

Features

- NEMA 3R Rainproof Enclosures
- 100,000 Amp Interrupting Capacity with Class R Fuses
- Heavy Duty NEMA Starters
- Solid State or Ambient Compensated Bimetal Overload Relays
- Heavy Duty Disconnect Handle
- Available in Reduced Voltage Versions
- Bold Pilot Legend on Front
- Generous Accessory Space
- Welded Corners and Pole Brackets
- Copper Grounding Bar For Three #6 Wires
- UL Listed for Outdoor Use and Service Equipment File #E14900
- CSA Certified File #LR6535

Application

Heavy duty pump control panels are designed to withstand the most demanding environments. Typical applications include irrigation, agriculture, petrochemical, wastewater treatment and wherever motor control is challenged by harsh elements.

Rugged pump control panels are seam welded, rainproof, sleet and ice resistant, there are no lapped surfaces to invite rust.

Installation is easy. Panels are factory wired to provide flexible control and protect against short circuits and overloads. Ample space is provided for field modifications and installation of accessories.

The exclusive **Compact NEMA Size 4** pump panels feature full sized NEMA starters in easy to "polemount" compact enclosures. The motor circuit protector panel features a full sized removable auxiliary panel for the mounting of accessories. The fusible version features fuse clips for full sized RK5 or compact class J fuses and accessory mounting space for the most commonly used accessories. A full sized Size 4 pump panel is also available for those applications that require an extra large auxiliary panel. See pages 155–156 for panel dimensions.

Class 87 pump panels become **jockey pump panels** with the addition of a pressure switch (see factory assembled modifications). The jockey pump's primary function is to maintain water pressure at a preset level and thus compensate for possible leakage of

water in the pumping system. When the water pressure drops below the preset level, the pressure switch energizes the starter which in turn activates the jockey pump. The water pressure is then brought back up to the desired level. This insures the maintenance of proper water pressure at all times.

Features

Specified by Fortune 500 companies, ESP100 or Innova Plus starters offer prolonged service under severe duty conditions. Made in the USA and NEMA rated, these starters utilize large silver cadmium oxide contacts and wide copper heat sinks to ensure rapid heat dissipation and maximum electrical life.

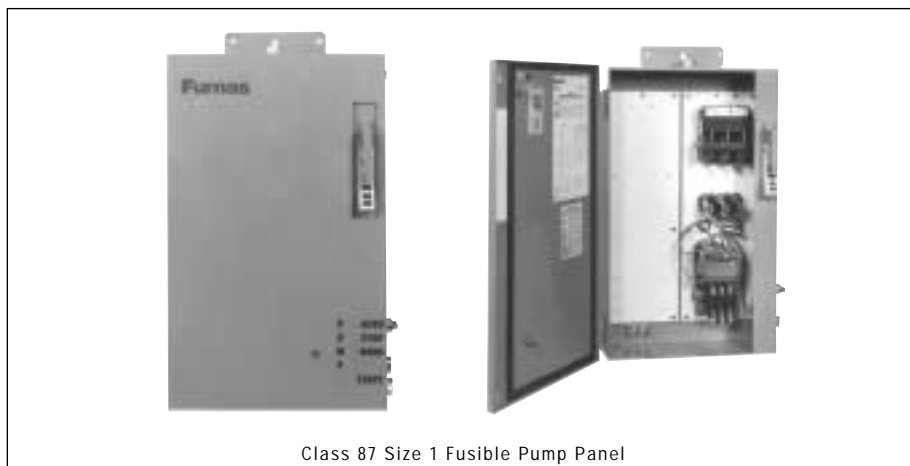
ESP100 solid state overload relays provide phase loss protection for the motor by tripping within three seconds upon complete loss of one phase in a three phase circuit. Each overload has a 2:1 (4:1 in lower ranges) FLA adjustment range with an adjustment dial reading out in FLA. This feature allows for extremely fine tuning. Their heaterless construction minimizes energy costs and costs of cabinet ventilation or cooling. (For more information see Section 8.)

The **ambient compensated bimetal overload relays** are designed to parallel thermal characteristics of typical pump motors. They prevent nuisance trips that may result from operation of the control in a higher ambient temperature than that at the pump. These relays are trip-free, tamperproof and can be set to reset automatically or manually.

2
NEMA & HP
Rated Control



Class 87 Compact Size 4 Fusible Pump Panel



Class 87 Size 1 Fusible Pump Panel



Class 87, 88

Panels are predrilled for easy repositioning of the fuse trailer block to accommodate 250 and 600 volt fuses and full sized RK or compact J fuses. Fuse clips are replaceable. Thermal magnetic circuit breakers and motor circuit protectors are also available.

Heavy Duty Fusible Disconnect Switch

These versions offer visible blades that provide positive indication of switch status. Contacts operate with a snap action for a quick make and quick break. A line side shield guards personnel from contact with live parts.

Motor Circuit Protector

The motor circuit protector provides fast, accurate fault clearing that will minimize damage to the motor and control apparatus and protect branch circuit conductors. Continuous current ratings and adjustable trip ranges meet NEC requirements for full load and locked rotor currents. The adjustable instantaneous trip point can be set precisely to assure fault protection and eliminate nuisance tripping.

Large NEMA 3R Rainproof Enclosure

The control, disconnecting means and accessories are all assembled in a rainproof and sleet resistant enclosure. This enclosure is constructed of heavy gauge sheet metal and equipped with a threaded conduit hub and a full door gasket. A removable backplate allows for easy field installation of modifications.

Removable Door

Enclosure door may be lifted off to make wiring easier.

Mounting Flanges

Convenient flanges at top and bottom of the enclosure provide easy mounting. They fit pole or flat surfaces using keyhole slots.

Door Hasp

Sizes 1 thru 3½ have 2 over-center latches to secure door. Sizes 4–6 have spring catch and use quarter-turn screws.

Safety Disconnect Handle

Up to three padlocks can be used to lock the disconnect in the OFF position. Maintenance work can be performed without hazard to personnel.

