



National Defense Center for
Energy and Environment



IMPROVED BUCKING BAR TO MAXIMIZE WORKER PERFORMANCE AND HEALTH

PROJECT OVERVIEW

The scope of this project is to field test a new bucking bar design that incorporates use of a spring, urethane and tungsten inserts as vibration dampeners to minimize vibration exposures riveters' face. Workers using manually-operated riveting tools (riveting hammers and rivet bucking bars) are exposed to significant levels of hand-transmitted vibration. Riveters are at risk of developing components of hand-arm vibration syndrome as they can install thousands of rivets in a work week when performing maintenance on aircraft.

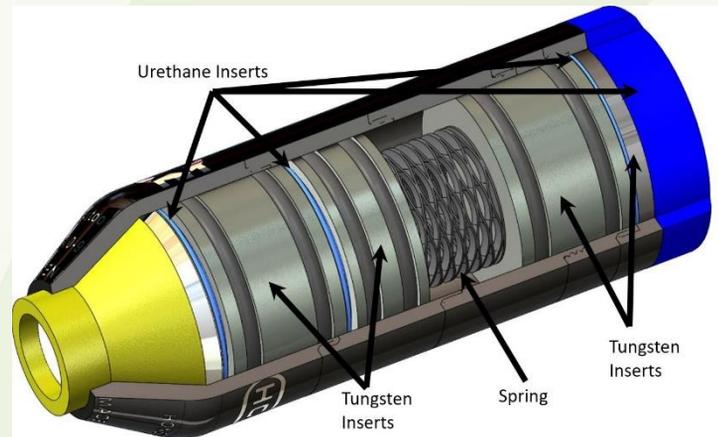
BENEFITS

All DoD Services perform pneumatic percussive riveting and use bucking bars in the maintenance of aircraft. Literature indicates that gloves do a poor job of protecting the hands at less than 250 Hz. The literature also notes that it is very difficult to find or make a glove that could reduce the vibrations transmitted to the fingers in this frequency range. Therefore, strategies for reducing the finger-transmitted vibration should primarily depend on the development and/or selection of better vibration tools.

PATH FORWARD

The completion of this project will help the DoD determine if there is a benefit to using bucking bars that possess vibration dampening properties. Specifically, four questions will be answered:

- Does hand-arm vibration levels decrease when using the proposed bucking bar.
- Does muscle activity decrease when using the proposed bucking bar.
- Does perceived exertion decrease when using the proposed bucking bar.
- Does error rate decrease when using the proposed bucking bar.



Proposed bucking bar design



Typical bucking bar

DoD Executive Agent

Office of the Assistant Secretary of the Army for Installations, Energy, and Environment

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FOR FURTHER INFORMATION

National Defense Center for Energy and Environment
<http://www.denix.osd.mil/ndcee/home>

Army Public Health Center Ergonomics Branch
<https://phc.amedd.army.mil/topics/workplacehealth/ergo/Pages/default.aspx>