Unelec

Industrial circuit breakers

General characteristics

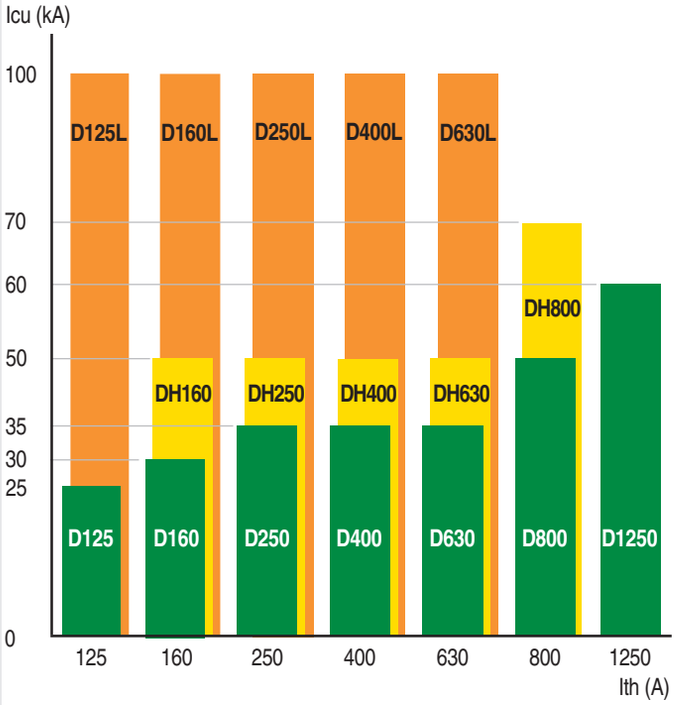
Use

The Record circuit breakers are suitable for three levels of performances:
- normal breaking capacity, type D,
- high breaking capacity, type DH,
- limiter circuit breaker, type D ... L.

By adding or replacing elements, it is possible to perform the following functions:
- earth leakage protection,
- visible isolation,
- low magnetic threshold protection,
- instantaneous protection alone
- selectivity of protection.

As a variant:
- source changeover switches for replacement source,
- switches for controlling and isolating circuits.

Breaking capacity (according to IEC 947-2 at 415V)



Description

Within an isolating box, the Record circuit breaker contains:
- 2 (D125), 3 or 4 poles,
- A mechanism enabling fully visible isolation.
  The control handle can only display "OFF" if all the contacts are actually open and separated by a distance greater than:
  - 9 mm for D125
  - 15 mm for D160, D250
  - 20 mm for D400, D630, D800, D1250,
- A display showing the exact position of contacts
  - red: contacts closed
  - white: contacts open, unit tripped
  - green: contacts open, fully visible isolation,
- 1 release unit:
  - integrated for D125, D160, D250
  - interchangeable for D400, D630, D800, D1250

  containing:
  - a trip push-button
  - compensated thermal elements for - 5°C to + 40°C adjustable from:
    0.75 to 1 for D125, D160, D250
    0.8 to 1 for D400, D630, D800, D1250
  - Adjustable magnetic releases (fixed for D125)

Structure

Record circuit breakers are available as:
- fixed unit, front or rear connections,
- withdrawable unit with front or rear connections.

The withdrawable version contains:
- a monoblock fixed isolating part, protection level IP 2X,
- a safety system at withdrawal,
- An upline-downline error prevention device,
- optional: rating error prevention device, wiring isolation.

The Record D800 and D1250 withdrawable devices have a fixed part with plug-in and withdrawal control by crank and optional isolation shutter and position indicator.

Versions:
- standard thermal magnetic
- low threshold type A thermal magnetic
- instantaneous type B magnetic only
- fixed, selective thermal magnetic type SM or S releases, magnetic
- for direct current.

Option of lead sealing access (front panel) to settings.

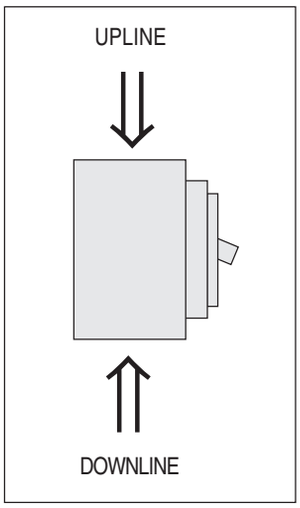
Auxiliaries, accessories

Record circuit breakers can receive:
- auxiliaries:
  - display contacts (ON-OFF, fault)
  - voltmetric releases (ST shunt, UV undervoltage)
- installation and connection accessories:
  - terminals, terminal covers,
- padlocks or locks.

Installation

Record circuit breakers Record can be mounted in all industrial or tertiary installations.
Adapter accessories such as plates or racks have been designed for integration into our Modula 400 boxes and Modula 4000 housings

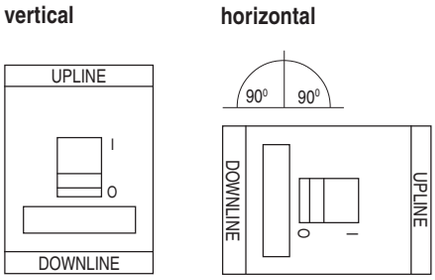
Power



		D125	D160	D250	D400	D630	D800	D1250
220/240V	Upline	•	•	•	•	•	•	•
	Downline	•	•	•	•	•	•	•
380/415V	Upline	•	•	•	•	•	•	•
	Downline	•	•	•	•	•	•	•
500V	Upline	•	•	•	•	•	•	•
	Downline	•	-	-	•	•	•	•
660/690V	Upline	-	•	•	•	•	•	•
	Downline	-	-	-	•	•	•	•

Mounting

The mounting of a fixed circuit breaker can be:

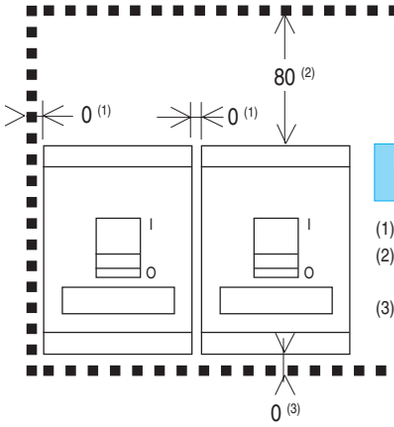


Circuit breaker type:

Fixed 125 / 1250	•	•
Withdrawable 125 / 630	•	•
Withdrawable type V 160 /1250	•	•

Safety perimeter

During breaking, all circuit breakers produce external agents (fragments, gases, . . .); in order to guarantee security during this phase, it is necessary to respect the safety distances indicated below:



Note: forward facing safety distance = 0

(1) D160 L: 25 mm
(2) D125/D125 L: 50 mm
D1250: 200 mm
(3) rear connections

metal, painted or insulated metal

Environmental endurance

Record circuit breakers and their additional units, meet the implementation requirement II of the standard NF C 63-100:
- relative humidity: 80% to 55° C and 95% to 45° C. (hot and humid climate).

Accreditation/certification

IEC 947-2
BS, CEI, NBN, NF C, VDE
ASEFA - Bureau Véritas - Germanischer Lloyd -
Lloyd's Register of Shipping - RINA

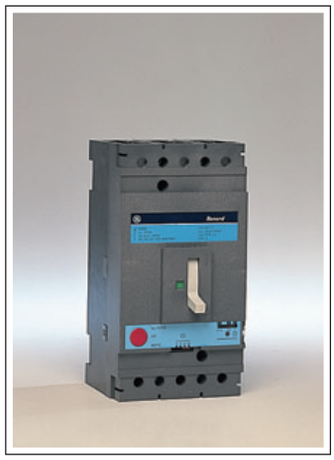
Circuit breaker characteristics: page A.4
Release characteristics: page A.6
Auxiliaries and accessories: page A.8

Technical data

D125

D160

D250



Circuit breakers			D125	D125L	D160	DH160	D160L	D250	DH250	D250L
Rated current										
Ith 40ºC		(A)	125	125	160	160	160	250	250	230
Ith 50ºC		(A)	118	118	152	152	152	237.5	237.5	215
Ith 60ºC		(A)	112	112	144	144	144	225	225	205
Rated operational voltage Ue										
AC 50/60 Hz		(V)	500	500	690	690	690	690	690	690
DC		(V)	500	500	500	500	500	500	500	500
Rated insulation voltage Ui		(V)	500	500	690	690	690	690	690	690
Ultimate breaking capacity Icu										
AC 50/60 Hz	220/240V	(kA)	100	130	70	80	130	70	80	130
	380/415V	(kA)	25 (2)	100	30	50	100	35	50	100
	500V	(kA)	10	100	12	14	70	20	22	80
	600/690V	(kA)	-	-	5	7	25	7	8	30
	1000V (1)	(kA)	-	-	-	-	-	-	-	-
DC (L/R = 15 ms) (3)	125V	(kA)	30	100	40	40	100	50	50	100
	250V	(kA)	30	100	20	40	100	35	50	100
	500V	(kA)	-	-	20	40	100	25	45	100
Service short circuit breaking capacity Ics										
AC 50/60Hz		(% Icu)	50	100	75	75	75	75	75	75
DC (L/R = 15 ms)		(% Icu)	50	100	75	75	75	75	75	75
Rated short circuit making capacity Icm										
	220/240V	(kA peak)	220	286	154	176	286	154	176	286
	380/415V	(kA peak)	48	220	66	110	220	77	110	220
Single pole IT system breaking capacity Ice										
	220/240V	(% Icu)	25	75	40	60	75	50	60	75
	380/415V	(% Icu)	-	-	15	10	25	20	15	30
Rated impulse withstand voltage Uimp		(kV)	8	8	8	8	8	8	8	8
Category of use			A	A	A	A	A	A	A	A
Number of poles			2-3-4	2-3-4	3-4	3-4	3-4	3-4	3-4	3-4
Endurance										
Mechanical		ops	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
Electrical		ops	5 000	5 000	4 000	4 000	4 000	4 000	4 000	4 000
Total fault elimination time		(ms)	8	2	8	8	3.5	8	8	3.5
Pollution degree			3	3	3	3	3	3	3	3

(1) Execution on demand
(2) 12 kA for 16A rating
(3) Number of poles involved in breaking:
- 125V: D125 to D1250 (2 poles)
- 250V: D125 and D125 L (4 poles)
  D160 to D1250 (2 poles)
- 500V: D160 to D250 (4 poles)
  D400 to D1250 (3 poles)

D400

D630

D800

D1250

D400	DH400	D400L	D630	DH630	D630L	D800	DH800	D1250
400	400	400	630	630	630	800	800	1250
380	380	380	580	580	580	760	760	1150
360	360	360	535	535	535	720	720	1050
690	690	690	690	690	690	690	690	690
500	500	500	500	500	500	500	500	500
690	690	690	690	690	690	690	690	690
50	70	130	70	80	130	70	80	60
35	50	100	35	50	100	50	70	60
30	35	50	20	25	60	25	35	35
10	12	18	10	12	25	15	20	25
-	-	10	-	-	12	-	-	21
80	100	100	80	100	100	80	100	70
60	85	100	60	85	100	60	80	50
40	50	60	40	50	60	40	50	70
100	75	75	75	75	75	75	75	75
100	75	75	75	75	75	75	75	75
110	154	286	154	176	286	154	176	132
77	110	220	77	110	220	110	154	132
70	70	75	50	60	75	70	85	100
30	25	20	25	25	25	30	20	40
8	8	8	8	8	8	8	8	8
A	A	A	A	A	A	A	A	A
3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4
5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	3 000
2 000	2 000	2 000	2 000	2 000	2 000	1 000	1 000	1 000
8	8	6	12	12	6	12	12	20
3	3	3	3	3	3	3	3	3

Technical data of thermal magnetic releases

Circuit breakers		D125					D160					D250				
Releases		integrated					integrated					integrated				
Type standard	thermal	adjustable from 0.75 to 1 Ith					adjustable: 0.75 to 1 Ith					adjustable: 0.75 to 1 Ith				
	adjusted for - 5°C to + 40°C	rat.	N (1)	40°C	50°C	60°C	rat.	N (1)	40°C	50°C	60°C	rat.	N (1)	40°C	50°C	60°C
		16	-	16	15	14.5	25	-	25	23.5	22.5	100	63	100	95	90
		25	-	25	23.5	22.5	40	25	40	38	36	125	63	125	118.5	112.5
		40	25	40	35	36	63	40	63	59.5	56.5	160	100	160	152	144
		63	40	63	60	57	100	63	100	95	90	200	100	200	190	180
		80	40	80	76	72	125	63	125	118.5	112.5	250	125	250	237.5	225
		100	63	100	95	90	160	100	160	152	144					
		125	63	125	118	112										
		D125L fixed, D125M withdrawable										**D250L fixed, D250M fixed, D250 withd.**				
		100	63	95	90	85						200	100	200	190	180
		125	63	120	115	110						250	125	230	215	205
		D125L withdrawable										**D250L withd., D250M withd.**				
		100	63	90	85	80						200	100	180	170	160
		125	63	110	100	90						250	100	205	195	185
	magnetic	fixed					adjustable					adjustable				
		operating threshold (A)					adjustment range (A)					adjustment range (A)				
		rat.	Irm				rat.	min.		max.		rat.	min.		max.	
		16	200				25	250		300		100	500		1200	
		25	300				40	320		480		125	625		1500	
		40	480				63	440		750		160	800		1900	
		63	750				100	600		1200		200	1000		2400	
		80	1000				125	750		1500		250	1250		2500	
		100	1200				160	800		1900						
		125	1200													
Type A low threshold instantaneous operation	thermal	identical to standard type					identical to standard type					identical to standard type				
	magnetic	fixed					adjustable					adjustable				
		operating threshold (A)					adjustment range (A)					adjustment range (A)				
		rat.	Irm				rat.	min.		max.		rat.	min.		max.	
		25	90				125	300		500		200	375		750	
		40	130				160	375		625		250	625		1500	
		63	260													
		80	400													
		100	400													
		125	400													
Type B instantaneous operation only	thermal	none					none					none				
	magnetic	fixed					adjustable					adjustable				
		operating threshold (A)					adjustment range (A)					adjustment range (A)				
		rat.	Irm				rat.	min.		max.		rat.	min.		max.	
		16	200				63	440		750		200	1000		2400	
		25	300				100	600		1200		250	1250		2500	
		40	480				125	750		1500						
		63	750				160	800		1900						
		80	1000													
		100	1200													
		125	1200													
Type SM or S selective operation	thermal						identical to standard type					identical to standard type				
	magnetic						fixed					fixed				
							operating threshold (A)					operating threshold (A)				
							rat.	Irm				rat.	Irm			
							100	2000				160	2500			
							125	2000				200	2500			
							160	2000				250	2500			
Type C instantaneous operation only for direct current																

(1) Reduced neutral
(2) No thermal operation for direct current

D400

interchangeable

adjustable: 0.8 to 1 Ith

rat.	N (2)	40°C	50°C	60°C
250	125	250	237	225
320	160	320	304	288
400	200	400	380	360

D400 withdrawable

400	200	370	340	310

adjustable

adjustment range (A)

rat.	min.	max.
250	1500	3000
320	1900	3850
400	2000	4800

identical to standard type

adjustable

adjustment range (A)

rat.	min.	max.
320	750	1200
400	960	1700

none

adjustable

adjustment range (A)

rat.	min.	max.
320	1900	3850
400	2000	4800

identical to standard type

fixed

operating threshold (A)

rat.	Irm
250	3000
320	3850
400	4800

D630

interchangeable

adjustable: 0.8 to 1 Ith

rat.	N (1)	40°C	50°C	60°C
400	200	400	370	340
500	250	500	460	425
630(2)	320	630	580	535

