ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Torque Systems BNR3312APG00HS0008* at our website: *Click HERE*

TORQUEMASTER
BRUSHLESS SERVO MOTORS

3300 SERIES

Performance Benefits

MTI-Torque Systems specializes in the design of high performance brushless servo motors that provide efficiency, flexibility of application, and a long and trouble-free service life. Our TORQUEMASTER® 3300 series is no exception.



With fast response, accurate control and high torque-to-inertia ratios, you can count on the TORQUEMASTER 3300 Series of brushless servo motors to provide smooth operation throughout a full speed range. The 3300 Series delivers smooth and superior low speed performance, and maximum power ratings with low thermal resistance for high speed performance. In addition, with maximum torque in a smaller package, you can count on better pricing for a better overall value.

When integrated with high performance brushless amplifiers, TORQUE-MASTER 3300 Series brushless servo motors provide effective and highly efficient motion control solutions for a wide range of applications—including factory automation, packaging, robotics, machine tools, medical instrumentation and more.

Design Features

TORQUEMASTER BNR 3300 Series servo motors are rated from 12 lb.-in. to 34 lb.-in. with speeds and torque stability up to 10,000 RPM— accommodating DC bus voltages up to 325 volts. They utilize the latest in high performance Neodymium, permanent magnet technology, and are available in several standard windings (as well as custom windings) to meet your most demanding applications.

Each servo motor in the TORQUE-MASTER 3300 Series is ruggedly designed and manufactured for reliable performance. To satisfy many different applications, TORQUEMASTER 3300 Series motors are manufactured to NEMA/IEC specifications. For severe duty environments, the BNR design is also available with IP65 sealing.

TORQUEMASTER BNR 3300 Series servo motors come standard with a hall sensor or resolver commutation. Encoders, brakes, gearheads and other options are available.

Series 3300, 325 VDC brushless servo motor — provides fast response, accurate control and high torque-to-inertia ratios

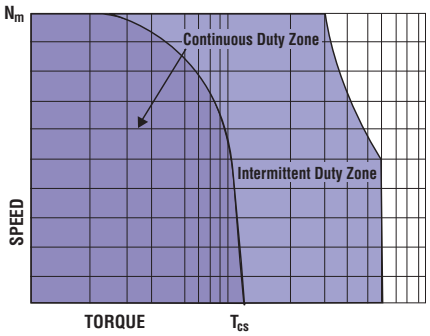
- Continuous torque ratings up to 34 lb.-in.—with speeds up to 10,000 RPM
- IP65 Sealing available
- NEMA 23 mounting features standard
- IEC 72 Metric specifications available
- Maximum torque per frame size with high performance Neodymium magnets
- Superior low speed performance
- Numerous custom options available

Montevideo Technology, Inc. (MTI)®
A Motor And Control Company
TORQUE SYSTEMS

BRUSHLESS SERVO MOTOR CHARACTERISTICS

SYMBOL	MOTOR PARAMETER	UNITS	BNR3312A	BNR3324D	BNR3334E
N_m	Max Operating Speed	RPM	10,000	7000	5800
T_C	Max Stall Torque	lb.-in.(Nm)	12 (1.4)	24 (2.7)	34 (3.8)
T_{Pk}	Peak Torque	lb.-in.(Nm)	60 (6.78)	110 (12.4)	150 (16.95)
K_T	Torque Sensitivity	lb.-in./AMP(Nm/Amp)	1.69 (.19)	4.22 (.47)	5.07 (.57)
K_e	Back E.M.F.	Volts/Krpm	20	50	60
R_a	Resistance Line to Line	Ohms	1.24	2.6	2.1
L		Inductance Line to Line	Millihenry	2	5.1 4.7
J_m	Rotor Inertia	lb.-in.-sec^2 (Kg-m^2)	0.0008 (0.00009)	0.0015 (0.00017)	0.00196 (0.0011)
T_F	Static Friction	lb.-in.(Nm)	0.10 (.011)	0.10 (.011)	.125 (.014)
F_i	Viscous Friction	Lb-In/Krpm	.075	0.094	0.156
R_{th}	Thermal Resistance	Deg C/Watt	1.2	0.92	0.8
T_m	Mechanical Time Const.	Millisec.	3.2	1.98	1.41
T_e	Electrical Time Const.	Millisec.	1.5	2.0	3.6
W_T	Motor Weight	Lbs(Kg)	6 (2.71)	8 (3.62)	9.5 (4.30)

