contents

types of Selpact

Two ranges of low voltage air circuit breakers are available from Merlin Gerin:
- Selpact range for current ratings up to 3200 A.
- DA range for current ratings up to 6300 A (8000 A on request).

This publication deals only with the Selpact range. For details of the DA range, refer to publication "LV power circuit breakers: DA".
Selpact low voltage air circuit breakers offer the switchboard builder and circuit designer a range of modern units certified for use on three-phase 4-wire systems up to 660 V ac, with current ratings up to 3200 A. Selpact air circuit breakers are also suitable for use on dc systems up to 600 V.

types of Selpact air circuit breakers

Selpact air circuit breakers are available in five different types according to the protection required. The final choice is determined by the intended application in the distribution system, site operating conditions and technical performance.

1. type DS2 or DS2-H selective air circuit breaker
(Identified by the letter 'S' in its code)
The direct acting short circuit protection built into this circuit breaker is time delayed, giving accurate time discrimination with other'down stream' ACB's. Four time settings are provided on each DS2. The selectivity is effective for a fault current up to the breaking capacity.
Application
- incomers with direct acting over-current protection.
- feeders to a remote board containing either air circuit breakers, moulded case circuit breakers and/or fuses,
- bus section with direct acting overcurrent protection.

2. type DN2 or DN2-H instantaneous air circuit breaker
(Identified by the letter 'N' in its code).
The direct acting short circuit protection built into this circuit breaker provides instantaneous tripping.
Application
- feeders to a single load.

3. type IS2 non-automatic air circuit breaker
(Derived from the DS2).
This type is not fitted with direct acting system protection - but during the closing operation a magnetic direct acting device instantaneously opens the circuit breaker if it is being closed onto a fault.
This'making current release' becomes inoperative once the circuit breaker has been closed onto a healthy system.
Application
- incomers with separate overcurrent relays.
- feeders with separate overcurrent relays.
- bus section unprotected.
- bus section with separate overcurrent relays.

4. type DR2 current limiting air circuit breaker
(Identified by the letter 'R' in its code).
Up to 40 kA peak (18 kA rms approx.) the circuit breaker acts as a normal instantaneous device Type DN2, opening in 30 ms. Should the fault current exceed 40 kA peak, the electro magnetic forces are utilised to operate a high speed unlatching mechanism which reduces the total opening time to less than 19 ms.
Application
- feeders to a single load with high fault level

5. type DRS2 current limiting and selective air circuit breaker
(Identified by the letter 'RS' in its code)
Up to 40 kA peak (18 kA rms approx.) this type acts as a normal selective circuit breaker Type DS2, opening after the selected time delay. Should the fault current exceed 40 kA peak, the electro-magnetic forces are utilised to operate a high speed unlatching mechanism that overrides the timer and reduces the total opening time to less than 19 ms.
Application
- feeders to a remote board containing either air circuit breakers, moulded case circuit breakers and/or fuses with high fault level.

merchant marine version

Reinforced models types DS2MM, DN2MM, IS2MM, DR2MM and DRS2MM are specially designed for marine use. Their ability to withstand vibration and salt corrosion tests is excellent. Their features, ratings and performances are the same as those of standard industrial ACB'S

All these circuit breakers are available in both the fixed and drawout versions.

Complying with
IEC 157-1 (P2).

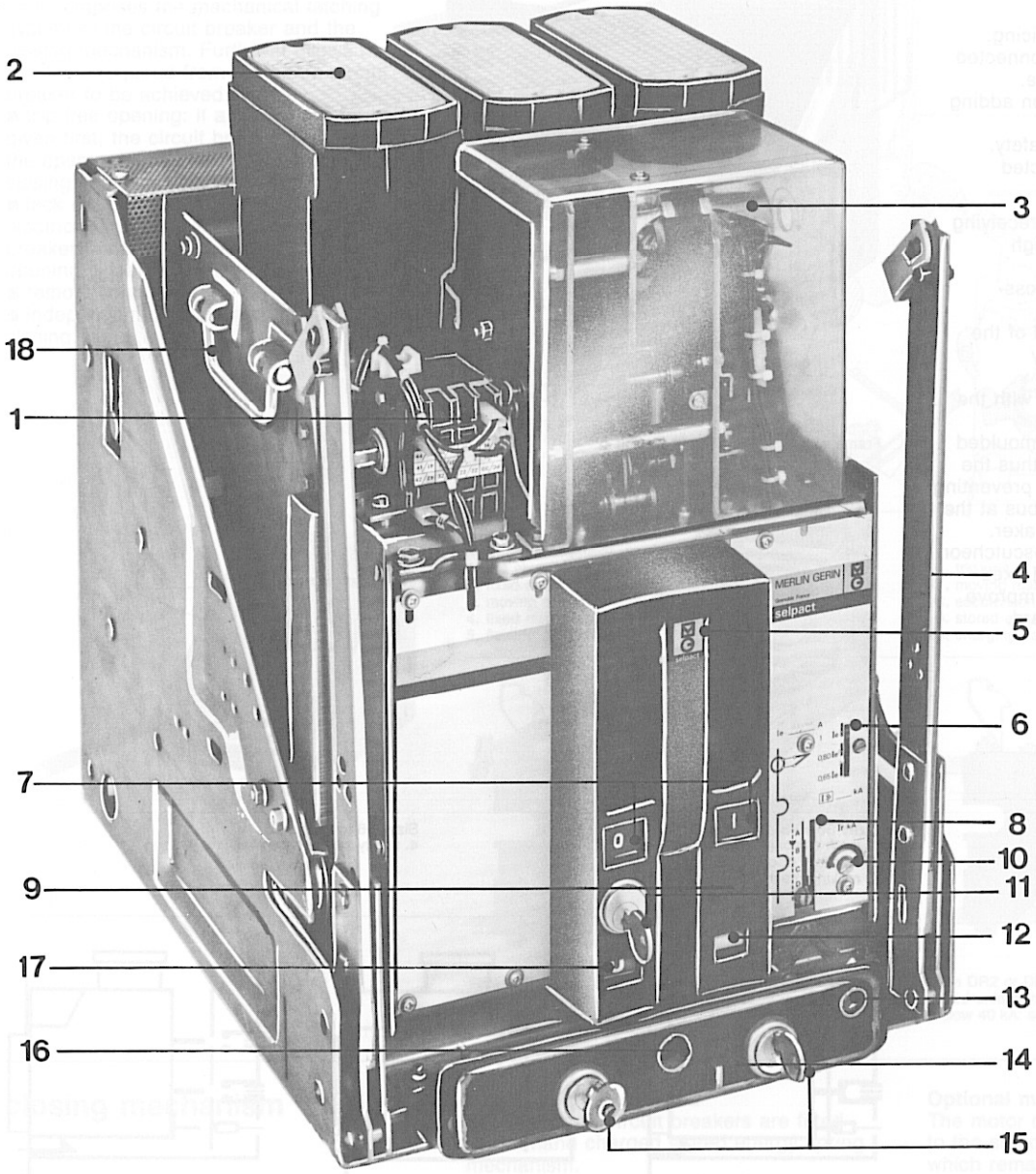
Certified by:
KEMA
ASEFA
MG (VOLTA)
ASTA

Approved by:
Lloyds Register of Shipping (Marine)
Bureau Veritas (Marine).
C.S.A. (Canada)
Post & Telecommunications (France)
Germanisher Lloyd's (Marine)
USSR Register of Shipping (Marine)
Registro Italiano Navale (Marine).

navy version

Due to the sturdy and compact construction of Selpact ACB's, shockproof versions are installed on numerous French and foreign war ships. Consult us.

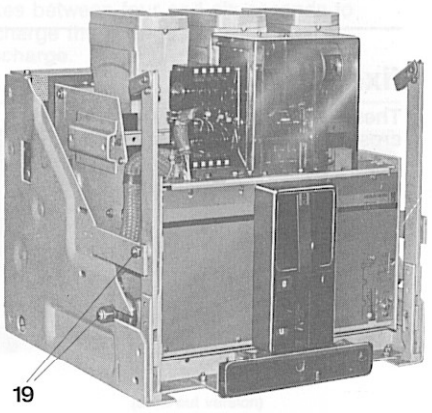
general description



Selpact air circuit breaker
(drawout version)

1. auxiliary contacts*
2. arc chutes
3. charging motor*
4. folding extension rail
5. charging handle
6. thermal adjustement indicator
7. open and close push-buttons
8. timer adjustment
9. overcurrent trip indicator
(hand reset)
10. magnetic adjustment
11. key lock on trip button*
12. spring charge condition indicator
yellow: discharged
blue: charged
13. shutters position indicators*
14. breaker position indicator
green: isolated
blue: test
red: service
15. key locks for locking in 'service' or 'fully isolated' position*
16. aperture for insertion of the racking handle
17. main contact position indicator
white: open
red: close
18. lifting handle

* optional



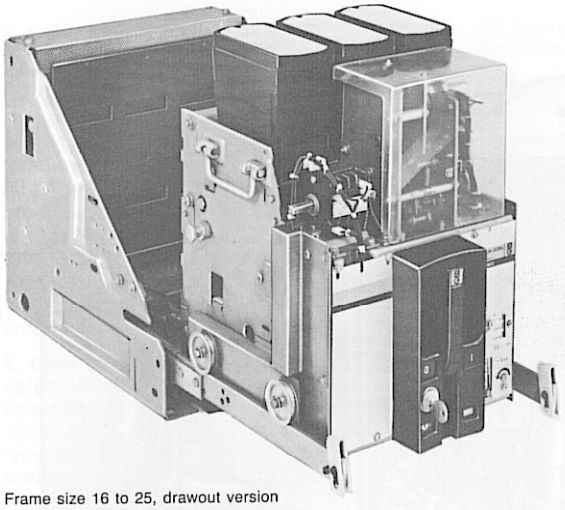
Navy version:
Selpact 16, 660 V
19. antivibration device for merchant marine and navy versions.

drawout version

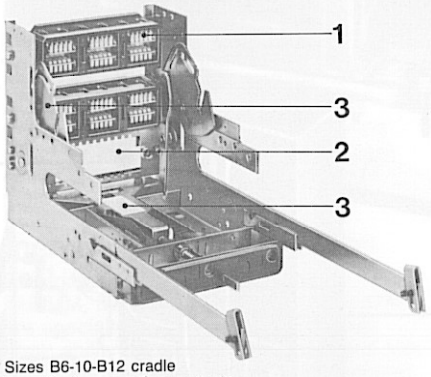
Features

- ease of maintenance and servicing. Units out of service can be disconnected without disturbing units in service.
- simplicity and time saving when adding accessories.
- high standards of personnel safety. Padlocking facilities in disconnected position.

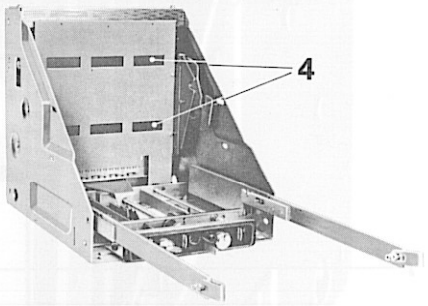
The drawout cradle intented for receiving the circuit-breaker is of a very high mechanical strength.
It is secured to two horizontal cross-members.
The engagement and withdrawal of the circuit breaker is made easier by retractable extension rails.
Racking operation can be made with the cubicle door closed.
Terminal studs are mounted on moulded bushings of insulating material; thus the rear of the frame forms a shield preventing any arc likely to strike from the bus at the rear from propagating to the breaker.
A front border surrounding the escutcheon is provided for both drawout and fixed versions for a perfect fit and to improve the appearance of the switchboard.



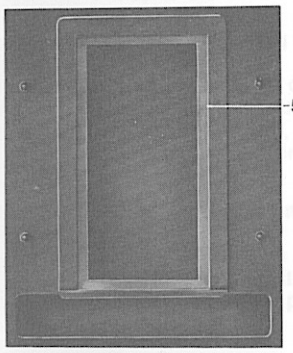
Frame size 16 to 25, drawout version



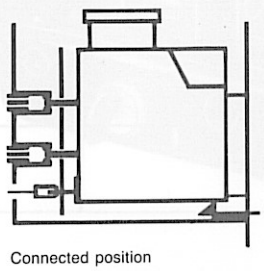
Sizes B6-10-B12 cradle
1. main disconnecting contacts
2. auxiliary disconnecting contacts
3. racking mechanism



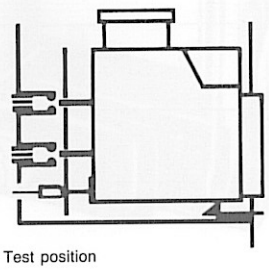
Sizes 16 to 25 cradle
4. safety shutters (optional)



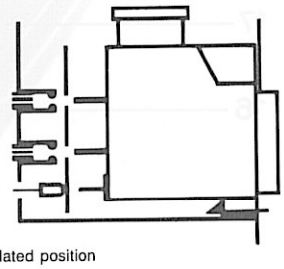
Front escutcheon (drawout version)
5. gasket for dust protection



Connected position



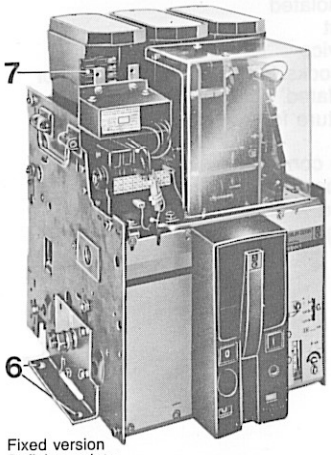
Test position



Isolated position

fixed version

These are mounted on two horizontal cross-members.
Auxiliary circuits are connected at the LH side of the circuit breaker.

