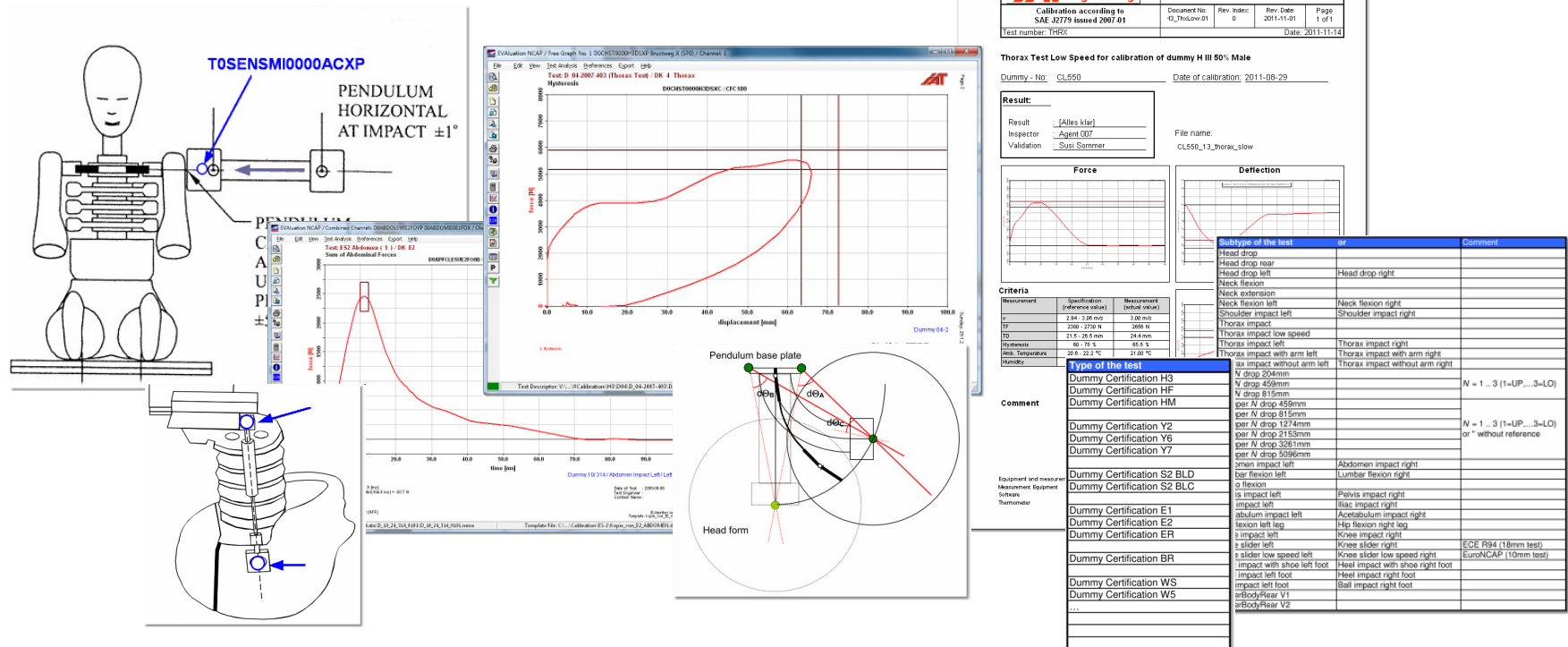


Dummy Certification with ISO MME conform Data Sets



Motivation

Standardized Data Exchange

- ISO MME Standard (ISO 13499)

Extensions for Dummy Certification

- Test Type Coding
- Channel Coding
- Transport of Parameters
- Coding of Data State
(Auto Offset / Auto Time Shift)

Additional Needs

- Sign Convention
- ...



Motivation

Why use ISO MME in Dummy Certification?



