



STARTERS

MAGNETIC MOTOR STARTERS



Line Starter



Combination Starter

FEATURES-SPECIFICATIONS



Applications

The PRISM® B7 Series of across-the-line starter and combination motor control centers utilize SSNR single-speed, non-reversing NEMA type starters.

Prism enclosures universal design accommodates, as standard, the magnetic starters made by the following manufacturers:

- Allen-Bradley – 509 Series
- Cutler-Hammer – A10 Series
- Cutler-Hammer – AN16 Series
- Furnas – Class 14 Series
- GE – CR306 Series
- Square D – 8536 Series
- Telemecanique – A20 Series
- Westinghouse – A200 Series

In addition, the SSNR combination starters will house a Cutler-Hammer (Eaton) motor circuit protector or circuit breakers manufactured by:

- Square D – FA, FH, FC Frames
- Cutler-Hammer – HMC, EHD, FDB, FD, HFD, FDC Frames
- General Electric – TEB-TEC-TED-THED-Frame

There is sufficient space in the combination starter enclosure for a control transformer, if required.

Standard Materials

Enclosure – Copper-free aluminum

O-ring Gasket – BUNA-N nitrile

Cover Bolts – 316 grade stainless steel

CB/MCP Handle – Copper-free aluminum

Reset Operator – Thermoplastic polyester button molded onto stainless steel shaft. Aluminum shroud.

Mounting Pan – Sheet aluminum

Hinge – Aluminum with stainless steel pin

Reset Shroud – Black anodized

Features

- Nema 4, 4X rated – providing protection from hose directed water and corrosion
- Universal mounting pan, pre-drilled to facilitate easy field installation of starters. Provision for grounding supplied as standard.
- More wiring room – meets latest NEC wire bend requirements
- Quick release, captivated cover bolts of 316 grade stainless steel
- Flange sealing gasket located to the inside of cover bolt – preventing water seepage into enclosure through bolt holes
- Hinged cover provided as standard for an extra measure of safety and convenience
- Breaker (MCP) handle can be padlocked in “ON” or “OFF” position

Class I, Div. 1 & 2, Groups B, C, D
 Class I, Zones 1 & 2, Groups IIB, IIA
 Class II, Div. 1 & 2, Groups E, F, G
 Class III, Div. 1 & 2
 NEMA 3, 4, 4X, 7 (B, C, D) 9 (E, F, G)



- File E83969



Certified - File LR11714

See files for details or call Killark.

- Provisions provided for drain and breather plus conduit openings for power and control
- Reset button provided as standard
- Two control operator openings provided plugged as standard. Additional openings can be factory or field drilled.
- Copper-free (less than 4/10 of 1% copper) enclosure
- Ductile mounting lugs

Catalog Logic

See page S8 for enclosures with controls.

NEW! The SQD 8536 Series now offered with solid state adjustable Class 30 overload relays. Overload heaters are no longer required.



B7 SERIES



MAGNETIC MOTOR STARTERS



Line Starter



Combination Starter

Class I, Div. 1 & 2, Groups B, C, D
 Class I, Zones 1 & 2, Groups IIB, IIA
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FEATURES-SPECIFICATIONS

Magnetic Line Starters – 3 Pole, 3 Phase, Single Speed Non Reversing 600 VAC Max, 60Hz

Square D or Cutler-Hammer motor starters available as standard. For Cutler-Hammer only, heaters not included. See page S9 to order.

B7 MAGNETIC LINE STARTERS

NEMA STARTER SIZE	MOTOR VOLTS	COIL VOLTS ^①	MAX. HP	CATALOG NUMBER		ENCLOSURE ONLY NO INTERIORS
				CUTLER-HAMMER SERIES AN16	SQUARE D SERIES 8536 ^②	
0	SEP. CONTROL	120	—	B7010HB	B7010SB	B7011
0	230	240	3	B7010HG	B7010SG	
0	460	480	5	B7010HK	B7010SK	
0	575	600	5	B7010HM	B7010SM	
1	SEP. CONTROL	120	—	B7011HB	B7011SB	B7011
1	230	240	7-1/2	B7011HG	B7011SG	
1	460	480	10	B7011HK	B7011SK	
1	575	600	10	B7011HM	B7011SM	
2	SEP. CONTROL	120	—	B7012HB	B7012SB	B7012
2	230	240	15	B7012HG	B7012SG	
2	460	480	25	B7012HK	B7012SK	
2	575	600	25	B7012HM	B7012SM	
3	SEP. CONTROL	120	—	B7013HB	B7013SB	B7013
3	230	240	30	B7013HG	B7013SG	
3	460	480	50	B7013HK	B7013SK	
3	575	600	50	B7013HM	B7013SM	
4	SEP. CONTROL	120	—	B7014HB	B7014SB	B7014
4	230	240	50	B7014HG	B7014SG	
4	460	480	100	B7014HK	B7014SK	
4	575	600	100	B7014HM	B7014SM	

① See catalog logic page S8 for other standard coil voltages.

