Data Sheet

H-POINT MANIKIN

The H-Point-Manikin (TE-HPM) is an essential tool for the correct measurements and dummy positioning in test applications.

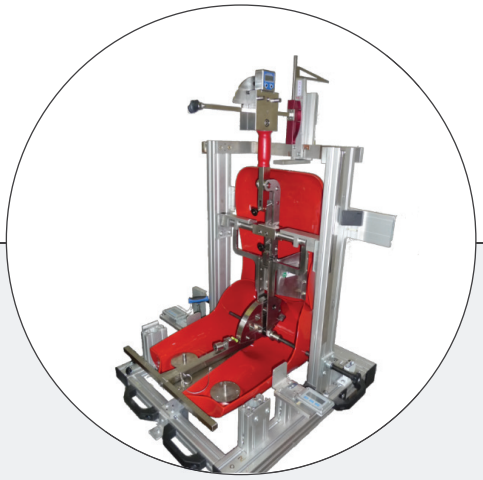
The HPM fulfills the **SAE-J826-NOV2015** as well as the recommended **VDA 304 (01-2010)** requirements. In combination with the Measuring Head (TE-MK) model, the user gets the most accurate solution available. The H-point is used as a key reference point in seated occupant location, seating package configurations, EPA volumes, and crash test positioning.

SCOPE OF PACKAGE

COMPONENT DESCRIPTION	QUANTITY
HPM INCLUDING FORCE GAUGE INDICATOR	1
HEAD ROOM PROBE (PLUG-IN VERSION)	1
LEG, RIGHT (ADJUSTABLE FOR 5TH, 50TH & 95TH PERCENTILE LENGTH)	1
LEG, LEFT (ADJUSTABLE FOR 5TH, 50TH, & 95TH PERCENTILE LENGTH)	1
TORSO, WEIGHT DISK	10
UPPER LEGS	2
LOWER LEGS	2
CLOTH	1
HPM TRANSPORT BOX	1
WEIGHT TRANSPORT BOX	1

HUMANETICS

ECAL-HPM-MK-CALIBRATION

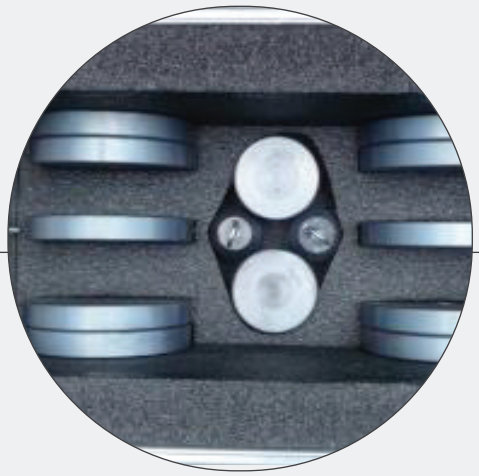


The calibration of the Hip Point Dummy (HPM) and the Measuring Head (MK or HRMD) meet **VDA304 the** recommendation of the German Association of the Automotive Industry (VDA), which predefines particularly tight tolerance on the instrument.

Additionally, the calibration of the H-Point-Manikin is fulfilling all standards of **SAE-J826-NOV2015,** the Society of Automotive Engineers. **SAE-J826-NOV2015,** is the central specification for H-Point Manikins worldwide, and the GLORIA standard for the Euro NCAP tests. In combination (HPM and MK/HRMD) Humanetics is also able to fulfill the GLORIA standard for calibration.

Regular calibration of the H-Point Manikin results in a reproducible measurement standard that can be used during development and series production. Almost every HPM and HRMD can be modified to meet **VDA 304** standard.

