

# Ecombo Starters

Save space,  
save money  
in individual or  
multi-motor  
starter applications

F

Ecombo Circuit Controllers

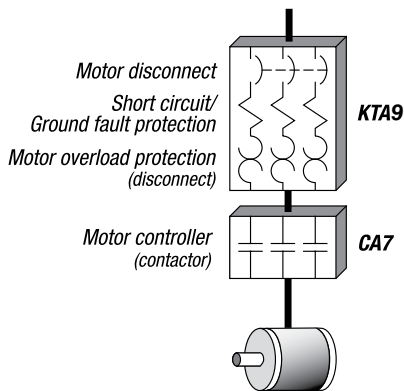


See our online white paper

## Methods of Applying

# KT9

Motor Circuit Controllers



The Ecombo starter line combines a KTA9 self-protected Type E combination controller with a CA7 contactor to form a cost effective compact Type E/F alternative to traditional combination starters.

Sprecher + Schuh's Ecombo starters are the compact alternative to larger and higher priced combination starters. Both models consist of a KTA9 Motor Circuit Controller (cULus listed as a Type E, self-protected combination starter), assembled with a CA7 or CA8 contactor, which provides remote operation (Type E/F). Whether used as a standalone starter or in multi-motor starter applications, Ecombo starters save significant panel space and dollars over conventional combination starter alternatives.

## Control and protection for most industrial applications

The Ecombo starter line covers motors to 40 amperes, while providing current limiting short circuit protection up to 65kA. Class 10 thermal overload protection is also assured with a very accurate current adjustment setting which is factory calibrated to the smallest and largest current the unit can handle. A "differential tripping" mechanism also provides accelerated tripping under single phase conditions (see illustration on page F3). Ecombo starters may be selected as Type 2 Coordinated per IEC 60947-4-1, or UL Construction Type E or F.

## The Ecombo starter...

Ecombo starters (CLE) come standard with a KTA9 Motor Circuit Controller connected to Sprecher + Schuh's CA7 contactor (or CA8 mini contactor) through a specially designed connection module. The unit is DIN-rail mounted. Contactor coil connections are at the bottom of the starter to provide attractive and cost effective panel wiring. Ecombo starters may also be purchased with just three parts and assembled by the user to further increase economy. The CLE + O/L is a three component starter with a KTB9 controller, CA7 contactor, and a CEP7 solid state overload relay, pre-assembled on a bus bar module and ready to mount to a DIN rail or panel.



CLE Ecombo starter



CLE Three-Component starter

## Reduce panel size, complexity and cost

Because KT9 Motor Circuit Controllers are UL listed as self-protected combination starters, NEC / CEC group motor rules are simplified substantially. In many cases, only a non-fused switch is required for panel disconnect. See our online white paper "Methods of Applying KT9 Motor Circuit Controllers", which explains applying KT9s in multi-motor starter applications.

Series	
<b>CL</b>	Non-reversing S+S
<b>CLU</b>	Reversing S+S

Mounting Style	
<b>E</b>	ECO (no mounting rail)
<b>S</b>	Sliding Din

Contactor Size	
<b>809</b>	9A
<b>812</b>	12A
<b>709</b>	9A
<b>712</b>	12A
<b>716</b>	16A
<b>723</b>	23A
<b>730</b>	30A
<b>737</b>	37A

Contactor Coil	
CA8	
<b>024Z</b>	24V 50Hz / 60Hz
<b>0120</b>	110V 50Hz / 120V 60Hz
<b>0240</b>	240V 50Hz / 60Hz
<b>0600</b>	525V 50Hz/ 600V60Hz CA
<b>024D</b>	24V DC
<b>24DD</b>	24V DC With Diode
CA7	
<b>024Z</b>	24V 50Hz / 60Hz
<b>0120</b>	110V 50Hz / 120V 60Hz
<b>220W</b>	208-220V 50Hz / 208-240V 60Hz
<b>220W</b>	240V 50Hz / 60Hz
<b>0480</b>	440V 50Hz / 480V 60Hz
<b>0600</b>	550V50Hz / 600V 60Hz
<b>024E</b>	24V DC

Contactor Aux	
<b>01</b>	1 N.C.
<b>10</b>	1 N.O.
<b>02</b>	2 N.C.
<b>11</b>	1 N.O. + 1 N.C.
<b>12</b>	1 N.O. + 2 N.C.
<b>21</b>	2 N.O. + 1 N.C.
<b>22</b>	2 N.O. + 2 N.C.
<b>30</b>	3 N.O.
<b>31</b>	3 N.O. + 1 N.C.
<b>32</b>	3 N.O. + 2 N.C.
<b>33</b>	3 N.O. + 3 N.C.

Breaker Frame	
<b>C</b>	KT9 C Frame MCPB only (32S)
<b>D</b>	KT9 D Frame MCPB or MCP (40H)

Breaker Current	
<b>A16</b>	0.1 - 0.16A
<b>A25</b>	0.16A - 0.25A
<b>A40</b>	0.25 - 0.40A
<b>A63</b>	0.40 - 0.63A
<b>B10</b>	0.63 - 1A
<b>B16</b>	1 - 1.6A
<b>B25</b>	1.6 - 2.5A
<b>B40</b>	2.5 - 4A
<b>B63</b>	4 - 6.3A
<b>C10</b>	6.3 - 10A
<b>C16</b>	10 - 16A
<b>C20</b>	14.5 - 20A
<b>C25</b>	18 - 25A
<b>C29</b>	23 - 29A
<b>C32</b>	26.5 - 32A
<b>C36</b>	30 - 36A
<b>C40</b>	34 - 40A

CL E - 709 0120 10 - C B40 B  
 CLU E - 723 024E 22 - C C20 B  
 CL E - 712 024Z 10 - C C16 B - FDB

Options	
<b>-KN</b>	Black Lockable Knob
<b>-KY</b>	Red/Yellow Lockable Knob
<b>-TE</b>	Spacing Adapter for Type E
<b>-W</b>	Mounting Module
<b>-JE</b>	Interface Adapter

Breaker Aux Code	
<b>X</b>	w/o Aux. and Trip Contacts
<b>A</b>	1 NC
<b>B</b>	1 NO
<b>C</b>	1 NO + 1 NC
<b>D</b>	2 NO
<b>E</b>	2 NC
<b>R</b>	1 NC + 1 NO (SC+OL)
<b>S</b>	1 NO + 1 NO (SC+OL)
<b>T</b>	1 NO + 1 NC (SC+OL)
<b>N</b>	1 NO (SC+OL) + 1 NC (SC)

Overload Relay	
<b>-</b>	No Separate Overload Relay
<b>FAB</b>	0.1...0.5A Solid State
<b>FBB</b>	0.12...1.0A Solid State
<b>FCB</b>	1.0...5.0A Solid State
<b>FDB</b>	3.2...16A Solid State
<b>FEB</b>	5.4...27A Solid State
<b>FED</b>	5.4...27A Solid State
<b>FFD</b>	11...55A Solid State

This illustration is for reference only.  
 Turn to the appropriate page to determine  
 specific catalog number.