External Reset

The overload relay may be quickly reset by means of a button on the front of the enclosure.

Bold Pilot Legend

Provides positive indication of the selector switch position for use to stop the pump motor.

Welded Seams

Helps prevent rust.

Ground Bar

Insures proper connecting of ground wires and lightning arresters.

UL Listed

Assures proper construction throughout control panel.

Reduced Voltage

Available in part winding, wye delta and auto transformer types, these controls may be necessary where the power company limits the amount of current drawn from its lines, or where starting torque must be reduced.

Fully gasketed NEMA 3/12 weatherproof enclosures are supplied with Class 88 reduced voltage starters.

Part Winding Starters apply starting current in timed steps to minimize voltage fluctuations.

Auto Transformer Starters maintain a closed circuit during transition and eliminate voltage or current surges. They draw less current than part winding starters and are well suited for starting motors over 20 Hp.

Wye Delta starters and motors are used in areas where the power supply is inadequate to supply full starting current without objectionable voltage drop or for applications where low starting torque is required. Centrifugal pumps and similar apparatus requiring a low starting torque are typical applications. Both ends of all three windings of the wye delta motor are brought out so that they may be accessible for reconnecting from wye to delta.

Auxiliary Equipment

Pilot Lights are easily installed on the enclosure. Oil Tight and Heavy Duty, they meet NEMA A600 requirements.

Lightning Arresters protect the control panel from lightning induced surges.

Undervoltage and Phase Sensing Relays protect the pump against low voltage, voltage imbalance, loss of phase and phase reversal.

Anti-Backspin Timers prevent the motor from starting during motor/shaft backspin.

Pressure Switches provide easy installation, inspection and adjustment with the 69ES Pro Control pressure switch. See the Pressure Switch Catalog Supplement for more information.

GARD-IT, for low water condition protection, see Pressure Switch Catalog Supplement.

HI-GARD, used in conjunction with a standard pressure switch to protect against undesirable pressure rises in your system, see Pressure Switch Catalog Supplement.

2
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Rated Control



Pump Control Panels

Solid-State Overload Class 87

Ordering Information	Coil Table [Ⓞ]																				
<ul style="list-style-type: none"> ▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. ▶ Contact Sales Office for 3 or 4 speed starters. ▶ For self-reset overload option on Sizes 0–5, change 4th character from “S” or “T” to “R”. No price addition. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 155–156. ▶ Wiring Diagrams see page 169–170. 	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24 Separate Control</td> <td>J</td> </tr> <tr> <td>120 Separate Control</td> <td>F</td> </tr> <tr> <td>110–120/220–240</td> <td>A[Ⓞ]</td> </tr> <tr> <td>200–208</td> <td>D</td> </tr> <tr> <td>220–240</td> <td>G</td> </tr> <tr> <td>220–240/440–480</td> <td>C[Ⓞ]</td> </tr> <tr> <td>277</td> <td>L</td> </tr> <tr> <td>440–480</td> <td>H</td> </tr> <tr> <td>550–600</td> <td>E</td> </tr> </tbody> </table> <p>For other voltages and frequencies see page 129.</p>	60Hz Voltage	Letter	24 Separate Control	J	120 Separate Control	F	110–120/220–240	A [Ⓞ]	200–208	D	220–240	G	220–240/440–480	C [Ⓞ]	277	L	440–480	H	550–600	E
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2
NEMA & HP
Rated Control

200/230V Max Hp 3 Phase

Max Hp		NEMA Size	Half Size	Overload Amp Range	Fuse Clip Amps	Fusible Disconnect		MCP	
200 Volts	230 Volts					NEMA 3R		NEMA 3R	
						Catalog No	Price \$	Catalog No	Price \$
1/2	1/2	1	—	.25–1	—	—	87DSA6M*	1279.	
1/2	1/2	1	—	0.75–3 [Ⓞ]	—	—	87DSB6M*	1279.	
2	2	1	—	2.5–10	30	1002.	87DSD6M*	1279.	
3	3	1	—	9–18	30	1002.	87DSE6M*	1279.	
7 1/2	7 1/2	1	—	13–27	30	1002.	87DSF6M*	1279.	
10	10	—	1 3/4	20–40	60	1194.	87ESG6M*	1433.	
10	15	2	—	22–45	60	1348.	87FSH6M*	1587.	
15	20	—	2 1/2	30–60	60	1903.	87GSJ6M*	2072.	
25	30	3	—	45–90	100	2165.	87HSK6M*	2242.	
30	40	—	3 1/2	57–115	200	3729.	87ISL6M*	4438.	
40	50	4	—	67–135	200	4037.	87JSM6M*	4746.	
40	50	Compact 4	—	67–135	200	4037.	87JSM6M*E6	4746.	
50	75	—	4 1/2	100–210	400	8120.	87RSS6M*	10254.	
75	100	5	—	100–270	400	8659.	87KSU6M*	10793.	
100	125	6	—	200–540	—	—	87MSW6M*	23401.	
150	200	6	—	200–540	—	—	87MSX6M*	26902.	

460/575V Max Hp 3 Phase

Max Hp		NEMA Size	Half Size	Overload Amp Range	Fuse Clip Amps	Fusible Disconnect		MCP	
460 Volts	575 Volts					NEMA 3R		NEMA 3R	
						Catalog No	Price \$	Catalog No	Price \$
1	1	1	—	.25–1	30	1017.	87DSA6F*	1279.	
1	1	1	—	0.75–3 [Ⓞ]	30	1017.	87DSB6F*	1279.	
5	5	1	—	2.5–10	30	1017.	87DSD6F*	1279.	
7 1/2	10	1	—	9–18	30	1017.	87DSE6F*	1279.	
10	—	1	—	13–27	—	—	87DSF6M*	1279.	
15	15	—	1 3/4	13–27	30	1194.	87ESF6M*	1433.	
15	20	2	—	13–27	60	1371.	87FSF6M*	1587.	
25	25	2	—	22–45	60	1371.	87FSH6M*	1587.	
30	30	—	2 1/2	22–45	60	1957.	87GSH6M*	2072.	
50	50	3	—	45–90	100	2211.	87HSK6M*	2242.	
75	75	—	3 1/2	57–115	200	3760.	87ISL6F*	4438.	
100	100	4	—	67–135	200	4068.	87JSM6F*	4746.	
100	100	Compact 4	—	67–135	200	4068.	87JSM6F*E6	4746.	
150	150	—	4 1/2	100–210	400	8305.	87RSS6F*	10254.	
150	200	5	—	100–270	—	—	87KST6M*	10793.	
200	—	5	—	100–270	400	8844.	87KSU6M*	10793.	
250	300 [Ⓞ]	6	—	200–540	600	22330.	87MSW6F*	23401.	
400	400	6	—	200–540	—	—	87MSX6M*	26902.	

