

# NIDEC MOTOR CORPORATION

8050 WEST FLORISSANT AVE.  
ST. LOUIS, MO 63136



**DATE:** 8/16/2023

**P.O. NO.:** FD97  
**Order/Line NO.:** 23244 MN 100

**TO:**

**Model Number:** FD97  
**Catalog Number:** UN2T2BC  
Warning  
MOD,NOTES

**REVISIONS:**  
(NONE)

**ALL DOCUMENTS HEREIN ARE CONSIDERED CERTIFIED BY NIDEC MOTOR CORPORATION.  
THANK YOU FOR YOUR ORDER AND THE OPPORTUNITY TO SERVE YOU.**

## Features:

Horsepower ..... 00002.00 ~ KW: 1.492  
Enclosure ..... TENV  
Poles ..... 04 ~ RPM: 1800  
Frame Size ..... 145~TC  
Phase/Frequency/Voltage.. 3~060~230/460 ~ Random Wound  
Service Factor ..... 1.00  
Insulation Class ..... Class "F" ~ Insulife 2000  
Altitude In Feet (Max) .. 3300 Ft.(1000 M)  
Ambient In Degree C (Max) +40 C  
Assembly Position ..... "F-1" Assembly Position  
Efficiency Class ..... Premium Efficiency  
Application ..... Unknown  
Customer Part Number ....  
Inverter Duty Rating:  
Load Type (Base Hz & Below) .. Constant Torque  
Constant HP Above Base Hz  
Speed Range (Base Hz & Below). Vector Duty (0-Base Hz)  
1:2 Above Base Hz  
"AK" Dimension (Inches).. 4.500  
Temperature Rise (Sine Wave): "F" Rise @ 1.0 SF (Resist)  
Starting Method ..... Direct-On-Line Start  
Duty Cycle ..... Continuous Duty  
Efficiency Value ..... 86.5 % ~ Typical  
Load Inertia (lb-ft<sup>2</sup>): NEMA ~ NEMA Inertia: 11.00 ~ 1.00  
Number Of Starts Per Hour: NEMA  
Motor Type Code ..... UTX  
Rotor Inertia (LB-FT<sup>2</sup>) .174 LB-FT<sup>2</sup>  
Qty. of Bearings PE (Shaft) 1  
Qty. of Bearings SE (OPP) 1  
Bearing Number PE (Shaft) 6205-2Z-J/C3  
Bearing Number SE (OPP) 6203-2Z-J/C3

Nidec trademarks followed by the ® symbol are registered with the U.S. Patent and Trademark Office.

# NIDEC MOTOR CORPORATION

8050 WEST FLORISSANT AVE.  
ST. LOUIS, MO 63136



**DATE:** 8/16/2023

**P.O. NO.:** FD97  
**Order/Line NO.:** 23244 MN 100

**TO:**

**Model Number:** FD97  
**Catalog Number:** UN2T2BC  
Warning  
MOD,NOTES

**REVISIONS:**  
(NONE)

**ALL DOCUMENTS HEREIN ARE CONSIDERED CERTIFIED BY NIDEC MOTOR CORPORATION.  
THANK YOU FOR YOUR ORDER AND THE OPPORTUNITY TO SERVE YOU.**

**Accessories:**

Special Balance  
Thermostats - Normally Closed  
Standard Leadtime: NA  
Est. Weight (lbs ea): 35 ~ F.O.B.:

**USE THE DATA PROVIDED BELOW TO SELECT THE APPROPRIATE DIMENSION PRINT**

<b>Horsepower</b>	2
<b>Pole(s)</b>	04
<b>Voltage(s)</b>	460-230
<b>Frame Size</b>	145TC
<b>Shaft U Diameter</b>	0.875
<b>Outlet Box AF</b>	1.59
<b>Outlet Box AA</b>	0.75

Nidec trademarks followed by the ® symbol are registered with the U.S. Patent and Trademark Office.

