

## Road vehicles - Multimedia data exchange format for impact tests

*Véhicules routiers — Format d'échange de données multimédia pour les essais de choc*

### Related electronic document C

## Figures

— Version 1.6.2p2 —

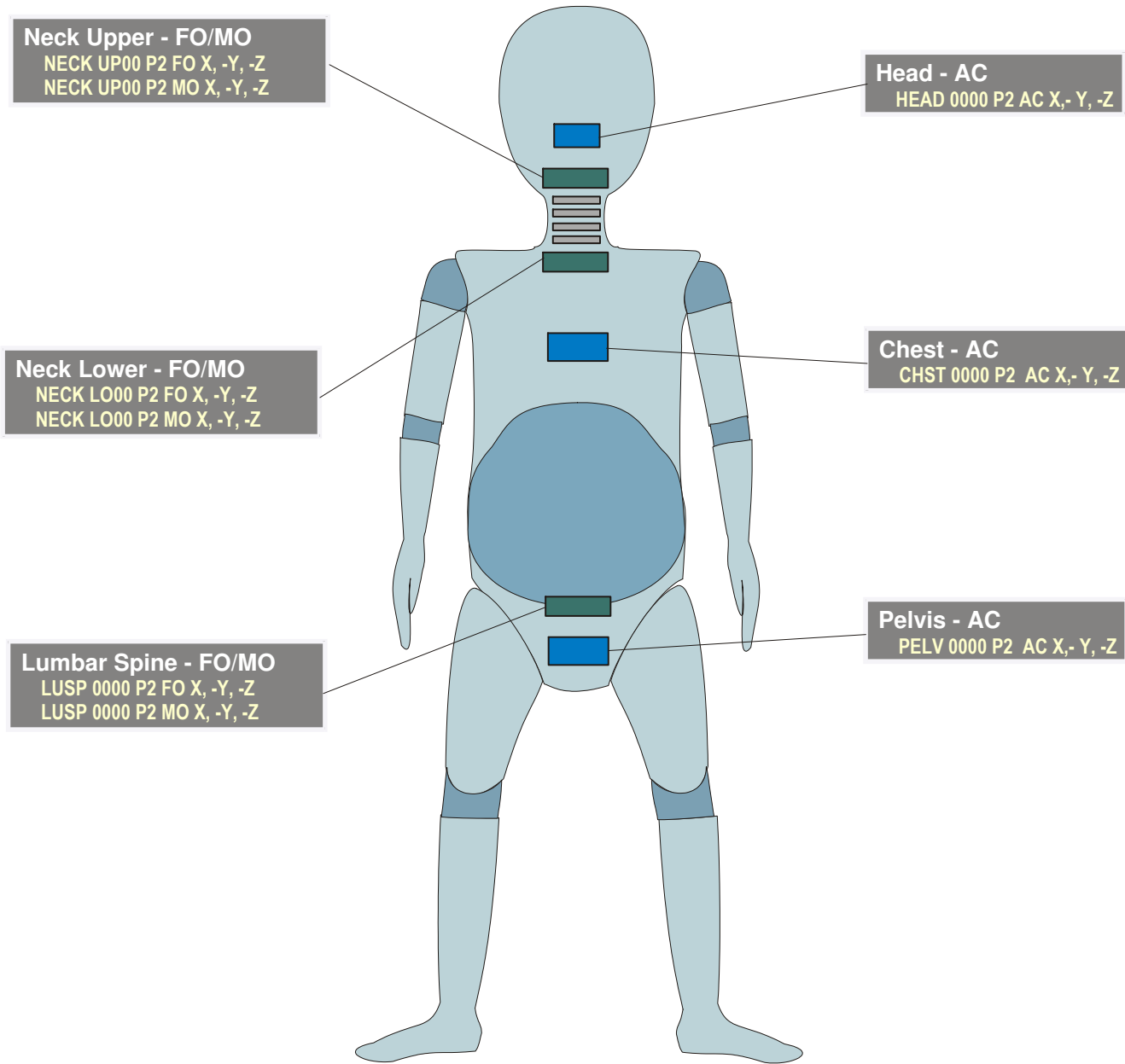
*Remark for version 2.x release:  
All figures comply to the latest version 1.x release .  
Figures are serviced and updated in parallel for both  
major versions. File name references will be identical to  
version 1.*

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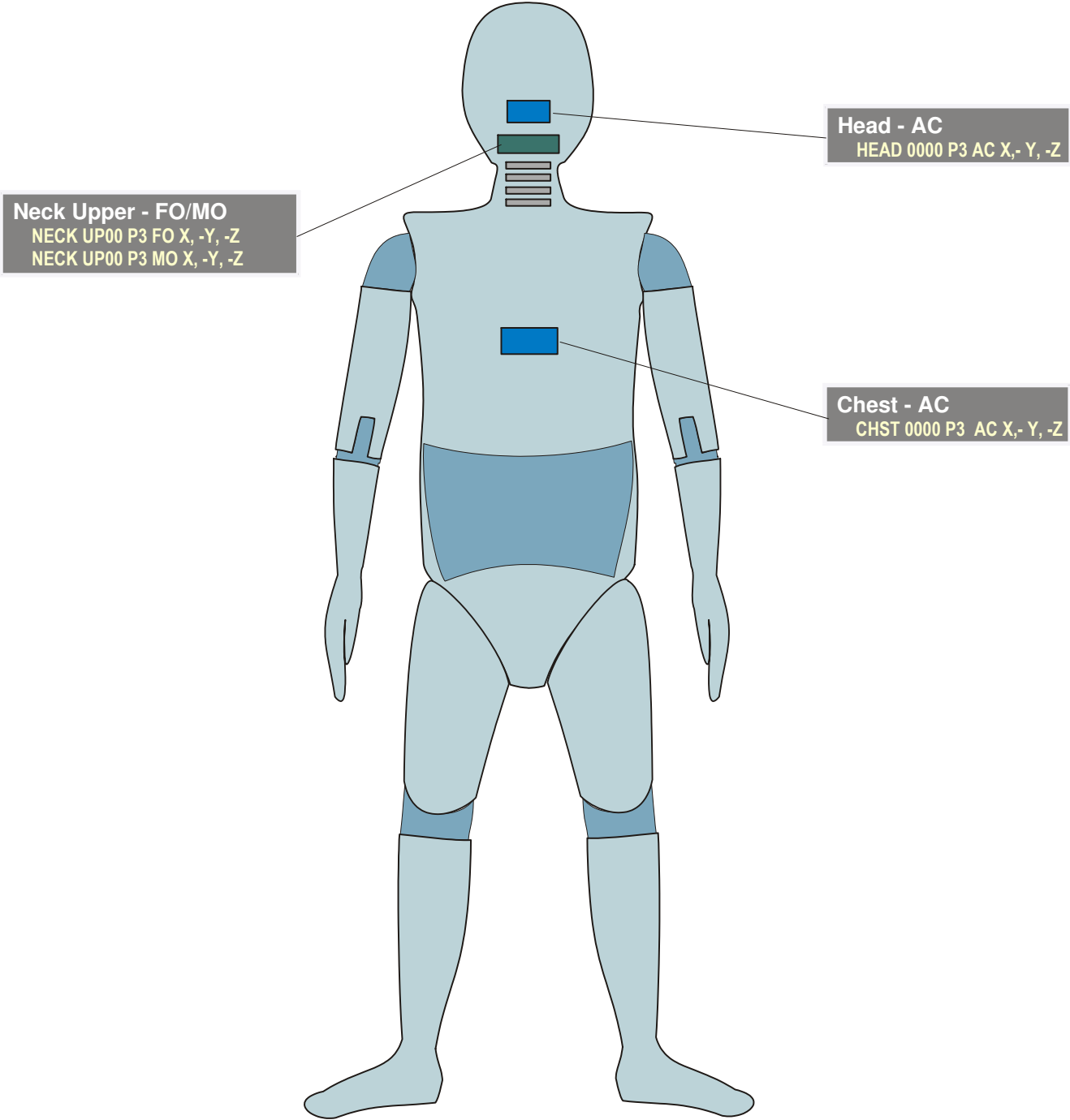
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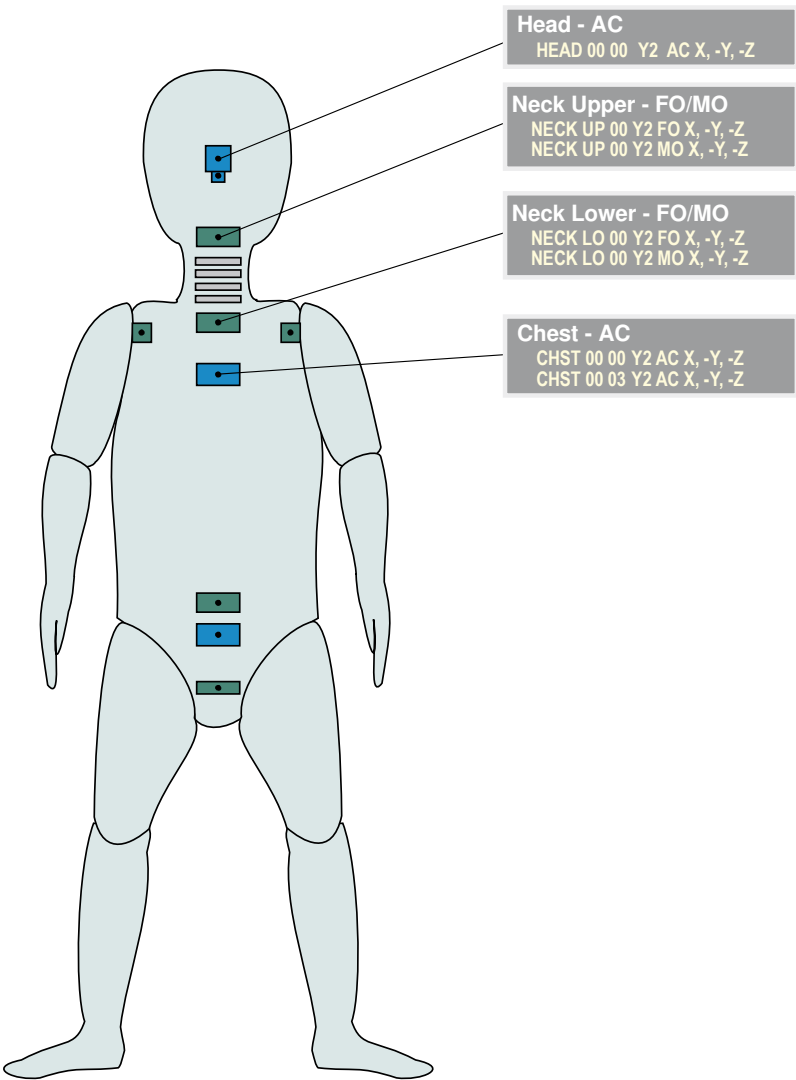
P3      TNO P 3 year old

Valid since Version      1.1





ISO/TS 13499 – RED C : 2010(E)  
Y2, CRABI 12 Month Old Infant Dummy  
Standard Instrumentation  
2011-12-20

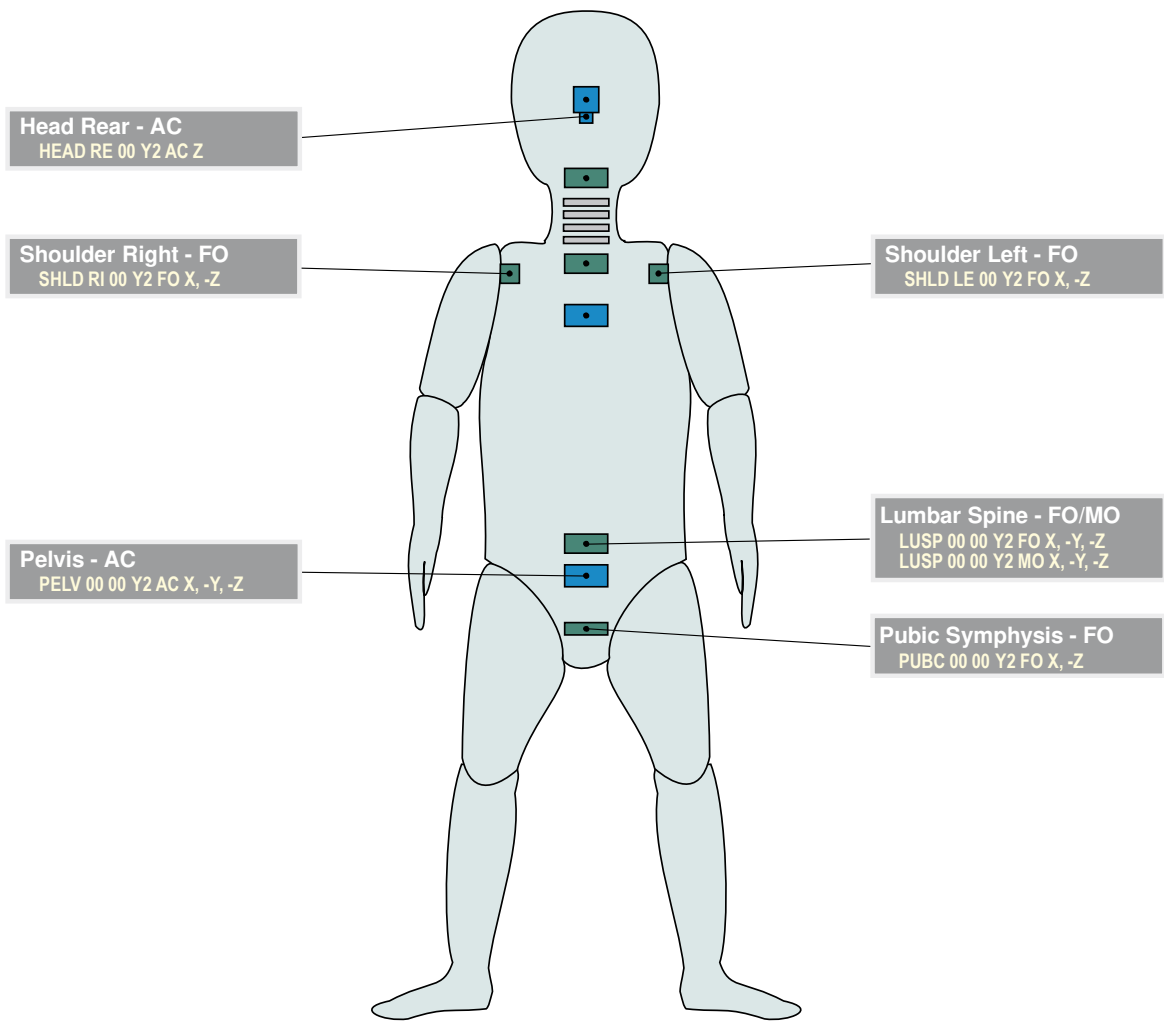


Y2 CRABI 12 month old (2)

Valid since Version 1.6

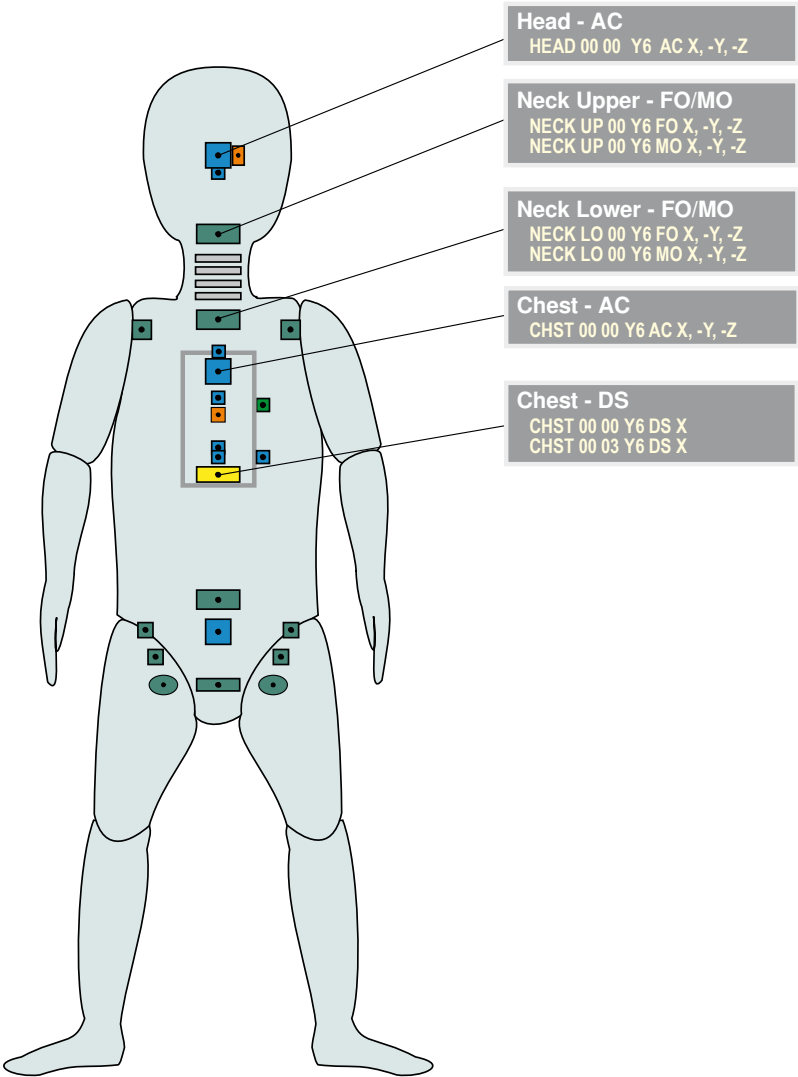


ISO/TS 13499 – RED C : 2010(E)  
Y2, CRABI 12 Month Old Infant Dummy  
Additional Instrumentation  
2011-12-20





ISO/TS 13499 – RED C : 2010(E)  
Y6, Hybrid III 3 Year Old Child Dummy  
Standard Instrumentation  
2013-07-10

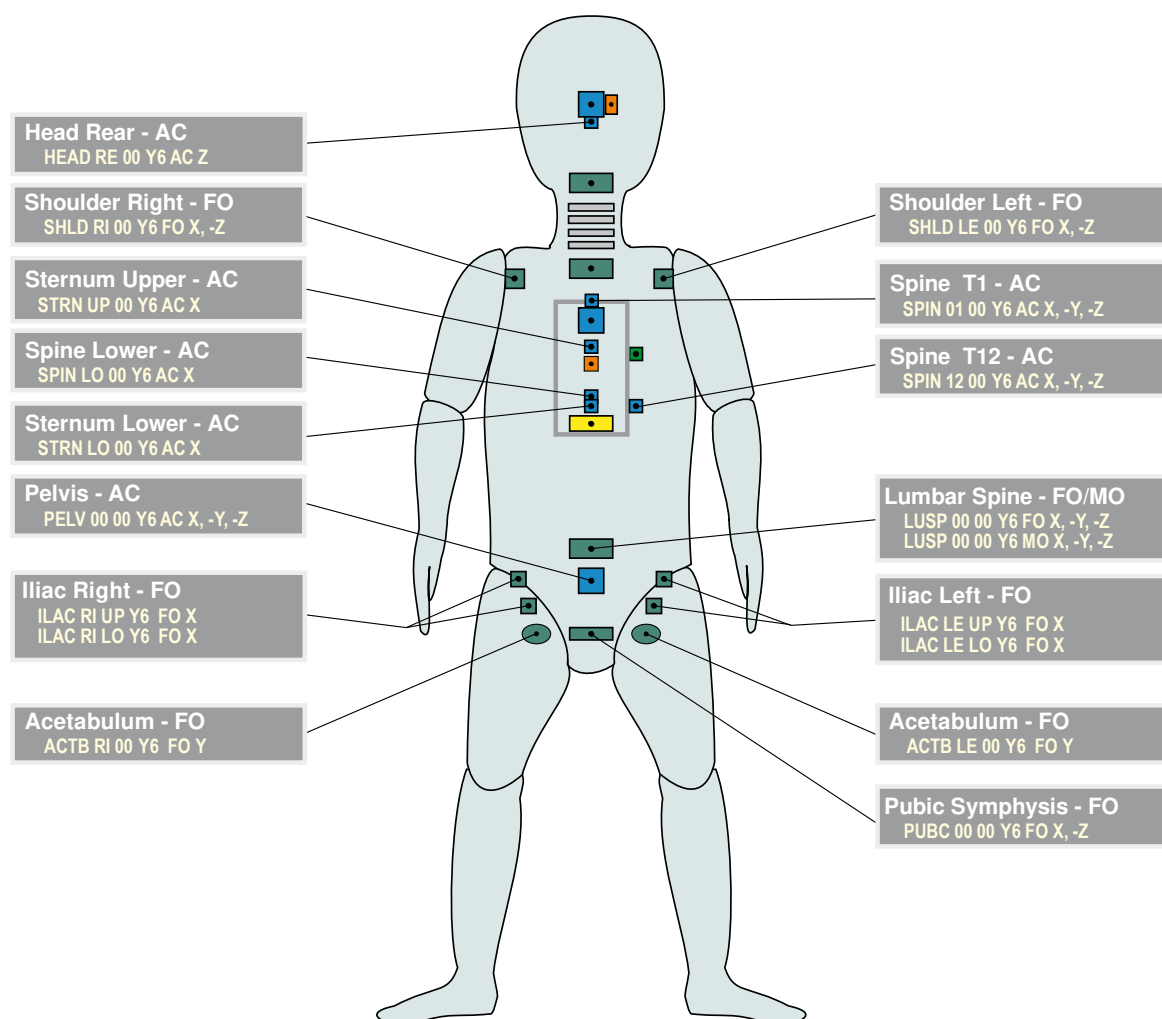




Y6 H III - 3 year old (2)

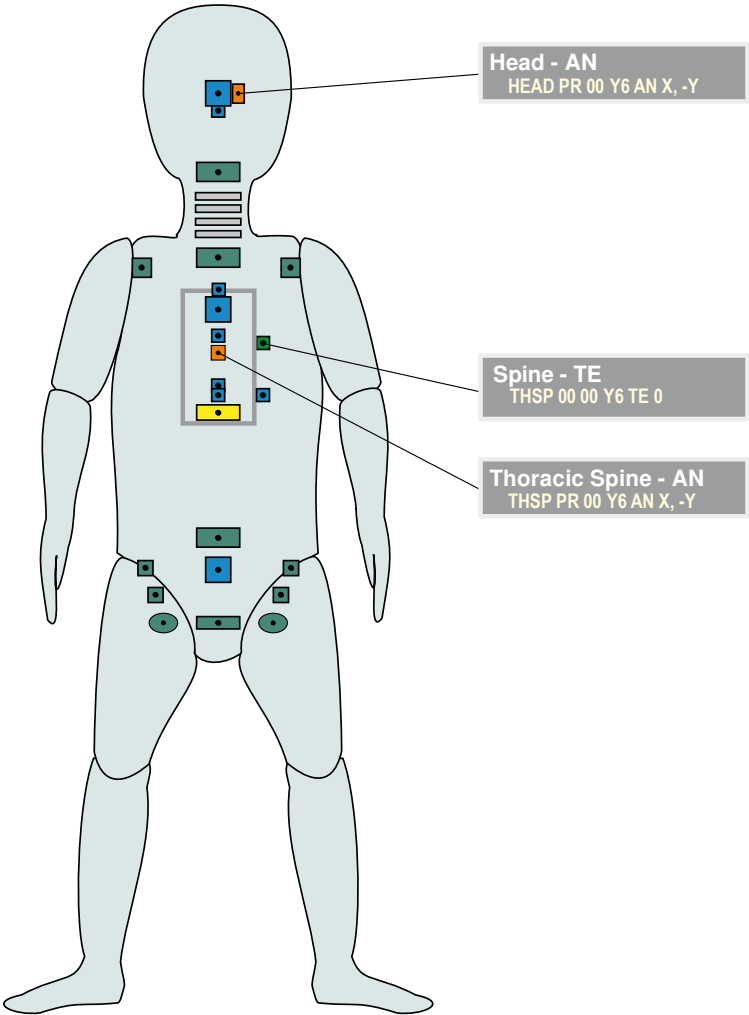
Valid since Version 1.6.1  
NPRM Level "A"

ISO/TS 13499 – RED C : 2010(E)  
Y6, Hybrid III 3 Year Old Child Dummy  
Additional Instrumentation  
2013-07-10





ISO/TS 13499 – RED C : 2010(E)  
Y6, Hybrid III 3 Year Old Child Dummy  
Static measurements, other channels  
2013-07-10

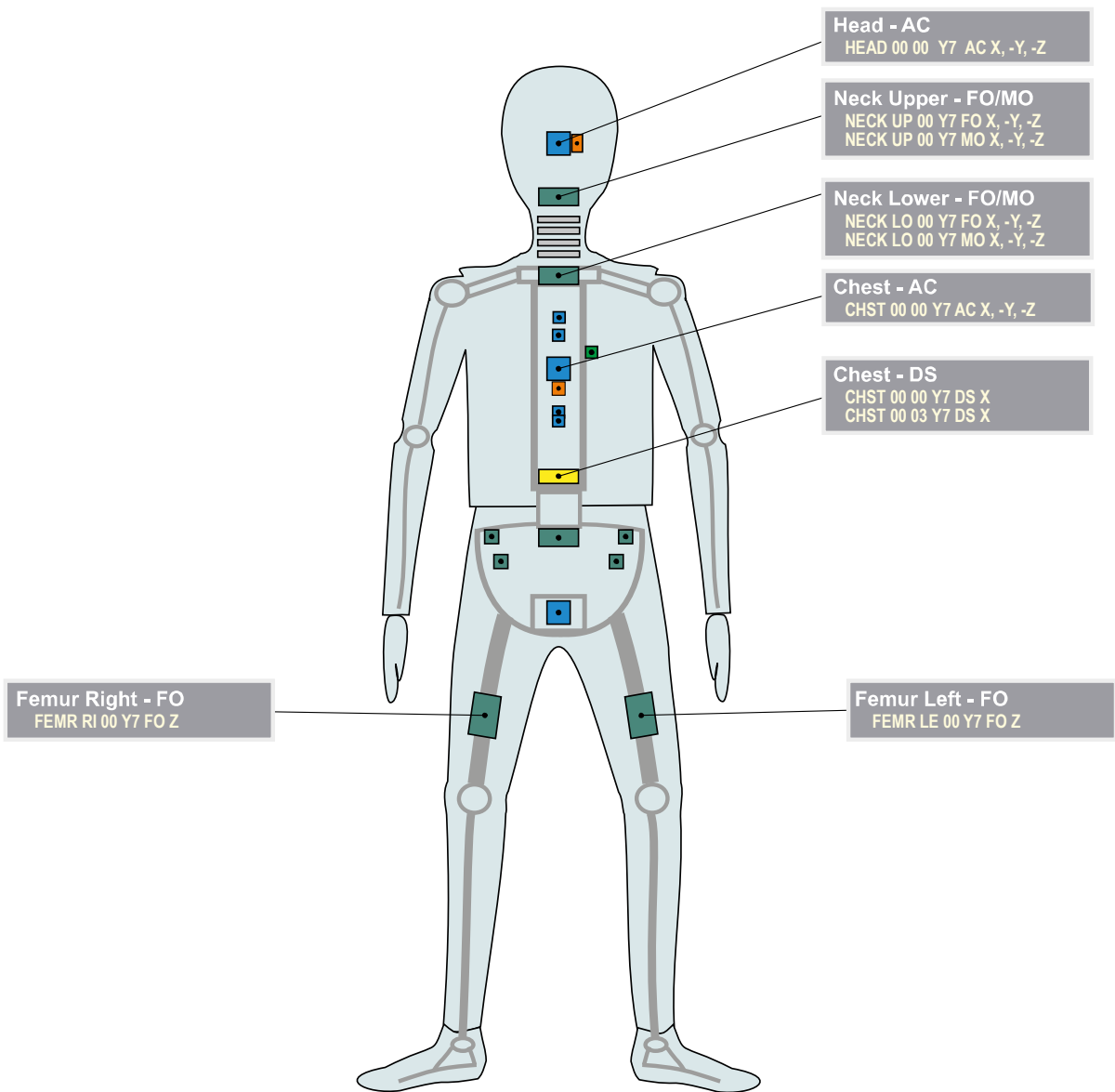


Y7 H III - 6 year old (1)

Valid since Version 1.6.1  
NPRM Level "I" and also Support S (6 Year weighted)



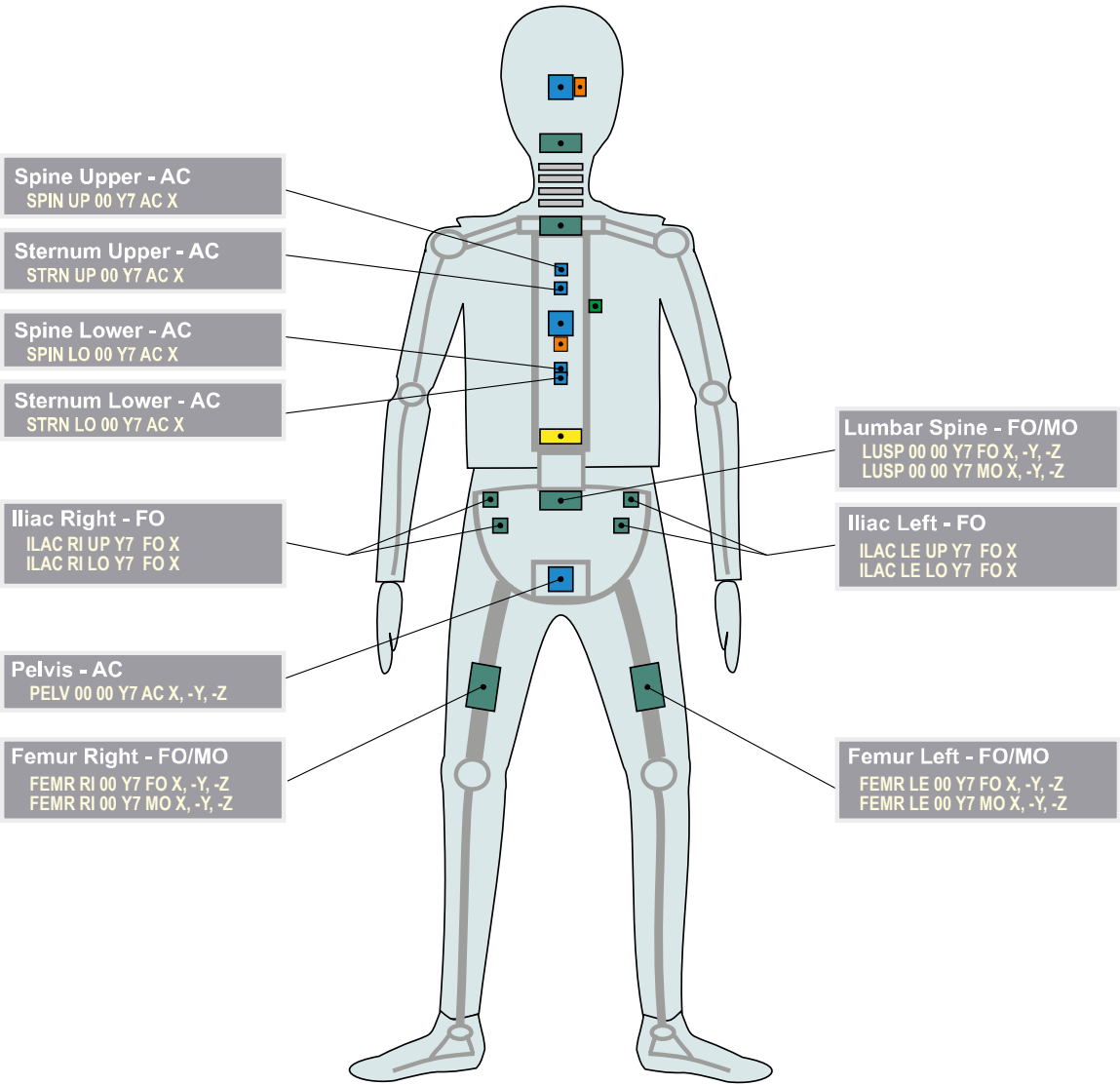
ISO/TS 13499 – RED C : 2010(E)  
Y7, Hybrid III 6-Year Old Child Dummy (use also for 6-Year weighted with YW)  
Standard Instrumentation  
2017-12-13



All codes can also be used with the 6-Year weighted Dummy (Subpart S). •  
Replace in Fine Location 3 the “Y7” with “YW”. •



ISO/TS 13499 – RED C : 2010(E)  
Y7, Hybrid III 6-Year Old Child Dummy (use also for 6-Year weighted with YW)  
Additional Instrumentation  
2017-12-13



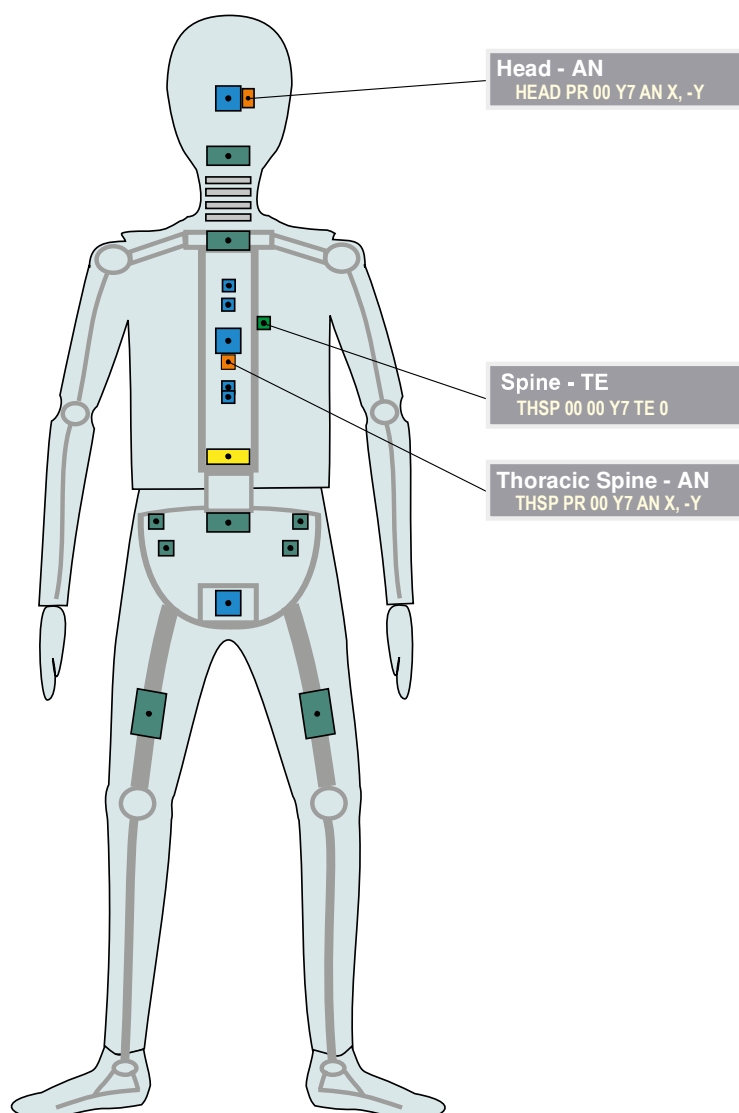
All codes can also be used with the 6-Year weighted Dummy (Subpart S). •  
Replace in Fine Location 3 the “Y7” with “YW”. •

Y7 H III - 6 year old (3)

Valid since Version 1.6.1  
NPRM Level "I" and also Support S (6 Year weighted)



ISO/TS 13499 – RED C : 2010(E)  
Y7, Hybrid III 6-Year Old Child Dummy (use also for 6-Year weighted with YW)  
Static measurements, other channels  
2017-12-13



All codes can also be used with the 6-Year weighted Dummy (Subpart S). •  
Replace in Fine Location 3 the “Y7” with “YW”. •

ISO-Y7\_20171213

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force •  
Maintained by Paul Wellicome, MIRA Ltd. •  
and Dirk Vetter, IATmbH

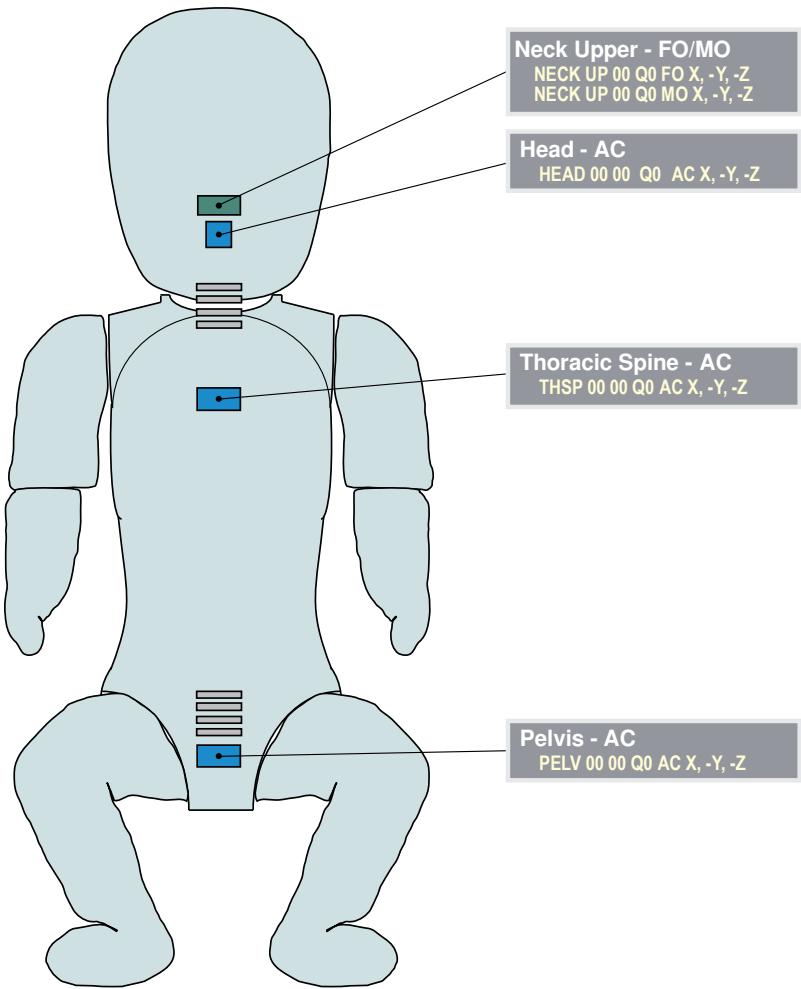
ISO-Y7\_3\_162p2\_20171213.EMF

-> Y7 <- 3 of 3



ISO/TS 13499 – RED C : 2012(E)  
Q0, 6-week Old Infant Dummy

2012-01-24

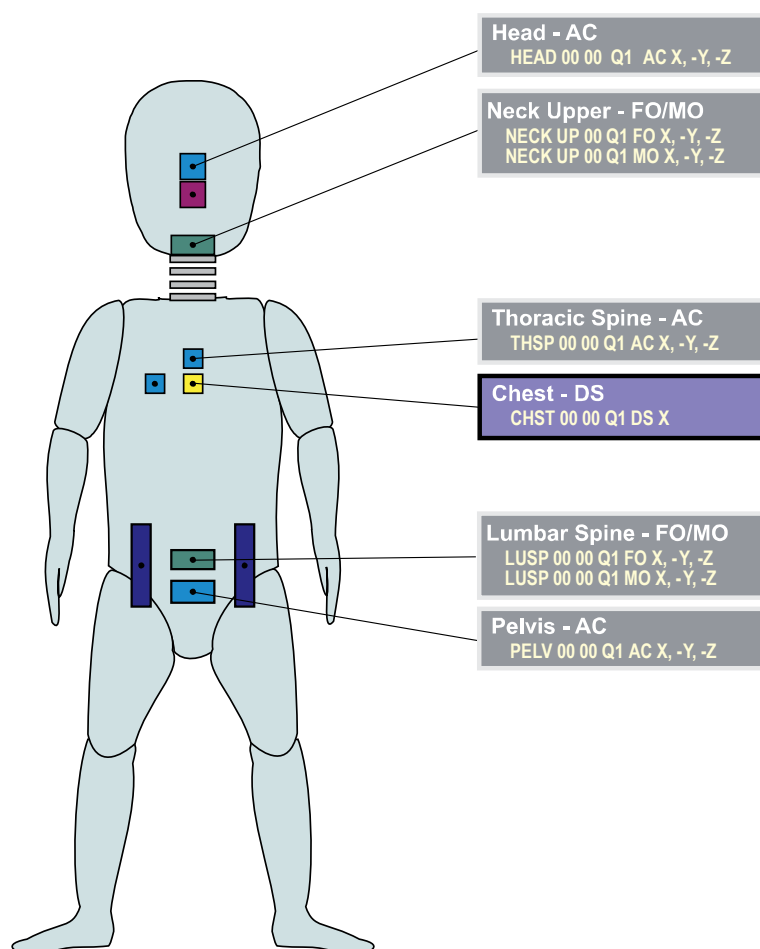


Q1 Q1 (1)

Valid since Version 1.6.2p1



ISO/TS 13499 – RED C : 2012(E)  
Q1, Advanced 1-year old Dummy  
Standard Instrumentation  
2015-11-25



#### Frontal Impact

Note that sensor orientation is different for side impact configurations.  
ISO Codes used must reflect the chosen orientation.\*  
Left-hand side impact: CHST LE 00 Q1 DS Y.\*  
Right-hand side impact: CHST RI 00 Q1 DS Y.

