COBRA-AHS

ADVANCED HIGH-SPEED
COMPUTER OPTIMIZED BALL & ROLLER BEARING ANALYSIS

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:

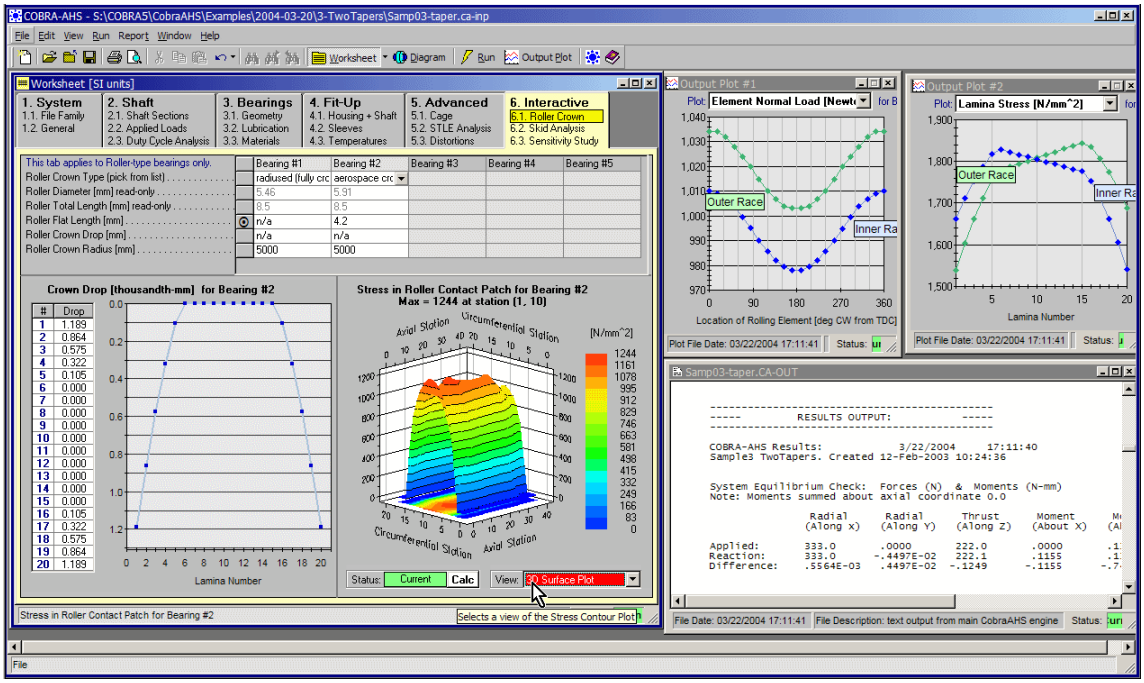
- Up to 5 Bearings on flexible or rigid shaft
- Up to 100 Applied Loads in 5 DOF
- Up to 100 Shaft Sections
- Tapered and hollow shaft sections
- Pre-defined defaults for many inputs
- Housing and Shaft Distortion inputs
- Housing and Shaft Sleeves option
- Crowned Rollers w/ Lamina
- Solid and Spring 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 50 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



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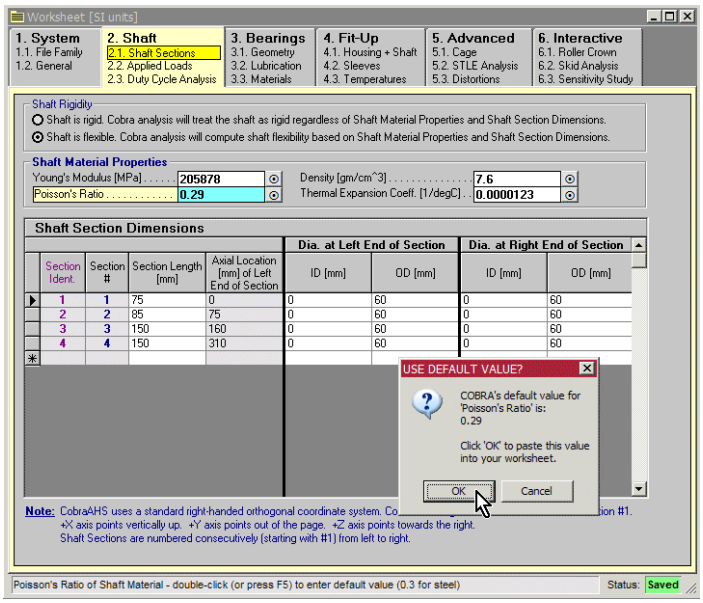

