PRODUCT DATASHEET

ES-HG-S24-F20-R160

Precision Transmission Component

Hat Harmonic Gearboxes | Standard Hat Unit Type I

Product Overview

Precision Transmission Component with rated Torque 40 N·m, instantaneous Maximum Torque 147 N·m and start/Stop Peak Torque 92 N·m.

Key Specifications

PARAMETER	VALUE	UNIT
Rated Torque	40	N·m
Instantaneous Maximum Torque	147	N·m
Start/Stop Peak Torque	92	N·m
Reduction Ratio	160	
Backlash	≤20	arc sec
Maximum Input Speed	6500	r/min
Allowable Average Torque	49	N·m
Frame Size	20	
Weight	0.72	kg

Technical Specifications

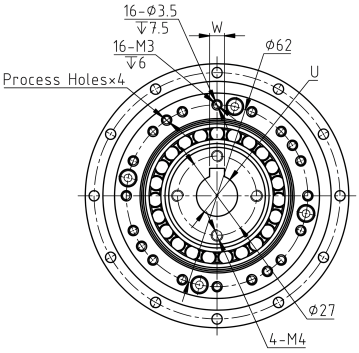
PARAMETER	SPECIFICATION	UNIT	NOTES
PERFORMANCE			
Rated Torque	40	N·m	Frame Size: 20; Reduction Ratio: 160
Instantaneous Maximum Torque	147	N·m	Frame Size: 20; Reduction Ratio: 160
Start/Stop Peak Torque	92	N·m	Frame Size: 20; Reduction Ratio: 160
Backlash	≤20	arc sec	Frame Size: 20; Reduction Ratio: 160
Allowable Average Torque	49	N·m	Frame Size: 20; Reduction Ratio: 160
MECHANICAL			
Frame Size	20		Frame Size: 20; Reduction Ratio: 160
Weight	0.72	kg	Frame Size: 20; Reduction Ratio: 160
Wave Generator Dimension T	12.8+0.10 / 9.4+0.10 / 16.3+0.10	mm	Varies by published configuration.
Wave Generator Bore U	φ8H7 / φ11H7 / φ14H7		Varies by published configuration.
Wave Generator Keyway W	4JS9/P9 / 3JS9/P9 / 5JS9/P9		Varies by published configuration.
RELIABILITY			
Design Life	15000	h	Frame Size: 20; Reduction Ratio: 160
ADDITIONAL SPECIFICATIONS			
Reduction Ratio	160		Frame Size: 20; Reduction Ratio: 160
Maximum Input Speed	6500	r/min	Frame Size: 20; Reduction Ratio: 160
Average Input Speed	3500	r/min	Frame Size: 20; Reduction Ratio: 160

Dimensional & Integration Overview

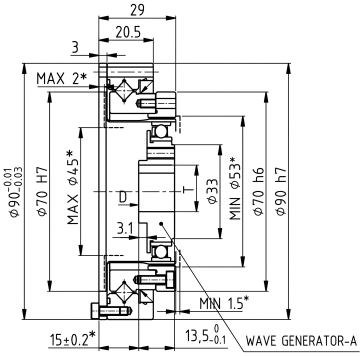
Mechanical Overview

PARAMETER	VALUE	UNIT
Frame Size	20	
Weight	0.72	kg
Wave Generator Dimension T	12.8+0.10 / 9.4+0.10 / 16.3+0.10	mm
Wave Generator Bore U	φ8H7 / φ11H7 / φ14H7	
Wave Generator Keyway W	4JS9/P9 / 3JS9/P9 / 5JS9/P9	

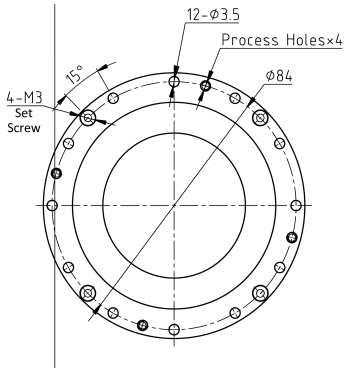
Dimensional Drawings



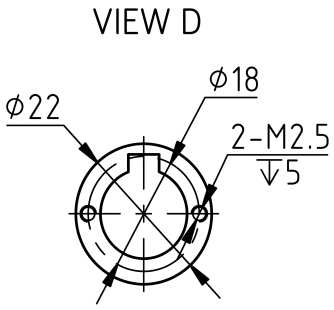
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 4

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 1	Sixteen diameter 3.5 holes	16 holes, diameter 3.5 mm
	Depth-style value for diameter 3.5 hole callout	V/depth-style value 7.5 mm associated with 16-Φ3.5
	Sixteen M3 threaded holes	16 threaded holes, M3
	Depth-style value for M3 threaded holes	V/depth-style value 6 mm associated with 16-M3
	Outer diameter	Diameter 62 mm
	Width symbol W	Width symbol W; numeric value not specified in this crop
	Interface or orientation label U	Label U; numeric value not specified
	Process holes quantity	Process holes ×4
	Diameter 27 hole or circular feature	Diameter 27 mm
	Four M4 threaded holes	4 threaded holes, M4

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 2	Upper overall length	29 mm
	Upper step length	20.5 mm
	End small step width	3 mm
	Maximum clearance or chamfer dimension	Maximum 2 mm, starred condition
	Left outer mounting diameter with tolerance	Diameter 90 mm, upper deviation -0.01 mm, lower deviation -0.03 mm
	Left bore or mating diameter	Diameter 70 mm H7 fit
	Maximum allowed diameter	Maximum diameter 45 mm, starred condition
	Datum or section marker D	Datum/marker D
	Local end dimension	3.1 mm
	Shaft end diameter	Diameter 33 mm
	Minimum allowed diameter	Minimum diameter 53 mm, starred condition
	Right shaft fit diameter	Diameter 70 mm h6 fit
	Right outer fit diameter	Diameter 90 mm h7 fit
	Minimum clearance dimension	Minimum 1.5 mm, starred condition
	Bottom local length with tolerance	13.5 mm, upper deviation 0 mm, lower deviation -0.1 mm
	Bottom left length with tolerance	15 mm ±0.2 mm, starred condition
	Component name	Wave Generator-A

2D Drawing Dimensions & Callouts

VIEW	FIELD	VALUE
Mechanical View 3	Diameter of 12 holes	12 holes, diameter Φ3.5
	Number of process holes	Process holes quantity 4
	Hole pitch circle diameter	Diameter Φ84
	M3 set screw quantity	4 × M3 set screws
Mechanical View 4	View D label	View D
	Hole diameter	Diameter 18 mm
	Outer diameter	Diameter 22 mm
	Threaded hole quantity and size	2 × M2.5 threaded holes
	T-slot or keyway callout	T5

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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.