PRODUCT DATASHEET

ES-HG-S09-F45-R100

Precision Transmission Component

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

Product Overview

Precision Transmission Component with rated Torque 459 N·m, instantaneous Maximum Torque 2041 N·m and start/Stop Peak Torque 982 N·m.

Key Specifications

PARAMETER	VALUE	UNIT
Rated Torque	459	N·m
Instantaneous Maximum Torque	2041	N·m
Start/Stop Peak Torque	982	N·m
Reduction Ratio	100	
Maximum Input Speed	3800	r/min
Allowable Average Torque	650	N·m
Backlash	≤20	arc sec
Frame Size	45	
Weight	6.5	kg

Technical Specifications

PARAMETER	SPECIFICATION	UNIT	NOTES
PERFORMANCE			
Rated Torque	459	N·m	Frame Size: 45; Reduction Ratio: 100; Size: 45
Instantaneous Maximum Torque	2041	N·m	Frame Size: 45; Reduction Ratio: 100; Size: 45
Start/Stop Peak Torque	982	N·m	Frame Size: 45; Reduction Ratio: 100; Size: 45
Backlash	≤20	arc sec	Reduction Ratio: 100; Size: 45; Frame Size: 45
Allowable Average Torque	650	N·m	Frame Size: 45; Reduction Ratio: 100; Size: 45
Angular Transmission Accuracy	1	arcmin	Frame Size: 45; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 45
Hysteresis Loss	1	arcmin	Frame Size: 45; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 45
MECHANICAL			
Frame Size	45		Frame Size: 45; Reduction Ratio: 100; Size: 45
Weight	6.5	kg	Frame Size: 45; Reduction Ratio: 100; Size: 45

Technical Specifications

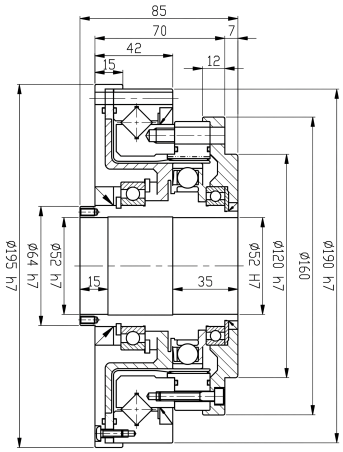
PARAMETER	SPECIFICATION	UNIT	NOTES
RELIABILITY			
Design Life	15000	h	Frame Size: 45; Reduction Ratio: 100; Size: 45
ADDITIONAL SPECIFICATIONS			
Reduction Ratio	100		Frame Size: 45; Reduction Ratio: 100; Size: 45
Maximum Input Speed	3800	r/min	Frame Size: 45; Reduction Ratio: 100; Size: 45
Average Input Speed	3000 / 3500	r/min	Frame Size: 45; Reduction Ratio: 100; Size: 45 / Frame Size: 45; Reduction Ratio: 100
Torsional Rigidity K2	29	×10⁴ N·m/rad	Frame Size: 45; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 45
Torsional Rigidity K1	18	×10⁴ N·m/rad	Frame Size: 45; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 45
Torsional Rigidity K3	33	×10⁴ N·m/rad	Frame Size: 45; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 45
Torsional Rigidity T2	275	N·m	Frame Size: 45; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 45
Torsional Rigidity T1	76	N·m	Frame Size: 45; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 45

Dimensional & Integration Overview

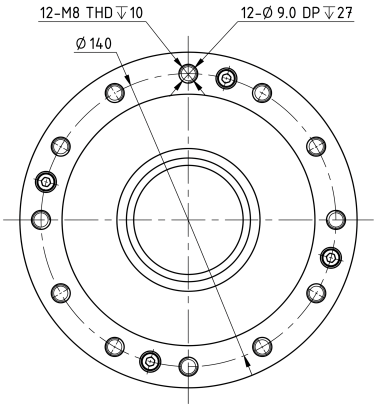
Mechanical Overview

PARAMETER	VALUE	UNIT
Frame Size	45	
Weight	6.5	kg

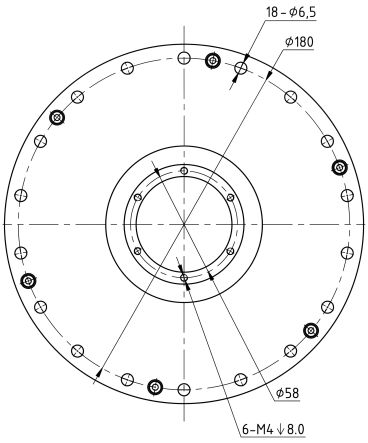
Dimensional Drawings



Mechanical View 1



Mechanical View 2



Mechanical View 3

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 1	Overall Length	85 mm
	Internal Width	70 mm
	Mounting Boss Width	42 mm
	Left Mounting Boss Depth	15 mm
	Right Mounting Boss Depth	12 mm
	Left Side Outer Diameter	Φ195 h7
	Left Side Inner Diameter	Φ64 h7
	Central Bore Diameter	Φ52 H7
	Middle Shaft Diameter	Φ120 h7
	Reference Diameter	Φ160
	Right Side Outer Diameter	Φ190 h7
	Bottom Mounting Boss Depth	15 mm
	Central Mounting Zone Width	35 mm
Mechanical View 2	M8 Threaded Hole Pattern	12 holes, M8 threaded, depth 10mm
	φ9.0 Through Hole Pattern	12 holes, φ9.0mm diameter, depth 27mm
	Bolt Circle Diameter	φ140mm

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 3	18 holes, diameter 6.5mm, evenly distributed on Φ180 bolt circle	18 holes × Φ6.5 on Φ180 PCD
	Outer circle diameter / bolt circle diameter	Φ180
	Center bore diameter	Φ58
	6 × M4 threaded holes with countersink depth 8.0mm	6 × M4 threaded holes, countersink depth 8.0mm

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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.