

# THOR-50M Euro NCAP Integrated ATDs

Publication Date: December 2018



position spine box set to the 'slouched' position which is equivalent to +9°.

1.3.2 The spine box offers only four angle adjustments, -9° erect position, 0° neutral position, +9° slouched position and +12° super slouched position.

1.3.3 Alternative spine box designs may only be used where data has been provided to show equivalence between the 'standard' and modified components.

#### 1.4 Lower Legs

1.4.1 The THOR dummy shall be equipped with Hybrid III 50th percentile lower legs, including Mil Spec shoes, HIII knee slider sensor and roller ball-bearing knees shall be fitted. The interface between the THOR 50% upper legs and the Hybrid III lower legs will be at the HIII ball bearing knee slider/ THOR knee.

Humanetics offers THOR-50M SBL-B ATDs which conform to the build specifications of Euro NCAP requirements as outlined in Euro NCAP TB026.

### THOR Specification in Euro NCAP TB026

*From Euro NCAP Technical Bulletin (TB026):*

1.1 The THOR dummy to be used in the MPDB test shall conform to standard build level B (SBL-B) and be equipped with the hardware detailed in the Humanetics bulletin January 2018 or equivalent where equivalence has been demonstrated. However, the following modifications shall be made.

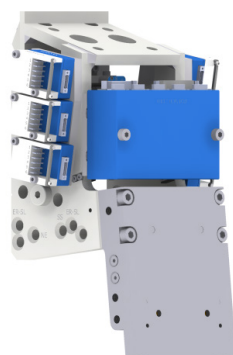
1.2 The dummy shall be equipped with an onboard data acquisition system for both certification and Euro NCAP testing.

#### 1.3 Spine

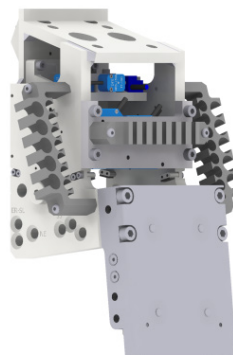
The THOR dummy shall be equipped with a four

### Humanetics Advanced Spine Box Assemblies

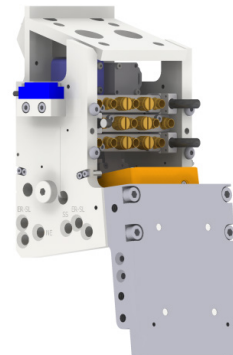
Humanetics Advanced DAS integrated spine boxes for use in Euro NCAP are equivalent to the standard NHTSA version.



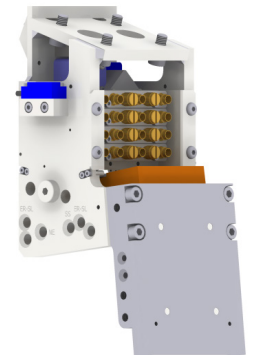
DTS SLICE6



DTS SLICE Nano



MG DAQ238

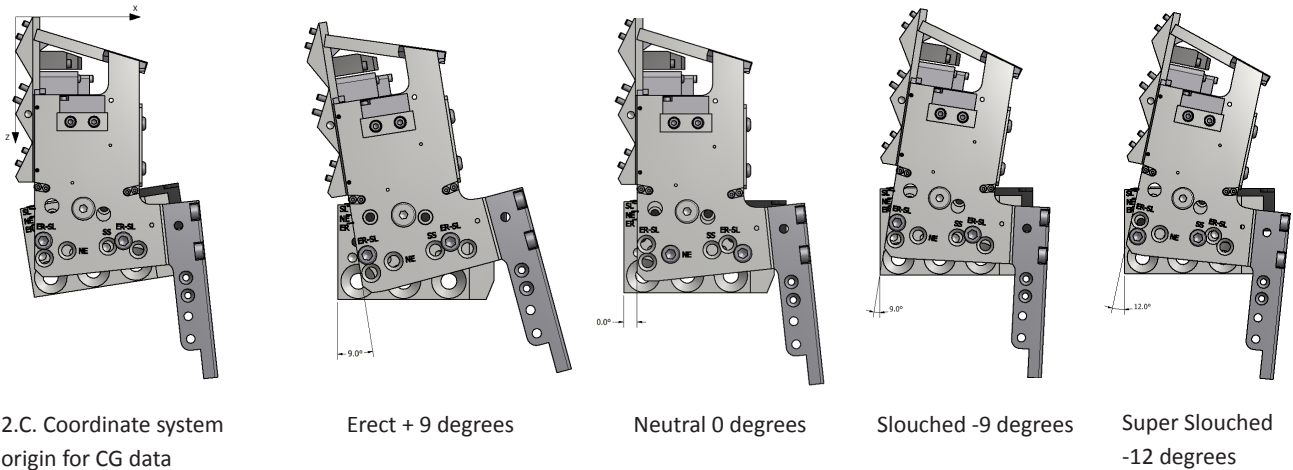


Kistler DTI304.12H

# THOR-50M Euro NCAP Integrated ATDs (Con't)

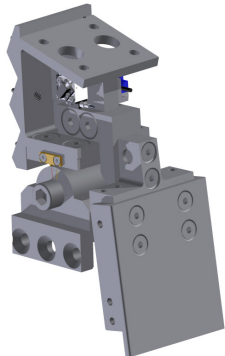
## Advanced Spine Box Positions

Humanetics Advanced DAS integrated spine boxes conform to the four angle adjustments as specified in the Euro NCAP Technical Bulletin 026 (TB026).



