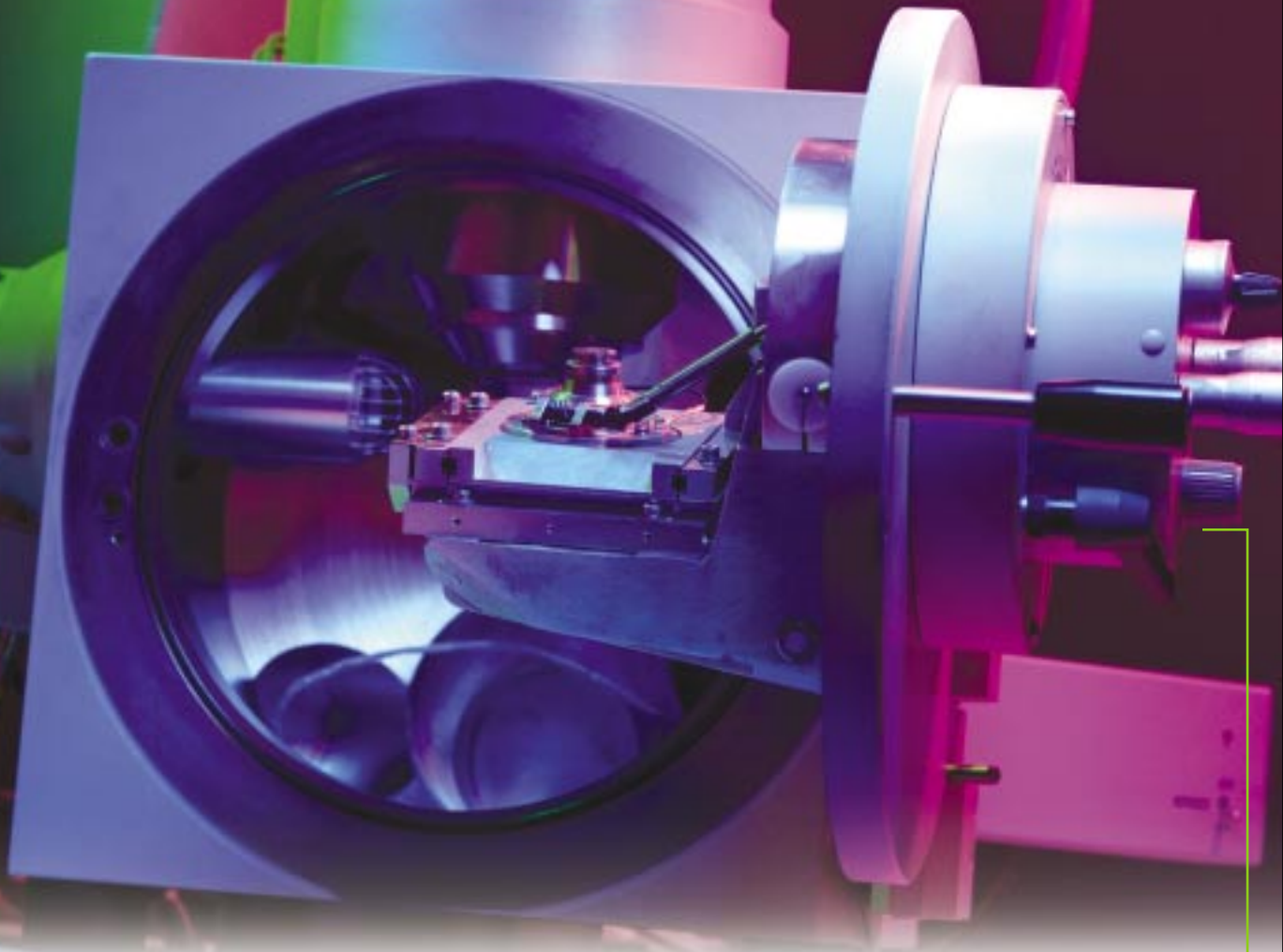


# Nanomotion's MM Motor

Nanomotion's MM Motor

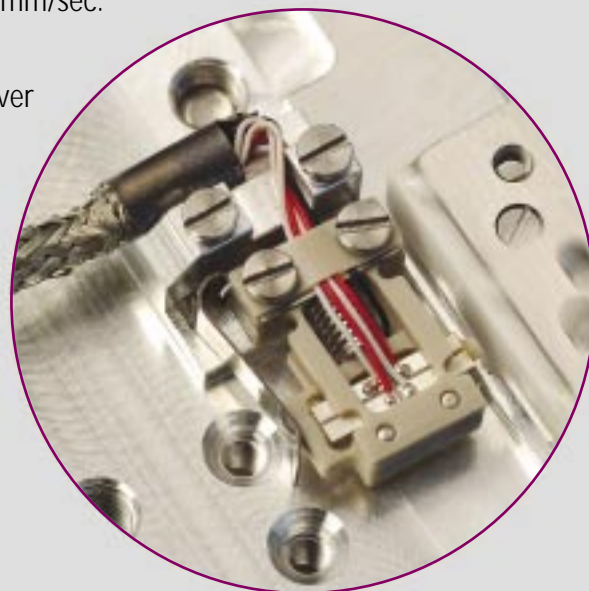


Nanomotion's MM motor is the smallest industrial motor of its kind that provides unlimited linear or rotary motion, with 