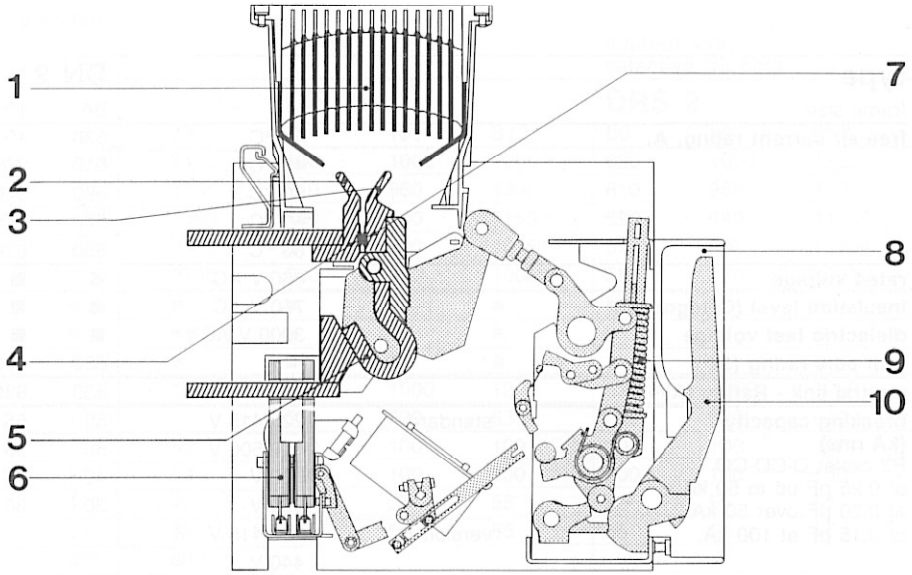


Fixed version
6. fixing points
7. auxiliary circuits connection

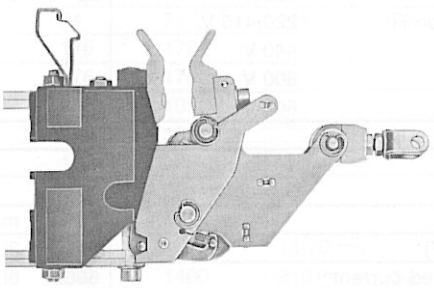
internal mechanism

This comprises the mechanical latching system of the circuit breaker and the closing mechanism. Further it allows the functions required from a modern circuit breaker to be achieved:

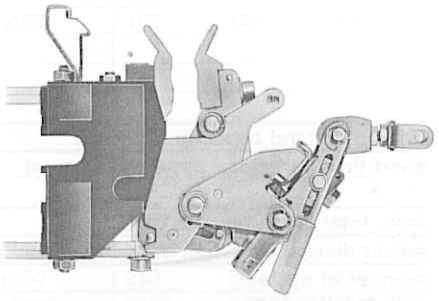
- trip free opening: if a closing signal is given first, the circuit breaker returns to the open position even if both opening and closing signals are maintained.
- lock out preventing closing: electrical and mechanical locking prevents breaker from being closed while the opening signal is maintained.
- remote control.
- independent opening and independent closing.



Internal mechanism
1. arc chutes
2. fixed arcing contact
3. moving arcing contact
4. fixed main contact
5. flexible connection
6. trip unit
7. moving main contact
8. escutcheon
9. stored energy springs
10. charging handle



Type DN2 or DS2, main contact arrangement with high electrodynamic and thermal withstand capacity.



Type DR2 or DRS2, main contact arrangement with high speed unlatching device operating from 40 kA peak (below 40 kA: same as DN2 or DS2).

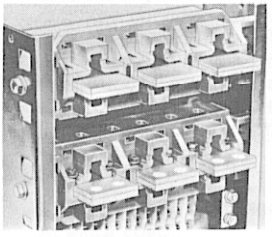
closing mechanism

Standard hand charged
All Selpact air circuit breakers are fitted with a hand charged stored energy spring mechanism.
The spring mechanism is charged by donwnard movements of the operating handle, one movement for frame sizes B6-10-B12 and four movements for frame sizes 16 to 32

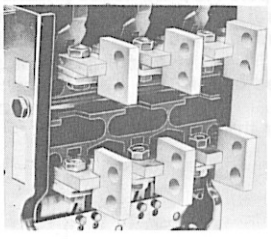
Optional motor charged
The motor charging mechanism is added to the standard hand charged mechanism which remains intact, i. e. complete with push buttons and operating handle. The electrically driven geared mechanism takes between four and six seconds to recharge the springs following their discharge.

connections for fixed or drawout version

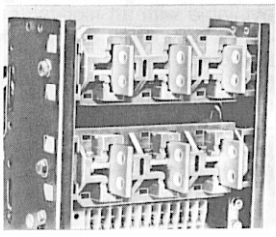
The terminations are vertical or horizontal. Any combination can be supplied (e.g. top: horizontal, bottom: vertical)



Horizontal terminations



Vertical terminations (fixed version)



Vertical terminations (draw-out version)

technical data

			Selpact standard						
type			DN 2						
frame size			B6	10	B12	16	20	25	32
free air current rating, A.		40 °C	630	1000	1255(1)	1600	2000	2500	3150
		45 °C	610	980	1200(1)	1520	1920	2425	3055
		50 °C	590	940	1150(1)	1455	1850	2300	2960
		55 °C	570	900	1075(1)	1360	1780	2200	2860
		60 °C	550	870	1000(1)	1290	1700	2100	2755
rated voltage		660 V AC	■	■	■	■	■	■	■
insulation level (Category C)		750 V AC	■	■	■	■	■	■	■
dielectric test voltage		3000 V AC(8)	■	■	■	■	■	■	■
4 th pole rating (3)			630	1000	1250	1250	1250	1250	1600
neutral link - Rating (A)(2)			630	630	630	1250	1250	1250	
breaking capacity (kA rms) P2 cycle: O-CO-CO at 0.25 pF up to 50 kA. at 0.20 pF over 50 kA. at 0.15 pF at 100 kA.	standard	220/415 V	55	55	55	55	55	55	55
		440/500 V	50	50	50	50	50	50	50
		600 V	45	45	45	42	42	42	42
		660 V	30	30	30	35	35	35	35
	version H	220/415 V				70	80	80	80
		440 V					80	80	80
		600 V				50	50	50	50
		660 V				50	50	50	50
making capacity (kA peak)	standard	220/415 V	125	125	125	125	125	125	125
		440/500 V	105	105	105	105	105	105	105
		600 V	97	97	97	89	89	89	89
		660 V	63	63	63	74	74	74	74
	version H	220/415 V				154	176	176	176
		440 V					176	176	176
		600 V				105	105	105	105
		660 V				105	105	105	105
peak withstand capacity (kA)									
short time withstand capacity (kA rms)		1 second							
		3 seconds							
max. total breaking time (ms)			25-30 ms						
power dissipated at full breaking capacity (W)			210	300	350	430	550	900	1400
number of cycles with maintenance	at rated current(4)		6000	6000	5000	4000	3500	2500	1800
	at zero current		30000	30000	30000	25000	20000	20000	20000
	at 6 × rated current(5)		10000	10000	8000	4000	3500	2500	
approximate weight (kg)	Breaker	3-poles	32	34	34	50	60	63	74
		4-poles	39	41	41	63	71	76	87
	Cradle	3-poles	16	16.5	16.5	32	36	38	48
		4-poles	19	19.5	19.5	33	38	41	54
if electrically operated add			2.5	2.5	2.5	4	4	4	4
number of poles			3-4						

(1) connections to be made according to IEC Standards.
(2) neutral link: on withdrawable breakers only, an arrangement using a 3 pole ACB is available with an isolatable neutral link which opens only when the moving portion is racked out.
(3) 4 th pole: neutral pole situated on left side when viewed from the front.
—3-second thermal withstand for the 4 th pole, at 35 kA rms.
(4) at 500 V, P.F. = 0.8.
(5) motor start-up with P.F. = 0.35
(6) selectivity ensured up to 32 kA with DIN rail added.
(7) selectivity ensured up to 40 kA with DIN rail added.
(8) 2500 V AC on auxiliaries (except motors).

	with selective tripping							limiter			limiteur with selective tripping		
	DS 2							**DR 2**			**DRS 2**		
	B6	10	B12	16	20	25	32	B6	10	B12	B6	10	B12
	630	1000	1255(1)	1600	2000	2500	3150	630	1000	1255(1)	630	1000	1255(1)
	610	980	1200(1)	1520	1920	2425	3055	610	980	1200(1)	610	980	1200(1)
	590	940	1150(1)	1455	1850	2300	2960	590	940	1150(1)	590	940	1150(1)
	570	900	1075(1)	1360	1780	2200	2860	570	900	1075(1)	570	900	1075(1)
	550	870	1000(1)	1290	1700	2100	2755	550	870	1000(1)	550	870	1000(1)
	■	■	■	■	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■	■	■	■	■
	630	1000	1250	1250	1250	1250	1600	630	1000	1250	630	1000	1250
	630	630	630	1250	1250	1250		630	630	630	630	630	630
	30	45	45	50	50	50	50	100	100	100	100	100	100
	30	45	45	50	50	50	50	100	100	100	100	100	100
	30	45	45	42	42	42	42	55	55	55	55	55	55
	30	30	30	35	35	35	35	55	55	55	55	55	55
				70(6)	80(7)	80(7)	80(7)						
					80	80	80						
				50	50	50	50						
				50	50	50	50						
	63	97	97	105	105	105	105	220	220	220	220	220	220
	63	97	97	105	105	105	105	220	220	220	220	220	220
	63	97	97	89	89	89	89	125	125	125	125	125	125
	63	63	63	74	74	74	74	125	125	125	125	125	125
				154	176	176	176						
					176	176	176						
				105	105	105	105						
				105	105	105	105						
	63	97	97	105	105	105	105						
	30	45	45	50	50	50	50						
	25	35	35	50(3)	50(3)	50(3)	50(3)						
	depending on time-delay							15-20 ms			depending on Isc		
	210	300	350	430	550	900	1400	210	300	350	210	300	350
	6000	6000	5000	4000	3500	2500	1800	6000	6000	5000	6000	6000	5000
	30000	30000	30000	25000	20000	20000	20000	30000	30000	30000	30000	30000	30000
	10000	10000	8000	4000	3500	2500		10000	10000	8000	10000	10000	8000
	32	34	34	50	60	63	74	32	34	34	32	34	34
	39	41	41	63	71	76	87	39	41	41	39	41	41
	16	16.5	16.5	32	36	38	48	16	16.5	16.5	16	16.5	16.5
	19	19.5	19.5	33	38	41	54	19	19.5	19.5	19	19.5	19.5
	2.5	2.5	2.5	4	4	4	4	2.5	2.5	2.5	2.5	2.5	2.5

protective treatments for indoor equipment

Normal treatment no. 1
- industrial atmospheres.
- maritime atmospheres of temperate zones.
- hot and dry or moderately humid conditions, e.g., the desert of the steppe in such locations as North Africa and Middle East.
- moderately corrosive conditions, (basic and ammoniated compounds, lime, sodium and potassium hydroxydes).
- maximum temperature and relative humidity:
40 °C – 80%
50 °C – 50%

Special treatment no. 2
At extra cost.
- extremely wet and hot conditions causing moisture condensation and mould growths, (e.g., tropical forests and the savanna, equipment installed in non-air-conditioned premises)
- wet underground installations.
- maximum temperature and relative humidity causing high condensation:
45 °C – 95%
55 °C – 80%

Anti-corrosive treatment
At extra cost.
For fluorinated, iodinated or brominated atmospheres; in gaseous chlorine, sulphuric acid, anhydride or nitrous vapours conditions, etc. Consult us.

selpact L.V. circuit breaker

performance levels for Merchant Marine and Offshore application

B.V. **Bureau Véritas** homologation.
L.R.S. **Lloyd's Register of Shipping** — listing.
R.I.N.A. **Registro Italiano Navale** — approval.
G.L. **Germanischer Lloyd's** — approval.
U.S.S.R.-R.S. **URSS Register of Shipping** — approval.
D.N.V. **Det Norske Véritas** — application.
A.B.S. **American Bureau of Shipping** — application.

