

ENGINEERING DOCUMENTATION

Cylindrical Voice Coil Actuator

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-MT-C09-S044-V002	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

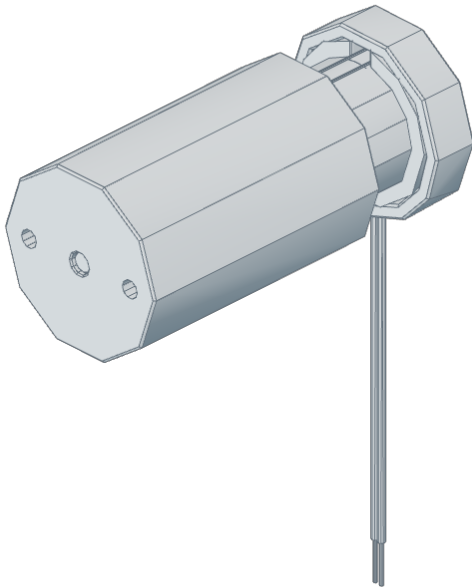
Cylindrical voice-coil actuator for direct linear force and short-stroke motion. This guide supports envelope, moving-mass, alignment, load-path, electrical, thermal, cable and commissioning planning for ES-MT-C09-S044-V002.

Key Integration Facts

INTEGRATION ITEM	VALUE
Peak Force	31 N
Force Constant	9 N/A $\pm$ 1 N/A
Continuous Force	11 N
Impedance	Configuration-dependent (2 records)
Insulation Class	Class B
Continuous Current	Configuration-dependent (2 records)
Insulation Resistance	100 M Ω (500 VDC) M Ω
Linear Back-EMF Constant	9 V/m/s

3D Orientation Reference

This axonometric reference provides a quick orientation check for the motor or actuator body, output interface and mounting relationship of ES-MT-C09-S044-V002.



Axonometric Orientation View

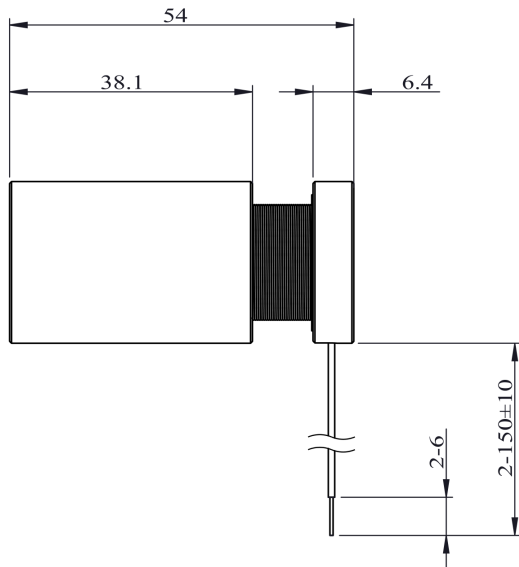
Orientation reference only. Use the exact-SKU parameter table and mechanical drawing for dimensions, hole geometry, fits and machining decisions.

Exact-SKU Interface Cross-Reference

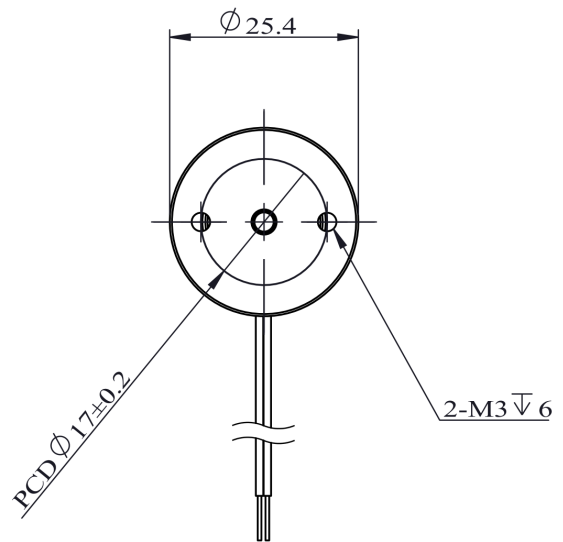
INTEGRATION TOPIC	EXACT-SKU REFERENCE
Actuator envelope and moving relationship	Stroke: 9.5 mm $\pm$ 0.5 mm. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Force and electrical boundaries	Continuous Force: 11 N; Peak Force: 31 N; Force Constant: 9 N/A $\pm$ 1 N/A; Continuous Current: Configuration-dependent (2 records). Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.
Installation and thermal reference	Coil Clearance: 0.38 mm; Operating Temperature: 5–40 °C. Confirm interface geometry, fits and installation details in the exact-SKU mechanical drawing.

Product Structure & Views

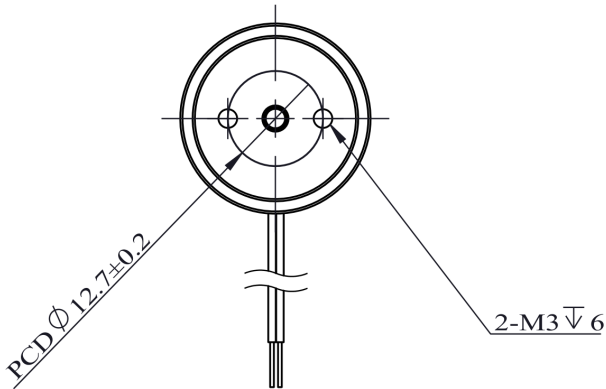
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



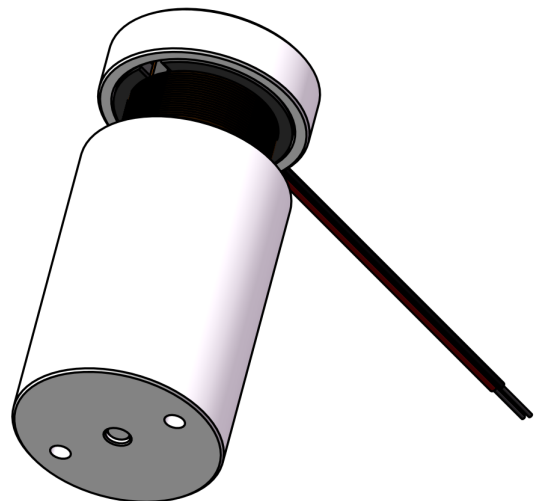
Mechanical View 1



Mechanical View 2



Mechanical View 3



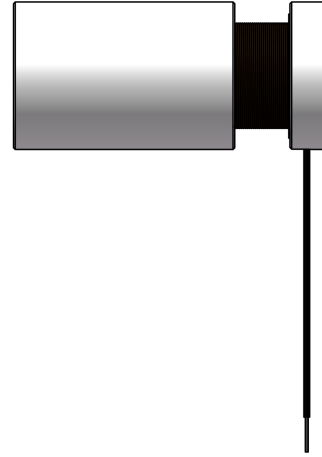
Mechanical View 4

CUSTOMER

WIRING CHART



Mechanical View 6



Mechanical View 9

Technical Specifications

PARAMETER	VALUE	UNIT
Peak Force	31	N
Force Constant	9 N/A $\pm$ 1	N/A
Continuous Force	11	N
Impedance		
CONDITION	VALUE	UNIT
Configuration-specific; confirm the selected configuration	7.87 $\pm$ 10% (20 °C)	Ω
condition: 20 °C	7.87 $\pm$ 10%	
Insulation Class	Class B	
Continuous Current		
CONDITION	VALUE	UNIT
Configuration-specific; confirm the selected configuration	1.25 A (coil at 100 °C)	A
condition: coil at 100 °C	1.25	
Insulation Resistance	100 M Ω (500 VDC)	M Ω
Linear Back-EMF Constant	9	V/m/s

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Closed-Circuit Line-to-Line Inductance	1.7 mH ±20%	mH
Body Mass	102	g
Stroke	9.5 mm ±0.5	mm
Coil Clearance	0.38	
Coil Assembly Mass	33	g
Operating Relative Humidity		
CONDITION	VALUE	UNIT
Configuration-specific; confirm the selected configuration	10–95% RH (non-condensing)	% RH
condition: non-condensing	10–95	
Operating Temperature	5–40	°C
Storage Temperature	–20–60	

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Storage Relative Humidity		
CONDITION	VALUE	UNIT
Configuration-specific; confirm the selected configuration	10–95% RH (non-condensing)	% RH
condition: non-condensing	10–95	
Maximum Continuous Power	10	W
Standards Compliance	RoHS compliant (2002/95/EC; 2011/65/E)	
Motor Midpoint Resistance	7.75 $\pm$ 10%	Ω
Operating Atmospheric Pressure	62–106	kPa
Storage Atmospheric Pressure	50–106	
Maximum Magnet Temperature	<100	°C

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-V002 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.