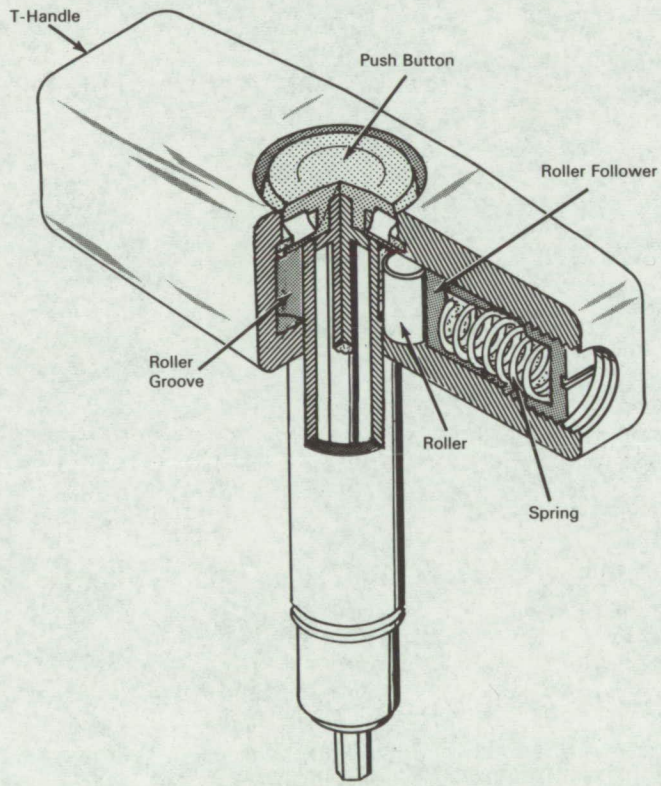
February 1966

ASO-311 (ATS-132)

Brief 66-10065

NASA TECH BRIEF

T-Handle Wrench Has Torque-Limiting Action



The problem:

In certain applications, a T-handle wrench offers the best means for securing fasteners, turning valve stems, and winding spring-driven devices. A need exists for such a wrench that could be preset to release when a certain torque value is exceeded.

The solution:

A spring-loaded roller and groove torque-limiting mechanism that is contained in the handle of the wrench.

How it's done:

Spring-loaded rollers in the handle engage grooves in the drive spindle shaft. Turning the handle transfers torque to the spindle as long as the rollers engage the grooves. When force applied to the handle exceeds the torque setting, the rollers are forced against spring tension to ride out of the shaft grooves. There are six such grooves in the handle, equally spaced, so that exceeding the torque setting causes the rollers to leave one opposed pair of grooves and enter the

(continued overleaf)

next, thus giving the operator a direct, mechanical indication that the desired torque has been reached. Torque adjustment is achieved by turning the spring compression lugs in each end of the handle.

Notes:

1. This item can be provided with a wide range of torque settings by the use of different tension springs in conjunction with the compression lugs.
2. The wrench is equipped with a push button in the handle that permits the operator to lock the handle to the spindle shaft, thus eliminating the torque-limiting function.
3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Manned Spacecraft Center
   P.O. Box 1537
   Houston, Texas, 77001
   Reference: B66-10065

Patent status:

No patent action is contemplated by NASA.

Source: Samuel B. Kemple of
North American Aviation, Inc.
under contract to
Manned Spacecraft Center
(MSC-280)