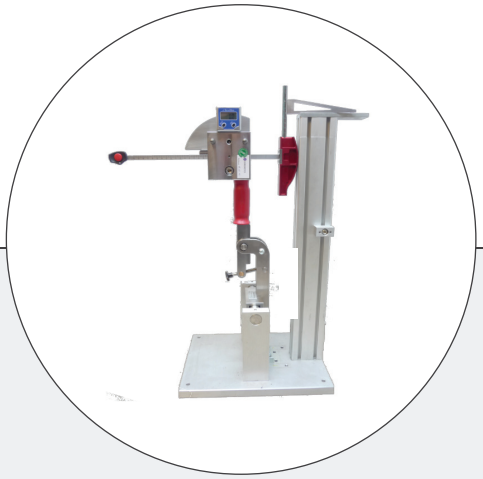
HPM TRANSPORT BOX



The HPM Transport box contains one box for the H-Point Manikin (TE-HPM-Box-1), as well as a second box for the weights (TE-HPM-Box2).

HUMANETICS

TE-MK MEASURING HEAD



The Humanetics Measuring Head (MK) is an advanced tool, used for precise and repeatable back set measurement. The device can be used on any H-Point machine that fulfills **SAE J826** requirements.

With its multiple adjustment possibilities, it allows for correct installation as well as positioning. A proper handle simplifies the installation onto the HPM (H-Point Manikin). The device fulfills the **VDA 304** calibration requirements.

SPECIFICATIONS

MEASUREMENT CAPABILITIES HEAD	RANGE
X-DIRECTION	14 - 200mm
Z-DIRECTION	-70 - 100mm
TORSO ANGLE	0 - 35 Deg.

PHYSICAL	WEIGHT
TOTAL MASS (INCL. INCLINOMETER)	8300 g
MASS INCLINOMETER - SUPPY	185 g
ADDITIONAL WEIGHTS	2x 4800 g
COMPENSATION WEIGHTS (BACKSET MEASUREMENT WITH HEAD ROOM PROBE)	2x 2770 g

INCLINOMETER	
ACCURACY	±0,1 Deg
SUPPLY	3V Battery

SCOPE OF PACKAGE

COMPONENT DESCRIPTION	QUANTITY
MEASURING HEAD (INCL. INCLINOMETER & WEIGHTS)	1
TRANSPORT BOX	1
BASE FOR SECURED STORAGE	1

Features

» Easy reading of measurement values without additional tools.

» Clamping system for proper installation on HPM.

» Scale secured against separation from device.

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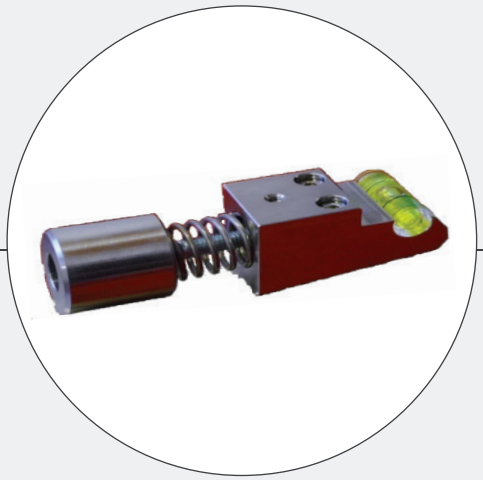
TE-KSM

The Head Restraint Measuring Device (TE-KSM) determines the head restraint height / width according to the legal requirements of **UNECE R17** and **FMVSS202a**.

The measuring device can be applied to all H-Point Manikins with standard HRP shaft (Ø 22,3 mm).

PHYSICAL	
WEIGHT	875 g ±25 g
SCALE	120 – 280 mm

TE-FGI-AD



The optimized Force Gauge Indicator (FGI) with its integrated bubble level guarantees best visibility during seating process of the H-Point Manikin.

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TE-HRP

The Plug-in Head Room Probe (HRP) can be mounted or dismounted no influence on the calibration of the H-Point Manikin. It is placed on the guidance of the plastic bushings and fixed with safety pins. The HRP can be retrofitted on all common HPM with standard HRP shaft (Ø 22,3 mm).

