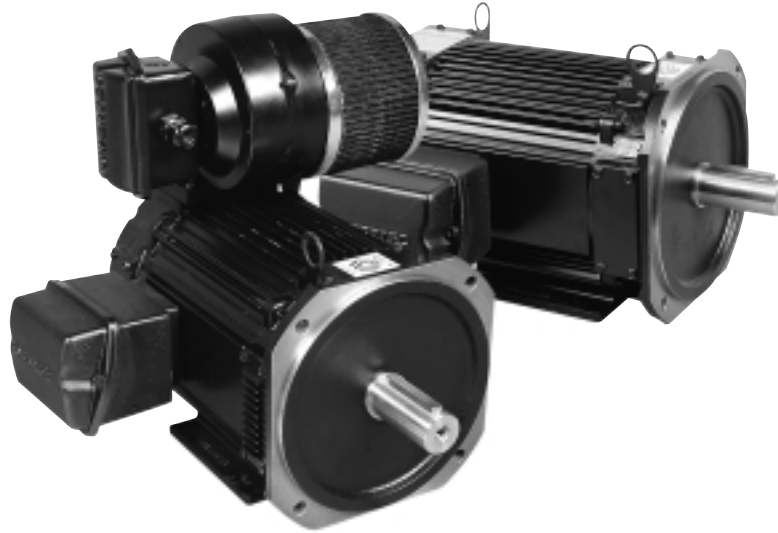
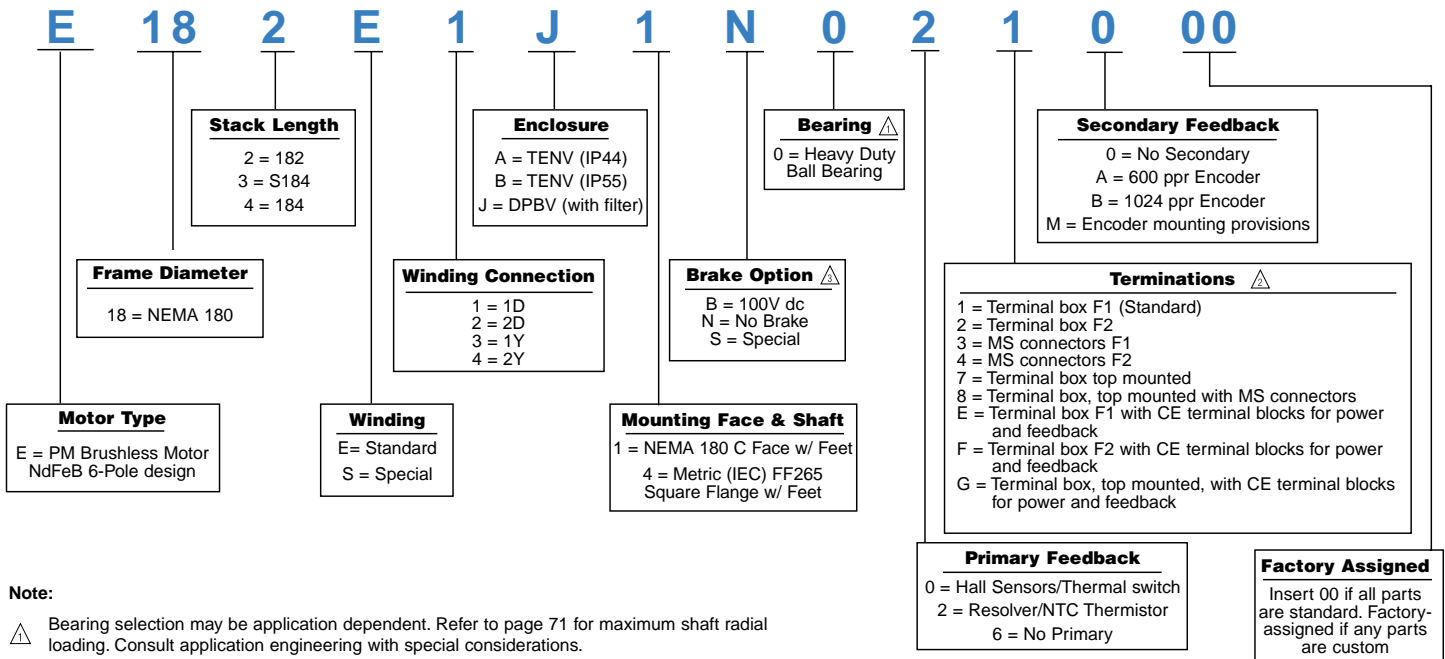


E180 DIAMETER FRAMES



MODEL NUMBER CODE...E180 FRAME

To construct a motor listing, 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.



Note:

- ⚠ Bearing selection may be application dependent. Refer to page 71 for maximum shaft radial loading. Consult application engineering with special considerations.
- ⚠ Terminal box top option not available with DPBV motor enclosures.
- ⚠ See page 68 for a detailed list of special options.

E180 DIAMETER FRAMES



RATINGS AND CHARACTERISTICS

Motor parameters and winding data

ENGLISH

METRIC

| Parameters, DPBV & TENV | Symbol | Units | E182 | E183 | E184 | Symbol | Units | E182 | E183 | E184 |
|---|-----------------|------------------------|-------------|-------------|-------------|-----------------|-------------------------------------|-------------|-------------|-------------|
| Continuous stall torque $\triangle \triangle$ | T _{CS} | lb-ft | 41 (16) | 66 (29) | 86 (38) | T _{CS} | Nm | 56 (22) | 90 (39) | 116 (51) |
| Peak Torque (theoretical) \triangle | T _{PK} | lb-ft | 164 | 250 | 335 | T _{PK} | Nm | 222 | 339 | 454 |
| Inertia (motor only) | J _M | lb-ft-sec ² | .00936 | .01180 | .01420 | J _M | kgm ² x 10 ⁻³ | 12,7 | 16,0 | 19,3 |
| Static friction (max.) | T _I | lb-ft | .058 | .086 | .313 | T _I | Nm | .079 | .117 | .424 |
| Viscous Damping coefficient \triangle | K _{DV} | lb-ft/Krpm | .432 | .649 | .681 | K _{DV} | Nm/Krpm | .585 | .879 | .923 |
| Thermal resistance \triangle | R _{TH} | °C/Watt | .073 (.380) | .050 (.250) | .047 (.235) | R _{TH} | °C/Watt | .073 (.380) | .050 (.250) | .047 (.235) |
| Thermal time constant \triangle | τ _{TH} | min. | 31 (160) | 30 (150) | 31 (150) | τ _{TH} | min. | 31 (161) | 30 (150) | 31 (150) |
| Weight \triangle | W | lbs. | 86 (80) | 113 (107) | 129 (123) | M (mass) | kg | 39,1 (36,4) | 51,4 (48,6) | 58,6 (55,9) |

