TYPE HS SQUIRREL CAGE INDUCTION MOTOR
ENCLOSURE – TOTALLY ENCLOSED FAN COOLED
AND EXPLOSION PROOF
BEARING – ANTI–FRICTION

NOTES

A– THIS DRAWING IS NOT TO BE REGARDED AS INDICATING EXACT DETAILS OF CONSTRUCTION. IT IS PROPERLY DIMENSIONED FOR ERECTION PURPOSES ONLY.

B– MOUNTING BOLTS, DOWELS AND COUPLING NOT SUPPLIED BY TOSHIBA UNLESS SPECIFICALLY ORDERED.

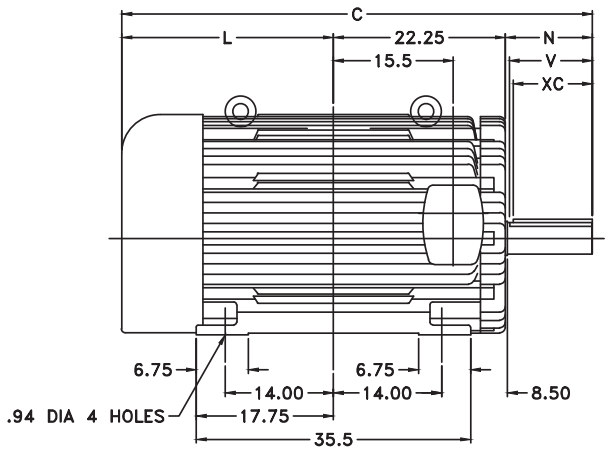
C– WHEN MOUNTING MOTOR, SHIM COMPLETE FOOT PAD AREA.

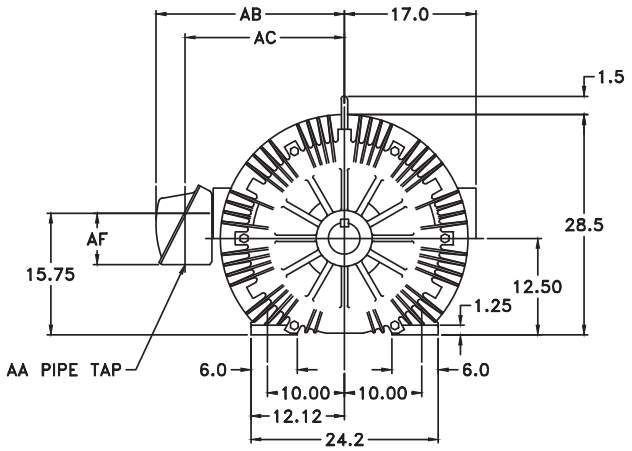
D– ANTI–FRICTION BEARINGS MUST BE REGREASED WHILE MOTOR IS RUNNING.

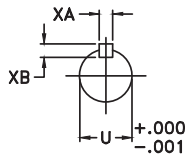
E– FOR MOUNTING OF MOTOR USE .875–9 THD/INCH HOLD DOWN BOLTS.

F– NON DRIVE END BEARING INSULATED.

DEVICES







END VIEW OF SHAFT

FRAME SIZE	REAR SHAFT EXTENSION U	KEY SIZE XA	KEY SIZE XB	KEY SIZE XC	N	V	C	L	RECOMMENDED COUPLING BORE MIN.	RECOMMENDED COUPLING BORE MAX.	APPROX WEIGHT
D509US	2.375	.625	.625	3.00	4.69	4.25	54.31	27.38	2.3730	2.3740	4000
D509E	2.875	.625	.625	3.75	5.12	4.62	54.75	27.38	2.8730	2.8740	4000
D509G	4.125	.875	.875	10.25	11.25	10.75	60.88	27.38	.....	.....	4000
D509H	5.000	1.250	1.250	11.00	13.25	12.75	62.88	27.38	.....	.....	4000
H509US	2.375	.625	.625	3.00	4.69	4.25	59.81	32.88	2.3730	2.3740	5000
H509E	2.875	.625	.625	3.75	5.12	4.62	60.25	32.88	2.8730	2.8740	5000
H509G	4.125	.875	.875	10.25	11.25	10.75	66.38	32.88	.....	.....	5000
H509H	5.000	1.250	1.250	11.00	13.25	12.75	68.38	32.88	.....	.....	5000

CONDUIT BOX							
FAN COOLED – STANDARD				EXPLOSION PROOF			
AA	AB	AC	AF	AA	AB	AC	AF
3.00	24.38	20.62	6.63	3.00	25.06	20.44	7.00
FAN COOLED – ALTERNATE							
3.50	28.38	22.50	9.38				

THIRD ANGLE PROJECTION

TOSHIBA INDUSTRIAL PRODUCTS CANADA

TOSHIBA

TITLE TYPE HS MOTOR FRAME D509/H509
OUTLINE – TEFC/TEXP ENCLOSURE

DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED | SCALE: N.T.S. | SHEET: 1 OF 1

