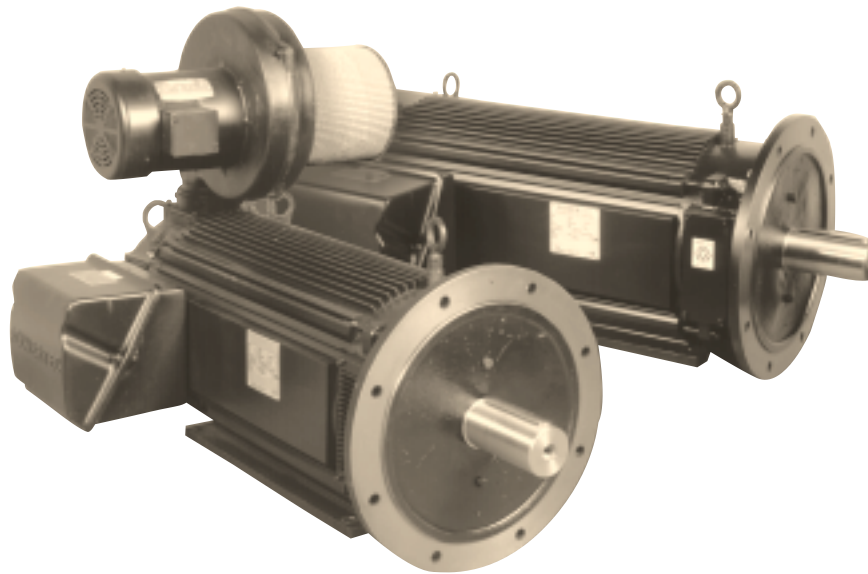
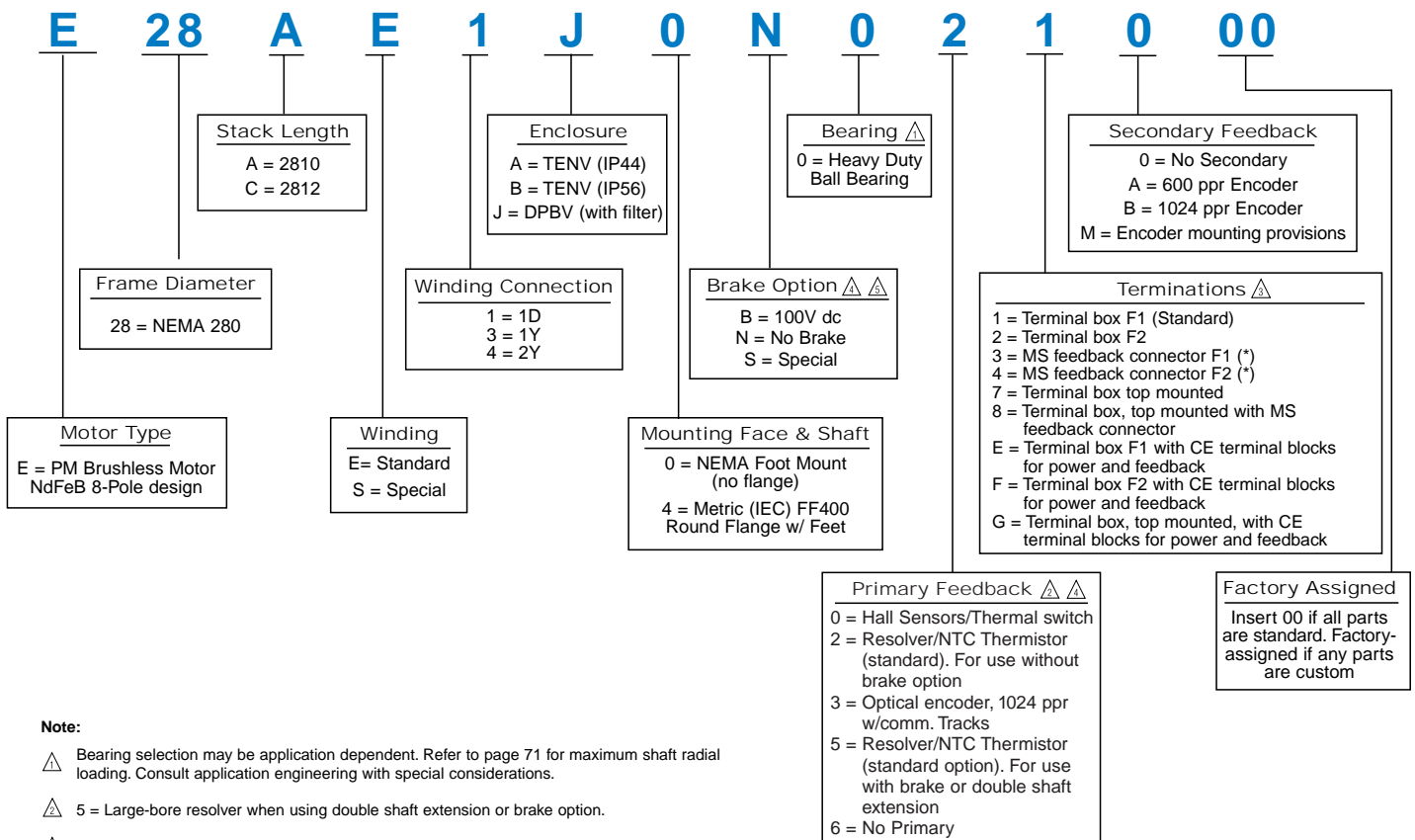


# E280 DIAMETER FRAMES



## MODEL NUMBER CODE...E280 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 the entries. The model number shown is an example of a properly specified motor.