Advantages:

» Removal of HRP, without dismantling of H-point axis
» Dismantling of the HRP doesn't affect the HPM calibration

PHYSICAL	
WEIGHT	2300 g
SCALE	760 - 1070 mm

TE-TBW

H-Point measurement with standard T-Bar on the middle seat:

» Positioning of the legs is in most vehicles not possible, because of the wide center tunnel
» H-Point measurement failure as it leads to a undefined sliding HPM
» Measurement without legs is not according to regulations

H-Point measurement with extended T-Bar:

» Positioning of the HPM is also possible for the center seat by the heel points
» H-Point measurement can be performed reproducible with mounted legs

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TE-TBN

H-Point measurement with standard T-Bar on the middle seat:

» Positioning of the HPM is not possible due to risk of collision with the center console
» Risk of damage to the interior is very high

H-Point measurement with small T-Bar:

The T-bar was shortened from 420 mm to 360 mm without weight influence.

» Positioning of the HPM on the front seats, even with bulky center consoles
» Danger of damage of the interior significantly reduced
» Mounting of the legs on HPM is much easier

TE-CAM

» Adaptation for mounting a camera on HPM
» Allows attachment of all common camera types
» Meets the legal requirements according to **FMVSS111** (rear visibility)
» Photographic documentation of the field of view Camera
» Camera can be swiveled and moved around X, Y and Z Axis

PHYSICAL	QUANTITY
ADAPTION ON HPM	1
CAMERA ADAPTATION	1
T-BAR SMALL	1
WEIGHT 2770G	2
TRANSPORTBOX	1

Camera is not included in the scope of delivery and can be ordered as an option.

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HPMtae

New vehicles offer a variety of different seating positions for the occupant. This leads to:

» New tests with different setups
» Standardized procedures for the test setup
» Equipment capable to measure necessary test setup values
» ATDs with a higher functionality

The HMPtae (torso angle extension) offers an HPM with integrated torso angle extension tae up to 65° and standard weight. This results in:

» Use of an universal measuring device with an extended functionality
» Usablility for all previous applications
» Repeatable test setups
» Precise positioning for tests
» Measurable results for the development (seat and vehicle)

The THOR-AV-50M is a fully adjustable ATD. It is designed to better represent the human form in crash scenarios, particularly those involving AV seating environments.

The THOR-AV-50M is characterized by:

» Head accel and slice mounting modifications
» Updated joint range of motion
» Neck with enhanced biofidelity
» Updates to lumbar spine, pelvis, and abdomen
» Design is unique to Humanetics

HUMANETICS

DMD TEST REQUIREMENTS
ACCORDING TO EURO NCAP

European new car assessment program Euro NCAP: Rear Whiplash Test Protocoll

Version 1.0 July 2013

3.5.4 Discomfort Metric

3.5.4.1 Set the head restraint into the non-use position.

3.5.4.2 On the surface given by the C/LO line, find the lowest point and record the related X-coordinate and Z-coordinate.

3.5.4.3. Calculate the X-coordinate recorded in 3.5.4.2 relative to the HPM X-coordinate, (ΔX).

$$\Delta X = X_{3,5,4,2} - \text{HPM X}$$

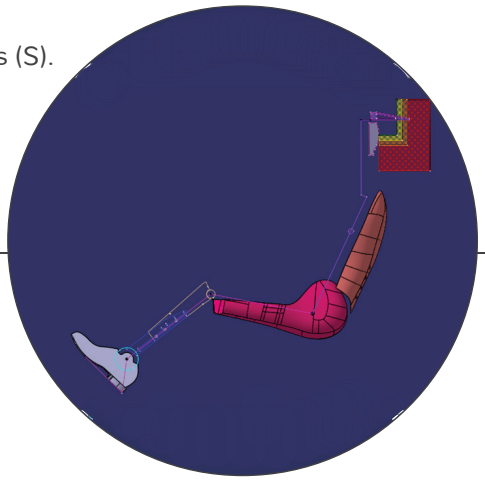
3.5.4.4 Calculate the Z-coordinate recorded in 3.5.4.2 relative to the HPM X-coordinate, (ΔZ).