DRAWN	N.WEST	DATE 1/28/98	APPLIED	DATE
CHECKED			APPLIED	
CHECKED			APPLIED	

E10D118

STANDARD

ISSUE 1 REVISIONS

TOSHIBA

Issued Date		Transmit #	
Issued By		Issued Rev	

TYPICAL MOTOR PERFORMANCE DATA

Model: 4504XPAL11E-C

HP	kW	Pole	FL RPM	Frame	Voltage	Hz	Phase	FL Amps
450 hp	336 kW	4	1788 rpm	H509E	4000 V	60	3	56.3 A
Enclosure	**IP**	**Ins. Class**	**S.F.**	**Duty**	**NEMA Nom. Eff.**	**NEMA Design**	**kVA Code**	**Ambient (°C)**
TEXP	55	F	1.15	Cont.	94.4	B	F	40

Load	HP	kW	Amperes	Efficiency (%)	Power Factor (%)
Full Load	450	336	56.3	94.4	91.4
¾ Load	337.5	252	42.5	94.2	91.1
½ Load	225	168	29.7	93.1	88.0
¼ Load	112.5	84			
No Load			11.9		9.0
Locked Rotor			351.2		22.0

Torque				Rotor wk² Inertia
Full Load (lb-ft)	**Locked Rotor (% FLT)**	**Pull Up (% FLT)**	**Break Down (% FLT)**	**(lb-ft²)**
1326	91	91	226	256

Safe Stall Time(s)		Sound Pressure dB(A) @ 1M	Bearings*		Approx. Motor Weight
Cold	**Hot**		**DE**	**NDE**	**(lbs)**
18	15	-	6216-C3	6313Z-C3	5000

*Bearings are the only recommended spare part(s).

Motor Options:

Customer	
Customer PO	
Sales Order	
Project #	

Tag:

All characteristics are average expected values.

TOSHIBA INTERNATIONAL CORPORATION · HOUSTON, TEXAS U.S.A.

Engineering		Doc. Written By		Doc.# / Rev	
Engr. Date		Doc. Approved By		Doc. Issued	

TOSHIBA

Issued Date		Transmit #	
Issued By		Issued Rev	

NAMEPLATE DATA

Model: 4504XPAL11E-C

HP	kW	Pole	FL RPM	Frame	Voltage	Hz	Phase	FL Amps
450	335.5605	4	1788	H509E	4000	60	3	56.31
Enclosure	**IP**	**Ins. Class**	**S.F.**	**Duty**	**NEMA Nom. Eff.**	**NEMA Design**	**kVA Code**	**Ambient (°C)**
TEXP	55	F	1.15	Cont.	94.4	B	F	40

Type: HSB

Form:

Drive End Bearing: 6216-C3

Non-Drive End Bearing: 6313Z-C3

Power Factor: 91.4

Max Safe RPM:

Comments 1:

Comments 2:

Comments 3:

Comments 4:

Customer	
Customer PO	
Sales Order	
Project #	

Tag:

All characteristics are average expected values.

TOSHIBA INTERNATIONAL CORPORATION · HOUSTON, TEXAS U.S.A.

Engineering		**Doc. Written By**	D. Suarez	**Doc.# / Rev**	MPCF-1120 / 0
Engr. Date		**Doc. Approved By**	M. Campbell	**Doc. Issued**	6/8/2011

