

PRODUCT DATASHEET

ES-HG-S07-F45-R160

Precision Transmission Component

Hat Harmonic Gearboxes | High-Torque Hat Unit Type I

Product Overview

Precision Transmission Component with reduction Ratio 160, frame Size 45 and angular Transmission Accuracy 1 arcmin.

Key Specifications

| PARAMETER                     | VALUE                             | UNIT                    |
|-------------------------------|-----------------------------------|-------------------------|
| Reduction Ratio               | 160                               |                         |
| Frame Size                    | 45                                |                         |
| Angular Transmission Accuracy | 1                                 | arcmin                  |
| Wave Generator Dimension T    | 25.3+0.10 / 24.8+0.10 / 21.8+0.10 | mm                      |
| Wave Generator Bore U         | φ22H7 / φ19H7                     |                         |
| Wave Generator Keyway W       | 8JS9/P9 / 6JS9/P9                 |                         |
| Hysteresis Loss               | 1                                 | arcmin                  |
| Torsional Rigidity K1         | 18                                | ×10 <sup>4</sup> Nm/rad |
| Torsional Rigidity K2         | 29                                | ×10 <sup>4</sup> Nm/rad |

## Technical Specifications

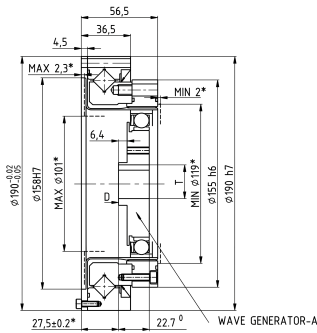
| PARAMETER                        | SPECIFICATION                     | UNIT                       | NOTES                                                                   |
|----------------------------------|-----------------------------------|----------------------------|-------------------------------------------------------------------------|
| <b>PERFORMANCE</b>               |                                   |                            |                                                                         |
| Angular Transmission Accuracy    | 1                                 | arcmin                     | Frame Size: 45; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 45 |
| Hysteresis Loss                  | 1                                 | arcmin                     | Frame Size: 45; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 45 |
| <b>MECHANICAL</b>                |                                   |                            |                                                                         |
| Frame Size                       | 45                                |                            | Frame Size: 45; Reduction Ratio: 160; Size: 45                          |
| Wave Generator Dimension T       | 25.3+0.10 / 24.8+0.10 / 21.8+0.10 | mm                         | Varies by published configuration.                                      |
| Wave Generator Bore U            | φ22H7 / φ19H7                     |                            | Varies by published configuration.                                      |
| Wave Generator Keyway W          | 8JS9/P9 / 6JS9/P9                 |                            | Varies by published configuration.                                      |
| <b>ADDITIONAL SPECIFICATIONS</b> |                                   |                            |                                                                         |
| Reduction Ratio                  | 160                               |                            | Frame Size: 45; Reduction Ratio: 160; Size: 45                          |
| Torsional Rigidity K2            | 29                                | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 45; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 45 |
| Torsional Rigidity K1            | 18                                | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 45; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 45 |
| Torsional Rigidity K3            | 33                                | ×10 <sup>4</sup><br>Nm/rad | Frame Size: 45; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 45 |
| Torsional Rigidity T2            | 275                               | Nm                         | Frame Size: 45; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 45 |
| Torsional Rigidity T1            | 76                                | Nm                         | Frame Size: 45; Reduction Ratio: 160; Reduction Ratio Min: 50; Size: 45 |

## Dimensional & Integration Overview

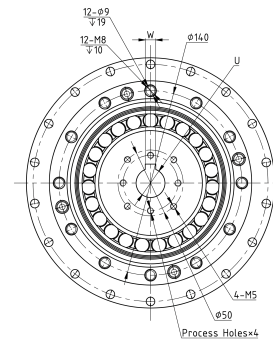
### Mechanical Overview

| PARAMETER                  | VALUE                             | UNIT |
|----------------------------|-----------------------------------|------|
| Frame Size                 | 45                                |      |
| Wave Generator Dimension T | 25.3+0.10 / 24.8+0.10 / 21.8+0.10 | mm   |
| Wave Generator Bore U      | φ22H7 / φ19H7                     |      |
| Wave Generator Keyway W    | 8JS9/P9 / 6JS9/P9                 |      |

