

## PRODUCT DATASHEET

# ES-HG-S08-F17-R100

## Precision Transmission Component

Hat Harmonic Gearboxes | High-Torque Hat Unit Type II

### Product Overview

Precision Transmission Component with rated Torque 31 Nm, instantaneous Maximum Torque 143 Nm and start/Stop Peak Torque 70 Nm.

### Key Specifications

| PARAMETER                    | VALUE | UNIT    |
|------------------------------|-------|---------|
| Rated Torque                 | 31    | Nm      |
| Instantaneous Maximum Torque | 143   | Nm      |
| Start/Stop Peak Torque       | 70    | Nm      |
| Reduction Ratio              | 100   |         |
| Maximum Input Speed          | 7300  | r/min   |
| Allowable Average Torque     | 51    | Nm      |
| Backlash                     | ≤20   | arc sec |
| Frame Size                   | 17    |         |
| Weight                       | 0.54  | kg      |

## Technical Specifications

| PARAMETER                     | SPECIFICATION        | UNIT    | NOTES                                                                                                                                                                                                                                                                                             |
|-------------------------------|----------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PERFORMANCE</b>            |                      |         |                                                                                                                                                                                                                                                                                                   |
| Rated Torque                  | 31                   | Nm      | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                                                                                                                                                                                    |
| Instantaneous Maximum Torque  | 143                  | Nm      | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                                                                                                                                                                                    |
| Start/Stop Peak Torque        | 70                   | Nm      | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                                                                                                                                                                                    |
| Backlash                      | ≤20                  | arc sec | Reduction Ratio: 100; Size: 17; Frame Size: 17                                                                                                                                                                                                                                                    |
| Allowable Average Torque      | 51                   | Nm      | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                                                                                                                                                                                    |
| Starting Torque               | 3.7 / 0.037          | Nm      | Frame Size: 17; Reduction Ratio: 100; Size: 17 / Reduction Ratio: 100; Size: 17; Frame Size: 17                                                                                                                                                                                                   |
| Angular Transmission Accuracy | 1.5                  | arcmin  | Frame Size: 17; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 17                                                                                                                                                                                                                           |
| Hysteresis Loss               | 1                    | arcmin  | Frame Size: 17; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 17                                                                                                                                                                                                                           |
| <b>MECHANICAL</b>             |                      |         |                                                                                                                                                                                                                                                                                                   |
| Frame Size                    | 17                   |         | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                                                                                                                                                                                    |
| Weight                        | 0.54                 | kg      | Frame Size: 17; Reduction Ratio: 100                                                                                                                                                                                                                                                              |
| Wave Generator Dimension T    | 9.4+0.10 / 12.8+0.10 | mm      | Frame Size: 17; Option Index: 1; Option Label: Wave generator - A φ 8; Reduction Ratio: 100; Wave Generator Option: wave-generator-e6e55a341aa3 / Frame Size: 17; Option Index: 2; Option Label: Wave generator - A φ11; Reduction Ratio: 100; Wave Generator Option: wave-generator-fd26f6670d9b |
| Wave Generator Bore U         | φ11H7 / φ8H7         |         | Varies by published configuration.                                                                                                                                                                                                                                                                |
| Wave Generator Keyway W       | 3JS9/P9 / 4JS9/P9    |         | Frame Size: 17; Option Index: 1; Option Label: Wave generator - A φ 8; Reduction Ratio: 100; Wave Generator Option: wave-generator-e6e55a341aa3 / Frame Size: 17; Option Index: 2; Option Label: Wave generator - A φ11; Reduction Ratio: 100; Wave Generator Option: wave-generator-fd26f6670d9b |

## Technical Specifications

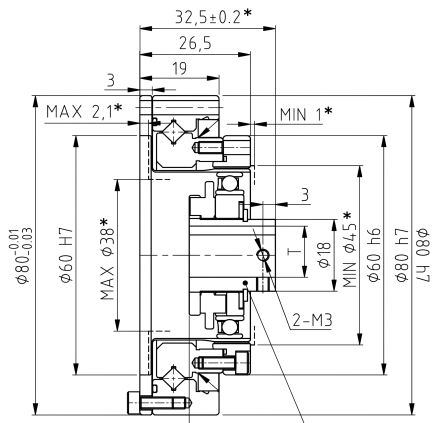
| PARAMETER                        | SPECIFICATION                                                          | UNIT                       | NOTES                                                                                                                                |
|----------------------------------|------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>RELIABILITY</b>               |                                                                        |                            |                                                                                                                                      |
| Design Life                      | 15000                                                                  | h                          | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                       |
| <b>ADDITIONAL SPECIFICATIONS</b> |                                                                        |                            |                                                                                                                                      |
| Reduction Ratio                  | 100                                                                    |                            | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                       |
| Maximum Input Speed              | 7300                                                                   | r/min                      | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                       |
| Average Input Speed              | 3500                                                                   | r/min                      | Frame Size: 17; Reduction Ratio: 100; Size: 17                                                                                       |
| Wave Generator T                 | 12.8 <sup>+</sup> 0.1 <sub>0</sub> / 9.4 <sup>+</sup> 0.1 <sub>0</sub> | mm                         | Reduction Ratio: 100; Size: 17; Frame Size: 17; Option Index: 2 /<br>Reduction Ratio: 100; Size: 17; Frame Size: 17; Option Index: 1 |
| Wave Generator U                 | φ11H7 / φ8H7                                                           |                            | Varies by published configuration.                                                                                                   |
| Wave Generator W                 | 3JS9/P9 / 4JS9/P9                                                      |                            | Reduction Ratio: 100; Size: 17; Frame Size: 17; Option Index: 1 /<br>Reduction Ratio: 100; Size: 17; Frame Size: 17; Option Index: 2 |
| Torsional Rigidity K2            | 1.4                                                                    | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 17; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 17                                                              |
| Torsional Rigidity K1            | 1                                                                      | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 17; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 17                                                              |
| Torsional Rigidity K3            | 1.6                                                                    | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 17; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 17                                                              |
| Torsional Rigidity T2            | 12                                                                     | Nm                         | Frame Size: 17; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 17                                                              |
| Torsional Rigidity T1            | 3.9                                                                    | Nm                         | Frame Size: 17; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 17                                                              |

