WWE5-18-184TC

HP	5
RPM / POLES	1800 / 4
VOLTAGE PHASE	208 - 230 / 460 V 3
FRAME	184TC
FREQUENCY	60 HZ
RATED SPEED	1750 RPM
FULL LOAD AMPS	11.8 / 5.9 A
DUTY CYCLE	CONTINUOUS
SERVICE FACTOR	1.15
AMBIENT TEMP.	40° C
ALTITUDE	3300 FT.
INSULATION CLASS	F
TEMP. RISE @ FULL LOAD	80° C
DESIGN	B
RATED TORQUE	15.1 LB. FT.
LOCKED ROTOR TORQUE	270%
BREAKDOWN TORQUE	310%
LOCKED ROTOR AMPS (STARTING)	92.0 / 46.0 A
IL / IN	7.8 CODE J
INRUSH CURRENT	260 / 130 A
SLIP	2.78%
NO LOAD CURRENT	5.1 / 2.55 A
MAX. TIME LOCKED ROTOR (HOT)	20 SECONDS
DE BEARING	6306-ZZ
ODE BEARING	6306-ZZ
REGREASING INT-DE	N / A
REGREASING INT-ODE	N / A
ENCLOSURE	TEFC (IP54)
MOUNTING	F-1
ROTATION	CW / CCW
MOMENT OF INERTIA	0.285 LB. FT. SQUARED
C FLANGE	ATTACHED
D FLANGE	W180TD
CONNECTION DIAGRAM	230 / 460 V - 9 LEAD Y
SHAFT MATERIAL	1045 CARBON STEEL
APPROX. WEIGHT	110 LBS.

LOAD	POWER FACTOR (%)	EFFICIENCY (%)
100%	83.0	87.5
75%	78.7	88.0
50%	66.9	87.6

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CE

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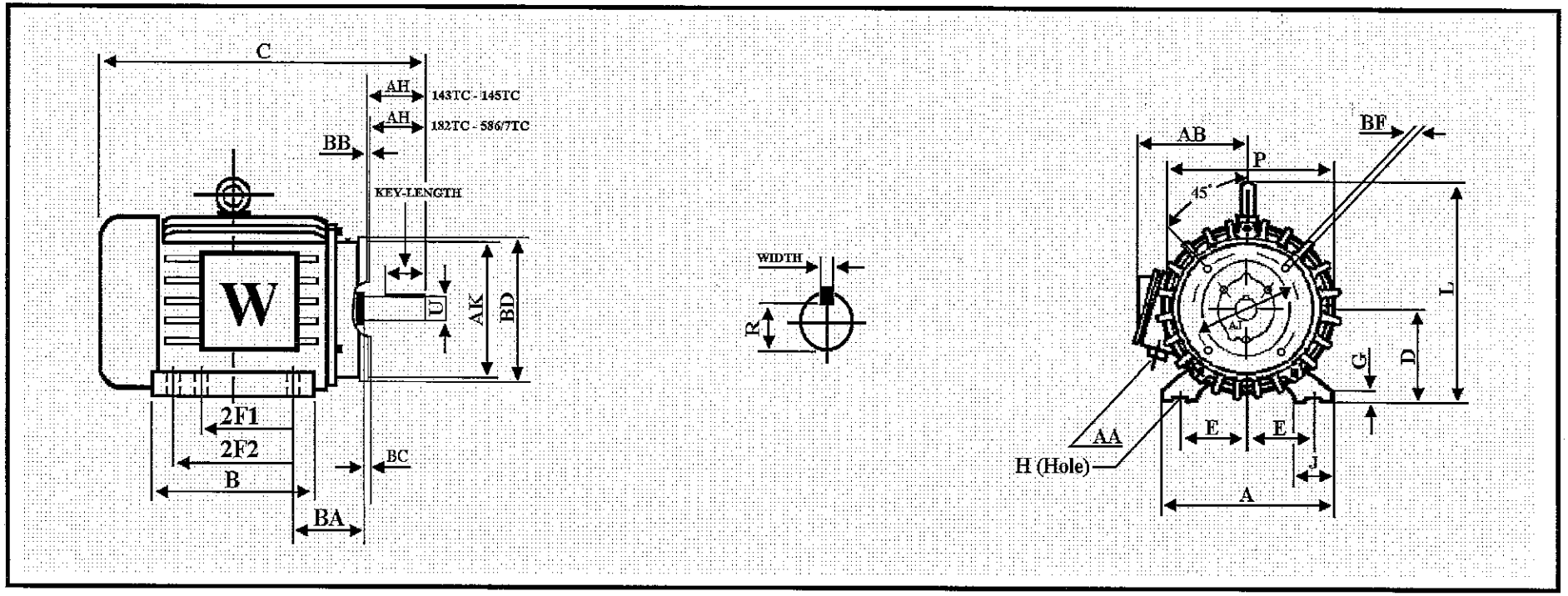
REVISED 04/25/08