D630 withdrawable

500	250	460	425	390
630(2)	320	580	535	495

adjustable

adjustment range (A)

rat.	min.	max.
400	2000	4000
500	2500	5000
630	3150	5000

identical to standard type

adjustable

adjustment range (A)

rat.	min.	max.
500	1000	2000
630 (2)	1250	2500

none

adjustable

adjustment range (A)

rat.	min.	max.
500	2500	5000
630	3150	5000

identical to standard type

fixed

operating threshold (A)

rat.	Irm
400	4000
500	5000
630	5000

D800

interchangeable

adjustable: 0.8 to 1 Ith

rat.	N (1)	40°C	50°C	60°C
630(2)	320	630	580	535
800(2)	400	800	760	720

D800 withdrawable

630(2)	320	600	550	505
800(2)	400	720	675	635

adjustable

adjustment range (A)

rat.	min.	max.
630	3150	5000
800	4000	6400

identical to standard type

adjustable

adjustment range (A)

rat.	min.	max.
630 (2)	1250	2500
800 (2)	2000	3000

none

adjustable

adjustment range (A)

rat.	min.	max.
630	3150	5000
800	4000	6400

identical to standard type

fixed

operating threshold (A)

rat.	Irm
630	5000
800	6400

D1250

interchangeable

adjustable: 0.8 to 1 Ith

rat.	N (1)	40°C	50°C	60°C
800(2)	400	800	760	675
1000(2)	500	1000	950	850
1250(2)	630	1250	1150	1050

adjustable

adjustment range (A)

rat.	min.	max.
800	4000	8000
1000	5000	10000
1250	6250	12500

identical to standard type

adjustable

adjustment range (A)

rat.	min.	max.
1000 (2)	2400	4000
1250 (2)	3000	5000

none

adjustable

adjustment range (A)

rat.	min.	max.
1000	5000	10000
1250	6250	12500

identical to standard type

adjustable

adjustment range (A)

rat.	min.	max.
800	4000	8000
1000	5000	10000
1250	6250	12500

adjustment range (A)

min.	max.
3000	6000

Functions

Circuit breakers		D125	D125L	D160	DH160	D160L	D250	DH250	D250L
Earth leakage		D125M	D125LM	D160M	DH160M	-	D250M	DH250M	-
By isolation visible breaking		-	-	D160VE D160MVE D160V	DH160VE DH160MVE DH160V	D160LVE	D250VE D250MVE D250V	DH250VE D250MVE D250V	D250LVE
Switch	standard	J125	-	J160	-	-	J250	-	-
	differential	J125M	-	J160M	-	-	J250M	-	-
	visible breaking	-	-	J160VE J160MVE J160V	-	-	J250VE J250MVE J250V	-	-
Automatic or manual source changeovers		-	-	•	•	•	•	•	•

Electrical auxiliaries

Auxiliary "ON-OFF" switch	AS	•	•	•	•	•	•	•	•
Bell alarm	BA	•	•	•	•	•	•	•	•
Voltmetric shunt release	ST	•	•	•	•	•	•	•	•
Undervoltage release	UV	•	•	•	•	•	•	•	•

Control accessories

Manual rotary control		•	•	•	•	•	•	•	•
Electrical control		•	•	•	•	•	•	•	•

Safety accessories

Terminal covers		•	•	•	•	•	•	•	•
Locks	padlock	•	•	•	•	•	•	•	•
	key lock	•	•	•	•	•	•	•	•
Isolating shutter		-	-	-	-	-	-	-	-
Rating error prevention		•	•	•	•	•	•	•	•

Installation/Connection

Fixed unit	front connections	FAV	•	•	•	•	•	•	•	•
	rear connections	FAR	•	•	•	•	•	•	•	•
Withdrawable unit	front connections	DAV	•	•	•	•	•	•	•	•
	rear connections	DAR	•	•	•	•	•	•	•	•

(1) Earth leakage protection can be achieved with a separate core unit (SHR or MTS)
(2) Terminal covers 4P only.

D400	DH400	D400L	D630	DH630	D630L	D800	DH800	D1250
D400M	DH400M	-	D630M	DH630M	-	(1)	(1)	(1)
D400VE D400VR D400V	DH400VE DH400VR DH400V	D400LVE D400LVR D400LV	D630VE D630VR D630V	DH630VE DH630VR DH630V	D630LVE D630LVR D630LV	D800V	DH800V	D1250V
J400	-	-	J630	-	-	J800	-	J1250
J400M	-	-	J630M	-	-	(1)	(1)	(1)
J400VE J400VR J400V	-	-	J630VE J630VR J630V	-	-	J800V	-	J1250V
•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•
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•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•
•	•	•	•(2)	•(2)	•(2)	-	-	-
•	•	•	•	•	•	•	•	•
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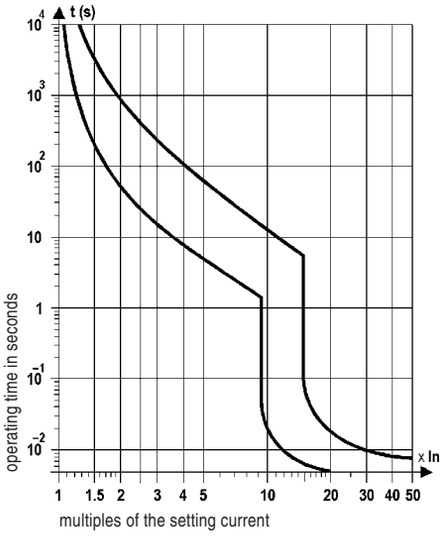
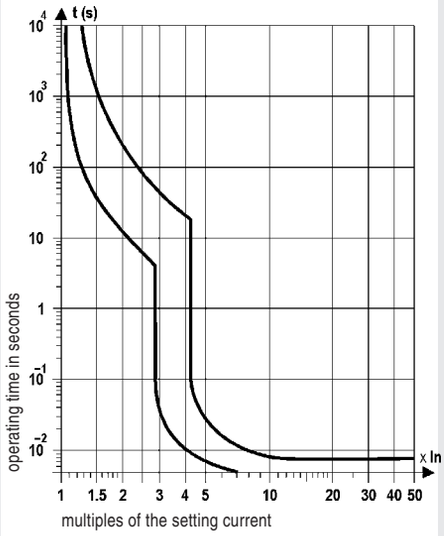
Operating curves