② Control transformers for use on Combination Starters Only. Will not fit into B701 Series of Non-Combination Starters.

③ See catalog page S8 for modifications and accessories to enclosure.

④ 8536 have solid state adjustable overload relays. Heaters are no longer required.



STARTERS

MAGNETIC MOTOR STARTERS

Combination Starters 3-Pole, 3-Phase, Single Speed Non Reversing 600 VAC Max, 60Hz

Square D combination motor starter / circuit breaker or Cutler-Hammer (Eaton) motor starter / motor circuit protector available. Enclosures sized to accommodate a control circuit transformer. Cutler-Hammer (Eaton) AN16 Series starters not supplied with overload heaters, see page S9 to order. Square D Series 8538 starters are supplied with adjustable solid state overloads, heaters no longer required.

B7 COMBINATION MAGNETIC LINE STARTERS							
NEMA STARTER SIZE	MOTOR VOLTS	COIL VOLTS ^①	MAX. HP	DISCONNECT TRIP AMPS	CATALOG NUMBER		ENCLOSURE ONLY NO INTERIORS
					CUTLER-HAMMER SERIES AN16	SQUARE D SERIES 8536	
0	SEP. CONTROL	120	—	3	B7020HBCA	B7020SBDA	B7021
0	SEP. CONTROL	120	—	7	B7020HBCB	B7020SBDB	
0	SEP. CONTROL	120	—	15	B7020HBCC	B7020SBDC	
0	230	240	1	7	B7020HGCB	B7020SGDB	
0	230	240	3	15	B7020HGCC	B7020SGDC	
0	460	480	1	3	B7020HKCA	B7020SKDA	
0	460	480	2	7	B7020HKCB	B7020SKDB	
0	460	480	5	15	B7020HKCC	B7020SKDC	
0	575	600	1	3	B7020HMCA	B7020SMDA	
0	575	600	2	7	B7020HMCB	B7020SMDB	
0	575	600	5	15	B7020HMCC	B7020SMDC	
1	SEP. CONTROL	120	—	15	B7021HBCC	B7021SBDC	B7021
1	SEP. CONTROL	120	—	30	B7021HBCF	B7021SBDF	
1	230	240	7-1/2	30	B7021HGCF	B7021SGDF	
1	460	480	10	30	B7021HKCF	B7021SKDF	
1	575	600	10	30	B7021HMCF	B7021SMDF	
2	SEP. CONTROL	120	—	50	B7022HBCK	B7022SBDK	B7022
2	SEP. CONTROL	120	—	70	B7022HBCM	B7022SBDM	
2	230	240	15	50	B7022HGCK	B7022SGDK	
2	230	240	15	70	B7022HGCM	B7022SGDM	
2	460	480	25	50	B7022HKCK	B7022SKDK	
2	575	600	25	50	B7022HMCK	B7022SMDK	
3	SEP. CONTROL	120	—	100	B7023HBCQ	B7023SBdq	B7023
3	230	240	30	100	B7023HGcQ	B7023SGDQ	
3	460	480	50	100	B7023HKCQ	B7023SKDQ	
3	575	600	50	100	B7023HMCQ	B7023SMDQ	
4	SEP. CONTROL	120	—	150	B7024HBCT	B7024SBGT	B7024
4	230	240	50	150	B7024HGCT	B7024SGGT	
4	460	480	100	150	B7024HKCT	B7024SKGT	
4	575	600	100	150	B7024HMCT	B7024SMGT	
5	SEP. CONTROL	120	—	250	B7025CBCMCPJ250	B7025SBSMAGK250	See chart below
5	SEP. CONTROL	120	—	400	B7025CBCMCPK400	B7025SBSMAGL400	
5	230	240	75	250	B7025CGCMCPJ250	B7025SGSMAGK250	
5	230	240	100	400	B7025CGCMCPK400	B7025SGSMAGL400	
5	460	480	150	250	B7025CKCMCPJ250	B7025SKSMAGK250	
5	460	480	200	400	B7025CKCMCPK400	B7025SKSMAGL400	
5	575	600	150	250	B7025CMCMCPJ250	B7025SMSMAGK250	
5	575	600	200	400	B7025CMCMCPK400	B7025SMSMAGL400	