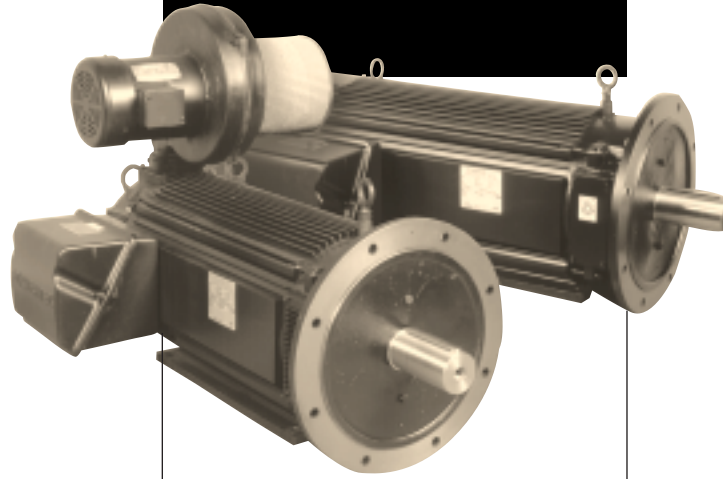


**Note:**

- $\Delta$  Bearing selection may be application dependent. Refer to page 71 for maximum shaft radial loading. Consult application engineering with special considerations.
- $\Delta$  5 = Large-bore resolver when using double shaft extension or brake option.
- $\Delta$  Terminal box, top option not available with DPBV motor enclosures.
- $\Delta$  Many feedback choices available, contact factory.
- $\Delta$  See page 68 for a detailed list of special options.

(\*) 3,4,8: Terminal block mounted in terminal box for motor power and MS connector for feedback.

# E280 DIAMETER FRAMES



## RATINGS AND CHARACTERISTICS

Motor parameters and winding data

### ENGLISH

### METRIC

Parameters, DPBV & TENV	Symbol	Units	E28A	E28C	Symbol	Units	E28A	E28C
Continuous stall torque $\triangle \triangle$	$T_{CS}$	lb-ft	531 (275)	722 (374)	$T_{CS}$	Nm	720 (373)	978 (507)
Peak Torque (theoretical) $\triangle$	$T_{PK}$	lb-ft	1250	1670	$T_{PK}$	Nm	1694	2263
Inertia (motor only)	$J_M$	lb-ft-sec <sup>2</sup>	.254	.336	$J_M$	kgm <sup>2</sup> x 10 <sup>-3</sup>	344	456
Static friction (max.)	$T_I$	lb-ft	2.3	2.6	$T_I$	Nm	3.1	3.5
Viscous Damping coefficient $\triangle$	$K_{DV}$	lb-ft/Krpm	3.73	4.98	$K_{DV}$	Nm/Krpm	5.05	6.75
Thermal resistance $\triangle$	$R_{TH}$	°C/Watt	.020 (.063)	.017 (.054)	$R_{TH}$	°C/Watt	.020 (.063)	.017 (.054)
Thermal time constant $\triangle$	$\tau_{TH}$	min.	64 (200)	64 (200)	$\tau_{TH}$	min.	64 (200)	64 (200)
Weight $\triangle$	$W$	lbs.	669 (630)	826 (787)	$M$ (mass)	kg	304 (286)	376 (358)

