P12 Motor Data

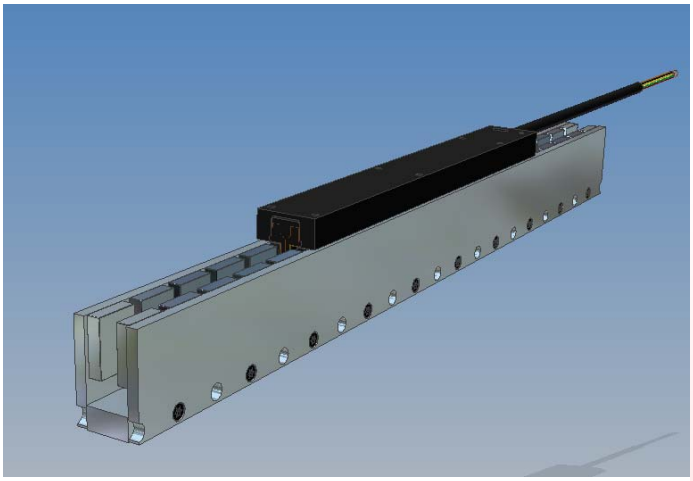
The Smallest Brushless Linear Servo Motor designed for Advanced Motion Applications

Designed for today's most advanced applications, Airex Brushless Linear Servo Motors offer the absolute best in linear motion technology.

Airex patented machine winding technology produces motors with exceptional performance, smooth motion, high accuracy, unmatched unit-to-unit repeatability, high acceleration, and stiffness. Used in high precision processing equipment, these motors meet and exceed the rigorous demands required in today's mfg, assembly, test and inspection environments.

Applications include multi-tiered stages, semiconductor mfg, inspection systems, micro-machining equipment, optical scanning devices, laser machining, and electrical component testing.

The P12 is a standard design in the Solution Series linear motor family. Airex also offers custom designs in ironless rotary and linear configurations.



FEATURES:

- CONTINUOUS FORCE UP TO 24 LBS.
- PEAK FORCE UP TO 76 LBS.
- HIGHEST FORCE TO COIL MASS RATIO
- HIGH ACCURACY/REPEATABILITY
- EFFICIENT THERMAL PERFORMANCE
- VELOCITIES > 3 M/SEC ACCELERATIONS > 5 G
- ZERO MAGNETIC PRELOAD
- SINUSOIDAL OR HALL EFFECT COMMUTATION
- POSITIVE OR NEGATIVE COEFFICIENT THERMISTORS
- HIGH PERFORMANCE RARE EARTH MAGNETS
- LOW INDUCTANCE COIL FOR FAST RESPONSE
- NON-CONTACTING ASSEMBLIES
- CONTINUOUS TRACK TO 24 INCHES
- CONFIGURABLE CONNECTIONS/CABLE OPTIONS
- FULLY CUSTOMIZABLE DESIGN

Solution Series™ Linear Motors

www.airex.com

ISO 9001:2000 CERTIFIED

AIREX CORPORATION
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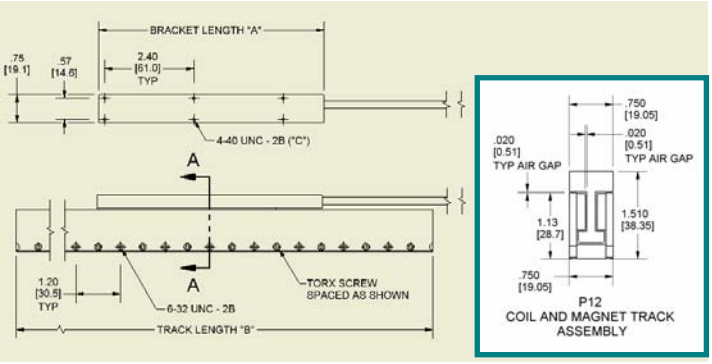
www.airex.com