TORQUE PERFORMANCE CURVES



NOTE: Continuous torque specifications obtained with motor mounted to an 8.5"x12"x 0.25" aluminum plate at 25°C ambient. Typical values are within ±10% of rating.

Relationship Between K_e & K_T
Torque Systems uses the following important motor performance parameters for the 3 phase square wave and 3 phase sine wave brushless motors in order to properly account for the British Imperial unit system currently used in the US.

K_e = Line-to-line volts-peak / Krpm*

K_T = Pound-inches (lb-in) / peak phase amps

K_e is related to Kt as follows:

$K_T = K_e/11.834$ for 3 phase square wave current driven amplifiers

$K_T = K_e/13.662$ for 3 phase sinusoidal wave current driven amplifiers

*Krpm = 1000 rpm

For "RMS" values, divide peak values by $\sqrt{2}$

STANDARD SPEED/TORQUE CURVE DATA FOR SIZING A SERVO MOTOR

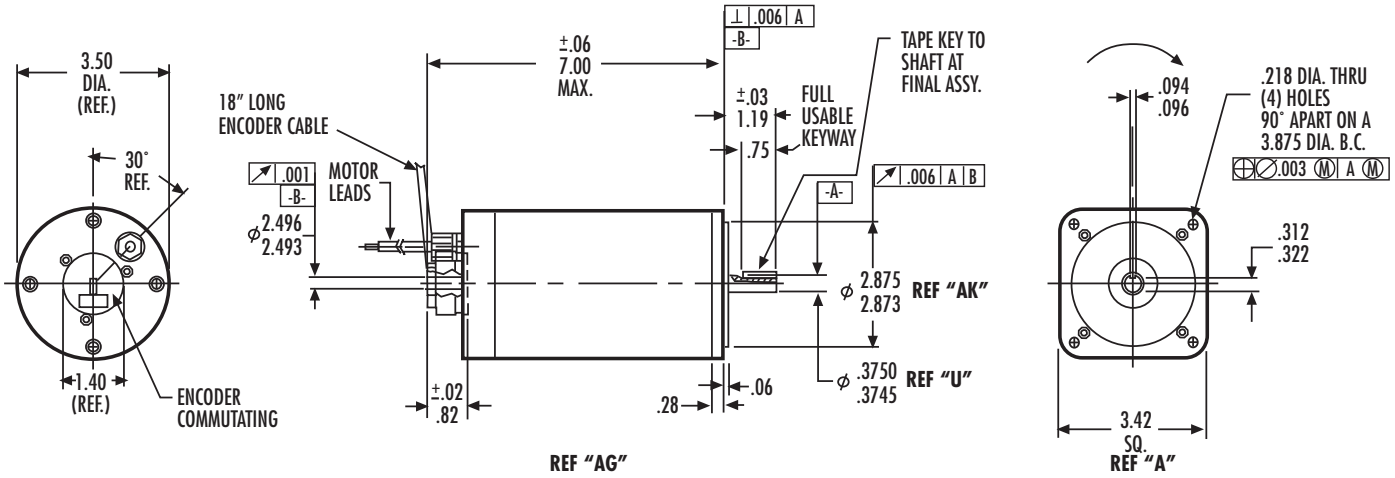
N_m = Maximum speed, continuous operation

T_{cs} = Continuous stall torque

All specifications subject to change without notice.