Ⓞ Pump panels are stocked with a “C” coil 220–240/440–480V 60Hz

Ⓞ 300 Hp 575V rating applies to MCP only.


Ⓞ Dual voltage coils NA on modified starters or in sizes 4 1/2–6.



Pump Control Panels

Selection

Ambient Compensated Bimetal Overload, Class 87

	Ordering Information	Coil Table [Ⓞ]																			
	<ul style="list-style-type: none"> ▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. ▶ Order 3 heater elements by code number at \$11.60 each see page 884. ▶ To order jockey pump panel see Factory Modifications page 126–132. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 155–156. ▶ Wiring Diagrams see page 169–170. ▶ 380V 50Hz information see page 136. 	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24 Separate Control</td> <td>J</td> </tr> <tr> <td>120 Separate Control</td> <td>F</td> </tr> <tr> <td>110–120/220–240</td> <td>A[Ⓢ]</td> </tr> <tr> <td>200–208</td> <td>D</td> </tr> <tr> <td>220–240</td> <td>G</td> </tr> <tr> <td>220–240/440–480</td> <td>C[Ⓢ]</td> </tr> <tr> <td>277</td> <td>L</td> </tr> <tr> <td>440–480</td> <td>H</td> </tr> <tr> <td>550–600</td> <td>E</td> </tr> </tbody> </table> <p>For other voltages and frequencies see page 129.</p>	60Hz Voltage	Letter	24 Separate Control	J	120 Separate Control	F	110–120/220–240	A [Ⓢ]	200–208	D	220–240	G	220–240/440–480	C [Ⓢ]	277	L	440–480	H	550–600
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2
NEMA & HP
Rated Control

200/230V Max Hp 3 Phase

Max Hp		NEMA Size	Half Size	Fuse Clip Amps	Fusible Disconnect		MCP	
200 Volts	230 Volts				NEMA 3R		NEMA 3R	
					Catalog No	Price \$	Catalog No	Price \$
1/2	1/2	1	—	} 7.5 HP Panel is suitable for these ratings with proper customer supplied fuses.	—	87DAA6M*	1244.	
1	1	1	—		—	87DAB6M*	1244.	
3	3	1	—		—	87DAD6M*	1244.	
7 1/2	7 1/2	1	—		30	87DAE6M*	1244.	
10	10	—	1 3/4	60	87EAG6L*	1159.	87EAG6M*	1398.
10	15	2	—	60	87FAJ6L*	1314.	87FAJ6M*	1552.
15	20	—	2 1/2	100	87GAL6L*	1961.	87GAL6M*	2038.
25	30	3	—	100	87HAN6L*	2130.	87HAN6M*	2207.
30	40	—	3 1/2	200	87IAP6L*	3694.	87IAP6M*	4403.
40	50	4	—	200	87JAR6L*	4002.	87JAR6M*	4711.
40	50	Compact 4	—	200	87JAR6L*E6	4002.	87JAR6M*E6	4711.
50	75	—	4 1/2	400	87RAS6L*	8085.	87RAS6M*	10219.
75	100	5	—	400	87KAU6L*	8625.	87KAU6M*	10759.
100	125	6	—	—	Use MCP type	—	87MAW6M*	23366.
150	200	6	—	—	Use MCP type	—	87MAX6M*	26868.

460/575V Max Hp 3 Phase

Max Hp		NEMA Size	Half Size	Fuse Clip Amps	Fusible Disconnect		MCP	
460 Volts	575 Volts				NEMA 3R		NEMA 3R	
					Catalog No	Price \$	Catalog No	Price \$
1	1	1	—	} 10 HP Panel is suitable for these ratings with proper customer supplied fuses.	—	87DAA6M*	1244.	
3	3	1	—		—	87DAB6M*	1244.	
7 1/2	7 1/2	1	—		—	87DAD6M*	1244.	
10	10	1	—		30	87DAE6M*	1244.	
15	15	—	1 3/4	30	87EAF6F*	1159.	87EAF6M*	1398.
15	20	2	—	} 25 HP Panel is suitable for these ratings with proper customer supplied fuses.	—	87FAH6M*	1552.	
—	—	—	—		—	—	—	
—	—	—	—		—	—	—	
25	25	2	—		60	87FAJ6F*	1337.	87FAJ6M*
30	30	—	2 1/2	60	87GAK6F*	1922.	87GAK6M*	2038.
50	50	3	—	100	87HAN6F*	2176.	87HAN6M*	2207.
75	75	—	3 1/2	200	87IAP6F*	3725.	87IAP6M*	4403.
100	100	4	—	200	87JAR6F*	4033.	87JAR6M*	4711.
100	100	Compact 4	—	200	87JAR6F*E6	4033.	87JAR6M*E6	4711.
150	150	—	4 1/2	400	87RAS6F*	8270.	87RAS6M*	10219.
200	200	5	—	—	—	—	87KAT6M*	10759.
200	—	5	—	400	87KAU6F*	8810.	87KAU6M*	10759.
250	300	6	—	600	87MAV6F*	22295.	87MAW6M*	23366.
400	400	6	—	—	Use MCP type	—	87MAX6M*	26868.

Ⓞ Pump panels are stocked with a "C" coil 220–240/440–480V 60Hz.

