COBRA-AHS is a bearing analysis program that computes the behavior of up to five (5) bearing rows on a flexible or rigid shaft loaded in 5 DOF. The program has a modern menu-driven Windows interface with a multi-tabbed worksheet format, allowing users to interactively change input data and quickly generate results. COBRA-AHS Full Edition is integrated with ANSYS/ED (copy included) to perform fit-up and temperature-distribution analyses, including iterative thermal/dimensional interaction.

PROGRAM CAPABILITIES INCLUDE:
- Up to 5 Bearings on flexible or rigid shaft
- Up to 10 Applied Loads in 5 DOF
- Up to 20 Shaft Sections
- Tapered and hollow shaft sections
- Pre-defined defaults for many inputs
- Housing and Shaft Distortion inputs
- Housing and Shaft Sleeves option
- Crowned Rollers w/ Lamina
- Solid and Spring Preload
- Bearing heat generation & cage forces
- Internal Clearance & End-Play
- STLE Fatigue Life Adjustments
- Misalignment, Location Offsets
- Axial Float
- Hybrid Bearings, Duplex Bearings
- Lubricant Film Thickness
- Lubricant Effects on L10 Life
- Library of Lubricants
- Interactive Roller Edge Stress Analysis w/ Contour Plot Outputs
- Interactive Sensitivity Studies
- Interactive Duty Cycle Analysis
- Up to 2000 Duty Cycle Conditions
- Skid Estimates for Ball and Cylindrical Roller Bearings
- Input in SI or US units
- Results in SI and English units
- Copy Results & Plots to Clipboard
- Print Results & Plots
- Automatic Update of Results & Plots

4 BEARING TYPES:
- Radial (Conrad) Ball, Angular Contact Ball
- Cylindrical Roller, Tapered Roller

3 EDITIONS AVAILABLE:
- Baseline: analysis capabilities equivalent to Jones Code, plus more output options and modern Windows user-interface
- Intermediate: all Baseline features plus: interactive Roller Crown Design Cell with Edge-Stress estimation (see below)
- Full: all Intermediate features plus: ANSYS integration for temperature distributions and more rigorous Fit-Up analysis
Integration with ANSYS FEA FOR DIMENSIONAL/THERMAL INTERACTION available in COBRA-AHS Full Edition only

ANSYS Plot of Temperature Distribution of Duplex Pair of Ball Bearings with Spacers

ANSYS Diagram of 3-Bearing Rotor System

ANSYS Plot of VonMises Stress and Deformed Geometry

Notes:
1. System
2. Shaft
3. Bearings
4. Fit-Up
5. Advanced
6. Interactive
7. Miscellaneous

Worksheet: [3 units]

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaft H.D. (mm)</td>
<td>0</td>
</tr>
<tr>
<td>Shaft O.D. (mm)</td>
<td>0</td>
</tr>
<tr>
<td>Bearing Inner Race Mean (ID. (mm)</td>
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</tr>
<tr>
<td>Housing (mm)</td>
<td>0</td>
</tr>
<tr>
<td>Shaft Flange</td>
<td>0.04</td>
</tr>
<tr>
<td>Housing Flange</td>
<td>0.02</td>
</tr>
<tr>
<td>Young's Modulus of Shaft (MPa)</td>
<td>205700</td>
</tr>
<tr>
<td>Plane of Shaft</td>
<td>0.39</td>
</tr>
<tr>
<td>Plane of Housing</td>
<td>0.29</td>
</tr>
<tr>
<td>Diameter of Shaft (mm)</td>
<td>2.5</td>
</tr>
<tr>
<td>Diameter of Housing (mm)</td>
<td>2.5</td>
</tr>
<tr>
<td>Thermal Expansion Coef. of Housing [ppm/°C]</td>
<td>0.000123</td>
</tr>
<tr>
<td>Diameter of Bearing</td>
<td>0.6</td>
</tr>
<tr>
<td>Diameter of Oil Groove</td>
<td>0.000123</td>
</tr>
<tr>
<td>Diameter of Oil Groove Depth</td>
<td>0.000123</td>
</tr>
<tr>
<td>Diameter of Oil Groove Radius</td>
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</tr>
<tr>
<td>Running Ed. to Calm Thr. Clearance Change</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Select AnsysEd method to calculate Diameter Change for Bearing #2

- 1. Structural only (single-pass)
- 2. Thermal only (single-pass)
- 3. Structural + Thermal (single-pass)
- 4. Iterative Structural + Thermal (multi-pass)

Iterations Limit: 10

Run
Cancel
PROGRAM RESULTS INCLUDE:
Bearing Reactions & Load Sharing
Radial & Axial Spring Rates
Angular Spring Rate
Dynamic Capacity
System B10 Life
Bearing B10 Life
Load Zones
Hertz Contact Stress
Sub-Surface Shear Stress
Operating Contact Angle
Element Loads
Contact Ellipse Size
Required Shoulder Heights
Lubricant Film Thickness
Life Adjustment Factor-Lubrication
Individual Element Output
Per Bearing Plots of 11 parameters

SYSTEM REQUIREMENTS:
IBM-compatible PC; 32-bit or 64-bit Windows Operating System (2000, XP, Vista, Windows 7); CD drive
40 MB hard disk space; 192 MB RAM installed (256 MB preferred); 800x600 pixel screen resolution; 16-bit color display
ANSYS/ED requires 500 MB hard disk space

PACKAGE INCLUDES:
Installation CD; End-User License; Example Problems; Printed Manual; Release Notes, USB Hardware Security Key
Free Technical Support for 1 year. Fee-based support available thereafter.
ANSYS/ED complete install package, including CD, license, and printed manual (in Full Edition).