EFFECTIVE:  
**04-JUN-14**

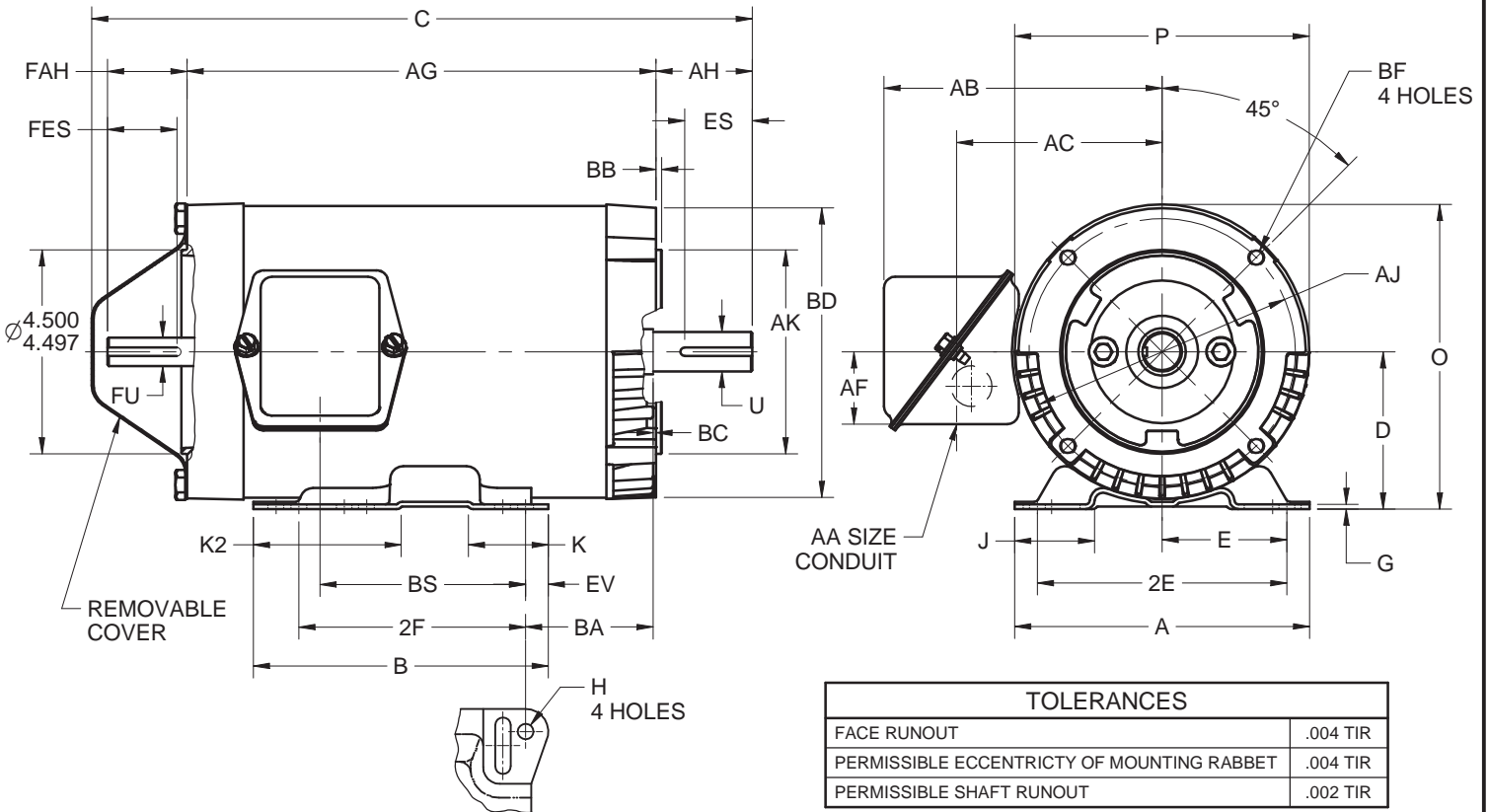
**HORIZONTAL MOTORS**  
UNIMOUNT VECTOR DUTY  
FRAME: 143, 145TC  
BASIC TYPE: UTX