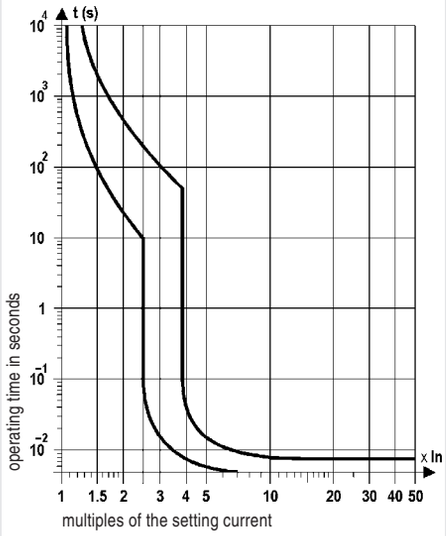
D125 - 16 and 25A



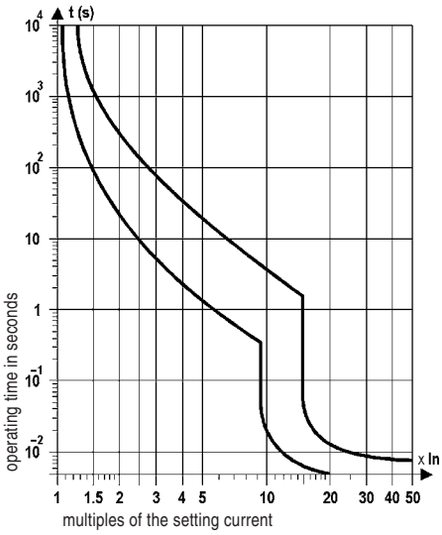
D125 - type A, 25A



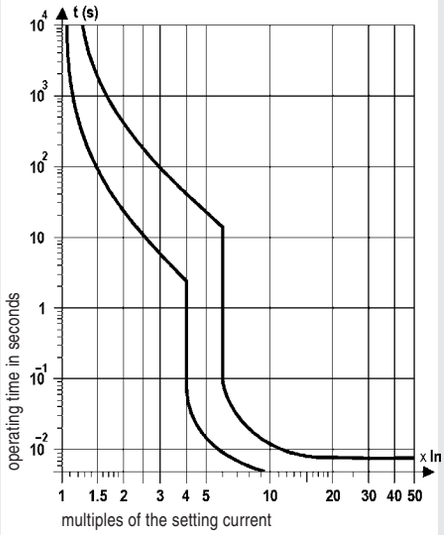
D125 - type A, 40 and 125A



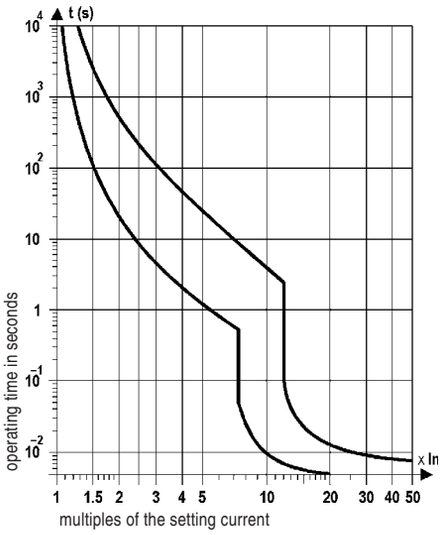
D125 - 40 to 100A



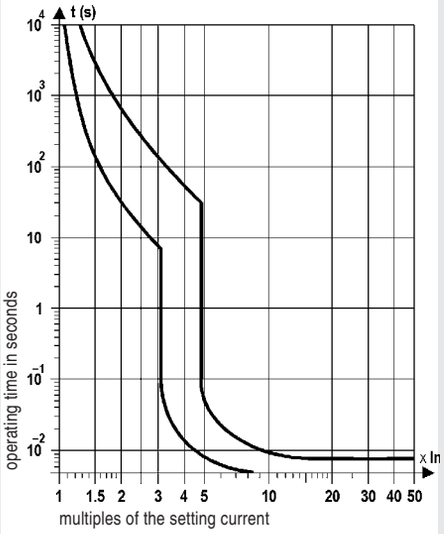
D125 - type A, 80A



D125 - 125A

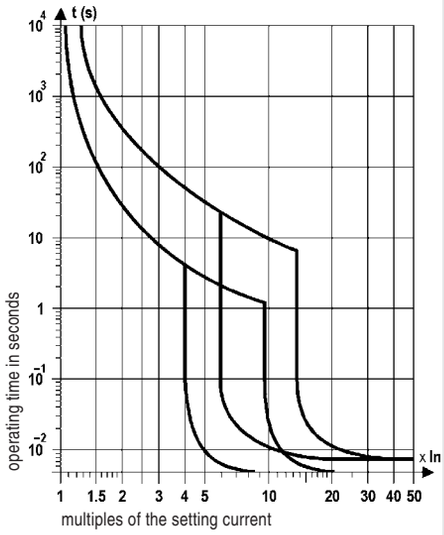


D125 - type A, 63 and 100A

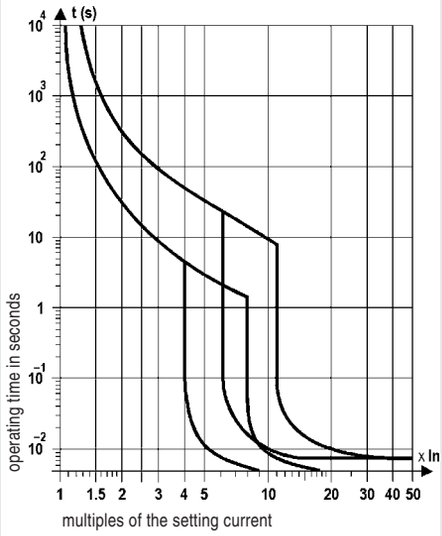


Operating curves

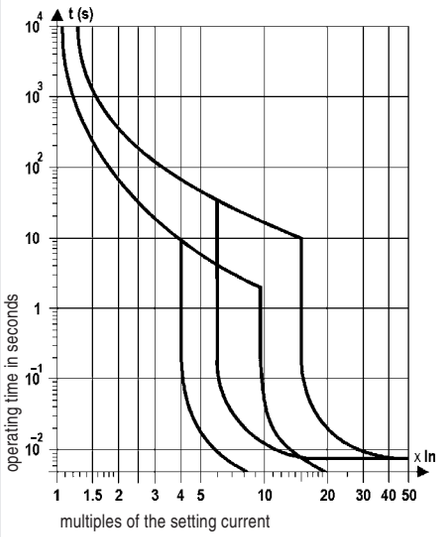
D160



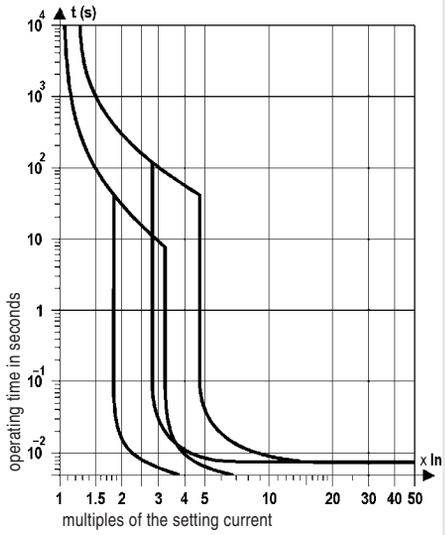
D250



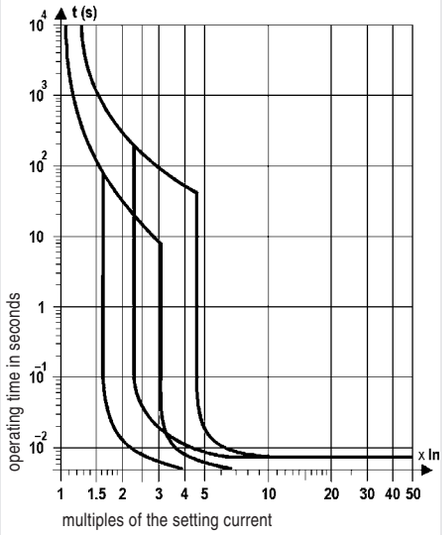
D400



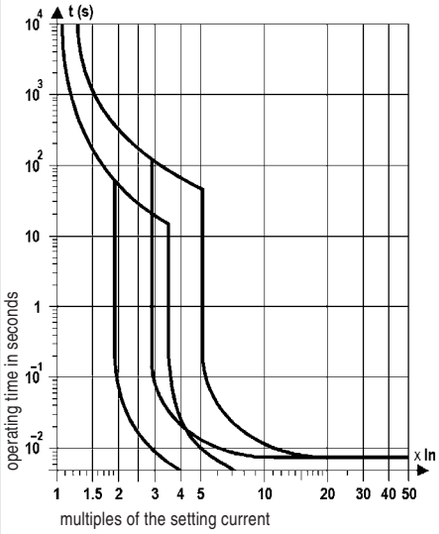
D160 - type A



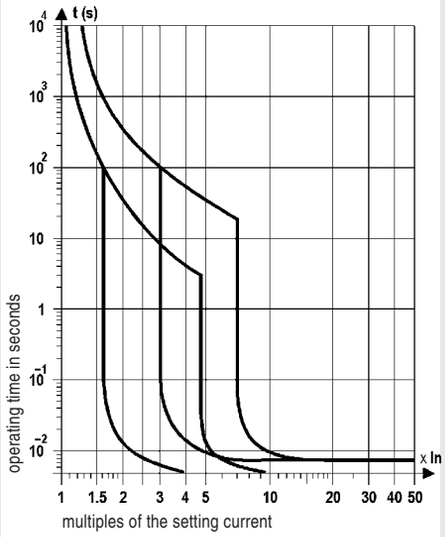
D250 - type A, 200A



D400 - type A, 320/400A

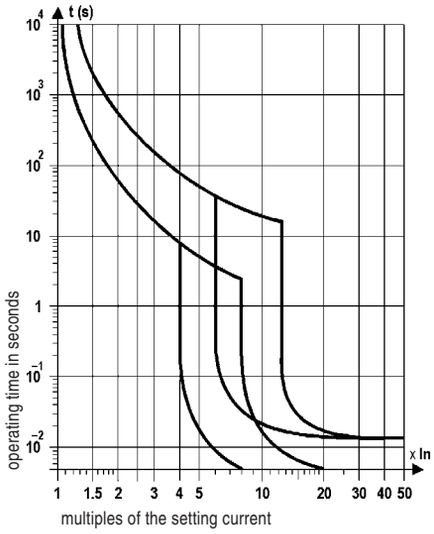


D250 - type A, 250A

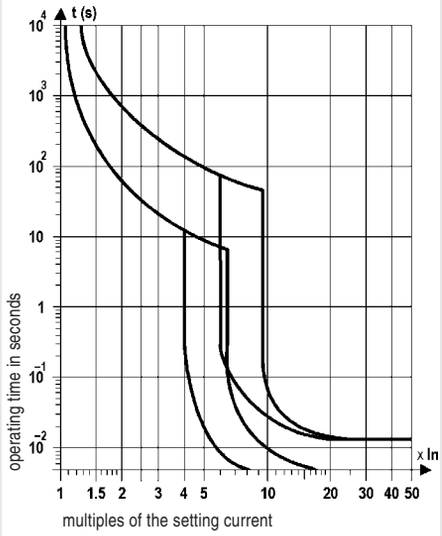


Operating curves

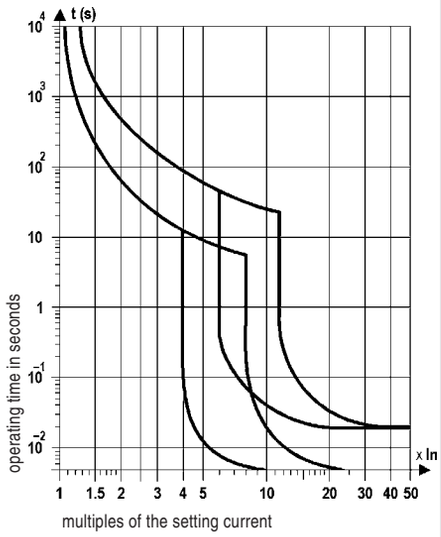
D630 - 400/500A



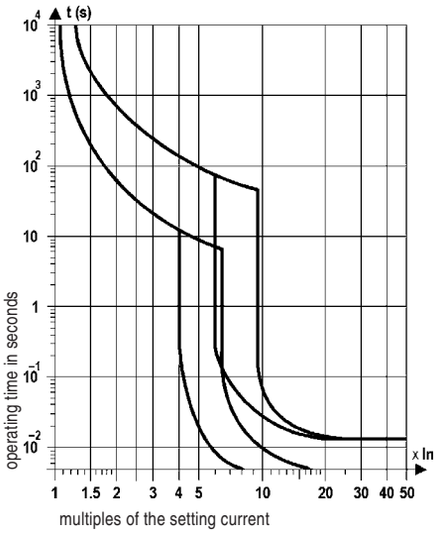
D800 - 630/800A



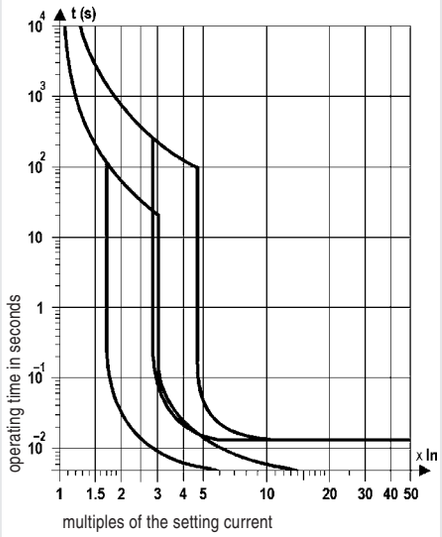
D1250 - 1000/1250A



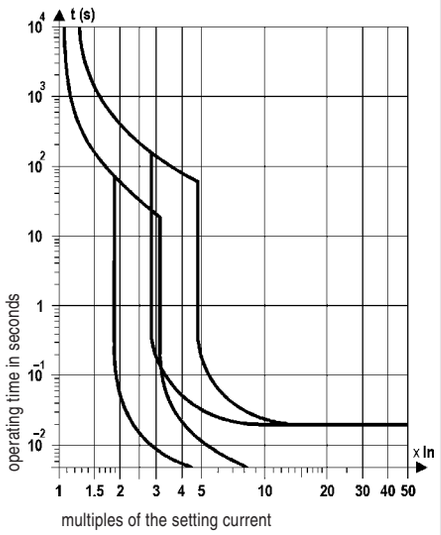
D630 - 630A



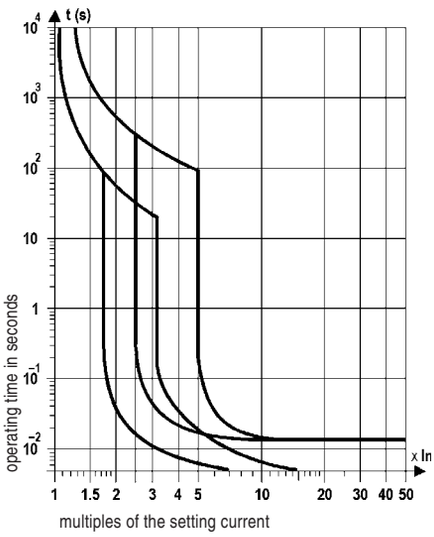
D800 - type A, 630/800A



D1250 - type A, 1000/1250A



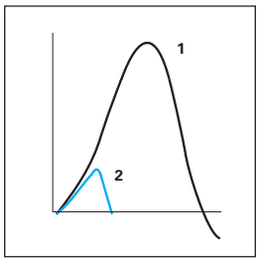
D630 - type A, 500/630A



Limiter circuit breakers

General

The limiting capacity of a circuit breaker is the expression of the breaker's capacity, in the event of a short-circuit, to let no current through that is greater than the assumed fault current.



1: Icc peak assumed

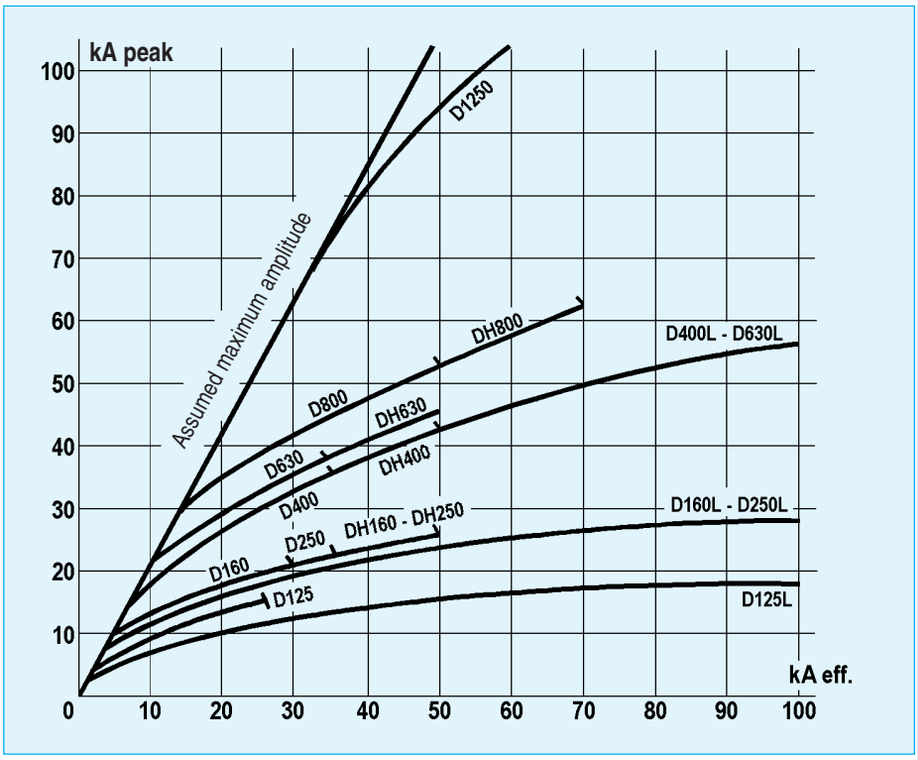
2: Icc peak limited

This characteristic is expressed by limitation curves

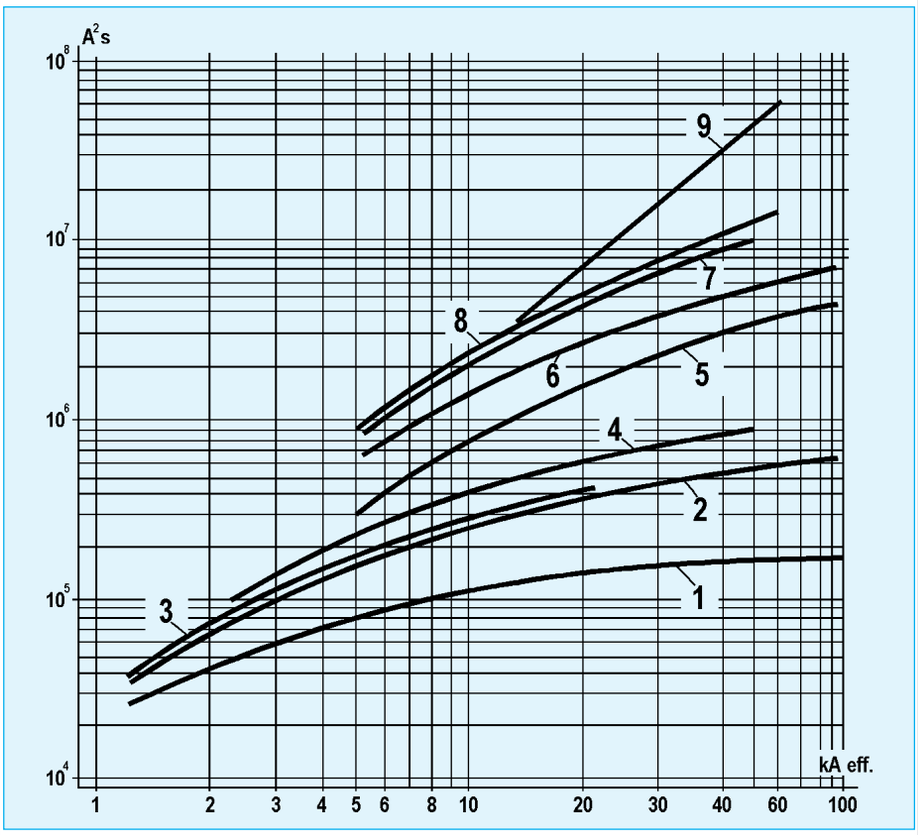
D125 L, D160 L, D250 L

The limitation function is performed by a unit which is adapted on site, to the upper part of standard or earth leakage protection circuit breakers.
The housing contains:
- a special contacts device allowing a breaking capacity without circuit breaking, of 100 kA (under 415V)
- a front facing short-circuit counter

Short-circuit current limitation curves, 380/415 V



Thermal constraint limiting curves



1. D125 L
2. D160 L - D250 L
3. D125 - D250 - DH250
4. D160 - DH160
5. D400 - DH400 - D400 L
6. D630 L
7. D630 - DH630
8. D800 - DH800
9. D1250

Switches J

Record switches are derived from Record circuit breakers.
They can receive auxiliaries, controls, and the circuit breaker accessories from which they come.

Type			J125*	J160	J250	J400	J630	J800	J1250
Rated thermal current Ith		(A)	100/125	160	250	400	630	800	1250
Short term withstand current Icw		(kA eff.)	1.2	2	2.5	4	5.5	7	16
	time	(s)	2	4	3	10	13	10	8
Rated short-term making capacity Icm		(kA peak)	1.7	3.5	4	9	9	14	32
Number of poles			2-3-4	3-4	3-4	3-4	3-4	3-4	3-4
Suitability for isolation (visible breaking indication)			•	•	•	•	•	•	•
Variants									
Ground leakage			J125M	J160M	J250M	J400M	J630M	(1)	(1)
By isolation visible breaking			- J160MVE	J160VE J250MVE J160V	J250VE J400VR J250V	J400VE J630VR J400V	J630VE J630V	J800V	J1250V
Source changeover automatic or manual			-	•	•	•	•	•	•
Auxiliaries									
		switches (2) type				T V	T V	T V	T V
Display contact "ON-OFF"		AS	•	•	•	• •	• •	• •	• •
Bell alarm (3)		BA	•	•	•	- -	- -	- -	• -
Shunt release		ST	•	•	•	• -	• -	• -	• -
Undervoltage release		UV	•	•	•	• -	• -	• -	• -
Controls									
Manual rotary			•	•	•	•	•	•	•
Electric			•	•	•	•	•	•	•
Accessories									
Connection acessories			•	•	•	•	•	•	•
Terminal covers			•	•	•	•	• (4)	-	-
Locks	padlock		•	•	•	•	•	•	•
	key lock		•	•	•	•	•	•	•
Isolating shutter			-	-	-	-	-	•	•
Installation/connection									
Fixed Unit	front connections	FAV	•	•	•	•	•	•	•
	rear connections	FAR	•	•	•	•	•	•	•
Withdrawable unit	front connections	DAV	•	•	•	•	•	•	•
	rear connections	DAR	•	•	•	•	•	•	•

* rating 100 and 125A

(1) Ground leakage protection can be achieved with separate magnetic core units (see page A.15)

(2) T: switch type "All auxiliaries"
V: switch type "Lock"
(no safety system at withdrawal)

(3) ST or UV release

(4) terminal cover 4P only

Earth leakage protection circuit breakers

Earth leakage protection

Earth leakage circuit breakers give protection in case of:
- isolation fault (decree of 14/11/1988)
- overload and short-circuit

They consist of:
- a Record circuit breaker
- a voltmetric shunt release installed in the circuit breaker
- an earth leakage protection device including magnetic core and an electronic unit with integrated power supply:
  - device built into D125 circuit breakers,
  - site adaptable device for circuit breakers D160, D250, D400, D630,
  - remote control AC/DC 220/415V

Characteristics

	D125 M D125 LM	D160 MD250 M DH160 M-DH250 M D160 LM-D250 LM	D400 M-D630 M DH400 M-DH630 M D400 LM-D630 LM
Nominal voltage (50/60 Hz) (V)	220 to 415	220 to 415	220 to 415
Switchable version			
. instantaneous fixed threshold (A)	0.03	0.03	-
. threshold - multiple positions (A)	0.3 - 1 - 3	0.3 - 1 - 3	0.3 - 1 - 3
- time delay (ms)	0 / 100 300 / 500	0 / 100 300 / 500	0 / 100 300 / 500
Operating display	-	yellow display resetable	yellow display resetable
Test button	•	•	•
Reset button	-	•	•
Option of sealing the settings	•	•	•
two terminals for remote control distance	•	•	•

Earth leakage protection can also be achieved by combining a circuit breaker with voltmetric release and an MTS or SHR earth leakage protection unit with separate magnetic core

The earth leakage protection units are:
- **protected against untimely tripping (non-release with 250A 8/20 micro-second, defined in IEC 947.2 appendix B)**
- **adapted to continuous pulse bi-directional and uni-directional components (class A).**

The electronic card is powered by 3 phases: protection is thus guaranteed even with loss of one phase.