## Supported DAS Spine Boxes and Specs

Humanetics Euro NCAP Advanced spine boxes have been demonstrated to show equivalency to the NHTSA standard version (shown below).



THOR-50M	NHTSA	Humanetics Advanced Spine				Avg.	St.dev.
		DTS SLICE6	DTS SLICE Nano	mg-sensor DAQ238	Kistler DT1304.12H		
Assembly mass [kg]	3.426	3.468	3.323	3.308	3.304	3.366	0.076
CG X coordinate [mm]	50.6	51.8	49.6	51.2	50.8	50.8	0.8
CG Z coordinate [mm]	96.1	97.1	96.8	93.7	94.8	95.7	1.4

## Euro NCAP Narrow Certification Corridors

At the request of the Euro NCAP Frontal Impact WG, Humanetics proposed narrow certification corridors for THOR 50M dummies to be used in the Euro NCAP MPDB frontal impact test protocol. Euro NCAP prepared a technical bulletin, TB026, specifying the narrower corridors and the Board of Directors has approved them. The new corridors are based on certification data of a population of approximately 40 SBL-B dummies. As corridors are narrower than current SBL-B specifications, there is a chance that existing SBL-B dummies will not pass all new Euro NCAP corridors. Euro NCAP will monitor the certification results of their dummies in the upcoming data collection period and will review corridors in due time based on performance. New dummies ordered to the Euro NCAP Spec will be delivered conforming to the Euro NCAP specification.

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# THOR-50M Euro NCAP Integrated ATDs (Con't)

## Euro NCAP Narrow Certification Corridors (con't)

Approved Euro NCAP Certification Corridors

Test	Parameter	Narrow Euro NCAP Corridors		
		Lower Limit	Upper Limit	Width
Neck Flexion	Moment	27.3	31.5	7%
	Fz	835	961	7%
	Angular Rate	-1993	-1732	7%
	Rotation	-65.3	-56.7	7%
Neck Extension	Moment	-24.9	-20.4	10%
	Fz	-3103	-2539	10%
	Angular Rate	1857	2270	10%
	Rotation	57.1	69.8	10%
Neck Lateral	Moment	44.8	51.5	7%
	Angular Rate	1256	1445	7%
	Rotation	38.0	43.8	7%
Neck Torsion	Moment	37.9	43.6	7%
	Angular Rate	1358	1563	7%
	Rotation	43.0	49.5	7%
Head Impact	Probe Force	4890	5976	10%
	Head Acceleration	104.9	120.7	7%
Upper Thorax 4.3m/s	Probe Force	2642	3039	7%
	X-axis Deflection	-45.0	-39.1	7%
	Z-axis Deflection	27.0	31.1	7%
Upper Thorax 2.5m/s	Probe Force	Data collection		
	X-axis Deflection*	Data collection		
	Z-axis Deflection*	Data collection		
Lower Thorax	Probe Force	3372	3880	7%
	X-axis Deflection	-52.4	-45.6	7%
Abdomen	Probe Force	2572	3143	10%
	X Deflection	-83.8	-72.8	7%
Upper Leg	Peak Probe Force	4217	5154	10%
	Peak Femur Force, Fz	-3314	-2712	10%
	Peak Resultant Acetabulum Force	1478	1806	10%

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# THOR-50M Euro NCAP Integrated ATDs (Con't)

## Hybrid III 50M Lower Legs

Humanetics has Hybrid III 50M lower leg solutions available per Euro NCAP TB026 for SLICE6, ADM, and DTI DAS systems.



DTS SLICE6



DTI-ADM

## Upgrades and Re-certification

Complete ATDs, including IR-TRACCs, can be returned to Humanetics for the comprehensive upgrade to SBL-B and a re-certification to the narrower Euro NCAP corridors. Humanetics is prepared to quickly certify your dummy to the new corridors, whether SBL-B or prior design configuration. Priority will be given to SBL-B dummies delivered in the last 18 months. We will run an analysis on how your dummy performs against the Euro NCAP corridors. If neck corrections are needed, we will have new neck assembly kits available for replacement. With the thorax, tuning the rib damping material may be required to meet the corridors.