



SM Series High-Performance Stepper Motor

HARDWARE MANUAL

Revision 3.00



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EU Declaration of Conformity

Manufacturer Aerotech, Inc.
Address 101 Zeta Drive
Pittsburgh, PA 15238-2811
USA



Declares that the product:

Product Stepper Motors
Model/Types SM35, SM60, SM100, SM280, SM465

To which this declaration relates, meets the essential health and safety requirements and is in conformity with the relevant EU Directives listed below:

2014/35/EU	Low Voltage Directive
2014/30/EU	Electromagnetic Compatibility (EMC)
EU 2015/863	Directive, Restricted Substances (RoHS 3)

Using the relevant section of the following EU Standards and other normative documents:

EN 61000-6-3:2007/A1:2011	EMC Generic standards - Emission standard for residential, commercial and light industrial environments
EN 61000-6-2:2005	EMC Generic standards – Immunity for industrial environments
EN 55014-2:1997/A2:2008	Electromagnetic compatibility – Part 2: Immunity
EN 60034:2010	Rotating electrical machines – Part 1: Rating and performance

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Aerotech, Inc.
101 Zeta Drive
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9/12/2023

Date

UKCA Declaration of Conformity

Manufacturer Aerotech, Inc.
Address 101 Zeta Drive
 Pittsburgh, PA 15238-2811
 USA



Declares that the product:

Product Stepper Motors
Model/Types SM35, SM60, SM100, SM280, SM465

To which this declaration relates, meets the essential health and safety requirements and is in conformity with the relevant UK Legislation listed below:

Electrical Equipment (Safety) Regulations 2016
 Electromagnetic Compatibility Regulations 2016
 Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Using the relevant section of the following UK Designated Standards and other normative documents when installed in accordance with the installation instructions supplied by the manufacturer.

EN 61000-6-3:2007/A1:2011	EMC Generic standards - Emission standard for residential, commercial and light industrial environments
EN 61000-6-2:2005	EMC Generic standards – Immunity for industrial environments
EN 55014-2:1997/A2:2008 EN 60034:2010	Electromagnetic compatibility – Part 2: Immunity Rotating electrical machines – Part 1: Rating and performance

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Aerotech, Inc.
 101 Zeta Drive
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Date

Safety Procedures and Warnings



IMPORTANT: This manual tells you how to carefully and correctly use and operate the motor.

- Read all parts of this manual before you install or operate the motor or before you do maintenance to your system.
- To prevent injury to you and damage to the equipment, obey the precautions in this manual.
- All specifications and illustrations are for reference only and were complete and accurate as of the release of this manual. To find the newest information about this product, refer to www.aerotech.com.

If you do not understand the information in this manual, contact Aerotech Global Technical Support.



IMPORTANT: This product has been designed for light industrial manufacturing or laboratory environments. If the product is used in a manner not specified by the manufacturer:

- The protection provided by the equipment could be impaired.
- The life expectancy of the product could be decreased.

Safety notes and symbols are placed throughout this manual to warn you of the potential risks at the moment of the safety note or if you fail to obey the safety note.



Shock/Electrocution Hazard



Pinch, Shear, or Crush Hazard



General/Conditional Awareness



Rotational Machinery Hazard



Hot Surface Hazard



Pinch/Entanglement Hazard



Magnetic Field Hazard



Trip Hazard



Heavy, Bulky Lifting Hazard



Appropriate Equipment Required



Pressure/Explosive Atmosphere Hazard



Electrostatic Discharge Hazard

A blue circle symbol is an action or tip that you should obey. Some examples include:



General tip



Read the manual/section



Wear personal protective equipment (PPE): Safety Glasses



If applicable, do not lift unassisted



Wear personal protective equipment (PPE): Gloves



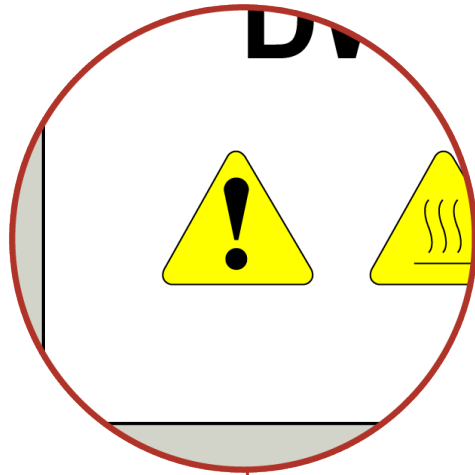
Wear personal protective equipment (PPE): Hearing Protection

Installation and Operation

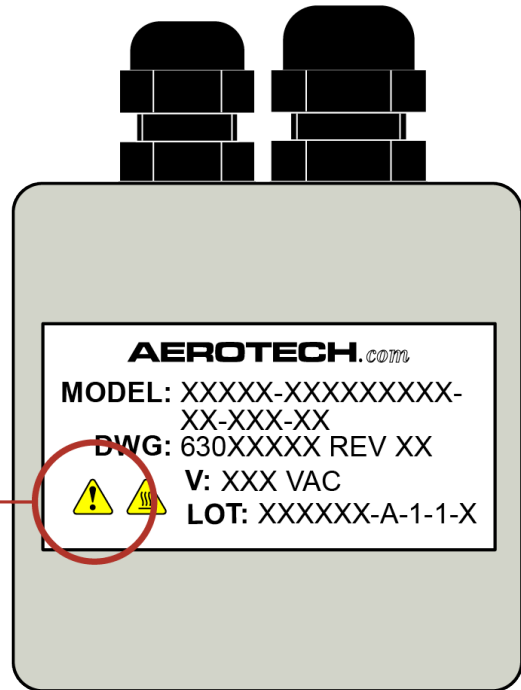
To decrease the risk of damage to the equipment, you must obey the precautions that follow.