PRINT:  
**07-3118**

SUPERSEDES:  
**04-APR-14**

SHEET:  
**1 OF 2**

FOR ENCODER AND BRAKE CONFIGURATIONS SEE SHEET 2



TOLERANCES	
FACE RUNOUT	.004 TIR
PERMISSIBLE ECCENTRICITY OF MOUNTING RABBET	.004 TIR
PERMISSIBLE SHAFT RUNOUT	.002 TIR

ALL DIMENSIONS ARE IN INCHES AND MILLIMETERS

UNITS	A	B	D -.06	E	2E ±.03	G	H +.05	J	K	K2	O	P <sup>2</sup>	U -.0005
IN	6.50	6.50	3.50	2.75	5.50	.13	.34	1.75	1.75	3.25	6.75	6.50	.8750
MM	165	165	89	70	140	3	9	44	44	83	171	165	22.225

UNITS	AA <sup>5</sup>	AB	AC	AF	AH	AJ	AK -.003	BA	BB MIN	BC	BD MAX	BF <sup>3,4</sup>
IN	.75	6.13	4.53	1.59	2.13	5.875	4.500	2.75	.13	.13	6.50	3/8-16 X .75
MM		156	115	40	54	149.23	114.30	70	3	3	165	

UNITS	ES MIN	EV	FAH	FES MIN	FU -.0005	ODE SQ KEY	DE SQ KEY
IN	1.41	.50	1.75	1.41	.6250	.188	.188
MM	36	13	44	36	15.875	4.78	4.78

UNITS	FRAME	HP	POLES	C	2F ±.03	AG	BS
IN	143TC	1	4	14.57	4.00	10.34	4.53
				370	102	263	115
MM	145TC	1	6	14.57	5.00	10.34	4.53
				370	127	263	115
IN	145TC	1.5	4	14.57	5.00	10.34	4.53
				370	127	263	115
MM	145TC	2	4	15.57	5.00	11.34	5.53
				395	127	288	140

1. DIMENSIONS MAY VARY .25" DUE TO CASTING AND/OR FABRICATION VARIATIONS
2. LARGEST MOTOR WIDTH
3. ALL TAP HOLES ARE UNIFIED NATIONAL COARSE, RIGHT HAND THREAD
4. TAP SIZE AND BOLT PENETRATION ALLOWANCE
5. BASIC CONDUIT FITTING SIZE. HOLE OPENING ON THE SIDE OF THE CONDUIT BOX (REPRESENTED BY A DASHED CIRCLE) WILL ACCEPT A .50 BASIC CONDUIT FITTING
6. THE CONDUIT BOX MAY BE LOCATED ON EITHER SIDE OF THE MOTOR. THE CONDUIT OPENING(S) MAY BE LOCATED IN STEPS OF 180° REGARDLESS OF LOCATION. STANDARD LOCATION IS SHOWN WITH THE CONDUIT OPENING DOWN
7. TOLERANCES ARE SHOWN IN INCHES ONLY
8. FRAME REFERENCE; 8.00/1 AND 1.5 HP AND 9.00/2 HP

07-3118/A

**Nidec Motor Corporation**  
St. Louis, Missouri

INFORMATION DISCLOSED ON THIS DOCUMENT IS CONSIDERED PROPRIETARY AND SHALL NOT BE REPRODUCED OR DISCLOSED WITHOUT WRITTEN CONSENT OF NIDEC MOTOR CORPORATION



