



**YASKAWA
ELECTRIC**

TSE-C249-13B

SMALL SIZE DC SERVOMOTORS

Minertia[®] Motor J Series

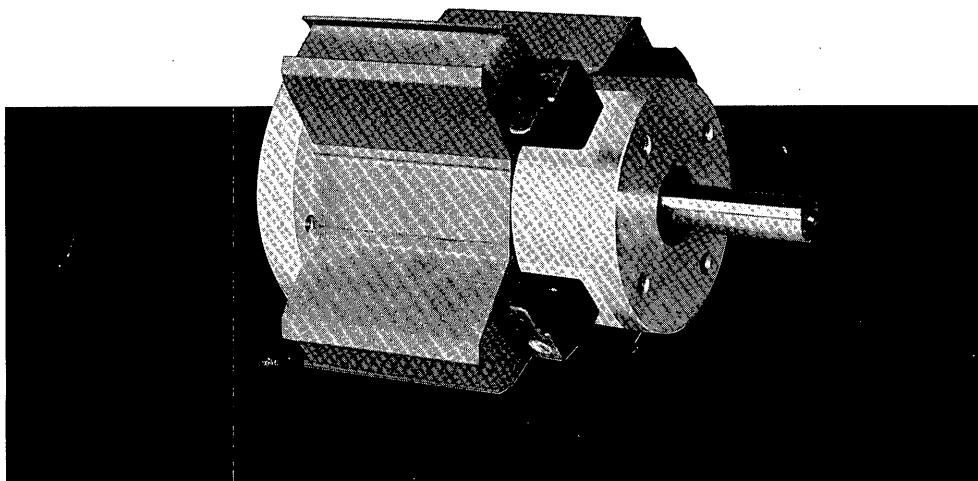
Type J03

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Designed to meet the Demands of Computer Peripherals

Creative design engineering and time-proven manufacturing technologies blended with accumulated knowledge of computer peripherals, achieve light weight, low cost, and high reliability in J Series.

J Series is a new line mainly for printer drivers. Construction feature is the employment of ceramic magnet for magnetic field formation and slotted core armature. Modifications are easily accomplished in a compact figure, because detecting devices like DC tachometer generators and optical encoders can be built-on the motors.



FEATURES

- Ceramic magnet DC servomotor
- 4-pole configuration for high performance in a small package
- Low inertia — High peak torque
- High torque-to-size ratio due to low thermal resistance
- Available with analog tachometers and optical encoders
- Substantial price reductions in OEM volumes

APPLICATIONS

- Carriage of medium- or high-speed serial printers
- X-Y plotters
- Recorders



RATINGS AND SPECIFICATIONS

Minertia Motor J Series		J03SA	J03SB	J03SC	J03MA	J03MB	J03MC	J03LA	J03LB	J03LC
Peak Rated Torque	oz · in	186			266			344		
Rated Torque	oz · in	40.3			54.2			66.7		
Torque Constant	oz · in/amp $\pm 10\%$	8.66	13.3	17.3	12.3	18.9	24.6	16.0	24.5	31.9
Armature Winding Resistance (at 25 °C)	$\Omega \pm 10\%$	0.69	1.66	2.86	0.88	2.12	3.66	1.08	2.58	4.45
Armature Inductance	mH	0.43	1.0	1.7	0.68	1.6	2.7	0.94	2.2	3.8
Peak Current	A	22	14.3	11	22	14.3	11	22	14.3	11
Voltage Constant	V/1000rpm $\pm 10\%$	6.4	9.8	12.8	9.1	14.0	18.2	11.8	18.1	23.6
Viscous Damping Coefficient	oz · in/1000rpm	1.4			2.0			2.5		
Friction Torque	oz · in	3.6			4.7			5.8		
Breakaway Torque	oz · in	—			—			—		
Cogging Torque at Zero Excitation	oz · in	—			—			—		
Inertia	oz · in · sec ² $\times 10^{-3}$	3.1			4.29			5.48		
Mechanical Time Constant	ms	4.1			3.6			3.4		
Electrical Time Constant	ms	0.6			0.76			0.85		
Power Rate	kW/sec	3.69			4.82			5.71		
Torque Inertia Ratio	rad/sec ²	13000			12600			12200		
Thermal Resistance	deg C/watt	3.1			2.8			2.5		
Thermal Time Constant	minutes	—			—			—		
Max Allowable Armature Temperature	°C	155			155			155		
Rated Speed	rpm	1000	1000	1000	1000	1000	1000	1000	1000	1000
Max Safe Operating Speed	rpm	3000	3000	3000	3000	3000	2400	3000	2500	1600
Max No Load Speed	rpm	5000	4900	4100	5000	3800	2900	4500	2900	2200
Cooling Required	cfm, in H ₂ O	TENV			TENV			TENV		