WORLDWIDE Electric Corp

CERTIFIED

NEMA FRAME 184TC



DIMENSIONS - Inches

MOUNTING					A	B	C	D	G	J	P	L	BC	AH
E	2F1	2F2	H	BA										
3.75	4.5	5.5	0.41	2.75	9	7.5	16.116	4.5	0.59	1.97	8.82	10.39	0.12	2.62

AB	AA	KEY		KEYSET	U	FLANGE				
		WIDTH	LENGTH	R		AK	AJ	BF	BB	BD
7.45	1" NPT	0.25	1.78	0.986	1.125	8.5	7.25	1/2-13	0.25	9

SECTION V: Inspection Before Start-Up

A. On all large horsepower motors, make sure you **remove the shaft lock** on drive-end shaft.

B. Turn the shaft by hand and make sure the shaft turns freely. Listen for any unusual noises or interruption in the shaft turning freely.

C. Check grease level on both drive-end and opposite drive-end bearings. Make sure the bearing cavities are filled with grease to their proper running level. Even in a new motor, grease can evaporate over a period of time and/or harden should the motor have sat on the shelf and the drive-end and opposite drive-end bearings were left unattended.

D. Perform a final check on the coupling, belt drive set-up and/or mounting bolts on C or D flanges.

E. Check the wiring diagram and the wiring hook-ups in both the motor junction box and the starter box. Make sure they are in accordance with the diagram on the motor nameplate. Please see ***FIGURE 4***. Please also make sure that these connections are tightened down properly.

F. Consult the motor performance data sheet for the electric motor so that you know what the locked rotor amps will be once the motor is started. Please see sample performance data sheet provided - ***FIGURE 5***.

G. **Make sure the motor is grounded!** Use the grounding lug provided. These grounding lugs are normally provided at the motor terminal box or on one of the mounting feet.