1. Introduction of In-Dummy Data Acquisition

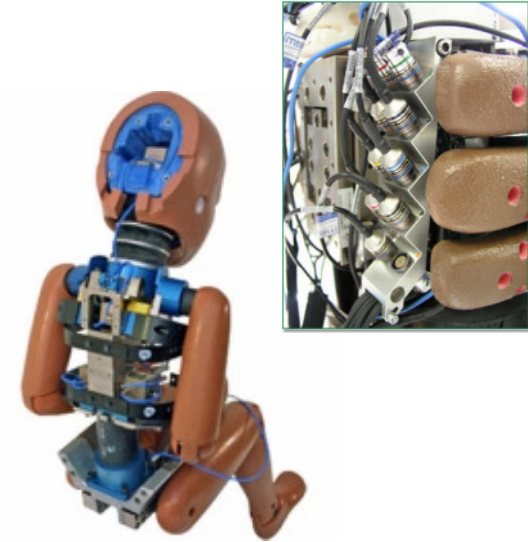
Labs: Closed Systems -> Open Systems

- ✦ Merge Hardware
- ✦ Merge Data Sets

2. Delivery of Complete Data Requested by Customers

- ✦ Delivery/Storage of Data Set beside Report

3. Separate Data Recording and Analysis



ISO MME is a standardised and well supported Format for Impact Test Data Exchange

- ✦ offers unique Channel Coding
- ✦ offers also Directories for delivery of Graphs and Reports



Standardized Data Sets in Dummy Certification:

- ◆ Verify Conformity between Labs
- ◆ Ensure correct Execution/Processing
- ◆ Ensure Quality
- ◆ More Details on signal Characteristics
- ◆ In-Depth History
- ◆ Allow automated (Re-)Processing
- ◆ Ideal Base for Round Robin Tests (of New Dummy Types)



***Standardized Data
Exchange with
ISO MME (ISO 13499)***

ISO 13499 – Data Exchange Format for Impact Test



- ◆ A: ISO/DTR 13499, ISO EGV, ISO/TR 13499, V1.0
 - General Description of Test and Measurement Channels
- ◆ B: ISO/TS 13499 = ISO MME; V1.1...1.5 {1.6}
 - General Description of Test and Measurement Channels (**ASCII based**)
AND Storage of other Data (Video, Photos, Static Measurement,...)
in different Sub-Directories

Official Part of ISO 13499 available from the ISO-Organisation:

- ◆ V1.0 (1996)
- ◆ V1.1 (2003; ISO MME)
- ◆ V2.0 (2012: ISO MME 2...)
- ◆ available at: <http://standards.iso.org>

RED's: Related Electronic Documents (1.1, 1.2, .. **1.5, 1.6**)

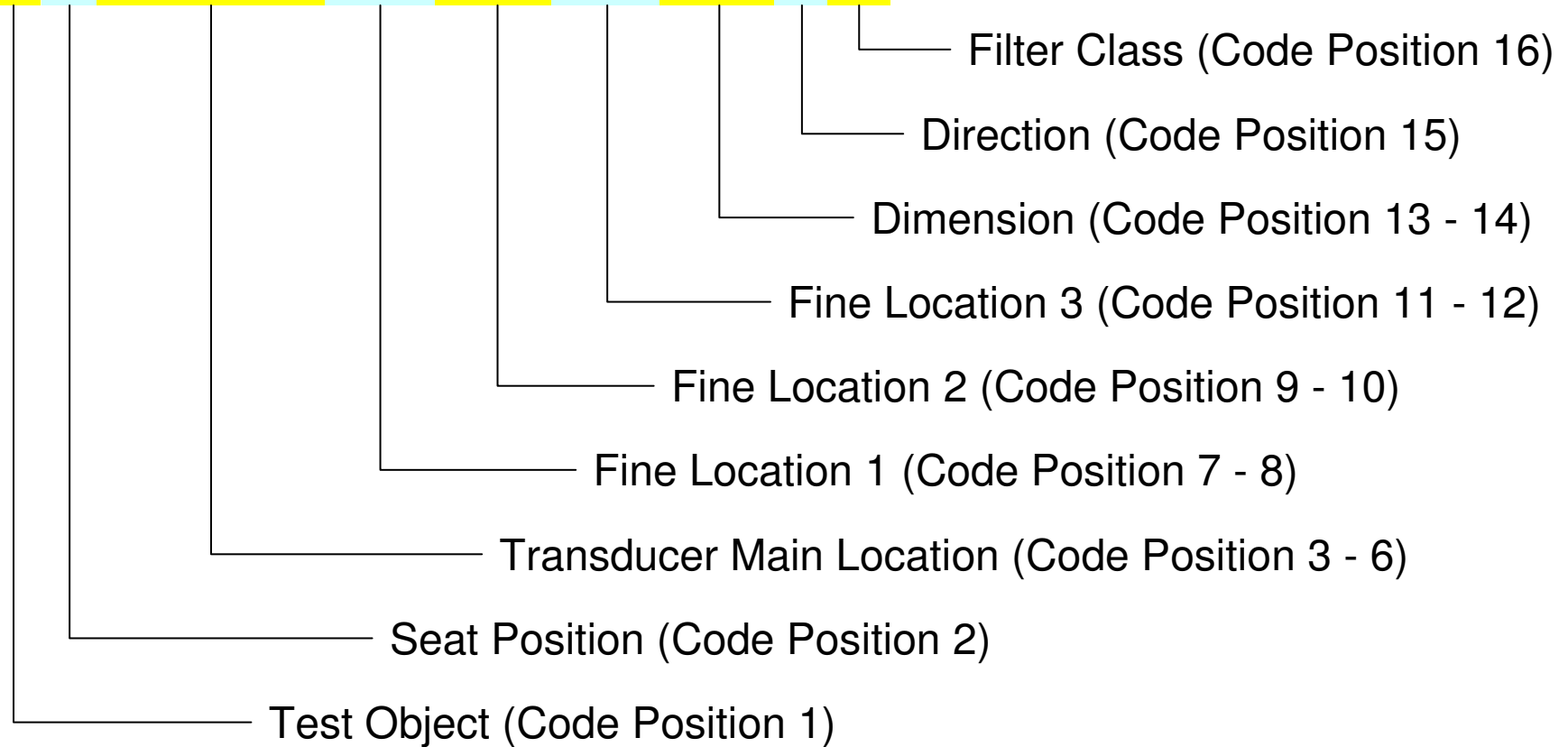
- ◆ additional Information: Reference tables, Change log,...
- ◆ available at: <http://www.iso-mme.org/forum>