ISSUED BY  
**R. TIMMERMANN**  
APPROVED BY  
**M. CULLEN**

IHP\_DP\_NMCA (MAR-2011) SOLIDEDGE

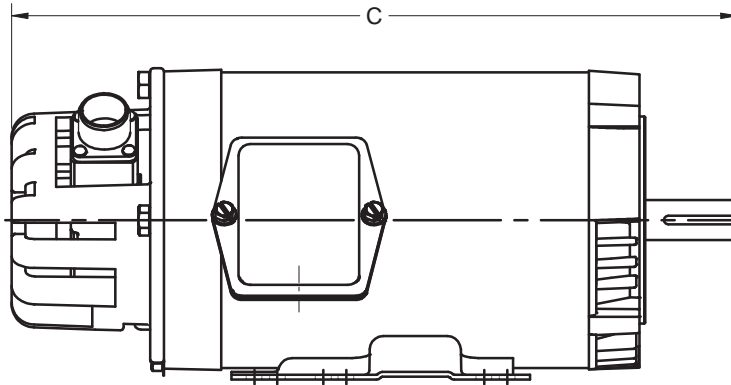
EFFECTIVE:  
**04-JUN-14**

SUPERSEDES:  
**04-APR-14**

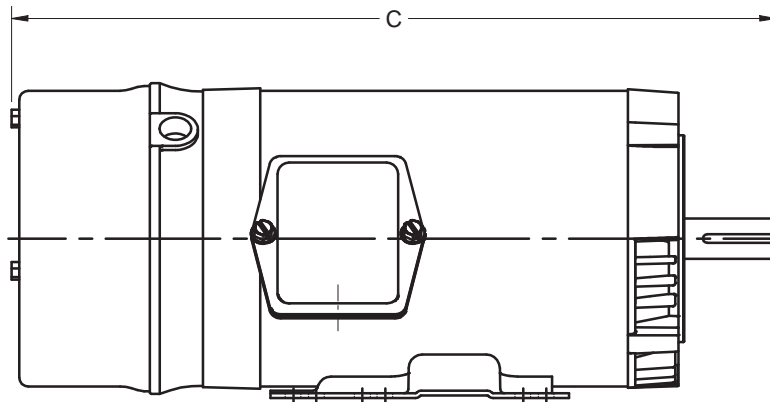
**HORIZONTAL MOTORS**  
UNIMOUNT VECTOR DUTY  
FRAME: 140TC  
BASIC TYPE: UTX

PRINT:  
**07-3118**

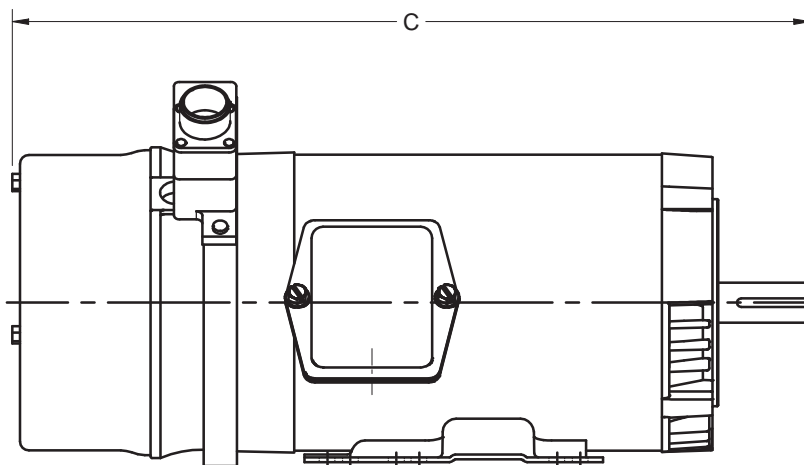
SHEET:  
**2 OF 2**



**ACCOMMODATE SHAFT MOUNTED ENCODER**  
FOR DYNAPAR ENCODER KIT ADD 1.20" TO THE "C" DIMENSION  
FOR EPC ENCODER KIT ADD .76" TO THE "C" DIMENSION