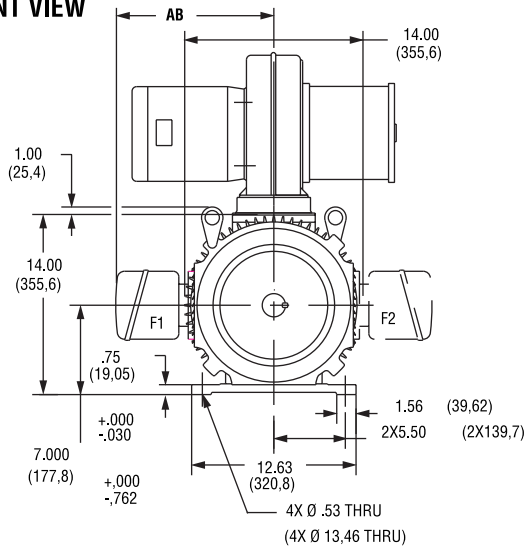
Winding data	Symbol	Units	E28A			E28C		
			E1	E3	E4	E1	E3	E4
Torque Constant line-line $\triangle$	$K_T$ rms	lb-ft/A	2.59	4.48	2.24	2.75	4.76	2.38
		Nm/A	3.51	6.07	3.04	3.73	6.46	3.23
Voltage Constant line-line $\triangle$	$K_E$ rms	V/Krpm	212	367	184	226	391	196
		V/rad/sec	2.02	3.51	1.75	2.16	3.74	1.87
Continuous stall current $\triangle \triangle \triangle$	$I_{CS}$	A	210 (118)	122 (68)	243 (136)	274 (151)	159 (87)	318 (175)
Current at peak torque $\triangle \triangle$	$I_{PK}$	A	485	280	560	606	350	700
Hot Resistance line-line $\triangle$	$R_H$	Ohms	0.070	0.209	0.052	0.050	0.151	0.038
Cold Resistance line-line $\triangle$	$R_C$	Ohms	0.048	0.144	0.036	0.035	0.104	0.026
Inductance line-line	$L$	mH	1.166	3.498	0.875	0.990	2.970	0.743
Electrical time constant $\triangle$	$\tau_e$	msec	24.3	24.3	24.3	28.5	28.5	28.5
Mechanical time constant $\triangle$	$\tau_m$	msec	2.00	1.73	2.00	1.69	1.69	1.69
Rated base speed $\triangle$	$\omega_r$	rpm	1750	1000	2000	1750	1000	2000
Rated current @ rated speed $\triangle$	$I_R$	A	166	104	186	252	159	280
		(39)	(45)	(N/A)	(41)	(67)	(N/A)	
Power @ rated speed $\triangle$	$P_R$	HP, DPBV	153	95	169	205	128	225
		(TENV)	(N/A)	(40)	(N/A)	(N/A)	(53)	(N/A)
Power @ rated speed $\triangle$		kW, DPBV	114.1	70.9	126.1	152.9	95.5	167.9
		(TENV)	(N/A)	(29.9)	(N/A)	(N/A)	(39.5)	(N/A)

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

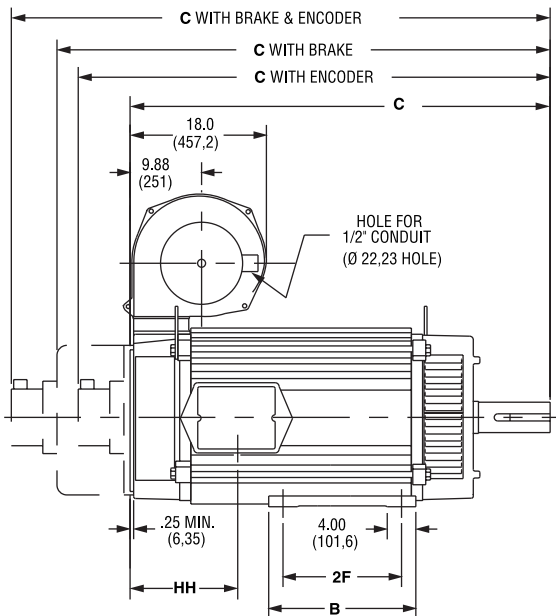
- $\triangle$  25°C ambient temperature
- $\triangle$  ( ) denotes TENV when dual ratings are shown. Single ratings apply to both
- $\triangle$  Based on RMS (sine wave) amps
- $\triangle$  140°C winding temperature
- $\triangle$  640V dc
- $\triangle$  Theoretical (cold) ratings at peak current,  $I_{PK}$ . For ratings at rated temperature, see Torque-Speed curves, pages 42, 43
- $\triangle$  Demagnetization current for 150°C magnet temperature

# DIMENSIONS . . . E280 Diameter Frames; DPBV (Dripproof, Blower Ventilated)

## FRONT VIEW



## SIDE VIEW

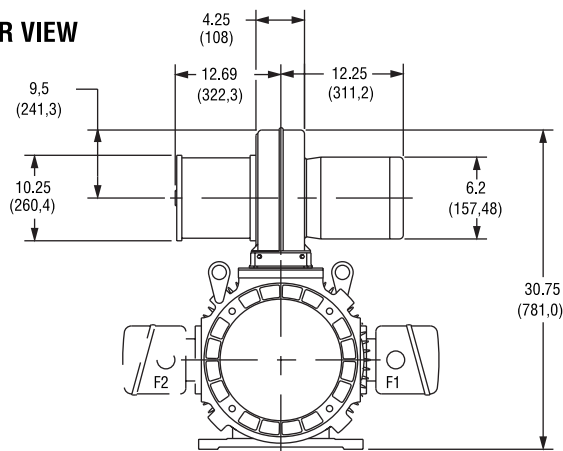


CALLOUT FOR "C" DIMENSION				
MODEL	MOTOR ONLY	WITH ENCODER	WITH BRAKE	WITH BRAKE & ENCODER
E28A	42.00 (1066,8)	44.79 (1137,7)	48.57 (1233,7)	50.54 (1283,7)
E28C	46.12 (1171,4)	48.91 (1242,3)	52.69 (1338,3)	54.66 (1388,4)