I.m.: maximum current in amps.
U.: rated voltage in volts.
b.c.: breaking capacity in kA rms
m.c.: making capacity in kA peak

Model			DN2							DN2H				DS2							DS2H				DR2			DRS2		
range			B6	10	B12	16	20	25	32	16	20	25	32	B6	10	B12	16	20	25	32	16	20	25	32	B6	10	B12	B6	10	B12
B.V.		I.m.	590	940	1150	1480	1850	2300		1480	1850	2300		590	940	1150	1480	1850	2300		1480	1850	2300		590	940	1150	590	940	1150
		U.																												
	b.c.	220																												
		380																												
		440	50	50	50	50	50	50		55	80	80		30	45	45	50	50	50		65	80	80		100	100	100	100	100	100
		600																												
		660	30	30	30	35	35	35		50	50	50		30	30	30	35	35	35		50	50	50		55	55	55	55	55	55
	m.c.	220																												
		380																												
		440	105	105	105	105	105	105		143	176	176		63	94	94	105	105	105		143	176	176		220	220	220	220	220	220
		600																												
		660	63	63	63	73	73	73		105	105	105		63	63	63	73	73	73		105	105	105		110	110	110	110	110	110
L.R.S.		I.m.	630	1000	1210	1530	1920	2460	3150	1530	1920	2460	3150	630	1000	1210	1530	1920	2460	3150	1530	1920	2460	3150	630	1000	1210	650	1000	1210
		U.																												
	b.c.	220																												
		380																												
		440	50	50	50	50	50	50	50	81	81	81	81	30	45	45	50	50	50	50	81	81	81	81	103	103	103	103	103	103
		600																												
		660								50	50	50	50								50	50	50	50	55	55	55	55	55	55
	m.c.	220																												
		380																												
		440	116	116	116	116	116	116	116	177	177	177	177	65	95	95	105	105	105	105	177	177	177	177	229	229	229	229	229	229
		600																												
		660								105	105	105	105								105	105	105	105	120	120	120	120	120	120
R.I.N.A.		I.m.	630	1000	1150	1600	2000	2500	3150	1600	2000	2500	3150	630	1000	1150	1600	2000	2500	3150	1600	2000	2500	3150	630	1000	1150	630	1000	1150
		U.																												
	b.c.	220																												
		380																												
		440	50	50	50	50	50	50	50	65	80	80	80	30	45	45	50	50	50	50	65	80	80	80	100	100	100	100	100	100
		600																												
		660																												
	m.c.	220																												
		380																												
		440	116	116	116	105	105	105	105	176	176	176	176	55	95	95	105	105	105	105	176	176	176	176	220	220	220	220	220	220
		600																												
		660																												
G.L.		I.m.	630	1000	1250	1600	2000	2500	3200	1600	2000	2500	3200	630	1000	1250	1600	2000	2500	3200	1600	2000	2500	3200	630	1000	1250	630	1000	1250
		U.																												
	b.c.	220	50	50		55	55	55						30	45		50	50	50						75	75		75	75	
		380	45	45		55	55	55						30	45		50	50	50											
		440	45	45		50	50	50						30	45		50	50	50						65	65		65	65	
		600																												
		660																												
	m.c.	220	105	105		120	120	120						65	95		105	105	105						165	165		165	165	
		380	95	95		120	120	120						65	95		105	105	105											
		600	95	95		105	105	105						65	95		105	105	105						144	144	144	144	144	
		600																												
		660																												
U.S.S.R.-R.S.		I.m.	630	1000	1250	1600	2000	2500	3200	1600	2000	2500	3200	630	1000	1250	1600	2000	2500	3200	1600	2000	2500	3200	630	1000	1250	630	1000	1250
D.N.V.		U.																												
A.B.S.	b.c.	220																												
		380	55	55	55	55	55	55	55	80	80	80	80	30	45	45	50	50	50	50	80	80	80	80	100	100	100	100	100	100
		440	50	50	50	50	50	50	50	80	80	80	80	30	45	45	50	50	50	50	80	80	80	80	100	100	100	100	100	100
		600	45	45	45	42	42	42	42	50	50	50	50	30	45	45	42	42	42	42	50	50	50	50	55	55	55	55	55	55
		660	30	30	30	35	35	35	35	50	50	50	50	30	30	30	35	35	35	35	50	50	50	50	55	55	55	55	55	55
	m.c.	220																												
		380	125	125	125	125	125	125	125	176	176	176	176	63	97	97	105	105	105	105	176	176	176	176	220	220	220	220	220	220
		440	105	105	105	105	105	105	105	176	176	176	176	63	97	97	105	105	105	105	176	176	176	176	220	220	220	220	220	220
		600	97	97	97	89	89	89	89	105	105	105	105	63	97	97	89	89	89	89	105	105	105	105	125	125	125	125	125	125
		660	63	63	63	74	74	74	74	105	105	105	105	63	63	74	74	74	74	74	105	105	105	105	125	125	125	125	125	125

optional electrical accessories

The following voltages are standard for all accessories. Special voltage ratings can be provided on request. No auxiliary transformer is necessary.

Standard voltages

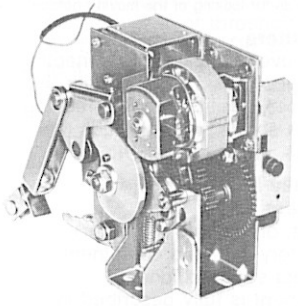
ac 50/60 Hz (V)	110	127	220	240	380	415	440
dc (V)	24	30	48	110	125	220	

a. motor mechanism

Motor consumption — Selpact B6-10-B12

ac	V	110/127	220	240	380	415	
	VA	190	165	180	310	312	
dc	V	24	30	48	110	125	220
	W	240	300	170	160	182	165

Selpact 16, 20, 25, and 32; ac: 350 VA, dc: 350 W

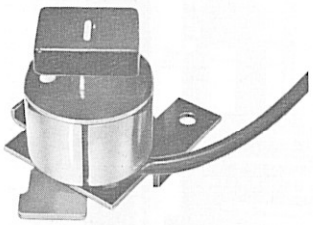


Sizes B6-10-B12 motor mechanism

A separate resistor is provided on frame sizes B6-10-B12 only according to the voltage. The resistor is supplied loose for mounting in the run of the control wiring (240 V: 27 Ω, 380 V: 180 Ω, 145 V: 220 Ω, 440 V: 270 Ω)

b. type YF closing release

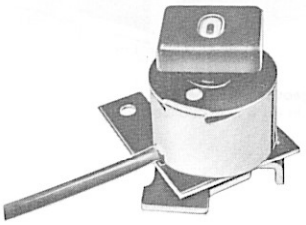
(Electrical release of spring)
Coil consumption ac up to 350 VA, dc up to 350 W.
Closing time 30 ms ± 5 ms.



Type YF closing release

c. type YO impulse shunt release

Coil consumption ac up to 350 VA, dc up to 350 W.
Operates between 70% and 130% of nominal voltage.
Opening times 23 ± 5 ms.



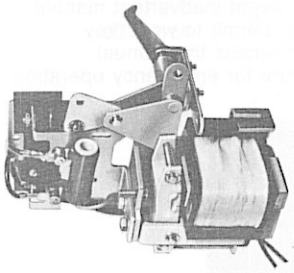
Type YO impulse shunt release

d. type YM instantaneous undervoltage release.

The type YM release is a 'no volt/no close' device. When de-energised this device opens a closed circuit breaker and prevents its from being re-closed. When energised the circuit breaker can be closed and opened as required.

consumption	pick-up	seal-in
ac	120 VA	25 VA
dc	25 W	3 W

Drop-off between 70% and 35% of nominal voltage. Pick-up at 85% of nominal voltage.
Maximum opening time 40 ms.
When used on dc, a contact on the release connects an economy resistor in series with the coil after 'pick-up'.



Type YM release

e. type YP permanently energised shunt release

Derived from undervoltage release type YM, when energised, this device opens a closed circuit breaker and prevents it from being re-closed.
When de-energised the circuit breaker can be closed and opened as required.

consumption	pick-up	seal in
ac	120 VA	25 VA
dc	25 W	3 W

Operates between 70% and 110% of nominal voltage.
Maximum operating time 40 ms.

f. type YM time delayed undervoltage release

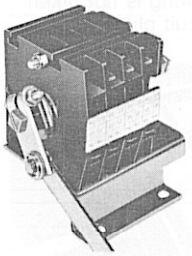
The time delayed undervoltage release is identical to type YM release described in d.
When time delay on 'drop off' is required a 'solid state' timer monitors the input supply and maintains the voltage, delaying the opening between 0.5 and 1 second.
The delay is not adjustable.

g. auxiliary switches

Auxiliary switches are of the double-throw type assembled into blocks of 4 or 6. The numbers of available contacts are 2 DT on the block of 4 and 4 DT on the block of 6. Two DT contacts are always reserved for the electrically operating function. Refer to the standard diagram (page 23).
Alternative combinations can be provided on fixed pattern circuit breakers, whilst for draw-out pattern circuit breakers the arrangement depends upon the availability of the auxiliary circuit isolating plugs.

Breaking capacity:

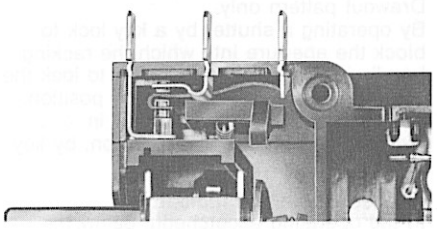
	110 V	220 V	380 V	500 V
ac pf >	15 A	10 A	5 A	3 A
dc L/R ≦ 0.01 s	5 A	3 A		0.5 A



Block of 4 with 2 DT available auxiliary switches

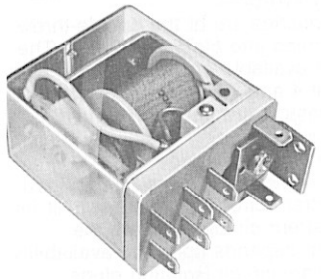
h. remote indication of tripping

If the circuit breaker trips due to its direct acting magnetic overcurrent protection, a fault trip contact, associated to the overcurrent trip indicator (see p. 10), can be provided upon request to permit remote electrical indication of the condition.
Opening of the circuit breaker either manually or by shunt trip or undervoltage release does not operate the contact.
Refer to diagram of connections on page 23 and the overcurrent trip indicator description on page 10.
When 'thermal' overload protection is fitted, an extra contact can be provided on request. This is a fleeting contact, i.e., self-resetting, which operates only when the thermal relay trips the circuit breaker.
Refer to the diagram of connections, on page 23.



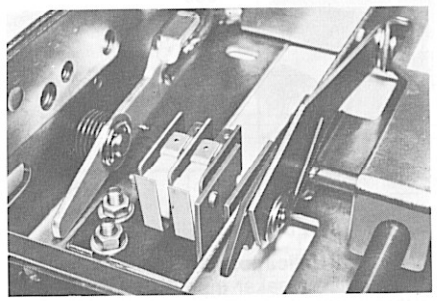
Thermal trip indication

. anti-pumping relay
When a circuit breaker is electrically closed and the signal to close is from a maintained contact, an anti-pumping relay can be fitted to the circuit breaker. Refer to the anti-pumping function on page 23. The anti-pumping relay must be supplied with the same voltage rating as that at the closing release type YF.



Anti-pumping relay.

j. carriage switches
On drawout circuit breakers, two or four carriage switches can be fitted to provide indications of service position. Each switch is of the DT type. The wiring is not taken through the auxiliary circuit plugs.



Carriage switches

optional mechanical accessories

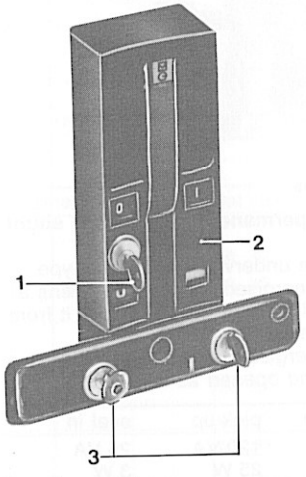
a. key lock on 'trip' button
A key lock can be fitted on the operating escutcheon, immediately below the 'opening' mechanical push button. When the button is depressed to open the breaker, the key can be turned and removed. The breaker cannot be closed manually or electrically until the key is replaced, turned and trapped.

b. locking of circuit breaker moving portion
Drawout pattern only.
By operating a shutter by a key lock to block the aperture into which the racking handle is inserted, it is possible to lock the moving portion in 'fully isolated' position. For other possibilities of locking in 'service' or 'fully isolated' position, by key locks or padlocks, consult us.

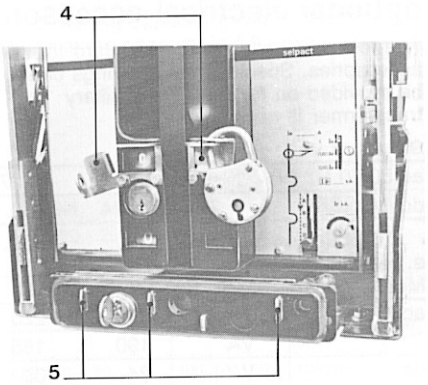
c. overcurrent trip indicator
In the operating escutcheon, below the 'close' push button, there is a red indicator which ejects when the circuit breaker opens as a result of its direct-acting overcurrent protection. This standard feature must be manually reset before the circuit breaker can be reclosed following overcurrent tripping.

As an additional feature, the reset button can be combined with an electrical contact for remote indication of the condition. The arrangements are as follows:
- frames sizes B6-10 B12 — hand reset contact
The reset button resets the contact when depressed.
- frames sizes B6-10 B12 — fleeting contact.
The reset button remains ejected even though contact automatically resets.
The circuit breaker can be released without resetting the button which remains extended as a reminder that an opening due to overcurrent has previously occurred.
This arrangement is usually for remotely operated ACB's where the operator, aware from the alarm signal that a trip has occurred, has the ability to reclose electrically.
- frame sizes 16, 20, 25, 32 — hand reset contact.
The reset button resets the contact when depressed, but the ACB mechanism automatically resets regardless of whether the button is reset or extended.
Reclosure can be carried out without resetting either the button or contact.
Refer to page 9 or 10 for electrical accessories and to page 23 for the diagram of connections

d. padlockable covers on operating push buttons
Either or both of the mechanical push buttons can be fitted with metal covers that can be padlocked to prevent manual operation. Normally when the circuit breaker is automatic in operation it is advisable to prevent inadvertent manual operation by a 'permit to work' key scheme which retains the manual operating feature for emergency operation.



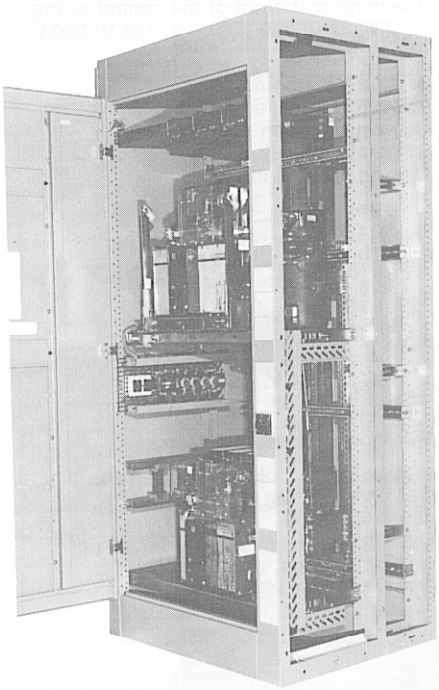
Operating escutcheon
1. key lock on trip button
2. thermal and magnetic trip indication
3. key locks for locking of the moving portion.