SIZE 5 COMBINATION MOTOR STARTER ENCLOSURE ONLY					
STARTER MANUFACTURER	STARTER TYPE	CIRCUIT BREAKER FRAME			ENCLOSURE CAT. NUMBER
		C-H	GE	SQ-D	
Allen Bradley	Series 509	J	F-225	K	B7025A2
Allen Bradley	Series 509	K	J-600	L	B7025A4
Cutler Hammer	Freedom-AN16	J	F-225	K	B7025C2
Cutler Hammer	Freedom-AN16	K	J-600	L	B7025C4
General Electric	Series 306	J	F-225	K	B7025G2
General Electric	Series 306	K	J-600	L	B7025G4
Square D	Series 8536	J	F-225	K	B7025S2
Square D	Series 8536	K	J-600	L	B7025S4
Eaton	Freedom-AN19 ^②	J	F-225	K	B7025W2
Eaton	Freedom-AN19 ^②	K	J-600	L	B7025W4

- ① See catalog logic page S8 for other standard coil voltages.
- ② Combination Starter enclosures provide sufficient space for factory of field mounting a control transformer.
- ③ See catalog page S8 for modifications and accessories to enclosure.
- ④ Eaton AN-19 Series are supplied with electronic overloads which do not require overload heaters.



B7 SERIES



Supplied with Eaton Freedom AN19 Starters with C440 Electronic Overload Relays Applications

The PRISM® B7 Series of Combination Starters are used for Motor Control and Circuit protection of motors in Hazardous And Hostile locations. These Hazardous locations are typically due to the presence of flammable gases or vapors, combustible dust, or easily ignitable fibers and flyings, and areas which are subject to corrosion, weather and dampness.

AN19 Starter Features

- Electronic Overload Starter
- Brownout Protection
- Communications and user interface capabilities
- Overload Heaters not required
- Phase loss and a selectable (On/Off) phase unbalance protection
- Selectable automatic/manual reset
- Selectable Trip Class (10A, 10, 20, 30)
- Class II ground-fault protection – option add “GF” at end of catalog number

Enclosure Features

- Nema 4, 4X rated – providing protection from hose directed water and corrosion

COMBINATION STARTERS

- Universal mounting pan, pre-drilled to facilitate easy field installation of starters. Provision for grounding supplied as standard.
- More wiring room – meets latest NEC wire bend requirements
- Quick release, captivated cover bolts of 316 grade stainless steel
- Flange sealing gasket located to the inside of cover bolt – preventing water seepage into enclosure through bolt holes
- Hinged cover provided as standard for an extra measure of safety and convenience
- Breaker (MCP) handle can be padlocked in “ON” or “OFF” position
- Provisions provided for drain and breather plus conduit openings for power and control
- Field replaceable reset button provided as standard with gold contact blocks
- Two control operator openings provided plugged as standard. Additional openings can be factory or field drilled
- Copper-free (less than 4/10 of 1% copper) enclosure
- Ductile mounting lugs

Modifications & Accessories

- Select from B7 Modification Chart on page S8
- Minimum Control Transformer
 - » Size 0 50VA
 - » Size 1-2 100VA
 - » Size 3 150VA
 - » Size 4-5 200VA

Class I, Div. 1 & 2, Groups B, C, D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2, Groups E, F, G
Class III, Div. 1 & 2
NEMA 3, 4, 4X, 7 (B, C, D) 9 (E, F, G)



- File E83969



Certified - File LR11714
 See files for details or call Killark.

- AN19 Starters Auxiliary Contacts available, B7HAC page S8

Standard Materials

Enclosure – Copper-free aluminum

O-ring Gasket – BUNA-N nitrile

Cover Bolts – 316 grade stainless steel

CB/MCP Handle – Copper-free aluminum

Reset Operator – Thermoplastic polyester button molded onto stainless steel shaft. Aluminum shroud.