TOSHIBA

Issued Date		Transmit #	
Issued By		Issued Rev	

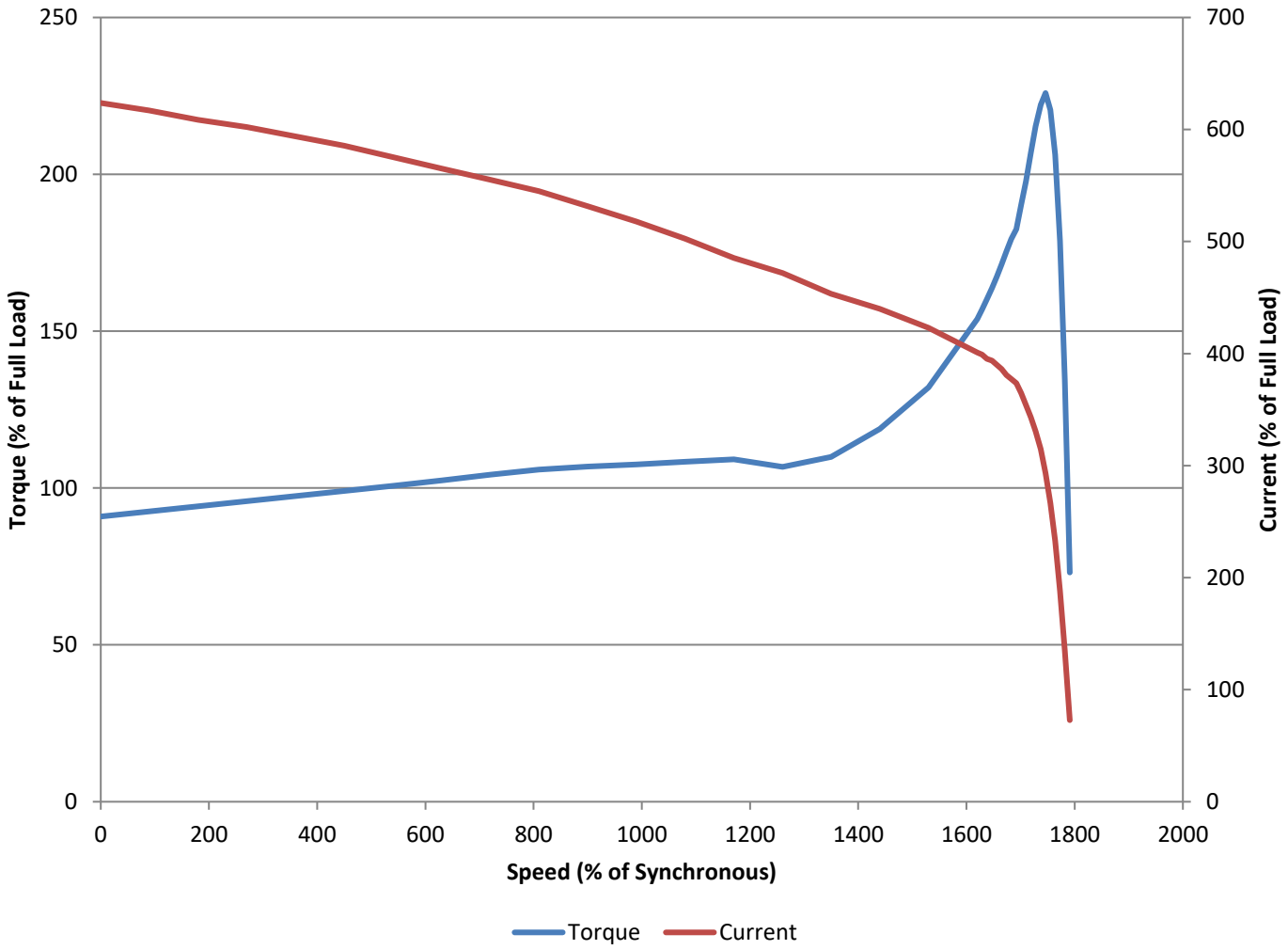
SPEED TORQUE/CURRENT CURVE

Model: 4504XPAL11E-C

HP	kW	Pole	FL RPM	Frame	Voltage	Hz	Phase	FL Amps
450	335.5605	4	1788	H509E	4000	60	3	56.31
Enclosure	**IP**	**Ins. Class**	**S.F.**	**Duty**	**NEMA Nom. Eff.**	**NEMA Design**	**kVA Code**	**Ambient (°C)**
TEXP	55	F	1.15	Cont.	94.4	B	F	40

Locked Rotor Amps	Rotor wk² Inertia (lb-ft²)	Torque			
		Full Load (lb-ft)	Locked Rotor (%)	Pull Up (%)	Break Down (%)
340.97	256	1326.11	90.95602929	90.95602929	225.9086124

Design Values



Customer			wk² Load Inertia (lb-ft²)	
Customer PO			Load Type	
Sales Order			Voltage (%)	100
Project #			Accel. Time	

Tag:

All characteristics are average expected values.

TOSHIBA INTERNATIONAL CORPORATION · HOUSTON, TEXAS U.S.A.

Engineering		Doc. Written By	D. Suarez	Doc.# / Rev	MPCF-1121/0
Engr. Date		Doc. Approved By	M. Campbell	Doc. Issued	6/8/2011

TOSHIBA

Issued Date		Transmit #	
Issued By		Issued Rev	

SPARE PARTS LIST*

Model: 4504XPAL11E-C

HP	kW	Pole	FL RPM	Frame	Voltage	Hz	Phase	FL Amps
450	335.5605	4	1788	H509E	4000	60	3	56.31
Enclosure	**IP**	**Ins. Class**	**S.F.**	**Duty**	**NEMA Nom. Eff.**	**NEMA Design**	**kVA Code**	**Ambient (°C)**
TEXP	55	F	1.15	Cont.	94.4	B	F	40

Bearings DE	6216-C3
Bearings NDE	6313Z-C3

*Bearings are the only recommended spare part(s).

Other than the grease used for regreasable bearings and the oil used for oil-lubricated bearings, Toshiba advises that there are no "use" parts. The only insurance spares that Toshiba suggests for these squirrel-cage induction motors are industry-standard and commercially available off-the-shelf bearings as noted above.

Motor components such as terminal boxes, fan covers and other machined parts are available on special request. In these cases, please advise our order entry department of the model and serial numbers found on the motor nameplate and a description of the needed components. With this information they will be able to furnish the current part number, price and availability.

Note: Our internal part numbers are subject to change without notice and are not published.

Customer	
Customer PO	
Sales Order	
Project #	

Tag:

All characteristics are average expected values.

TOSHIBA INTERNATIONAL CORPORATION · HOUSTON, TEXAS U.S.A.

Engineering		**Doc. Written By**	D. Suarez	**Doc.# / Rev**	MPCF-1125 / 0
Engr. Date		**Doc. Approved By**	M. Campbell	**Doc. Issued**	6/8/2011