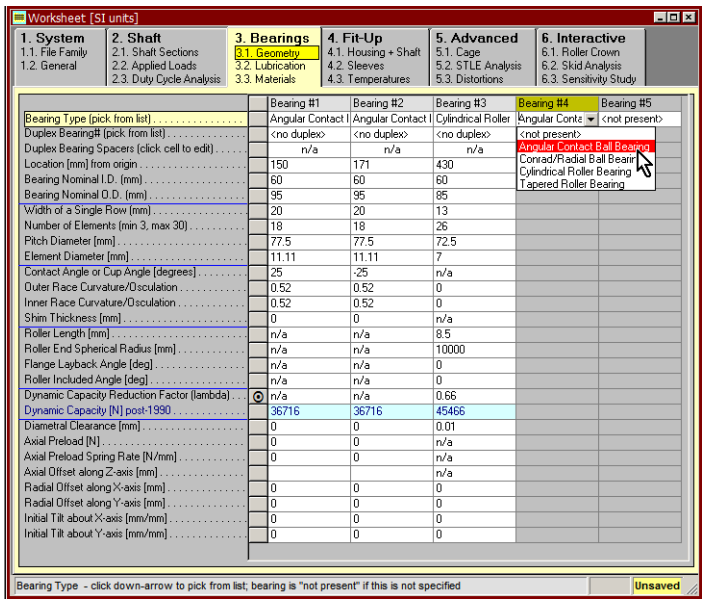

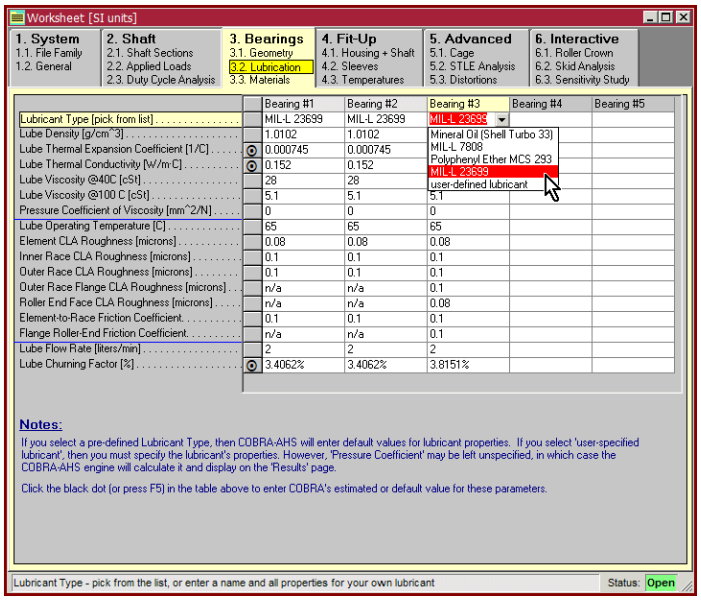

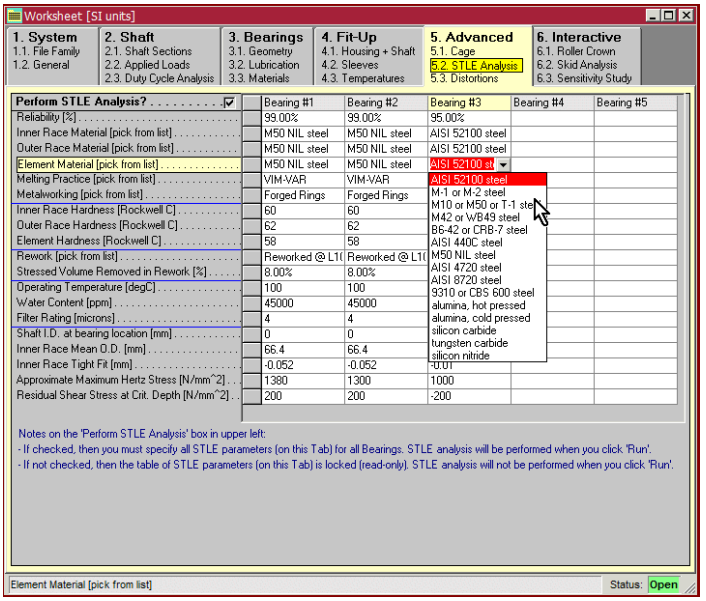

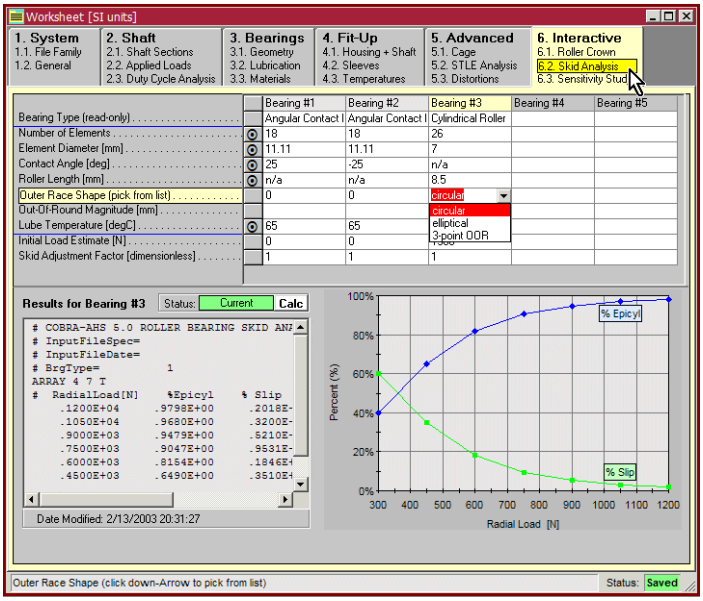