FIGURE 4 - MOTOR NAMEPLATE

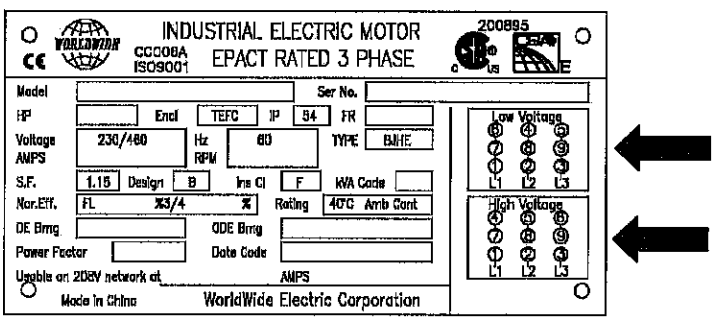


FIGURE 5 – PERFORMANCE DATA SHEET

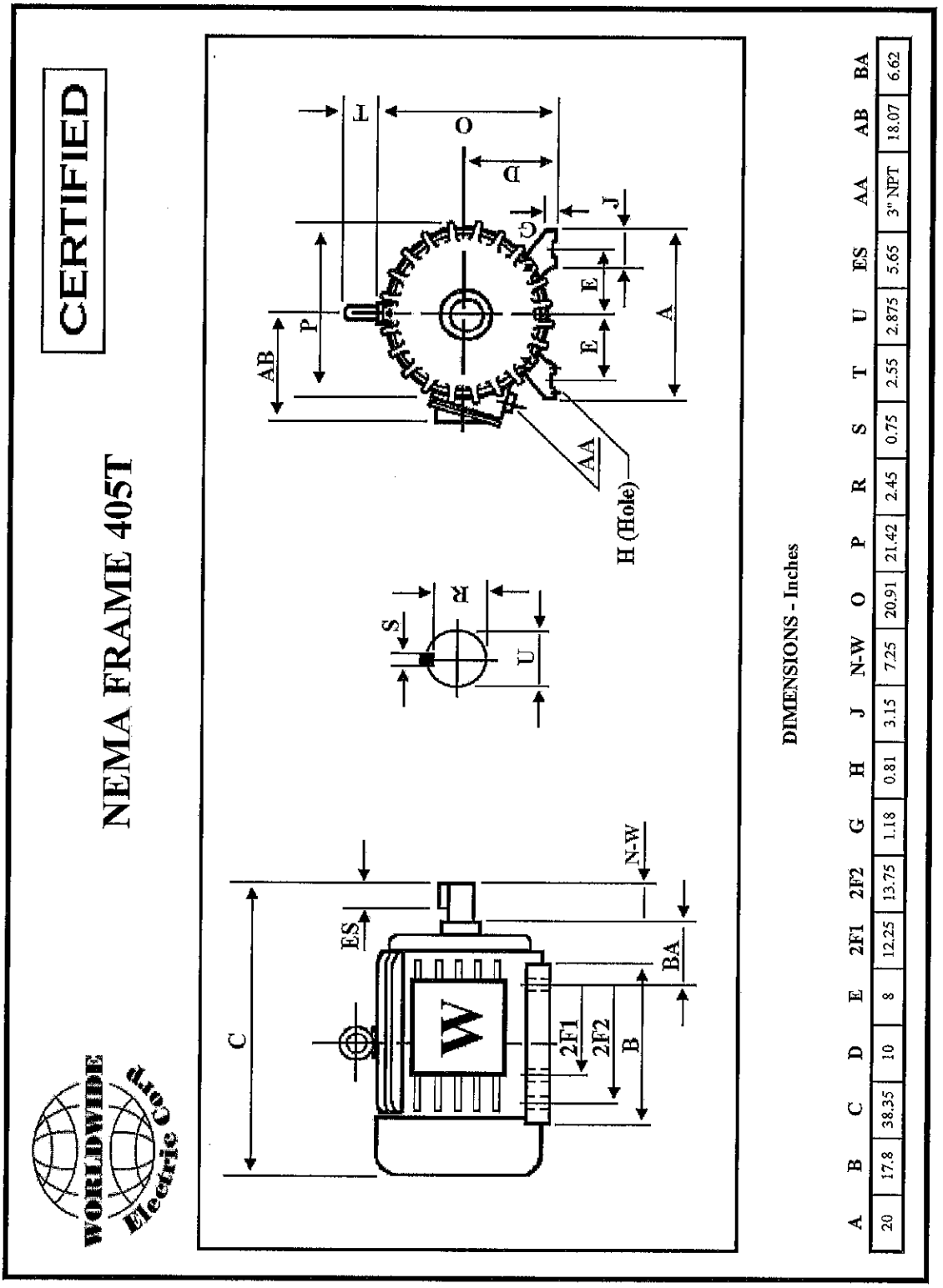
WWE100-18-405T

HP	100	
RPM / POLES	1800 / 4	
VOLTAGE PHASE	208 - 230 / 460 V	3
FRAME	405T	
FREQUENCY	60 HZ	
RATED SPEED	1785 RPM	
FULL LOAD AMPS	230 / 115 A	
DUTY CYCLE	CONTINUOUS	
SERVICE FACTOR	1.15	
AMBIENT TEMP.	40° C	
ALTITUDE	3300 FT.	
INSULATION CLASS	F	
TEMP. RISE @ FULL LOAD	80° C	
DESIGN	B	
RATED TORQUE	296 LB. FT.	
LOCKED ROTOR TORQUE	200%	
BREAKDOWN TORQUE	290%	
LOCKED ROTOR AMPS (STARTING)	1450 / 725 A	
IL / IN	6.3	CODE G
INRUSH CURRENT	4100 / 2050 A	
SLIP	0.83%	
NO LOAD CURRENT	72.0 / 36.0 A	
MAX. TIME LOCKED ROTOR (HOT)	15 SECONDS	
DE BEARING	NU316	
ODE BEARING	6313	
REGREASING INT-DE	3,000 HOURS (1.22 OZ.)	
REGREASING INT-ODE	6,500 HOURS (0.86 OZ.)	
ENCLOSURE	TEFC (IP54)	
MOUNTING	F-1	
ROTATION	CW / CCW	
MOMENT OF INERTIA	9.200 LB. FT. SQUARED	
C FLANGE	W400TC	
D FLANGE	W400TD	
CONNECTION DIAGRAM	230 / 460 V - 12 LEAD Y/DELTA	
SHAFT MATERIAL	1045 CARBON STEEL	
APPROX. WEIGHT	1350 LBS.	
LOAD	POWER FACTOR	EFFICIENCY (%)
100%	0.87	94.5
75%	0.86	94.8
50%	0.80	92.9

C US **ISO9001** CE **CC006A**

REVISED 06/10/04

FIGURE 6 – DIMENSIONAL DRAWING



A	B	C	D	E	2F1	2F2	G	H	J	N-W	O	P	R	S	T	U	ES	AA	AB	BA
20	17.8	38.35	10	8	12.25	13.75	1.18	0.81	3.15	7.25	20.91	21.42	2.45	0.75	2.55	2.875	5.65	3" NPT	18.07	6.62

A. Frames 143T through 184T are 9-Lead, 208-230/460 Volt, Wye wound.

B. Frames 213T through 256T are 9-Lead, 208-230/460 Volt, Delta wound.

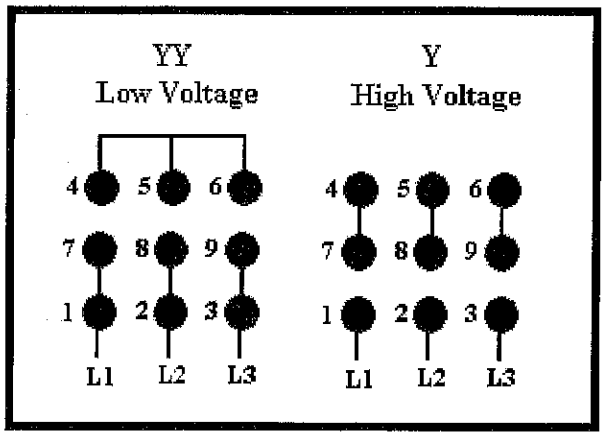
C. Frames 284T through 447T and 505UZ are12-Lead, 208-230/460 Volt, Wye/Delta wound.

