

Product Family Overview



Irrigation Pump Panel

Product Description

Cutler-Hammer® Irrigation Pump Controllers, from Eaton’s electrical business, are combination starters designed to meet the requirements of the agricultural industry. The enclosure is UL Type 3R rated to provide weathertight protection and is available in two sizes. Irrigation application specific accessories and modifications are available to fit the customer’s requirements.

The Irrigation Pump Panels use Freedom Series Motor Starting Technology to control motors up to 100 hp @ 460V. These controllers have two styles of overload protection available, interchangeable heater and solid-state overload (SSOL).

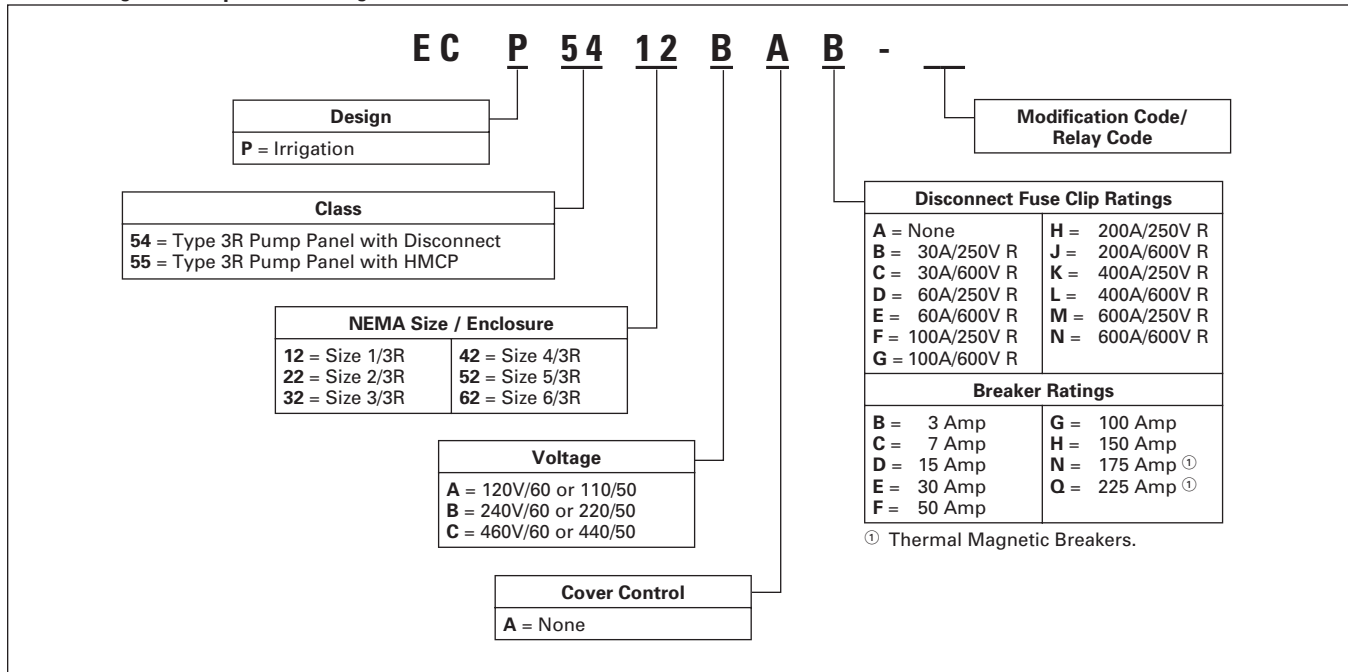
- The interchangeable heater overload (C306) utilizes individual heater packs to allow customers the ability to use various heater styles.
- The solid-state overload relay provides enhanced protection and adjustment ranges as compared to bimetallic overload relays. Trip Class 10 and 20 are available, along with a very wide trip current range to make setup very easy.

Standards and Certifications

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approval

Catalog Number Selection

Table 17. Irrigation Pump Panel Catalog Number Selection



Product Selection

Standard ECP54 controllers have a HAND/OFF/AUTO selector switch and START pushbutton mounted on the enclosure and are wired as illustrated in Figure 7.

