

## 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 .*

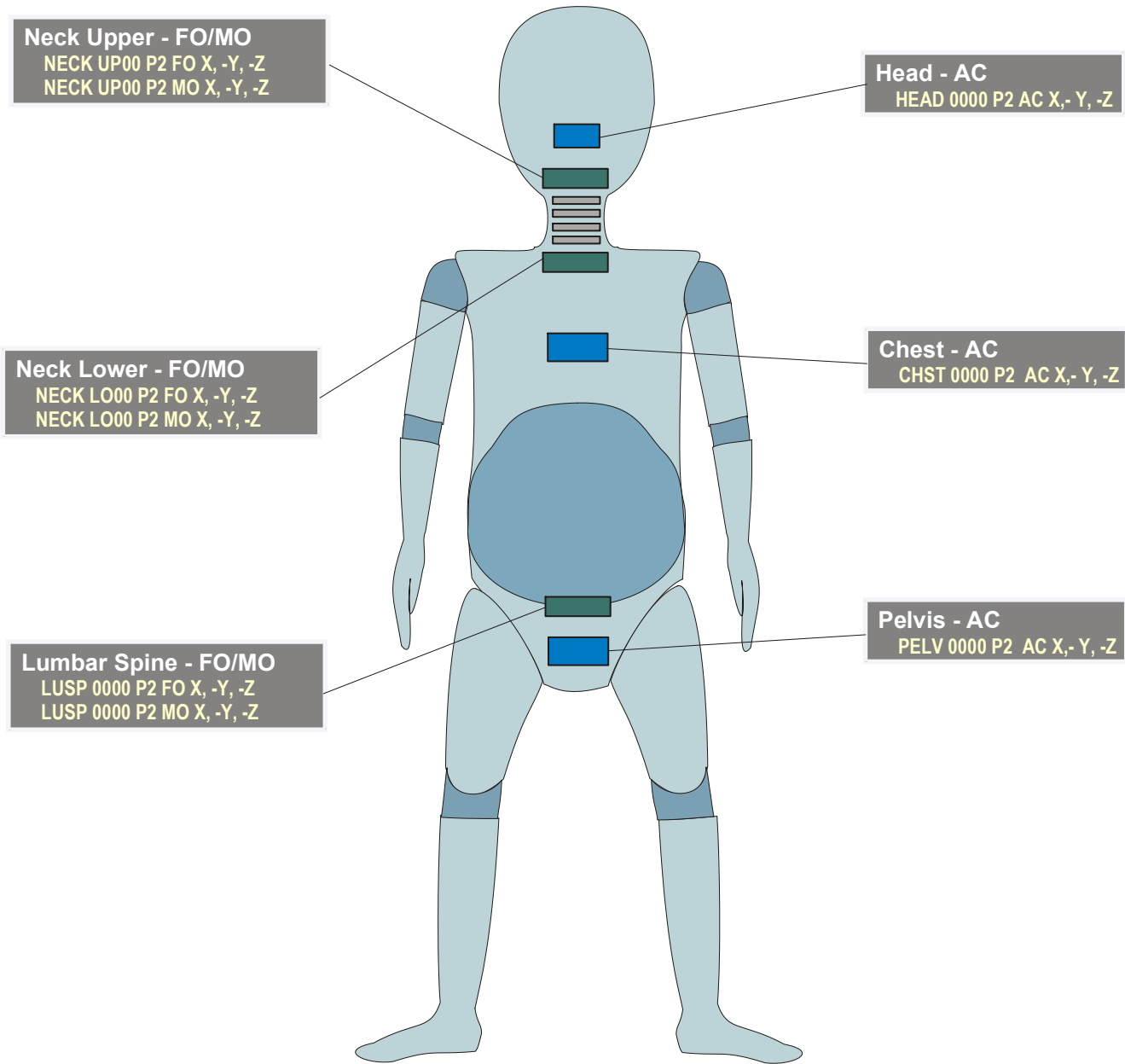
*Figures are serviced and updated in parallel for both major versions. File name references will be identical to version 1.*

## Contents

### Figures for:

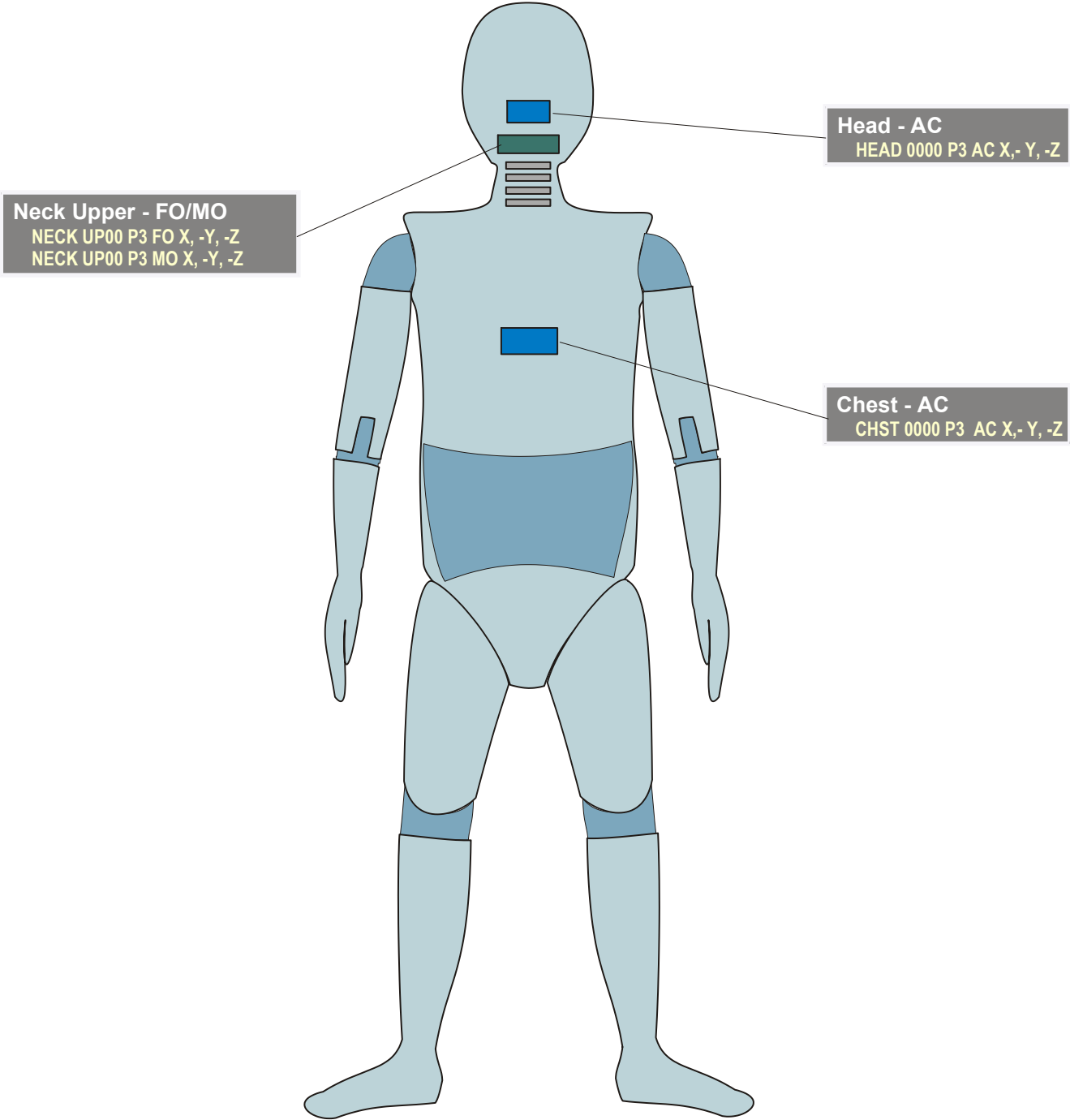
ISO	Content	Revision	Remarks
P2	TNO P 1½ year old	1.1	
P3	TNO P 3 year old	1.1	
Y2	CRABI 12 month old (2)	1.6	
Y6	H III - 3 year old (3)	1.6.1	NPRM Level "A"
Y7	H III - 6 year old (3)	1.6.1	NPRM Level "I" and also Support S (6 Year weighted)
Q0	Q0 newborn	1.6	
Q1	Q1 (2)	1.6.2	
Q2	Q1 1/2 (2)	1.6.2	
Q3	Q3 (3)	1.6.2	
Q3s	Q3s Side Impact (3)	1.6.2	
Q6	Q6 (3)	1.6.2	
Q10	Q10 (3)	1.6.2	
HF	Hybrid III 5% Female (5)	1.6.1	
H3	Hybrid III 50% Male (4)	1.6.1	
TH	THOR 50th (4)	1.6.2	
BR	BioRID (4)	1.6.1	
BS	Bio-SID	1.3	
E1	EuroSID I	1.2	
SI	US SID	1.2	
E2+ER	ES-2 & ES-2re (3)	1.6.1	
S2	SID IIs (5)	1.6.1	
WS	WorldSID (6)	1.6.1	
HUM	Human Models	1.6.2	Human Models; specific Main Locations
VEH_S1	Vehicle left side	1.6.2	A,B,C,D-pillar, wheel, door, sillbeam, hood, tailgate, v
VEH_S2	Vehicle left side	1.6.2	lock, locking system, roof rack, step, suspension, ...
VEH_S3	Vehicle left side, open	1.6.2	left side open; steering wheel, pedals
VEH_T1	Vehicle top	1.6.2	window, roof, roof frame, lamp, ...
VEH_B1	Vehicle bottom	1.6.2	side and cross members, suspension, axle, ...
VEH_B2	Vehicle bottom	1.6.2	engine, transmission, fuel tank, electrical component
VEH_B3	Vehicle bottom	1.6.2	electric elements
ACTIVE	Active Safety	1.6.2	Coding for Active Safety Tests
OBJ_1	Objects	1.6.2	other objects; deformable elements; video tracking
OBJ_2	Objects	1.6.2	other objects; sled, obstacle, ramp configurations
LOMA	Load Cell Matrix	1.6.2	Load Cell Matrix Configurations Coding Description
AIRB	Airbag (2)	1.6.1	external, seat related airbags
IMP_1	Impactors: vehicle front end	1.6.1	impactors overview
IMP_2	Impactors: head, upper legform	1.6.2	headforms and upper legform impactor
IMP_3	Impactors: legform	1.6.1	pedestrian legform impactor

<b>IMP_4</b>	<b>Impactors: flexpli-legform</b>	<b>1.6.1</b>	<b>pedestrian flexible legform impactor</b>
<b>SEAT_1</b>	<b>Seat</b>	<b>1.6.1</b>	<b>belts and seat structure</b>
<b>SEAT_2</b>	<b>Seat and traction devices</b>	<b>1.6.1</b>	<b>traction devices, Child restraint anchorage</b>
<b>WPL_1</b>	<b>Whiplash</b>	<b>1.6.2</b>	<b>whiplash filmanalysis</b>
<b>OTHER</b>	<b>Chest Deflection Measurement</b>	<b>1.6.2</b>	<b>Chest Deflection Coding for different dummy types</b>