ISO-Q1\_20151125

Page 1 of 2

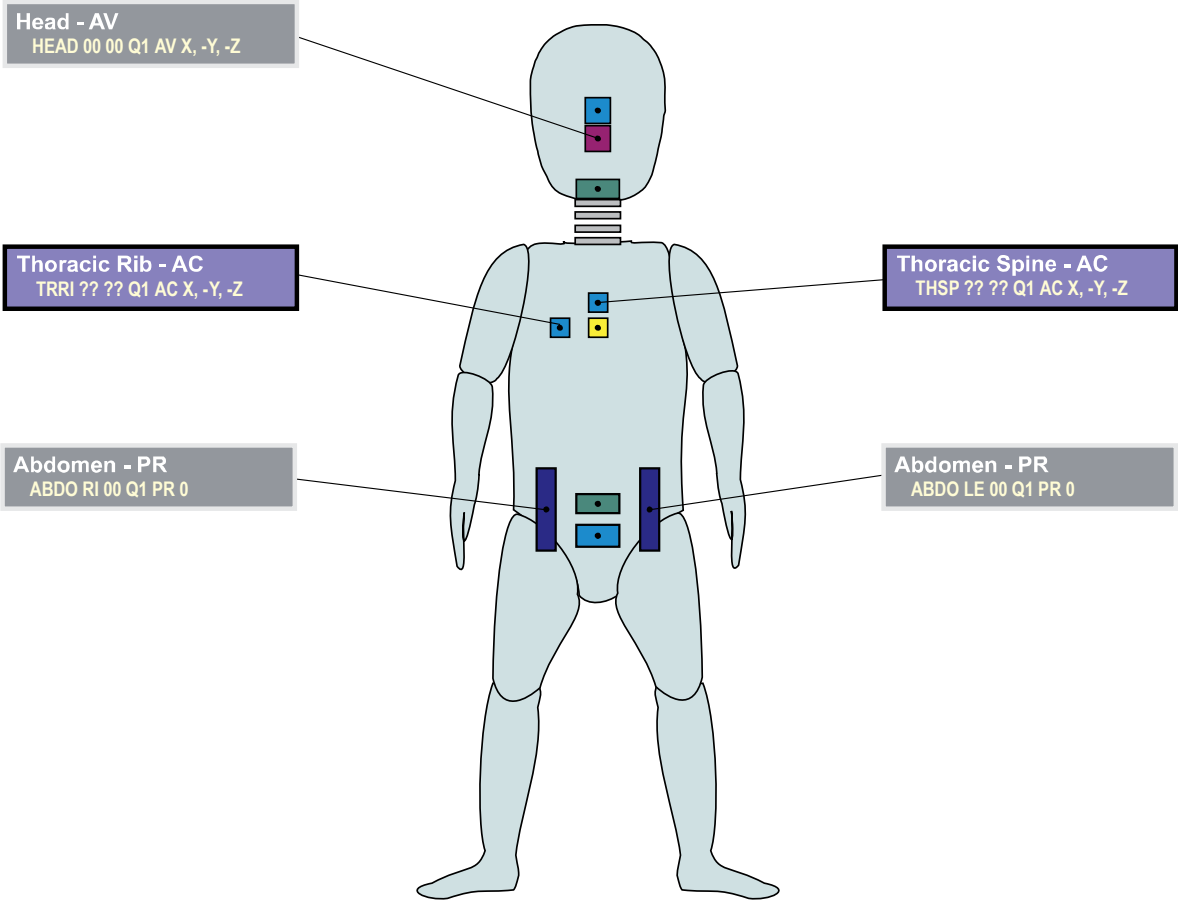
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force\*  
Maintained by Paul Wellicome, HORIBA MIRA Ltd.

ISO\_Q1\_1\_162p1\_20151125.EMF

-> Q1 <- 1 of 2



ISO/TS 13499 – RED C : 2012(E)  
Q1, Advanced 1-year old Dummy  
Additional Instrumentation  
2015-11-25



Note that sensor locations are not fixed: transducers are taped in position as required.  
ISO Codes used must reflect the chosen position.  
FL1 should reflect the side, LE or RI, for these channels, if used.

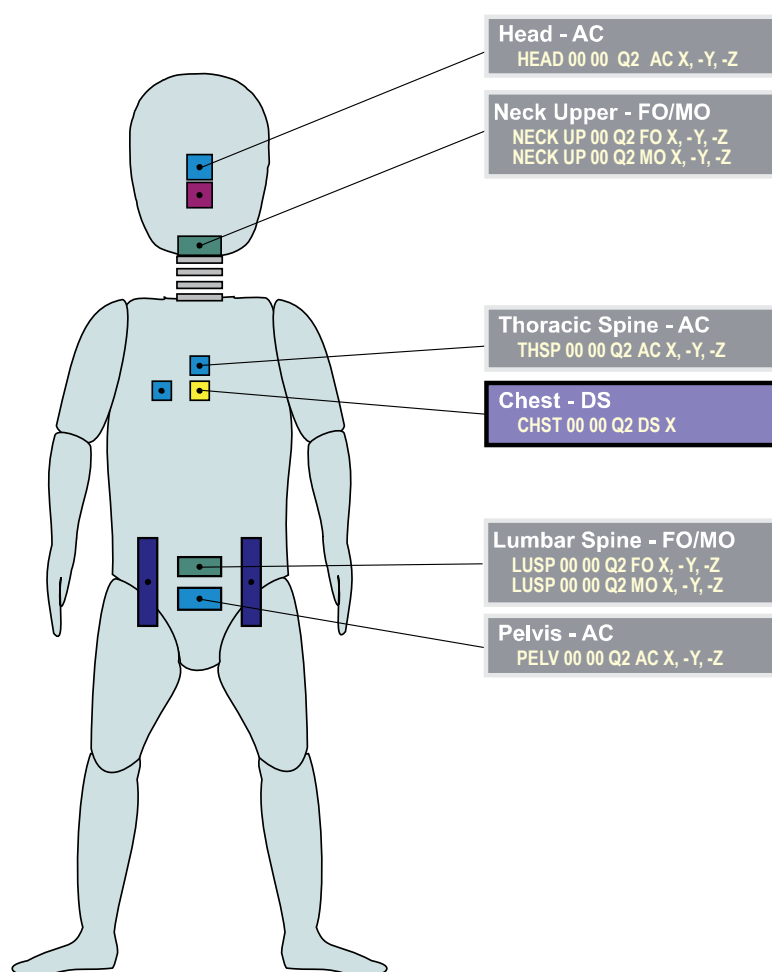


Q2 Q1 1/2 (1)

Valid since Version 1.6.2p1



ISO/TS 13499 – RED C : 2012(E)  
Q2, Advanced 1.5-year old child dummy (Q1.5)  
Standard Instrumentation  
2015-11-25



#### Frontal Impact



Note that sensor orientation is different for side impact configurations.  
ISO Codes used must reflect the chosen orientation.  
Left-hand side impact: CHST LE 00 Q2 DS Y.  
Right-hand side impact: CHST RI 00 Q2 DS Y.

ISO-Q2\_20151125

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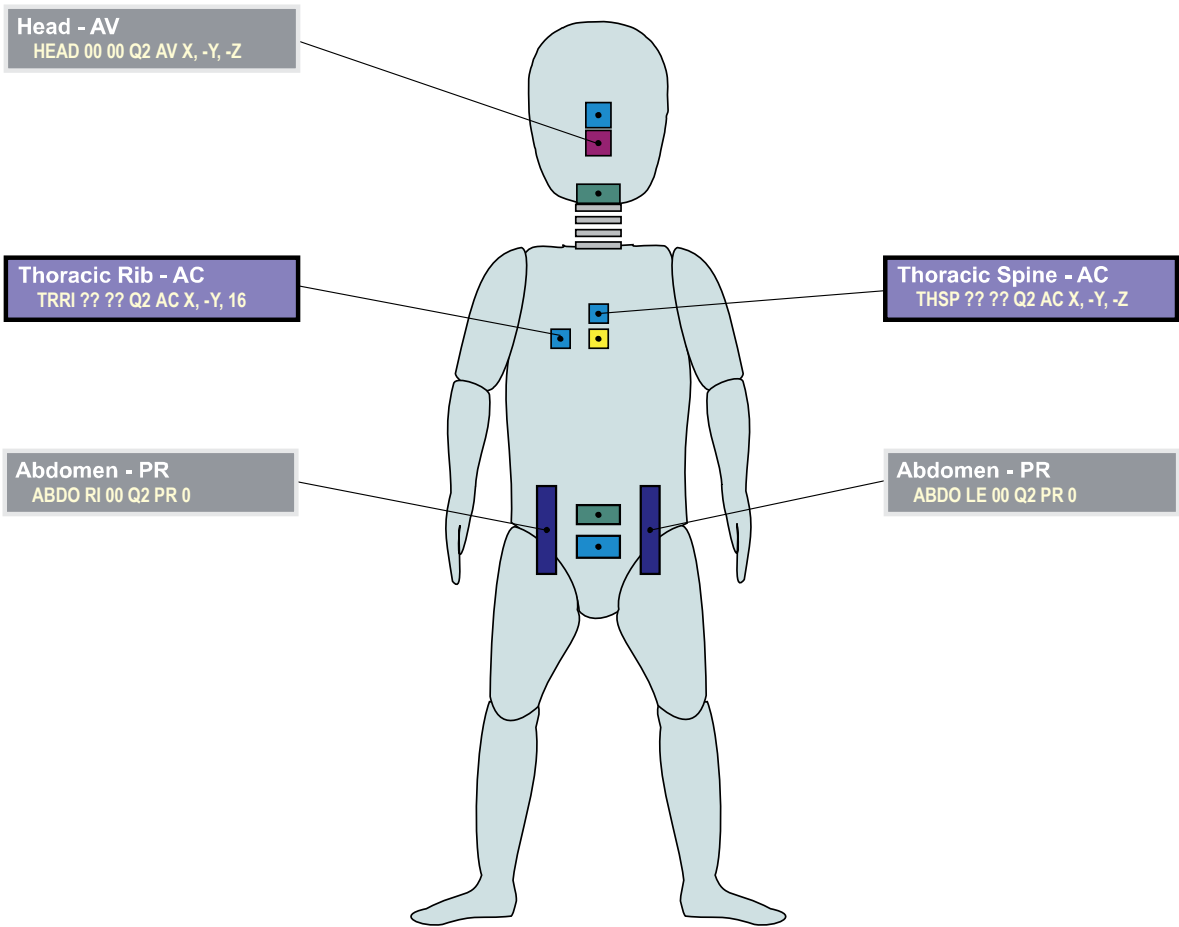
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, HORIBA MIRA Ltd.


ISO\_Q2\_1\_162p1\_20151125.EMF

-> Q2 <- 1 of 2



ISO/TS 13499 – RED C : 2012(E)  
Q2, Advanced 1.5-year old child dummy (Q1.5)  
Additional Instrumentation  
2015-11-25



 Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q3

Q3 (1)

Valid since Version

1.6.2p1

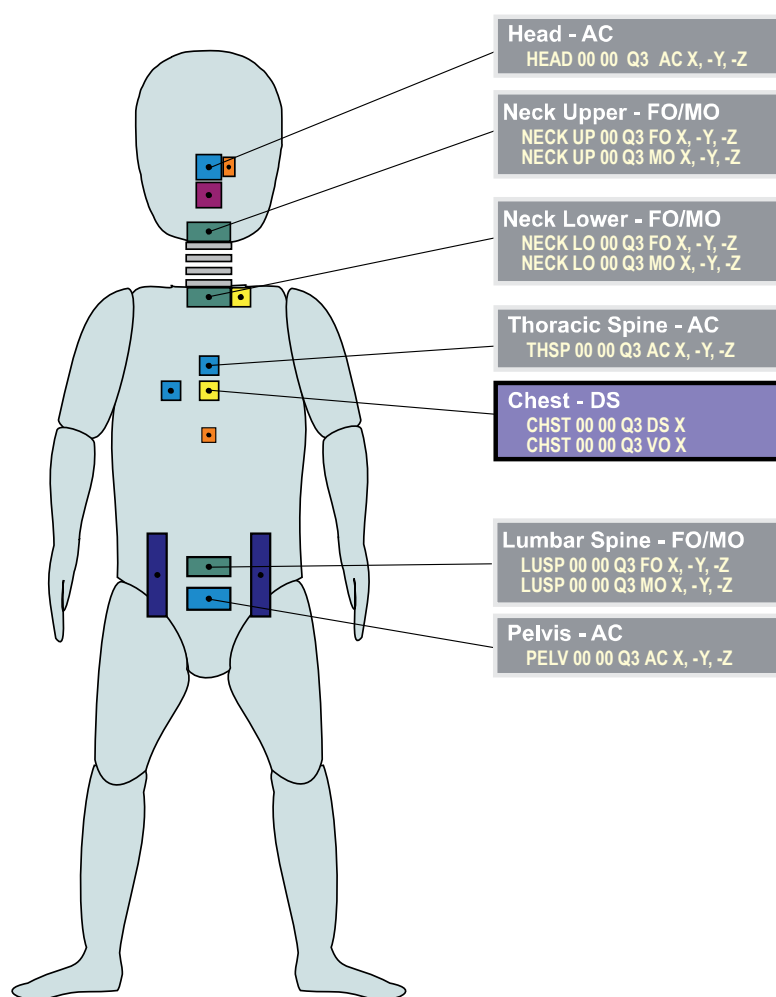


ISO/TS 13499 – RED C : 2012(E)

Q3, Advanced 3-year old child dummy: frontal impact (Q3)

Standard Instrumentation

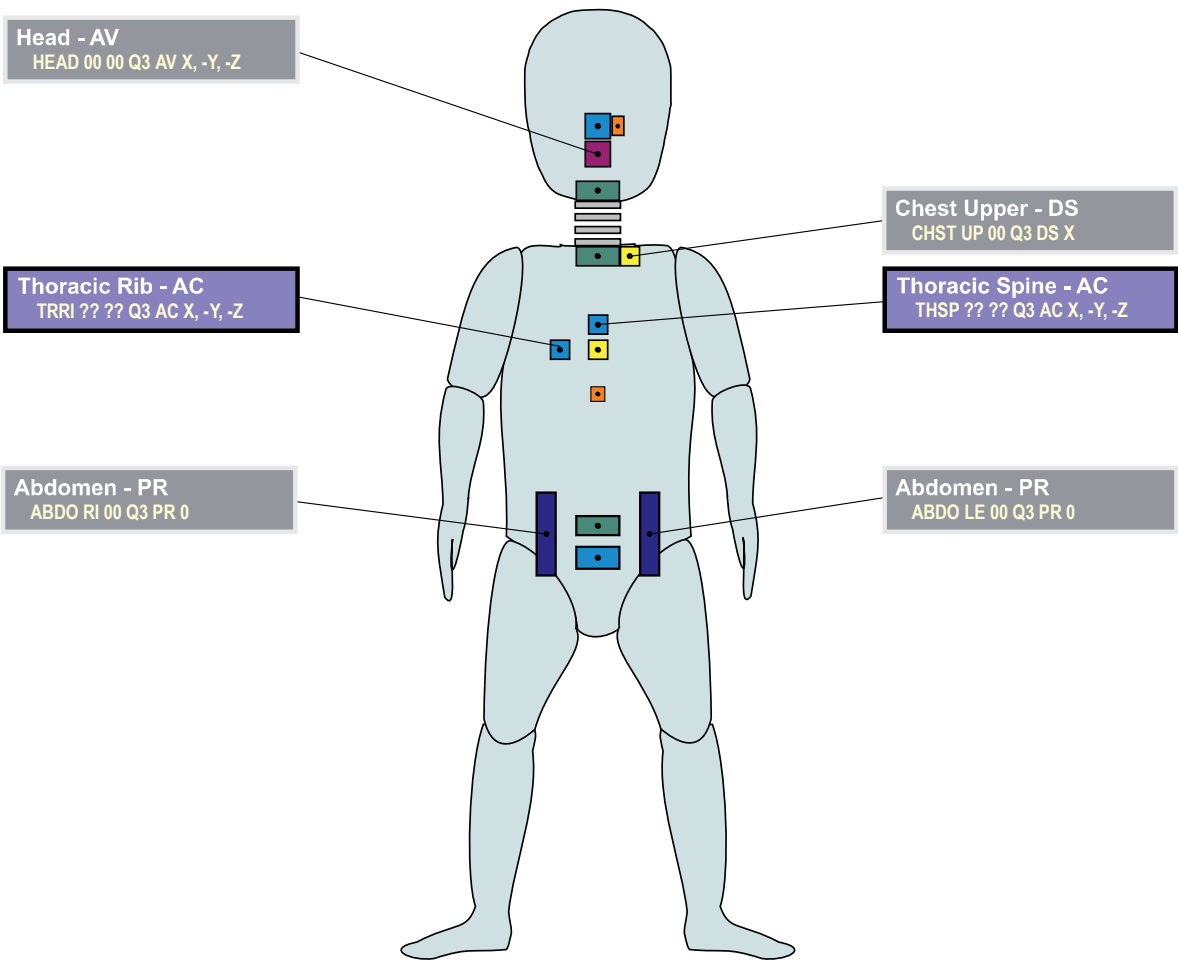
2015-11-25




Note that the IR-TRACC device fitted to this dummy records a voltage.  
It is more normal to exchange the displacement channel.



ISO/TS 13499 – RED C : 2012(E)  
Q3, Advanced 3-year old child dummy: frontal impact (Q3)  
Additional Instrumentation  
2015-11-25



 Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q3

Q3 (3)

Valid since Version

1.6.2p1

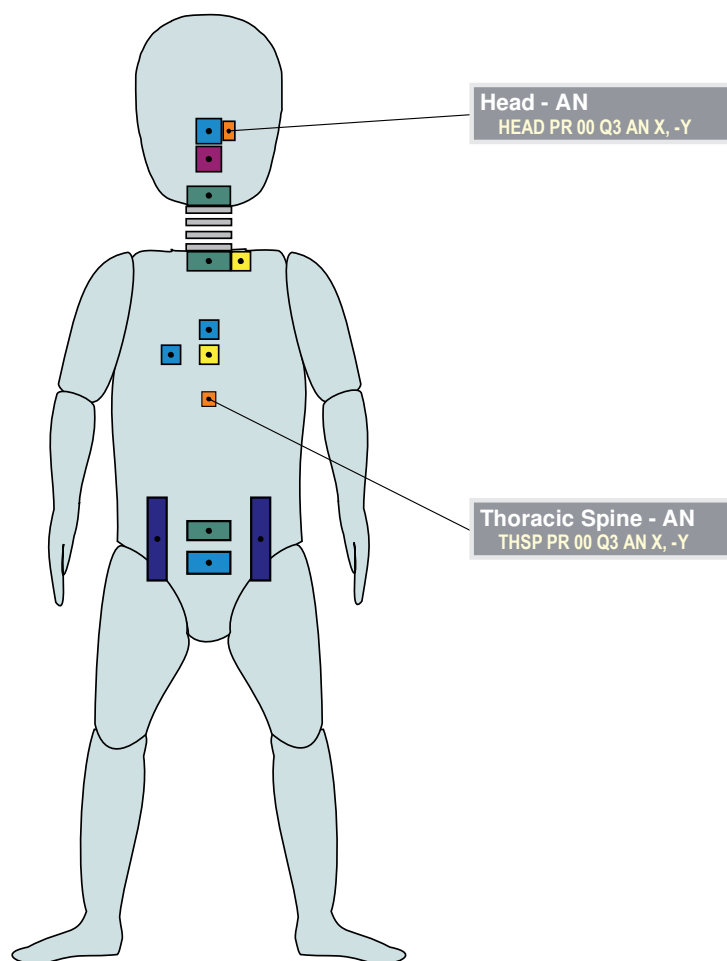


ISO/TS 13499 – RED C : 2012(E)

Q3, Advanced 3-year old child dummy: frontal impact (Q3)

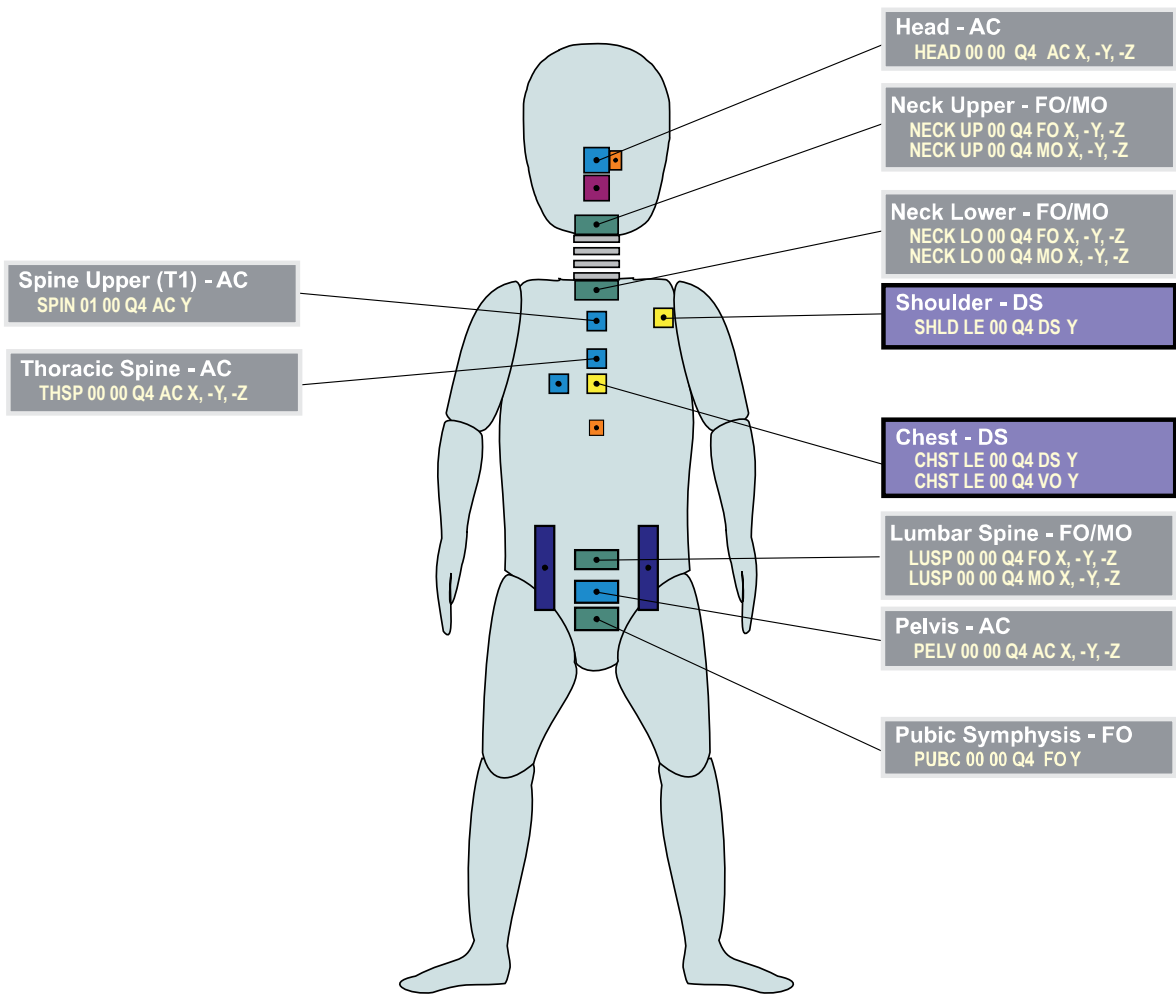
Static measurements, other channels

2015-11-25





ISO/TS 13499 – RED C : 2012(E)  
Q4, Advanced 3-year old child dummy: side impact (Q3s)  
Standard Instrumentation  
2015-11-25



**Left Side Impact, Front-View**

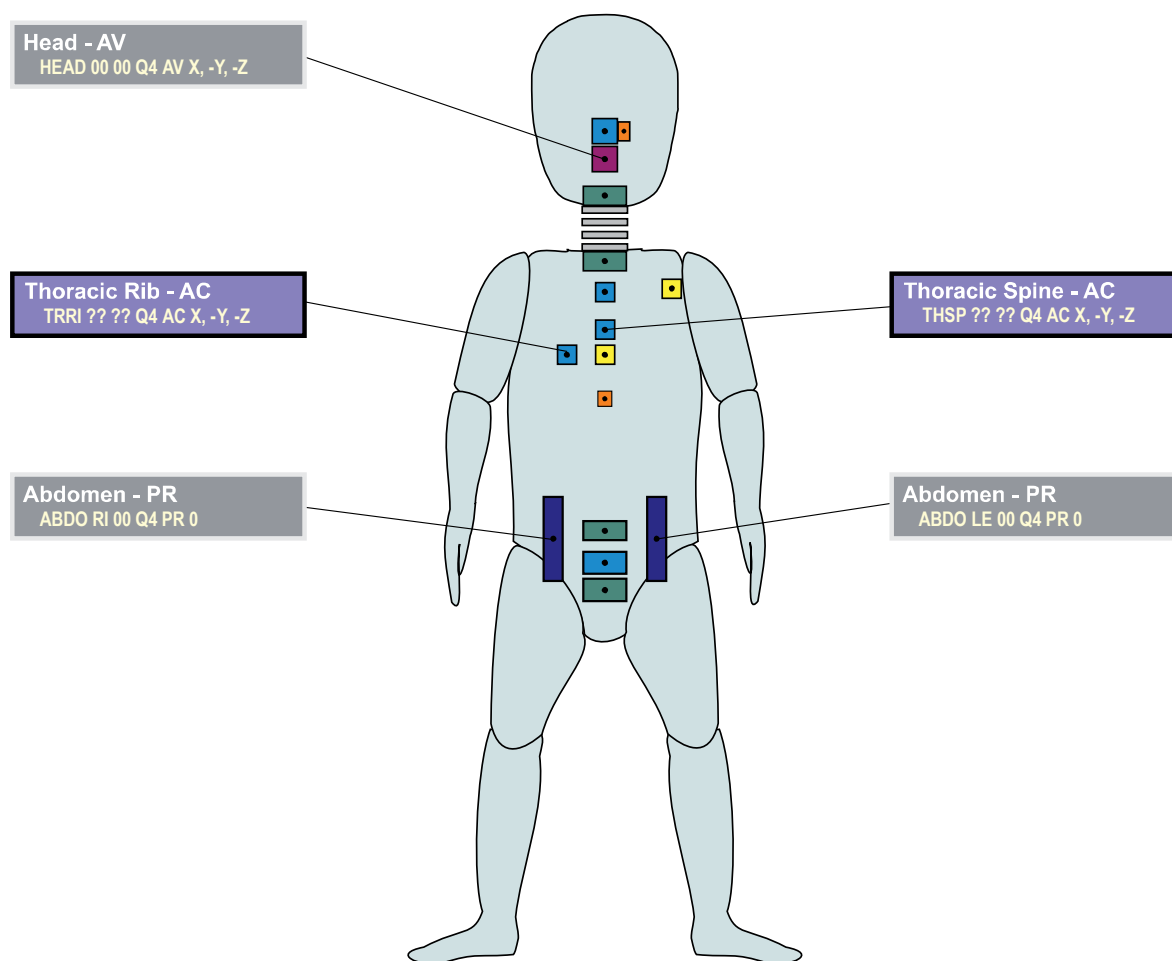
Note that sensor locations and ISO Codes are different for right side impact.  
Note that the IR-TRACC device fitted to this dummy records a voltage.  
It is more normal to exchange the displacement channel.

Q3s Q3s Side Impact (2)

Valid since Version 1.6.2p1



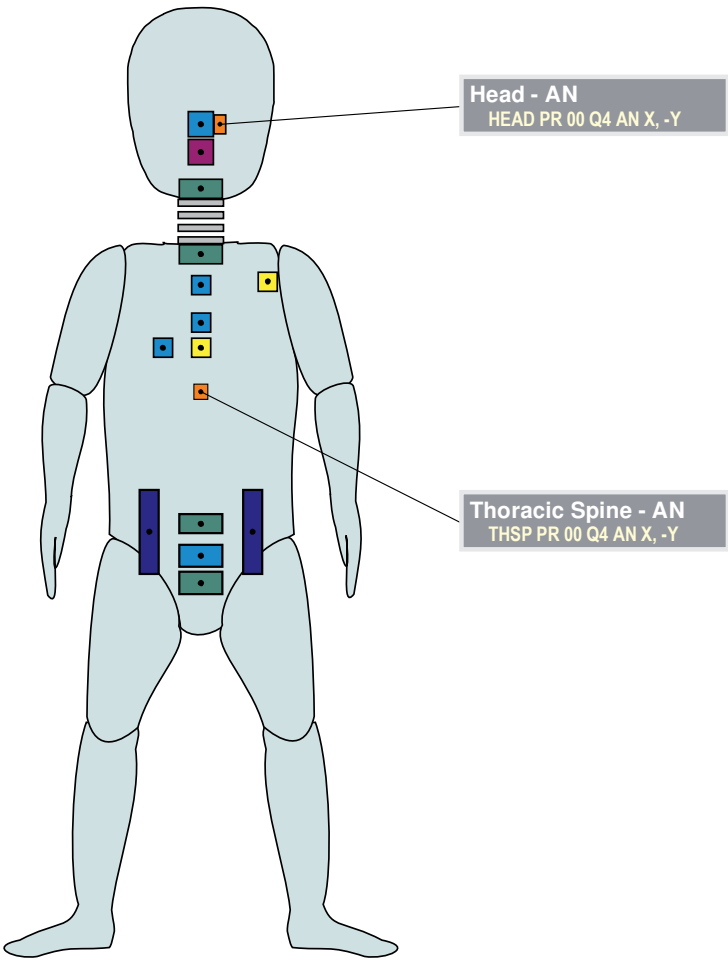
ISO/TS 13499 – RED C : 2012(E)  
Q4, Advanced 3-year old child dummy: side impact (Q3s)  
Additional Instrumentation  
2015-11-25



Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.



ISO/TS 13499 – RED C : 2012(E)  
Q4, Advanced 3-year old child dummy: side impact (Q3s)  
Static measurements, other channels  
2015-11-25





Q6

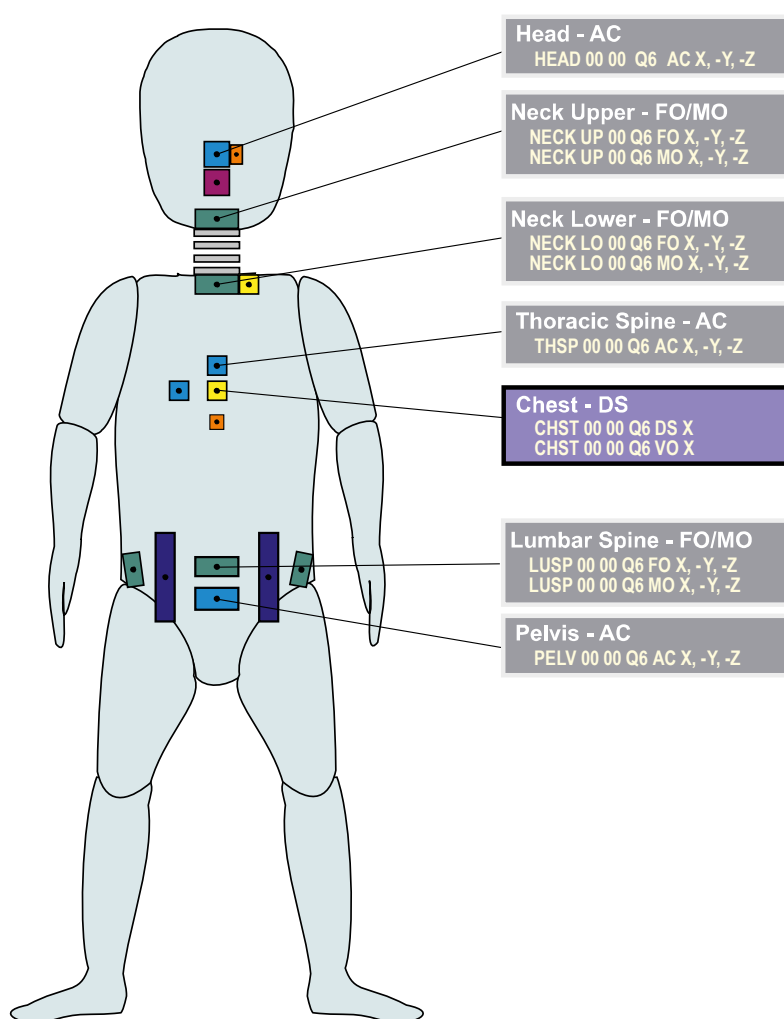
Q6 (1)

Valid since Version

1.6.2p1



ISO/TS 13499 – RED C : 2012(E)  
Q6, Advanced 6-year old child dummy  
Standard Instrumentation  
2017-04-05



#### Frontal Impact



Note that sensor orientation is different for side impact configurations.  
ISO Codes used must reflect the chosen orientation.

**Left-hand side impact :** CHST LE 00 Q6 DS Y and CHST LE 00 Q6 VO Y.

**Right-hand side impact :** CHST RI 00 Q6 DS Y and CHST RI 00 Q6 VO Y..

Note that the IR-TRACC device fitted to this dummy records a voltage.  
It is more normal to exchange the displacement channel.

ISO-Q6\_20170405

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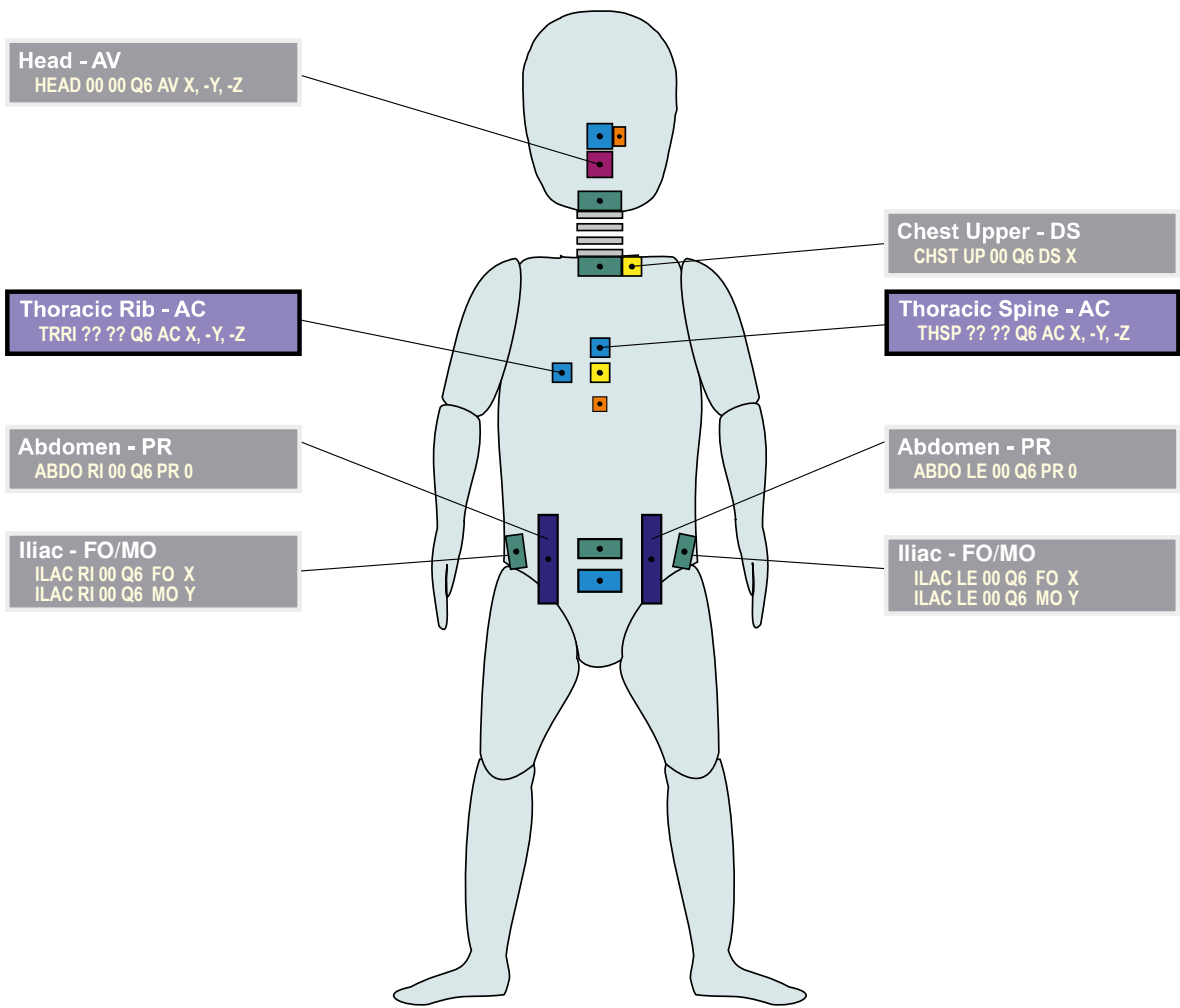
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, HORIBA MIRA Ltd.

