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MC5000 CMS Model

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Proposed MC5000 Super-Element Parameters

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Coordinate System:	+X (aft to forward) +Y (0 degrees) +Z (90 degrees)
Units:	*Current units are inch, pounds, seconds *Will be converted to SI units for AWE usage
Interface Points:	* 4 discrete points at the base. Will be constrained to the system using a collection of rigid bar elements and “spring”/joint2g elements to simulate a bolted connection. *Can provide a point at the top of the model for visualization.
Frequency Resolution:	*Up to 2000Hz *Modal solution computed to sufficient frequency to give 2000 Hz resolution

Conversion Factors

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- Conversion Factors (length & force)
  - 1 in = 0.0254 meters
  - 1 lb = 4.4482 N
- Derived Conversion Factors
  - 1 psi = 6894.7 Pa
  - 1 lb/cu. in = 27670.3 kg/m^3

Delivery of Super-Element

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- The super-element representation will be delivered in MATLAB database format (.mat)
- The file will contain:
  - Craig-Bampton stiffness and mass matrices
  - Coordinates of the interface nodes
  - A map relating interface degrees of freedom to local degrees of freedom at interface nodes
  - Craig-Bampton inertial matrix (for applying gravity loads in LS-Dyna)
- Will provide fixed-base and free-free natural frequencies of the model for validation after incorporation of the super-element into the AWE models