Mounting Pan – Sheet aluminum

Hinge – Aluminum with stainless steel pin

Reset Shroud – Black anodized

Notes:

1. Heaters are not required with the AN19 Starter. The Overload Module has trip current settings via DIP Switch between the amperage range shown.
2. All AN19 Starters are wired for separate control and supplied with 110V/50Hz - 120V/60Hz as standard.
3. Enclosures provide sufficient space for factory or field mounting a control transformer.

B7AD COMBINATION STARTER								
NEMA STARTER SIZE	MOTOR VOLTS	MAXIMUM HP	COIL VOLTS/HZ	DISCONNECT AMP TRIP	WITH MOTOR PROTECTOR AND STARTER	CATALOG NUMBER		
						*ADD OLR CODE [Ⓞ]		ENCLOSURE ONLY
						ORL CODE	FLA RANGE	
0	230	3	110/50 120/60	3 7 15	B7AD020H6CA* B7AD020H6CB* B7AD020H6CC*	-1P6	0.33-1.62A	B7AD021
	460	5				-005	1.0-5.0A	
	575	5				-020	4.0-20A	
1	230	7-1/2	110/50 120/60	30	B7AD021H6CF*	-005	1.0-5.0A	B7AD021
	460	10				-020	4.0-20A	
	575	10				-045	0.9-45A	
2	230	15	110/50 120/60	50	B7AD022H6CK*	-20	4.0-20A	B7AD022
	460	25				-045	0.9-45A	
	575	25						
3	230	30	110/50 120/60	100	B7AD023H6CQ*	-100	20-100A	B7AD023
	460	50						
	575	50						
4	230	50	110/50 120/60	150	B7AD024H6CT*	-140	28-140A	B7AD024
	460	100						
	575	100						
5	230	100	110/50 120/60	400	B7AD025H6K400*	-300	60-300A	B7AD025K
	460	200						
	575	200						