D. Frames 449T and 586/7 are 6-Lead, 460 Volt, Wye-Delta wound.

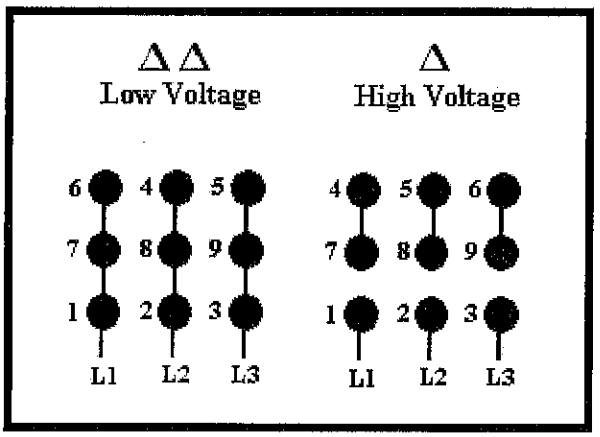
E. Please see wiring terminal samples provided – ***FIGURE 7.***

FIGURE 7 – WIRING TERMINAL SAMPLES

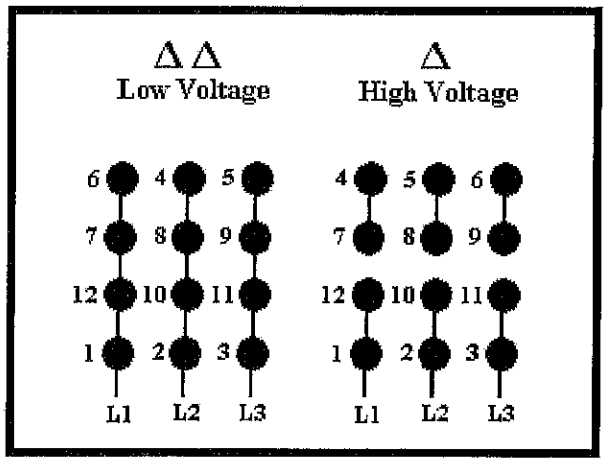
9-Lead, 208-230/460 Volt



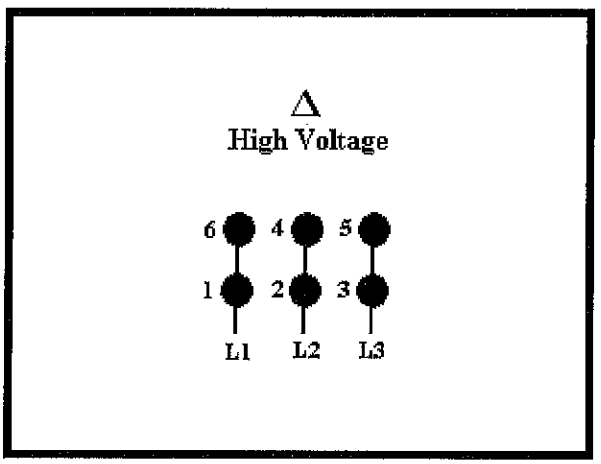
9-Lead, 208-230/460 Volt



12-Lead, 208-230/460 Volt



6-Lead, 460 Volt



LEAD WIRE INFORMATION (B, S & M Factories)

Frame Size	WWE		WWES		WWEM	
	Lead Size	Lead Length	Lead Size	Lead Length	Lead Size	Lead Length
143T	16 AWG	9-1/2"	16 AWG	9-1/2"	16 AWG	9-1/2"
145T	16 AWG	9-1/2"	16 AWG	9-1/2"	16 AWG	9-1/2"
182T	16 AWG	9-1/2"	16 AWG	9-1/2"	16 AWG	9-1/2"
184T	16 AWG	9-1/2"	16 AWG	9-1/2"	16 AWG	9-1/2"
213T	16 AWG	9-1/2"	16 AWG	9-1/2"	16 AWG	9-1/2"
215T	14 AWG	9-1/2"	14 AWG	9-1/2"	14 AWG	9-1/2"
254T	12 AWG	9-1/2"	12 AWG	9-1/2"	12 AWG	9-1/2"
256T	12 AWG	9-1/2"	12 AWG	9-1/2"	12 AWG	9-1/2"
284T	10 AWG	10-5/8"	10 AWG	10-5/8"	10 AWG	9-1/2"
286T	10 AWG	10-5/8"	10 AWG	10-5/8"	10 AWG	9-1/2"
324T	8 AWG	13"	8 AWG	13"	8 AWG	9-1/2"
326T	8 AWG	13"	8 AWG	13"	8 AWG	9-1/2"
364T	6 AWG	13"	6 AWG	13"	6 AWG	11"
365T	6 AWG	13"	6 AWG	13"	6 AWG	11"
404T	4 AWG	13-3/4"	4 AWG	13-3/4"	4 AWG	11"
405T	4 AWG	13-3/4"	4 AWG	13-3/4"	4 AWG	11"
444T	3 AWG	13-3/4"	3 AWG	13-3/4"	N/A	N/A
445T	3 AWG	13-3/4"	3 AWG	13-3/4"	N/A	N/A
445/7T	3 AWG	13-3/4"	3 AWG	13-3/4"	N/A	N/A
449T	WWE200-12 – 2 AWG	14"	1 AWG	14"	N/A	N/A
505Z (UZ)	WWE250-18 – 1 AWG	14"	N/A	N/A	N/A	N/A
586/7 (UZ)	1/0 AWG	14"	1/0 AWG	13"	N/A	N/A

