

MAG™ Moving Magnet Linear Motor Stage

Features

- Direct drive linear motor
- Anti-creep cross roller design for smooth motion
- compact cross section 150mm x 50mm
- No moving cables



Linear Motor Stage

The MAG Linear motor stage is a very compact, high performance, direct drive table suitable for use in applications that require high accelerations as well as high performance scanning. The product line has been designed in two versions, MAG-IC stage, which is best suited for high acceleration point-to-point type moves, and MAG-IL stage, which is suited for scanning type applications.

Cross sections for both MAG-IC and MAG-IL stages are identical at 50mm tall x 150mm wide. Any two versions will bolt directly together to form a very stiff, compact X-Y assembly, without the need of adapter plates. MAG stages employ a moving magnet design, which locates all cables and connectors in the stationary base. The resulting absence of any moving cable is clean and eliminates motion errors due to cable forces. The precision ground cross roller way provides high stiffness together with smooth motion, and are capable of supporting torques due to offset loads. Cage creep is eliminated through the use of geared cage assemblies.

Two types of linear motors are available, the MAG-IC stage incorporates ironcore motors while the MAG-IL stage uses ironless. Each one provides characteristics that are optimal depending on the applications. Iron core motors, which have their coils wound on steel laminates, maximizes force with a single-sided magnet way. Their high thrust force make them ideal for accelerating and moving higher masses, and maintaining stiffness during process forces. Ironless motors have no iron, therefore, these motors have zero cogging and no attractive forces between the coil and the magnetic way. These characteristics make these types of motors ideal for applications that require constant velocity control.

The built-in non-contact encoder is available with resolutions from 1 micron to 50 nanometers in digital and 10 nanometers with 1vpp with 2048 interpolation. Both versions plug directly into Kollmorgen CD and Pico products for a complete staging and controller solution and are available in standard travels of 50 to 300 millimeter in 50 millimeter increments.

MAG MOVING MAGNET LINEAR MOTOR STAGE SPECIFICATIONS

Specification	MAG-50 Stage	MAG-100 Stage	MAG-150 Stage	MAG-200 Stage	MAG-250 Stage
Travel (mm)	50	100	150	200	250
Accuracy (microns)	3	5	8	10	12
Resolution Options (microns)	1, 0.5, 0.1, 0.05				
Bi-Directional Repeatability	± 1 count	±1 count	± 1 count	± 1 count	± 1 count
Maximum Acceleration (m/s²) IC	50	50	50	40	30
Maximum Acceleration (m/s²) IL	20	20	18	17	16
Maximum Velocity (m/s)	5	5	5	5	5
Load Capacity (kg)*	75	75	75	75	75
Moving Mass (kg) IC	2.4	2.7	3	4	5
Moving Mass (kg) IL	5.8	6.0	6.1	6.3	6.5
Total Mass (kg) IC	3.8	4.8	5.5	6.5	9
Total Mass (kg) IL	8.5	8.8	9.0	9.3	9.5
Pitch & Yaw (arc-seconds)	5	10	15	20	25
Straightness & Flatness (microns)	3	5	7	9	12

Motor Force Specification	IC Configuration	IL Configuration
Fundamental Motor Constant	10 N / √Watt	4.7 N / √Watt
Motor Force Constant	26.7 N/A	16.8 N/A
Back-emf Constant	21.8 V/m/s	13.7 V/m/s
Coil Resistance @ 25°C	3.2 Ohms	6.1 Ohms
Coil Inductance	9.1 mH	1.3 mH
Continuous Current @ 130°C	2.1 A	2.3 A
Peak Current	7.9 A	7.1 A
Continuous Force @ 130°C	57 N	38 N
Peak Force	170 N	120 N
Continuous Power Rating	30 W	65 W
Thermal Resistance	3.5°C/W	1.61°C/W

* Please contact our Applications Engineers for loads exceeding 75kg.