ISO\_Q6\_1\_162p2\_20170405.EMF

-> Q6 <- 1 of 3



ISO/TS 13499 – RED C : 2012(E)  
Q6, Advanced 6-year old child dummy  
Additional Instrumentation  
2017-04-05



Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q6

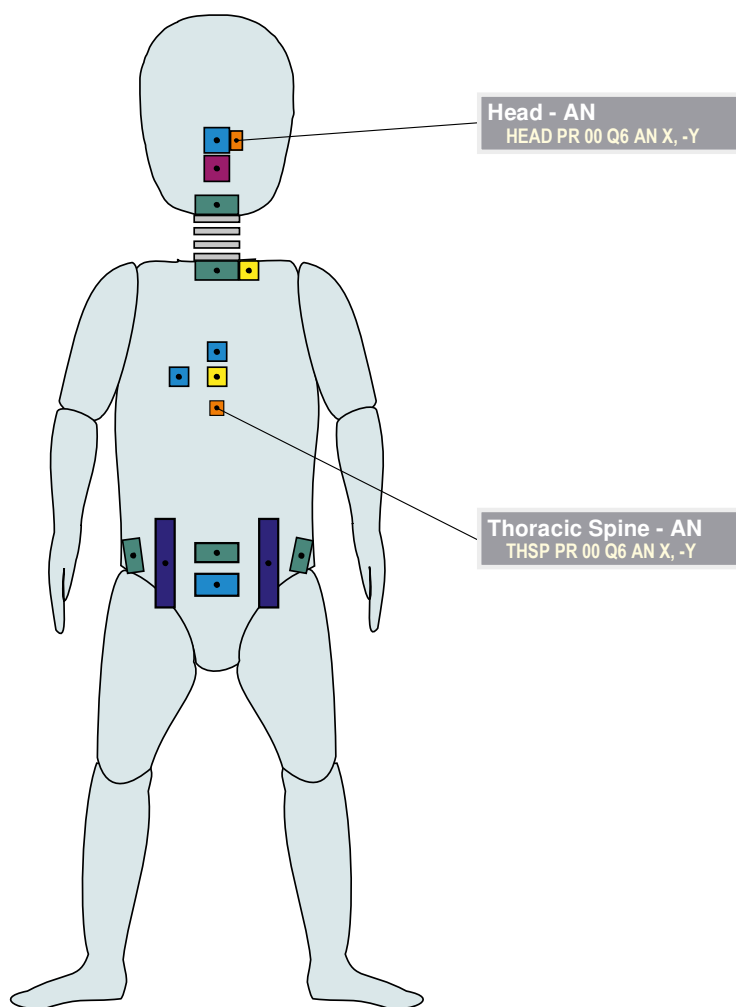
Q6 (3)

Valid since Version

1.6.2p1

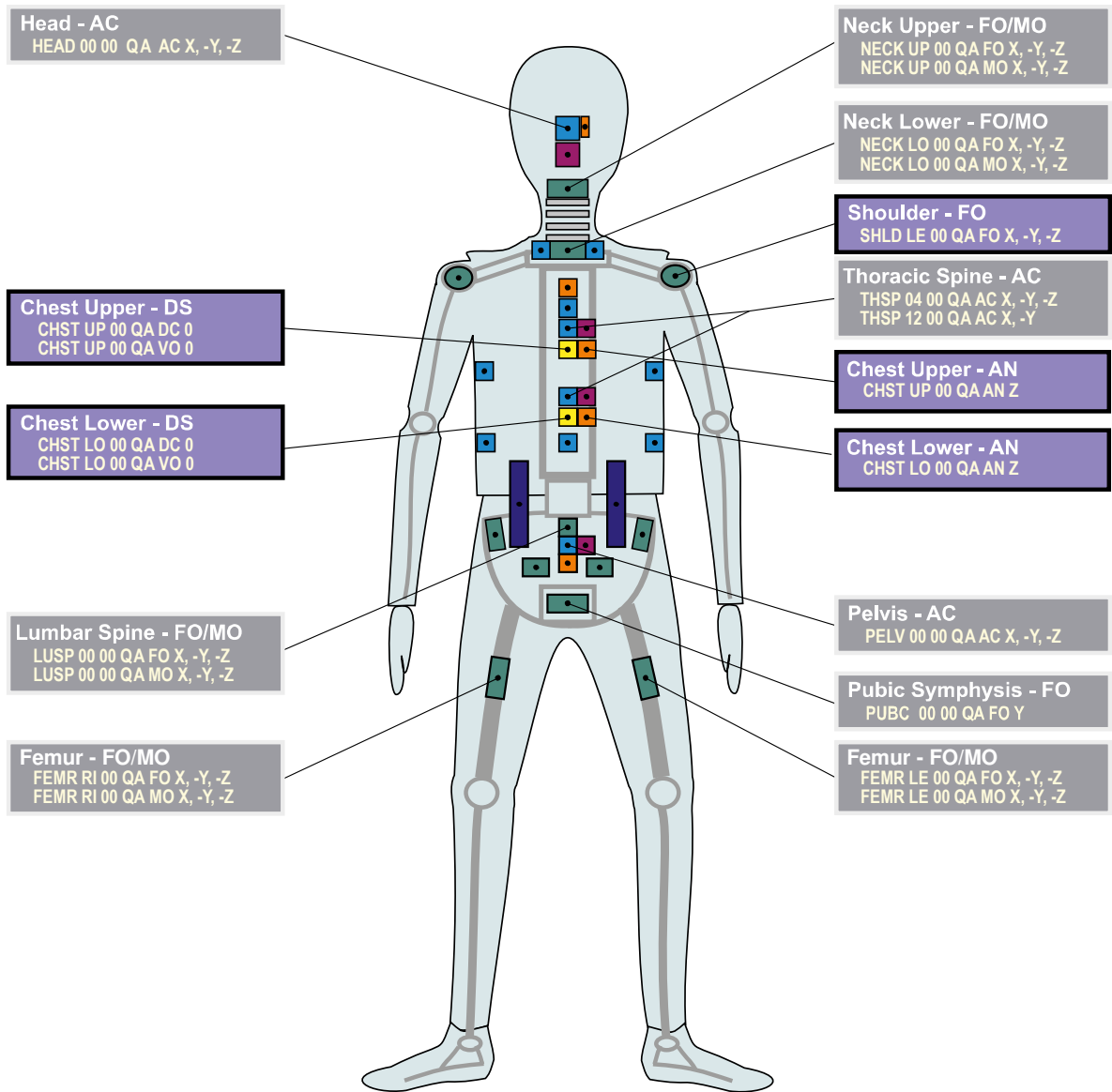


ISO/TS 13499 – RED C : 2012(E)  
Q6, Advanced 6-year old child dummy  
Static measurements, other channels  
2017-04-05





ISO/TS 13499 – RED C : 2010(E)  
QA, Advanced 10-year old child dummy  
Standard Instrumentation  
2017-04-05



Frontal Impact

Note that sensor configuration is different for side impact. •  
ISO Codes used must reflect the chosen orientation. •

**Left-hand side impact:** SHLD LE 00 QA FO X, -Y, -Z, CHST LE UP QA DC 0, CHST LE UP QA VO 0, CHST LE LO QA DC 0, •  
CHST LE LO QA VO 0, CHST LE UP QAAN Z and CHST LE LO QAAN Z. •  
**Right-hand side impact:** SHLD RI 00 QA FO X, -Y, -Z, CHST RI UP QA DC 0, CHST RI UP QA VO 0, CHST RI LO QA DC 0, •  
CHST RI LO QA VO 0, CHST RI UP QAAN Z and CHST RI LO QAAN Z. •

Note that the IR-TRACC device fitted to this dummy records a voltage.  
It is more normal to exchange the distance channel, IR-TRACC total length.

Q10

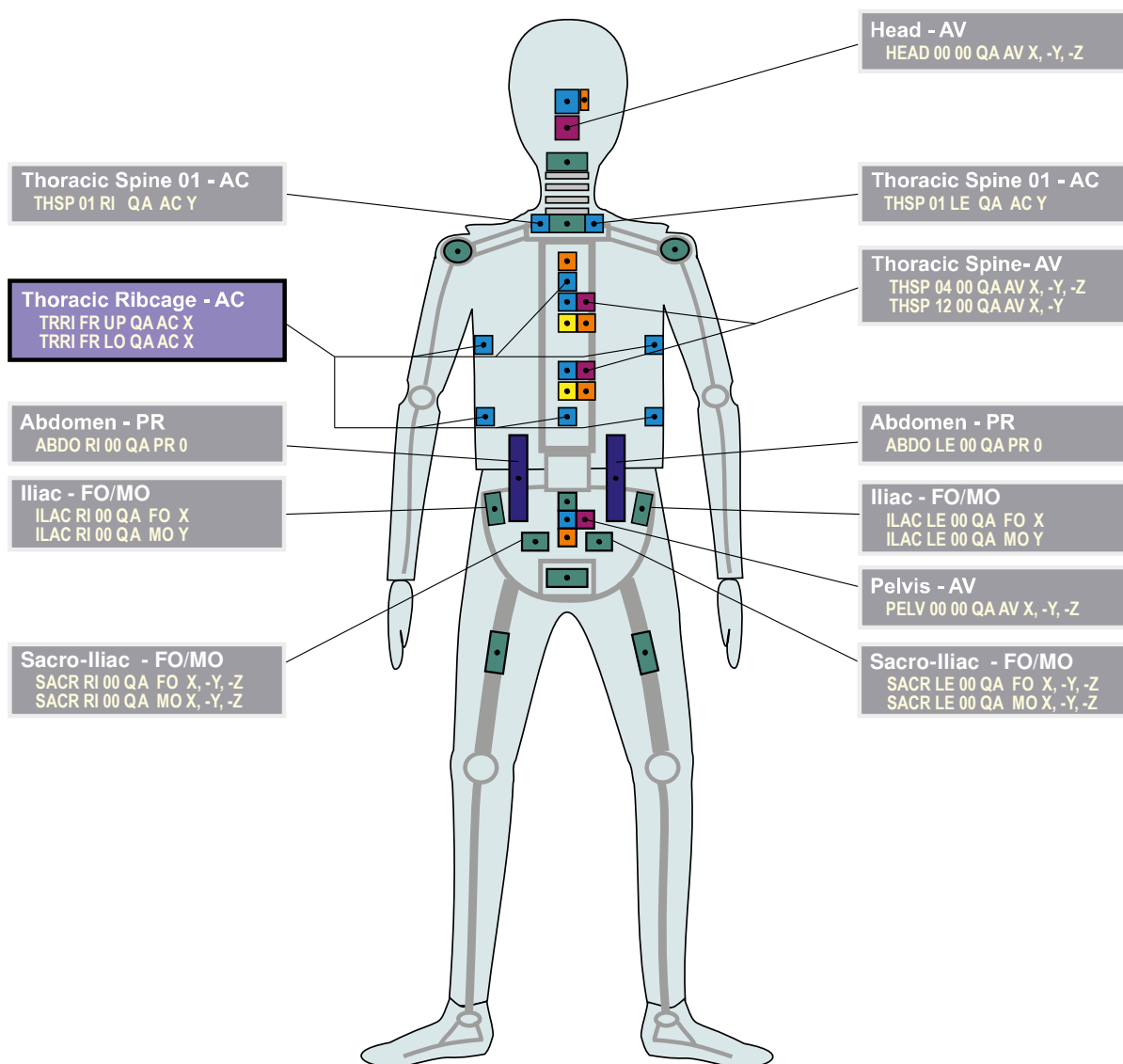
Q10 (2)

Valid since Version

1.6.2p1



**ISO/TS 13499 – RED C : 2010(E)**  
**QA, Advanced 10-year old child dummy**  
 Additional Instrumentation  
 2017-04-05



#### Frontal Impact



Note that sensor orientation is different for side impact configurations. •  
 ISO Codes used must reflect the chosen orientation. •

**Left-hand side impact:** TRRI LE UP QA AC Y and TRRI LE LO QA AC Y. •

**Right-hand side impact:** TRRI RI UP QA AC Y and TRRI RI LO QA AC Y.

ISO-QA\_20170405

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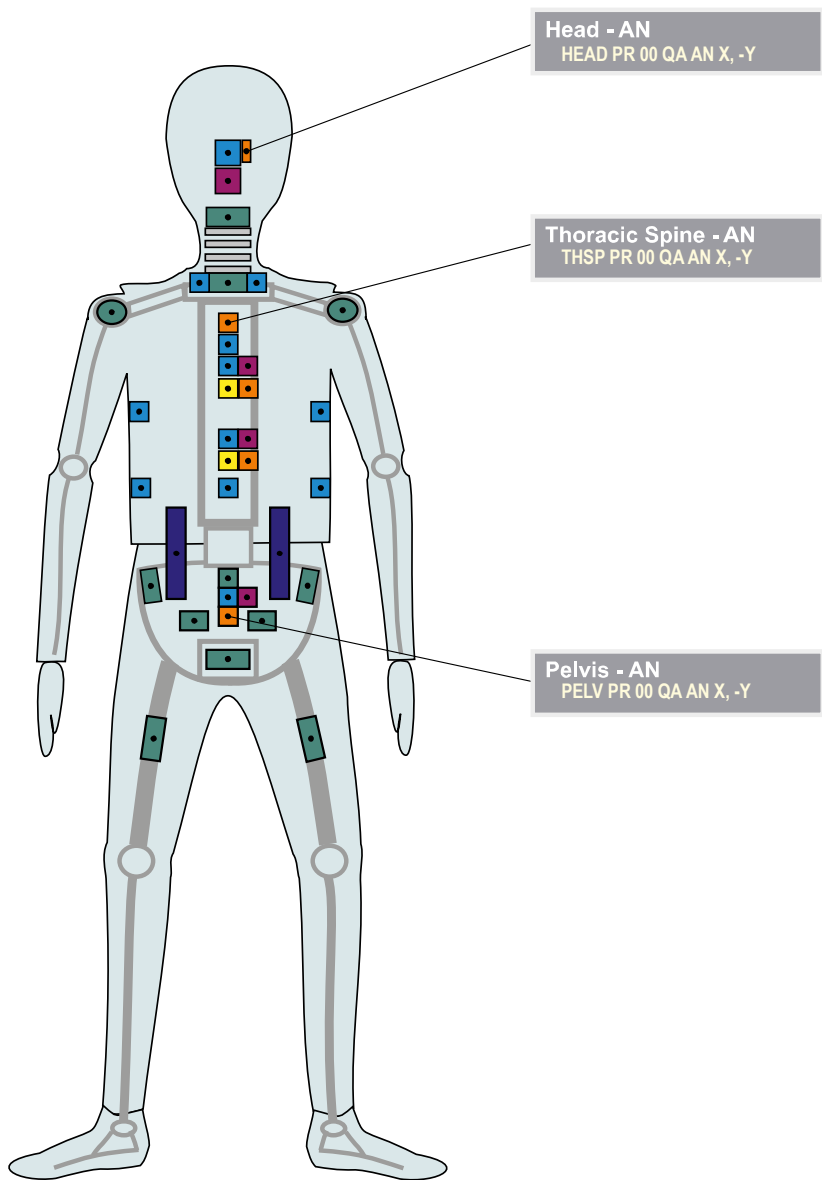
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force •  
 Maintained by Paul Wellicome, HORIBA MIRA Ltd.

ISO\_QA\_2\_162p2\_20170405.EMF

-> Q10 <- 2 of 3



ISO/TS 13499 – RED C : 2010(E)  
QA, Advanced 10-year old child dummy  
Static measurements, other channels  
2017-04-05



**HF Hybrid III 5% Female (1)**

Valid since Version

1.6.1

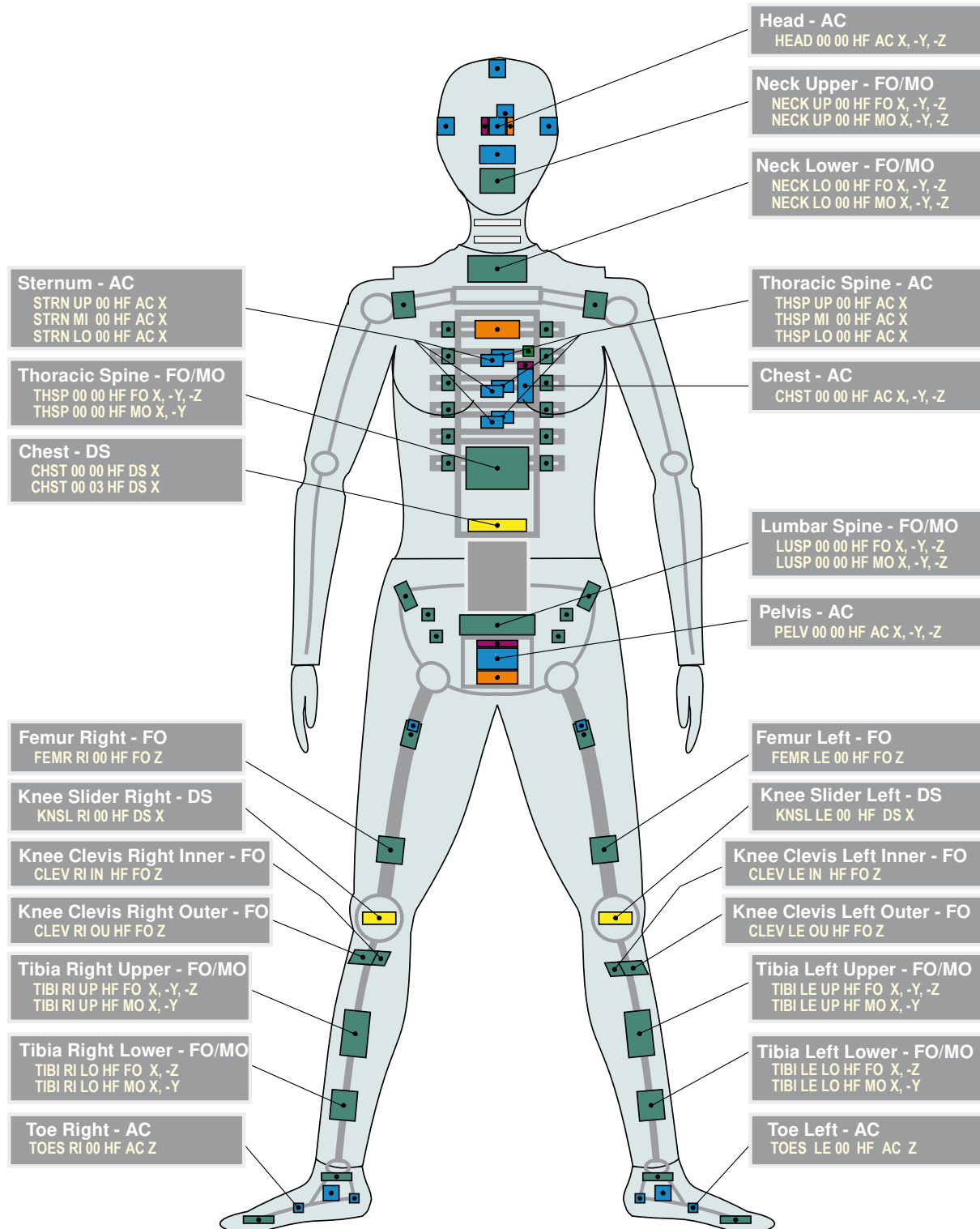


ISO/TS 13499 – RED C : 2012(E)

HF, Hybrid III 5% female

Standard Instrumentation

2013-04-10



ISO-HF\_20130410

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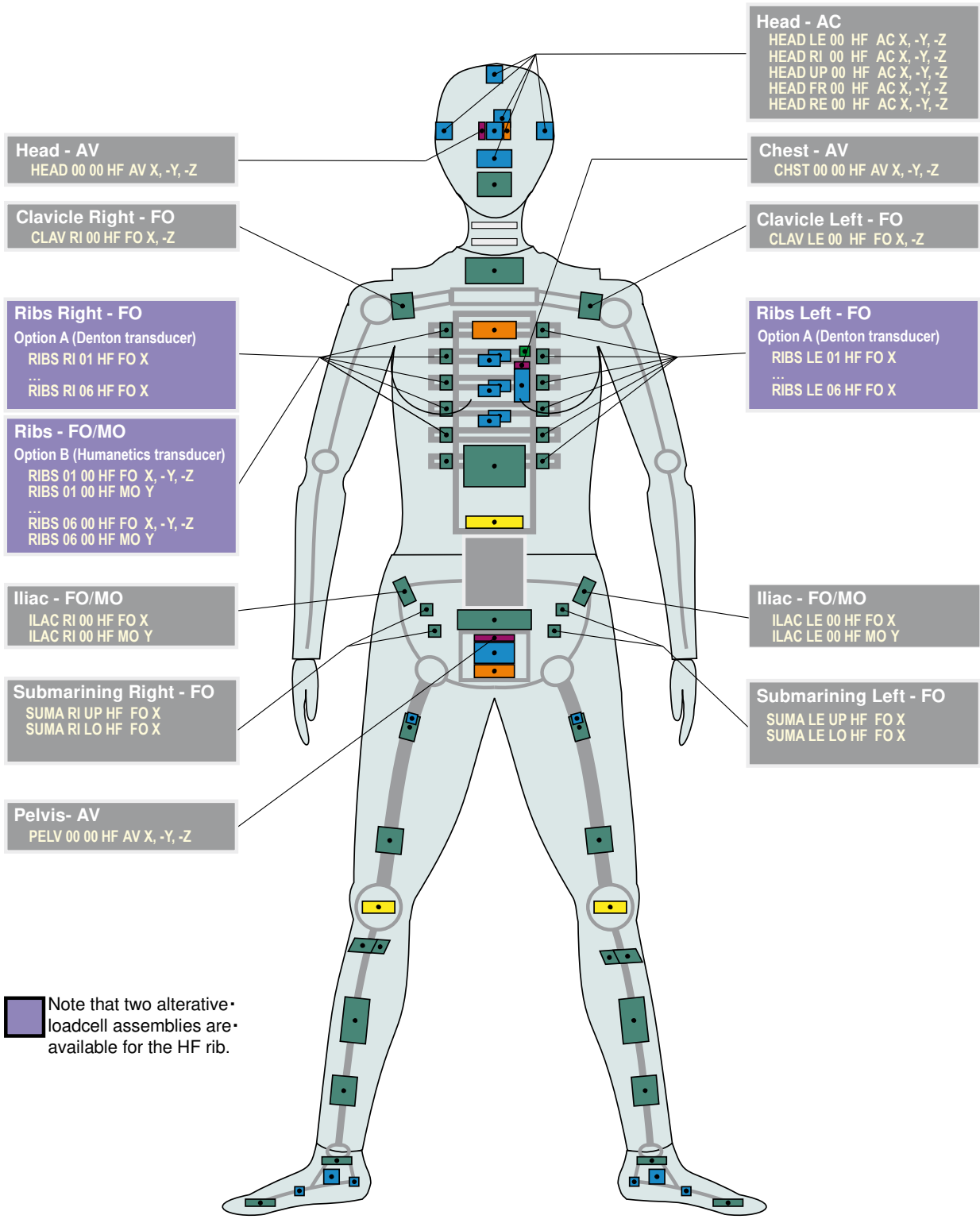
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force-  
Maintained by Paul Wellcome, MIRA Ltd.

ISO\_HF\_1\_161\_20130410.EMF

-&gt; HF &lt;- 1 of 5



ISO/TS 13499 – RED C : 2012(E)  
HF, Hybrid III 5% female  
Additional Instrumentation - Head, Torso and Pelvis  
2013-04-10





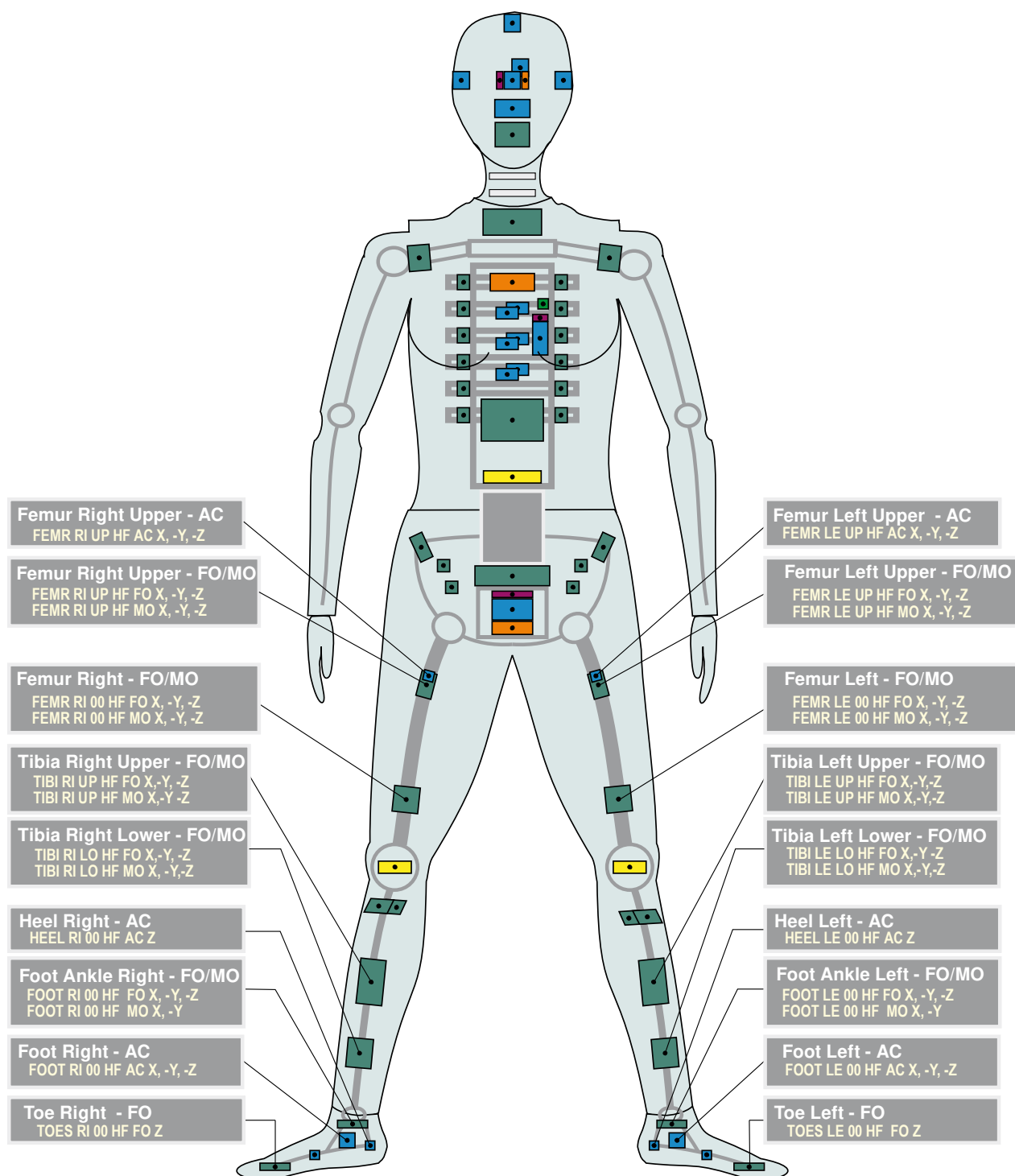
## HF Hybrid III 5% Female (3)

Valid since Version

1.6.1



ISO/TS 13499 – RED C : 2012(E)  
 HF, Hybrid III 5% female  
 Additional Instrumentation - Legs  
 2013-04-10



ISO-HF\_20130410

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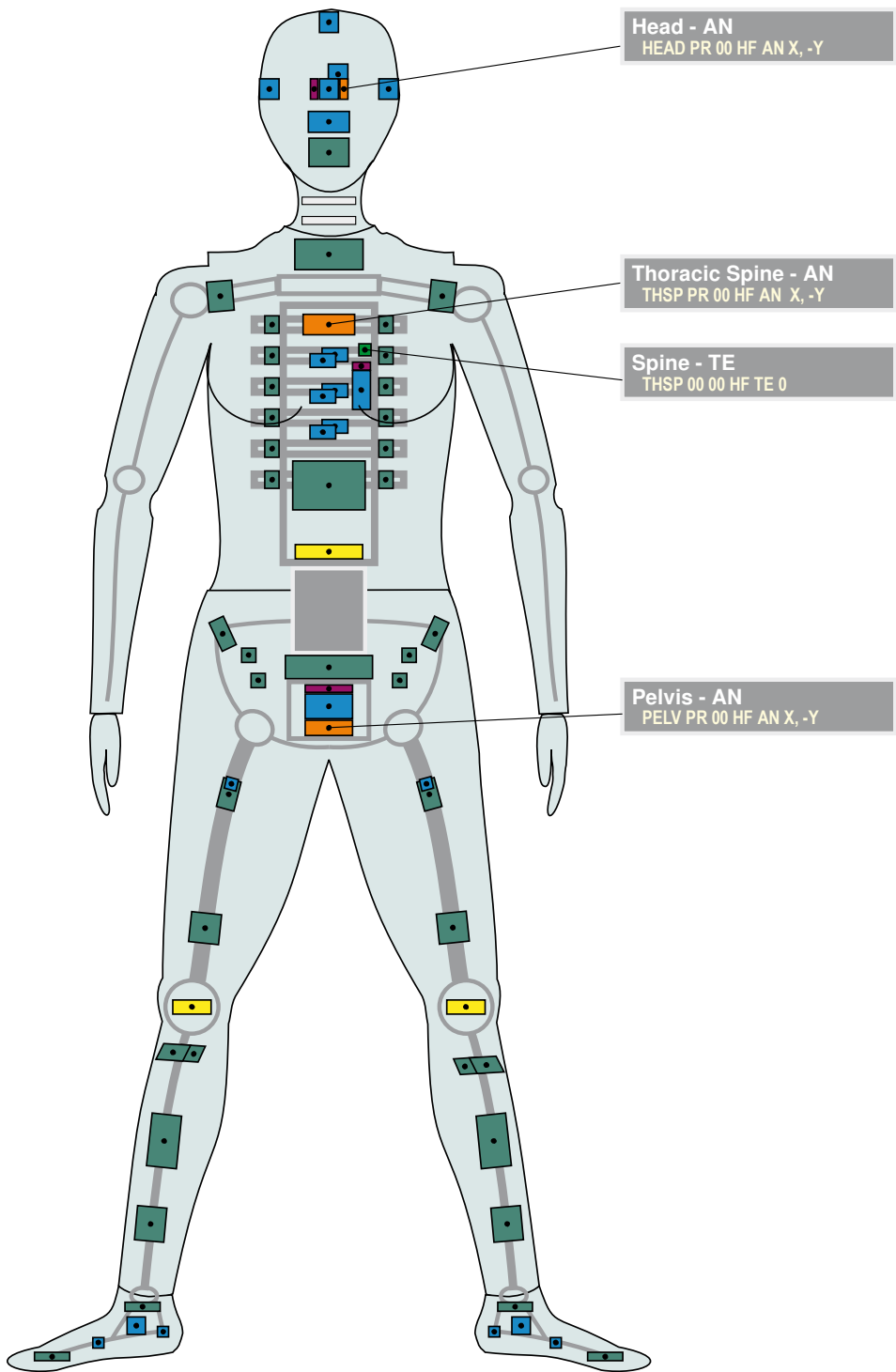
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, MIRA Ltd.

ISO\_HF\_3\_161\_20130410.EMF

-&gt; HF &lt;- 3 of 5



ISO/TS 13499 – RED C : 2012(E)  
HF, Hybrid III 5% female  
Static measurements, other channels  
2013-04-10

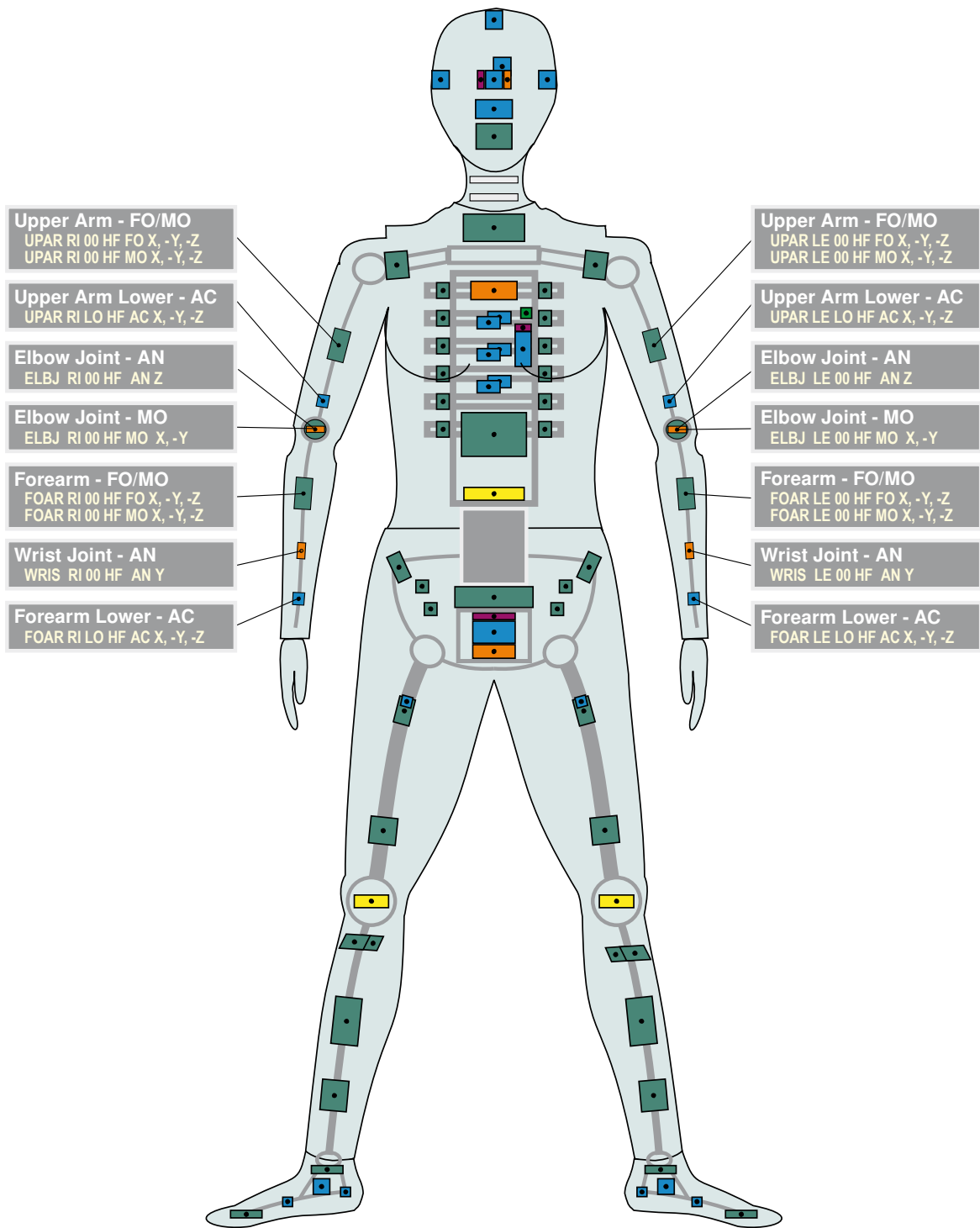


HF Hybrid III 5% Female (5)

Valid since Version 1.6.1



ISO/TS 13499 – RED C : 2012(E)  
HF, Hybrid III 5% female  
Additional Instrumentation: Instrumented arm  
2013-04-10

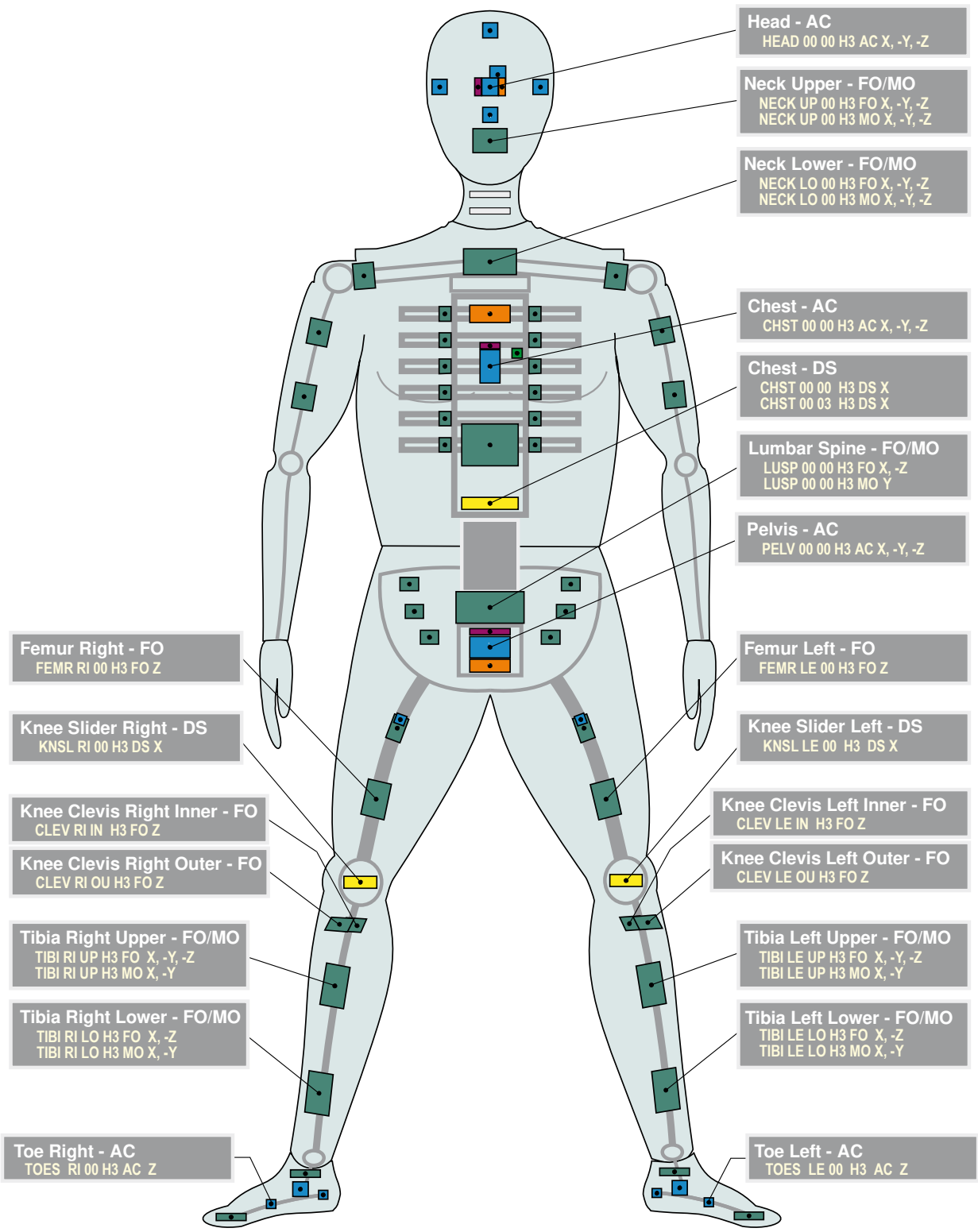


ISO-HF\_20130410

ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, MIRA Ltd.



