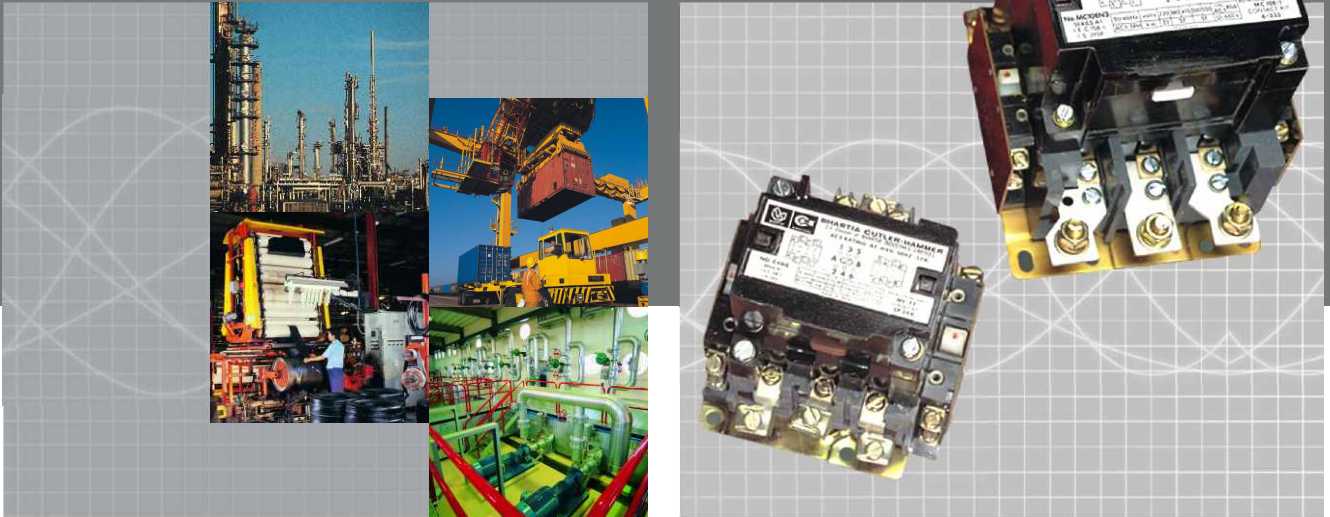




CITATION M CONTACTOR



BCH ELECTRIC LIMITED
we care for you



Citation M Contactor

BCH Citation 'M' Contactors have been designed keeping in view high performance parameters and easy maintenance. These are suitable for mill duty, crane control, motor control centres, switching of solenoids, capacitor banks and for lighting & heating circuits.

Features

- Encapsulated plug in coil
- High efficiency magnetics
- Metric terminations
- Total front accessibility for easy servicing without disturbing wiring
- Any angle vertical mounting.
- Wide ambient temp. range -5°C to $+55^{\circ}\text{C}$
- Unique Mechanical Interlocking
- IEC: 158-1 and IS-2959 compliance

Design features **Compact, heavy-duty**

Each of these contactors consists essentially of two sections :

(1) a fixed-contacts assembly, mounted on a steel baseplate.

(2) a with drawble power unit containing all the moving parts. In power unit, the magnet is in front of the contacts, so that the armature drives the entire moving-contacts assembly, independent of gravity, with a controlled horizontal stroke.

Coil

Encapsulated coil is moisture and heat resistant. It can with-stand wide variation in atmospheric conditions. The dual winding type design gives smoother pull, less impact on closure and minimum contact bounce giving trouble-free life.

Plug-in magnet coil

Replacement is fast and reliable. Once is required to just plug in the coil without disturbing any wiring.

Fast action

The low-inertia EI type magnet system has a well balanced closing action, ensuring minimum wear of the moving parts. Leaf springs cushion the impact of the armature and, assisted by the Stainless Steel Leaf springs... eliminate secondary bounce of the assembly. Operation is exceptionally quiet, and the built in permanent, non-wearing air gap ensures fast drop-out. Citation M Contactors maintain fast, clean pick-up and drop-out, thus making them eminently suitable for machines operating at very high speeds. The magnet design also provides high resistance to shock-induced accidental closure. The complete magnet assembly is enclosed in a robust moulded housing with cover to protect against mishandling and adverse environments.