MODEL	2F DIMENSION	B DIMENSION
E28A	18.00 (457,2)	20.00 (508)
E28C	22.00 (558,8)	24.00 (609,6)

Dimensions in ( ) are mm, all others in inches

## REAR VIEW



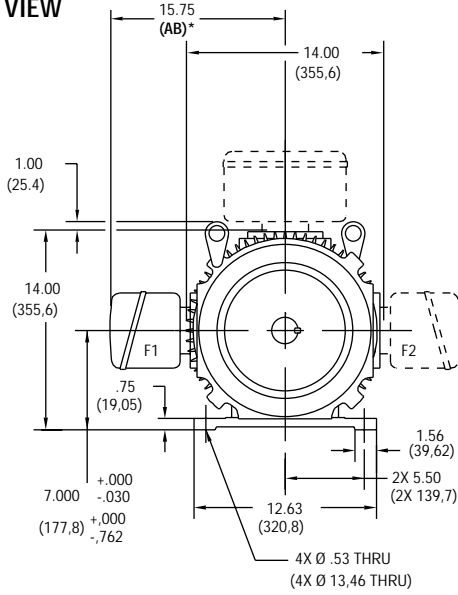
### NOTE:

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.
3. Blower can be rotated 180° about its axis. Size #10 blower is used on E280 frames. See page 67.

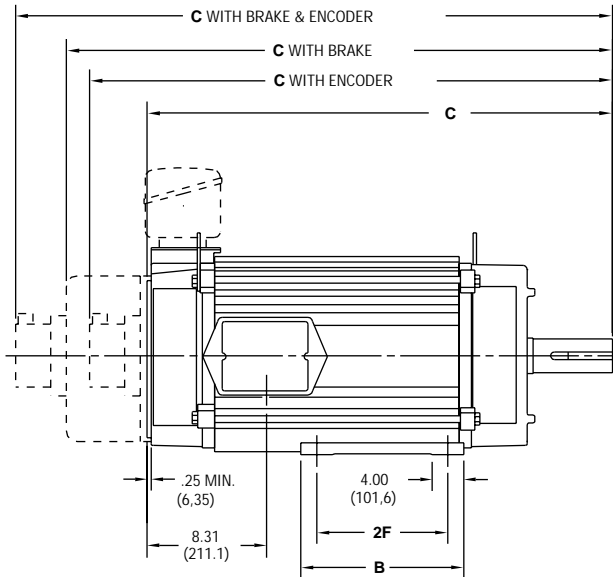
\* See terminations, page 56.

# DIMENSIONS . . . E280 Diameter Frames; TENV (Totally Enclosed, Non-Ventilated)

## FRONT VIEW



## SIDE VIEW

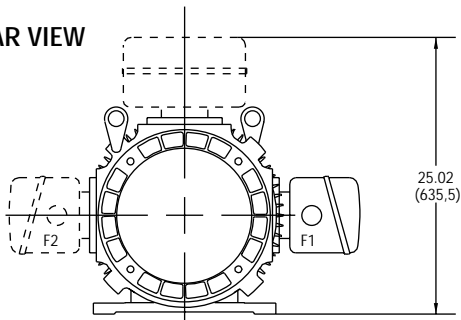


CALLOUT FOR "C" DIMENSION				
MODEL	MOTOR ONLY	WITH ENCODER	WITH BRAKE	WITH BRAKE & ENCODER
E28A	42.00 (1066,8)	44.79 (1137,7)	48.57 (1233,7)	50.54 (1283,7)
E28C	46.12 (1171,4)	48.91 (1242,3)	52.69 (1338,3)	54.66 (1388,4)

MODEL	2F DIMENSION	B DIMENSION
E28A	18.00 (457,2)	20.00 (508)
E28C	22.00 (558,8)	24.00 (609,6)

Dimensions in ( ) are mm, all others in inches

## REAR VIEW



### NOTE:

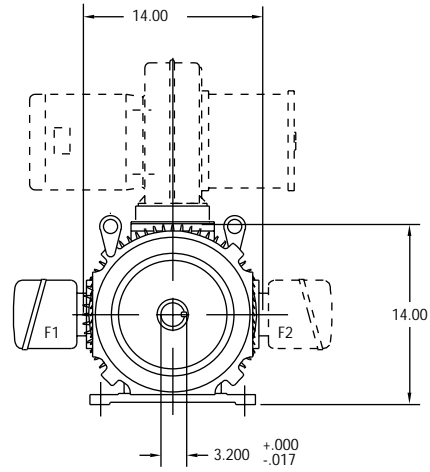
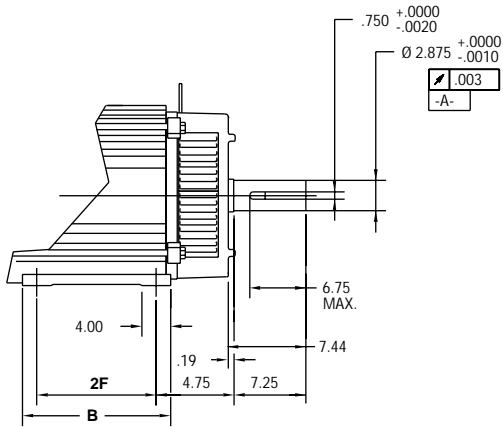
- Reference pages 56, 57 for conduit box dimensions.
- Conduit box can be rotated in 90° steps on its own axis and can be mounted on opposite side or top when specified.

