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TECHNOLOGY GROUP

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Find the *Kollmorgen / Pacific Scientific T22NRLC-LNN-NS-00* at our website: *Click HERE*

Kollmorgen
Stepper Solutions Catalog

including AC Synchronous Motors



K & N Series Stepper Motors

KOLLMORGEN®

Because Motion Matters™

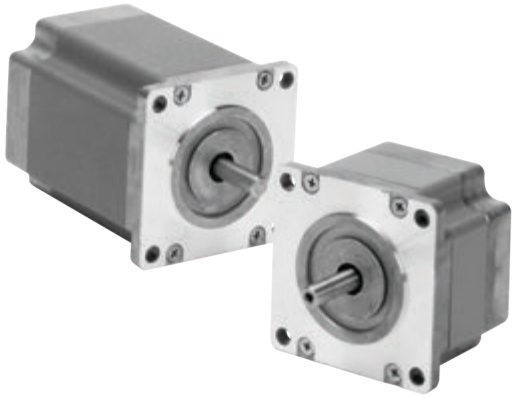
Kollmorgen.
Every solution comes from a real understanding of the challenges facing machine designers and users.

The ever-escalating demands of the marketplace mean increased pressure on machine designers and users at every turn. Time constraints. Demands for better performance. Having to think about the next-generation machine even before the current one is built. While expectations are enormous, budgets are not. Kollmorgen's innovative motion solutions and broad range of quality products help engineers not only overcome these challenges but also build truly differentiated machines.

Because motion matters, it's our focus. Motion can distinctly differentiate a machine and deliver a marketplace advantage by improving its performance. This translates to overall increased efficiency on the factory floor. Perfectly deployed machine motion can make your customer's machine more reliable and efficient, enhance accuracy and improve operator safety. Motion also represents endless possibilities for innovation. We've always understood this potential, and thus have kept motion at our core, relentlessly developing products that offer precision control of speed, accuracy and position in machines that rely on complex motion.

T2 Series Stepper Motors

General Specifications

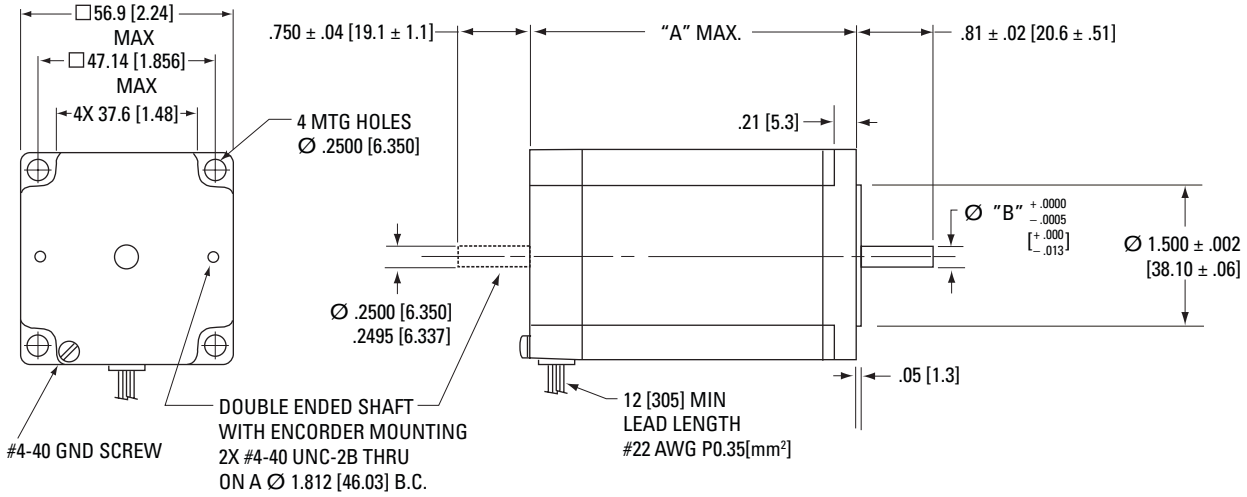


- NEMA Size 23
- High Torque at moderate speeds
- Inch standard mounting
- CE cUR and UR compliant
- Unipolar or Bipolar windings
- Features: leadwire connection, flat or smooth shaft
- Options: MS connector, terminal boxes, encoder mounting provisions, 200 LPR, 400 LPR encoders with line drivers
- Custom Motors

