PRODUCT DATASHEET

# ES-HG-S24-F20-R100

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 82 N·m.

## Key Specifications

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Rated Torque | 40 | N·m |
| Instantaneous Maximum Torque | 147 | N·m |
| Start/Stop Peak Torque | 82 | N·m |
| Reduction Ratio | 100 | |
| 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

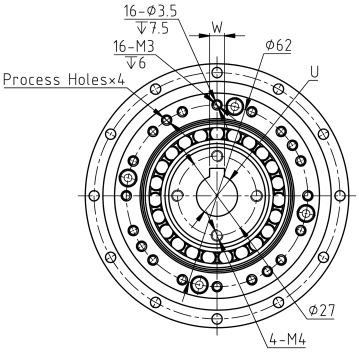
| PARAMETER | SPECIFICATION | UNIT | NOTES |
|---|---|---|---|
| **PERFORMANCE** | | | |
| Rated Torque | 40 | N·m | Frame Size: 20; Reduction Ratio: 100 |
| Instantaneous Maximum Torque | 147 | N·m | Frame Size: 20; Reduction Ratio: 100 |
| Start/Stop Peak Torque | 82 | N·m | Frame Size: 20; Reduction Ratio: 100 |
| Backlash | ≤20 | arc sec | Frame Size: 20; Reduction Ratio: 100 |
| Allowable Average Torque | 49 | N·m | Frame Size: 20; Reduction Ratio: 100 |
| **MECHANICAL** | | | |
| Frame Size | 20 | | Frame Size: 20; Reduction Ratio: 100 |
| Weight | 0.72 | kg | Frame Size: 20; Reduction Ratio: 100 |
| Wave Generator Dimension T | 9.4+0.10 / 16.3+0.10 / 12.8+0.10 | mm | Varies by published configuration. |
| Wave Generator Bore U | φ14H7 / φ8H7 / φ11H7 | | Varies by published configuration. |
| Wave Generator Keyway W | 3JS9/P9 / 4JS9/P9 / 5JS9/P9 | | Varies by published configuration. |
| **RELIABILITY** | | | |
| Design Life | 15000 | h | Frame Size: 20; Reduction Ratio: 100 |
| **ADDITIONAL SPECIFICATIONS** | | | |
| Reduction Ratio | 100 | | Frame Size: 20; Reduction Ratio: 100 |
| Maximum Input Speed | 6500 | r/min | Frame Size: 20; Reduction Ratio: 100 |
| Average Input Speed | 3500 | r/min | Frame Size: 20; Reduction Ratio: 100 |

# Dimensional & Integration Overview

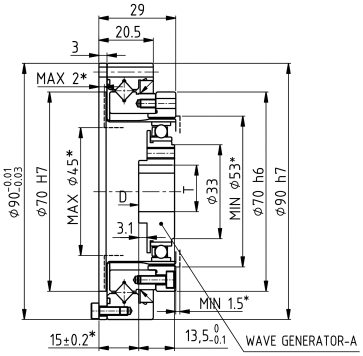
## Mechanical Overview

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

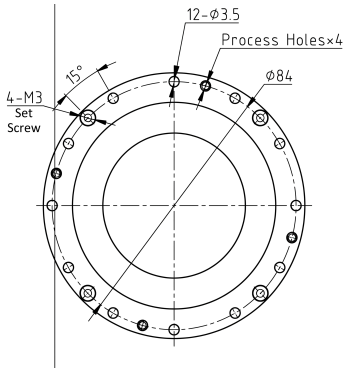
## Dimensional Drawings



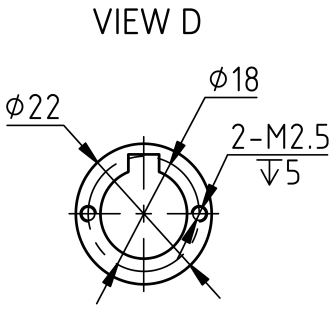

Mechanical View 1




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.