PRODUCT DATASHEET

# ES-HG-S18-F32-R80

Precision Transmission Component

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

## Product Overview

Precision Transmission Component with rated Torque 153 N·m, instantaneous Maximum Torque 738 N·m and start/Stop Peak Torque 395 N·m.

## Key Specifications

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Rated Torque | 153 | N·m |
| Instantaneous Maximum Torque | 738 | N·m |
| Start/Stop Peak Torque | 395 | N·m |
| Reduction Ratio | 80 | |
| Backlash | ≤20 | arc sec |
| Maximum Input Speed | 4800 | r/min |
| Allowable Average Torque | 217 | N·m |
| Frame Size | 32 | |
| Weight | 2.7 | kg |

# Technical Specifications

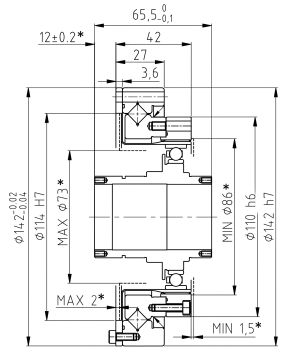
| PARAMETER | SPECIFICATION | UNIT | NOTES |
|---|---|---|---|
| **PERFORMANCE** | | | |
| Rated Torque | 153 | N·m | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Instantaneous Maximum Torque | 738 | N·m | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Start/Stop Peak Torque | 395 | N·m | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Backlash | ≤20 | arc sec | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Allowable Average Torque | 217 | N·m | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| **MECHANICAL** | | | |
| Frame Size | 32 | | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Weight | 2.7 | kg | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| **RELIABILITY** | | | |
| Design Life | 15000 | h | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| **CONFIGURATION** | | | |
| Variant Style | Simple Integrated Hollow-Shaft Type | | Frame Size: 32; Reduction Ratio: 80 |
| Unit Structure | Complete Unit | | Frame Size: 32; Reduction Ratio: 80 |
| Series Family | High-Torque Hat-Type Harmonic Gear Series | | Frame Size: 32; Reduction Ratio: 80 |
| **ADDITIONAL SPECIFICATIONS** | | | |
| Reduction Ratio | 80 | | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Maximum Input Speed | 4800 | r/min | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Average Input Speed | 3500 | r/min | Frame Size: 32; Reduction Ratio: 80; Size: 32 |
| Angle Transmission Accuracy | 1 | arcmin | Frame Size: 32; Reduction Ratio Min: 50; Size: 32 |
| Torsional Rigidity K2 | 11 | ×10⁴ N·m/rad | Frame Size: 32; Reduction Ratio: 80; Rigidity Scope: reduction ratio above 50; Size: 32 |
| Torsional Rigidity K1 | 6.7 | ×10⁴ N·m/rad | Frame Size: 32; Reduction Ratio: 80; Rigidity Scope: reduction ratio above 50; Size: 32 |
| Torsional Rigidity K3 | 12 | ×10⁴ N·m/rad | Frame Size: 32; Reduction Ratio: 80; Rigidity Scope: reduction ratio above 50; Size: 32 |
| Torsional Rigidity T2 | 108 | N·m | Frame Size: 32; Rigidity Scope: all reduction ratios; Size: 32 |
| Hysteresis Loss | 1 | arcmin | Frame Size: 32; Reduction Ratio Min: 50; Size: 32 |
| Torsional Rigidity T1 | 29 | N·m | Frame Size: 32; Rigidity Scope: all reduction ratios; Size: 32 |
| Starting Torque | 21 | N·m | Frame Size: 32; Reduction Ratio: 80; Size: 32 |

# Dimensional & Integration Overview

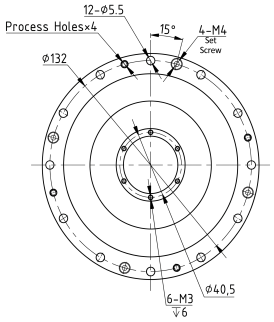
## Mechanical Overview

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Frame Size | 32 | |
| Weight | 2.7 | kg |