Phases	2
Full Steps per Revolution	200
Step Angle	1.8°
Step Accuracy (of one full step, no load)	± 2 %
Operating Temperature	-20°C to +40°C
Insulation Class	Class B, 130°C
Insulation Voltage Rating	340 Vdc
Insulation Resistance	100 Megohms

T2 Outline Drawings

Leadwire Hookup Models

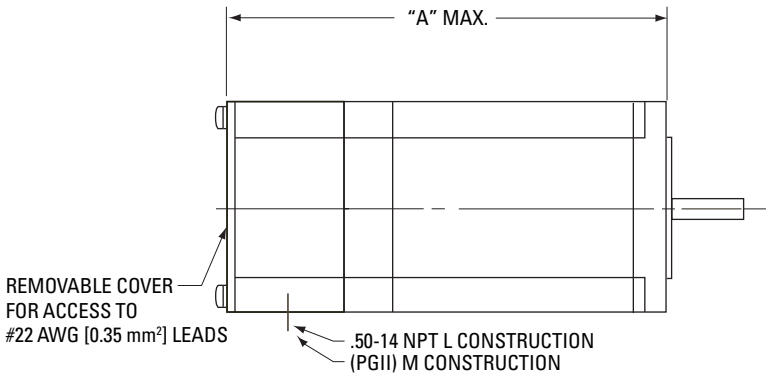


Dimensions in inches [mm]

Model	"A" Max	"B" Max
T2H	1.64 (41.6)	0.2500 (6.35)
T21	2.21 (56.1)	
T22	3.06 (77.7)	
T23	4.06 (103.1)	0.3125 (7.94)

Terminal Box Construction

Model	"A" Max
T2H	2.84 (72.1)
T21	3.41 (86.6)
T22	4.26 (108.2)
T23	5.26 (133.6)



Dimensions in inches [mm]