Ⓢ Dual voltage coils NA on modified starters or in size 4 1/2–6.



Reduced Voltage Pump Panels

Selection

Auto Transformer & Part Winding 2 Step Solid State Overload, Class 88

2

NEMA & HP
Rated Control

Ordering Information	Coil Table [Ⓞ]		Overload Table			
<ul style="list-style-type: none"> ▶ If necessary replace the last letter of the catalog number with the appropriate letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. Ex: for 120V separate control change the last character of the catalog number to F. Example: 88FS†T2FG becomes 88FS†T2FF. Listed prices apply. ▶ Use complete catalog number. Replace the (†) with letter that corresponds to the correct FLA in the overload table. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 156. ▶ Wiring Diagrams see page 169–170. ▶ 380V 50Hz information see page 135. 	60Hz Voltage	Letter	Size	FLA	†	
	24 Separate Control	J	0, 1	0.25–1	A	
	120 Separate Control	F	0, 1	0.75–3	B	
	200–208	D	0, 1	2.5–10	D	
	220–240	G	0–1 ³ / ₄	9–18	E	
	277	L	1–2	13–27	F	
	440–480	H	1 ³ / ₄	20–40	G	
	550–600	E	2–2 ¹ / ₂	22–45	H	
	For other voltages and frequencies see page 129.			2 ¹ / ₂ –3	30–60	J
				3	45–90	K
			3 ¹ / ₂	57–115	L	
			4	67–135	M	
			4 ¹ / ₂	100–210	S	
			5	100–270	U	

Auto Transformer Type

Motor Volts	Max Hp	Size	Half Size	Fusible Disconnect		Motor Circuit Protector	
				Catalog No	Price \$	Catalog No	Price \$
230 240V Coil	15	2	—	88FS†T2FG	6402.	88FS†T2MG	6487.
	20	—	2 ¹ / ₂	88GS†T2FG	8659.	88GS†T2MG	8836.
	30	3	—	88HS†T2FG	9241.	88HS†T2MG	10123.
	40	—	3 ¹ / ₂	88IS†T2FG	13128.	88IS†T2MG	14499.
	50	4	—	88JS†T2FG	13867.	88JS†T2MG	15239.
	75	—	4 ¹ / ₂	88RS†T2FG	23204.	88RS†T2MG	23913.
	100	5	—	88KS†T2FG	24013.	88KS†T2MG	25670.
	200	6	—	—	—	88MS†T2MG	42954.
460 480V Coil	25	2	—	88FS†T4FH	6826.	88FS†T4MH	6937.
	30	—	2 ¹ / ₂	88GS†T4FH	8983.	88GS†T4MH	9071.
	50	3	—	88HS†T4FH	9568.	88HS†T4MH	10042.
	75	—	3 ¹ / ₂	88IS†T4FH	13574.	88IS†T4MH	14676.
	100	4	—	88JS†T4FH	15146.	88JS†T4MH	15601.
	150	—	4 ¹ / ₂	88RS†T4FH	22611.	88RS†T4MH	24560.
	200	5	—	88KS†T4FH	26463.	88KS†T4MH	27750.
	250	6	—	88MS†T7FH	35985.	88MS†T7MH	40223.
	300	6	—	88MS†T8FH	37774.	88MS†T8MH	42010.
	400	6	—	88MS†T4FH	38713.	88MS†T4MH	42950.

Part Winding 2 Step

Motor Volts	Max Hp	Size	Half Size	Fusible Disconnect		Motor Circuit Protector	
				Catalog No	Price \$	Catalog No	Price \$
230 240V Coil	20	—	1 ³ / ₄	88ES†P2FG	3829.	88ES†P2MG	3590.
	25	2	—	88FS†P2FG	4145.	88FS†P2MG	4014.
	40	—	2 ¹ / ₂	88GS†P2FG	5855.	88GS†P2MG	5701.
	50	3	—	88HS†P2FG	6348.	88HS†P2MG	6194.
	60	—	3 ¹ / ₂	88IS†P2FG	11248.	88IS†P2MG	12111.
	75	4	—	88JS†P2FG	11872.	88JS†P2MG	12727.
	125	—	4 ¹ / ₂	88RS†P2FG	21879.	88RS†P2MG	22426.
150	5	—	88KS†P2FG	22958.	88KS†P2MG	23505.	
460 480V Coil	30	—	1 ³ / ₄	88ES†P4FH	3829.	88ES†P4MH	3590.
	40	2	—	88FS†P4FH	4145.	88FS†P4MH	4014.
	60	—	2 ¹ / ₂	88GS†P4FH	5855.	88GS†P4MH	5701.
	75	3	—	88HS†P4FH	6348.	88HS†P4MH	6194.
	100	—	3 ¹ / ₂	88IS†P4FH	11248.	88IS†P4MH	12111.
	150	4	—	88JS†P4FH	11872.	88JS†P4MH	12727.
	250	—	4 ¹ / ₂	88RS†P4FH	21879.	88RS†P4MH	22426.
	350	5	—	88KS†P4FH	22958.	88KS†P4MH	23505.
600	6	—	—	—	88MS†P4MH	42287.	

ⓄPump panels are stocked with a "C" coil 220–240/440–480V 60Hz.