P12 Motor Data

	UNITS	P12-1	P12-2	P12-3	P12-4
Coil Length	inches [mm]	2.4 [61.0]	4.8 [122.0]	7.2 [182.9]	9.6 [243.8]
Bracket Length *	inches [mm]	3.6 [91.4]	6.0 [152.4]	8.4 [213.4]	10.8 [274.3]
Coil Weight	lbs [Kg]	0.19 [.09]	0.38 [.17]	0.58 [.26]	0.77 [.35]
Magnet Track Weight	lbs/Ft [N/cm]	2.0 [0.3]	2.0 [0.3]	2.0 [0.3]	2.0 [0.3]
Max. Winding Temperature	°C	125	125	125	125
Series Connected Coils					
Force Constant	lbs [N]/Amp	1.9 [8.4]	3.8 [16.8]	5.7 [25.2]	7.5 [33.5]
Coil Resistance ** (6 Lead @25° C)	Ohms	8.70	17.40	26.10	34.80
Phase Resistance ** (@25° C in delta)	Ohms	5.80	11.60	17.40	23.20
Coil Resistance ** (6 Lead @125° C)	Ohms	12.05	24.10	36.16	48.21
Phase Resistance ** (@125° C in delta)	Ohms	8.04	16.07	24.11	32.14
Inductance (6 Lead [Delta] @ 1kHz)	mH	1.9 [1.3]	3.8 [2.5]	5.6 [3.8]	7.5 [5.0]
Continuous Force	lbs [N]	6.0 [26.7]	12.0 [53.3]	18.0 [80.0]	24.0 [106.7]
Continuous Current ***	Amps	3.18	3.18	3.18	3.18
Continuous Power (@125° C)	Watts	81	163	244	325
Peak Force	lbs [N]	19 [84]	38 [169]	57 [253]	76 [337]
Peak Current ***	Amps	10.06	10.06	10.06	10.06
Peak Power (@125° C; 10% Duty Cycle)	Watts	813	1625	2438	3251
Back EMF Constant	V/ips [V /mps]	0.2 [8.4]	0.4 [16.8]	0.6 [25.2]	0.9 [33.5]
Electrical Time Constant **	msec	0.22	0.22	0.22	0.22
Thermal Resistance	°C/Watt	1.60	0.80	0.53	0.40
Motor Constant	lbs [N]/√W	0.7 [2.96]	0.9 [4.18]	1.2 [5.12]	1.3 [5.92]
Parallel Connected Coils					
Force Constant	lbs [N]/Amp	0.9 [4.2]	1.9 [8.4]	2.8 [12.6]	3.8 [16.8]
Coil Resistance ** (6 Lead @125° C)	Ohms	2.13	4.27	6.40	8.53
Phase Resistance ** (@25° C. in delta)	Ohms	1.42	2.84	4.27	5.69
Coil Resistance ** (6 Lead @125° C)	Ohms	3.31	6.61	9.92	13.23
Phase Resistance ** (@125° C. in delta)	Ohms	2.20	4.41	6.61	8.82
Inductance @ (6 Lead [Delta] @ 1kHz)	mH	0.5 [0.3]	0.9 [0.6]	1.4 [0.9]	1.9 [1.3]
Continuous Force	lbs [N]	6.0 [26.7]	12.0 [53.3]	18.0 [80.0]	24 [106.7]
Continuous Current ***	Amps	6.36	6.36	6.36	6.36
Continuous Power (@125° C)	Watts	89	178	268	357
Peak Force	lbs [N]	19 [84]	38 [169]	57 [253]	76 [337]
Peak Current ***	Amps	20.11	20.11	20.11	20.11
Peak Power (@125° C; 10% Duty Cycle)	Watts	892	1783	2675	3567
Back EMF Constant	V/ips [V /mps]	0.1 [4.2]	0.2 [8.4]	0.3 [12.6]	0.4 [16.8]
Electrical Time Constant **	msec	.22	.22	.22	.22
Thermal Resistance	°C/Watt	1.46	0.73	0.49	0.36
Motor Constant	lbs [N]/√W	0.6 [2.82]	0.9 [3.99]	1.1 [4.89]	1.3 [5.65]

* Length is specified without Hall device
** These specifications reflect a 6 lead or delta connected coil with 1 foot of cable. A 6-lead motor has Start/Finish leads available at the cable end for control of each individual phase. Additional cable will increase resistance values.
*** An appropriate heat sink is required to dissipate the continuous power generated by the motor coil and maintain the coil assembly at or below the maximum specified operating temperature.



P12 Series	-1	-2	-3	-4
Bracket "A" inches [mm]	3.6 [91.4]	6.0 [152.4]	8.4 [213.4]	10.8 274.3]
# of Holes "N"	4	6	8	10
Track "B"	Increments of 1.2" to 48" long			

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