\* See terminations, page 56.

# DIMENSIONS . . . E280 Diameter Frame Mounting; NEMA and Metric

## NEMA FOOT MOUNT

Dimensions in inches

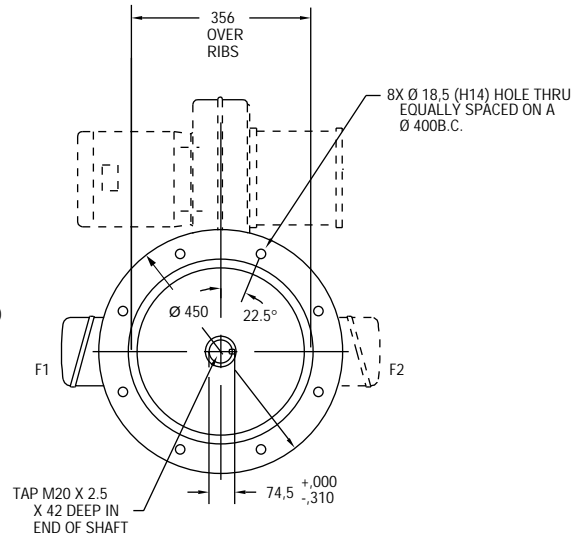
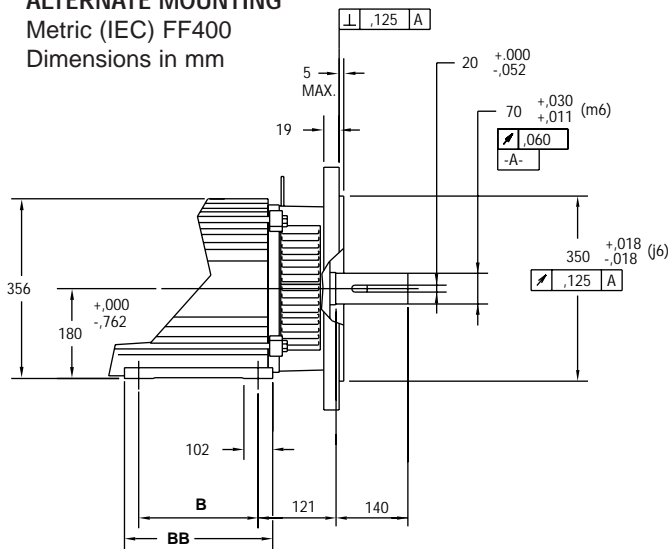


REFER TO DPBV, PAGE 39, FOR FRONT VIEW FEET DIMENSIONS

MODEL	2F DIMENSION	B DIMENSION
E28A	18.00	20.00
E28C	22.00	24.00

## ALTERNATE MOUNTING

Metric (IEC) FF400  
Dimensions in mm



EXCEPT FOR FOOT HEIGHT REFER TO DPBV, PAGE 39, FOR FRONT VIEW FEET DIMENSIONS



MODEL	B DIMENSION	BB DIMENSION
E28A	457,2	508,0
E28C	558,8	610,0

# PERFORMANCE CURVES

## 280 FRAME E28A

### 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

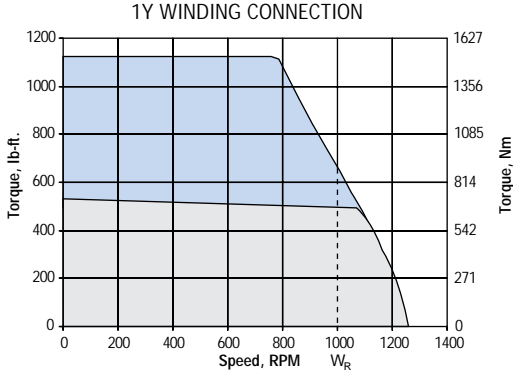
-  Intermittent duty
-  Continuous duty

**DPBV**  
**DRIPPROOF**  
**BLOWER VENTILATED**

**TENV**  
**TOTALLY ENCLOSED**  
**NON-VENTILATED**

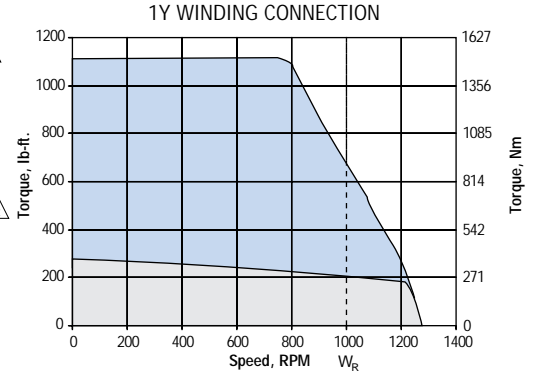
### E28AE3 MOTOR

Reference Points	
$T_{PK}$	1128
$T_{CS}$	531
$T_{CR}$	498
$W_R$	1,000
$I_{CS}$	122
$I_{CR}$	166