Fast installation

Mounting and wiring of Citation M Contactors is quick and easy. The three-point fixings include a keyhole slot so that the contactor can be hung in position with all screws partially engaged before tightening. It can be

mounted at any angle, provided the baseplate is kept vertical. All wiring is from the front and a convenient earth terminal is incorporated in the base plate. The coil and contacts can be replaced from the front without disturbing the wiring. Plug in coil & magnet assembly can be replaced by unscrewing two screws of the Front cover.

High performance contacts

All contact assemblies incorporate three NO main poles with large double-break weld resistance silver cadmium oxide contacts having anti arc-tracking properties. These contactors provide a mechanical endurance of at last 10 milion operations, and an electrical endurance considerably beyond the requirements of IEC 158-1 i.e, (AC-3). For example, a Size D contactor breaking 40A (Ie) has an electrical endurance of 2 million operations, although the IEC requirement is only 0.5 million.

Positive contact every time

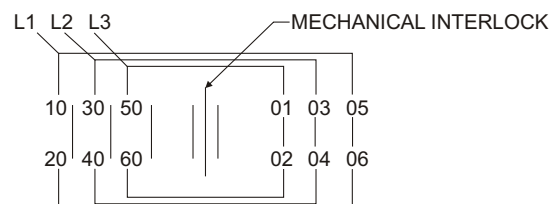
Stainless-steel contact springs are provided for reliable operation. Leaf springs above and below the magnet structure improve contactor life and performance by cushioning armature impact. Large silver cadmium oxide contacts are double break and weld resistant. They sit squarely with no twisting or sliding motion to wear away contact surfaces. Contacts are positioned vertically preventing dust accumulation on them.

Auxiliary contacts

The contactor is supplied with 2NO+2NC auxiliary contacts. Additional 2NO+2NC auxiliary contacts can be provided from the front with two captive screws.

Unique interlocking

Pairs of Citation M Contactors can be mounted side-by-side on a panel, mechanically and electrically interlocked for reversing duty etc. The novel mechanical interlock is a simple pivoted bar, easily fitted and adjusted to the optimum setting.



Mechanically interlocked contactors for reversing applications should always be electrically interlocked, using auxiliary contact block. Main poles adjacent to the mechanical interlock are connected in parallel.

For electrical interlocking, contacts of base block only should be used.

Lower power consumption

Encapsulated double-bobbin coils are suitable for a wide range of standard AC voltages. The class B and class F insulation of these coils, with its high thermal capacity, provides long life under both normal and adverse conditions. Coil power requirements are low, placing less load on pilot circuits and reducing transformer size when a number of contactors are controlled by a single transformer.

Easy maintenance-anywhere

The power unit containing coil, magnet, armature and moving contacts can be removed in seconds by simply loosening two screws. Thus, maintenance does not involve disturbing wiring or removing the contactor from the panel. All contacts are clearly visible when the power unit is removed, and all dismantling screws are captive. For replacement, moving contacts merely slide out of their holders, while each fixed contact is served by just one or two screws.

DC ratings of main contacts

RATED VOLTAGE	MODE OF CONNECTION	L/R RATIO	DC2 TO DC5 RATINGS.		
			Contactor Size		
			C4	D	E
125V	3 poles in series	15m secs.	20A	25A	40A
250V	3 poles in series	15m secs.	16A	20A	40A

Maximum number of operations

AC1 rating	:	1200/hr
AC2 and AC3 rating	:	750/hr
AC4 rating	:	250/hr

AC3 and AC4 ratings given under making and breaking capacities are maximum ratings but achieved at the expense of reduced electrical life.

Rotor Contactors, Intermediate ratings apply only when they are subsequently short circuited by the final rotor contactor. For regulating duty, the final ratings should be used. The contactors must not make and break on more than 700 volts.

Star-Delta, Phase connected. Star and delta contactors should be mechanically and electrically interlocked. The ratings for star and delta contactors are identical since mechanical interlocking is possible only between contactors of the same size. e.g. Contactors C4 & D.