D125M earth leakage protection circuit breaker

Residual current earth leakage devices SHR 1100 and SHR 1110

Residual current earth leakage protection devices with separate core, which, via a Record circuit breaker or switch provide circuit opening in the event of an isolation fault.
Specially designed for industrial networks.

Functions

Isolation fault	LED indication two changeover switches
Pre-alarm 50% positive security relay	LED indication one changeover switch
Fault reset	by push-button (optional bistable relay)
System failure	manual integrated test external test
Core failure	signal 'error' and tripping

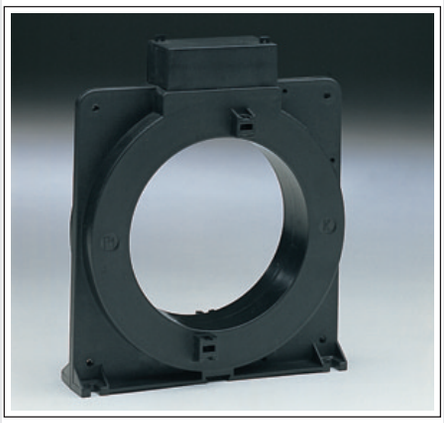
Performances

Supply voltage version 1	V1 24V~	V2 48V~
version 2	110/127V~	440/480V~
version 3	220/240V~	380/415V~
Contacts output	dry contacts 2 changeover + 1 NO	
breaking capacity	6A 250V, 1500VA max.	
insulation	4kV eff.	
Protection degree	IP20 surface IP42 flush	

Characteristics

Controlled network alternative L.V.	AC < 1000V
frequency	40 to 70Hz - 400Hz N.C.
Detection principle	measurement residual current
core ratio	600/1 (optional 470/1)
maximum current	500A - 1 s.
nominal impedance	100Ω
Current measurement threshold	30mA at 3.4A
pre-alarm	50% of the threshold (not adjustable)
threshold adjustm.	64 steps
indicators	4 LEDs
Power supply frequency	40 to 400Hz
standard voltage	24 to 480V~ in 3 ranges
consumption	4VA
Operating time adjustments	adjustable on SHR 1110 0.1 to 1.5 s. in 16 steps
instantaneous	15 ms bypass if 30mA threshold

Continued on A.16



SHR 1100 - SHR 1110 (Continued from A.15)

Presentation

- Modular box 4 modules - DIN 43880
- Mounting on symmetrical rail (surface or flush)
- Screw terminals for 2.5 mm² wires
- Front face setting
- Sealable transparent cover

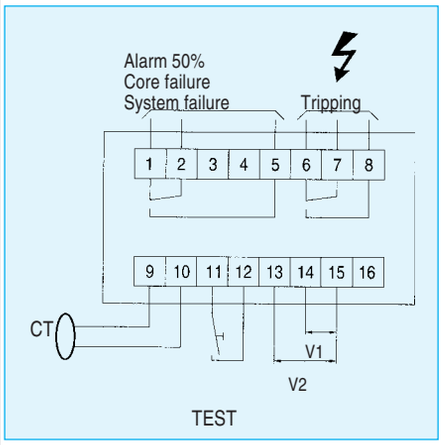
Remarks

1. Ensure cover conductors are centered
2. If the neutral is not out, enclose the 3 phases
3. Never allow the core to enclose the protection conductor
4. Armoured cable obligatory for cable lengths (SHR / core) ≥ 5 m or for sensitive settings ≥ 1A

Cores CITO - CITF

- Ratio: 600/1
- Connection by box type terminals for wires of 2.5 mm²
- Connection to earth leakage protection relays using armoured cable with two insulated conductors and the shortest possible cabling (resistance < 30Ω)

Connection diagram



MTS earth leakage protection units with separate magnetic core

Function and use

Maximum current earth leakage protection relay with separate magnetic core which uses a circuit breaker or switch Record release to open a circuit in the event of an isolation fault.
Specially designed for industrial networks.

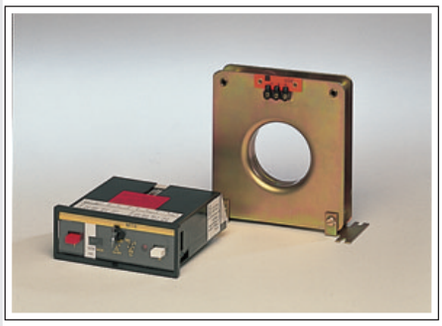
Characteristics

	MTS
Alternate earth neutral network protected	•
Frequency	50 to 175Hz
Setting values	fixed 0.03A adjustable 0.1 to 1A
Time delay	0 to 500 ms (for 0.1 to 1A)
Outgoing contacts	2 changeover contacts (2A/250V cos φ 0.3)
Display	•
Test button	•
Reset button	•

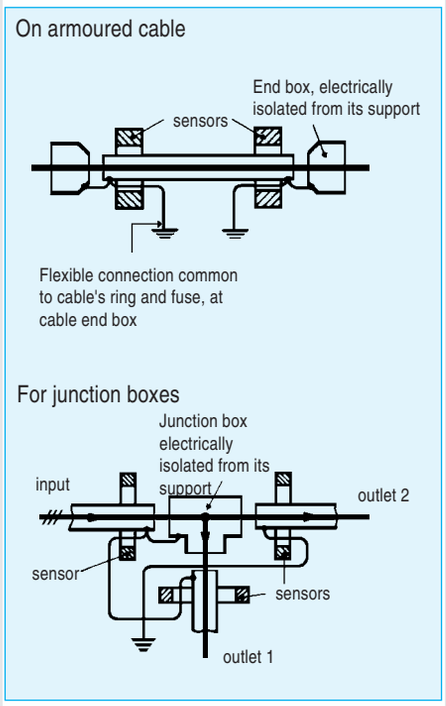
Power
Frequency 50/60 Hz
AC 220/240V or 380/415V

Mounting
Recessible into the bottom of the housing

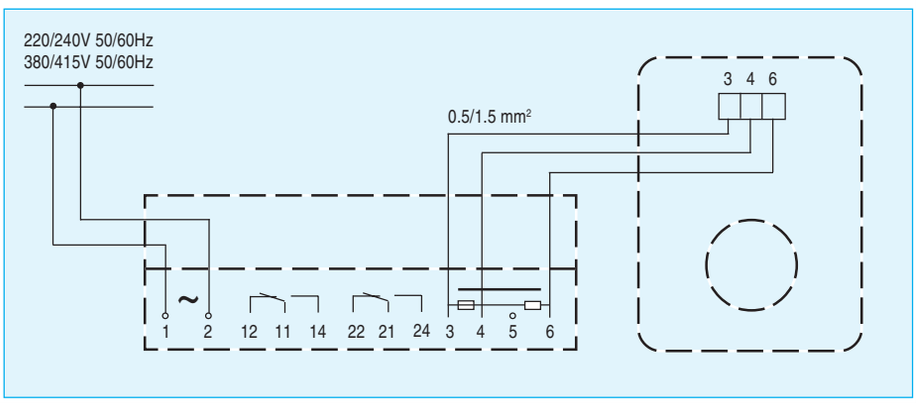
Detection core
Passing diameter: 34, 55, 70, 100 mm
(shipped with MTS)
Detection core ratio:
- signal: 34: 230/1
  55: 200/1
  70: 200/1
  100: 280/1
- test: 34, 55, 70, 100: 200/1



Detection core mounting



Connection diagram



Notes

1. ensure conductors are centred on the core
2. if neutral is not out, enclose the 3 phases
3. never allow the protection conductor to be enclosed by the core

V, VR, VE visible isolation circuit breakers

General

Visible isolation circuit breakers can be used:
- for general low voltage protection of low voltage metering, high/low voltage sub stations
- wherever personnel safety implies visually clear separation of source and loads.

Conforms to NF C 13-100 and NF C 15-100 standards as well as the decree of 14/11/1988. Based on standard withdrawable circuit breakers and can receive the auxiliaries and accessories for these units.

Structure

Type of circuit breaker	Version		
D160-D250 **DH160-DH250**	V	-	VE
D160 L/M **D250 L/M**	-	-	VE
D400-D630 **DH400-DH630** **D400 L-D630 L**	V	VR	VE
D800 **DH800**	V	-	-
D1250	V	-	-

Version V

Characteristics

- 2 stable circuit breaker positions: "plugged in" "withdrawn"
- Isolation by handle or crank
- Padlocking in "removed" position
- Option of locking off in "withdrawn" position with lock (not supplied):
  - Ronis type 1104 right opening or Profalux KS 5B 20 D4Y for D160/D250
  - Ronis type 1104 right opening or Ronis EL 11 AP, or Profalux KS 5B 20 D4Y or Profalux V11 - 18 for D400
  - Ronis type 1104 left opening or Profalux KS 5B 20 G4Y for D630 - D800 - D1250
- Front connections

Version VR

Characteristics

- 2 stable circuit breaker positions: "plugged in" "withdrawn"
- Isolation by handle or crank
- Padlocking in "removed" position
- Option of locking off in "withdrawn" position with lock (not supplied):
  - Ronis type 1104 right opening or Profalux KS 5B 20 D4Y or Profalux KS 5B 20 D4Y or Profalux V11 - 18 for D400
  - Ronis type 1104 left opening or Profalux KS 5B 20 G4Y for D630
- Rear connections

Version VE

Characteristics

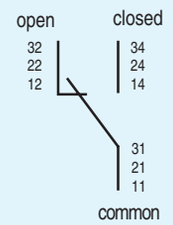
- 2 stable circuit breaker positions: "plugged in" "withdrawn"
- Padlocking in "removed" position
- Option of locking off in "withdrawn" position with lock (not supplied):
  - Ronis type 1104 left opening or Ronis EL 11 AP, or Profalux KS 5B 20 G4Y or Profalux V11 - 18
- Front connections

Electrical auxiliaries

Auxiliary AS “ON/OFF” switches

Changeover contact operated simultaneously with circuit breaker poles.
Easy on-site clip-on installation, no calibration needed.

		D125 to D250	D400 to D1250
Rated thermal current Ith		5A	5A
Rated breaking capacity			
AC	125 V	6A	10A
	220 V	5A	10A
	250 V	5A	10A
	380 V	5A	10A
DC	120 V	0.6A	0.6A
Resistance circuit			

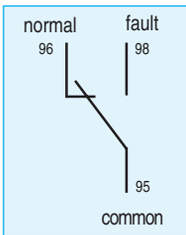


Wiring colour code:
12 - 22 - 32: OG (orange)
14 - 24 - 34: RD (red)
11 - 21 - 31: BN (brown)

BA bell alarm contacts

Changeover switch displays the "tripped" position of the circuit breaker when initiated by the thermal magnetic release.
Easy on-site clip on installation, no calibration needed.

		D125 to D250	D400 to D1250
Rated thermal current Ith		5A	5A
Rated breaking capacity (A)			
AC	125 V	6A	5A
	220 V	5A	5A
	250 V	5A	5A
DC	120 V	0.6A	0.6A
resistance circuit			



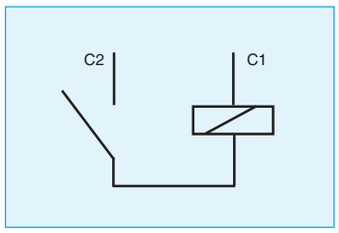
Wiring colour code:
96: OG (orange)
98: RD (red)
95: BN (brown)

Electrical auxiliaries

Shunt trip release ST

Trips the circuit breaker as soon as voltage is applied.
An intergrated auto-cut-off cuts power.
Tripping occurs for any voltage between 70 and 110 % of nominal control voltage.
The circuit breaker must be reset after tripping.
Easy on-site installation with no need for calibration

	D125	D160/250	D400 to 800	D1250
Rated voltage AC and DC	24-48-110/127-220/250-380/440-500/550	24-48-92/127-180/250-380/500	24-48-110/127 220/250-380/415-440/500	24-48-110/127-220/240-380/415-440/500
Current consumption				
AC (VA)	100	100	60	45
DC (W)	100	100	60	50
Release breaking time (ms)	15	15	15	15

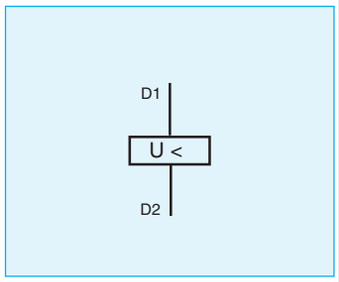


Wiring colour code:
C1 - C2: GN (green)

Undervoltage release UV

Opens the circuit breaker when control voltage disappears or falls to ≤ 70 % of Un.
Closing of the circuit breaker possible with control voltage 85 % of Un.
Closing impossible for control voltage ≤ 35 % of Un.
In some cases the circuit breaker must be reset after tripping.
Simple on-site clip-on installation requiring no calibration.

	D125	D160/250(1)	D400 to 800(1)	D1250(1)
Rated voltage				
AC (V)	24-48-110/127-220/240-380/415-440/500	24-48-110/127-220/240-380/440-500	24-48-110/127-220/240-380-415/440-500	24-48-110-127-220-380-415-440-500
DC (V)	24-48-110/125-220/250	24-48-110-250	24-48-110/125-250	24-48-110-125-250
Current consumption				
AC (VA)	8	5 (8 for 440V, 10 for 500V)	2.7	8
DC (W)	4 (6 for 250 V)	2.5 (5 for 250V)	2.5	4
Release breaking time (ms)	20	20	25	20



Wiring colour code:
D1 - D2: GN (green)

(1) Time delay device; 250 ms at 220V - 50Hz, 380V - 50Hz: avoids accidental tripping at sudden brief voltage drops.

Maximum equipment

	D125				D160/250			D400(1)				D630/800(1)				D1250(1)				
	↓ or	↓ or	↓ or	↓	↓ or	↓ or	↓	↓ or	↓ or	↓ or	↓	↓ or	↓ or	↓ or	↓	↓ or	↓ or	↓ or	↓ or	↓
ST release																				
left mounting	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1
right mounting	1	1	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0
UV release																				
left mounting	0	0	0	0	0	0	1	0	0	1	1	0	0	1	1	0	0	0	1	0
right mounting	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
AS contacts - 1 NO/NC																				
left mounting	2	1	2	1	2	0	0	2	2	0	0	3	0	0	0	3	1	0	0	0
right mounting	0	0	0	0	2	2	2	2	0	2	0	3	3	3	0	3	3	3	3	0
BA contact - 1 NO/NC	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1

(1) Option of 3 extra AS contacts on 4P units (except D400 4P: 2 AS contacts)
Withdrawable version, max. equipment limited by the number of wiring isolations:
- D160 to D400 3 and 4P, D630 3P, D800 3P: 16 wires max.
- D630 4P, D800 4P, D1250 3 and 4P: 24 wires max.