ISO Codes for Measurement Locations

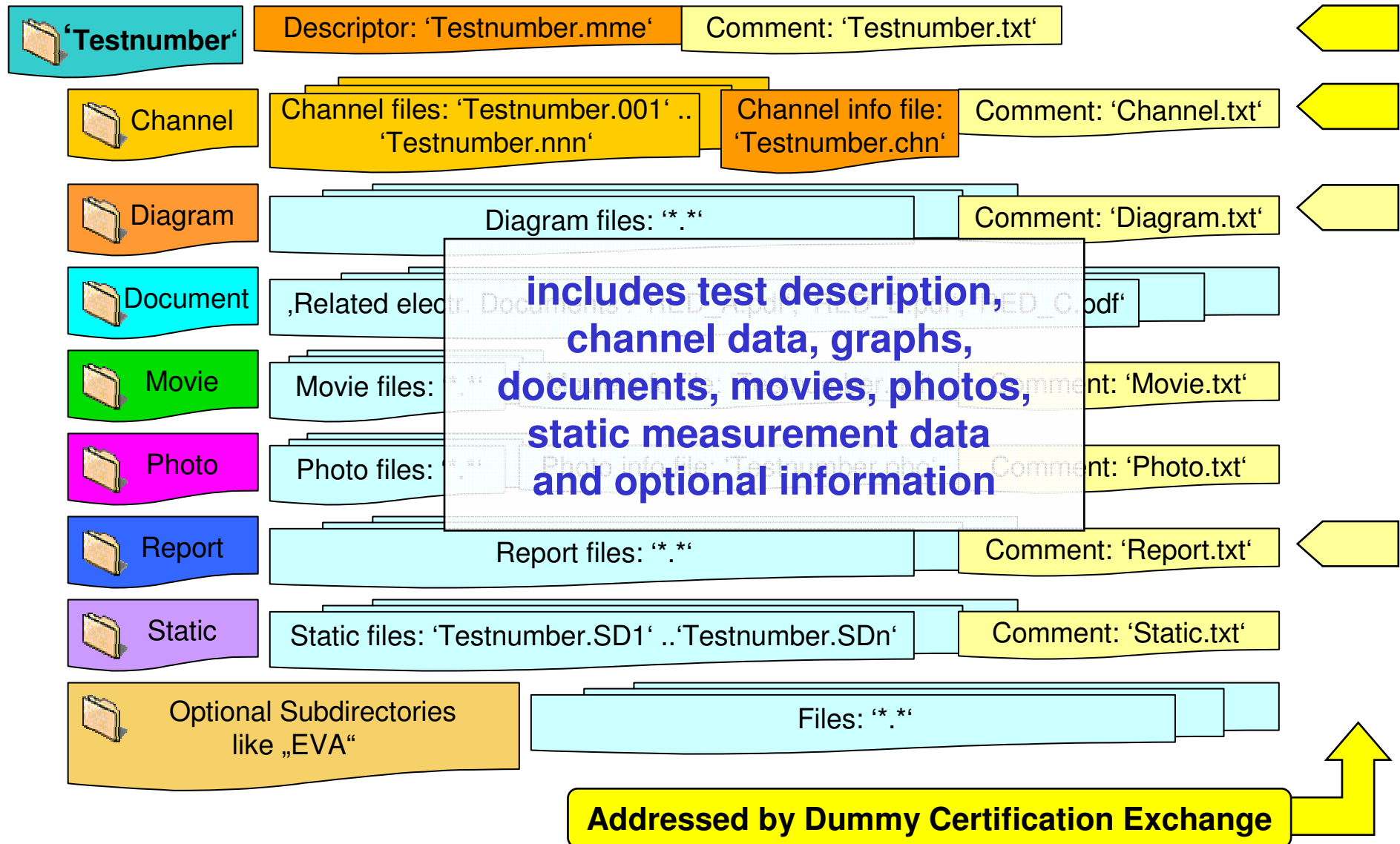


Unique Channel Naming using 16 characters

11FEMRLE00H3FOZB



ISO MME – Structure / Data Types



***Extensions for
Dummy Certification
(additional Specification needed)***

Test Type Coding (Existing Proposal)



Identification and automated Processing

Based on ISO MME Descriptors:

- Type of the Test
- Subtype of the Test
- (Regulation)

MME Test Descriptor Extract:

```
Customer test engineer name :CustEngineer
Customer test engineer phone:CustPhone
Customer test engineer fax :CustFax
Customer test engineer email:CustEmail
Title :Dummy Certification for E2 - S
left
Medium no./number of media :1/1
Timestamp :2012-02-08 03:29:39
Type of the test :Dummy Certification E2
Subtype of the test :Shoulder impact left
Regulation :Users Manual ES-2 Rev D 2010
Reference temperature :21.0
Relative air humidity :34.0
Date of the test :2012-02-08
Number of test objects :2
Comments :
Comments :block d
```

Subtype of the test	or	Comment
Head drop		
Head drop rear		
Head drop left	Head drop right	
Neck flexion		
Neck extension		
Neck flexion left	Neck flexion right	
Shoulder impact left	Shoulder impact right	
Thorax impact		
Thorax impact low speed		
Thorax impact left	Thorax impact right	