Operating escutcheon
4. padlockable covers on operating push buttons
5. padlocking device for locking of the moving portion.

e. safety shutters
Two shutters over the fixed disconnecting contacts are positively driven to both the open and closed positions by the racking mechanism. A shutter also shrouds the auxiliary plugs. Refer to page 4.

f. mechanically interlocked circuit breakers
(2 or 3 ACB's, one above the other)
Complete factory-adjusted equipment or circuit breakers supplied loose.
This arrangement is fully described in publication "mechanically interlocked changeover equipment with Selpact or DA ACB's".



Complete changeover equipment
2 Selpact ACB's in a P6 type cubicle.

technical data

Overload protection
■ type DIT5: standard thermal release.
■ type DIT5-G: optional thermal release for generator protection.

Short-circuit protection
■ type DINA: instantaneous magnetic release.
■ type DIRS.A: short time-delay magnetic release.
■ type DINF: making current magnetic release.
■ type DIN: instantaneous magnetic release.
The different types of Selpact are fitted with the following protections as standard.

(1) other adjustement: consult us.
(2) other threshold adjustement: 4 kA.
(3) maximum adjustment threshold: 2.5 kA.
(4) other adjustement threshold: 2.5 kA, 2 kA for DINA, 3 kA for DIRSA.
(5) 2 to 4 kA for DINA.
(6) other adjustement threshold: 3.5 kA.

release type		DIT5 DIT5G	DINA	DIRSA	DINF	DIN
Selpact type	DS2	■		■	■	
	DS2-H	■		■	■	■
	DN2/DN2-H	■	■			
	IS2				■	
	DR2	■	■			
	DRS2	■		■	■	

selection table

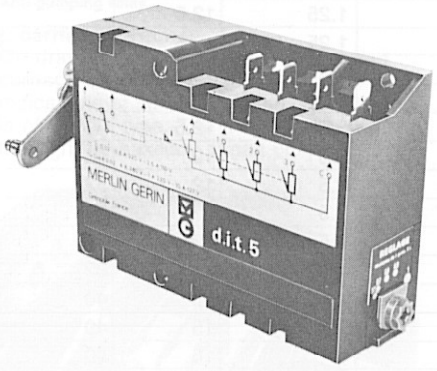
release type		DIT5 ou DIT5G[1] rating (A) C.T. adjustable 0,65 à 1		DINA - DIRSA — adjustable 1 to 2 [1]		DINF (kA) non adjust.	DIN (kA) non adjust
		standard	dual ratio C.T.	standard	générator		
Selpact type	B6	250		2	1.25	6.3	
		400	250/400	2	1.25	6.3	
		630	400/630	2.5[2]	1.5[3]	6.3	
	10	250		2	1.25	10	
		400	250/400	2	1.25	10	
		630	400/630	2.5[2]	1.5[3]	10	
		1000	800/1000	4[4]	3[5]	10	
	12	250			1.25	12.5	
		400			1.25	12.5	
		630		4[6]	1.5[3]	12.5	
		1000			3[5]	12.5	
		1250		4	3.5	12.5	
	16	630		4	2.5	12	32
		800		4	2.5	12	32
		1000		4	2.5	12	32
		1250		4	2.5	12	32
		1600		4	4	12	32
	20	1600		5	4	15	40
		2000		5	4	15	40
	25	1800		5	4	15	40
		2500		5	5	15	40
	32	3150		7		15	40

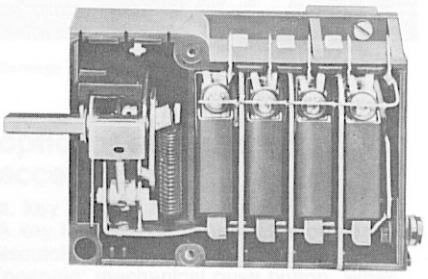
thermal protection

DIT5 thermal release (self-reset)
DIT5 thermal release consists of three or four bi-metal elements energised from CT's mounted on the circuit breaker and compensated up to 60 °C ambient temperature. The setting indicator adjusts all phases simultaneously between 65% and 100% of primary operating currents. The protection of the neutral is non adjustable and is provided by selection of the appropriate CT.
Remote indication: a double-throw fleeting contact can be provided for remote thermal trip indication.

Breaking capacity:

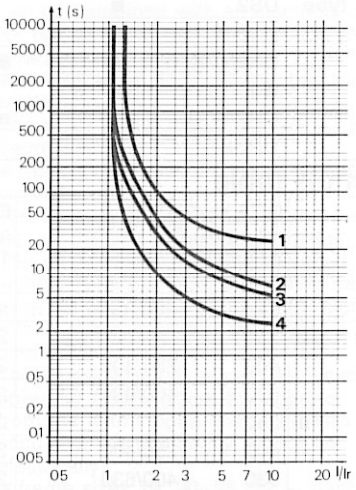
ac (PF = 0.02)	380 V	4 A
	220 V	7 A
	127 V	10 A
dc (L/R = 0.02 s)	220 V	0.6 A
	110 V	2.5 A



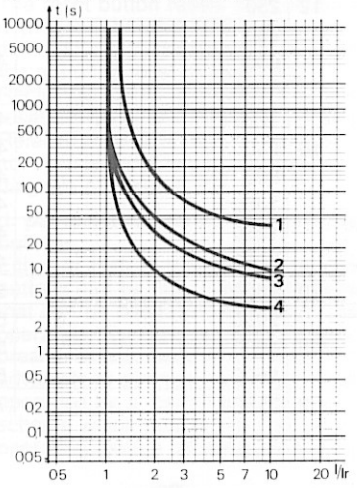


Type DIT5 thermal release

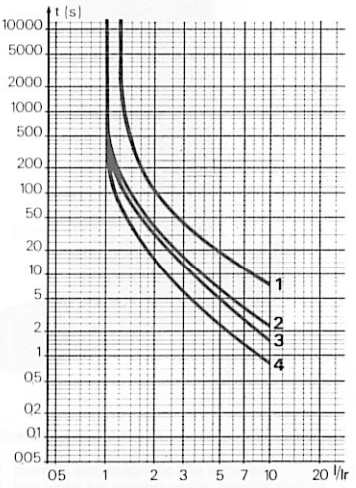
DIT5 time/current characteristic curves



Selpact 630 A and 1000 A
max. setting Ir: 250 A and 400 A



Selpact 630 A, 1000 A and 1250 A
max. setting Ir: 630 A, 1000 A and 1250 A



Selpact 1600 A, 2000 A, 2500 A and 3200 A
all settings

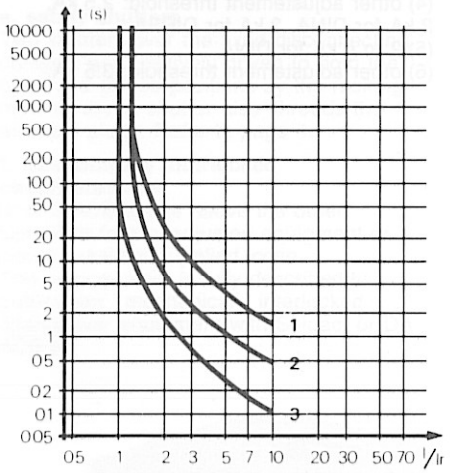
Depending on preloading conditions
- maximum time curve 1
- no preload: minimum time curve 2
- preload 0.8 x Ir: minimum time curve 3
- preload Ir: minimum time curve 4

I overload current
Ir current setting

Tripping time conditions
- at 1.05 Ir: no tripping after 2 hours
- at 1.25 Ir: tripping before 2 hours

DIT5-G thermal release for generator protection
For generator protection applications, Selpact air circuit breakers rated from 630 A to 3200 A can be fitted with special type DIT5G thermal releases with a suitable setting range and with low current setting short time-delay magnetic releases. A.C. generators can be used in low voltage systems as either stand-by or mobile prime power source for providing synchronous, three-phase supplies up to 15MVA. Special protection is necessary because of the inherent limited thermal capability and low short circuit current capacities as follows:
- 3 or 4 times rated current for salient pole generators without damping winding.
- 4 to 7 times rated current for generators with direct axis damping winding.

DIT5-G time/current characteristic curve.



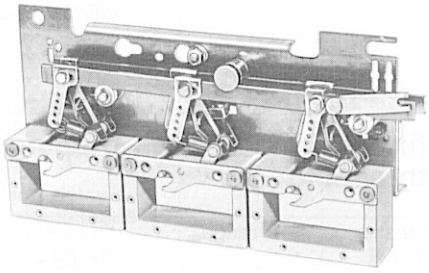
Depending on preloading conditions
- maximum time curve 1
- preload Ir: maximum time curve 2
- preload Ir: minimum time curve 3

I overload current
Ir current setting

Tripping time conditions:
- at Ir: no tripping after 2 hours
- at 1.20 Ir: tripping before 2 hours

magnetic protection

DINA instantaneous magnetic release
The release consists of a laminated magnetic circuit surrounding the lower current terminal pad of the pole and of a rotating core restrained by an adjusting spring.
Three releases are assembled onto a common support to form a trip unit. They are fitted to instantaneous and current-limiting ACB's, adjustable on the three phases simultaneously by means of an indicator, from the front of the ACB and preset when they are energised on 2 poles.



Type DINA instantaneous magnetic release

DIRS.A time-delay magnetic release
Standard in selective air-circuit breakers. Identical in conception to the instantaneous release, the type DIRS.A is coupled to a timer. The time setting is adjustable to four positions designated A, B, C and D.

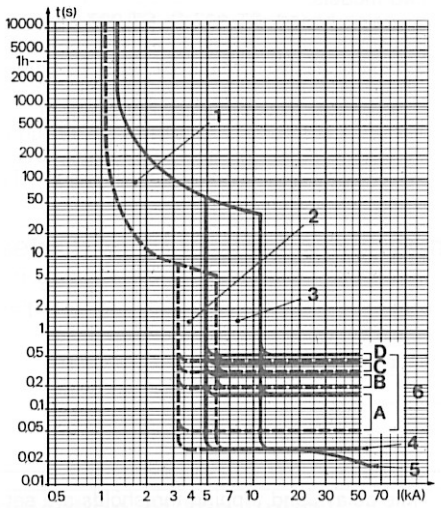
	maximum	
	tripping time	resetting time
setting A	150 ms	50 ms
setting B	270 ms	180 ms
setting C	390 ms	300 ms
setting D	510 ms	420 ms

Resetting time: circuit breaker will trip if current persists for longer than this time.
Tripping time: this is the maximum time the circuit breaker will take to open completely. This includes the resetting time.

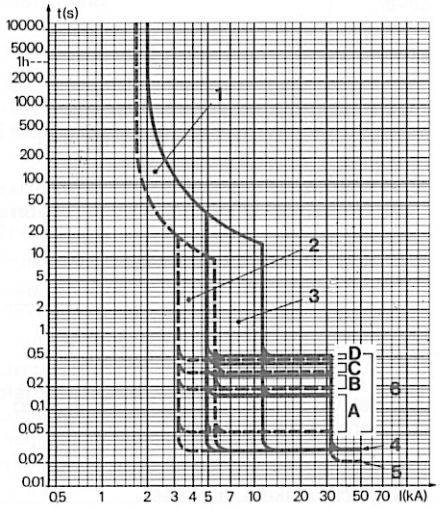
DINF instantaneous making current release
Standard in selective and non-automatic Selpact ACB's. They operate only when closing the breaker onto a short-circuit.

DIN instantaneous release
On H version, a type DIN instantaneous release 16 to the DINF or to the solid state protection (see p. 14) in Selpact DS2 16, 20, 25, 32. With this addition, the circuit breaker keeps its selectivity characteristics up to the DIN operating current. Above this value, tripping is instantaneous.

Time/current characteristic curves



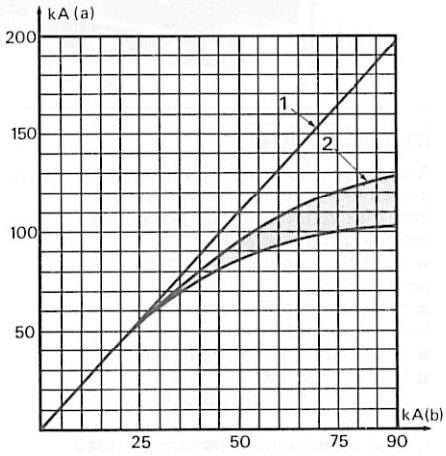
Selpact 1000 A
1. DIT5 thermal release set at 1000 A
2. and **3.** DIRS.A short time-delay magnetic release set at 4000 A and 8000 A.
4. DINA instantaneous magnetic release.
5. current-limiting curve above 40 kA peak (18 kA rms).
6. DIRS.A time settings.