**ACCOMMODATE BRAKE**  
FOR BRAKE ADD 2.13" TO THE "C" DIMENSION



**ACCOMMODATE FLANGE MOUNT ENCODER AND BRAKE**  
FOR BRAKE WITH SL56 ENCODER ADD 2.87" TO THE "C" DIMENSION  
FOR BRAKE WITH 770 ENCODER ADD 3.11" TO THE "C" DIMENSION

# NAMEPLATE DATA

CATALOG NUMBER: <input style="width: 150px;" type="text" value="UN2T2BC"/>	NAMEPLATE PART #: <input style="width: 150px;" type="text" value="422699-005"/>
MODEL <input style="width: 60px;" type="text" value="FD97"/> <input style="width: 60px;" type="text" value="FR"/> <input style="width: 60px;" type="text" value="145TC"/>	TYPE <input style="width: 60px;" type="text" value="UTNX"/> ENCL <input style="width: 60px;" type="text" value="TENV"/>
SHAFT END BRG <input style="width: 150px;" type="text" value="6205-2Z-J/C3 - QTY 1"/>	OPP END BRG <input style="width: 150px;" type="text" value="6203-2Z-J/C3 - QTY 1"/>
PH <input style="width: 40px;" type="text" value="3"/> MAX AMB <input style="width: 60px;" type="text" value="40 C"/>	ID# <input style="width: 150px;" type="text"/>
INSUL CLASS <input style="width: 40px;" type="text" value="F"/> Asm. Pos. <input style="width: 150px;" type="text" value="F1"/>	DUTY <input style="width: 150px;" type="text" value="CONT"/>
HP <input style="width: 40px;" type="text" value="2"/> <input style="width: 60px;" type="text"/> RPM <input style="width: 40px;" type="text" value="1750"/> <input style="width: 60px;" type="text"/>	HP <input style="width: 40px;" type="text"/> <input style="width: 60px;" type="text"/> RPM <input style="width: 40px;" type="text"/> <input style="width: 60px;" type="text"/>
VOLTS <input style="width: 40px;" type="text" value="460"/> <input style="width: 40px;" type="text" value="230"/> <input style="width: 60px;" type="text"/>	VOLTS <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> <input style="width: 60px;" type="text"/>
FL AMPS <input style="width: 40px;" type="text" value="2.8"/> <input style="width: 40px;" type="text" value="5.6"/> <input style="width: 60px;" type="text"/>	FL AMPS <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> <input style="width: 60px;" type="text"/>
SF AMPS <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> <input style="width: 60px;" type="text"/>	SF AMPS <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> <input style="width: 60px;" type="text"/>
SF <input style="width: 40px;" type="text" value="1.00"/> DESIGN <input style="width: 40px;" type="text" value="A"/> CODE <input style="width: 40px;" type="text" value="N"/>	SF <input style="width: 40px;" type="text"/> DESIGN <input style="width: 40px;" type="text"/> CODE <input style="width: 40px;" type="text"/>
NEMA NOM EFFICIENCY <input style="width: 40px;" type="text" value="86.5"/> NOM PF <input style="width: 40px;" type="text" value="76.8"/> KiloWatt <input style="width: 40px;" type="text" value="1.5"/>	NEMA NOM EFFICIENCY <input style="width: 40px;" type="text"/> NOM PF <input style="width: 40px;" type="text"/>
GUARANTEED EFFICIENCY <input style="width: 40px;" type="text" value="84.0"/> MAX KVAR <input style="width: 40px;" type="text"/> HZ <input style="width: 40px;" type="text" value="60"/>	GUARANTEED EFFICIENCY <input style="width: 40px;" type="text"/> MAX KVAR <input style="width: 40px;" type="text"/> HZ <input style="width: 40px;" type="text"/>