ISO/TS 13499 – RED C : 2012  
H3, Hybrid III 50% male  
Standard Instrumentation  
2013-04-10



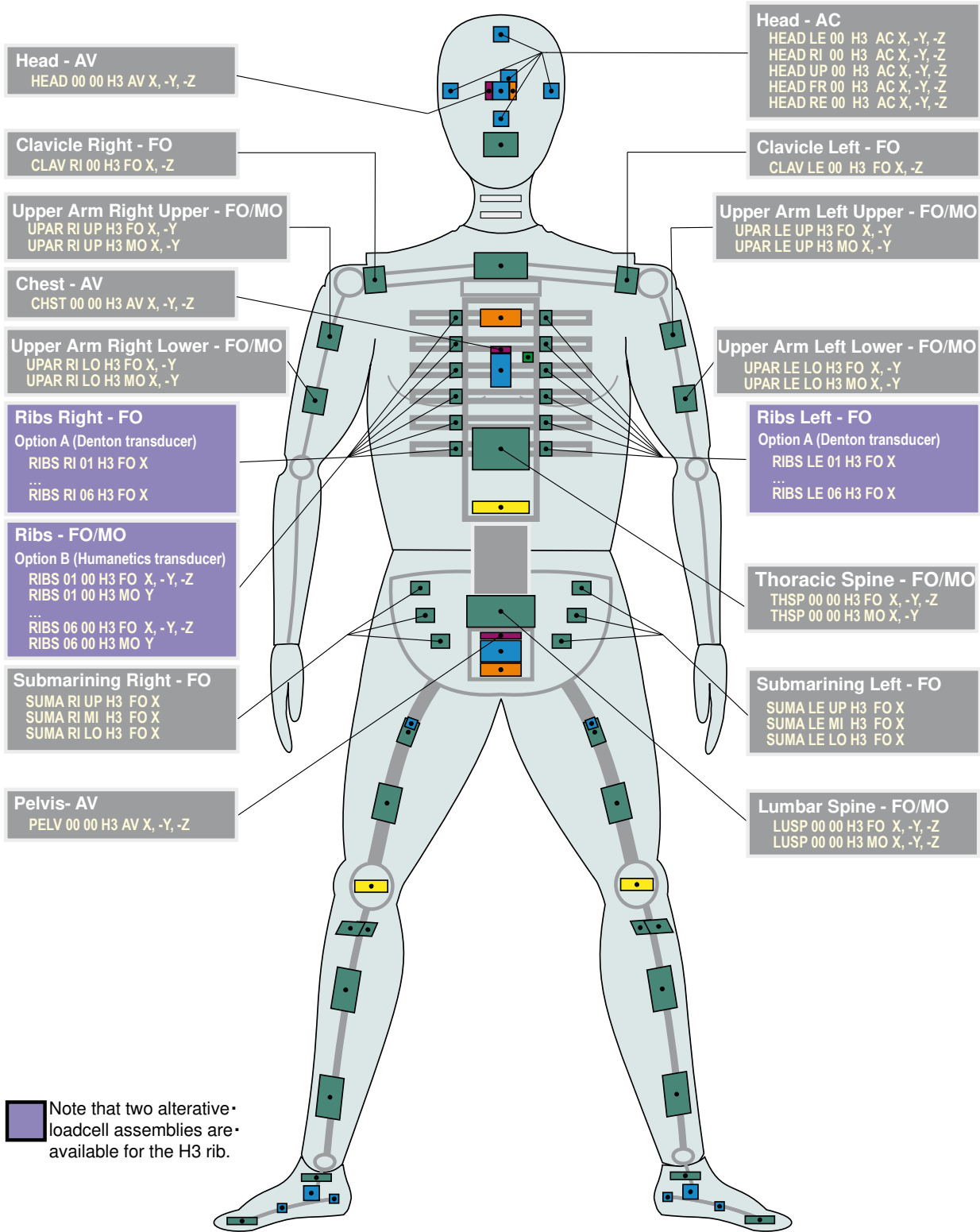
ISO-H3\_20130410

H3 Hybrid III 50% Male (2)

Valid since Version 1.6.1



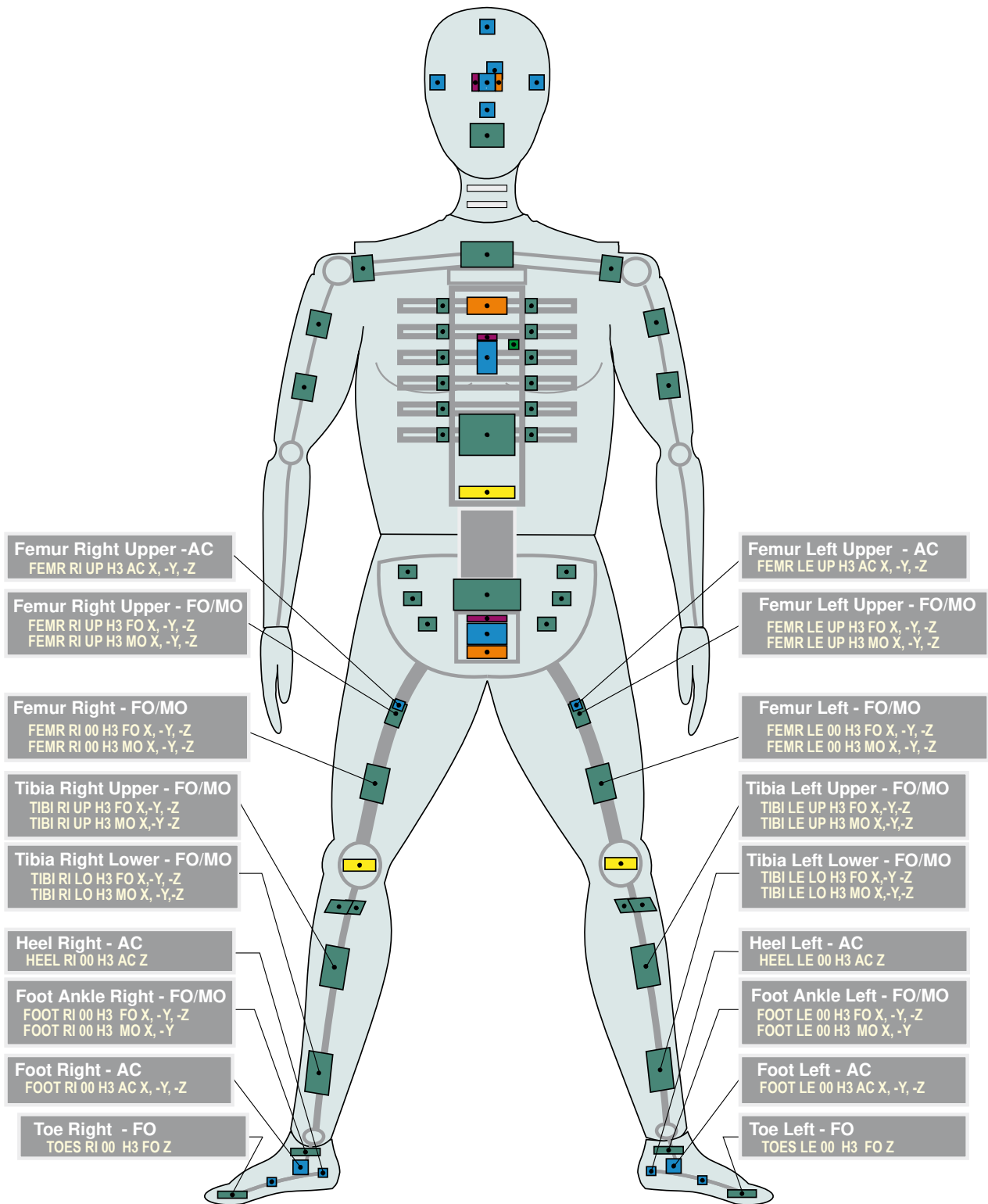
ISO/TS 13499 – RED C : 2012  
H3, Hybrid III 50% male  
Additional Instrumentation - Head, Torso and Pelvis  
2013-04-10



ISO-H3\_20130410



ISO/TS 13499 – RED C : 2012  
H3, Hybrid III 50% male  
Additional Instrumentation - Legs  
2013-04-10



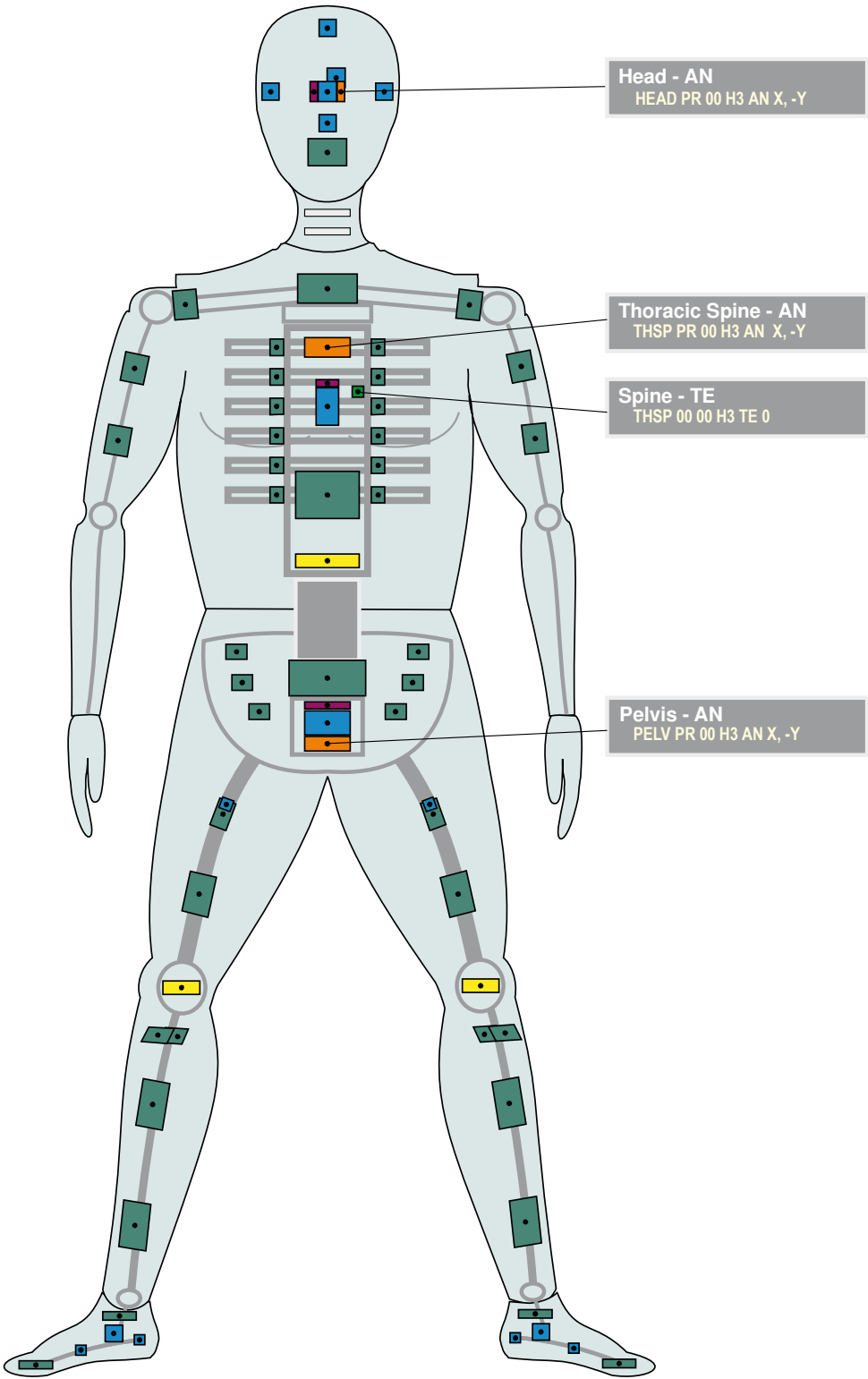
ISO-H3\_20130410

H3 Hybrid III 50% Male (4)

Valid since Version 1.6.1



ISO/TS 13499 – RED C : 2012  
H3, Hybrid III 50% male  
Static measurements, other channels  
2013-04-10

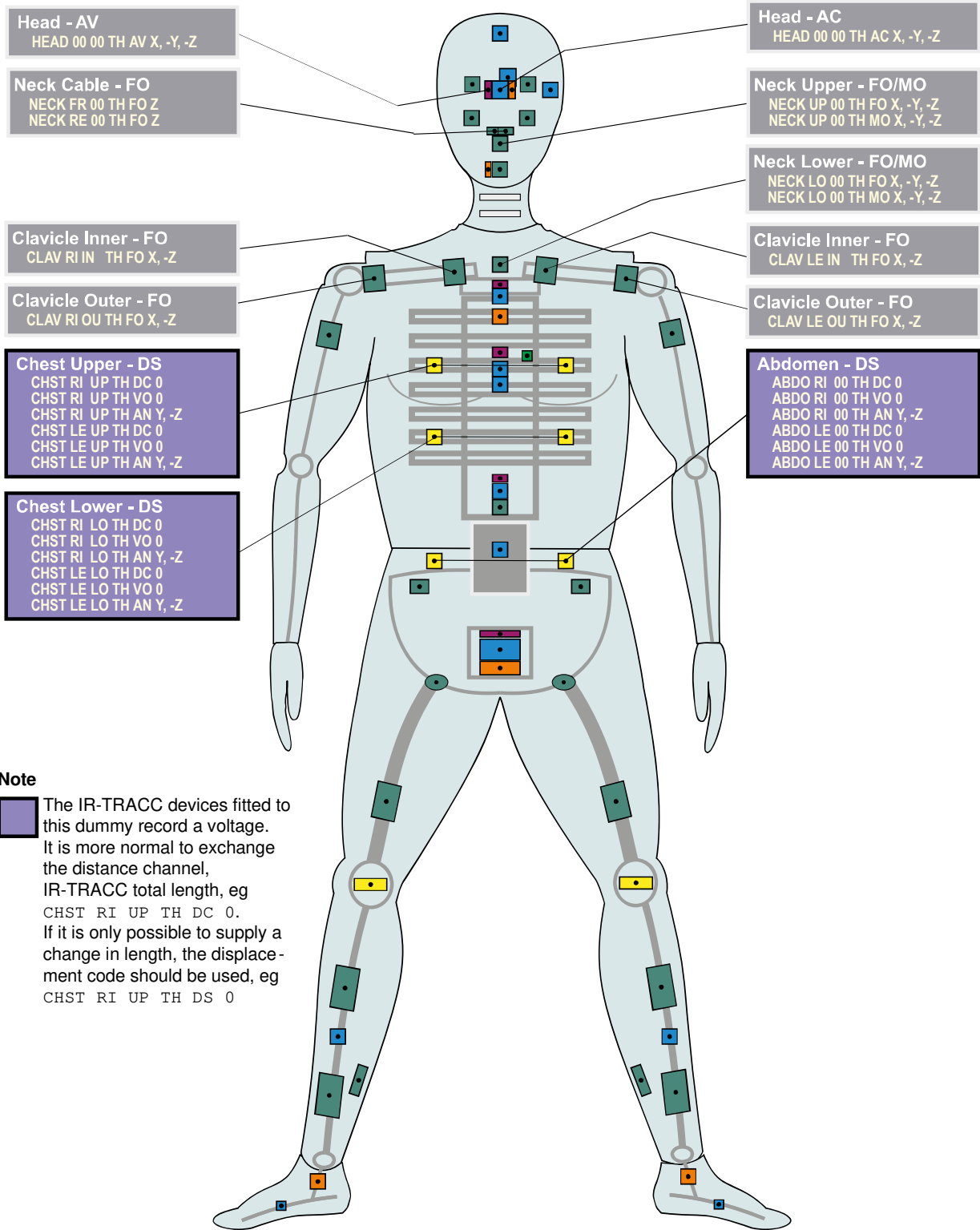


ISO-H3\_20130410

ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, MIRA Ltd.



ISO/TS 13499 – RED C : 2017  
TH, THOR 50% male  
Standard Instrumentation: Upper Body  
2017-12-13



ISO-TH\_20171213

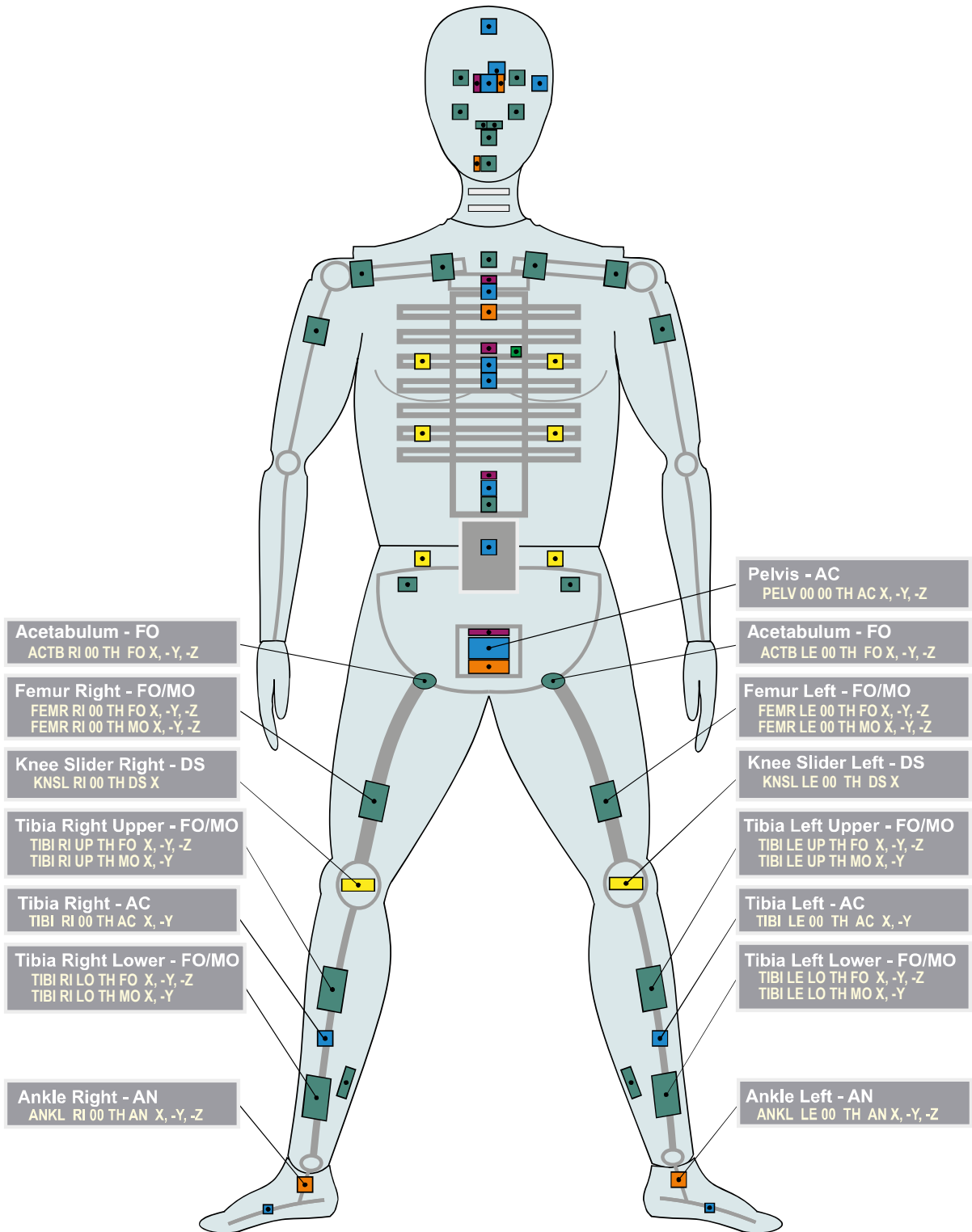


TH THOR 50th (2)

Valid since Version 1.6.2p1



ISO/TS 13499 – RED C : 2017  
TH, THOR 50% male  
Standard Instrumentation: Lower Body  
2017-12-13



ISO-TH\_20171213

Page 2 of 4

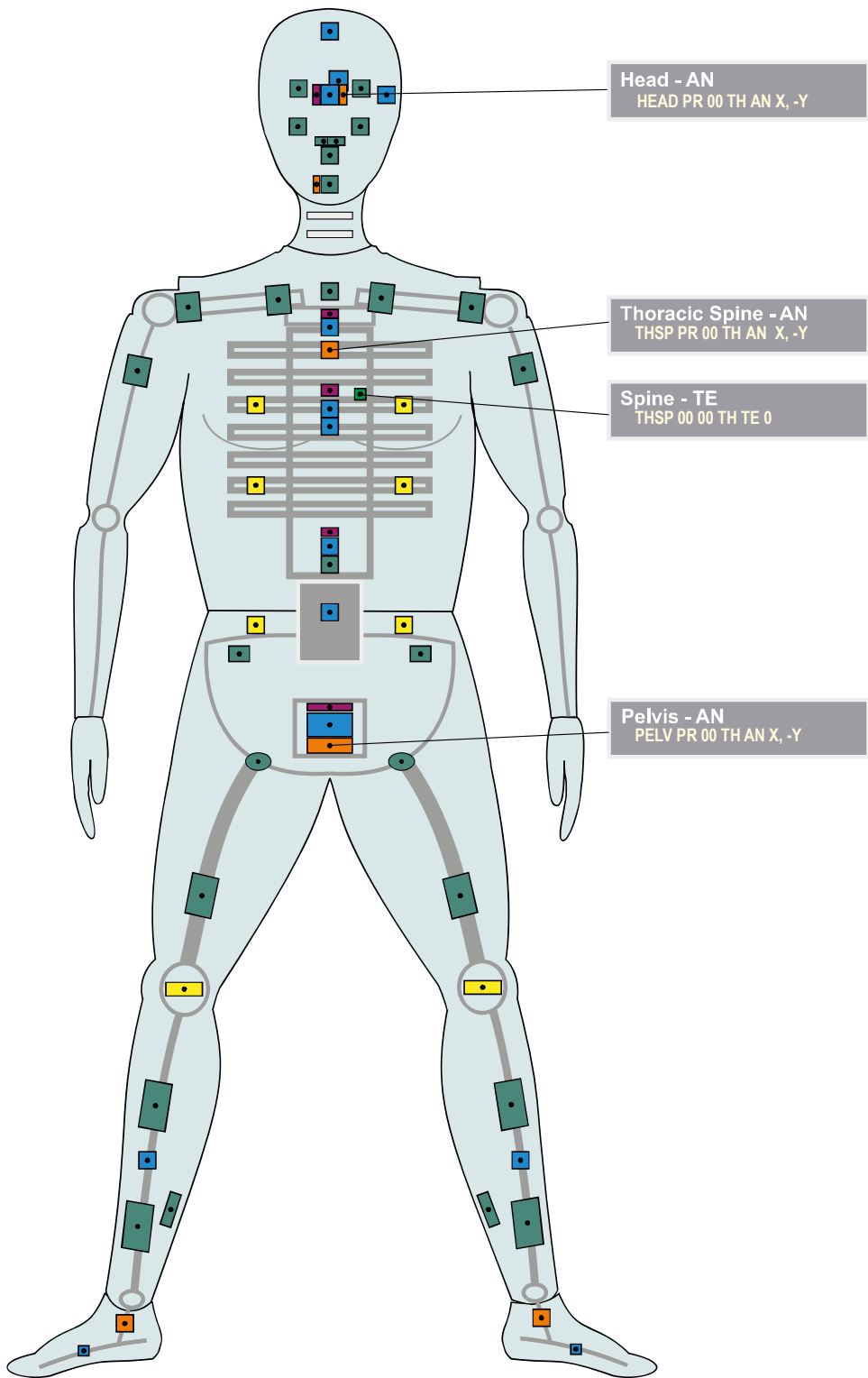
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellcome, HORIBA MIRA Ltd.  
and Dirk Vetter, IAT mbH

ISO\_TH\_2\_162p2\_20171213.EMF

-> TH <- 2 of 4



ISO/TS 13499 – RED C : 2017  
TH, THOR 50% male  
Static measurements, other channels  
2017-12-13



ISO-TH\_20171213

ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, HORIBA MIRA Ltd.  
and Dirk Vetter, IAT mbH

TH THOR 50th (3)

Valid since Version 1.6.2p1

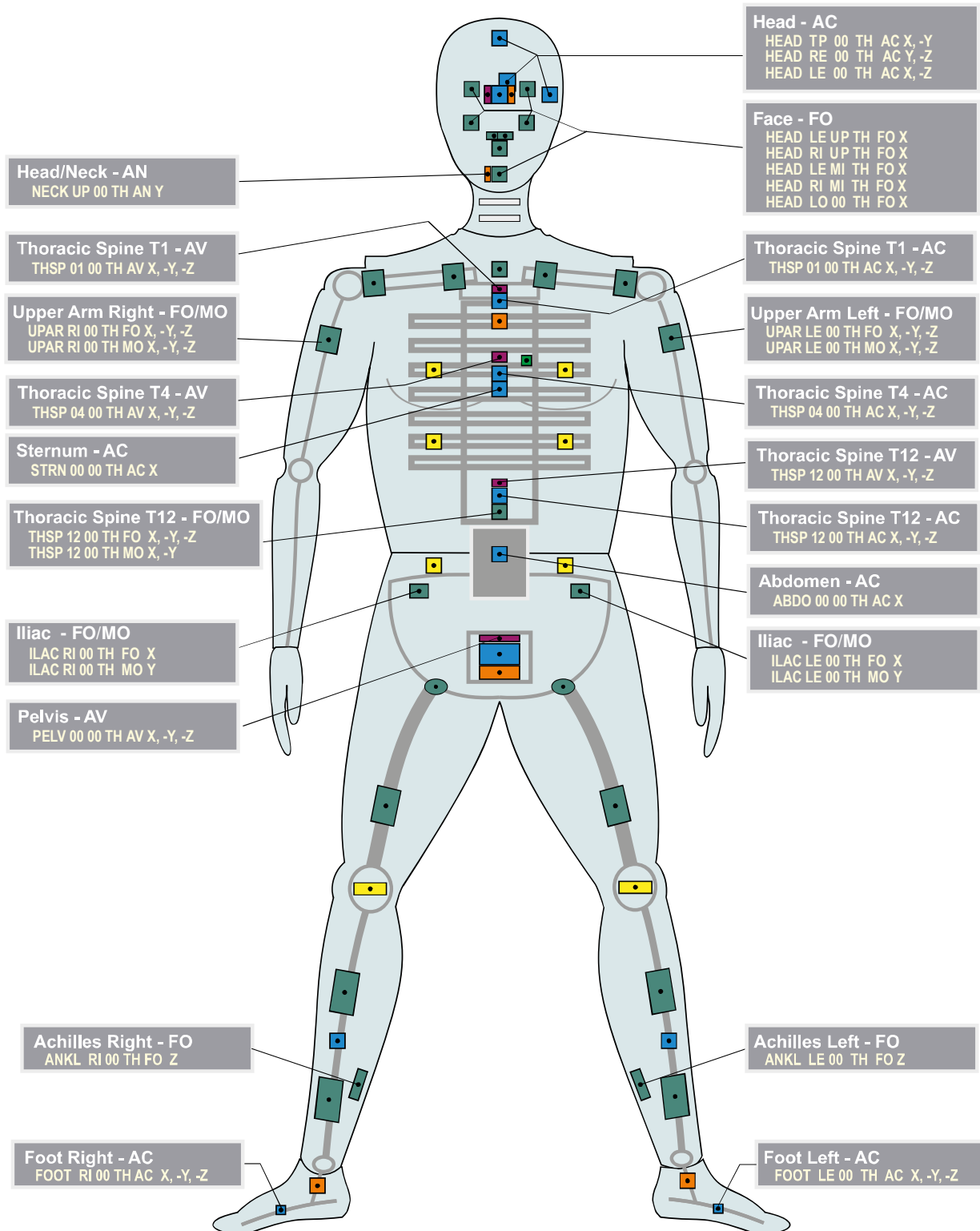


ISO/TS 13499 – RED C : 2017

TH, THOR 50% male

Additional Instrumentation: Upper and Lower Body

2017-12-13



ISO-TH\_20171213

Page 3 of 4

ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, HORIBA MIRA Ltd.  
and Dirk Vetter, IAT mbH

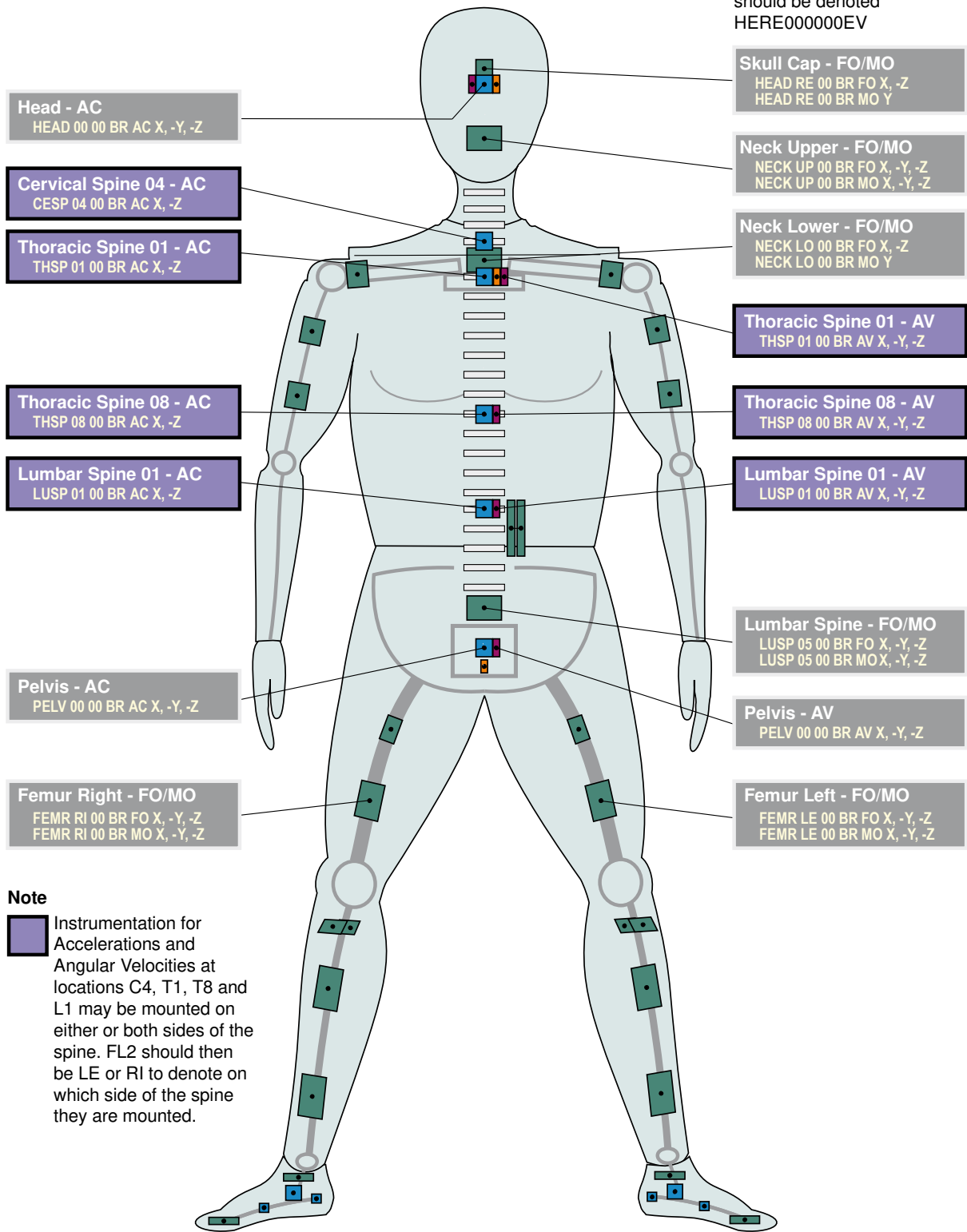
ISO\_TH\_3\_162p2\_20171213.EMF

-> TH <- 3 of 4



ISO/TS 13499 – RED C : 2012  
BR, BioRID II 50% male  
Standard Instrumentation  
2013-07-10

**Note**  
The Skull Cap to Headrest  
contact event (not shown)  
should be denoted  
HERE000000EV



ISO-BR\_20130710

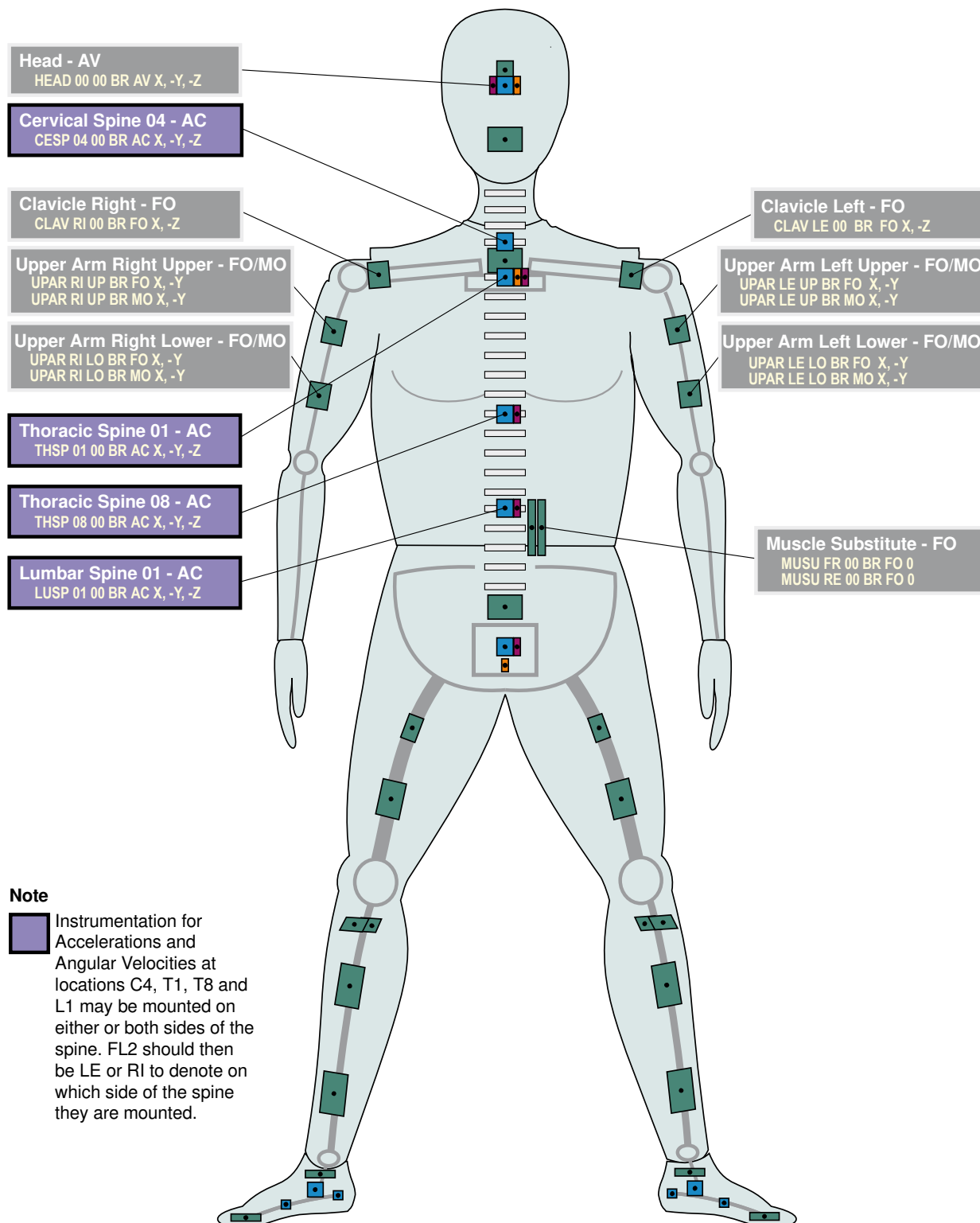


ISO/TS 13499 – RED C : 2012

BR, BioRID II 50% male

Additional Instrumentation - Upper Torso

2013-07-10



ISO-BR\_20130710

Page 2 of 4

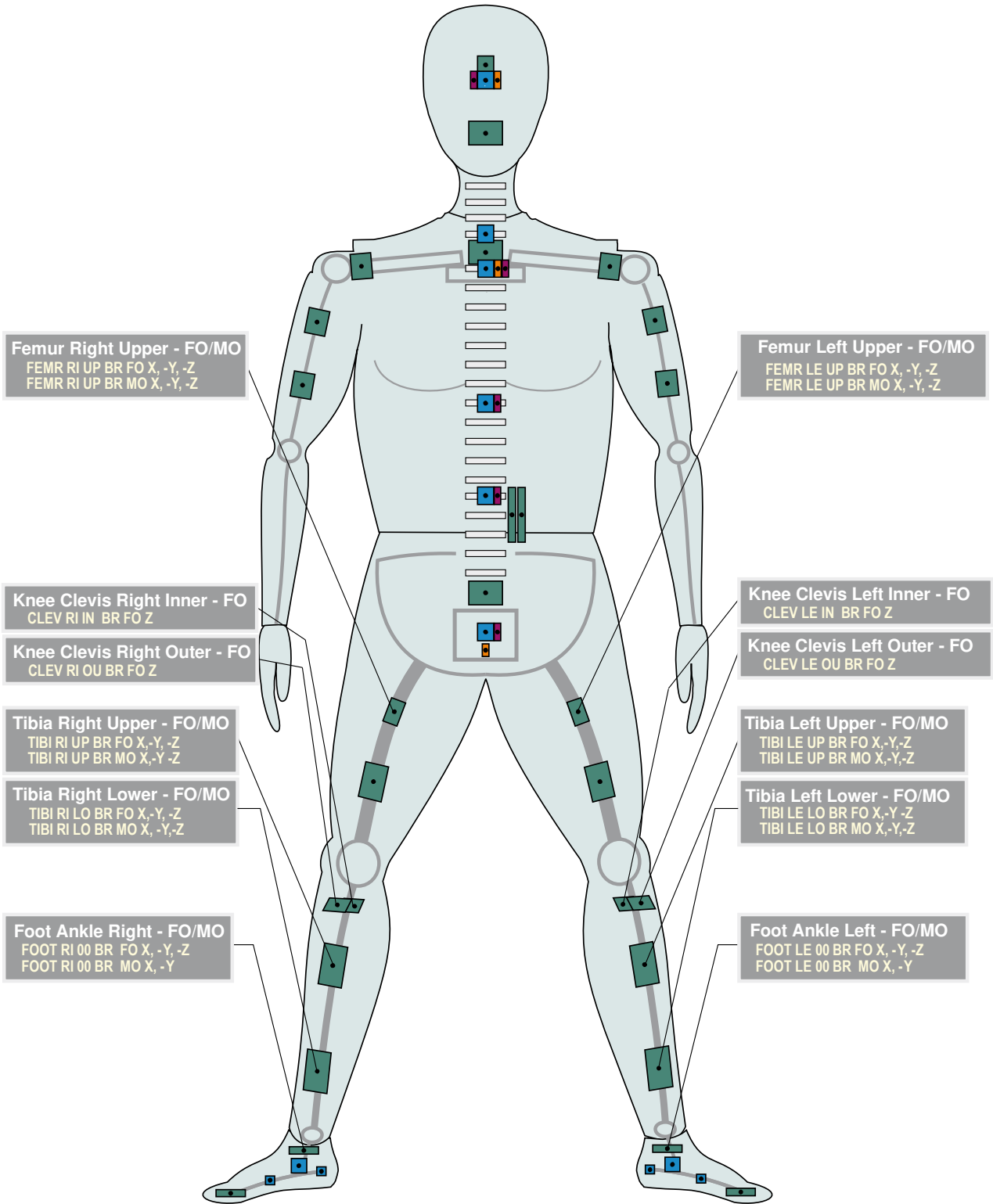
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, MIRA Ltd.