TORQUE-SPEED CURVES

Shown below are the torque-speed curves under the following environmental conditions:

Temperature: 25°C

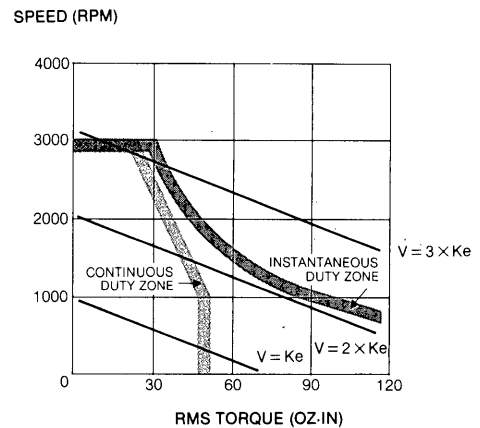
Humidity: 80%

Armature temperature: 125°C

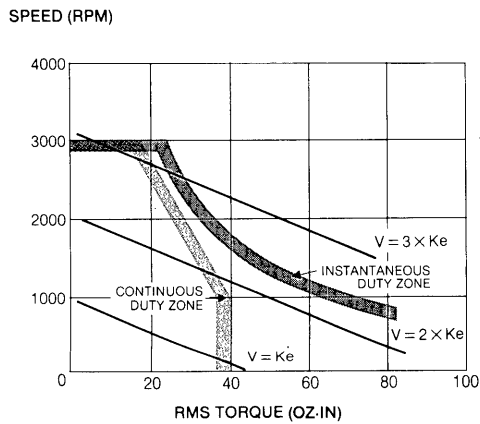
Magnet temperature: 80°C

Heat sink: 10" × 10" × 1/4"

