

PRODUCT DATASHEET

ES-HG-S07-F50-R160

Precision Transmission Component

Hat Harmonic Gearboxes | High-Torque Hat Unit Type I

Product Overview

Precision Transmission Component with reduction Ratio 160, frame Size 50 and angular Transmission Accuracy 1 arcmin.

Key Specifications

PARAMETER	VALUE	UNIT
Reduction Ratio	160	
Frame Size	50	
Angular Transmission Accuracy	1	arcmin
Wave Generator Dimension T	25.3+0.10 / 24.8+0.10 / 21.8+0.10	mm
Wave Generator Bore U	φ19H7 / φ22H7	
Wave Generator Keyway W	8JS9/P9 / 6JS9/P9	
Hysteresis Loss	1	arcmin
Torsional Rigidity K1	25	×10 ⁴ Nm/rad
Torsional Rigidity K2	40	×10 ⁴ Nm/rad

Technical Specifications

PARAMETER	SPECIFICATION	UNIT	NOTES
PERFORMANCE			
Angular Transmission Accuracy	1	arcmin	Frame Size: 50; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 50
Hysteresis Loss	1	arcmin	Frame Size: 50; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 50
MECHANICAL			
Frame Size	50		Frame Size: 50; Reduction Ratio: 160; Size: 50
Wave Generator Dimension T	25.3+0.10 / 24.8+0.10 / 21.8+0.10	mm	Varies by published configuration.
Wave Generator Bore U	φ19H7 / φ22H7		Varies by published configuration.
Wave Generator Keyway W	8JS9/P9 / 6JS9/P9		Varies by published configuration.
ADDITIONAL SPECIFICATIONS			
Reduction Ratio	160		Frame Size: 50; Reduction Ratio: 160; Size: 50
Torsional Rigidity K2	40	×10 ⁴ Nm/rad	Frame Size: 50; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 50
Torsional Rigidity K1	25	×10 ⁴ Nm/rad	Frame Size: 50; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 50
Torsional Rigidity K3	44	×10 ⁴ Nm/rad	Frame Size: 50; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 50
Torsional Rigidity T2	382	Nm	Frame Size: 50; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 50
Torsional Rigidity T1	108	Nm	Frame Size: 50; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 50

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 1	Overall width	63 mm
	Partial width	39 mm
	End step width	5 mm
	Maximum clearance	MAX 2.5 mm
	Minimum clearance	MIN 2 mm
	Outer diameter with deviations	Diameter 214 mm, upper deviation -0.02 mm, lower deviation -0.05 mm
	Bore diameter fit	Diameter 175 H7
	Maximum diameter limit	MAX diameter 113 mm
	Minimum diameter limit	MIN diameter 133 mm
	Shaft diameter fit	Diameter 170 h6
	Outer diameter fit	Diameter 214 h7
	Datum T	
	Datum D	
	Component label	Wave Generator A
	Bottom partial width	26.8 mm, upper deviation 0 mm, lower deviation -0.1 mm
		29.2 ±0.2 mm

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 2	Tapped holes, 16x M8, depth 12mm, evenly distributed	16× M8 threaded holes, depth 12 mm, evenly distributed on bolt circle
	Through/counterbore holes, 16x $\varnothing 9$, depth 22mm, evenly distributed	16× $\varnothing 9$ mm holes, depth 22 mm, evenly distributed on bolt circle
	Flange outer diameter $\varnothing 154$ mm	$\varnothing 154$ mm
	Process holes × 4	4× process holes (tooling/assembly aid holes)
	Tapped holes, 4x M5	4× M5 threaded holes
Mechanical View 3	Through hole quantity and diameter	12 holes, diameter 9 mm
	M5 set screw quantity	6 M5 set screws
	Hole angular spacing	15 degree angular spacing
	Bolt circle diameter	Diameter 200 mm bolt circle
Mechanical View 4	View designation	View D
	Diameter 32	Diameter 32 mm
	Diameter 26	Diameter 26 mm
	Two M3 threaded holes	2x M3 threaded holes
	Thread hole depth	Depth 6 mm

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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.