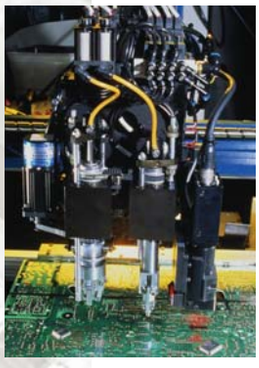
Servo
Motor Brakes



Matrix International

A variety of brake solutions to meet specific servomotor application requirements

For over 30 years, Matrix has designed and manufactured more than 700 variants of spring-applied, electromagnetic brakes for the leading servomotor manufacturers in Europe and the United States.

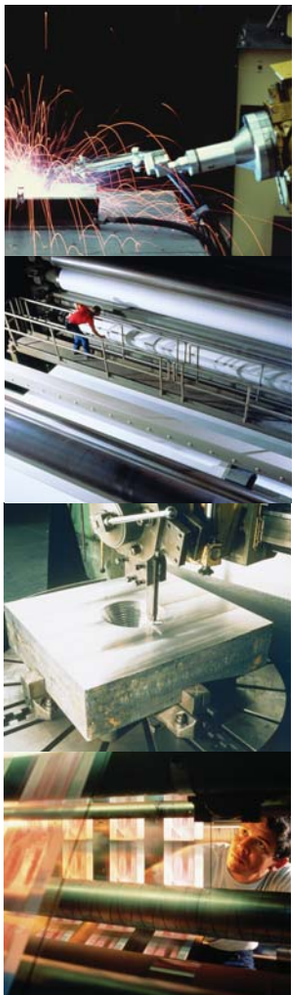
Matrix servomotor brakes provide high torque in small space envelopes.

Our experienced design and development team provides solutions that meet the specific requirements of a wide range of servomotor applications. We utilize sophisticated computer-controlled test equipment that ensures very high quality and consistency levels.

Matrix quality systems are accredited to ISO 9001 ensuring that product design and development, manufacturing and service are of the highest standard. We are in the process of attaining ISO 14001 environmental standards while minimizing our carbon footprint. Our refined manufacturing processes and quality supply chain partners help us provide cost effective products that meet or exceed our customers expectations.

Servo-driven solutions can achieve faster speeds with more precise accuracy while providing greater flexibilty and quicker changeover in various industrial applications including:

- Packaging
- Semiconductors
- Automotive
- Machine Tool
- Medical
- Printing
- Robotics
- Assembly
- Paper Converting



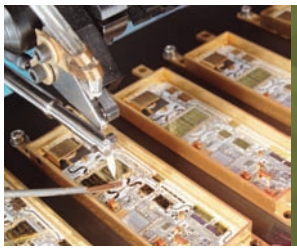
Product Range Specifications

- Torque Ratings from 0.1 to 500 Nm (1 to 4425 in. lbs.)
- Diameters from 22mm (0.86 in.)
- Coil Votages from 6 to 240 VDC
- Options Available:
  - Spring-applied, electrically released brakes with low backlash
  - Spring-applied, electrically released brakes with zero backlash
  - Permanent magnet brakes with zero backlash

Custom Designs

Our flexible engineering systems support design, development, manufacturing and testing of custom solutions. Working with your design team, we can engineer brakes that:

- provide specified performance within given space restrictions
- reduce the number of components by closely integrating the motor and brake
- use high-technology, asbestos-free materials to meet specific torque requirements, high temperature ranges and/or special duty cycle conditions.



1EB SERIES

Servo Motor Brakes

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Servo Motor Applications

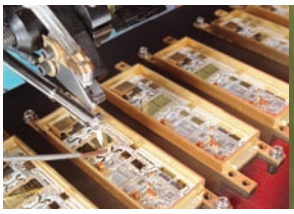
- Packaging
- Semiconductors
- Automotive
- Machine Tool
- Medical
- Printing
- Robotics
- Assembly
- Paper Converting

