

# MOTORS INDEX

## How to use this section

This section covers our extensive line of high performance POWERTEC and PACTORQ Brushless DC Motors. Select the proper motor using one of the following procedures.

- If you are already familiar with these motors and the available options, refer to the POWERTEC Model Number Codes beginning on page 6, or the PACTORQ Model Number Codes beginning on page 53 to verify the coded information.
- If you are not familiar with these motors and the available options refer to the POWERTEC general specifications on page 5, the PACTORQ general specifications on page 52 and/or the index at the right. Construct a model number after all the technical parameters, including options, are determined.

## POWERTEC Brushless DC Motors

<b>Product Overview</b>	3
<b>Features and Benefits</b>	4
<b>Options and General Specifications</b>	5
<b>Model Number Codes</b>	6
<b>Totally Enclosed, Non-Ventilated Motors (0.25-100 HP)</b>	
Product Description	11
Constant Torque Speed Range	11
Typical Applications	11
Agency Approvals	11
Ratings and Characteristics	11
Recommended Motor/Drive Combinations	
Genesis	12
Millennium	14
<b>Dripproof, Fully Guarded Motors (5-300 HP)</b>	
Product Description	15
Constant Torque Speed Range	15
Typical Applications	15
Agency Approvals	15
Ratings and Characteristics	15
Recommended Motor/Drive Combinations	
Genesis	16
Millennium	18
<b>Totally Enclosed, Air Over Motors (10-250 HP)</b>	
Product Description	20
Constant Torque Speed Range	20
Typical Applications	20
Agency Approvals	20
Ratings and Characteristics	20
Recommended Motor/Drive Combinations	
Genesis	21
Millennium	22
<b>Dripproof, Blower Ventilated Motors (5-300 HP)</b>	
Product Description	23
Constant Torque Speed Range	23
Typical Applications	23
Agency Approvals	23
Ratings and Characteristics	23
Recommended Motor/Drive Combinations	
Genesis	24
Millennium	25
<b>POWERTEC Motor Dimensions</b>	
NEMA 42 Frames	26
NEMA 140 Frames	27
NEMA 180 Frames	29
NEMA 210 Frames	32
NEMA 250 Frames	35
NEMA 280 Frames	40
NEMA 320 Frames	44
NEMA 500 Frames	48

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED  
DRIVE SYSTEMS

D

GENERAL  
INFORMATION

# MOTORS INDEX

## PACTORQ Brushless DC Motors

Product Overview	50
Features and Benefits	51
Options and General Specifications	52
Model Number Codes	53
<b>Totally Enclosed, Non-Ventilated Motors (10-75 HP)</b>	
Product Description	56
Constant Torque Speed Range	56
Typical Applications	56
Agency Approvals	56
Ratings and Characteristics	56
Recommended Motor/Drive Combinations	
Millennium	57
<b>Dripproof, Blower Ventilated Motors (10-400 HP)</b>	
Product Description	58
Constant Torque Speed Range	58
Typical Applications	58
Agency Approvals	58
Ratings and Characteristics	58
Recommended Motor/Drive Combinations	
Millennium	59
<b>PACTORQ Motor Dimensions</b>	
NEMA 180 Frames	60
NEMA 210 Frames	63
NEMA 250 Frames	66
NEMA 280 Frames	70
NEMA 320 Frames	73

# POWERTEC BRUSHLESS DC MOTORS

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED  
DRIVE SYSTEMS

D

GENERAL  
INFORMATION

## Versatile Packaging

The POWERTEC motor line includes NEMA Totally Enclosed Non-Ventilated (TENV), Totally Enclosed Air Over (TEAO), Dripproof Fully Guarded (DPFG), and Dripproof Blower Ventilated (DPBV) enclosures. This broad array provides suitable motor enclosures and mounting for virtually any industrial environment. The motors are available with NEMA foot mountings, NEMA C face, and D flange mountings are also available.

## High Efficiency

The brushless DC motor uses efficient ceramic ferrite permanent magnets bonded to the rotor to produce the magnetic field. Thus, there are no losses in the motor due to rotor induction currents. All of the current delivered to the brushless DC motor is used to develop torque.

## Dynamic Response

The powerful and lightweight permanent magnet rotor design provides low rotor inertia providing high torque to inertia ratios in a relatively small frame. This high torque density equates to a very responsive motor with high starting and running torque, rapid start-stop capabilities, and smooth operation over the entire speed range.

## Precision Control

The brushless DC motor is a true synchronous motor. The rotor field is always in sync with the excitation field; it does not have losses due to slip. This factor, inherent to brushless DC design, combined with various primary and secondary feedback options, allows for precise speed and torque control.

## Low Maintenance

The brushless DC motor does not have any brushes to replace or a commutator to wear out. Little heat is generated in the rotor allowing the bearings to run cooler while increasing bearing life. Factory mounted feedback devices are integral to the motor and eliminate high maintenance couplings.



POWERTEC BRUSHLESS DC MOTORS  
0.25-300 HP STANDARD

**A****MOTORS****B****DRIVES****C****PRE-ENGINEERED  
DRIVE SYSTEMS****D****GENERAL  
INFORMATION**

# POWERTEC BRUSHLESS DC MOTORS

## FEATURES

## BENEFITS

Brushless Technology	Reliable, high-performance motor technology - long life, virtually maintenance free, cooler running, low acoustic noise, same HP as other motor technologies in smaller motor frame
Optimum ferrite permanent magnet design	<ul style="list-style-type: none"> <li>- Low rotor inertia</li> <li>- High power density</li> <li>- High torque density</li> </ul>
NEMA enclosures and mounting options	Satisfies broad end-use requirements
Patented double-finned, aluminum frame (US Patent No. 4,839,547)	Efficient cooling of the stator assembly Withstands higher shock loads than conventional cast iron enclosures
Oversize bearings pressed into steel bearing insert, clamped rear bearing (NEMA 180-500 frames)	All thrust loads accommodated by rear bearing, increasing reliability and life
Integral shaft mounted Hall Sensors or resolver and encoder	No coupling, yields higher feedback resolution and accuracy
Four different wiring configurations for various horsepower and speed requirements	Flexible and versatile
Robust stator <ul style="list-style-type: none"> <li>- Concentric coil windings</li> <li>- Inverter duty insulation system</li> <li>- Proprietary trickle varnish process</li> </ul>	Stator better withstands high voltage transients of PWM waveforms
Class H insulated, conservatively rated for class F operation	Additional assurance of motor integrity over broad temperature range
Near unity power factor at all speeds and loads	Eliminates costly power factor correction Reduces power consumption for important energy savings
0% speed regulation	No slip, drift, higher throughput
Standard two year warranty	Assured quality and reliability

# POWERTEC BRUSHLESS DC MOTORS

## FEATURES

- Optimum ferrite permanent magnet design
- High efficiency
- High dynamic response
- High power density
- Patented, double-finned aluminum frame for highest thermal efficiency and light weight (NEMA 42-500 frames)
- Four different wiring configurations for various horsepower and speed requirements
- Robust stator
  - Concentric coil windings
  - Inverter duty insulation system
  - Proprietary trickle varnish process
- NEMA mounting options
- Standard two year warranty

## PRIMARY FEEDBACK OPTIONS

- Hall sensors (dual channel quadrature)
  - 30 ppr (120 ppr after 4x multiplication by the drive)  
(NEMA 42-250 frames)
  - 60 ppr (240 ppr after 4x multiplication by the drive)  
(NEMA 280-500 frames)
- Integral, through-shaft frameless resolver (transmitter type)

## SECONDARY FEEDBACK OPTIONS

- Externally mounted 600 or 1024 ppr line driver encoder
- Encoder feedback mounting kit

## OTHER OPTIONS

- NEMA C face and D flange mounting
- Maximum capacity ball bearings and roller bearings
- NTC or PTC thermistor
- 100 VDC fail-safe brake
- 115, 230, or 460 VAC fail-safe brake
- Custom terminations: F1, F2, or top mounted terminal box, MS connectors, explosion proof terminal box
- Slide base mounting
- Custom stator windings
- Custom mounting and shaft configurations
- Grease fittings and grease relief
- Special rotor balance
- Dripproof, Separately Ventilated
- Totally Enclosed, Pipe Ventilated
- Totally Enclosed, Water Proof
- Totally Enclosed, Dust Proof
- Totally Enclosed, Water Cooled (NEMA 250-320 frames)

## TYPICAL APPLICATIONS

- Test stands
- Extruders
- Electronic line shafting
- Winders
- Wire drawing
- Printing
- Forest Industry machinery
- Tube and rolling mills
- Textile machinery
- Punch presses
- Paper converting
- Cranes
- Elevators

## AGENCY APPROVALS

- UL Recognized (file #E130709)
- CSA Listed (file #LR103655-2)
- CE Certified (Pending)

## GENERAL SPECIFICATIONS

Number of poles . . . . .	4 (NEMA 42 - 250 frames) 8 (NEMA 280 - 500 frames)
Winding . . . . .	3 phase Wye or Delta, series or parallel (12 lead reconnectable)
Magnet Type . . . . .	Ferrite
Standard Enclosures . .	TENV, TEO, DPBV, DPF
Mounting . . . . .	NEMA foot mounting (NEMA 180-500) NEMA C face (NEMA 42-250) NEMA D flange (NEMA 210, 280, 320)
Terminations . . . . .	Flying leads in terminal box: top mounted (NEMA TENV 42, 140) F1 mounted (NEMA 180-500)
Thermal Protection . . .	Normally closed thermostat with Hall Sensor Feedback NTC thermistor with Resolver Feedback