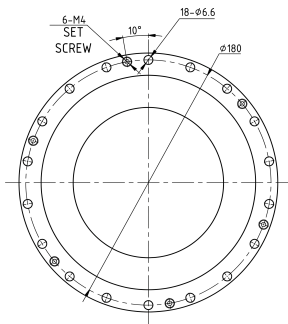
### Dimensional Drawings



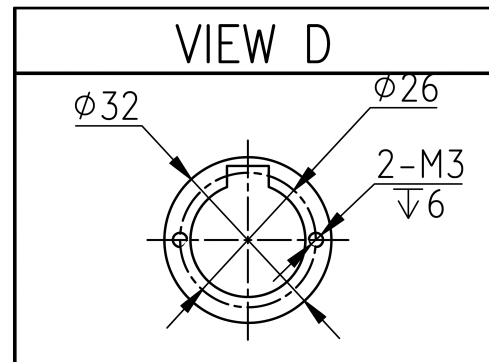
Mechanical View 1



Mechanical View 2



Mechanical View 3



Mechanical View 4

## 2D Drawing Dimensions & Callouts

| VIEW              | FIELD                                      | VALUE                                                      |
|-------------------|--------------------------------------------|------------------------------------------------------------|
| Mechanical View 1 | Top overall width                          | 56.5                                                       |
|                   | Top inner width                            | 36.5                                                       |
|                   | Upper left step offset                     | 4.5                                                        |
|                   | Maximum clearance or protrusion            | MAX 2.3                                                    |
|                   | Minimum clearance or protrusion            | MIN 2                                                      |
|                   | Local transverse distance                  | 6.4                                                        |
|                   | Left diameter with deviations              | Diameter 190, upper deviation -0.02, lower deviation -0.05 |
|                   | Fit diameter                               | Diameter 158 H7                                            |
|                   | Maximum diameter                           | MAX diameter 101                                           |
|                   | Minimum diameter                           | MIN diameter 119                                           |
|                   | Fit diameter                               | Diameter 155 h6                                            |
|                   |                                            | Diameter 190 h7                                            |
|                   | Datum or local identifier D                | D                                                          |
|                   | Datum or local identifier T                | T                                                          |
|                   | Bottom mounting offset                     | 27.5 ±0.2                                                  |
|                   | Bottom local distance with upper deviation | 22.7, upper deviation 0, lower deviation Not specified     |
|                   | Component label                            | Wave Generator-A                                           |

## 2D Drawing Dimensions & Callouts

| VIEW              | FIELD                                           | VALUE                               |
|-------------------|-------------------------------------------------|-------------------------------------|
| Mechanical View 2 | 12 through holes diameter and counterbore depth | 12 holes, diameter 9, depth 19      |
|                   | 12 M8 threaded holes and depth                  | 12 M8 threaded holes, depth 10      |
|                   | Width designation W                             | W, value not specified in this crop |
|                   | Diameter 140                                    |                                     |
|                   | Position designation U                          | U, value not specified in this crop |
| Mechanical View 3 | Through hole quantity and diameter              | 18 holes, diameter 6.6 mm           |
|                   | Set screw quantity and thread size              | 6 M4 set screws                     |
|                   | Angular spacing                                 | 10 degrees                          |
|                   | Bolt circle diameter                            | Pitch circle diameter 180 mm        |
| Mechanical View 4 | View designation                                | View D                              |
|                   | Outer diameter                                  | Diameter 32 mm                      |
|                   | Hole pitch circle diameter                      | Diameter 26 mm                      |
|                   | Threaded hole specification                     | 2 × M3 threaded holes               |
|                   | Unspecified numeric callout                     | 9, feature not specified            |

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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.