For Technical Assistance In The U.S.A. Call

800-825-6544

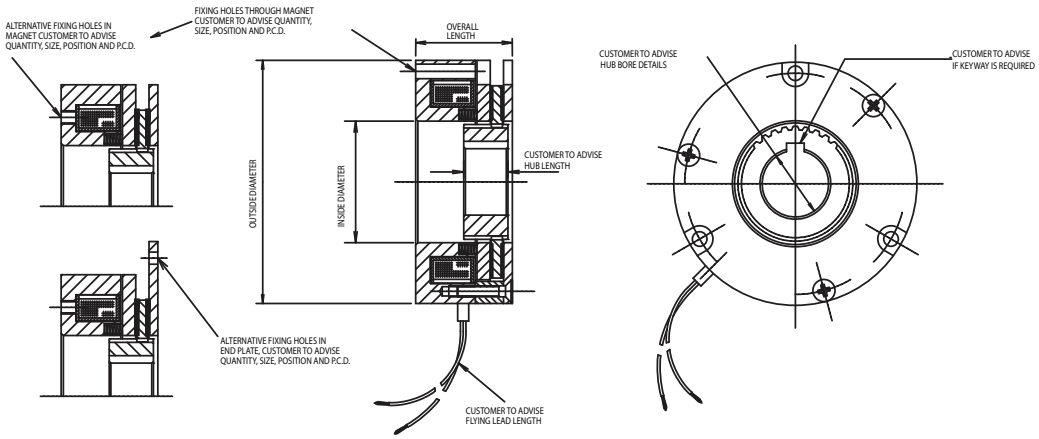
Matrix International

Altra Industrial Motion



1EB SERIES

Servo Motor Brakes



Unit Ref.	Outside Diameter in.	(mm)	Inside Diameter in.	(mm)	Brake Length in.	(mm)	Preferred Max. Hub Bore in.	(mm)	Max. Static Torque lb. in.	(Nm)	Approx. Weight lbs.	(kg)
1EB11	1.58	(40)	0.51	(13)	1.18	(30)	0.39	(10)	3.54	(0,4)	0.44	(0,20)
1EB12	1.73	(44)	0.55	(14)	1.22	(31)	0.47	(12)	10.62	(1,2)	0.66	(0,30)
1EB14	1.97	(50)	0.79	(20)	1.38	(35)	0.47	(12) plain bore	17.70	(2,0)	0.88	(0,40)
1EB17	2.20	(56)	1.02	(26)	1.18	(30)	0.59	(15)	22.12	(2,5)	0.88	(0,40)
1EB18	2.36	(60)	0.79	(20)	1.22	(31)	0.67	(17)	35.40	(4,0)	1.00	(0,45)
1EB20	2.76	(70)	1.18	(30)	1.30	(33)	0.79	(20) plain bore	61.95	(7,0)	1.54	(0,70)
1EB24	3.03	(77)	1.18	(30)	1.38	(35)	1.06	(27) plain bore	106.19	(12,0)	1.76	(0,80)
1EB26	3.27	(83)	1.38	(35)	1.46	(37)	1.26	(32) plain bore	119.47	(13,5)	2.20	(1,00)
1EB27	3.35	(85)	1.38	(35)	1.57	(40)	0.98	(25)	132.74	(15,0)	2.42	(1,10)
1EB28	3.54	(90)	1.38	(35)	1.42	(36)	1.26	(32) plain bore	221.24	(25,0)	2.42	(1,10)
1EB30	3.94	(100)	1.65	(42)	1.73	(44)	1.18	(30) plain bore	265.49	(30,0)	3.74	(1,70)
1EB35	4.33	(110)	2.17	(55)	1.73	(44)	1.57	(40)	442.48	(50,0)	3.96	(1,80)
1EB37	4.72	(120)	2.17	(55)	1.77	(45)	1.57	(40)	486.73	(55,0)	4.84	(2,20)
1EB40	5.04	(128)	2.17	(55)	1.81	(46)	1.57	(40)	530.97	(60,0)	7.26	(3,30)
1EB45	5.71	(145)	2.17	(55)	2.36	(60)	1.57	(40)	619.47	(70,0)	11.00	(5,00)
1EB50	6.30	(160)	2.28	(58)	2.76	(70)	1.57	(40)	1327.43	(150,0)	17.60	(8,00)
1EB60	7.28	(185)	2.60	(66)	2.99	(76)	1.57	(40)	1592.92	(180,0)	26.40	(12,00)
1EB70	8.35	(212)	3.15	(80)	3.70	(94)	1.77	(45)	3539.82	(400,0)	44.00	(20,00)
1EB70-D*	8.35	(212)	3.15	(80)	4.33	(110)	1.77	(45)	3982.30	(450,0)	55.00	(25,00)
1EB80**	10.00	(254)	4.25	(108)	4.72	(120)	2.76	(70)	3539.82	(400,00)	70.00	NA
1EB100**	12.05	(306)	5.04	(128)	5.12	(130)	3.15	(80)	5309.73	(600,00)	90.00	NA

* Brake with double friction disc.
** Brakes have been designed only, i. e. not manufactured.

Note: The table above shows some of the outline data for our range of typical servomotor brakes. It is to be used as a guide only and the torque values are based on static holding use only. For brakes that will see dynamic use or operation at elevated temperatures these values do not apply. The data may vary to suit customer requirements.Matrix International Limited reserves the right to alter any of the above information without prior notice.

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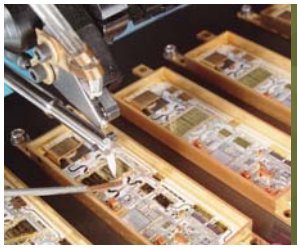

FEATURE COMPARISON

Servo Motor Brakes

Spring Applied versus Permanent Magnet

Spring Applied

Positive Features

- Factory set - easy installation of one-piece assembly
- Can be higher torque - two (or more) friction faces
- Lower cost for given torque rating
- Ratio of Ts to Td can be modified by material selection
- Electric leads not polarity sensitive
- Use of unstable voltage supply
- Smooth deceleration characteristic
- Stable torque - less sensitive to speed change and temperature change
- No bedding in (good from the box)
- Friction material can be non-magnetic
- Fail-safe in use
- Low power when disengaged
- Low inertia
- Stable and predictable life time
- Backlash of <0.50° possible

Negative Features

- Backlash in spline connection
- Zero-backlash style is difficult to install
- Can give noise in operation due to friction plate movement
- Low backlash is more costly (spline size has to be controlled)

Permanent Magnet

Positive Features

- Zero backlash style
- No contact when disengaged
- No 'drag' torque
- Low noise in operation
- Fail-safe in use

Negative Features

- Installation difficult due to two-piece construction
- Air gap has to be set
- Single face – relatively low energy capacity
- Unstable metal-to-metal friction contact
- Metallic dust particles produced in use
- Leads are polarity sensitive
- Needs a stable power supply (current control is best)
- Unable to accept much axial movement due to temperature
- Final stage of deceleration is abrupt
- High power when disengaged
- High inertia
- Long periods of disengagement can result in low torque

Matrix International

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Altra Industrial Motion

Warner Electric

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South Beloit, IL
815-389-3771

For customer service:
1-800-825-6544
For application assistance:
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Electromagnetic Clutches and Brakes - Europe

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For sales office:
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