

AIR CIRCUIT BREAKERS

1



C-POWER : C Range

Page

CE marked ACBs, available in 3 pole or 4 pole, manual or electrical, fixed or drawout versions for 800A to 6300A ratings. These are available with a wide variety of protection releases.

Technical Data	1/2-1/5
Protection Units	1/6-1/14
Accessories	1/15-1/19
Ordering Information	1/20-1/22
Overall Dimensions	1/24,1/25,1/27-1/29,1/32-1/34
Wiring Diagrams	1/35,1/37



C-POWER : H Range

Page

CE marked, High Breaking Capacity ACBs. Available in 3 pole or 4 pole, manual or electrical drawout versions for 800A to 4000A ratings. These are available with a wide variety of protection releases.

Technical Data	1/2-1/5
Protection Units	1/6-1/14
Accessories	1/15-1/19
Ordering Information	1/21,1/22
Overall Dimensions	1/30-1/34
Wiring Diagrams	1/35,1/37



CNCS & CNCS..E

Page

CNCS: Available in 3 pole manual fixed version with thermo-magnetic release for 400A & 630A ratings.

CNCS..E: Compact ACBs, available in 3 pole manual fixed version with thermo-magnetic release for 630A to 2000A ratings.

Technical Data	1/2-1/4
Protection Units	1/13,1/14
Accessories	1/16-1/19
Ordering Information	1/21,1/22
Overall Dimensions	1/23,1/26
Wiring Diagrams	1/36,1/37



C-POWER : S Range

Page

Low Breaking Capacity ACBs, available in 3 pole manual drawout version with thermo-magnetic release for 800A to 1600A ratings.

Technical Data	1/2-1/4
Protection Units	1/13,1/14
Accessories	1/15-1/19
Ordering Information	1/21,1/22
Overall Dimensions	1/31-1/34
Wiring Diagrams	1/36,1/37

SALIENT FEATURES

1

L&T's Air Circuit Breakers (ACBs), specially designed for extreme tropical conditions, have a proven track record of more than 30 years. L&T is one amongst the world's five largest manufacturers of ACBs and has supplied over 2,00,000 ACBs for diverse applications in over 40 countries in the world.

These ACBs, which adhere to stringent requirements of protection and discrimination in low voltage networks, are type tested at ASTA, U.K. for compliance to IEC 60947-2 & BSEN 60947-2 standards & at CPRI, ERDA, India for compliance to IS 13947 - Part 2.

C & H ranges of C-POWER ACBs carry the 'CE' mark & meet the requirements of European LV directive for safety & EMC directive.

L&T offers the widest range of ACBs which are available in 3 or 4 pole configuration, fixed or drawout version, auto or manual reset type, with independent manual or stored energy type manual or electrically operated mechanism. Various terminal orientation options are available including flat rear type, horizontal rear type, vertical rear type and front type.

These ACBs are available with a wide variety of over current protection devices :

- ◆ Computer compatible & Communication capable release type SR61C.
- ◆ Microprocessor based Releases type SR21 & SR21E.
- ◆ Solid State Releases type SR15 & SR15G.
- ◆ Thermomagnetic Releases type DN1.

There are over 500 options to choose from.

PRODUCT HIGHLIGHTS

- ◆ Widest range of ACBs : 400A to 6300A.
- ◆ Elegant design having rugged construction.
- ◆ I_{cw} for 1sec = I_{cs} = I_{cu} to ensure complete selectivity.
- ◆ High mechanical & electrical life.
- ◆ Unique pole design ensures bounce free contact operation.
- ◆ All 4-pole ACBs have fully rated neutral pole. Hence the poles at either extreme can be used as the neutral i.e. in NRYB or RYBN configuration.
- ◆ Utilisation category 'B' i.e. discrimination possible with all releases.
- ◆ All ratings can be used for ON/OFF Load Isolation.
- ◆ Single stroke of handle to close independent manual ACBs.
- ◆ Unique sliding shutters to prevent unauthorized access to "Trip" & "Close" Push button.
- ◆ Auxiliary contacts in drawout ACBs are programmable for service and test position.
- ◆ Optimally compact ACBs to ensure low temperature rise.

USER FRIENDLINESS

- ◆ Over current release settings, telescopic racking handle and various racking interlocks are accessible from front. This means that the panel door is not required to be opened for accessing the above.
- ◆ Wide choice of terminal orientations (Flat, Horizontal, Vertical and Front).
- ◆ Easy racking on telescopic rails.
- ◆ 4th "Maintenance" position in Drawout type ACBs to facilitate maintenance.
- ◆ Multitap CTs for enhancing protection range.
- ◆ Wide variety of ampemetric and voltmetric releases.

SUPERIOR AESTHETICS IN C-POWER ACBs


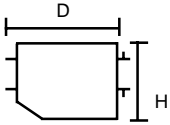
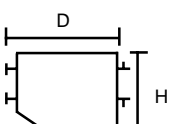
- ◆ Aesthetically designed front-facia featuring common panel cut-outs for fixed breakers and drawout breakers.
- ◆ Common height of all 'H' Range ACBs.
- ◆ Left aligned panel appearance.
- ◆ Left aligned mechanism for effective space utilization of panel.
- ◆ Unique gasket for IP54 protection.

SAFETY

- ◆ 'CE' marking on C & H ranges of C-POWER ACBs.
- ◆ Superior quality of engineering grade plastics used for insulation purpose. Conform to glow wire test (Ref.: IEC 60695-2-1)
- ◆ In-built mechanical anti-pumping for electrically operated ACBs.
- ◆ In-built safety lever in Drawout type ACBs to ensure tripping of ACB :
 - before breaker jaws disengage from cradle terminals while racking out the ACB from "Service" position.
 - before breaker jaws engage with cradle terminals while racking in the ACB from "Isolated" or "Test" position.
- ◆ In-built rating error preventor in Drawout ACBs to ensure correct rating of breaker in corresponding cradle.
- ◆ In-built safety shutter assembly to prevent accidental contact with live cradle terminals when breaker is in drawout position. This is directly operated without linkages and transparent flaps facilitate easy visibility of terminals.

TECHNICAL DATA

1

Rating (A)		400	630		800					
Type Designation		CN-CS	CN-CS	CN-CS.E	CN-CS.E	S	C	H		
Rated Current (A) 40°C	In	400	630	630	800	800	800	800		
Rated Operational Voltage (V) 50/60Hz	Ue*	415	415	415	415	415	415	415		
Rated insulation voltage (V), 50/60Hz	Ui	690	690	690	690	1000	1000	1000		
No. of poles		3	3	3	3	3	3/4	3/4		
Rated ultimate short circuit breaking capacity 50/60Hz (kA rms)	Icu	36.6	36.6	25	36.6	50	50	65		
Rated service short circuit breaking capacity 50/60Hz (kA rms)	Ics	36.6	36.6	25	36.6	38	50	65		
Rated short time withstand capacity 50/60Hz (kA rms)	Icw	0.5sec	36.6	36.6	25	36.6	38	50	65	
		1sec	25	25	25	25	38	50	65	
Rated making capacity 50/60Hz (kA peak)	Icm	77	77	52.5	77	105	105	143		
Rated impulse withstand voltage of main circuit (kV), Uimp		8	8	8	8	8	8	8		
Rated impulse withstand voltage of aux. circuit (kV), Uimp		4	4	4	4	4	4	4		
Typical opening time	msec	40	40	40	40	40	40	40		
Typical closing time	msec	60	60	60	60	60	60	60		
Utilization category		B	B	B	B	B	B	B		
Suitability for isolation		✓	✓	✓	✓	✓	✓	✓		
Versions	Fixed	✓	✓	✓	✓		✓▲			
	Drawout					✓	✓	✓		
	Manual	✓	✓	✓	✓	✓	✓	✓		
	Electrical						✓	✓		
CT taps for Thermo-Magnetic (DN1), Solid State (SR15, SR15G) Releases	Amps	320,400	400,500,630		400,500,640,800					
CT taps for Microprocessor based (SR21, SR21E & SR61C) Releases	Amps	---	---		---	---	800			
Electrical & Mechanical life (Operating Cycles)**		15,000	15,000		15,000	20,000	20,000	20,000		
Dimensions (mm)	Fixed 	H	385	385	385	385	NA	394	NA	
		W	3 pole	331.2	331.2	331.2		331.2		378
			4 pole	NA	NA	NA		NA		466
		D	447	447	447	447		431		
	Drawout 	H	NA				468	468	468	
		W	3pole	NA				399	399	399
			4 pole	NA				NA	487	487
		D	NA				587	587	587	

NA - Not Available

* Please consult us for applications at higher operational voltages upto 1000V and dc voltages.

** Electrical life = Mechanical life, however arcing contacts need to be replaced depending upon wear. Arcing contacts are readily available as spares & easily replaceable at site.

▲ Available in CN-CS version also.


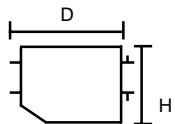
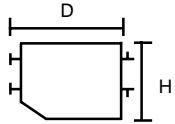
Note: 1) CN-CS400, CN-CS630, 630E, 800E & 1000E ACB are available only with DN1 release.

2) A Choice of straight horizontal rear, straight vertical rear, flat rear and front terminal orientations in all drawout ACBs.

3) Data of Icw rating for 3 sec is available on request.


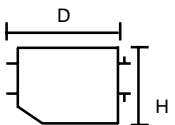
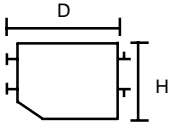
TECHNICAL DATA

1

Rating (A)		1000				1250				
Type Designation		CN-CS..E	S	C	H	CN-CS..E	S	C	H	
Rated Current (A) 40°C	In	1000	1000	1000	1000	1250	1250	1250	1250	
Rated Operational Voltage (V) 50/60Hz	Ue*	415	415	415	415	415	415	415	415	
Rated insulation voltage (V), 50/60Hz	Ui	690	1000	1000	1000	1000	1000	1000	1000	
No. of poles		3	3	3/4	3/4	3	3	3/4	3/4	
Rated ultimate short circuit breaking capacity 50/60Hz (kA rms)	Icu	36.6	50	50	65	50	50	50	65	
Rated service short circuit breaking capacity 50/60Hz (kA rms)	Ics	36.6	38	50	65	50	38	50	65	
Rated short time withstand capacity 50/60Hz (kA rms)	Icw	0.5sec 1sec	36.6 25	38 38	50 50	65 65	50 50	38 38	50 50	
Rated making capacity 50/60Hz (kA peak)	Icm	77	105	105	143	105	105	105	143	
Rated impulse withstand voltage of main circuit (kV), Uimp		8	8	8	8	8	8	8	8	
Rated impulse withstand voltage of aux. circuit (kV), Uimp		4	4	4	4	4	4	4	4	
Typical opening time	msec	40	40	40	40	40	40	40	40	
Typical closing time	msec	60	60	60	60	60	60	60	60	
Utilization category		B	B	B	B	B	B	B	B	
Suitability for isolation		✓	✓	✓	✓	✓	✓	✓	✓	
Versions	Fixed	✓		✓▲		✓		✓		
	Drawout		✓	✓	✓		✓	✓	✓	
	Manual	✓	✓	✓	✓	✓	✓	✓	✓	
	Electrical			✓	✓			✓	✓	
CT taps for Thermo-Magnetic (DN1), Solid State (SR15, SR15G) Releases		Amps	800, 1000				1000, 1250			
CT taps for Microprocessor based (SR21, SR21E & SR61C) Releases		Amps	---	---	1000	---	---	1250		
Electrical & Mechanical life (Operating Cycles)**			15,000	20,000	20,000	20,000	20,000	20,000	20,000	
Dimensions (mm)	Fixed 	H	385		394		385		394	
		W	3 pole	331.2	NA	378	NA	378	NA	
			4 pole	NA		466		466		
		D	447		431		447		431	
		Drawout 	H		468	468	468	NA	468	468
	W		3 pole	399	399	399	399		399	399
			4 pole	NA	487	487	NA		487	487
	D			587	587	587	587		587	587

TECHNICAL DATA

1

Rating (A)		1600			2000			2500				
Type Designation		S	C	H	E	C	H	C	H			
Rated Current (A) 40°C	In	1600	1600	1600	2000	2000	2000	2500	2500			
Rated Operational Voltage (V) 50/60Hz	Ue*	415	415	415	415	415	415	415	415			
Rated insulation voltage (V), 50/60Hz	Ui	1000	1000	1000	1000	1000	1000	1000	1000			
No. of poles		3	3/4	3/4	3	3/4	3/4	3/4	3/4			
Rated ultimate short circuit breaking capacity 50/60Hz (kA rms)	Icu	50	50	65	50	55	75	60	75			
Rated service short circuit breaking capacity 50/60Hz (kA rms)	Ics	38	50	65	50	55	75	60	75			
Rated short time withstand capacity 50/60Hz (kA rms)	Icw	0.5sec	38	50	65	50	55	75	60			
		1sec	38	50	65	50	55	75	60			
Rated making capacity 50/60Hz (kA peak)	Icm	380/415/500V	105	105	143	105	121	165	132			
Rated impulse withstand voltage of main circuit (kV), Uimp			8	8	8	8	8	8	8			
Rated impulse withstand voltage of aux. circuit (kV), Uimp			4	4	4	4	4	4	4			
Typical opening time	msec		40	40	40	40	40	40	40			
Typical closing time	msec		60	60	60	60	60	60	60			
Utilization category			B	B	B	B	B	B	B			
Suitability for isolation			✓	✓	✓	✓	✓	✓	✓			
Versions	Fixed			✓		✓	✓		✓			
	Drawout		✓	✓	✓		✓	✓	✓			
	Manual		✓	✓	✓	✓	✓	✓	✓			
	Electrical			✓	✓		✓	✓	✓			
CT taps for Thermo-Magnetic (DN1), Solid State (SR15, SR15G) Releases		Amps	1250,1600			1000,1250,1600,2000			2000,2500			
CT taps for Microprocessor based (SR21, SR21E & SR61C) Releases		Amps	---	1600			---	2000		2500		
Electrical & Mechanical life (Operating Cycles)**			20,000	20,000	20,000	20,000	20,000	20,000	20,000			
Dimensions (mm)	Fixed		H			394		385	394		394	
			W	3 pole	NA	378	NA	378	534	NA	534	NA
				4 pole	NA	466	NA	NA	680	NA	680	NA
	D			431		447	431		431			
	Drawout		H		468	468	468	NA	468	468	468	468
			W	3pole	399	399	399		555	555	555	555
4 pole				NA	487	487	701		701	701	701	
D		587	587	587	587	587	587	587				

NA - Not Available

* Please consult us for applications at higher operational voltages upto 1000V and dc voltages.

