

September 1970

Brief 70-10526

NASA TECH BRIEF



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Division, NASA, Code UT, Washington, D.C. 20546.

Standards for Material Handling and Facilities Equipment Proofload Testing

Proofload testing is the application of specific weight-load configurations to verify the structural and mechanical integrity of equipment within design working capacities. Usually, a design engineer must refer to numerous publications for information on each type of equipment. A comprehensive document is now available which provides information on verifying the safety of material handling and facilities equipment (MH/FE), ranging from monorail systems to ladders and non-powered mobile equipment. These testing standards can save considerable time for technical personnel, and should be quite valuable to many industrial organizations.

Seven categories of MH/FE equipment are defined: portable lifting; portable hoisting; fixed hoisting; rigging; miscellaneous special; miscellaneous handling; and ladders. Portable lifting equipment includes fork lift trucks, miscellaneous lift trucks, lift work platforms and jacks. The requirements for proofload testing each item are given, as well as tilt tests and special attachment tests for determining capacity limitations.

The second category contains mobile and portable gantry cranes, and portable gantry cranes with integral hoists and interchangeable hoists. Proofload test instructions are comprehensive.

Fixed hoisting equipment includes fixed hoists, bridge and jib cranes, and monorail systems. Testing instructions include support equipment such as bridge rails and supports.

Rigging equipment contains items such as chains, wire ropes, forged steel links and shackles, turnbuckles and related items. Tables are detailed and give safe working loads for reduction of rated capacities of chain due to wear, and other pertinent information. The allowable wire break data and wear on mine

hoist ropes are particularly noteworthy. Attachments used in conjunction with rigging equipment are also categorized, and the manner of their testing is described.

The fifth category, miscellaneous special equipment, includes vacuum slings, pneumatic grip slings, and air pads. The next breakdown lists non-transporting type equipment such as work and access platforms, work stands, portable or stationary fixtures, storage racks, bins, and related equipment.

The last category, ladders, characterizes those made of metal, wood, portable, straight and extension ladders, platform, two-sided workstands, and fixed vertical ladders. Tests for bending, column and hardware, rung strength, and other characteristics are outlined, illustrated and described.

The information in these kinds of testing is extremely important for industry, and essential for companies manufacturing, assembling or handling costly items. These data represent updated information retrieved from state-of-the-art documentation.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Manned Spacecraft Center, Code BM7
Houston, Texas 77058
Reference: TSP-10526

Patent status:

No patent action is contemplated by NASA.

Source: Stephen P. Bonn of
North American Rockwell Corp.
under contract to
Manned Spacecraft Center
(MSC-15788)
Category 07