

# DoD Ergonomics Working Group NEWS



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## Air Force Institute for Operational Health Assessment of Handheld Laser De-Paint System



The operator added a nozzle end to the 40-watt handheld laser to serve as a capture vent. The ventilation hose is not attached.



The 120-watt handheld laser at the time of the evaluation.

### WHO

The Health and Safety Division of the Air Force Institute for Operational Health (AFIOH/RSH)

### WHAT

An ergonomic survey to evaluate and describe the process used to remove paint from metal surfaces with a handheld, class IV, laser technology. Two different units were assessed:

- 40-watt handheld laser unit
- 120-watt handheld laser unit

### WHY

Part of an overall operational and environmental health assessment of handheld laser technology application in de-painting processes by the Air Force Research Laboratory (AFRL) at Wright Patterson AFB (WPAFB) for potential implementation at depots.

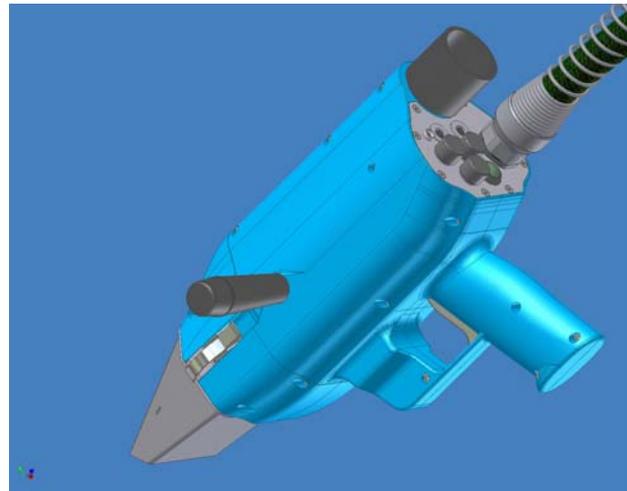
### RECOMMENDATIONS

To reduce the potential risk for musculoskeletal disorders of the neck, shoulder and/or wrist/hand, both tools should be redesigned to decrease non-neutral postures, grip forces, and repetition by addressing:

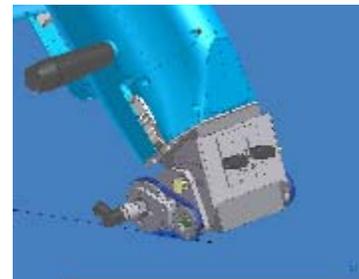
- handle shape, sharp edges, and diameter
- material
- weight
- balance
- hose attachments
- sequential laser firing mechanism

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- In a fixed location such as a depot, consider using an overhead suspension system for supporting handheld tools.
- Consider permanent or portable scaffolding frames to allow workers to position themselves appropriate to the work area on the aircraft.
- Because the area to be cleaned may be located in unusual places, stair ladders with appropriate railings, and/or power lift platforms with appropriate railing and safety features should be considered in order to align the worker with the work.
- If the product to be cleaned is removed from the aircraft, use support frames that can clamp the piece in place and position it at a height and angle appropriate to the user and the tool.
- Provide proper mats for cushioning the lower extremities during prolonged standing.



The 120-watt handheld laser after modifications by the manufacturer: modified handle, larger trigger, second handle for balance and control, and swivel hose attachment.



Improved guide for resting on surface at appropriate distance.

In a deployed environment, equipment would be similar, but may have to be more portable such as portable stair ladders, suspension frames (hoist), and A frames.

**The goal is to protect the worker from injury and work-related musculoskeletal disorders, while maintaining effective work strategies.**