** Electrical life = Mechanical life, however arcing contacts need to be replaced depending upon wear. Arcing contacts are readily available as spares & easily replaceable at site.


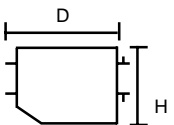
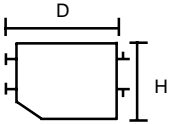
▲ Available in CN-CS version also.

Note: 1) A Choice of straight horizontal rear, straight vertical rear, flat rear and front terminal orientations in all drawout ACBs.

2) Data of Icw rating for 3 sec is available on request.

TECHNICAL DATA

1


Rating (A)		3200		4000		5000	6300			
Type Designation		D	H1	C	H	C	C			
Rated Current (A) 40°C	In	3200	3200	4000	4000	5000	6300			
Rated Operational Voltage (V) 50/60Hz	Ue*	415	415	415	415	415	415			
Rated insulation voltage (V), 50/60Hz	Ui	1000	1000	1000	1000	1000	1000			
No. of poles		3/4	3	3/4	3	3	3			
Rated ultimate short circuit breaking capacity 50/60Hz (kA rms)	Icu	70	100	70	100	85	85			
Rated service short circuit breaking capacity 50/60Hz (kA rms)	Ics	70	100	70	100	85	85			
Rated short time withstand capacity 50/60Hz (kA rms)	Icw	0.5sec 1sec	70 100	70 100	100 100	— 85	— 85			
Rated making capacity 50/60Hz (kA peak)	Icm	154	220	154	220	187	187			
Rated impulse withstand voltage of main circuit (kV), Uimp		8	8	8	8	8	8			
Rated impulse withstand voltage of aux. circuit (kV), Uimp		4	4	4	4	4	4			
Typical opening time	msec	40	40	40	40	40	40			
Typical closing time	msec	60	60	60	60	60	60			
Utilization category		B	B	B	B	B	B			
Suitability for isolation		✓	✓	✓	✓	✓	✓			
Versions	Fixed	✓		✓						
	Drawout	✓	✓	✓	✓	✓	✓			
	Manual	✓	✓	✓	✓	✓	✓			
	Electrical	✓	✓	✓	✓	✓	✓			
CT taps for Thermo-Magnetic (DN1), Solid State (SR15, SR15G) Releases	Amps	1600,2000,2500,3200		2000,2500,3200,4000		—	—			
CT taps for Microprocessor based (SR21, SR21E & SR61C) Releases	Amps	3200		4000		5000	6300			
Electrical & Mechanical life (Operating Cycles)**		10,000	10,000	5,000	5,000	5,000	5,000			
Dimensions (mm)	Fixed		H	509	NA	509	NA	NA		
			W	3 pole		688			688	
				4 pole		890			890	
			D	518		518				
	Drawout		H	583	468	583	468	583	583	
			W	3pole	711	701	711	701	913	913
				4 pole	913	NA	913	NA	NA	NA
			D	652	607	678	607	691	691	

PROTECTION


MICROPROCESSOR BASED

1

SR21



SR21E



SALIENT FEATURES OF RELEASES TYPE SR21 & SR21E

- ◆ Incorporate 8-bit microprocessor.
- ◆ True RMS measurement.
- ◆ True hot and cold characteristics.
- ◆ Thermal memory takes care of residual heat in case of repeat overloads. Thermal memory can be bypassed, if required.
- ◆ Comprehensive protection functions : long time, short time, instantaneous and ground fault.
- ◆ Reliable tripping by direct operation on trip mechanism of the breaker.
- ◆ No external power supply.
- ◆ Built-in electromechanical fault status indicators in SR21 release.
- ◆ Zone selective interlocking on short circuit and ground fault.
- ◆ Self-diagnostic and self-correcting watchdog provision.
- ◆ SRT-2 Test kit available for verifying the release operation.
- ◆ Suitable for 50/60 Hz systems.
- ◆ Annunciation module available for remote indication of each type of fault.

Note : 3 phase, 4 wire system, Neutral CT for earthfault is required.

Type of Protection	Setting Ranges	
	Pick-up current	Time Delay
Long Time	$I_r - 0.5$ to 1.0 times I_n Steps : 0.50, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.9, 0.95, 1.00	0.2 to 30 sec. at 6 I_r Steps : 0.2, 0.5, 1, 1.5, 2, 3, 5, 6, 12, 17, 30s
Short Time	2 to 10 times I_r Steps : 2, 3, 4, 5, 6, 7, 8, 9, 10	20ms to 600 ms Steps : 20, 60, 100, 160, 200, 260, 300, 400, 500, 600 ms
Instantaneous	2 to 16 times I_n Steps : 2, 3, 4, 6, 8, 10, 12, 14, 16 One position as infinity	
Ground Fault	0.2 to 0.6 times I_n Steps : 0.2, 0.3, 0.4, 0.5, 0.6	100 to 400 ms Steps : 100, 200, 300, 400 ms & infinity

Note: Positioning the knob to infinity position will suppress the corresponding protection.

I_n is the nominal current which is the CT tap value.

I_r is the rated current which is the setting of pick-up current for long time in the release.

E.g. 1000A CT has taps of 800A & 1000A and if 800A tap is selected, then the nominal current (I_n) is 800A.

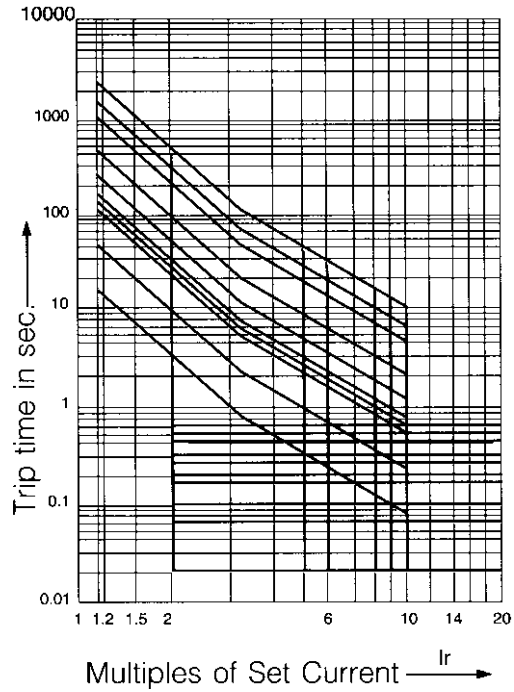
If the long time pick-up knob is at 0.5, then the rated current (I_r) is $0.5 \times 800A = 400A$.

PROTECTION

MICROPROCESSOR BASED

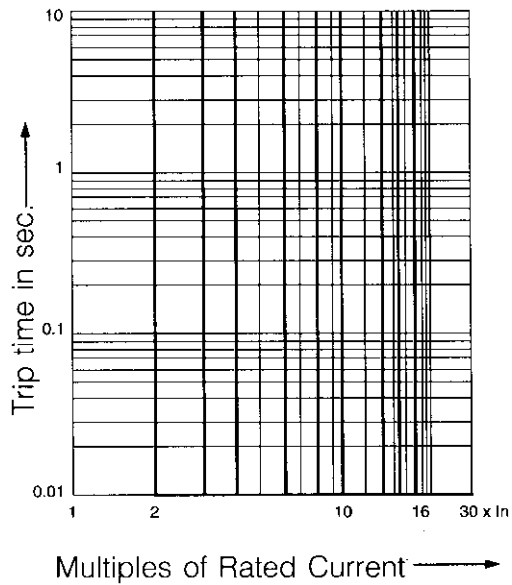
1

CHARACTERISTIC CURVE



Long Time & Short time

SR21/ 21E



Instantaneous

SR21/ 21E

PROTECTION

COMPUTER COMPATIBLE & COMMUNICATION CAPABLE



SALIENT FEATURES OF RELEASE TYPE SR61C

- ◆ Display of rms currents (Phase, Highest among phases) and Trip data by 4-seven segment LEDs.
- ◆ Non-volatile memory for Storage and display of trip history for last 5 tripping operations.
- ◆ Communication with PC and breaker control through RS485 port.
- ◆ Serial communication by MODBUS-RTU protocol.
- ◆ Separate indication for Power-ON and Programming mode or fault.
- ◆ Individual fault indication by LEDs. LED indication can be reset by the Reset button on the release. However, resetting is not possible when fault is present.
- ◆ Direct tripping of breaker - Reliable and Minimum tripping time.
- ◆ Blocking function to inhibit any of the trip functions to achieve intelligent discrimination.
- ◆ Protection against failure of breaker to trip within set time delay (Range : 0.05 s to 0.25 s in steps of 0.01 s)
- ◆ Automatic doubling feature to prevent nuisance tripping during motor starting. Can be Enabled or Disabled.
- ◆ Protection settings can be changed through computer while breaker is carrying current.
- ◆ 5 Output relays
 - R1 Used for trip output (Can be programmed in manual or auto reset mode)
 - R2 For Instantaneous output
 - R3 For opening the breaker
 - R4 For closing the breaker
 - R5 For indication of internal error / program error / auxiliary supply failure
- ◆ Auxiliary power supply required : 110V to 240V ac/dc $\pm 10\%$
Auxiliary power supply burden < 10 VA

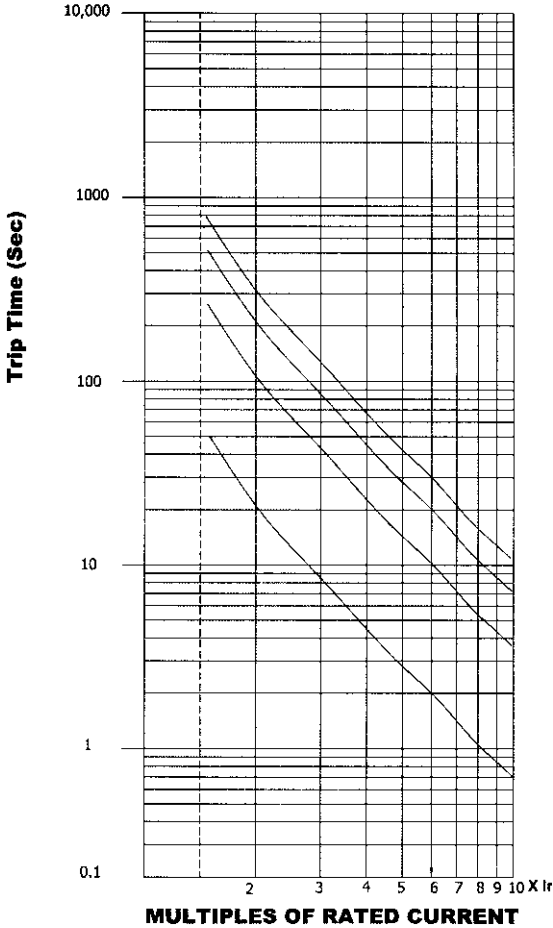
Type of Protection	Setting Ranges	
	Pick-up current	Time Delay
Long Time	$I_r - 0.5$ to 1.0 times I_n Steps : 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.9, 0.95, 1.00	2 to 30 sec. at 6 times I_r Steps : 2, 10, 20, 30 sec
Short Time	2 to 16 times I_n Steps : 2, 3, 4, 6, 8, 10, 12, 14, 16	Inst. to 400 ms Steps : Inst., 100, 200, 300, 400 ms
Ground Fault	0.2 to 0.6 times I_n Steps : 0.2, 0.3, 0.4, 0.5, 0.6	100 to 400 ms Steps : 100, 200, 300, 400 ms & Disable

PROTECTION

COMPUTER COMPATIBLE & COMMUNICATION CAPABLE

1

CHARACTERISTIC CURVE



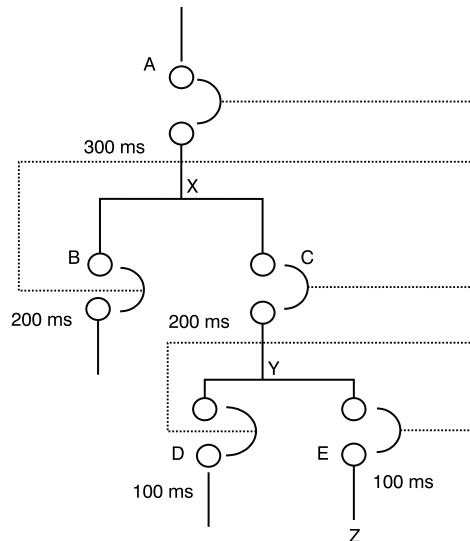
Long Time
SR61C

ZONE SELECTIVE INTERLOCKING

1

Zone Selectivity, applicable to short circuit protection function allows one to obtain shorter trip times for the circuit breaker closest to the fault than in the case of time based selectivity. The word zone is used to refer to the part of an installation between two circuit breakers in series. Every circuit breaker which detects a fault, communicates this to the circuit breaker upstream using a simple connection wire. The fault zone is the zone immediately downstream of the circuit breaker which detects the fault but does not receive any communication from those downstream. This circuit breaker opens without waiting for the time delay set. All ratings of C-POWER ACBs with SR21/SR21E/SR61C releases allow one to obtain zone selectivity as explained below.

A, B, C, D, and E are breakers with SR21 / SR21E release and are interconnected in cascade as shown. Short time delays are as indicated to achieve discrimination between upstream and downstream breakers. When a fault occurs in zone 'Z', breaker 'E' trips after a delay of 100 ms*, and breakers 'C' and 'A' follow delays of 200 ms* and 300 ms*, respectively, if required. But in case of a fault at 'Y' breaker 'C' trips after a delay of 60 ms*, a default value, instead of 200 ms*. This is because of the communication between releases in circuit breakers 'C' and 'E'. Similarly, a fault in zone 'X' results in breaker 'A' tripping after delay of 60 ms* instead of 300 ms*, thus achieving intelligent discrimination.




This intelligent discrimination is achieved in communication capable release type SR61C by programming its blocking function.

* Breaker opening time additional.

PROTECTION

SOLID STATE

1



SALIENT FEATURES OF RELEASES TYPE SR15 & SR15G

- ◆ Comprehensive protection
 - SR15 - Long Time and Short Time
 - SR15G - Long Time, Short Time and Ground Fault.
- ◆ Wide range of current adjustments possible
- ◆ Choice of three I-t characteristics in long time zone.
- ◆ Hot and cold characteristics.
- ◆ Thermal memory takes care of residual heat in case of repetitive overloads.
- ◆ Reliable tripping by direct operation on the breaker trip shaft.
- ◆ No external power supply required.
- ◆ Power On LED.
- ◆ SRT-1 Test kit is available for verifying the release operation.
- ◆ Suitable for 50/60 Hz systems.
- ◆ Annunciator module available for remote indication of each type of fault.