❶ (D & E) designations indicate DC coil.

### Non-Reversing Ecombo Starters with AC Coil, Series CA8 Contactor

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ②
		200V	230V	460V	575V	
<b>KTA9-32S – Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLE-809*10-CA16X
0.16...0.25A	3.5	~	~	~	~	CLE-809*10-CA25X
0.25...0.40A	5.6	~	~	~	~	CLE-809*10-CA40X
0.40...0.63A	8.8	~	~	~	~	CLE-809*10-CA63X
0.63...1.0A	14	~	~	1/2	1/2	CLE-809*10-CB10X
1.0...1.6A	22	~	~	3/4	3/4	CLE-809*10-CB16X
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLE-809*10-CB25X
2.5...4.0A	56	3/4	3/4	2	3	CLE-809*10-CB40X
4.0...6.3A	88	1	1-1/2	3	5 ⑤	CLE-809*10-CB63X
6.3...10A	140	2	2	5	5 ⑤	CLE-809*10-CC10X
6.3...10A	140	2	2	5	7-1/2 ⑥	CLE-812*10-CC10X
10...16A	224	3	3	7-1/2	10 ⑥	CLE-812*10-CC16X



Includes:

- KTA9-32S (Standard Interrupting Capacity) Motor Controller
- CA8 Contactor
- Connecting Module (Cat.# KT9-32S-PEK12)
- Terminal Adaptor for Type F Applications (Cat.# KT9-40-TE)
- Can mount on one DIN-rail

### Reversing Ecombo Starters with AC Coil, Series CA8 Contactor

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ②
		200V	230V	460V	575V	
<b>KTA9-32S – Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLUE-809*10-CA16X
0.16...0.25A	3.5	~	~	~	~	CLUE-809*10-CA25X
0.25...0.40A	5.6	~	~	~	~	CLUE-809*10-CA40X
0.40...0.63A	8.8	~	~	~	~	CLUE-809*10-CA63X
0.63...1.0A	14	~	~	1/2	1/2	CLUE-809*10-CB10X
1.0...1.6A	22	~	~	3/4	3/4	CLUE-809*10-CB16X
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLUE-809*10-CB25X
2.5...4.0A	56	3/4	3/4	2	3	CLUE-809*10-CB40X
4.0...6.3A	88	1	1-1/2	3	5 ⑤	CLUE-809*10-CB63X
6.3...10A	140	2	2	5	5 ⑤	CLUE-809*10-CC10X
6.3...10A	140	2	2	5	7-1/2 ⑥	CLUE-812*10-CC10X
10...16A	224	3	3	7-1/2	10 ⑥	CLUE-812*10-CC16X



Includes:

- KTA9-32S (Standard Interrupting Capacity) Motor Controller
- One Reversing CAU8 Contactor with Mechanical Interlock (CM8)
- Connecting Module (Cat.# KT9-32S-PEK12)
- Terminal Adaptor for Type F Applications (Cat.# KT9-40-TE)
- Reversing Power Wiring Kit (Cat.# CAUT8-PW)
- Can mount on one DIN-rail

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
024Z	24V	24V
0120	110V	120V
0240	240V	240V
0380 ④	Use Coil Code 0400	
0400 ④	400V	400V
0480	440V	480V
0575 ⑤	Use Coil Code 0600	
0600 ⑤	525V	600V

**Horsepower ratings shown in the tables are for reference only. The final selection of the controller depends on the actual motor full load current and service factor.**

- For motor with service factor less than 1.15. Use motor nameplate full load current times 0.9 and choose the motor starter with the appropriate current range. Example: Motor F.L.C. = 4.2A; S.F. = 1.0. – 4.2A x 0.9 = 3.78A. Select Catalog Number KTA9-32S-4.0A.

① KAIC Assembly Rating Index. See pages F73-F76 for Application Rating Guide.

② Does not include auxiliary contacts. See Factory Options on page F69 for additional auxiliary contact configurations.

③ The coil codes shown are the most commonly stocked items. Contact your Sprecher + Schuh representative if special voltages are required.

④ The European Community has agreed that 400V is the nominal voltage in lieu of 380V. Use this code when 380V is required.

⑤ Use this code for 575V applications.

⑥ Catalog numbers with specific voltages (i.e. @ 575V) shaded in gray are suitable for use as a manual motor starter only because they are not Type E rated. See page F5 for ratings.

### Non-Reversing Ecombo Starters with DC Coil, Series CA8 Contactor

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ②
		200V	230V	460V	575V	
<b>KTA9-32S – Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLE-809*D10-CA16X
0.16...0.25A	3.5	~	~	~	~	CLE-809*D10-CA25X
0.25...0.40A	5.6	~	~	~	~	CLE-809*D10-CA40X
0.40...0.63A	8.8	~	~	~	~	CLE-809*D10-CA63X
0.63...1.0A	14	~	~	1/2	1/2	CLE-809*D10-CB10X
1.0...1.6A	22	~	~	3/4	3/4	CLE-809*D10-CB16X
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLE-809*D10-CB25X
2.5...4.0A	56	3/4	3/4	2	3	CLE-809*D10-CB40X
4.0...6.3A	88	1	1-1/2	3	5 ⑤	CLE-809*D10-CB63X
6.3...10A	140	2	2	5	5 ⑤	CLE-809*D10-CC10X
6.3...10A	140	2	2	5	7-1/2 ⑥	CLE-812*D10-CC10X
10...16A	224	3	3	7-1/2	10 ⑥	CLE-812*D10-CC16X