$$\Delta Z = Z_{3,5,4,2} - \text{HPM Z}$$

3.5.4.5 Calculate the height of the lowest point on the head restraint (H_{LE}) relative to the HPM H-POint using

$$H_{LE} = \Delta X * \sin(\text{TorsoAngle}) + \Delta Z * (\text{TorsoAngle})$$

3.5.4.6 Using the measuring device in (Annex B) determine the thickness (S).



TE-HPM-CAD

- » CAD Model based on CATIA V5 R19
- » Dummy shells are based on the VDA defined surfaces of 2009
- » Dummy, head positions and dimensions are in accordance with the „VDA Specification of the H-Point and Backset Measuring Equipment “ of 2010 and representing the Humanetics Measuring Head
- » Analysis geometry is according to RCAR definitions

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TE-TCT

Discomfort Tool W/O Protractor

Measurement tool to check the discomfort and to determine the actual comfort value of the rear seat headrests in accordance with the EuroNCAP "REAR Whiplash Test Protocol", version 1.0 of July 2013.

SCOPE OF PACKAGE

COMPONENT DESCRIPTION	QUANTITY
DISCOMFORT MEASURING DEVICE	1
INTEGRATED SCALE	1
TRANSPORT BOX	1

TE-HPM-TESTSTAND

H-Point Teststand W/ adjustable footstand

PHYSICAL	
WEIGHT	70kg
WIDTH	600mm
GROUNDLEVEL	520mm
ADJUSTABLE FOOT RANGE HEIGHT	250mm
DEEPNESS	1500mm
ADJUSTABLE RANGE FOR ADAPTATION PLATE	500mm
ADJUSTABLE RANGE FOOT ANGLE LENGTH	0 - 300mm
ADJUSTABLE RANGE FOOT ANGLE	0 - 30°
POWER SUPPLY	12V

Scope:

» H-Point measurement
» Seat function tests
» Presentation

Advantages:

» Seat adapter for vehicle-specific adapter plates which can be produced on request.
» Due to significant adjustment range each vehicle geometry can be adjusted.

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TE-FTM PRV-038

Durability Manikin

» For functional testing of vehicle seats according **PRV-038**

» Shell contour and position in accordance with the **SAE J826/VDA304** and are derived from the 50th percentile dummy

» Force introduction into the H-Point

PHYSICAL	
WEIGHT TOTAL MAX.	140 kg
WEIGHT UNEQUIPPED	19,5 kg
ANGLE (SEAT TO BACKSHELL)	105 Deg
FORCE INTRODUCTION POINTS	3

TE-FTM PRV-038

Durability Manikin

» For functional testing of vehicle seats

» Shell contour and position in accordance with the **SAE J826/VDA304** and are derived from the 50th percentile dummy

» Depending on weight charging incl. legs, weights for 5th, 50th und 95th percentile dummy can be achieved

PHYSICAL	
ADJUSTABLE RANGE	76° - 96°
CONNECTING POINTS	3
TORSO WEIGHT	6 blades | 3 kg
BUTT WEIGHT	16 blades | 2 kg
SPACERS	4x 20/22/41/54/61 mm

Optional: Also available with T-Bar and HPM legs.

Adjustable Manikin, optional Accessoires:

» T-Bar with scale

» Leg fixation in Y-Direction is possible

» Legs incl. weight for 50th und 95th manikin

HUMANETICS

TE-SBTD-50

The Belt Evaluation Dummy is used to check the belt progress

» Breast,- and pelvic-shells are removable
» Shell geometry corresponds to **VDA304**

TE-SFAD I

The Static Force Application Device I (SFAD I), is used to test child restraint anchorage systems. The tests are to ensure their proper strength and location for the effective securing of child restraints and to reduce the likelihood of anchorage system failure, in accordance with **FMVSS 225**.