Table 18. Class ECP54 — Freedom Fusible Irrigation Pump Panels with Interchangeable Heater Overload

Motor Voltage ①	Max. hp 50/60 Hz	NEMA Size	Fuse Clip Rating ②		Standard Width
			Amperes	Volts	Catalog Number
230 460 —	7-1/2 10 —	1	30 30 Not Installed	250 600 Not Installed	ECP5412BAB ECP5412CAC ECP5412AAA
230 460 —	15 25 —	2	60 60 Not Installed	250 600 Not Installed	ECP5422BAD ECP5422CAE ECP5422AAA
230 460 —	30 50 —	3	100 100 Not Installed	250 600 Not Installed	ECP5432BAF ECP5432CAG ECP5432AAA

Starters do not include heater packs. Select 1 carton of 3 heater packs.
Heater pack selection, **Page 72.**

① Dual element fuse ratings.

② Class R fuse clips.

For Other Volts and Hertz Applications

For other than listed volts and hertz, select required controller by Catalog Number and replace the magnet coil alpha designation, 8th digit in Catalog Number with proper Code Suffix from **Table 19.**

Example: For 600V 60 Hz coil, change ECP5412BAB to ECP5412DAB

Table 19. Coil Voltage

Coil Volts and Hertz	Suffix Code
120/60 or 110/50	A
240/60 or 220/50	B
480/60 or 440/50	C
600/60 or 550/50	D
208/60	E

Fuse Clips

Table 20. C351 — Fuse Clip Selection — 3-Pole (3 Fuses)

NEMA Size	Motor Voltage	Fuse Clip Rating		Fuse Clip Kit for Field Installation in Non-fusible Starter	
		Amperes	Volts	For Non-rejection Type Fuses	For use with "R" Rejection Type Fuses
				Catalog Number	Catalog Number
1	200/230 460 – 575	30	250	C351KC21	C351KC21R
		30	600	C351KD22-61	C351KD22-61R
2	200 230 460 – 575	60	250	C351KD22-61	C351KD22-61R
		60	250	C351KD22-61	C351KD22-61R
		60	600	C351KD62	C351KD62R
3	200 230 460 – 575	100	250	C351KE23-63	C351KE23-63 ①
		100	250	C351KE23-63	C351KE23-63 ①
		100	600	C351KE23-63	C351KE23-63 ①

① Fuse clip "R" rejection members for use with Class R fuses are supplied loose both in Fuse Clip Kits and when fuse clips are factory installed.

Pump Panels with Solid-State Overload

Product Selection

Table 21. Class ECP54 — Freedom Fusible Irrigation Pump Panels with Solid-State Overload Protection, Manual Reset Button and Class 20 Trip ^①

Motor Voltage	Max. hp	NEMA Size	Fuse Clip Amperes	Volts	Trip Range	Catalog Number
240V	1	1	30	250	1.6 – 5.0	ECP5412BAB-R50/G84
	3	1	30	250	3.7 – 12	ECP5412BAB-R50/G85
	7-1/2	1	30	250	12 – 32	ECP5412BAB-R50/G86
	10	2	60	250	12 – 37	ECP5422BAD-R50/G87
	15	2	60	250	14 – 45	ECP5422BAD-R50/G88
480V	25	3	100	250	26 – 85	ECP5432BAF-R50/G89
	1	1	30	600	1.0 – 2.9	ECP5412CAC-R50/G83
	2	1	30	600	1.6 – 5.0	ECP5412CAC-R50/G84
	5	1	30	600	3.7 – 12	ECP5412CAC-R50/G85
	10	1	30	600	12 – 32	ECP5412CAC-R50/G86
	20	2	60	600	12 – 37	ECP5422CAE-R50/G87
	25	2	60	600	14 – 45	ECP5422CAE-R50/G88
50	3	100	600	26 – 85	ECP5432CAG-R50/G89	

^① Motor FLA based on NEC table. For Class 10, Automatic Reset and other trip ranges see Table 24.