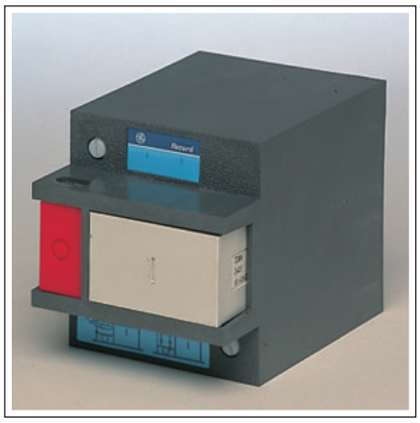
Electrical auxiliaries

Electrical control

D125

The electrical control is fastened to the front of the unit and enables opening and closing by remote or local control.

Opening and closing is by electromagnets.
Local push-button control.
Locking off in "tripped" position by 3 padlocks (not supplied)



Characteristics

Nominal voltages:
- AC: 48 -110/127 - 220/240 -380/415 V
- DC: 24 - 48 - 110/130 - 220/250 V

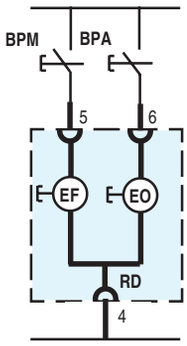
Operating voltage:
- 0.85 to 1.1 Un

Power consumption:
- AC: 600 VA
- DC: 500 W

Hold power: 6 VA
Response time:
- opening/closing: 0.1 s.

Time delay between 2 successive operations: 0.1 s.

Operating diagram



BPA : "OFF" push button
BPM : "ON" push button
EF : Closing magnetic coil
EO : Opening magnetic coil

: connection terminals

D160 - D250

Operating and closing by bidirectional motor with automatic cut-off at the end of operation.
Emergency local operation by crank
Display showing
- red: "ON"
- white: "tripped" on fault (electrical control reset)
- green: "OFF" (electrical control reset)

In the event of tripping on fault the control can be re-armed by pressing BPA.
Wiring connection by withdrawable connectors.
Locking off in "tripped" position:
- with 3 padlocks (not supplied)
- by lock Ronis type 1104 right opening supplied or Profalux type KS 5B 20D 4Y not supplied.

Characteristics

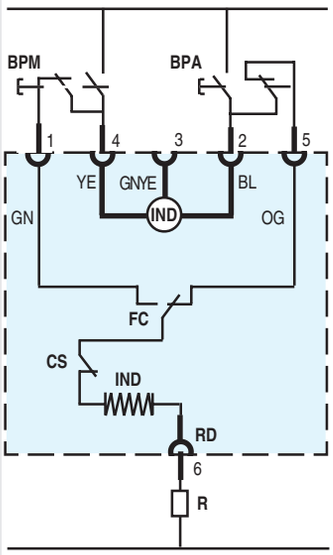
Operating voltage:
- AC: 24 - 48 - 110/127 - 220/240 V
- DC: 24 - 48 - 110/125 - 220/250 V

Operating voltage: 0.85 to 1.1 Un.
Power consumption:
- AC: 450 VA
- DC: 550 W

Response time:
- opening/closing: 0.1 s.

Time delay between 2 successive operations: 0.2 s.

Operating diagram



BL : blue
OG : orange
YE : yellow
GN : green
RD : red
BPA : "OFF" push button
BPM : "ON" push button
FC : limit switch
CS : crank safety contacts
IND : magnetic coils
R : resistance for U > 240V

: connection terminals

Electrical auxiliaries

Electrical control
D400 to D1250

Accumulation type: an electric motor arms a spring which stores the energy required to close the breaker.
Local control.
Display showing:
- red: "ON" or "tripped" on fault (electrical control not reset)
- green: "tripped" (electrical control reset)

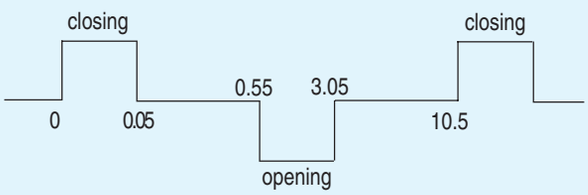
Wiring connection by withdrawable connectors.
Locking off in "tripped position":
- using 3 padlocks (not supplied)
- by lock Ronis type 1104, right opening supplied or Profalux type KS 5B 20 D4Y not supplied

Characteristics

Nominal voltage:
- AC: 24 - 48 - 110/127 - 220/240 - 380 - 415 V
- DC: 24 - 48 - 110/125 - 220/250 V

Operating voltage: 0.85 to 1.1 Un.
Power consumption:
- AC: 250 VA
- DC: 175 W

Response time

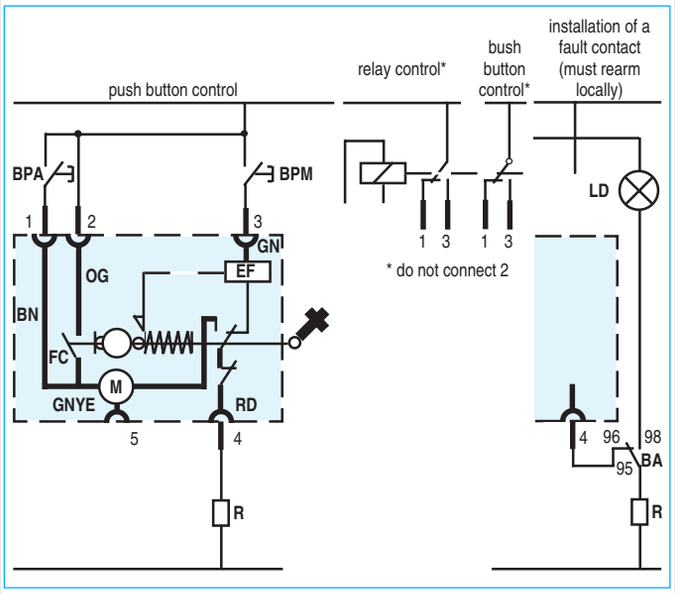


Operating diagram

The accumulation of energy (compression of a spring), required for rapid closure of the circuit breaker, takes place when the breaker opens or the electrical control is rearmed.
- closing: pressing the BPM controls power to the EF closing coil which frees the spring and operates the breaker.
- opening: pressing the BPA controls power to the motor which opens the breaker and rearms the spring.

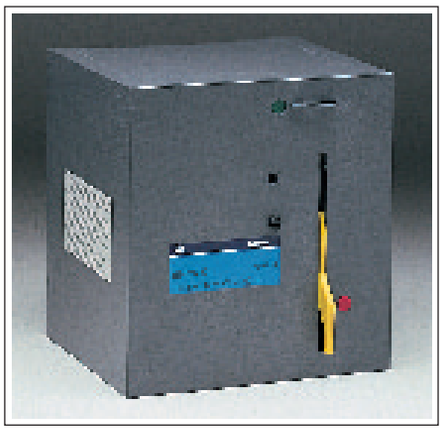
The motor is cut at the end of travel by the limit switch FC; the breaker is then ready to engage once more.
- opening by ST or UV release, overload or short-circuit: the tripping signal engages opening of the breaker which must be rearmed by pressing the BPA or if necessary, locally by the emergency controls.

A BA fault contact can be inserted into the rearming circuit requiring manual local rearming.
In the event of a continuous engage signal (relay or switch) do not connect terminal 2 to avoid hunting.



BN	: brown	BPA	: "OFF"
RD	: red	BPM	: "ON"
OG	: orange	EF	: electrical close
YE	: yellow	M	: motor
GN	: green	FC	: limit switch
GNYE	: green/yellow		
R	: resistance > 240V		: manual emergency control
LD	: fault signal		: connection terminals
BA	: fault contact		

Manual rotary control



General for D125

The rotary control fastens to the front of the unit.
It provides double insulation with a protection degree of:
- IP40 for controls located directly on the unit
- IP55 for controls with removable or disengageable handle.

A display indicates the exact position of the contacts:
- red: contacts closed
- white: device untripped
- green: contacts open

The fully visible isolation function is retained.
The green display appears when contacts are separated by a distance greater than 9 mm.
The three basic types are:
- direct on unit
- with removable handle for circuit breaker screwed in back of panel
- disengageable for circuit breaker behind hinged door.

General for D160 to D1250

The rotary control fastens to the front of the unit.
The rotary control is suitable in the following applications:
- fixed
- withdrawable

or installed:
- direct on breaker
- behind a screwed-on panel or a hinged door.

It proivdes double insulation with a protection degree of:
- IP30 for controls located directly on the unit
- IP55 for controls behind a screwed-on panel or a hinged door.

Description D160 to D1250

The handle precisely indicates the main contact positions:
- red: device 'closed'
- white: device 'tripped' on fault, by voltmetric release or 'test' button
- green: device 'open'.

The rotary control guarantees the fully isolation function and the disconnecting function (IEC 947-3).
The handle comes into the position facing the green indicator when the main contacts are separated by a distance greater than:
- 15 mm for D160-D250
- 20 mm for D400-D1250.

The interlock is not possible unless main contacts are fully open.

Basic elements for all installations

Handle

Colour
- Grey as standard
- Red for safety circuit breakers in accordance with the standard VDE 0113.

Interlock in OFF-position D125
With Ronis lock (not supplied) type 1104, 1/4 turn, right opening.

Interlock in OFF-position D160 to D1250

The handle is fitted with a retractable flap giving access to three ∅ 8 padlocks only when the unit is in the 'open' position.

The Ronis lock 1104, 1/4 turn right opening is easily snapped into place, and locking and removal of the key are only possible in the 'open' position.

Interlock D125

The interlock of the mecanism prevents the opening of the door.

Basic converter

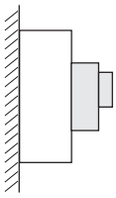
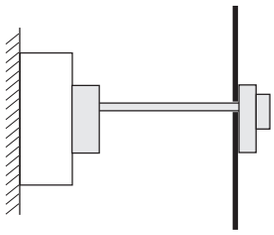
Can be fitted to the front of the circuit breaker to transform the sideways movement of the control handle into a rotary movement.

For D160 - D250
The handle can be snap-on mounted on the converter.
The handle can be removed in the 'tripped' position by a by-pass.

'ON-OFF' display contacts D125

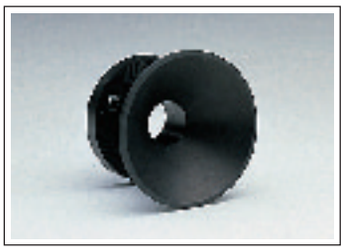
One or two shared point changeover contacts, operating before the opening of the unit, can be mounted in the casing of devices D125.
Their characteristics are the same as those for the AS auxiliary contacts.

Exécution D160 à D1250

Direct on unit (IP30)	Behind door or panel (IP55)
	

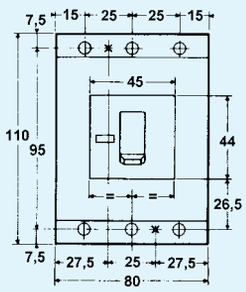
Components

Handle	
Grey or red + (lock: optional)	Grey or red + (lock: optional)
Converter	
Basic converter	Basic converter
External operator	
	Door-mounted operator: - prevents opening of the door if the circuit breaker is not 'open' - memorises the opening position - prevents handle movement with door open.
Funnel (optional)	
	This part eliminates the problem of tolerances and then facilitates the coupling between the external operator and the extension bar.

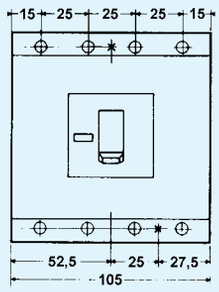


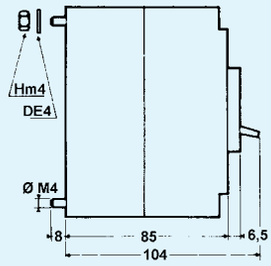
Circuit breakers D125

2/3 poles



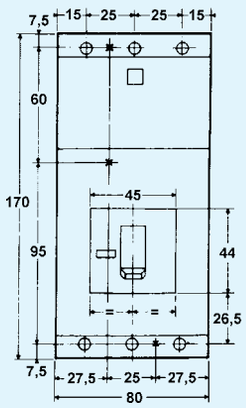
4 poles



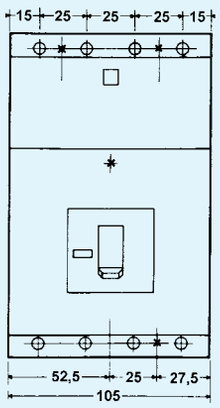


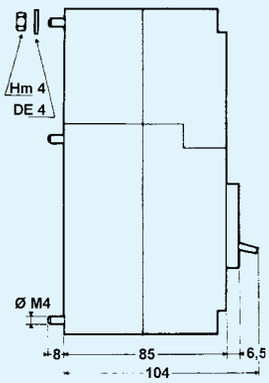
Circuit breakers D125 L

2/3 poles



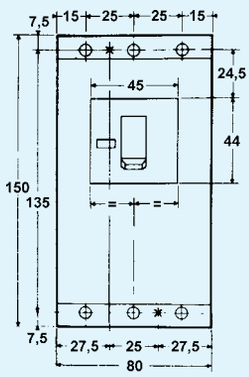
4 poles



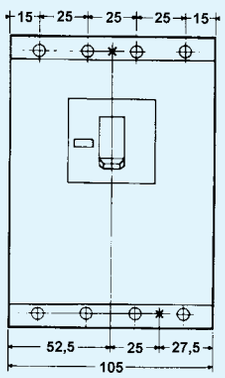


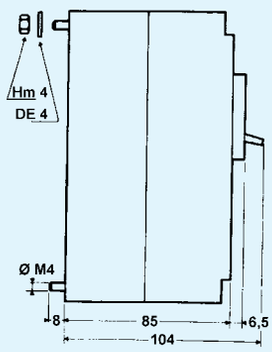
Circuit breakers D125 M

2/3 poles



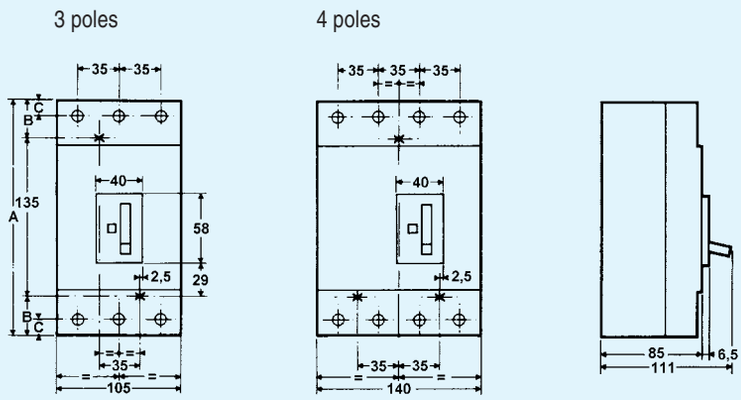
4 poles





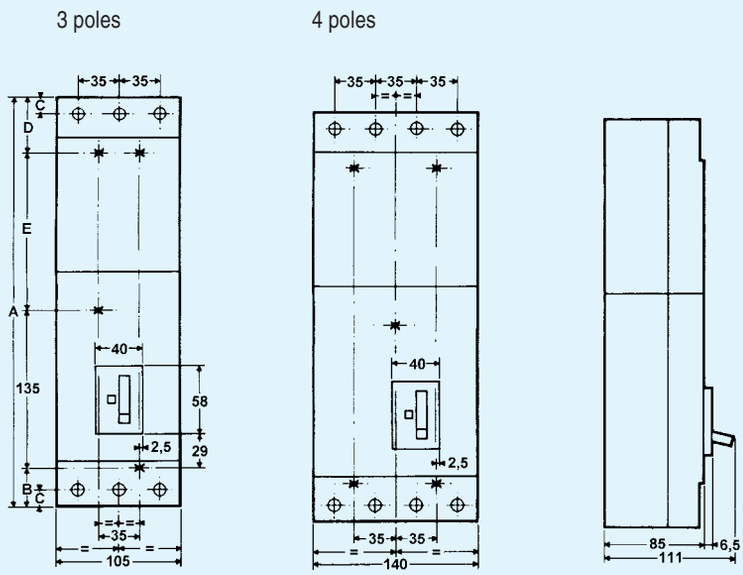
✳ : Fixation points screw M4

Circuit breakers D160 - DH160 - D250 - DH250



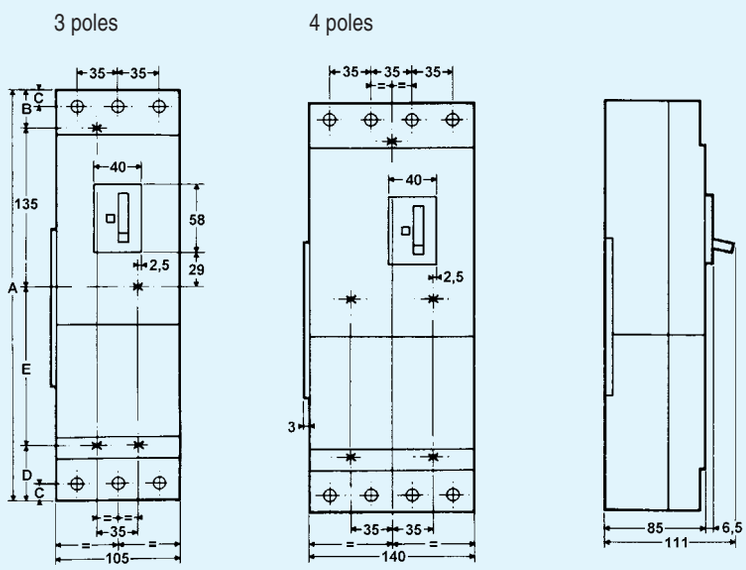
	160	250
A	160	200
B	12,5	32,5
C	12,5	14