TE-SFAD II

The Static Force Application Device II (SFAD II), is used to test child restraint anchorage systems. The tests are to ensure their proper strength and location for the effective securing of child restraints and to reduce the probability of anchorage system failure, in accordance with **FMVSS 225** and **UNECE R14**.

» Availability of I-size (TE-SFAD-II-SUPPORT-LEG)
» Calibration services available on request

HUMANETICS

TE-TB CARGO I

Luggage test block type I

» Available in solid beech and aluminium
» All edges and corners rounded to 20 mm
» Attachment for securing belt
» Analog to the legal requirements of **UNECE R17**

PHYSICAL	
WEIGHT	18 kg (+/- 100 g)
LENGTH	300 mm
WIDTH	300 mm
HEIGHT	300 mm
MATERIAL	Beechwood / Aluminium

Optional:

» TE-TB CARGO I MT
(Device for accommodating an accelerometer at the center of the test block).
» TE-TB CARGO I CG
(Determination of the moment of inertia in the X, Y and Z Axes).

TE-TB CARGO II

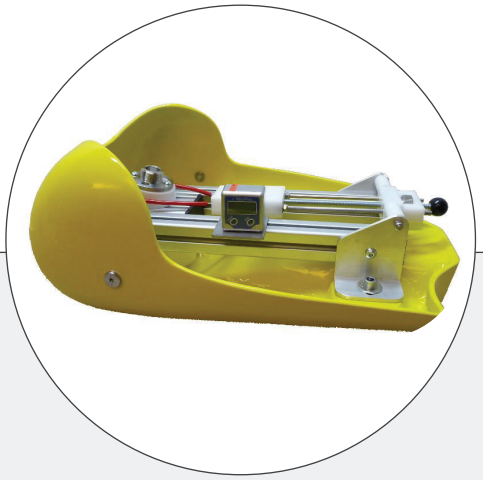
Luggage test block type II

» Available in solid beech and aluminium
» All edges and corners rounded to 20 mm
» Attachment for securing belt
» Analog to the legal requirements of **UNECE R17**

PHYSICAL	
WEIGHT	10 kg (+/- 100 g)
LENGTH	500 mm
WIDTH	350 mm
HEIGHT	125 mm
MATERIAL	Beechwood / Aluminium

HUMANETICS

TE - COM1-V2



For comfort measurement on seat assembly according to Audi specification **PV3410/VR604.1**

» Connection for Zwick measuring machine
» H-Point marking outside
» Digital magnetic protractor
» Painted in RAL 1021

TE – COM3

For comfort measurement on seat back rest.

» Connection for Zwick measuring machine
» Digital magnetic protractor
» Painted in RAL 1021

TE-CRF-R16 UNIVERSAL

The test fixture shall be used to determine the suitability of seat positions for the installation of child restraints of the "universal" category. According to the legal requirements of **UNECE R16** and the **Euro NCAP assessment protocol for children occupant protection, version 6.4.1 of 2013.**

PHYSICAL	
WEIGHT	23 kg
LENGTH	690 mm
WIDTH	400 mm
HEIGHT	420 mm
MATERIAL	Ureol, Coated

» TE-CRF-R16 UNIVERSAL-CC (available with aluminum corners)

» Cotton cloth available on request

HUMANETICS

TE-CRF-R16

» IIsofix reference block according to **UNECE R16. A17.2**
» High strength and dimensional stability
» Divided horizontally and with sliding aluminum ISOFIX connectors that can be locked
» Labeling on the ISOFIX connectors
» I-size support leg adaptable

CRF	UN ECE KEY	MASS (KG)	TOLERANCE (KG)
ISO/R1	E	10	± 0,2
ISO/R2	D	10	± 0,2
ISO/R2X	D1	10	± 0,2
ISO/R3	C	13	± 0,2
ISO/F2	B	13	± 0,2
ISO/F2X	B1	13	± 0,2
ISO/F3	A	13	± 0,2
ISO/L1		13	± 0,2
ISO/L2		13	± 0,2
ISO/B1		3	± 0,2
ISO/B2		7	± 0,2
ISO/B3		7	± 0,2
I-Size	Support Leg		