Reduced Voltage Pump Panels

Selection

Auto Transformer & Part Winding 2 Step Ambient Compensated Bimetal Overload, Class 88

Ordering Information	Coil Table																
<ul style="list-style-type: none"> ▶ If necessary replace the last letter of the catalog number with the appropriate letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. Ex: for 120V separate control change the last character of the catalog number to F. Example: 88FS†T2FG becomes 88FS†T2FF. Listed prices apply. ▶ Order 3 heater elements for auto transformer type by code number at \$11.60 each page 884. ▶ Order 6 heater elements for part winding type by code number at \$11.60 each page 884. To select proper code number multiply full load current by 50%. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 156. ▶ Wiring Diagrams see page 169–170. ▶ 380V 50Hz information see page 135. 	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24 Separate Control</td> <td>J</td> </tr> <tr> <td>120 Separate Control</td> <td>F</td> </tr> <tr> <td>200–208</td> <td>D</td> </tr> <tr> <td>220–240</td> <td>G</td> </tr> <tr> <td>277</td> <td>L</td> </tr> <tr> <td>440–480</td> <td>H</td> </tr> <tr> <td>550–600</td> <td>E</td> </tr> </tbody> </table> <p>For other voltages and frequencies see page 129.</p>	60Hz Voltage	Letter	24 Separate Control	J	120 Separate Control	F	200–208	D	220–240	G	277	L	440–480	H	550–600	E
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2
NEMA & HP
Rated Control

Auto Transformer Type

Motor Volts	Max Hp	Size	Half Size	Fusible Disconnect		Motor Circuit Protector	
				Catalog No	Price \$	Catalog No	Price \$
230 240V Coil	15	2	—	88FPT2FG	6367.	88FPT2MG	6452.
	20	—	2½	88GPT2FG	8625.	88GPT2MG	8802.
	30	3	—	88HPT2FG	9206.	88HPT2MG	10088.
	40	—	3½	88IPT2FG	13093.	88IPT2MG	14464.
	50	4	—	88JPT2FG	13833.	88JPT2MG	15204.
	75	—	4½	88RPT2FG	23170.	88RPT2MG	23879.
	100	5	—	88KPT2FG	23979.	88KPT2MG	25635.
	200	6	—	—	—	88MPT2MG	42919.
460 480V Coil	25	2	—	88FPT4FH	6791.	88FPT4MH	6903.
	30	—	2½	88GPT4FH	8948.	88GPT4MH	9037.
	50	3	—	88HPT4FH	9534.	88HPT4MH	10007.
	75	—	3½	88IPT4FH	13540.	88IPT4MH	14641.
	100	4	—	88JPT4FH	15111.	88JPT4MH	15566.
	150	—	4½	88RPT4FH	22577.	88RPT4MH	24526.
	200	5	—	88KPT4FH	26429.	88KPT4MH	27715.
	250	6	—	88MPT7FH	35951.	88MPT7MH	40188.
	300	6	—	88MPT8FH	37739.	88MPT8MH	41975.
	400	6	—	88MPT4FH	38678.	88MPT4MH	42915.

Part Winding 2 Step

Motor Volts	Max Hp	Size	Half Size	Fusible Disconnect		Motor Circuit Protector	
				Catalog No	Price \$	Catalog No	Price \$
230 240V Coil	20	—	1¾	88EPP2FG	3760.	88EPP2MG	3521.
	25	2	—	88FPP2FG	4075.	88FPP2MG	3944.
	40	—	2½	88GPP2FG	5786.	88GPP2MG	5632.
	50	3	—	88HPP2FG	6279.	88HPP2MG	6125.
	60	—	3½	88IPP2FG	11179.	88IPP2MG	12041.
	75	4	—	88JPP2FG	11803.	88JPP2MG	12658.
	125	—	4½	88RPP2FG	21810.	88RPP2MG	22357.
	150	5	—	88KPP2FG	22889.	88KPP2MG	23436.
460 480V Coil	30	—	1¾	88EPP4FH	3760.	88EPP4MH	3521.
	40	2	—	88FPP4FH	4075.	88FPP4MH	3944.
	60	—	2½	88GPP4FH	5786.	88GPP4MH	5632.
	75	3	—	88HPP4FH	6279.	88HPP4MH	6125.
	100	—	3½	88IPP4FH	11179.	88IPP4MH	12041.
	150	4	—	88JPP4FH	11803.	88JPP4MH	12658.
	250	—	4½	88RPP4FH	21810.	88RPP4MH	22357.
	350	5	—	88KPP4FH	22889.	88KPP4MH	23436.
600	6	—	—	—	88MFP4MH	42218.	



Reduced Voltage Pump Panels

Selection

Wye Delta Closed Transition Solid State Overload, Class 88

2

NEMA & HP
Rated Control

Ordering Information	Coil Table		Overload Table		
<ul style="list-style-type: none"> ▶ Replace the (*) with a letter from the coil table. ▶ Replace (†) with the letter from the overload table that corresponds to the correct FLA. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 156. ▶ Wiring Diagrams see page 169–170. 	60Hz Voltage	Letter	Size	FLA	†
	24 Separate Control	J	0, 1	0.25–1	A
	120 Separate Control	F	0, 1	0.75–3	B
	200–208	D	0, 1	2.5–10	D
	220–240	G	0–1¾	9–18	E
	277	L	1–2	13–27	F
	440–480	H	1¾	20–40	G
	550–600	E	2–2½	22–45	H
	For other voltages and frequencies see page 129.		2½–3	30–60	J
			3	45–90	K
		3½	57–115	L	
		4	67–135	M	
		4½	100–210	S	
		5	100–270	U	
		6	200–540	X	

