1. **Purpose:**
   1.1. This document defines tolerances and features which are not explicitly stated on the assembly drawing.

2. **Application:**
   2.1. This document is not applicable to standard Series 1000 or 2100 slewing ring bearings.
   2.2. Dimensions, tolerances, and notes shown on the assembly drawing take precedent over this document.
   2.3. Slewing ring internal raceway features are not defined by this document.
   2.4. Dimensions without tolerance or undefined features on the assembly drawing fall under design control of thyssenkrupp rothe erde USA Engineering. thyssenkrupp rothe erde USA Engineering has authority to approve deviations to any specific dimension without tolerance or specific undefined feature on the assembly drawing in accordance with sound engineering principles.
   2.5. This document may be updated without customer notification.

3. Dimensions without Tolerances:

3.1. Ring Diameters

Ring Diameter Dimensions without Tolerances (Does not include drilled holes)		
> 0 ≤ 12.4" [315mm]	> 12.4" [315mm] ≤ 39.4" [1000mm]	> 39.4" [1000mm] ≤ 78.7" [2000mm]
± .060" [1.6mm]	± .098" [2.5mm]	± .138" [3.5mm]
> 78.7" [2000mm] ≤ 157.5" [4000mm]	> 157.5" [4000mm] ≤ 248.0" [6300mm]	> 248.0" [6300mm] ≤ 393.7" [10000mm]
± .197" [5.0mm]	± .276" [7.0mm]	± .394" [10.0mm]

3.2. Ring Heights

Ring Height Dimensions without Tolerances (Does not include tolerances covered by sections 3.3., & 3.5. thru 3.8.) [2H] (WN 121.504) [A,2A] (WN 121.101) [3RR] (WN 141.001)			
> 0 ≤ 2.76" [70mm]	> 2.76" [70mm] ≤ 3.94" [100mm]	> 3.94" [100mm] ≤ 7.87" [200mm]	> 7.87" [200mm]
-.039"/+.020" [-1.0mm/+0.50mm]	-.039"/+.020" [-1.0mm/+0.50mm]	-.059"/+.020" [-1.5mm/+0.5mm]	-.071"/+.020" [-1.8mm/+0.5mm]

3.3. Assembly Heights

Assembly Height Dimensions without Tolerances (Slewing ring mounting surface to mounting surface) [2H] (WN 121.504) [A,2A] (WN 121.101) [3RR] (WN 141.001)			
> 0 ≤ 2.76" [70mm]	> 2.76" [70mm] ≤ 3.94" [100mm]	> 3.94" [100mm] ≤ 7.87" [200mm]	> 7.87" [200mm]
-.039"/+.039" [-1.0mm/+1.0mm]	-.047"/+.039" [-1.2mm/+1.0mm]	-.059"/+.039" [-1.5mm/+1.0mm]	-.071"/+.039" [-1.8mm/+1.0mm]

3.4. Hole Diameters

Hole Diameter Dimensions without Tolerances (WN 005.001)			
> 0 ≤ .260" [6.6mm]	> .260" [6.6] ≤ .433" [11mm]	> .433" [11mm] ≤ .787" [20mm]	> .787" [20mm] ≤ 1.299" [33mm]
-.005"/+.014" [-0.12mm/+0.36mm]	-.006"/+.017" [-0.14mm/+0.43mm]	-.007"/+.021" [-0.18mm/+0.53mm]	-.008"/+.025" [-0.21mm/+0.63mm]
> 1.299" [33mm] ≤ 2.205" [56mm]	> 2.205" [56mm] ≤ 3.386" [86mm]	> 3.386" [86mm] ≤ 4.803" [122mm]	> 4.803" [122mm] ≤ 6.220" [158mm]
-.010"/+.030" [-0.25mm/+0.75mm]	-.012"/+.035" [-0.3mm/+0.9mm]	-.014"/+.041" [-0.35mm/+1.05mm]	-.016"/+.047" [-0.4mm/+1.2mm]