IMPORTANT: Aerotech motors are meant to be part of a drive package that consists of an amplifier and a controller. The motor relies on the drive package for fault protection. Do not use these motors in any other way.



This symbol on the motor label means that you must read this manual in its entirety to understand any potential dangers and what actions you will have to take to avoid them.



Rear View

DANGER: General Hazard Warning!



This product can produce high forces and move at velocities that could cause injury. The user is responsible for its safe operation. The following general equation is provided to assist with risk assessments in regards to contact and pinch points:

$$Pressure_{Max} \left[\frac{N}{mm^2} \right] = \frac{Force_{Peak} [N]}{Area_{Contact} [mm^2]}$$

**WARNING: General Hazard Warning!**

- Only trained operators should operate this equipment.
- All service and maintenance must be done by approved personnel.
- Use this product only in environments and operating conditions that are approved in this manual.
- Never install or operate equipment that appears to be damaged.
- Make sure that the product is securely mounted before you operate it.
- Use care when you move the motor or you could negatively affect the performance of it.

**WARNING: Trip Hazard!**

Route, house, and secure all cables, duct work, air, or water lines. Failure to do so could introduce trip hazards around the system that could result in physical injury or could damage the equipment.

Electrical Warnings

To decrease the risk of electrical shock, injury, death, and damage to the equipment, obey the precautions that follow.

DANGER: Electrical Shock Hazard!



- Motor phase voltage levels could be hazardous live.
- Personnel are protected from hazardous voltages unless electrical interconnections, protective bonding (safety ground), or motor enclosures are compromised.
- Do not connect or disconnect motor interconnections while connected to a live electrical power source.
- Before you set up or do maintenance, disconnect electrical power.
- Make sure that the motor frame is safety grounded with a conductor equal in size to the phase conductors.
- The drive must contain a properly-sized fuse, matched to the motor cable wire size.
- It is the responsibility of the End User/System Integrator to make sure that motors are properly connected and grounded per Engineering Standards and applicable safety requirements.
- It is the responsibility of the End User/System Integrator to configure the system drive or controller within the Aerotech motor electrical and mechanical specifications.

Motor-Related Warnings

Aerotech motors are capable of producing high forces and velocities. Obey all warnings and all applicable codes and standards when you use or operate a stage or system that incorporates Aerotech motors.

DANGER: Mechanical Hazard!



Personnel must be made aware of the mechanical hazards during set up or when you do service to the motor.

- Unintentional manual movement into the stage "end-of-travel" stops, could damage the stage or undo precision alignments.
- Motor movement could create pinch points, entanglement hazards, or rotational mechanical hazards.
- Uncouple or otherwise prevent motion of motor-coupled machinery when you do service to the equipment.

DANGER: Hot Surface Hazard!



- The motor frame temperature could exceed 70°C in some applications.
- Do not touch the motor frame while it is in operation.
- Wait until the motor has cooled before you touch it.

DANGER: Risk of Explosive Atmosphere!



- Standard Aerotech motors are not rated for applications with explosive atmospheres such as airborne dust or combustible vapors.
- Do not operate motors outside of Aerotech environmental specifications.

DANGER: Magnetic Field Hazard!



Aerotech motors contain magnets which can present a Magnetic Field Hazard.

- Do not disassemble a motor under any circumstances.
- Strong magnetic fields could interfere with external/internal medical devices.
- Strong magnetic fields could present mechanical hazards such as pinch points.

Pinch Points

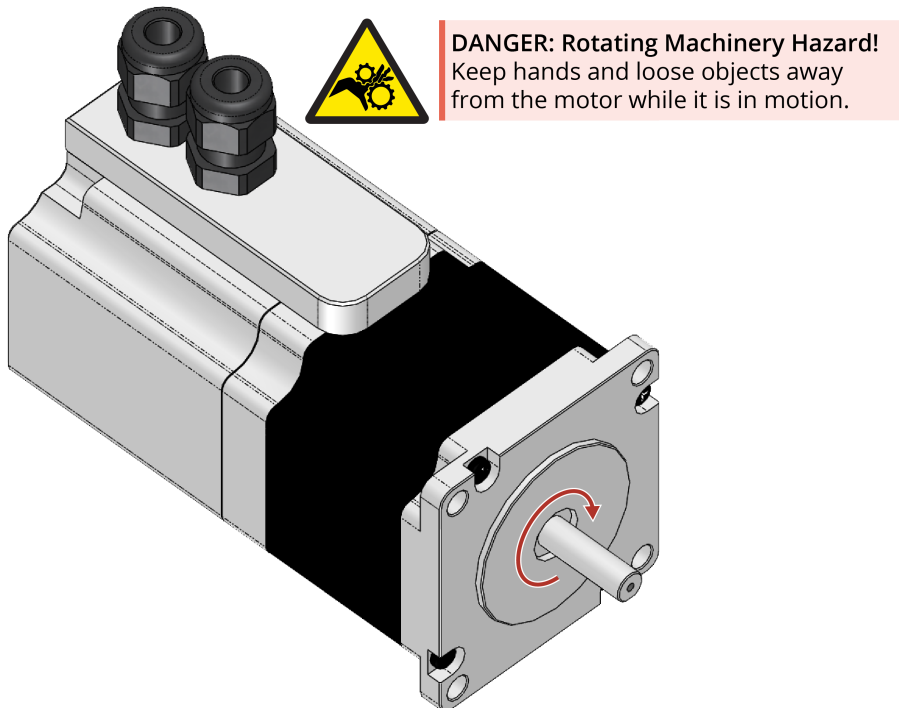
A pinch point is a mechanical hazard that can occur when there are exposed parts of the motor, stage, or system that can move. For example, the travel of a stage tabletop could expose the user to a pinch point between the tabletop and the stage housing. The images that follow will show you typical external and internal pinch point locations.