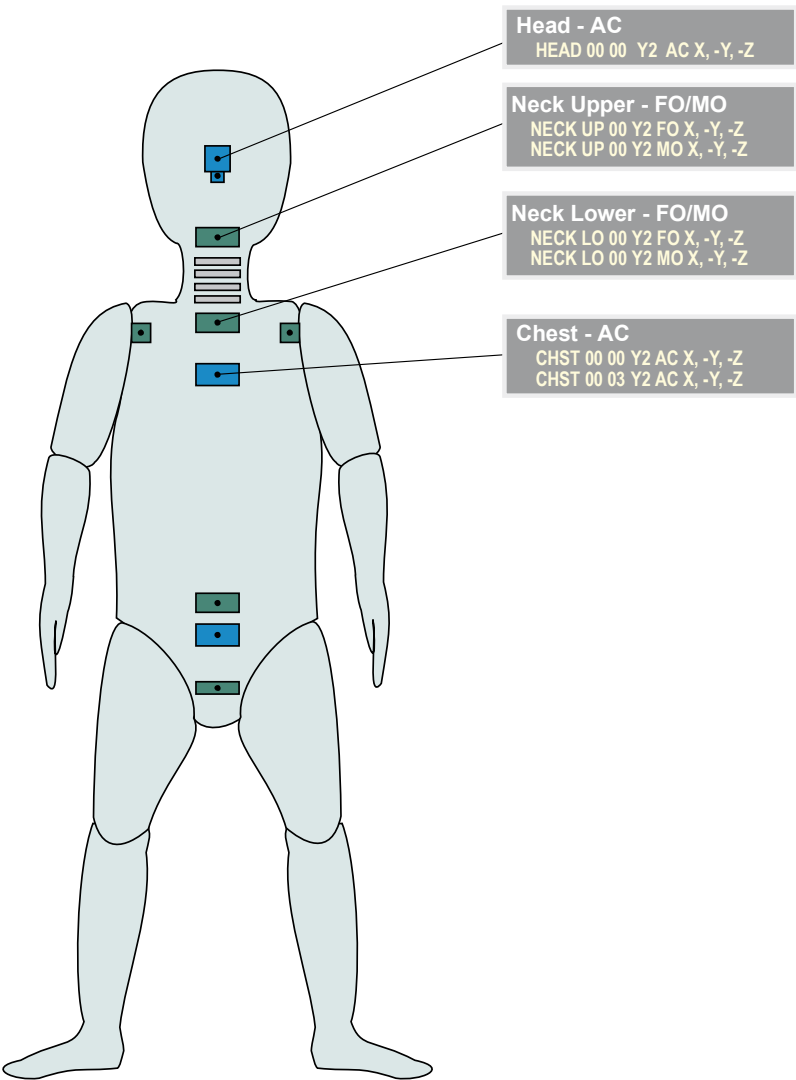
P3 TNO P 3 year old

Valid since Version 1.1





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

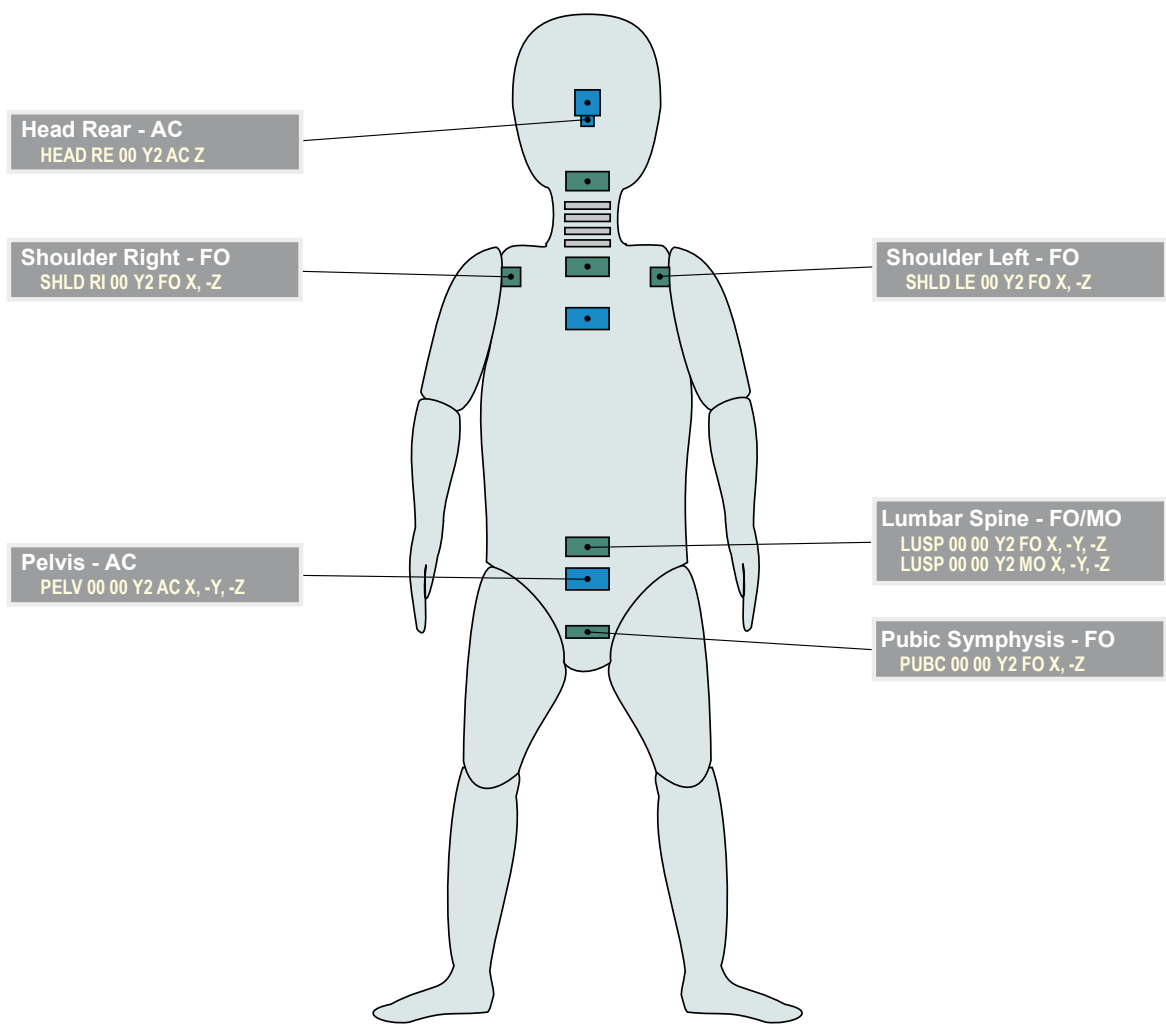


Y2 CRABI 12 month old (2)

Valid since Version 1.6

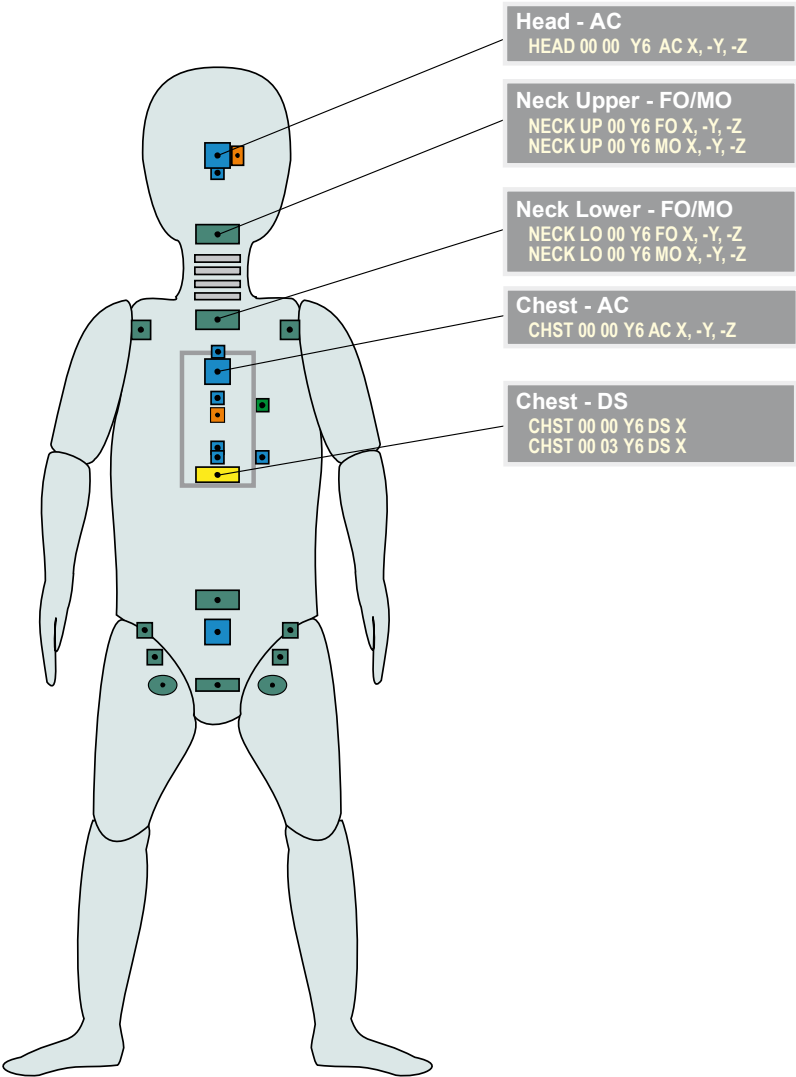


ISO/TS 13499 – RED C : 2010(E)  
Y2, CRABI 12 Month Old Infant Dummy  
Additional Instrumentation  
2011-12-20





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



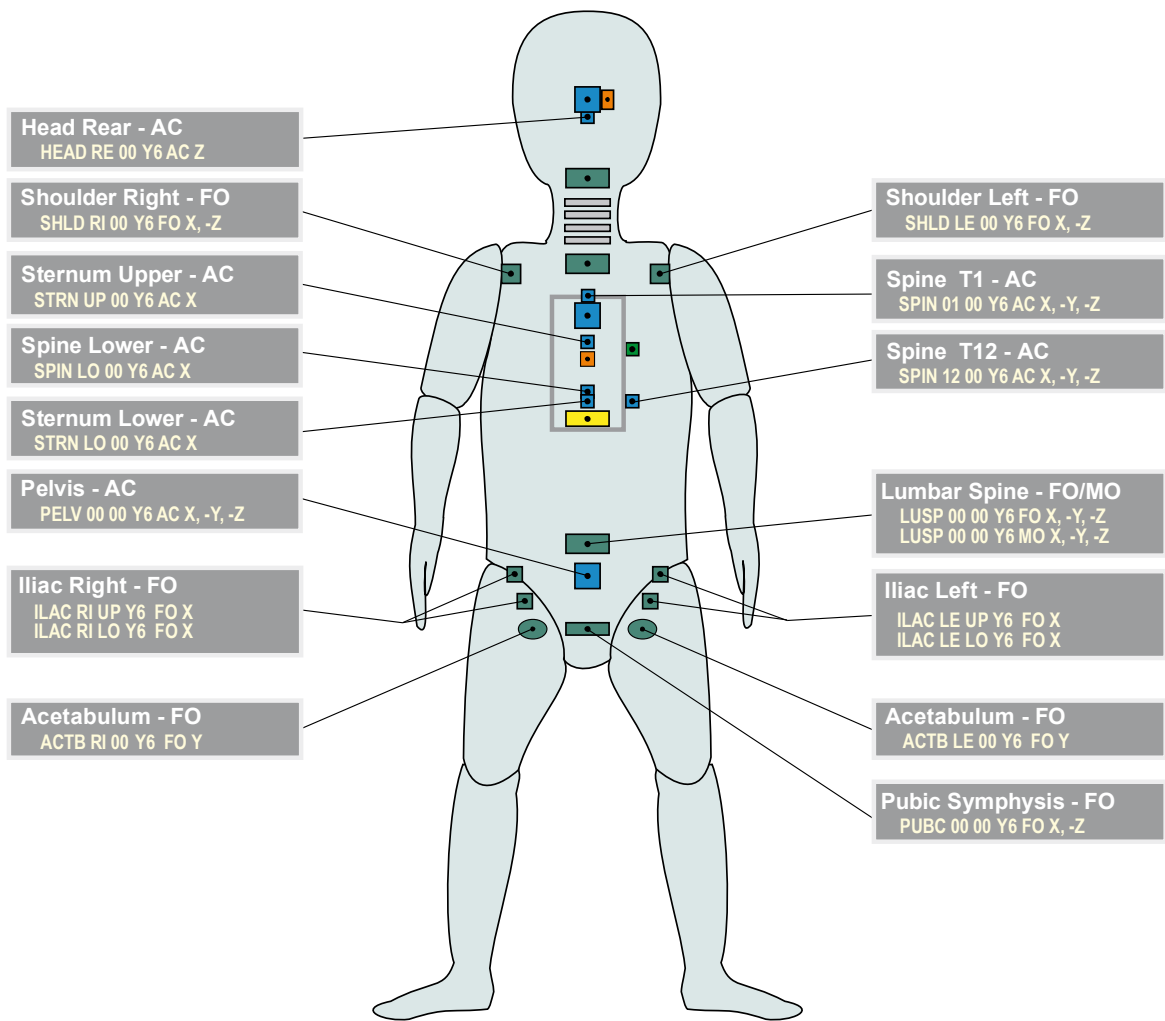


Y6 H III - 3 year old (2)

Valid since Version 1.6.1  
NPRM Level "A"

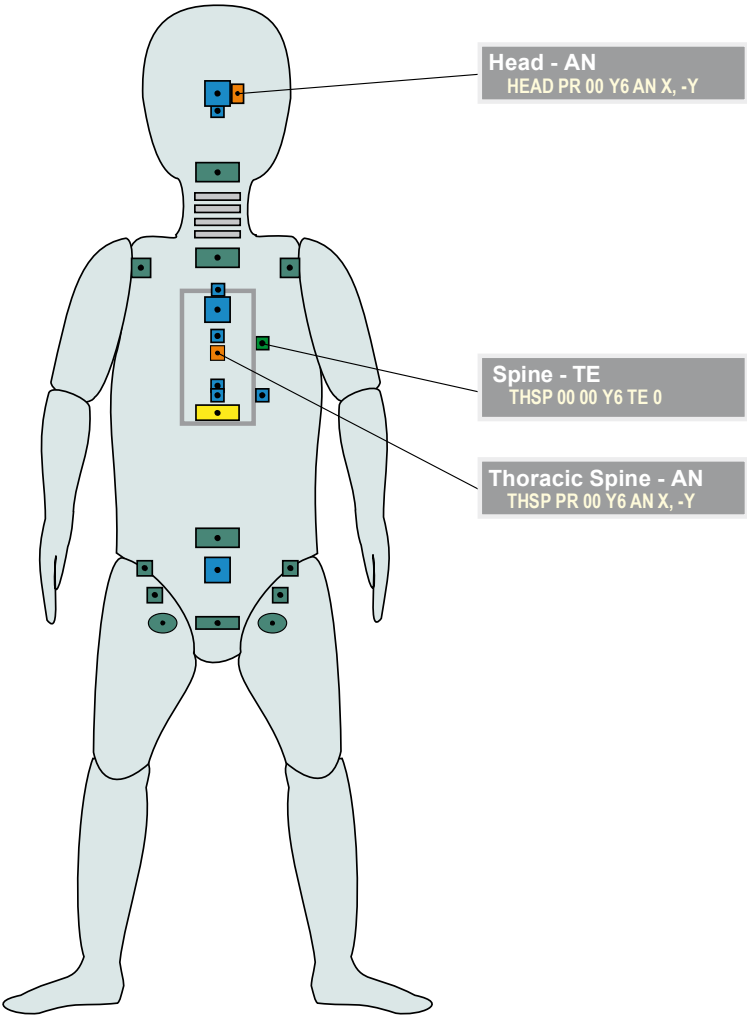


ISO/TS 13499 – RED C : 2010(E)  
Y6, Hybrid III 3 Year Old Child Dummy  
Additional Instrumentation  
2013-07-10