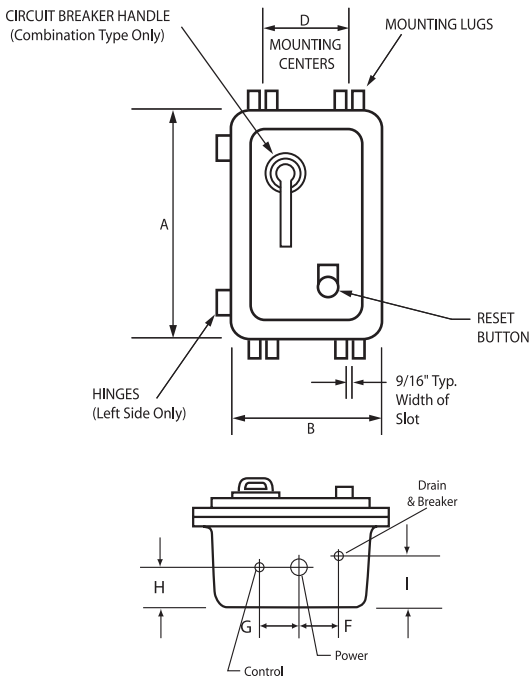
MOTOR STARTERS DIMENSIONS

B7 DIMENSIONS															
CATALOG NUMBER	NEMA SIZE	TYPE	DIMENSIONS									EST. ENCLOSURE WEIGH LBS.	CONDUIT OPENINGS TOP/BOTTOM (NPT)Ⓢ		
			A	B	C	D	E	F	G	H	I		POWER	CONTROL	DRAIN BREATHER
B7011	0,1	Starter Only	18" (457)	11" (280)	9-1/8" (232)	3-5/8" (92)	16-3/8" (416)	2-1/8" (54)	2-3/8" (60)	2-11/16" (68)	3-7/16" (87)	46	1-1/2"	3/4"	1/2"
B7012	2	Starter Only	20" (508)	12-1/2" (317)	9-1/8" (232)	5" (127)	18-3/8" (467)	2-1/2" (63)	2-1/2" (63)	2-11/16" (68)	3-3/16" (81)	56	1-1/2"	3/4"	1/2"
B7013	3	Starter Only	26-1/4" (667)	12-1/2" (317)	10-3/4" (276)	5" (127)	24-5/8" (625)	2-1/2" (63)	2-3/4" (70)	4-1/16" (103)	5-1/2" (140)	80	2"	1"	1/2"
B7014	4	Starter Only	34-1/4" (870)	16-1/2" (419)	11-1/2" (292)	9" (229)	32-5/8" (830)	3-3/4" (95)	4" (102)	4-7/16" (113)	6" (152)	155	3"	1"	1/2"
B7021	0,1	Combination Starter	23" (584)	14-1/2" (368)	9-1/8" (232)	7" (178)	21-3/8" (543)	2-1/8" (54)	2-1/2" (64)	2-11/16" (68)	3-7/16" (87)	78	1-1/2"	3/4"	1/2"
B7022	2	Combination Starter	25-1/2" (648)	14-1/2" (368)	9-1/8" (232)	7" (178)	23-7/48" (606)	2-1/8" (54)	2-1/2" (64)	2-11/16" (68)	3-7/16" (87)	88	1-1/2"	3/4"	1/2"
B7023	3	Combination Starter	27-1/4" (692)	17-7/8" (454)	11" (280)	10-3/8" (263)	25-5/8" (651)	3-1/2" (89)	3-1/2" (89)	4-3/16" (106)	5-1/2" (140)	143	2"	1"	1/2"
B7024	4	Combination Starter	34-1/4" (870)	21-1/2" (546)	11-7/8" (302)	14" (356)	32-5/8" (829)	4-3/4" (121)	5" (127)	4-9/16" (116)	6-3/16" (157)	235	3"	1"	1/2"

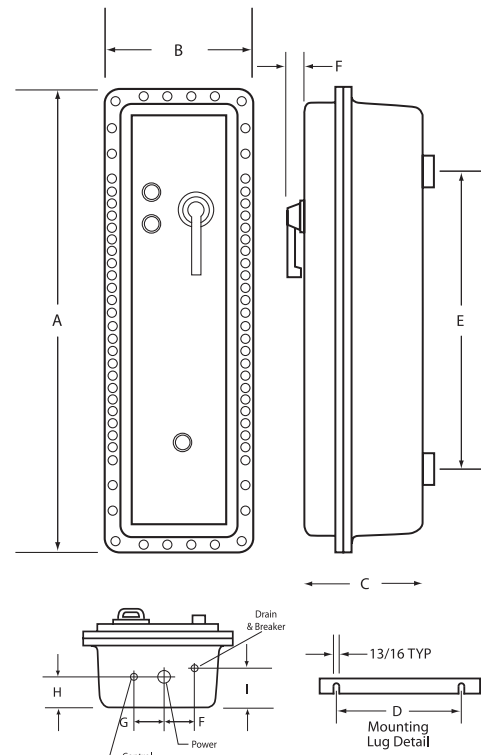
Ⓢ 1/2" conduit openings may be used for drain and/or breather installation. Smaller conduit openings may be used by utilizing reducing bushings. Custom conduit sizes and locations are available upon request.

DIMENSIONS FOR SIZE 5 COMBINATION STARTER														
DIMENSIONS										CONDUIT TOP & BTM. (NPT)			ENCL. WT. (LBS.)	
A	B	C	D	E	F	G	H	I	J	K	L	M		
62-1/4" (1581)	20-1/4" (514)	15" (381)	18-1/2" (470)	43-1/2" (1105)	2-5/8" (67)	3-1/8" (79)	5-3/8" (137)	7-3/8" (187)	3-1/2" (89)	4" (102)	1/2" (13)	1" (25)	540	