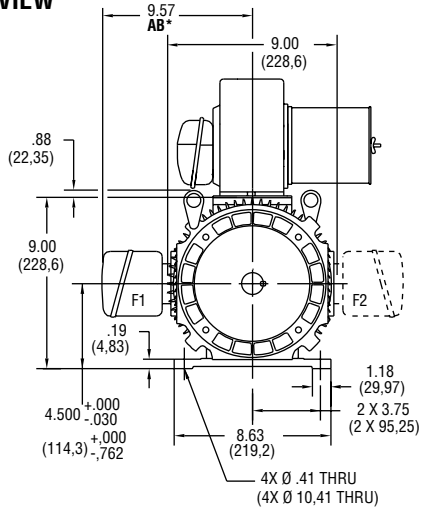
| Winding data | Symbol | Units | E182 | | | | E183 | | | | E184 | | | |
|--|--------------------|---------------------|---------|--------|----------|---------|--------|--------|-----------|--------|--------|--------|---------|--------|
| | | | E1 | E2 | E3 | E4 | E1 | E2 | E3 | E4 | E1 | E2 | E3 | E4 |
| Torque Constant line-line \triangle | K _T rms | lb-ft/A Nm/A | 2.78 | 1.39 | 4.82 | 2.41 | 2.87 | 1.43 | 4.96 | 2.48 | 2.81 | 1.40 | 4.86 | 2.43 |
| | | | 3.77 | 1.88 | 6.53 | 3.26 | 3.89 | 1.94 | 6.73 | 3.37 | 3.80 | 1.90 | 6.59 | 3.30 |
| Voltage Constant line-line \triangle | K _E rms | V/Krpm V/rad/sec | 228 | 114 | 395 | 197 | 235 | 118 | 407 | 204 | 230 | 115 | 398 | 199 |
| | | | 2.18 | 1.09 | 3.77 | 1.89 | 2.24 | 1.12 | 3.89 | 1.94 | 2.20 | 1.10 | 3.80 | 1.90 |
| Continuous stall current $\triangle \triangle \triangle$ | I _{CS} | A | 16(6.2) | 32(12) | 9.5(3.7) | 19(7.4) | 25(11) | 51(22) | 14.7(6.5) | 30(13) | 49(21) | 67(29) | 19(8.3) | 38(16) |
| Current at peak torque $\triangle \triangle \triangle$ | I _{PK} | A | 59 | 118 | 34 | 68 | 88 | 177 | 51 | 102 | 120 | 239 | 69 | 138 |
| Hot Resistance line-line \triangle | R _H | Ohms | 3.14 | 0.78 | 9.41 | 2.35 | 2.02 | 0.48 | 5.60 | 1.41 | 1.16 | 0.29 | 3.49 | 0.87 |
| Cold Resistance line-line \triangle | R _C | Ohms | 2.16 | 0.54 | 6.48 | 1.62 | 1.39 | 0.33 | 3.86 | 0.97 | 0.80 | 0.20 | 2.40 | 0.60 |
| Inductance line-line | L | mH | 25.8 | 6.45 | 77.4 | 19.4 | 16.8 | 4.2 | 50.3 | 12.6 | 12 | 3.00 | 36.0 | 9.00 |
| Electrical time constant \triangle | τ _e | msec | 11.9 | 11.9 | 11.9 | 11.9 | 12.6 | 12.6 | 12.6 | 12.6 | 15 | 15 | 15 | 15 |
| Mechanical time constant \triangle | τ _m | msec | 2.88 | 2.88 | 2.88 | 2.88 | 2.03 | 2.03 | 2.03 | 2.03 | 1.59 | 1.59 | 1.59 | 1.59 |
| Rated base speed \triangle | ω _r | rpm | 1750 | 3600 | 1000 | 2000 | 1750 | 3600 | 1000 | 2000 | 1750 | 3600 | 1000 | 2000 |
| Rated current @ rated speed, RMS Amperes | I _R | A | 14.8 | 26.8 | 8.8 | 16.9 | 24.0 | 44.0 | 14.3 | 27.4 | 31.5 | 56.2 | 18.9 | 36.0 |
| | | | (3.6) | (N/A) | (3.0) | (3.4) | (8.2) | (N/A) | (5.7) | (8.6) | (10.3) | (N/A) | (7.5) | (10.4) |
| Power @ rated speed \triangle | P _R | HP, DPBV (TENV) | 12.8 | 23.7 | 7.6 | 14.5 | 20.8 | 38.7 | 12.2 | 23.5 | 26.9 | 49.0 | 15.9 | 30.2 |
| | | | (3.0) | (N/A) | (2.5) | (2.7) | (6.8) | (N/A) | (4.8) | (7.0) | (8.4) | (N/A) | (6.2) | (8.4) |
| Power @ rated speed \triangle | P _R | kW, DPBV (TENV) | 9.6 | 17.7 | 5.7 | 10.8 | 15.6 | 28.9 | 9.1 | 17.5 | 20.2 | 36.5 | 11.9 | 22.5 |
| | | | (2.2) | (N/A) | (1.9) | (2.0) | (5.1) | (N/A) | (3.6) | (5.2) | (6.3) | (N/A) | (4.6) | (6.3) |

Note: All values at 40°C unless otherwise noted.

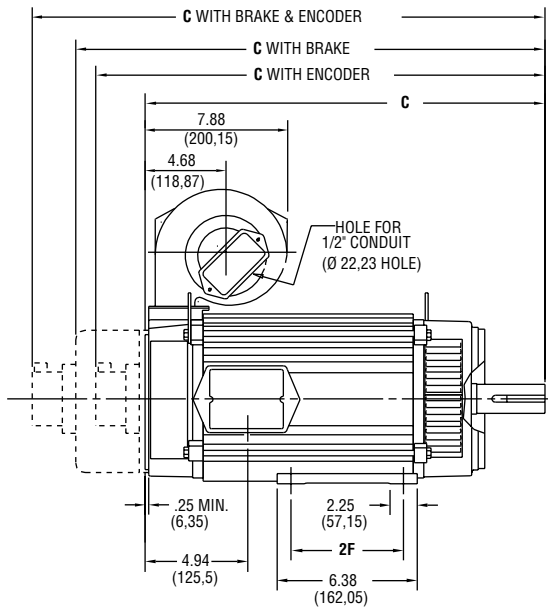
- \triangle 25°C ambient temperature
- \triangle () denotes TENV when dual ratings are shown. Single ratings apply to both
- \triangle Based on RMS (sine wave) amps
- \triangle 140°C winding temperature
- \triangle 640V dc
- \triangle Theoretical (cold) ratings at peak current, I_{PK}. For ratings at rated temperature, see Torque-Speed curves, pages 10-12
- \triangle Demagnetization current for 150°C magnet temperature

DIMENSIONS ... 180 Diameter Frames; DPBV (Dripproof, Blower Ventilated)