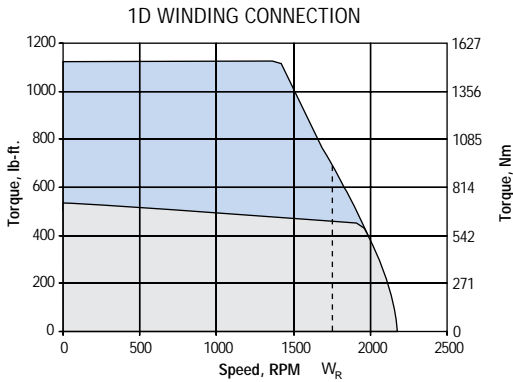
### E28AE3 MOTOR

Reference Points	
$T_{PK}$	1115
$T_{CS}$	275
$T_{CR}$	211
$W_R$	1,000
$I_{CS}$	68.0
$I_{CR}$	45.0



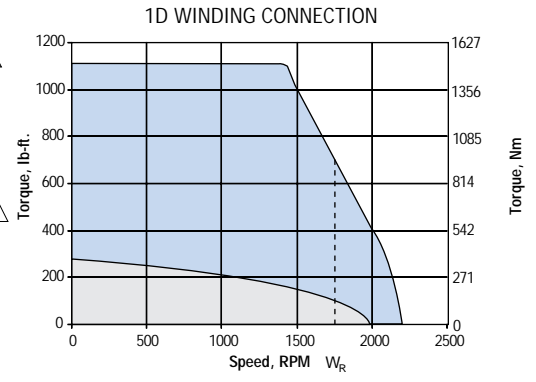
### E28AE1 MOTOR

Reference Points	
$T_{PK}$	1128
$T_{CS}$	531
$T_{CR}$	459
$W_R$	1,750
$I_{CS}$	210
$I_{CR}$	166



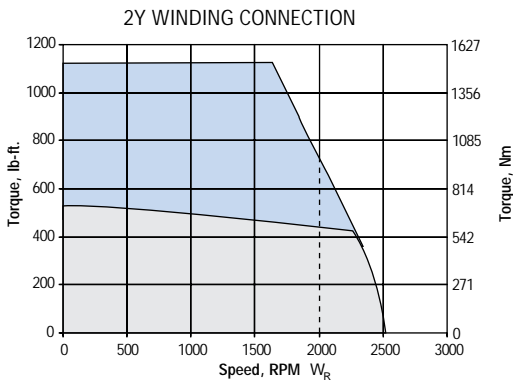
### E28AE1 MOTOR

Reference Points	
$T_{PK}$	1115
$T_{CS}$	275
$T_{CR}$	101
$W_R$	1,750
$I_{CS}$	118.0
$I_{CR}$	39.0



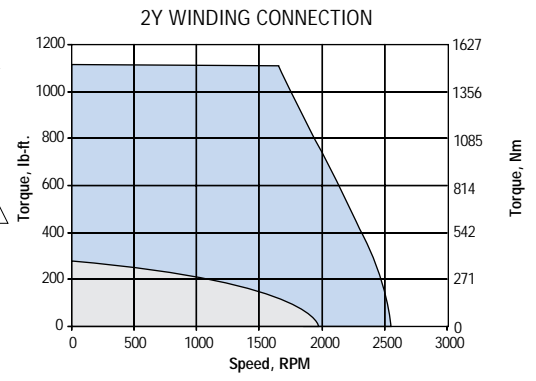
### E28AE4 MOTOR

Reference Points	
$T_{PK}$	1128
$T_{CS}$	531
$T_{CR}$	444
$W_R$	2,000
$I_{CS}$	293
$I_{CR}$	186



### E28AE4 MOTOR

Reference Points	
$T_{PK}$	1115
$T_{CS}$	275
$T_{CR}$	237
$W_R$	-
$I_{CS}$	-
$I_{CR}$	-



- △ See model number code, page 37.
- △ 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 44.
  4. See Efficiency Curves, page 45.