Termination

CONTACTOR SIZE	AUX. TERMINALS	MAIN SCREW AND SADDLE CLAMP	CABLE Sq. mm.
CA	1 or 2 Cables	M5	16
D	of 4 mm ²	M5	16
E	Captive clamp with Screw M4	M8	35

Terminal plate with belting hole

CATALOGUE CODE	SIZE	CODE
Contactor basic code	C4	C4NE22
	D	MC10DN22
	E	MC10EN22
Auxiliary contacts 2NO + 2NC are supplied with all Contactors		
Voltage code	(50Hz)	
	110 V	A
	220 V	B
	240 V	K
	415 V	M

A 32 Amp open contactor with 110V 50 Hz coil fitted with 2 NO + 2NC auxiliary contacts is termed as C4NE22A.

Accessories

AUXILIARY CONTACT BLOCKCODE		
Contactor size	C4 & D	E
Base block 1NO + 1NC	MC 320 KB2	AC 35 EB11
Add-on-block 1 NO + 1 NC	AC 34 EA11	AC 34 EA11
Mechanical interlock	MC 321 KM1	MC 321 KM2

Adaptor place for mounting dimensions 68 (W) x 65 (H) mm 3 holes AC 34 P

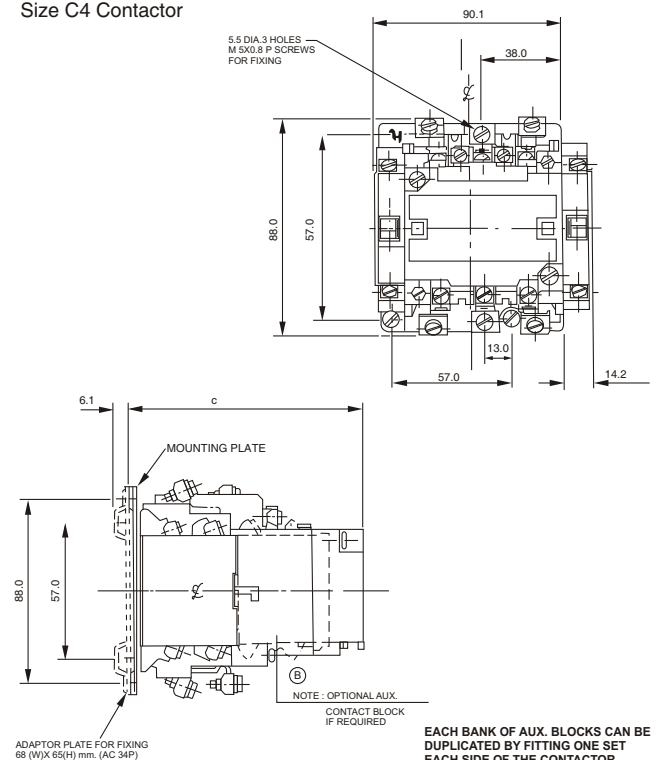
Spares

Contactor Size	C4	D	E
Contact Kit (with springs)	SP 34 K	6-334	6-335

Replacement Magnetic coil (frequency 50 Hz.)

VOLTAGE	CONTACTOR SIZE : C4 & D		E
110	9-2267-1	9-2268-1	
220	9-2267-2	9-2268-2	
240	9-2267-13	9-2268-13	
415	9-2267-16	9-2268-16	
Weight (Kgs.)	C4	D	E
	1.05	1.05	2.6

