ENGINEERING DOCUMENTATION

Standard Cup Unit Type I

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-HG-S22-F17-R30	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

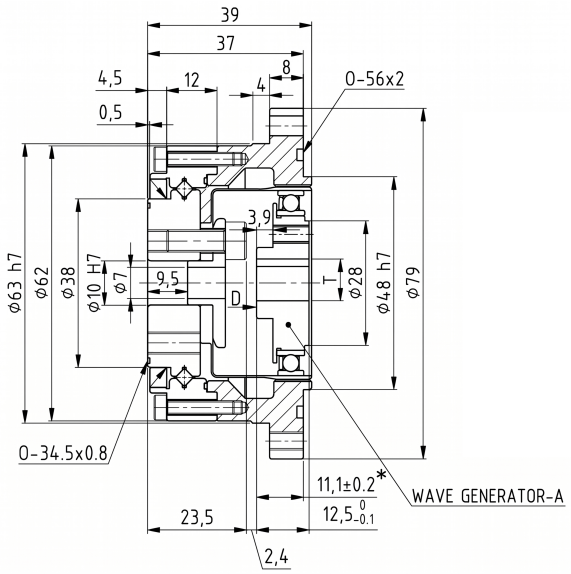
Standard Cup Unit Type I for compact, coaxial, high-ratio rotary-axis integration. This guide supports interface planning, mounting alignment, duty validation, torsional behavior, lubrication, sealing and commissioning for ES-HG-S22-F17-R30.

Key Integration Facts

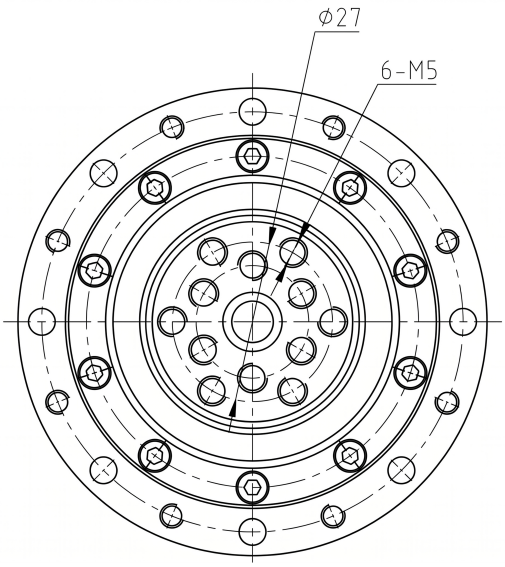
INTEGRATION ITEM	VALUE
Reduction Ratio	30
Frame Size	17

Product Structure & Views

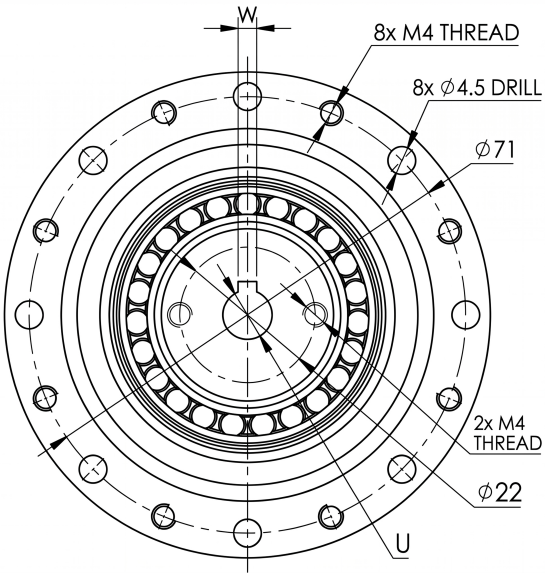
These views present the selected product structure, mounting interfaces and relevant integration geometry for this SKU.



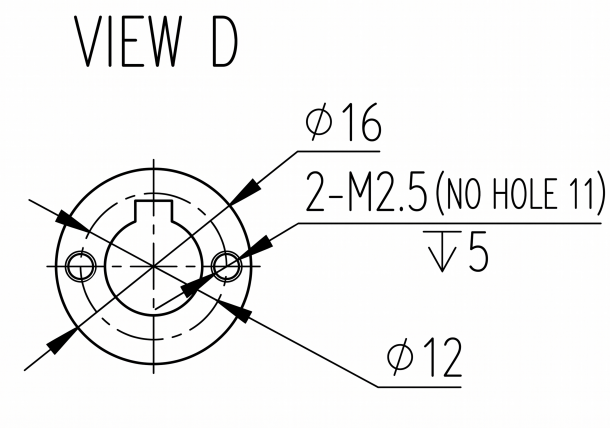
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 4