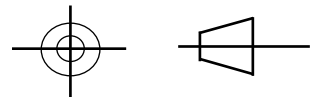
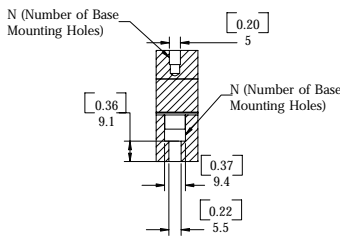
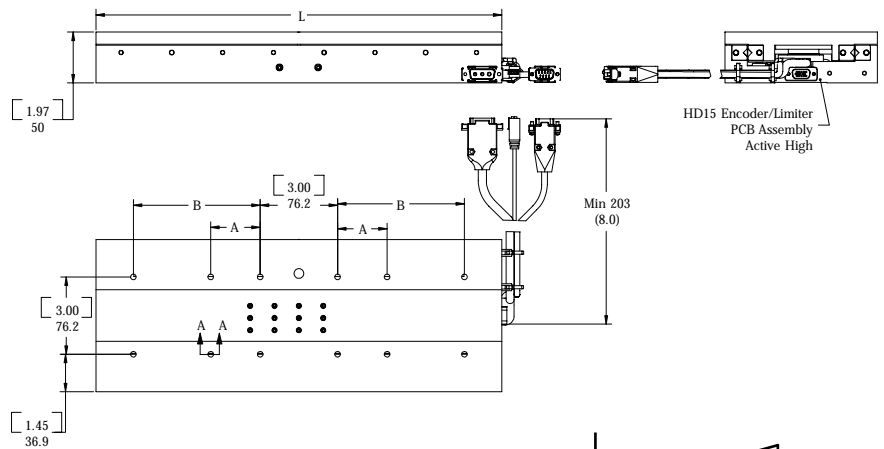
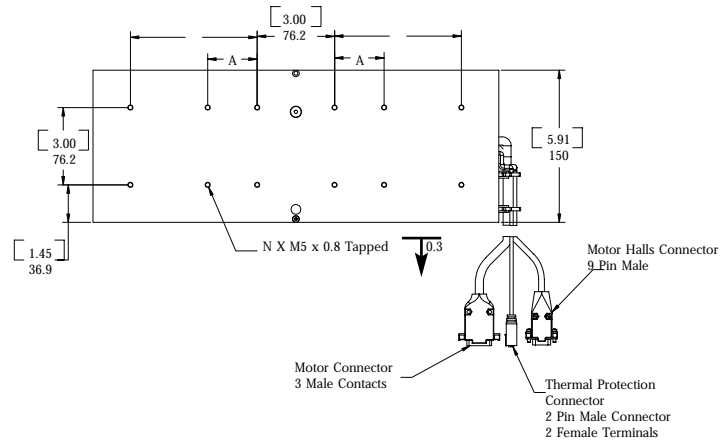
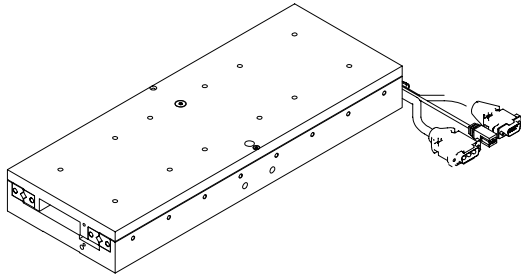
Note: Maximum speed and velocity is load and encoder dependent.



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MAG MOVING MAGNET LINEAR MOTOR STAGE SPECIFICATIONS



Third Angle Projection

Model	Part #	Travel	Length (L)	Dim. A	Dim. B	N
MAG-50 Stage	1122348	59 (1.97)	200 (7.87)	N/A	N/A	4
MAG-100 Stage	1122349	100 (3.94)	250 (9.8)	76.2 (3)	NA	8
MAG-150 Stage	1122358	150 (5.91)	300 (11.81)	76.2 (3)	N/A	8
MAG-200 Stage	1122359	200 (7.87)	350 (13.78)	38.1 (1.5)	114.3 (4.5)	12
MAG-250 Stage	1122349	250 (9.84)	400 (15.75)	48.77 (1.92)	125.0 (4.92)	12

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