Setting Ranges of SR15 & SR15G

Type of Protection	Setting Ranges	
	Pick-up current	Time Delay
Long Time	$I_r - 0.5$ to 1.0 times I_n	2.5 sec, 13 sec, 25 sec at 6 Ir
Short Time	2 to 10 times I_n	Inst. to 400 ms.
Ground Fault*	0.2 to 0.5 times I_n	100 to 400 ms.

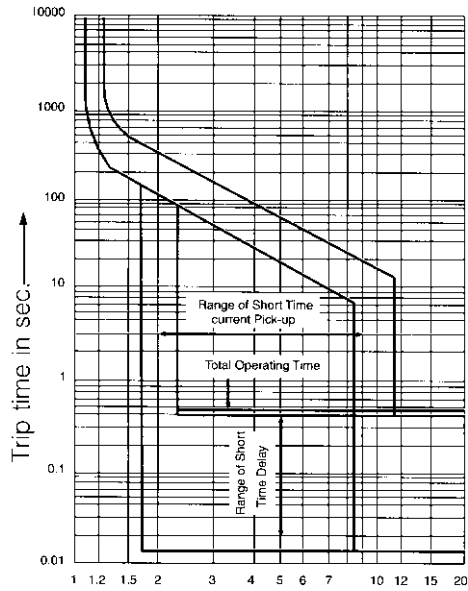
* Available in SR 15G release only.

PROTECTION

SOLID STATE

1

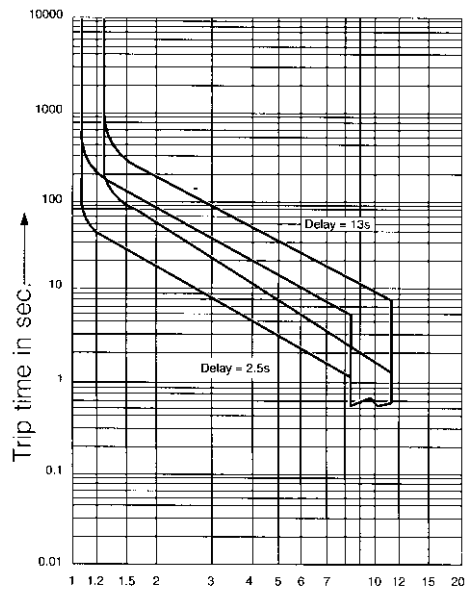
CHARACTERISTIC CURVE



Multiples of current →
 I_r for Long time
 I_n for Short Time

Long Time (delay 25 sec.) and Short time

SR15/15G



Multiples of current →
 I_r for Long time
 I_n for Short Time

Long Time (delay 2.5 sec. and 13 sec.)

SR15/15G

PROTECTION

THERMO-MAGNETIC

1



SALIENT FEATURES OF THERMO MAGNETIC OVERCURRENT RELEASE TYPE DN1

- Comprehensive protection - Long Time & Short Time.
- Sensing through Current transformers.
- Wide range of overload and short circuit setting possible with multi-tap CTs.
- True RMS sensing.
- Each phase can be individually adjusted for overload and short circuit settings.
- Ambient temperature compensated from -5°C to + 50°C.
- Suitable for 50/60Hz systems.
- Mechanical trip test facility available.

Overload Protection

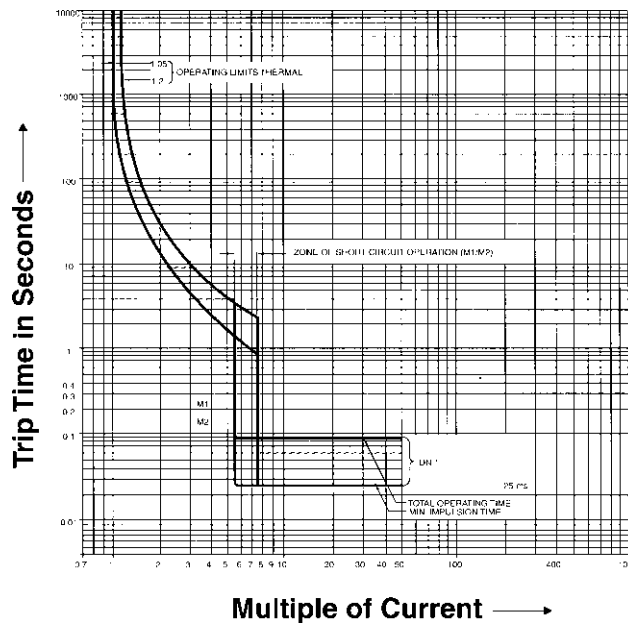
- Provided by bi-metals.
- Continuously adjustable dial settings from 75% to 100% of CT tap.
- Inverse time characteristics on overload.

Short Circuit Protection

- Provided by electromagnets.
- Multiple settings available.
- Fixed minimum impulsion time of 25 ms on short circuit by means of a flywheel to prevent tripping due to transients.

CHARACTERISTICS

I-t Characteristics for DN1 Release



Note :

For exact values of magnetic threshold refer overcurrent release table.

Thermal Characteristics shown above are for dial setting of 1.0 in DN1 overcurrent release.

PROTECTION

OVERCURRENT SETTINGS FOR RELEASE TYPE DN1

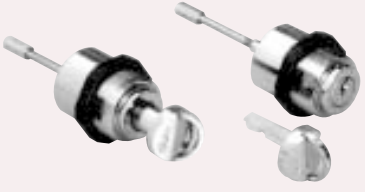

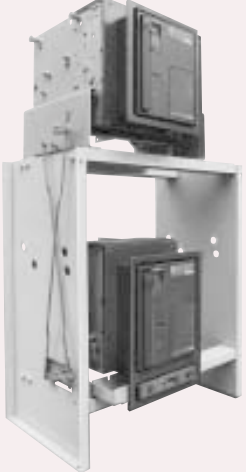
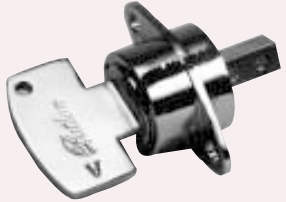
Type Designation	CT	CT Tap (Amps.)	Setting of Magnetic Release (Amps.)		Thermal Current Setting (Amps.)
			DN1 taps		
			M1	M2	
CN-CS 400	400	320	1800	*	240 to 320
		400	2300	*	300 to 400
CN-CS 630 / 630 E	630	400	2500	*	300 to 400
		500	3000	3700	375 to 500
		630	3600	4500	472 to 630
CN-CS 800 E/S/C/H	500	400	2700	*	300 to 400
		500	3200	3900	375 to 500
	800	640	3900	4900	480 to 640
		800	4700	6000	600 to 800
CN-CS 1000 E/S/C/H	1000	800	4700	6000	600 to 800
		1000	5700	7200	750 to 1000
CN-CS 1250 E/S/C/H	1250	1000	5700	7200	750 to 1000
		1250	7000	8900	940 to 1250
CN-CS 1600 S/C/H	1600	1250	7000	8900	940 to 1250
		1600	8800	11500	1200 to 1600
CN-CS 2000 E/C/H	1250	1000	5700	7200	750 to 1000
		1250	7000	8900	940 to 1250
	2000	1600	8800	11500	1200 to 1600
		2000	11000	14000	1500 to 2000
CN-CS 2500 C/H	2500	2000	11000	14000	1500 to 2000
		2500	13500	17000	1875 to 2500
CN-CS 3200 D	2000	1600	8500	11500	1200 to 1600
		2000	11500	16000	1500 to 2000
		3200	12500	16500	1500 to 2000
	3200	2000	12500	16500	1500 to 2000
		2500	14000	18000	1875 to 2500
		3200	17000	23000	2400 to 3200
CN-CS 3200 H1	3200	2500	14000	17500	1875 to 2500
		3200	17500	22000	2400 to 3200
CN-CS 4000 C/H	4000	2000	12500	16500	1500 to 2000
		2500	14000	18000	1875 to 2000
		3200	17000	23000	2400 to 3200
		4000	22000	29000	3000 to 4000
Operating Limits			0.8 - 1.2 of setting		1.05 - 1.2 of setting

* Not recommended

ACCESSORIES

LOCKS/INTERLOCKS

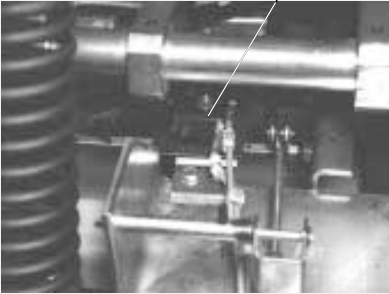
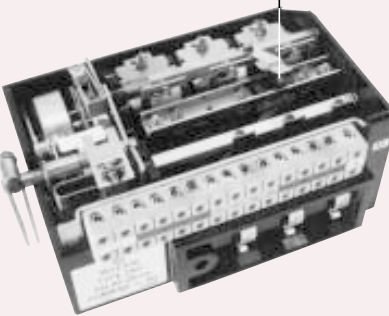

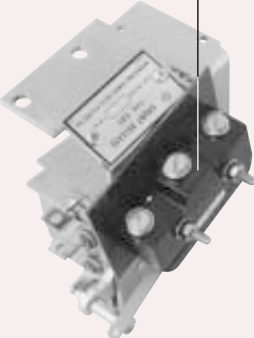
1

Type	Data	Type Catalogue No.
<p>LOCKABLE TRIP PUSH BUTTON (LTPB)</p> 	<p>LTPB is suitable for fixed as well as draw-out manual or electrical ACBs. For interlocking, LTPBs are offered in following combinations :</p> <ul style="list-style-type: none"> • 4 different types of keys i.e. AA, BB, CC and DD suitable for 2 incomers and 1 bus coupler schemes. • Combination of L, M, N, LM and MN locks, which are suitable for three incomer and two bus coupler schemes. • Combination of K, L, M, N, KL, LM, and MN locks, which are suitable for four incomer and three bus coupler schemes. • Combination of J, K, L, M, N, JK, KL, LM and MN locks, which are suitable for five incomer and four bus coupler schemes 	<p>AA SL93148000A BB SL93148000B CC SL93148000C DD SL93148000D</p>
<p>View of the cradle</p>  <p>Door Interlock Racking Interlock Locking in 'Isolated' Position</p>	<p>A) Locking in Isolated Position (LIP) The facility of locking in Isolated position is available in D/O ACBs, both Manual and Electrical Versions. This feature is useful in achieving interlocking between Mains & Standby source. (Normally 2 incomer and one bus coupler)</p> <ul style="list-style-type: none"> • The key is inserted in breaker and unlocked. This ACB can then be racked in to Service position and closed. <p>B) Door Interlock The functioning of door interlock can be explained with reference to two positions</p> <ol style="list-style-type: none"> 1) Door is open and breaker in isolated Position. Door Interlock ensures that unless the door is closed, breaker cannot be racked into test & service position. 2) Door is closed and breaker in service/test position. When the breaker is in service or test position, it is not possible to open the door. <p>C) Racking Interlock This ensures that breaker cannot be racked in/out unless it is in tripped/open condition.</p>	<p>LIP</p> <p>A SL93A46000A B SL93A46000B C SL93A46000C D SL93A46000D</p> <p>DOOR I/L</p> <p>SL931500000</p> <p>RACKING I/L</p> <p>A SL93149000A B SL93149000B C SL93149000C D SL93149000D</p>
	<p>Mechanical Interlock</p> <p>It is possible to provide "Mechanical Interlock" between two breakers of the same or different ratings in vertical or horizontal configurations. Mechanical Interlock is available for ACBs upto 4000A.</p> <p>Mechanical Interlocking for ACBs in vertical configuration can be provided by links or by flexible cables. Same for horizontal configuration can be provided by flexible cables.</p>	<p>*</p>
	<p>Castell-lock</p> <p>Numbered Castell-lock can also be mounted on C-Power ACBs. This can be used to Inter-lock with other products such as S-D-F units, MCCBs etc. Castell-lock is available only for manual ACBs.</p>	<p>*</p>

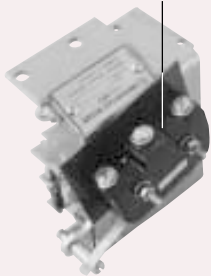

* Available on request as special ACBs

ACCESSORIES

ACB tripping indication available for the following:

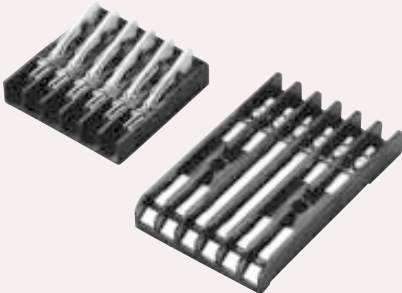
Type	Data	Catalogue No.
	<p>Common indication for overload and short circuit.</p> <ul style="list-style-type: none"> • Available for release type DN1 as an option and for releases type SR15/SR15G/ SR21/SR21E/SR61C as standard. • Provided by microswitch C1 fitted inside the ACB. 	SL927040000
	<p>Separate indication for overload and short circuit.</p> <ul style="list-style-type: none"> • For release type DN1, this is provided by microswitches C1 & C2 (C2 fitted inside release.) • Available through fault indicators in SR21 and SR61C releases as standard feature. 	SL927050000
<p>AN1 - ANNUNCIATOR MODULE</p> 	<p>Remote indication for overload and short circuit.</p> <ul style="list-style-type: none"> • Individual fault indication provided by three separate LEDs for <ul style="list-style-type: none"> - Long time fault - Short time/Instantaneous fault - Ground fault • Can be used with releases type SR15G/SR21/SR21E • One potential free contact rated 5A at 230Vac available for each type of fault • Flush mounting on panel • Requires operating voltage : 240V ac/110V dc/220 Vdc. Other voltages available on request 	EF 981140000
	<p>Indication for shunt release operation</p> <ul style="list-style-type: none"> • Provided by microswitch C5 fitted on the shunt release. 	SL927030000

ACCESSORIES

Type	Data	Catalogue No.
 <p>C3</p>	<p>Indication for under voltage release operation</p> <ul style="list-style-type: none"> • Provided by microswitch C3 fitted on the undervoltage release. 	SL927030000
 <p>C8 C6 C7 C9</p>	<p>Microswitches for position Indication</p> <ul style="list-style-type: none"> • Electrical indication available through microswitches. • Two microswitches with one changeover contact for <ul style="list-style-type: none"> i) Service (C6 & C7) ii) Test or Isolated position (C8 & C9) • In case of electrical ACB, a service position microswitch is always fitted on the left side. This prevents remote closing of ACB in 'Test' Position. 	<p>SERVICE</p> <p>(R) SL931420000 (L) SL931430000</p> <p>TEST/ISOLATED</p> <p>(R) SL931440000 (L) SL931450000</p>