FRONT VIEW



SIDE VIEW

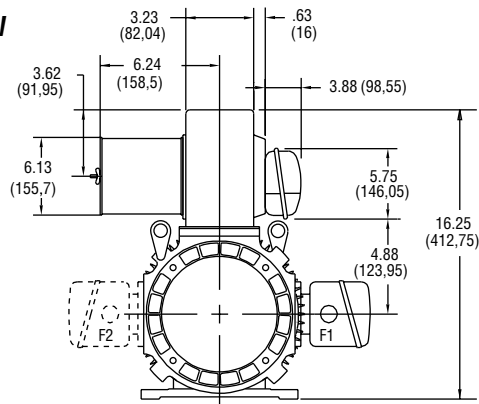


| CALLOUT FOR "C" DIMENSION | | | | |
|---------------------------|------------------|------------------|------------------|----------------------|
| MODEL | MOTOR ONLY | WITH ENCODER | WITH BRAKE | WITH BRAKE & ENCODER |
| E182 | 16.63 (422,4) | 19.42 (493,3) | 20.52 (521,2) | 22.48 (571) |
| E183 | 20.44 (519,2) | 22.23 (590) | 24.33 (618) | 26.29 (667,8) |
| E184 | 20.44 (519,2) | 23.23 (590) | 24.33 (618) | 26.29 (667,8) |

| MODEL | 2F DIMENSION |
|-------|-----------------|
| E182 | 4.50 (114,3) |
| E183 | 5.50 (139,7) |
| E184 | 5.50 (139,7) |

Dimensions in () are mm, all others in inches

REAR VIEW



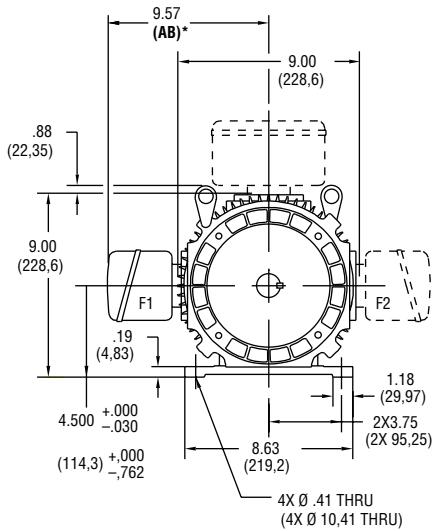
NOTE:

- Reference pages 56, 57 for conduit box dimensions.
- Conduit box can be rotated in 90° steps on its own axis and can be mounted on opposite side or top when specified.
- Blower can be rotated 180° about its axis. Size #2 blower is used on E180 frames. See Page 67.

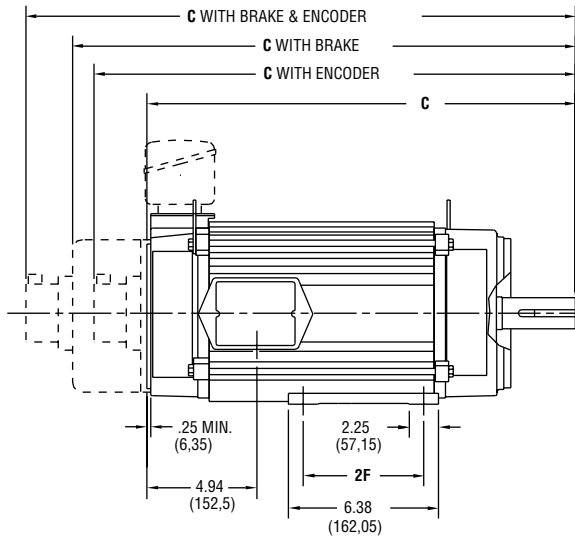
* See terminations, page 56.

DIMENSIONS ... 180 Diameter Frames; TENV (Totally Enclosed, Non-Ventilated)

FRONT VIEW



SIDE VIEW

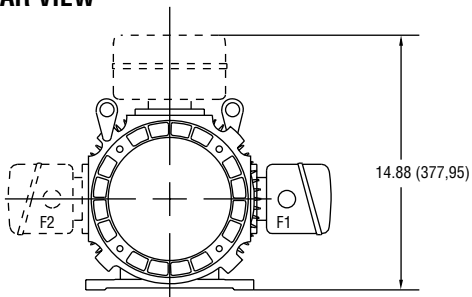


| CALLOUT FOR "C" DIMENSION | | | | |
|---------------------------|------------------|------------------|------------------|----------------------|
| MODEL | MOTOR ONLY | WITH ENCODER | WITH BRAKE | WITH BRAKE & ENCODER |
| E182 | 16.63 (422,4) | 19.42 (493,3) | 20.52 (521,2) | 22.48 (571) |
| E183 | 20.44 (519,2) | 22.23 (590) | 24.33 (618) | 26.29 (667,8) |
| E184 | 20.44 (519,2) | 23.23 (590) | 24.33 (618) | 26.29 (667,8) |

| MODEL | 2F DIMENSION |
|-------|-----------------|
| E182 | 4.50 (114,3) |
| E183 | 5.50 (139,7) |
| E184 | 5.50 (139,7) |

Dimensions in () are mm, all others in inches

REAR VIEW



NOTE:

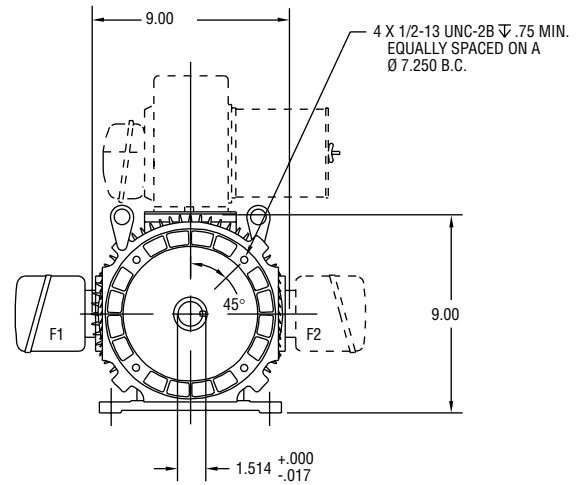
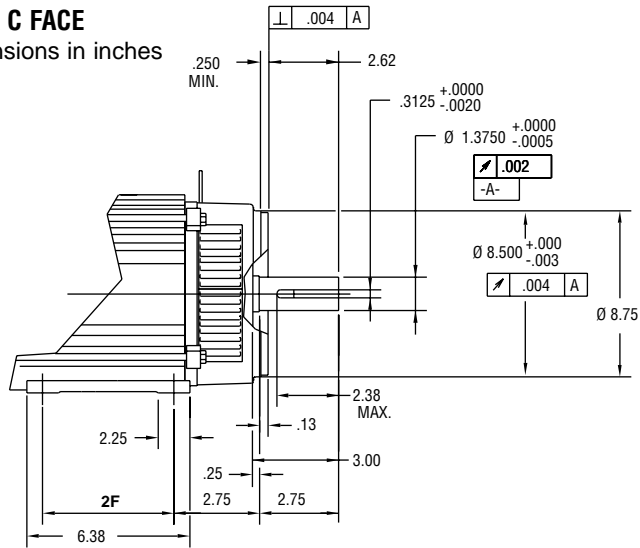
1. Reference pages 56, 57 for conduit box dimensions.
2. Conduit box can be rotated in 90° steps on its own axis and can be mounted on opposite side or top when specified.

