PRODUCT DATASHEET

# ES-HG-S09-F25-R100

Precision Transmission Component

Hollow Shaft Harmonic Gearboxes | High-Torque Hollow Shaft Gear Unit

## Product Overview

Precision Transmission Component with rated Torque 87 N·m, instantaneous Maximum Torque 369 N·m and start/Stop Peak Torque 204 N·m.

## Key Specifications

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Rated Torque | 87 | N·m |
| Instantaneous Maximum Torque | 369 | N·m |
| Start/Stop Peak Torque | 204 | N·m |
| Reduction Ratio | 100 | |
| Maximum Input Speed | 5600 | r/min |
| Allowable Average Torque | 140 | N·m |
| Backlash | ≤20 | arc sec |
| Frame Size | 25 | |
| Weight | 2.02 | kg |

# Technical Specifications

| PARAMETER | SPECIFICATION | UNIT | NOTES |
|---|---|---|---|
| **PERFORMANCE** | | | |
| Rated Torque | 87 | N·m | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Instantaneous Maximum Torque | 369 | N·m | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Start/Stop Peak Torque | 204 | N·m | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Backlash | ≤20 | arc sec | Reduction Ratio: 100; Size: 25; Frame Size: 25 |
| Allowable Average Torque | 140 | N·m | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Angular Transmission Accuracy | 1 | arcmin | Frame Size: 25; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 25 |
| Hysteresis Loss | 1 | arcmin | Frame Size: 25; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 25 |
| **MECHANICAL** | | | |
| Frame Size | 25 | | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Weight | 2.02 | kg | Frame Size: 25; Reduction Ratio: 100; Size: 25 |

# Technical Specifications

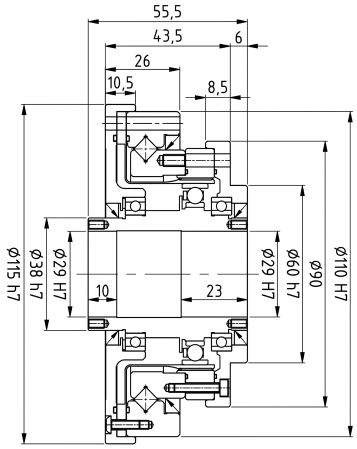
| PARAMETER | SPECIFICATION | UNIT | NOTES |
|---|---|---|---|
| **RELIABILITY** | | | |
| Design Life | 15000 | h | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| **ADDITIONAL SPECIFICATIONS** | | | |
| Reduction Ratio | 100 | | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Maximum Input Speed | 5600 | r/min | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Average Input Speed | 3500 | r/min | Frame Size: 25; Reduction Ratio: 100; Size: 25 |
| Torsional Rigidity K2 | 5 | $\times 10^4$ N·m/rad | Frame Size: 25; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 25 |
| Torsional Rigidity K1 | 3.1 | $\times 10^4$ N·m/rad | Frame Size: 25; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 25 |
| Torsional Rigidity K3 | 5.7 | $\times 10^4$ N·m/rad | Frame Size: 25; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 25 |
| Torsional Rigidity T2 | 48 | N·m | Frame Size: 25; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 25 |
| Torsional Rigidity T1 | 14 | N·m | Frame Size: 25; Reduction Ratio: 100; Reduction Ratio Min: 50; Size: 25 |

# Dimensional & Integration Overview

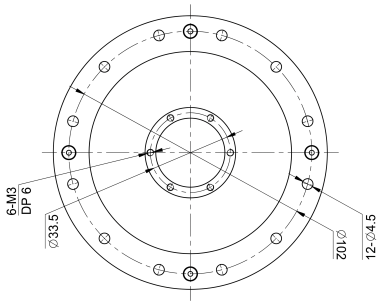
## Mechanical Overview

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Frame Size | 25 | |
| Weight | 2.02 | kg |

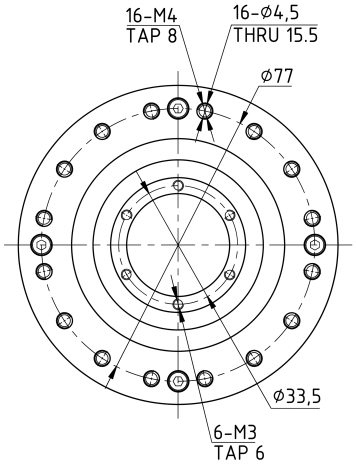
## Dimensional Drawings




Mechanical View 1




Mechanical View 2




Mechanical View 3

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 1 | Overall length | 55.5 mm |
| | Middle section length | 43.5 mm |
| | Right section length | 6 mm |
| | Left section length | 26 mm |
| | Lower left section length | 10.5 mm |
| | Right section length | 8.5 mm |
| | Outer mounting hole diameter with tolerance | Φ110 H7 |
| | | Φ115 h7 |
| | Inner hole diameter with tolerance (upper right) | Φ29 H7 |
| | Inner hole diameter with tolerance (lower left) | |
| | Middle hole diameter with tolerance | Φ60 h7 |
| | | Φ38 h7 |
| | Middle ring diameter | Φ90 |
| | Center section length | 23 mm |
| | Lower left end length | 10 mm |

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 2 | Flange mounting threaded holes | 6 × M3 threaded holes |
| | Pitch circle diameter of mounting holes | DP6 (likely designation or reference code) |
| | Center bore diameter | φ33.5 mm |
| | Outer mounting holes | 12 × φ4.5 mm holes |
| | Flange outer diameter | φ102 mm |
| Mechanical View 3 | Outer circle threaded holes (M4) | 16 holes, M4 thread, tap depth 8 mm |
| | Outer circle through holes (Φ4.5) | 16 holes, Φ4.5 mm, through depth 15.5 mm |
| | Outer circle diameter | Φ77 mm |
| | Inner circle diameter | Φ33.5 mm |
| | Inner circle threaded holes (M3) | 6 holes, M3 thread, tap depth 6 mm |

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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.