A

MOTORS

B

DRIVES

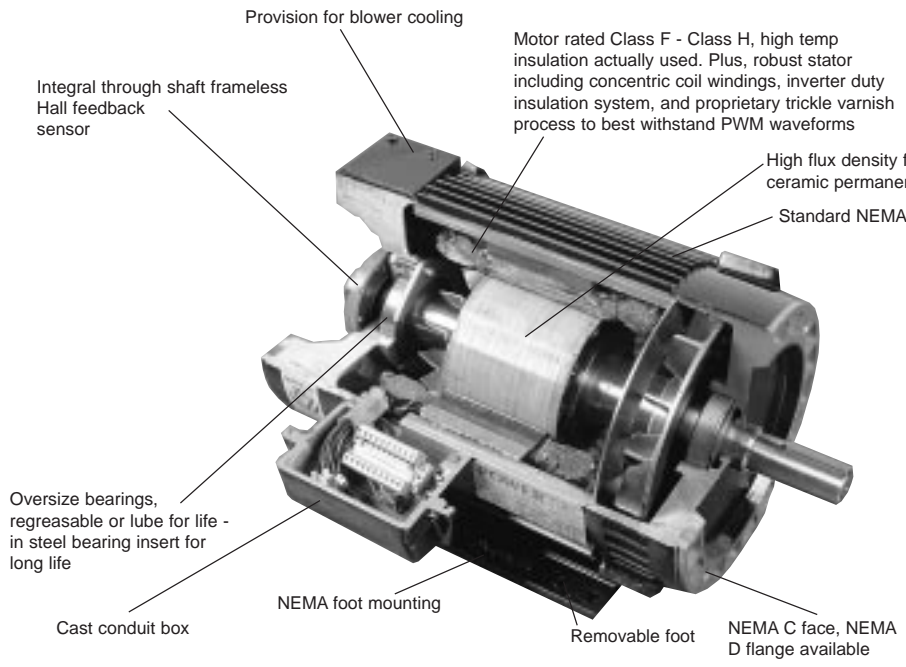
C

PRE-ENGINEERED  
DRIVE SYSTEMS

D

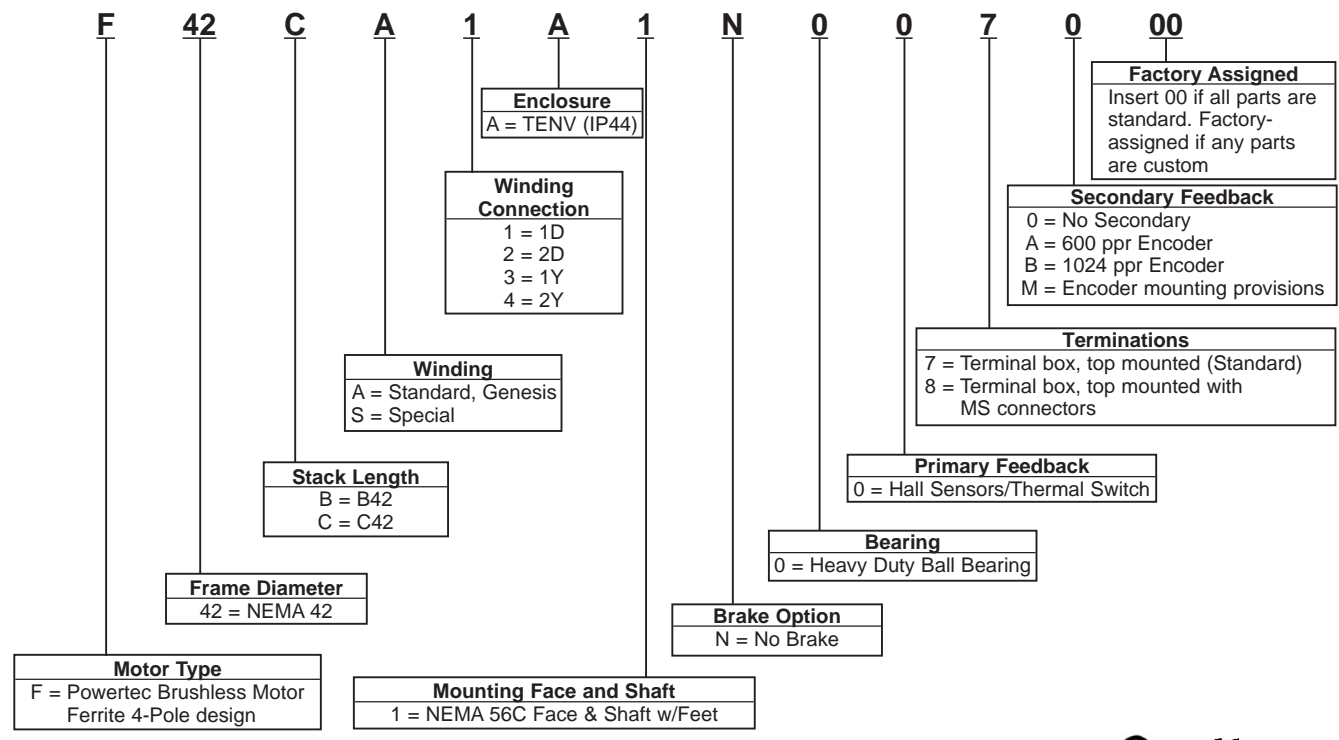
GENERAL  
INFORMATION

# POWERTEC MOTORS MODEL NUMBER CODES



**POWERTEC  
F184 Dripproof,  
Fully Guarded  
(DPFG) Motor Shown**

## POWERTEC FERRITE-NEMA 42 FRAME



File #E130709 File #LR103655-2 (Pending)

NOTE: To construct a motor model number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified motor.

# POWERTEC MOTORS MODEL NUMBER CODES

A

MOTORS

B

DRIVES

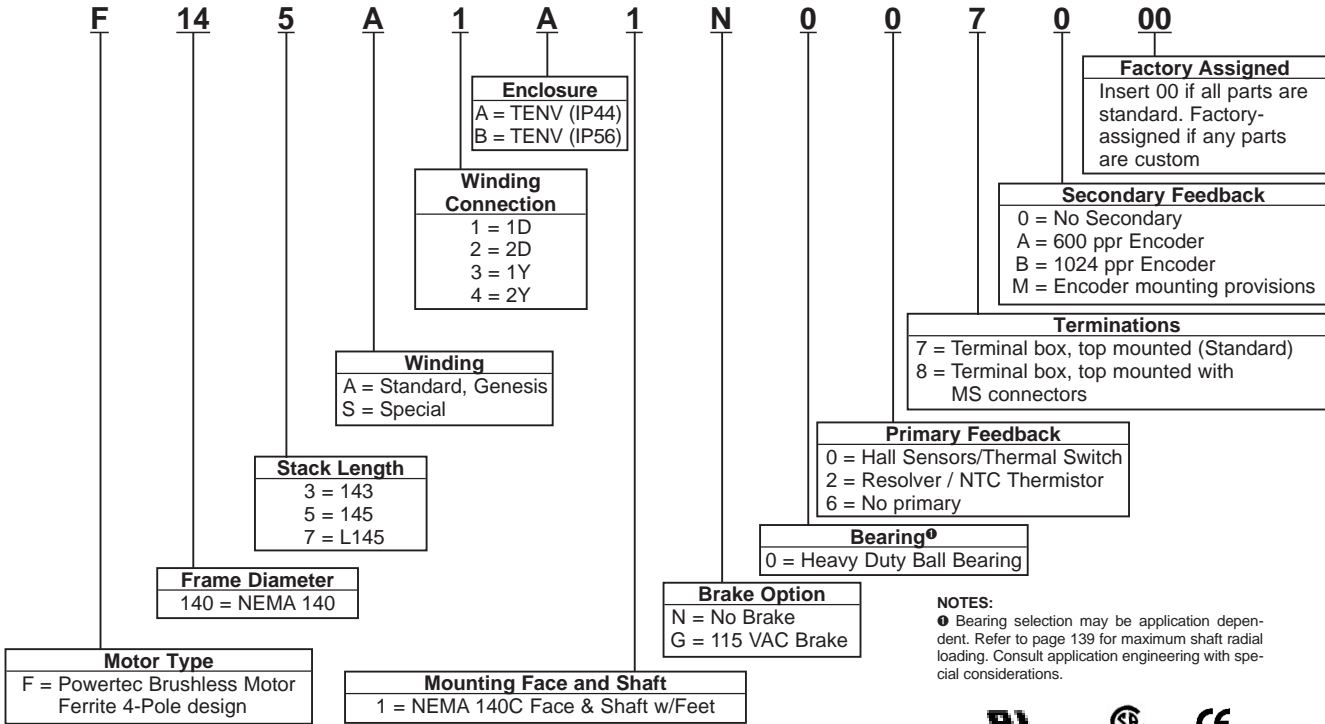
C

PRE-ENGINEERED  
DRIVE SYSTEMS

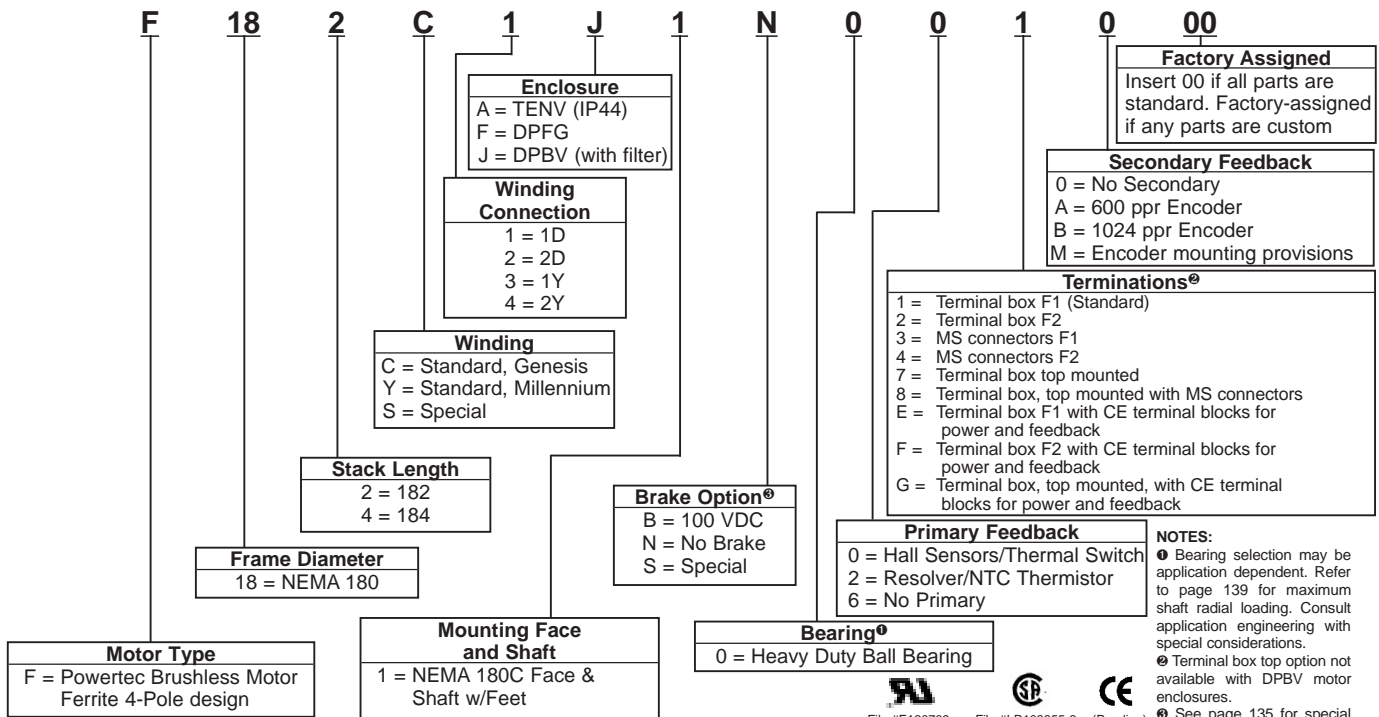
D

GENERAL  
INFORMATION

## POWERTEC FERRITE-NEMA 140 FRAME



## POWERTEC FERRITE-NEMA 180 FRAME

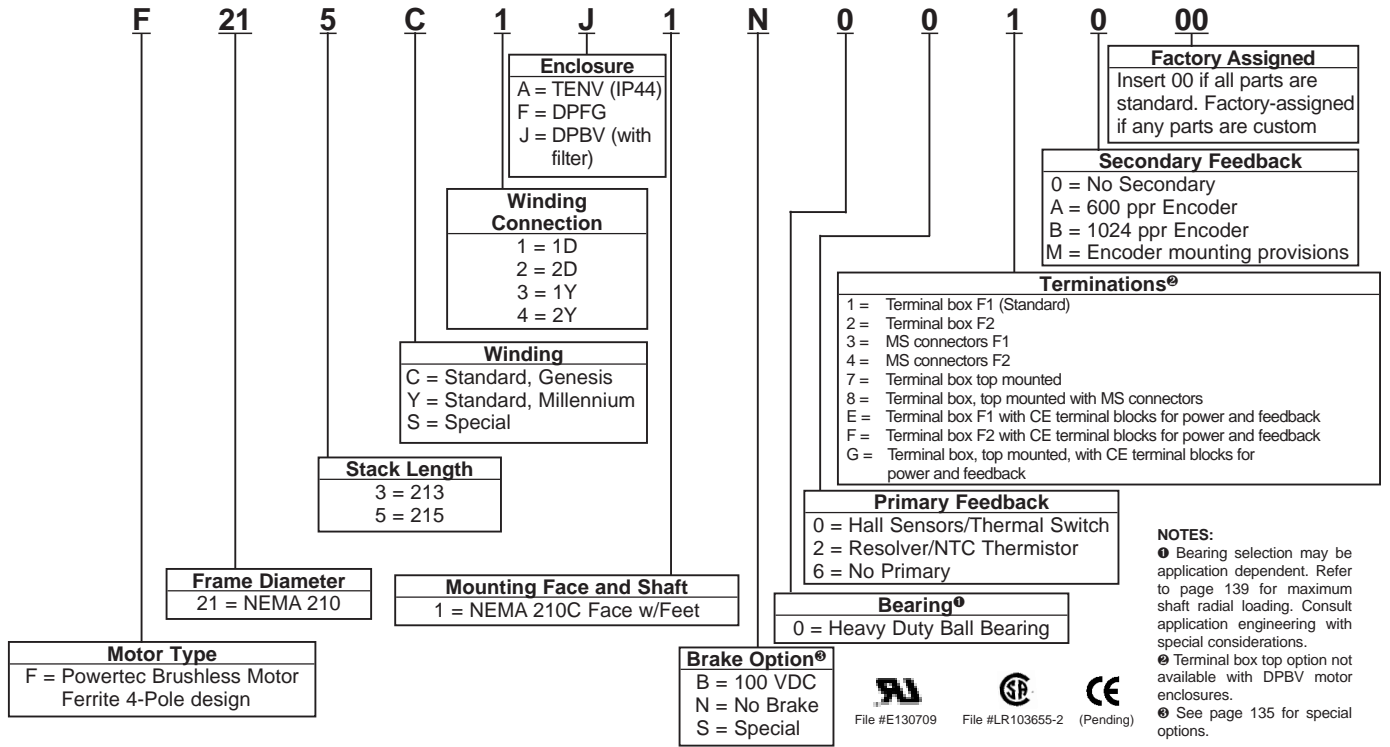


NOTE: To construct a motor model number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified motor.