* See terminations, page 56.

DIMENSIONS . . . 180 Diameter Frame Mounting; NEMA and Metric

NEMA C FACE

Dimensions in inches



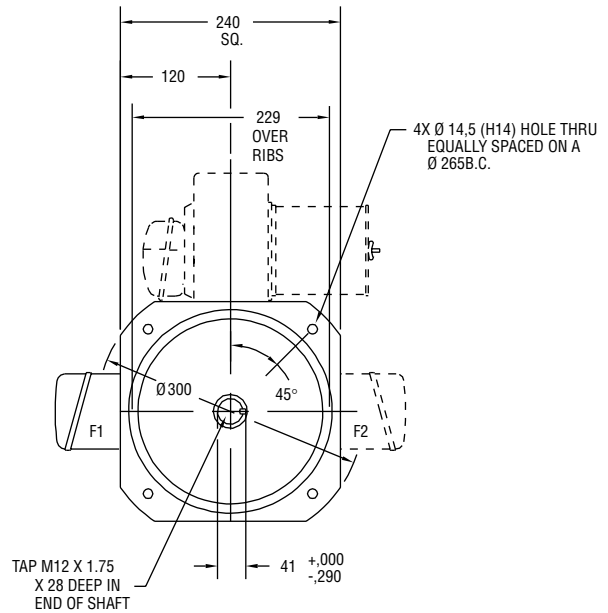
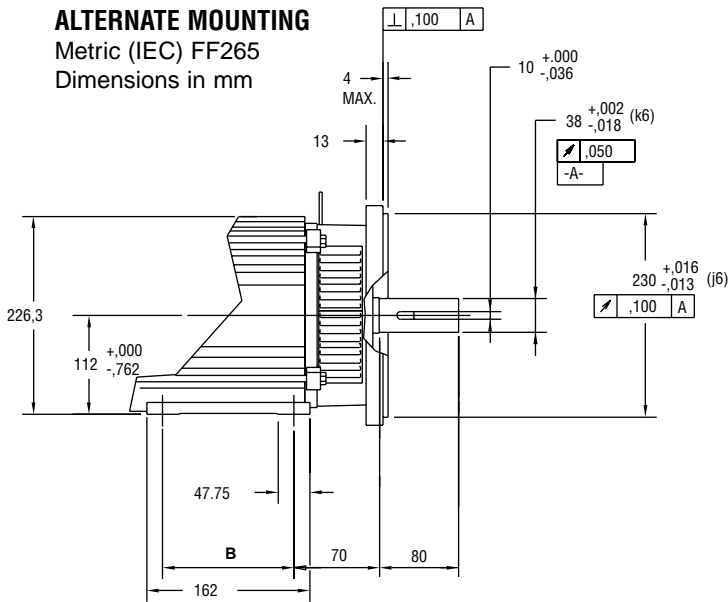
REFER TO DPBV, PAGE 7 FOR FRONT VIEW FEET DIMENSIONS.

| MODEL | 2F DIMENSION |
|-------|--------------|
| E182 | 4.50 |
| E183 | 5.50 |
| E184 | 5.50 |

ALTERNATE MOUNTING

Metric (IEC) FF265

Dimensions in mm



EXCEPT FOR FOOT HEIGHT REFER TO DPBV, PAGE 7 FOR FRONT VIEW FEET DIMENSIONS.