### Reversing Ecombo Starters with DC Coil, Series CA8 Contactor

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ②
		200V	230V	460V	575V	
<b>KTA9-32S – Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLUE-809*D10-CA16X
0.16...0.25A	3.5	~	~	~	~	CLUE-809*D10-CA25X
0.25...0.40A	5.6	~	~	~	~	CLUE-809*D10-CA40X
0.40...0.63A	8.8	~	~	~	~	CLUE-809*D10-CA63X
0.63...1.0A	14	~	~	1/2	1/2	CLUE-809*D10-CB10X
1.0...1.6A	22	~	~	3/4	3/4	CLUE-809*D10-CB16X
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLUE-809*D10-CB25X
2.5...4.0A	56	3/4	3/4	2	3	CLUE-809*D10-CB40X
4.0...6.3A	88	1	1-1/2	3	5 ⑤	CLUE-809*D10-CB63X
6.3...10A	140	2	2	5	5 ⑤	CLUE-809*D10-CC10X
6.3...10A	140	2	2	5	7-1/2 ⑥	CLUE-812*D10-CC10X
10...16A	224	3	3	7-1/2	10 ⑥	CLUE-812*D10-CC16X



Includes:

- KTA9-32S (Standard Interrupting Capacity) Motor Controller
- CA8 Contactor
- Connecting Module (Cat.# KT9-32S-PEK12)
- Terminal Adaptor for Type F Applications (Cat.# KT9-40-TE)
- Can mount on one DIN-rail



Includes:

- KTA9-32S (Standard Interrupting Capacity) Motor Controller
- One Reversing CAU8 Contactor with Mechanical Interlock (CM8)
- Connecting Module (Cat.# KT9-32S-PEK12)
- Terminal Adaptor for Type F Applications (Cat.# KT9-40-TE)
- Reversing Power Wiring Kit (Cat.# CAUT8-PW)
- Can mount on one DIN-rail

DC Coil Code	Voltage
012	12V
024	24V ③
110	110V
125	125V
220	220V

**Horsepower ratings shown in the tables are for reference only. The final selection of the controller depends on the actual motor full load current and service factor.**

- For motor with service factor less than 1.15. Use motor nameplate full load current times 0.9 and choose the motor starter with the appropriate current range. Example: Motor F.L.C. = 4.2A; S.F. = 1.0. – 4.2A x 0.9 = 3.78A. Select Catalog Number KTA9-32S-4.0A.

- KAIC Assembly Rating Index. See pages F73-F76 for Application Rating Guide.
- Does not include auxiliary contacts. See Factory Options on page F1.48 for additional auxiliary contact configurations.
- The coil codes shown are the most commonly stocked items. Contact your Sprecher + Schuh representative if special voltages are required.
- Integrated surge suppressor for coil is available. See page F1.48 for options.
- The European Community has agreed that 400V is the nominal voltage in lieu of 380V. Use this code when 380V is required.
- Use this code for 575V applications.
- Catalog numbers with specific voltages (i.e. @ 575V) shaded in gray are suitable for use as a manual motor starter only because they are not Type E rated. See page F5 for ratings.



### Non-Reversing Ecombo Starters with AC Coil, Series CA7 Contactor ②

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ①
		200V	230V	460V	575V	
<b>KTA9-32S - Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLE-709*10-CA16B
0.16...0.25A	3.5	~	~	~	~	CLE-709*10-CA25B
0.25...0.40A	5.6	~	~	~	~	CLE-709*10-CA40B
0.40...0.63A	8.8	~	~	~	~	CLE-709*10-CA63B
0.63...1.0A	14	~	~	1/2	1/2	CLE-709*10-CB10B
1.0...1.6A	22	~	~	3/4	3/4	CLE-709*10-CB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLE-709*10-CB25B
2.5...4.0A	56	3/4	3/4	2	3	CLE-709*10-CB40B
4.0...6.3A	88	1	1-1/2	3	5 ④	CLE-709*10-CB63B
6.3...10A	140	2	2	5	7-1/2 ④	CLE-709*10-CC10B
6.3...10A	140	3	3	7-1/2	7-1/2 ④	CLE-712*10-CC10B
10...16A	224	3	5	10	10 ④	CLE-716*10-CC16B
<b>KTA9-40H – High Interrupting Capacity (14 x In)</b>						
0.40...0.63A	8.8	~	~	~	~	CLE-709*10-DA63B
0.63...1.0A	14	~	~	1/2	1/2	CLE-709*10-DB10B
1.0...1.6A	22	~	~	3/4	3/4	CLE-709*10-DB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLE-709*10-DB25B
2.5...4.0A	56	3/4	3/4	2	3	CLE-709*10-DB40B
4.0...6.3A	88	1	1-1/2	3	5	CLE-709*10-DB63B
6.3...10A	140	2	2	5	7-1/2	CLE-709*10-DC10B
6.3...10A	140	2	2	5	7-1/2	CLE-712*10-DC10B
10...16A	224	3	5	10	10	CLE-716*10-DC16B
14.5...20A	280	5	5	10	15 ④	CLE-723*10-DC20B
18...25A	350	5	7-1/2	15	20 ④	CLE-723*10-DC25B
23...29A	406	7-1/2	10	20	25 ④	CLE-730*10-DC29B
26.5...32A	448	7-1/2	10	20	30 ④	CLE-730*10-DC32B
30...36A	432	10	10	25	30 ④	CLE-737*10-DC36B
34...40A	480	10	10	25	30 ④	CLE-737*10-DC40B
<b>KTA7-45H – High Interrupting Capacity (13 x In)</b>						
6.3...10A	130	2	3	5	7-1/2	CLE-730*10-FC10B-W ②
10...16A	208	3	5	10	10	CLE-730*10-FC16B-W ②
14.5...20A	260	5	5	10	15	CLE-730*10-FC20B-W ②
18...25A	325	7-1/2	7-1/2	15	20	CLE-730*10-FC25B-W ②
23...32A	416	7-1/2	10	20	25	CLE-730*10-FC32B-W ②
32...45A	585	10	10	25	30	CLE-737*10-FC45B-W ②
32...45A	585	10	15	30	30	CLE-743*11-FC45C-W ② ③

For applications above 45 amps please consider open type combination starters on page C59.

