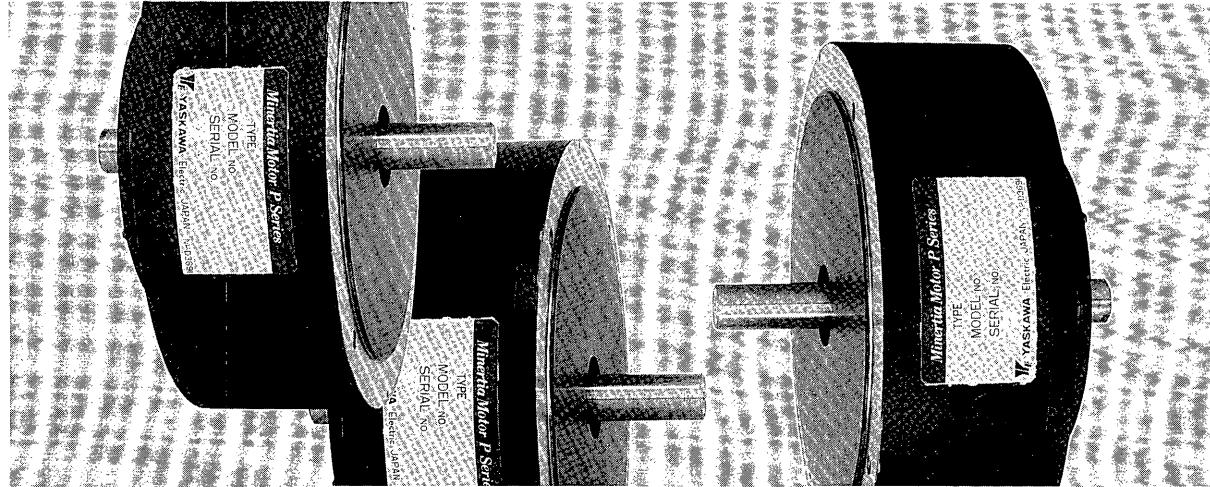


# MINERTIA MOTOR P Series

SMALL SIZE DC SERVOMOTORS

TYPE P09, P12



YASKAWA



Minertia Motors P Series are disc-armature DC motors. The principle of disc armature DC motors was developed by SEA in France. They feature epoch-making armature construction: "flat" armature.

In 1964, Yaskawa made technological breakthroughs and gained success in manufacturing the highly-reliable, highly-durable armatures of stabilized performance in quantity. P Series motors incorporating these armatures have been widely used throughout the world for general industrial applications including robots, X-Y tables and computer peripherals.

## FEATURES

- Strong permanent alnico magnets
- Quick response and accurate positioning
- Very low ripples and no cogging
- Compatible with conventional flat armature motors
- Ferrite type also available
- Available with analog tachometers and optical encoders
- Fast-reacting service centers in U.S.A. for maintenance and repair service
- Quality control testing performed on a 100% basis



984-26

The Deming Application Prize Medal  
Awarded to Yaskawa in 1984 for  
Exceptional Achievement in Industrial  
Performance

## RATINGS AND SPECIFICATIONS

Specifications	Motor Type	P09S	P12S	P12H
Peak Rated Torque	N·m	1.80	4.53	6.28
Rated Torque	N·m	0.36	0.90	1.26
Torque Constant	N·m/A	0.0463	0.110	0.170
Armature Winding Resistance (at 25°C)	Ω	0.65	0.61	0.61
Armature Inductance	mH	< 0.1	< 0.1	< 0.1
Peak Current	A	39.5	41	37.1
Voltage Constant	V/1000rpm	4.85	11.55	17.80
Viscous Damping Coefficient	N·m/(r/min)	$7.06 \times 10^{-6}$	$2.25 \times 10^{-5}$	$4.03 \times 10^{-5}$
Friction Torque	N·m	0.0155	0.0245	0.0245
Inertia	$\text{kg} \cdot \text{m}^2 \times 10^{-4}$	0.38	1.42	1.44
Mechanical Time Constant	millisec	11.3	7.0	3.0
Electrical Time Constant	millisec	< 0.15	< 0.16	< 0.16
Power Rate	kW/sec	3.4	5.8	10.7
Torque Inertia Ratio	rad/sec <sup>2</sup>	9400	6400	8900
Thermal Resistance	deg C/watt	1.3	1.27	1.27
Max Allowable Armature Temperature	°C	150	150	150
Rated Speed	r/min	3000	3000	3000
Max Safe Operating Speed	r/min	4000	4000	4000

The data in the above table is obtained under the following conditions.