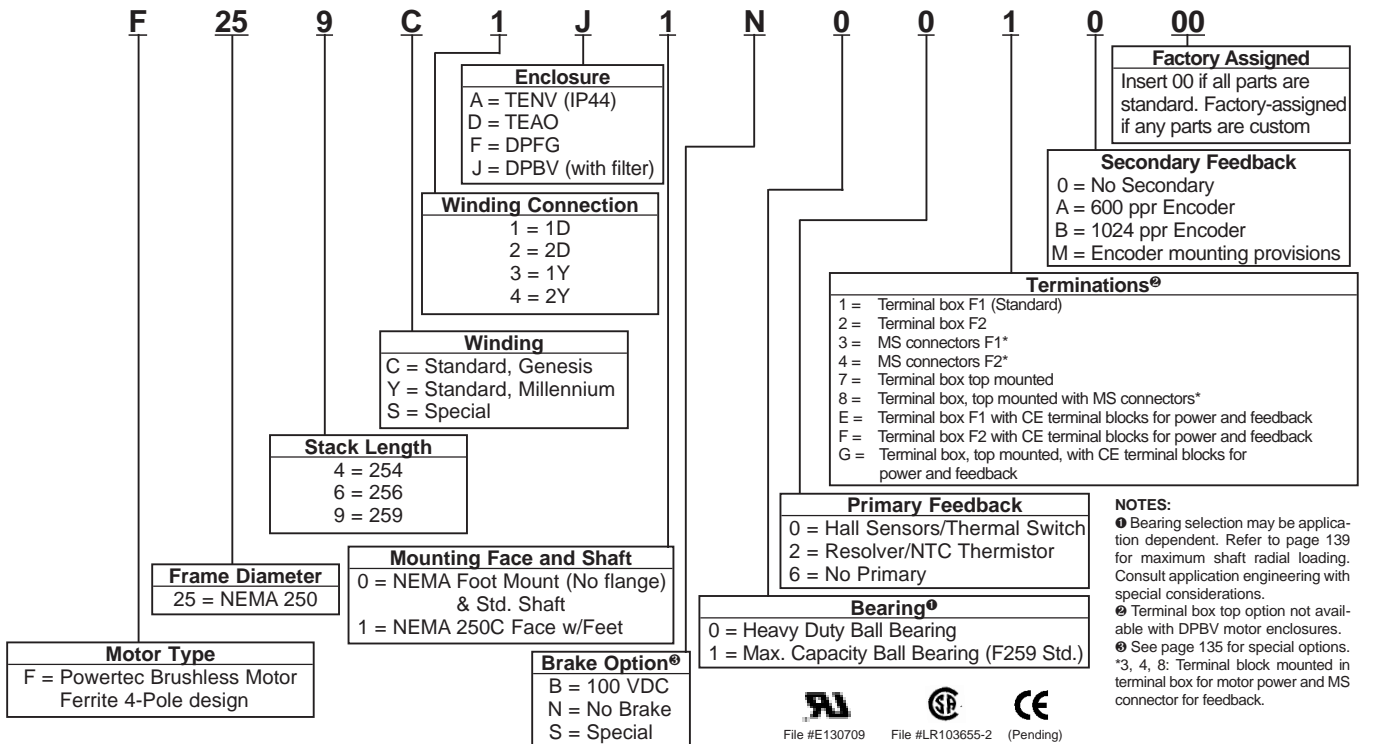


# POWERTEC MOTORS MODEL NUMBER CODES

## POWERTEC FERRITE-NEMA 210 FRAME



## POWERTEC FERRITE-NEMA 250 FRAME



NOTE: To construct a motor model number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified motor.



