

ENGINEERING DOCUMENTATION

Cup Component Set

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-HG-S01-F14-R120	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

Cup Component Set 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-S01-F14-R120.

Key Integration Facts

INTEGRATION ITEM	VALUE
Reduction Ratio	120
Frame Size	14

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



VIEW	FIELD	VALUE
Mechanical View 1	Overall Length	23.5 mm
	Mounting Length with Tolerance	17.5 +0.4/0 mm
	End Section Length	6 mm
	Minimum Mounting Length	MIN 17.1 mm
	Minimum Step Height	MIN 1 mm
	Feature Count or Width	2 mm or 2x
	Inner Diameter with Tolerance	10 0/-0.1 mm
	Datum D	Datum D
	Parameter T	T (see specification table)
	Shaft Diameter h7 Fit	Ø8 h7
	Minimum Shaft Diameter	MIN Ø8 mm
	Internal Shaft Diameter	Ø3 mm
	Center Bore Diameter H7 Fit	Ø1 H7
	Internal Diameter	Ø2 mm
	Minimum Outer Diameter	MIN Ø6.3 mm
	Mounting Outer Diameter h6 Fit	Ø0 h6
	Wave Generator-A Variant Dimension	10.5±0.2 mm (Wave Generator-A)
	Wave Generator-B Variant Dimension	12.5±0.2 mm (Wave Generator-B)
	Wave Generator Type	Type A wave generator
Mechanical View 2	Outer mounting circle diameter	Ø4
	Hole pattern: quantity and diameter	12 holes × Ø.5
	Width dimension label	W (dimension label)
	Dimension label U	U (dimension label)
	Threaded hole specification and quantity	2 × M3 threaded holes
	Center hole diameter	Ø8
Mechanical View 3	Mounting hole quantity and diameter	6 holes, Ø.3
	Bolt circle diameter (PCD)	Ø7
Mechanical View 4	Width	W (variable dimension)
	Center hole diameter	Ø1
	U dimension	U (variable dimension)
	Mounting threaded holes	2 holes, M2 thread, depth 5mm
	Angular positioning	45°
	Angular span	90°
Mechanical View 5	Outer diameter	Ø4
	Threaded hole specification and quantity	2 × M2 threaded holes, depth 5mm
	Center hole diameter	Ø1
Mechanical View 6	Mounting threaded hole	2 holes M2.5 thread
	Shaft diameter	Ø4 mm
	Axial distance 1	2 mm
	Axial distance 2	4 mm

VIEW	FIELD	VALUE
Overall length with tolerance	12 mm (+0/-0.1)	
Datum reference	Datum T	

Housing and Input Interface Dimensions

Housing Size: 14 Reduction Ratio: 120

WAVE GENERATOR	T (MM)	U	W
A6	7 +0.10	6 H7	2 JS9/P9
A8	9.4 +0.10	8 H7	3 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-S01-F14-R120 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.