

ENGINEERING DOCUMENTATION

Cylindrical Voice Coil Actuator

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-MT-C09-S044-V001	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

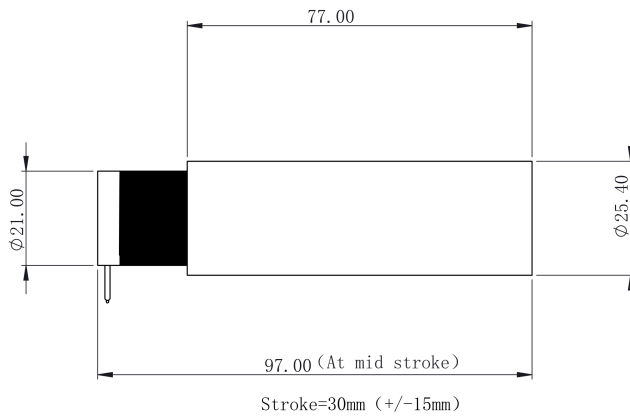
Cylindrical voice-coil actuator for direct linear force and short-stroke motion. This guide supports envelope, moving-mass, alignment, load-path, electrical, thermal, cable and commissioning planning for ES-MT-C09-S044-V001.

Key Integration Facts

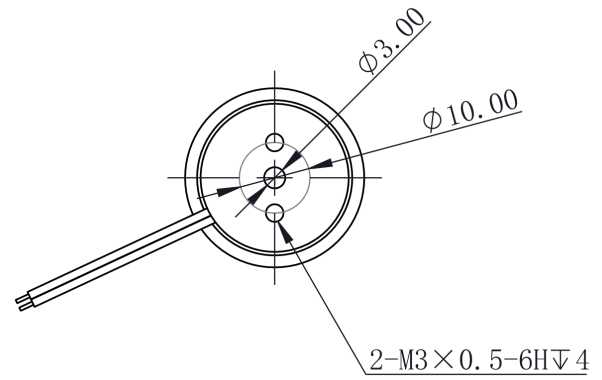
INTEGRATION ITEM	VALUE
Peak Force	55 N
Force Constant	6 N/A
Continuous Force	6 N
Peak Current	9.2 A
Insulation Class	Class B
Continuous Current	Configuration-dependent (2 records)
Linear Back-EMF Constant	6 V/m/s
Closed-Circuit Line-to-Line Inductance	5.04 mH $\pm$ 20% mH

Product Structure & Views

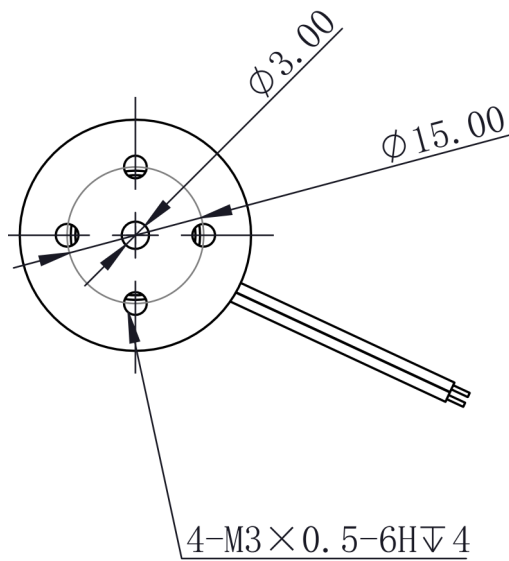
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



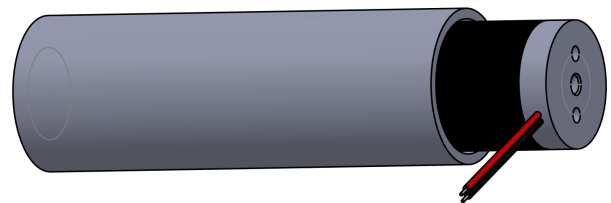
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 5

CUSTOMER

WIRING CHART



Mechanical View 6

Technical Specifications

PARAMETER	VALUE	UNIT
Peak Force	55	N
Force Constant	6	N/A
Continuous Force	6	N
Peak Current	9.2	A
Insulation Class	Class B	
Continuous Current		
CONDITION	VALUE	UNIT
Configuration-specific; confirm the selected configuration	1 A (coil at 100 °C)	A
condition: coil at 100 °C	1	
Linear Back-EMF Constant	6	V/m/s
Closed-Circuit Line-to-Line Inductance	5.04 mH ±20%	mH

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Magnet Mass	225	g
Stroke	30	mm
Coil Clearance	0.5	
Coil Assembly Mass	59	g
Maximum Coil Temperature	100	°C
Motor Midpoint Resistance	17.4 Ω $\pm$ 10%	Ω

Mounting, Alignment and Moving Mass

- Support the stationary and moving members from their intended interfaces, maintain concentric alignment and prevent host structure from introducing side load or binding.
- Keep the complete moving envelope clear and include the attached moving mass, cable force and acceleration in the installed load case.

Force, Stroke and Thermal Boundaries

- Validate continuous and peak force, usable stroke, duty cycle and installed cooling as one operating condition; peak force is not a continuous rating.
- Use current limiting and temperature monitoring appropriate to the actual supply, motion profile and fault response.

Cable, Sensing and Commissioning

- Provide flexible cable routing and strain relief that do not bias the moving member through the full stroke.
- Commission at reduced energy and verify polarity, motion direction, travel limits, force response, temperature and fault handling before automatic operation.

Integration Checklist

- | | |
|----|--|
| 01 | Confirm the exact-SKU drawing and parameter set. |
| 02 | Verify stationary and moving interfaces, concentric alignment and full stroke clearance. |
| 03 | Validate moving mass, force, acceleration, side load, duty cycle and cooling. |
| 04 | Provide flexible cable routing, sensing boundaries and strain relief. |
| 05 | Commission at reduced energy and verify polarity, direction, limits, temperature and fault behavior. |

[View SKU Product Datasheet](#) [Request controlled 2D drawing](#) [Request controlled STEP review](#) [Request a Quote](#)

Engineering Use and Verification Notice

01. This Dimensional & Integration Guide applies only to EmbodyStack SKU ES-MT-C09-S044-V001 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, motor or actuator application approval, wiring definition, drive-selection approval, machinery risk assessment, safety validation or production authorization. Before design freeze, installation or energization, verify all dimensions, mounting and locating features, moving envelopes, shaft or output geometry, permissible loads, alignment, supply and current limits, wiring, motion profile, duty cycle, thermal condition, cable routing, environmental boundaries, maintenance and fault response against the applicable EmbodyStack engineering data for this exact SKU. Validate the complete installed system under intended operating and fault conditions.