# POWERTEC MOTORS MODEL NUMBER CODES

A

MOTORS

B

DRIVES

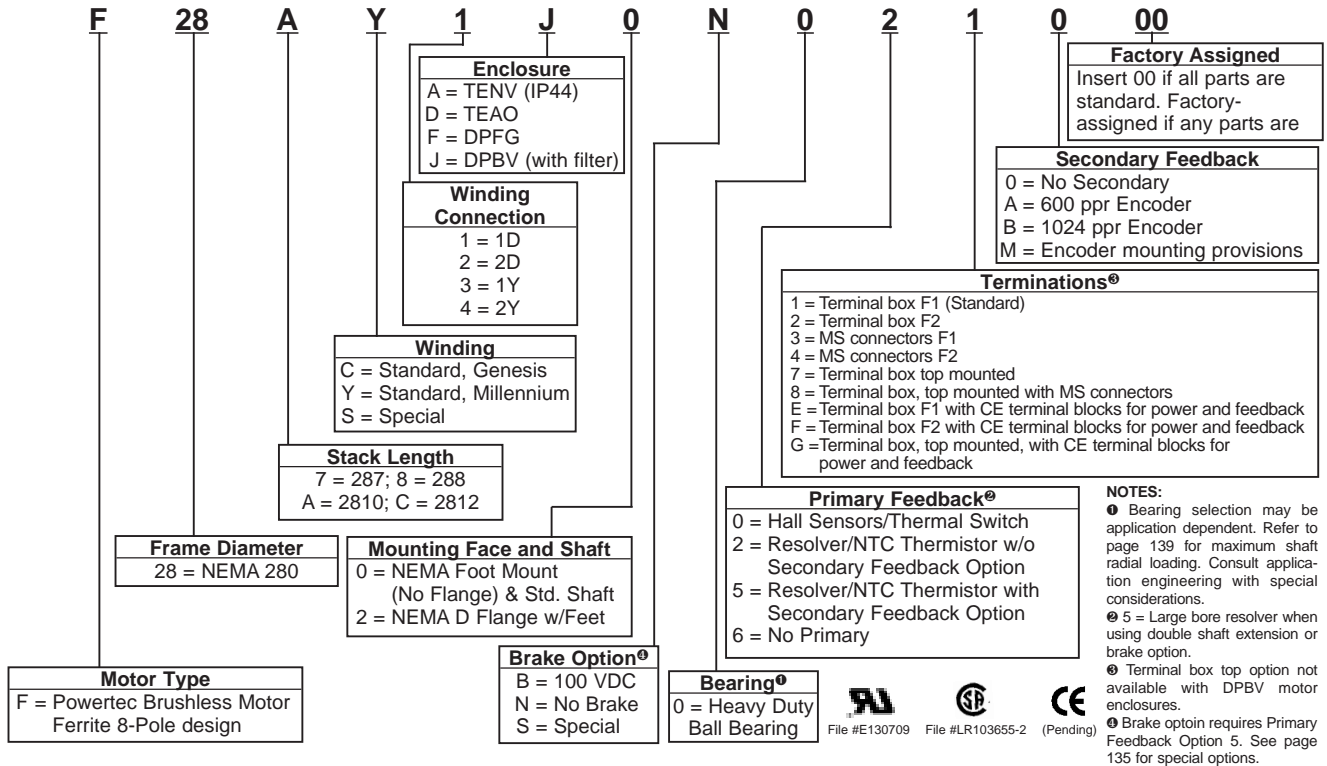
C

PRE-ENGINEERED  
DRIVE SYSTEMS

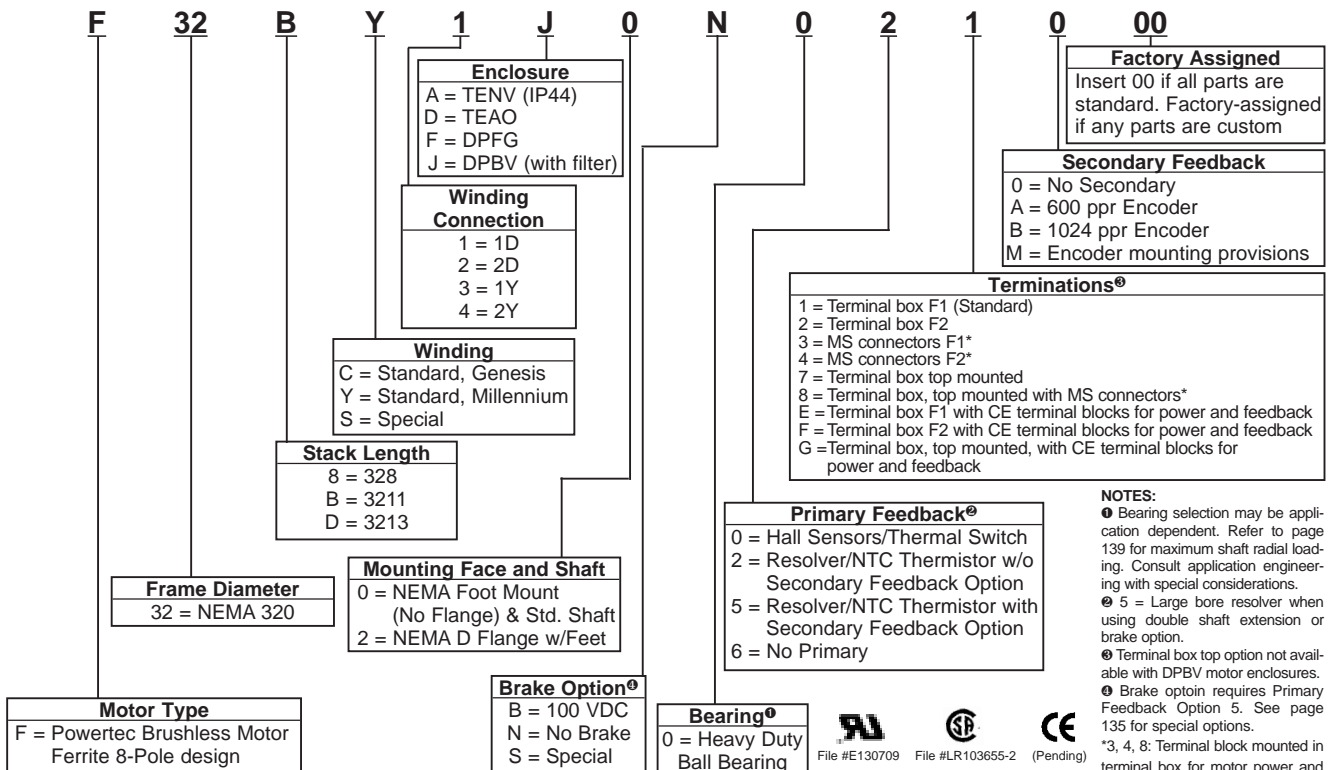
D

GENERAL  
INFORMATION

## POWERTEC FERRITE-NEMA 280 FRAME



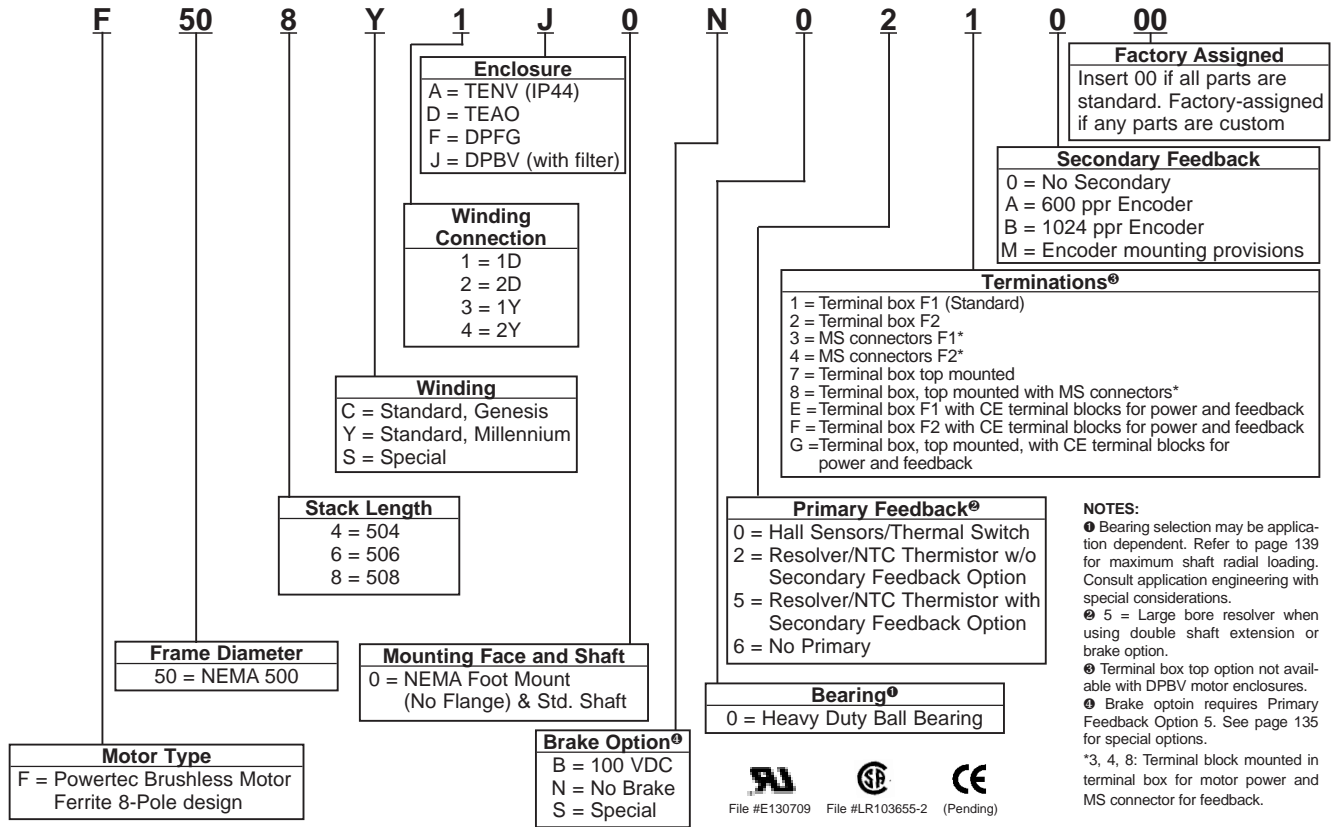
## POWERTEC FERRITE-NEMA 320 FRAME



NOTE: To construct a motor model number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified motor.

# POWERTEC MOTORS MODEL NUMBER CODES

## POWERTEC FERRITE-NEMA 500 FRAME



NOTE: To construct a motor model number select the combination of features required and put all the coded information in the proper sequence. Please account for all entries. The model number shown is an example of a properly specified motor.

# POWERTEC MOTORS

## Totally Enclosed, Non-Ventilated (TENV)



0.25 - 100 HP Standard

### FEATURES

- High Efficiency Ferrite Permanent Magnets
- NEMA/IEC Totally Enclosed, Non-Ventilated enclosure (IP55, IC410)
- Troublefree, brushless construction
- High power density
- Long life regreasable, oversize bearings
- Class H insulated, rated for class F operation
- Normally closed thermal switch protection
- NEMA C face, D flange, and foot mounting available
- Standard two year warranty

### PRODUCT DESCRIPTION

Powertec TENV motors offer high horsepower in a small frame size. From 0.25HP in a NEMA 42 frame to 100HP in a NEMA 500 frame, these motors are ideally suited for use in harsh industrial environments with unclean, or particle saturated air.

### CONSTANT TORQUE SPEED RANGE

- 100:1 with Genesis Drives
- 1000:1 with Millennium Drives

### TYPICAL APPLICATIONS

- Test stands
- Extruders
- Electronic line shafting
- Winders
- Wire drawing
- Printing
- Forest Industry machinery
- Tube and rolling mills
- Textile machinery
- Punch presses
- Paper converting
- Cranes
- Elevators

### AGENCY APPROVALS

- UL Recognized (file #E130709)
- CSA Listed (file #LR103655-2)
- CE Certified (Pending)

## RATINGS AND CHARACTERISTICS

Model Number Prefix	NEMA HP Rating	IEC kW Rating	Base Speed	Rated Efficiency @ Base Speed	Rotor Inertia lb.-ft. <sup>2</sup>	Approximate Weight	Rotor Inertia kg-m <sup>2</sup>	Approximate Weight
			RPM			lbs.		kg
F42B	0.25	0.187	1750	0.850	0.022	20	0.000927	9.1
F42B	0.33	0.25	1750	0.850	0.022	20	0.000927	9.1
F42B	0.5	0.37	1750	0.851	0.022	20	0.000927	9.1
F42C	0.75	0.56	1750	0.874	0.033	26	0.00139	11.8
F143	1	0.75	1750	0.880	0.042	34	0.00177	15.4
F145	1.5	1.1	1750	0.905	0.083	53	0.00350	24.0
F145	2	1.5	1750	0.896	0.083	53	0.00350	24.0
F147	3	2.2	1750	0.922	0.122	73	0.00514	33.1
F184	5	3.8	1750	0.931	0.520	120	0.0219	54.4
F213	7.5	5.6	1750	0.908	0.800	148	0.0337	67.1
F215	10	7.5	1750	0.925	1.13	196	0.0476	88.9
F256	15	11	1750	0.950	2.76	325	0.116	147
F259	20	15	1750	0.955	3.65	411	0.154	186
F287	25	19	1750	0.957	4.32	356	0.182	161
F288	30	22	1750	0.952	6.48	458	0.273	208
F28A	40	30	1750	0.971	8.63	560	0.364	254
F328	50	38	1750	0.966	18.0	669	0.759	303
F328	60	45	1750	0.968	18.0	669	0.759	303
F32B	75	56	1750	0.967	24.0	819	1.01	371
F506	100	75	1150	0.969	178	2460	7.50	1116

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED  
DRIVE SYSTEMS

D

GENERAL  
INFORMATION

## RECOMMENDED TENV MOTOR / GENESIS SERIES DRIVE COMBINATIONS – 100:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Genesis Series Drive <sup>⑥</sup>	
TENV		Base Model Number <sup>②</sup>				\$	230VAC
HP	RPM	Frame <sup>③</sup>	230VAC	460VAC			
0.25	3600	B42	◆F 42B A2A1N0070XX	NA	1,338	500	NA
	2500	B42	F 42B B2A1N0070XX		1,338		
	1750	B42	◆F 42B A1A1N0070XX		1,338		
	1150	B42	F 42B B1A1N0070XX		1,338		
0.33	3600	B42	◆F 42B A2A1N0070XX	NA	1,338	500	NA
	2500	B42	F 42B B2A1N0070XX		1,338		
	1750	B42	◆F 42B A1A1N0070XX		1,338		
	1150	B42	F 42B B1A1N0070XX		1,338		
0.5	3600	B42	◆F 42B A2A1N0070XX	NA	1,338	500	NA
	2500	B42	F 42B B2A1N0070XX		1,338		
	1750	B42	◆F 42B A1A1N0070XX		1,338		
	1150	C42	F 42C B1A1N0070XX		1,477		
0.75	3600	B42	◆F 42B A2A1N0070XX	NA	1,338	500	NA
	2500	C42	F 42C B2A1N0070XX		1,477		
	1750	C42	◆F 42C A1A1N0070XX		1,477		
	1150	143T	F 143 B1A1N0070XX		2,174		
1	3600	C42	◆F 42C A2A1N0070XX	NA	1,477	500	1000
	2500	C42	F 42C B2A1N0070XX	NA	1,477		
	1750	143T	◆F 143 A1A1N0070XX	F 143 C1A1N0070XX	2,174		
	1150	145T	F 145 B1A1N0070XX	F 145 D1A1N0070XX	2,535		
1.5	3600	143T	◆F 143 A2A1N0070XX	F 143 C2A1N0070XX	2,174	500	1000
	2500	143T	F 143 B2A1N0070XX	F 143 D2A1N0070XX	2,174		
	1750	145T	◆F 145 A1A1N0070XX	F 145 C1A1N0070XX	2,535		
	1150	145T	F 145 B1A1N0070XX	F 145 D1A1N0070XX	2,535		
2	3600	143T	◆F 143 A2A1N0070XX	F 143 C2A1N0070XX	2,174	500	1000
	2500	145T	F 145 B2A1N0070XX	F 145 D2A1N0070XX	2,535		
	1750	145T	◆F 145 A1A1N0070XX	F 145 C1A1N0070XX	2,535		
	1150	L145T	F 147 B1A1N0070XX	F 147 D1A1N0070XX	3,282		
3	3600	145T	◆F 145 A2A1N0070XX	F 145 C2A1N0070XX	2,535	500	1000
	2500	145T	F 145 B2A1N0070XX	F 145 D2A1N0070XX	2,535		
	1750	L145T	◆F 147 A1A1N0070XX	F 147 C1A1N0070XX	3,282		
	1750	182T	F 182 A1A0N0010XX	◆F 182 C1A0N0010XX	3,599		
	1150	184T	F 184 A3A0N0010XX	◆F 184 C3A0N0010XX	4,965		
5	3600	L145T	◆F 147 A2A1N0070XX	◆F 147 C2A1N0070XX	3,282	1000	1000
	3600	182T	F 182 A2A0N0010XX	◆F 182 C2A0N0010XX	3,599		
	2500	184T	F 184 A4A0N0010XX	◆F 184 C4A0N0010XX	4,965		
	1750	184T	F 184 A1A0N0010XX	◆F 184 C1A0N0010XX	4,965		
	1150	213T	F 213 A4A0N0010XX	◆F 213 C4A0N0010XX	6,323		
7.5	3600	184T	F 184 A2A0N0010XX	◆F 184 C2A0N0010XX	4,965	1000	1000
	2500	184T	F 184 A4A0N0010XX	◆F 184 C4A0N0010XX	4,965		
	1750	213T	F 213 A1A0N0010XX	◆F 213 C1A0N0010XX	6,323		
	1150	254T	F 254 A3A0N0010XX	◆F 254 C3A0N0010XX	8,719		
10	3600	184T	F 184 A2A0N0210XX	◆F 184 C2A0N0210XX	4,965	1000A	1000
	2500	213T	F 213 A4A0N0210XX	◆F 213 C4A0N0210XX	6,323		
	1750	215T	F 215 A1A0N0210XX	◆F 215 C1A0N0210XX	7,281		
	1150	259TZ	F 259 A3A0N1210XX	◆F 259 C3A0N1210XX	11,363		
15	3600	215T	F 215 A2A0N0210XX	◆F 215 C2A0N0210XX	7,281	2000	1000A
	2500	254T	F 254 A4A0N0210XX	◆F 254 C4A0N0210XX	8,719		
	1750	256T	F 256 B4A0N0210XX	F 256 D4A0N0210XX	10,235		
	1150	259TZ	F 259 A3A0N1210XX	◆F 259 C3A0N1210XX	11,363		
20	3600	254T	F 254 A2A0N0210XX	◆F 254 C2A0N0210XX	8,719	2000	2000
	2500	256T	F 256 A4A0N0210XX	◆F 256 C4A0N0210XX	10,235		
	1750	287TZ	F 287 B4A0N0510XX	F 287 D4A0N0510XX	12,263		
	1150	288TZ	◆F 288 C4A0N0510XX	◆F 288 C3A0N0510XX	13,702		

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Genesis Series Drives, Section B, page 78.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