**HAZARDOUS LOCATION DATA (IF APPLICABLE):**

DIVISION <input style="width: 100px;" type="text"/>	CLASS I <input style="width: 100px;" type="text"/>	GROUP I <input style="width: 100px;" type="text"/>
TEMP CODE <input style="width: 100px;" type="text"/>	CLASS II <input style="width: 100px;" type="text"/>	GROUP II <input style="width: 100px;" type="text"/>



**VFD DATA (IF APPLICABLE):**

VOLTS <input style="width: 60px;" type="text" value="460"/> <input style="width: 60px;" type="text" value="230"/>	AMPS <input style="width: 60px;" type="text" value="2.9"/> <input style="width: 60px;" type="text" value="5.9"/>
TORQUE 1 <input style="width: 100px;" type="text" value="6LB-FT"/>	TORQUE 2 <input style="width: 100px;" type="text" value="6-3LB-FT"/>
VFD LOAD TYPE 1 <input style="width: 100px;" type="text" value="CT/VEC"/>	VFD LOAD TYPE 2 <input style="width: 100px;" type="text" value="CHP/VEC"/>
VFD HERTZ RANGE 1 <input style="width: 100px;" type="text" value="0-60"/>	VFD HERTZ RANGE 2 <input style="width: 100px;" type="text" value="60-120"/>
VFD SPEED RANGE 1 <input style="width: 100px;" type="text" value="0-1800"/>	VFD SPEED RANGE 2 <input style="width: 100px;" type="text" value="1800-3600"/>
SERVICE FACTOR <input style="width: 60px;" type="text" value="1.00"/>	FL SLIP <input style="width: 60px;" type="text" value="50"/>
NO. POLES <input style="width: 60px;" type="text" value="4"/>	MAGNETIZING AMPS <input style="width: 60px;" type="text" value="1.7"/>
VECTOR MAX RPM <input style="width: 60px;" type="text" value="3600"/>	Encoder PPR <input style="width: 60px;" type="text"/>
Radians / Seconds <input style="width: 60px;" type="text" value="10.5"/>	Encoder Volts <input style="width: 60px;" type="text"/>

**TEAO DATA (IF APPLICABLE):**

HP (AIR OVER) <input style="width: 60px;" type="text"/>	HP (AIR OVER M/S) <input style="width: 60px;" type="text"/>	RPM (AIR OVER) <input style="width: 60px;" type="text"/>	RPM (AIR OVER M/S) <input style="width: 60px;" type="text"/>
FPM AIR VELOCITY <input style="width: 60px;" type="text"/>	FPM AIR VELOCITY M/S <input style="width: 60px;" type="text"/>	FPM AIR VELOCITY SEC <input style="width: 60px;" type="text"/>	

**ADDITIONAL NAMEPLATE DATA:**

Decal / Plate	WD=344136	Customer PN	
Notes		Non Rev Ratchet	
Max Temp Rise		OPP/Upper Oil Cap	GREASE
Thermal (WDG)	OVER TEMP PROT 2	SHAFT/Lower Oil Cap	GREASE
Altitude		Usable At	
Regulatory Notes		Regulatory Compliance	CC 030A
COS		Marine Duty	
Balance	0.08 IN/SEC	Arctic Duty	
3/4 Load Eff.	87.2	Inrush Limit	
Motor Weight (LBS)	35	Direction of Rotation	
Sound Level		Special Note 1	
Vertical Thrust (LBS)		Special Note 2	
Thrust Percentage		Special Note 3	
Bearing Life		Special Note 4	
Starting Method		Special Note 5	
Number of Starts		Special Note 6	
200/208V 60Hz Max Amps		SH Max. Temp.	
190V 50 hz Max Amps		SH Voltage	
380V 50 Hz Max Amps		SH Watts	
NEMA Inertia		Load Inertia	
Sumpheater Voltage		Sumpheater Wattage	
Special Accessory Note 1		Special Accessory Note 16	
Special Accessory Note 2		Special Accessory Note 17	
Special Accessory Note 3		Special Accessory Note 18	
Special Accessory Note 4		Special Accessory Note 19	
Special Accessory Note 5		Special Accessory Note 20	
Special Accessory Note 6		Special Accessory Note 21	
Special Accessory Note 7		Special Accessory Note 22	
Special Accessory Note 8		Special Accessory Note 23	
Special Accessory Note 9		Special Accessory Note 24	
Special Accessory Note 10		Special Accessory Note 25	
Special Accessory Note 11		Special Accessory Note 26	
Special Accessory Note 12		Special Accessory Note 27	
Special Accessory Note 13		Special Accessory Note 28	
Special Accessory Note 14		Special Accessory Note 29	
Special Accessory Note 15		Special Accessory Note 30	
Heater in C/B Voltage		Heater in C/B Watts	
Zone 2 Group		Division 2 Service Factor	
Note 1		Note 2	
Note 3		Note 4	
Note 5		Note 6	
Note 7		Note 8	
Note 9		Note 10	
Note 11		Note 12	
Note 13		Note 14	
Note 15		Note 16	
Note 17		Note 18	
Note 19		Note 20	
Note 21		Note 22	