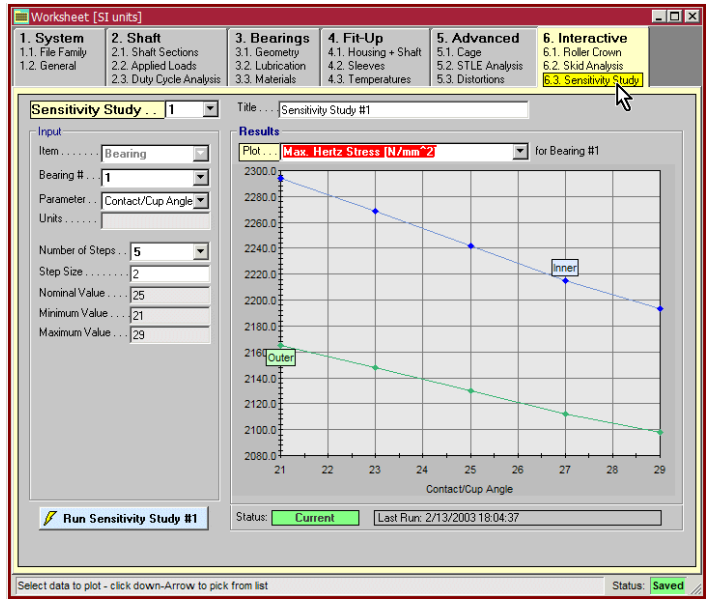

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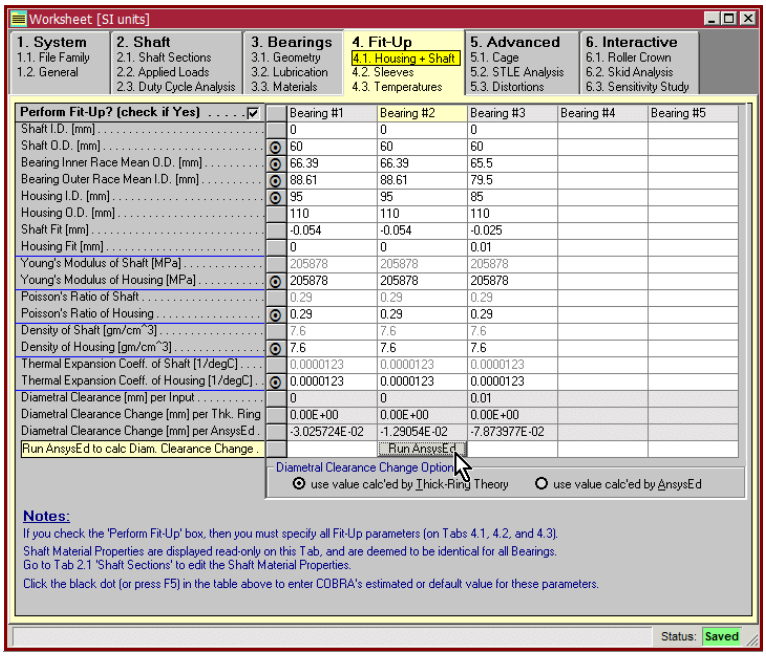