### Coil Codes (\*) ①

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
024Z	24V	24V
0120	110V	120V
220W	200-220V	208-240V
230Z	230V	230V
0277	240V	277V
0415	400-415V	~
0480 ⑤	440V	480V
0600 ⑤	550V	600V

**Horsepower ratings shown in the tables are for reference only. The final selection of the controller depends on the actual motor full load current and service factor.**

- For motor with service factor less than 1.15. Use motor nameplate full load current times 0.9 and choose the motor starter with the appropriate current range. Example: Motor F.L.C. = 4.2A; S.F. = 1.0. – 4.2A x 0.9 = 3.78A. Select Catalog Number KTA9-32S-4.0A.

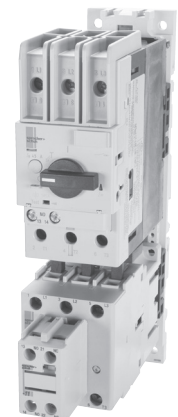


Includes:

- KT9 Motor Controller with 1 NO Auxiliary Contact
- CA7 Contactor (AC)
- Connecting Module (Cat.# KT9-32S or 40H-PEC23)
- Terminal Adaptor for Type E/F Applications
- Can mount on one DIN-rail

Optional: ②

- Type W Mounting Module is optional on 32S & 40H. Type W Module is standard on C26 to C29 and 45H models. See modifications on page F69.



### Ordering Instructions

Specify Catalog Number	
Replace (*) with Coil Code	See Coil Code table on this page for codes.

① Other voltages available, see Section A in this catalog.

② CLE-730...743 with KTA7-45H include Type W Mounting Modules for 35mm or 70mm DIN rail or Panel Mounting as necessary from page F17. To add Type W Mounting Modules for 32S models add -W to end of catalog number. See page F69 for modifications.

③ CLE-743 supplied with (1) NO and (1) NC front mount auxiliary.

④ Catalog numbers with specific voltages (i.e. @ 575V) shaded in gray are suitable for use as a manual motor starter only because they are not Type E rated. See page F5 for ratings.

### Non-Reversing Ecombo Starters with DC Coil, Series CA7 Contactor ②

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ①
		200V	230V	460V	575V	
<b>KTA9-32S - Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLE-709*E10-CA16B
0.16...0.25A	3.5	~	~	~	~	CLE-709*E10-CA25B
0.25...0.40A	5.6	~	~	~	~	CLE-709*E10-CA40B
0.40...0.63A	8.8	~	~	~	~	CLE-709*E10-CA63B
0.63...1.0A	14	~	~	1/2	1/2	CLE-709*E10-CB10B
1.0...1.6A	22	~	~	3/4	3/4	CLE-709*E10-CB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLE-709*E10-CB25B
2.5...4.0A	56	3/4	3/4	2	3	CLE-709*E10-CB40B
4.0...6.3A	88	1	1-1/2	3	5 ④	CLE-709*E10-CB63B
6.3...10A	140	2	2	5	7-1/2 ④	CLE-709*E10-CC10B
6.3...10A	140	3	3	7-1/2	7-1/2 ④	CLE-712*E10-CC10B
10...16A	224	3	5	10	10 ④	CLE-716*E10-CC16B
<b>KTA9-40H – High Interrupting Capacity (14 x In)</b>						
0.40...0.63A	8.8	~	~	~	~	CLE-709*E10-DA63B
0.63...1.0A	14	~	~	1/2	1/2	CLE-709*E10-DB10B
1.0...1.6A	22	~	~	3/4	3/4	CLE-709*E10-DB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLE-709*E10-DB25B
2.5...4.0A	56	3/4	3/4	2	3	CLE-709*E10-DB40B
4.0...6.3A	88	1	1-1/2	3	5	CLE-709*E10-DB63B
6.3...10A	140	2	2	5	7-1/2	CLE-709*E10-DC10B
6.3...10A	140	2	2	5	7-1/2	CLE-712*E10-DC10B
10...16A	224	3	5	10	10	CLE-716*E10-DC16B
14.5...20A	280	5	5	10	15 ④	CLE-723*E10-DC20B
18...25A	350	5	7-1/2	15	20 ④	CLE-723*E10-DC25B
23...29A	406	7-1/2	10	20	25 ④	CLE-730*E10-DC29B
26.5...32A	448	7-1/2	10	20	30 ④	CLE-730*E10-DC32B
30...36A	432	10	10	25	30 ④	CLE-737*E10-DC36B
34...40A	480	10	10	25	30 ④	CLE-737*E10-DC40B
<b>KTA7-45H – High Interrupting Capacity (13 x In)</b>						
6.3...10A	130	2	3	5	7-1/2	CLE-730*E10-FC10B-W ②
10...16A	208	3	5	10	10	CLE-730*E10-FC16B-W ②
14.5...20A	260	5	5	10	15	CLE-730*E10-FC20B-W ②
18...25A	325	7-1/2	7-1/2	15	20	CLE-730*E10-FC25B-W ②
23...32A	416	7-1/2	10	20	25	CLE-730*E10-FC32B-W ②
32...45A	585	10	10	25	30	CLE-737*E10-FC45B-W ②
32...45A	585	10	15	30	30	CLE-743*E11-FC45C-W ② ③

For applications above 45 amps please consider open type combination starters on page C59.

### Coil Codes (\*) ①

DC Coil Codes	Voltage
012	12V
024	24V
036	36-48V
048	48-72V
110	110-125V
220	220-250V

Horsepower ratings shown in the tables are for reference only. The final selection of the controller depends on the actual motor full load current and service factor.

- For motor with service factor less than 1.15. Use motor nameplate full load current times 0.9 and choose the motor starter with the appropriate current range. Example: Motor F.L.C. = 4.2A; S.F. = 1.0. - 4.2A x 0.9 = 3.78A. Select Catalog Number KTA9-32S-4.0A.

### Ordering Instructions

Specify Catalog Number	
Replace (*) with Coil Code	See Coil Code table on this page for codes.