**NIDEC MOTOR CORPORATION  
ST. LOUIS, MO**

TYPICAL NAMEPLATE DATA  
ACTUAL MOTOR NAMEPLATE LAYOUT MAY VARY  
SOME FIELDS MAY BE OMITTED



Nidec trademarks followed by the ® symbol are registered with the U.S. Patent and Trademark Office.

## MOTOR PERFORMANCE

MODEL NO.	CATALOG NO.	PHASE	TYPE	FRAME
FD97	UN2T2BC	3	UTNX	145TC
ORDER NO.		23244	LINE NO.	
MPI:			221597	221598
HP:			2	2
POLES:			4	4
VOLTS:			460	230
HZ:			60	60
SERVICE FACTOR:			1	1
EFFICIENCY (%):				
S.F.				
FULL			86.5	86.5
3/4			87.2	87.2
1/2			85.1	85.1
1/4			77.2	77.2
POWER FACTOR (%):				
S.F.				
FULL			76.8	76.8
3/4			68.6	68.6
1/2			55.3	55.3
1/4			35.1	35.1
NO LOAD			7.1	7.1
LOCKED ROTOR			62.8	62.8
AMPS:				
S.F.				
FULL			2.8	5.6
3/4			2.3	4.7
1/2			2	4
1/4			1.7	3.5
NO LOAD			1.7	3.3
LOCKED ROTOR			28	56
NEMA CODE LETTER			N	N
NEMA DESIGN LETTER			A	A
FULL LOAD RPM			1750	1750
NEMA NOMINAL / EFFICIENCY (%)			86.5	86.5
GUARANTEED EFFICIENCY (%)			84	84
MAX KVAR			1.2	1.1
AMBIENT (°C)			40	40
ALTITUDE (FASL)			3300	3300
SAFE STALL TIME-HOT (SEC)			13	13
SOUND PRESSURE (DBA @ 1M)			0	0
TORQUES:				
BREAKDOWN{% F.L.}			543	543
LOCKED ROTOR{% F.L.}			425	425
FULL LOAD{LB-FT}			6	6

NEMA Nominal and Guaranteed Efficiencies are up to 3,300 feet above sea level and 25 ° C ambient.

