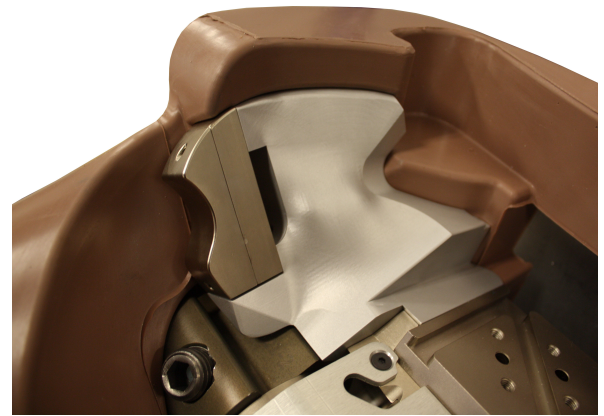


# THOR-M Iliac Wing Upgrade

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Humanetics has released an updated THOR-M iliac wing design and H-Point measurement tool. Parts are now available to retrofit existing THOR-M ATDs.

## THOR Iliac Wing Background

The THOR iliac wing design was originally updated during the NHTSA's (National Highway Traffic Safety Administration) 2011 THOR-NT dummy update project which added ASIS load cells and improved flesh fit. Initial testing of this design looked good.

In the following years as more testing proceeded, iliac wing failures began to surface. Weak points and cracks in the aluminum casting used to manufacture the wings were exposed. Working with the NHTSA, new targets for loading were agreed upon and Humanetics began the process of improving the wing design as well as creating a more accurate H-point measurement tool.

## Updated Iliac Wing Design

To increase the iliac wing durability, several new design improvements have been incorporated (figure 1).



Figure 1 -Outer view of the updated left side iliac wing

1. Wings are now machined completely from solid aluminum stock instead of starting with a poured casting and then machining them to their final dimensions.
2. Material was added to the inside geometry and radius.
3. Cable channel was re-routed.
4. Screw hole sizes were reduced and one bolt changed to a Low Head Cap Screw for strength.

Using the new durability targets agreed upon with stakeholders, Quasi-static testing on oblique and frontal loading showed increased loading capacity without failure.

## Pelvis Base Module Update

In order to offset the slight increase in mass of the iliac wings, the pelvis base module (472-4211) has been updated to remove 0.12 kg of material mass (figure 2).

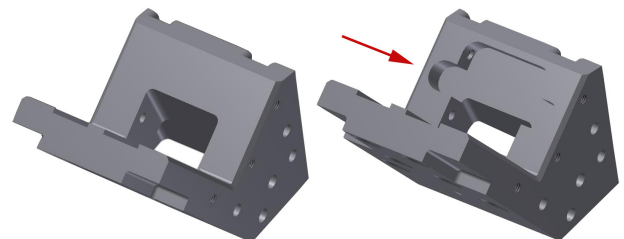


Figure 2 -Old pelvis base module shown on the left vs. the new module on right, with machined face to decrease weight.

(Con't on next page)

# THOR-M Iliac Wing Upgrade (Con't)

## New H-Point Measurement Tool

A new H-Point tool (472-8510) has been designed to interface with the new iliac wings in order to reduce pelvis angle measurement error (figures 3 & 4).

A stack up analysis of the old tool and wing design shows that up to +/- 4.3 degrees of error in pelvis angle measurement is possible. An analysis of the new design shows a worst case error of +/- 0.8 degrees, thus vastly increasing the potential measurement accuracy.

*\*The new H-Point tool will only fit into the mounting insert of the new iliac wing design.*



Figure 3 -New H-Point tool used to measure pelvis angle in conjunction with the new iliac wing design.



Figure 4 -New H-Point tool mounted in new iliac wing design.

## Recommended Update Components

Updated Iliac Wing and Pelvis Components		
472-4390-1	ILIAC, LEFT	1
472-4390-2	ILIAC, RIGHT	1
472-8510	H-POINT TOOL	1
472-4212	PELVIS BASE MODULE	1
5001316-FT	SCREW LHCS M6 X 1.0 X 20	2

For further inquiries please contact Humanetics Customer Service or your account manager.