Time Rating: Continuous

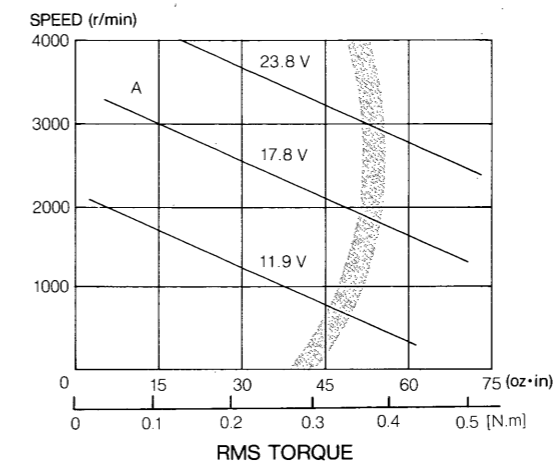
Dielectric Strength: 500 VAC

Enclosure: Totally-enclosed self-cooled type

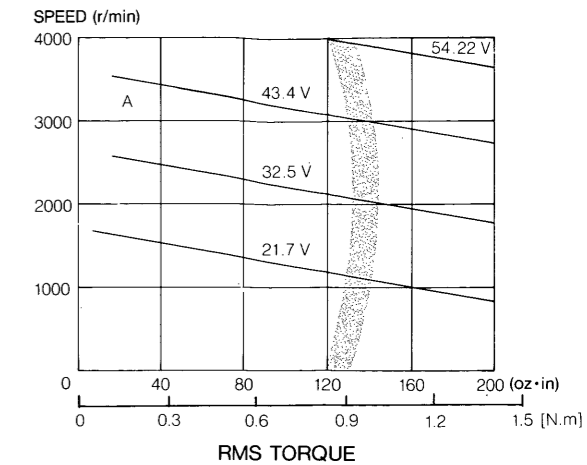
Ambient Temperature: -10°C to 25°C

## SPEED-TORQUE CHARACTERISTICS

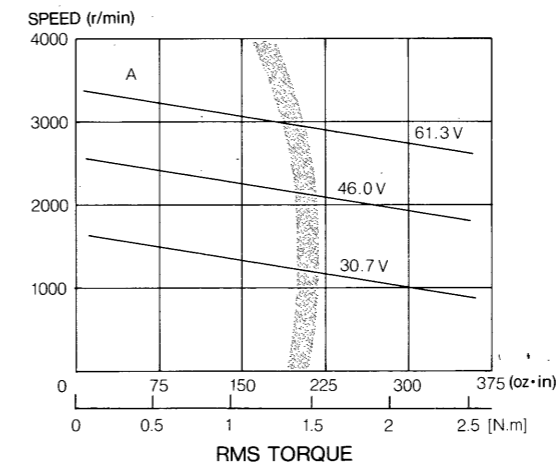
### TYPE P09S



### TYPE P12S



### TYPE P12H



A: Area of safe continuous operation without air cooling.

Note: Curves are for motors mounted on 8" × 16" × 3/8" heat sinks and armature temperature of 125°C.

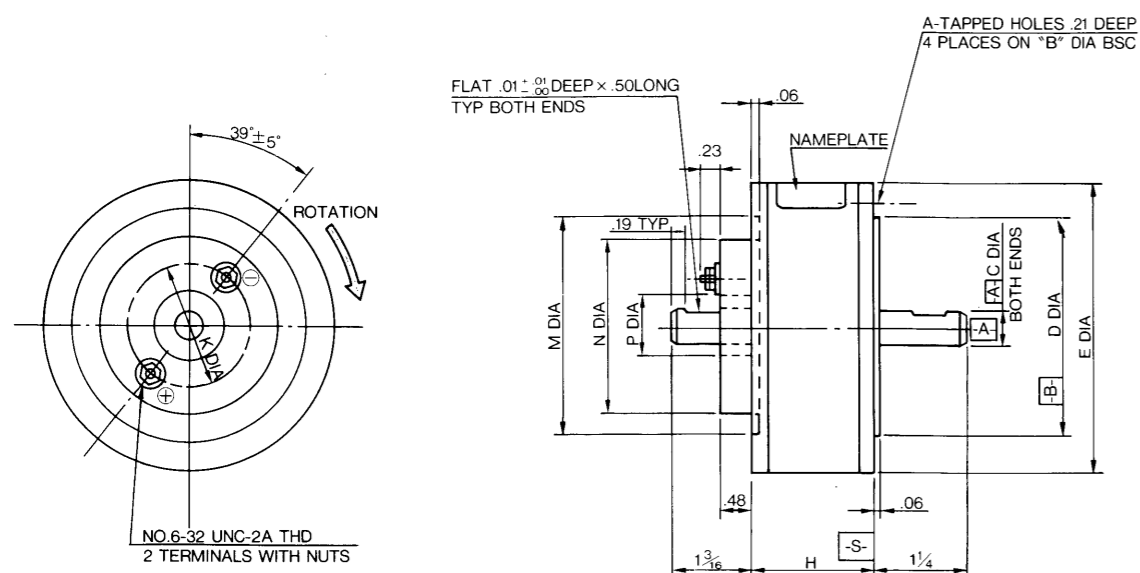
### ORDERING INFORMATION

- Application
- Type
- Ratings: output, voltage, current, torque, speed
- Environmental conditions: ambient temperature, location
- Others to be specified

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## DIMENSIONS in inches



Motor Type	"A" Tap	B ±.005	C +.0000 -.0005	D +.000 -.002	E ±.01	H	K
P09S	No. 8-32UNC-2B	3.656	.4995	3.311	4.37	1.752	1.850
P12S	No. 10-32UNF-2B	4.875	.4995	4.500	5.50	1.876	2.382
P12H	No. 10-32UNF-2B	4.875	.4995	4.500	5.50	2.067	2.382

M +.002 -.000	N	P	Approx Weight lb
3.311	2.60	1.339	4.1
4.500	3.31	1.654	6.8
4.500	3.31	1.654	7.9

### Note:

- Shaft dia [-A-] runout not to exceed 0.001 inch per inch.
- Pilot dia [-B-] concentric to [-A-] within 0.003 inch T.I.R.
- Mounting surface [-S-] perpendicular to [-A-] within 0.005" for Type P09S; 0.007" for Types P12S and P12H.
- Shaft end play 0.001" max under a thrust in the direction shown of: 10 lb for Types P09S, P12S and P12H.
- Maximum pure radial load, 1" from surface "S": 25 lb for Type P09S; 60 lb for Types P12S and P12H, at rated speed.
- Maximum pure axial load is 11 lb for Type P09S; 55 lb for Types P12S and P12H.
- Screw terminals are standard.

# MINERTIA MOTOR P Series

SMALL SIZE DC SERVOMOTORS  
TYPE P09, P12

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