DANGER: Mechanical Hazard!



- System travel can cause crush, shear, or pinch injuries.
- Only trained operators should operate this equipment.
- Do not put yourself in the travel path of machinery.
- Restrict access to all motor parts
 - when the system moves under power (during normal operation, for example).
 - when the system is moved manually (during the installation process or when you do maintenance, for example).
- Motors are capable of very high speeds and acceleration rates.

Figure 1: Typical Pinch Point Locations



Handling and Storage



IMPORTANT: It is the responsibility of the customer to safely and carefully lift and move the motor.

- Be careful when you move or transport the motor.
- Retain the shipping materials for future use.
- Transport or store the motor in its protective packaging.



WARNING: Electrostatic Discharge (ESD) Sensitive Components!

Wear an ESD wrist strap when you handle, install, or do service to the system assembly. You could damage the power supply or drives if you fail to observe the correct ESD practices.

Inspect the shipping container for any evidence of shipping damage. If any damage exists, notify the shipping carrier immediately.

Remove the packing list from the shipping container. Make sure that all the items specified on the packing list are contained within the package.

The documentation for the motor is on the included installation device. The documents include manuals, interconnection drawings, and other system documentation. Save this information for future reference.

Each motor has a label listing the system part number and serial number. These numbers contain information necessary for maintenance or system hardware and software updates. Locate this label and record the information for later reference.

Unpacking and Handling

It is the responsibility of the customer to safely and carefully lift and move the motor.



IMPORTANT: All electronic equipment and instrumentation is wrapped in antistatic material and packaged with desiccant. Ensure that the antistatic material is not damaged during unpacking.



DANGER: Lifting Hazard! Use care when you move the motor or you could negatively affect the performance of it.

- Use the correct lifting techniques, mechanical assistance, or additional help to lift or move this product.
- Do not use the cables or the connectors to lift or move this product.
- Make sure that all moving parts are secure before you move the motor. Unsecured moving parts could shift and cause injury or damage to the equipment.
- If the motor is heavy, a single person lift could cause injury. Use assistance when you lift or move it.
 - Refer to [Section 1.2. Dimensions](#) for dimensions
 - Refer to [Section 1.1. Motor Specifications](#) for weight specifications.

Carefully remove the motor from its protective shipping container.

- Lift this product only by the base.
- Use a cart, dolly, or similar device to move the motor to a new location.

Gently set the motor on a smooth, flat, and clean surface. Use compressed nitrogen or clean, dry, oil-free air to remove any dust or debris that has collected during shipping.

Before you operate the motor, let it stabilize at room temperature for at least 12 hours. This will ensure that all of the alignments, preloads, and tolerances are the same as they were when they were tested at Aerotech.

Storage

Store the motor in the original shipping container. If the original packaging included ESD protective packaging, make sure to store the motor in it. The storage location must be dry, free of dust, free of vibrations, and flat.

Refer to [Section 1.3. Environmental Specifications](#)

Chapter 1: Overview

Table 1-1: SM Stepper Motor Options

Permanent Magnet Stepper Motors	
SM35	NEMA 17 stepper motor
SM60	NEMA 23 stepper motor
SM100	NEMA 23 stepper motor, high torque
SM280	NEMA 34 stepper motor
SM465	NEMA 34 stepper motor, high torque
Add Ons (Optional)	
-CN1	Standard connectorized motor
-BK	Holding brake
-E1	1000-line incremental square-wave encoder with marker (RS-422 line-drive output)
-E2	1000-line incremental 1 Vpp amplified sine-wave encoder with marker
-D	Viscous damper (only available on NEMA 17 and NEMA 23 SM motors.)
Bus Voltage Selection (Optional for NEMA 23 and NEMA 34 Motors Only)	
-VT1	Low voltage model
-VT2	High voltage model

1.1. Motor Specifications

The specifications for the SM series stepper motors are listed in [Table 1-2](#), [Table 1-3](#), [Table 1-4](#), [Table 1-5](#), and [Table 1-6](#).

Table 1-2: SM35 Stepper Motor Specifications

	SM35
NEMA Motor Frame Size	NEMA 17
Stall Torque	0.78 N·m (111 oz·in)
Rated Phase Current	3.0 A
Maximum Voltage Across the Motor	35 V
Rotor Inertia	$1.02 \times 10^{-5} \text{ kg}\cdot\text{m}^2$ (0.0014 oz·in·s ²)
Full Step Angle	1.8°
Accuracy	±0.09°
Maximum Radial Load	2.9 kg (6.3 lb)
Maximum Thrust Load	1.0 kg (2.2 lb)
Weight	0.50 kg (1.1 lb)

Table 1-3: SM60 Stepper Motor Specifications

	SM60-VT1	SM60-VT2
NEMA Motor Frame Size	NEMA 23	NEMA 23
Stall Torque	1.23 N·m (175 oz·in)	1.41 N·m (200 oz·in)
Rated Phase Current	2.8 A	0.84 A
Maximum Voltage Across the Motor	35 V	160 V
Rotor Inertia	$3.00 \times 10^{-5} \text{ kg}\cdot\text{m}^2$ (0.0042 oz·in·s ²)	$3.00 \times 10^{-5} \text{ kg}\cdot\text{m}^2$ (0.0042 oz·in·s ²)
Full Step Angle	1.8°	1.8°
Accuracy	±0.09°	±0.09°
Maximum Radial Load	7.7 kg (17 lb)	7.7 kg (17 lb)
Maximum Thrust Load	1.5 kg (3.4 lb)	1.5 kg (3.4 lb)
Weight	0.70 kg (1.54 lb)	0.70 kg (1.54 lb)