Thorax impact with arm left	Thorax impact with arm right	
Thorax impact without arm left	Thorax impact without arm right	
Rib N drop 204mm		
Rib N drop 459mm		
Rib N drop 815mm		
Damper N drop 459mm		
Damper N drop 815mm		
Damper N drop 1274mm		
Damper N drop 2153mm		
Damper N drop 3261mm		
Damper N drop 5096mm		
Abdomen impact left	Abdomen impact right	
Lumbar flexion left	Lumbar flexion right	
Torso flexion		
Pelvis impact left	Pelvis impact right	
Iliac impact left	Iliac impact right	
Acetabulum impact left	Acetabulum impact right	
Hip flexion left leg	Hip flexion right leg	
Knee impact left	Knee impact right	
Knee slider left	Knee slider right	
Knee slider low speed left	Knee slider low speed right	
Heel impact with shoe left foot	Heel impact with shoe right foot	
Heel impact left foot	Heel impact right foot	
Ball impact left foot	Ball impact right foot	
UpperBodyRear V1		
UpperBodyRear V2		

Type of the test
Dummy Certification H3
Dummy Certification HF
Dummy Certification HM
Dummy Certification Y2
Dummy Certification Y6
Dummy Certification Y7
Dummy Certification S2 BLD
Dummy Certification S2 BLC
Dummy Certification E1
Dummy Certification E2
Dummy Certification ER
Dummy Certification BR
Dummy Certification WS
Dummy Certification W5
...