- Other voltages available, see Section A in this catalog.
- CLE-730...743 with KTA7-45H include Type W Mounting Modules for 35mm or 70mm DIN rail or Panel Mounting as necessary from page F17. To add Type W Mounting Modules for 32S models add -W to end of catalog number. See page F1.48 for modifications.
- CLE-743 supplied with (1) NO and (1) NC front mount auxiliary.
- Catalog numbers with specific voltages (i.e. @ 575V) shaded in gray are suitable for use as a manual motor starter only because they are not Type E rated. See page F5 for ratings.

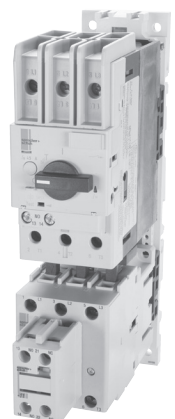


Includes:

- KT9 Motor Controller with 1 NO Auxiliary Contact
- CA7 Contactor (DC)
- Connecting Module (Cat.# KT9-32S or 40H-PEC23)
- Terminal Adaptor for Type E/F Applications
- Can mount on one DIN-rail

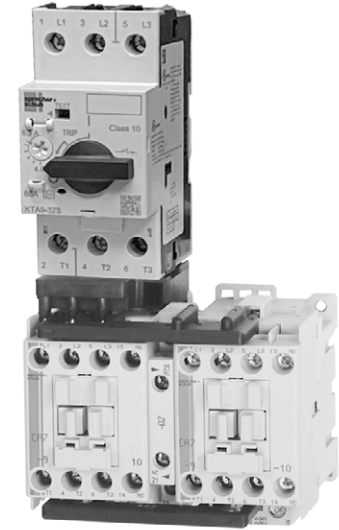
Optional: ②

- Type W Mounting Module is optional on 32S & 40H. Type W Module is standard on C26 to C29 and 45H models. See modifications on page F1.48.



### Reversing Ecombo Starters with AC Coil, Series CA7 Contactor ②

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ①
		200V	230V	460V	575V	
<b>KTA9-32S - Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLUE-709*22-CA16B
0.16...0.25A	3.5	~	~	~	~	CLUE-709*22-CA25B
0.25...0.40A	5.6	~	~	~	~	CLUE-709*22-CA40B
0.40...0.63A	8.8	~	~	~	~	CLUE-709*22-CA63B
0.63...1.0A	14	~	~	1/2	1/2	CLUE-709*22-CB10B
1.0...1.6A	22	~	~	3/4	3/4	CLUE-709*22-CB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLUE-709*22-CB25B
2.5...4.0A	56	3/4	3/4	2	3	CLUE-709*22-CB40B
4.0...6.3A	88	1	1-1/2	3	5 ④	CLUE-709*22-CB63B
6.3...10A	140	2	2	5	7-1/2 ④	CLUE-709*22-CC10B
6.3...10A	140	3	3	7-1/2	7-1/2 ④	CLUE-712*22-CC10B
10...16A	224	3	5	10	10 ④	CLUE-716*22-CC16B
<b>KTA9-40H - High Interrupting Capacity (14 x In)</b>						
0.40...0.63A	8.8	~	~	~	~	CLUE-709*22-DA63B
0.63...1.0A	14	~	~	1/2	1/2	CLUE-709*22-DB10B
1.0...1.6A	22	~	~	3/4	3/4	CLUE-709*22-DB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLUE-709*22-DB25B
2.5...4.0A	56	3/4	3/4	2	3	CLUE-709*22-DB40B
4.0...6.3A	88	1	1-1/2	3	5	CLUE-709*22-DB63B
6.3...10A	140	2	2	5	7-1/2	CLUE-709*22-DC10B
6.3...10A	140	2	2	5	7-1/2	CLUE-712*22-DC10B
10...16A	224	3	5	10	10	CLUE-716*22-DC16B
14.5...20A	280	5	5	10	15 ④	CLUE-723*22-DC20B
18...25A	350	5	7-1/2	15	20 ④	CLUE-723*22-DC25B
23...29A	406	7-1/2	10	20	25 ④	CLUE-730*22-DC29B ②
26.5...32A	448	7-1/2	10	20	30 ④	CLUE-730*22-DC32B ②
30...36A	432	10	10	25	30 ④	CLUE-737*22-DC36B ②
34...40A	480	10	10	25	30 ④	CLUE-737*22-DC40B ②
<b>KTA7-45H - High Interrupting Capacity (13 x In)</b>						
6.3...10A	130	2	3	5	7.5	CLUE-730*22-FC10B-W ②
10...16A	208	3	5	10	10	CLUE-730*22-FC16B-W ②
14.5...20A	260	5	5	10	15	CLUE-730*22-FC20B-W ②
18...25A	325	7.5	7.5	15	20	CLUE-730*22-FC25B-W ②
23...32A	416	7.5	10	20	25	CLUE-730*22-FC32B-W ②
32...45A	585	10	10	25	30	CLUE-737*22-FC45B-W ②
32...45A	585	10	15	30	30	CLUE-743*22-FC45C-W ②③



#### Includes:

- KT9 Motor Controller with 1 NO Auxiliary Contact
- Two CA7 Contactors (AC)
- Connecting Module (Cat.# KT9-32S or 40H-PEC23)
- Terminal Adaptor for Type E/F Applications
- Reversing Power Wiring Kit (Cat.# CAUT7-PW23)
- Electrical / Mechanical Interlock
- Can mount on one DIN-rail

#### Optional: ②

- Type W Mounting Module is optional on 32S & 40H. Type W Module is standard on C29...C40 and 45H models. See modifications on page F69.

### Coil Codes (\*) ①

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
024Z	24V	24V
0120	110V	120V
220W	200-220V	208-240V
230Z	230V	230V
0277	240V	277V
0415	400-415V	~
0480 ⑤	440V	480V
0600 ⑤	550V	600V

Horsepower ratings shown in the tables are for reference only. **The final selection of the controller depends on the actual motor full load current and service factor.**

- For motor with service factor less than 1.15. Use motor nameplate full load current times 0.9 and choose the motor starter with the appropriate current range. Example: Motor F.L.C. = 4.2A; S.F. = 1.0. - 4.2A x 0.9 = 3.78A. Select Catalog Number KTA9-32S-4.0A.