SECTION VII: Initial Motor Start-Up

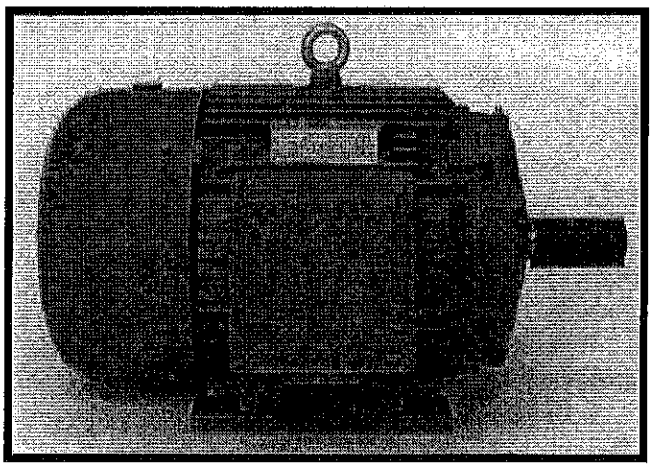
A. Monitor the start-up, the voltage and the running voltage on the motor. Please see ***FIGURE 8*** for allowable starts and starting intervals. The full load voltage should not exceed the line voltage on the motor nameplate multiplied by the service factor of the motor. Ex.: 230 Volt x 1.15 = 264.5.

B. Pay special attention to the temperature readings on the motor. The outside temperature or skin temperature of the motor as well as monitoring and measuring the inside temperature of the motor. Also note that the bearing temperature should not exceed 60°C.

C. Check the full load running amperage on the motor to ensure it is at or very close to the full load amps listed on the performance data sheet.

D. Listen for any unusual noises on start-up and in the initial first hour of the motor running. Listen especially to the bearings on both the drive-end and opposite drive-end. Please note, with large horsepower motors that have roller bearings on the drive-end of the motor, these bearings will run noisier (initial bearing chatter) in the initial running stages of the motor. It is normal for roller bearings to run somewhat noisier than ball bearing motors.

E. Abnormal initial bearing noise could possibly be a defective bearing with a flat spot in it or it could simply be bearings that do not have enough grease in them. If there is abnormal noise, please shut the motor down and re-check the grease levels on both drive-end and opposite drive-end bearings.



Initial Start-Up

FIGURE 8 – ALLOWABLE STARTS AND STARTING INTERVALS (Design A and B Motors)

HP	3600 RPM		1800 RPM		1200 RPM	
	A	C	A	C	A	C
1	15	75	30	38	34	33
1.5	12.9	76	25.7	38	29.1	34
2	11.5	77	23	39	26.1	35
3	9.9	80	19.8	40	22.4	36
5	8.1	83	16.3	42	18.4	37
7.5	7.0	88	13.9	44	15.8	39
10	6.2	92	12.5	46	14.2	41
15	5.4	100	10.7	50	12.1	44
20	4.8	110	9.6	55	10.9	48
25	4.4	115	8.8	58	10.0	51
30	4.1	120	8.2	60	9.3	53
40	3.7	130	7.4	65	8.4	57
50	3.4	145	6.8	72	7.7	64
60	3.2	170	6.3	85	7.2	75
75	2.9	180	5.8	90	6.6	79
100	2.6	220	5.2	110	5.9	97
125	2.4	275	4.8	140	5.4	120
150	2.2	320	4.5	160	5.1	140
200	2.0	600	4.0	300	4.5	265
250	1.8	1000	3.7	500	4.2	440

A = Maximum number of starts per hour.
C = Minimum rest or off time in seconds between starts.

SECTION VIII: Preventative Ongoing Maintenance

A. Exterior cleaning – wipe down all motors with a soft cloth and, whenever possible, use compressed air to hose the motor housing, in between the cooling ribs and at the fan and fan cover sections.

B. Follow the bearing lubrication schedule provided by the manufacturer! 95% of all motor problems are bearing problems. Please see ***FIGURE 9*** for relubrication intervals and the lubrication schedule – ***FIGURE 10***.