## RECOMMENDED TENV MOTOR / GENESIS SERIES DRIVE COMBINATIONS – 100:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Genesis Series Drive <sup>②</sup>	
TENV			Base Model Number <sup>③</sup>			\$	230VAC
HP	RPM	Frame <sup>④</sup>	230VAC	460VAC			
25	3600	256T	NA	◆F 256 C2A0N0210XX	10,235	NA	2000
	2500	256T		◆F 256 C4A0N0210XX	10,235		
	1750	287TZ		F 287 D4A0N0510XX	12,263		
	1150	288TZ		◆F 288 C3A0N0510XX	13,702		
30	3600	259TZ	NA	◆F 259 C2A0N1210XX	11,363	NA	2000
	2500	259TZ		F 259 D2A0N1210XX	11,363		
	1750	288TZ		◆F 288 C1A0N0510XX	13,702		
	1150	2810TZ		◆F 28A C3A0N0510XX	20,436		
40	2500	288TZ	NA	F 288 D2A0N0510XX	13,702	NA	2000
	1750	2810TZ		F 28A D4A0N0510XX	20,436		
	1150	2812TZ		◆F 28C C3A0N0510XX	21,853		
50	1750	328TZ	NA	F 328 D4A0N0510XX	27,758	NA	3000
	1150	3211TZ		◆F 32B C3A0N0510XX	36,699		
60	1750	328TZ	NA	F 328 D4A0N0510XX	27,758	NA	3000
	1150	3211TZ		◆F 32B C3A0N0510XX	36,699		
75	1750	3211TZ	NA	F 32B D4A0N0510XX	36,699	NA	3000
	1150	3213TZ		F 32D G1A0N0010XX	42,183		
100	1150	506T	NA	◆F 506 C1A0N0210XX	66,077	NA	3500

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED  
DRIVE SYSTEMS

D

GENERAL  
INFORMATION

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Genesis Series Drives, Section B, page 78.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

## RECOMMENDED TENV MOTOR / MILLENNIUM SERIES DRIVE COMBINATIONS – 1000:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Millennium Series Drive <sup>®</sup> /Amperes	
TENV			Base Model Number <sup>②</sup>			\$	230VAC
HP	RPM	Frame <sup>③</sup>	230VAC	460VAC			
10	3600	184T	F 184 W2A0N0210XX	◆ F 184 Y2A0N0210XX	5,705	M4/30	NA
	2500	213T	F 213 X2A0N0210XX	F 213 Z2A0N0210XX	7,063		
	1750	215T	F 215 W1A0N0210XX	◆ F 215 Y1A0N0210XX	8,021		
	1150	259TZ	F 259 X1A0N1210XX	F 259 Z1A0N1210XX	12,102		
15	3600	215T	F 215 W2A0N0210XX	◆ F 215 Y2A0N0210XX	8,021	M4/40	NA
	2500	254T	F 254 X2A0N0210XX	F 254 Z2A0N0210XX	9,459		
	1750	256T	F 256 W1A0N0210XX	◆ F 256 Y1A0N0210XX	10,974		
	1150	259TZ	F 259 X1A0N1210XX	F 259 Z1A0N1210XX	12,102		
20	3600	254T	F 254 W2A0N0210XX	◆ F 254 Y2A0N0210XX	9,459	M4/50	NA
	2500	256T	F 256 X2A0N0210XX	F 256 Z2A0N0210XX	10,974		
	1750	287TZ	F 287 W1A0N0510XX	◆ F 287 Y1A0N0210XX	13,248		
	1150	288TZ	F 288 X1A0N0510XX	F 288 Z1A0N0210XX	14,686		
25	3600	256T	NA	◆ F 256 Y2A0N0210XX	10,974	NA	M4/40
	2500	256T		F 256 Z2A0N0210XX	10,974		
	1750	287TZ		◆ F 287 Y1A0N0210XX	13,248		
	1150	288TZ		F 288 Z1A0N0210XX	14,686		
30	3600	259TZ	NA	◆ F 259 Y2A0N1210XX	12,102	NA	M4/40
	2500	259TZ		F 259 Z2A0N1210XX	12,102		
	1750	288TZ		◆ F 288 Y1A0N0210XX	14,686		
	1150	2810TZ		F 28A Z1A0N0210XX	21,420		
40	2500	288TZ	NA	F 288 Z2A0N0210XX	14,686	NA	M4/50
	1750	2810TZ		◆ F 28A Y1A0N0210XX	21,420		
	1150	2812TZ		F 28C Z1A0N0210XX	22,838		
50	1750	328TZ	NA	◆ F 328 Y1A0N0210XX	28,743	NA	M5/60
	1150	3211TZ		F 32B Z1A0N0210XX	37,683		
60	1750	328TZ	NA	◆ F 328 Y1A0N0210XX	28,743	NA	M5/75
	1150	3211TZ		F 32B Z1A0N0210XX	37,683		
75	1750	3211TZ	NA	◆ F 32B Y1A0N0210XX	37,683	NA	M5/90
	1150	3213TZ		F 32D Z1A0N0210XX	43,167		
100	1150	506T	NA	F 506 Z1A0N0210XX	67,062	NA	M6/120

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Millennium Series Drives, Section B, page 92.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

# POWERTEC MOTORS

## Dripproof, Fully Guarded (DPFG)



5-300 HP Standard

### FEATURES

- High Efficiency Ferrite Permanent Magnets
- NEMA/IEC Dripproof Fully Guarded enclosure (IP22, IC01)
- Troublefree, brushless construction
- High power density
- Long life regreasable, oversize bearings
- Class H insulated, rated for class F operation
- Normally closed thermal switch protection
- NEMA or IEC (Metric) mounting
- NEMA C face, D flange, and foot mounting available
- Standard two year warranty

### PRODUCT DESCRIPTION

Powertec DPFM motors offer high horsepower in a small frame size; from 5HP in a NEMA 180 frame to 300HP in a NEMA 320 frame. The motor is cooled by means of integral fans mounted to the motor shaft. Air is drawn into and exhausted through louvered covers in both ends of the motor enclosure. The larger fan incorporates a balanced, asymmetrical design. This design reduces audible resonance and causes turbulent airflow within the motor to eliminate hot spots. Our patented double finned aluminum frame allows more efficient cooling of the stator assembly.

### CONSTANT TORQUE SPEED RANGE

- 2:1 or 100:1 with Genesis Drives
- 2:1 or 1000:1 with Millennium Drives

### TYPICAL APPLICATIONS

- Test stands
- Extruders
- Electronic line shafting
- Winders
- Wire drawing
- Printing
- Forest Industry machinery
- Tube and rolling mills
- Textile machinery
- Punch presses
- Paper converting
- Cranes
- Elevators

### AGENCY APPROVALS

- UL Recognized (file #E130709)
- CSA Listed (file #LR103655-2)
- CE Certified (pending)

## RATINGS AND CHARACTERISTICS

Model Number Prefix	NEMA HP Rating 2:1 CTSR	IEC kW Rating	Base Speed	Rated Efficiency @ Base Speed	Rotor Inertia lb.-ft. <sup>2</sup>	Approximate Weight lbs.	Rotor Inertia kg-m <sup>2</sup>	Approximate Weight kg
			RPM					
F182	5	3.8	1750	0.891	0.255	72	0.0107	32.7
F184	7.5	5.6	1750	0.924	0.523	120	0.0220	54.4
F184	10	7.5	1750	0.902	0.523	120	0.0220	54.4
F215	15	11	1750	0.929	1.13	196	0.0476	89
F254	20	15	1750	0.939	1.85	242	0.0780	110
F256	25	19	1750	0.951	2.76	325	0.116	147
F256	30	22	1750	0.947	2.76	325	0.116	147
F259	40	30	1750	0.954	3.65	411	0.154	186
F287	50	38	1750	0.9556	4.32	356	0.182	161
F287	60	45	1750	0.949	4.32	356	0.182	161
F288	75	56	1750	0.963	6.48	458	0.273	208
F28A	100	75	1750	0.966	8.63	560	0.364	254
F28C	125	93	1750	0.967	10.8	662	0.455	300
F32B	150	112	1750	0.965	24	662	1.01	300
F32D	200	150	1750	0.966	28	950	1.18	431

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED  
DRIVE SYSTEMS

D

GENERAL  
INFORMATION



## RECOMMENDED DPFM MOTOR / GENESIS SERIES DRIVE COMBINATIONS – 2:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Genesis Series Drive <sup>②</sup>	
DPFM		Base Model Number <sup>③</sup>				\$	230VAC
HP	RPM	Frame <sup>④</sup>	230VAC	460VAC			
5	3600	182T	F 182 A2F0N0010XX	◆ F 182 C2F0N0010XX	4,087	1000	1000
	2500	182T	F 182 B2F0N0010XX	F 182 D2F0N0010XX	4,087		
	1750	184T	F 184 A1F0N0010XX	◆ F 184 C1F0N0010XX	4,779		
	1150	184T	F 184 A3F0N0010XX	◆ F 184 C3F0N0010XX	4,779		
7.5	3600	182T	F 182 A2F0N0010XX	◆ F 182 C2F0N0010XX	4,087	1000	1000
	2500	184T	F 184 B2F0N0010XX	F 184 D2F0N0010XX	4,779		
	1750	184T	F 184 A1F0N0010XX	◆ F 184 C1F0N0010XX	4,779		
	1150	213T	F 213 B1F0N0010XX	F 213 D1F0N0010XX	4,897		
10	3600	184T	F 184 A2F0N0010XX	◆ F 184 C2F0N0010XX	4,779	1000A	1000
	2500	184T	F 184 B1F0N0010XX	F 184 D1F0N0010XX	4,779		
	1750	184T	F 184 A1F0N0010XX	◆ F 184 C1F0N0010XX	4,779		
	1150	256T	F 256 B1F0N0010XX	F 256 D2F0N0010XX	7,981		
15	3600	184T	F 184 A2F0N0010XX	◆ F 184 C2F0N0010XX	4,779	2000	1000A
	2500	215T	F 215 B2F0N0010XX	F 215 D2F0N0010XX	5,855		
	1750	256T	F 256 A1F0N0010XX	◆ F 256 C1F0N0010XX	7,981		
	1150	259T	F 259 A3F0N1010XX	◆ F 259 C3F0N1010XX	9,240		
20	3600	215T	F 215 A2F0N0210XX	◆ F 215 C2F0N0210XX	5,855	2000	2000
	2500	254T	F 254 B2F0N0210XX	F 254 D2F0N0210XX	6,095		
	1750	256T	F 256 A1F0N0210XX	◆ F 256 C1F0N0210XX	7,981		
	1150	287TZ	F 287 B1F0N0510XX	F 287 D1F0N0510XX	11,335		
25	3600	215T	NA	◆ F 215 C2F0N0210XX	5,855	NA	2000
	2500	254T		F 254 D2F0N0210XX	6,095		
	1750	256T		◆ F 256 C1F0N0210XX	7,981		
	1150	259TZ		F 259 D1F0N0510XX	9,240		
30	3600	215T	NA	◆ F 215 C2F0N0210XX	5,855	NA	2000
	2500	254T		F 254 D2F0N0210XX	6,095		
	1750	256T		◆ F 256 C1F0N0210XX	7,981		
	1150	287TZ		F 287 D1F0N0510XX	11,335		
40	3600	254T	NA	◆ F 254 C2F0N0210XX	6,095	NA	2000
	2500	256T		F 256 D2F0N0210XX	7,981		
	1750	259TZ		◆ F 259 C1F0N0210XX	9,240		
	1150	288TZ		F 288 D1F0N0510XX	13,732		
50	3600	256T	NA	◆ F 256 C2F0N0210XX	7,981	NA	3000
	2500	259TZ		F 259 D2F0N0210XX	9,240		
	1750	287TZ		◆ F 287 C1F0N0210XX	11,335		
	1150	2810TZ		◆ F 28A C3F0N0510XX	16,177		
60	3600	259TZ	NA	◆ F 259 C2F0N0210XX	9,240	NA	3000
	2500	259TZ		F 259 D2F0N0210XX	9,240		
	1750	287TZ		◆ F 287 C1F0N0210XX	11,335		
	1150	2810TZ		F 28A D1F0N0510XX	16,177		
75	3600	259TZ	NA	◆ F 259 C2F0N0210XX	9,240	NA	3000
	2500	287TZ		F 287 D2F0N0210XX	11,335		
	1750	288TZ		◆ F 288 C1F0N0210XX	13,732		
	1150	2812TZ		F 28C D1F0N0510XX	20,046		
100	2500	288TZ	NA	F 288 B2F0N0210XX	13,732	NA	3500
	1750	2810TZ		◆ F 28A C1F0N0210XX	16,177		
	1150	3211TZ		F 32B D1F0N0510XX	30,128		
125	2500	2810TZ	NA	F 28A D2F0N0210XX	16,177	NA	4000
	1750	2812TZ		◆ F 28C C1F0N0210XX	20,046		
150	2500	2812TZ	NA	F 28C D2F0N0210XX	20,046	NA	4000
	1750	3211TZ		◆ F 32B C1F0N0210XX	30,128		