| MODEL | B DIMENSION |
|-------|-------------|
| E182 | 114,3 |
| E183 | 139,7 |
| E184 | 139,7 |

PERFORMANCE CURVES

180 FRAME E182

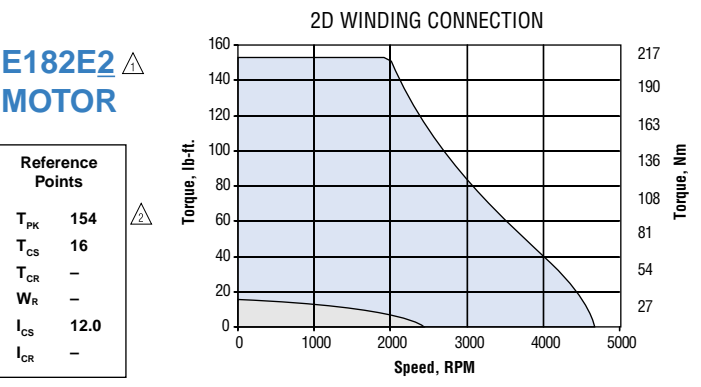
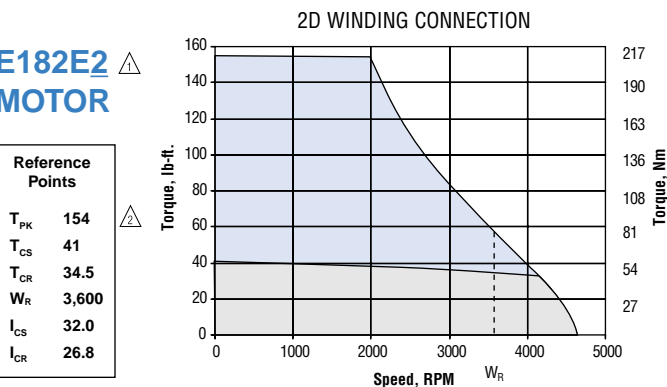
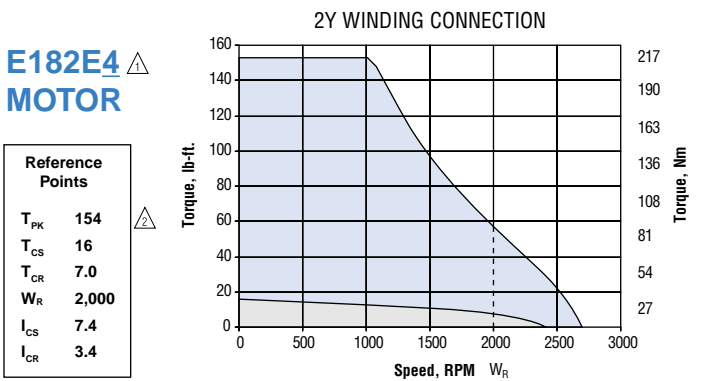
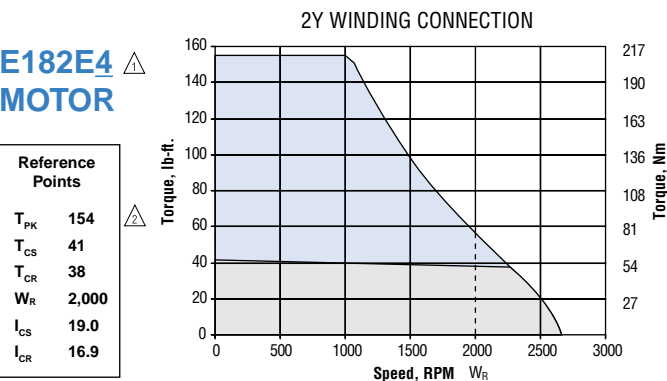
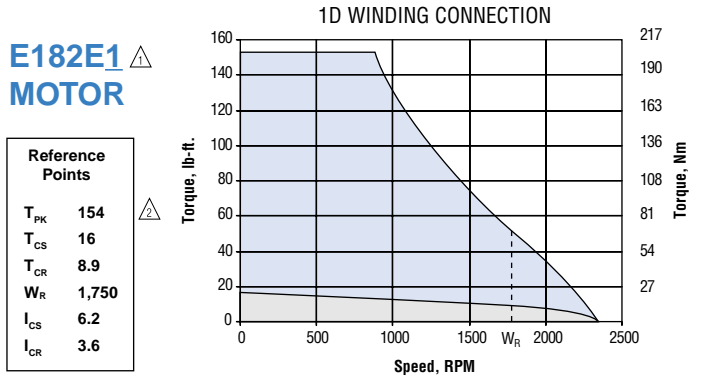
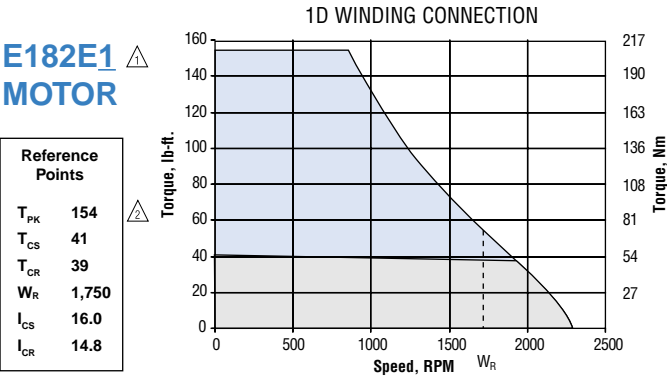
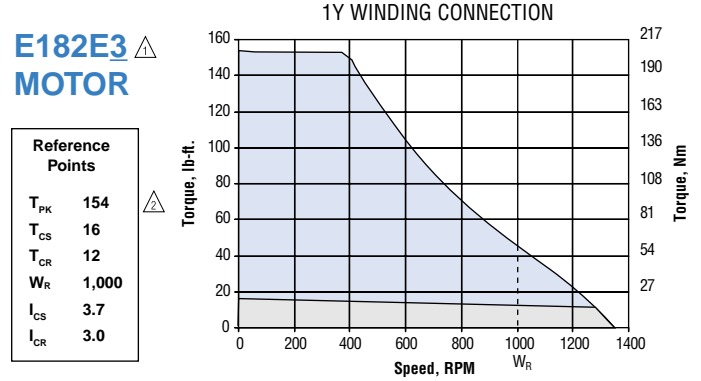
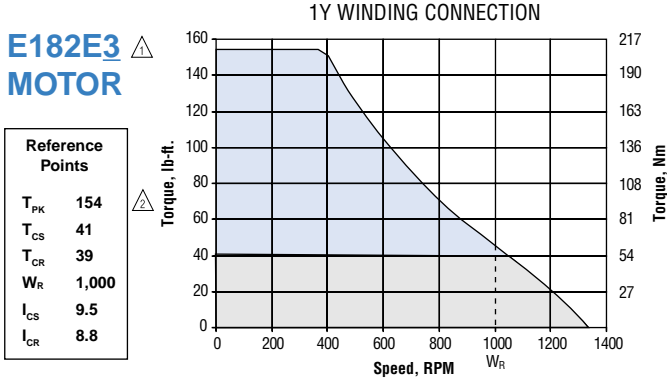
Test Conditions



- Motor operated in ambient temperature of 40° C maximum that results in a maximum motor stator winding temperature of 140° C
- 640V dc bus applied
- Sinusoidal drive output

-  Intermittent duty
-  Continuous duty

DPBV DRIPPROOF BLOWER VENTILATED

TENV TOTALLY ENCLOSED NON-VENTILATED



-  See model number code, page 5.
-  This is also the demagnetization limit. User should apply appropriate safety margins in its use.

- Notes:
1. See Motor Performance Curves, page 76.
 2. See Thermal Protection, page 69.
 3. See Power Curves, page 13.
 4. See Efficiency Curves, page 14.

PERFORMANCE CURVES

180 FRAME E183 (NEMA ES184)

Test Conditions

- Motor operated in ambient temperature of 40° C maximum that results in a maximum motor stator winding temperature of 140° C
- 640V dc bus applied
- Sinusoidal drive output

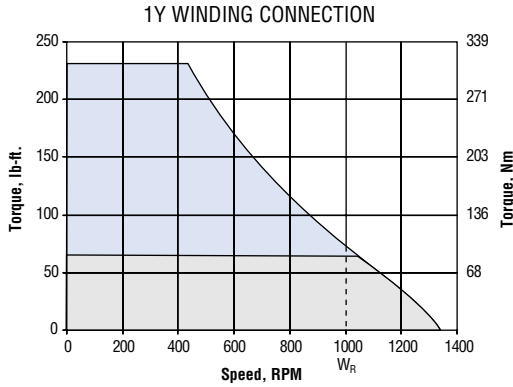
- Intermittent duty
- Continuous duty

DPBV DRIPPROOF BLOWER VENTILATED

TENV TOTALLY ENCLOSED NON-VENTILATED

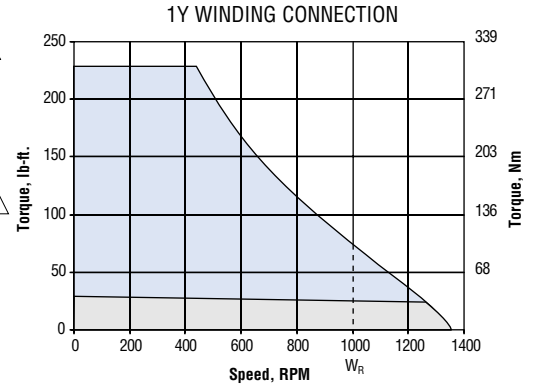
E183E3 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 230 |
| T_{CS} | 66 |
| T_{CR} | 64 |
| W_R | 1,000 |
| I_{CS} | 14.7 |
| I_{CR} | 14.3 |



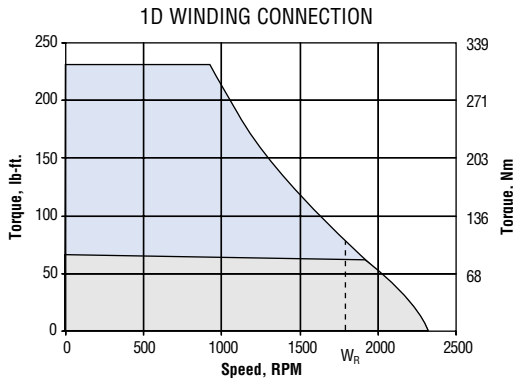
E183E3 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 230 |
| T_{CS} | 29 |
| T_{CR} | 25 |
| W_R | 1,000 |
| I_{CS} | 6.5 |
| I_{CR} | 5.7 |