ISO\_BR\_2\_161\_20130710.EMF

-&gt; BR &lt;- 2 of 4



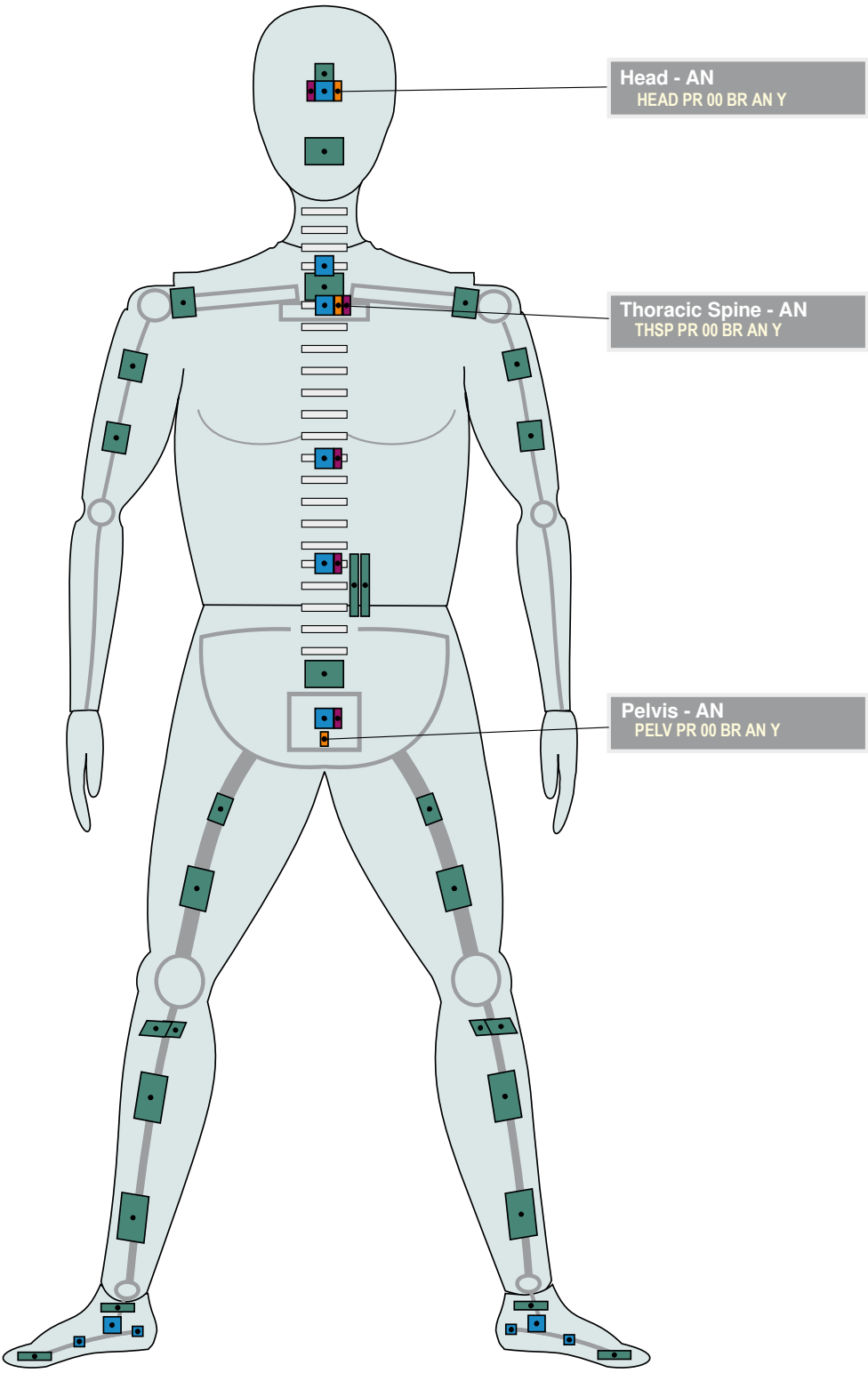
ISO/TS 13499 – RED C : 2012  
BR, BioRID II 50% male  
Additional Instrumentation - Legs  
2013-07-10

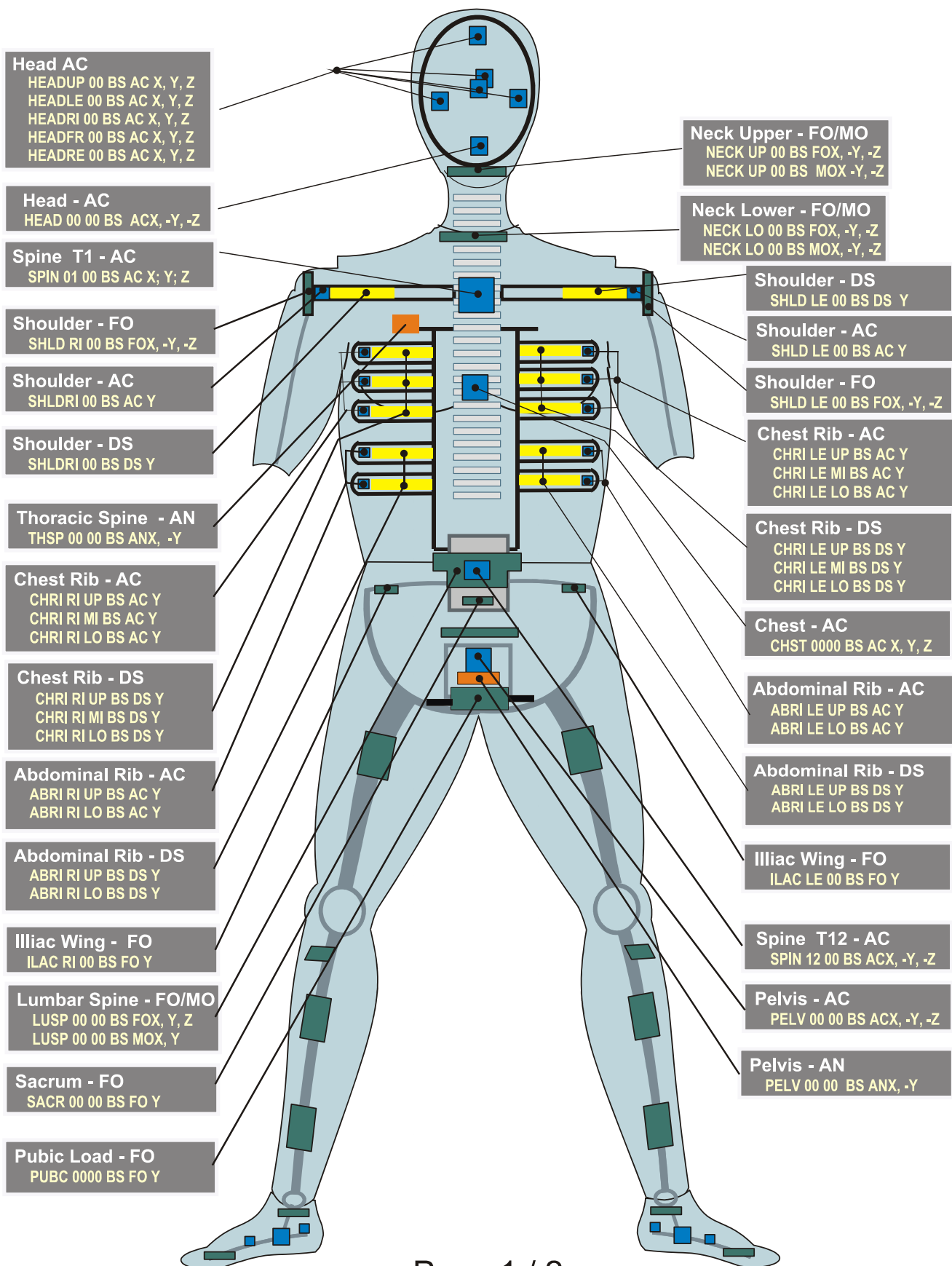


ISO-BR\_20130710

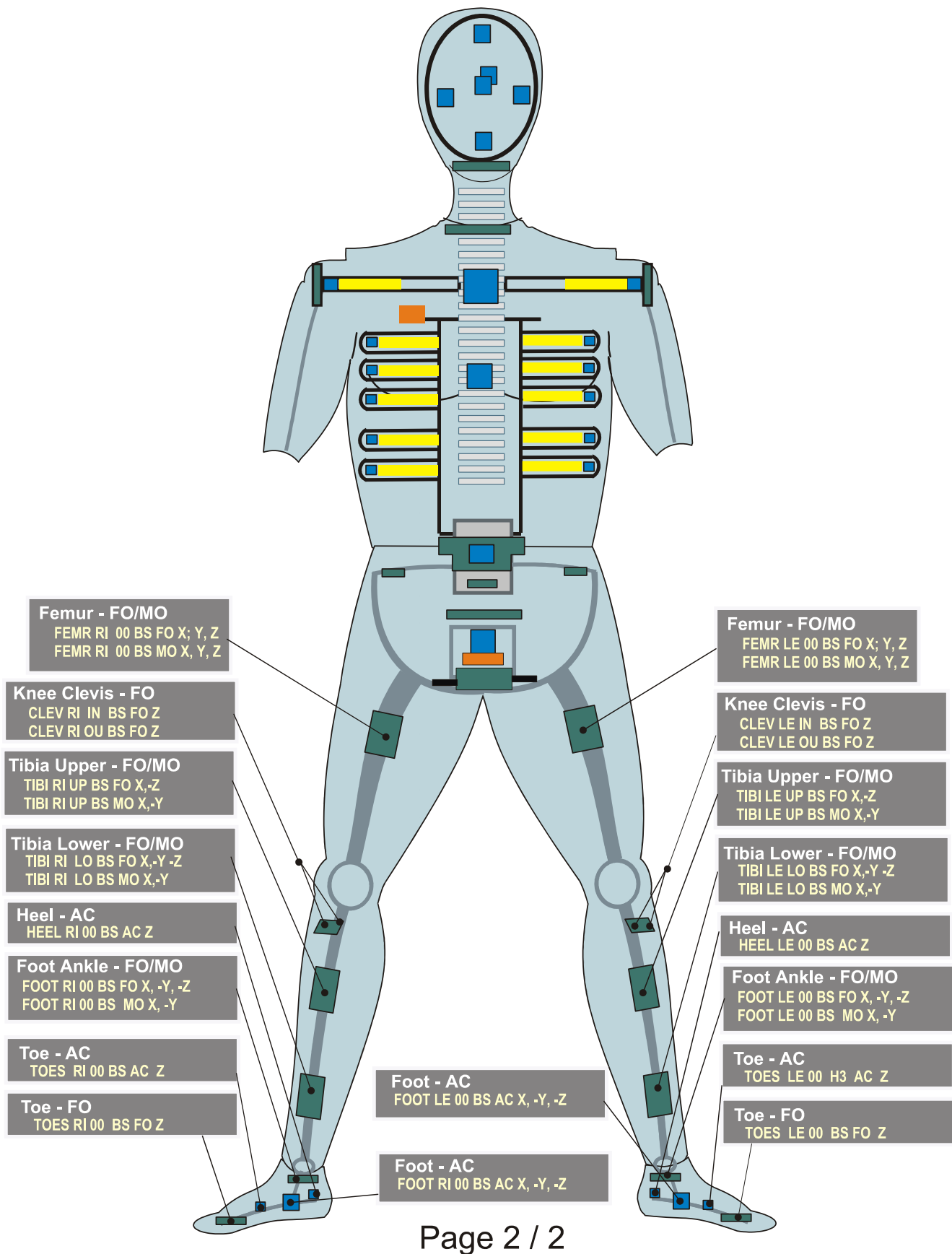


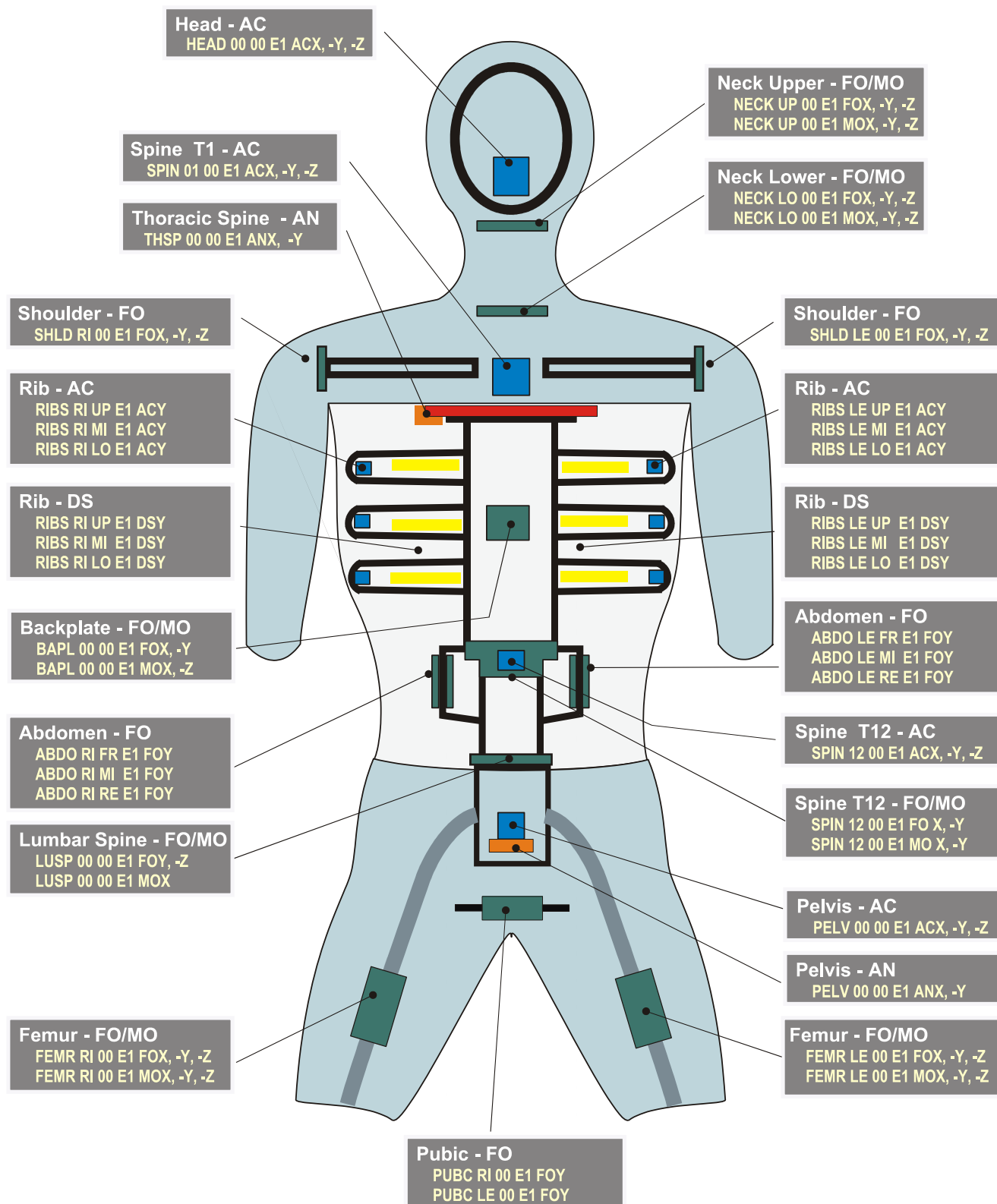
ISO/TS 13499 – RED C : 2012  
BR, BioRID II 50% male  
Static measurements, other channels  
2013-07-10

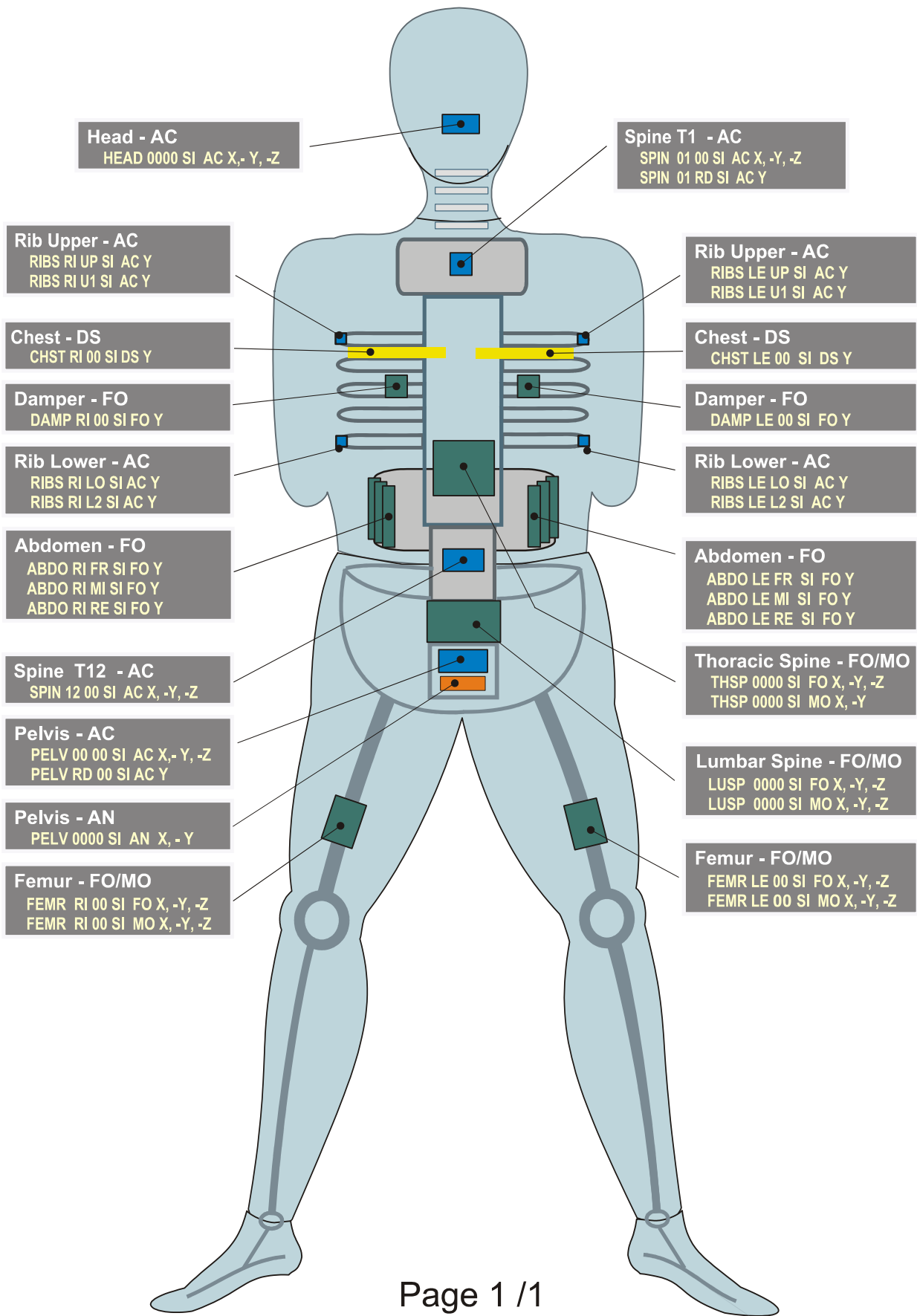








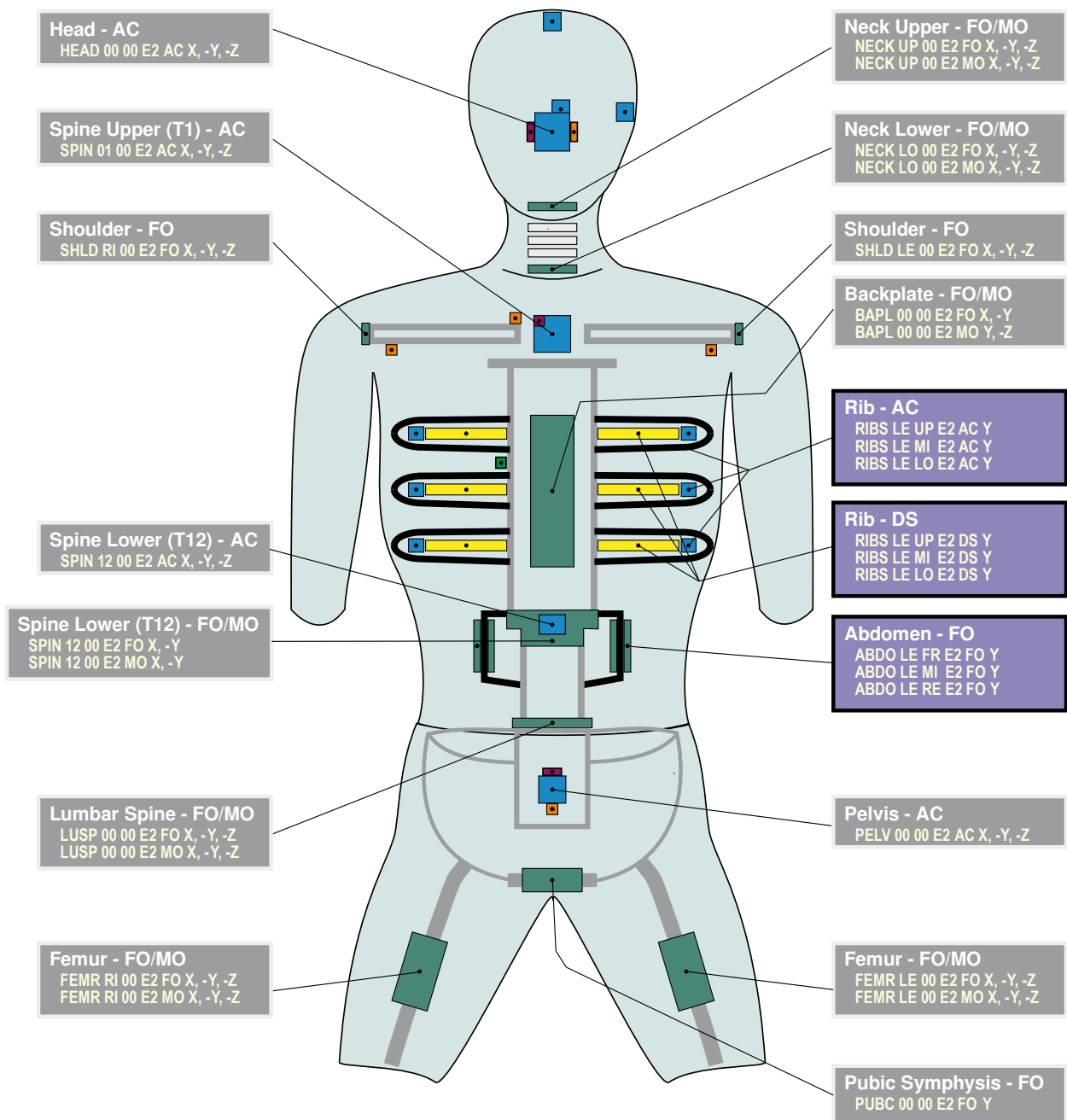






ISO/TS 13499 – RED C : 2012(E)  
E2, ES-2 dummy  
ER, ES2 Dummy with Rib Extension  
Standard Instrumentation  
2013-04-10

Note: For ER dummy, FL3 will read ER



Left Side Impact, Front-View

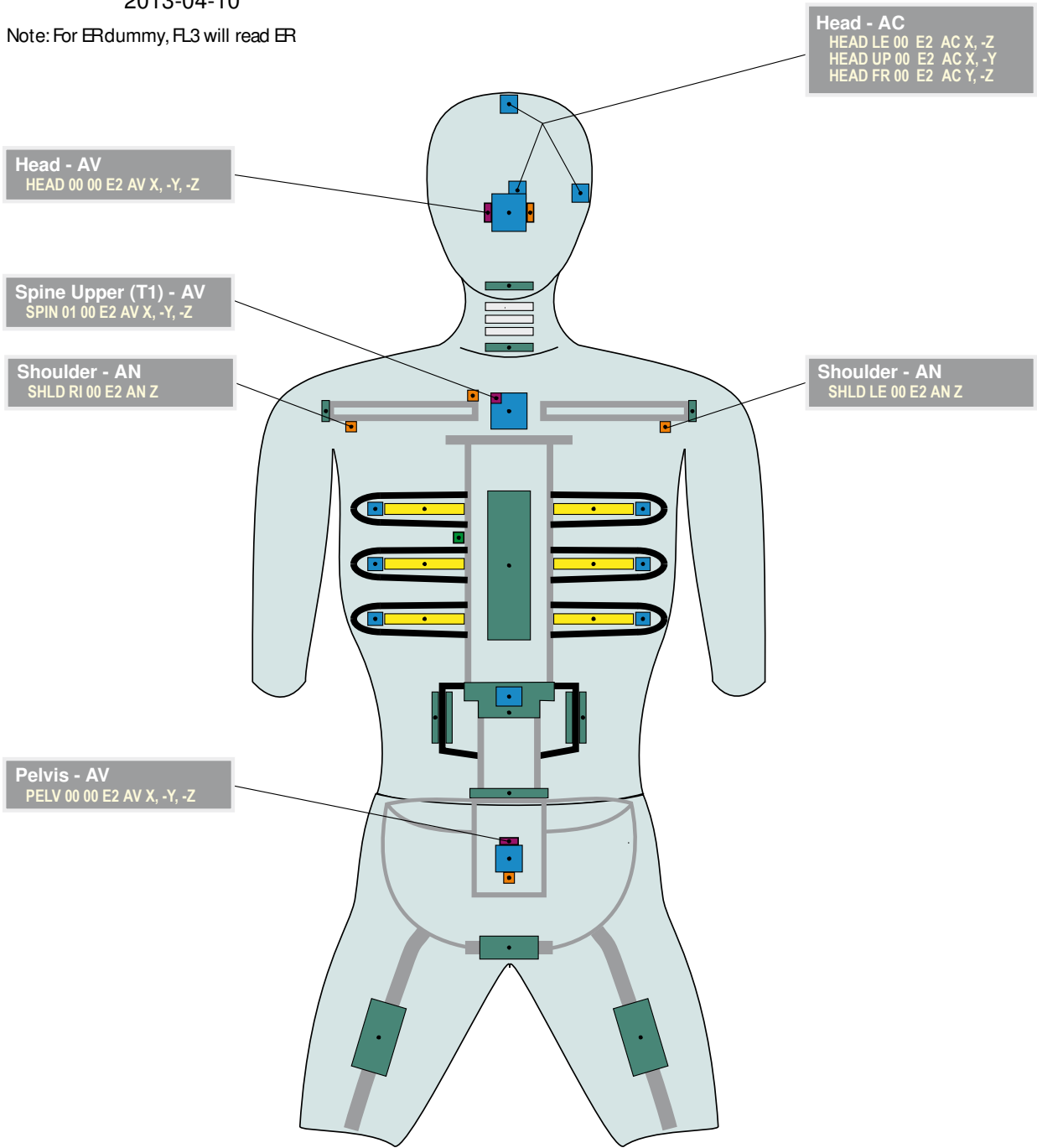
Note that sensor locations and ISO Codes are different for right side impact.

ISO-E2\_20130410



ISO/TS 13499 – RED C : 2012(E)  
E2, ES-2 dummy  
ER, ES2 Dummy with Rib Extension  
Additional Instrumentation  
2013-04-10

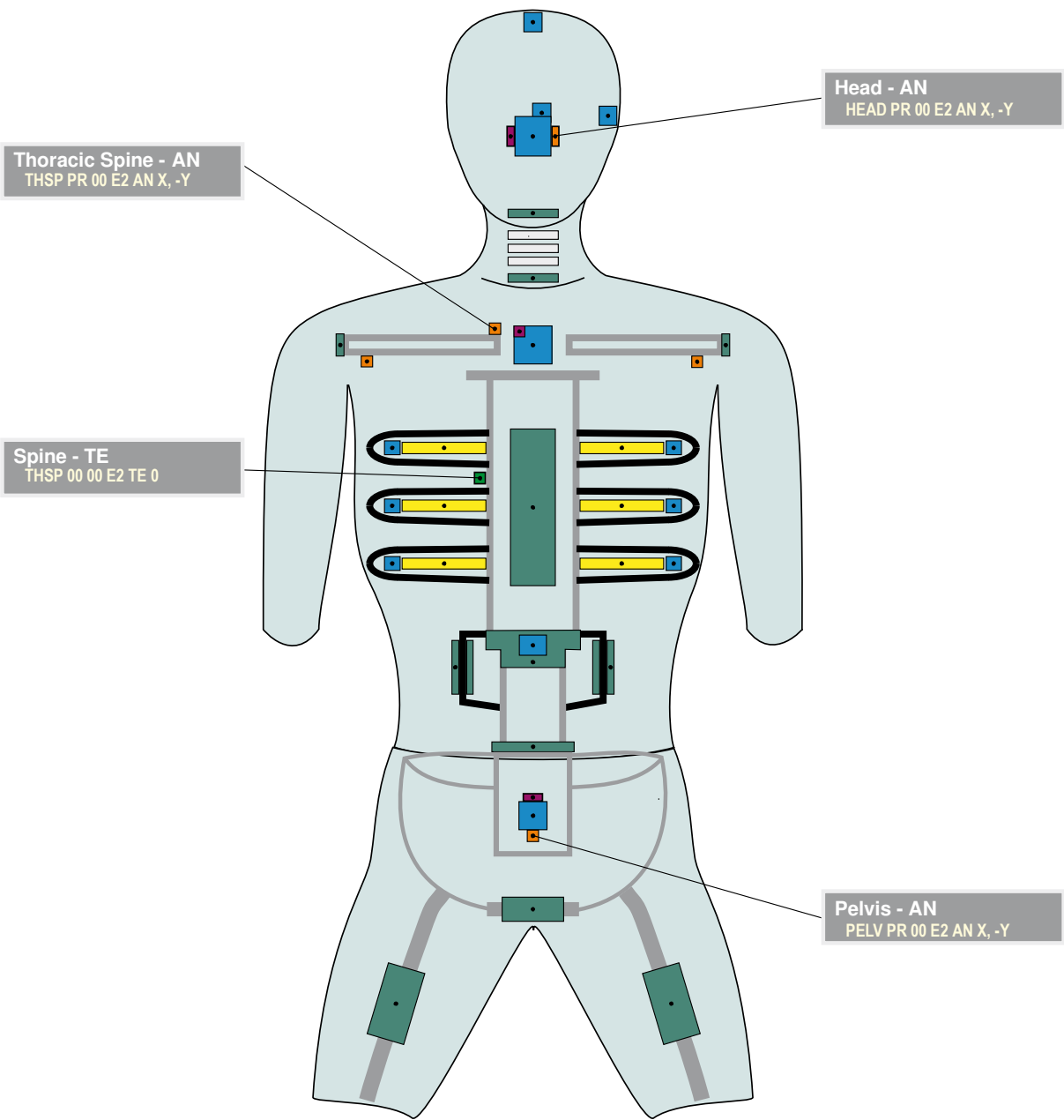
Note: For ERdummy, FL3 will read ER





ISO/TS 13499 – RED C : 2012(E)  
E2, ES-2 dummy  
ER, ES2 Dummy with Rib Extension  
Static measurements, other channels  
2013-04-10

Note: For ERdummy, FL3 will read ER



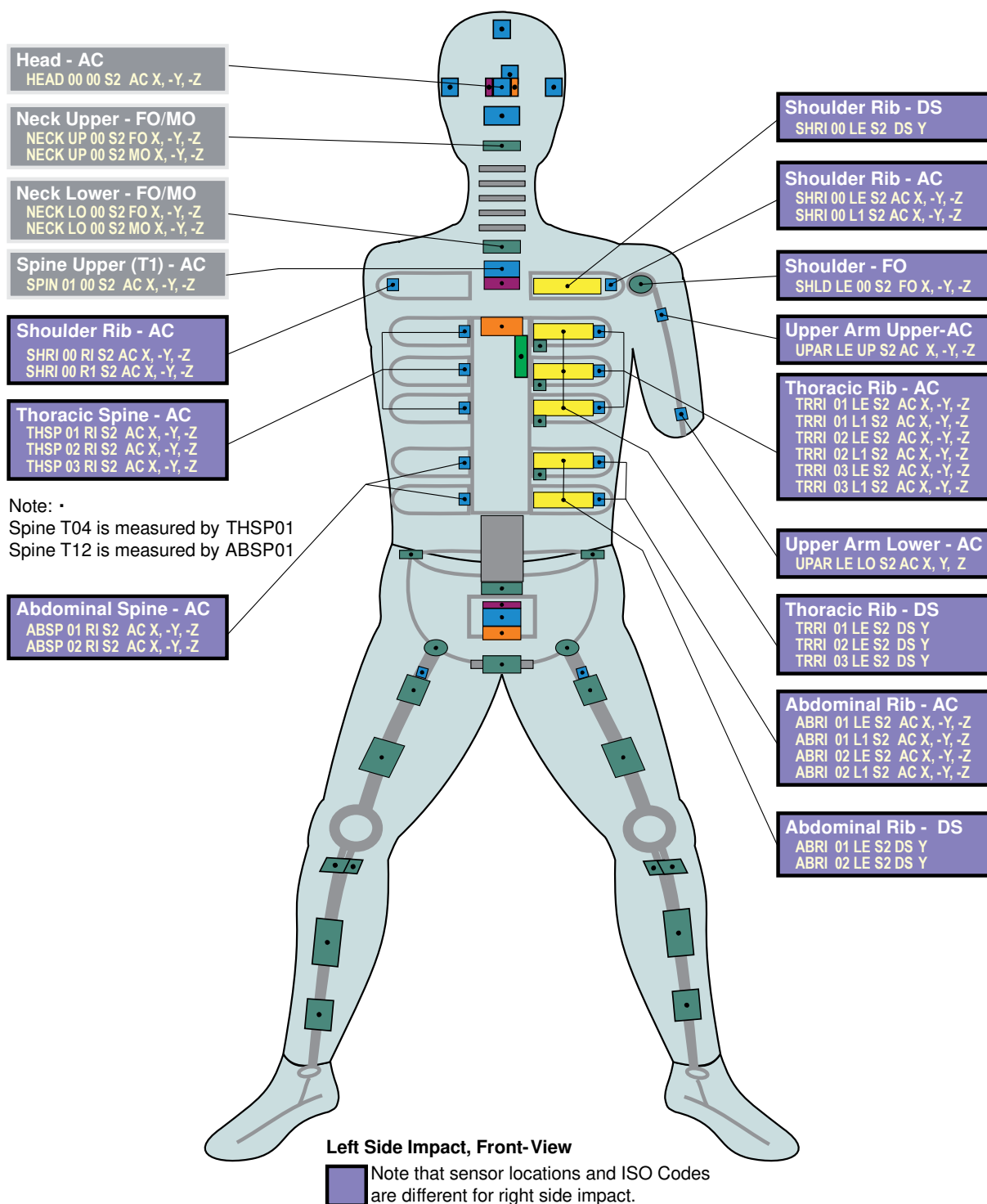
## S2 SID IIs (1)

Valid since Version

1.6.1



ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Standard Instrumentation (upper body)  
2013-04-09



ISO-S2\_20140409

Page 1 of 5

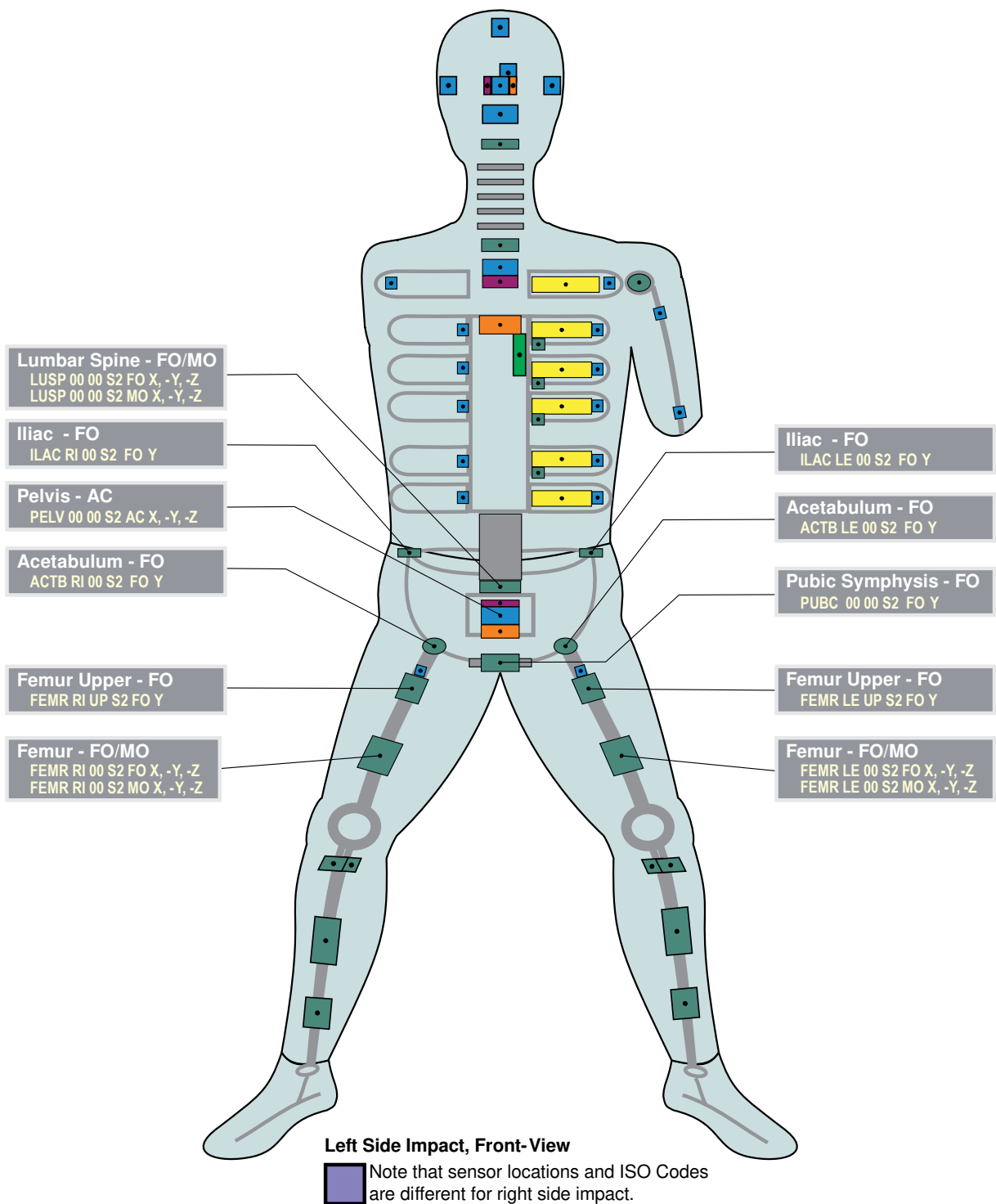
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, MIRA Ltd.