Circuit breakers D160 L - D250 L



	160	250
A	275	350
B	12,5	32,5
C	12,5	14
D	12,5	47,5
E	115	135

Circuit breakers D160 M - DH160 M - D250 M - DH250 M

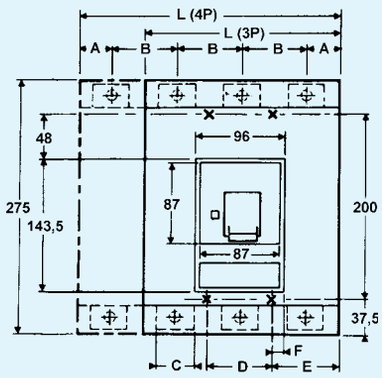


	160	250
A	275	350
B	12,5	32,5
C	12,5	14
D	12,5	47,5
E	115	135

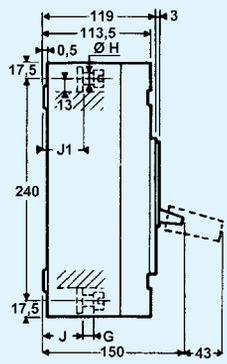
✳ : Fixation points screw M5

Circuit breakers D400 - DH400 - D400 L - D630 - DH630 - D630 L - D800 - DH800

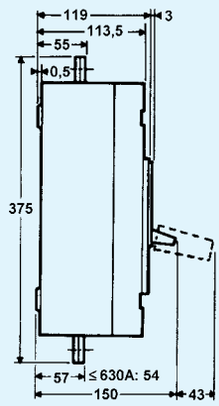
3/4 poles



D400 - D630



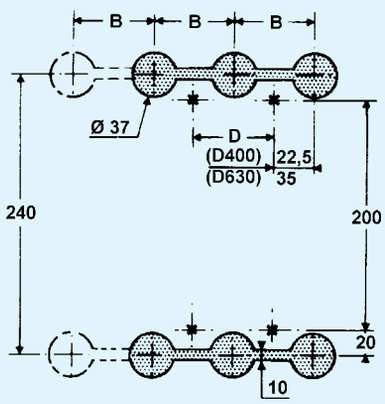
D800



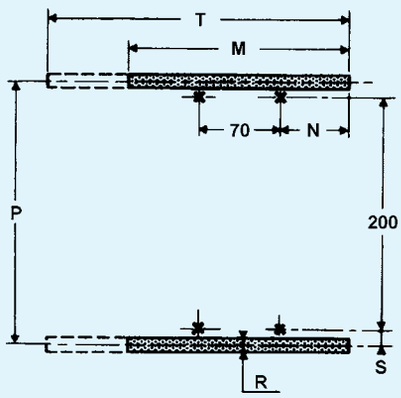
	400	630	800
A	25	35	35
B	45	70	70
C	32	40	-
D 3p	45	70	70
D 4p	90	70	70
E	47,5	70	70
F	25	13	13
G	11	12	-
H	10	12	-
J	38	44	-
J1	35,5	41	-
Ø K	5	6	6
L 3p	140	210	210
L 4p	185	280	280
M	-	190	200
N	-	60	65
P	-	225	244
R	-	10	28
S	-	12,5	22
T	-	260	270

Drilling diagrams for circuit breakers with rear connections

D400 - D630 (ratings ≤ 500A)



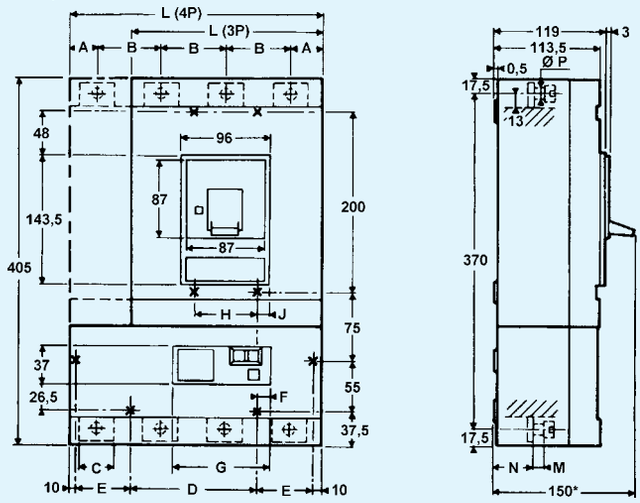
D630 (rating 630A) - D800



✳ : Fixation points screw M Ø K

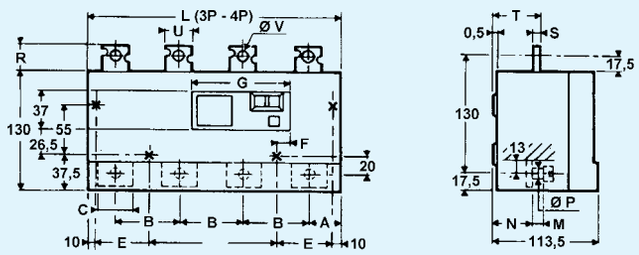
Circuit breakers D400 M - D630 M

3/4 poles



	400	630
A	25	35
B	45	70
C	32	40
D	90	140
E	37,5	60
F	25,5	15
G	96	100
H 3p	45	70
H 4p	90	70
J	25,5	13
Ø K	5	6
L 3p	185	280
L 4p	185	280
M	11	12
N	35,5	41
P	10	12
R	29	29,5
S	5	6
T	43	50
U	22	30
V	12,5	14

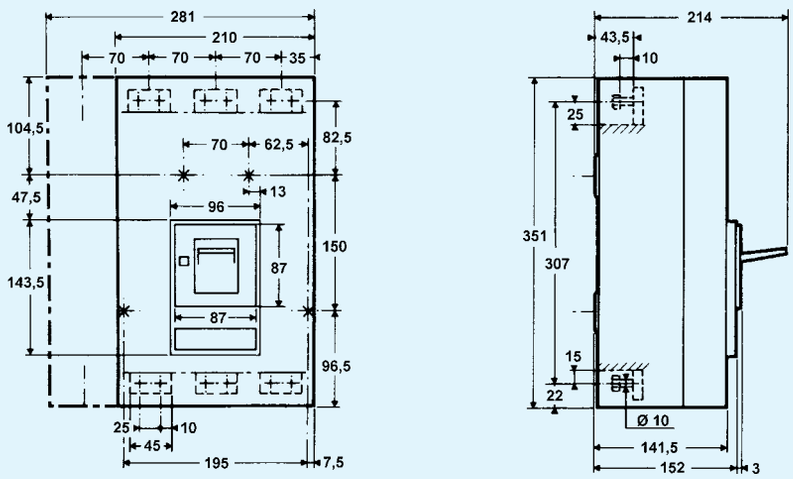
Earth leakage units M400 - M630



✳ : Fixation points screw M Ø K
* : + 43 with extension

Circuit breakers D1250

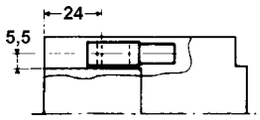
3/4 poles



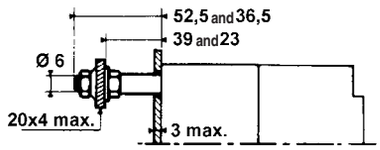
✳ : Fixation points holes Ø 9

Fixed circuit breakers D125

Front with tunnel terminals for cables without lugs
Capacity : min. 2.5 mm² max. 50 mm²
Torque :
section ≤ 10mm² 3 N.m
section ≥ 16 mm² 5 N.m



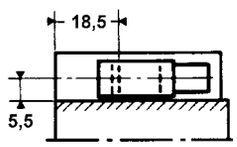
Rear connections for bars or cables with lugs
Bar width max. 20 mm
Torque :
rear connection 3.5 N.m (M6)
bar or cable with lug 3.5 N.m (M6)



Withdrawable circuit breakers D125

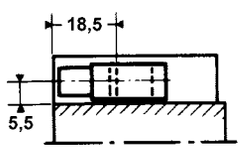
Front with tunnel terminals for cables without lugs
Capacity : min. 2.5 mm² max. 50 mm²
Torque :
section ≤ 10mm² 3 N.m
section ≥ 16 mm² 5 N.m

Terminals accessible from the front for device mounted on panel or on section

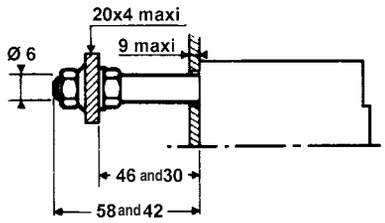


Rear with tunnel terminals for cables without lugs
Capacity : min. 2.5 mm² max. 50 mm²
Torque :
section ≤ 10mm² 3 N.m
section ≥ 16 mm² 5 N.m

Terminals accessible from the rear for device mounted behind panel or on section

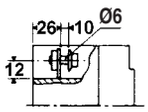


Rear connections for bars or cables with lugs
Bar width max. 20 mm
Torque :
rear connection 3.5 N.m (M6)
bar or cable with lug 3.5 N.m (M6)

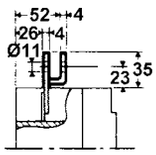


Fixed circuit breakers D160

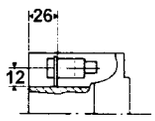
Front for bars or cables with lugs
Bar width max. 22 mm
Torque :
bar or cable with lug 8 N.m (M6)



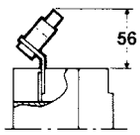
Front extender for bars or cables with lugs
Bar width max. 22 mm
Torque :
extender 8 N.m (M6)
bar or cable with lug 14 N.m (M8)



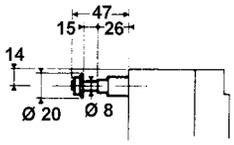
Front with tunnel terminals for cables without lugs
Capacity : min. 16 mm² max. 95 mm²
Torque :
section from 16 to 95 mm² 17 N.m



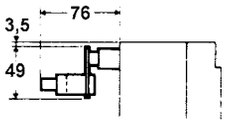
Front with sloped tunnel terminals for cables without lugs
capacity : min. 16 mm² max. 95 mm²
Torque :
sloped extender 8 N.m (M6)
section from 16 to 95 mm² 17 N.m



Rear connections for bars or cables with lugs
Bar width max. 22 mm
Torque :
rear connection 10 N.m (M6)
bar or cable with lug 7 N.m (M8)

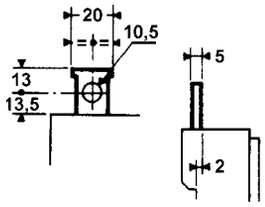


Rear connections for cables without lugs
Capacity : min. 16 mm² max. 95 mm²
Torque :
rear connection 10 N.m (M6)
section from 16 to 95 mm² 17 N.m

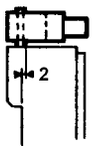


Withdrawable circuit breakers D160

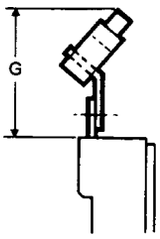
Front for bars or cables with lugs
Bar width max. 22 mm
Torque :
bar or cable with lug 14 N.m (M8)



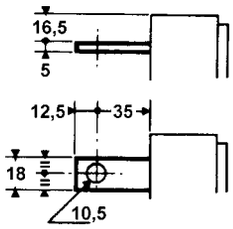
Front with tunnel terminals for cables without lugs
Capacity : min. 16 mm² max. 95 mm²
Torque :
section from 16 to 95 mm² 17 N.m



Front with sloped tunnel terminals for cables without lugs
Capacity : min. 16 mm² max. 95 mm²
Torque :
sloped extender 8 N.m (M6)
section from 16 to 95 mm² 17 N.m

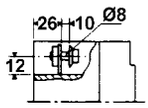


Rear connections for bars or cables with lugs
Bar width max. 22 mm
Torque: bar or cable with lug 14 N.m (M8)

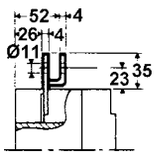


Fixed circuit breakers D250

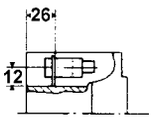
Front for bars or cables with lugs
Bar width max. 25 mm
Torque: bar or cable with lug 14 N.m (M8)



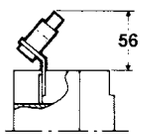
Front extender for bars or cables with lugs
Bar width max. 25 mm
Torque: extender 14 N.m (M8)
bar or cable with lug 28 N.m (M10)



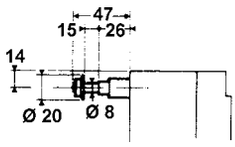
Front with tunnel terminals for cables without lugs
Capacity : min. 35 mm² max. 120 mm²
Torque: section from 35 to 120 mm² 28 N.m



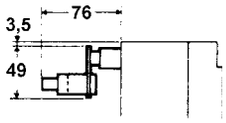
Front with sloped tunnel terminals for cables without lugs
Capacity : min. 35 mm² max. 120 mm²
Torque: sloped extender 14 N.m (M8)
section from 35 to 120 mm² 28 N.m



Rear connections for bars or cables with lugs
Bar width max. 25 mm
Torque: rear connection 10 N.m (M6)
bar or cable with lug 7 N.m (M8)

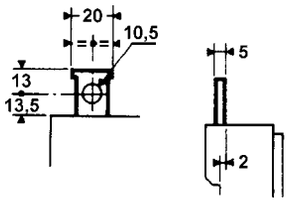


Rear connections for cables without lugs
Capacity : min. 35 mm² max. 120 mm²
Torque :
rear connection 10 N.m (M6)
section from 35 to 120 mm² 28 N.m