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Genesis Series Drives, Section B, page 78.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

# RECOMMENDED DPFM MOTOR / GENESIS SERIES DRIVE COMBINATIONS – 100:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Genesis Series Drive <sup>②</sup>	
DPFM		Base Model Number <sup>③</sup>				\$	230VAC
HP	RPM	Frame <sup>④</sup>	230VAC	460VAC			
5	3600	182T	F 182 A2F0N0010XX	◆ F 182 C2F0N0010XX	4,087	1000	1000
	2500	182T	F 182 B2F0N0010XX	F 182 D2F0N0010XX	4,087		
	1750	184T	F 184 A1F0N0010XX	◆ F 184 C1F0N0010XX	4,779		
	1150	184T	F 184 A3F0N0010XX	◆ F 184 C3F0N0010XX	4,779		
7.5	3600	182T	F 182 A2F0N0010XX	◆ F 182 C2F0N0010XX	4,087	1000	1000
	2500	184T	F 184 A1F0N0010XX	◆ F 184 C1F0N0010XX	4,779		
	1750	184T	F 184 A1F0N0010XX	◆ F 184 C1F0N0010XX	4,779		
	1150	215T	F 215 A3F0N0010XX	◆ F 215 C3F0N0010XX	5,855		
10	3600	184T	F 184 A2F0N0010XX	◆ F 184 C2F0N0010XX	4,779	1000A	1000
	2500	184T	F 184 B2F0N0010XX	F 184 D2F0N0010XX	4,779		
	1750	215T	F 215 B4F0N0010XX	◆ F 215 C1F0N0010XX	5,855		
	1150	256T	F 256 A3F0N0010XX	◆ F 256 C3F0N0010XX	7,981		
15	3600	184T	F 184 A2F0N0010XX	◆ F 184 C2F0N0010XX	4,779	2000	1000A
	2500	215T	F 215 B2F0N0010XX	F 215 D2F0N0010XX	5,855		
	1750	256T	F 256 B4F0N0010XX	F 256 D4F0N0010XX	7,981		
	1150	259T	F 259 A3F0N1010XX	◆ F 259 C3F0N1010XX	9,240		
20	3600	215T	F 215 A2F0N0010XX	◆ F 215 C2F0N0010XX	5,855	2000	2000
	2500	254T	F 254 A4F0N0010XX	F 254 D2F0N0010XX	6,095		
	1750	256T	F 256 B4F0N0010XX	F 256 D4F0N0010XX	7,981		
	1150	287TZ	F 287 A3F0N0010XX	◆ F 287 C3F0N0010XX	11,335		
25	3600	215T	NA	◆ F 215 C2F0N0010XX	5,855	NA	2000
	2500	256T		◆ F 254 C4F0N0010XX	7,981		
	1750	259TZ		F 259 D4F0N1010XX	9,240		
	1150	288TZ		◆ F 288 C3F0N0010XX	13,732		
30	3600	256T	NA	◆ F 256 C2F0N0010XX	7,981	NA	2000
	2500	256T		F 256 D2F0N0010XX	7,981		
	1750	287TZ		◆ F 287 C1F0N0010XX	11,335		
	1150	288TZ		◆ F 288 C3F0N0010XX	13,732		
40	3600	256T	NA	◆ F 256 C2F0N1010XX	7,981	NA	2000
	2500	259TZ		F 259 D2F0N0010XX	9,240		
	1750	288TZ		◆ F 288 C1F0N0010XX	13,732		
	1150	2810TZ		◆ F 28A C3F0N0010XX	16,177		
50	3600	259TZ	NA	◆ F 259 C2F0N1010XX	9,240	NA	3000
	2500	287TZ		F 287 D2F0N0010XX	11,335		
	1750	288TZ		◆ F 288 C1F0N0010XX	13,732		
	1150	2812TZ		◆ F 28C C3F0N0010XX	20,046		
60	2500	288TZ	NA	F 288 D2F0N0010XX	13,732	NA	3000
	1750	2810TZ		◆ F 28A C1F0N0010XX	16,177		
	1150	328TZ		F 328 D1F0N0010XX	26,168		
75	2500	2810TZ	NA	◆ F 28A C4F0N0010XX	16,177	NA	3000
	1750	2812TZ		◆ F 28C C1F0N0010XX	20,046		
	1150	3211TZ		F 32B D1F0N0010XX	30,128		
100	2500	2812TZ	NA	F 28C D2F0N0010XX	20,046	NA	3500
	1750	328TZ		◆ F 328 C1F0N0010XX	26,168		
	1150	3213TZ		F 32D D1F0N0010XX	34,093		
125	2500	328TZ	NA	F 328 D2F0N0010XX	26,168	NA	4000
	1750	3211TZ		◆ F 32B C1F0N0010XX	30,128		
150	2500	3211TZ	NA	F 32B D2F0N1010XX	30,128	NA	4000

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Genesis Series Drives, Section B, page 78.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED DRIVE SYSTEMS

D

GENERAL INFORMATION

## RECOMMENDED DPGF MOTOR / MILLENNIUM SERIES DRIVE COMBINATIONS – 2:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Millennium Series Drive <sup>®</sup> /Amperes	
DPFG			Base Model Number <sup>②</sup>			\$	230VAC
HP	RPM	Frame <sup>③</sup>	230VAC	460VAC			
10	3600	182T	F 182 W2F0N0210XX	NA	4,827	M4/30	NA
	2500	184T	F 184 X2F0N0210XX		5,519		
	1750	184T	F 184 W1F0N0210XX		5,519		
	1150	215T	F 215 X1F0N0210XX		6,595		
15	3600	184T	F 184 W2F0N0210XX	NA	5,519	M4/40	NA
	2500	213T	F 213 X2F0N0210XX		5,637		
	1750	215T	F 215 W1F0N0210XX		6,595		
	1150	259T	F 259 X1F0N1210XX		9,980		
20	3600	213T	F 213W2F0N0210XX	NA	5,637	M4/50	NA
	2500	215T	F 215 X2F0N0210XX		6,595		
	1750	254T	F 254 W1F0N0210XX		6,835		
	1150	256T	F 256 X1F0N0510XX		8,720		
25	3600	215T	NA	◆F 215 Y2F0N0210XX	6,595	NA	M4/40
	2500	215T		F 215 Z2F0N0210XX	6,595		
	1750	256T		◆F 256 Y1F0N1210XX	8,720		
	1150	259TZ		F 259 Z1F0N0510XX	9,980		
30	3600	215T	NA	◆F 215 Y2F0N0210XX	6,595	NA	M4/40
	2500	254T		F 254 Z2F0N0210XX	6,835		
	1750	256T		◆F 256 Y1F0N0510XX	8,720		
	1150	287TZ		F 287 Z1F0N0510XX	12,320		
40	3600	254T	NA	◆F 254 Y2F0N0210XX	6,835	NA	M4/50
	2500	256T		F 256 Z2F0N1210XX	8,720		
	1750	259TZ		◆F 259 Y1F0N0510XX	9,980		
	1150	288TZ		F 288 Z1F0N0510XX	14,717		
50	3600	256TZ	NA	◆F 256 Y2F0N1210XX	8,720	NA	M5/60
	2500	259TZ		F 259 Z2F0N0510XX	9,980		
	1750	287TZ		◆F 287 Y1F0N0510XX	12,320		
	1150	2810TZ		F 28A Z1F0N0510XX	17,161		
60	3600	259TZ	NA	◆F 259 Y2F0N1210XX	9,980	NA	M5/75
	2500	259TZ		F 259 Z2F0N0510XX	9,980		
	1750	287TZ		◆F 287 Y1F0N0510XX	12,320		
	1150	2810TZ		F 28A Z1F0N0510XX	17,161		
75	3600	259TZ	NA	◆F 259 Y2F0N1210XX	9,980	NA	M5/90
	2500	287TZ		F 287 Z2F0N0510XX	12,320		
	1750	288TZ		◆F 288 Y1F0N0510XX	14,717		
	1150	2812TZ		F 28C Z1F0N0510XX	21,030		
100	2500	288TZ	NA	F 288 Z2F0N0510XX	14,717	NA	M6/120
	1750	2810TZ		◆F 28A Y1F0N0510XX	17,161		
	1150	3211TZ		F 32B Z1F0N0510XX	31,113		
125	2500	2810TZ	NA	F 28A Z2F0N0510XX	17,161	NA	M6/150
	1750	2812TZ		◆F 28C Y1F0N0510XX	21,030		
150	2500	2812TZ	NA	F 28C Z2F0N0510XX	21,030	NA	M6/175
	1750	3211TZ		◆F 32B Y1F0N0510XX	31,113		
200	2500	3211TZ	NA	F 32B Z2F0N0510XX	31,113	NA	M7/275
	1750	3213TZ		◆F 32D Y1F0N0510XX	35,077		
250	2500	3211TZ	NA	F 32B Z2F0N0510XX	31,113	NA	M7/275
300	2500	3211TZ	NA	F 32B Z2F0N0510XX	31,113	NA	M7/330

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Millennium Series Drives, Section B, page 92.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

## RECOMMENDED DPMG MOTOR / MILLENNIUM SERIES DRIVE COMBINATIONS – 1000:1 CTSR<sup>①</sup>

Powertec Motors (ferrite magnets)					Motor List Price	Millennium Series Drive <sup>②</sup> /Amperes	
DPMG		Base Model Number <sup>③</sup>				\$	230VAC
HP	RPM	Frame <sup>④</sup>	230VAC	460VAC			
10	3600	184T	F 184 W2F0N0210XX	NA	5,519	M4/30	NA
	2500	184T	F 184 X2F0N0210XX		5,519		
	1750	215T	F 215 W1F0N0210XX		6,595		
	1150	256T	F 256 X1F0N0210XX		8,720		
15	3600	184T	F 184 W2F0N0210XX	NA	5,519	M4/40	NA
	2500	215T	F 215 X2F0N0210XX		6,595		
	1750	256T	F 256 W1F0N0210XX		8,720		
	1150	259T	F 259 X1F0N1210XX		9,980		
20	3600	215T	F 215 W2F0N0210XX	NA	6,595	M4/50	NA
	2500	254T	F 254 X2F0N0210XX		6,835		
	1750	256T	F 256 W1F0N0210XX		8,720		
	1150	287TZ	F 287 X1F0N0210XX		12,320		
25	3600	215T	NA	◆F 215 Y2F0N0210XX	6,595	NA	M4/40
	2500	256T		F 256 Z2F0N0210XX	8,720		
	1750	259TZ		◆F 259 Y1F0N1210XX	9,980		
	1150	288TZ		F 288 Z1F0N0210XX	14,717		
30	3600	256T	NA	◆F 256 Y2F0N0210XX	8,720	NA	M4/40
	2500	256T		F 256 Z2F0N0210XX	8,720		
	1750	287TZ		◆F 287 Y1F0N0210XX	12,320		
	1150	288TZ		F 288 Z1F0N0210XX	14,717		
40	3600	256T	NA	◆F 256 Y2F0N0210XX	8,720	NA	M4/50
	2500	259TZ		F 259 Z2F0N1210XX	9,980		
	1750	288TZ		◆F 288 Y1F0N0210XX	14,717		
	1150	2810TZ		F 28A Z1F0N0210XX	17,161		
50	3600	259TZ	NA	◆F 259 Y2F0N1210XX	9,980	NA	M5/60
	2500	287TZ		F 287 Z2F0N0210XX	12,320		
	1750	288TZ		◆F 288 Y1F0N0210XX	14,717		
	1150	2812TZ		F 28C Z1F0N0210XX	21,030		
60	2500	288TZ	NA	F 288 Z2F0N0210XX	14,717	NA	M5/75
	1750	2810TZ		◆F 28A Y1F0N0210XX	17,161		
	1150	328TZ		F 328 Z1F0N0210XX	27,152		
75	2500	2810TZ	NA	F 28A Z2F0N0210XX	17,161	NA	M5/90
	1750	2812TZ		◆F 28C Y1F0N0210XX	21,030		
	1150	3211TZ		F 32B Z1F0N0210XX	31,113		
100	2500	2812TZ	NA	F 28C Z2F0N0210XX	21,030	NA	M6/120
	1750	328TZ		◆F 328 Y1F0N0210XX	27,152		
	1150	3213TZ		F 32D Z1F0N0210XX	35,077		
125	2500	328TZ	NA	F 328 Z2F0N0210XX	27,152	NA	M6/150
	1750	3211TZ		◆F 32B Y1F0N0210XX	31,113		
150	2500	3211TZ	NA	F 32B Z2F0N0210XX	31,113	NA	M6/175