Montevideo Technology, Inc. (MTI)®
A Motor And Control Company
TORQUE SYSTEMS

MECHANICAL SPECIFICATIONS*



DIMENSION CHART* (Dimensions may change depending upon options)

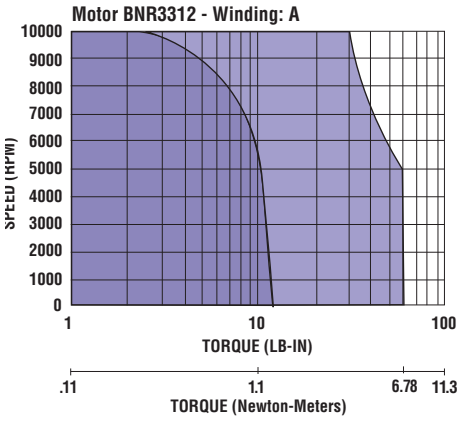
PART NUMBER	AG	A	AK	BB	U		AH		XD	S	R
STD (inch)					STD	NEMA 34	STD	NEMA 34			
BNR3312	6.40	3.42	2.875	.06	.500	.375	1.00	1.19	.62	.125	.420/.413
BNR3324	7.40	3.42	2.875	.06	.500	.375	1.00	1.19	.62	.125	.420/.413
BNR3334	8.40	3.42	2.875	.06	.500	.375	1.00	1.19	.62	.125	.420/.413

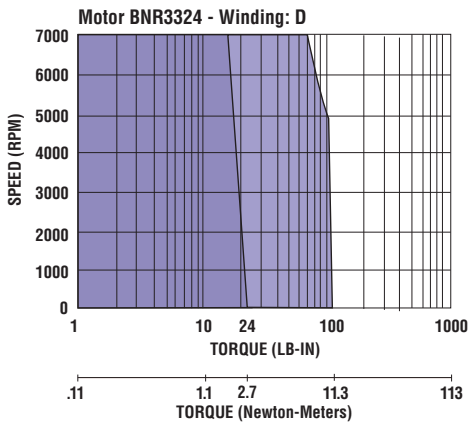
All dimensions meet NEMA 34 specifications except where indicated as standard.

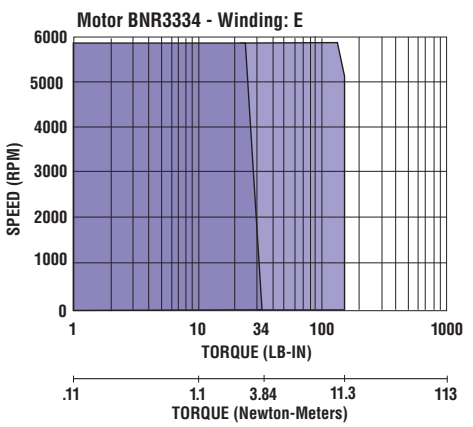
Metric IEC 72 (mm)									
BNR3312	162.6	86.9	60j6	2.5	15j6	30	23	5.0	12
BNR3324	187.9	86.9	60j6	2.5	15j6	30	23	5.0	12
BNR3334	213.4	86.9	60j6	2.5	15j6	30	23	5.0	12

NOTE: Dimension AG includes commutation feedback device and/or a secondary feedback device as shown on ordering information.
With internal brake option add 2.0" to dimension "AG"

TORQUE PERFORMANCE CURVES







TORQUE SPEED CURVES OF OTHER WINDINGS AVAILABLE, CONSULT FACTORY.