Channel Coding (Existing Proposal)



Dummy Codes covered by RED B / C

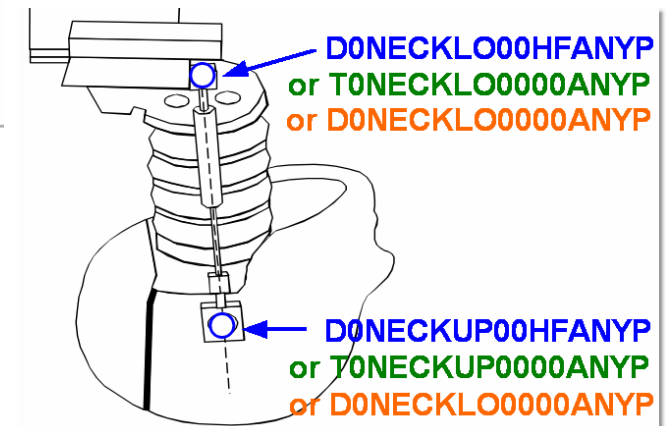
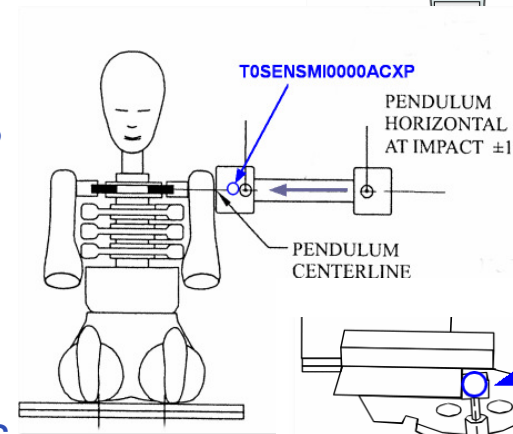
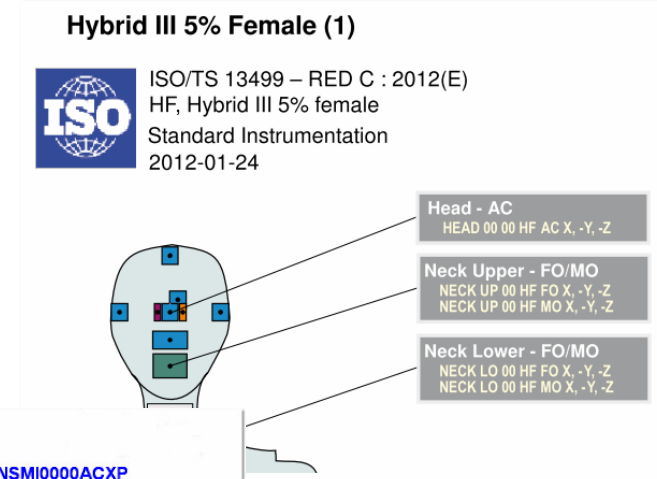
- ◆ Test Object and Seating Position -> "D0"
- ◆ Example: **D0HEAD0000HFACXP**
D0NECKUP00HFMOYP

Coding for Test Rig

- ◆ uses "T0" (T= Test Rig)
- ◆ Example: **T0SENSMI0000ACXP**

Under Discussion:

- ◆ Contributions for practical use
- ◆ Coding for external Measurements on Dummy (Neck Angles)
 - like **D0NECKUP00HFANYP**
 - -> **T0NECKUP0000ANYP**
 - -> **D0NECKUP0000ANYP**
(no need to re-program rig for different dummy types)



Example Coding Table H3 (50th)



