PRODUCT DATASHEET

ES-HG-S09-F20-R80

Precision Transmission Component

Hollow Shaft Harmonic Gearboxes | High-Torque Hollow Shaft Gear Unit

Product Overview

Precision Transmission Component with rated Torque 44 N·m, instantaneous Maximum Torque 165 N·m and start/Stop Peak Torque 96 N·m.

Key Specifications

PARAMETER	VALUE	UNIT
Rated Torque	44	N·m
Instantaneous Maximum Torque	165	N·m
Start/Stop Peak Torque	96	N·m
Reduction Ratio	80	
Maximum Input Speed	6500	r/min
Allowable Average Torque	61	N·m
Backlash	≤20	arc sec
Frame Size	20	
Weight	1.32	kg

Technical Specifications

PARAMETER	SPECIFICATION	UNIT	NOTES
PERFORMANCE			
Rated Torque	44	N·m	Frame Size: 20; Reduction Ratio: 80; Size: 20
Instantaneous Maximum Torque	165	N·m	Frame Size: 20; Reduction Ratio: 80; Size: 20
Start/Stop Peak Torque	96	N·m	Frame Size: 20; Reduction Ratio: 80; Size: 20
Backlash	≤20	arc sec	Reduction Ratio: 80; Size: 20; Frame Size: 20
Allowable Average Torque	61	N·m	Frame Size: 20; Reduction Ratio: 80; Size: 20
Angular Transmission Accuracy	1	arcmin	Frame Size: 20; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 20
Hysteresis Loss	1	arcmin	Frame Size: 20; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 20
MECHANICAL			
Frame Size	20		Frame Size: 20; Reduction Ratio: 80; Size: 20
Weight	1.32	kg	Frame Size: 20; Reduction Ratio: 80; Size: 20

Technical Specifications

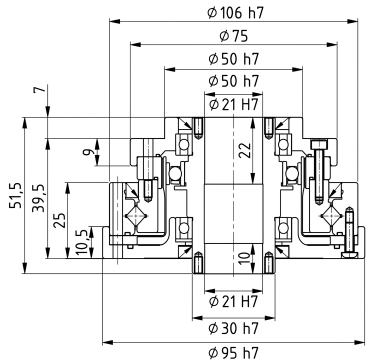
PARAMETER	SPECIFICATION	UNIT	NOTES
RELIABILITY			
Design Life	15000	h	Frame Size: 20; Reduction Ratio: 80; Size: 20
ADDITIONAL SPECIFICATIONS			
Reduction Ratio	80		Frame Size: 20; Reduction Ratio: 80; Size: 20
Maximum Input Speed	6500	r/min	Frame Size: 20; Reduction Ratio: 80; Size: 20
Average Input Speed	3500	r/min	Frame Size: 20; Reduction Ratio: 80; Size: 20
Torsional Rigidity K2	2.5	×10⁴ N·m/rad	Frame Size: 20; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity K1	1.6	×10⁴ N·m/rad	Frame Size: 20; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity K3	2.9	×10⁴ N·m/rad	Frame Size: 20; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity T2	25	N·m	Frame Size: 20; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity T1	7	N·m	Frame Size: 20; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 20

Dimensional & Integration Overview

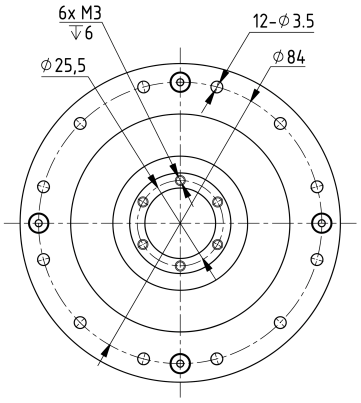
Mechanical Overview

PARAMETER	VALUE	UNIT
Frame Size	20	
Weight	1.32	kg

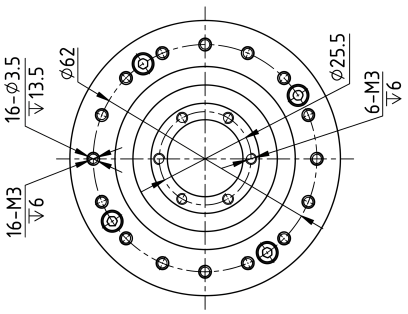
Dimensional Drawings



Mechanical View 1



Mechanical View 2



Mechanical View 3

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 1	Maximum outer diameter	Φ106 h7
	Intermediate diameter	Φ75
	Shaft diameter 1	Φ50 h7
	Shaft diameter 2	
	Mounting hole diameter 1	Φ21 H7
	Mounting hole diameter 2	
	Lower shaft diameter	Φ30 h7
	Lower end outer diameter	Φ95 h7
	Vertical dimension 1	7
	Vertical dimension 2	22
	Vertical dimension 3	51.5
	Vertical dimension 4	39.5
	Vertical dimension 5	25
	Vertical dimension 6	10.5
	Vertical dimension 7	10
	Feature dimension	9

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 2	Mounting threaded holes	6x M3 threaded holes
	Surface finish depth	Surface finish depth 6
	Through hole pattern	12x φ3.5 holes
	Outer circle diameter	φ84
	Bolt circle diameter	φ25.5
Mechanical View 3	Center hole diameter	
	Outer diameter	φ62
	Outer mounting holes	16 holes × φ3.5
	Outer mounting holes pitch circle diameter	√13.5 (radial notation)
	Middle mounting holes	6 holes × M3 thread
	Inner mounting holes	16 holes × M3 thread

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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.