# PERFORMANCE CURVES

## 280 FRAME E28C

### 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

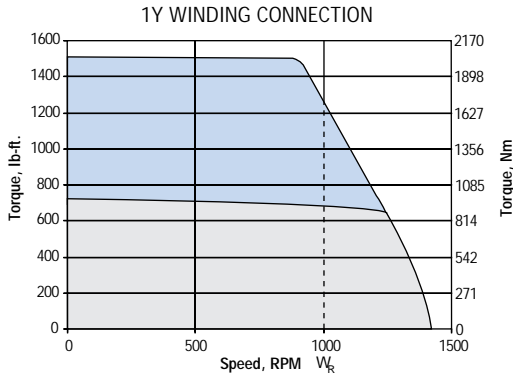
- Intermittent duty
- Continuous duty

### DPBV DRIPPROOF BLOWER VENTILATED

### TENV TOTALLY ENCLOSED NON-VENTILATED

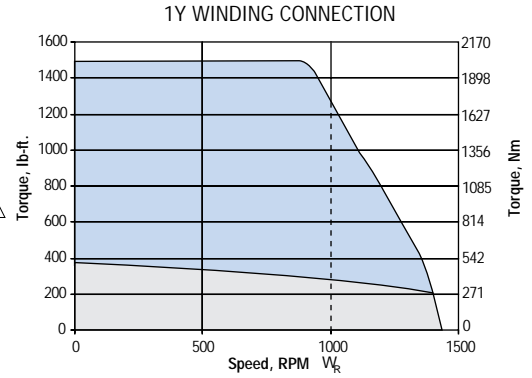
#### E28CE3 MOTOR

Reference Points	
$T_{PK}$	1498
$T_{CS}$	722
$T_{CR}$	674
$W_R$	1,000
$I_{CS}$	159.0
$I_{CR}$	159.0



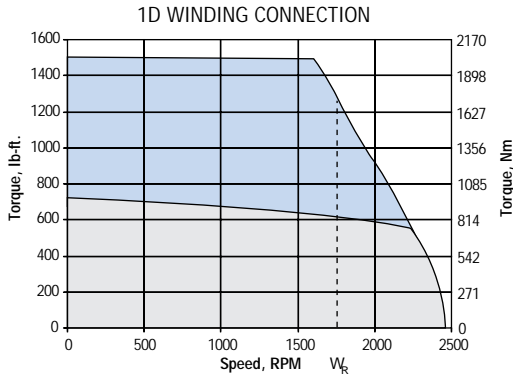
#### E28CE3 MOTOR

Reference Points	
$T_{PK}$	1482
$T_{CS}$	374
$T_{CR}$	279
$W_R$	1,000
$I_{CS}$	87.0
$I_{CR}$	67.0



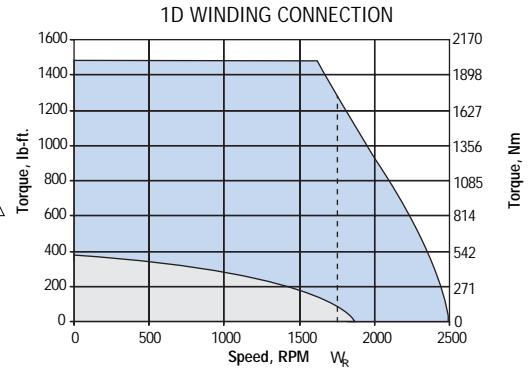
#### E28CE1 MOTOR

Reference Points	
$T_{PK}$	1498
$T_{CS}$	722
$T_{CR}$	615
$W_R$	1,750
$I_{CS}$	274.0
$I_{CR}$	252.0



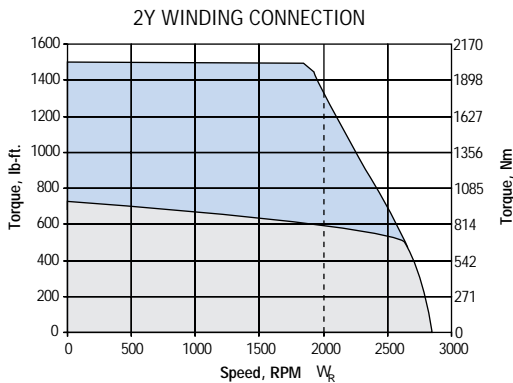
#### E28CE1 MOTOR

Reference Points	
$T_{PK}$	1482
$T_{CS}$	374
$T_{CR}$	93
$W_R$	1,750
$I_{CS}$	151.0
$I_{CR}$	41.0



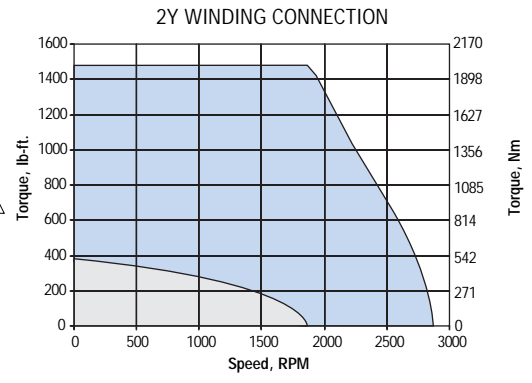
#### E28CE4 MOTOR

Reference Points	
$T_{PK}$	1498
$T_{CS}$	722
$T_{CR}$	592
$W_R$	2,000
$I_{CS}$	318
$I_{CR}$	280



#### E28CE4 MOTOR

Reference Points	
$T_{PK}$	1482
$T_{CS}$	374
$T_{CR}$	-
$W_R$	-
$I_{CS}$	175
$I_{CR}$	-



- △ See model number code, page 37.
- △ 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 44.
  4. See Efficiency Curves, page 45.