Montevideo Technology, Inc. (MTI)®
A Motor And Control Company
TORQUE SYSTEMS

TERMINATION CHART

MOTOR/CABLE CODE

Function	Wire Color
Motor M1	White
Motor M2	Black
Motor M3	Red
HALL CONNECTIONS	
+5-24V	Red
Common	Black
H1	Yellow
H2	Orange
H3	Green

Note: Separate drain wires for motor power and halls

ENCODER WIRING CONNECTION CODE

Function	Wire Color
Encoder Output A	Green
Encoder Output $\bar{A}$	Brown
Encoder Output B	Orange
Encoder Output $\bar{B}$	Yellow
Encoder Output M	White
Encoder Output $\bar{M}$	Blue
Encoder +5 VDC	Red
Encoder Common	Black
Case Ground	Drain

Note 1. Hall Sensor Specifications

Voltage = 5V to 24V
Current = 10 ma typical, 25 ma max.
Output = Open collector

Note 2. Com. Encoder

Current = 250 ma

BNR ORDERING INFORMATION – (For Standard Options)

BNR 3 012 A HA B A P A A 000

FRAME SIZE
3 = 3.38" Dia.

STALL TORQUE
312 = 12 lb-in
324 = 24 lb-in
334 = 34 lb-in

WINDINGS
A = 20 V/Krpm
D = 50 V/Krpm
E = 60 V/Krpm

COMMUTATION/FEEDBACK (see note 3)
HA = Hall Sensor only
RA = Resolver, 12 Arc Min
PA = Resolver, 7 Arc Min
SP = Special

Commutating Encoders		Line Count		Modular Encoders*
CB	=	250	=	MB
CC	=	500	=	MC
CD	=	1000	=	MD
CE	=	1024	=	ME
CF	=	2500	=	MF
SC	=	Special	=	MS

*Modular Encoder selection includes Hall Sensor Commutation

BRAKE (Internal) (see note 4)
0 = None
B = 30 lb-in brake

MATING CONNECTORS
0 = None

TERMINATIONS
C = Connector, MS3102A-20-4P Motor
MS3102A-22-14P Feedback
H = Heyco seal-tite w/1.5 ft shielded cable
P = Pipe Tap (NPT) w/1.5 ft shielded cable

MOUNTING (see note 1)
A = 3.42" Sq. Flange with .500" Dia. x 1.00" long shaft
D = NEMA 34 Flange with 0.375" Dia. x 1.19" long shaft
M = Metric IEC72 Flange w/12J6 Dia. shaft
S = Special Flange and shaft

SEALING
0 = None
A = per IP65 w/o shaft seal
B = per IP65 w/shaft seal

ENGINEERING MODIFICATIONS

EXAMPLE: BNR 3 324 A RA B 0 C A A 000

- MODEL/FRAME
- 24 LB-IN STALL TORQUE
- WINDING
- COMMUTATION
- BRAKE
- MATING CONNECTORS
- TERMINATIONS
- MOUNTING FEATURES
- SEALING
- ENGINEERING MODIFICATIONS

Notes:

1. Standard BNR3300 motor mounting flanges use NEMA 34 standards but have oversized shaft diameters to carry the rated torque load. Standard NEMA shaft diameters are typically undersized for most servo ratings and are not recommended. Consult CMC regarding acceptable load limits before ordering or applying this option.
2. The above motors include standard MS connectors. Connector mates or cables must be ordered separately.
3. Standard encoders are dual channel line driver output with a marker pulse and complementary outputs.
4. Brakes are for holding static loads and not designed to stop moving loads. Standard coils are 24 volts DC.

CUSTOMIZE THE 3300 SERIES TO YOUR EXACT REQUIREMENTS

To satisfy various applications with cost-effective solutions, 3300 Series motors are readily available with a wide range of standard capabilities. Final designs are often the result of cooperative efforts between the customer's engineering department and MTI-Torque Systems. For assistance, call your local distributor or Torque Systems direct. We look forward to meeting your custom requirements.

MTI-Torque Systems
6 Enterprise Road
Billerica, MA 01821
Tel: 978.667.5100 or 1.800.669.5112
Fax: 978.600.0280

sales; customer@slmti.com
www.torquesystems.com

MTI-Torque Systems
8201 109th St. Suite 500
Pleasant Prairie, WI 53158
www.torquesystems.com

Montevideo Technology, Inc. (MTI)®
A Motor And Control Company
TORQUE SYSTEMS

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP