

ENGINEERING DOCUMENTATION

Frameless Torque Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-FM-H01-OD038-TOP135NM-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

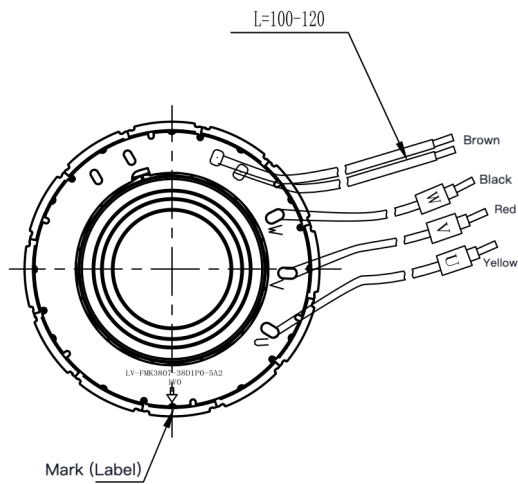
Frameless torque motor for direct integration into a host rotary assembly. This guide supports rotor-stator alignment, air-gap control, bearing and load-path design, thermal extraction, electrical integration and staged commissioning.

Key Integration Facts

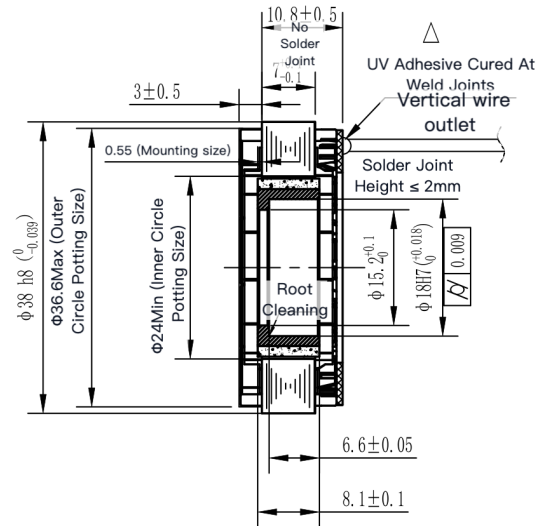
INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	0.135 Nm
Rated Speed	3500 rpm
Weight	0.056 kg

Product Structure & Views

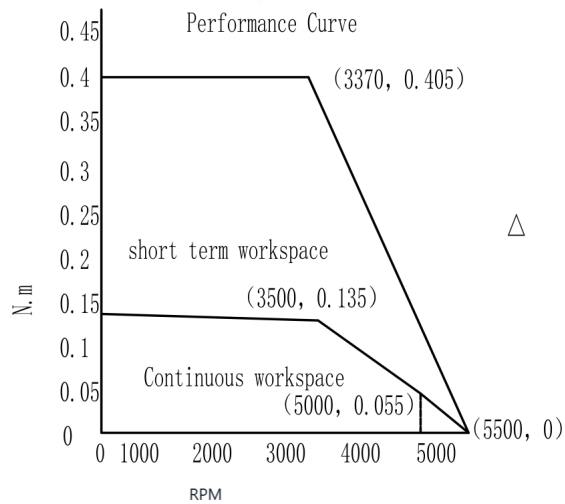
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