ISO\_S2\_1\_161\_20140409.EMF

-&gt; S2 &lt;- 1 of 5



ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Standard Instrumentation (lower body)  
2013-04-09





S2

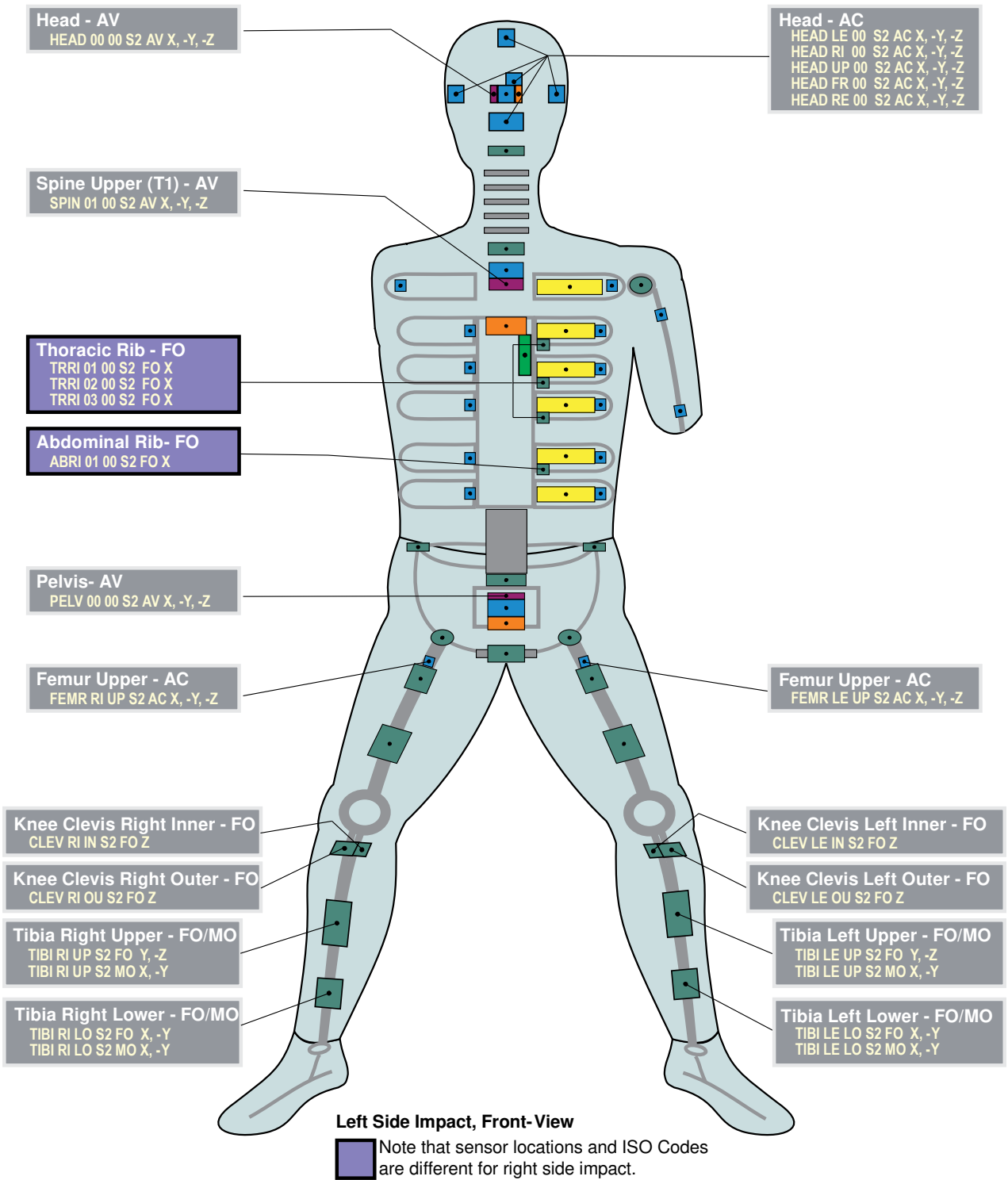
SID IIs (3)

Valid since Version

1.6.1



ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Additional Instrumentation  
2013-04-09



ISO-S2\_20140409

Page 3 of 5

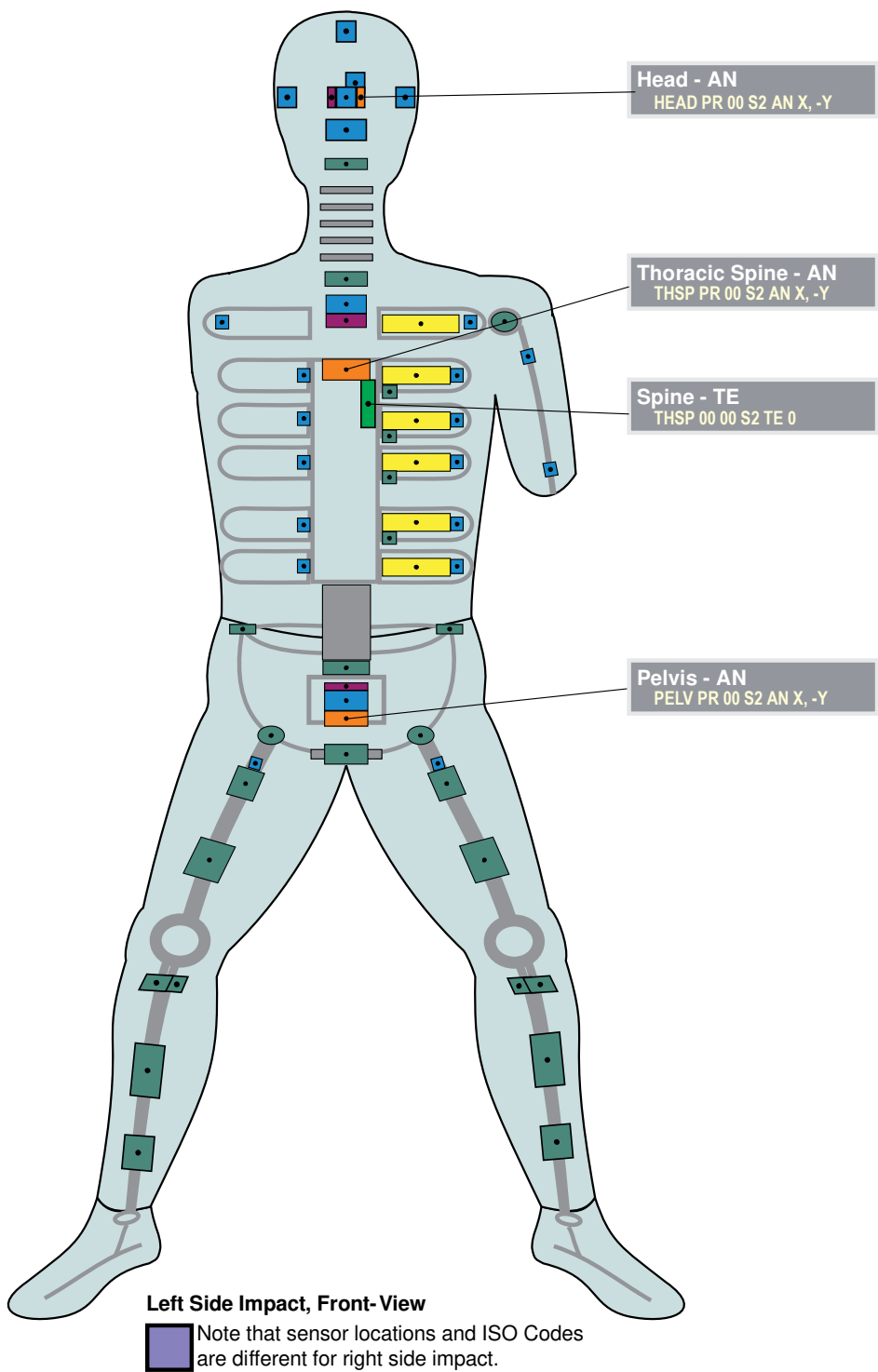
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force-  
Maintained by Paul Wellicome, MIRA Ltd.

ISO\_S2\_3\_161\_20140409.EMF

-> S2 <- 3 of 5

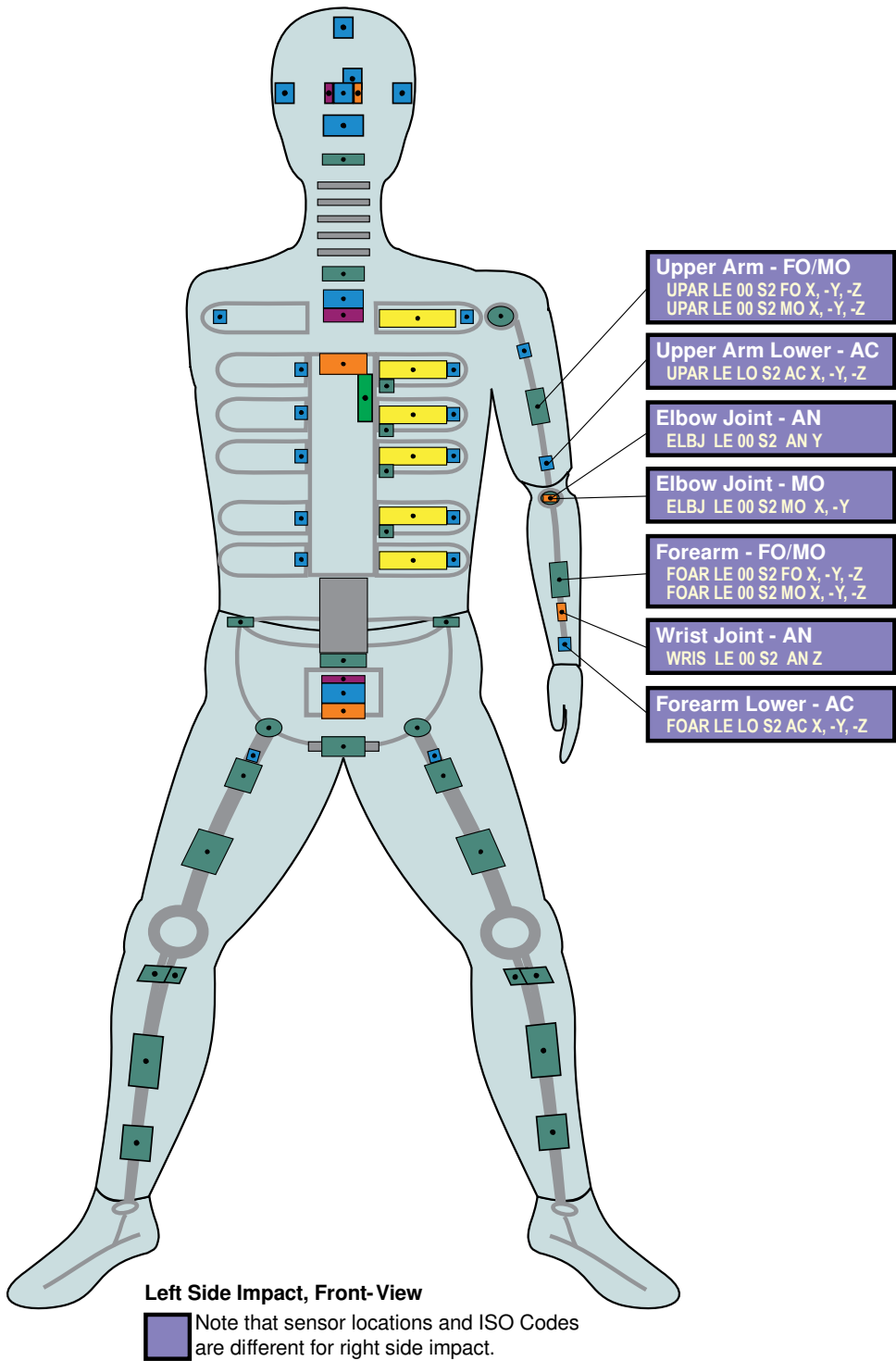


ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Static measurements, other channels  
2013-04-09



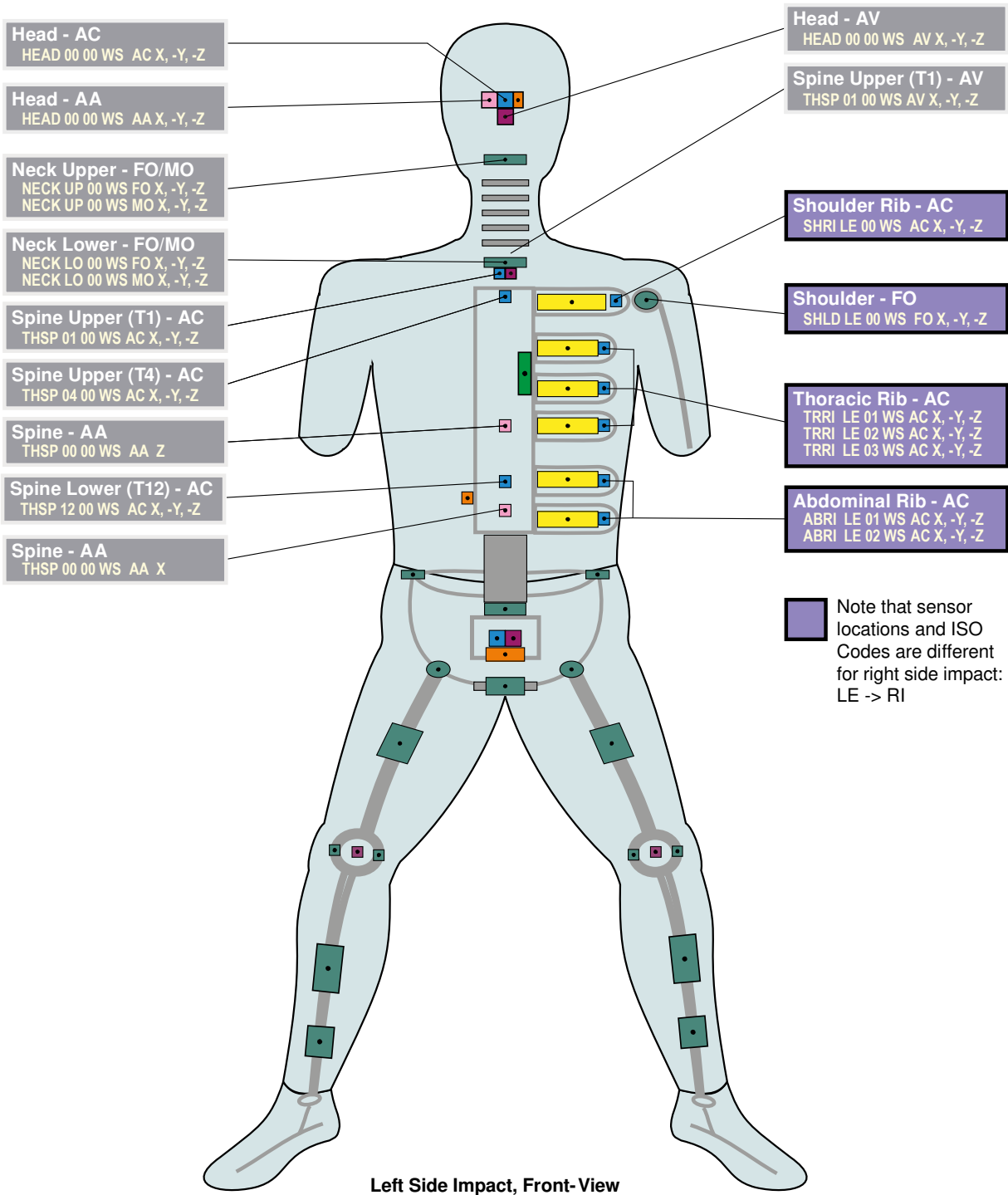


ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Additional Instrumentation: Instrumented arm  
2013-04-09





ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Standard Instrumentation (upper body)  
2017-04-20





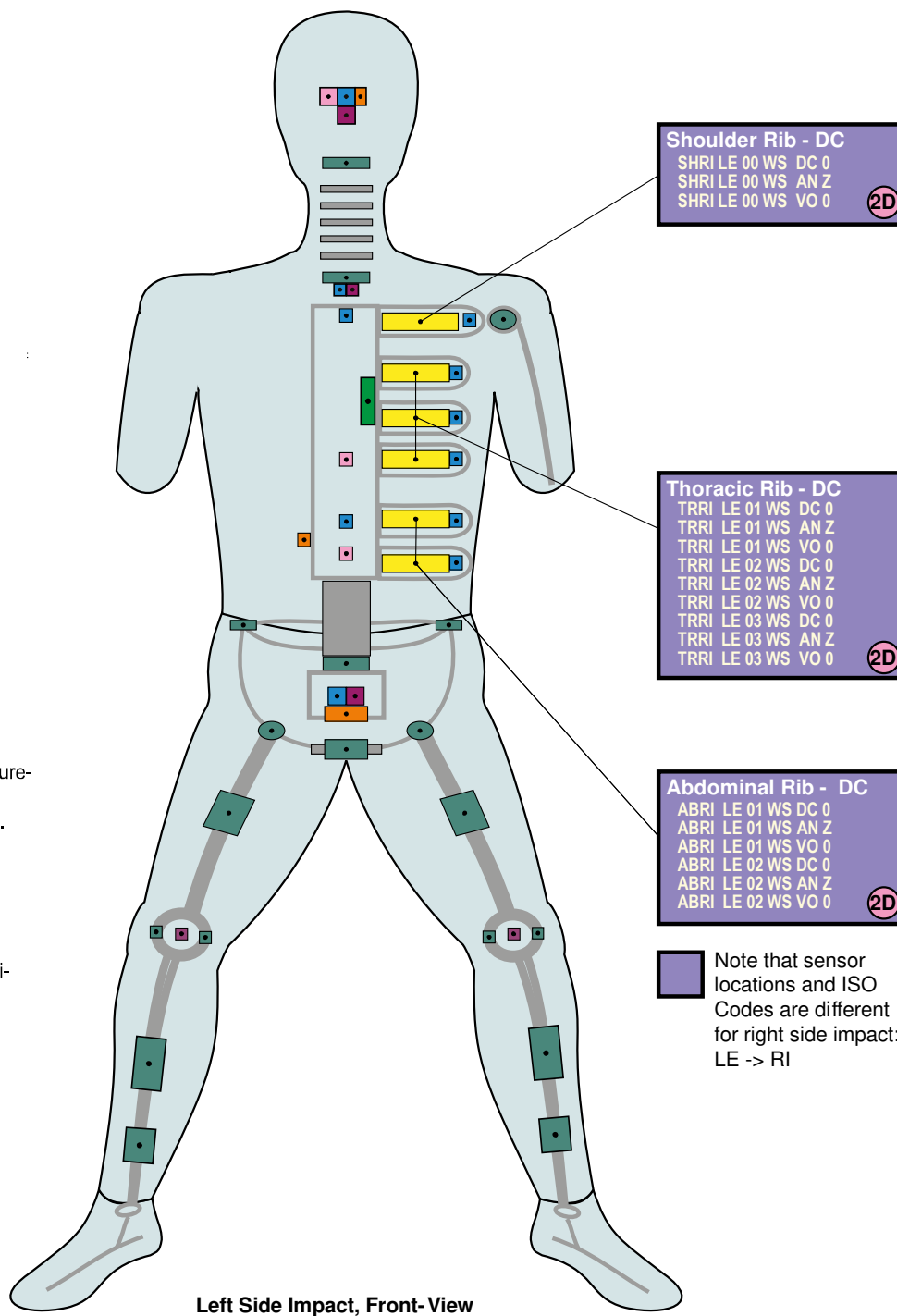
ISO/TS 13499 – RED C : 2012(E)

WS, WorldSID 50th percentile dummy

Deflection Measurement (Shoulder, Thorax, Abdomen) 2D-Equipment

2017-04-20

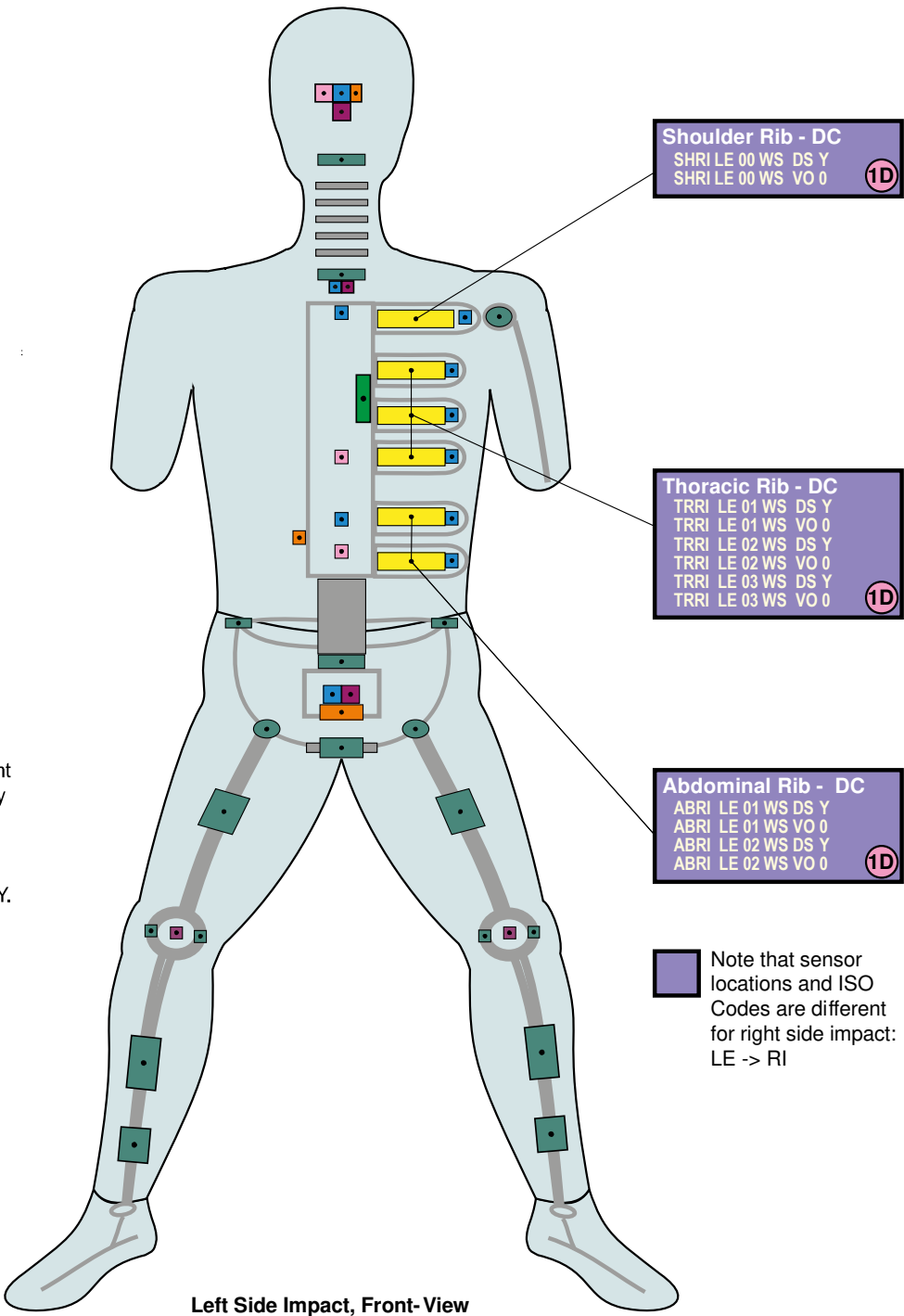
Note that the some measurement devices fitted to this dummy records a voltage. It is more normal to exchange the distance channel or total length channel (DC0). □  
If the DC0 channel is not available, DS0 is permissible.





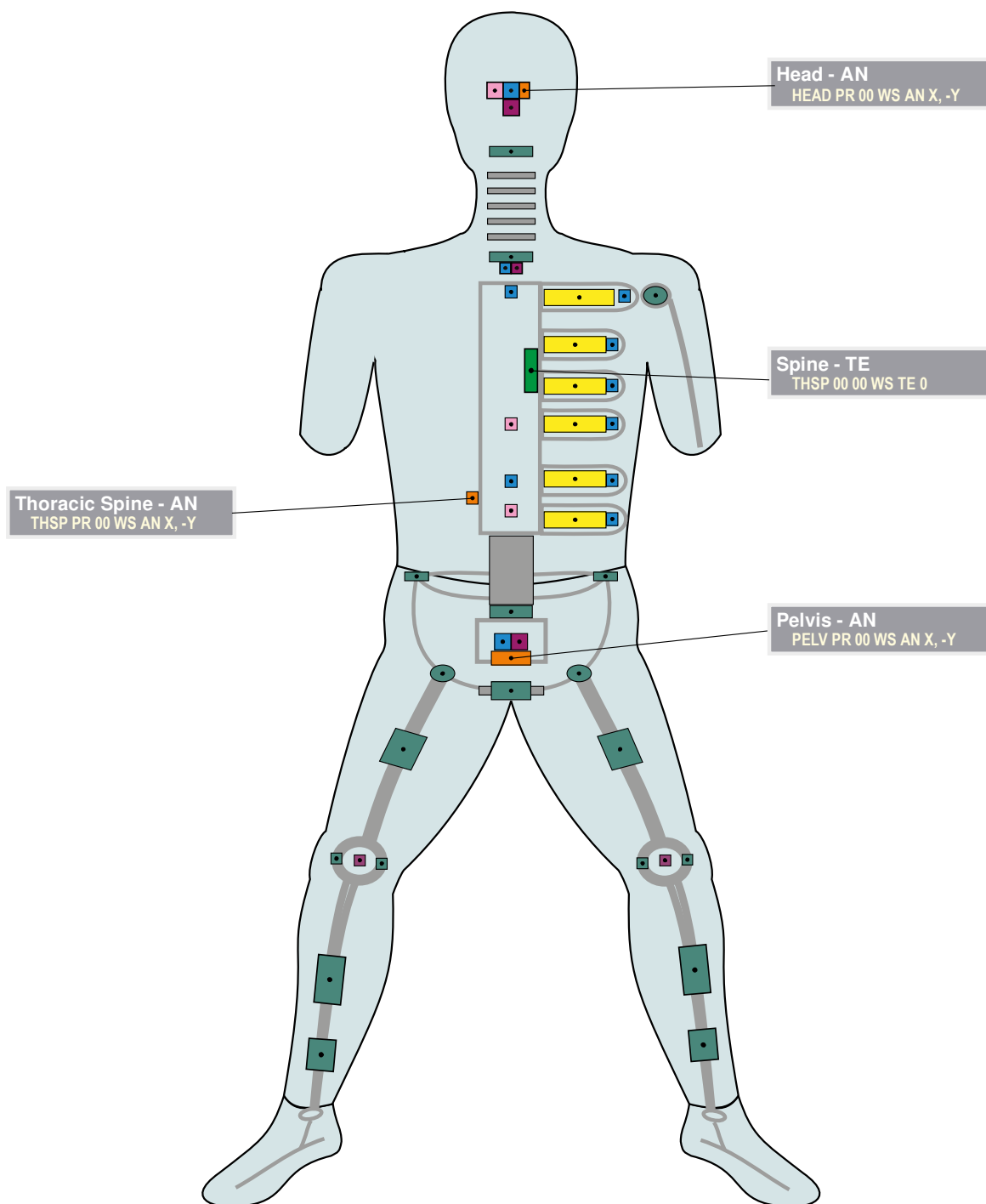
ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Deflection Measurement (Shoulder, Thorax, Abdomen) 1D Equipment  
2017-04-20

Note that the measurement device fitted to this dummy often records a voltage. It is more normal to exchange the generated displacement channel DSY.



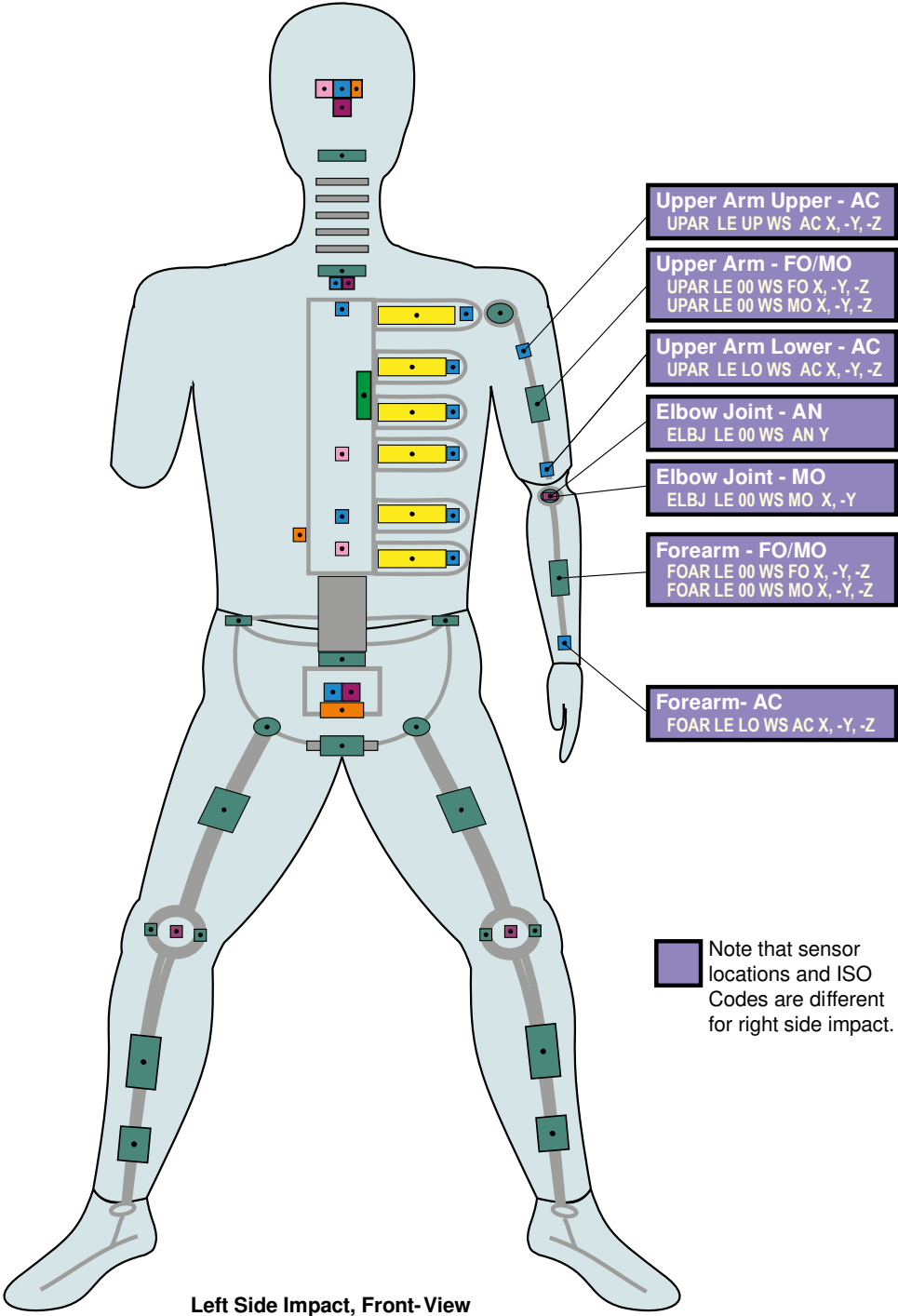


ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Static measurements, other channels  
2017-04-20





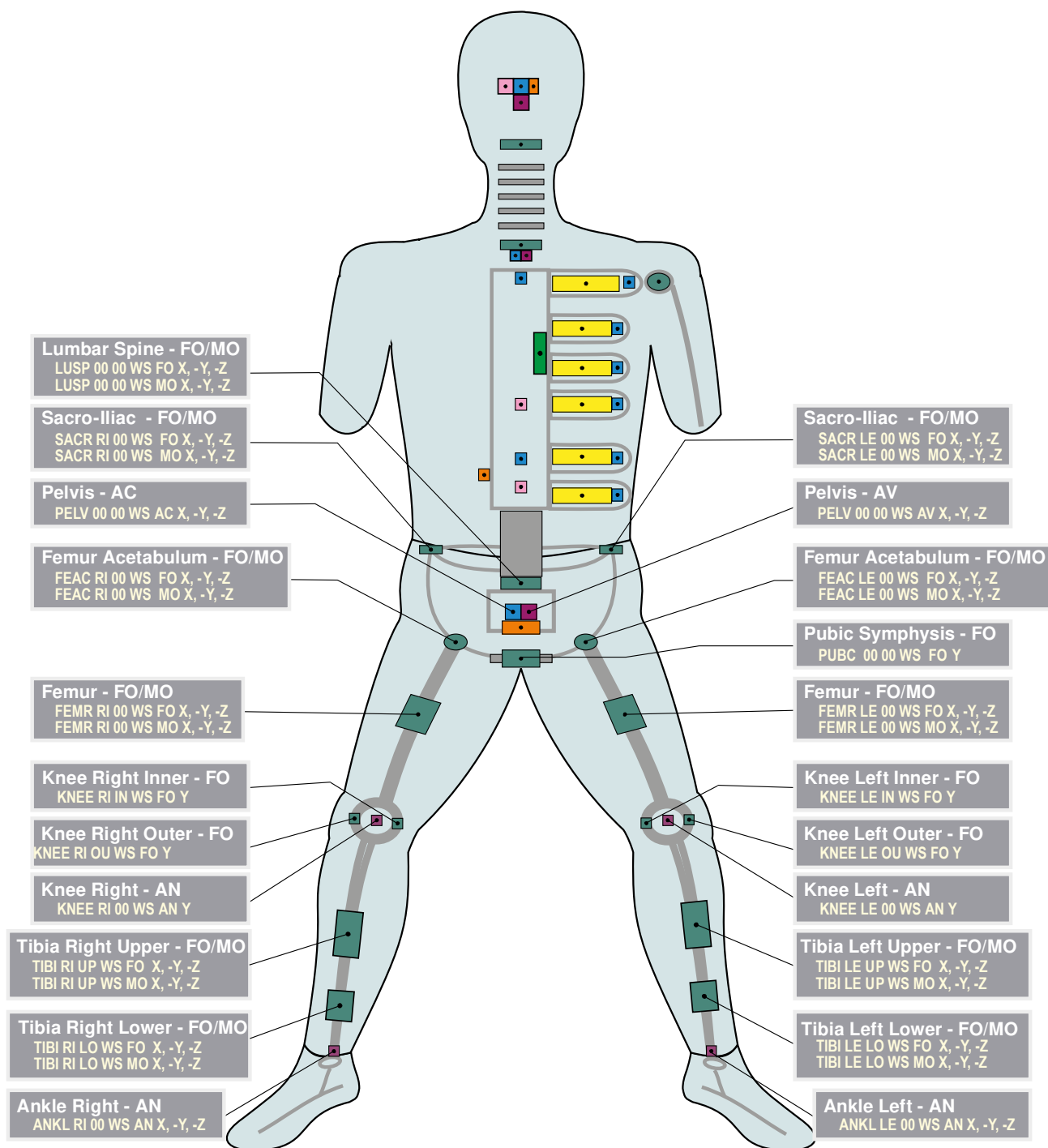
ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Additional Instrumentation: Instrumented arm  
2017-04-20








ISO/TS 13499 – RED C : 2012(E)  
 WS, WorldSID 50th percentile dummy  
 Standard Instrumentation (lower body)  
 2017-04-20





ISO/TS 13499 - RED C : 2017  
Human Model  
2017-09-13

**The Skeletal System**

*Anterior* *Posterior*

?? SKUL Skull

?? HUMS Humerus

?? RADI Radius

?? ULNA Ulna

?? ULEG Upper Leg

?? LLEG Lower Leg

?? FIBU Fibula

?? BRAI Brain

?? ACRO Acromion

?? SCAP Scapula

?? ACHI Achilles Tendon

Sternum

Clavicle

Scapula

Humerus

Ribs

Vertebral Column

Radius

Ulna

Carpals

Metacarpals

Phalanges

Femur

Patella

Tibia

Fibula

Ilium

Ischium

Pubis

Tarsals

Phalanges

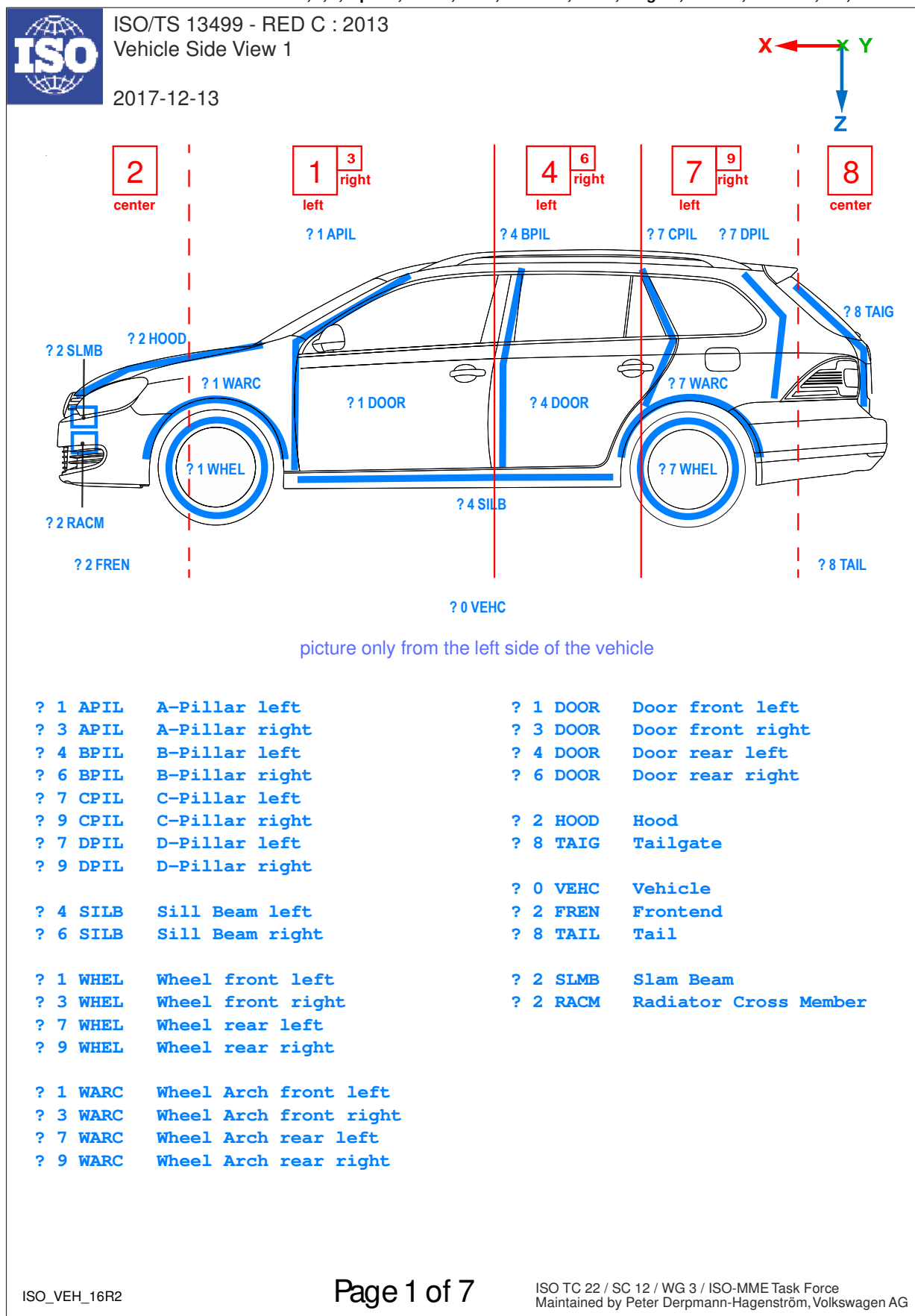
Metatarsals

?? SKUL	Skull
?? HUMS	Humerus
?? RADI	Radius
?? ULNA	Ulna
?? ULEG	Upper Leg
?? LLEG	Lower Leg
?? FIBU	Fibula
?? BRAI	Brain
?? ACRO	Acromion
?? SCAP	Scapula
?? ACHI	Achilles Tendon

## VEH\_S1 Vehicle left side

Valid since Version 1.6.2p2


A,B,C,D-pillar, wheel, door, sillbeam, hood, tailgate, vehicle, frontend, tail, wheelarch ...



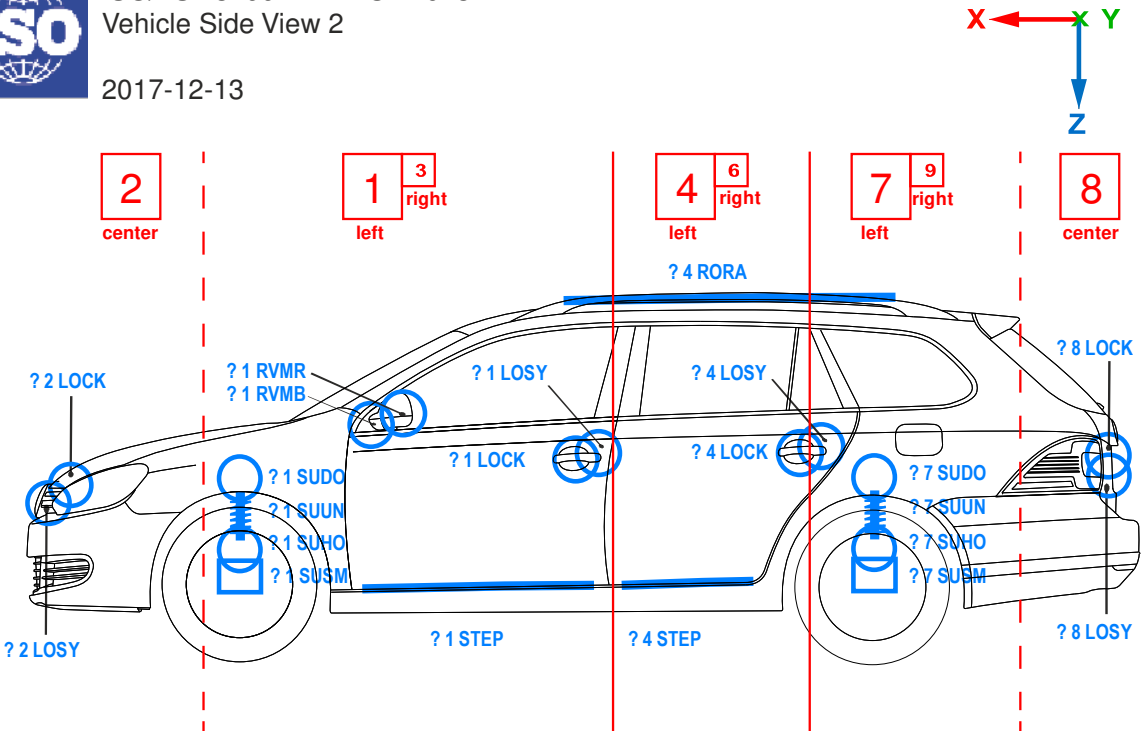
VEH\_S2 Vehicle left side

Valid since Version 1.6.2p2

lock, locking system, roof rack, step, suspension, ...