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

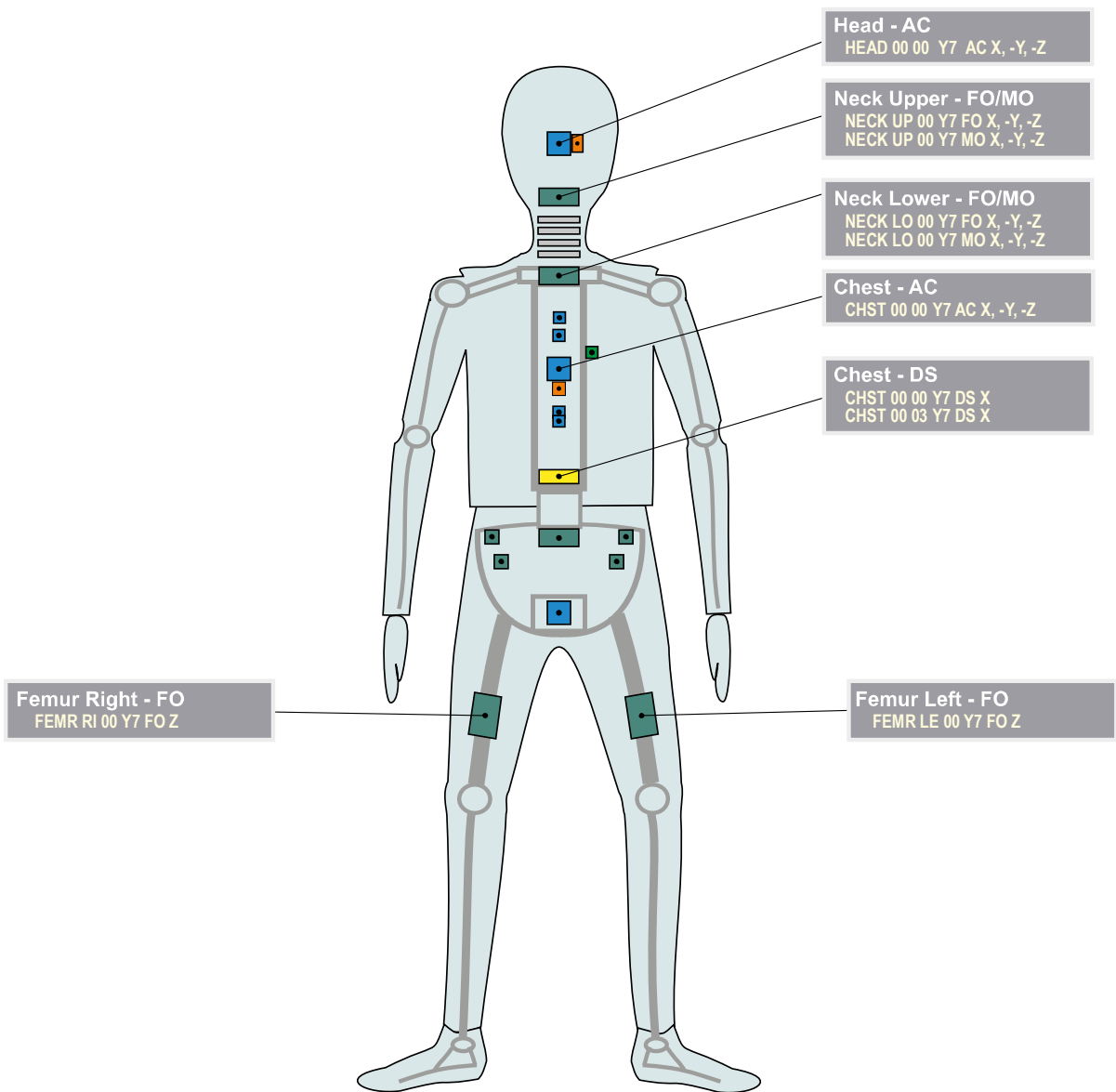


Y7 H III - 6 year old (1)

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



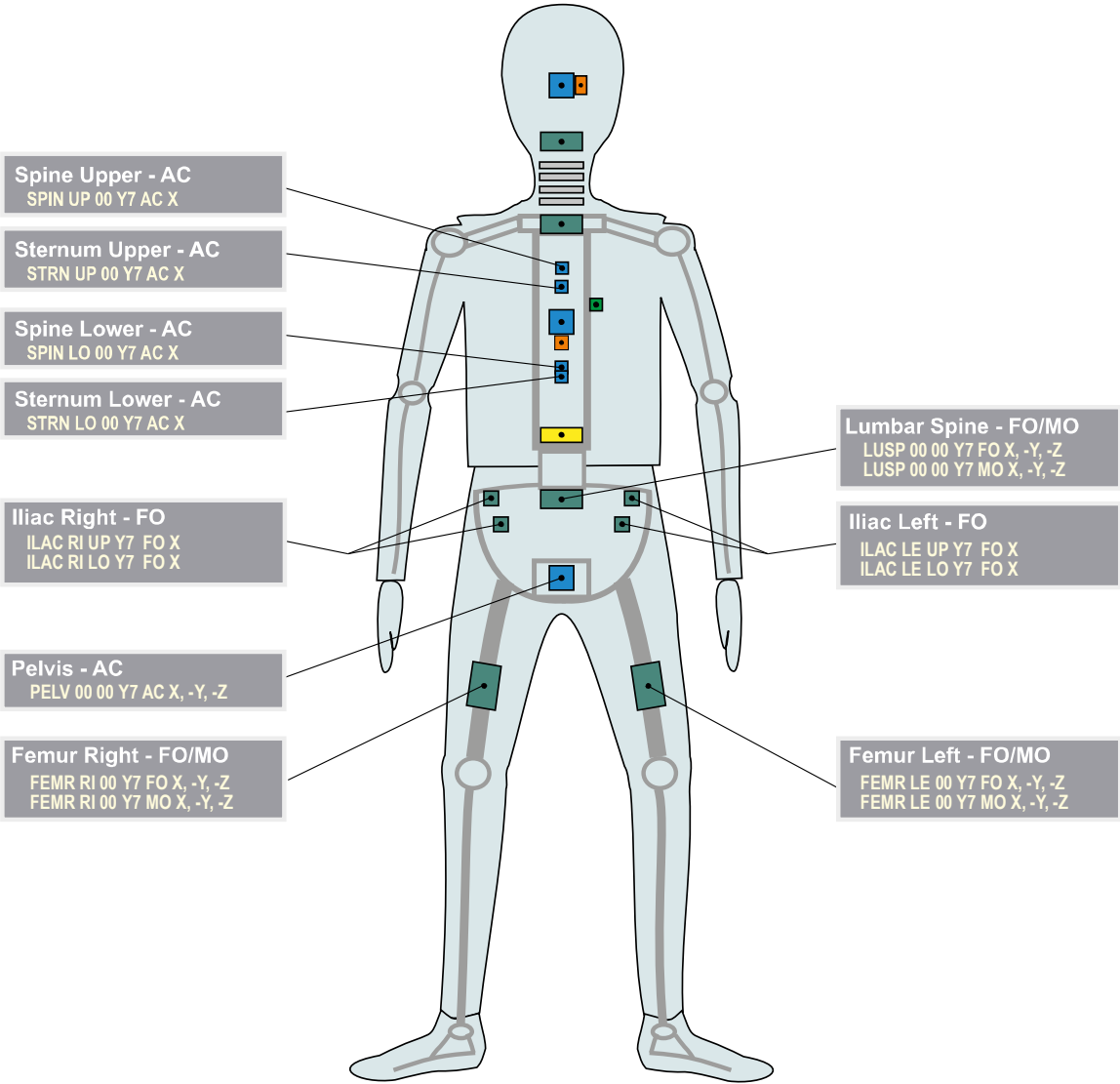
ISO/TS 13499 – RED C : 2010(E)  
Y7, Hybrid III 6-Year Old Child Dummy (use also for 6-Year weighted with YW)  
Standard Instrumentation  
2017-12-13



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



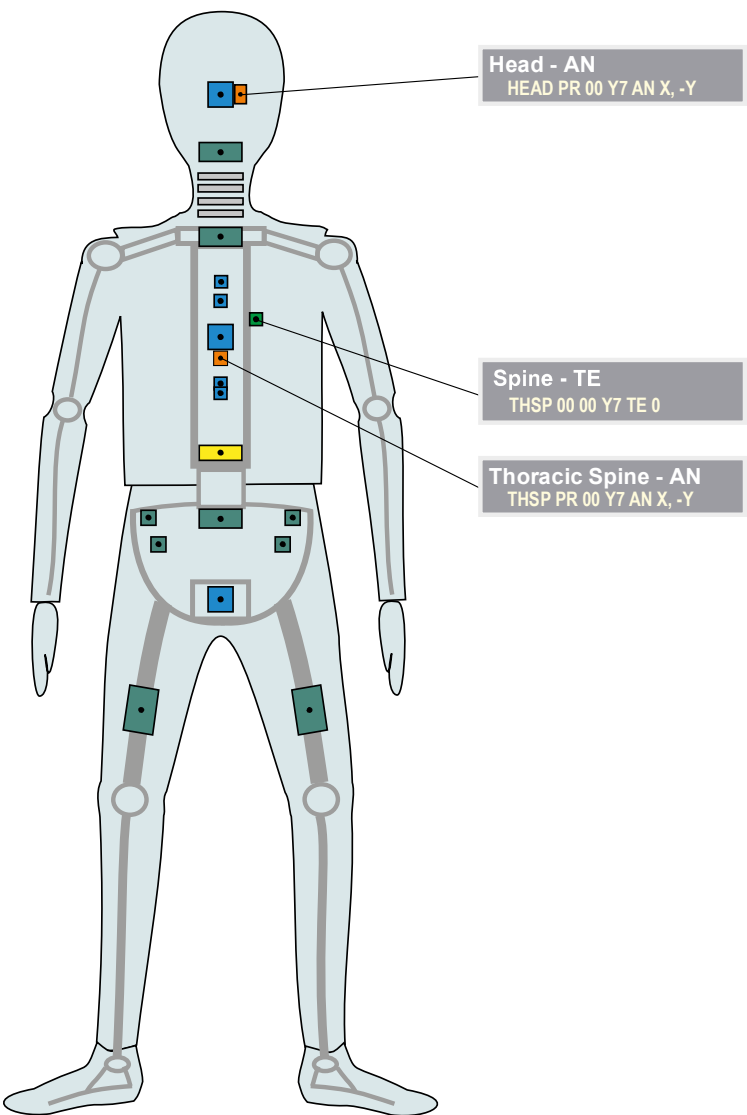
All codes can also be used with the 6-Year weighted Dummy (Subpart S).  
Replace in Fine Location 3 the “Y7” with “YW”.

Y7 H III - 6 year old (3)

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



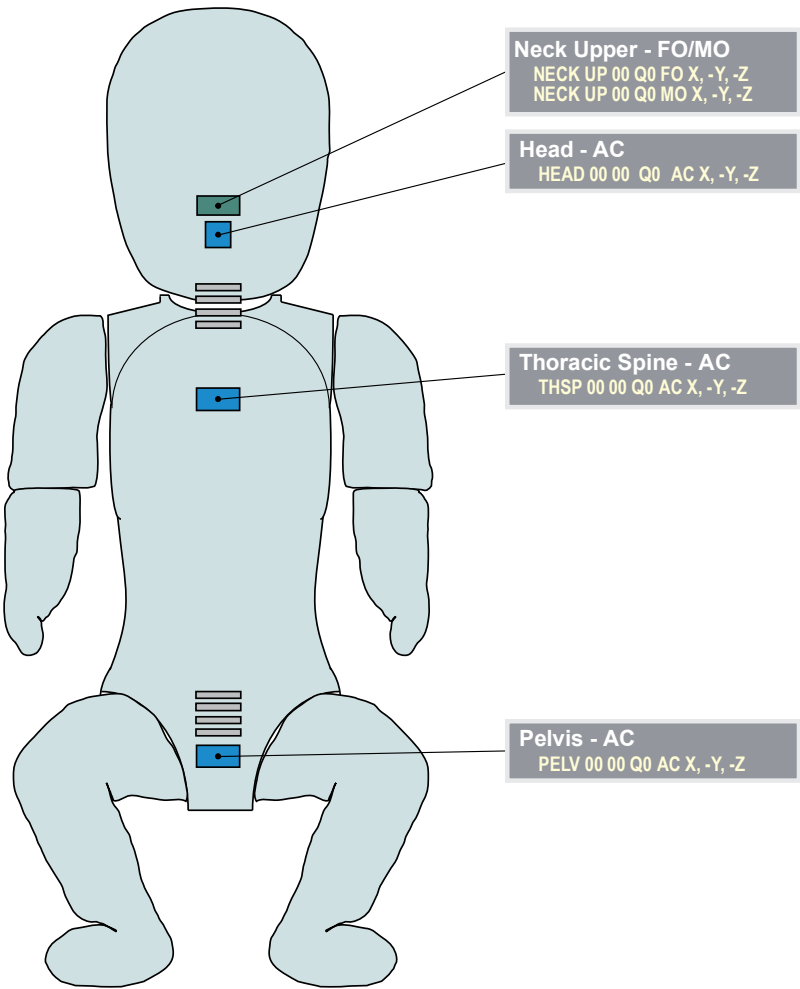
ISO/TS 13499 – RED C : 2010(E)  
Y7, Hybrid III 6-Year Old Child Dummy (use also for 6-Year weighted with YW)  
Static measurements, other channels  
2017-12-13