Wye Delta Closed Transition—Solid State Overload^①

	Max Hp	Size (Y Δ)	Half Size	Fuse Clip Amps	MCP Amps	Fusible Disconnect		Motor Circuit Protector	
						Catalog No	Price \$	Catalog No	Price \$
200V	10	1	—	60	50	88DStC6F*	6209.	88DStC6M*	6510.
	15	—	1¾	100	100	88ES1C6F*	6564.	88ES1C6M*	6818.
	20	2	—	100	100	88FS1C6F*	7303.	88FS1C6M*	7350.
	30	—	2½	200	100	88GS1C6F*	9091.	88GS1C6M*	9491.
	40	3	—	200	150	88HS1C6F*	10077.	88HS1C6M*	10477.
	50	—	3½	400	200	88IS1C6F*	16802.	88IS1C6M*	18181.
	60	4	—	400	250	88JS1C6F*	18097.	88JS1C6M*	19476.
	75	—	4½	400	400	88RS1C6F*	30458.	88RS1C6M*	30381.
	150	5	—	600	600	88KS1C6F*	31425.	88KS1C6M*	30932.
	300	6	—	—	800	Use MCP Type	—	88MS1C6M*	59706.
230V	10	1	—	60	50	88DStC2F*	6209.	88DStC2M*	6510.
	15	—	1¾	60	50	88ES1C2F*	6479.	88ES1C2M*	6818.
	25	2	—	100	100	88FS1C2F*	7303.	88FS1C2M*	7350.
	30	—	2½	200	100	88GS1C2F*	9091.	88GS1C2M*	9491.
	50	3	—	200	150	88HS1C2F*	10077.	88HS1C2M*	10477.
	60	—	3½	400	200	88IS1C2F*	16802.	88IS1C2M*	18181.
	75	4	—	400	250	88JS1C2F*	18097.	88JS1C2M*	19476.
	100	—	4½	400	400	88RS1C2F*	30458.	88RS1C2M*	30381.
	150	5	—	600	600	88KS1C2F*	31425.	88KS1C2M*	30932.
	350	6	—	—	1200	Use MCP Type	—	88MS1C2M*	59706.
460V	15	1	—	30	30	88DStC4F*	6209.	88DStC4M*	6510.
	30	—	1¾	60	50	88ES1C4F*	6494.	88ES1C4M*	6818.
	40	2	—	100	100	88FS1C4F*	7465.	88FS1C4M*	7519.
	60	—	2½	100	100	88GS1C4F*	9260.	88GS1C4M*	9661.
	75	3	—	200	150	88HS1C4F*	10901.	88HS1C4M*	11302.
	100	—	3½	200	150	88IS1C4F*	17373.	88IS1C4M*	19044.
	150	4	—	400	250	88JS1C4F*	18775.	88JS1C4M*	20154.
	200	—	4½	400	400	88RS1C4F*	31151.	88RS1C4M*	31074.
	300	5	—	600	600	88KS1C4F*	33096.	88KS1C4M*	32603.
	700	6	—	—	1200	Use MCP Type	—	88MS1C4M*	59706.
575V	15	1	—	30	30	88DStC5F*	6209.	88DStC5M*	6510.
	30	—	1¾	60	50	88ES1C5F*	6494.	88ES1C5M*	6818.
	40	2	—	100	100	88FS1C5F*	7465.	88FS1C5M*	7519.
	60	—	2½	100	100	88GS1C5F*	9260.	88GS1C5M*	9661.
	75	3	—	200	100	88HS1C5F*	10901.	88HS1C5M*	11302.
	100	—	3½	200	200	88IS1C5F*	17373.	88IS1C5M*	19044.
	150	4	—	400	250	88JS1C5F*	18775.	88JS1C5M*	20154.
	200	—	4½	400	400	88RS1C5F*	31151.	88RS1C5M*	31074.
	300	5	—	600	400	88KS1C5F*	33096.	88KS1C5M*	32603.
	700	6	—	—	1200	Use MCP Type	—	88MS1C5M*	59706.

^①For phase loss protection order factory modification suffix R1 or R2. See page 132.



Reduced Voltage Pump Panels

Selection

Wye Delta Closed Transition Ambient Compensated Bimetal Overload, Class 88

Ordering Information	Coil Table																
<ul style="list-style-type: none"> ▶ Replace the (*) with a letter from the coil table. ▶ Order 3 heater elements by code number at \$11.60 each page 884. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 156. ▶ Wiring Diagrams see page 169–170. 	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24 Separate Control</td> <td>J</td> </tr> <tr> <td>120 Separate Control</td> <td>F</td> </tr> <tr> <td>200–208</td> <td>D</td> </tr> <tr> <td>220–240</td> <td>G</td> </tr> <tr> <td>277</td> <td>L</td> </tr> <tr> <td>440–480</td> <td>H</td> </tr> <tr> <td>550–600</td> <td>E</td> </tr> </tbody> </table>	60Hz Voltage	Letter	24 Separate Control	J	120 Separate Control	F	200–208	D	220–240	G	277	L	440–480	H	550–600	E
	60Hz Voltage	Letter															
	24 Separate Control	J															
120 Separate Control	F																
200–208	D																
220–240	G																
277	L																
440–480	H																
550–600	E																
For other voltages and frequencies see page 129.																	