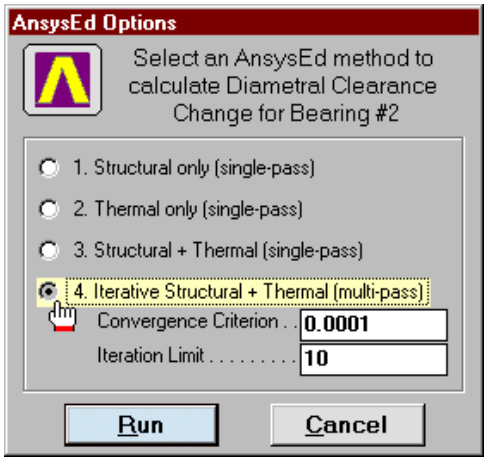
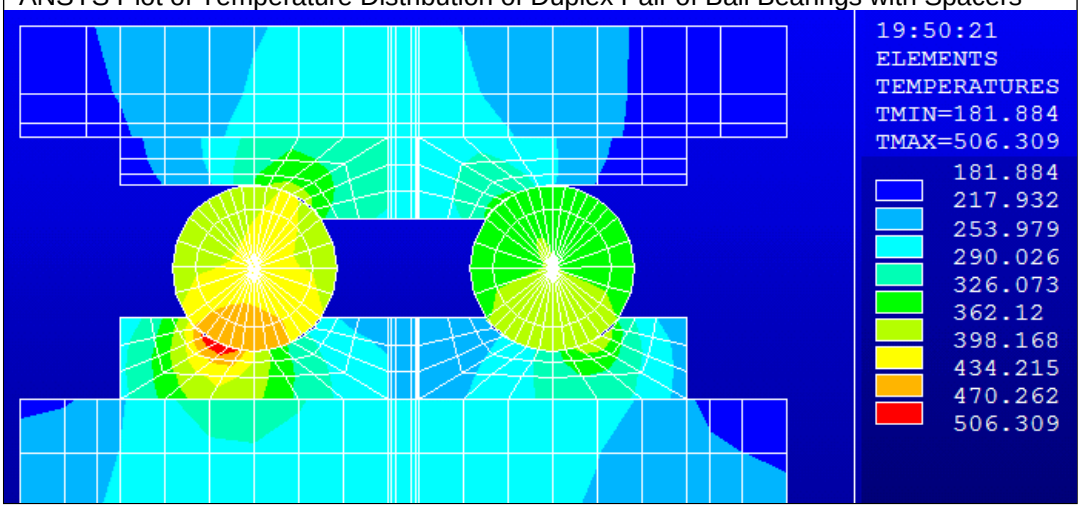
Integration with ANSYS FEA FOR DIMENSIONAL/THERMAL INTERACTION