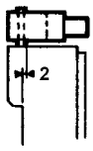


Withdrawable circuit breakers D250

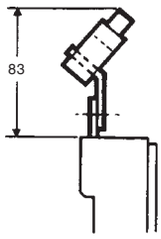
Front for bars or cables with lugs
Bar width max. 25 mm
Torque :
bar or cable with lug 28 N.m (M10)



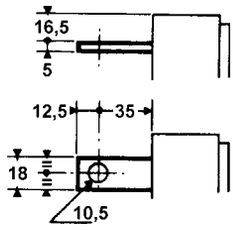
Front with tunnel terminals for cables without lugs
Capacity : min. 35 mm² max. 120 mm²
Torque :
section from 35 to 120 mm² 28 N.m



Front with sloped tunnel terminals for cables without lugs
Capacity : min. 35 mm² max. 120 mm²
Torque :
sloped extender 14 N.m (M8)
section from 35 to 120 mm² 28 N.m

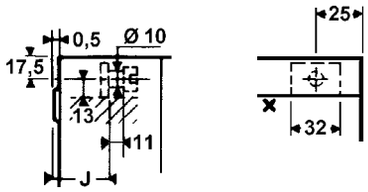


Rear connections for bars or cables with lugs
Bar width max. 25 mm
Torque :
bar or cable with lug 28 N.m (M10)



Fixed circuit breakers D400

Front for bars or cables with lugs
Bar width max. 32 mm
Torque :
bar or cable with lug 28 N.m (M10)

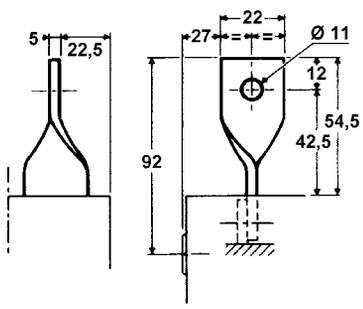


J : 38 mm (upline)
J : 35.5 mm (downline)

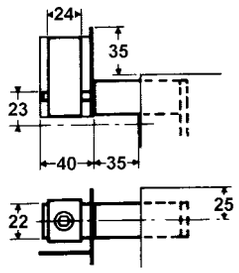
Extender with front connections for bars or cables with lugs
Bar width max. 32 mm
Torque :
extender 28 N.m (M10)
bar or cable with lug 28 N.m (M10)

Flat bar mounting

Narrow edge bar mounting

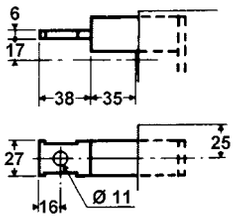


Rear connections plus tunnel connections for cables without lugs
Capacity : min. 95 mm² max. 240 mm²
Torque :
rear connection 36 N.m (M10)
section from 95 to 240 mm² 42 N.m

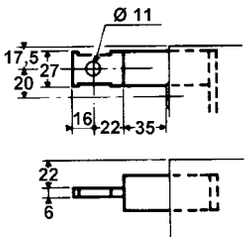


Rear connections for bars or cables with lugs
Bar width max. 32 mm
Torque :
rear connection 36 N.m (M10)
bar or cable with lug 28 N.m (M10)

Flat bar mounting

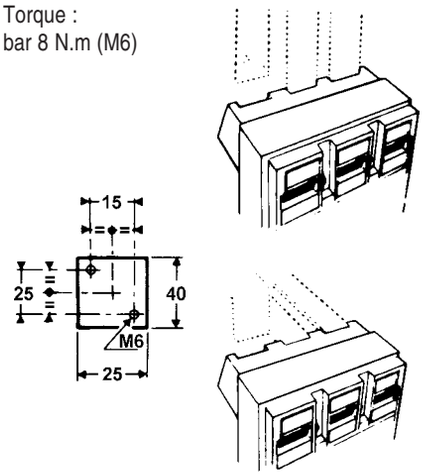


Narrow edge bar mounting

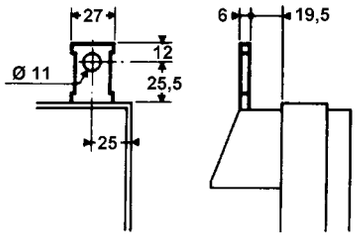


Withdrawable circuit breakers D400

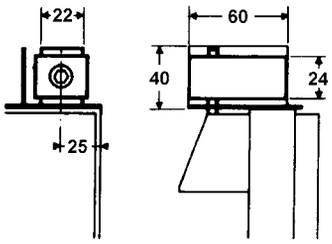
Connection via sections for bars
Bar width max. 25 mm
Torque :
bar 8 N.m (M6)



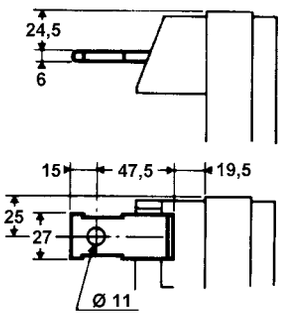
Extender with front connections for bars or cables with lugs
Bar width max. 25 mm
Torque :
extender 8 N.m (M6)
bar or cable with lug 28 N.m (M10)



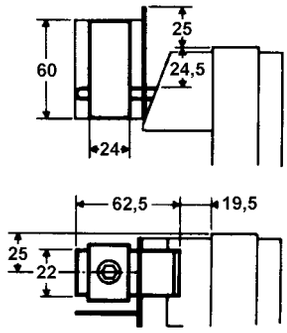
Extender with front connections plus tunnel connections for cables without lugs
Capacity : min. 95 mm² max. 240 mm²
Torque :
extender 8 N.m (M6)
section from 95 to 240 mm² 42 N.m



Rear connections for bars or cables with lugs
Bar width max. 25 mm
Torque :
extender 8 N.m (M6)
bar or cable with lug 28 N.m (M10)

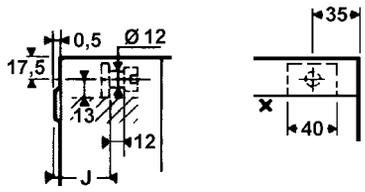


Rear connections plus tunnel connections for cables without lugs
Capacity : min. 95 mm² max. 240 mm²
Torque :
extender 8 N.m (M6)
section from 95 to 240 mm² 42 N.m



Fixed circuit breakers D630

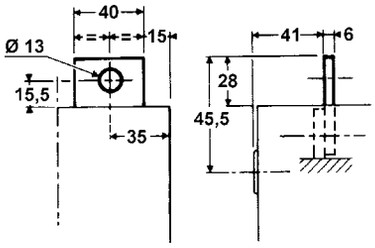
Front for bars or cables with lugs
Bar width max. 40 mm
Torque :
bar or cable with lug 48 N.m (M12)



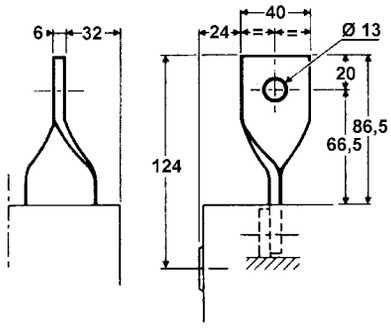
J = 44 mm (upline)
41 mm (downline)

Extender with front connections for bars or cables with lugs
Bar width max. 40 mm
Torque :
extender 8 N.m (M6)
bar or cable with lug 48 N.m (M12)

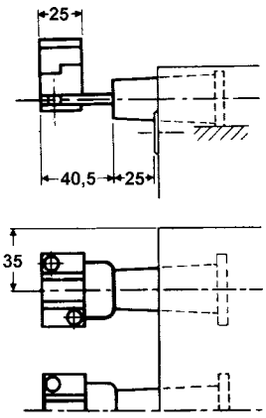
Flat bar mounting



Narrow edge bar mounting

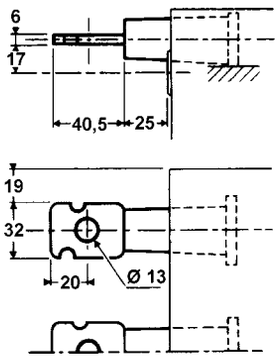


Rear connections plus tunnel connections for cables without lugs
Ratings 400 and 500 A only
Capacity : min. 185 mm² max. 300 mm²
Torque :
rear connection 55 N.m (M12)
section from 185 to 300 mm² 9 N.m

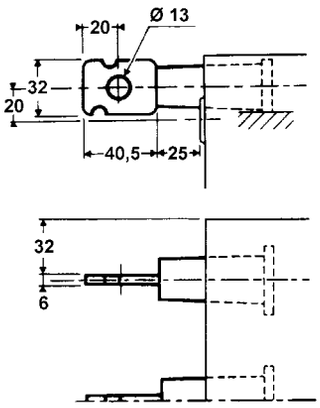


Rear connections for bars or cables with lugs
Ratings 400 and 500 A only
Bar width max. 40 mm
Torque :
rear connection 55 N.m (M12)
bar or cable with lug 48 N.m (M12)

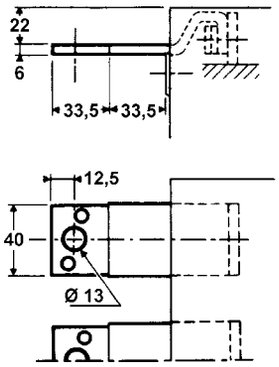
Flat bar mounting



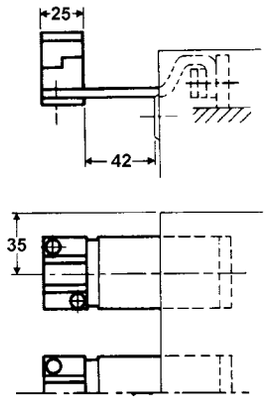
Narrow edge bar mounting



Rear connections for bars or cables with lugs
Ratings 630 A
Bar width max. 40 mm
Torque :
rear connection 8 N.m (M6)
bar or cable with lug 48 N.m (M12)

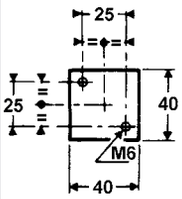


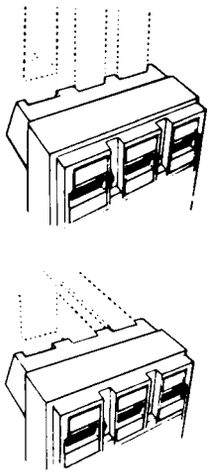
Rear connections plus tunnel connections for cables without lugs
Ratings 630 A
Capacity : min. 185 mm² max. 300 mm²
Torque :
rear connection 8 N.m (M6)
section from 185 to 300 mm² 9 N.m



Withdrawable circuit breakers D630

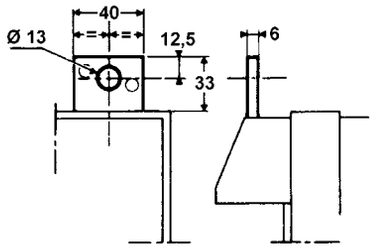
Connection sections for bars
Bar width max. 40 mm
Torque :
bar 8 N.m (M6)



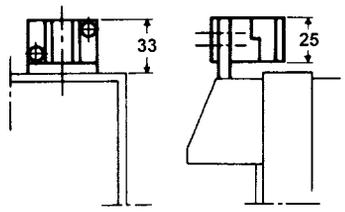


Extender with front connections for bars or cables with lugs
Bar width max. 40 mm
Torque :
extender 8 N.m (M6)
bar or cable with lug 48 N.m (M12)

Flat bar mounting

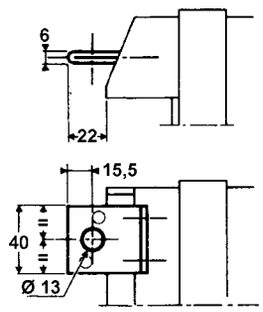


Extender with front connections plus tunnel connections for cables without lugs
Capacity : min. 185 mm² max. 300 mm²
Torque :
extender 8 N.m (M6)
section from 185 to 300 mm² 9 N.m

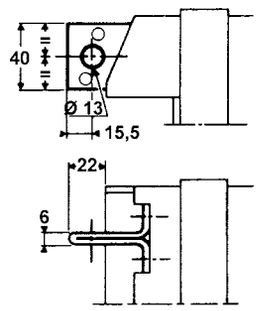


Rear connections for bars or cables with lugs
Bar width max. 40 mm
Torque :
rear connection 8 N.m (M6)
bar or cable with lug 48 N.m (M12)

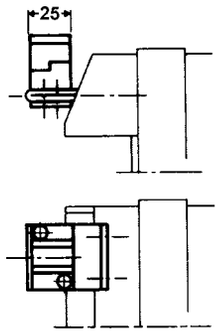
Flat bar mounting



Narrow edge bar mounting



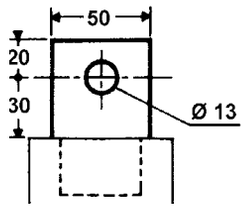
Rear connections plus tunnel connections for cables without lugs
Capacity : min. 185 mm² max. 300 mm²
Torque :
rear connection 8 N.m (M6)
section from 185 to 300 mm² 9 N.m



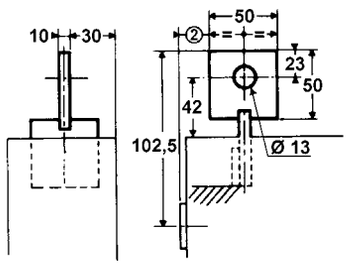
Fixed circuit breakers D800

Front extender for bars or cables with lugs
Bar width max. 50 mm
Torque :
extender 48 N.m (M12)
bar or cable with lug 48 N.m (M12)

Flat bar mounting

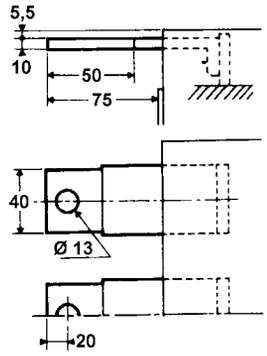


Narrow edge bar mounting



② = 24 mm for rating 630 A
27 mm for rating 800 A

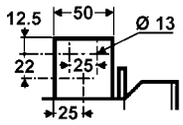
Rear connections for bars or cables with lugs
Bar width max. 50 mm
Torque :
rear connection 8 N.m (M6)
bar or cable with lug 48 N.m (M12)



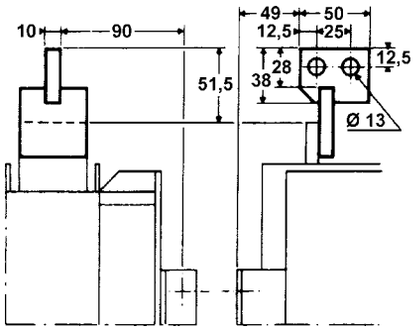
Withdrawable circuit breakers D800

Front extender for bars or cables with lugs
Bar width max. 50 mm
Torque :
extender 28 N.m (M10)
bar or cable with lug 48 N.m (M12)

Flat bar mounting (without extender)

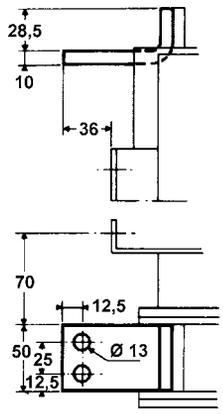


Narrow edge bar mounting

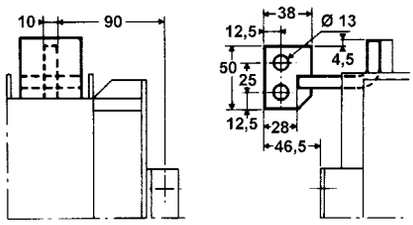


Rear connections for bars or cables with lugs
Bar width max. 50 mm
Torque :
extender 28 N.m (M10)
bar or cable with lug 48 N.m (M12)

