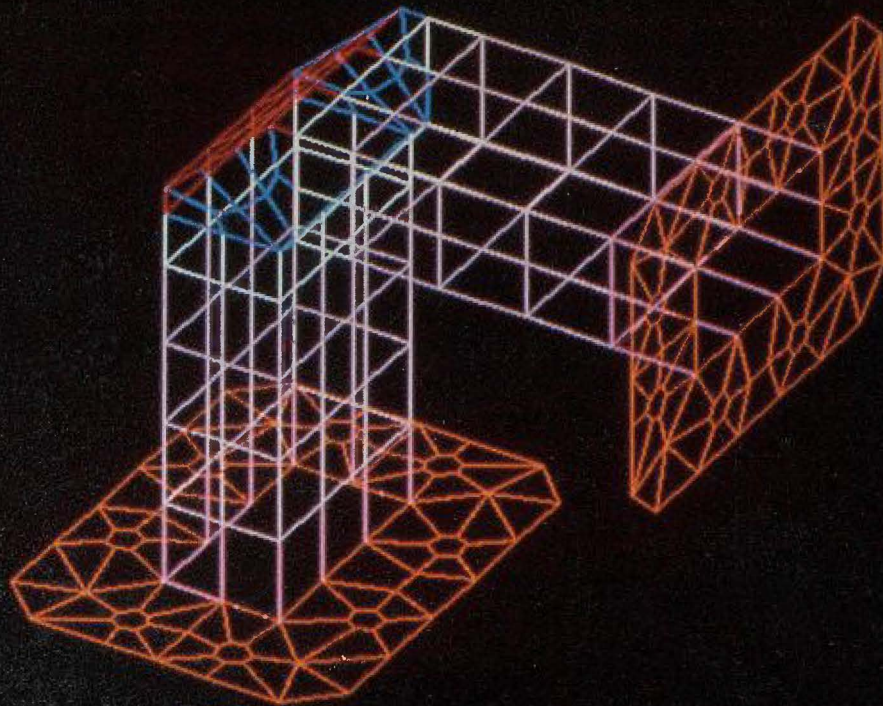


McGraw-Hill Dictionary of

MECHANICAL AND DESIGN ENGINEERING



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McGraw-Hill Dictionary of **MECHANICAL AND DESIGN ENGINEERING**

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On the cover: A computer-generated graphical representation of a waveguide divided into finite elements for structural analysis. (Courtesy of Peter Marks, Design Insight, Milford, Ohio)

McGRAW-HILL DICTIONARY OF MECHANICAL AND DESIGN ENGINEERING

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Cons

bootstrap process [AERO ENG] A self-generating or self-sustaining process; specifically, the operation of liquid-propellant rocket engines in which, during main-stage operation, the gas generator is fed by the main propellants pumped by the turbopump, and the turbopump in turn is driven by hot gases from the gas generator system.

Borda mouthpiece [FL MECH] A reentrant tube in a hydraulic reservoir, whose contraction coefficient (the ratio of the cross section of the issuing jet of liquid to that of the opening) can be calculated more simply than for other discharge openings.

bore [DES ENG] Inside diameter of a pipe or tube. [MECH ENG] 1. The diameter of a piston-cylinder mechanism as found in reciprocating engines, pumps, and compressors. 2. To penetrate or pierce with a rotary tool. 3. To machine a workpiece to increase the size of an existing hole in it.

borer [MECH ENG] An apparatus used to bore openings into the earth up to about 8 feet (2.4 meters) in diameter.

boring bar [MECH ENG] A rigid tool holder used to machine internal surfaces.

boring machine [MECH ENG] A machine tool designed to machine internal work such as cylinders, holes in castings, and dies; types are horizontal, vertical, jig, and single.

boring mill [MECH ENG] A boring machine tool used particularly for large workpieces; types are horizontal and vertical.

Bosch fuel injection pump [MECH ENG] A pump in the fuel injection system of an internal combustion engine, whose pump plunger and barrel are a very close lapped fit to minimize leakage.

Bosch metering system [MECH ENG] A system having a helical groove in the plunger which covers or uncovers openings in the barrel of the pump; most usually applied in diesel engine fuel-injection systems.

boss [DES ENG] Protuberance on a cast metal or plastic part to add strength, facilitate assembly, provide for fastenings, or so forth.

bottom dead center [MECH ENG] The position of the crank of a vertical reciprocating engine, compressor, or pump when the piston is at the end of its downstroke. Abbreviated BDC.

bottom-discharge bit See face-discharge bit.

bottoming drill [DES ENG] A flat-ended twist drill designed to convert a cone at the bottom of a drilled hole into a cylinder.

bottom tap [DES ENG] A tap with a chamfer 1-1½ threads in length.

bounce table [MECH ENG] A testing device which subjects devices and components to impacts such as might be encountered in accidental dropping.

boundary-layer control [FL MECH] Control over the development of a boundary layer by reduction of surface roughness and choice of surface contours. Abbreviated BLC.

boundary-layer flow [FL MECH] The flow of that portion of a viscous fluid which is in the neighborhood of a body in contact with the fluid and in motion relative to the fluid.

boundary-layer separation [FL MECH] That point where the boundary layer no longer continues to follow the contour of the boundary because the residual momentum of the fluid (left after overcoming viscous forces) may be insufficient to allow the flow to proceed into regions of increasing pressure. Also known as flow separation.

bound vector [MECH] A vector whose line of application and point of application are both prescribed, in addition to its direction.

Boussinesq approximation [FL MECH] The assumption (frequently used in the theory of convection) that the fluid is incompressible except insofar as the thermal expansion