T2 Series Stepper Motors

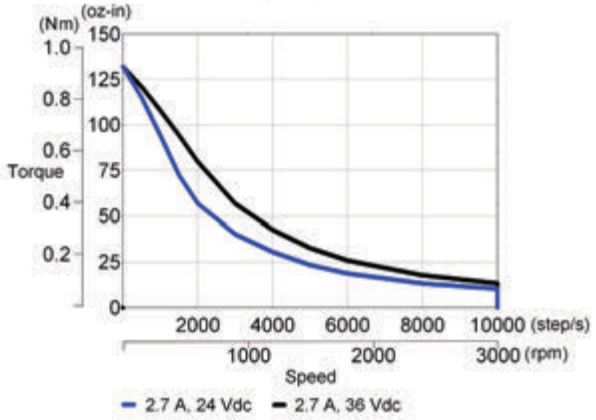
T2 Performance Data

Motor Model Number		Config.		Holding Torque (2 phases on)	Rated Current/ Phase	Phase Resistance	Phase Inductance	Detent Torque	Thermal Resistance	Rotor Inertia	Weight	Shaft Loading*	
		Parallel	Series	oz-in (Nm) +/-10%	Amps DC	Ohms +/-10%	mH Typical	oz-in (Nm)	Mounted °C/Watt	oz-in-s^2 (kg-m^2 x 10^{-3})	lb (kg)	Radial Force lb (N)	Axial Force lb (N)
Short Stack	T2HxxHK	•		74 (0.52)	5.3	0.19	0.63	2.0 (0.014)	6.14	0.00154 (0.0109)	1.1 (0.50)	15 (67)	25 (111)
	T2HxxHJ	•			4.0	0.28	1.0						
	T2HxxLH		•		2.7	0.64	2.5						
	T2HxxLD		•		1.1	3.6	16						
1 Stack	T21xxHK	•		180 (1.27)	5.4	0.23	1.1	3.0 (0.021)	4.64	0.0034 (0.024)	1.5 (0.68)	15 (67)	25 (111)
	T21xxHJ	•			4.1	0.33	1.8						
	T21xxLC		•		0.4	42.9	209						
	T21xxLH		•		2.7	0.85	4.6						
	T21xxLE		•		1.4	3.0	16						
	T21xxLD		•		1.1	4.9	30						
2 Stack	T22xxHK	•		280 (1.98)	6.6	0.20	0.85	6.0 (0.042)	3.69	0.0056 (0.040)	2.2 (1.0)	15 (67)	25 (111)
	T22xxHJ	•			4.1	0.49	2.5						
	T22xxLC		•		0.46	41.4	209						
	T22xxLH		•		3.3	0.75	3.4						
	T22xxLG		•		2.5	1.3	7.1						
	T22xxLE		•		1.5	2.9	17						
3 Stack	T23xxHK	•		380 (2.68)	6.0	0.28	1.5	7.0 (0.049)	3.04	0.0084 (0.059)	3.3 (1.5)	15 (67)	25 (111)
	T23xxHJ	•			3.8	0.64	3.9						
	T23xxLC		•		0.67	23.5	136						
	T23xxLH		•		3.0	1.0	6.2						
	T23xxLF		•		1.8	2.8	17						
	T23xxLE		•		1.5	4.1	24						

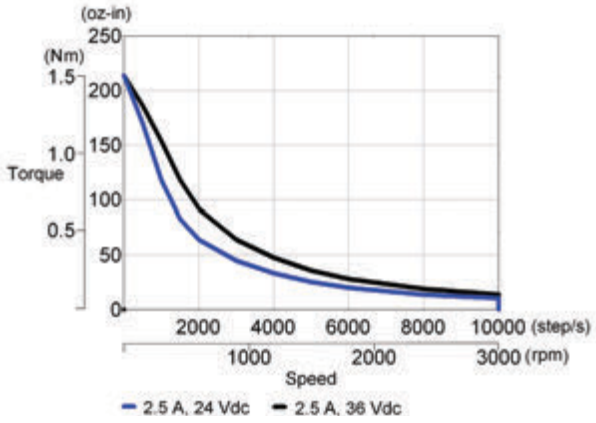
Note: *Maximum shaft loading based on 20,000 hours of operation at 1500 rpm.
See page 90 for T series connector diagrams and switching sequence.

