

PRODUCT DATASHEET

ES-HG-S10-F40-R120

Precision Transmission Component

Hat Harmonic Gearboxes | High-Torque Shaft-Input Gear Unit

Product Overview

Precision Transmission Component with rated Torque 382 N·m, instantaneous Maximum Torque 1530 N·m and start/Stop Peak Torque 802 N·m.

Key Specifications

PARAMETER	VALUE	UNIT
Rated Torque	382	N·m
Instantaneous Maximum Torque	1530	N·m
Start/Stop Peak Torque	802	N·m
Reduction Ratio	120	
Maximum Input Speed	4000	r/min
Allowable Average Torque	586	N·m
Backlash	≤20	arc sec
Frame Size	40	
Weight	7	kg

Technical Specifications

PARAMETER	SPECIFICATION	UNIT	NOTES
PERFORMANCE			
Rated Torque	382	Nm	Frame Size: 40; Reduction Ratio: 120; Size: 40
Instantaneous Maximum Torque	1530	Nm	Frame Size: 40; Reduction Ratio: 120; Size: 40
Start/Stop Peak Torque	802	Nm	Frame Size: 40; Reduction Ratio: 120; Size: 40
Backlash	≤20	arc sec	Reduction Ratio: 120; Size: 40; Frame Size: 40
Allowable Average Torque	586	Nm	Frame Size: 40; Reduction Ratio: 120; Size: 40
Starting Torque	44 / 0.44	Nm	Frame Size: 40; Reduction Ratio: 120; Size: 40 / Reduction Ratio: 120; Size: 40; Frame Size: 40
Angular Transmission Accuracy	1	arcmin	Frame Size: 40; Reduction Ratio: 120; Reduction Ratio Min: 50; Size: 40
Hysteresis Loss	1	arcmin	Frame Size: 40; Reduction Ratio: 120; Reduction Ratio Min: 50; Size: 40
MECHANICAL			
Frame Size	40		Frame Size: 40; Reduction Ratio: 120; Size: 40
Weight	7	kg	Frame Size: 40; Reduction Ratio: 120; Size: 40

Technical Specifications

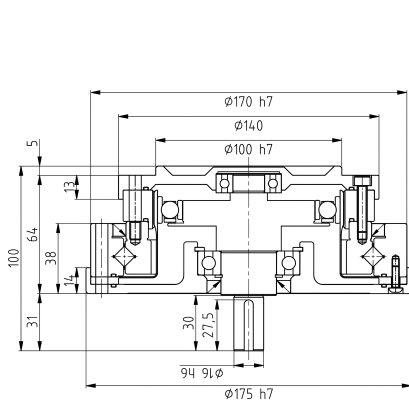
PARAMETER	SPECIFICATION	UNIT	NOTES
RELIABILITY			
Design Life	15000	h	Frame Size: 40; Reduction Ratio: 120; Size: 40
ADDITIONAL SPECIFICATIONS			
Reduction Ratio	120		Frame Size: 40; Reduction Ratio: 120; Size: 40
Maximum Input Speed	4000	r/min	Frame Size: 40; Reduction Ratio: 120; Size: 40
Average Input Speed	3000 / 3500	r/min	Frame Size: 40; Reduction Ratio: 120; Size: 40 / Frame Size: 40; Reduction Ratio: 120
Torsional Rigidity K2	20	$\times 10^4$ Nm/rad	Frame Size: 40; Reduction Ratio: 120; Reduction Ratio Min: 50; Size: 40
Torsional Rigidity K1	13	$\times 10^4$ Nm/rad	Frame Size: 40; Reduction Ratio: 120; Reduction Ratio Min: 50; Size: 40
Torsional Rigidity K3	23	$\times 10^4$ Nm/rad	Frame Size: 40; Reduction Ratio: 120; Reduction Ratio Min: 50; Size: 40
Torsional Rigidity T2	196	Nm	Frame Size: 40; Reduction Ratio: 120; Reduction Ratio Min: 50; Size: 40
Torsional Rigidity T1	54	Nm	Frame Size: 40; Reduction Ratio: 120; Reduction Ratio Min: 50; Size: 40

Dimensional & Integration Overview

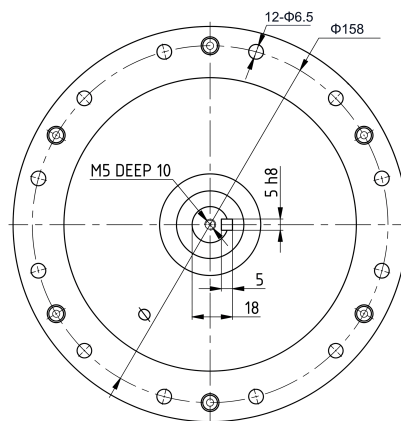
Mechanical Overview

PARAMETER	VALUE	UNIT
Frame Size	40	
Weight	7	kg

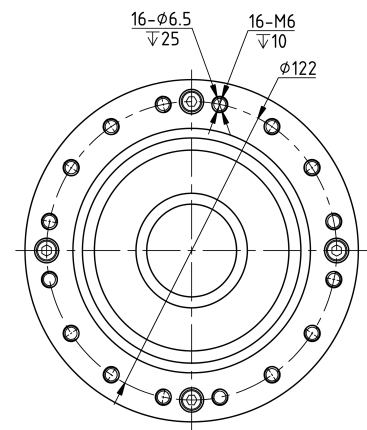
Dimensional Drawings



Mechanical View 1



Mechanical View 2



Mechanical View 3

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 1	Outer diameter	Φ170 h7
	Middle diameter	Φ140
	Mounting hole diameter	Φ100 h7
	Top edge dimension	5
	Overall height	100
	Mid-section height	64
	Middle segment height	38
	Small segment height	14
	Bottom segment height	31
	Shaft diameter	Φ16 h6
	Bottom outer diameter	Φ175 h7
	Feature dimension	3
		4

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 2	Mounting hole pattern	12 holes, $\Phi 6.5\text{mm}$
	Outer diameter	$\Phi 158\text{mm}$
	Threaded hole depth	M5 threaded hole, 10mm depth
	Shaft diameter with tolerance	$\Phi 5\text{ h8 tolerance}$
	Shaft extension length	5mm
	Shaft center to reference distance	18mm
Mechanical View 3	Mounting hole diameter and quantity	16 holes, $\Phi 6.5\text{mm}$ each
	Threaded hole specification and quantity	16 holes, M6 thread each
	Surface roughness (hole pattern area)	Ra $25\mu\text{m}$ or $\nabla 25$
	Surface roughness (threaded hole area)	Ra $10\mu\text{m}$ or $\nabla 10$
	Outer diameter	$\Phi 122\text{mm}$

[View Product Online](#) [Request Engineering Data](#) [Request a Quote](#)

01 Specifications are subject to change without notice. Verify the current product configuration before final design release.

02 2D drawings, CAD files and integration documentation are controlled documents and are supplied separately on request.