Table 1-4: SM100 Stepper Motor Specifications

	SM100-VT1	SM100-VT2
NEMA Motor Frame Size	NEMA 23	NEMA 23
Stall Torque	1.85 N·m (262 oz·in)	2.50 N·m (354 oz·in)
Rated Phase Current	3.5 A	0.99 A
Maximum Voltage Across the Motor	35 V	160 V
Rotor Inertia	$4.80 \times 10^{-5} \text{ kg}\cdot\text{m}^2$ (0.0068 oz·in·s ²)	$5.21 \times 10^{-5} \text{ kg}\cdot\text{m}^2$ (0.0074 oz·in·s ²)
Full Step Angle	1.8°	1.8°
Accuracy	±0.09°	±0.09°
Maximum Radial Load	7.7 kg (17 lb)	7.7 kg (17 lb)
Maximum Thrust Load	1.5 kg (3.4 lb)	1.5 kg (3.4 lb)
Weight	1.0 kg (2.2 lb)	1.2 kg (2.6 lb)

Table 1-5: SM280 Stepper Motor Specifications

	SM280-VT1	SM280-VT2
NEMA Motor Frame Size	NEMA 34	NEMA 34
Stall Torque	4.50 N·m (637 oz·in)	8.75 N·m (1238 oz·in)
Rated Phase Current	7.1 A	3.04 A
Maximum Voltage Across the Motor	48 V	160 V
Rotor Inertia	$1.41 \times 10^{-4} \text{ kg}\cdot\text{m}^2$ (0.020 oz·in·s ²)	$2.70 \times 10^{-4} \text{ kg}\cdot\text{m}^2$ (0.038 oz·in·s ²)
Full Step Angle	1.8°	1.8°
Accuracy	±0.09°	±0.09°
Maximum Radial Load	22.5 kg (50 lb)	22.5 kg (50 lb)
Maximum Thrust Load	6.1 kg (14 lb)	6.1 kg (14 lb)
Weight	2.3 kg (5.1 lb)	3.8 kg (8.4 lb)

Table 1-6: SM465 Stepper Motor Specifications

	SM465-VT1	SM465-VT2
NEMA Motor Frame Size	NEMA 34	NEMA 34
Stall Torque	12.0 N·m (1700 oz·in)	11.5 N·m (1637 oz·in)
Rated Phase Current	7.1 A	2.94 A
Maximum Voltage Across the Motor	48 V	160 V
Rotor Inertia	$4.02 \times 10^{-4} \text{ kg}\cdot\text{m}^2$ (0.057 oz·in·s ²)	$4.02 \times 10^{-4} \text{ kg}\cdot\text{m}^2$ (0.057 oz·in·s ²)
Full Step Angle	1.8°	1.8°
Accuracy	±0.09°	±0.09°
Maximum Radial Load	22.5 kg (50 lb)	22.5 kg (50 lb)
Maximum Thrust Load	6.1 kg (14 lb)	6.1 kg (14 lb)
Weight	5.4 kg (12 lb)	5.3 kg (11.7 lb)

1.2. Dimensions

Figure 1-1: SM35 Model Dimensions (NEMA 17)