Table 22. Class ECP55 — Freedom Breaker Irrigation Pump Panels with Solid-State Overload Protection, Manual Reset Button and Class 20 Trip ^②

Motor Voltage	Max. hp	NEMA Size	Breaker Rating	Trip Range	Catalog Number
240V	1	1	7	1.6 – 5.0	ECP5512BAC-R50/G84
	3	1	15	3.7 – 12	ECP5512BAD-R50/G85
	7-1/2	1	30	12 – 32	ECP5512BAE-R50/G86
	10	2	50	12 – 37	ECP5522BAF-R50/G87
	15	2	50	14 – 45	ECP5522BAF-R50/G88
480V	25	3	100	26 – 85	ECP5532BAG-R50/G89
	50	4	150	57 – 180	ECP5542BAQ-R50/G92
	1	1	3	1.0 – 2.9	ECP5512CAB-R50/G83
	3	1	7	1.6 – 5.0	ECP5512CAC-R50/G84
	5	1	15	3.7 – 12	ECP5512CAD-R50/G85
	10	1	30	12 – 32	ECP5512CAE-R50/G86
	10	2	30	12 – 37	ECP5522CAE-R50/G87
25	2	50	14 – 45	ECP5522CAF-R50/G88	
50	3	100	26 – 85	ECP5532CAG-R50/G89	
100	4	150	57 – 180	ECP5542CAN-R50/G92	

^② Motor FLA based on NEC table. For Class 10, Automatic Reset and other trip ranges see Table 24.

Table 23. Class ECP55 — Freedom Breaker Irrigation Pump Panels with Interchangeable Heater Overload

Motor Voltage	Max. hp	NEMA Size	Breaker Rating	Catalog Number
240V	1	1	7	ECP5512BAC
	3	1	15	ECP5512BAD
	7-1/2	1	30	ECP5512BAE
	10	2	50	ECP5522BAF
	15	2	50	ECP5522BAF
480V	25	3	100	ECP5532BAG
	50	4	150	ECP5542BAQ
	1	1	3	ECP5512CAB
	3	1	7	ECP5512CAC
	5	1	15	ECP5512CAD
	10	1	30	ECP5512CAE
	10	2	30	ECP5522CAE
25	2	50	ECP5522CAF	
50	3	100	ECP5532CAG	
100	4	150	ECP5542CAN	

Relays

Table 24. Freedom Solid-State Overload Relays

CEP7 Frame	NEMA Size	Full Load Current Adjustment Range (A)	3-Phase Manual Reset Overload		3-Phase Automatic/Manual Reset	
			Class 10	Class 20	Class 10	Class 20
Catalog Number Suffix			R52	R50	R53	R51
M32	00	0.1 – 0.32	G101	G81	G141	G121
		0.32 – 1.0	G102	G82	G142	G122
1.0 – 2.9		G103	G83	G143	G123	
1.6 – 5.0		G104	G84	G144	G124	
3.7 – 12		G105	G85	G145	G125	
0 & 1	0.1 – 0.32	0.1 – 0.32	G101	G81	G141	G121
		0.32 – 1.0	G102	G82	G142	G122
		1.0 – 2.9	G103	G83	G143	G123
		1.6 – 5.0	G104	G84	G144	G124
		3.7 – 12	G105	G85	G145	G125
		12 – 32	G106	G86	G146	G126
M37	2	12 – 37	G107	G87	G147	G127
M45		14 – 45	G108	G88	G148	G128
M85	3	26 – 85	G109	G89	G149	G129
M110		66 – 110	G110	G90	G150	G130
M180	4	57 – 180	G112	G92	G152	G132

Example: R53/G144 = Class 10, 1.6 – 5.0 ampere overload for Size 0 or 1 starters.