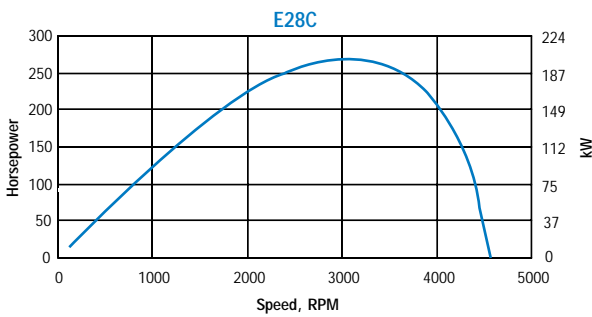
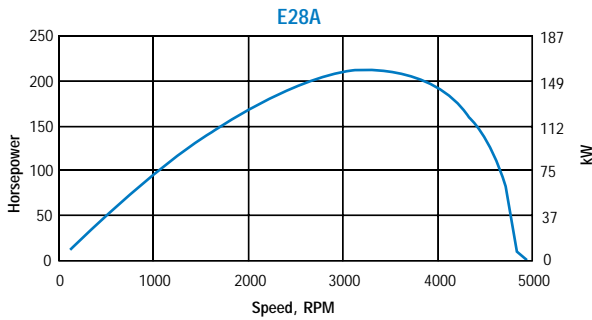
# CONTINUOUS POWER CURVES

## E280 DIAMETER FRAMES

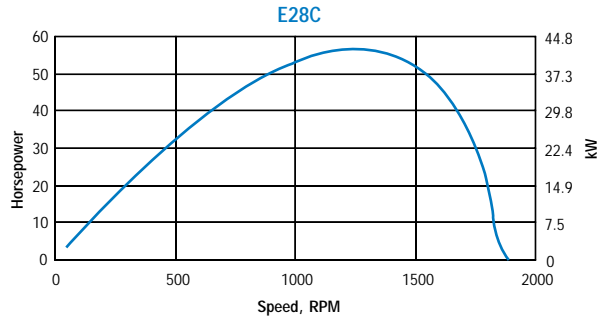
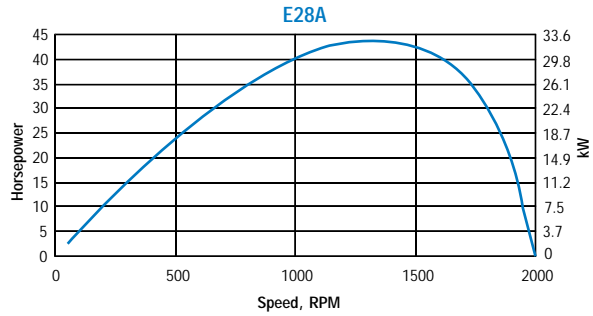
Standard E280 frame motors are limited (mechanical design) to 3600 RPM. Special designs are available that allow operation to speeds indicated in the individual curves.

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



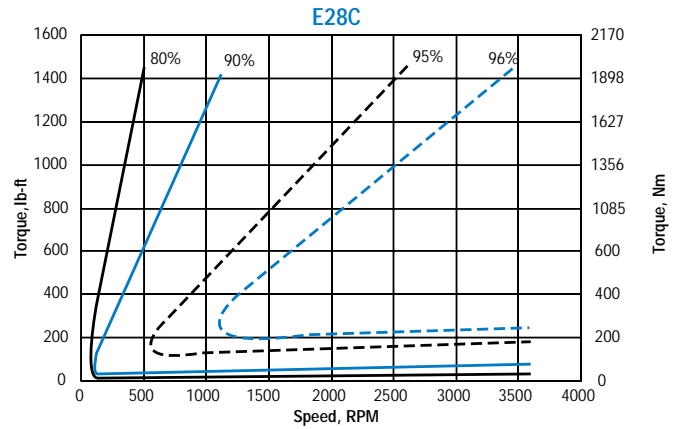
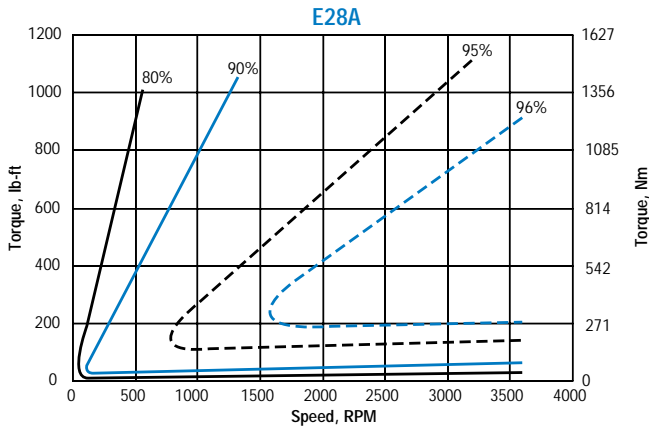
Note: see Motor Performance Curves, page 76.



# EFFICIENCY CURVES

## E280 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.