## Dimensional & Integration Overview

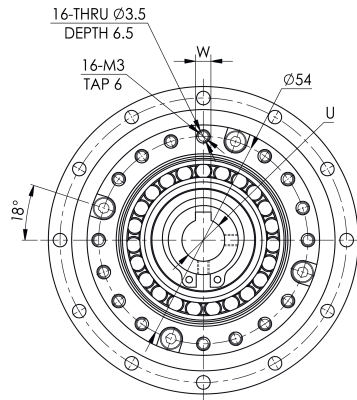
### Mechanical Overview

| PARAMETER                  | VALUE                | UNIT |
|----------------------------|----------------------|------|
| Frame Size                 | 17                   |      |
| Weight                     | 0.54                 | kg   |
| Wave Generator Dimension T | 9.4+0.10 / 12.8+0.10 | mm   |
| Wave Generator Bore U      | φ11H7 / φ8H7         |      |
| Wave Generator Keyway W    | 3JS9/P9 / 4JS9/P9    |      |

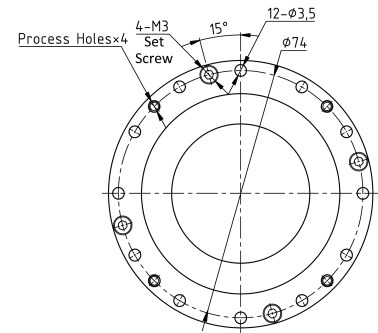
### Dimensional Drawings



Mechanical View 1



Mechanical View 2



Mechanical View 3

## 2D Drawing Dimensions & Callouts

| VIEW              | FIELD                                       | VALUE                  |
|-------------------|---------------------------------------------|------------------------|
| Mechanical View 1 | Overall Length                              | 32.5 ±0.2 mm           |
|                   | Intermediate Section Length                 | 26.5 mm                |
|                   | Inner Section Length                        | 19 mm                  |
|                   | Small Feature Dimension                     | 3 mm                   |
|                   | Maximum Radial Dimension                    | MAX 2.1 mm (reference) |
|                   | Minimum Radial Dimension                    | MIN 1 mm (reference)   |
|                   | Right Side Dimension                        | 3 mm                   |
|                   | Maximum Inner Diameter                      | MAX Φ38 mm (reference) |
|                   | Mounting Hole Diameter and Tolerance (Left) | Φ60 H7                 |
|                   | Shaft Diameter and Tolerance (Right)        | Φ60 h6                 |
|                   | Outer Diameter and Tolerance (Left)         | Φ80 -0.01/-0.03 mm     |
|                   | Hole Diameter                               | Φ18 mm                 |
|                   | Shaft Diameter and Tolerance (Right Outer)  | Φ80 h7                 |
|                   | Threaded Holes                              | 2 × M3 threaded holes  |
|                   | Minimum Inner Diameter                      | MIN Φ45 mm (reference) |

## 2D Drawing Dimensions & Callouts

| VIEW              | FIELD                                                       | VALUE                                |
|-------------------|-------------------------------------------------------------|--------------------------------------|
| Mechanical View 2 | Through hole diameter                                       | 16 holes, $\Phi 3.5$ mm through      |
|                   | Through hole depth                                          | Depth 6.5 mm                         |
|                   | Threaded hole specification                                 | 16 holes, M3 thread                  |
|                   | Tap depth                                                   | Tap depth 6 mm                       |
|                   | Outer diameter                                              | $\Phi 54$ mm                         |
|                   | Width dimension label                                       | Width dimension indicator            |
|                   | Dimension label U                                           | Dimension indicator U                |
|                   | Angular distribution                                        | 18° angular spacing                  |
| Mechanical View 3 | 12 holes of $\Phi 3.5$ mm diameter, spaced at 15° intervals | 12× $\Phi 3.5$ , 15° pitch           |
|                   | 4 M3 threaded holes for set screws                          | 4×M3 threaded holes                  |
|                   | 4 process holes                                             | 4 process holes (size not specified) |
|                   | Bolt circle diameter / pitch circle diameter                | $\Phi 74$                            |

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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.