Wye Delta Closed Transition

	Max Hp	Size (Y Δ)	Half Size	Fuse Clip Amps	MCP Amps	Fusible Disconnect		Motor Circuit Protector	
						Catalog No	Price \$	Catalog No	Price \$
200V	10	1	—	60	50	88DPC6F*	6175.	88DPC6M*	6475.
	15	—	1¾	100	100	88EPC6F*	6529.	88EPC6M*	6783.
	20	2	—	100	100	88FPC6F*	7269.	88FPC6M*	7315.
	30	—	2½	200	100	88GPC6F*	9056.	88GPC6M*	9457.
	40	3	—	200	150	88HPC6F*	10042.	88HPC6M*	10443.
	50	—	3½	400	200	88IPC6F*	16768.	88IPC6M*	18147.
	60	4	—	400	250	88JPC6F*	18062.	88JPC6M*	19441.
	75	—	4½	400	400	88RFC6F*	30423.	88RFC6M*	30346.
	150	5	—	600	600	88KFC6F*	31390.	88KFC6M*	30897.
	300	6	—	—	800	Use MCP Type	—	88MFC6M*	59671.
230V	10	1	—	60	50	88DPC2F*	6175.	88DPC2M*	6475.
	15	—	1¾	60	50	88EPC2F*	6444.	88EPC2M*	6783.
	25	2	—	100	100	88FPC2F*	7269.	88FPC2M*	7315.
	30	—	2½	200	100	88GPC2F*	9056.	88GPC2M*	9457.
	40	3	—	200	150	88HPC2F*	10042.	88HPC2M*	10443.
	60	—	3½	400	200	88IPC2F*	16768.	88IPC2M*	18147.
	75	4	—	400	250	88JPC2F*	18062.	88JPC2M*	19441.
	100	—	4½	400	400	88RFC2F*	30423.	88RFC2M*	30346.
	150	5	—	600	600	88KFC2F*	31390.	88KFC2M*	30897.
	350	6	—	—	1200	Use MCP Type	—	88MFC2M*	59671.
460V	15	—	—	30	30	88DPC4F*	6175.	88DPC4M*	6475.
	30	—	1¾	60	50	88EPC4F*	6460.	88EPC4M*	6783.
	40	2	—	100	100	88FPC4F*	7431.	88FPC4M*	7484.
	60	—	2½	100	100	88GPC4F*	9226.	88GPC4M*	9626.
	75	3	—	200	150	88HPC4F*	10866.	88HPC4M*	11267.
	100	—	3½	200	150	88IPC4F*	17338.	88IPC4M*	19010.
	150	4	—	400	250	88JPC4F*	18740.	88JPC4M*	20119.
	200	—	4½	400	400	88RFC4F*	31116.	88RFC4M*	31039.
	300	5	—	600	600	88KFC4F*	33062.	88KFC4M*	32569.
	700	6	—	—	1200	Use MCP Type	—	88MFC4M*	59671.
575V	15	—	—	30	30	88DPC5F*	6175.	88DPC5M*	6475.
	30	—	1¾	60	50	88EPC5F*	6460.	88EPC5M*	6783.
	40	2	—	100	100	88FPC5F*	7431.	88FPC5M*	7484.
	60	—	2½	100	100	88GPC5F*	9226.	88GPC5M*	9626.
	75	3	—	200	100	88HPC5F*	10866.	88HPC5M*	11267.
	100	—	3½	200	200	88IPC5F*	17338.	88IPC5M*	19010.
	150	4	—	400	250	88JPC5F*	18740.	88JPC5M*	20119.
	200	—	4½	400	400	88RFC5F*	31116.	88RFC5M*	31039.
	300	5	—	600	400	88KFC5F*	33062.	88KFC5M*	32569.
	700	6	—	—	1200	Use MCP Type	—	88MFC5M*	59671.

2
 NEMA & HP
 Rated Control



Reduced Voltage Pump Panels

Selection

Wye Delta Open Transition Solid State Overload, Class 88

2

NEMA & HP
Rated Control

Ordering Information	Coil Table		Overload Table		
<ul style="list-style-type: none"> ▶ Replace the (*) with a letter from the coil table. ▶ Replace (†) with the letter from the overload table that corresponds to the correct FLA. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 156. ▶ Wiring Diagrams see page 169–170. 	60Hz Voltage	Letter	Size	FLA	†
	24 Separate Control	J	0, 1	0.25–1	A
	120 Separate Control	F	0, 1	0.75–3	B
	200–208	D	0, 1	2.5–10	D
	220–240	G	0–1¾	9–18	E
	277	L	1–2	13–27	F
	440–480	H	1¾	20–40	G
	550–600	E	2–2½	22–45	H
	For other voltages and frequencies see page 129.		2½–3	30–60	J
			3	45–90	K
		3½	57–115	L	
		4	67–135	M	
		4½	100–210	S	
		5	100–270	U	
		6	200–540	X	

Wye Delta Open Transition—Solid State Overload[Ⓢ]

	Max Hp	Size (Y Δ)	Half Size	Fuse Clip Amps	MCP Amps	Fusible Disconnect		Motor Circuit Protector	
						Catalog No	Price \$	Catalog No	Price \$
200V	10	1	—	60	50	88DS†06F*	4815.	88DS†06M*	5115.
	15	—	1¾	100	100	88ES†06F*	5408.	88ES†06M*	5385.
	20	2	—	100	100	88FS†06F*	6163.	88FS†06M*	5909.
	30	—	2½	200	100	88GS†06F*	7727.	88GS†06M*	7820.
	40	3	—	200	150	88HS†06F*	8320.	88HS†06M*	8721.
	50	—	3½	400	200	88IS†06F*	14622.	88IS†06M*	15616.
	60	4	—	400	250	88JS†06F*	15161.	88JS†06M*	16540.
	75	—	4½	400	400	88RS†06F*	22808.	88RS†06M*	26667.
	150	5	—	600	600	88KS†06F*	27573.	88KS†06M*	27080.
	300	6	—	—	800	Use MCP Type	—	88MS†06M*	50276.
230V	10	1	—	60	50	88DS†02F*	4815.	88DS†02M*	5115.
	15	—	1¾	60	50	88ES†02F*	5323.	88ES†02M*	5385.
	25	2	—	100	100	88FS†02F*	6163.	88FS†02M*	5909.
	30	—	2½	200	100	88GS†02F*	7727.	88GS†02M*	7820.
	50	3	—	200	150	88HS†02F*	8320.	88HS†02M*	8721.
	60	—	3½	400	200	88IS†02F*	14622.	88IS†02M*	15616.
	75	4	—	400	250	88JS†02F*	15161.	88JS†02M*	16540.
	100	—	4½	400	400	88RS†02F*	22808.	88RS†02M*	26667.
	150	5	—	600	600	88KS†02F*	27573.	88KS†02M*	27080.
	350	6	—	—	1200	Use MCP Type	—	88MS†02M*	50276.
460V	15	1	—	30	30	88DS†04F*	4815.	88DS†04M*	5115.
	30	—	1¾	60	50	88ES†04F*	5339.	88ES†04M*	5385.
	40	2	—	100	100	88FS†04F*	5855.	88FS†04M*	5909.
	60	—	2½	200	100	88GS†04F*	7419.	88GS†04M*	7820.
	75	3	—	200	150	88HS†04F*	8320.	88HS†04M*	8721.
	100	—	3½	200	150	88IS†04F*	12727.	88IS†04M*	15616.
	150	4	—	400	250	88JS†04F*	15161.	88JS†04M*	16540.
	200	—	4½	400	400	88RS†04F*	22808.	88RS†04M*	26667.
	300	5	—	600	600	88KS†04F*	27573.	88KS†04M*	27080.
	700	6	—	—	1200	Use MCP Type	—	88MS†04M*	50276.
575V	15	1	—	30	30	88DS†05F*	4815.	88DS†04M*	5115.
	30	—	1¾	60	50	88ES†05F*	5339.	88ES†05M*	5385.
	40	2	—	100	100	88FS†05F*	5855.	88FS†04M*	5909.
	60	—	2½	100	100	88GS†05F*	7419.	88GS†05M*	7820.
	75	3	—	200	100	88HS†05F*	8320.	88HS†04M*	8721.
	100	—	3½	200	150	88IS†05F*	12727.	88IS†05M*	15616.
	150	4	—	400	250	88JS†05F*	15161.	88JS†04M*	16540.
	200	—	4½	400	400	88RS†05F*	22808.	88RS†05M*	26667.
	300	5	—	600	400	88KS†05F*	27573.	88KS†04M*	27080.
	700	6	—	—	1200	Use MCP Type	—	88MS†04M*	50276.