Microswitch Rating

Type	Rated voltage (V)	Rated current (A)
C2	125 ac 250 ac 30 dc	0.5 2 2
C1,C3 C5,C6 C7, C8, C12	125-250 ac 415 ac 30 dc 110 dc 220 dc	10 5 8 0.5 0.2

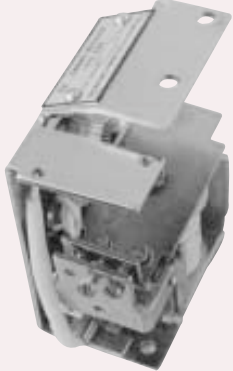
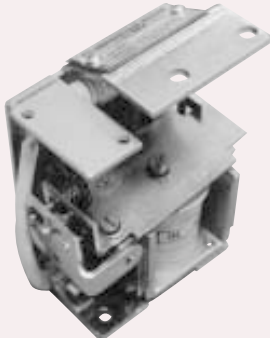
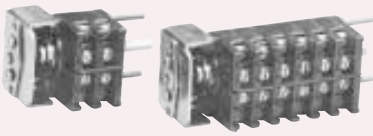
	<p>Secondary Isolating Contacts (SIC)</p> <ul style="list-style-type: none"> • Self aligned, spring loaded, fully drawout type. • Required for control circuit connections. • Maximum four blocks, each of six contacts. • The contacts are rated at 16A, 500V AC. • Programmable for service or Test Positions of ACB 	<p>MOVING-SIC SL927010000</p> <p>FIX-SIC SL938660000</p>
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ACCESSORIES

1

Type	Data	Catalogue No.
<p>OPERATION COUNTER</p> 	<ul style="list-style-type: none"> Operates mechanically. Displays total number of breaker operations cycles. 	<p>XM 810630000</p>
<p>SRT - 2 for SR21/SR21E releases</p>  <p>SRT - 1 for SR15/SR15G releases</p> 	<p>Test kits for checking functions of releases</p> <ul style="list-style-type: none"> Test kits require control supply for their operation Releases should never be tested when breaker is carrying current 	<p>SRT1 ST240450000</p> <p>SRT2 ST231300000</p>

ACCESSORIES

Type	Data	Technical Data	Catalogue No.													
<p>SHUNT RELEASE</p> 	<ul style="list-style-type: none"> For remote tripping of the breaker. Shunt release coil is short time rated and is disconnected from the circuit by an auxiliary contact when the ACB trips (Refer the wiring diagram), <p>Two types available:</p> <ul style="list-style-type: none"> EA for dc application EA1 for ac application 	<table border="1"> <thead> <tr> <th>Type of Release</th> <th>Nominal Voltage Uc(V) 50Hz</th> <th>Power Consumption at pick up</th> <th>Operating Limits</th> </tr> </thead> <tbody> <tr> <td>EA1</td> <td>240 ac 415 ac</td> <td>800 VA 800 VA</td> <td>10-130% Uc</td> </tr> <tr> <td>EA</td> <td>24V dc 48V dc 110 dc 220 dc</td> <td>32 W 125 W 45 W 30 W</td> <td>65-130% Uc</td> </tr> </tbody> </table> <p>Note : Other voltages available on request</p>	Type of Release	Nominal Voltage Uc(V) 50Hz	Power Consumption at pick up	Operating Limits	EA1	240 ac 415 ac	800 VA 800 VA	10-130% Uc	EA	24V dc 48V dc 110 dc 220 dc	32 W 125 W 45 W 30 W	65-130% Uc	<p>110Vdc -SL927180100 220Vdc -SL927180200 24/48Vdc-SL927180400 240Vac -SL927180BOO 415Vac -SL927180DOO</p>	
Type of Release	Nominal Voltage Uc(V) 50Hz	Power Consumption at pick up	Operating Limits													
EA1	240 ac 415 ac	800 VA 800 VA	10-130% Uc													
EA	24V dc 48V dc 110 dc 220 dc	32 W 125 W 45 W 30 W	65-130% Uc													
<p>UNDER VOLTAGE RELEASE</p> 	<p>Two types available :</p> <ul style="list-style-type: none"> Type MV with no intentional time delay. Type MVR With fixed time delay of 3 ± 1.5 sec. to prevent nuisance tripping against momentary voltage dips. <p>Note : When undervoltage release is provided, the ACB can be closed only when supply is available to the undervoltage release.</p>	<table border="1"> <tbody> <tr> <td>Nominal voltage (Uc)</td> <td>240V & 415V : 50Hz 220V & 415V : 60Hz</td> </tr> <tr> <td>Pick up (V)</td> <td>80% Uc</td> </tr> <tr> <td>Drop off (V)</td> <td>35-65% Uc</td> </tr> <tr> <td>VA Consumption</td> <td>Pick up - 23 VA Hold on - 10 VA</td> </tr> <tr> <td>Watt loss</td> <td>6 W</td> </tr> </tbody> </table>	Nominal voltage (Uc)	240V & 415V : 50Hz 220V & 415V : 60Hz	Pick up (V)	80% Uc	Drop off (V)	35-65% Uc	VA Consumption	Pick up - 23 VA Hold on - 10 VA	Watt loss	6 W	<p>MV 240Vac-SL92720BOOO 415Vac-SL92720DOOO</p> <p>MVR 240Vac-SL92719BOOO 415Vac-SL92719DOOO</p>			
Nominal voltage (Uc)	240V & 415V : 50Hz 220V & 415V : 60Hz															
Pick up (V)	80% Uc															
Drop off (V)	35-65% Uc															
VA Consumption	Pick up - 23 VA Hold on - 10 VA															
Watt loss	6 W															
<p>AUXILIARY CONTACTS</p> 	<ul style="list-style-type: none"> Two combinations available. 2 NO + 2 NC 6 NO + 6 NC 	<table border="1"> <thead> <tr> <th>Electrical Circuit</th> <th>Voltage (V)</th> <th>Rated current (A)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Resistive</td> <td>24 to 415 ac</td> <td>16</td> </tr> <tr> <td>250 V dc</td> <td>1.2</td> </tr> <tr> <td rowspan="2">Non-resistive</td> <td>24 to 415 ac</td> <td>16</td> </tr> <tr> <td>250 V dc</td> <td>1.0#</td> </tr> </tbody> </table> <p># L/R = 15ms with two contacts in series</p>	Electrical Circuit	Voltage (V)	Rated current (A)	Resistive	24 to 415 ac	16	250 V dc	1.2	Non-resistive	24 to 415 ac	16	250 V dc	1.0#	<p>FOR RATINGS FROM 800A TO 2500A</p> <p>2NO+2NC: SL927650000</p> <p>6NO+6NC: SL927670000</p> <p>FOR RATINGS FROM 3200A TO 6300A</p> <p>2NO+2NC: SL927660000</p> <p>6NO+6NC: SL927680000</p>
Electrical Circuit	Voltage (V)	Rated current (A)														
Resistive	24 to 415 ac	16														
	250 V dc	1.2														
Non-resistive	24 to 415 ac	16														
	250 V dc	1.0#														

ORDERING INFORMATION FOR STANDARD ACBs

1

All Air Circuit Breakers conform to IS 13947-2 and IEC 60947-2. The items listed under column III are standard ACBs with thermo-magnetic release DN1, CTs & auto reset. The standard manually operated fixed breakers come equipped with 6NO + 6NC auxiliary contacts (except for 400 & 630A Manually Operated Fixed Breakers). The standard Manual Drawout breakers come equipped with 6NO + 6NC auxiliary contacts & 18 way secondary isolating contacts. The standard Electrical Drawout breakers come equipped with 6NO + 6NC auxiliary contacts, 240V ac or 220 dc shunt release, service position microswitch, 240V ac or 220V dc motor & 24 way secondary isolating contacts. ACBs are suitable for operational voltage of 415V ac.

The items listed under column IV are ACBs as in column III but without protection release.

The items listed under column V are ACBs as in column III but with solid state analog release SR15G in place of DN1. Column VI indicate 4 pole ACBs with DN1 release.

I		II		III		IV		V		VI	
DESCRIPTION		With Thermo-Magnetic Release (3 Pole)		Without Protection Release (3 Pole)		With Solid State Release (3 Pole)		With Thermo-Magnetic Release (4 Pole)			
		Catalogue No.		Catalogue No.		Catalogue No.		Catalogue No.			
400 A	MF	SL 929880000									
630 A	MF	SL 928800000									
800 A	MF	SL 926780000		*		*		*			
	EF	SL 930210000		*		*		*			
	MDO	SL 930610000		SL935610000		SL 935810000		ST 250310000			
	EDO (AC)	SL 930810000		SL938610000		SL 936810000		ST 250410000			
	EDO(DC)	SL 931010000		*		*		*			
1000 A	MF	SL 926790000		*		*		*			
	EF	SL 930220000		*		*		*			
	MDO	SL 930620000		SL935620000		SL 935820000		ST 250320000			
	EDO (AC)	SL 930820000		SL938620000		SL 936820000		ST 250420000			
	EDO(DC)	SL 931020000		*		*		*			
1250 A	MF	SL 930030000		*		*		*			
	EF	SL 930230000		*		*		*			
	MDO	SL 930630000		SL935630000		SL 935830000		ST 250330000			
	EDO (AC)	SL 930830000		SL938630000		SL 936830000		ST 250430000			
	EDO(DC)	SL 931030000		*		*		*			
1600 A	MF	SL 930040000		*		*		*			
	EF	SL 930240000		*		*		*			
	MDO	SL 304140000		SL935640000		SL 935840000		ST 250340000			
	EDO (AC)	SL 304150000		SL938640000		SL 936840000		ST 250440000			
	EDO(DC)	SL 931040000		*		*		*			
2000 A	MF	SL 930050000		*		*		*			
	EF	SL 930250000		*		*		*			
	MDO	SL 930650000		SL935650000		SL 935850000		ST 250350000			
	EDO (AC)	SL 930850000		SL938650000		SL 936850000		ST 250450000			
	EDO(DC)	SL 931050000		*		*		*			
2500 A	MF	SL 930060000		*		*		*			
	EF	SL 930260000		*		*		*			
	MDO	SL 930660000		SL935660000		SL 935860000		ST 250360000			
	EDO (AC)	SL 930860000		SL938660000		SL 936860000		ST 250460000			
	EDO(DC)	SL 931060000		*		*		*			
3200 A	MF	*		*		*		*			
	EF	*		*		*		*			
	MDO	SL 930700000		SL935700000		SL 935900000		SL 912890000			
	EDO (AC)	SL 930900000		SL938700000		SL 936900000		SL 912900000			
	EDO(DC)	SL 931100000		*		*		SL 912910000			
4000 A	MF	*		*		*		*			
	EF	*		*		*		*			
	MDO	SL 930680000		SL935680000		SL 935880000		SL 939830000			
	EDO (AC)	SL 930880000		SL938680000		SL 936880000		SL 939810000			
	EDO(DC)	SL 931080000		*		*		SL 939820000			

* Available on request as special ACBs

ORDERING INFORMATION FOR SPECIAL ACBs

1

Rating	<input type="checkbox"/> 400	<input type="checkbox"/> 630	<input type="checkbox"/> 800	<input type="checkbox"/> 1000	<input type="checkbox"/> 1250	<input type="checkbox"/> 1600
	<input type="checkbox"/> 2000	<input type="checkbox"/> 2500	<input type="checkbox"/> 3200	<input type="checkbox"/> 4000	<input type="checkbox"/> 5000	<input type="checkbox"/> 6300
Rated Operational Voltage	<input type="checkbox"/> 415Vac	<input type="checkbox"/> 660Vac	<input type="checkbox"/> Other voltages, please specify			
Type*	<input type="checkbox"/> E	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> H	<input type="checkbox"/> H1	
	(Note: D & H1 type of ACBs are available only for 3200A ACB)					
No. of Poles	<input type="checkbox"/> 3	<input type="checkbox"/> 4				
Versions	<input type="checkbox"/> Fixed	<input type="checkbox"/> Drawout				
Type of Closing	<input type="checkbox"/> Independent Manual	<input type="checkbox"/> Stored energy type Manual	<input type="checkbox"/> Stored energy type (Motor operated)			
	Motor Voltage					
	<input type="checkbox"/> 110V AC 50/60 Hz					
	<input type="checkbox"/> 240V AC 50/60 Hz					
	<input type="checkbox"/> 110V dc					
	<input type="checkbox"/> 220V dc					
	Closing Electromagnet					
	<input type="checkbox"/> 110V 50 Hz					
	<input type="checkbox"/> 240V 50 Hz					
	<input type="checkbox"/> 110V dc					
	<input type="checkbox"/> 220V dc					
	<input type="checkbox"/> Other Voltages, Please specify					
Wiring Scheme	<input type="checkbox"/> 3 phase, 3 wire	<input type="checkbox"/> 3 phase, 4 wire				
Type of Protection	<input type="checkbox"/> SR 61C					
	<input type="checkbox"/> SR 21	<input type="checkbox"/> SR 21E				
	<input type="checkbox"/> SR 15G	<input type="checkbox"/> SR 15				
	<input type="checkbox"/> DN1					
Type of Reset	<input type="checkbox"/> Manual	<input type="checkbox"/> Auto				
Auxillary Contacts	<input type="checkbox"/> 2 NO + NC					
	<input type="checkbox"/> 6 NO + 6 NC					
Voltmetric Release						
Shunt Release	<input type="checkbox"/> EA 24/48V dc					
	<input type="checkbox"/> EA 110V dc					
	<input type="checkbox"/> EA 220V dc					
	<input type="checkbox"/> EA1 240V ac					
	<input type="checkbox"/> EA1 415V ac					
Under Voltage Release	<input type="checkbox"/> MV 240V ac					
	<input type="checkbox"/> MV 415V ac					
	<input type="checkbox"/> MVR 240V ac					
	<input type="checkbox"/> MVR 415V ac					
	(Note: MV release is meant for instantaneous tripping of ACB and MVR release is for tripping the ACB with intentional time delay)					

* Refer Range and Product Data for details.