available in COBRA-AHS Full Edition only

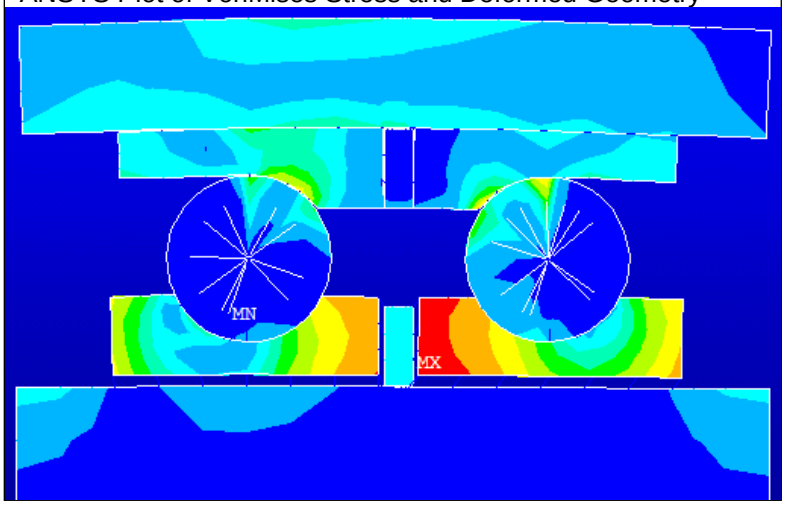




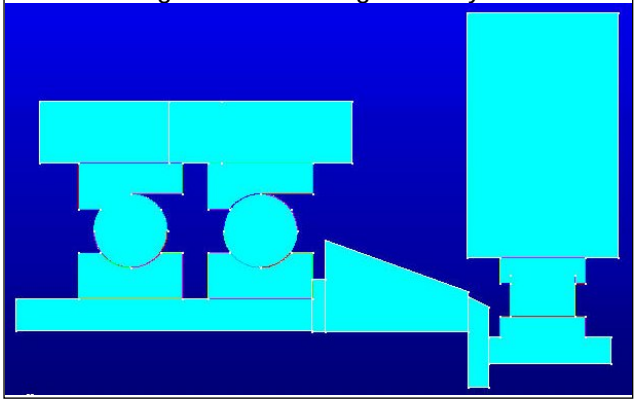
ANSYS Plot of Temperature Distribution of Duplex Pair of Ball Bearings with Spacers



ANSYS Plot of VonMises Stress and Deformed Geometry



ANSYS Diagram of 3-Bearing Rotor System



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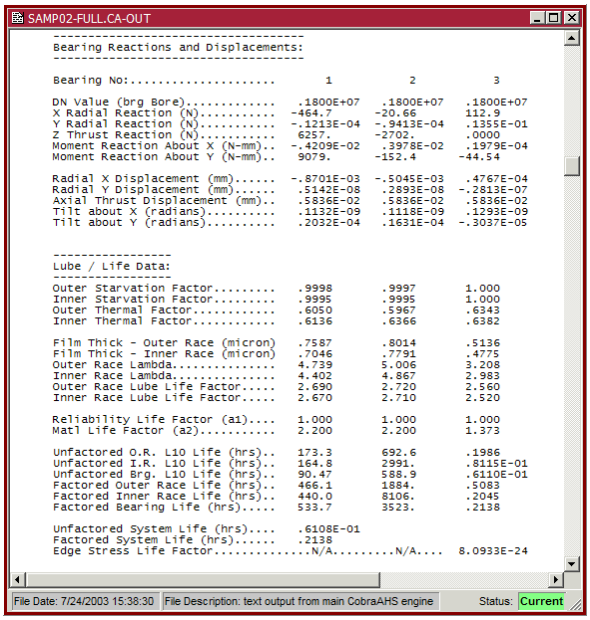
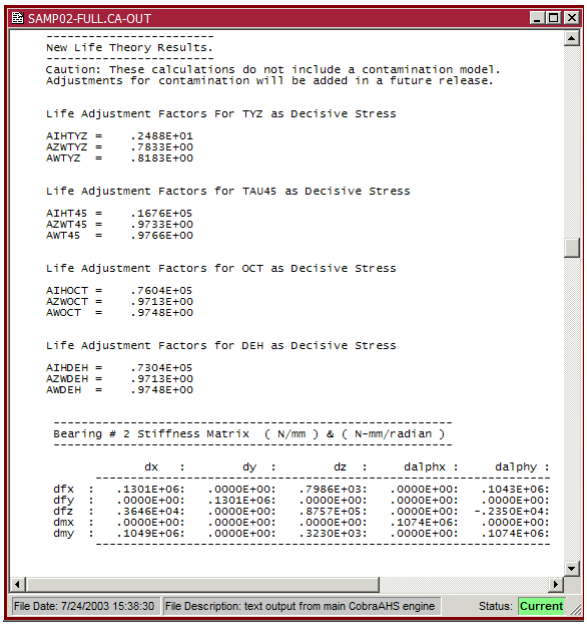
PROGRAM RESULTS INCLUDE:

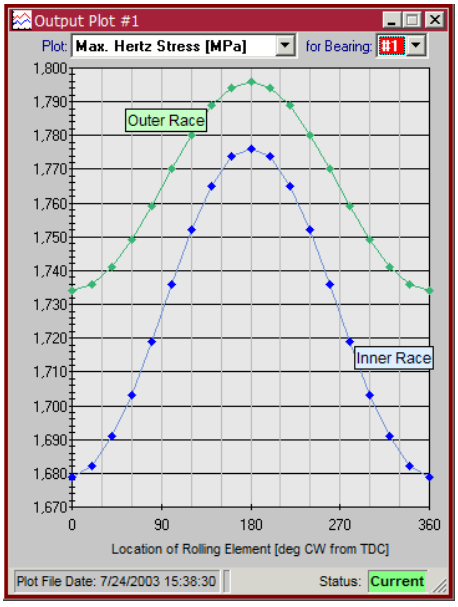
Bearing Reactions & Load Sharing
Radial & Axial Spring Rates
Angular Spring Rate
Dynamic Capacity
System B10 Life
Bearing B10 Life

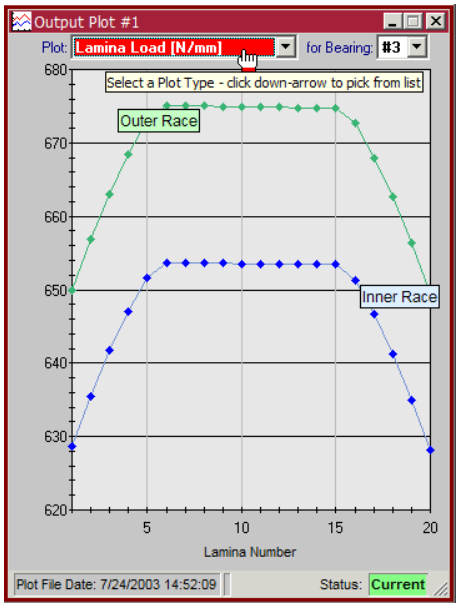
Load Zones
Hertz Contact Stress
Sub-Surface Shear Stress
Operating Contact Angle
Element Loads
Contact Ellipse Size

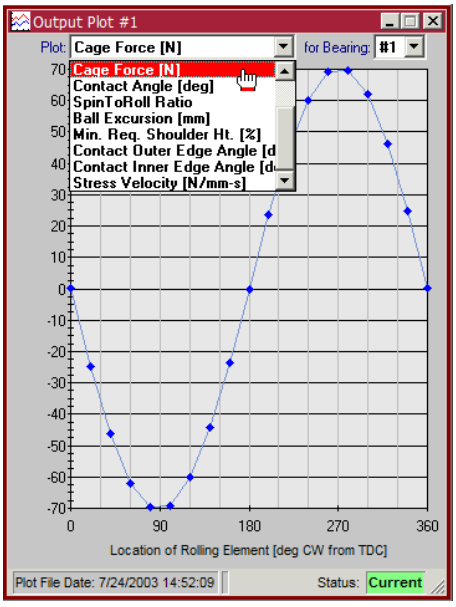
Required Shoulder Heights
Lubricant Film Thickness
Life Adjustment Factor-Lubrication
Individual Element Output
Per Bearing Plots of 11 parameters











SYSTEM REQUIREMENTS:

IBM-compatible PC; 32-bit Windows Operating System (2000, XP); CD drive
40 MB hard disk space; 192MB 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; Hardware Security Lock.
Free Technical Support for 1 year. Fee-based support available thereafter.
ANSYS/ED complete install package, including CD, license, and printed manual.

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