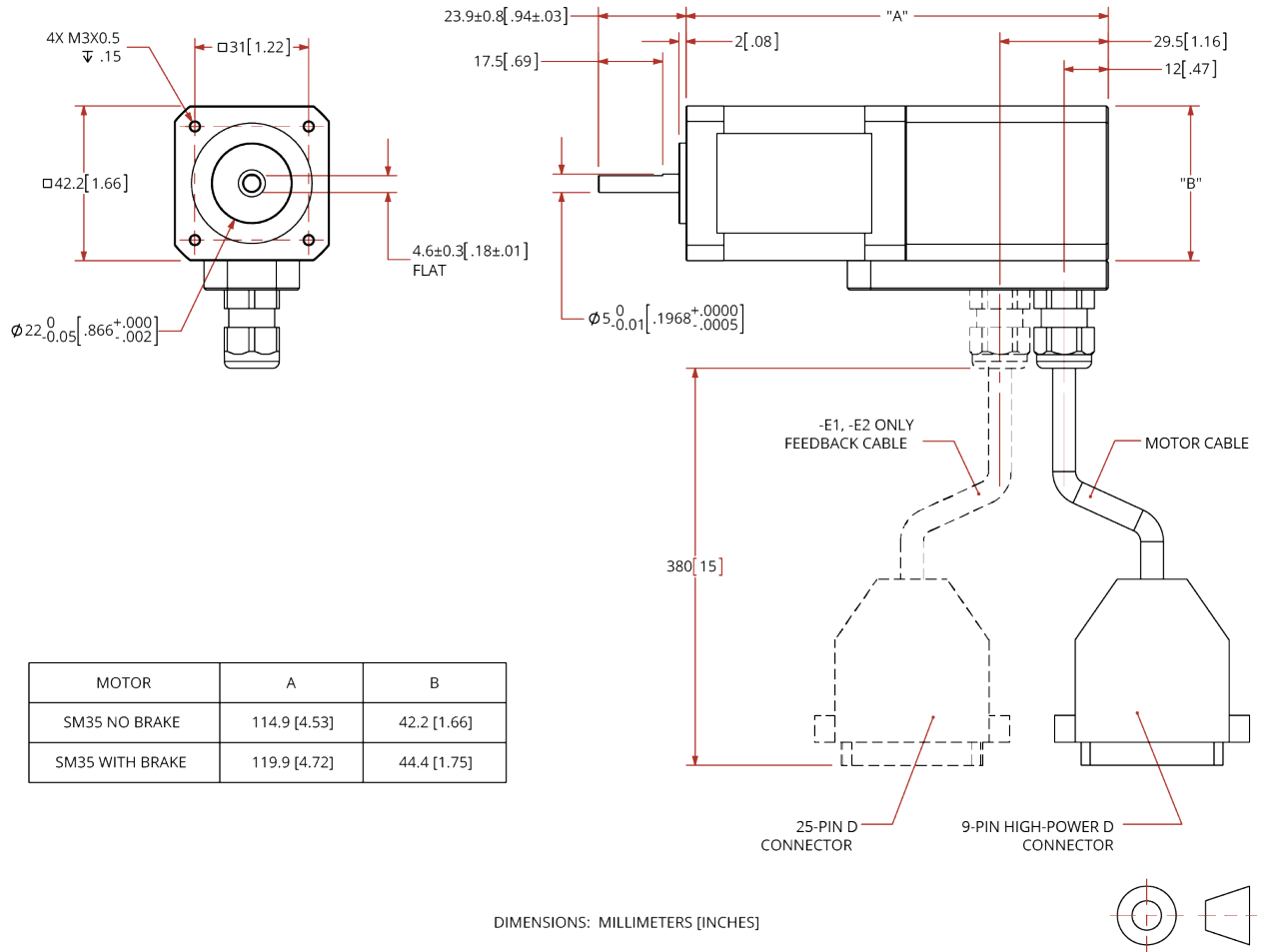


Figure 1-2: SM60 and SM100 Model Dimensions (NEMA 23)