ORDERING INFORMATION FOR SPECIAL ACBs

1

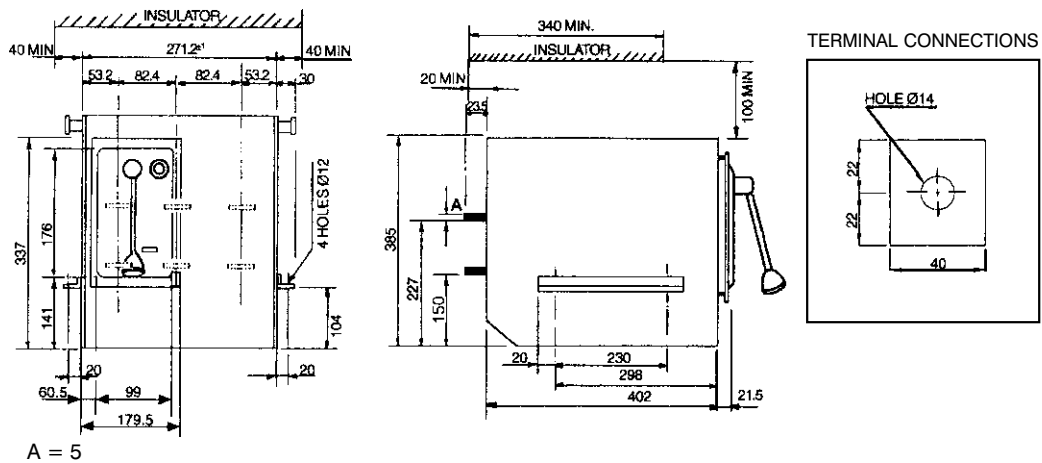
<p>Terminal Orientation*</p>	<input type="checkbox"/> Straight Horizontal <input type="checkbox"/> Straight Vertical <input type="checkbox"/> Front <p>* Standard ACBs mentioned on page 1/20 have flat rear terminals for ratings upto 3200A and straight horizontal for ratings above 3200A</p>
<p>Signalling Microswitches</p>	<input type="checkbox"/> Shunt release operation <input type="checkbox"/> Under voltage release operation <input type="checkbox"/> Electrical Indication of spring charging
<p>Position Microswitches</p> <p>-Service Position</p> <p>-Test/Isolated Position</p>	<input type="checkbox"/> Left <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Right
<p>Accessories</p> <p>-Lockable Trip Push Button</p> <p style="padding-left: 40px;">Type</p> <p style="padding-left: 40px;">OR</p> <p style="padding-left: 40px;">Suitable for</p>	<input type="checkbox"/> AA <input type="checkbox"/> BB <input type="checkbox"/> CC <input type="checkbox"/> DD <input type="checkbox"/> 3 Incomer + 2 Bus Coupler scheme <input type="checkbox"/> 4 Incomer + 3 Bus coupler scheme <input type="checkbox"/> 5 Incomer + 4 Bus coupler scheme
<p>-Mechanical Interlock</p>	<input type="checkbox"/> Through cables for horizontal or vertical configuration of ACBs <input type="checkbox"/> Through links for vertical configuration of ACBs
<p>-Castell lock</p>	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D
<p>-Operation Counter</p>	<input type="checkbox"/>
<p>-ANI Annunciator Module</p>	<input type="checkbox"/>
<p>Accessories for Drawout ACBs</p> <p>-Door Interlock</p>	<input type="checkbox"/>
<p>-Locking in</p> <p style="padding-left: 40px;">Type</p>	<input type="checkbox"/> Any position <input type="checkbox"/> Isolated position <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D
<p>-Racking Interlock</p> <p style="padding-left: 40px;">Type</p>	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D

OVERALL DIMENSIONS - TYPE CN-CS

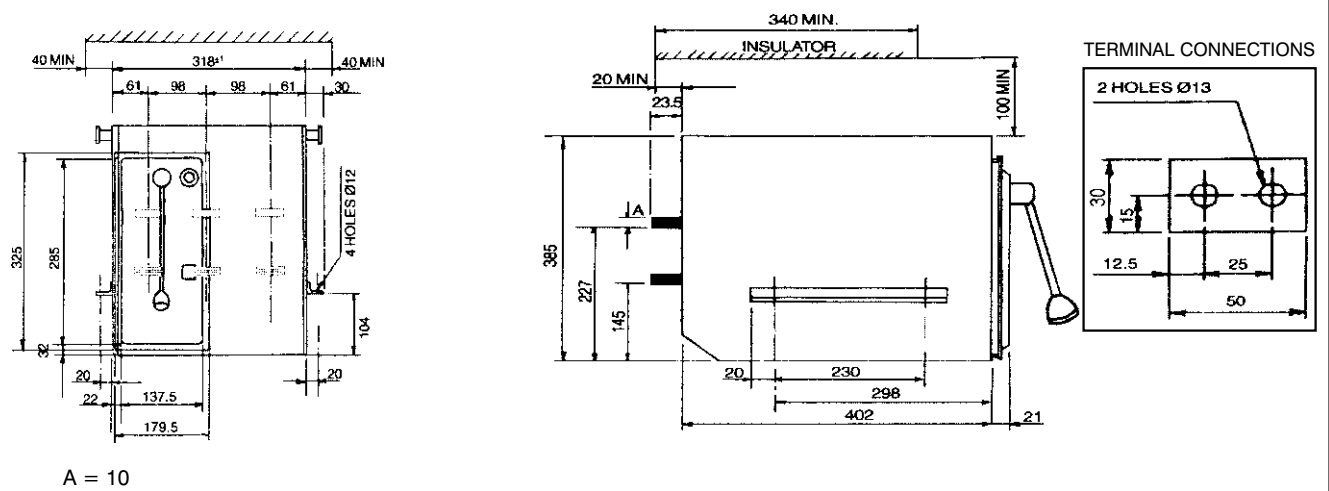
Fixed ACBs

1

For 400 A/630 A 3P



For 800 A/1000 A 3P

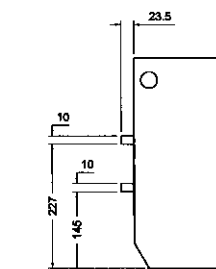
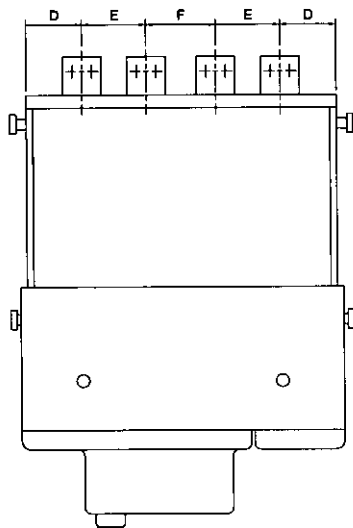
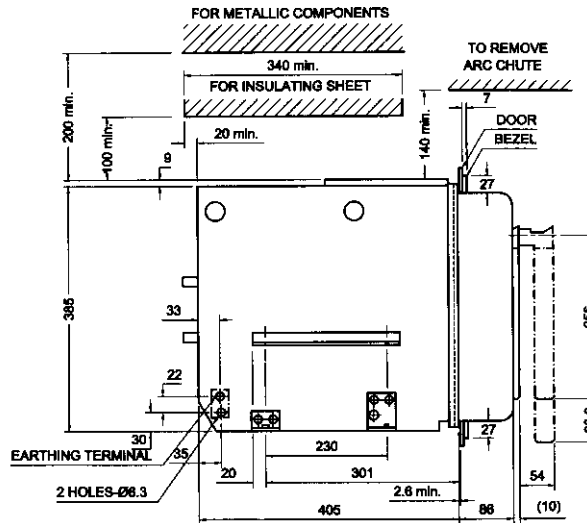
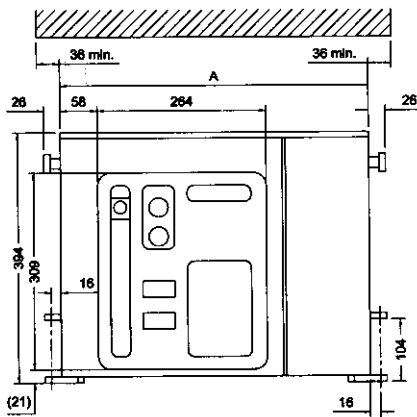


Note : All Dimensions are in mm.

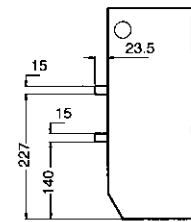
OVERALL DIMENSIONS - TYPE C

Fixed ACBs

For 800 A to 2500 A 3P/4P



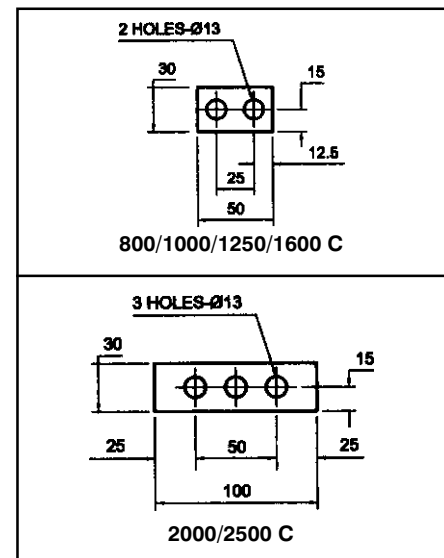
Terminal for 800/1000 C



Terminal for 1250/1600/2000/2500 C

Ratings		Dimensions (mm)			
		A	D	E	F
800/1000A	C 3P	326	57	102	-
1250/1600A	C 3P				
800/1000A	C 4P	414	56	98	98
1250/1600A	C 4P				
2000/2500A	C 3P	482	83	154	-
2000/2500A	C 4P	628	82	150	156

TERMINAL CONNECTIONS



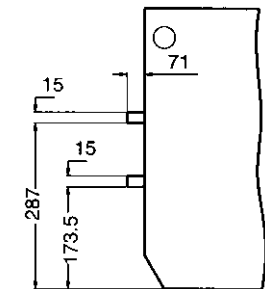
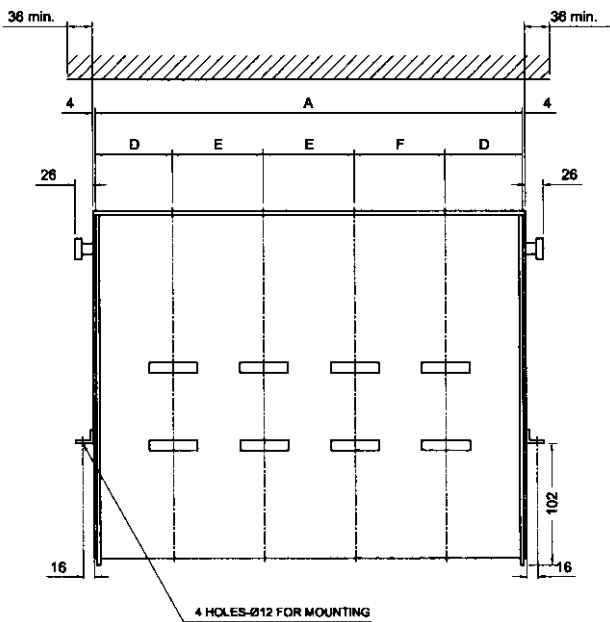
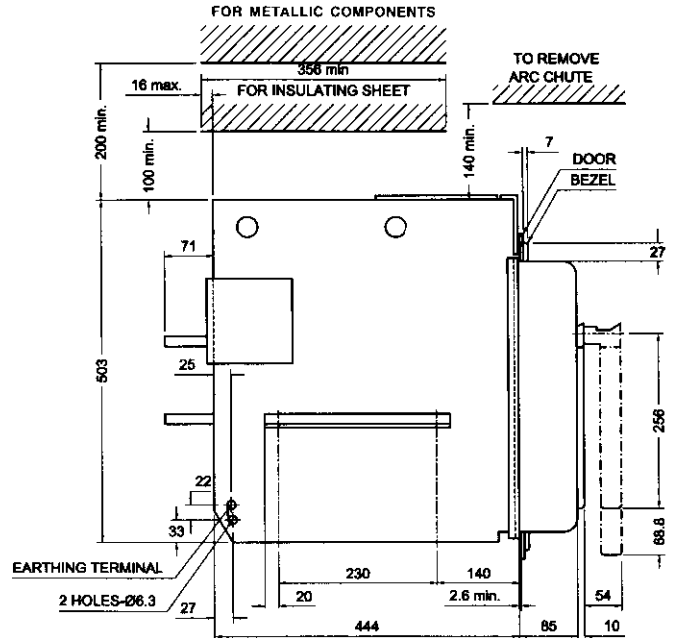
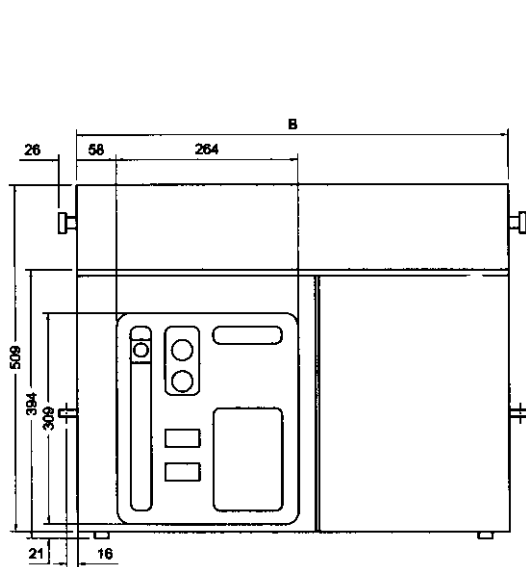
Note : All Dimensions are in mm.

OVERALL DIMENSIONS - TYPE C

Fixed ACBs

1

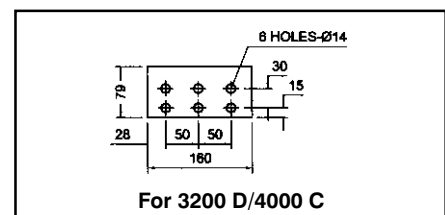
For 3200 D/4000 C 3P/4P



Terminal for 3200 D/4000 C

Ratings	Dimensions (mm)				
	A	B	D	E	F
3200D/4000 C 3P	628	636	112	202	-
3200D/4000 C 4P	830	838	112	202	202

TERMINAL CONNECTIONS



For 3200 D/4000 C

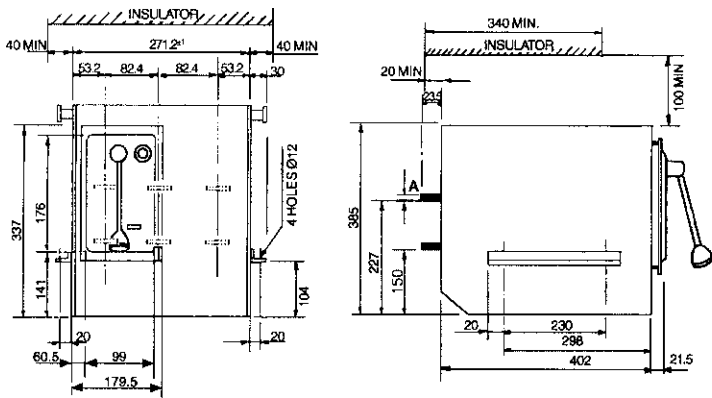
Note : All Dimensions are in mm.

