Modifiable NEMA®† Standard Vertical Motors
Quick Engineering Facts

WPI

FRAME SIZE	STANDARD BASE DIAMETER	ALTERNATE BASE DIAMETER	MAX 'BX' COUPLING BORE	CD'DIM. COUPLING HEIGHT	TYPICAL SHIPPING WT. (LBS.)
213TP	10	-	1.001	17.56	210
215TP	10	-	1.001	17.56	220
254TP	10	12/16.5	1.251	23.38	265
256TP	10	12/16.5	1.251	23.38*	300
284TP	12	10/16.5	1.251	24.75	305
286TP	12	10/16.5	1.251	24.75	325
324TP	16.5	12	1.501	28.22	635
326TP	16.5	12	1.501	28.22	675
364TP	16.5	12	1.501	31.16	730
365TP	16.5	12	1.501	31.16	800
404TP	16.5	20	1.813	36.94	1110
405TP	16.5	20	1.813	36.94	1220
H444TP	16.5	20	2.251	44.78	1500
H445TP	16.5	20	2.251	44.78	1600
447TPA	20	16.5/24.5	2.251	49.78	2200
449TPH	20	24.5/30.5	2.501	49.81	2800
5008PH	20	24.5/30.5	2.501	57.06	4200
5012P	24.5	20/30.5	2.751	72.30	5450

* Premium efficiency has 24.75" CD on this frame

TEFC

FRAME SIZE	STANDARD BASE DIAMETER	ALTERNATE BASE DIAMETER	MAX 'BX' COUPLING BORE	CD-COUPLING HEIGHT TEFC	CD-COUPLING HEIGHT C-DUTY	TYPICAL SHIPPING WT. (LBS.) TEFC	TYPICAL SHIPPING WT. (LBS.) C-DUTY
182TP	10	-	1.001	17.56	17.5	170	180
184TP	10	-	1.001	17.56	17.5	170	180
213TP	10	-	1.001	-	17.5	-	220
215TP	10	-	1.001	-	17.5	-	230
H213TP	10	-	1.001	18.81	-	210	-
H215TP	10	-	1.001	18.81	-	220	-
254TP	10	12	1.251	22.94	22.94	265	395
256TP	10	12	1.251	22.94	22.94	300	405
284TP	10	12/16.5	1.251/1.501**	26.56	26.56	320	500
286TP	10	12/16.5	1.251/1.501**	26.56	26.56	330	520
324TP	16.5	12	1.501	28.50	28.50	665	740
326TP	16.5	12	1.501	28.50	28.50	690	750
364TP	16.5	-	1.751	30	30	900	925
365TP	16.5	-	1.751	30	30	925	940
405TP	16.5	20	1.938	39.94	39.94	1500	1600
444TP	16.5	20	1.938	42.50	42.50	1800	1900
447TP	16.5	20	1.938	46	46	2300	2300
449TP	24.5	20	2.501	56.88	56.88	3800	3900

** BX has 1.501 max BX bore on CORRO-DUTY (TUCI)

Formulas

$kWout = HP_{out} \times 0.746$	
Torque in lb-ft	$\frac{HP \times 5252}{RPM}$
Motor synchronous speed in RPM	$\frac{120 \times Hz}{\text{number of poles}}$
Three-phase full-load amp	$\frac{HP \times 0.746}{1.73 \times kV \times \text{efficiency*} \times \text{power factor*}}$
Rated motor kVA	$\frac{HP \times 0.746}{\text{efficiency*} \times \text{power factor*}}$
kW loss	$\frac{HP\ (0.746)\ (1.0 - \text{efficiency*})}{\text{efficiency*}}$
Wk^2 referred to motor shaft speed	$\left[\text{driven machine } Wk^2 \frac{(\text{driven machine rpm})^2}{\text{motor RPM}}\right]$ + gear Wk^2 at motor speed
Accelerating time	$\frac{0.462\ (Wk^2 \text{ of motor and load})\ RPM^2}{\text{motor rated kW} \times 106 \times \text{per unit effective accelerating torque}}$
kVA in-rush	percent in-rush x rated kVA
Approximate voltage drop (%)	$\frac{\text{motor kVA in-rush}}{\text{transformer kVA}}$ x transformer impedance (normally 5% to 7%)
Stored kinetic energy in kW-sec	$2.31 \times (\text{total } Wk^2) \times RPM^2 \times 10^7$
Inertia constant (H) in seconds	$\frac{\text{stored kinetic energy in kW-seconds}}{HP\ (0.746)}$
Conversion factors:	CV = (metric HP) = 735.5 watts = 75 kg-m/sec Wk^2 (lb-ft) = 5.93 x GD^2 ($kg\text{-}m^2$)
Ventilating-air requirements:	100-125 cfm of 40°C air at 1/2-in. water pressure for each kW of loss
Degrees C	$(\text{Degrees F-32}) \times \frac{5}{9}$
Degrees F	$\left[(\text{Degrees C}) \times \frac{9}{5}\right] + 32$

*Efficiency and power factor stated as decimal value rather than percentage.