

ENGINEERING DOCUMENTATION

Lightweight Cup Unit Type I

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-HG-S11-F25-R30	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

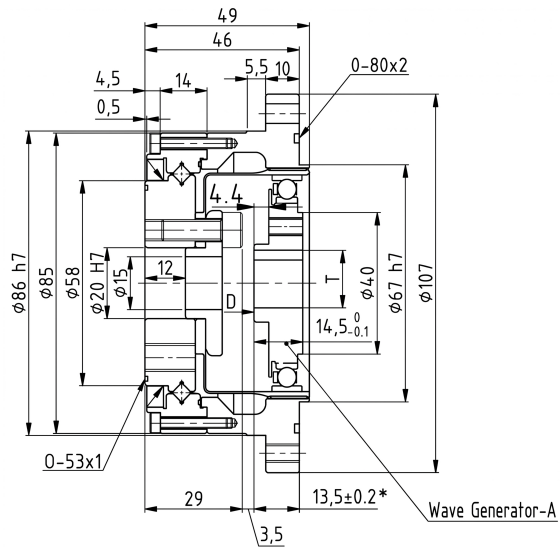
Lightweight Cup Unit Type I for compact, coaxial, high-ratio rotary-axis integration. This guide supports interface planning, mounting alignment, duty validation, torsional behavior, lubrication, sealing and commissioning for ES-HG-S11-F25-R30.

Key Integration Facts

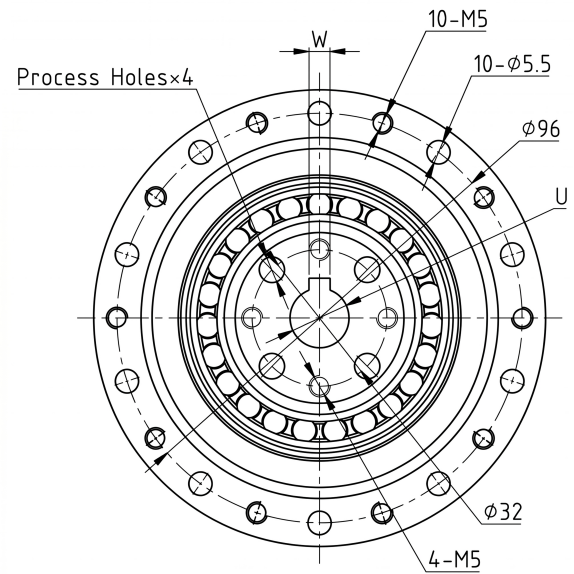
INTEGRATION ITEM	VALUE
Reduction Ratio	30
Frame Size	25

Product Structure & Views

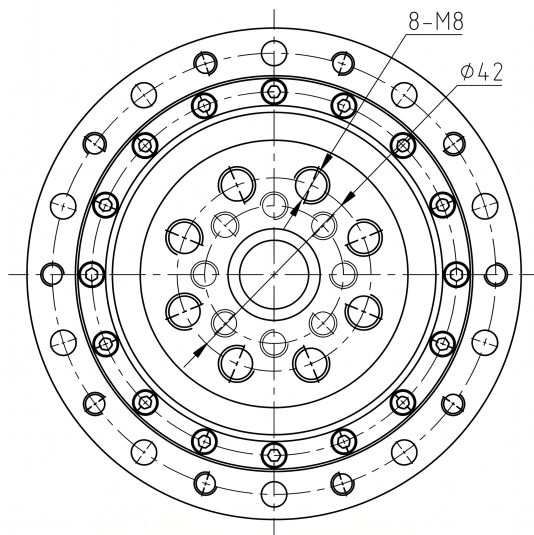
These views present the selected product structure, mounting interfaces and relevant integration geometry for this SKU.



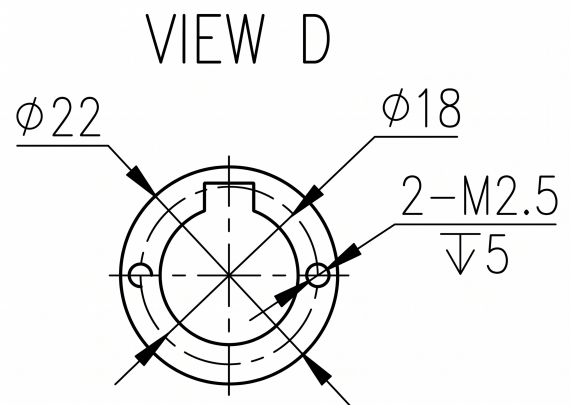
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 4



VIEW	FIELD	VALUE
Mechanical View 1	Overall axial length	49
	Inner axial length	46
	O-ring or groove callout	O-80 x 2
	Local axial dimensions	5.5 and 10
	End step axial width	4.5
	Local axial length	14
	Small step axial width	0.5
	Local clearance or offset dimension	4.4
	Diameter 86 h7 fit	Diameter 86 h7
	Diameter 20 H7 fit	Diameter 20 H7
	Diameter 58	Diameter 58
	Outer diameter 107	Diameter 107
	Diameter 85	Diameter 85
	Diameter 40	Diameter 40
	Diameter 15	Diameter 15
	Diameter 67 h7 fit	Diameter 67 h7
	Local axial dimension	12
	Dimension symbol T	T, value not specified in this crop
	Dimension symbol D	D, value not specified in this crop
	Axial dimension 14.5 tolerance	14.5 +0/-0.1
	O-ring or groove callout	O-53 x 1
	Axial dimension 13.5 tolerance	13.5 ±0.2
	Bottom axial length	29
	Axial Face Distance	3.5
	Wave Generator - A	Wave Generator - A
Mechanical View 2	Number of process holes	4 process holes
	View or feature label W	Label W
	M5 threaded holes quantity	10 × M5 threaded holes
	Diameter 5.5 holes quantity and diameter	10 × 5 .5 holes
	Diameter 96	9 6
	View or feature label U	Label U
	Diameter 32	3 2
	M5 holes quantity	4 × M5 holes
Mechanical View 3	M8 threaded mounting holes quantity and size	8 × M8 threaded holes
	Hole diameter	Diameter 42
Mechanical View 4	View identifier	View D
	Hole diameter	Diameter 22 mm
	Hole diameter	Diameter 18 mm
	Threaded hole quantity and size	2 × M2.5 threaded holes
	Hole depth or depth callout	Depth 5 mm

Housing and Input Interface Dimensions

Housing Size: 25 Reduction Ratio: 30

WAVE GENERATOR	T (MM)	U	W
A11	12.8 +0.10	11 H7	4 JS9/P9
A14	16.3 +0.10	14 H7	5 JS9/P9

Note: Dimensions in mm unless otherwise specified. Refer to the dimensional drawing for feature locations and datum definitions.

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-S11-F25-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.