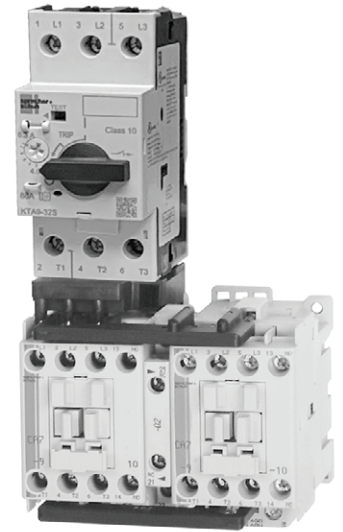
### Ordering Instructions

Specify Catalog Number	
Replace (*) with Coil Code	See Coil Code table on this page for codes.

- ① Other voltages available, see Section A in this catalog.
- ② CLUE-730...743 with KTA9-40H and KTA7-45H include Type W Mounting Modules for 35mm or 70mm DIN rail or Panel Mounting as necessary from page F17
- ③ CLUE-743 supplied with (1) NO and (1) NC front mount auxiliary per contactor.
- ④ Catalog numbers with specific voltages (i.e. @ 575V) shaded in gray are suitable for use as a manual motor starter only because they are not Type E rated. See page F5 for ratings.

Reversing Ecombo Starters with DC Coil, Series CA7 Contactor ②

Thermal Trip [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ①
		200V	230V	460V	575V	
<b>KTA9-32S - Standard Interrupting Capacity (14 x In)</b>						
0.10...0.16A	2.2	~	~	~	~	CLUE-709*E22-CA16B
0.16...0.25A	3.5	~	~	~	~	CLUE-709*E22-CA25B
0.25...0.40A	5.6	~	~	~	~	CLUE-709*E22-CA40B
0.40...0.63A	8.8	~	~	~	~	CLUE-709*E22-CA63B
0.63...1.0A	14	~	~	1/2	1/2	CLUE-709*E22-CB10B
1.0...1.6A	22	~	~	3/4	3/4	CLUE-709*E22-CB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLUE-709*E22-CB25B
2.5...4.0A	56	3/4	3/4	2	3	CLUE-709*E22-CB40B
4.0...6.3A	88	1	1-1/2	3	5 ④	CLUE-709*E22-CB63B
6.3...10A	140	2	2	5	7-1/2 ④	CLUE-709*E22-CC10B
6.3...10A	140	3	3	7-1/2	7-1/2 ④	CLUE-712*E22-CC10B
10...16A	224	3	5	10	10 ④	CLUE-716*E22-CC16B
<b>KTA9-40H - High Interrupting Capacity (14 x In)</b>						
0.40...0.63A	8.8	~	~	~	~	CLUE-709*E22-DA63B
0.63...1.0A	14	~	~	1/2	1/2	CLUE-709*E22-DB10B
1.0...1.6A	22	~	~	3/4	3/4	CLUE-709*E22-DB16B
1.6...2.5A	35	1/2	1/2	1	1-1/2	CLUE-709*E22-DB25B
2.5...4.0A	56	3/4	3/4	2	3	CLUE-709*E22-DB40B
4.0...6.3A	88	1	1-1/2	3	5	CLUE-709*E22-DB63B
6.3...10A	140	2	2	5	7-1/2	CLUE-709*E22-DC10B
6.3...10A	140	2	2	5	7-1/2	CLUE-712*E22-DC10B
10...16A	224	3	5	10	10	CLUE-716*E22-DC16B
14.5...20A	280	5	5	10	15 ④	CLUE-723*E22-DC20B
18...25A	350	5	7-1/2	15	20 ④	CLUE-723*E22-DC25B
23...29A	406	7-1/2	10	20	25 ④	CLUE-730*E22-DC29B ②
26.5...32A	448	7-1/2	10	20	30 ④	CLUE-730*E22-DC32B ②
30...36A	432	10	10	25	30 ④	CLUE-737*E22-DC36B ②
34...40A	480	10	10	25	30 ④	CLUE-737*E22-DC40B ②
<b>KTA7-45H - High Interrupting Capacity (13 x In)</b>						
6.3...10A	130	2	3	5	7.5	CLUE-730*E22-FC10B-W ②
10...16A	208	3	5	10	10	CLUE-730*E22-FC16B-W ②
14.5...20A	260	5	5	10	15	CLUE-730*E22-FC20B-W ②
18...25A	325	7.5	7.5	15	20	CLUE-730*E22-FC25B-W ②
23...32A	416	7.5	10	20	25	CLUE-730*E22-FC32B-W ②
32...45A	585	10	10	25	30	CLUE-737*E22-FC45B-W ②
32...45A	585	10	15	30	30	CLUE-743*E22-FC45C-W ②⑥



Includes:

- KT9 Motor Controller with 1 NO Auxiliary Contact
- Two CA7 Contactors (DC)
- Connecting Module (Cat.# KT9-32S or 40H-PEC23)
- Terminal Adaptor for Type E/F Applications
- Reversing Power Wiring Kit (Cat.# CAUT7-PW23)
- Electrical / Mechanical Interlock
- Can mount on one DIN-rail

Optional: ②

- Type W Mounting Module is optional on 32S & 40H. Type W Module is standard on C29...C40 and 45H models. See modifications on page F1.48.

**F** Ecombo Circuit Controllers

Coil Codes (\*) ①

DC Coil Codes	Voltage
012	12V
024	24V
036	36-48V
048	48-72V
110	110-125V
220	220-250V

Horsepower ratings shown in the tables are for reference only. The final selection of the controller depends on the actual motor full load current and service factor.

- For motor with service factor less than 1.15. Use motor nameplate full load current times 0.9 and choose the motor starter with the appropriate current range. Example: Motor F.L.C. = 4.2A; S.F. = 1.0. - 4.2A x 0.9 = 3.78A. Select Catalog Number KTA9-32S-4.0A.

Ordering Instructions

Specify Catalog Number	
Replace (*) with Coil Code	See Coil Code table on this page for codes.