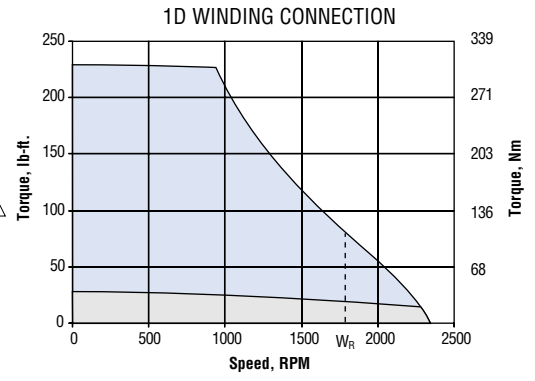
E183E1 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 230 |
| T_{CS} | 66 |
| T_{CR} | 62 |
| W_R | 1,750 |
| I_{CS} | 25.0 |
| I_{CR} | 24.0 |



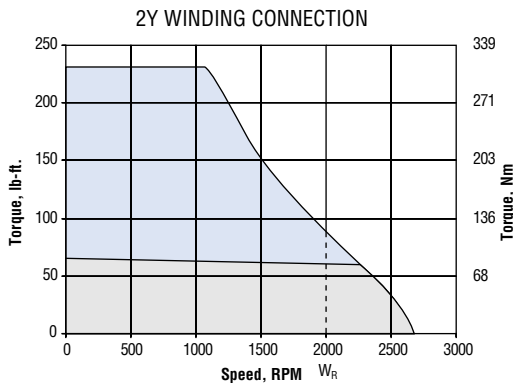
E183E1 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 230 |
| T_{CS} | 29 |
| T_{CR} | 20 |
| W_R | 1,750 |
| I_{CS} | 11.0 |
| I_{CR} | 8.2 |



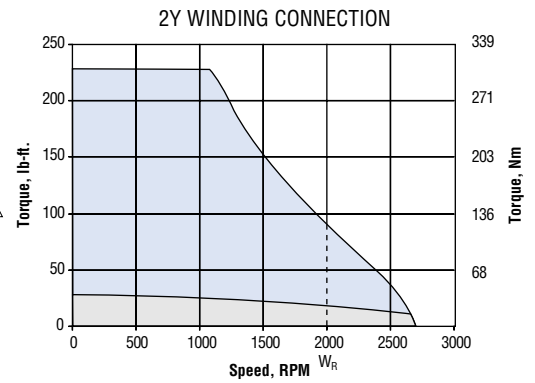
E183E4 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 230 |
| T_{CS} | 66 |
| T_{CR} | 61 |
| W_R | 2,000 |
| I_{CS} | 30.0 |
| I_{CR} | 27.4 |



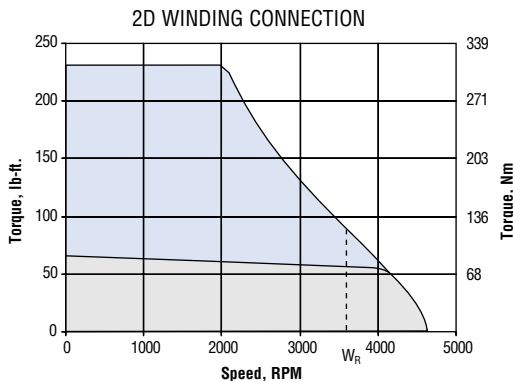
E183E4 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 230 |
| T_{CS} | 29 |
| T_{CR} | 18.4 |
| W_R | 2,000 |
| I_{CS} | 13.0 |
| I_{CR} | 8.6 |



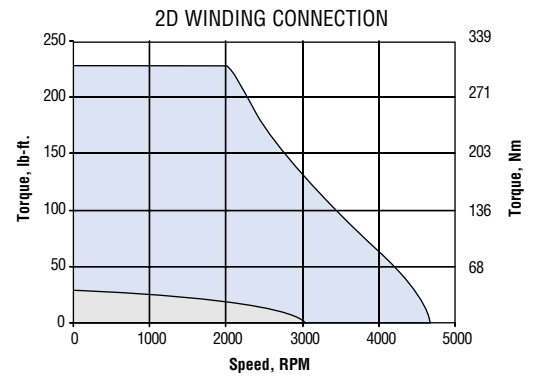
E183E2 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 230 |
| T_{CS} | 66 |
| T_{CR} | 56 |
| W_R | 3,600 |
| I_{CS} | 51.0 |
| I_{CR} | 44 |



E183E2 MOTOR

| Reference Points | |
|------------------|------|
| T_{PK} | 230 |
| T_{CS} | 29 |
| T_{CR} | - |
| W_R | - |
| I_{CS} | 22.0 |
| I_{CR} | - |



- △ See model number code, page 5.
- △ This is also the demagnetization limit. User should apply appropriate safety margins in its use.

- Notes:
1. See Motor Performance Curves, page 76.
 2. See Thermal Protection, page 69.
 3. See Power Curves, page 13.
 4. See Efficiency Curves, page 14.

PERFORMANCE CURVES

180 FRAME E184

Test Conditions

- Motor operated in ambient temperature of 40° C maximum that results in a maximum motor stator winding temperature of 140° C
- 640V dc bus applied
- Sinusoidal drive output

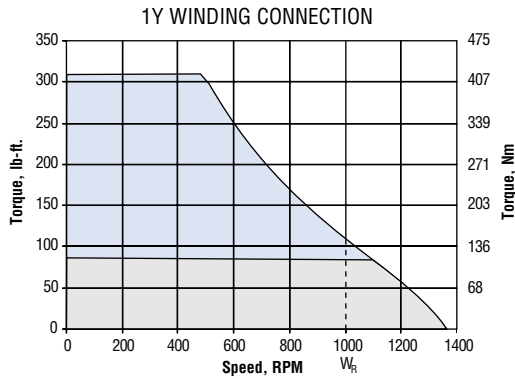
- Intermittent duty
- Continuous duty

DPBV DRIPPROOF BLOWER VENTILATED

TENV TOTALLY ENCLOSED NON-VENTILATED

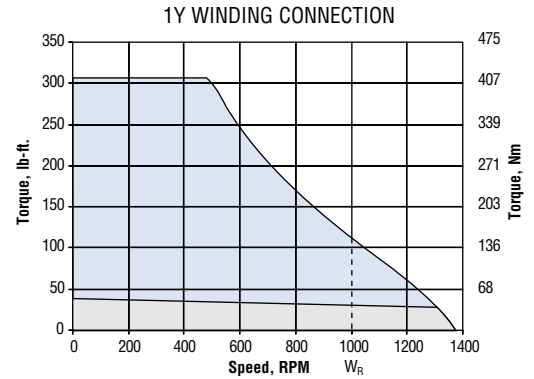
E184E3 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 310 |
| T_{CS} | 86 |
| T_{CR} | 83 |
| W_R | 1,000 |
| I_{CS} | 19.0 |
| I_{CR} | 18.9 |