T2 Performance Curves - DC Drive Models

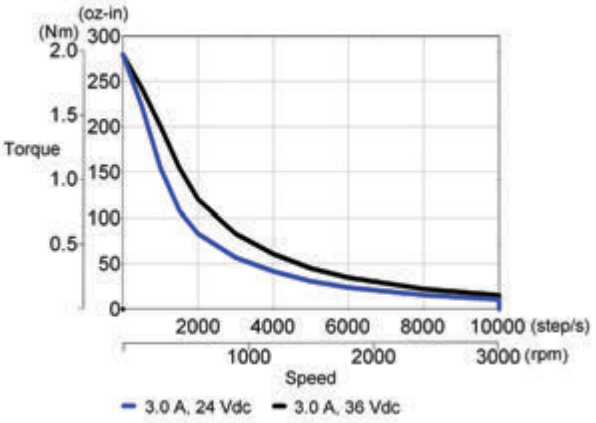
T21xxLH w/ P70530



T22xxLG w/ P70530

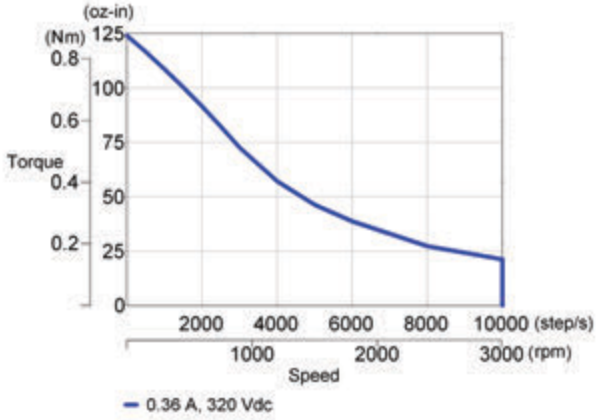


T23xxLH w/ P70530

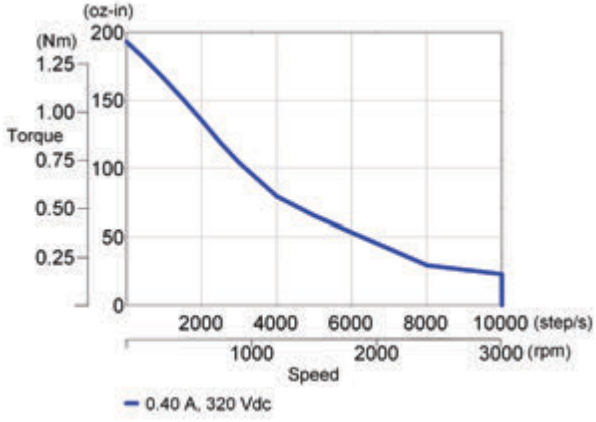


T2 Performance Curves - AC Drive Models

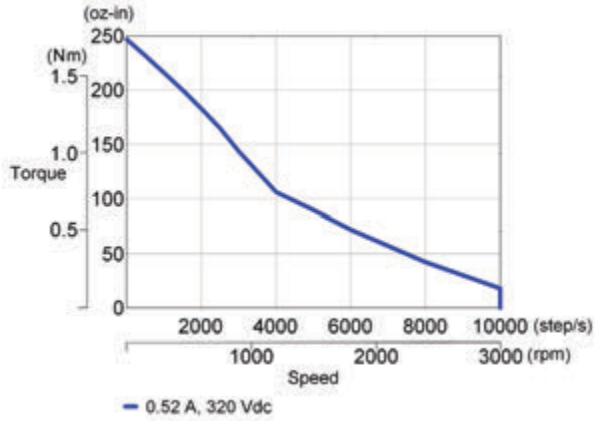
T21xxLC w/ P70360



T22xxLC w/ P70360



T23xxLC w/ P70360



Model Nomenclature

T2 Series Stepper Motor

T 2 3 N R H J – L N N – N – 00

T Series

Motor Frame Size
2 = NEMA 23 (2.25" square)

Rotor Stack Length
H = Half stack
1 = 1 stack
2 = 2 stacks
3 = 3 stacks

Mounting Configuration
N = NEMA 23
S = Special, contact factory

Construction / Hookup
C = MS connector
L = Terminal box via 1/2" NPT pipe thread
M = Terminal box via metric PG11 pipe thread
R = Regular - leadwire
S = Special, contact factory

Windings / Leads
E = 6 leads (Unipolar)[1]
H = 4 leads (Parallel connected)
L = 4 leads (Series connected)
S = Special, contact factory

Winding Type
D, E, F, G, H, J, K
S = Special, contact factory

Special Sequence
Insert 00 if all parts are standard. Any other numbers are factory assigned

Ecoder Option
C2 = Encoder 200 LPR w/line driver[3]
C4 = Encoder 400 LPR w/line driver[3]
C5 = Encoder 500 LPR w/line driver[3]
M4 = Encoder mtg. provisions[3]
NS = No Feedback
SS = Special, contact factory

Shaft Modifications
F = Flat
N = Smooth
S = Special, contact factory

Shaft Configuration
D = Rear shaf extension[2]
N = No rear shaft extension
S = Special, contact factory

Rotor Type
L = Laminated

Notes:
1. N/A with "C" Construction / Hookup option
2. "R" Construction / Hookup only, required for motors with encoders
3. Requires "R" Construction / Hookup option and "D" Shaft Configuration option

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