VIEW	FIELD	VALUE
Mechanical View 1	Overall width	39 mm
	Inner width	37 mm
	Right section length	8 mm
	Left boss height	4.5 mm
	O-ring specification	O-56x2
	Central section width	12 mm
	Left lower section height	0.5 mm
	Left shaft diameter with tolerance	Ø3 h7
	Left secondary shaft diameter	Ø2 mm
	Center shaft diameter	Ø8 mm
	Center hole diameter with tolerance	Ø10 H7
	Small hole diameter	Ø7 mm
	Middle section height	9.5 mm
	Right boss height	3.9 mm
	Datum D	Datum D
	Right inner diameter	Ø28 mm
	Right shaft diameter with tolerance	Ø48 h7
	Right end outer diameter	Ø59 mm
	O-ring specification	O-34.5x0.8
	Bottom section width	23.5 mm
	Bottom boss height	2.4 mm
	Lower right section height with tolerance	11.1±0.2 mm
	Lower right section width with tolerance	12.5 0/-0.1 mm
	Right Upper Step Width	4mm
	Tatum mark T (upper center)	Tatum T
Mechanical View 2	Mounting hole pitch circle diameter	Pitch circle diameter Ø27
	Threaded hole quantity and thread size	6 × M5 threaded holes
Mechanical View 3	Width designation W	W; numeric value not specified in this crop
	8x M4 threaded holes	8x M4 thread
	8x diameter 4.5 drilled holes	8x Ø4.5 drill
	Diameter 71	Ø71
	2x M4 threaded holes	2x M4 thread
	Diameter 22	Ø22
	Callout U	U label; associated feature not fully specified in this crop
Mechanical View 4	View identifier	View D
	Local hole diameter	Diameter 16
	Threaded hole quantity and size	2 × M2.5 threaded holes; no hole 11
	Depth-style callout value	Depth-style value 5
	Local hole diameter	Diameter 12

Overall Dimensions and Input Interface

PARAMETER	VALUE	UNIT
Frame Size	17	
Reduction Ratio	30	

Input Interface Design Guidance

- Confirm the selected series, frame size, ratio and product form before using dimensions or interface geometry.
- Design the input shaft, key, engagement and axial retention for the verified torque and assembly state.
- Reserve assembly, sealing, inspection and removal access around input, housing and output interfaces.

Mounting, Alignment and Fastener Control

- Keep mounting faces flat, clean and free of burrs, debris and coating buildup.
- Control concentricity, tilt and axial position of input and housing datums.
- Tighten fasteners in a staged diagonal sequence and verify free, even rotation during assembly.

Torque, Speed and Duty Boundaries

- Calculate torque and speed from acceleration, constant-speed, deceleration, dwell and reversal portions of the complete cycle.
- Treat start/stop peak and instantaneous maximum torque as transient boundaries.
- Validate life against actual torque, speed, shock frequency, lubrication, temperature, alignment and external loading.

Transmission Accuracy and Torsional Rigidity

- Installed positioning depends on reducer behavior, datum control, structural stiffness, motor and encoder errors and thermal growth.
- Use stiffness regions and transition torques when evaluating compliance, resonance, control gain and reversal.

Lubrication, Sealing and Thermal Control

- Use the specified lubricant, fill method and quantity for the exact configuration; do not mix incompatible lubricants.
- Provide compatible sealing at input, output and housing interfaces without distorting the reducer.
- Validate lubricant distribution and temperature for orientation, speed, load cycle and enclosure.
- Prevent chips, fibers, residue and moisture from entering gear or bearing cavities.

Output Bearing and External Load Path

- Calculate radial, axial and moment loads including offset, acceleration, gravity, process force, impact and emergency stops.
- Do not infer permissible external load from reducer torque capacity or frame size.
- Avoid forcing, impact, misalignment or host distortion through the output support during installation and operation.

Integration Checklist

01	Confirm the selected series, frame size, ratio and product form for this SKU.
02	Verify available dimensions and interface geometry without substituting a nearby configuration.
03	Check mounting-face flatness, concentricity, tilt, reliefs, cleanliness and support stiffness.
04	Verify input shaft, key, engagement length and axial retention.
05	Use staged diagonal tightening and verify free, even rotation.
06	Calculate average, start/stop peak and shock torque over the complete cycle.
07	Validate average and maximum input speed, design life and thermal condition.
08	Evaluate backlash, angular accuracy, hysteresis and stiffness for the control system.
09	Confirm lubricant, fill quantity, orientation, sealing and contamination controls.
10	Validate output radial, axial and moment loads using applicable bearing data.

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-HG-S22-F17-R30 and supports preliminary dimensional evaluation and integration. It is not a manufacturing drawing, reducer selection approval, bearing-load approval, lubrication specification, machinery risk assessment, safety validation or integration planning document. Before design freeze, assembly or commissioning, verify all dimensions, datum geometry, fits, interfaces, retention, fasteners, torque and speed duty, shock cases, torsional behavior, external loads, lubrication, sealing, temperature, contamination and maintenance requirements against the current EmbodyStack engineering data for this exact SKU. Validate the complete reducer, motor, host structure, output load, motion cycle, guarding, fault cases and applicable regulatory requirements under intended operating conditions.