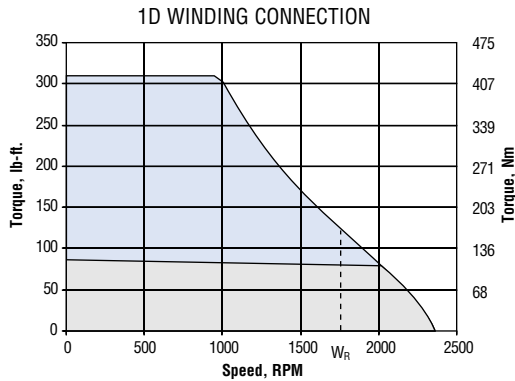
E184E3 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 310 |
| T_{CS} | 38 |
| T_{CR} | 32 |
| W_R | 1,000 |
| I_{CS} | 8.3 |
| I_{CR} | 7.5 |



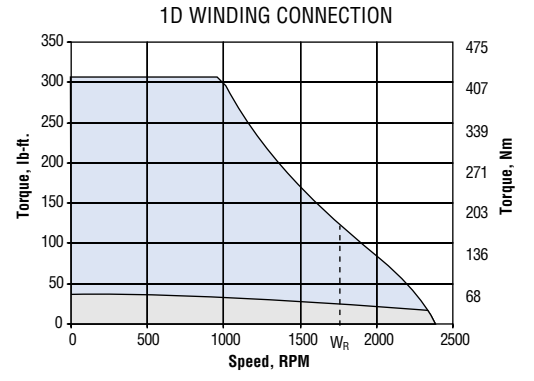
E184E1 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 310 |
| T_{CS} | 86 |
| T_{CR} | 79 |
| W_R | 1,750 |
| I_{CS} | 49.0 |
| I_{CR} | 31.5 |



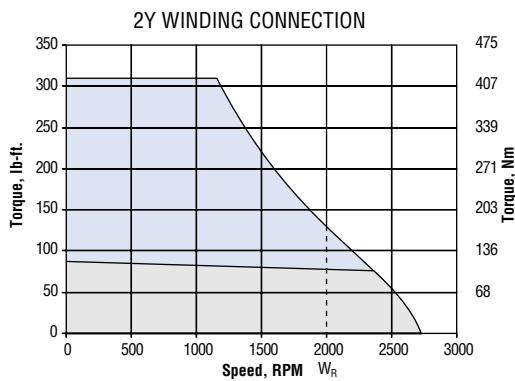
E184E1 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 310 |
| T_{CS} | 38 |
| T_{CR} | 25 |
| W_R | 1,750 |
| I_{CS} | 21.0 |
| I_{CR} | 10.3 |



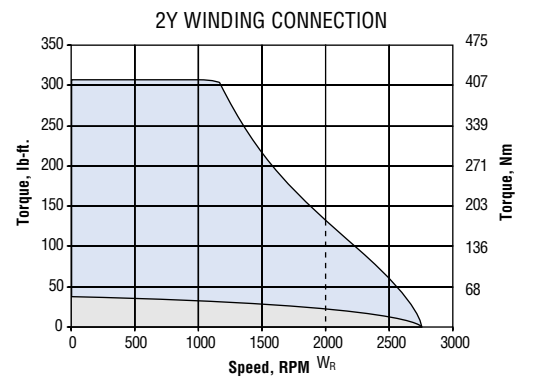
E184E4 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 310 |
| T_{CS} | 86 |
| T_{CR} | 79 |
| W_R | 2,000 |
| I_{CS} | 38.0 |
| I_{CR} | 36.0 |



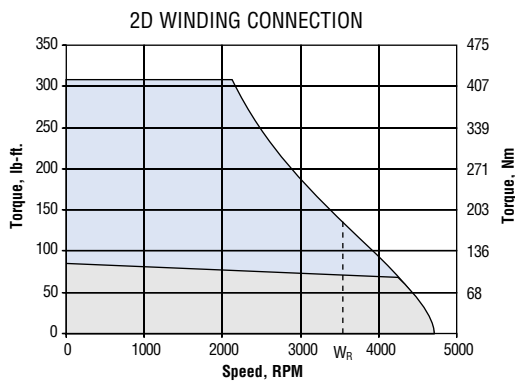
E184E4 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 310 |
| T_{CS} | 38 |
| T_{CR} | 22 |
| W_R | 2,000 |
| I_{CS} | 16.0 |
| I_{CR} | 10.4 |



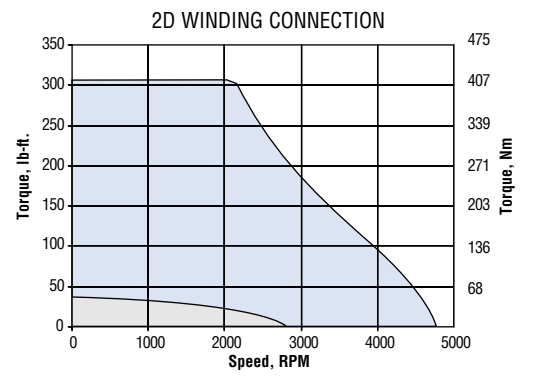
E184E2 MOTOR

| Reference Points | |
|------------------|-------|
| T_{PK} | 310 |
| T_{CS} | 86 |
| T_{CR} | 71 |
| W_R | 3,600 |
| I_{CS} | 67.0 |
| I_{CR} | 56.2 |



E184E2 MOTOR

| Reference Points | |
|------------------|------|
| T_{PK} | 310 |
| T_{CS} | 38 |
| T_{CR} | - |
| W_R | - |
| I_{CS} | 29.0 |
| I_{CR} | - |



△ See model number code, page 5.
△ This is also the demagnetization limit. User should apply appropriate safety margins in its use.

Notes: 1. See Motor Performance Curves, page 76.
2. See Thermal Protection, page 69.
3. See Power Curves, page 13.
4. See Efficiency Curves, page 14.

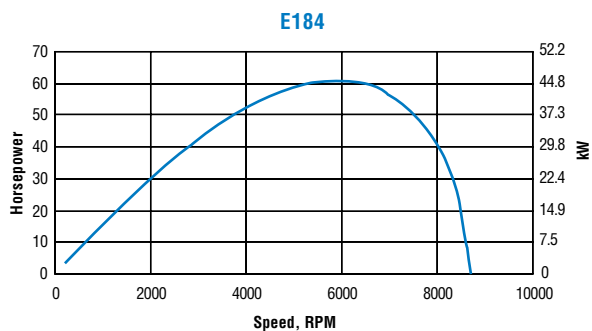
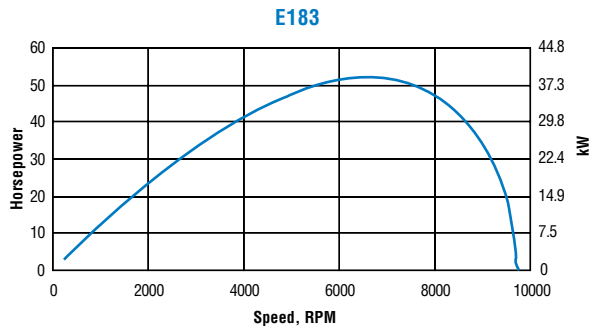
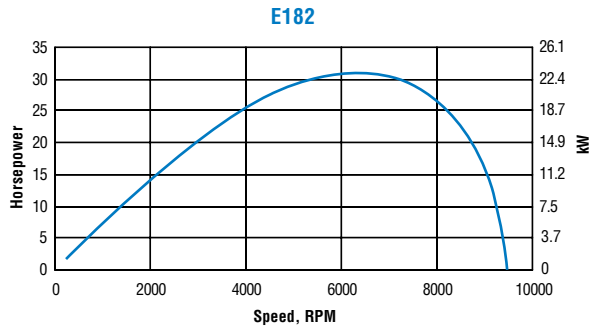
CONTINUOUS POWER CURVES