Wiring Diagram

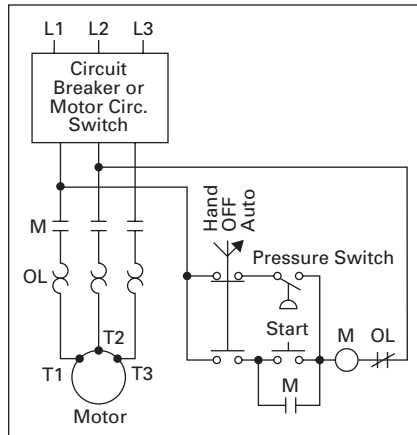
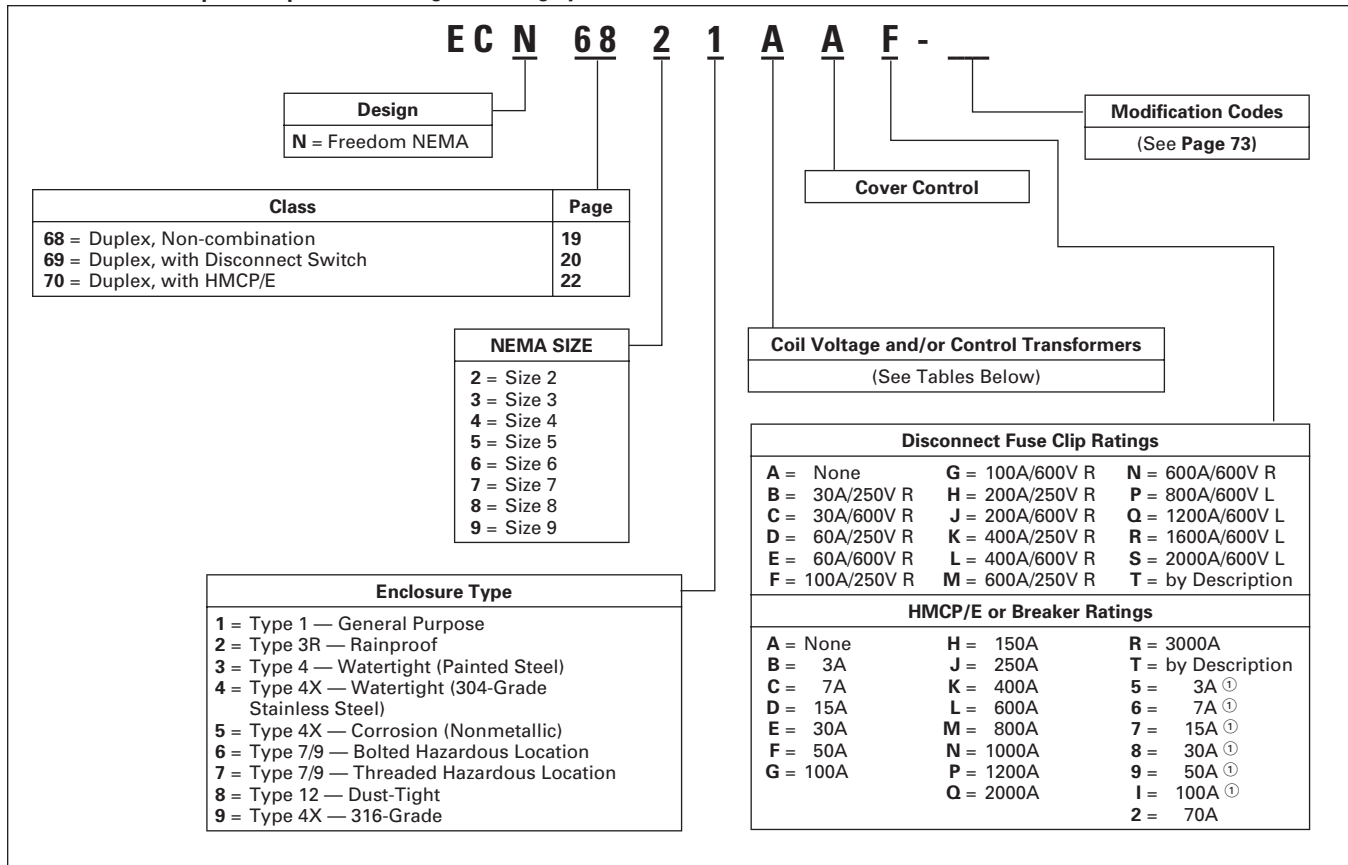


Figure 7. Typical Wiring Diagram

Catalog Number Selection

Table 29. Freedom Duplex Pump Panels Catalog Numbering System



① Use for Sizes 0 – 3, HMCP 600V applications only.