C. Monitor the bearing temperature on the motor, especially the drive-end bearing, to ensure it does not exceed 60°C.

D. Whenever possible, have the insulation checked periodically by an authorized motor specialist.

E. Whenever possible, follow a bearing maintenance program of purging the grease completely through the bearings every six months and replacing the bearings when the recommended L-10 life (in running hours) expires. WorldWide Electric Motors have SKF premium quality bearings. The L-10 life of these bearings are as follows:

1. Belt drive applications – 50,000 hours
2. Direct coupled applications – 100,000 hours

FIGURE 9 – RELUBRICATION INTERVALS

Type Of Service	Typical Examples	HP Range	Relubrication Interval	
			Horizontal	Vertical
Easy	Valves, Door Openers, Portable Floor Sanders, Motor Operating Infrequently (One Hour Per Day)	1.0 – 7.5 10 – 40 50 – 150 200 – 350 400 – 500	10 Years 7 Years 4 Years 3 Years 1 Year	9 Years 3 Years 1.5 Years 9 Months ---
Standard	Machine Tools, Air Conditioning Apparatus, Conveyors, One Or Two Shifts, Garage Compressors, Refrigeration Machinery, Laundry Machinery, Oil Well Pumps, Water Pumps, Wood Working Machinery	1.0 – 7.5 10 – 40 50 – 150 200 – 350 400 – 500	7 Years 4 Years 1.5 Years 1 Year 6 Months	3 Years 1 Year 6 Months 3 Months ---
Severe	Motor For Fans, M-G Sets, etc… That Run 24 Hours Per Day, 365 Days Per Year, Coal and Mining Machinery, Motors Subject To Severe Vibration, Steel Mill Machinery	1.0 – 7.5 10 – 40 50 – 150 200 – 350 400 – 500	4 Years 1.5 Years 9 Months 6 Months 3 Months	1.5 Years 6 Months 3 Months 1.5 Months ---
Very Severe	Dirty, Vibrating Applications Where End Of Shaft Is Hot (Pumps and Fans), High Ambient Temperatures	1.0 – 7.5 10 – 40 50 – 150 200 – 350 400 – 500	9 Months 4 Months 4 Months 3 Months 2 Months	6 Months 3 Months 2 Months 1 Month ---

FIGURE 10 – LUBRICATION SCHEDULE (IN HOURS)

HP	3600 RPM				1800 RPM				1200 RPM				900 RPM			
	DE Bearing	Grease Amount (Oz.) *	ODE Bearing	Grease Amount (Oz.) *	DE Bearing	Grease Amount (Oz.) *	ODE Bearing	Grease Amount (Oz.) *	DE Bearing	Grease Amount (Oz.) *	ODE Bearing	Grease Amount (Oz.) *	DE Bearing	Grease Amount (Oz.) *	ODE Bearing	Grease Amount (Oz.) *
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12400	0.46	12700	0.29
7.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14500	0.46	14500	0.29	12400	0.46	12700	0.29
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14500	0.46	14500	0.29	12700	0.64	13400	0.46
15	4000	0.46	4000	0.29	9000	0.46	9000	0.29	12500	0.64	14500	0.46	12700	0.64	13400	0.46
20	4000	0.46	4000	0.29	9000	0.46	9000	0.29	12500	0.64	14500	0.46	12400	0.75	12700	0.64
25	3500	0.64	4000	0.46	7500	0.64	9000	0.46	11500	0.75	12500	0.64	12400	0.75	12700	0.64
30	3500	0.64	4000	0.46	7500	0.64	9000	0.46	11500	0.75	12500	0.64	12200	0.86	12400	0.75
40	3000	0.75	3500	0.64	7000	0.75	7500	0.64	11000	0.86	11500	0.75	12200	0.86	12400	0.75
50	3000	0.75	3500	0.64	7000	0.75	7500	0.64	11000	0.86	11500	0.75	4400	1.22	12200	0.86
60	2800	0.86	3000	0.75	6500	0.86	7000	0.75	4500	1.22	11000	0.86	4400	1.22	12200	0.86
75	2800	0.86	3000	0.75	6500	0.86	7000	0.75	4500	1.22	11000	0.86	4300	1.47	12200	0.86
100	2800	1.22	2800	0.86	3000	1.22	6500	0.86	4000	1.47	11000	0.86	4300	1.47	12200	0.86
125	2800	1.47	2800	0.86	2500	1.47	6500	0.86	4000	1.47	11000	0.86	4100	1.61	12200	0.86
150	2800	1.47	2800	0.86	2500	1.47	6500	0.86	3800	1.61	11000	0.86	4000	1.82	12000	1.61
200	2800	1.61	2800	0.86	2300	1.61	6500	0.86	3500	1.82	3800	1.61	4000	1.82	12000	1.61
									3250	2.14	3800	1.61				
250	2300	1.82	2800	1.82	2100	1.82	2300	1.61	3500	1.82	3800	1.61	2800	2.14	3050	2.14
					1900	2.14	2300	1.61	2800	2.14	3050	2.14				
300	N/A	N/A	N/A	N/A	2100	1.82	2300	1.61	3500	1.82	3800	1.61	4000	2.14	12000	2.14
					1500	2.14	1700	2.14	2800	2.14	3050	2.14				
350	N/A	N/A	N/A	N/A	1500	2.14	1700	2.14	2800	2.14	3050	2.14	N/A	N/A	N/A	N/A
400	N/A	N/A	N/A	N/A	1500	2.14	1700	2.14	2800	2.14	3050	2.14	N/A	N/A	N/A	N/A
450	N/A	N/A	N/A	N/A	1500	2.14	1700	2.14	2800	2.14	3050	2.14	N/A	N/A	N/A	N/A
500	N/A	N/A	N/A	N/A	1500	2.14	1700	2.14	2800	2.14	3050	2.14	N/A	N/A	N/A	N/A