Hybrid III 50th						
Type of Test	SubType of test	Parameter	Channels			
Dummy Certification H3	Head drop		D0HEAD0000H3ACXP	D0HEAD0000H3ACYP	D0HEAD0000H3ACZP	
Dummy Certification H3	Neck flexion	V0	D0NECKUP00H3FOXP T0SENSMI0000ACXP	D0NECKUP00H3MOYP	D0NECKUP0000ANYP T0NECKUP0000ANYP	D0NECKLO0000ANYP T0NECKLO0000ANYP
Dummy Certification H3	Neck extension	V0	D0NECKUP00H3FOXP T0SENSMI0000ACXP	D0NECKUP00H3MOYP	D0NECKUP0000ANYP T0NECKUP0000ANYP	D0NECKLO0000ANYP T0NECKLO0000ANYP
Dummy Certification H3	Thorax impact	V0, mTHX	D0CHST0000H3DSXP T0SENSMI0000ACXP			
Dummy Certification H3	Thorax impact low speed	V0, mTHXLOW	D0CHST0000H3DSXP T0SENSMI0000ACXP			
Dummy Certification H3	Hip flexion left/right		T0SENS000000FOOP	T0SENS000000ANYP		
Dummy Certification H3	Knee impact left	V0, mKNEE	T0SENSMI0000ACXP			
Dummy Certification H3	Knee impact right	V0, mKNEE	T0SENSMI0000ACXP			
Dummy Certification H3	Knee slider left	V0	D0KNSLE00H3DSXP	D0FEMRLE00H3FOZP		
Dummy Certification H3	Knee slider right	V0	D0KNSLRI00H3DSXP	D0FEMRRI00H3FOZP		
Dummy Certification H3	Knee slider left low speed	V0	D0KNSLE00H3DSXP			
Dummy Certification H3	Knee slider right low speed	V0	D0KNSLRI00H3DSXP			
Dummy Certification H3	Ball impact left foot	V0	D0TIBILELOH3MOYP T0SENSMI0000ACXP			
Dummy Certification H3	Ball impact right foot	V0	D0TIBIRILOH3MOYP T0SENSMI0000ACXP			
Dummy Certification H3	Heel impact left foot	V0	T0SENSMI0000ACXP			
Dummy Certification H3	Heel impact right foot	V0	T0SENSMI0000ACXP			
Dummy Certification H3	Heel impact with shoe left foot	V0	D0TIBILELOH3FOZP T0SENSMI0000ACXP			
Dummy Certification H3	Heel impact with shoe right foot	V0	D0TIBIRILOH3FOZP T0SENSMI0000ACXP			

Laboratory Conditions

- ◆ Temperature and Humidity via MME Descriptors

Impactor Velocity

- ◆ Transport via Test Object "T"

Impactor Mass is defined with tolerance and needs to be exchanged

- ◆ Transport via Test Object "T"

Identify Dummy by a Reference Number

- ◆ appropriate Descriptor might be "Ref. no of test object" for Test Object "D"

```
Type of the test           :Dummy Certification E2
Subtype of the test        :Shoulder impact left
Regulation                 :Users Manual ES-2 Rev D 2010
Reference temperature      :294.15
Relative air humidity      :34.0
Date of the test          :2012-02-08
Number of test objects    :2
Comments                   :
Comments                   :The following block
Comments                   :describes test object 1
Name of test object 1      :Test Rig
Velocity test object 1     :4.2589
Mass test object 1         :23.38
Driver position object 1   :0
Impact side test object 1 :FR
Type of test object 1      :T
Class of test object 1     :NOVALUE
Code of test object 1      :NOVALUE
Ref. number of test object 1:NOVALUE
Comments                   :
Comments                   :The following block
Comments                   :describes test object 2
Name of test object 2      :Dummy
Velocity test object 2     :0.0
Mass test object 2         :NOVALUE
Driver position object 2   :NOVALUE
Impact side test object 2  :LE
Type of test object 2      :D
Class of test object 2     :NOVALUE
Code of test object 2      :NOVALUE
Ref. number of test object 2:Dummy 232
```

Data State Coding (Under Discussion)



