Technical Bulletin

IR-TRACC Absolute Length and Angle Calibration

Version 1.0

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Title	IR-TRACC Absolute Length and Angle Calibration
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1   Calibration of 2D IR-TRACC

From 2015 onwards, Euro NCAP uses the WorldSID 50th dummy in side impact tests. The dummy is equipped with 2D-IRTRACC sensors from which the maximum lateral rib deflection is determined. The lateral deflection can be calculated from the actual IR-TRACC compression and the measured rotation.

To be able to accurately calculate the theoretical lateral deflection, a dedicated calibration procedure has been proposed. Any IR-TRACC installed in the WorldSID dummy and used in Euro NCAP side impact tests will need to be calibrated as described below.

1.1   Calibration procedure

The calibration procedure used for all Euro NCAP tests will be performed as reported in Humanetics Service Bulletin, IR-TRACC Absolute Length Calibration, which can be found on http://www.humaneticsatd.com/tech-sheets-service-bulletins.

1.2   Lateral Rib Deflection

For all WorldSID rib deflection measurements used in official Euro NCAP tests, the purely lateral displacement is used which is determined using the following formula (also detailed in TB 021):

$$Dy_{rib} = \max\left(D_y(t) - D_y(0)\right)$$

with:

$D_y(t) = L(t) \cdot \cos(\alpha(t))$
L(t)   Filtered IR-TRACC length
$\alpha(t)$ Filtered IR-TRACC rotation
$D_y(0)$ Lateral Rib Displacement @ t=0