*** Only Exxon POLYREX® EM Polyurea Grease Should Be Used**

SECTION X: Bearing Size Chart

A. WorldWide Electric uses SKF bearings. SKF is recognized as the premier bearing in the electric motor market.

B. A bearing chart is provided for your convenience. The bearing sizes also appear on the motor nameplate.

BEARING SIZE CHART (B, S & M Factories)

Frame Size	DE Bearing				ODE Bearing			
	WWE	WWES		WWEM	WWE	WWES		WWEM
143T	6205-ZZ	6205-ZZ		6205-ZZ	6205-ZZ	6205-ZZ		6205-ZZ
145T	6205-ZZ	6205-ZZ		6205-ZZ	6205-ZZ	6205-ZZ		6205-ZZ
182T	6306-ZZ	6306-ZZ		6306-ZZ	6306-ZZ	6306-ZZ		6306-ZZ
184T	6306-ZZ	6306-ZZ		6306-ZZ	6306-ZZ	6306-ZZ		6306-ZZ
213T	6308-ZZ	6308-ZZ		6308-ZZ	6308-ZZ	6308-ZZ		6306-ZZ
215T	6308-ZZ	6308-ZZ		6308-ZZ	6308-ZZ	6308-ZZ		6306-ZZ
254T	6309	6309		6309	6209	6309		6308
256T	6309	6309		6309	6209	6309		6308
284T	6311	6311		6311	6309	6311		6309
286T	6311	6311		6311	6309	6311		6309
324T	6312	6312		6312	6311	6312		6312
326T	6312	6312		6312	6311	6312		6312
364T	6313	6313		6313	6312	6313		6312
365T	6313	6313		6313	6312	6313		6312
404T	NU316	NU316		NU316	6313	6314		6313
405T (4,6,8P)	NU316	405T (4, 6P)	NU316	NU316	6313	405T (4, 6P)	6314	6313
405T (2P)	6313	405T (2P)	6314	6313		405T (2P)	6314	6313
444T (4,6,8P)	NU318	444T (4, 6P)	NU319	N/A	6313	444T (4, 6P)	6313	N/A
444T (2P)	6313	444T (2P)	6317	N/A		444T (2P)	6313	N/A
445T (4,6,8P)	NU318	445T (4, 6P)	NU319	N/A	6313	445T (4, 6P)	6313	N/A
445T (2P)	6313	445T (2P)	6317	N/A		445T (2P)	6313	N/A
445/7T (4,6,8P)	NU319	447T (4, 6P)	NU319	N/A	6313	447T (4, 6P)	6313	N/A
445/7T (2P)	6313	447T (2P)	6317	N/A		447T (2P)	6313	N/A
449T (4,6,8P)	NU320	NU320		N/A	6320	6320		N/A
449TS (4,6,8P)	6320				6320			
449TS (2P)	6314				6314			
505Z (UZ)	NU322	N/A		N/A	6319	N/A		N/A
586/7 (UZ)	NU326	NU326		N/A	6324	6324		N/A

SECTION XIV: Conduit Hole Dimensions

Conduit hole dimensions are national pipe thread standard and listed here for your convenience on all motor sizes.

CONDUIT HOLE DIMENSIONS (B, S & M Factories)

Frame Size	WWE	WWES	WWEM
	Taper Thread (NPT)	Taper Thread (NPT)	Taper Thread (NPT)
143T	3/4"	3/4"	3/4"
145T	3/4"	3/4"	3/4"
182T	1"	1"	1"
184T	1"	1"	1"
213T	1"	1"	1"
215T	1"	1"	1"
254T	1.5"	1.5"	1.5"
256T	1.5"	1.5"	1.5"
284T	1.5"	1.5"	1.5"
286T	1.5"	1.5"	1.5"
324T	2"	2"	2"
326T	2"	2"	2"
364T	3"	3"	3"
365T	3"	3"	3"
404T	3"	3"	3"
405T	3"	3"	3"
444T	2 x 3"	2 x 3"	N/A
445T	2 x 3"	2 x 3"	N/A
445/7T	2 x 3"	2 x 3"	N/A
449T	2 x 3"	2 x 3"	N/A
505UZ	2 x 3"	N/A	N/A
586/7	2 x 3"	2 x 3"	N/A

SECTION XV: Guidelines For VFD Use

A. All stock three-phase motors (with the exception of explosion proof motors) are suitable for variable torque $T=N^2$ applications with a 5:1 speed range as per Item D. and conditional to Item F.