Size C4 Contactor



MOTOR STARTING DUTY		C4			D			E					
	Voltage (V)	Kw	Hp	FLC leA	Kw	Hp	FLC leA	Kw	Hp	FLC leA			
AC2	220	9.3	12.5	32	11	15	39	22	30	75			
Slipring motors	380	15	20	32	22	30	44	37	50	72.5			
Starting & Plugging	415	15	20	32	22	30	40	37	50	70			
AC3**	500	18.5	25	28	22	30	33	37	50	55			
Squirrel cage motors													
Starting & FLC breaking	550	18.5	25	26	22	30	30	37	50	50			
AC4**	220	3.7	5	16	4	5.5	14.5	7.5	10	27			
Squirrel Cage	380	7.5	10	16	7.5	10	15.5	15	20	30			
Motors	415	7.5	10	14	7.5	10	14	15	20	28			
Starting	500	7.5	10	12	10	13.5	15	18.5	25	28.3			
Plugging & inching	550	7.5	10	12	10	13.5	14	18.5	25	25.5			
Star Delta Switching (Phase connected)	Volts	Kw	Hp	ILA	IpA	Kw	Hp	ILA	IpA	Kw	Hp	ILA	IpA
	220	15	20	52	30	18.5	25	64	37	37	50	126	72
	380	26	35	50	30	30	40	60	35	55	75	105	61
	415	30	40	55	32	37	50	66	38	75	100	126	72
	500	30	40	45	26	37	50	55	32	75	100	105	61
	550	30	40	41	24	37	50	50	29	75	100	95	55
Rotor contactors : (for Slipring motors delta connected) as per IEC 292 Part 3										Max. rotor voltage : Without inching & plugging : 1400V with inching and Plugging : 700V.			
	Operational current le A		45		50		80						
	Volt		KW		KW		KW						
AC 1	220		17		19		30						
Enclosed or open	380		30		33		52						
ratings at	415		32		36		57						
Non inductive or	500		39		43		68						
Slighting inductive loads	550		43		47		75						
Capacitor Switching													
KVAR rating at	current le A		32		40		70						
3Ph 50Hz AC	220/240V		10		12		25						
(Single Bank Only)	380/440V		20		25		45						
	500/550V		25		30		55						
DC ratings of	Rated volts		Rating				L/R m.sec.						
main contacts	125V		DC2 to DC5				20A	25A	40A	15			
(3 Pole in Series)	250V		DC2 to DC5				16A	20A	40A	15			

Other ratings

Fluorescent lamps 330V or less	A	45	50	80
Transformer primary switching	A	24	30	50
Tungsten or infra-red lamps 250 V or less	A	24	30	50

Coil Parameters

Coil consumption (Max.)	inrush/initial VA :	118	118	350
	Sealed/finals VA :	24	24	55
Insulation class of coil		F	F	B

Coil operating range : +10% to –15% of rated voltage.

Standard coil voltage : 110V, 220V, 240V and 415V 50 Hz.

** AC3 & AC4 ratings are not the maximum values but are conservative ratings to ensure electrical life of above 2 million operations for AC2/AC3 and 300,000 operations for AC4 category.



Auxiliary contacts

Number of auxiliary contacts : 2NO+2NC as a standard
(Max. 8 contacts can be achieved.)

Auxiliary contact blocks : AC ratings

MAKE	BREAK	MILLIONS OF OPERATIONS
3600VA	360VA	1.5
1800VA	180VA	6
1100VA	110VA	10

Electrical and Mechanical ratings

All values shown below are based on the requirements of IEC 158-1 (1970), viz-ambient temperature -5°C to +55°C, altitude not exceeding 2000m etc.

CONTACTOR SIZE		C4	D	E
Thermal current Ith	A	45	50	80
Insulation voltage Ui	V	660	660	660
(Utilisation category AC1, AC2, AC3 and AC4 as per IS:2959/IEC 158-1 and VDE 0660)				

Number of main poles : Three normally open

Auxiliary contact ratings

Operational voltage Ue	: 48V to 600V
Operational current Ie	: 6A at 415V to IEC 337-1 (1970) AC11 pf 0.3 2A at 110V and 1A at 220V DC11, L/R-100 m sec.
Thermal current Ith	: 10A