HUMANETICS

TE-CRF-R16 - MODULAR

» Modular add-ons for the Isofix TE-CRF-R16
» Available in seven different mounting kits

PART NUMBER	DESCRIPTION
TE-CRF-R16-MOD-BASE	SEAT BELT FIXT ECE R16-BASE
TE-CRF-SUPPORT-LEG	SUPPORT LEG FOR CRF-FMVSS225/ECE R16.A17
TE-CRF-R16-MOD-F2	SEAT BELT FIXT ECE R16.A17.2 TYPE F2
TE-CRF-R16-MOD-F2X	SEAT BELT FIXT ECE R16.A17.2, TYPE F2X
TE-CRF-R16-MOD-F3	SEAT BELT FIXT ECE R16.A17.2, TYPE F3
TE-CRF-R16-MOD-R1	SEAT BELT FIXT ECE R16.A17.2 TYPE R1
TE-CRF-R16-MOD-R2	SEAT BELT FIXT ECE R16.A17.2 TYPE R2
TE-CRF-R16-MOD-R2X	SEAT BELT FIXT ECE R16.A17.2 TYPE R2X
TE-CRF-R16-MOD-R3	SEAT BELT FIXT ECE R16.A17.2, TYPE R3

HUMANETICS

400-0000-WH/RD OCCUBOTT

400-0000-WH OCCUBOTT

Structure of the OccuForm-Dummy:

» Highly durable fiberglass shells
» Colour of shells are red; Optional: every colour available
» Three piece design with removable torso which allows for individual seat back or seat pan testing
» Adjustable and lockable seat back angle positioning

Typical Testing Applications:

» Ingress / Egress testing
» Jounce and Squirm
» Vibrational / Shaker Table Testing
» Ballast Testing

400-0000-RD OCCUBOTT

The OccuForm Features:

» Size and contours conforms to **SAE J-826** definition of a 50th Male
» 4x Bolts directly to KUKA Robot
» 4x additionals threads for „Schrunk quick hitch“ clamping ring
» Compatible with all Robots
» Upper and Lower Torso hinges at H-Point
» Weights can easily be added for ballast testing

Covers:

»Scrub-Covers are available on request
» Fixation with hook-and-loop fastener ore strap and rope

HUMANETICS

TE-ECE-R29/02 MANIKIN

UNECE Regulation 29/02 specifies that commercial truck cabs must be designed to guarantee sufficient suvival space for the driver and passenger in the event of an accident.

Humanetics has developed a manikin specifically für **UNECE R29** survival space tests, including frontal pendulum impact and roof strength. The manikin is based on a 50th percentile Hybrid male. Integrated hip joints enable a 20 degree lateral rotation of the legs, and joints between the upper legs and torso allow for a 45 degree rotation of the legs.
This new dummy is much cheaper for **UNECE R29** tests than the HIII-50M or HIIIU because it was only developed for static indentation tests. Therefore, there are no additional measuring sensors that are not required for these test scenarios.
One advantage is the lower weight of approx. 10 kg compared to the HII or HIIIU-50 dummies that normally are being used for these tests.

TE-HIZ-165

Measuring device to determine the head impact zone according to ECE R21
H-Point adjustable in X / Z direction
Scale tube with length measurement from 650mm to 900mm
Acrylic glass ball d = 165mm
Leather covered weight bags to increase test shell weight

HUMANETICS

TE-CSF-ECE R129 F2/F3

Child seat measuring device.

» All measured variables can be checked in accordance with **UNECE R129 Annex 18 Fig. 2/ Fig. 3** and easily read on the scale

» Measurement display for calibration adjustable

» Scope of the adjustment units adjustable

» Simplified width adjustment via threaded spindle

TE-CSF-ECE R129 F2

TE-CSF-ECE R129 F3

HUMANETICS