E180 DIAMETER FRAMES

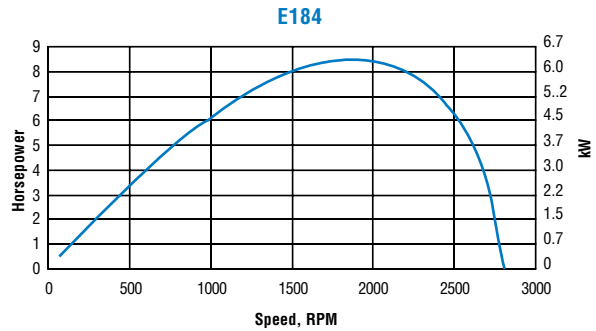
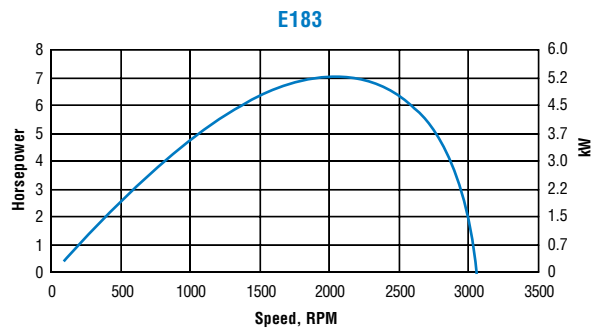
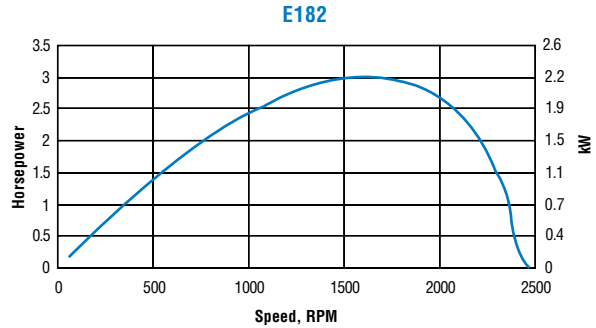
Standard E180 frame motors are limited (mechanical design) to 6000 RPM. Special designs are available that allow operation to speeds indicated in the individual curves.

One power curve is shown for each stack length in both the DPBV and TENV enclosures. Four different winding connections are offered for each stack length, but the power curve is the same for all connections. Therefore, only one power curve is necessary for each stack length and enclosure.

DPBV DRIPPROOF BLOWER VENTILATED



TENV TOTALLY ENCLOSED NON-VENTILATED



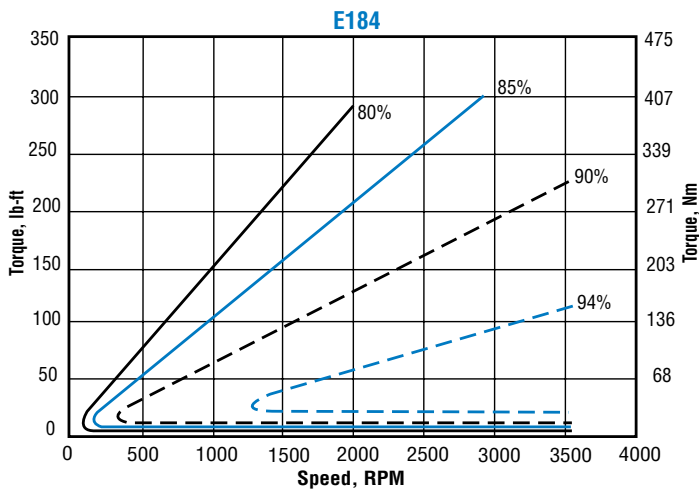
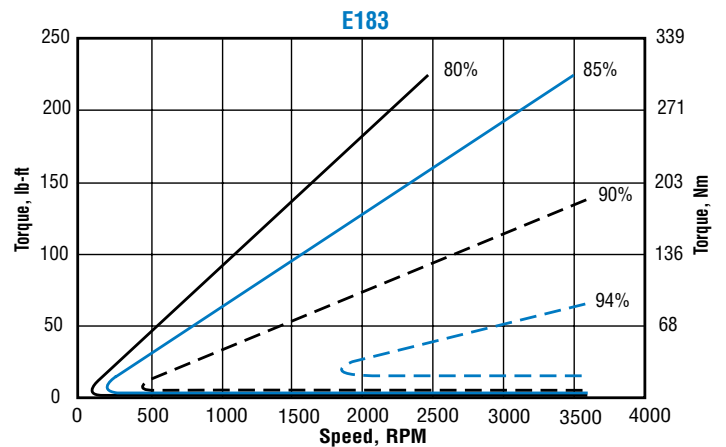
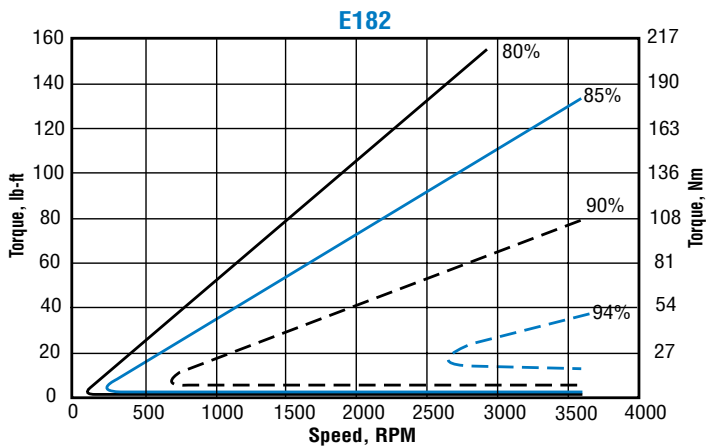
Note: see Motor Performance Curves, page 76.

EFFICIENCY CURVES

E180 DIAMETER

FRAMES

One efficiency curve is shown for each stack length. Efficiencies for the DPBV and TENV enclosures are approximately the same, so a single curve represents both. In addition, although four different winding connections are offered for each stack length, the efficiency is the same for all connections.



Note: see Motor Performance Curves, page 76.