About the Author/WAYNE WALLACE

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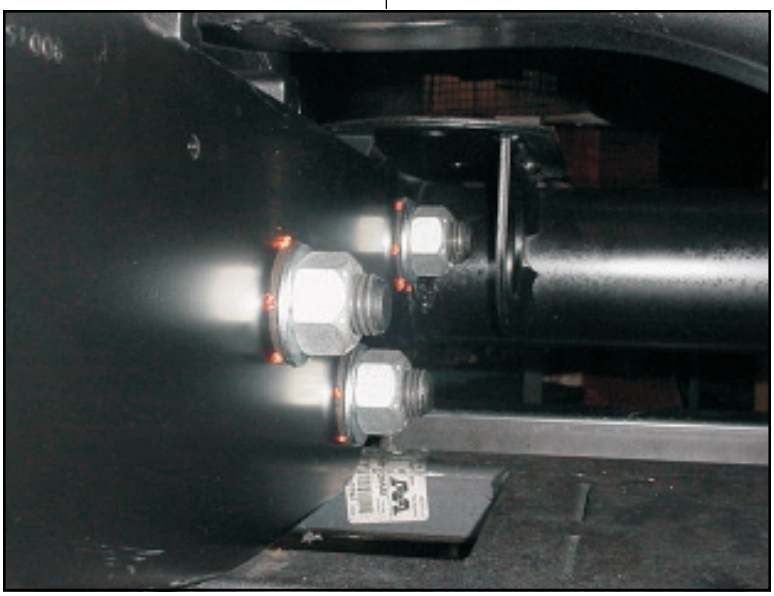
Squirter DTIs Solve Suspension Pivot Bolt Problems

The Freightliner plant in Gaffney, South Carolina, owned by Daimler-Chrysler, builds RV chassis and their "Sprinter" bus chassis. They had a bolting problem. For the 1-1/8" diameter bolts in their suspension pivots, four per chassis, they had always required a torque of 800 ft-lb to tighten, more or less, and used prevailing torque nuts. But they knew 800 ft-lb didn't always necessarily do the job. They wanted a better way to get to a consistent clamping force.

Access to the nuts was difficult both for installation and inspection. And, after their production line air tools applied 800 ft-lb of torque, the pivot bolt assembly still looked the same. So inspection required another torquing procedure, which took time, equipment, and work.

Freightliner's supplier of suspension components is Holland Neway of Muskegon, Michigan, who had some experience with Squirter DTIs on similar assemblies for highway truck trailer suspensions. Applied Bolting had developed a Squirter DTI for Holland Neway with dimensions and compression characteristics to suit the same bolts. On hearing of Freightliner's torquing and inspection problems, Holland Neway suggested they try Squirter DTIs.

Freightliner thought it made sense, and did some trials to come up with a tightening procedure which made sense on their production line. Their procedure became simply this — assembly the Squirter under a hardened flat washer on the nut tightening end, apply turning power until either 800 ft-lb was achieved and the wrench shut off, or, stop tightening when the Squirter DTI had shown a sufficient amount of silicone squirted out. If the "squirt event" had occurred at, say, 700 ft-lb, the wrench operators stopped tightening. Shortly, Freightliner formally specified that a Squirter DTI be used on each of the four bolts of every chassis, and to then apply all or part of 800 ft-lb torque but to make sure the squirt had occurred. Sort of a "belt-and-suspenders" approach.



The DTI squirt event parallels the DTI bump compression, which in turn parallels bolt tension, regardless of torque resistance. In less controlled environments, like construction sites, one torque setting does not, in general, always result in the correct squirt event. It is possible, if they encounter poorly manufactured bolts or nuts, or if thread surface conditions deteriorate, that 800 ft-lb will not produce the correct amount of squirt, at which time Applied Bolting's recommendation would be to increase the maximum torque applied.

What Freightliner achieves by using Squirter DTIs is the confidence that they are achieving a consistent clamp load, but, even better, the final line inspection becomes purely visual. The inspector just looks for the squirted silicone and knows with certainty the procedure had been followed.

Presto — a better chassis product, less expensive to make. Is this a great country or what?

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