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



ISO/TS 13499 – RED C : 2012(E)  
Q0, 6-week Old Infant Dummy  
2012-01-24

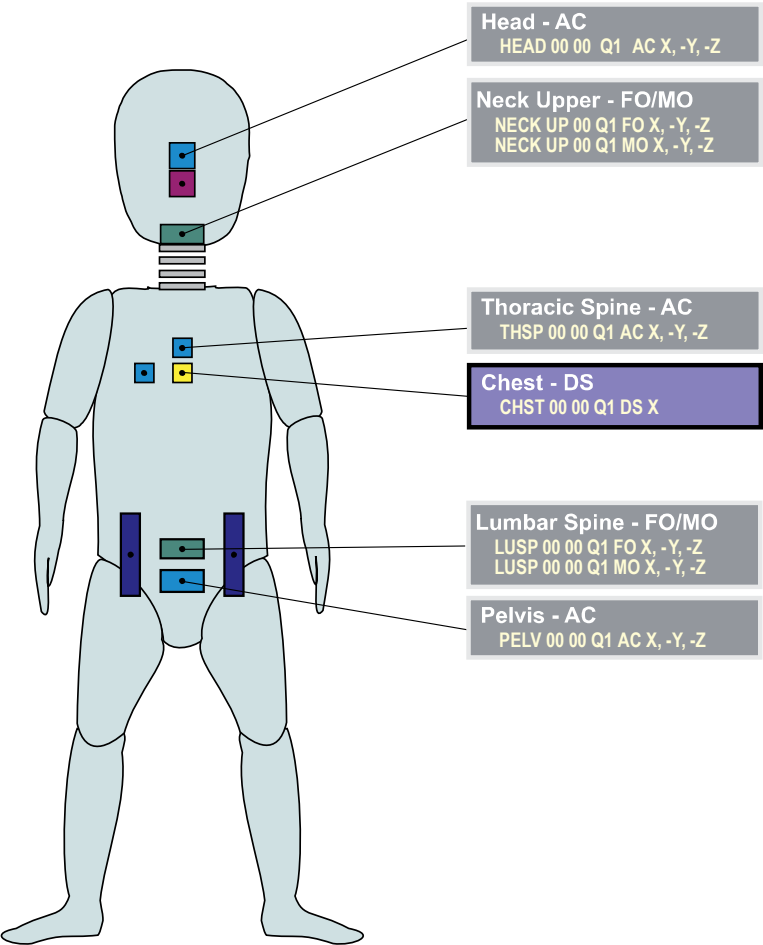


Q1 Q1 (1)

Valid since Version 1.6.2p1



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

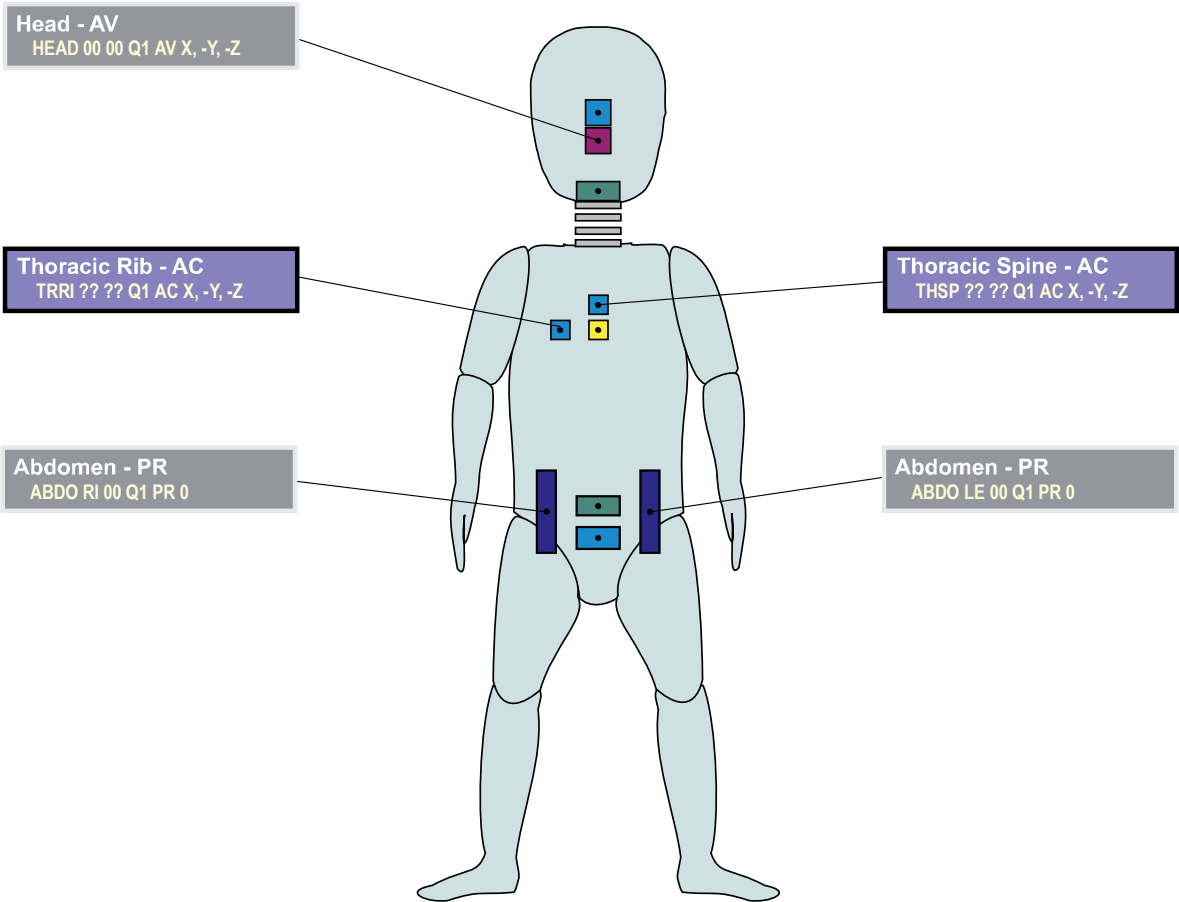


Frontal Impact

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/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.

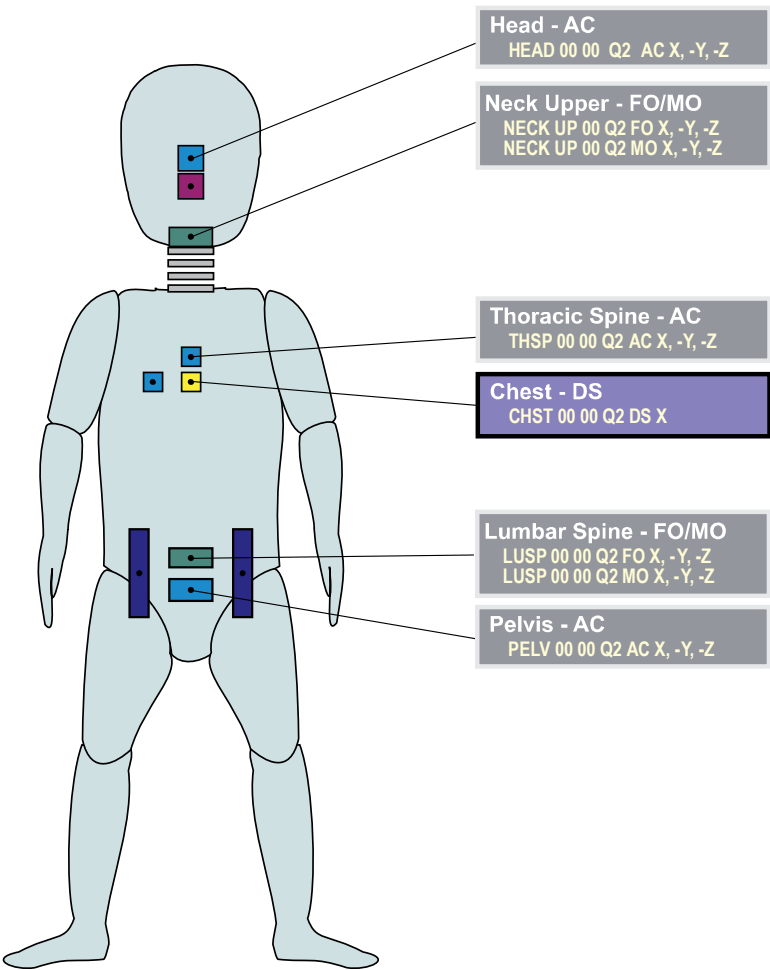


Q2 Q1 1/2 (1)

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

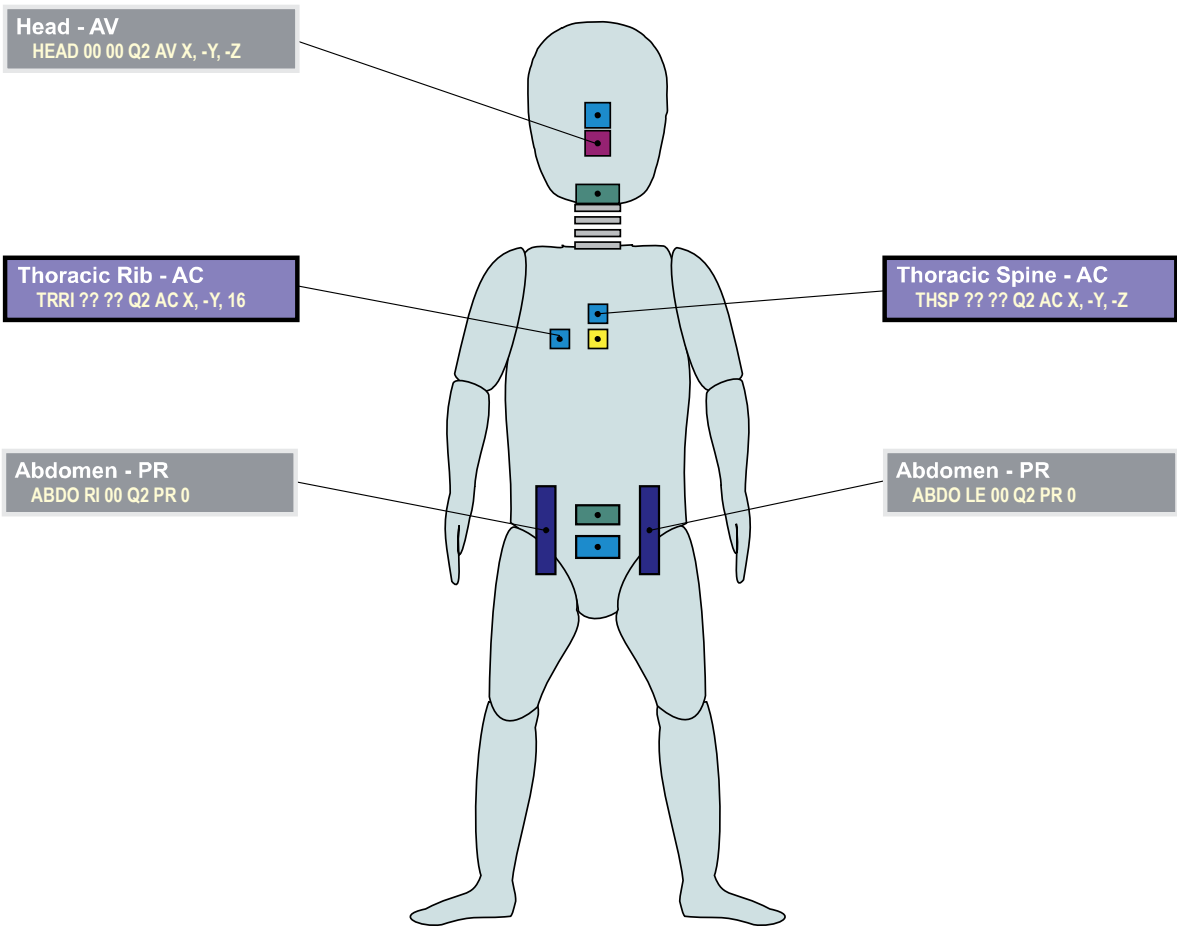


Frontal Impact

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



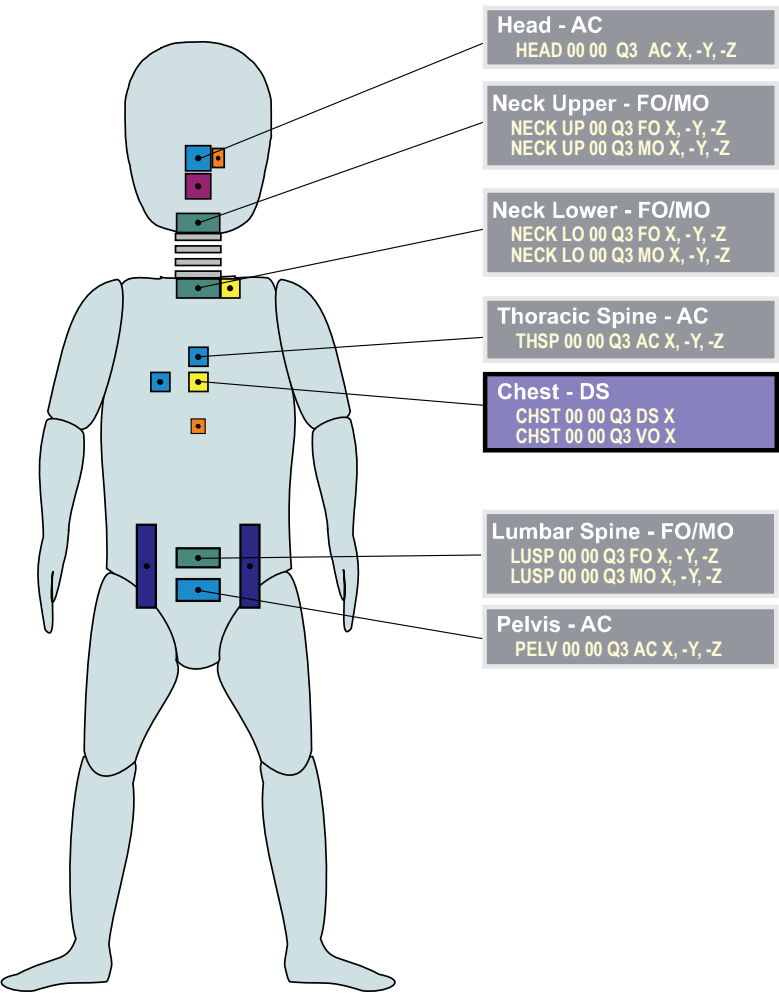
Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q3 Q3 (1)