[Ⓢ]For phase loss protection order factory modification suffix R1 or R2. See page 132.



Reduced Voltage Pump Panels

Selection

Wye Delta Open Transition Ambient Compensated Bimetal Overload, Class 88

Ordering Information	Coil Table																
<ul style="list-style-type: none"> ▶ Replace the (*) with a letter from the coil table. ▶ Order 3 heater elements by code number at \$11.60 each page 884. ▶ Field Modification Kits see page 121–125. ▶ Factory Modifications see page 126–132. ▶ Dimensions see page 156. ▶ Wiring Diagrams see page 169–170. 	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>24 Separate Control</td> <td>J</td> </tr> <tr> <td>120 Separate Control</td> <td>F</td> </tr> <tr> <td>200–208</td> <td>D</td> </tr> <tr> <td>220–240</td> <td>G</td> </tr> <tr> <td>277</td> <td>L</td> </tr> <tr> <td>440–480</td> <td>H</td> </tr> <tr> <td>550–600</td> <td>E</td> </tr> </tbody> </table>	60Hz Voltage	Letter	24 Separate Control	J	120 Separate Control	F	200–208	D	220–240	G	277	L	440–480	H	550–600	E
	60Hz Voltage	Letter															
	24 Separate Control	J															
120 Separate Control	F																
200–208	D																
220–240	G																
277	L																
440–480	H																
550–600	E																
	For other voltages and frequencies see page 129.																

Wye Delta Open Transition

	Max Hp	Size (Y Δ)	Half Size	Fuse Clip Amps	MCP Amps	Fusible Disconnect		Motor Circuit Protector	
						Catalog No	Price \$	Catalog No	Price \$
200V	10	1	—	60	50	88DP06F*	4780.	88DP06M*	5081.
	15	—	1¾	100	100	88EP06F*	5374.	88EP06M*	5350.
	20	2	—	100	100	88FP06F*	6129.	88FP06M*	5874.
	30	—	2½	200	100	88GP06F*	7692.	88GP06M*	7785.
	40	3	—	200	150	88HP06F*	8286.	88HP06M*	8686.
	50	—	3½	400	200	88IP06F*	14588.	88IP06M*	15581.
	60	4	—	400	250	88JP06F*	15127.	88JP06M*	16506.
	75	—	4½	400	400	88RF06F*	22773.	88RF06M*	26633.
	150	5	—	600	600	88KF06F*	27538.	88KF06M*	27045.
	300	6	—	—	800	Use MCP Type	—	88MF06M*	50242.
230V	10	1	—	60	50	88DP02F*	4780.	88DP02M*	5081.
	15	—	1¾	60	50	88EP02F*	5289.	88EP02M*	5350.
	25	2	—	100	100	88FP02F*	6129.	88FP02M*	5874.
	30	—	2½	200	100	88GP02F*	7692.	88GP02M*	7785.
	50	3	—	200	150	88HP02F*	8286.	88HP02M*	8686.
	60	—	3½	400	200	88IP02F*	14588.	88IP02M*	15581.
	75	4	—	400	250	88JP02F*	15127.	88JP02M*	16506.
	100	—	4½	400	400	88RF02F*	22773.	88RF02M*	26633.
	150	5	—	600	600	88KF02F*	27538.	88KF02M*	27045.
	350	6	—	—	1200	Use MCP Type	—	88MF02M*	50242.
460V	15	1	—	30	30	88DP04F*	4780.	88DP04M*	5081.
	30	—	1¾	60	50	88EP04F*	5304.	88EP04M*	5350.
	40	2	—	100	100	88FP04F*	5820.	88FP04M*	5874.
	60	—	2½	200	100	88GP04F*	7384.	88GP04M*	7785.
	75	3	—	200	150	88HP04F*	8286.	88HP04M*	8686.
	100	—	3½	200	150	88IP04F*	12692.	88IP04M*	15581.
	150	4	—	400	250	88JP04F*	15127.	88JP04M*	16506.
	200	—	4½	400	400	88RF04F*	22773.	88RF04M*	26633.
	300	5	—	600	600	88KF04F*	27538.	88KF04M*	27045.
	700	6	—	—	1200	Use MCP Type	—	88MF04M*	50242.
575V	15	1	—	30	30	88DP05F*	4780.	88DP04M*	5081.
	30	—	1¾	60	50	88EP05F*	5304.	88EP05M*	5350.
	40	2	—	100	100	88FP05F*	5820.	88FP04M*	5874.
	60	—	2½	100	100	88GP05F*	7384.	88GP05M*	7785.
	75	3	—	200	100	88HP05F*	8286.	88HP04M*	8686.
	100	—	3½	200	150	88IP05F*	12692.	88IP05M*	15581.
	150	4	—	400	250	88JP05F*	15127.	88JP04M*	16506.
	200	—	4½	400	400	88RF05F*	22773.	88RF05M*	26633.
	300	5	—	600	400	88KF05F*	27538.	88KF04M*	27045.
	700	6	—	—	1200	Use MCP Type	—	88MF04M*	50242.

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NEMA & HP
Rated Control