Mechanical View 2



Mechanical View 3



Mechanical View 4

VIEW	FIELD	VALUE
Mechanical View 2	Lead length range	L = 100-120 mm
	Brown lead identification	Brown lead
	Black lead identification	Black lead
	Red lead identification	Red lead
	Yellow lead identification	Yellow lead
	Terminal phase marking W	W terminal marking
	Terminal phase marking V	V terminal marking
	Terminal phase marking U	U terminal marking
	Material or rating marking	1V0
	Label position note	Mark (Label)
Mechanical View 3	Axial end height excluding solder joint	10.8 ± 0.5, excluding solder joint
	UV adhesive curing requirement at weld joints	UV adhesive cured at weld joints
	Local axial dimension	7 + 0.4 / - 0.1
	Local axial dimension	3 ± 0.5
	Wire outlet orientation	Vertical wire outlet
	Mounting size	0.55 mounting size
	Solder joint height limit	Solder joint height $\geq$
	Outer circle potting diameter	Diameter 36.6 max
	Inner circle potting diameter	Diameter 24 min
	Outer fit diameter	Diameter 38 h8, +0 / -0.039
	Inner bore or step diameter	Diameter 15.2 + 0.1 / 0
	Bore fit diameter	Diameter 18 H7, +0.018 / 0
	Geometric tolerance value	Geometric tolerance diameter 0.009
	Root Cleaning	Root Cleaning
	Hole Depth	6.6 ± 0.05
	Bottom Step Depth	8 ± 0.1
Mechanical View 4	Chart title	Performance curve
	Torque axis unit	Torque axis in N.m
	Torque scale values	Torque scale from 0 to 0.45 N.m
	Speed scale values	Speed scale values shown: 0, 1000, 2000, 3000, 4000, 5000 rpm
	Short term workspace	Short term workspace region
	Continuous workspace	Continuous workspace region
	Short term workspace boundary point	Speed 3370 rpm, torque 0.405 N.m
	Continuous workspace boundary point	Speed 3500 rpm, torque 0.135 N.m
	Continuous workspace boundary point	Speed 5000 rpm, torque 0.055 N.m
	Curve end point	Speed 5500 rpm, torque 0 N.m

VIEW	FIELD	VALUE
Triangle marker	Triangle marker shown on chart	
Speed Unit	RPM	

Overall Dimensions and Mounting Interface

- Confirm the stator, rotor, bore, axial stack, locating and retention geometry against the applicable exact-SKU drawing.
- The host housing and shaft must provide the required datum control without distorting the active motor components.

Rotor, Stator and Air-Gap Alignment

- Control concentricity, axial position, runout and operating air gap through the complete tolerance and temperature range.
- Prevent contact, magnetic debris, impact and assembly forces from damaging the rotor or stator.

Bearing, Load Path and Retention

PARAMETER	PUBLISHED VALUE	UNIT
Rotor Inertia	0.0124	kg·cm ²
Weight	0.056	kg

- The host bearing system must carry radial, axial and moment loads; do not infer bearing capability from motor torque or diameter.
- Provide positive rotor retention and verify overspeed, imbalance, shock and fault torque cases.

Electrical and Feedback Integration

PARAMETER	PUBLISHED VALUE	UNIT
Torque Constant	0.089	Nm/A

- Match the winding, drive current, voltage, commutation and feedback system to the exact SKU.
- Use current phase, sensor and insulation definitions; do not infer pin or phase identity from this guide.

Thermal Path and Duty Cycle

PARAMETER	PUBLISHED VALUE	UNIT
Rated Torque	0.135	Nm

- Design a verified heat path from the stator into the host structure and validate temperatures under the intended duty cycle.
- Peak torque and current are transient boundaries and require coordinated drive protection.

Assembly and Commissioning Validation

PARAMETER	PUBLISHED VALUE	UNIT
Rated Speed	3500	rpm
Rated Torque	0.135	Nm

- Check free rotation, air gap, retention, insulation and sensor alignment before energization.
- Commission at low energy, confirm commutation and direction, then validate the complete joint through intended load and fault cases.

Integration Checklist

- | | |
|----|--|
| 01 | Confirm the exact SKU, 2D package and applicable assembly data. |
| 02 | Verify stator, rotor, bore, stack, datums, retention and operating air gap. |
| 03 | Validate host bearings, shaft, housing stiffness, runout and thermal growth. |
| 04 | Confirm winding, drive, feedback, commutation and insulation compatibility. |
| 05 | Establish and validate the stator-to-housing thermal path. |
| 06 | Check free rotation and insulation before low-energy commissioning. |
| 07 | Validate full load, speed, temperature and credible fault cases. |

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

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01. This Dimensional & Integration Guide applies only to EmbodyStack SKU ES-FM-H01-OD038-TOP135NM-001 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, wiring definition, application approval, machinery risk assessment, safety validation or integration planning document. Before design freeze, machining, wiring or energization, verify all dimensions, tolerances, mounting and locating features, load boundaries, electrical interfaces, thermal conditions, cabling, grounding, protection, commissioning and applicable regulatory requirements against the applicable EmbodyStack engineering data for this exact SKU. Where this guide and applicable product documentation differ, the applicable product documentation governs. Validate the complete installed system under intended duty cycles, loads, accelerations, environmental conditions and credible fault cases.