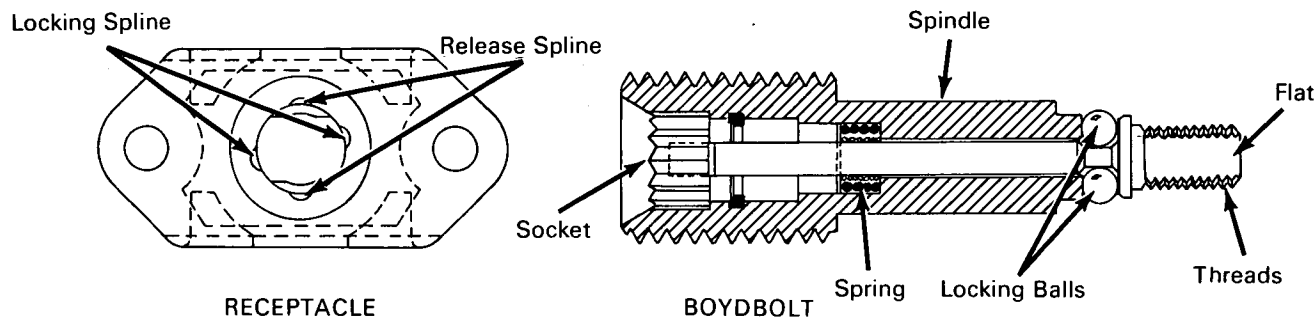


# NASA TECH BRIEF



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## Boydbolt, a Positive-Latch, Simple-Release Fastener



In the attachment of experimental equipment to support brackets within and without a space vehicle, a fastener is required that will remain in the latched position under high dynamic preload but permit removal simply and by the application of small force.

A fastener (Boydbolt) has recently been designed to furnish these features plus positive lock and release characteristics that positively prevent accidental adverse functions of lock or release.

A floating receptacle, specially designed to receive the Boyd Bolt, is riveted or screwed to the support structure. This receptacle contains two locking and two release splines in its outer section. Inside, the receptacle is machined to form a four-lead thread that has opposing 90° segments removed to provide a breach-type engagement for the bolt. The forward portion of the bolt is threaded in a mating pattern, i.e., flats are machined on approximately 90° opposing segments so that the bolt may be freely inserted into the receptacle. Immediately above these threads are two locking balls whose action is controlled by the position of a central spindle. In the raised position, the spindle will prevent the balls from moving towards the center of the bolt, thus providing for positive engagement of the balls with either the locking or release splines. The spindle is maintained in

its free position by a spring. The top of the bolt is machined to a double hex socket to receive a lock or release hex-headed hand tool.

To assemble the Boyd Bolt fastener, insertion of the hand tool in the bolt socket causes the spindle to be depressed, thus releasing the locking balls. The bolt assembly is then inserted into the receptacle with the locking balls oriented in line with the release spline. The bolt is now rotated clockwise until the balls engage the locking spline and stop the bolt from turning further, the threads of bolt and receptacle now being fully engaged. Upon withdrawal of the hand tool from the bolt, the spindle moves in to force the balls into the locking splines, thus preventing any rotation of the bolt assembly under vibration conditions.

**Notes:**

1. This device lends itself to manufacture in a variety of sizes both as to length and diameter so that a wide range of applications may be accommodated.
2. Documentation for the innovation is available from:  
 Clearinghouse for Federal Scientific and Technical Information  
 Springfield, Virginia 22151  
 Price \$3.00  
 Reference: B68-10512

(continued overleaf)

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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