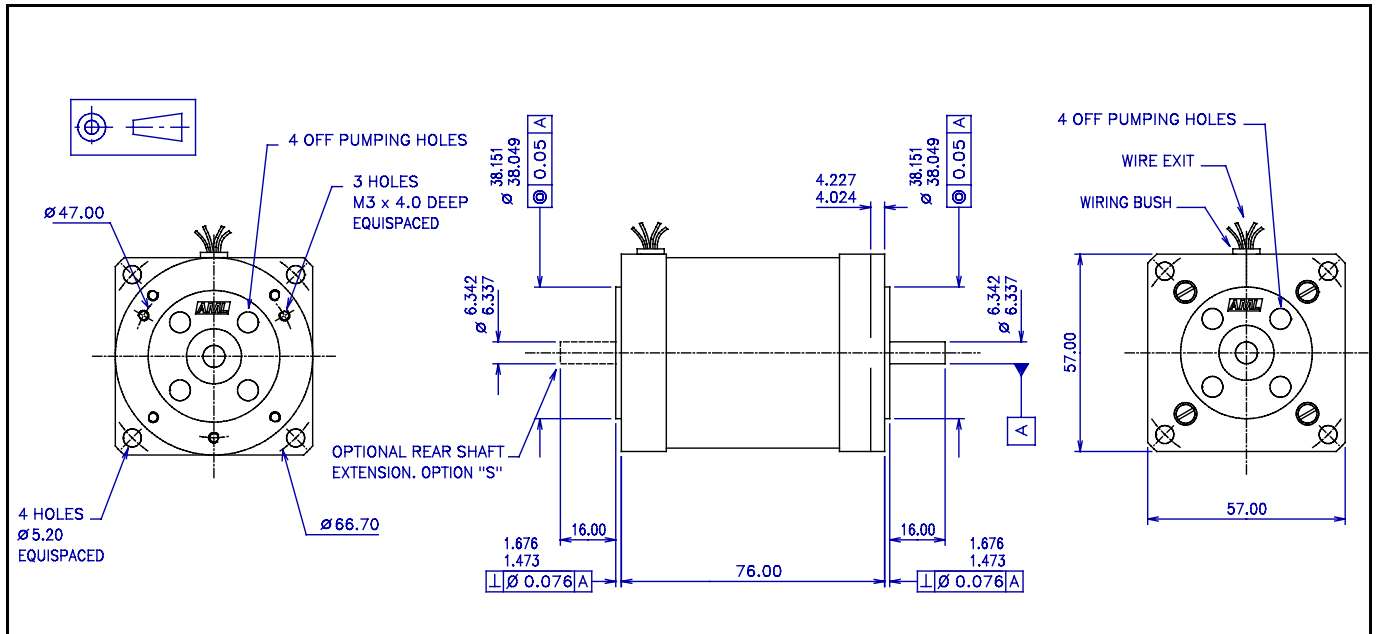


HIGH-POWER UHV STEPPER MOTOR MODEL B23.2

This large UHV-compatible stepper motor has a significantly greater torque and mass compared to other AML motors. Where space is available, using this motor will result in the lowest temperature rise in vacuum and hence the least gas load for a given work load. It incorporates all the advanced materials and construction of other AML B-series motors.



