

## PRODUCT DATASHEET

# ES-HG-S07-F17-R80

## Precision Transmission Component

Hat Harmonic Gearboxes | High-Torque Hat Unit Type I

### Product Overview

Precision Transmission Component with rated Torque 29 N·m, instantaneous Maximum Torque 113 N·m and start/Stop Peak Torque 56 N·m.

### Key Specifications

| PARAMETER                    | VALUE | UNIT    |
|------------------------------|-------|---------|
| Rated Torque                 | 29    | N·m     |
| Instantaneous Maximum Torque | 113   | N·m     |
| Start/Stop Peak Torque       | 56    | N·m     |
| Reduction Ratio              | 80    |         |
| Maximum Input Speed          | 7300  | r/min   |
| Allowable Average Torque     | 35    | N·m     |
| Backlash                     | ≤20   | arc sec |
| Frame Size                   | 17    |         |
| Weight                       | 0.54  | kg      |

## Technical Specifications

| PARAMETER                     | SPECIFICATION        | UNIT    | NOTES                                                                                                                                                                                                                                                                         |
|-------------------------------|----------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PERFORMANCE</b>            |                      |         |                                                                                                                                                                                                                                                                               |
| Rated Torque                  | 29                   | Nm      | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                                                                                                                                                                                 |
| Instantaneous Maximum Torque  | 113                  | Nm      | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                                                                                                                                                                                 |
| Start/Stop Peak Torque        | 56                   | Nm      | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                                                                                                                                                                                 |
| Backlash                      | ≤20                  | arc sec | Reduction Ratio: 80; Size: 17; Frame Size: 17                                                                                                                                                                                                                                 |
| Allowable Average Torque      | 35                   | Nm      | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                                                                                                                                                                                 |
| Starting Torque               | 4.4 / 0.044          | Nm      | Frame Size: 17; Reduction Ratio: 80; Size: 17 / Reduction Ratio: 80; Size: 17; Frame Size: 17                                                                                                                                                                                 |
| Angular Transmission Accuracy | 1.5                  | arcmin  | Frame Size: 17; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 17                                                                                                                                                                                                        |
| Hysteresis Loss               | 1                    | arcmin  | Frame Size: 17; Reduction Ratio: 80; Reduction Ratio Min: 50; Size: 17                                                                                                                                                                                                        |
| <b>MECHANICAL</b>             |                      |         |                                                                                                                                                                                                                                                                               |
| Frame Size                    | 17                   |         | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                                                                                                                                                                                 |
| Weight                        | 0.54                 | kg      | Frame Size: 17; Reduction Ratio: 80                                                                                                                                                                                                                                           |
| Wave Generator Dimension T    | 9.4+0.10 / 12.8+0.10 | mm      | Frame Size: 17; Option Label: Wave generator - A φ8; Reduction Ratio: 80; Wave Generator Option: wave-generator-e6e55a341aa3 / Frame Size: 17; Option Index: 1; Option Label: Wave generator - A φ11; Reduction Ratio: 80; Wave Generator Option: wave-generator-fd26f6670d9b |
| Wave Generator Bore U         | φ8H7 / φ11H7         |         | Frame Size: 17; Option Label: Wave generator - A φ8; Reduction Ratio: 80; Wave Generator Option: wave-generator-e6e55a341aa3 / Frame Size: 17; Option Index: 1; Option Label: Wave generator - A φ11; Reduction Ratio: 80; Wave Generator Option: wave-generator-fd26f6670d9b |
| Wave Generator Keyway W       | 4JS9/P9 / 3JS9/P9    |         | Frame Size: 17; Option Index: 1; Option Label: Wave generator - A φ11; Reduction Ratio: 80; Wave Generator Option: wave-generator-fd26f6670d9b / Frame Size: 17; Option Label: Wave generator - A φ8; Reduction Ratio: 80; Wave Generator Option: wave-generator-e6e55a341aa3 |

## Technical Specifications

| PARAMETER                        | SPECIFICATION                                                          | UNIT                       | NOTES                                                                                                             |
|----------------------------------|------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>RELIABILITY</b>               |                                                                        |                            |                                                                                                                   |
| Design Life                      | 15000                                                                  | h                          | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                     |
| <b>ADDITIONAL SPECIFICATIONS</b> |                                                                        |                            |                                                                                                                   |
| Reduction Ratio                  | 80                                                                     |                            | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                     |
| Maximum Input Speed              | 7300                                                                   | r/min                      | Frame Size: 17; Reduction Ratio: 80; Size: 17                                                                     |
| Average Input Speed              | 3500                                                                   | r/min                      | Frame Size: 17; Reduction Ratio: 80; 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: 80; Size: 17; Frame Size: 17; Option Index: 1 /<br>Reduction Ratio: 80; Size: 17; Frame Size: 17 |
| Wave Generator U                 | φ11H7 / φ8H7                                                           |                            | Reduction Ratio: 80; Size: 17; Frame Size: 17; Option Index: 1 /<br>Reduction Ratio: 80; Size: 17; Frame Size: 17 |
| Wave Generator W                 | 3JS9/P9 / 4JS9/P9                                                      |                            | Reduction Ratio: 80; Size: 17; Frame Size: 17 / Reduction Ratio: 80;<br>Size: 17; Frame Size: 17; Option Index: 1 |
| Torsional Rigidity K2            | 1.4                                                                    | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 17; Reduction Ratio: 80; Reduction Ratio Min: 50; Size:<br>17                                         |
| Torsional Rigidity K1            | 1                                                                      | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 17; Reduction Ratio: 80; Reduction Ratio Min: 50; Size:<br>17                                         |
| Torsional Rigidity K3            | 1.6                                                                    | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 17; Reduction Ratio: 80; Reduction Ratio Min: 50; Size:<br>17                                         |
| Torsional Rigidity T2            | 12                                                                     | Nm                         | Frame Size: 17; Reduction Ratio: 80; Reduction Ratio Min: 50; Size:<br>17                                         |
| Torsional Rigidity T1            | 3.9                                                                    | Nm                         | Frame Size: 17; Reduction Ratio: 80; Reduction Ratio Min: 50; Size:<br>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      | ϕ8H7 / ϕ11H7         |      |
| Wave Generator Keyway W    | 4JS9/P9 / 3JS9/P9    |      |

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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.