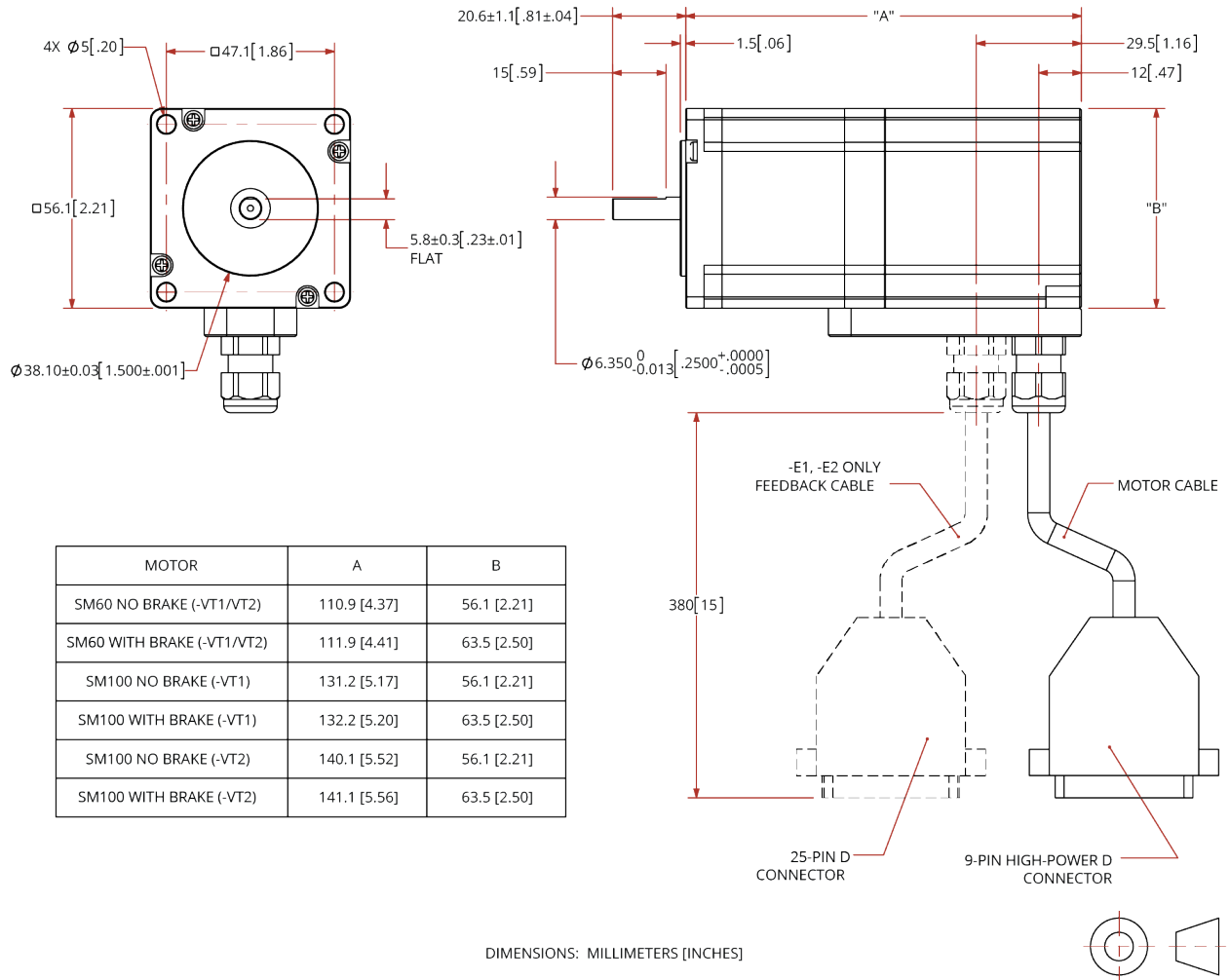
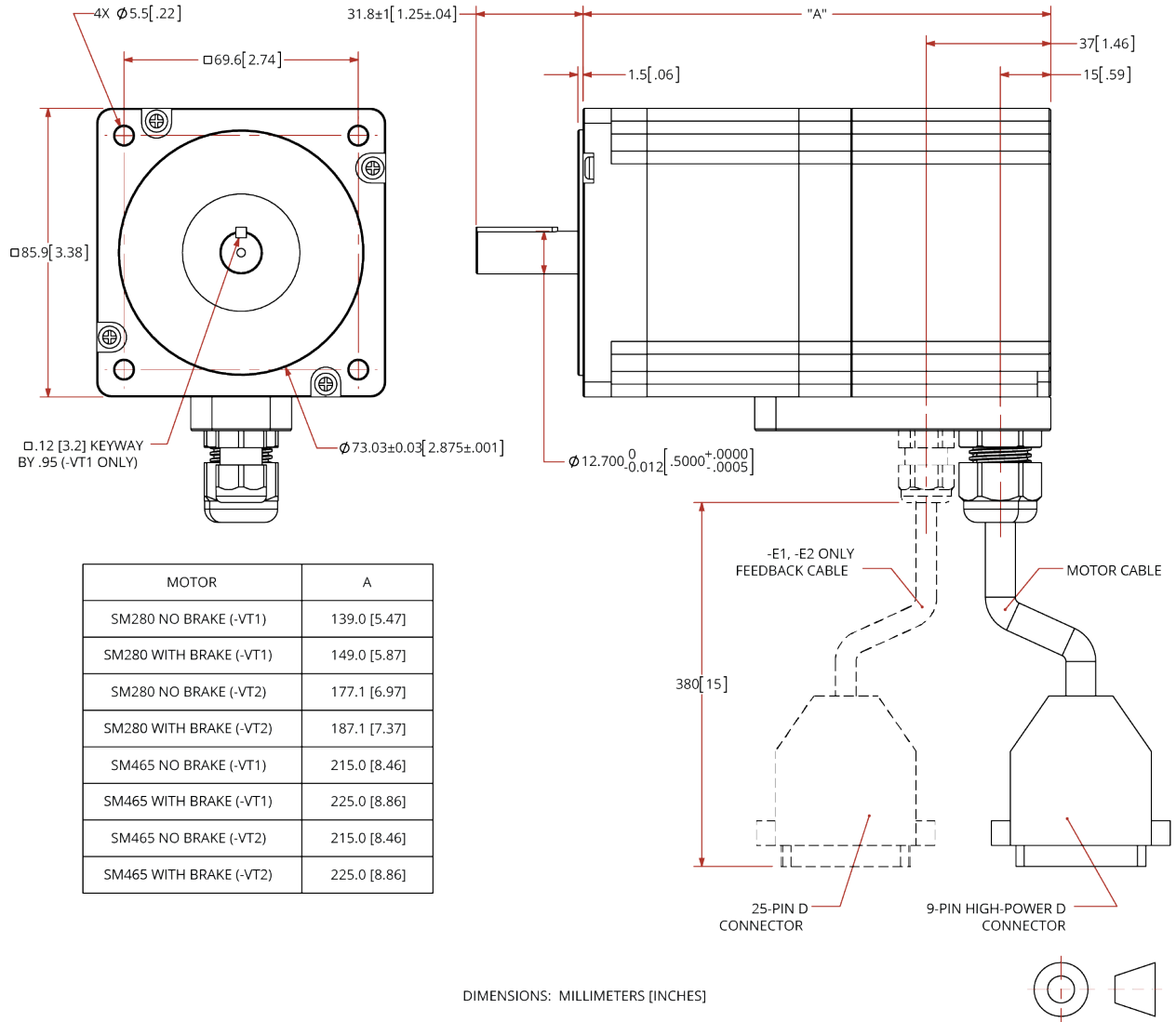


Figure 1-3: SM280 and SM465 Model Dimensions (NEMA 34)



1.3. Environmental Specifications



WARNING: Use this product only in environments and operating conditions that are approved in this manual.

Table 1-7: Environmental Specifications

Temperature:	Operating: 0 °C to 25 °C, consult Aerotech for operation outside of this range.
	Storage: -20 °C to 85 °C
Humidity:	Ambient conditions need to be such that condensation on the motor does not occur. Do not use the motors in wash-down environments.
Dust Exposure:	The SM motors are rated IP40.
Altitude:	Up to 2,000 m. Consult Aerotech for derating considerations for altitudes above 2,000 m.
Use:	Indoor use only.
Atmosphere:	Do not use in hydrogen atmospheres

1.4. Vacuum Operation

SM motors are not vacuum-compatible. Contact Aerotech for alternate solutions.

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Chapter 2: Assembly and Installation



WARNING: To prevent injury or damage to the equipment, you will need devices in place that will prevent unexpected motion in the event of an intentional or unintentional disruption of electrical power. Applications with vertical axes require a fail-safe brake.

2.1. Connector Pinout

The pin assignment for the motor power connector is displayed in [Table 2-1](#). The optional -E1/-E2 encoder connector is shown in [Table 2-3](#).



DANGER: Do not allow motor connection cables to contact the motor frame while the motor is in operation.