Table 30. Magnetic Coil Codes (System Voltage) ②

Code	Magnet Coil	Code	Magnet Coil	Code	Magnet Coil
A	120/60 110/50	K	240/50	U	24/50
B	240/60 220/50	L	380/50	V	32/50
C	460/60 440/50	M	415/50	W	48/60
D	575/60 550/50	P	12V DC	X	104 – 120/60
E	208/60	Q	24V DC	Y	48/50
G	550/50	R	48V DC	Z	By Description
H	277/60	S	125V DC		
J	208 – 240/60	T	24/60		

② When control power transformer modification codes (C1 – C11) are used or when starter class includes CPT (i.e. ECN07, 18) see table to the right for system voltage code.

Table 31. Control Power Transformer Codes (System Voltage)

Code	Primary	Secondary
B	240/480 – 220/440 Wired for 240V	120/60 – 110/50
C	240/480 – 220/440 Wired for 480V	120/60 – 110/50
D	600/60 – 550/50	120/60 – 110/50
E	208/60	120/60
H	277/60	120/60
L	380/50	110/50
M	415/50	110/50
Q	208/60	24
R	240/480 – 220/440 Wired for 240V	24
S	240/480 – 220/440 Wired for 480V	24
T	600/60	24
U	277/60	24
V	380/50	24
W	415/50	24
X	240/480/600 Wired for 480V	120
Y	240/480/600 Wired for 480V	24
Z	By Description	

Features

- Full Voltage Non-reversing Non-combination
- 3-Phase Magnetic, 3-Pole
- Interchangeable Heater OLR
- 600V Maximum

Alternator

In normal operation, the alternator automatically selects alternate pumps for each succeeding cycle to equalize pump wear. During periods of heavy demand, both pumps will operate.

Product Selection

Table 32. Class ECN68 — NEMA 3-Pole Non-combination Duplex Pump Panels with Automatic Alternator and Interchangeable Heater ^{②③}

NEMA Size	Motor Voltage	Max. hp Rating	Magnet Coil Voltage	Type 1 General Purpose	Type 3R Rainproof	Type 4X ^④ Watertight & Dust-Tight Stainless Steel	Type 12 Dust-Tight Industrial External Reset ^①	Component Starter (Open) ^⑤
				Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
0	—	—	120	ECN6801AAA	ECN6802AAA	ECN6804AAA	ECN6808AAA	AN16BN0AC
	200	3	208	ECN6801EAA	ECN6802EAA	ECN6804EAA	ECN6808EAA	AN16BN0EC
	230	3	240	ECN6801BAA	ECN6802BAA	ECN6804BAA	ECN6808BAA	AN16BN0BC
	460	5	480	ECN6801CAA	ECN6802CAA	ECN6804CAA	ECN6808CAA	AN16BN0CC
	575	5	600	ECN6801DAA	ECN6802DAA	ECN6804DAA	ECN6808DAA	AN16BN0DC
1	—	—	120	ECN6811AAA	ECN6812AAA	ECN6814AAA	ECN6818AAA	AN16DN0AB
	200	7-1/2	208	ECN6811EAA	ECN6812EAA	ECN6814EAA	ECN6818EAA	AN16DN0EB
	230	7-1/2	240	ECN6811BAA	ECN6812BAA	ECN6814BAA	ECN6818BAA	AN16DN0BB
	460	10	480	ECN6811CAA	ECN6812CAA	ECN6814CAA	ECN6818CAA	AN16DN0CB
	575	10	600	ECN6811DAA	ECN6812DAA	ECN6814DAA	ECN6818DAA	AN16DN0DB
2	—	—	120	ECN6821AAA	ECN6822AAA	ECN6824AAA	ECN6828AAA	AN16GN0AB
	200	10	208	ECN6821EAA	ECN6822EAA	ECN6824EAA	ECN6828EAA	AN16GN0EB
	230	15	240	ECN6821BAA	ECN6822BAA	ECN6824BAA	ECN6828BAA	AN16GN0BB
	460	25	480	ECN6821CAA	ECN6822CAA	ECN6824CAA	ECN6828CAA	AN16GN0CB
	575	25	600	ECN6821DAA	ECN6822DAA	ECN6824DAA	ECN6828DAA	AN16GN0DB
3	—	—	120	ECN6831AAA	ECN6832AAA	ECN6834AAA	ECN6838AAA	AN16KN0A
	200	25	208	ECN6831EAA	ECN6832EAA	ECN6834EAA	ECN6838EAA	AN16KN0E
	230	30	240	ECN6831BAA	ECN6832BAA	ECN6834BAA	ECN6838BAA	AN16KN0B
	460	50	480	ECN6831CAA	ECN6832CAA	ECN6834CAA	ECN6838CAA	AN16KN0C
	575	50	600	ECN6831DAA	ECN6832DAA	ECN6834DAA	ECN6838DAA	AN16KN0D
4	—	—	120	ECN6841AAA	ECN6842AAA	ECN6844AAA	ECN6848AAA	AN16NN0A
	200	40	208	ECN6841EAA	ECN6842EAA	ECN6844EAA	ECN6848EAA	AN16NN0E
	230	50	240	ECN6841BAA	ECN6842BAA	ECN6844BAA	ECN6848BAA	AN16NN0B
	460	100	480	ECN6841CAA	ECN6842CAA	ECN6844CAA	ECN6848CAA	AN16NN0C
	575	100	600	ECN6841DAA	ECN6842DAA	ECN6844DAA	ECN6848DAA	AN16NN0D

