

PRODUCT DATASHEET

ES-HG-S09-F20-R160

Precision Transmission Component

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

Product Overview

Precision Transmission Component with rated Torque 52 N·m, instantaneous Maximum Torque 191 N·m and start/Stop Peak Torque 120 N·m.

Key Specifications

PARAMETER	VALUE	UNIT
Rated Torque	52	N·m
Instantaneous Maximum Torque	191	N·m
Start/Stop Peak Torque	120	N·m
Reduction Ratio	160	
Maximum Input Speed	6500	r/min
Allowable Average Torque	64	N·m
Backlash	≤20	arc sec
Frame Size	20	
Weight	1.32	kg

Technical Specifications

PARAMETER	SPECIFICATION	UNIT	NOTES
PERFORMANCE			
Rated Torque	52	Nm	Frame Size: 20; Reduction Ratio: 160; Size: 20
Instantaneous Maximum Torque	191	Nm	Frame Size: 20; Reduction Ratio: 160; Size: 20
Start/Stop Peak Torque	120	Nm	Frame Size: 20; Reduction Ratio: 160; Size: 20
Backlash	≤20	arc sec	Reduction Ratio: 160; Size: 20; Frame Size: 20
Allowable Average Torque	64	Nm	Frame Size: 20; Reduction Ratio: 160; Size: 20
Angular Transmission Accuracy	1	arcmin	Frame Size: 20; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 20
Hysteresis Loss	1	arcmin	Frame Size: 20; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 20
MECHANICAL			
Frame Size	20		Frame Size: 20; Reduction Ratio: 160; Size: 20
Weight	1.32	kg	Frame Size: 20; Reduction Ratio: 160; Size: 20

Technical Specifications

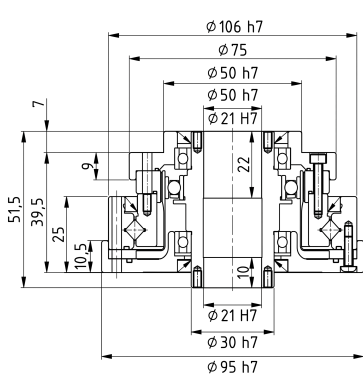
PARAMETER	SPECIFICATION	UNIT	NOTES
RELIABILITY			
Design Life	15000	h	Frame Size: 20; Reduction Ratio: 160; Size: 20
ADDITIONAL SPECIFICATIONS			
Reduction Ratio	160		Frame Size: 20; Reduction Ratio: 160; Size: 20
Maximum Input Speed	6500	r/min	Frame Size: 20; Reduction Ratio: 160; Size: 20
Average Input Speed	3500	r/min	Frame Size: 20; Reduction Ratio: 160; Size: 20
Torsional Rigidity K2	2.5	$\times 10^4$ Nm/rad	Frame Size: 20; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity K1	1.6	$\times 10^4$ Nm/rad	Frame Size: 20; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity K3	2.9	$\times 10^4$ Nm/rad	Frame Size: 20; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity T2	25	Nm	Frame Size: 20; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 20
Torsional Rigidity T1	7	Nm	Frame Size: 20; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 20

Dimensional & Integration Overview

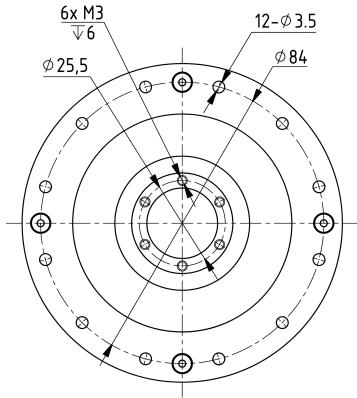
Mechanical Overview

PARAMETER	VALUE	UNIT
Frame Size	20	
Weight	1.32	kg

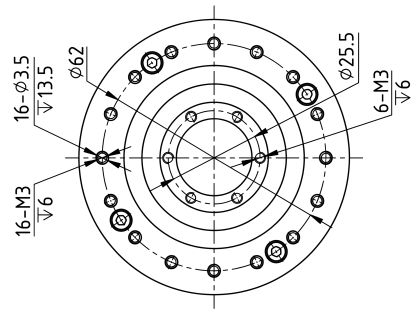
Dimensional Drawings



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 ϕ 3.5 holes
	Outer circle diameter	ϕ 84
	Bolt circle diameter	ϕ 25.5
Mechanical View 3	Center hole diameter	
	Outer diameter	ϕ 62
	Outer mounting holes	16 holes $\times$ ϕ 3.5
	Outer mounting holes pitch circle diameter	$\sqrt{13.5}$ (radial notation)
	Middle mounting holes	6 holes $\times$ M3 thread
	Inner mounting holes	16 holes $\times$ 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.