ISO/TS 13499 - RED C : 2013  
Vehicle Side View 2  
2017-12-13



picture only from the left side of the vehicle

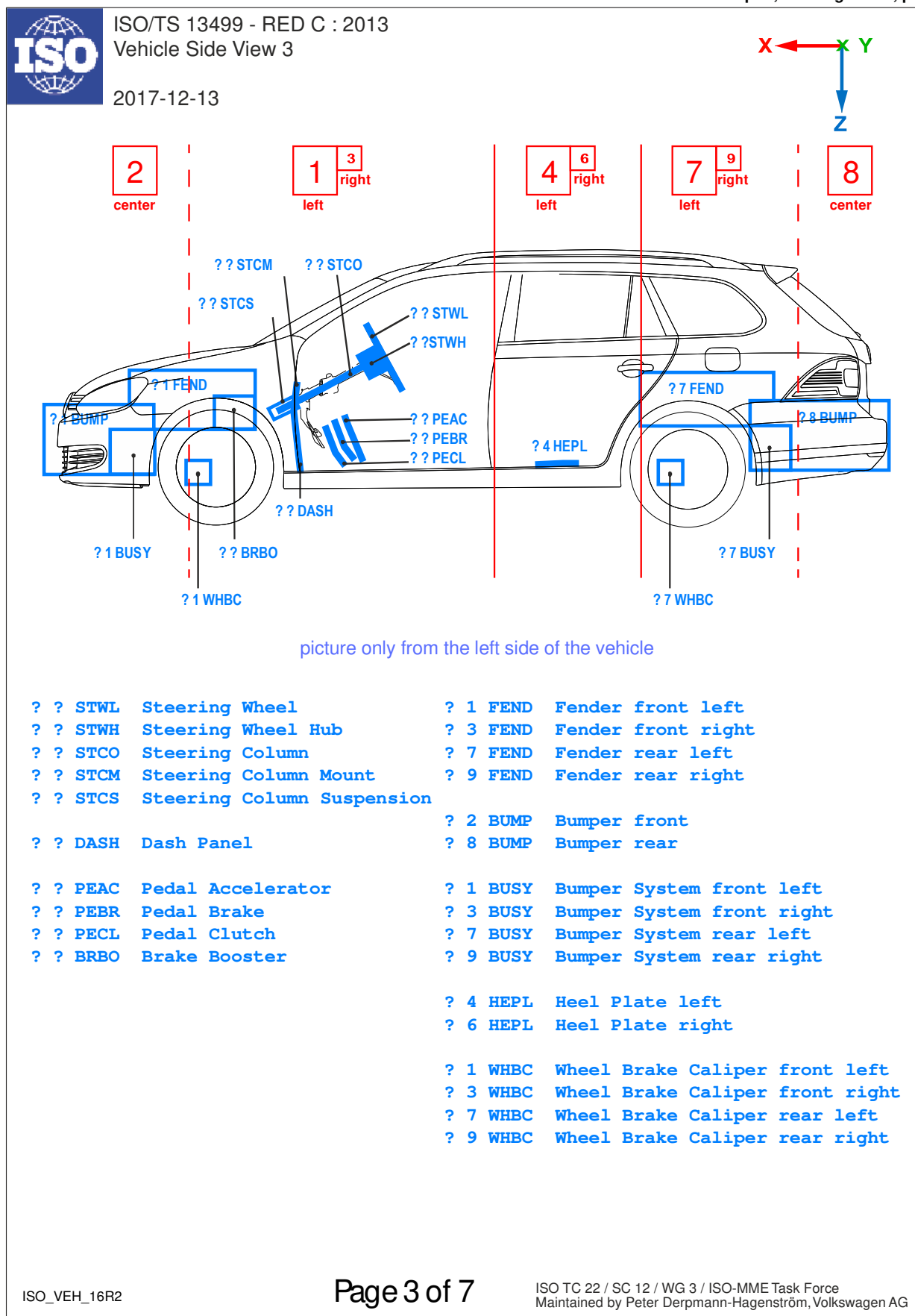
? 1 LOSY	Locking System front left	? 1 SUDO	Suspension Dome front left
? 3 LOSY	Locking System front right	? 3 SUDO	Suspension Dome front right
? 4 LOSY	Locking System rear left	? 7 SUDO	Suspension Dome rear left
? 6 LOSY	Locking System rear right	? 9 SUDO	Suspension Dome rear right
? 2 LOSY	Locking System front		
? 8 LOSY	Locking System rear		
		? 1 SUUN	Suspension Unit front left
		? 3 SUUN	Suspension Unit front right
		? 7 SUUN	Suspension Unit rear left
		? 9 SUUN	Suspension Unit rear right
		? 1 SUHO	Suspen. Housing front left
		? 3 SUHO	Suspen. Housing front right
		? 7 SUHO	Suspen. Housing rear left
		? 9 SUHO	Suspen. Housing rear right
		? 1 SUSM	Suspension Mount front left
		? 3 SUSM	Suspension Mount front right
		? 7 SUSM	Suspension Mount rear left
		? 9 SUSM	Suspension Mount rear right

ISO\_VEH\_16R2

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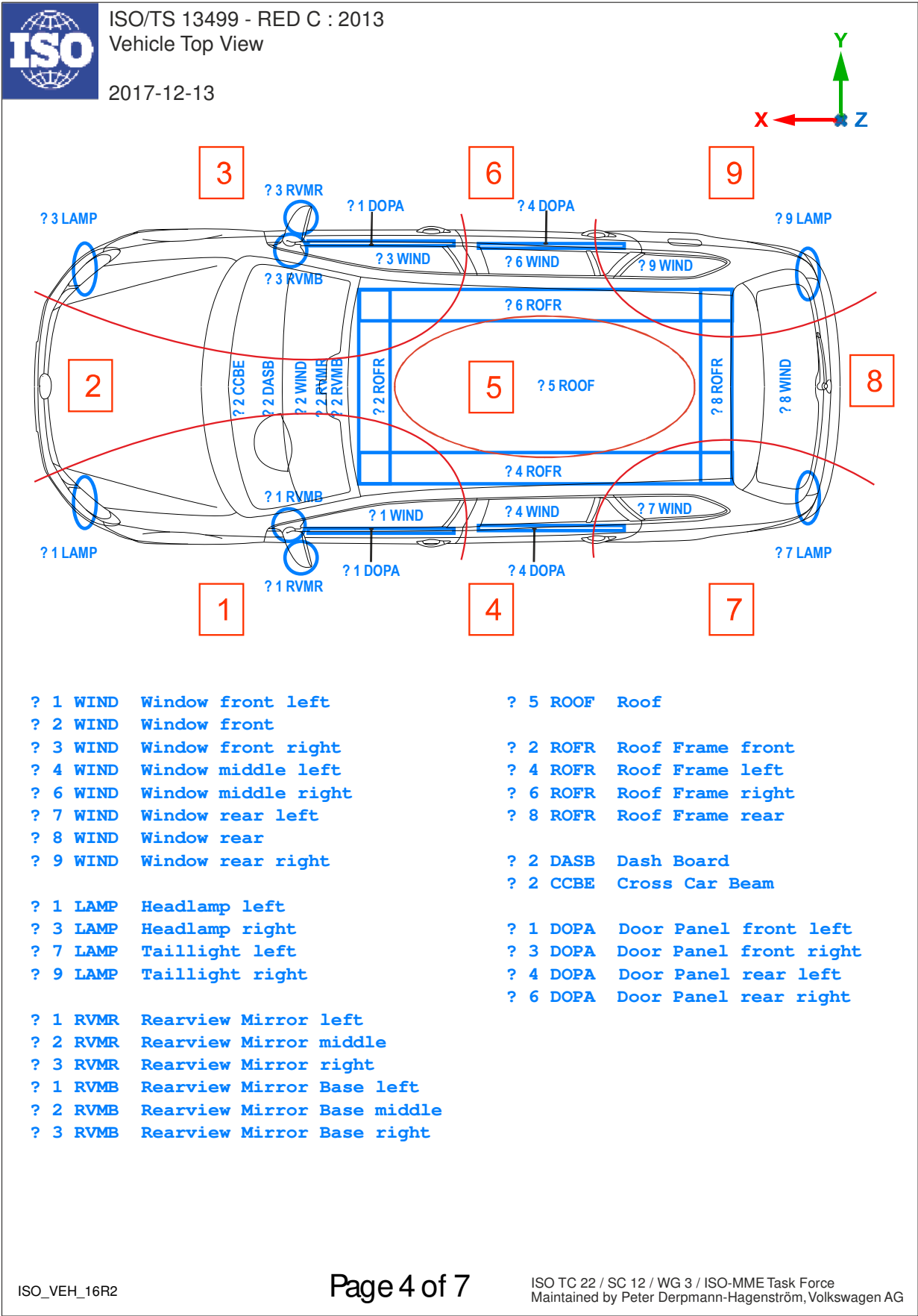
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Peter Derpmann-Hagenström, Volkswagen AG

## VEH\_S3 Vehicle left side, open

Valid since Version 1.6.2p2  
left side open; steering wheel, pedals

VEH\_T1 Vehicle top

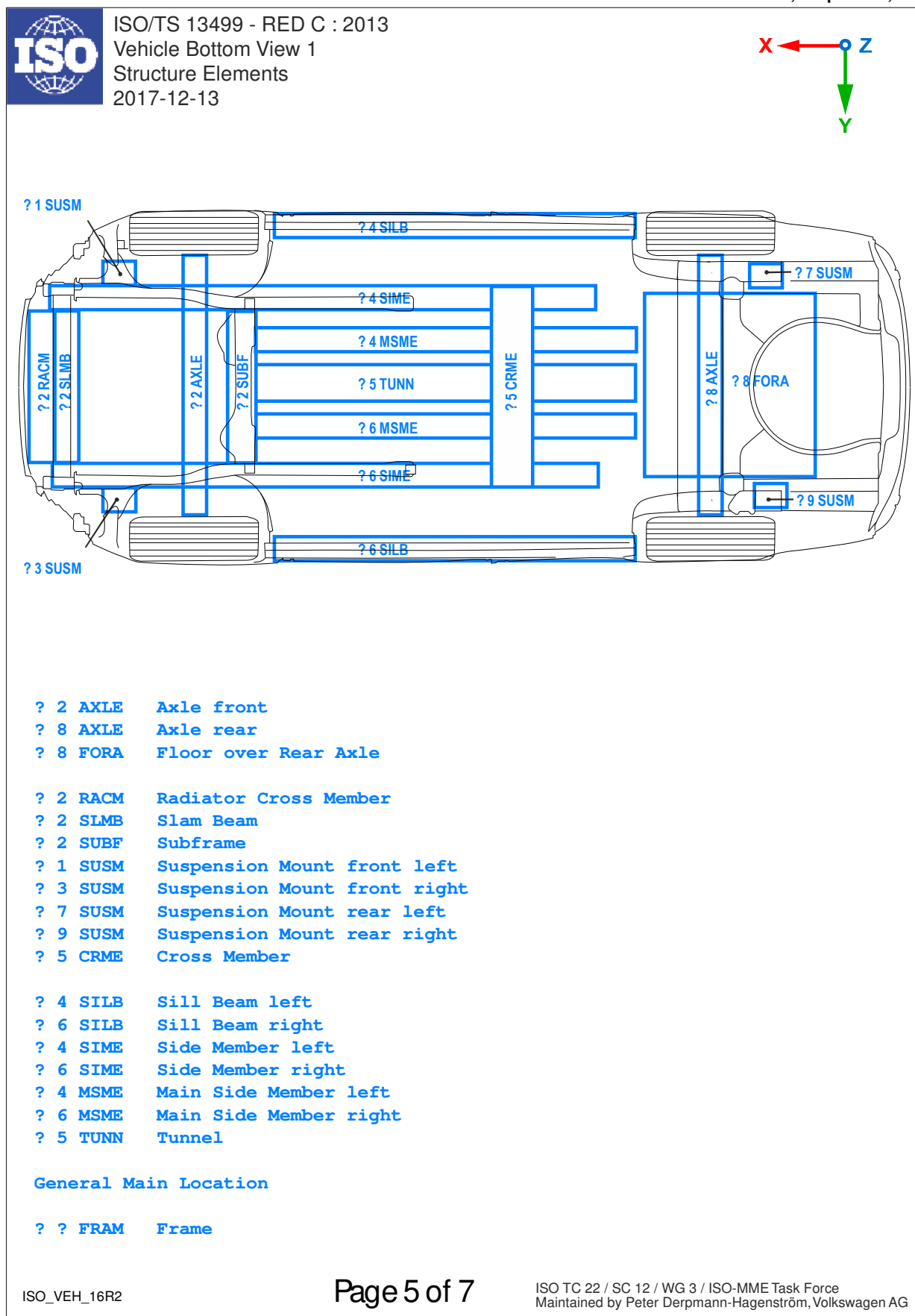
Valid since Version 1.6.2p2  
window, roof, roof frame, lamp, ...



## VEH\_B1 Vehicle bottom

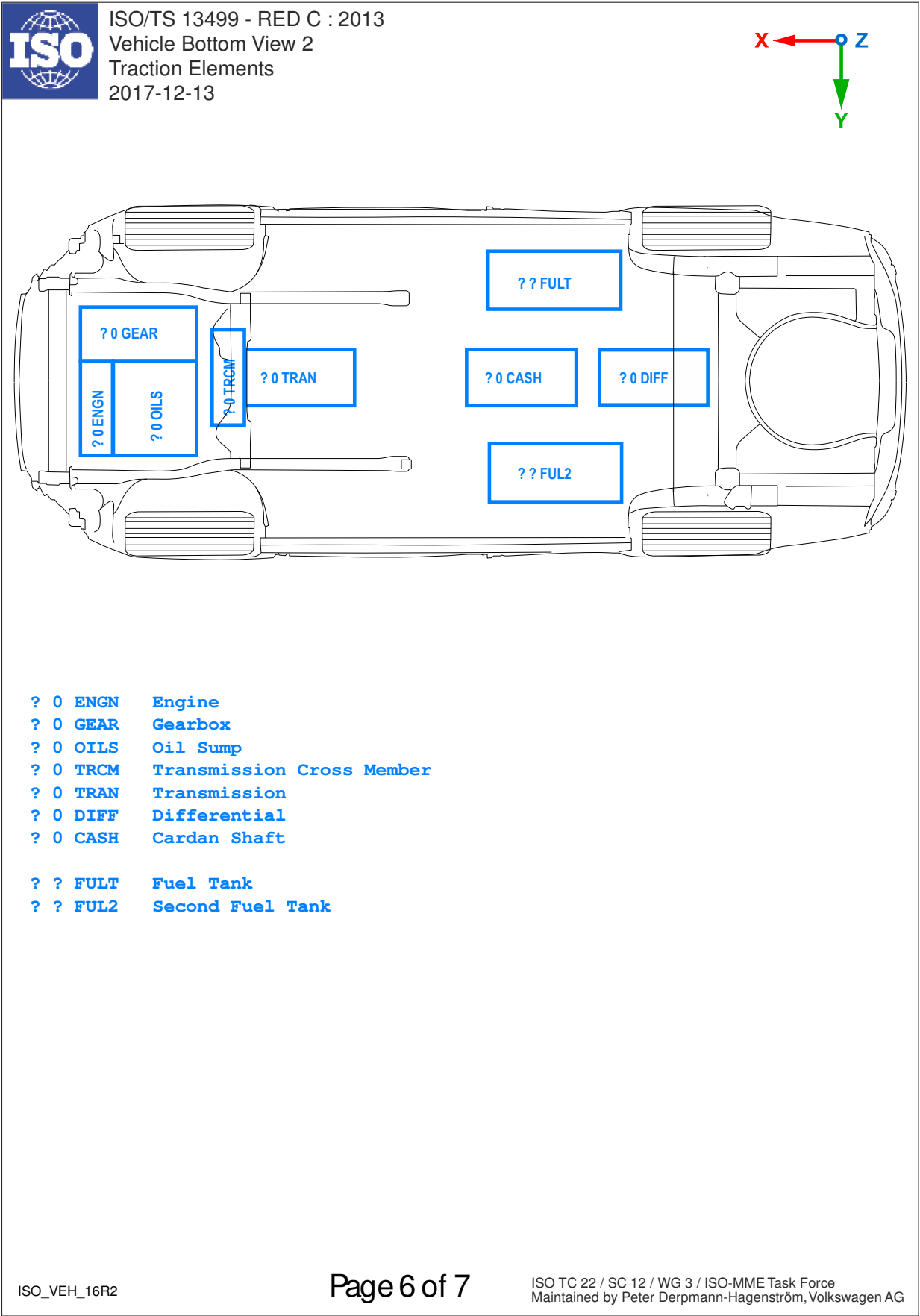
Valid since Version 1.6.2p2

side and cross members, suspension, axle, ...



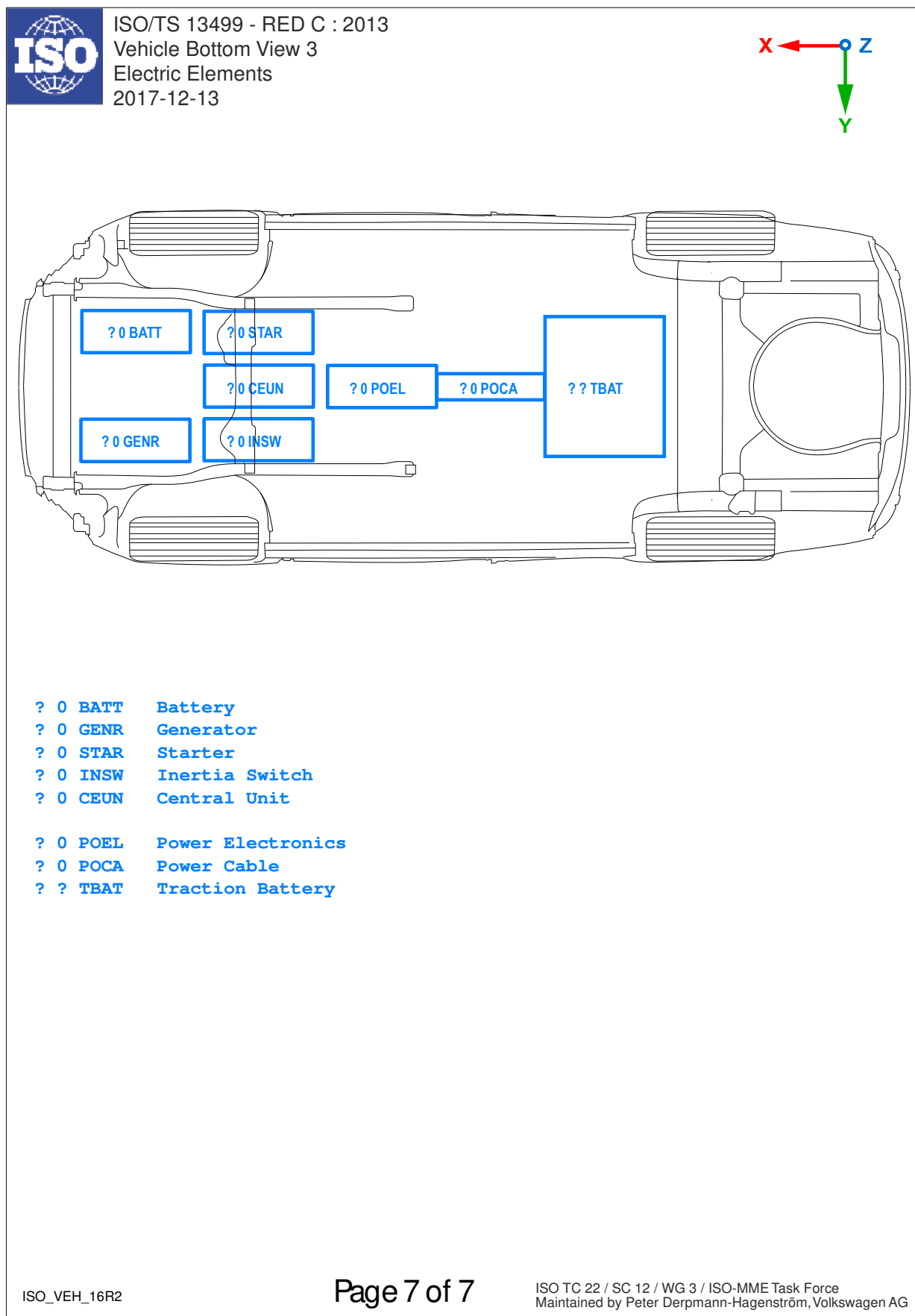
VEH\_B2 Vehicle bottom

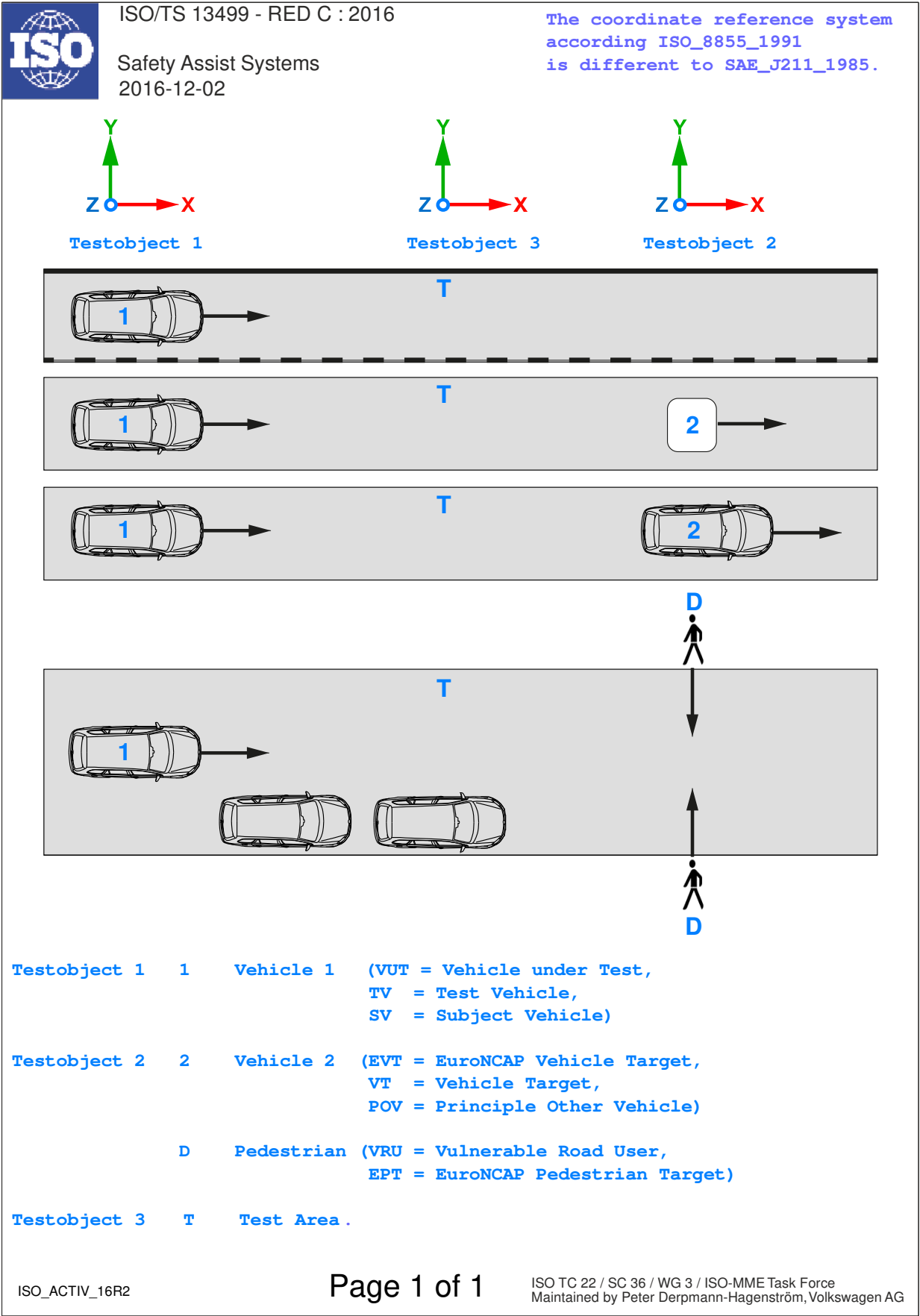
Valid since Version 1.6.2p2  
engine, transmission, fuel tank, electrical components,





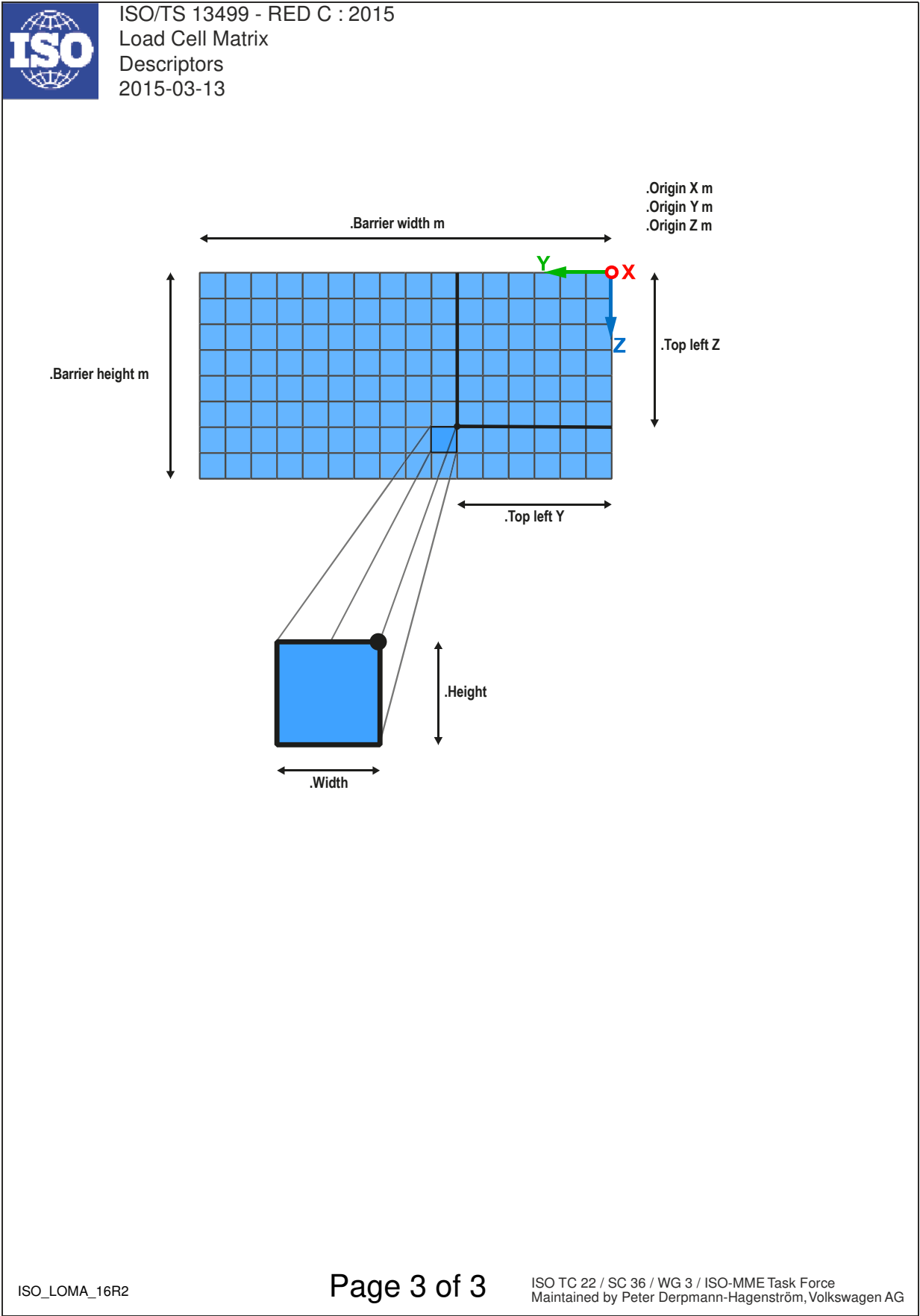
## VEH\_B3 Vehicle bottom

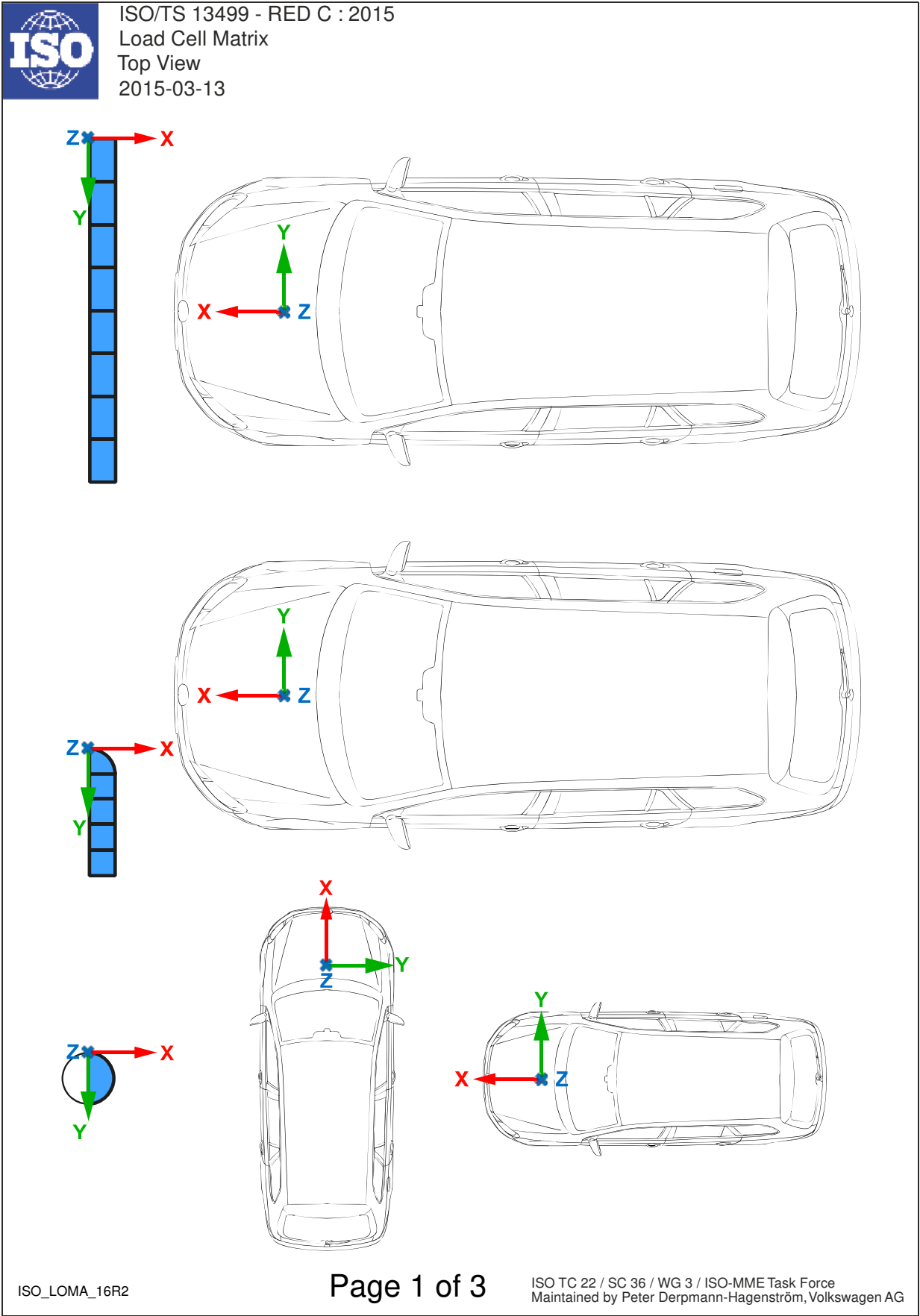
Valid since Version 1.6.2p2  
electric elements



LOMA Load Cell Matrix

Valid since Version 1.6.2p2  
Load Cell Matrix Configurations Coding Description






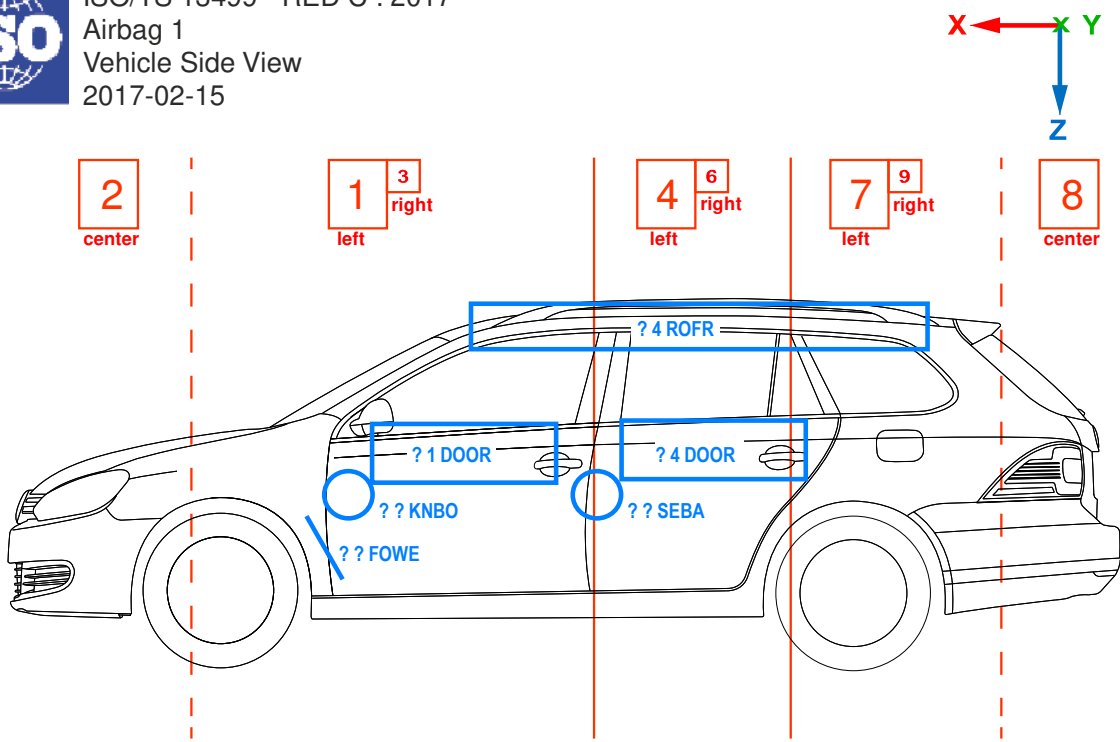


AIRB     Airbag (1)

Valid since Version 1.6.1  
door, knee, footwell, roof frame airbags



ISO/TS 13499 - RED C : 2017  
Airbag 1  
Vehicle Side View  
2017-02-15



picture only from the left side of the vehicle

**General Main Locations**

? ? AIRB ???? ??	Airbag
? ? ABSE ???? ??	Airbag Sensor

**Frontal Airbags**

? ? KNBO ???? AF	Knee Bolster Airbag
? ? KNBO ???? GF	Knee Bolster Generator
? ? SEBA ???? AF	Seat Back Knee Airbag
? ? SEBA ???? GF	Seat Back Knee Generator
? ? FOWE ???? AF	Footwell Airbag
? ? FOWE ???? GF	Footwell Generator

**Side Airbags**

? ? DOOR ???? AS	Door Side Airbag
? ? DOOR ???? GS	Door Side Generator

**Head Airbags**

? ? DOOR ???? AH	Door Head Airbag
? ? DOOR ???? GH	Door Head Generator
? ? ROFR ???? AH	Roof Frame Head Airbag
? ? ROFR ???? GH	Roof Frame Head Generator

**Interaction Airbags (without picture)**

? 2 AIRB ???? AI	Interaction Airbag frontal
? 2 AIRB ???? GI	Interaction Generator frontal
? 5 AIRB ???? AI	Interaction Airbag rear
? 5 AIRB ???? GI	Interaction Generator rear


ISO\_AIRB\_16R2

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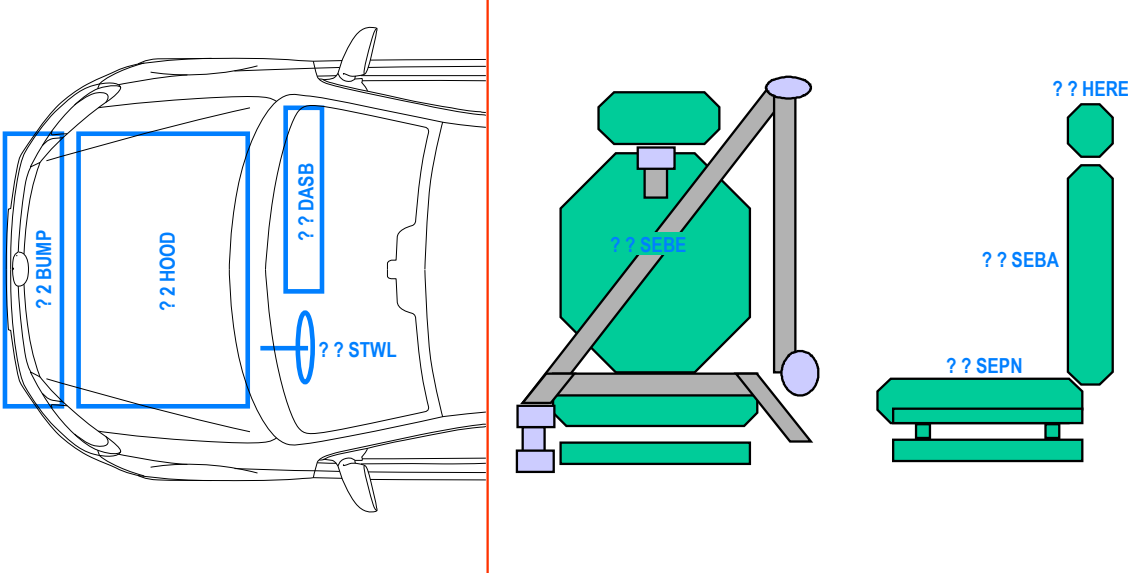
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Peter Derpmann-Hagenström, Volkswagen AG

AIRB      Airbag (2)

Valid since Version      1.6.1  
external, seat related airbags



ISO/TS 13499 - RED C : 2013  
Airbag 2  
Vehicle Top View and Seat  
2016-11-24



The diagram illustrates the locations of various airbags in a vehicle. On the left, a top-down view of the car shows the front and rear seats. Blue boxes and labels indicate the positions of different airbags: '?? BUMP' at the front bumper, '?? HOOD' on the hood, '?? DASB' on the dashboard, and '?? STWL' at the steering wheel. On the right, a side view of the front seat shows '?? SEBE' on the seat belt, '?? SEBA' on the seat back, '?? SEPN' on the seat pan, and '?? HERE' on the headrest.

**Frontal Airbags**

?? STWL    AF Steering Wheel Airbag  
?? STWL    GF Steering Wheel Gen.  
?? DASB    AF Dashboard Airbag  
?? DASB    GF Dashboard Generator

**Pedestrian Airbags**

?? 2 BUMP    AP Bumper Airbag  
?? 2 BUMP    GP Bumper Generator  
?? 2 HOOD    AP Hood Airbag  
?? 2 HOOD    GP Hood Generator

**Frontal Airbags**

?? SEBE    AF Seat Belt Airbag  
?? SEBE    GF Seat Belt Generator

**Side Airbags**

?? SEPN    AS Seat Pan Airbag  
?? SEPN    GS Seat Pan Generator  
?? SEBA    AS Seat Back Airbag  
?? SEBA    GS Seat Back Generator

**Rear Airbags**

?? HERE    AR Head Restraint Airbag  
?? HERE    GR Head Restraint Gen.

ISO\_AIRB\_16R2

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
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## IMP\_2 Impactors: head, upper legform

Valid since Version 1.6.2p1  
headforms and upper legform impactor

ISO/TS 13499 - RED C : 2013  
Impactors  
Headforms and Upper Legform Impactor  
2016-11-24

D 0 HEAD 00 00 P? AC ?