The Above Data Is Typical, Sinewave Power Unless Noted Otherwise

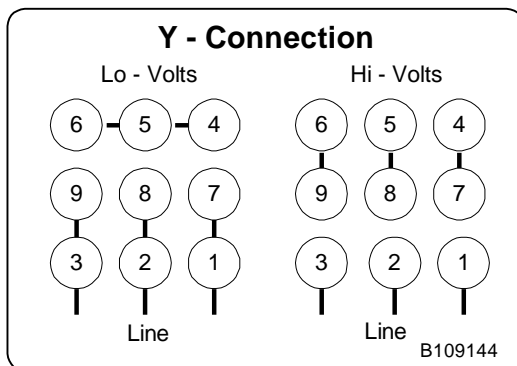
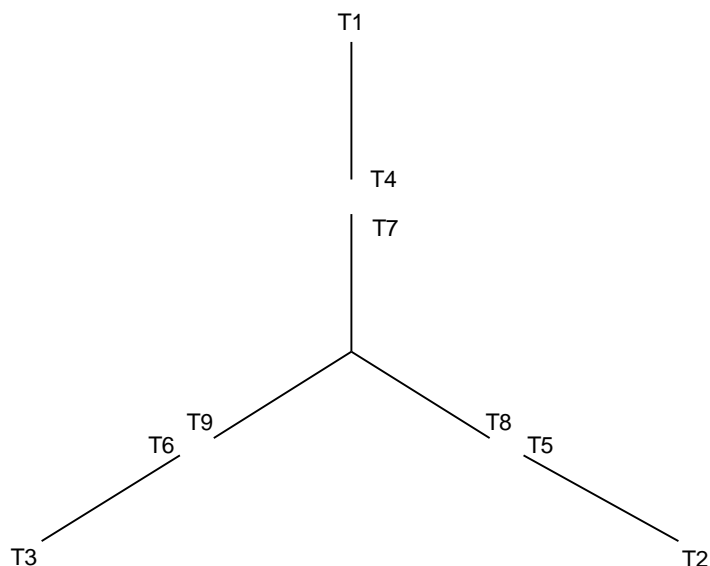
**NIDEC MOTOR CORPORATION**  
ST. LOUIS, MO





**B109144**

### Motor Wiring Diagram 9 Lead, Dual Voltage (WYE Conn.)



To reverse direction of rotation interchange connections L1 and L2.

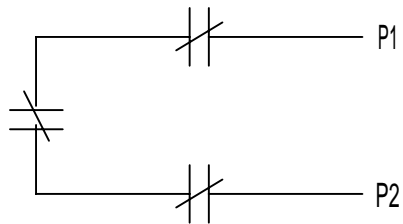
Each lead may have one or more cables comprising that lead.  
In such case each cable will be marked with the appropriate lead number.



THERMOSTATS

1. MOTOR IS EQUIPPED WITH QTY-3 (1 PER PHASE) NORMALLY CLOSED THERMOSTATS. THERMOSTATS ARE SET TO OPEN AT HIGH TEMPERATURE.
2. CONTACT RATINGS FOR THERMOSTATS: 120-600 VAC, 720 VA

N. C. THERMOSTATS



NOTE: THERMOSTATS LEADS MAY BE LOCATED IN EITHER THE MAIN OUTLET BOX OR IF SO EQUIPPED, AN AUXILIARY BOX.

ACCESSORY LISTING
QTY-3 N.C. THERMOSTATS

REVISION DESCRIPTION FOR: <b>MISC</b>	SCALE <b>NONE</b>	UNITS <b>IN</b>	TITLE <b>CUSTOMER CONNECTION DIAGRAM</b>		<b>NIDEC MOTOR CORPORATION</b>
<b>STL0211 - UPDATED FORMAT .</b>	TOLERANCES ON DIMENSIONS (UNLESS OTHERWISE SPECIFIED)		ISSUED BY <b>R. KING</b>		
MATERIAL: <b>---</b>	<u>INCHES</u>	<u>mm</u>	REVISION DATE <b>24-FEB-11</b>	REV <b>G</b>	SHEET NUMBER <b>1 OF 1</b>
MUST BE COMPLIANT TO RoHS DIRECTIVE EU 2002/95/IEC AND REGULATION EC 1907/2006 (REACH) AS AMENDED	ANGLES $X^\circ = \pm 1^\circ$		CODE	DWG NO. <b>0834066</b>	DWG SIZE <b>A</b>