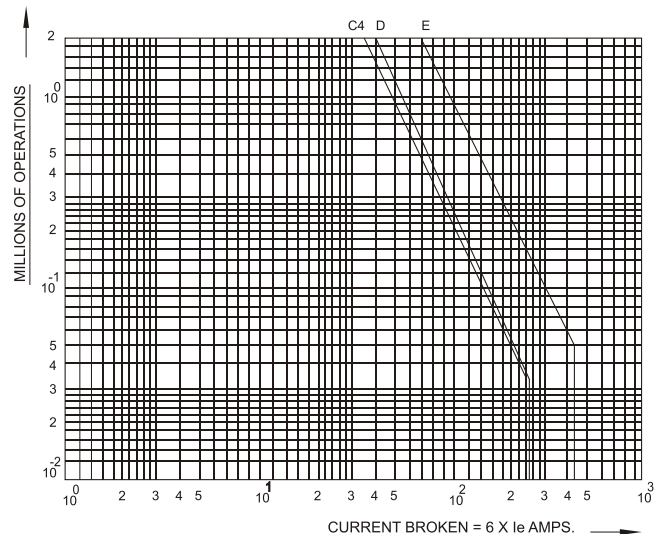
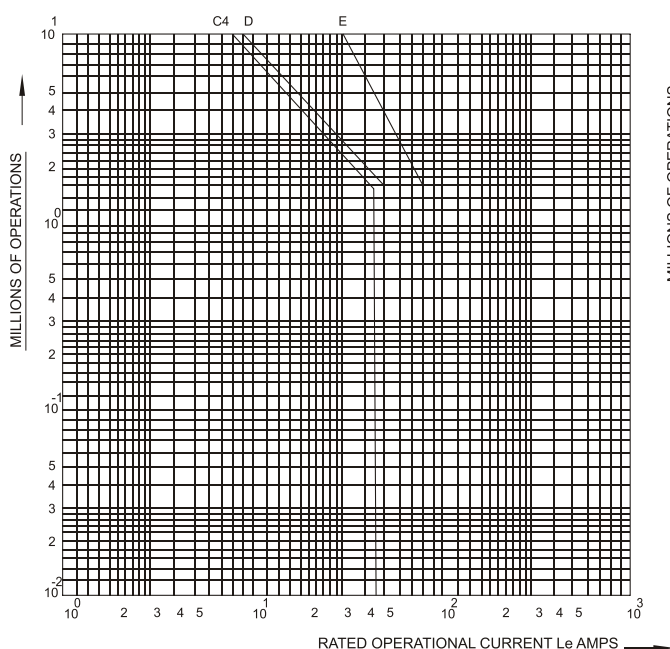
Note :

1. With the combination of base block 1NO+1NC and add-on-block 1NO+1NC, maximum 4NO+4NC contacts can be achieved. Contact block of upto 4 contacts can be stacked on each side. Out of 4 contacts at least one must be NO or NC.
2. When contacts are mechanically interlocked, only 4 auxiliary contacts can be achieved on each contactor.
3. Crane duty ratings of all contactors can be furnished on request.

Making and Breaking Capacity

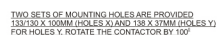
VOLTAGE UE	380V/415V			500V/550V		
Contact Size	C4	D	E	C4	D	E
Make current rms Amps	600	770	1230	600	770	1230
Break current rms Amps	600	770	1230	600	770	1230
Lagging power factor	0.35	0.35	0.35	0.35	0.35	0.35
Max. AC3* motor FLC IeA	35	44	72	35	44	72
Max. AC4 motor FLC IeA	28	36	55	28	36	55

Contact life



CONTACT LIFE OF SIZE 'D' & SIZE 'E' CONTACTOR
AC4.

SIZE 'E' CONTACTOR



0.45.0.20DIA. 3
FIXING HOLES
FOR M6 SCREWS

HOLES X&Y DIA 6.20/6.5

EACH BANK OF AUX. BLOCKS CAN BE DUPLICATED BY FITTING ONE SET EACH SIDE OF THE CONTRACTOR.

TWO SETS OR MOUNTING HOLES ARE PROVIDED 110.0X50.0MM (HOLES X) AND 65.0 X 83 MM (HOLES Y) FOR HOLES Y ROTATE THE CONTRACTOR BY 100° AND REMOVE AUXILIARY CONTACT BLOCKS FOR ACCESSIBILITY TO THE MOUNTING HOLES SHOWN DOTTED IN THE DIAGRAM.

TWO SETS OF MOUNTING HOLES ARE PROVIDED 110.0X50.0MM (HOLES X) AND 65.0 X 63 MM (HOLES Y) FOR HOLES Y, ROTATE THE CONTRACTOR BY 100° AND REMOVE AUXILIARY CONTACT BLOCKS FOR ACCESSIBILITY TO THE MOUNTING HOLES SHOWN DOTTED IN THE DIAGRAM.

SIZE 'D' CONTACTOR