Flat bar mounting



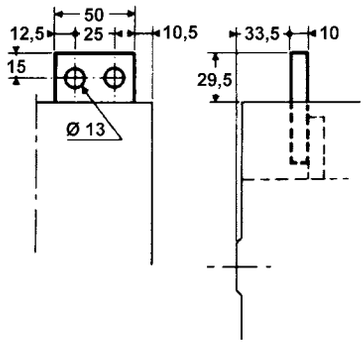
Narrow edge bar mounting



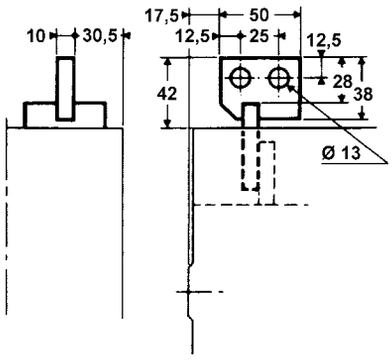
Fixed circuit breakers D1250

Front extender for bars or cables with lugs
Bar width max. 50 mm
Torque :
extender 35 N.m (M10)
Bar or cable with lug 48 N.m (M12)
Spreader 48 N.m (M12)

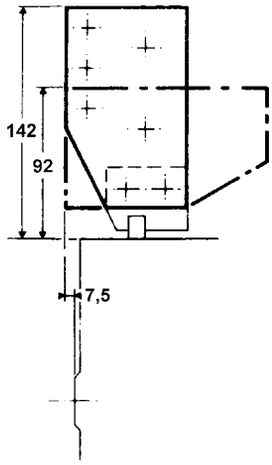
Flat bar mounting



Narrow edge bar mounting

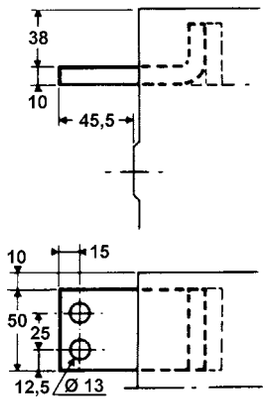


Spreader for connection to cables with lugs

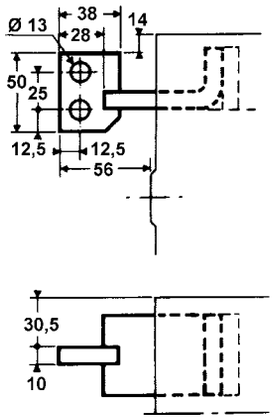


Rear connections for bars or cables with lugs
Bar width max. 50 mm
Torque :
extender 35 N.m (M10)
bar or cable with lug 48 N.m (M12)
Spreader 48 N.m (M12)

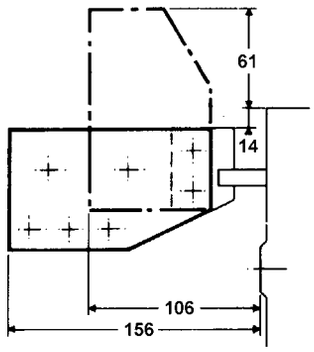
Flat bar mounting



Narrow edge bar mounting



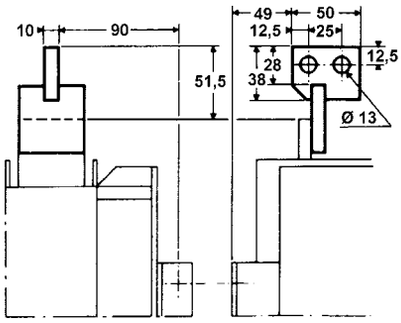
Spreader for connection to cables with lugs



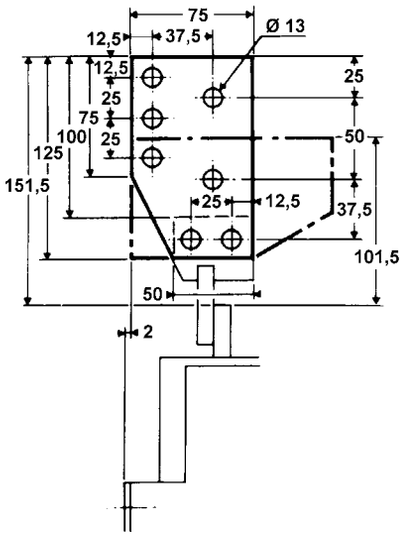
Withdrawable circuit breakers D1250

Front extender for bars or cables with lugs
Bar width max. 50 mm
Torque :
extender 48 N.m (M12)
bar or cable with lug 48 N.m (M12)
Spreader 48 N.m (M12)

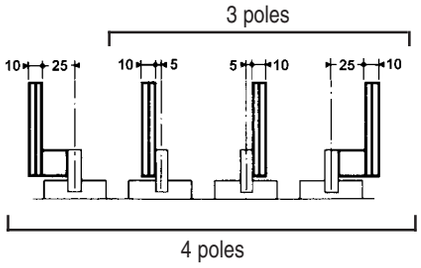
Narrow edge bar mounting



Spreader for connection to cables with lugs

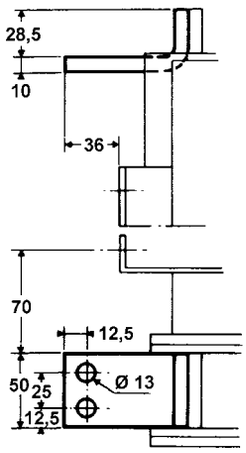


Typical spreader assembly for connection upline or downline from fixed or withdrawable circuit breakers via cables with lugs

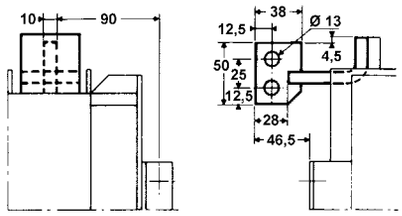


Rear connections for bars or cables with lugs
Bar width max. 50 mm
Torque :
extender 48 N.m (M12)
bar or cable with lug 48 N.m (M12)
Spreader 48 N.m (M12)

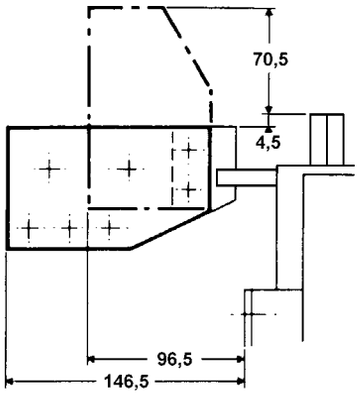
Flat bar mounting



Narrow edge bar mounting

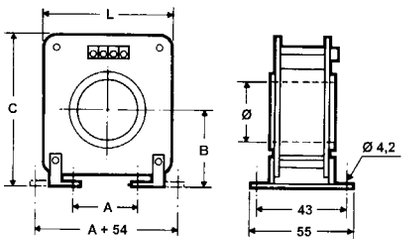


Spreader for connection to cables with lugs



Overall dimensions

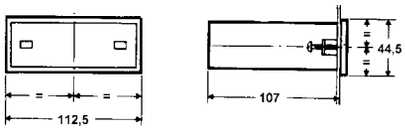
MTS detection core



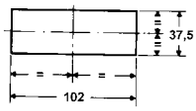
	Cable passage			
	Ø 35	**Ø 55**	**Ø 70**	**Ø 100**
A	35	73	98	138
B	45	64	76	99
C	99	134	156	209
L	82	120	145	185

MTS relay

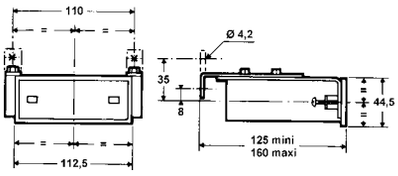
Recessed mounting



Cut-out plan

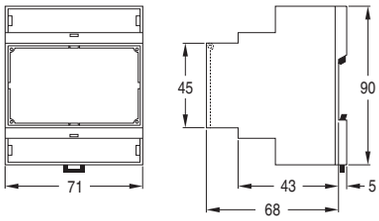


Bottom of housing mounting



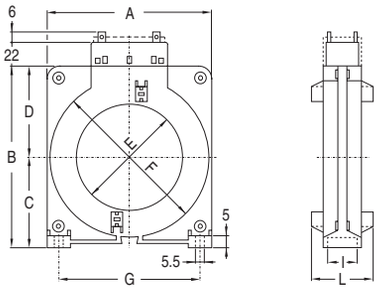
SHR 1100 - SHR 1110

Clipping onto DIN rail



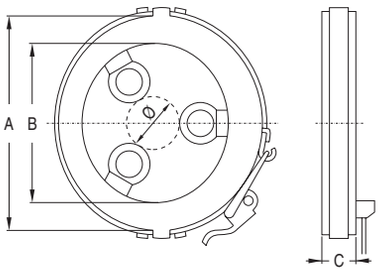
Detection cores

Non-opening CITF



	CITF 35	CITF 80	CITF 110	CITF 140	CITF 210
A	92	125	165	200	290
B	85	132	170	205[5]	295
C	42	67	89	103[5]	150
D	43	65	84	102	145
EØ	35	80	110	140	210
FØ	74	120	158	194	282
G	75	108	148	177	270
I	23	23	23	23	23
L	56	56	56	56	64
M	yes	yes	yes	yes	no

Opening CITO



	CITO 65	CITO 104
A	103	145
B	65	104
C	34	44
Ø	26 to 47	68 to 90

Weights(kg)

		125			160		250	
		2 poles	3 poles	4 poles	3 poles	4 poles	3 poles	4 poles
Fixed circuit breaker front connections		0.680	0.840	1.100	1.800	2.300	2.300	2.700
Earth-leakage circuit breaker, fixed front connections		0.990	1.170	1.460	3.000	3.900	3.900	4.700
Fixed limiter circuit breaker front connections		1.100	1.360	1.780	3.000	3.900	3.800	4.600
Withdrawable circuit breaker front connections		1.050	1.320	1.710	2.870	3.660	3.700	4.400
Withdrawable earth leakage circuit breaker front connections		1.450	1.730	2.180	5.170	6.660	6.700	8.200
Withdrawable limiter circuit breaker front connections		1.580	1.940	2.520	5.170	6.660	6.600	8.100
WIthdrawable circuit breaker rear connections		-	-	-	2.990	3.820	3.760	4.480
Withdrawable earth leakage circuit breaker rear connections		-	-	-	5.290	6.820	6.670	8.280
Withdrawable limiter circuit breaker rear connections		-	-	-	5.290	6.820	6.660	8.180
Withdrawable adaptation								
complete unit front connections		0.370	0.480	0.610	1.070	1.360	1.400	1.700
complete unit rear connections		-	-	-	1.190	1.520	1.460	1.780
fixed part front connections		0.320	0.400	0.500	0.800	1.000	1.100	1.300
fixed part rear connections		-	-	-	0.920	1.160	1.160	1.380
connecting plate for earth leakage circuit breaker or limiter		-	-	-	1.100	1.400	1.400	1.800
moving plate		-	-	-	0.270	0.360	0.300	0.400
Earth leakage unit		-	-	-	1.200	1.600	1.600	2.000
Limiter unit		0.420	0.520	0.680	1.200	1.600	1.500	1.900
VE visible isolation circuit breaker								
complete unit		-	-	-	2.420	2.660	2.700	3.000
fixed part		-	-	-	2.150	2.300	2.400	2.600
moving part		-	-	-	0.270	0.360	0.300	0.400
V visible isolation circuit breaker								
complete unit		-	-	-	3.220	3.460	3.450	3.750
fixed part		-	-	-	2.950	3.100	3.150	3.350
moving part		-	-	-	0.270	0.360	0.300	0.400
Auxiliary								
"ON/OFF" display contact								
	1 unit	0.025	0.025	0.025	0.040	0.040	0.040	0.040
	2 units	0.035	0.035	0.035	0.070	0.070	0.070	0.070
fault display contact		0.025	0.025	0.025	0.040	0.040	0.040	0.040
fault and "ON/OFF" display contact								
	1 unit	-	-	-	0.070	0.070	0.070	0.070
	2 units	-	-	-	0.100	0.100	0.100	0.100
undervoltage release		0.075	0.075	0.075	0.080	0.080	0.080	0.080
Accessories								
Connections (for 1 pole)		-	-	-	fixo	extr.	fixo	extr.
tunnel terminals		-	-	-	0.050	0.045	0.080	0.075
rear connections	bars or cables with lugs	0.050	0.050	0.050	0.160	1.000	0.180	0.120
	cables without lugs	-	-	0.240	0.180	0.270	0.210	
front connections	extenders	-	-	-	0.080	0.090	0.100	0.130
	bars or cables with lugs							
sloped terminals, cables without lugs		-	-	-	0.110	0.120	0.170	0.200
locking control arm		-	-	-	0.025	0.025	0.400	0.400
multi-pole terminal covers (pair)		0.140	0.140	0.170	0.200	0.300	0.200	0.300
wiring isolation device		0.085	0.085	0.085	0.100	0.100	0.100	0.100
Electrical control		1.260	1.260	1.260	1.300	1.300	1.300	1.300
locking control		-	-	-	0.010	0.010	0.010	0.010
Manual rotary controls								
direct on circuit breaker		0.110	0.110	0.110	0.200	0.200	0.200	0.200
with removable handle		0.220	0.220	0.220	0.400	0.400	0.400	0.400
disengageable		0.480	0.480	0.480	0.500	0.500	0.500	0.500
locking the handle		0.060	0.060	0.060	0.060	0.060	0.060	0.060
auxiliary contact	1 unit	0.010	0.010	0.010	0.030	0.030	0.030	0.030
	2 units	0.025	0.025	0.025	0.050	0.050	0.050	0.050

400		630		800		1250	
3 poles	4 poles	3 poles	4 poles	3 poles	4 poles	3 poles	4 poles
5.850	7.520	8.450	11.300	11.900	15.905	16.500	21.700
8.450	10.370	12.050	15.500	-	-	-	-
-	-	-	-	-	-	-	-
7.950	10.220	12.670	16.760	35.800	43.705	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
10.650	12.905	18.070	22.760	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
18.700	20.970	19.500	24.260	35.800	43.705	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
0.043	0.043	0.043	0.043	0.043	0.043	0.065	0.065
0.057	0.057	0.057	0.057	0.057	0.057	0.090	0.090
0.030	0.030	0.030	0.030	0.030	0.030	0.045	0.045
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
0.116	0.116	0.116	0.116	0.116	0.116	0.210	0.210
0.180	0.180	-	-	-	-	-	-
0.500	0.500	0.600	0.600	0.850	0.850	-	-
-	-	-	-	-	-	-	-
0.240	0.240	0.300	0.300	0.500	0.500	-	-
-	-	-	-	-	-	-	-
0.720	-	0.060	0.060	0.060	0.060	-	-
-	-	-	-	-	-	-	-
0.095	0.950	0.095	0.095	0.095	0.095	0.100	0.100
3.650	3.650	3.650	3.650	3.650	3.650	4.400	4.400
-	-	-	-	-	-	-	-
1.100	1.100	1.250	1.250	1.250	1.250	-	-
2.750	2.750	2.900	2.900	2.900	2.900	-	-
2.750	2.750	2.900	2.900	2.900	2.900	-	-
0.725	0.725	0.725	0.725	0.725	0.725	-	-
0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060