OVERALL DIMENSIONS - TYPE E

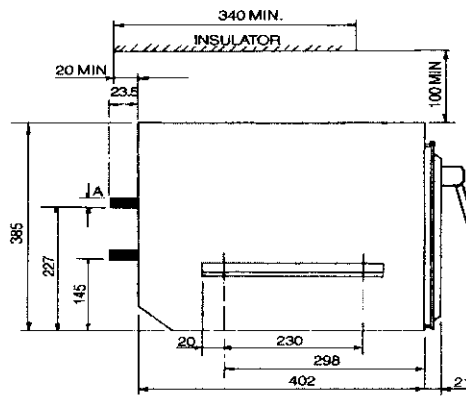
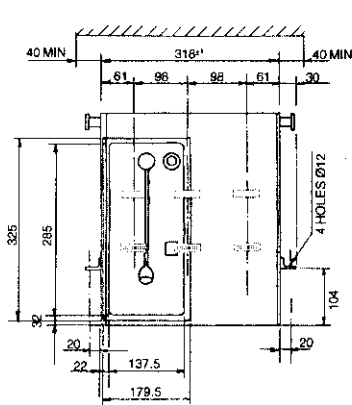
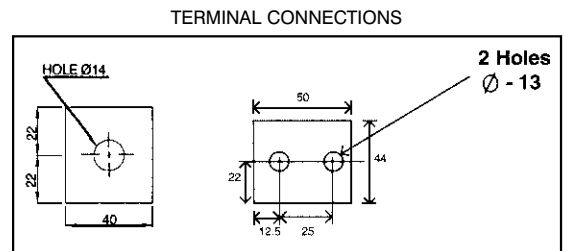
FIXED ACBs

1

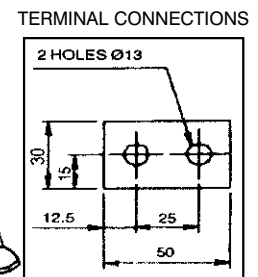
For 630A - 2000A 3P



630E/800E/1000E



1250E/2000E



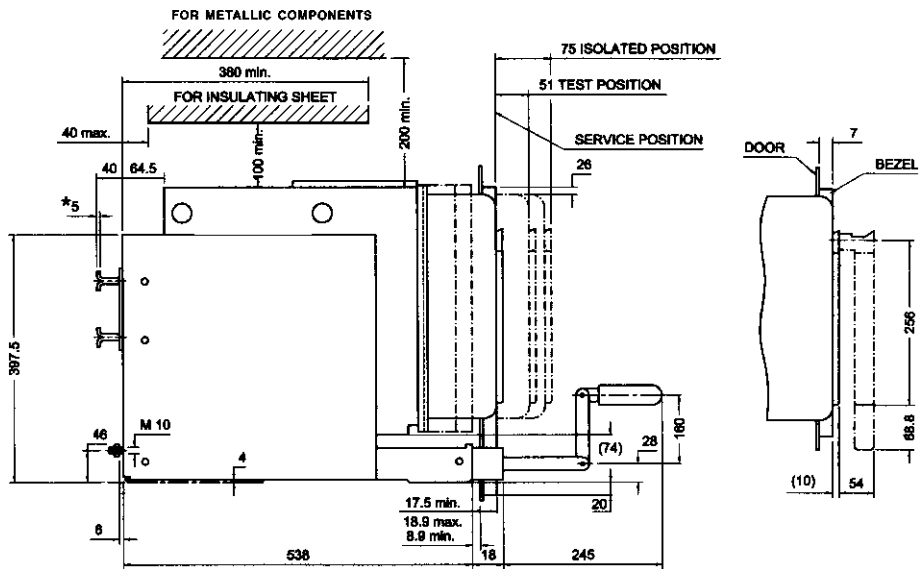
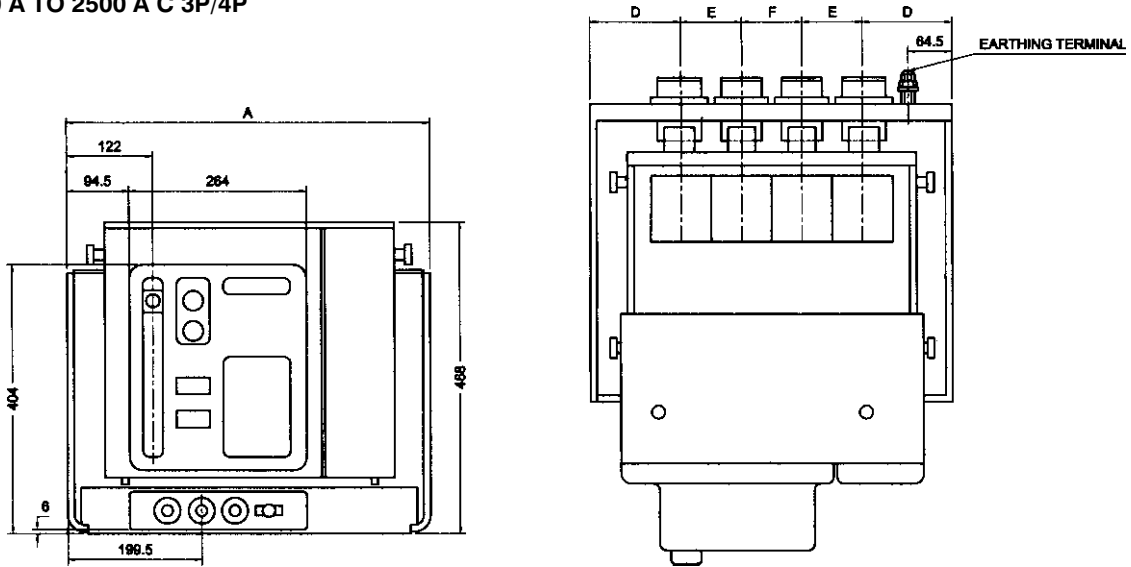
Note : All Dimensions are in mm.

OVERALL DIMENSIONS - TYPE C

Drawout ACBs

1

For 800 A TO 2500 A C 3P/4P



Ratings	Dimensions (mm)			
	A	D	E	F
800/1000A C 3P	399	97.5	102	-
1250/1600A C 3P				
800/1000A C 4P	487	96.5	98	98
1250/1600A C 4P				
2000/2500A C 3P	555	123.5	154	-
2000/2500A C 4P	701	122.5	150	156

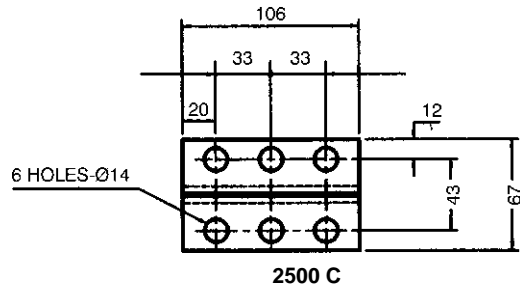
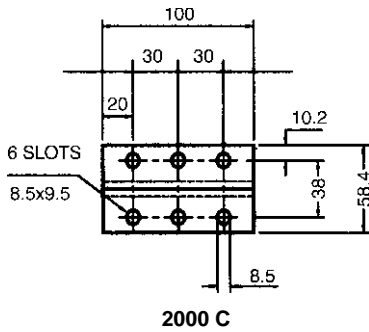
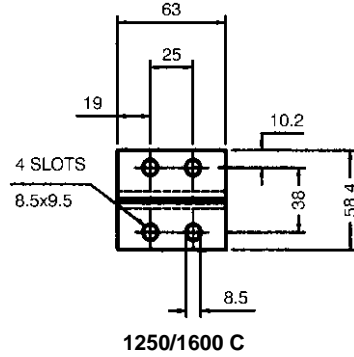
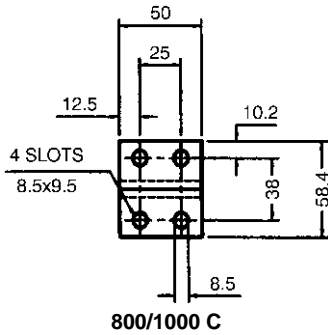
Note : All Dimensions are in mm.

OVERALL DIMENSIONS - TYPE C

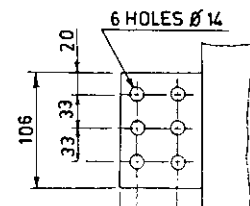
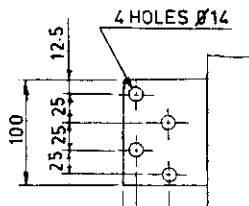
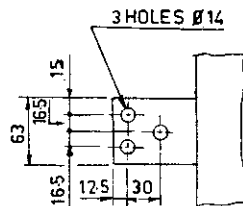
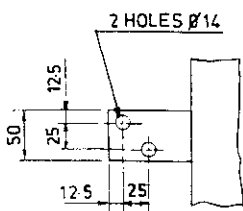
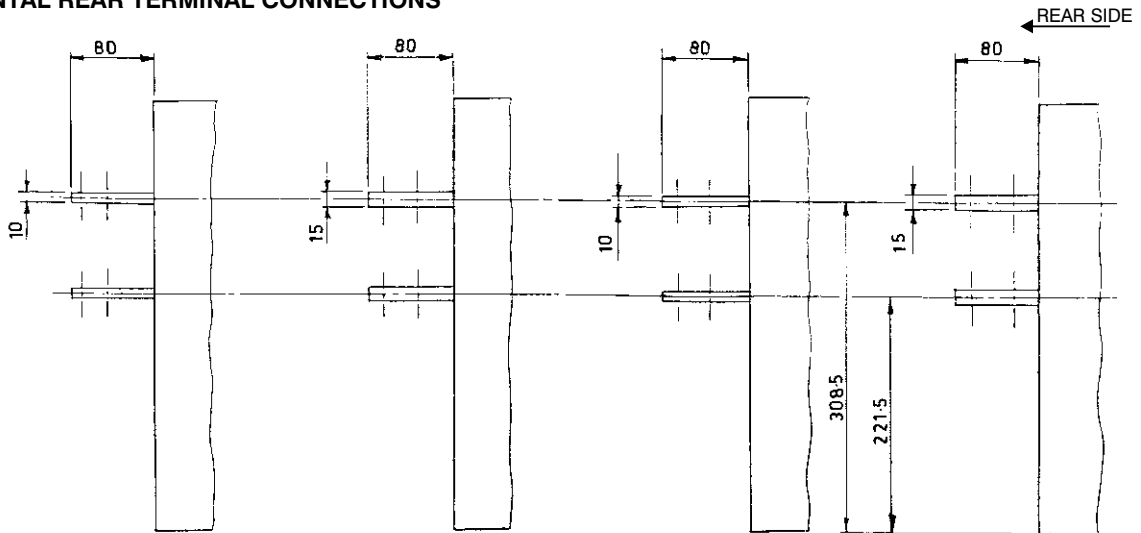
Drawout ACBs

1

FLAT TERMINAL CONNECTIONS



HORIZONTAL REAR TERMINAL CONNECTIONS



TOP VIEW

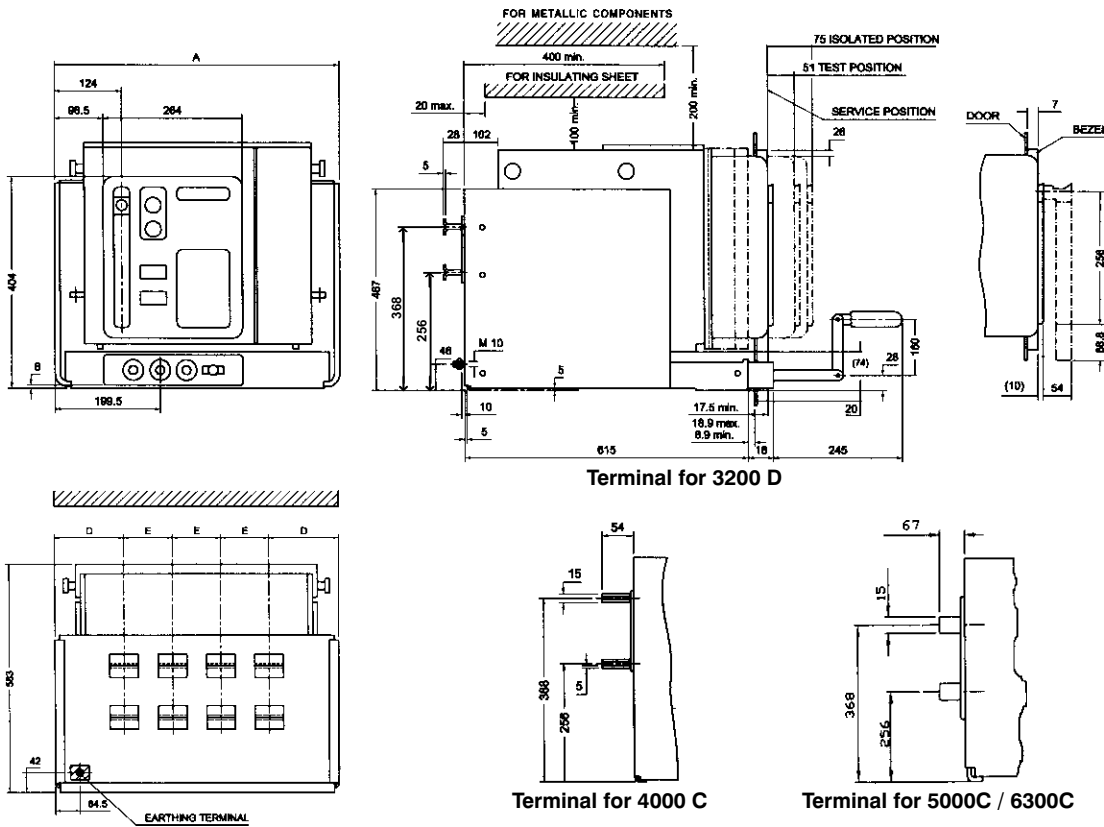
Note : 1) All Dimensions are in mm. 2) Consult us for other Terminal Orientations.