Selpact 1600 A
1. DIT5 thermal release set at 1600 A.
2. and **3.** DIRS.A short time-delay magnetic release set at 4000 A and 8000 A.
4. DINA instantaneous magnetic release.
5. DIN instantaneous release.
6. DIRS.A time settings

protection on types DR2 and DRS2 ACB's

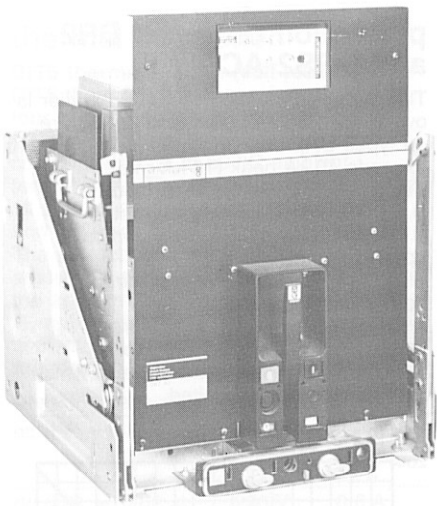
The system protection described earlier is over-ridden by a current limiting feature, on types DR2 and DRS2, when the current exceeds 40 kA peak (18 kA rms).
Calculations to be made as follows:
- calculate system RMS current
- locate on RMS axis, draw vertically upwards to the curve (b).
- at the point of intersection, draw horizontally to curve (a).
- at the point of intersection draw vertically down to base RMS axis.
- current indicated is the value to which fault current will be limited.



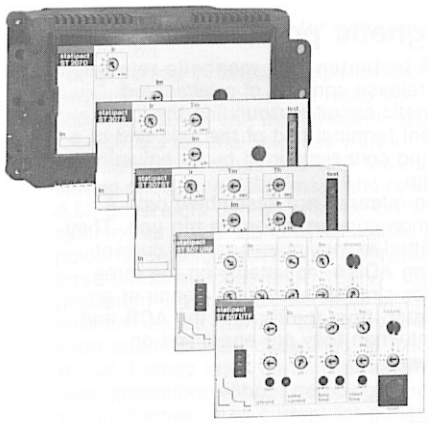
Types DR2-DRS2 cut-off characteristic curves.
1. prospective peak current curve (asymmetry 2.2, pf = 0.2)
2. characterictic curve.
(a) kA peak: $1.56 \times \sqrt{2}$ kA rms
(b) kA rms

- new -

statipact solid state trip unit for Selpact



The Selpact ST possesses a range of Statipact solid state trip units.
Two models:
- analog based, ST 207 D, ST 307 S and ST 307 ST;
- microprocessor based, ST 507 URF and ST 507 UTF.



introduction

A range of Statipact ST trip units is available to provide Selpact circuit breakers with numerous possibilities, including the following:
- protection against overloads - long time-delay;
- protection against short circuits - short time-delay and instantaneous;
- protection against earth faults;
- load monitoring;
  - maximum load threshold - load shedding;
  - load reconnection threshold - load resumption;
- alarms and selective fault indications by front panel LEDs, coupled with double-throw contact relays for external use - interlocks, remote alarms, etc.;
- memorization of fault indications.

operating principle

The Statipact ST range combines the following functions:
- a detection stage using a precision current transformer to provide a measurement signal;
- an electronic unit to process the detected current;
- a special trip featuring magnetic latching and low consumption.

All these features are an integral part of the circuit breaker and operate without an auxiliary power supply.
- for the microprocessor based versions, an alarm interface module incorporating:
  - the necessary control system for the alarm LEDs;
  - the output relays;
  - a battery to safeguard the various data after circuit breaker tripping.

technology

To handle all these functions, the range of Statipact ST trip units implement two types of electronic technologies:
- **analog** for versions ST 207 D, ST 307 S and ST 307 ST;
- **microprocessor** for versions ST 507 URF and ST 507 UTF.

Time-delays and tripping thresholds are set on multiposition selectors accessible from the front of the unit.
All versions come in the same size casing, housed in the front panel of the circuit breaker.
Access to the multiposition selectors can be prevented by sealable transparent cover.

functions provided

Selective tripping:
- **with long time-delay:**
  - 6 time-delay bands - ST 507 URF and UTF.
- **with short time-delay:**
  - 4 or 5 time-delay settings, depending on the version.
- **with earth fault protection:**
  - 4 time-delay settings.

All settings are interselective.
The I^2t characteristics, long and short delay, combined with long and short trip time-delays, provide total selective tripping at several levels between:
- Selpact breakers and between Selpact and Compact breakers;
- Selpact breakers and fuses.

instantaneous trip

On circuit breakers DRS2 and DS2H, instantaneous protection is provided in addition to the Statipact ST trip unit.
In this case, the breaker retains its selective tripping characteristics up to the instantaneous tripping threshold.

fixed instantaneous tripping threshold

breaker model	range	threshold (kA rms)
DS2H	B6-10-B12	18
DRS2	16	32
	20-25-32	40

For installations of low electrodynamic withstand, where the protection of machines and generators requires low level instantaneous protection, the Statipact ST 507 URF and ST 507 UTF offer in addition, on all circuit breaker models, 7 instantaneous tripping thresholds.
This function may be cancelled by setting to "off" position.

load monitor

Incorporated in the Statipact ST 507 URF version, this function uses two 8-position selectors to set:
- a maximum load indication threshold;
- a load reconnection indication threshold.

The ST 507 UTF versions offers the maximum load indication feature alone.
Set with respect to the long delay threshold, these two thresholds can be used in numerous applications:
- load monitoring and management;
- load shedding and reconnection;
- alarm and control systems (local or remote);
- interlocks;

alarms and output information

Auxiliary contacts (open/closed and alarm contacts - see page 9 of Selpact catalogue) indicate the position of the circuit breaker.
In addition to these auxiliaries, the Statipact ST 507 URF and UTF versions are equipped with:
■ LEDs for local fault indications;
■ double-throw contact relays in the alarm interface module for remote indications.
Depending on the version, the LED/relay assembly monitors the following faults:

fonction	Statipact ST 507 URF	507 UTF
load monitor		
Max. load threshold.	■	■
Load reconnection threshold.	■	
long delay		
Threshold.	■	■
Trip.	■	■
short delay and instantaneous		
Trip.	■	■
earth fault protection		
Trip.		■

alarm memory

After tripping, the fault indication is stored in memory and can only be cleared by pushing the "reset" button.

processing unit testing

For versions ST 307 S, ST 307 ST, ST 507 URF and ST 507 UTF, a multi-function test kit can be used to make an on-site check of the processing unit (test kit power supply: 110-127-220-240 V, 50-60 Hz). This test kit is fitted with a special adapter for testing versions ST 507 URF and ST 507 UTF.

equipment selection

■ **long delay, short delay and instantaneous protection.**
□ 3-pole circuit breakers: protection on all 3 poles.
□ 4-pole circuit breakers: - protection on 3 poles; - protection on all 4 poles.
The system is not designed to protect against earth faults and protect the neutral at the same time.
The neutral can be equipped with protection rated at half the breaker current rating.
On Selpact B6-10-B12 breakers, neutral protection can be rated at the breaker current rating.
■ **protection against earth faults**
□ 3-pole circuit breakers: protection on all 3 poles.
For unswitched distributed neutral systems, a fourth current transformer, identical to those equipping the circuit breaker, can be supplied separately.
This transformer must be installed and connected in accordance with installation manual no. 677325.
□ 4-pole circuit breaker: neutral unprotected for long and short time-delays.
For B6-10-B12 ratings, the fourth sensor is incorporated in the circuit breaker.
For 16-20-25 ratings, the fourth sensor is supplied separately.
□ the Selpact 32 cannot be equipped with ST 307 ST and ST 507 UTF trip units.

selection of current transformers

rating	(A)	320	500	630	800	1000	1250	1600	2000	2500	3150
Selpact	**B6**	■		■							
	10		■			■					
	B12			■			■				
	16				■			■			
	20					■			■		
	25						■			■	
	32							■			■

selection of trip units

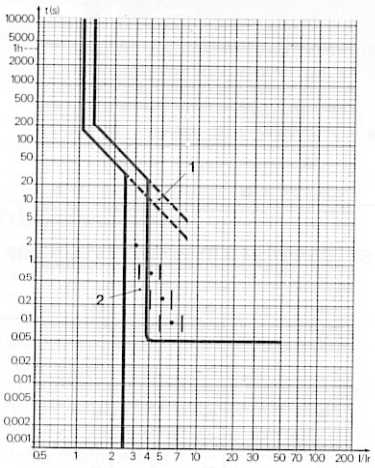
Functions	Versions	ST207 D	ST307 S	ST307 ST	ST507 UTF	ST507 URF
long delay						
Threshold	adjustable	■	■	■	■	■
Time-delay	fixed	■	■	■		
	adjustable				■	■
short delay						
Threshold	adjustable		■	■	■	■
Time-delay	fixed					
	adjustable		■	■	■	■
instantaneous						
Threshold	fixed(1)		■	■	■	■
	adjustable	■			■	■
earth fault protection						
Threshold	adjustable			■	■	
Time-delay	adjustable			■	■	
load monitor maximum load					■	■
Load reconnection						■
circuit breaker alarms						
Local by mechanical indicator		■	■	■	■	■
Remote by alarm contact(2)		■	■	■	■	■
differentiated alarms						
Local LEDs(3)					■	■
Remote by double-throw contacts(3)					■	■
Differentiated alarm memory(3)					■	■

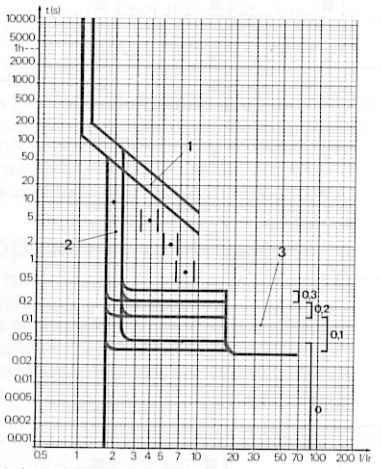
(1) Instantaneous with high threshold (standard on version H).
(2) Optional alarm contact for any electrical fault.
(3) With alarm interface module.

Statipact ST 207 D ST 307 S et ST 307 ST

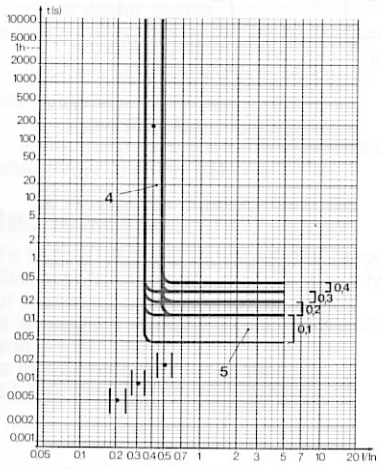
The Statipact ST 207 D, ST 307 S and ST 307 ST trip units are characterized by their use of analog technology. They are used for the following protection functions:
- long delay protection, threshold;
- short delay protection, threshold and time-delay;
- instantaneous protection, threshold;
- earth fault protection, threshold and time-delay.

Tripping curves

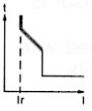




1. long delay — overload
2. instantaneous — short circuit
3. short delay — short circuit — time-delay settings

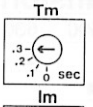


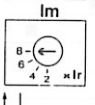
4. protection against earth faults
5. time-delay settings.
Show at 0.4 setting.

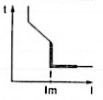


Protection common to the ST 207 D, ST 307 S and ST 307 ST

■ **long delay protection**
□ tripping threshold **I.r.**: a 6-position selector is used to set a tripping threshold between 0.5 and 1.0 rated current I.n., defined by the current transformers incorporated in the circuit breaker (see page 15).
The short delay and instantaneous protection settings are functions of the I.r. threshold setting.

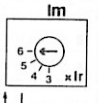


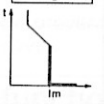




Protection common to the ST 307 S and ST 307 ST

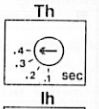
■ **short delay protection**
□ tripping threshold **I.m.:**
as a function of the I.r. threshold setting, a 4-position selector is used to set a tripping threshold between 2 and 8 I.r.
□ time-delay **T.m.:**
a 4-position selector is used to set:
— selective protection (positions 0.1-0.2-0.3);
— instantaneous protection (position 0).

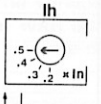


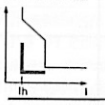


Protection specific to the ST 207 D

■ **instantaneous protection**
□ tripping threshold **I.m.:** as a function of the I.r. threshold setting, a 4-position selector is used to set a tripping threshold between 3 and 6 I.r.







Protection specific to the ST 307 ST

■ **earth fault protection.**
□ tripping threshold **I.h.:**
as a function of the rating I.n., a 4-position selector is used to set a tripping threshold between 0.2 and 0.5 In.
□ time-delay **T.h.:** a 4-position selector (0.1 to 0.4 seconds) is used to provide selective protection between several circuit breaker levels.

electrical data

version	ST 207 D	ST 307 S	ST 307 ST
mounted on Selpact			
3-pole	■	■	■
4-pole + unprotected N	■	■	■
4-pole with protected N	■	■	
long delay protection			
threshold settings Ir = In x...	0.5-0.6-0.7-0.8-0.9-1	0.5-0.6-0.7-0.8-0.9-1	0.5-0.6-0.7-0.8-0.9-1
tripping between:	1.05 and 1.25 Ir	1.05 and 1.25 Ir	1.05 and 1.25 Ir
short delay and intantaneous protection, adjustable			
threshold settings Im = Ir x...	3-4-5-6	2-4-6-8	2-4-6-8
accuracy:	± 20%	± 15%	± 15%
for Selpact 32	− 15 + 25%	− 15 + 25%	
time-delay settings	none	0-0.1-0.2-0.3	0-0.1-0.2-0.3
maximum overcurrent time without tripping (ms)	0	0-35-125-230	0-35-125-230
maximum breaking time (ms)	50	50-125-230-350	50-125-230-350
protection against earth faults			
threshold setting Ih = In x...			0.2-0.3-0.4-0.5
accuracy			± 15%
time-delay settings			0.1-0.2-0.3-0.4
maximum fault time without tripping (ms)			50-140-230-350
maximum breaking time (ms)			140-230-350-500
processing unit test		■	■

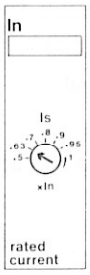
Statipact ST 507 URF and ST 507 UTF

These trip units are characterized by their use of **microprogramming technology,** offering an extensive range of functions and adjustment possibilities.