Dimensions B7 Size 0 Thru 4



Dimensions B7 Size 5





B7 SERIES



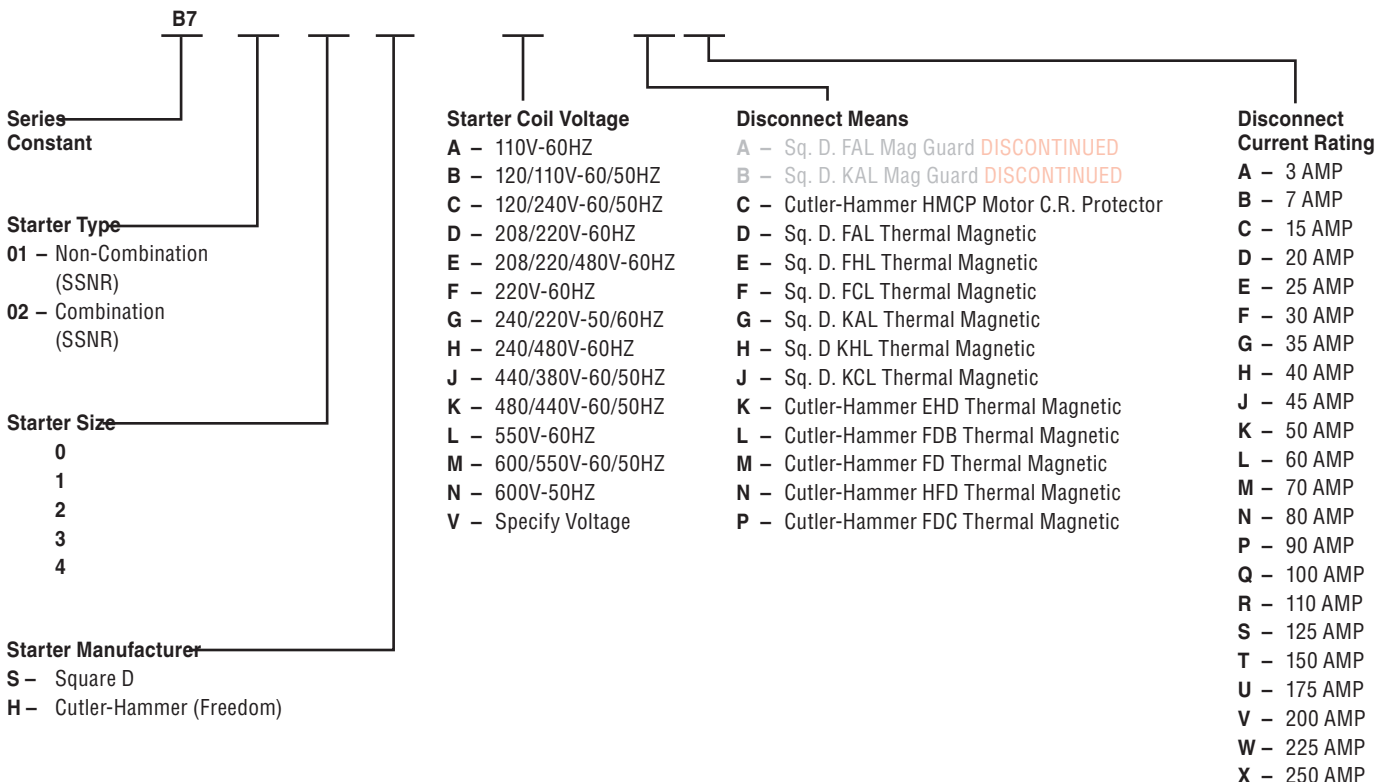
MOTOR STARTERS ACCESSORIES / CATALOG LOGIC

B7 MODIFICATIONS AND ACCESSORIES		
CATALOG NUMBER		DESCRIPTION
SIZE 0 THRU 4	SIZE 5	
B7DBP	B7EDBP	Double pushbutton (Start/Stop)
B7RPL	B7ERPL	Red pilot light 120 Volt
B7GPL	B7EGPL	Green pilot light 120 Volt
B7APL	B7EAPL	Amber pilot light 120 Volt
B7LPBR	B7ELPBR	Illuminated red pushbutton 120 Volt
B7LPBG	B7ELPBG	Illuminated green pushbutton 120 Volt
B7LPBA	B7ELPBA	Illuminated amber pushbutton 120 Volt
B7PLR220	B7PLR220	Pilot light resistor 220 Volt to 110 Volt
B7PLR440	B7PLR440	Pilot light resistor 440 Volt to 110 Volt
B7PLR550	B7PLR550	Pilot light resistor 550 Volt to 110 Volt
B72SS	B7ESS	2 position selector switch (On-Off)
B7SSH0A	B7ESSH0A	3 position selector switch (Hand-Off-Auto)
B7HAC	B75CAC	Cutler Hammer auxiliary contact (1NO/1NC)
B7SAC	B75SAC	Square D auxiliary contact (1NO/1NC)
B7TB	B7TB	Terminal block (6 Terminals)
—	B7IPR	Interposing relay 120 Volt coil
B7CT50	—	Control transformer 50VA (0,1,2)*
B7CT75	—	Control transformer 75VA (0,1,2)*