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Millennium Series Drives, Section B, page 92.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

**A**  
MOTORS

**B**  
DRIVES

**C**  
PRE-ENGINEERED DRIVE SYSTEMS

**D**  
GENERAL INFORMATION

## POWERTEC MOTORS

### Totally Enclosed, Air Over Motors (TEAO)



10-250 HP Standard  
(shown without shroud and blower)

#### FEATURES

- High Efficiency Ferrite Permanent Magnets
- NEMA/IEC Totally Enclosed, Air Over enclosure (IP44, IC416)
- Troublefree, brushless construction
- High power density
- Long life regreasable, oversize bearings
- Class H insulated, rated for class F operation
- Normally closed thermal switch protection
- NEMA C face, D flange, and foot mounting available
- Standard two year warranty

#### PRODUCT DESCRIPTION

Powertec TEAO motors offer high horsepower in a small frame size; from 10HP in a NEMA 250 frame to 250HP in a NEMA 500 frame. An aluminum shroud encloses a portion of the external finned aluminum motor housing. This design allows air to be moved over a large surface area of the motor for efficient cooling. This design also has the advantage of preventing dust particles from accumulating on the motor's surface, which act as an insulator and inhibit proper cooling of the motor.

#### CONSTANT TORQUE SPEED RANGE

- 100:1 with Genesis Drives
- 1000:1 with Millennium Drives

#### TYPICAL APPLICATIONS

- Test stands
- Extruders
- Electronic line shafting
- Winders
- Wire drawing
- Printing
- Forest Industry machinery
- Tube and rolling mills
- Textile machinery
- Punch presses
- Paper converting
- Cranes
- Elevators

#### AGENCY APPROVALS

- UL Recognized (file #E130709)
- CSA Listed (file #LR103655-2)
- CE Certified (pending)

## RATINGS AND CHARACTERISTICS

Model Number Prefix	NEMA HP Rating	IEC kW Rating	Base Speed	Rated Efficiency @ Base Speed	Rotor Inertia	Approximate Weight lbs.	Rotor Inertia	Approximate Weight kg
			RPM		lb.-ft. <sup>2</sup>		kg-m <sup>2</sup>	
F254	10	7.5	1150	0.927	1.85	257	0.0780	117
F254	15	11	1750	0.942	1.85	257	0.0780	117
F256	20	15	1750	0.952	2.76	340	0.116	154
F259	25	19	1750	0.957	3.65	426	0.154	193
F287	30	22	1750	0.959	4.32	376	0.182	171
F287	40	30	1750	0.958	4.32	376	0.182	171
F288	50	38	1750	0.965	6.48	478	0.273	217
F288	60	45	1750	0.964	6.48	478	0.273	217
F28A	75	56	1750	0.966	8.63	580	0.364	263
F328	100	75	1750	0.971	18.0	684	0.759	310
F32B	125	93	1750	0.971	24.0	834	1.01	378
F32B	150	112	1750	0.970	24.0	834	1.01	378
F504	200	150	1750	0.970	140	2030	5.90	921
F508	250	188	1750	0.974	216	2910	9.10	1320

# RECOMMENDED TEAO MOTOR / GENESIS SERIES DRIVE COMBINATIONS – 100:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Genesis Series Drive <sup>②</sup>	
TEAO		Base Model Number <sup>③</sup>				\$	230VAC
HP	RPM	Frame <sup>④</sup>	230VAC	460VAC			
10	1150	254T	F 254 A3C0N0010XX	◆ F 254 C3C0N0010XX	11,080	1000	1000
15	1750	254T	F 254 B4C0N0010XX	F 254 D4C0N0010XX	11,080	2000	1000A
	1150	256T	F 256 A3C0N0010XX	◆ F 256 C3C0N0010XX	12,596		
20	2500	254T	F 254 A4C0N0010XX	◆ F 254 C4C0N0010XX	11,080	2000	2000
	1750	256T	F 256 B4C0N0010XX	F 256 D4C0N0010XX	12,596		
	1150	259TZ	F 259 A3C0N0110XX	◆ F 259 C3C0N0110XX	13,724		
25	3600	254T	NA	◆ F 254 C2C0N0010XX	11,080	NA	2000
	2500	254T		F 254 D2C0N0010XX	11,080		
	1750	259TZ		F 259 D4C0N0110XX	13,724		
	1150	287TZ		◆ F 287 C3C0N0010XX	15,028		
30	3600	256T	NA	◆ F 256 C2C0N0010XX	12,596	NA	2000
	2500	256T		F 256 D2C0N0010XX	12,596		
	1750	287TZ		◆ F 287 C1C0N0010XX	15,028		
	1150	288TZ		◆ F 288 C3C0N0010XX	16,502		
40	3600	259TZ	NA	◆ F 259 C2C0N0110XX	13,724	NA	2000
	2500	287TZ		◆ F 287 C4C0N0010XX	15,028		
	1750	287TZ		F 287 D4C0N0010XX	15,028		
	1150	288TZ		F 288 D1C0N0010XX	16,502		
50	2500	287TZ	NA	◆ F 287 C4C0N0010XX	15,028	NA	3000
	1750	288TZ		◆ F 288 C1C0N0010XX	16,502		
	1150	2810TZ		◆ F 28A C3C0N0010XX	23,202		
60	2500	288TZ	NA	F 288 D2C0N0010XX	16,502	NA	3000
	1750	288TZ		◆ F 288 C1C0N0010XX	16,502		
	1150	2812TZ		◆ F 28C C3C0N0010XX	24,620		
75	2500	288TZ	NA	F 288 D2C0N0010XX	16,502	NA	3000
	1750	2810TZ		◆ F 28A C1C0N0010XX	23,202		
	1150	328TZ		F 328 D1C0N0010XX	30,301		
100	2500	328TZ	NA	F 328 D2C0N0010XX	30,301	NA	3500
	1750	328TZ		◆ F 328 C1C0N0010XX	30,301		
	1150	3211TZ		F 32B D1C0N0010XX	39,242		
125	2500	328TZ	NA	F 328 D2C0N0010XX	30,301	NA	4000
	1750	3211TZ		◆ F 32B C1C0N0010XX	39,242		
	1150	3213TZ		F 32D D2C0N0010XX	44,723		
150	2500	328TZ	NA	F 328 D2C0N0010XX	30,301	NA	4000
	1750	3211TZ		◆ F 32B C1C0N0010XX	39,242		

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Genesis Series Drives, Section B, page 78.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED DRIVE SYSTEMS

D

GENERAL INFORMATION



## RECOMMENDED TEAO MOTOR / MILLENNIUM SERIES DRIVE COMBINATIONS – 1000:1 CTSR<sup>1</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Millennium Series Drive/Amperes <sup>2</sup>	
TEAO			Base Model Number <sup>3</sup>			\$	230VAC
HP	RPM	Frame <sup>4</sup>	230VAC	460VAC			
10	1150	254T	F 254 X1D0N0210XX	F 254 Z1D0N0210XX	11,820	M4/30	M4/30
15	1750	254T	F 254 W1D0N0210XX	◆ F 254 Y1D0N0210XX	11,820	M4/40	M4/30
	1150	256T	F 256 X1D0N0210XX	F 256 Z1D0N0210XX	13,335		
20	2500	254T	F 254 X2D0N0210XX	F 254 Z2D0N0210XX	11,820	M4/50	M4/30
	1750	256T	F 256 W1D0N0210XX	◆ F 256 Y1D0N0210XX	13,335		
	1150	259TZ	F 259 X1D0N1210XX	F 259 Z1D0N1210XX	14,463		
25	3600	254T	NA	◆ F 254 Y2D0N0210XX	11,820	NA	M4/40
	2500	254T		F 254 Z2D0N0210XX	11,820		
	1750	259TZ		◆ F 259 Y1D0N1210XX	14,463		
	1150	287TZ		F 287 Z1D0N0510XX	16,013		
30	3600	256T	NA	◆ F 256 Y2D0N0210XX	13,335	NA	M4/40
	2500	256T		F 256 Z2D0N0210XX	13,335		
	1750	287TZ		◆ F 287 Y1D0N0510XX	16,013		
	1150	288TZ		F 288 Z1D0N0510XX	17,486		
40	3600	259TZ	NA	◆ F 259 Y2D0N1210XX	14,463	NA	M4/50
	2500	287TZ		F 287 Z2D0N0510XX	16,013		
	1750	287TZ		◆ F 287 Y1D0N0510XX	16,013		
	1150	288TZ		F 288 Z1D0N0510XX	17,486		
50	2500	287TZ	NA	F 287 Z2D0N0510XX	16,013	NA	M5/60
	1750	288TZ		◆ F 288 Y1D0N0510XX	17,486		
	1150	2810TZ		F 28A Z1D0N0510XX	24,187		
60	2500	288TZ	NA	F 288 Z2D0N0510XX	17,486	NA	M5/75
	1750	288TZ		◆ F 288 Y1D0N0510XX	17,486		
	1150	2812TZ		F 28C Z1D0N0510XX	25,605		
75	2500	288TZ	NA	F 288 Z2D0N0510XX	17,486	NA	M5/90
	1750	2810TZ		◆ F 28A Y1D0N0510XX	24,187		
	1150	328TZ		F 328 Z1D0N0510XX	31,286		
100	2500	328TZ	NA	F 328 Z2D0N0510XX	31,286	NA	M6/120
	1750	328TZ		◆ F 328 Y1D0N0510XX	31,286		
	1150	3211TZ		F 32B Z1D0N0510XX	40,226		
125	2500	328TZ	NA	F 328 Z2D0N0510XX	31,286	NA	M6/150
	1750	3211TZ		◆ F 32B Y1D0N0510XX	40,226		
	1150	3213TZ		F 32D Z1D0N0510XX	45,708		
150	2500	328TZ	NA	F 328 Z2D0N0510XX	31,286	NA	M6/175
	1750	3211TZ		◆ F 32B Y1D0N0510XX	40,226		
	1150	504TZ		F 504 Z1D0N0210XX	61,117		
200	1750	504TZ	NA	◆ F 504 Y1D0N0510XX	61,117	NA	M7/220
	1150	506TZ		F 506 Z1D0N0210XX	71,229		
250	1750	508TZ	NA	◆ F 508 Y1D0N0210XX	82,242	NA	M7/275

<sup>1</sup> Constant Torque Speed Range

<sup>2</sup> To construct a complete motor model number see Model Number Codes beginning on page 6.

<sup>3</sup> See Millennium Series Drives, Section B, page 92.

<sup>4</sup> NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.



# POWERTEC MOTORS

## Dripproof, Blower Ventilated (DPBV)



5-300 HP Standard

### FEATURES

- High Efficiency Ferrite Permanent Magnets
- NEMA/IEC Dripproof Blower Ventilated enclosure (IP22, IC06)
- Troublefree, brushless construction
- High power density
- Long life regreasable, oversize bearings
- Class H insulated, rated for class F operation
- Normally closed thermal switch protection
- NEMA C face, D flange, and foot mounting available
- Standard two year warranty

### PRODUCT DESCRIPTION

Powertec DPBV motors offer high horsepower in a small frame size: from 5HP in a NEMA 180 frame to 300HP in a NEMA 500 frame. The motor is cooled by means of an external blower. Our patented double finned aluminum frame allows more efficient cooling of the stator assembly. Air is exhausted through louvered covers in the shaft end of the motor enclosure.