Table 2-1: Motor Power Connector Pinout

Pin	Description	Connector
Case	Shield Connection	
A1	Motor Phase A	
A2	Motor Phase B	
A3	Motor Phase A Return	
1	Brake - (with Brake Option)	
2	Brake + (with Brake Option)	
3	Reserved	
4	Frame Ground (motor protective ground)	
5	Frame Ground (motor protective ground)	
A4	Motor Phase B Return	

Table 2-2: Mating Connector Part Numbers for the Motor Power Connector

Mating Connector	Aerotech P/N	Third Party P/N
Backshell	ECK00656	Amphenol #17E-1726-2
Sockets [QTY. 4]	ECK00659	ITT Cannon #DM53744-6
Connector	ECK00657	ITT Cannon #DBM9W4SA197

Table 2-3: -E1 and -E2 Encoder Option Connector Pinout

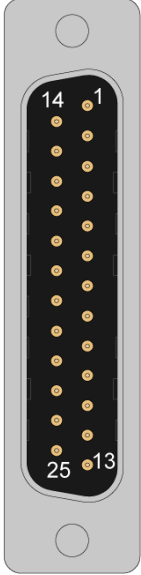
Pin	Description	Connector
Case	Shield Connection	
1	Reserved	
2	Reserved	
3	5V Power Supply Input	
4	Reserved	
5	Reserved	
6	MRK- (Encoder Marker-)	
7	MRK+ (Encoder Marker+)	
8	Reserved	
9	Reserved	
10	Reserved	
11	Reserved	
12	Reserved	
13	Reserved	
14	COS+ (Encoder Cosine+)	
15	COS- (Encoder Cosine-)	
16	5V Power Supply Input	
17	SIN+ (Encoder Sine+)	
18	SIN- (Encoder Sine-)	
19	Reserved	
20	Common	
21	Common	
22	Reserved	
23	Reserved	
24	Reserved	
25	Reserved	

Table 2-4: Mating Connector Part Numbers for the Encoder Option Connector

Mating Connector	Aerotech P/N	Third Party P/N
25-Socket D-Connector	ECK00300	FCI DB25S064TLF
Backshell	ECK00656	Amphenol 17E-1726-2

2.2. External Motor Wiring

It is the responsibility of the customer to supply all external wiring. Customer-supplied wiring must obey all local electrical safety requirements.

- The wiring must be able to supply the rated current without overheating.
- The wire insulation must be rated for the voltage and temperature at which the motor is operating.
- Cable selection and installation should be made to reduce EMI emissions and to increase EMI immunity.

In addition to the external wiring, it is also the responsibility of the customer to provide over-current protection for the motor.

2.2.1. Motor Power Conductors

The motor power conductors must be sized to handle the electrical current requirements of the motor (refer to [Section 1.1. Motor Specifications](#)). Select the wire insulation voltage rating based on the maximum voltage that will be applied to the motor.

2.2.2. Protective Ground

The protective ground is a safety conductor that you must use to ground the motor case. The protective ground conductor must have a current carrying capacity at least equal to the carrying capacity of the motor wires. The standard insulation is "Green/Yellow" and must be rated for the maximum voltage applied to the motor winding. The protective ground wire is typically bundled with the motor wires, but your system could require a separate protective ground wire.

2.2.3. Over-Current Protection

You will need to provide the motor with over-current protection to prevent the motor from overheating. Use programmable current limits, traps, over-current protection circuitry, or fuses. Fuse values should be selected according to the rated phase current of the motor. For most applications, you should use slow-blow type fuses.

When the motor is part of an Aerotech system that uses an Aerotech controller and drive, use the rated phase current to set the motor over-current protection fault (refer to [Section 1.1.](#)). If the motor is not installed in a system configured by Aerotech, you must provide the over-current protection.

2.2.4. Wiring Guidelines

The wiring guidelines given below can help to reduce EMI related problems which can result in poor overall system performance.

- Keep cable lengths as short as possible. Long cable runs are more susceptible to EMI pickup than short runs.
- Use grounded shielded cables for both the motor power and signal wiring.
- Use twisted pair shielded cabling to help reduce magnetically induced currents.
- Braided shield has a slightly better low frequency shielding capability than a foil shield. Foil is often used where RF shielding is necessary.
- Do not bundle signal, motor power cables, or AC power lines within the same protective shield or conduit. Use separate protective shields or conduits.
- Do not introduce multiple paths to ground from a grounding point. Multiple paths to ground can create ground loops within the system.
- If necessary, use an EMI suppression device.

2.3. Motor Heating

The amount of current that can pass through the motor winding is limited by a rise in temperature above ambient. If the temperature of the motor exceeds the thermal limit, the motor will overheat. This could cause damage to the motor or system.



WARNING: This motor does not have a built-in over-temperature feature. It is your responsibility to find the correct duty cycle and to not exceed the maximum operating temperature of 80 °C.

The motor specifications show the continuous motor current that will result in a predetermined temperature rise of the motor. The motor specifications listed in [Section 1.1](#), were compiled under a single set of operating conditions and environmental specifications ([Section 1.3](#)).

The operating conditions of the motor are defined by:

- The thermal characteristics of the motor.
- The effectiveness of the medium that surrounds the motor to transfer heat away from the motor.
- The use of supplemental cooling.

Examples of what could cause the motor to overheat:

- Poor heat transfer away from the motor.
- The load is too high for the motor.
- The ambient temperature has increased above the expected operating conditions.

Chapter 3: Maintenance



DANGER: To minimize the possibility of bodily injury or death, disconnect all electrical power before you do maintenance or make adjustments to the equipment.

Inspect the SM motor at least once per month. You will have to determine a longer or shorter inspection interval based on the application and conditions, such as the duty cycle, speed, and environment.