0.17N of driving force and velocity up to 220mm/sec.

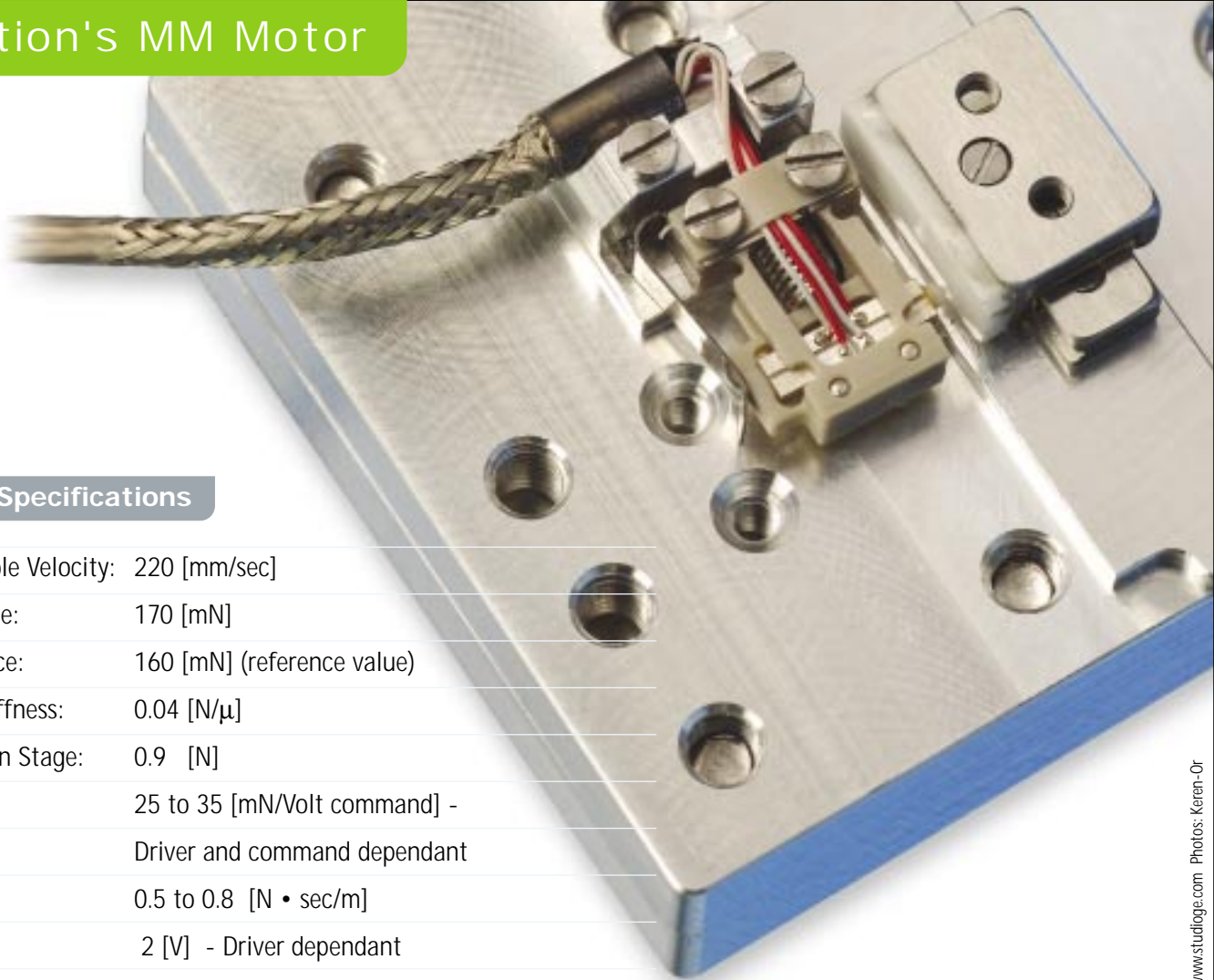
The MM motor works with Nanomotion's standard AB4 and AB2 driver amplifiers and any servo controller, and can be integrated into most bearing structures.

