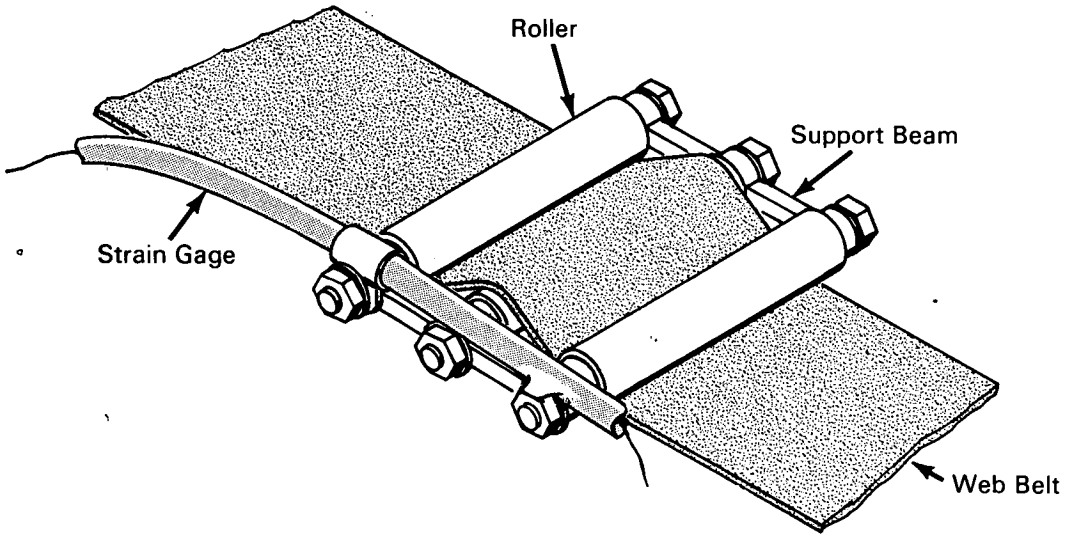
NASA TECH BRIEF

Web Belt Load Measuring Instrument Has Excellent Stability



The problem:

Prior methods of belt or strap load measurement required strain gage instrumentation of end fittings with reduced cross section or the cutting, insertion, and reassembly of the belt system using a load link. Load links are available for high level loads but perform poorly at low loads and require disassembly and reassembly of the belting at each use.

The solution:

A web belt load measuring system that may be partially disassembled and installed on an existing belt without cutting or re-threading the belt.

How it's done:

The instrument operates about a force link that consists of three parallel rollers riding on axle pins mounted in two lateral support beams. The beams are reduced in cross section in the areas between center and outboard shaft mounting holes to more readily register stress in these sections in response to roller displacement. A strain gage is installed on one of the support beams to form a full Wheatstone bridge and thus eliminate errors due to uneven loading. Displacement in the rollers occurs when tension in a belt or strap, passing in conventional fashion through the rollers, forces the center roller in one direction and the outboard rollers in opposite direction to stress the support beam and unbalance the electrical output in the strain gage bridge.

Notes:

1. This method could be used to test various types of belts, straps, harnesses, etc. for load applications or to destruction.

(continued overleaf)

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B67-10242

Patent status:

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

Source: R. R. Walker
of North American Aviation, Inc.
under contract to
Manned Spacecraft Center
(MSC-921)