OVERALL DIMENSIONS - TYPE C

Drawout ACBs

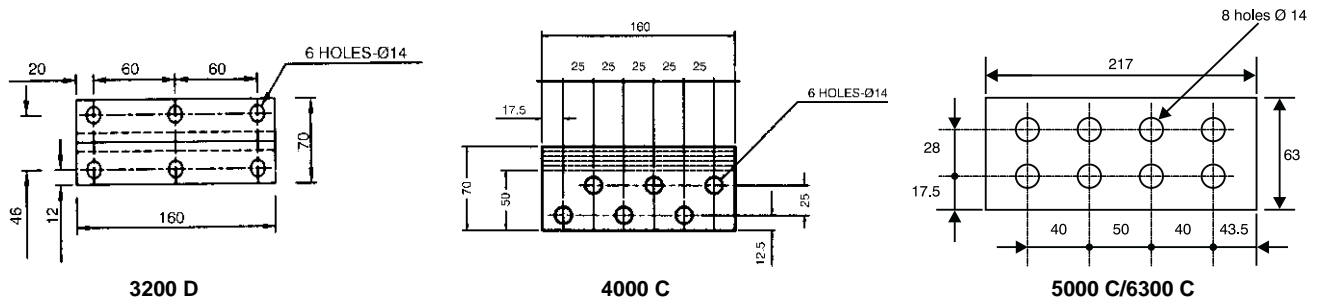
1

FOR 3200 D/4000 C 3P/4P, 5000 C 3P, 6300 C 3P



Ratings	Dimensions (mm)		
	A	D	E
3200 D/4000 C 3P	711	155.5	200
3200 D/4000 C 4P	913	156.5	200
5000 A C 3P	913	187.5	269
6300 A C 3P	913	187.5	269

TERMINAL CONNECTIONS

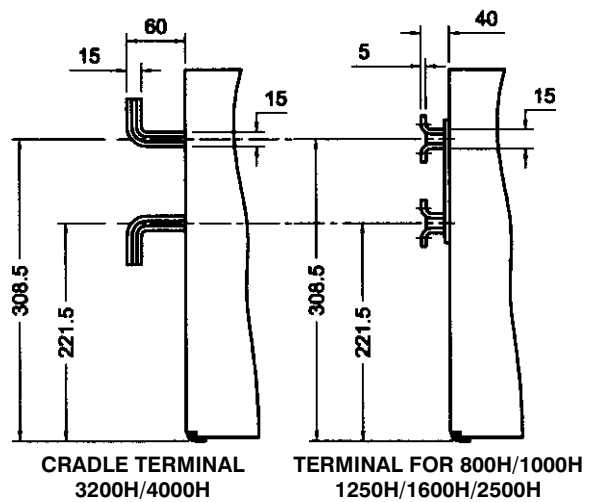
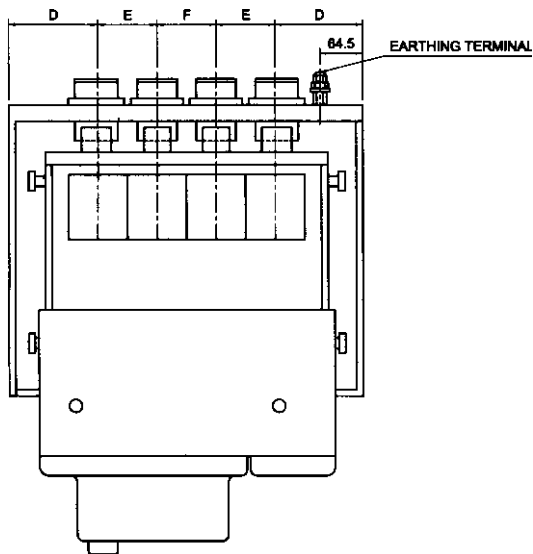
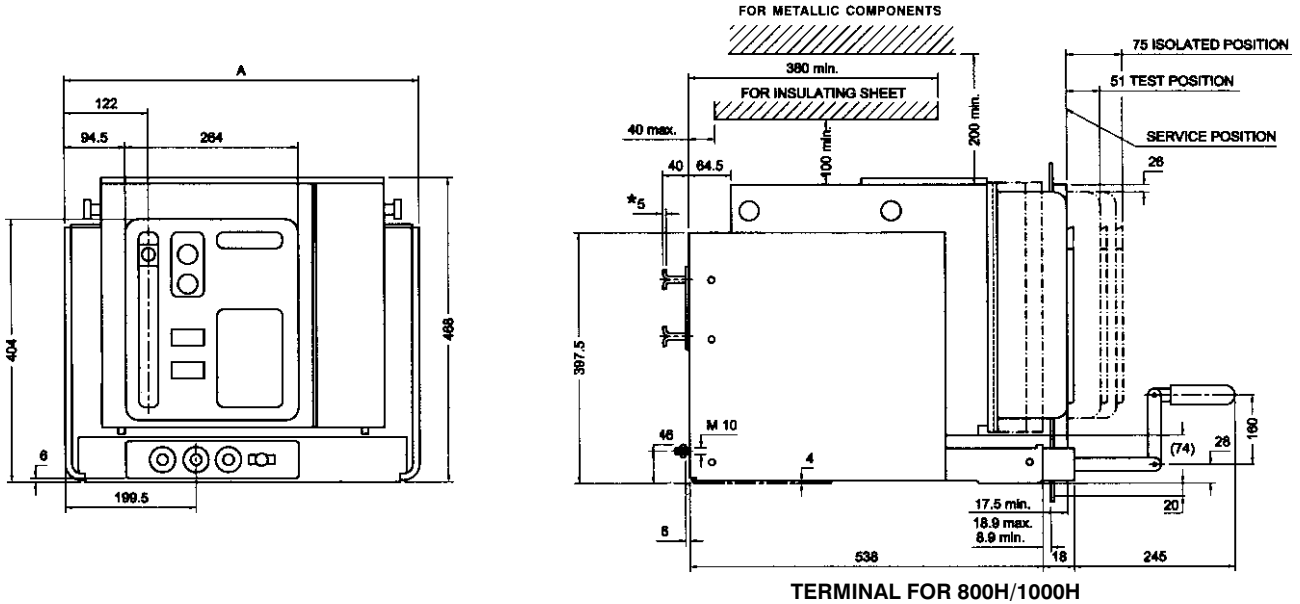


Note : All Dimensions are in mm.

OVERALL DIMENSIONS - TYPE H

Drawout ACBs

FOR 800 TO 2500 H 3P/4P, 3200 H1 3P, 4000 H 3P



Ratings		Dimensions (mm)			
H-Range		A	D	E	F
800/1000A	H 3P	399	97.5	102	-
1250/1600A	H 3P				
800/1000A	H 4P	487	96.5	98	98
1250/1600A	H 4P				
2500A	H 3P	555	123.5	154	-
2500A	H 4P	701	122.5	150	156
3200A	H1 3P	701	148.5	202	-
4000A	H 3P				

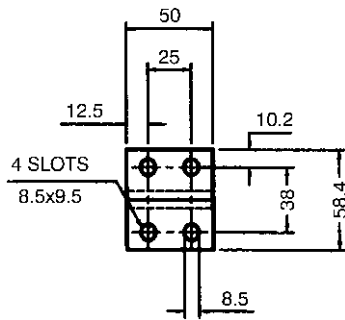
Note : All Dimensions are in mm.

OVERALL DIMENSIONS - TYPE H

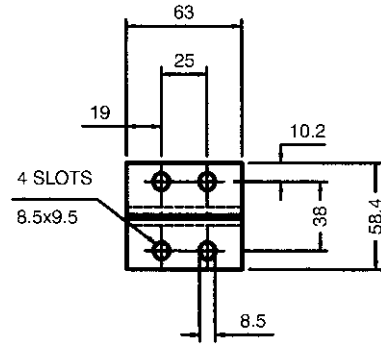
Drawout ACBs

1

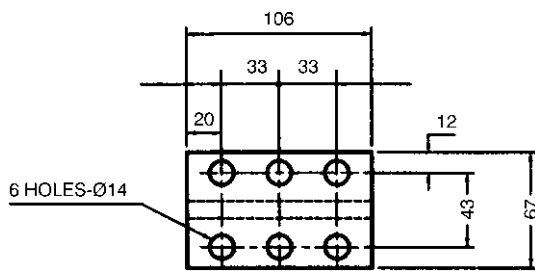
TERMINAL CONNECTIONS



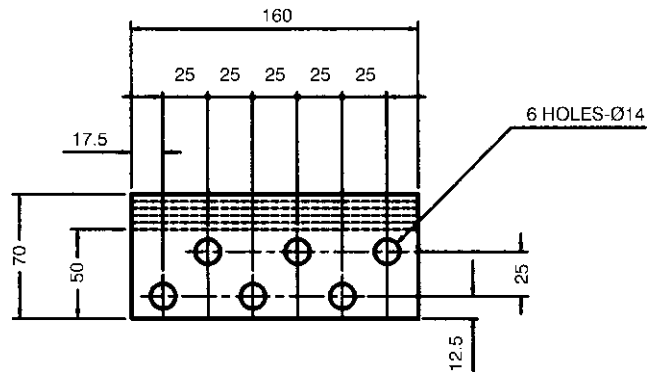
800 H/1000 H



1250 H/1600 H



2500 H



3200 H1/4000 H

OVERALL DIMENSIONS - TYPE S

Same as that of C-POWER (Type C) ACBs

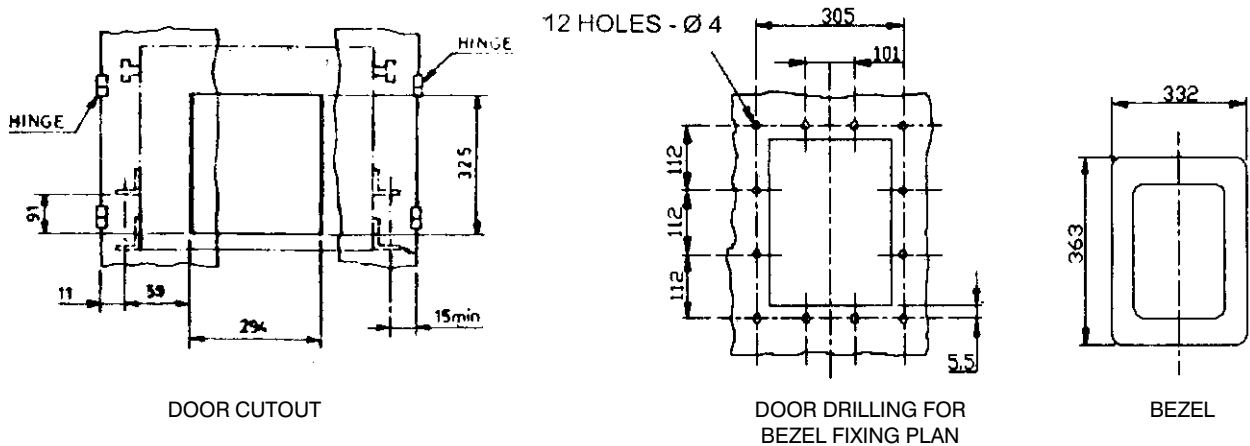
Note : All Dimensions are in mm.

OVERALL DIMENSIONS

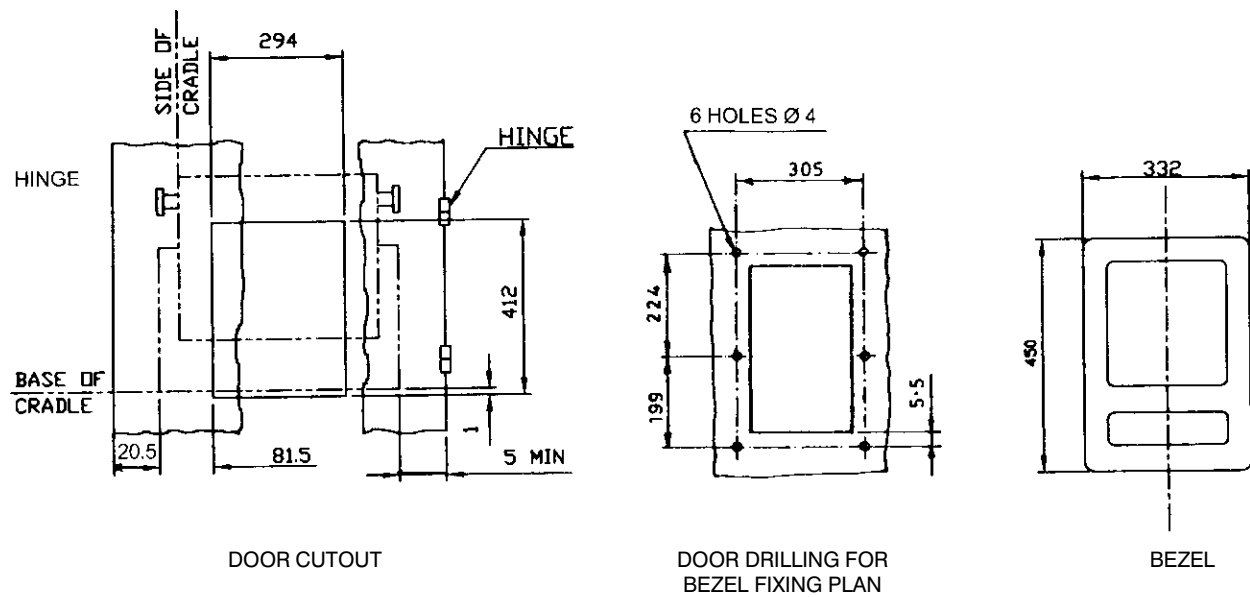
DOOR CUTOUT DETAILS

1

FOR FIXED ACBs - 800A to 4000A (Type C)



FOR DRAWOUT ACBs - 800A to 6300A (Type C, S & H)



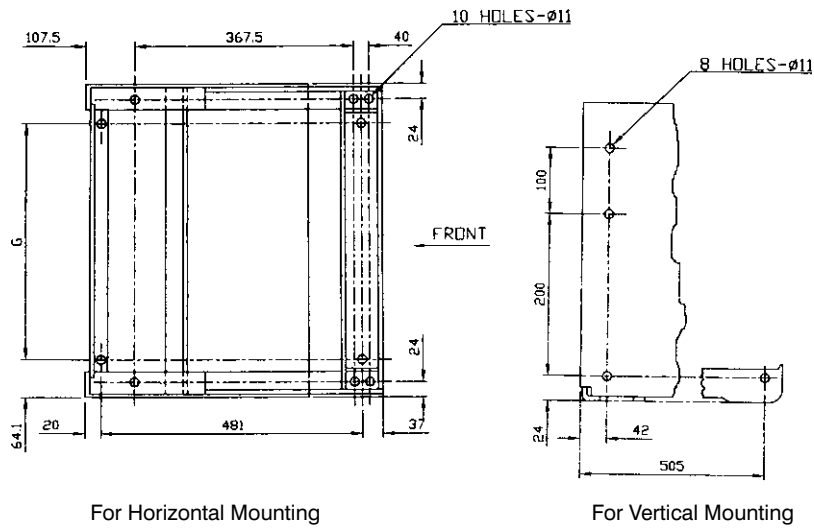
Note : All Dimensions are in mm.

