

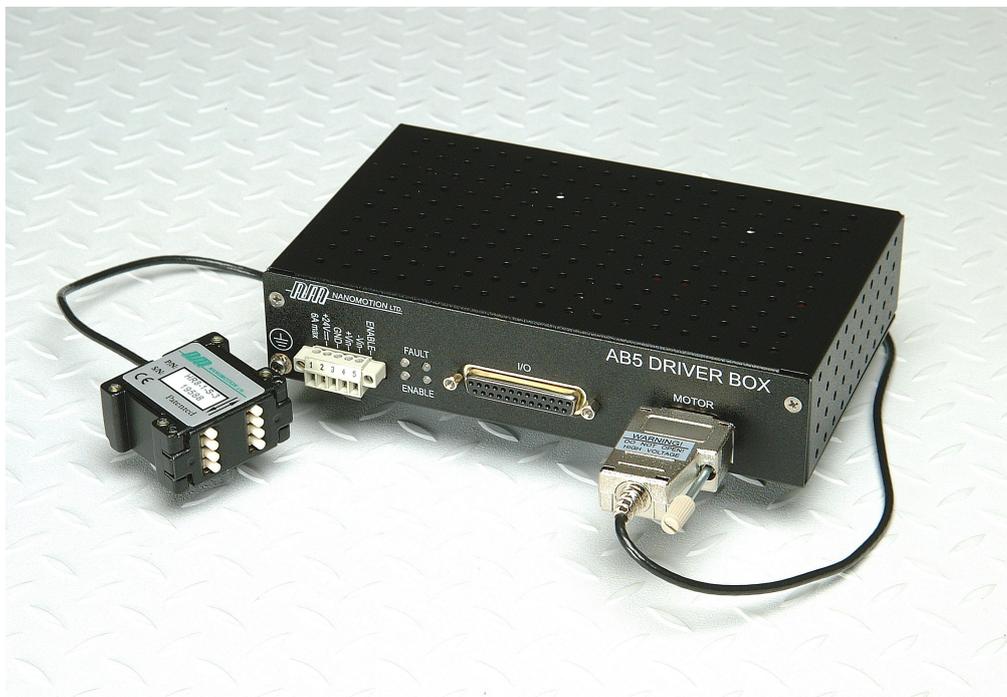
## Technical Bulletin 105

### Motor Run-In (Conditioning) Using the AB-5 Driver

#### Introduction

Run-in (conditioning) of any Nanomotion motor prior to operation is an important action, as it stabilizes dynamic performance, reduces wear rate and increases the lifetime of the system.

The AB5 driver is unique in its mode of operation as compared to other Nanomotion drivers, as it allows a full linear response starting with very low commands. In order to do so, the AB5, when enabled, energizes the motor even at 0 command. Consequently, the AB5 may cause the motor to overheat, especially during the initial phase of conditioning. This technical bulletin is intended to instruct the user on how to safely run-in/condition Nanomotion motors while using the AB5 driver.



**AB5 Driver with HR8 ceramic servo motor**



## **Run-in/Conditioning Procedure**

**IMPORTANT:** Run-in/conditioning of all Nanomotion motors **MUST** be performed after initial assembly and before motor tuning. In addition, run-in/conditioning should be performed any time a motor has been removed and remounted, or its pre-load released.

**CAUTION:** Limit the command to 5V and use the “Abort on Position Error” option of the controller in order to protect the motor during initial integration and run-in/conditioning.

**CAUTION: Do not** perform run-in/conditioning procedures in vacuum environments. The run-in/conditioning procedure should be performed in ambient conditions only.

The run-in/conditioning procedure is as follows:

1. Set the run-in/conditioning procedure to cover the whole expected operated travel of the ceramic drive strip.
2. Run the stage repetitively from end to end in either closed-loop or open-loop operation. Closed-loop has the advantage of controlled acceleration, speed and deceleration, and the ability to avoid hitting the hard stops. Open-loop has the advantage of simplicity and forced duty cycle.
3. Velocity - 100 mm/sec.
4. Duty cycle - 25%. This means that the dwell time (AB5 disabled) should be three times longer than the move time (AB5 enabled). The AB5 should be disabled during the dwell (standing) time.
5. Duration of run-in/conditioning:
  - i. 8 hours for all HR and ST series motors
  - ii. 16 hours for all DuraMotor series motors
  - iii. 18 to 20 hours for applications that use Ceramic Coated Strips (CCS), in order to stabilize control
6. Wipe the ceramic drive strip surface with isopropyl alcohol approximately one hour into the conditioning process.
7. At the end of the run-in/conditioning procedure, wipe the drive strip again with isopropyl alcohol **without** retracting the motor's fingers.



**Contact Information:**

**Nanomotion Ltd. Headquarters**

Nanomotion Ltd.

PO Box 223

Yokneam, Israel 20692.

Tel: +972-4-9590862

Fax: +972-4-9590995.

Web site: [www.nanomotion.com](http://www.nanomotion.com)

Email: [nano@nanomotion.com](mailto:nano@nanomotion.com)

**Nanomotion Inc. (US) Headquarters**

Nanomotion Inc

1 Comac Loop, Ste. 14B2

Ronkonkoma, NY 11779

Tel: (800)821-6266

Fax: (631)585-1947

Web site: [www.nanomotion.com](http://www.nanomotion.com)

Email: [nanous@nanomotion.com](mailto:nanous@nanomotion.com)