B. All stock three-phase motors (with the exception of explosion proof motors) are suitable for constant torque applications with a 2:1 speed range as per Item D. and conditional to Item F.

C. Suitability of our stock motors for other speed ranges will be based on an individual application assessment. (Complete with forced air blower systems, derated motors, etc…)

D. The insulation systems of the motors in Items A and B are suitable to withstand the voltage stress per NEMA Part 30 having the value of:

- Base Voltage Rating ≤ 600 V
- Vpk = 1 Kv
- Rise Time = 2 μs

E. WorldWide Electric Corporation can supply spike resistant wire on factory ordered motors per NEMA Part 31 having the value of:

- Base Voltage Rating ≤ 600 V
- Vpk = 1.6 Kv
- Rise Time = 0.1 μs

F. It is the responsibility of the system design engineer to ensure that the system being supplied/installed stays within the above limitations and takes into account the particular nature of a variable frequency drive application as a complete system and not just specific parts of the application.

It has come to our attention and we have seen the evidence that some drives/systems installed exceed even the allowable NEMA standards set for motors under Part 31 (and therefore Part 30) which means that despite the motors being "Definite Purpose Inverter-Fed Motors" Part 31, they would not withstand the voltage stresses imposed by the drive/system. Therefore, by using the correct load filters/reactors it is possible to protect any motor and application, definite purpose or other, from winding damage and/or system damage due to the drive output.

SECTION XVI: Decibel Levels (Sound Levels)

Decibel levels (sound levels) should be measured on motor start-up, after thirty (30) days and after six (6) months. Decibel levels are also an indication as to the vibration levels of an electric motor. A decibel chart has been provided here for your convenience. If the measured motor decibel levels exceed the listed levels by more than ten percent (10%), please consult the motor manufacturer and/or your motor repair center.

DECIBEL LEVELS (B Factory)

HP	Noise Level Lw dB(A)			
	3600 RPM	1800 RPM	1200 RPM	900 RPM
1	N/A	64.0	59.3	N/A
1.5	71.8	68.0	65.0	N/A
2	71.9	68.8	66.5	N/A
3	73.0	74.0	68.0	N/A
5	73.4	73.0	70.8	69.0
7.5	74.1	78.4	73.0	69.0
10	74.4	74.3	74.0	70.0
15	74.8	74.6	75.0	72.0
20	75.0	74.0	76.0	73.0
25	75.5	75.0	77.0	73.0
30	76.2	76.1	77.0	74.0
40	79.0	76.4	77.9	75.0
50	79.9	77.0	78.0	77.0
60	80.4	77.1	79.0	79.0
75	81.1	78.0	80.1	80.0
100	81.9	78.1	81.0	82.0
125	82.5	78.3	82.1	82.0
150	83.0	79.0	82.4	85.0
200	83.5	79.4	449T - 83.0 505UZ - 83.0	89.0
250	N/A	449T - 81.0 505UZ - 81.0	449T - 84.0 586/7 - 84.0	95.0
300	N/A	449T - 81.4 586/7 - 81.4	449T - 86.0 586/7 - 86.0	95.0
350	N/A	82.0	86.0	N/A
400	N/A	82.0	86.0	N/A
450	N/A	82.0	86.0	N/A
500	N/A	82.0	86.0	N/A

DECIBEL LEVELS (S Factory)

HP	Noise Level Lw dB(A)		
	3600 RPM	1800 RPM	1200 RPM
1	N/A	65.0	61.3
1.5	76.3	68.0	67.0
2	76.9	68.8	68.5
3	77.5	74.0	70.0
5	77.9	74.0	72.8
7.5	79.1	76.4	75.0
10	80.3	74.3	76.0
15	80.8	74.6	77.0
20	81.0	75.0	78.0
25	81.9	76.0	79.0
30	82.2	77.1	79.0
40	83.0	77.4	79.9
50	83.9	78.0	80.0
60	84.4	78.5	81.0
75	85.1	78.6	82.1
100	85.9	79.1	83.0
125	86.5	79.3	84.1
150	87.0	79.5	84.4
200	88.5	80.4	N/A
250	N/A	N/A	95
300	N/A	112	95
350	N/A	112	95
400	N/A	112	95
450	N/A	112	95
500	N/A	112	112

DECIBEL LEVELS (M Factory)

HP	Noise Level Lw dB(A)		
	3600 RPM	1800 RPM	1200 RPM
1	N/A	70.0	64.0
1.5	85.0	70.0	67.0
2	85.0	70.0	67.0
3	88.0	74.0	71.0
5	88.0	74.0	71.0
7.5	91.0	79.0	75.0
10	91.0	79.0	75.0
15	94.0	84.0	80.0
20	94.0	84.0	80.0
25	94.0	88.0	83.0
30	94.0	88.0	83.0
40	100	89.0	83.0
50	100	89.0	86.0
60	101	95.0	90.0
75	101	95.0	90.0
100	102	98.0	94.0