## Key MM Motor Features:

- Exceptionally small dimensions
- Excellent move and settle characteristics
- Suitable for high vacuum environments
- Inherent brake at power off
- Unlimited travel
- Wide dynamic velocity range – from 100 microns/sec to 220 mm/sec
- No intrinsic magnetic field
- High resolution



# Nanomotion's MM Motor



## Performance Specifications

|                             |  |
|-----------------------------|--|
| Maximum Allowable Velocity: | 220 [mm/sec]   |
| Dynamic Stall Force:        | 170 [mN]   |
| Static Holding Force:       | 160 [mN] (reference value)                                   |
| Non-Energized Stiffness:    | 0.04 [N/ $\mu$ ]   |
| Nominal Preload on Stage:   | 0.9 [N]  |
| Kf:                         | 25 to 35 [mN/Volt command] -<br>Driver and command dependant |
| Kfv:                        | 0.5 to 0.8 [N • sec/m]                                       |
| Offset:                     | 2 [V] - Driver dependant                                     |
| Attainable Resolution:      | Better than 50 nm  |
| Nominal Lifetime:           | 20,000 hours under nominal operating conditions              |

## Physical

|                      |                  |
|----------------------|------------------|
| Physical dimensions: | 9mm x 17mm x 5mm |
| Motor weight:        | 5 grams          |

## Environmental

|                       |                                    |
|-----------------------|------------------------------------|
| Ambient Temperature:  | 0 - 50°C                           |
| Storage:              | -40°C - +70°C                      |
| Humidity:             | 0 - 80% non condensing             |
| Residual Magnetism:   | 0.27 nT                            |
| Vacuum compatibility: | 1E-7 Torr. Guaranteed after baking |
| Bake-Out:             | Max 24Hr @ 120°C                   |

## Electrical

|                              |                    |
|------------------------------|--------------------|
| Maximal Voltage:             | 70 Vrms, sine wave |
| Maximal Current Consumption: | 18 mA rms          |
| Maximal Power Consumption:   | 350 mW             |

## Envelop of Performance

|  |       |
|--|-------|
| Maximum continues operation<br>at 3.5-10V command: | 4 sec |
| Maximum Duty Cycle at<br>10V command:              | 10%   |