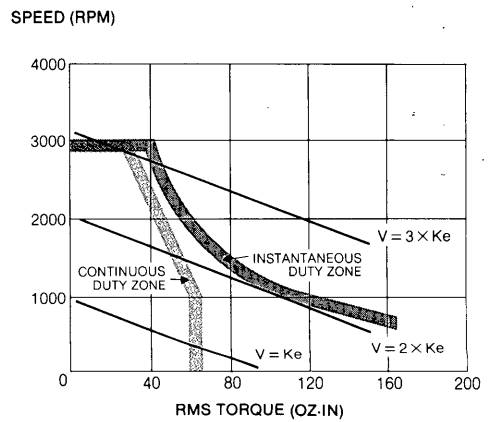
Type J03M



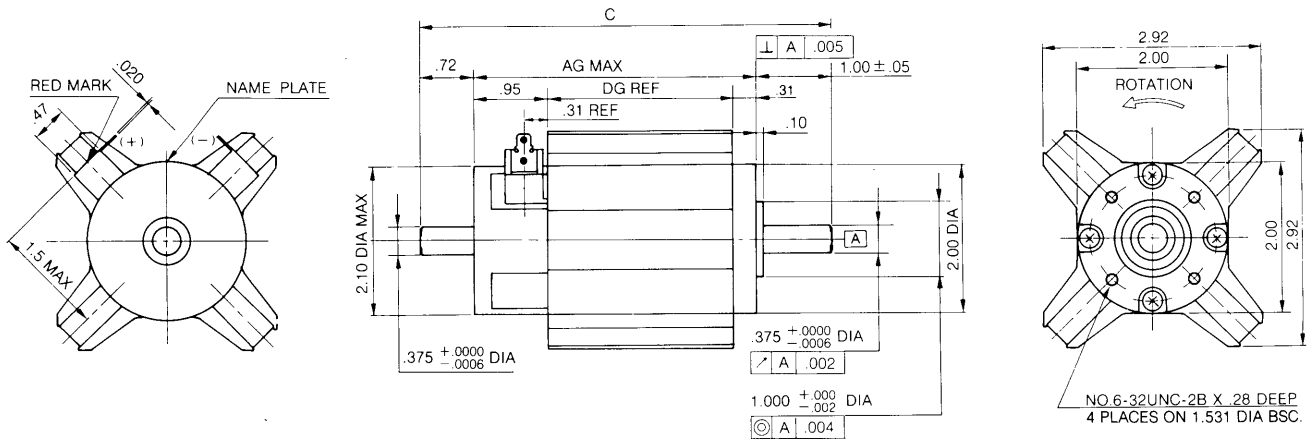
Type J03S



Type J03L

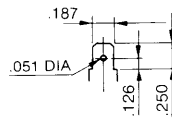


DIMENSIONS in inches



Note:

1. Ccw rotation with positive voltage applied to red mark terminal when viewed from drive end.
2. The motor shaft is pre-loaded with spring washers toward opposite drive end by 5 pounds.
3. Shaft end play .002 max under of 2 pounds thrust.
4. All dimensions in inches,
2-decimal tolerance $\pm .03$,
3-decimal tolerance $\pm .010$.



FASTON 187 SERIES TAB
TERMINAL DETAIL

Type	C	AG	DG	Weight lbs
J03S	4.89	3.23	1.91	2.9
J03M	5.44	3.78	2.46	3.6
J03L	5.99	4.33	3.01	4.4

ALLOWABLE RADIAL AND THRUST LOAD

Minertia Motor Type	Allowable Radial Load (F _R) lb	Allowable Thrust Load (F _S) lb	Reference Diagram in.
J03S	18.5	7	
J03M			
J03L			

Note: Allowable thrust and radial loads are based on the assumption that motor is driven at rated speed and has 10,000 hours of bearing life.



A Better Tomorrow for Industry through Automation

YASKAWA Electric America, Inc.

CHICAGO OFFICE (Head Office) 3160 MacArthur Blvd., Northbrook, Illinois 60062, U. S. A.
Phone (312) 291-2340 Telex (230) 270197 YSKW YSNC NBRK Fax (312) 498-2430

LOS ANGELES OFFICE 7341 Lincoln Way, Garden Grove, California 92641, U. S. A.
Phone (714) 894-5911 Telex (230) 678396 YASKAWAUS TSTN Fax (714) 894-3258

NEW JERSEY OFFICE 30 Two Bridges Road, Fairfield, New Jersey 07006, U. S. A.
Phone (201) 575-5940 Fax (201) 575-5947

YASKAWA ELECTRIC EUROPE GmbH: SUBSIDIARY
Monschauerstrasse 1, 4000 Düsseldorf 11, West Germany
Phone (0211) 501127 Telex (41) 8588673 YASD D Fax (0211) 507737
Manufactured by:

YASKAWA ELECTRIC MFG. CO., LTD.

TOKYO OFFICE Ohtemachi Bldg., Chiyoda-ku, Tokyo, 100 Japan
Phone (03) 284-9111, -9145 Telex YASKAWA J33530 Fax (03) 284-9034

Due to ongoing product modification/improvement, data subject to change without notice.