Starters do not include heater packs. Select 2 cartons of 3 heater packs (2 overload relays — 1 for each motor). Heater Pack Selection, Page 72.

- ① All Type 12 enclosures are standardized with external reset. For internal reset, order Modification Code R5.
- ② Circuitry arranged for double-pole pilot devices.
- ③ All duplexes come standard with alternator. To remove, add Modification Code D12.
- ④ The Catalog Numbers listed in the Type 4X column are for Type 4X 304-Grade Stainless Steel, as indicated by the seventh digit 4. Example: ECN6804AAA. To order Type 4X 316-Grade Stainless Steel, change that digit to 9. To order Type 4 Painted Steel, change that digit to 3. To order Nonmetallic, change that digit to 5.
- ⑤ Requires 2 starters.

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Combination

Features

- Full Voltage Non-reversing Combination
- 3-Phase Magnetic, 3-Pole
- Interchangeable Heater OLR
- 600V Maximum

Alternator

In normal operation, the alternator automatically selects alternate pumps for each succeeding cycle to equalize pump wear. During periods of heavy demand, both pumps will operate.

Product Selection

Table 33. Class ECN69 — NEMA 3-Pole Fusible Combination Duplex Pump Panels with Automatic Alternator and Interchangeable Heater ④⑤

NEMA Size	Motor Voltage	Max. hp Rating Dual Element Fuses	Magnet Coil Voltage ①	Fuse Clip Amps.	Type 1 General Purpose	Type 3R Rainproof	Type 4X ⑥ Watertight & Dust-Tight Stainless Steel	Type 12 Dust-Tight Industrial External Reset ②③	Component Starter (Open) ⑦
					Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
0	230	3	120	30A	ECN6901AAB	ECN6902AAB	ECN6904AAB	ECN6908AAB	AN16BN0AC
	460	5	120		ECN6901AAC	ECN6902AAC	ECN6904AAC	ECN6908AAC	AN16BN0AD
	200	3	208		ECN6901EAB	ECN6902EAB	ECN6904EAB	ECN6908EAB	AN16BN0EC
	230	3	240		ECN6901BAB	ECN6902BAB	ECN6904BAB	ECN6908BAB	AN16BN0BC
	460	5	480		ECN6901CAC	ECN6902CAC	ECN6904CAC	ECN6908CAC	AN16BN0CC
	575	5	600		ECN6901DAC	ECN6902DAC	ECN6904DAC	ECN6908DAC	AN16BN0DC
1	230	7-1/2	120	30A	ECN6911AAB	ECN6912AAB	ECN6914AAB	ECN6918AAB	AN16DN0AB
	460	10	120		ECN6911AAC	ECN6912AAC	ECN6914AAC	ECN6918AAC	AN16DN0AD
	200	7-1/2	208		ECN6911EAB	ECN6912EAB	ECN6914EAB	ECN6918EAB	AN16DN0EC
	230	7-1/2	240		ECN6911BAB	ECN6912BAB	ECN6914BAB	ECN6918BAB	AN16DN0BC
	460	10	480		ECN6911CAC	ECN6912CAC	ECN6914CAC	ECN6918CAC	AN16DN0CC