Valid since Version 1.6.2p1



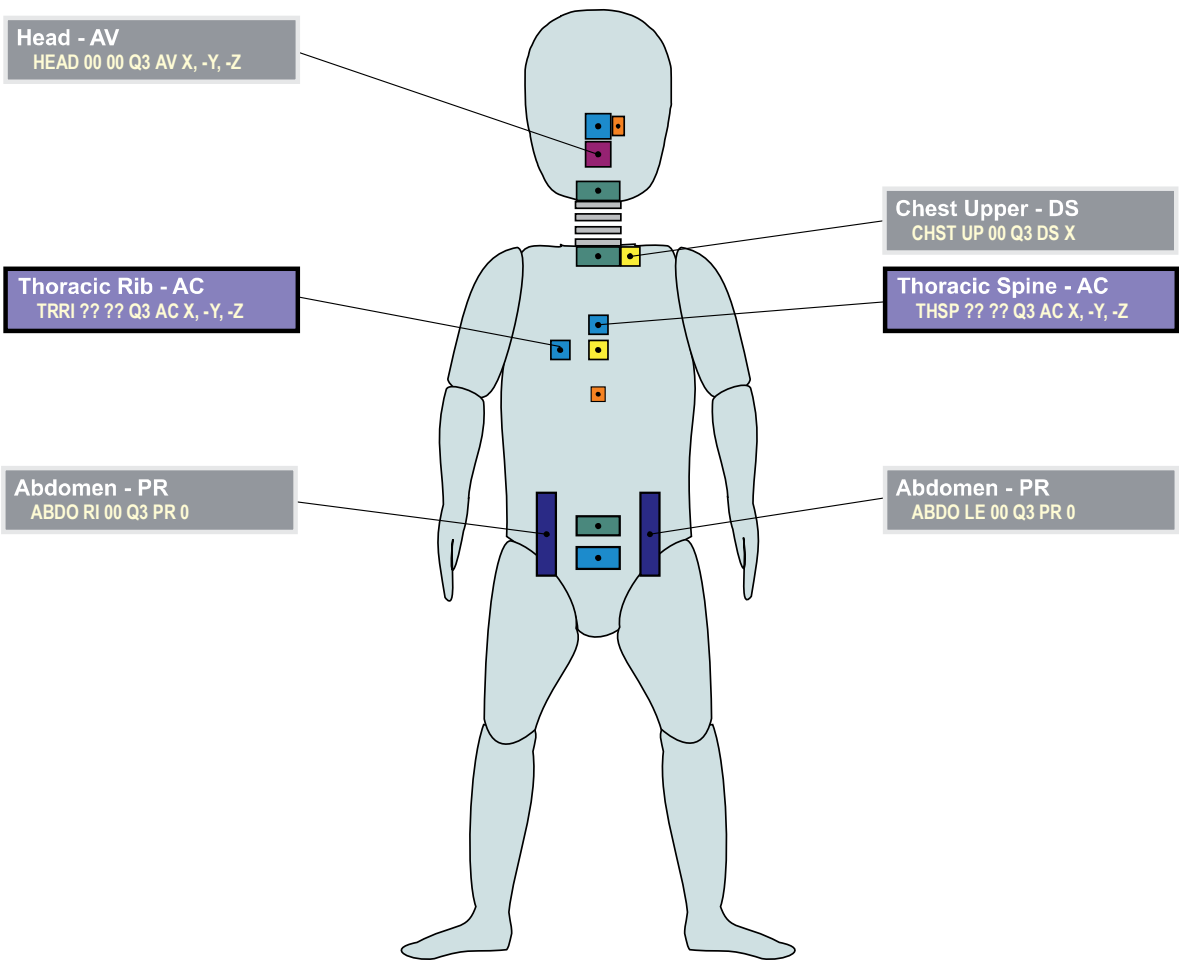
ISO/TS 13499 – RED C : 2012(E)  
Q3, Advanced 3-year old child dummy: frontal impact (Q3)  
Standard Instrumentation  
2015-11-25



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



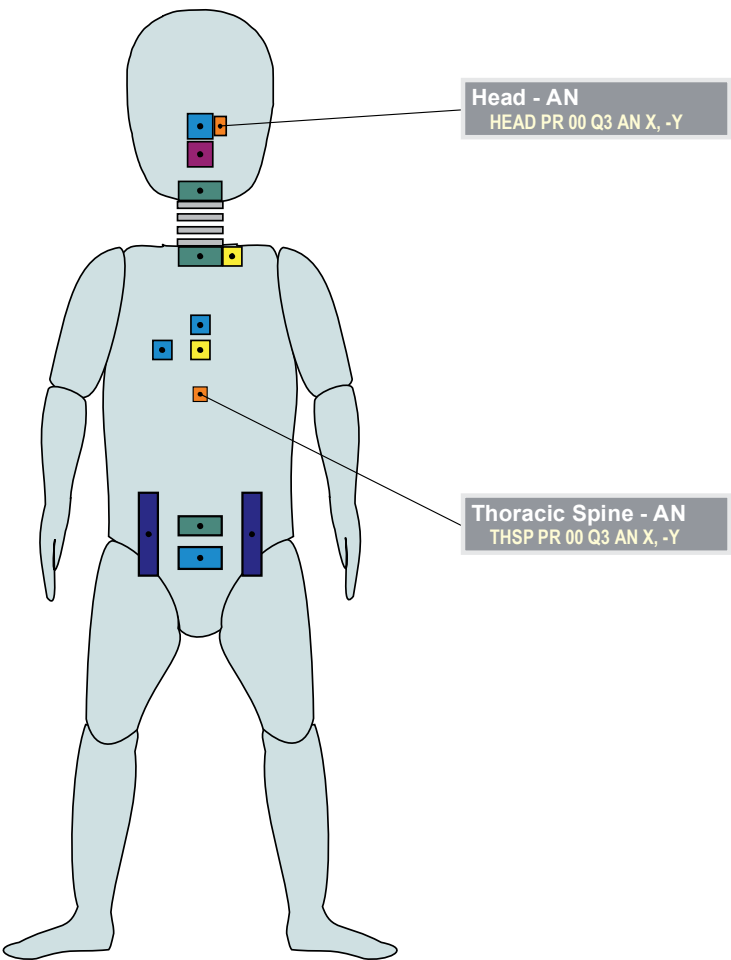
Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q3 Q3 (3)

Valid since Version 1.6.2p1

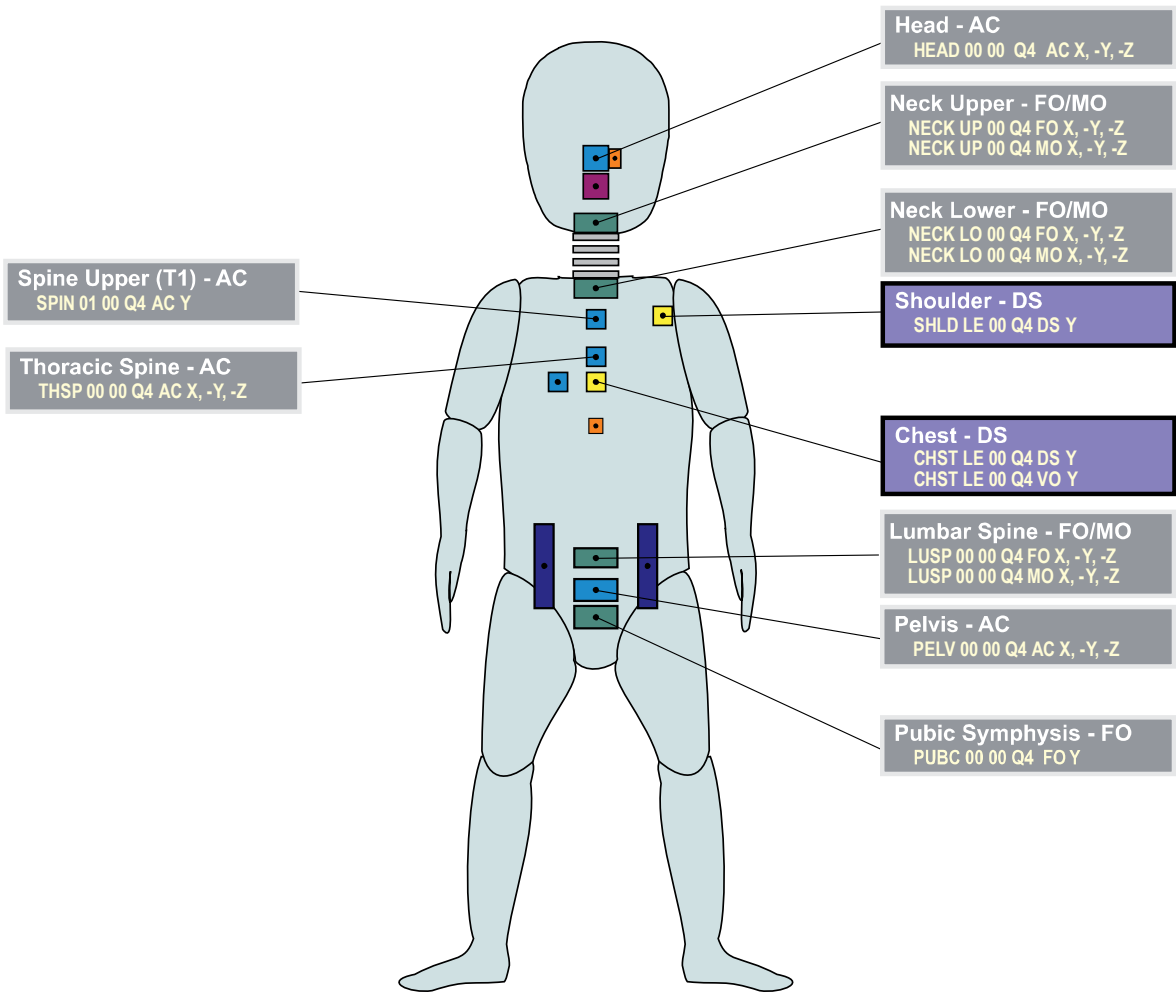


ISO/TS 13499 – RED C : 2012(E)  
Q3, Advanced 3-year old child dummy: frontal impact (Q3)  
Static measurements, other channels  
2015-11-25





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

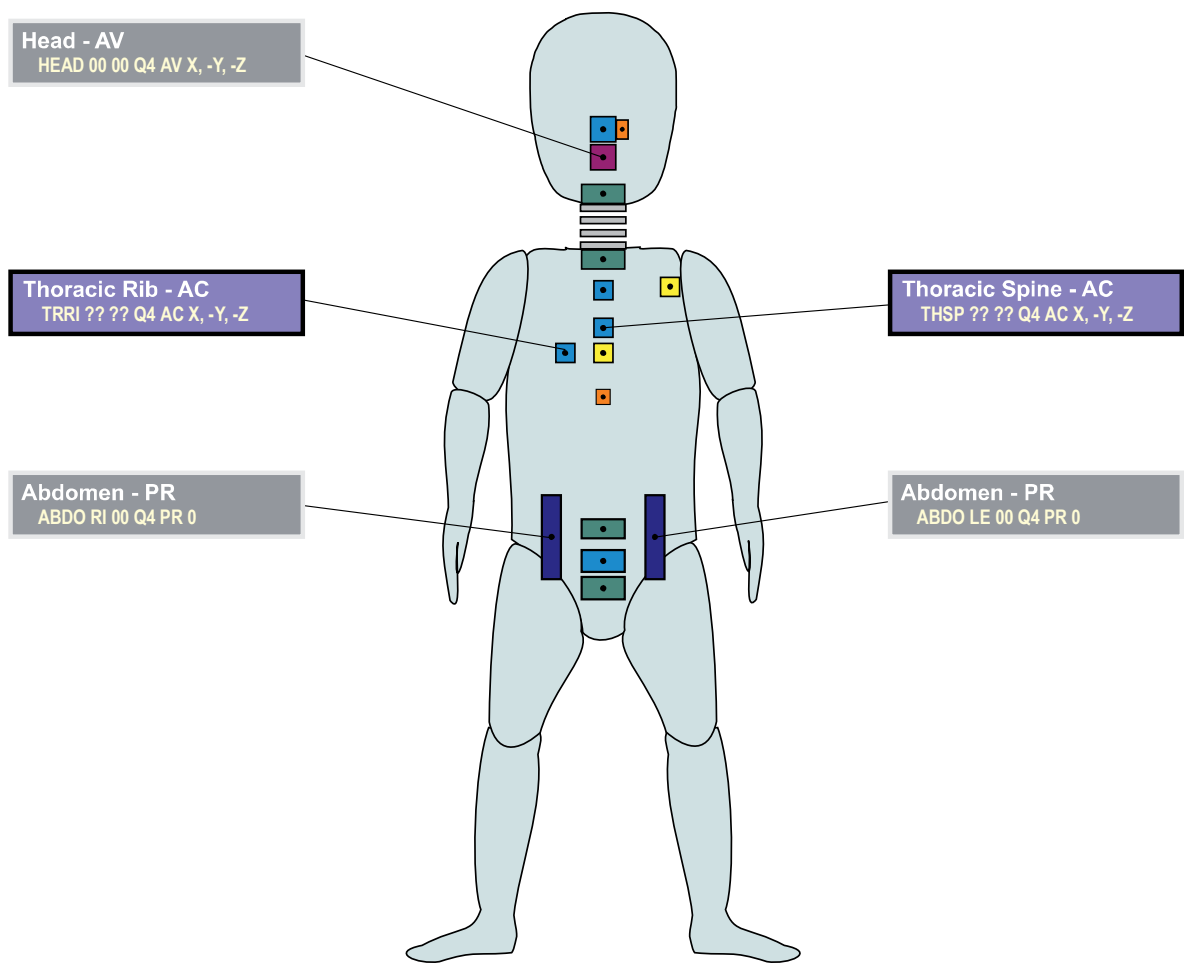
Note that sensor locations and ISO Codes are different for right side impact.  
Note that the IR-TRACC device fitted to this dummy records a voltage.  
It is more normal to exchange the displacement channel.