- ① Other voltages available, see Section A in this catalog.
- ② CLUE-730...743 with KTA9-40H and KTA7-45H include Type W Mounting Modules for 35mm or 70mm DIN rail or Panel Mounting as necessary from page F17
- ③ CLUE-743 supplied with (1) NO and (1) NC front mount auxiliary per contactor.
- ④ Catalog numbers with specific voltages (i.e. @ 575V) shaded in gray are suitable for use as a manual motor starter only because they are not Type E rated. See page F5 for ratings.



### CLE and CLUE Modifications ③

Modification	Change Last Digit in Catalog Number to: ❶
<b>KT9 Auxiliary (Front Mount 250VAC max.) and Trip Contacts</b>	
Auxiliary Contact 1 NO (CL_-8 only)	<b>B</b>
Auxiliary Contact 1 NC	<b>A</b>
Auxiliary Contact 1 NO + 1 NC	<b>C</b>
Auxiliary Contact 2 NO	<b>D</b>
1 NO SC or OL + 1 NC Auxiliary Contact	<b>R</b>
1 NO SC or OL + 1 NO Auxiliary Contact	<b>S</b>
1 NC SC or OL + 1 NO Auxiliary Contact	<b>T</b>
<b>KT9 Auxiliary (Side Mount 600VAC max.) and Trip Contacts</b>	
Auxiliary Contact 2 NC	<b>E</b>

### CLE and CLUE Additions ③

Add desired suffix AFTER auxiliary contact option code.

Addition	Add Suffix to Catalog Number:
<b>Accessories</b>	
Electronic Interfaces (CA7)	<b>-JE ❷</b>
Lockable Twist Knob (KT9) - Black	<b>-KN</b>
Lockable Twist Knob (KT9) - Red/Yellow	<b>-KY</b>
Type W Mounting Module for CLE-709...723 includes 45mm short module (W-32489)	<b>-W</b>
Type W Mounting Module for CLUE-709...723 includes 45mm (W-32849) and 54mm (W-32490) short module	<b>-W</b>
<b>Additional KT9 Trip Contacts (Side Mount)</b>	
1 NO SC or OL + 1 NO SC	<b>-R00</b>
1 NO SC or OL + 1 NC SC	<b>-R01</b>
1 NC SC or OL + 1 NO SC	<b>-R10</b>
1 NC SC or OL + 1 NC SC	<b>-R11</b>
1 NO SC + 1 NC SC	<b>-M11</b>

F  
ECombo Circuit Controllers

❶ For CLE-8... or CLUE-8..., change last digit "X" to one of the modifications listed. Example: – CLE-809\*10-CA16X changes to CLE-809\*10-CA16B.  
For CLE-7... or CLUE-7..., change last digits "B" to one of the modifications listed. Example: CLE-709\*10-CA16B changes to CLE-709\*10-CA16C.

❷ CRI7E-24 will be used. CRI7E-12 by special order only.

❸ See pages A47 for limitations on adding auxiliaries to Electronic DC Coil contactors.

### Non-Reversing 3-Component Ecombo Starters ③④

Rated Oper. Current [A] ⑥	Overload Adj. Range [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ②
			200V	230V	460V	575V	
<b>KT B9-40H – High Interrupting Capacity (14 x In)</b>							
0.63	1.0...5.0	8.8	~	~	~	~	CLE-709*10-DA63B-FCB
1.0	1.0...5.0	14	~	~	1/2	1/2	CLE-709*10-DB10B-FCB
1.6	1.0...5.0	22	~	~	3/4	3/4	CLE-709*10-DB16B-FCB
2.5	1.0...5.0	35	1/2	1/2	1	1-1/2	CLE-709*10-DB25B-FCB
4.0	1.0...5.0	52	3/4	3/4	2	3	CLE-709*10-DB40B-FCB
6.3	3.2...16	88	1	1-1/2	3	5	CLE-709*10-DB63B-FDB
10	3.2...16	130	2	2	5	7-1/2	CLE-709*10-DC10B-FDB
16	5.4...27	208	3	3	7-1/2	10	CLE-712*10-DC16B-FEB
20	5.4...27	280	5	5	10	~	CLE-723*10-DC20B-FEB
25	5.4...27	325	5	7-1/2	15	~	CLE-723*10-DC25B-FEB
29	11...55	406	7-1/2	10	20	~	CLE-730*10-DC29B-FFD
32	11...55	448	7-1/2	10	20	~	CLE-730*10-DC32B-FFD
<b>KT B7-45H – High Interrupting Capacity (13 x In)</b>							
25	5.4...27	325	5	7-1/2	15	20	CLE-730*10-FC25B-FED
32	11...55	416	7-1/2	10	20	25	CLE-730*10-FC32B-FFD
32	11...55	416	7-1/2	10	20	25	CLE-737*10-FC32B-FFD
45	11...55	585	10	10	25	30	CLE-737*10-FC45B-FFD
45	11...55	585	10	15	30	~	CLE-743*11-FC45C-FFD



#### Includes:

- KTB9 Motor Controller
- CA7 Contactor (AC)
- CEP7 Solid State Overload Relay
- KT9 Connectors
- Terminal Adaptor for Type E Applications
- Mounting Modules for 40H or 45H Frame Units as required from page F17
- See page F72 for Factory Options

### Coil Codes (\*) ①

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
024Z	24V	24V
0120	110V	120V
220W	200-220V	208-240V
230Z	230V	230V
0277	240V	277V
0415	400-415V	~
0480 ⑥	440V	480V
0600 ⑥	550V	600V

### Ordering Instructions

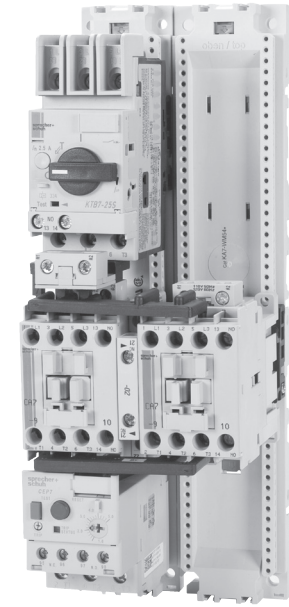
Specify Catalog Number	
Replace (*) with Coil Code	See Coil Code table on this page for codes.