Pre-Processing Steps

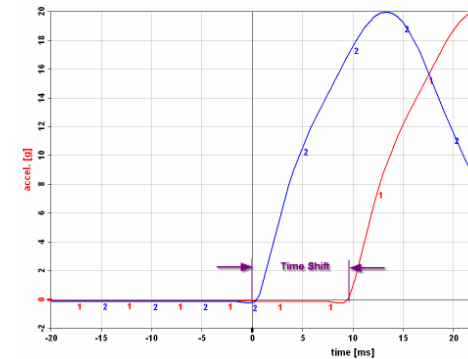
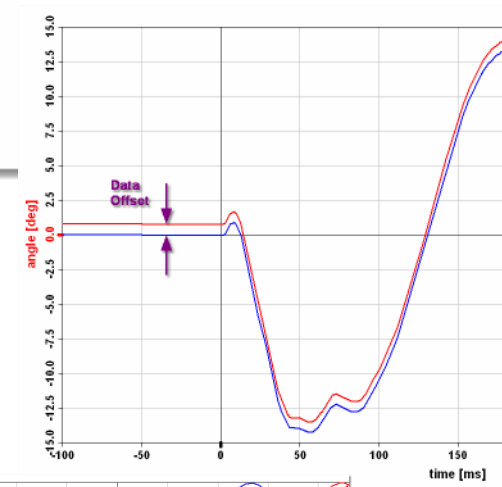
- ◆ A) Raw Data from Test
- ◆ B) Data Offset Correction
 - will use Interval Descriptors
 - "Offset post test" Available since 1.6 (in 1.5 also used or ".Offset post test")
- ◆ C) Time Shifting
 - actually no storage of time shift
 - additional descriptor (Proposal) "Original time of first Sample" or ".Original time of first Sample" could overcome this issue

Solution: Extension of Descriptors to Reverse former processing

- ◆ Offset post test
- ◆ Original time of first sample

```
First global minimum value : -5.040705E+2
Time of minimum value      : 2.810000E-2
Start offset interval      : -1.000000E-2
End offset interval        : 0.000000E+0
Offset post test           : 5.130843E-1
```

```
2.580665E+0
2.580665E+0
6.282517E-1
-1.324161E+0
-2.300367E+0
-1.324161E+0
```



Additional Needs for Dummy Certification



Additional need for Sign Convention
of specific Signals (Test Rigs, Angles)

Additional Need for Report Naming Convention?

More? ... (Your Contribution is welcome)

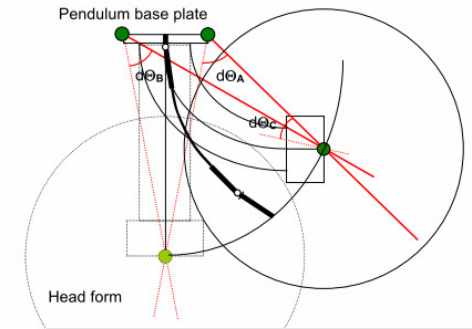
View the status and discuss at:



ISO/TS
13499
Road Vehicles — Multimedia data
exchange format for impact tests

ISO-MME
Discussion Forum

[ISO MME Home Page](#) | [Board index](#) < [TS 13499 - Suggestions](#) < [Dummy certification](#)



IAT Automotive Engineering

DUMMY CALIBRATION

Calibration according to SAE J2779 issued 2007-01

Document No: 49_ThorLow-01 Rev. Index: 0 Rev. Date: 2011-11-01 Page: 1 of 1

Test number: THRX Date: 2011-11-14

Thorax Test Low Speed for calibration of dummy H III 50% Male

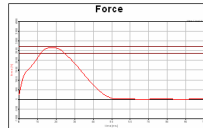
Dummy - No: CL550 Date of calibration: 2011-08-29

Result:

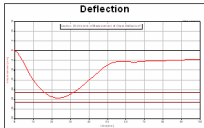
Result: [Alles klar]
Inspector: Agent 007
Validation: Susi Sommer

File name: CL550_13_thorax_slow

Force



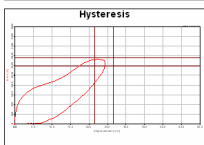
Deflection



Criteria

Measurement	Specification (reference value)	Measurement (actual value)
C	2.04 - 3.06 ms	3.06 ms
T ₁	2100 - 2700 N	2600 N
T ₂	21.5 - 26.5 mm	24.4 mm
Hysteresis	60 - 70 %	69.5 %
Amb. Temperature	20.0 - 22.5 °C	21.00 °C
Humidity	10 - 70 %	40.0 %

Hysteresis



Comment

Equipment and measurement standard:
Measurement Equipment: 7600W
Software: Deflection
Thermometer: CFC 180

Filter Class: 7600W
Pendulum: CFC 180
Deflection: CFC 180

<http://www.iso-mme.org/forum/viewforum.php?f=40>