B7 MODIFICATIONS AND ACCESSORIES		
CATALOG NUMBER		DESCRIPTION
SIZE 0 THRU 4	SIZE 5	
B7CT100	—	Control transformer 100VA (0,1,2)*
B7CT150	—	Control transformer 150VA (0,1,2)*
B7CT200	—	Control transformer 200VA (3,4)*
B7CT250	—	Control transformer 250VA (3,4)*
—	B7CT300	Control transformer 300VA (5)*
—	B7CT500	Control transformer 500VA (5)*
KB1-4X	KB1-4X	Breather & Drain Type 4X
KB1S6-4X	KB1S6-4X	Drain & Breather Type 4X SS
KIT-251	KIT-251	Grounding kit
B7SF	B7SF	Special finish – Baked epoxy outside
B7DLO	B7DLO	Delete lock “ON” feature for breaker handle
B7SH251	B7SH251	Space heater 25 Watt 120 Volt
B7SH252	B7SH252	Space heater 25 Watt 240 Volt
B7SH254	B7SH254	Space heater 25 Watt 480 Volt
B7SH501	B7SH501	Space heater 50 Watt 120 Volt
B7SH502	B7SH502	Space heater 50 Watt 240 Volt
B7SH504	B7SH504	Space heater 50 Watt 480 Volt

* Control transformers are primary 240/480 - Secondary 120 Volt. Control transformers for use on Combination Starters Only. Will not fit into B701 Series of Non-Combination Starters. All control transformers include fused primary and secondary circuits.

Catalog Logic – B7 Enclosures with Controls



This Catalog Logic Chart is for reference only and is to be used for selection of special voltage and amperage requirements. Consult Factory since not all assemblies are available with complete list of options displayed.

STARTERS

OVERLOAD HEATERS/NON-REVERSING



3-POLE, 60HZ, 600VAC SINGLE-SPEED

Overload heaters are not supplied as part of the starter assemblies and are to be ordered as separate items by catalog number and priced accordingly.

Heaters should be selected on the basis of the actual full-load current and service factor as shown on the motor nameplate or in the manufacturer's published literature.

When motor and overload relay are in the same ambient and the service factor of the motor is 1.15 to 1.25, select heaters from the heater selection chart. If the service factor of the motor is 1.0, or there is no service factor shown, or a maximum of 115% protection is desired, select one size smaller heater than indicated.

When motor and overload relay are in different ambients, select heaters from the chart using adjusted motor currents as follows: decrease rated motor current 1% for each °C motor ambient exceeds controller ambient; increase rated motor current 1% for each °C controller ambient exceeds motor ambient.

CUTLER-HAMMER HEATER (EACH HEATER PACK CONSISTS OF 3 HEATERS)				
CATALOG NUMBER	MOTOR FULL-LOAD AMPERE RATING DIAL POSITION			
	A	B	C	D
FOR SIZES 0-1				
KH2001B-3	.254	.306	.359	.411
KH2002B-3	.375	.452	.530	.607
KH2003B-3	.560	.676	.791	.907
KH2004B-3	.814	.983	1.15	1.32
KH2005B-3	1.20	1.45	1.71	1.96
KH2006B-3	1.79	2.16	2.53	2.90
KH2007B-3	2.15	2.60	3.04	3.49
KH2008B-3	3.23	3.90	4.56	5.23
KH2009B-3	4.55	5.50	6.45	7.40
KH2010B-3	6.75	8.17	9.58	11.0
KH2011B-3	9.14	10.8	12.4	14.0
KH2012B-3	14.0	16.9	19.9	22.8
KH2013B-3	18.7	22.7	26.7	30.7
KH2014B-3	23.5	28.5	33.5	38.5
FOR SIZE 2				
KH2015B-3	29.0	34.0	39.1	44.1
KH2016B-3	39.6	45.5	51.5	57.4
KH2017B-3	53.9	60.9	67.9	74.9
FOR SIZES 3-4				
KH2018-3	18.0	20.2	22.3	24.5
KH2019-3	24.6	27.6	30.5	33.4
KH2020-3	33.5	37.5	41.5	45.6
KH2021-3	45.7	51.2	56.7	62.1
KH2022-3	62.2	69.7	77.1	84.6
KH2023-3	84.7	95.0	105.0	115.0
KH2024-3	106.0	118.0	131.0	144.0
FOR SIZE 5				
KH2004B-3	49	59	69	79
KH2005B-3	72	87	103	118
KH2006B-3	107	130	152	174
KH2007B-3	129	156	182	209
KH2008B-3	194	234	274	—