- ① KAIC Assembly Rating Index. See pages F73-F76 for Application Rating Guide.
- ② Other voltages available, see Section A in this catalog.
- ③ All CLE are supplied with Auxiliary Contacts for customer use as follows:  
 CLE-709...723 (1) NO Internal Mount  
 CLE-730...737 (1) NO Side Mount  
 CLE-743 (1) NO & (1) NC Front Mount  
 All KTB9s are supplied with (1) NO auxiliary contact, which should be used in series with the NC contact on the overload (95-96).
- ④ Horsepower ratings shown in tables are for reference only. **The final selection of the controller and solid state overload relay depends on the actual motor full load current and service factor.**
- ⑤ The KTB9 Motor Circuit Controller is designed and tested to protect a motor circuit in case of a shortcircuit. A separate Sprecher + Schuh CEP7-1EF overload relay with selectable trip class should be used to protect the motor against overload. In Applications with motor starting times exceeding 10 seconds (heavy duty starting) the rated operational current (Ie) of the motor FLA must be multiplied by the following factors for selection of the KTB9 Motor Circuit Controller KTB9-40H and KTB7-45H.  
 Trip classes according to UL 508 Section 52 and IEC 60947-4-1  
 CLASS 10 = 1.0, CLASS 15 = 1.22, CLASS 20 = 1.42, CLASS 25 = 1.58, CLASS 30 = 1.7  
 The maximum number of motor starts in 25 cycles/hour with a minimum OFF-time of 120 seconds between cycles. This additional calculation and selecting a larger frame size is necessary to compensate (dissipate) the increased heat resulting from long acceleration applications effecting the rated operational current of the KTB9.

F Ecombo Circuit Controllers

### Reversing 3-Component Ecombo Starters ③④⑤

Rated Oper. Current [A] ⑥	Overload Adj. Range [A]	Magnetic Trip [A]	Typical Three Phase [HP]				Catalog Number ②④⑦
			200V	230V	460V	575V	
<b>KTB9-40H – High Interrupting Capacity (14 x In)</b>							
0.63	1.0...5.0	8.8	~	~	~	~	CLUE-709*10-DA63B-FCB
1.0	1.0...5.0	14	~	~	1/2	1/2	CLUE-709*10-DB10B-FCB
1.6	1.0...5.0	22	~	~	3/4	3/4	CLUE-709*10-DB16B-FCB
2.5	1.0...5.0	35	1/2	1/2	1	1-1/2	CLUE-709*10-DB25B-FCB
4.0	1.0...5.0	52	3/4	3/4	2	3	CLUE-709*10-DB40B-FCB
6.3	3.2...16	88	1	1-1/2	3	5	CLUE-709*10-DB63B-FDB
10	3.2...16	130	2	2	5	7-1/2	CLUE-709*10-DC10B-FDB
16	5.4...27	208	3	3	7-1/2	10	CLUE-712*10-DC16B-FEB
20	5.4...27	280	5	5	10	~	CLUE-723*10-DC20B-FEB
25	5.4...27	325	5	7-1/2	15	~	CLUE-723*10-DC25B-FEB
29	11...55	406	7-1/2	10	20	~	CLUE-730*10-DC29B-FFD
32	11...55	448	7-1/2	10	20	~	CLUE-730*10-DC32B-FFD
<b>KTB7-45H – High Interrupting Capacity (13 x In)</b>							
25	5.4...27	325	5	7-1/2	15	20	CLUE-730*22-FC25B-FED
32	11...55	416	7-1/2	10	20	25	CLUE-730*22-FC32B-FFD
32	11...55	416	7-1/2	10	20	25	CLUE-737*22-FC32B-FFD
45	11...55	585	10	10	25	30	CLUE-737*22-FC45B-FFD
45	11...55	585	10	15	30	~	CLUE-743*22-FC45B-FFD



#### Includes:

- KTB9 Motor Controller
- CAU7 Reversing Contactor (AC)
- CEP7 Solid State Overload Relay
- KT9 Connectors
- Terminal Adaptor for Type E Applications
- Mounting Modules for 40H or 45H Frame Units as required from page F17
- See page F72 for Factory Options

### Coil Codes (\* ) ①

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
024Z	24V	24V
0120	110V	120V
220W	200-220V	208-240V
230Z	230V	230V
0277	240V	277V
0415	400-415V	~
0480 ⑥	440V	480V
0600 ⑥	550V	600V

### Ordering Instructions

Specify Catalog Number	
Replace (*) with Coil Code	See Coil Code table on this page for codes.

- ① KAIC Assembly Rating Index. See pages F73-F76 for Application Rating Guide.
- ② Other voltages available, see Section A in this catalog.
- ③ All CLUE are supplied with Auxiliary Contacts for customer use as follows;
  - CLUE-709...723 (1) NO Internal Mount
  - CLUE-730...737 (1) NO Side Mount
  - CLUE-743 (1) NO & (1) NC Front Mount
  - CM7-02 interlock (2) NC (Electrical Interlocks)
 All KTB9s are supplied with (1) NO auxiliary contact (A10), which should be used in series with the NC contact on the overload (95-96).
- ④ All CAU7 reversing contactors are supplied with CM7-02, including (2) NC contacts for electronic interlocking (not available for customer use).
- ⑤ Horsepower ratings shown in tables are for reference only. **The final selection of the controller and solid state overload relay depends on the actual motor full load current and service factor.**
- ⑥ The KTB9 Motor Circuit Controller is designed and tested to protect a motor circuit in case of a short circuit. A separate Sprecher + Schuh CEP7-1EF overload relay with selectable trip class should be used to protect the motor against overload. In Applications with motor starting times exceeding 10 seconds (heavy duty starting) the rated operational current (Ie) of the motor FLA must be multiplied by the following factors for selection of the KTB9 Motor Circuit Controller KTB9-40H and KTB7-45H.
  - Trip classes according to UL 508 Section 52 and IEC 60947-4-1
  - CLASS 10 = 1.0, CLASS 15 = 1.22, CLASS 20 = 1.42, CLASS 25 = 1.58, CLASS 30 = 1.73
 The maximum number of motor starts in 25 cycles/hour with a minimum OFF-time of 120 seconds between cycles. This additional calculation and selecting a larger frame size is necessary to compensate (dissipate) the increased heat resulting from long acceleration applications effecting the rated operational current of the KTB9.