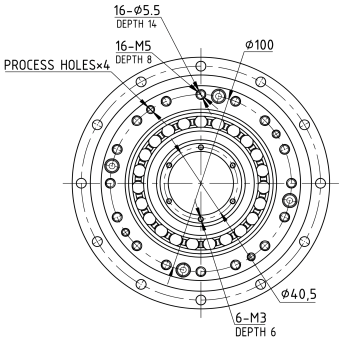
## Dimensional Drawings



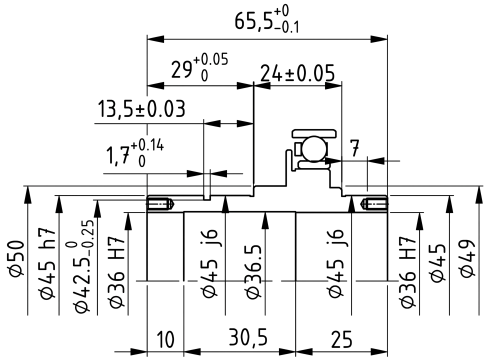

Mechanical View 1




Mechanical View 2




Mechanical View 3




Mechanical View 4

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 1 | Overall length | 65.5 +0/-0.1 |
| | Left offset distance | 12 ±0.2, marked with asterisk |
| | Upper horizontal span | 42 |
| | Internal horizontal span | 27 |
| | Local clearance or step dimension | 3.6 |
| | Bore diameter fit | Diameter 114 H7 |
| | Outside diameter with tolerance | Diameter 142 -0.02/-0.04 |
| | Maximum outside diameter | Maximum diameter 73, marked with asterisk |
| | Minimum diameter | Minimum diameter 86, marked with asterisk |
| | Shaft diameter fit | Diameter 110 h7 |
| | Diameter fit dimension | Diameter 142 h7 |
| | Maximum clearance or protrusion | Maximum 2, marked with asterisk |

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 2 | 12 hole diameter callout | 12 holes, diameter 5.5 mm |
| | process hole quantity | Process holes x4 |
| | hole angular spacing or offset | 15 degrees |
| | set screw thread callout | 4 x M4 set screws |
| | outer diameter | Diameter 132 mm |
| | inner circular feature diameter | Diameter 40.5 mm |
| | M3 threaded hole callout with depth indication | 6 x M3 threaded holes, depth/feature value 6 mm |
| Mechanical View 3 | 16 countersunk/counterbored process hole diameter | 16 holes, diameter 5.5, depth 14 |
| | 16 M5 threaded holes | 16 threaded holes M5, depth 8 |
| | Process hole quantity | Process holes quantity 4 |
| | Outer diameter | Diameter 100 |
| | Circular feature diameter | Diameter 40.5 |
| | 6 M3 threaded holes | 6 threaded holes M3, depth 6 |

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 4 | Overall length with tolerance | 65.5 +0.000/-0.100 mm |
| | Shoulder/step length with upper tolerance | 29 +0.050/0.000 mm |
| | End section length with bilateral tolerance | 24 ±0.050 mm |
| | Mounting/locating length with bilateral tolerance | 13.5 ±0.030 mm |
| | Small step/shoulder length with upper tolerance | 1.7 +0.140/0.000 mm |
| | Local/detail dimension | 7 mm |
| | Outer diameter | Ø50 mm |
| | Shaft journal diameter with h7 fit tolerance | Ø45 h7 mm |
| | Shaft diameter with unilateral tolerance | Ø42.5 +0.000/-0.250 mm |
| | Bore diameter with H7 fit tolerance (left) | Ø36 H7 mm |
| | Bore diameter with H7 fit tolerance (right) | |
| | Shaft diameter with j6 fit tolerance (left-center) | Ø45 j6 mm |
| | Inner bore diameter | Ø36.5 mm |
| | Bottom axial length (left section) | 10 mm |
| | Bottom axial length (center section) | 30.5 mm |
| | Bottom axial length (right section) | 25 mm |
| | Shaft diameter with j6 fit tolerance (right-center) | Ø45 j6 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.