Visually inspect the motor and cables to make sure that:

- the motor does not become too hot.
- the motor does not vibrate too much.
- you do not see evidence of burns or smell smoke.

You will also need to

- re-tighten loose motor-to-machine couplers.
- remove an accumulation of debris on the motor.
- replace or repair damaged cables.
- clean the motor and any components and cables if needed.
- assess any damage to the motor.

Cleaning

Motors should be wiped with a clean dry cloth to remove any grease, dirt, or other material that has accumulated on the motor. Do not use fluids and sprays so that you do not contaminate the internal parts of the motor. Be careful when you clean the motor so that you do not remove the text on the motor labels.

Lubrication

Aerotech stepper motors do not require lubrication. It is the responsibility of the customer or OEM to lubricate customer-supplied components.

Repairs

In general, it is not possible for field service personnel to repair and/or replace damaged or components that have malfunctioned. Repair typically requires that you return the unit to the factory.

Contact Aerotech Global Technical Support for more information.

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Appendix A: Warranty and Field Service

Aerotech, Inc. warrants its products to be free from harmful defects caused by faulty materials or poor workmanship for a minimum period of one year from date of shipment from Aerotech. Aerotech's liability is limited to replacing, repairing or issuing credit, at its option, for any products that are returned by the original purchaser during the warranty period. Aerotech makes no warranty that its products are fit for the use or purpose to which they may be put by the buyer, whether or not such use or purpose has been disclosed to Aerotech in specifications or drawings previously or subsequently provided, or whether or not Aerotech's products are specifically designed and/or manufactured for buyer's use or purpose. Aerotech's liability on any claim for loss or damage arising out of the sale, resale, or use of any of its products shall in no event exceed the selling price of the unit.

THE EXPRESS WARRANTY SET FORTH HEREIN IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE. IN NO EVENT SHALL AEROTECH BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES.

Return Products Procedure

Claims for shipment damage (evident or concealed) must be filed with the carrier by the buyer. Aerotech must be notified within thirty (30) days of shipment of incorrect material. No product may be returned, whether in warranty or out of warranty, without first obtaining approval from Aerotech. No credit will be given nor repairs made for products returned without such approval. A "Return Materials Authorization (RMA)" number must accompany any returned product(s). The RMA number may be obtained by calling an Aerotech service center or by submitting the appropriate request available on our website (www.aerotech.com). Products must be returned, prepaid, to an Aerotech service center (no C.O.D. or Collect Freight accepted). The status of any product returned later than thirty (30) days after the issuance of a return authorization number will be subject to review.

Visit [Global Technical Support Portal](#) for the location of your nearest Aerotech Service center.

Returned Product Warranty Determination

After Aerotech's examination, warranty or out-of-warranty status will be determined. If upon Aerotech's examination a warranted defect exists, then the product(s) will be repaired at no charge and shipped, prepaid, back to the buyer. If the buyer desires an expedited method of return, the product(s) will be shipped collect. Warranty repairs do not extend the original warranty period.

Fixed Fee Repairs - Products having fixed-fee pricing will require a valid purchase order or credit card particulars before any service work can begin.

All Other Repairs - After Aerotech's evaluation, the buyer shall be notified of the repair cost. At such time the buyer must issue a valid purchase order to cover the cost of the repair and freight, or authorize the product(s) to be shipped back as is, at the buyer's expense. Failure to obtain a purchase order number or approval within thirty (30) days of notification will result in the product(s) being returned as is, at the buyer's expense.

Repair work is warranted for ninety (90) days from date of shipment. Replacement components are warranted for one year from date of shipment.

Rush Service

At times, the buyer may desire to expedite a repair. Regardless of warranty or out-of-warranty status, the buyer must issue a valid purchase order to cover the added rush service cost. Rush service is subject to Aerotech's approval.

On-site Warranty Repair

If an Aerotech product cannot be made functional by telephone assistance or by sending and having the customer install replacement parts, and cannot be returned to the Aerotech service center for repair, and if Aerotech determines the problem could be warranty-related, then the following policy applies:

Aerotech will provide an on-site Field Service Representative in a reasonable amount of time, provided that the customer issues a valid purchase order to Aerotech covering all transportation and subsistence costs. For warranty field repairs, the customer will not be charged for the cost of labor and material. If service is rendered at times other than normal work periods, then special rates apply.

If during the on-site repair it is determined the problem is not warranty related, then the terms and conditions stated in the following "On-Site Non-Warranty Repair" section apply.

On-site Non-Warranty Repair

If any Aerotech product cannot be made functional by telephone assistance or purchased replacement parts, and cannot be returned to the Aerotech service center for repair, then the following field service policy applies:

Aerotech will provide an on-site Field Service Representative in a reasonable amount of time, provided that the customer issues a valid purchase order to Aerotech covering all transportation and subsistence costs and the prevailing labor cost, including travel time, necessary to complete the repair.

Service Locations

<https://www.aerotech.com/contact-sales.aspx?mapState=showMap>

USA, CANADA, MEXICO

Aerotech, Inc.
Global Headquarters

CHINA

Aerotech China
Full-Service Subsidiary

GERMANY

Aerotech Germany
Full-Service Subsidiary

TAIWAN

Aerotech Taiwan
Full-Service Subsidiary

UNITED KINGDOM

Aerotech United Kingdom
Full-Service Subsidiary

Appendix B: Revision History

Revision	Description
3.00	<ul style="list-style-type: none">• EU Declaration of Conformity updated.• UK Declaration of Conformity added.• Safety Procedures and Warnings updated.
1.02	Revision changes have been archived. If you need a copy of this revision, contact AerotechGlobal Technical Support.
1.01	
1.00	

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