D 0 HEAD 00 00 FH AC ?

D 0 HEAD 00 00 HE AC ?

D 0 HEAD LE 00 HH AC ?

D 0 HEAD RI 00 HH AC ?

D 0 FEMR UP 00 PU FO X

D 0 FEMR UP 00 PU MO Y

D 0 FEMR MI 00 PU MO Y

D 0 FEMR LO 00 PU MO Y

D 0 FEMR LO 00 PU FO X

D 0 HEAD 00 00 FH AC X ?	Free Motion Headform Acceleration X	transducer
D 0 HEAD 00 00 FH AC Y ?	Free Motion Headform Acceleration Y	transducer
D 0 HEAD 00 00 FH AC Z ?	Free Motion Headform Acceleration Z	transducer

D 0 HEAD ?? 00 H? AC X ?	(Hemisphere) Headform Acceleration X	transducer
D 0 HEAD ?? 00 H? AC Y ?	(Hemisphere) Headform Acceleration Y	transducer
D 0 HEAD ?? 00 H? AC Z ?	(Hemisphere) Headform Acceleration Z	transducer

D 0 HEAD 00 00 P? AC X ?	Pedestrian Headform Acceleration X	transducer
D 0 HEAD 00 00 P? AC Y ?	Pedestrian Headform Acceleration Y	transducer
D 0 HEAD 00 00 P? AC Z ?	Pedestrian Headform Acceleration Z	transducer


D 0 HEAD 00 ?? ?? DS X V	Position X	filmanalysis
D 0 HEAD 00 ?? ?? DS Y V	Position Y	filmanalysis
D 0 HEAD 00 ?? ?? DS Z V	Position Z	filmanalysis
D 0 HEAD 00 ?? ?? AN X V	Rotation around X Axis	filmanalysis
D 0 HEAD 00 ?? ?? AN Y V	Rotation around Y Axis	filmanalysis
D 0 HEAD 00 ?? ?? AN Z V	Rotation around Z Axis	filmanalysis

D 0 FEMR UP 00 PU FO X ?	Upper Shear Force X	transducer
D 0 FEMR LO 00 PU FO X ?	Lower Shear Force X	transducer
D 0 FEMR UP 00 PU MO Y ?	Upper Bending Moment Y	transducer
D 0 FEMR MI 00 PU MO Y ?	Middle Bending Moment Y	transducer
D 0 FEMR LO 00 PU MO Y ?	Lower Bending Moment Y	transducer

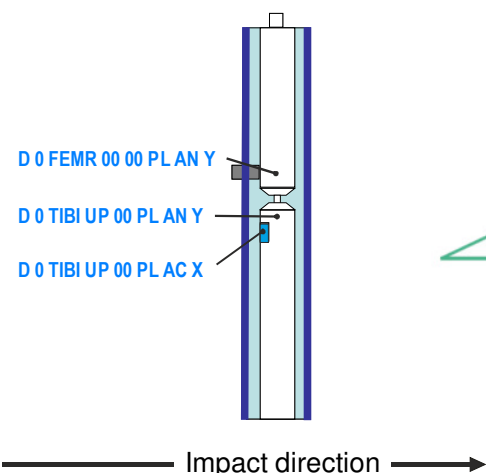
ISO\_IMP\_16R2

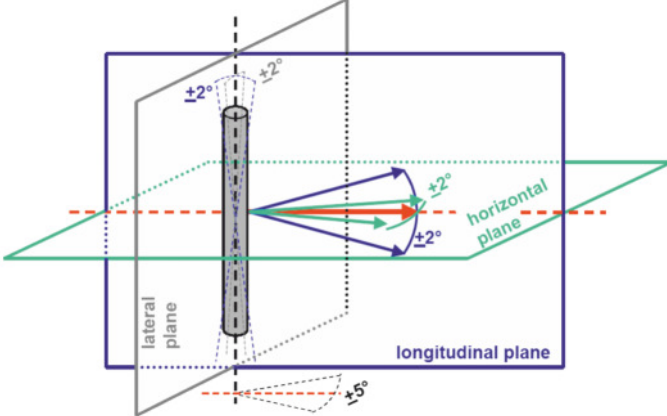
Page 2 of 4

ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Peter Derpmann-Hagenström, Volkswagen AG



ISO/TS 13499 - RED C : 2013  
Impactors  
Pedestrian Legform Impactor  
2016-11-24





D 0 TIBI UP 00 PL AC X ?    Tibia Acceleration X      transducer

D 0 TIBI UP 00 PL AN Y ?    Bending Angle Tibia Y      transducer

D 0 FEMR 00 00 PL AN Y ?    Bending Angle Femur Y      transducer

D 0 KNEE 00 00 PL AN Y ?    Bending Angle effective Y      calculation

D 0 KNEE 00 00 PL DS X ?    Shear Displacement X      calculation

negative shear displacement values if tibia is retained against femur

D 0 FEMR 00 OR PL DS X V    Position X      filmanalysis

D 0 FEMR 00 OR PL DS Y V    Position Y      filmanalysis

D 0 FEMR 00 OR PL DS Z V    Position Z      filmanalysis

D 0 FEMR 00 OR PL AN X V    Orientation in lateral Plane YZ      filmanalysis

D 0 FEMR 00 OR PL AN Y V    Orientation in longitudinal Plane XZ      filmanalysis

D 0 FEMR 00 OR PL AN Z V    Orientation in horizontal Plane XY      filmanalysis

D 0 TIBI UP 00 PL DS X ?    Indentation at Hit Point X      calculation

For compatibility to existing data the impact direction for this impactor defines the X coordinate of the local system.

ISO\_IMP\_16R2

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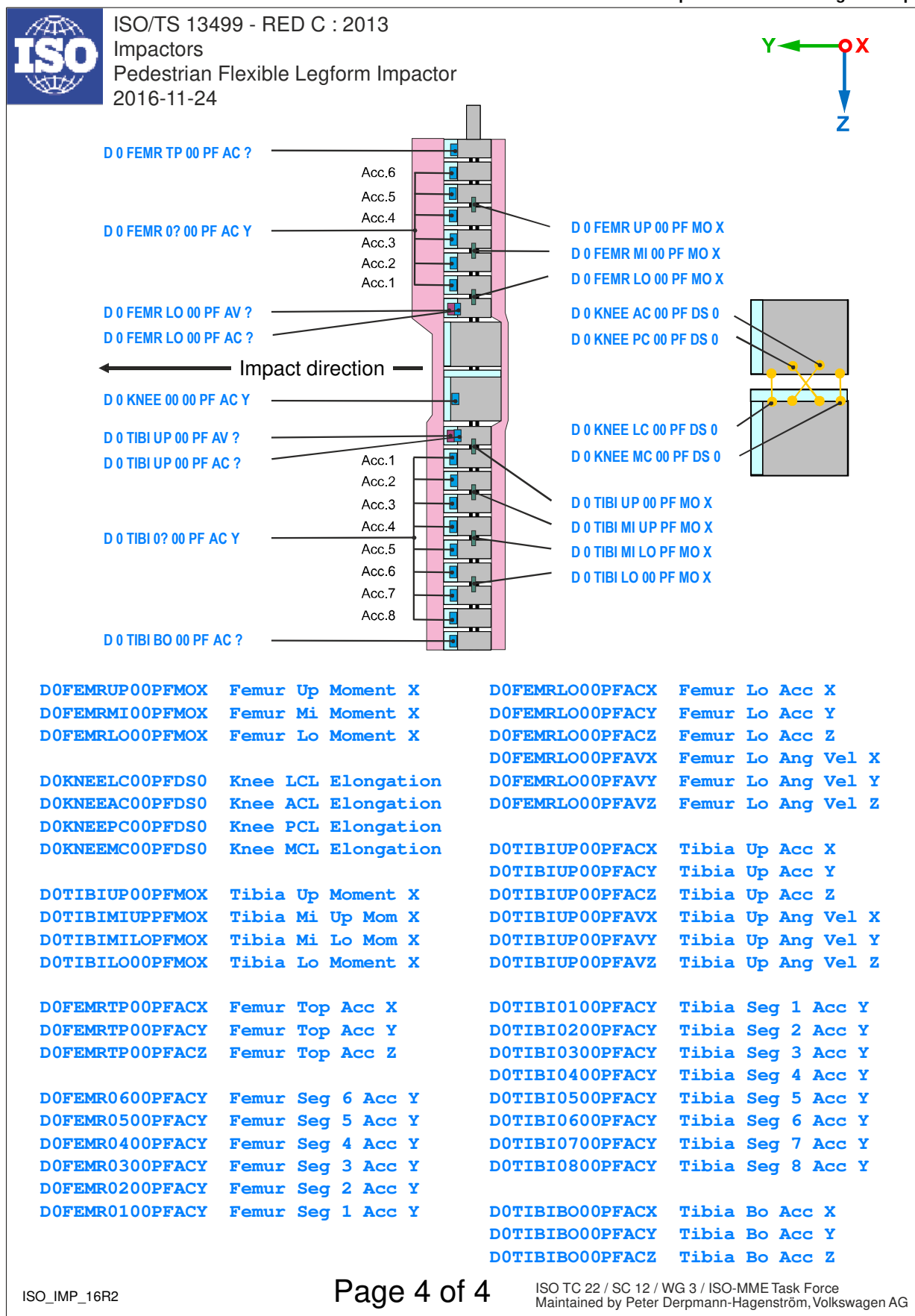
ISO\_IMP\_3\_162p2\_20161124.EMF

-> IMP\_3 <-    3 of 4

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ISO MME Database 250 - Data Release 1.6.2p2

## IMP\_4 Impactors: flexpli-legform

Valid since Version 1.6.1  
pedestrian flexible legform impactor

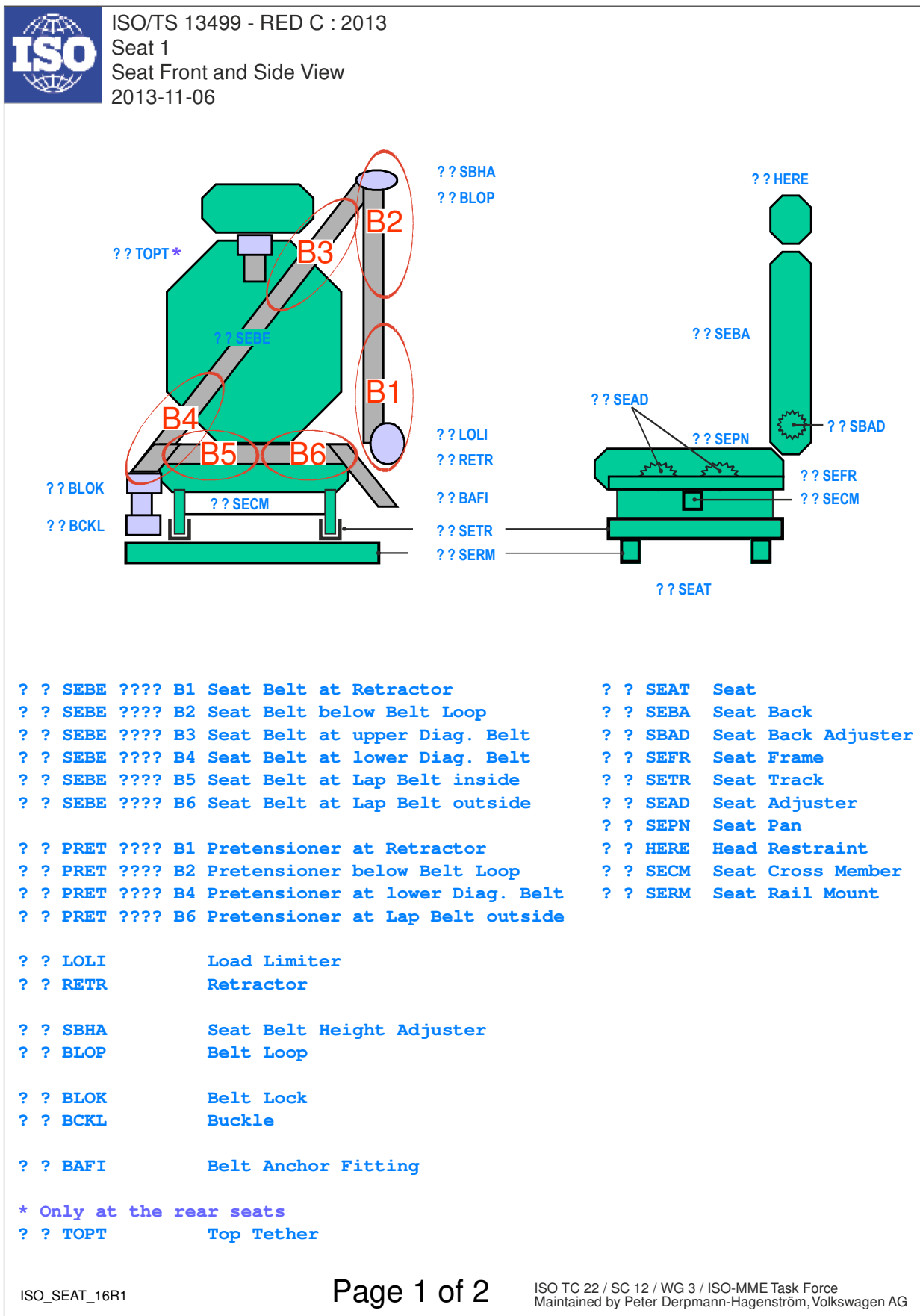
ISO\_IMP\_16R2

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
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**SEAT\_1** Seat

Valid since Version **1.6.1**  
**belts and seat structure**

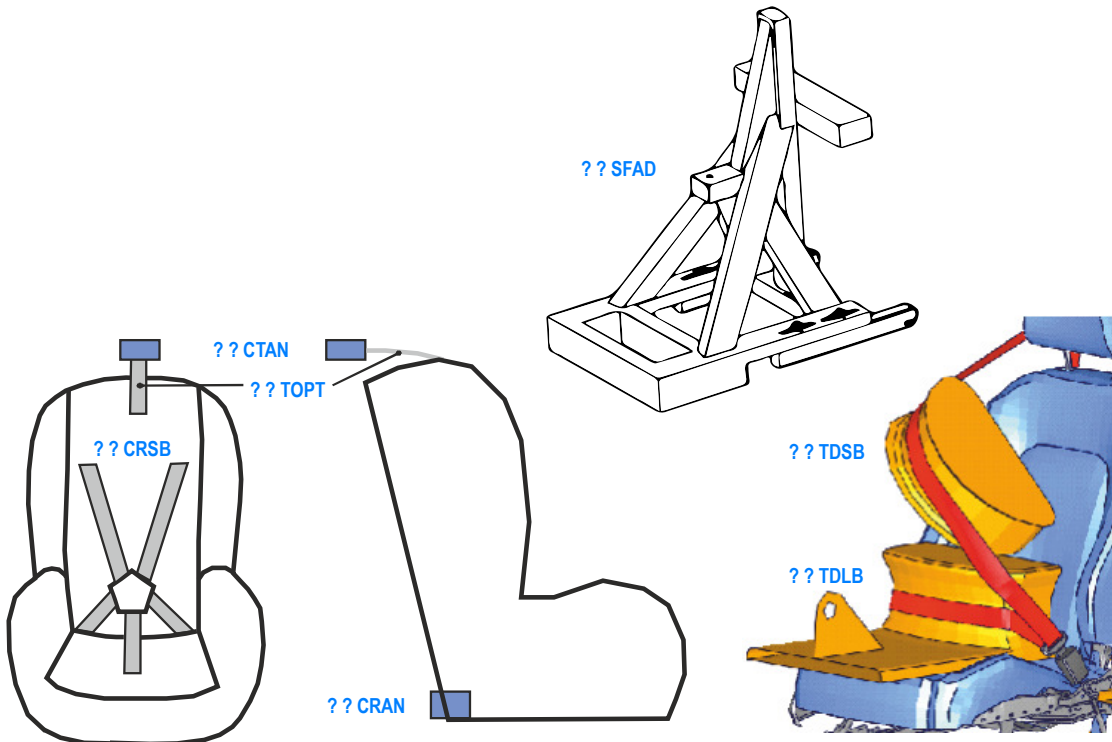


SEAT\_2 Seat and traction devices

Valid since Version 1.6.1  
traction devices, Child restraint anchorage



ISO/TS 13499 - RED C : 2013  
Seat 2  
Child Restraint Systems  
2013-11-06



?? TDSB Traction Device Shoulder Belt  
?? TDLB Traction Device Lap Belt

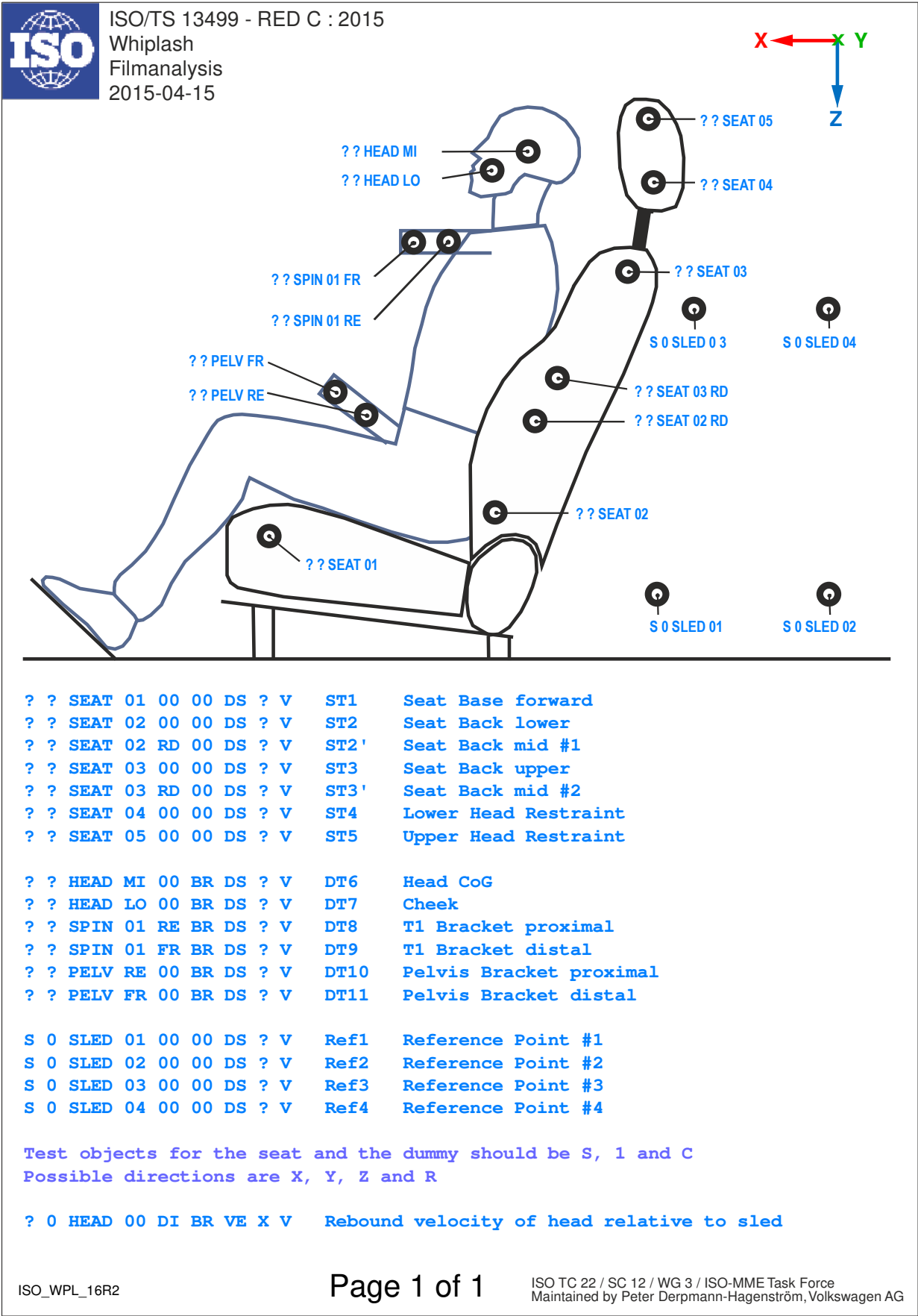
?? CTAN Child Tether Anchorage  
?? CRAN Child Restraint Anchor  
?? CRSB Child Restraint Seat Belt  
?? TOPT Top Tether

?? SFAD Static Force Application Device

ISO\_SEAT\_16R1

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
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OTHER Chest Deflection Measurement

Valid since Version 1.6.2p1

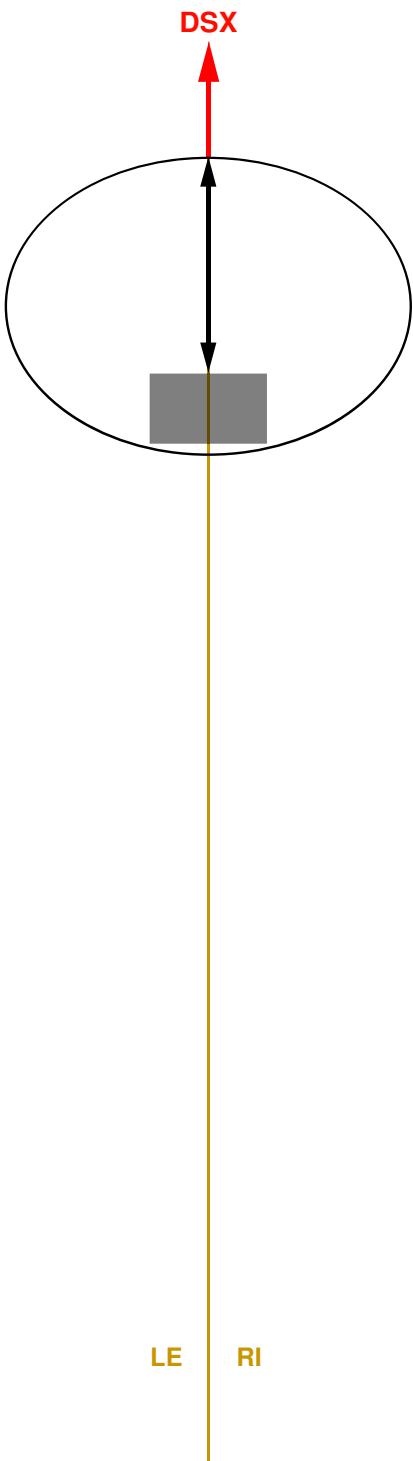
Chest Deflection Coding for different dummy types



ISO/TS 13499 - RED C : 2013  
Chest Deflection  
1 Axis - Frontal Impact  
2016-05-12

**X**

**Z** **Y**



DSX

X

Z Y

LE RI

Rotary Potentiometer **H3, HF, HM, Y6, Y7**  
transducer:  
CHST 00 00 ?? DSX

for polynomial calibration and  
simultaneously exchange only:  
calculation:  
CHST 00 03 ?? DSX

String Potentiometer **Q1, Q2**  
transducer:  
CHST 00 00 ?? DSX

IR-TRACC 1D **Q3, Q6**  
transducer:  
CHST 00 00 ?? VOX  
calculation:  
CHST 00 00 ?? DSX


ISO\_CHST\_16R2

Page 1 of 6

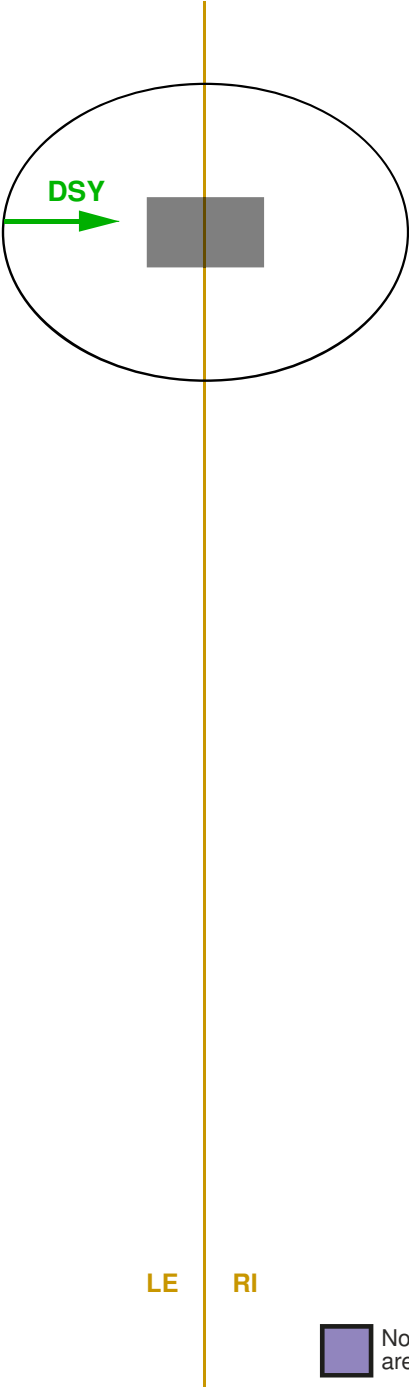
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Peter Derpmann-Hagenström, Volkswagen AG

OTHER Chest Deflection Measurement

Valid since Version 1.6.2p1  
Chest Deflection Coding for different dummy types



ISO/TS 13499 - RED C : 2013  
Chest Deflection  
1 Axis - Side Impact  
2016-05-12



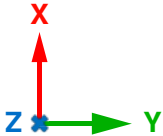
Linear Potentiometer **E1, E2, SI**  
transducer:  
???? LE ?? ?? DSY

Linear Potentiometer **S2** (historical)  
transducer:  
???? ?? LE S2 DSY


String Potentiometer **Q1, Q2**  
transducer:  
CHST LE 00 ?? DSY

IR-TRACC 1D **Q3, Q4, Q6**  
transducer:  
CHST LE 00 ?? VOY  
calculation:  
CHST LE 00 ?? DSY

IR-TRACC 1D **WS** (historical)  
transducer:  
???? LE ?? WS VOY  
calculation:  
???? LE ?? WS DSY



LE RI



Note that sensor locations and ISO Codes are different for right side impact.

ISO\_CHST\_16R2

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
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OTHER Chest Deflection Measurement

Valid since Version 1.6.2p1

Chest Deflection Coding for different dummy types

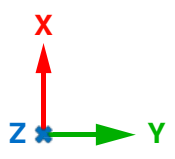


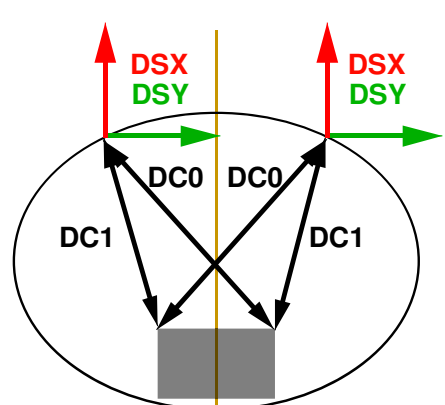
ISO/TS 13499 - RED C : 2013

Chest Deflection

2 Axis - Frontal Impact

2016-05-12





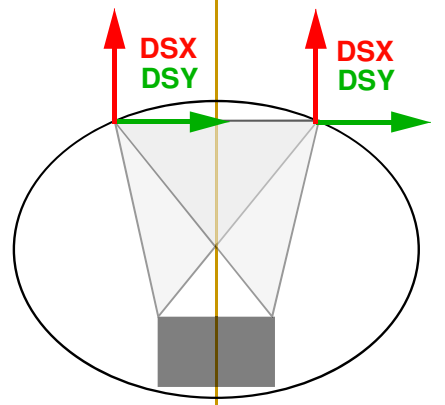
String Potentiometer **H3, HF**

transducer:

```
CHST LE UP ?? DC 0,1
CHST RI UP ?? DC 0,1
CHST LE LO ?? DC 0,1
CHST RI LO ?? DC 0,1
```

calculation:

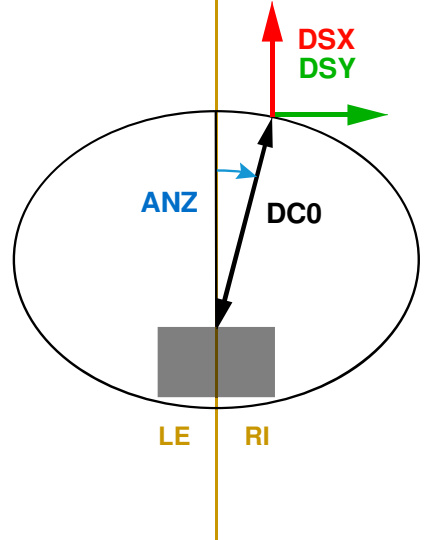
```
CHST LE UP ?? DS X,Y
CHST RI UP ?? DS X,Y
CHST LE LO ?? DS X,Y
CHST RI LO ?? DS X,Y
```



RibEye **H3, HF**

calculation:

```
CHST LE ?? ?? DS X,Y
CHST RI ?? ?? DS X,Y
```



IR-TRACC 2D **QA**

transducer:

```
CHST UP 00 QA VO0
CHST UP 00 QA DC0
CHST UP 00 QA ANZ
CHST LO 00 QA VO0
CHST LO 00 QA DC0
CHST LO 00 QA ANZ
```

calculation:

```
CHST UP 00 QA DS X,Y
CHST LO 00 QA DS X,Y
```


ISO\_CHST\_16R2

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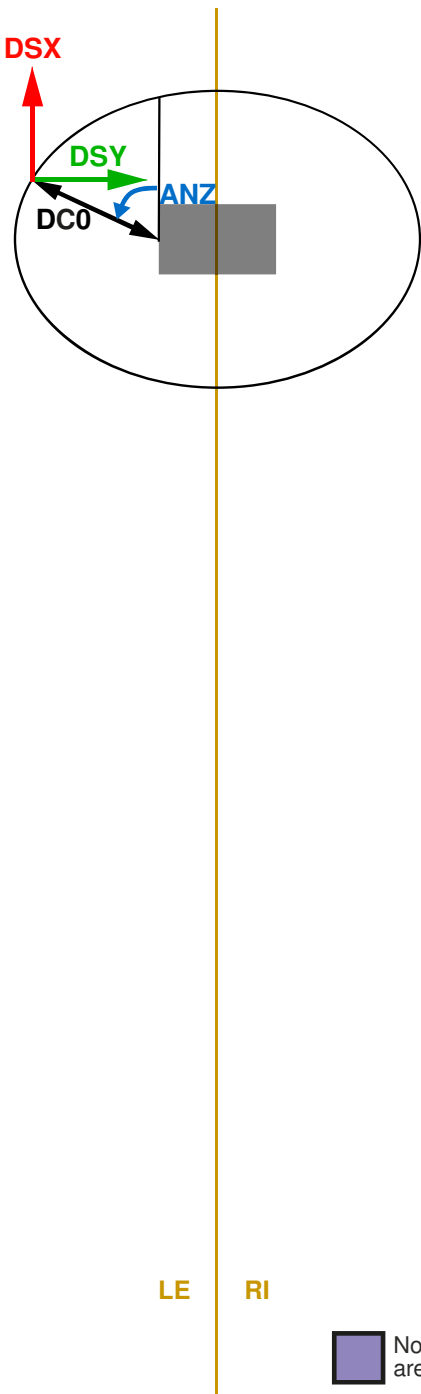
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
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OTHER Chest Deflection Measurement

Valid since Version 1.6.2p1  
Chest Deflection Coding for different dummy types



ISO/TS 13499 - RED C : 2013  
Chest Deflection  
2 Axis - Side Impact - Variant  
2016-05-12



**IR-TRACC 2D WS**

transducer:

SHRI LE 00 WS VOO  
SHRI LE 00 WS DC0  
SHRI LE 00 WS ANZ  
TRRI LE 0? WS VOO  
TRRI LE 0? WS DC0  
TRRI LE 0? WS ANZ  
ABRI LE 0? WS VOO  
ABRI LE 0? WS DC0  
ABRI LE 0? WS ANZ

calculation:

SHRI LE 00 WS DS X,Y  
TRRI LE 01 WS DS X,Y  
TRRI LE 02 WS DS X,Y  
TRRI LE 03 WS DS X,Y  
ABRI LE 01 WS DS X,Y  
ABRI LE 02 WS DS X,Y

**IR-TRACC 2D QA**


transducer:

CHST LE UP QA VOO  
CHST LE UP QA DC0  
CHST LE UP QA ANZ  
CHST LE LO QA VOO  
CHST LE LO QA DC0  
CHST LE LO QA ANZ

calculation:

CHST LE UP QA DS X,Y  
CHST LE LO QA DS X,Y


LE RI

 Note that sensor locations and ISO Codes are different for right side impact.

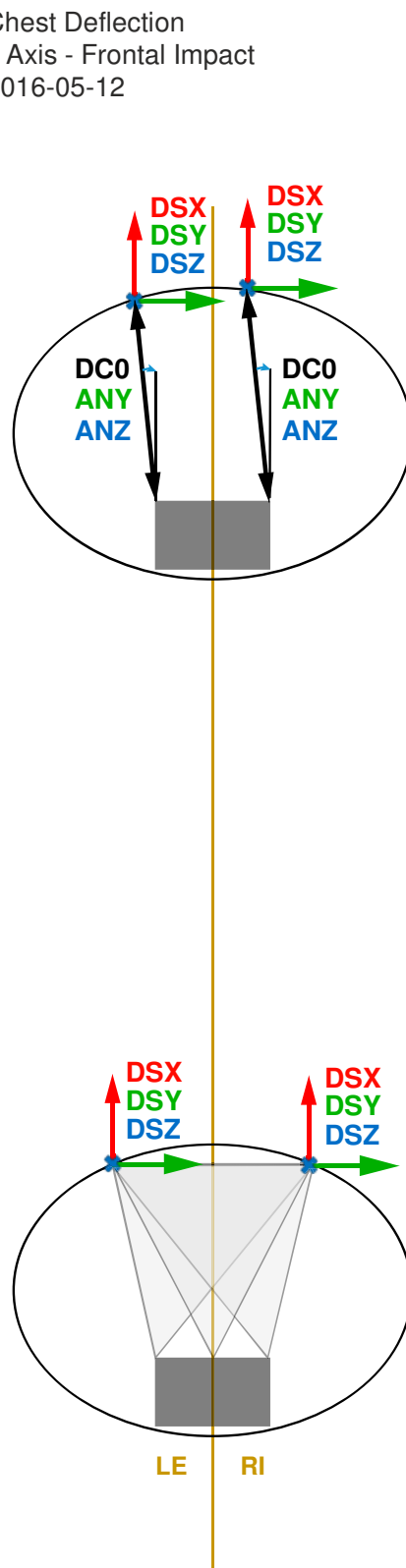
OTHER Chest Deflection Measurement

Valid since Version 1.6.2p1

Chest Deflection Coding for different dummy types



ISO/TS 13499 - RED C : 2013  
Chest Deflection  
3 Axis - Frontal Impact  
2016-05-12



IR-TRACC 3D TH , (THMPR) H3, HF

transducer:

CHST LE UP ?? VOO

CHST LE UP ?? DC0

CHST LE UP ?? ANY

CHST LE UP ?? ANZ

CHST RI UP ?? VOO

CHST RI UP ?? DC0

CHST RI UP ?? ANY

CHST RI UP ?? ANZ

CHST LE LO ?? VOO

CHST LE LO ?? DC0

CHST LE LO ?? ANY

CHST LE LO ?? ANZ

CHST RI LO ?? VOO

CHST RI LO ?? DC0

CHST RI LO ?? ANY

CHST RI LO ?? ANZ

calculation:

CHST LE UP ?? DS X,Y,Z

CHST RI UP ?? DS X,Y,Z

CHST LE LO ?? DS X,Y,Z

CHST RI LO ?? DS X,Y,Z

RibEye H3, HF

calculation:

CHST LE ?? H? DS X,Y,Z


CHST RI ?? H? DS X,Y,Z

ISO\_CHST\_16R2

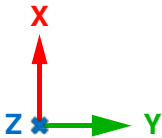
OTHER Chest Deflection Measurement

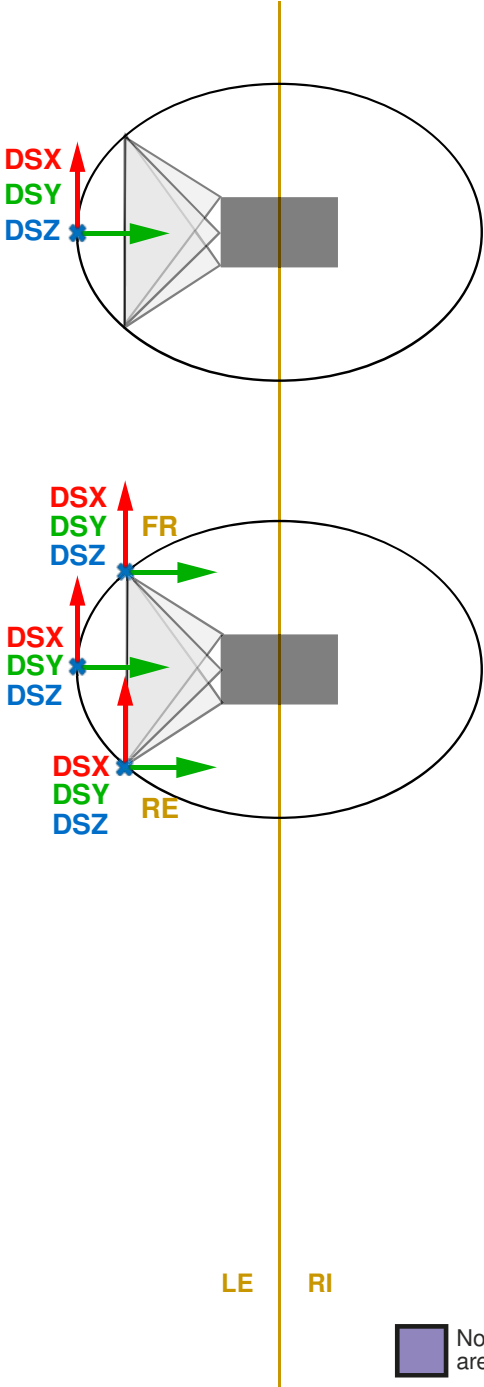
Valid since Version 1.6.2p1

Chest Deflection Coding for different dummy types



ISO/TS 13499 - RED C : 2013  
Chest Deflection  
3 Axis - Side Impact  
2016-05-12





RibEye **S2**

calculation:

SHRI	00	LE	S2	DS	X,Y,Z
TRRI	01	LE	S2	DS	X,Y,Z
TRRI	02	LE	S2	DS	X,Y,Z
TRRI	03	LE	S2	DS	X,Y,Z
ABRI	01	LE	S2	DS	X,Y,Z
ABRI	02	LE	S2	DS	X,Y,Z

RibEye **WS**


calculation:

SHRI	LE	00	WS	DS	X,Y,Z
TRRI	LE	01	WS	DS	X,Y,Z
TRRI	LE	02	WS	DS	X,Y,Z
TRRI	LE	03	WS	DS	X,Y,Z
ABRI	LE	01	WS	DS	X,Y,Z
ABRI	LE	02	WS	DS	X,Y,Z

optional channels

SHRI	LE	FR	WS	DS	X,Y,Z
SHRI	LE	RE	WS	DS	X,Y,Z
TRRI	LU	FR	WS	DS	X,Y,Z
TRRI	LU	RE	WS	DS	X,Y,Z
TRRI	LE	FR	WS	DS	X,Y,Z
TRRI	LE	RE	WS	DS	X,Y,Z
TRRI	LL	FR	WS	DS	X,Y,Z
TRRI	LL	RE	WS	DS	X,Y,Z
ABRI	LU	FR	WS	DS	X,Y,Z
ABRI	LU	RE	WS	DS	X,Y,Z
ABRI	LL	FR	WS	DS	X,Y,Z
ABRI	LL	RE	WS	DS	X,Y,Z

LE RI



Note that sensor locations and ISO Codes are different for right side impact.