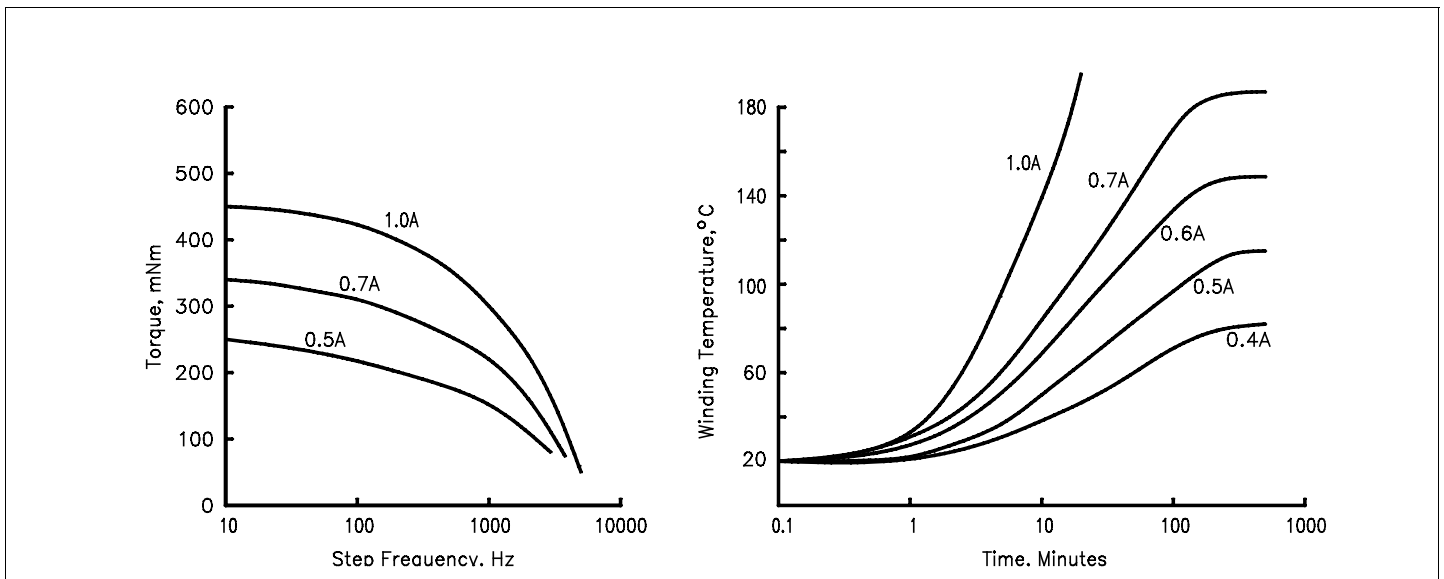
- ◆ Proven technology: similar AML motors have been in constant use since 1986. Warranty returns are less than 0.2%
- ◆ Reduced thermal resistance between windings and case. Continuous running in vacuum at 0.7A is possible.
- ◆ Hybrid ceramic bearings for long life and reduced friction after multiple bakeouts.
- ◆ Greatly reduced outgassing and temperature rise due to advanced design, materials, surface finish and construction.
- ◆ All insulating materials are self-coloured polyimide or PEEK, with exceptional outgassing and insulating performance.
- ◆ Surfaces are etched and coated with DLC for increased emissivity and reduced outgassing.
- ◆ Open construction with all internal spaces ventilated.
- ◆ Very low particulate generation due to the absence of sliding metal contacts.
- ◆ Bakeable to 200°C, suitable for use in vacuum at 77°K.
- ◆ Electrical connections reduced to only 6 durable polyimide film-coated wires.
- ◆ Simplified connection with MLF18 bakeable lead, feedthrough and internal connector. Motors are supplied pre-wired to to 1.5mm socket connectors compatible with MLF18.
- ◆ Dedicated drive, AML type SMD2 is available.
- ◆ Rear shaft and rear wire entry options .
- ◆ Standard and radiation-hard motors are normally available from stock.
- ◆ Suitable for use below 1×10^{-10} mB.

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AML

innovation in vacuum technology

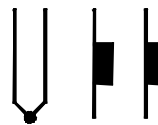
SPECIFICATION



The performance shown on the graphs above was obtained with a motor suspended by two copper braids 6mm diameter and 30 cm long in UHV, simulating a typical application without deliberate heatsinking. The drive was an SMD2 operating with standard settings for step division. SMD2 is a switch-mode current-regulating drive with a nominal source of 67volts, optimised for use with vacuum stepper motors. Different drives will produce different speed/torque curves. Drives capable of producing a total phase current of more than 1A RSS (root sum of squares) may damage the insulation, even if the current is claimed to be adjustable. Drives with significantly lower source voltages will result in poor high-speed performance. Sufficient data are given below for drive selection.

Step angle	1.8°	Bakeout Temperature	200°C
Step angle tolerance (unloaded)	5%	Operating Temperature	< -196 to 175°C
Resistance per phase @ 20 °C	15Ohms	Weight	1kg
Inductance per phase	42mH	Power leads, rad-hard (Cu+Polyimide)	4 x 0.3mm Φ
Motional voltage	56v p-p @ 1kHz	Power leads (Cu+Ag+Poyimide+FEP)	0.6mm Φ
Holding torque (2 phases, 1 A)	0.7Nm	K-type T/C leads (Polyimide)	0.2mm Φ
Detent torque	0.05Nm	Lead length	1.35m
Rotor inertia	200gram cm ²	(N.B Holding with two phases energised at 1A is not a recommended operating condition.)	
		Bearings are silicon nitride balls running in stainless steel cage and races. Wiring bushes are PEEK.	

Wiring Diagram



Identify phases with a meter. Reverse one phase to reverse rotation. The thermocouple alumel wire (negative) is magnetic.

Ordering information: **B23.2** Add suffix **N** for lead-length variation. State length.
Add suffix **R** for radiation-hardness to 10⁹ Rad.
Add suffix **S** for rear shaft
Add suffix **X** for shaft length or flat variation. Supply sketch.

Related products: **SMD2** Dual UHV Stepper Motor Drive
MLF18 Feedthrough, lead and Connector kit
MLF18VCF In-vacuum bakeable connector, 18 way, female. (Can be pre-wired to motor)
PWB PEEK wiring bushes, x 4, +screws M3 x 10mm

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