	575	10	600		ECN6911DAC	ECN6912DAC	ECN6914DAC	ECN6918DAC	AN16DN0DC
2	230	15	120	60A	ECN6921AAD	ECN6922AAD	ECN6924AAD	ECN6928AAD	AN16GN0AB
	460	25	120		ECN6921AAE	ECN6922AAE	ECN6924AAE	ECN6928AAE	AN16GN0AD
	200	10	208		ECN6921EAD	ECN6922EAD	ECN6924EAD	ECN6928EAD	AN16GN0EB
	230	15	240		ECN6921BAD	ECN6922BAD	ECN6924BAD	ECN6928BAD	AN16GN0BB
	460	25	480		ECN6921CAE	ECN6922CAE	ECN6924CAE	ECN6928CAE	AN16GN0CB
	575	25	600		ECN6921DAE	ECN6922DAE	ECN6924DAE	ECN6928DAE	AN16GN0DB
3	230	30	120	100A	ECN6931AAF	ECN6932AAF	ECN6934AAF	ECN6938AAF	AN16KN0A
	460	50	120		ECN6931AAG	ECN6932AAG	ECN6934AAG	ECN6938AAG	AN16KN0AD
	200	25	208		ECN6931EAF	ECN6932EAF	ECN6934EAF	ECN6938EAF	AN16KN0EB
	230	30	240		ECN6931BAF	ECN6932BAF	ECN6934BAF	ECN6938BAF	AN16KN0BB
	460	50	480		ECN6931CAG	ECN6932CAG	ECN6934CAG	ECN6938CAG	AN16KN0CB
	575	50	600		ECN6931DAG	ECN6932DAG	ECN6934DAG	ECN6938DAG	AN16KN0DB
4	230	50	120	200A	ECN6941AAH	ECN6942AAH	ECN6944AAH	ECN6948AAH	AN16NN0A
	460	100	120		ECN6941AAJ	ECN6942AAJ	ECN6944AAJ	ECN6948AAJ	AN16NN0AD
	200	40	208		ECN6941EAH	ECN6942EAH	ECN6944EAH	ECN6948EAH	AN16NN0EB
	230	50	240		ECN6941BAH	ECN6942BAH	ECN6944BAH	ECN6948BAH	AN16NN0BB
	460	100	480		ECN6941CAJ	ECN6942CAJ	ECN6944CAJ	ECN6948CAJ	AN16NN0CB
	575	100	600		ECN6941DAJ	ECN6942DAJ	ECN6944DAJ	ECN6948DAJ	AN16NN0DB

Starters do not include heater packs. Select 2 cartons of 3 heater packs (2 overload relays — 1 for each motor). Heater Pack Selection, Page 72.

- ① For 200V and 575V motors — Starters with 120V coil (for separate control) are available. To order, substitute the letter **A** for the eighth character of the listed Catalog Number.
- ② All Type 12 enclosures are standardized with external reset. For internal reset, order Modification Code **R5**.
- ③ Type 12 enclosure is without safety door interlock.
- ④ Circuitry arranged for double-pole pilot devices.
- ⑤ All duplexes come standard with alternator. To remove, add Modification Code **D12**.
- ⑥ The Catalog Numbers listed in the Type 4X column are for Type 4X 304-Grade Stainless Steel, as indicated by the seventh digit **4**. Example: ECN6904AAB. To order Type 4X 316-Grade Stainless Steel, change that digit to **9**. To order Type 4 Painted Steel, change that digit to **3**. To order Nonmetallic, change that digit to **5**.
- ⑦ Requires 2 starters.

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