OVERALL DIMENSIONS

MOUNTING DETAILS

1

FOR DRAWOUT ACBs - 800 to 1600 C/H/S, 2000 to 2500 C/H, 3200 H1, 4000 H



Ratings	Type	G (mm)
800A to 1600A 3P	C,S&H	280.3
800A to 1600A 4P	C&H	368.3
2000 / 2500A 3P	C&H	436.3
2000 / 2500A 4P	C&H	582.3
3200A	H1	582.3
4000A	H	582.3

For Horizontal Mounting

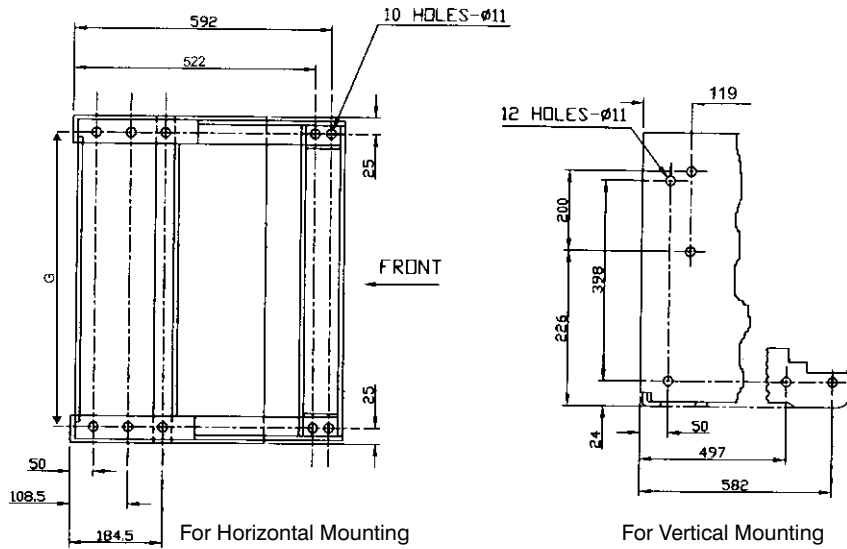
For Vertical Mounting

Note : All Dimensions are in mm.

OVERALL DIMENSIONS

MOUNTING DETAILS

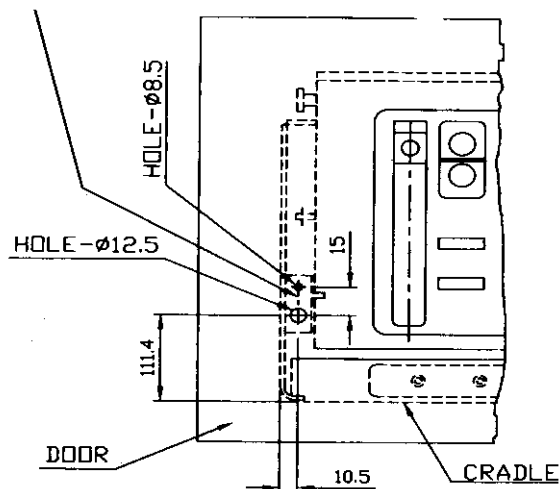
FOR DRAWOUT ACBs - 3200 D, 4000 to 6300 C



Ratings	Type	G (mm)	
3200A	3P	D	661
3200A	4P	D	863
4000A	3P	C	661
4000A	4P	C	863
5000A	3P	C	863
6300A	3P	C	863

FIXING OF DOOR INTERLOCK

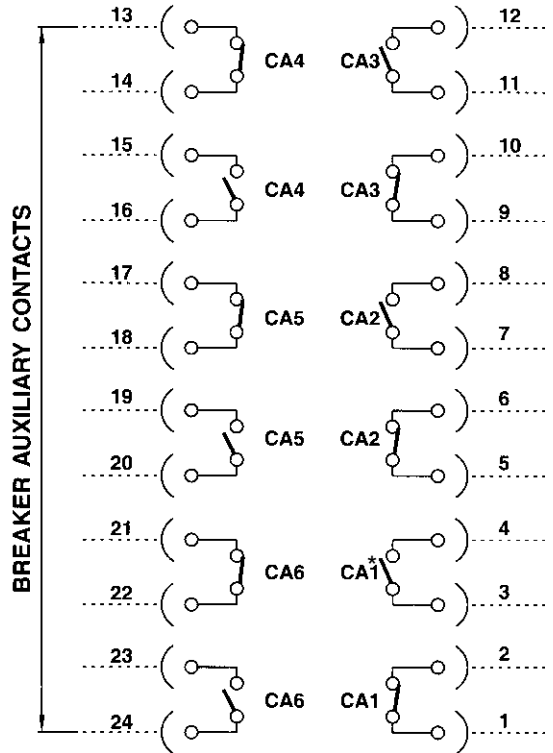
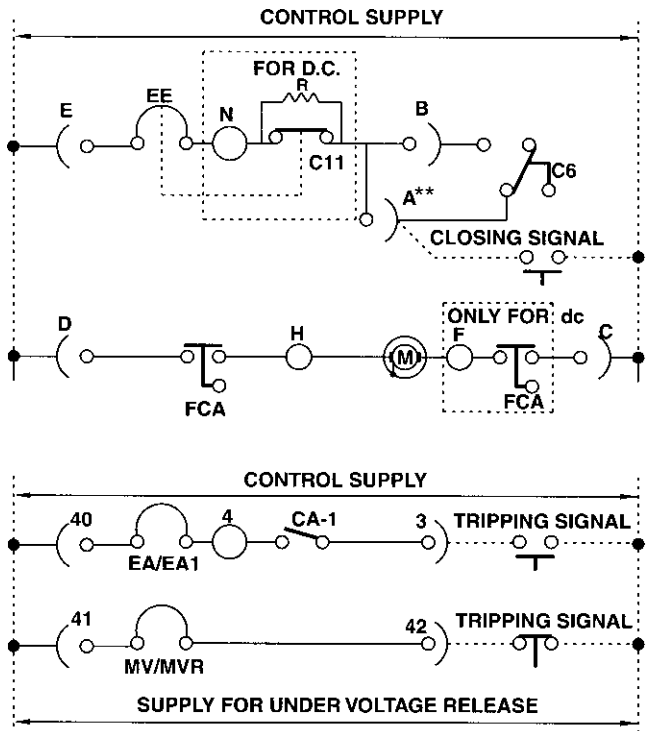
Bracket to be welded to the door from inside after aligning the Ø12.5 hole of the bracket to that of the door



Note : All Dimensions are in mm.

WIRING DIAGRAMS

FOR ELECTRICALLY OPERATED ACBS



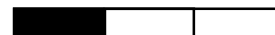
- EE : 'Closing' electromagnet
- M : Motor
- C6 : Service Position Microswitch for Drawout Circuit Breaker (shown in 'Test' Position)
- C11 : Limit Switch (Operates when closing electromagnet is held ON)
- R : Economy resistor
- FCA : Limit Switch (Shown in Spring Charged Condition)
- CA : Auxiliary Contacts (Shown in Breaker Open Position)
- E,B,D,C,A : SIC Termination A,B,C,D, & E are SICs used for internal wiring in electrically operated ACBs.

- N,H,4 : Internal Termination Points
- : Wiring to be done by the Customer
- : Internal Wiring

NOTE :

*CA1 N.O. Contact not available for auxiliary use if shunt release type EA/EA1 is used

**SIC-A



TEST SERVICE

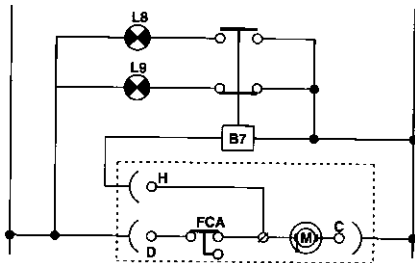
Programmed to complete the circuit only in 'Test' position. This enables carrying out operations of breakers by bypassing the electrical interlocks which are active in 'Service' position.

Max 24 SICs available on ACB (For control, accessories and auxiliary circuits)

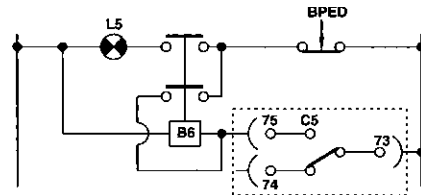
WIRING DIAGRAMS

SIGNALLING

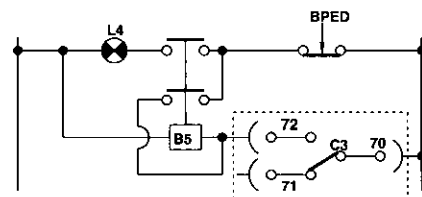
SPRING CHARGE INDICATION (FOR ELECTRICAL ACBs)



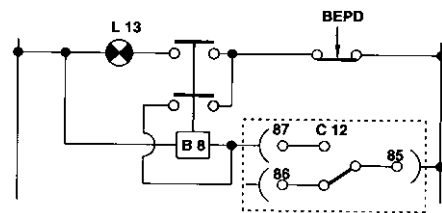
SIGNALLING FOR VOLTMETRIC/AMPEMETRIC RELEASES SHUNT RELEASE



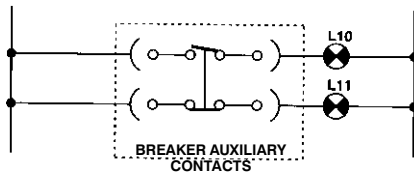
UNDER VOLTAGE RELEASE



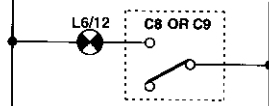
EARTH FAULT



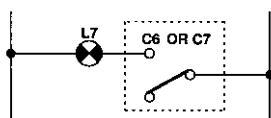
BREAKER ON-OFF INDICATION



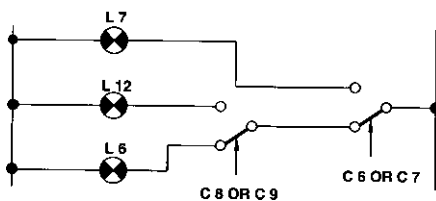
POSITION INDICATION ISOLATED / TEST POSITION



SERVICE POSITION



SERVICE, TEST, ISOLATED POSITION



INDICATING LAMPS

- L4-for Under Voltage Trip
- L5-for 'Shunt' Trip
- L6-for 'Isolated' and/or 'Test Position'
- L7-for 'Service Position'
- L8-for 'Spring Discharged'
- L9-for 'Spring Charged'
- L10-for 'Breaker On'
- L11-for 'Breaker Off'
- L12-for 'Test' Position
- L13-for 'Earth-fault' Trip
- B5,B6,B7,B8 - Contactors
- BPED - 'Signal Cancelling' Push Button

SIGNALLING SWITCHES

- C3-for 'Under Voltage' Trip
- C5-for 'Shunt' Trip
- C6-for 'Service' Position (Left)
- C7-for 'Service' Position (Right)
- C8-for 'Isolated/Test' Position (Left)
- C9-for 'Isolated/Test' Position (Right)
- C12-for 'Earthfault' Trip

WIRING DIAGRAMS

SIGNALLING FOR OVERLOAD AND SHORT-CIRCUIT TRIPPING

1

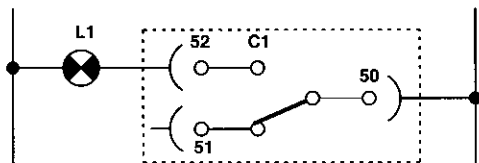
Manual Reset

The cancelling of the fault signal is effected by pressing the local trip button, which also resets the overcurrent release.

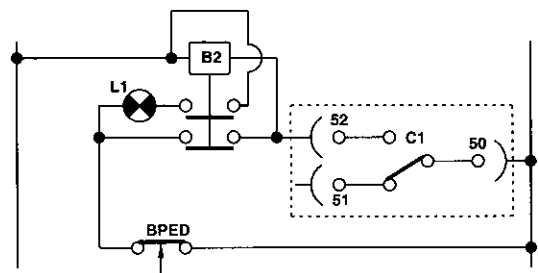
Auto Reset

Cancelling of fault signalling is provided by push button BPED. The presence of the fault signal does not prevent closing of the circuit breaker.

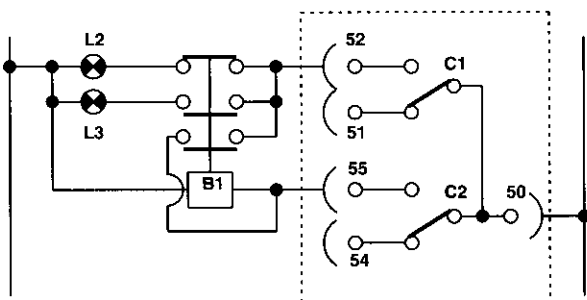
Common Signalling



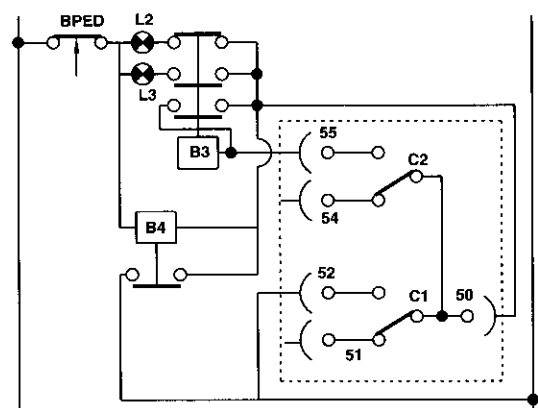
Common Signalling



Separate Signalling



Separate Signalling



Signalling Switches

C1-for 'Overload and Short Circuit' Trip

C2-for 'Short Circuit' Trip

INDICATING LAMPS

L1-Common for 'Overload and short Circuit' Trip

L2-for 'Overload' Trip

L3-for 'Short Circuit' Trip

B1, B2, B3, B4 - Contactors

BPED - 'Signal Cancelling' Push button

(o) - SIC terminals

Note : Wiring shown inside dotted lines is wired in ACB