Q3s Q3s Side Impact (2)

Valid since Version 1.6.2p1



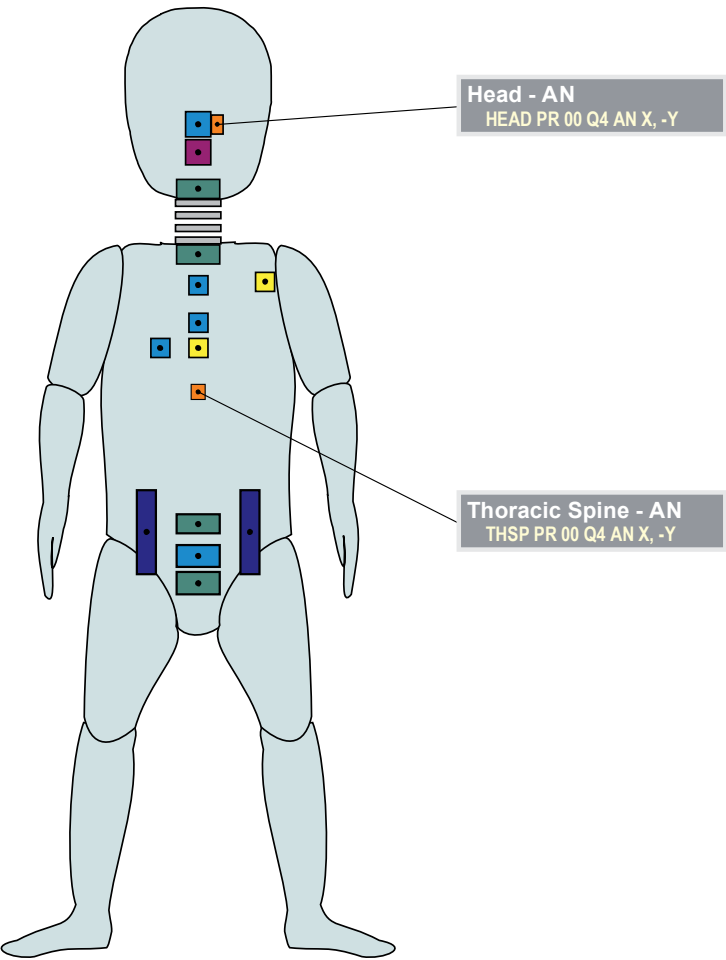
ISO/TS 13499 – RED C : 2012(E)  
Q4, Advanced 3-year old child dummy: side impact (Q3s)  
Additional Instrumentation  
2015-11-25



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



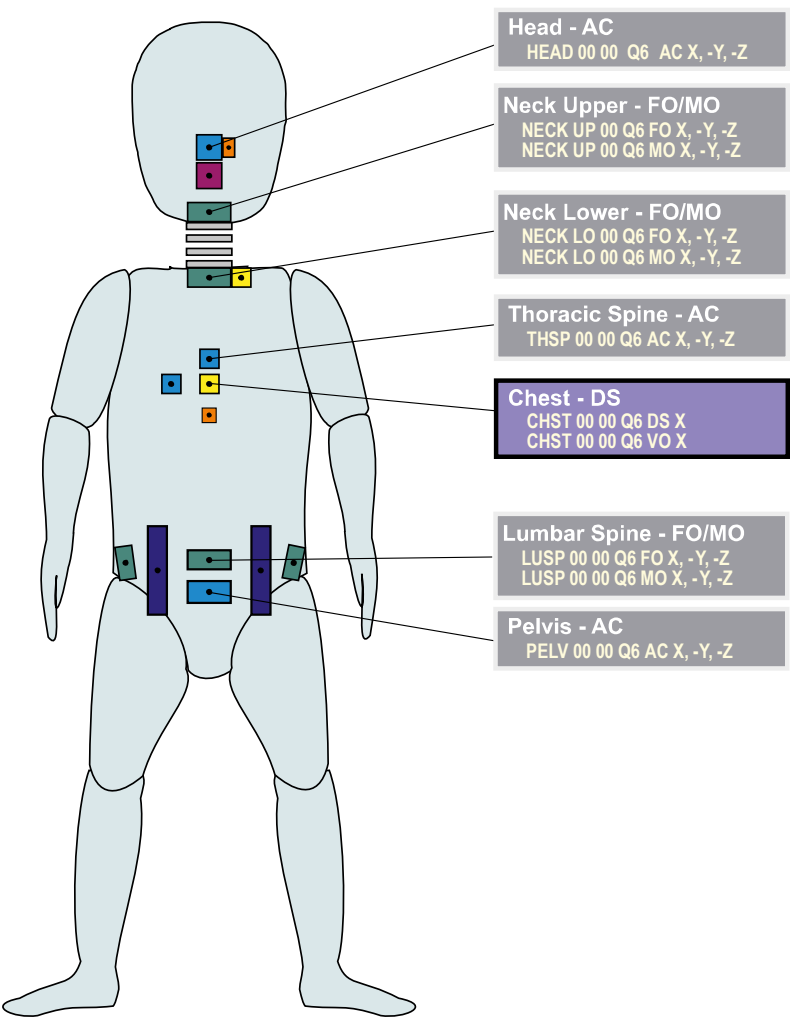


Q6 Q6 (1)

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.¶

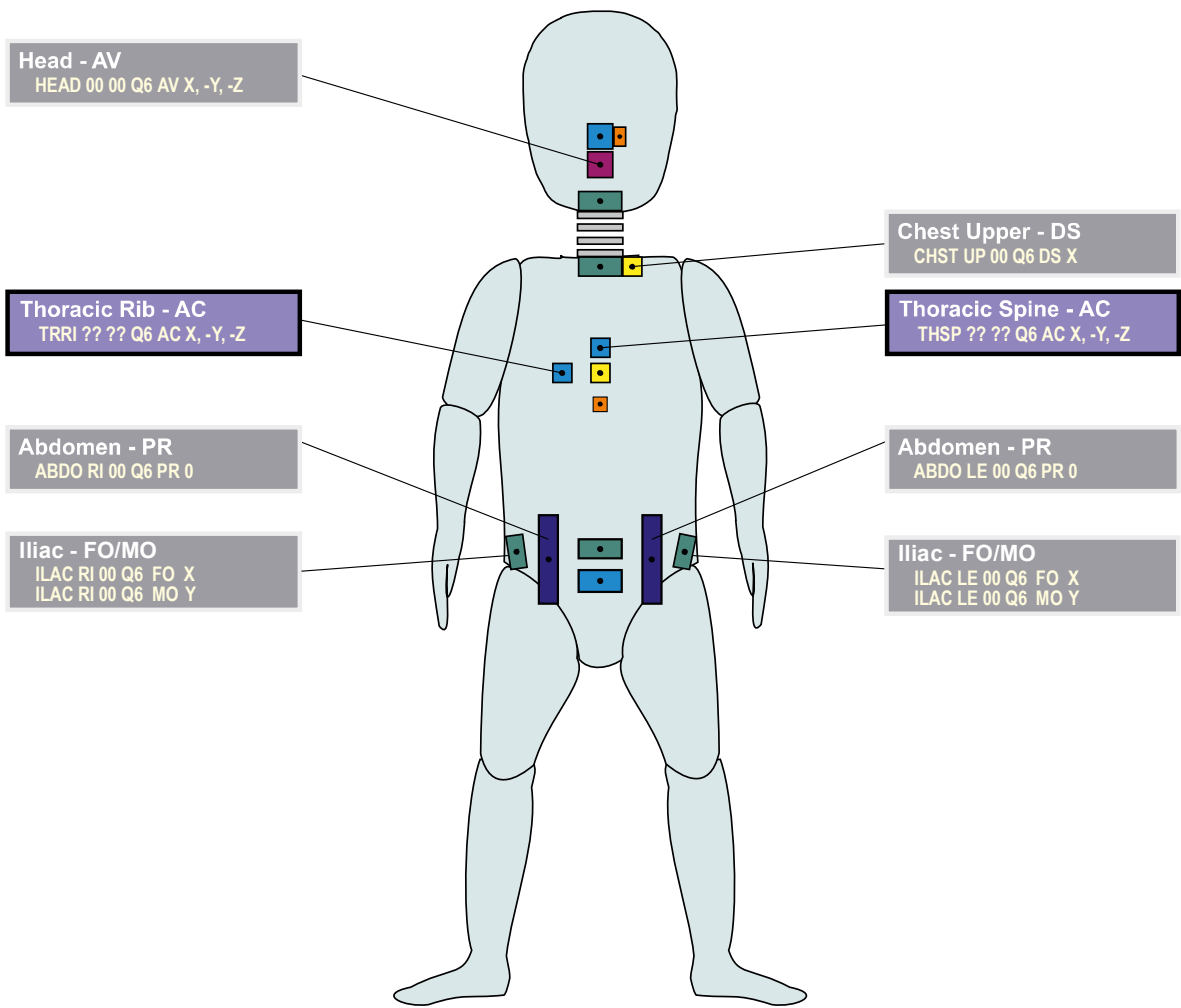
**Left-hand side impact:** CHST LE 00 Q6 DS Y and CHST LE 00 Q6 VO Y.¶  
**Right-hand side impact:** CHST RI 00 Q6 DS Y and CHST RI 00 Q6 VO Y..

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



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



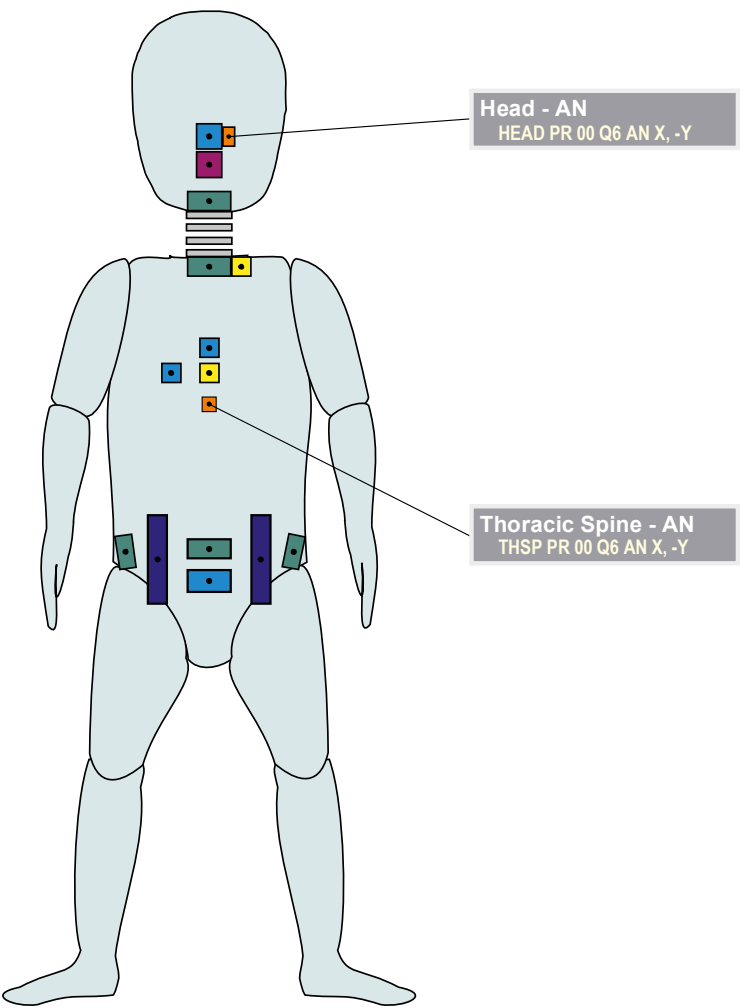
Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q6      Q6 (3)

Valid since Version      1.6.2p1

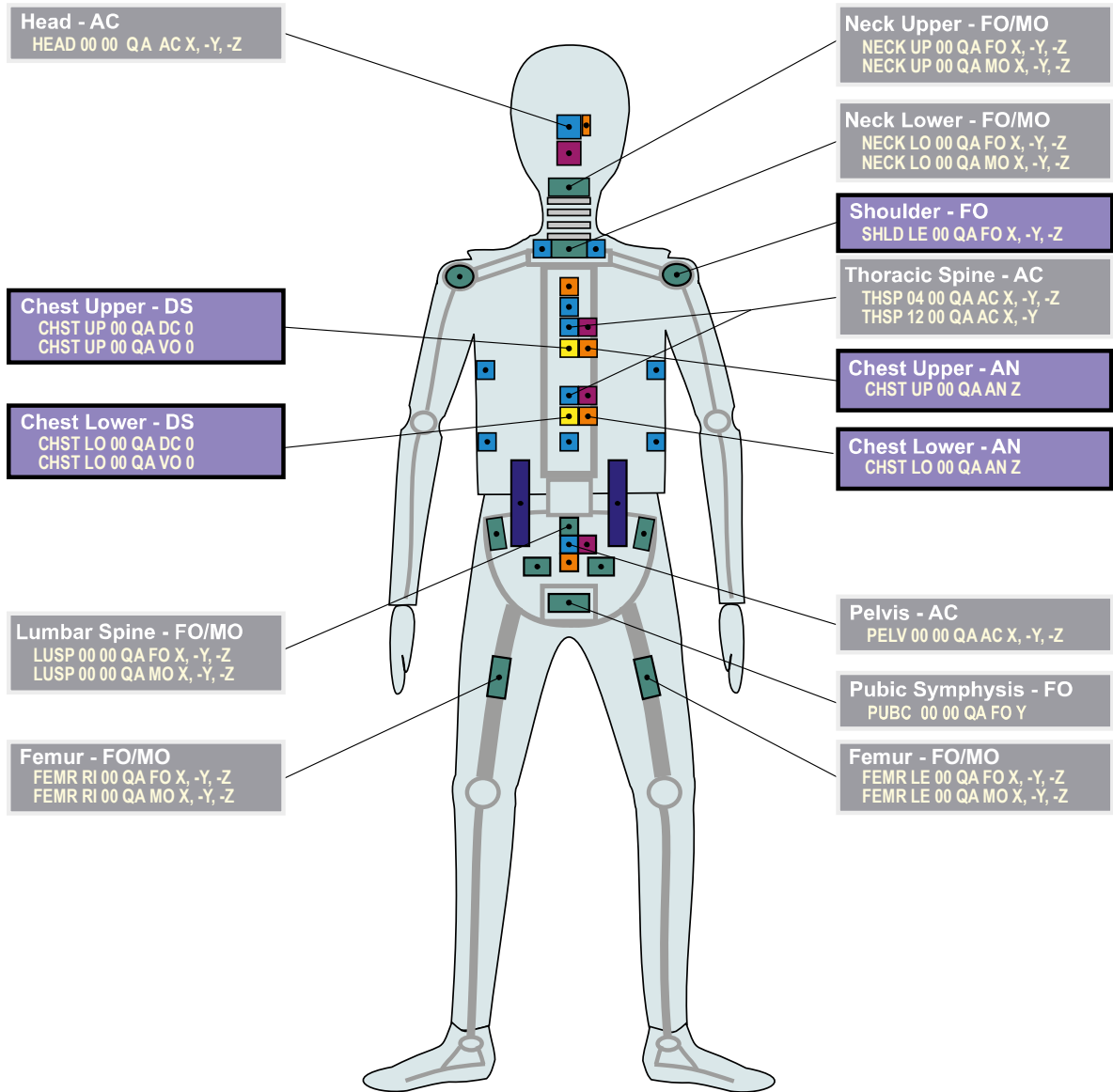


ISO/TS 13499 – RED C : 2012(E)  
Q6, Advanced 6-year old child dummy  
Static measurements, other channels  
2017-04-05





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 .