These motors are protected from solid particles greater than 12mm diameter and liquids striking or entering the enclosure at an angle of not more than 15 degrees from the vertical (NEMA IP22). The cooling of the motor is in accordance with NEMA IC06.

### CONSTANT TORQUE SPEED RANGE

- 100:1 with Genesis Drives
- 1000:1 with Millennium Drives

### TYPICAL APPLICATIONS

- Test stands
- Extruders
- Electronic line shafting
- Winders
- Wire drawing
- Printing
- Forest Industry machinery
- Tube and rolling mills
- Textile machinery
- Punch presses
- Paper converting
- Cranes
- Elevators

### AGENCY APPROVALS

- UL Recognized (file #E130709)
- CSA Listed (file #LR103655-2)
- CE Certified (pending)

## RATINGS AND CHARACTERISTICS

Model Number Prefix	NEMA HP Rating	IEC kW Rating	Base Speed RPM	Rated Efficiency @ Base Speed	Rotor Inertia lb.-ft. <sup>2</sup>	Approximate Weight lbs.	Rotor Inertia kg-m <sup>2</sup>	Approximate Weight kg
F184	7.5	5.6	1750	0.924	0.530	126	0.0223	57.2
F184	10	7.5	1750	0.904	0.520	126	0.0219	57.2
F215	15	11	1750	0.929	1.13	208	0.0476	94.3
F254	20	15	1750	0.939	1.85	254	0.0780	115
F256	25	19	1750	0.952	2.76	337	0.116	153
F256	30	22	1750	0.948	2.76	337	0.116	153
F259	40	30	1750	0.955	3.65	428	0.154	194
F287	50	38	1750	0.956	4.32	370	0.182	168
F287	60	45	1750	0.949	4.32	370	0.182	168
F288	75	56	1750	0.963	6.48	472	0.273	214
F28A	100	75	1750	0.966	8.63	575	0.364	261
F28C	125	93	1750	0.967	10.8	681	0.455	309
F328	150	112	1750	0.969	18.0	695	0.759	315
F32B	200	150	1750	0.971	24.0	843	1.01	382
F32D	250	187	1750	0.973	28.0	975	1.18	442
F32D	300	220	1750	0.973	28.0	975	1.18	442

A

MOTORS

B

DRIVES

C

PRE-ENGINEERED  
DRIVE SYSTEMS

D

GENERAL  
INFORMATION

## RECOMMENDED DPBV MOTOR / GENESIS SERIES DRIVE COMBINATIONS – 100:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Genesis Series Drive <sup>②</sup>	
DPBV		Base Model Number <sup>③</sup>				\$	230VAC
HP	RPM	Frame <sup>④</sup>	230VAC	460VAC			
5	3600	182T	F 182 A2J0N0010XX	◆ F 182 C2J0N0010XX	4,612	1000	1000
	2500	182T	F 182 B2J0N0010XX	F 182 D2J0N0010XX	4,612		
	1750	182T	F 182 A1J0N0010XX	◆ F 182 C1J0N0010XX	4,612		
	1150	184T	F 184 A3J0N0010XX	◆ F 184 C3J0N0010XX	5,265		
7.5	3600	182T	F 182 A2J0N0010XX	◆ F 182 C2J0N0010XX	4,612	1000	1000
	2500	182T	F 182 B2J0N0010XX	F 182 D2J0N0010XX	4,612		
	1750	184T	F 184 A1J0N0010XX	◆ F 184 C1J0N0010XX	5,265		
	1150	213T	F 213 B1J0N0010XX	F 213 D1J0N0010XX	5,984		
10	3600	182T	F 182 A2J0N0010XX	◆ F 182 C2J0N0010XX	4,612	1000A	1000
	2500	184T	F 184 B2J0N0010XX	F 184 D2J0N0010XX	5,265		
	1750	184T	F 184 A1J0N0010XX	◆ F 184 C1J0N0010XX	5,265		
	1150	215T	F 215 B1J0N0010XX	F 215 D1J0N0010XX	6,788		
15	3600	184T	F 184 A2J0N0010XX	◆ F 184 C2J0N0010XX	5,265	2000	1000A
	2500	213T	F 213 B2J0N0010XX	F 213 D2J0N0010XX	5,984		
	1750	215T	F 215 A1J0N0010XX	◆ F 215 C1J0N0010XX	6,788		
	1150	256T	F 256 A3J0N0010XX	F 256 D3J0N0010XX	8,866		
20	3600	213T	F 213 A2J0N0010XX	◆ F 213 C2J0N0010XX	5,984	2000	2000
	2500	215T	F 215 B2J0N0010XX	F 215 D2J0N0010XX	6,788		
	1750	254T	F 254 A1J0N0010XX	◆ F 254 C1J0N0010XX	7,614		
	1150	256T	F 256 B1J0N0010XX	F 256 D1J0N0010XX	8,866		
25	3600	215T	NA	◆ F 215 C2J0N0010XX	6,788	NA	2000
	2500	215T		F 215 D2J0N0010XX	6,788		
	1750	256T		◆ F 256 C1J0N0010XX	8,866		
	1150	259TZ		F 259 D1J0N0010XX	9,788		
30	3600	215T	NA	◆ F 215 C2J0N0010XX	6,788	NA	2000
	2500	254T		F 254 D2J0N0010XX	7,614		
	1750	256T		◆ F 256 C1J0N0010XX	8,866		
	1150	259TZ		F 259 D1J0N0010XX	9,788		
40	3600	254T	NA	◆ F 254 C2J0N0010XX	7,614	NA	2000
	2500	256T		F 256 D2J0N0010XX	8,866		
	1750	259TZ		◆ F 259 C1J0N0010XX	9,788		
	1150	287TZ		F 287 D1J0N0010XX	12,494		
50	3600	256T	NA	◆ F 256 C2J0N0010XX	8,866	NA	3000
	2500	259TZ		F 259 D2J0N0010XX	9,788		
	1750	287TZ		◆ F 287 C1J0N0010XX	12,494		
	1150	288TZ		F 288 D1J0N0010XX	14,258		
60	3600	259TZ	NA	◆ F 259 C2J0N0010XX	9,788	NA	3000
	2500	259TZ		F 259 D2J0N0010XX	9,788		
	1750	287TZ		◆ F 287 C1J0N0010XX	12,494		
	1150	2810TZ		F 28A D1J0N0010XX	17,202		
75	3600	259TZ	NA	◆ F 259 C2J0N0010XX	9,788	NA	3000
	2500	287TZ		F 287 D2J0N0010XX	12,494		
	1750	288TZ		◆ F 288 C1J0N0010XX	14,258		
	1150	2810TZ		F 28A D1J0N0010XX	17,202		
100	2500	288TZ	NA	F 288 D2J0N0010XX	14,258	NA	3500
	1750	2810TZ		◆ F 28A C1J0N0010XX	17,202		
	1150	328TZ		F 328 D1J0N0010XX	26,649		
125	2500	2810TZ	NA	F 28A D2J0N0010XX	17,202	NA	4000
	1750	2812TZ		◆ F 28C C1J0N0010XX	21,619		
	1150	3211TZ		F 32B D1J0N0010XX	31,504		
150	2500	2812TZ	NA	F 28C D2J0N0010XX	21,619	NA	4000
	1750	328TZ		◆ F 328 C1J0N0010XX	26,649		
	1150	3211TZ		F 32B D1J0N0010XX	31,504		

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Genesis Series Drives, Section B, page 78.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.

# RECOMMENDED DPBV MOTOR / MILLENNIUM SERIES DRIVE COMBINATIONS – 1000:1 CTSR<sup>①</sup>

POWERTEC Motors (ferrite magnets)					Motor List Price	Millennium Series Drive <sup>®</sup> /Amperes	
DPBV		Base Model Number <sup>②</sup>				\$	230VAC
HP	RPM	Frame <sup>③</sup>	230VAC	460VAC			
10	3600	182T	F 182 W2J0N0210XX	NA	5,352	M4/30	NA
	2500	184T	F 184 X2J0N0210XX		6,005		
	1750	184T	F 184 W1J0N0210XX		6,005		
	1150	215T	F 215 X1J0N0210XX		7,528		
15	3600	184T	F 184 W2J0N0210XX	NA	6,005	M4/40	NA
	2500	213T	F 213 X2J0N0210XX		6,724		
	1750	215T	F 215 W1J0N0210XX		7,528		
	1150	256T	F 256 X1J0N0210XX		9,605		
20	3600	213T	F 213 W2J0N0210XX	NA	6,724	M4/50	NA
	2500	215T	F 215 X2J0N0210XX		7,528		
	1750	254T	F 254 W1J0N0210XX		8,354		
	1150	256T	F 256 X1J0N0210XX		9,605		
25	3600	215T	NA	◆ F 215 Y2J0N0210XX	7,528	NA	M4/40
	2500	215T		F 215 Z2J0N0210XX	7,528		
	1750	256T		◆ F 256 Y1J0N0210XX	9,605		
	1150	259TZ		F 259 Z1J0N1210XX	10,527		
30	3600	215T	NA	◆ F 215 Y2J0N0210XX	7,528	NA	M4/40
	2500	254T		F 254 Z2J0N0210XX	8,354		
	1750	256T		◆ F 256 Y1J0N0210XX	9,605		
	1150	259TZ		F 259 Z1J0N1210XX	10,527		
40	3600	254T	NA	◆ F 254 Y2J0N0210XX	8,354	NA	M4/50
	2500	256T		F 256 Z2J0N0210XX	9,605		
	1750	259TZ		◆ F 259 Y1J0N1210XX	10,527		
	1150	287TZ		F 287 Z1J0N0510XX	13,479		
50	3600	256T	NA	◆ F 256 Y2J0N0210XX	9,605	NA	M5/60
	2500	259TZ		F 259 Z2J0N1210XX	10,527		
	1750	287TZ		◆ F 287 Y1J0N0510XX	13,479		
	1150	288TZ		F 288 Z1J0N0510XX	15,243		
60	3600	259TZ	NA	◆ F 259 Y2J0N1210XX	10,527	NA	M5/75
	2500	259TZ		F 259 Z2J0N1210XX	10,527		
	1750	287TZ		◆ F 287 Y1J0N0510XX	13,479		
	1150	2810TZ		F 28A Z1J0N0510XX	18,187		
75	3600	259TZ	NA	◆ F 259 Y2J0N1210XX	10,527	NA	M5/90
	2500	287TZ		F 287 Z2J0N0510XX	13,479		
	1750	288TZ		◆ F 288 Y1J0N0510XX	15,243		
	1150	2810TZ		F 28A Z1J0N0510XX	18,187		
100	2500	288TZ	NA	F 288 Z2J0N0510XX	15,243	NA	M6/120
	1750	2810TZ		◆ F 28A Y1J0N0510XX	18,187		
	1150	328TZ		F 328 Z1J0N0510XX	27,634		
125	2500	2810TZ	NA	F 28A Z2J0N0510XX	18,187	NA	M6/150
	1750	2812TZ		◆ F 28C Y1J0N0510XX	22,604		
	1150	3211TZ		F 32B Z1J0N0510XX	32,488		
150	2500	2812TZ	NA	F 28C Z2J0N0510XX	22,604	NA	M6/175
	1750	328TZ		◆ F 328 Y1J0N0510XX	27,634		
	1150	3211TZ		F 32B Z1J0N0510XX	32,488		
200	2500	328TZ	NA	F 328 Z2J0N0510XX	27,634	NA	M7/275
	1750	3211TZ		◆ F 32B Y1J0N0510XX	32,488		
	1150	504ATZ		F 504 Z1J0N0210XX	56,046		
250	2500	3211TZ	NA	F 32B Z2J0N0510XX	32,488	NA	M7/275
	1750	3213TZ		◆ F 32D Y1J0N0510XX	38,689		
300	2500	3211TZ	NA	F 32B Z2J0N0510XX	32,488	NA	M7/330
	1750	504ATZ		◆ F 504 Y1J0N0210XX	56,046		

① Constant Torque Speed Range

② To construct a complete motor model number see Model Number Codes beginning on page 6.

③ See Millennium Series Drives, Section B, page 92.

④ NEMA Frame Designation. See POWERTEC Motor Dimensions beginning on page 26.

◆ Denotes standard motors. Non-standard motors may have additional lead time.