■ **trip unit:** mounted on the circuit breaker, it performs the following protection functions:
□ long delay protection, threshold and time-delay;
□ short delay protection, threshold and time delay;
□ instantaneous protection, threshold;
□ earth fault protection, threshold and time-delay;
□ load monitoring;
□ alarms and indications.

The load monitoring and indication functions extend the field of application of circuit breakers to:
□ maximum load indication;
□ load reconnection indication;
□ local and remote alarms and indications.

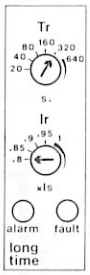
■ **Alarm interface:** this module connected to the circuit breaker performs:
□ control of power supply to LEDs;
□ fault indications via double-throw contact relays.



Protection common to the ST 507 URF and ST 507 UTF

■ **selection of rating I.s.**

A 7-position selector is used to set an operating rating is between 0.5 and 1.0 rated of current I.n. defined by the current transformers incorporated in the circuit breaker (see page 15). The long delay, short delay and instantaneous protection settings are multiples of the I.s. setting.



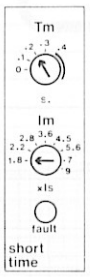
■ **long delay protection**

□ tripping threshold **I.r.:** multiple of the I.s. setting, a 5-position selector is used to set a tripping threshold between 0.8 and 1 I.s.

□ time delay **Tr:** offered as standard equipment on these trip units, the 6-position time-delay selector (values for 1.5 Ir) is used to delay the tripping of the long delay threshold according to six interselective adjustment bands.

□ alarms (3): two LEDs indicte respectively:
- threshold exceeded (alarm);
- long delay trip (fault).

The "reset" button is used to clear the fault indication.



■ **short delay protection**

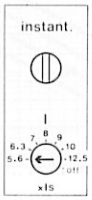
□ tripping threshold **I.m.:** a multiple of the I.s. setting, an 8-position selector is used to set a tripping threshold between 1.8 and 9 I.s. This very large range of adjustments range is provided to enable protection of networks of cables, motors, generators, etc.

□ time-delay **T.m.:** a 5-position selector is used to set:
- selective protection (positions 0.1 to 0.4);
- instantaneous protection (position 0).

□ **I²t** function:

this function completes the timing of short-delay tripping.
The slope I²t of this curve improves selectivity with load-side protection - circuit breakers, fuses.

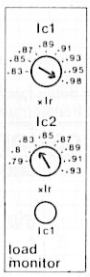
□ alarms (3): an LED indicates short delay tripping (fault). The "reset" button is used to clear the fault indication.



■ **adjustable instantaneous protection**

□ tripping threshold **I.:** multiple of I.s., an 8-position selector is used to set an instantaneous tripping threshold between 5.6 and 12.5 I.s.

The "OFF" position of this selector cancels this function and enables selectivity with load-side protection up to the breaking capacity of the device.



Functions specific to the ST 507 URF

■ **load monitoring function**

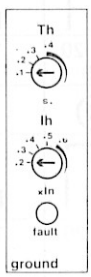
Two 8-position selectors are used to set the maximum load and load reconnection thresholds;

□ threshold **I.c1 = maximum load:** a multiple of the long-delay tripping threshold I.r., this selector is used to set a maximum load monitoring threshold;

□ time-delay: automatically adjusted to 0.4 times the value of the value of the long time-delay setting T.r;

□ threshold **I.c2 = load reconnection:** the reverse of the preceding function, this function indicates a return to normal load conditions. A 8-position selector is used to set the desired threshold;

□ alarms (3): a LED indication combined with a double-throw contact signal indicates the crossing of thresholds I.c1 and I.c2. These signals can be used to implement the following functions:
— load shedding, load reconnection, alarms, interlocks, remote indications and load management.



Functions specific to the ST 507 UTF

■ **load monitoring function**

Implemented in a simpler manner than in the preceding version, a maximum load indication threshold is fixed at 0.9 I.r. (long delay tripping threshold) which can be used to carry out load shedding, interlock, remote indication, alarm, etc. functions via a double-throw relay contact.

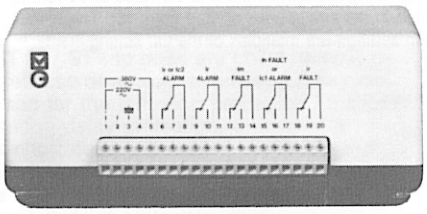
■ **earth fault protection function**

□ tripping threshold **I.h.:** a 5-position selector is used to set a tripping threshold between 0.2 and 0.6 rated current I.n. (4);

□ time-delay: a 4-position selector (0.1 to 0.4 seconds) is used to provide selective protection between several circuit breaker levels;

□ alarms (3): a LED indication and a double-throw relay contact signal earth fault tripping. The « reset » button is used to clear the fault indication.

alarm interface



Associated with the ST 507 URF and ST 507 UTF trip units, the alarm interface module comprises:
- control of trip unit LEDs;
- a battery unit to safeguard indications stored in memory(2)
- double-throw relay contacts for fault indications.

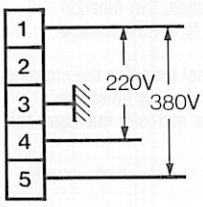
Supplied with a 1-metre lead, the alarm interface module is equipped for DIN rail mounting.
A connector is provided for the connection between the module and the trip unit.

Technical data

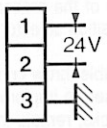
power supply	220 or 380 V ac(1) 28 V dc
power consumption: 7 W	
double-throw output contact (open/closed)	
breaking capacity:	250 V ac at 3 A 300 V dc at 3 A
battery(2): data safeguard time approximately 1 1/2 hours	

connection of power supplies(3)

220 or 380 V ac



dc



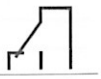
(1) Depending on connection.
(2) For ac power supply.
(3) Specify voltage with order.

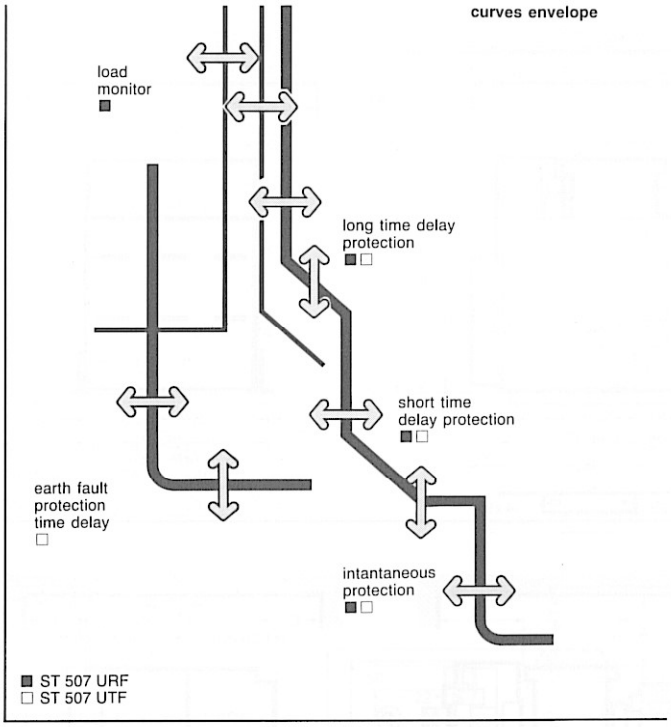
electrical data

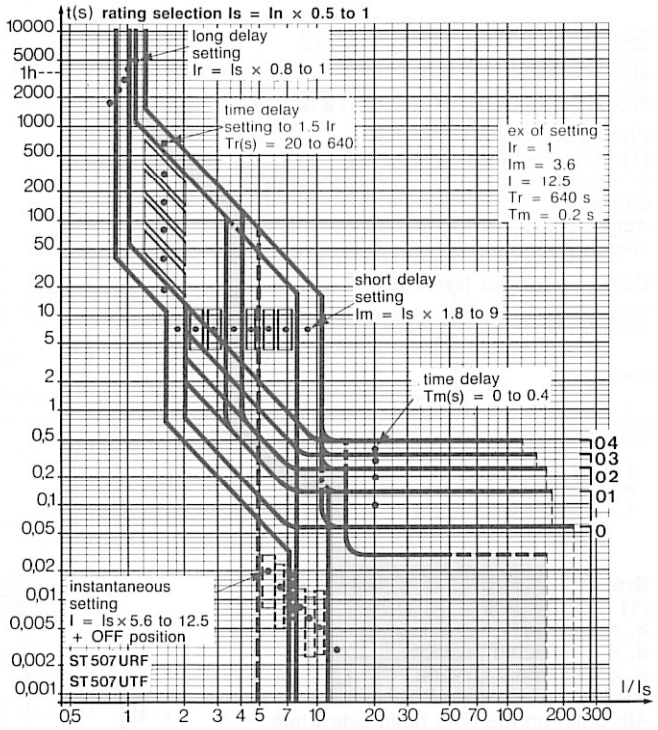
Version	ST507 URF	ST507 UTF
Mounted on Selpact		
3-pole	■	■
3-pole unswitched distributed neutral		■
4-pole unprotected N	■	■
4-pole protected N	■	
Breaker rating Is = In(4) × 0.5 - 0.63 - 0.7 - 0.8 - 0.9 - 0.95 - 1		
Long delay protection Ir		
Threshold setting Ir = Is ×...	0.8 - 0.85 - 0.9 - 0.95 - 1	0.8 - 0.85 0.9 - 0.95 - 1
Tripping between:	1.05 and 1.20 Ir	1.05 and 1.20 Ir
Time-delay bands calibrated at 1.05 Ir) tr (S)	20 - 40 - 80 160 - 320 - 640	20 - 40 - 80 160 - 320 - 640
Short delay protection Im		
Threshold setting Ir = Is ×...	1.8 - 2.2 - 2.8 - 3.6 - 4.5 - 5.6 - 7 - 9	1.8 - 2.2 - 2.8 - 3.6 - 4.5 - 5.6 7 - 9
Accuracy	±15%	±15%
Time-delay settings	0 - 0.1 - 0.2 - 0.3 - 0.4	0 - 0.1 - 0.2 0.3 - 0.4
Max. overcurrent time without tripping (ms)	0 - 60 - 140 - 230 - 350	0 - 60 - 140 - 230 - 350
Max breaking time (ms)	60 - 140 - 230 - 350 - 500	60 - 140 - 230 - 350 - 500
I²t slope	■	■
Instantaneous protection I		
Threshold setting I = Is ×...	5.6 - 6.3 - 7 8 - 9 - 10 - 12.5 - OFF(1)	5.6 - 6.3 -7 8 - 9 - 10 12.5 - OFF(1)
Earth fault protection Ih = In(4) ×...		
Threshold setting Ih = In(4) ×...		0.2 - 0.3 - 0.4 - 0.5 - 0.6
Accuracy		±15%
Time-delay setting th (s)		0.1 - 0.2 - 0.3 - 0.4
Max. fault time without tripping (ms)		60 - 140 - 230 - 350
Max. breaking time (ms)		140 - 230 - 350 - 500
Load monitoring I.c1 - I.c2		
Maximum load threshold I.c1 = Ir ×...	0.83 - 0.85 - 0.87 - 0.89 - 0.91 - 0.93 - 0.95 - 0.98	I.c1 = 0.9 × Ir(2)
Time-delay (ms)	0.4 tr	
Load reconnection threshold I.c2 = Ir ×...	0.79 - 0.81 - 0.83 - 0.85 - 0.87 - 0.89 - 0.91 - 0.93	
Differentiated fault indications(3)		
LEDS on trip unit	■	■
Via double-throw relay contacts	■	■

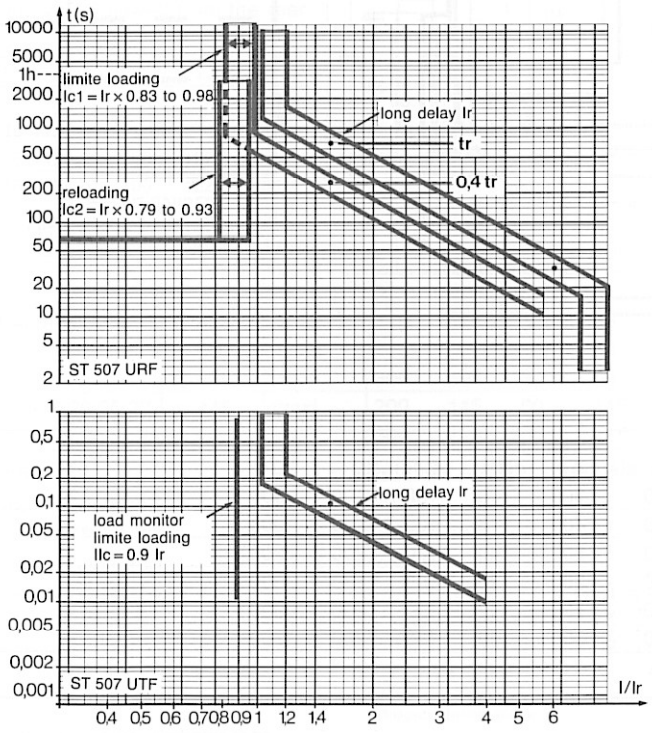
(1) The "OFF" position renders the adjustable instantaneous protection inoperative.
(2) Fixed value only.
(3) Indications via alarm interface module, see detail table for local and remote indications.
(4) In: Rated current of circuit breaker current transformers