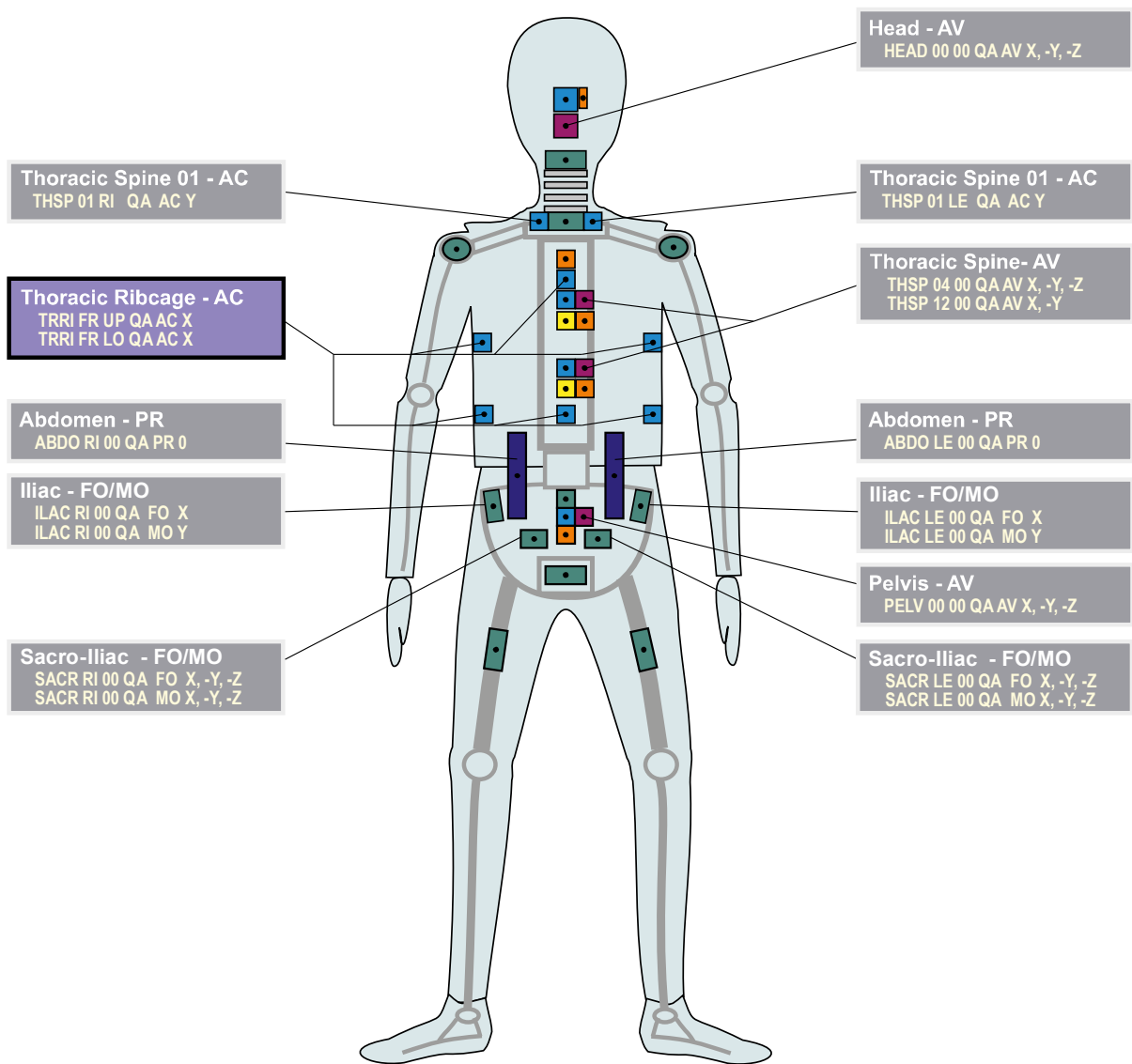
Note that the IR-TRACC device fitted to this dummy records a voltage.  
It is more normal to exchange the distance channel, IR-TRACC total length.

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

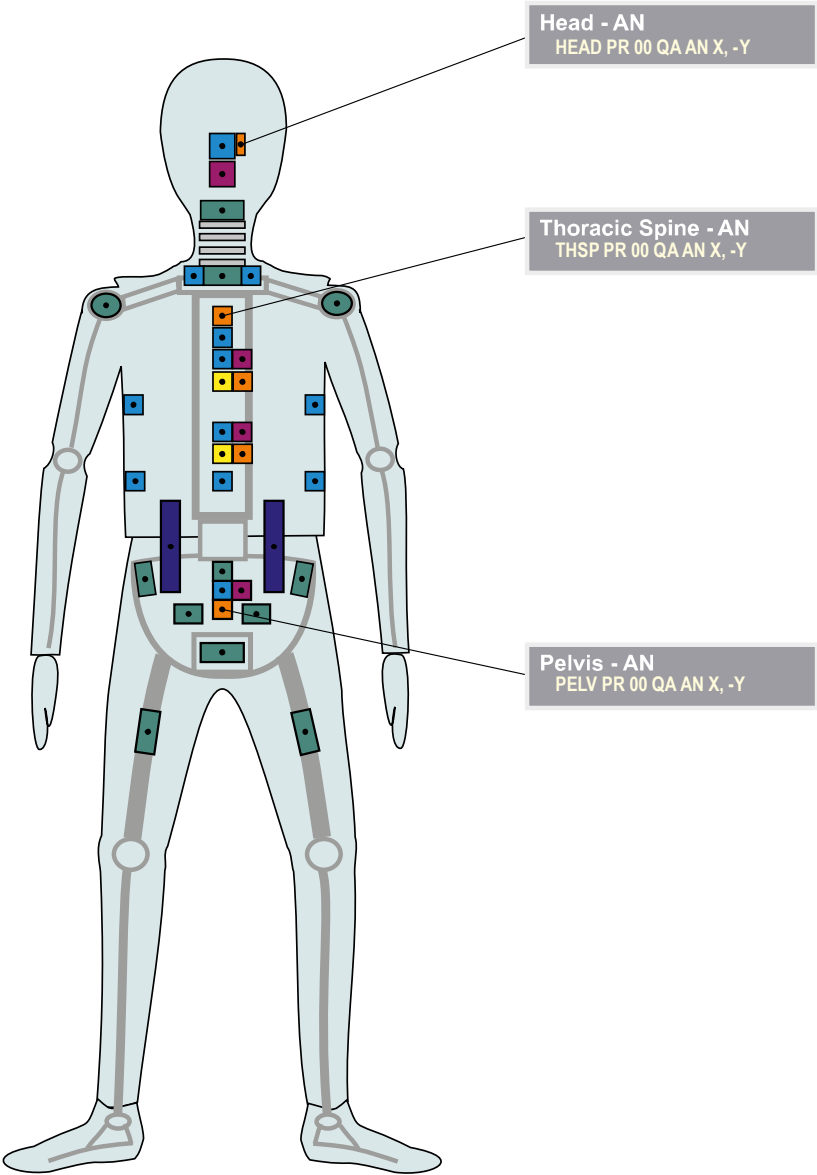


Note that sensor orientation is different for side impact configurations. []  
ISO Codes used must reflect the chosen orientation.[]

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



HF

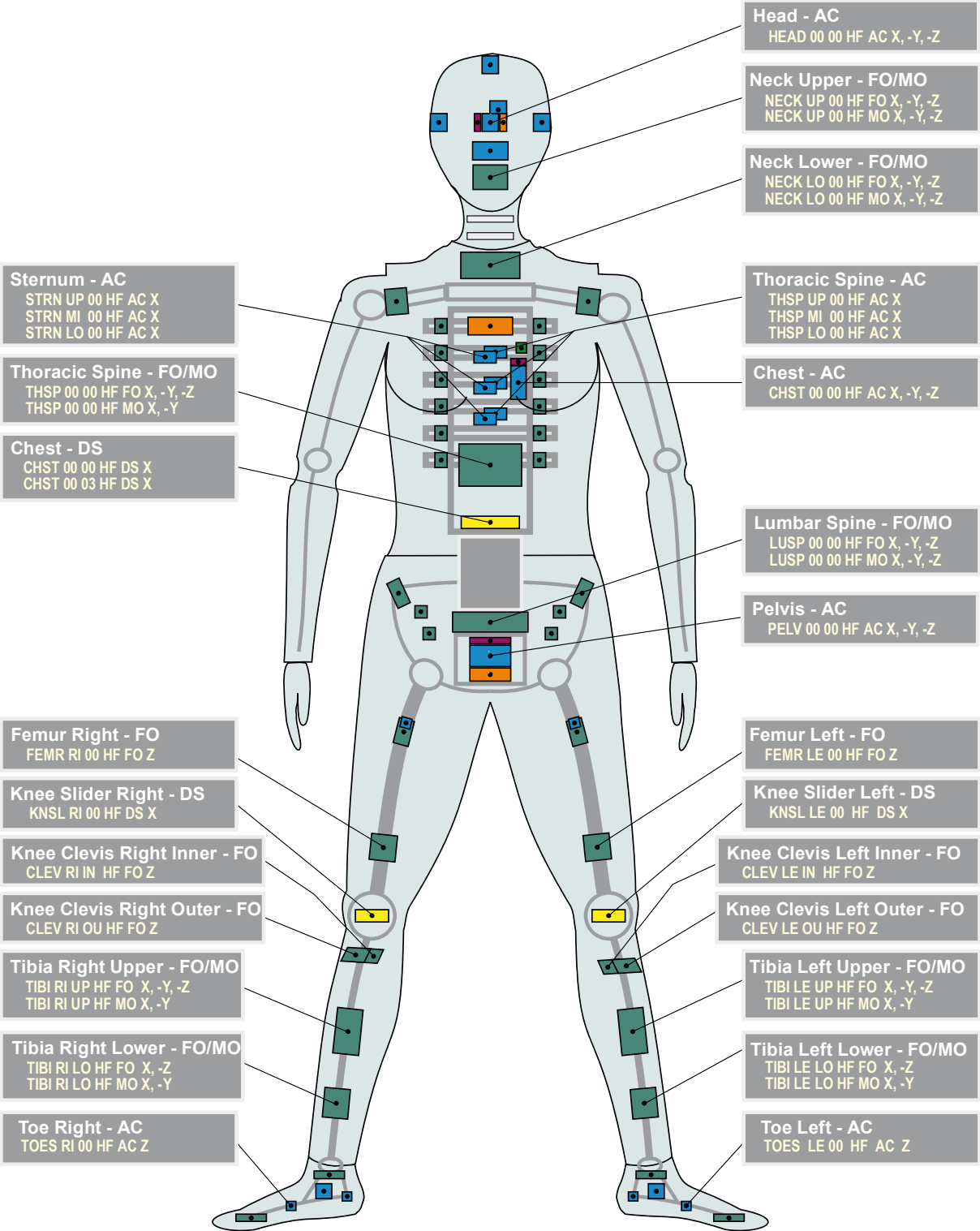
Hybrid III 5% Female (1)

