

ASSEMBLY TOLERANCES



Document Description: DEFINITIONS TO FEATURES ON ASSEMBLY DRAWINGS



Rotek Inc.

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Document : **AT-001**

Revision: **4**

This Document's Values Do Not Apply to Standard Series 1000 or 2100 Slewing Rings

1. Dimensions without Tolerances

1.1. Ring Diameters

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

1.2. Ring Heights

Ring Height Dimensions without Tolerances (Does not include tolerances covered by sections 1.3., & 1.5. thru 1.8.)			
> 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]

[2H] (WN 121.504)
[A,2A] (WN 121.101)
[3RR] (WN 141.001)

1.3. Assembly Heights

Assembly Height Dimensions without Tolerances (Slewing ring mounting surface to mounting surface)			
> 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]

[2H] (WN 121.504)
[A,2A] (WN 121.101)
[3RR] (WN 141.001)

1.4. 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]

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1.5. Thread Depths without Tolerances

- 1.5.1. Parallel thread depths are minimum effective full thread depths.
- 1.5.2. Taper thread depths according to applicable industry standard (e.g., ANSI ASME B1.20.1.)

1.6. Pilot Lengths without Tolerances

- 1.6.1. Pilot length to have a ± 0.04 [1.0] tolerance.

1.7. Drill Depths without Tolerances

- 1.7.1. Counter bores.
 - 1.7.1.1. Axial hole counter bores to have ± 0.02 [0.5] tolerance to specified depth.
 - 1.7.1.2. Radial hole counter bores to have ± 0.12 [3.0] tolerance to specified depth.
- 1.7.2. Counter drills.
 - 1.7.2.3. Axial hole counter drills to have ± 0.04 [1.0] tolerance to specified depth.
 - 1.7.2.4. Radial hole counter drills to have ± 0.12 [3.0] tolerance to specified depth.
- 1.7.3. Precision dowel holes to have ± 0.04 [1.0] tolerance to specified ream depth.
- 1.7.4. Blind drilled holes to have ± 0.12 [3.0] tolerance to specified depth.
- 1.7.5. Toleranced depths exclude drill point.
- 1.7.6. Tap drill depths are reference.

1.8. Angles without Tolerances

- 1.8.1. All undefined angles are reference

1.9. Radii without Tolerances

- 1.9.1. All undefined radii are reference

2. Undefined Features:

2.1. Surface Finishes

- 2.1.1. Surface finish is 512 μin [13 μm] Ra roughness or smoother.
- 2.1.2. Seal running surfaces 98 μin [2.5 μm] Ra roughness or smoother.

2.2. Chamfers

- 2.2.1. All sharp corners to be broken with an allowable .10" [2.5mm] maximum x 45° chamfer; gear face chamfers excluded.

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3. General Information Unless Otherwise Specified:

- 3.1. Dimensions, tolerances, and notes shown on the assembly drawing take precedent over this document.
- 3.2. Slewing ring internal raceway features are not defined by this document.
- 3.3. Dimensions in parentheses () are reference only values. Section 1 does not apply to dimensions marked as reference.
- 3.4. Dimensions in blocks are basic. Section 1 does not apply to dimensions marked as basic.
- 3.5. Primary dimension values are in units of inches.
- 3.6. Secondary dimension values in brackets [] are in units of millimeters unless otherwise noted.
- 3.7. Given weight for reference only.
- 3.8. Bolt circle diagrams, cross sections, gear profiles, and detail views are not drawn to scale.
- 3.9. Lifting holes not labeled for manufacturing assume the use of the following:
 - 3.9.1. ANSI B18.15 eye bolts for SAE tap sizes.
 - 3.9.2. DIN 580 eye bolts for metric tap sizes
- 3.10. Dimensions and tolerances apply before any painting, plating, or other such surface treatment.
- 3.11. 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.
- 3.12. Gear high point. At the location of minimum backlash, the tips of three adjacent gear teeth are marked with green paint.
- 3.13. Bearing identification. Bearing identification is located near the hardness gap "S" markings.
- 3.14. Threaded Inserts. At the discretion of Rotek 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

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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.

Drawing Release & Revisions:

Revision Number	Description	Edited by Name	Checked By Name	Release 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 ± 0.04 [1.0] was ± 0.039 [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

Attention: Rotek reserves the right to update this document without customer notification. Dimensions without tolerance or undefined features on the assembly drawing fall under the design control of Rotek engineering. Rotek 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.

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