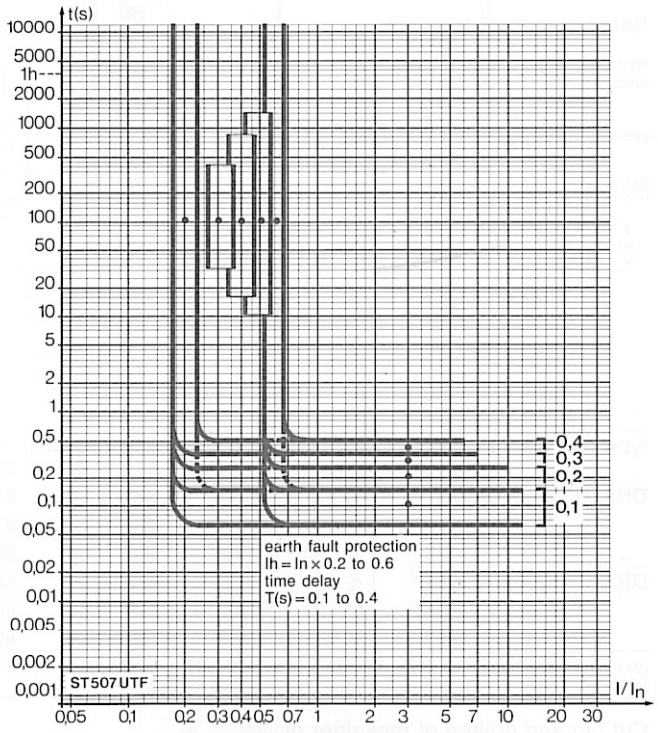
differentiated fault indications — connection

trip unit functions	long delay		short delay	Earth fault protection	Load monitoring	
	thresh.	trip	trip	trip	Max. load	load reconnect.
ST507 URF	⊗	⊗	⊗		⊗	⊗
alarm interface						
terminal block connection	9 11 10	18 20 19	12 14 13		15 17 16	6 8 7
ST507 UTF	⊗	⊗	⊗	⊗		
alarm interface						
terminal block connection	9 11 10	18 20 19	12 14 13	15 17 16	6 8 7	
"Reset" button to clear fault indications		■	■	■		


curves envelope
load monitor
long time delay protection
short time delay protection
earth fault protection time delay
intantaneous protection
ST 507 URF
ST 507 UTF


t(s) rating selection Is = In x 0.5 to 1
long delay setting Ir = Is x 0.8 to 1
time delay setting to 1.5 Ir Tr(s) = 20 to 640
ex of setting Ir = 1 Im = 3.6 I = 12.5 Tr = 640 s Tm = 0.2 s
short delay setting Im = Is x 1.8 to 9
time delay Tm(s) = 0 to 0.4
04
03
02
01
0
instantaneous setting I = Is x 5.6 to 12.5 + OFF position
ST 507 URF
ST 507 UTF
I/Is


t(s)
limite loading Ic1 = Ir x 0.83 to 0.98
long delay Ir
tr
0,4 tr
reloading Ic2 = Ir x 0.79 to 0.93
ST 507 URF
long delay Ir
load monitor limite loading Ilc = 0.9 Ir
ST 507 UTF
I/Ir

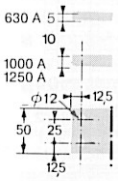

t(s)
0,4
0,3
0,2
0,1
earth fault protection Ih = In x 0.2 to 0.6 time delay T(s) = 0.1 to 0.4
ST 507 UTF
I/In

Selpact DN2, DS2, DR2 and DRS2
630 A, 1000 A and 1250 A

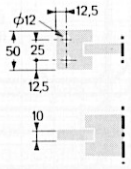
Fixed pattern
(1) fixing centres
s. necessary space for removing the arc chutes.
4th pole: on the right hand side when viewed from the rear.

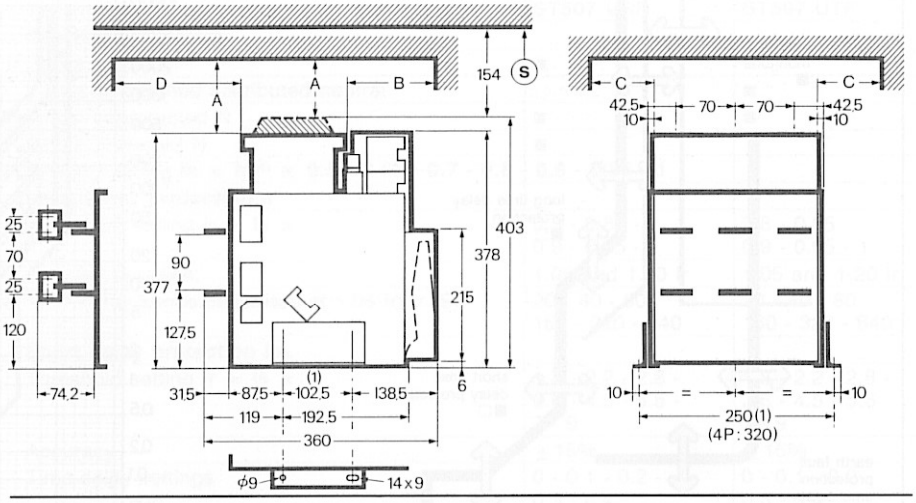
Detail of current terminals

Horizontal terminals



Vertical terminals

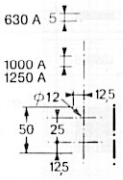




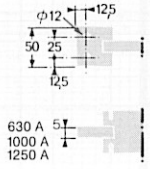
Drawout pattern
(1) fixing centres
b. neutral link
d. disconnected position
p. door internal surface
n1 & n2 fixing centres of neutral link
4th pole: on the right hand side when viewed from the rear

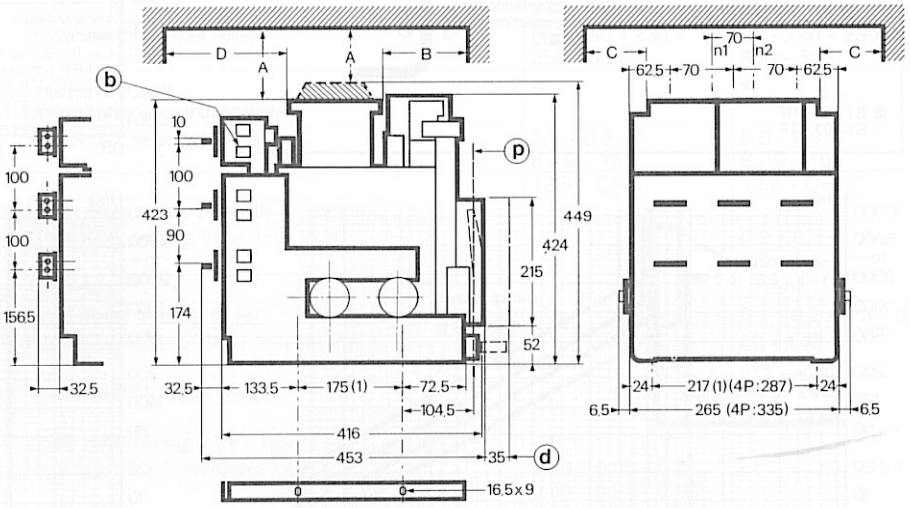
Detail of current terminals

Horizontal terminals



Vertical terminals



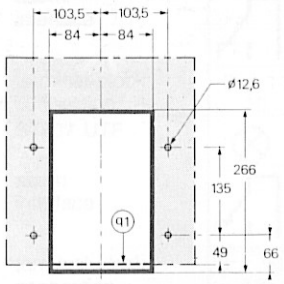


type	current V	b.c. kA. rms	with insulating screen A	B	C	D	with metal screen A	B	C	D	with live bars D
DN2, DS2-B6-10-B12	⩽ 415	⩽ 45	100(2)	50	80	50	300	100	100	100	300
	⩽ 500	maxi	200	50	80	50	400	140	100	200	300
	⩽ 660	maxi	300	50	80	50	500	140	100	200	300
DR2, DRS2-B6-10-B12	⩽ 415	⩽ 70	200	50	80	50	300	120	100	170	300
	⩽ 500	maxi	250	50	80	50	400	140	100	200	300
	⩽ 660	maxi	350	50	80	50	500	140	100	200	300

(2) the distances shown are safety clearances to be provided for the ACB maximum performances.
Note: any busbar mounted above the arc chutes should be insulated.

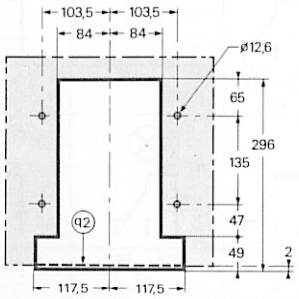
Cut out and drilling of face door or panel to fit the front escutcheon:
according to drawings (right)

Fixed pattern, all ratings



q1 bottom mounting surface of breaker

Drawout pattern, all ratings

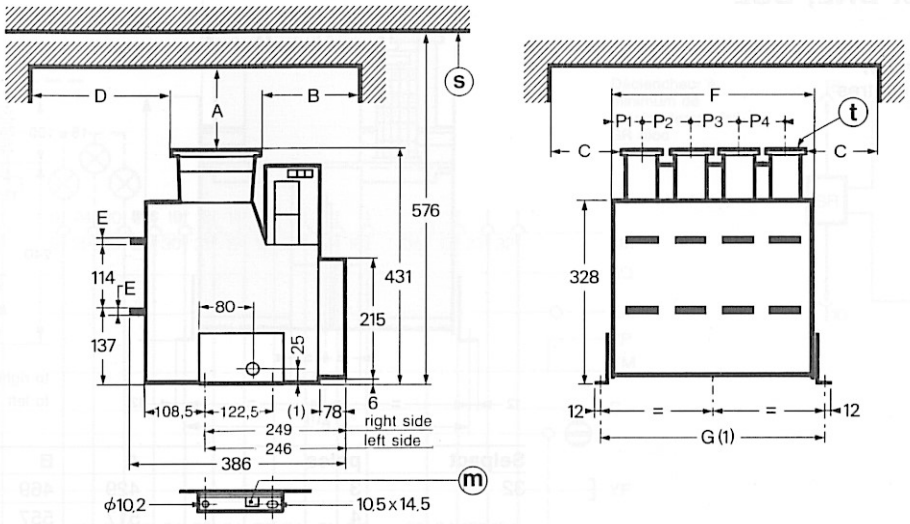


q2 bottom mounting surface of fixed cradle

Selpact DN2, DS2, DN2-H and DS2-H
1600 A, 2000 A and 2500 A

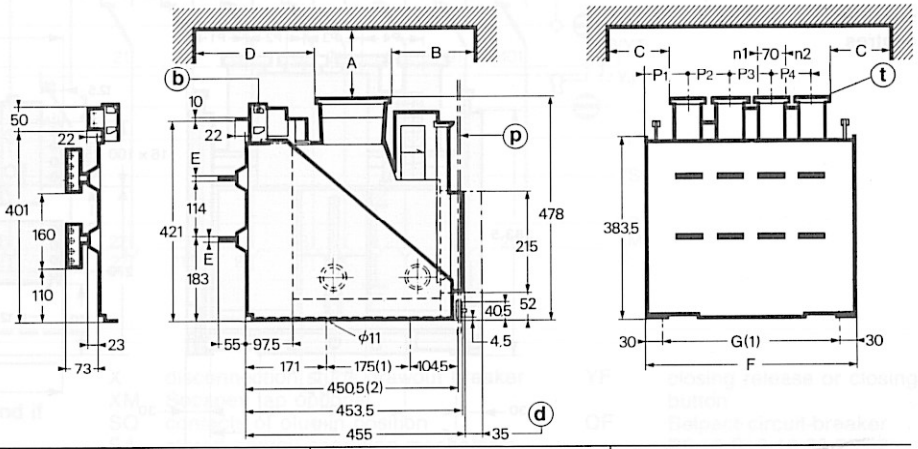
Fixed pattern
(1) fixing centres
m. earth terminal: 25 mm long, dia. M12
s. necessary space for removing arc chutes
t. 4th pole on the right hand side when viewed from the rear.

type	poles	E	F	G	P1	P2,P3	P4
16	3	16	272	312	48.5	87.5	
	4	16	377	417	57.25	87.5	87.5
20	3	16	377	417	66	122.5	
	4	16	464	504	66	122.5	105
25	3	16	429	469	74.5	140	
	4	16	517	557	74.5	140	113.75



Drawout pattern
(1) fixing centres (4 holes dia. 11)
(2) door internal surface
b. neutral link
d. disconnected position
p. door
n1 & n2 fixing centres of neutral link
t. 4th pole (always rated 1250 A) on the right hand side when viewed from the rear.

type	poles	E	F	G	P1	P2,P3	P4
16	3	16	340	280	82.5	87.5	
	4	16	445	385	91.25	87.5	87.5
20	3	16	445	385	100	122.5	
	4	16	532	472	100	122.5	105
25	3	16	497	437	108.5	140	
	4	16	585	525	108.5	140	113.75

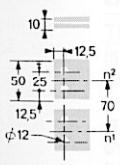


type	current V	b.c. kA. rms	with insulating screen A	B	C	D	with metal screen A	B	C	D	with live bars D
DN2, DS2-16-20-25-32	⩽ 415	⩽ 40	100(1)	50	30	50	200	125	100	125	230
	⩽ 500	⩽ 50	200	50	30	50	300	125	100	125	230
	⩽ 660	maxi	300	50	30	50	400	125	100	125	230
DN2-H, DS2-H-16-20-25-32	⩽ 415	maxi	200	115	60	115					300
	⩽ 660	maxi	300	115	60	115					300

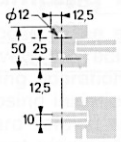
Detail of neutral

Fixed and drawout pattern

Horizontal neutral



Vertical neutral



(1) the distances shown are safety clearances to be provided for the ACB maximum performances.
Note: any busbar mounted above the arc chutes should be insulated.