3.5. **Thread depths without Tolerances**

3.5.1. Parallel thread depths are minimum effective full thread depths.

3.5.2. Taper thread depths according to applicable industry standard (e.g. ANSI, ASME, B1.20.1.)

3.6. **Pilot Lengths without Tolerances**

3.6.1. Pilot length to have a ±.04" [1.0mm] tolerance.

3.7. **Drill Depths without Tolerances**

3.7.1. Counterbores

3.7.1.1. Axial hole counter bores to have ±.02" [0.5mm] tolerance to specified depth.

3.7.1.2. Radial hole counter bores to have ±.12" [3.0mm] tolerance to specified depth.

3.7.2. Counter-drills

3.7.2.1. Axial hole counter drills to have ±.04" [1.0mm] tolerance to specified depth.

3.7.2.2. Radial hole counter drills to have ±.12" [3.0mm] tolerance to specified depth.

3.7.3. Precision dowel holes to have ±.04" [1.0mm] tolerance to specified ream depth.

3.7.4. Blind drilled holes to have ±.12" [3.0mm] tolerance to specified depth.

3.7.5. Tolerance depths exclude drill point.

3.7.6. Tap drill depths are reference only.

3.8. **Angles without Tolerances**

3.8.1. All undefined angles are reference only.

3.9. **Radii without Tolerances**

3.9.1. All undefined radii are reference only.

4. **Undefined Features:**

4.1. **Surface Finishes**

4.1.1. Surface finish is 512 µin [13 µm] Ra roughness or smoother.

4.1.2. Seal running surfaces 98 µin [2.5 µm] Ra roughness or smoother.

4.2. **Corners**

4.2.1. All sharp corners, gear face chamfers excluded, to be broken with a maximum .10" [2.5mm] x .10" [2.5mm] chamfer or a maximum .10" [2.5mm] radius.

5. **General Information Unless Otherwise Specified:**
   5.1. Dimensions in parentheses () are reference only values. Section 3 does not apply to dimensions marked as reference.
   5.2. Dimensions in blocks ▭ are basic. Section 3 does not apply to dimensions marked as basic.
   5.3. Primary dimension values are in units of inches unless otherwise noted.
   5.4. Secondary dimension values in brackets [] are in units of millimeters unless otherwise noted.
   5.5. Given weight for reference only.
   5.6. Bolt circle diagrams, cross sections, gear profiles, and detail views are not drawn to scale.
   5.7. Lifting holes not labeled for manufacturing assume the use of the following:
      5.7.1. ANSI B18.15 eye bolts for SAE tap sizes.
      5.7.2. DIN 580 eye bolts for metric tap sizes.
   5.8. Dimensions and tolerances apply before any painting, plating, or other such surface treatment.
   5.9. Hardness gap. The unhardened zone between the beginning and the end of the hardened region of the raceway is marked with an “S” on an inner diameter of the inner bearing ring and on an outer diameter of the outer bearing ring. Where gearing exists on one of these surfaces, the hardness gap is marked on the non-mounting side axial face. Where a raceway filler plug exists, the unhardened zone is located at the filler plug location.
   5.10. Gear high point. At the location of minimum backlash, the tips of three adjacent gear teeth are marked with green paint.
   5.11. Bearing identification. Bearing identification is located near the hardness gap “S” markings.
   5.12. Threaded Inserts. At the discretion of thyssenkrupp rothe erde USA Engineering, free-running threaded inserts (e.g., Helicoils, Keenserts or similar) may be substituted for tapped threads in any individual or multiple holes in the bearing slewing ring. Substituted insert length will be equivalent to or greater than the noted proposal drawing length of tap except in cases where the length of tap exceeds 2 times the nominal thread diameter. When the length of tap exceeds 2 times the nominal thread diameter, an insert length equivalent to 2 times the nominal thread diameter will be used and drilling for the insert shall permit a fastener to be installed to a depth equal to the drawing tapping depth.

Rev #	Revision Description	Edited By	Checked By	Date
0	Initial Release	GVS	DTG	07/12/2012
1	Added sections 3.11 (hardness gap), 3.12 (gear high point) & 3.13 (bearing identification)	MDG	ETA	09/18/2012
2	Section 1.6.1 tolerance ±.04 [1.0] was ±.039[1.0], Section 1.7.2 removed "and blind drilled" & added sections 1.7.3 & 1.7.4	LVB	MDG	01/30/2014
3	Section 1.7 added tolerances for radial c'bore and radial c'drill depths, blind holes and added "drill point" note	MDG	LVB	10/21/2015
4	Added Section 3.14 (Threaded Inserts).	MDG	LVB	08/10/2016
5	Replaced 'Rotek' with 'thyssenkrupp rothe erde USA Inc. ; Updated format and title block to current template and made the document type a Design Product Requirement ; added 2 new sections for Purpose and Application which became Sections 1 & 2 ; Sections 1, 2, & 3 became sections 3,4, & 5	CDG	MDG	11/05/2019