(2) the width (L) of 4 th pole terminations for 1600 A, 2000 A and 2500 A rating is:
top termination: 53 mm
bottom termination: 50 mm

(3) the width (L) of 4th pole terminations for 1600 A, 2000 A and 2500 A ratings is 50 mm.

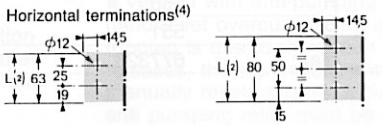
(4) vertical terminations are available (consult us)

Detail of current terminals

1600 A | 2000 A | 2500 A | 2500 A

Fixed pattern

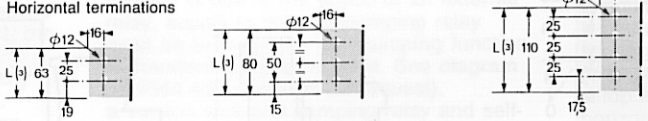
Horizontal terminations(4)



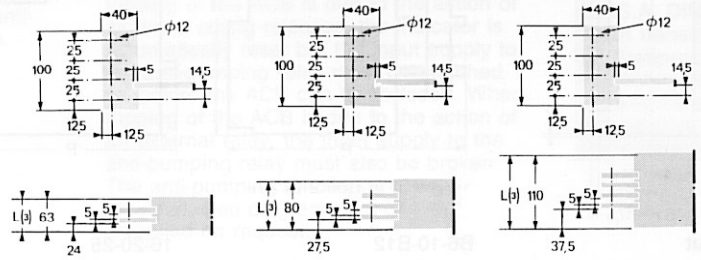
Drawout pattern

bottom | top

Horizontal terminations

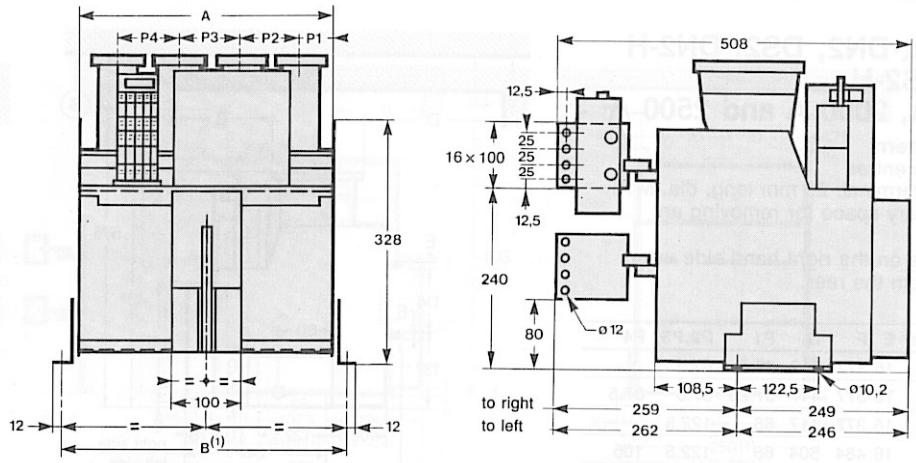


Vertical terminations



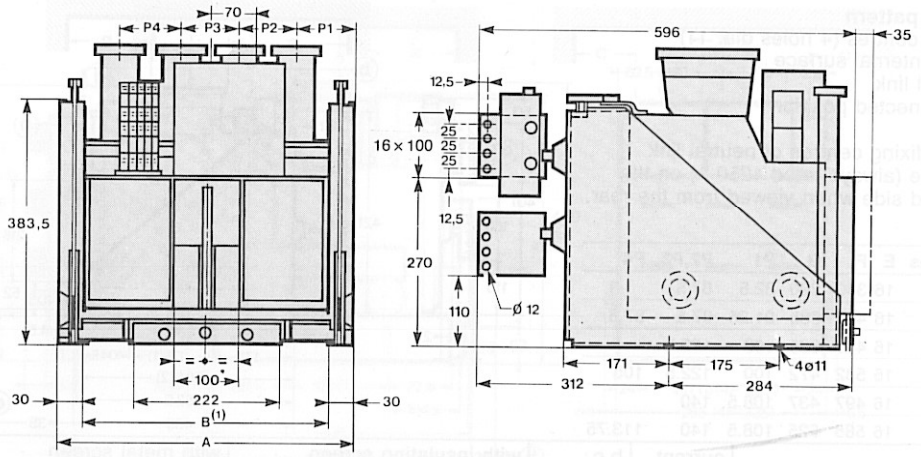
Selpact DN2, DS2 3200A

Fixed version
(1) fixing centres



Selpact	poles	A	B	P1	P2	P3	P4
32	3	429	469	74,5	140	140	
	4	517	557	74,5	140	140	113,75

Drawout version
(1) fixing centres

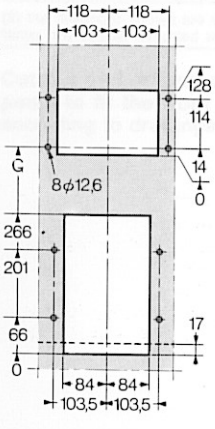


Selpact	poles	A	B	P1	P2	P3	P4
32	3	497	437	108,5	140	140	
	4	585	525	108,5	140	140	113,75

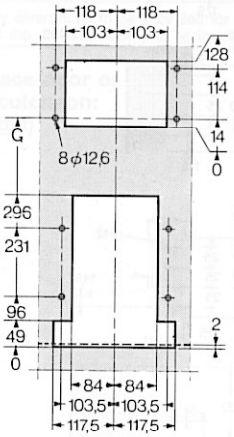
Statipact for Selpact DS2, DRS2

The Statipact does not modify the dimensions of the Selpact circuit breakers except in the following cases, dimensions H and P.

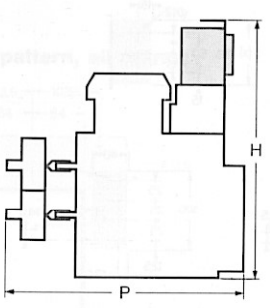
		B6-10-B12	16-20-25	32
fixed	G	403	420	420
	H	513	538	538
	P	470	386	508
	plan:	677327	677329	677330
drawout	G	450	467	467
	H	558	584	584
	P	551	510	596
	plan:	677328	677331	677332



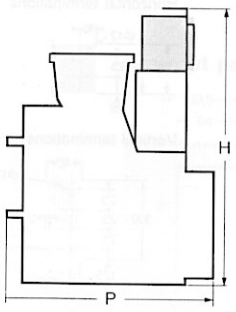
fixed



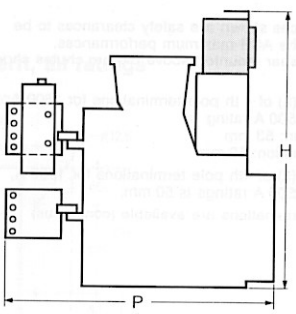
drawout



B6-10-B12



16-20-25

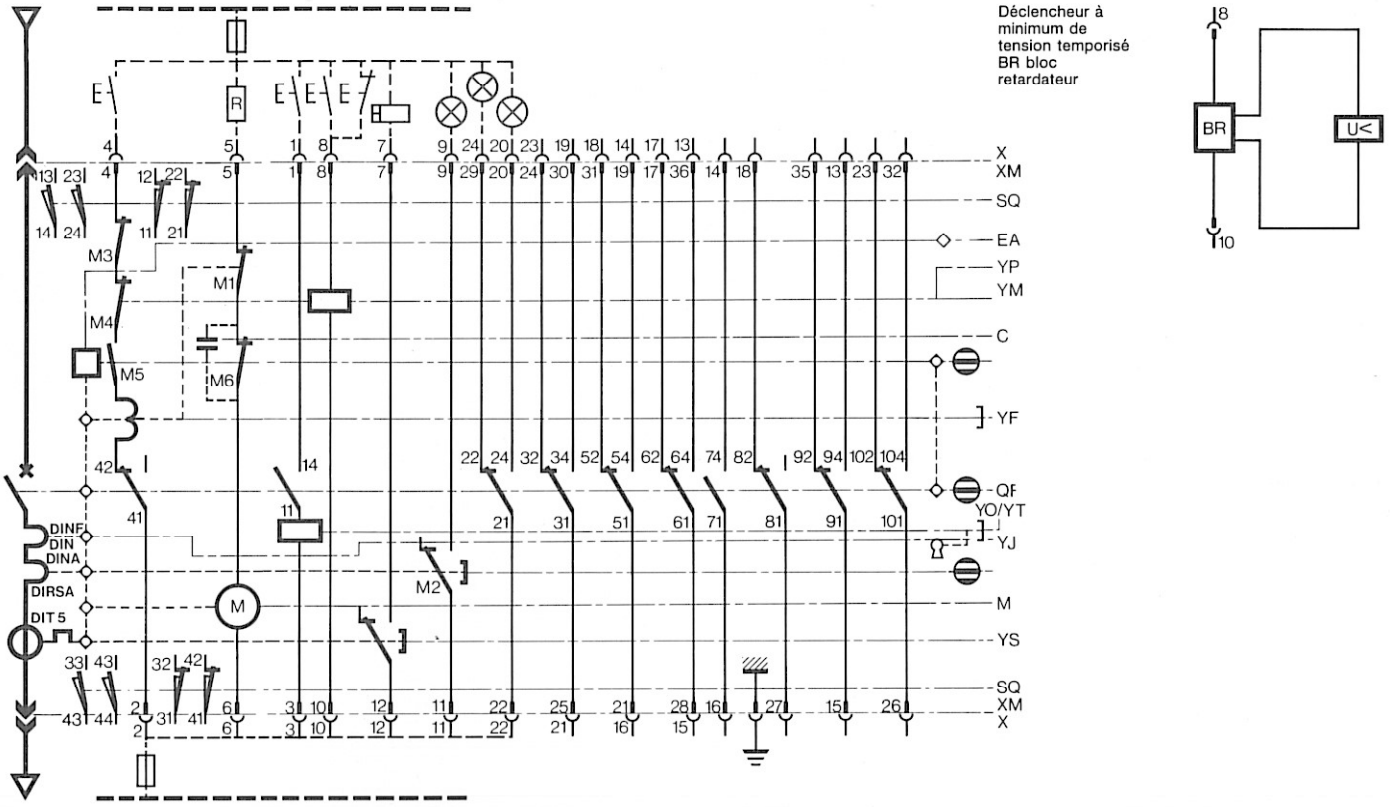


32

wiring diagram

standard version

Selpact B6-10-B12-16-20-25-32



Important note:
If the closing impulse is maintained and if the ACB is fitted with an YM release connected to the system, a simultaneous impulse may be given both on the closing release and on the YM undervoltage release. A 100 ms time delayed relay should then be connected in series with the closing release

X	disconnection studs drawout breaker
XM	Socapex tap optional
SQ	contacts of plug-in position
EA	stored energy operating mechanism
YP	permanent shunt trip release
YM	instantaneous under voltage release
C	capacitor 0.47 MF for direct current
YF	closing release or closing push-button
QF	Selpact circuit-breaker B6.10.B12.16.20.25.32
YO	impulse shunt trip release or opening push button
YT	time delayed undervoltage release
YJ	overcurrent release
M	operating mechanism setting motor
YS	thermal release and overcurrent trip indicator

antipumping function

The purpose of the anti-pumping function is to prevent the reclosing of the CB after an opening operation as a result of a fault when closing initiation is maintained.

■ standard version with hand-reset overcurrent tripping indication: when tripping is due to the direct acting releases DIT5, DINA, DIRS.A, DINF or Statipact, the anti-pumping function is incorporated, since the trip indicator must be manually reset before the ACB can be reclosed. When tripping is due to the action of an external relay through an impulse shunt or undervoltage release YO or YM, the anti-pumping function is not provided. See diagram n° 9644 405.

■ version with anti-pumping relay and hand-reset overcurrent trip indicator: when tripping is due to the action of direct acting releases, the trip indicator must be manually reset, and the input supply to the anti pumping relay must be switched off before the ACB can be reclosed. When tripping is due to the action of an external relay, supply to the anti-pumping relay must be broken. The anti-pumping function is therefore always provided. See diagram n° 9644 419 (supplied on request).

■ version with anti-pumping relay and self-resetting overcurrent trip indicator: when tripping of the ACB is due to the action of its direct acting releases, the indicator is automatically reset but the input supply to the anti-pumping relay must be switched off before the ACB can be reclosed. When tripping of the ACB is due to the action of an external relay, the input supply to the anti-pumping relay must also be broken. The anti-pumping function is always provided. See diagram no 9 644 407 (supplied on request)

ordering information

■ type: DN2, DS2, IS2, DR2, DRS2, DN2 'H', DS2 'H'.
■ version: marine, navy, industry or d.c.
■ frame size: B6, 10, B12, 16, 20, 25, 32
■ mounting: fixed or drawout
■ service voltage
■ number of poles: 3P or 4P
■ neutral link: with/without
■ operation: hand or motor (voltage to be specified)
■ top and bottom terminations: horizontal or vertical.
■ protection type and settings: DIT5, DINA, DIRS.A, DINF, DIN, Statipact.
■ 4th transformer for earth fault protection on Statipact: with/without.
■ mechanical accessories
■ electrical accessories with supply voltage
■ protective treatment: normal, special or anti-corrosive (for industrial version)