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

Page 1 of 5

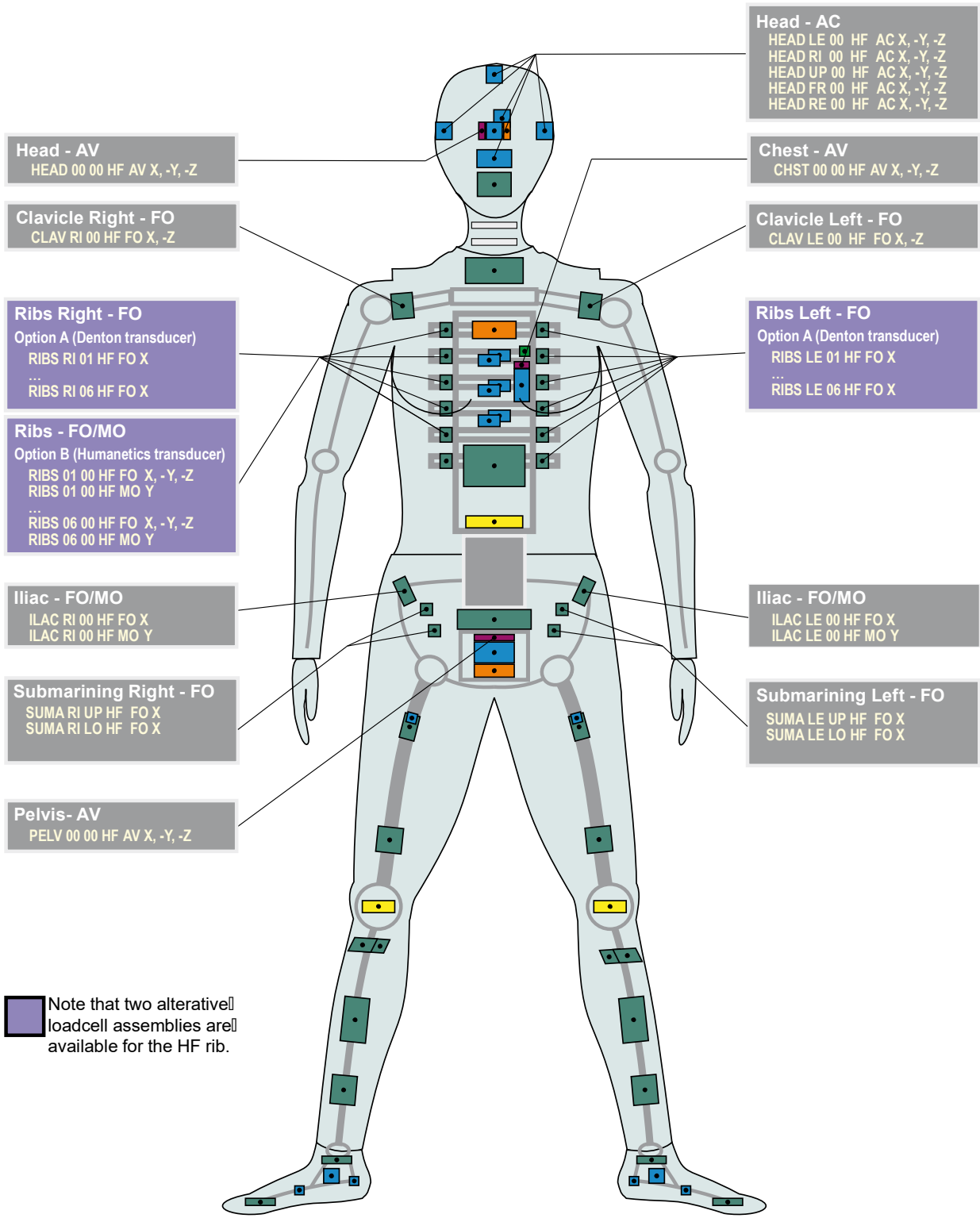
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellcome, MIRA Ltd.

ISO\_HF\_1\_161\_20130410.EMF

-> HF <- 1 of 5



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



ISO-HF\_20130410



HF

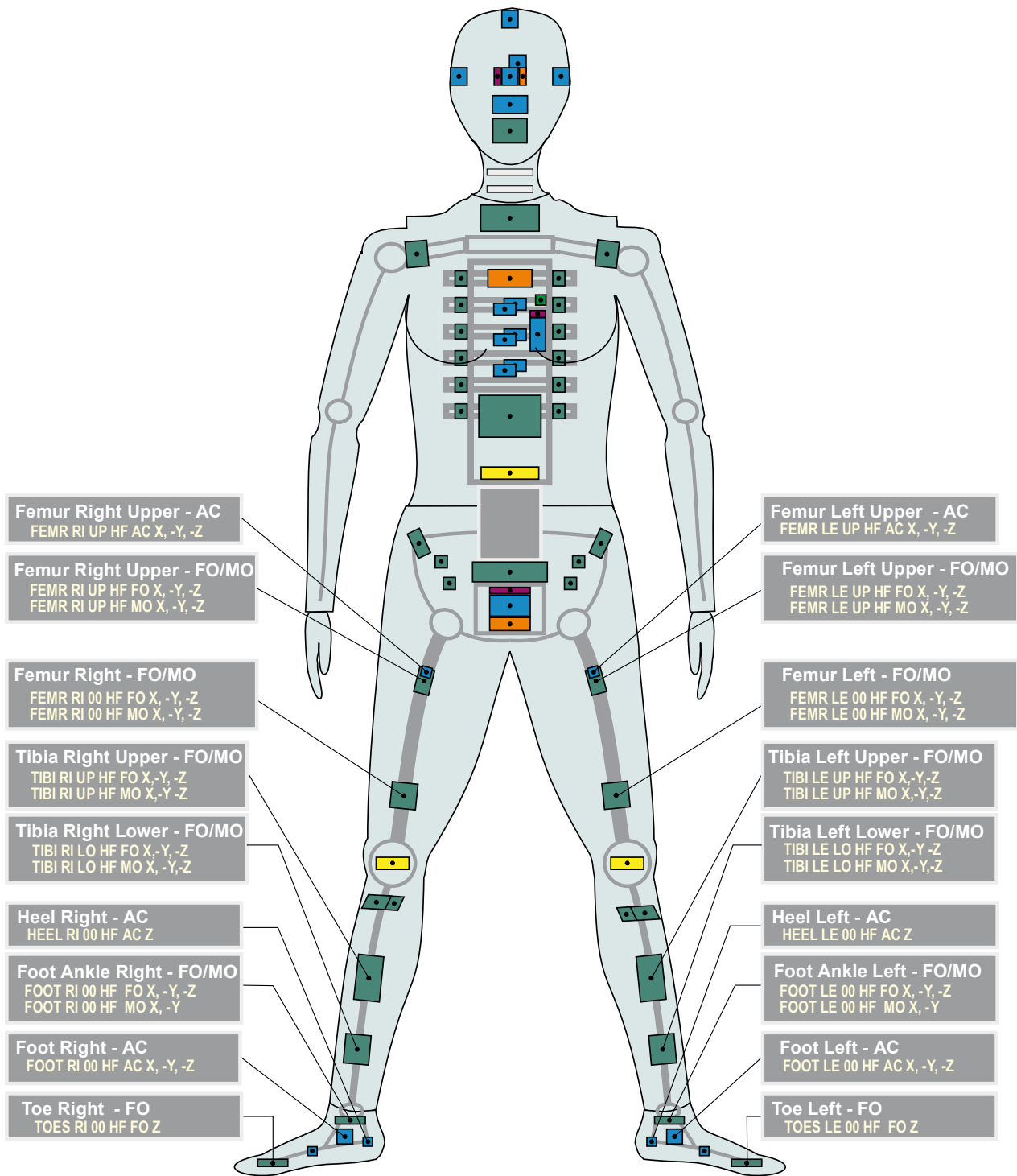
Hybrid III 5% Female (3)

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

Page 3 of 5

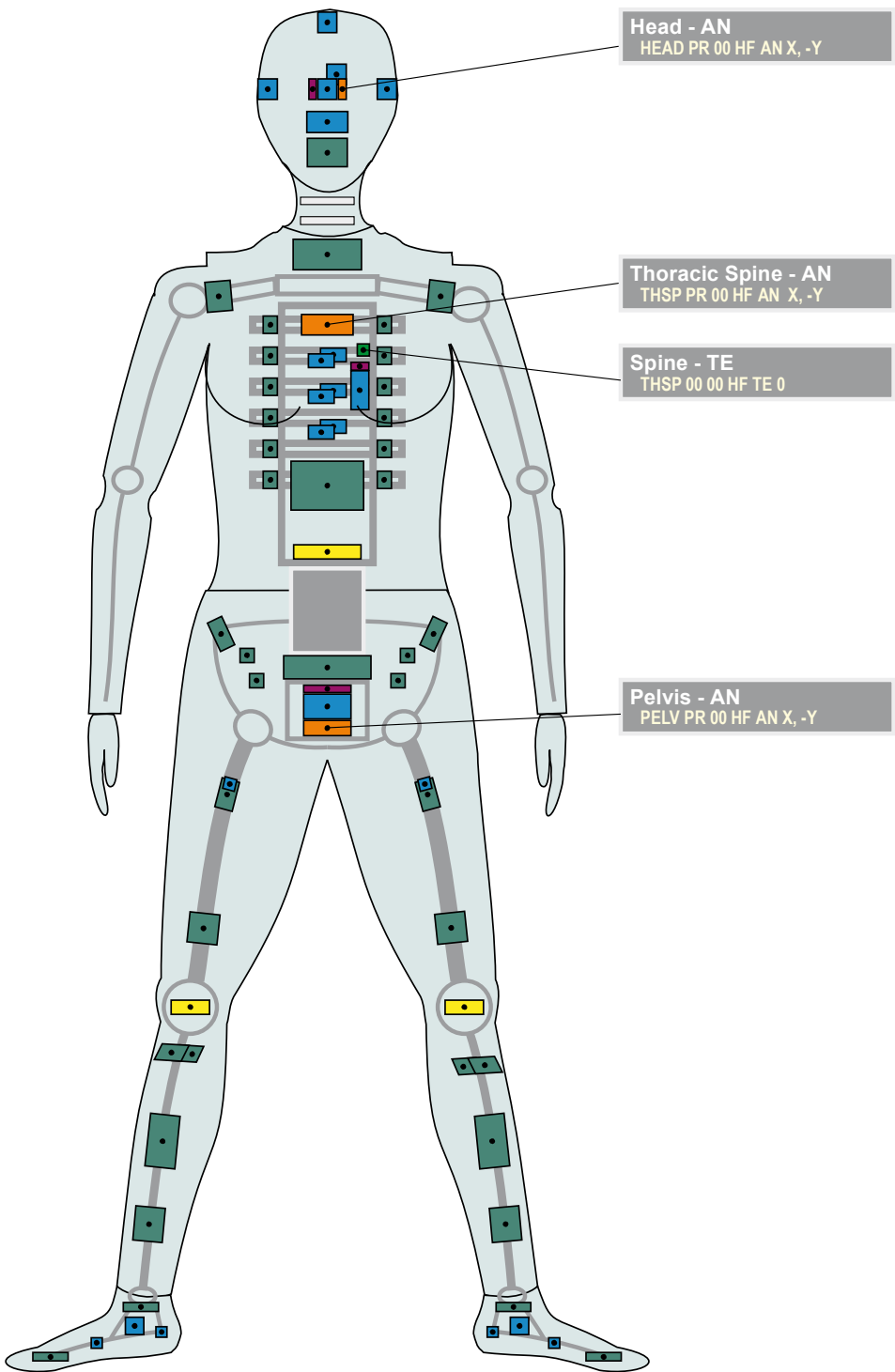
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, MIRA Ltd.

ISO\_HF\_3\_161\_20130410.EMF

-> HF <- 3 of 5



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

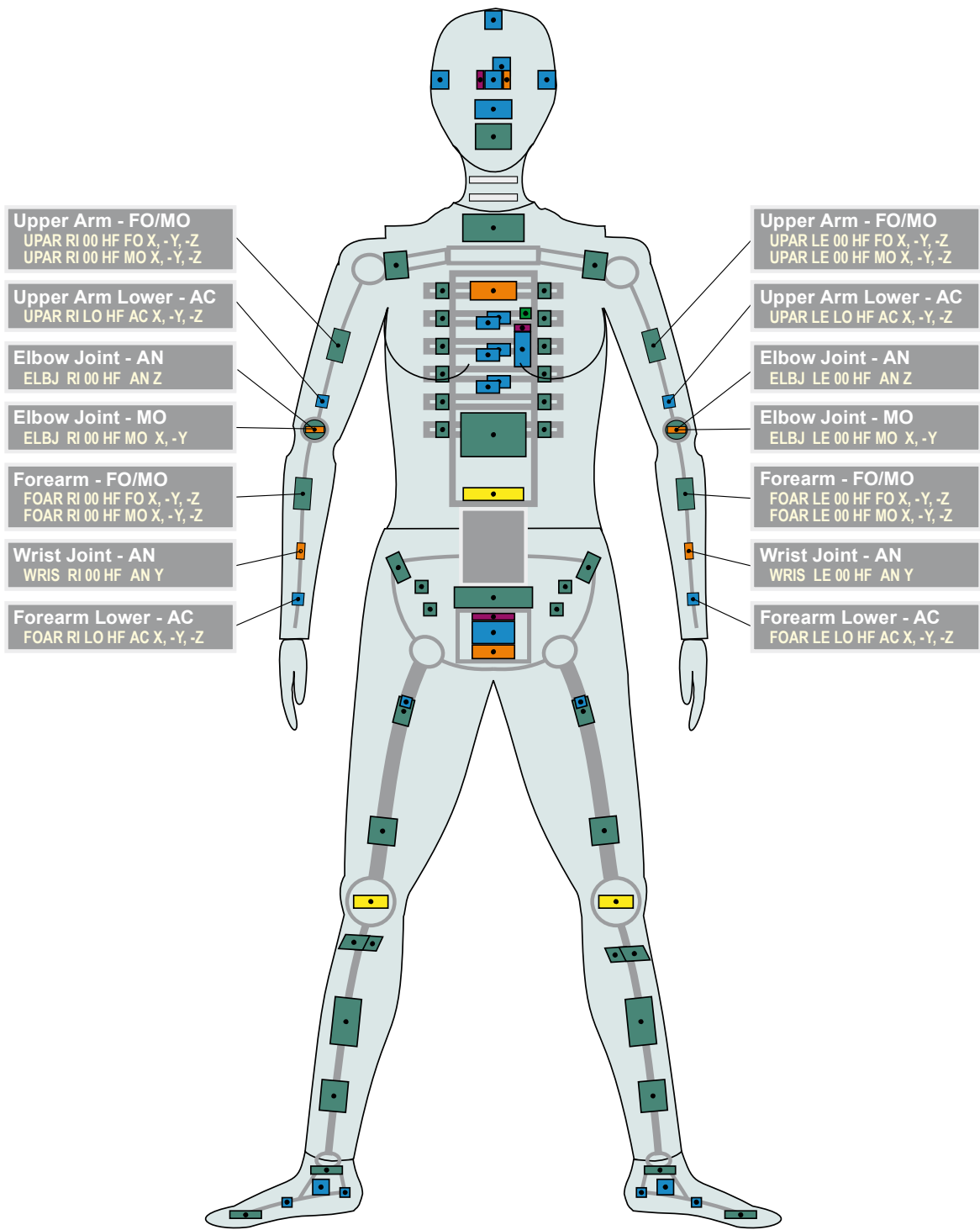


HF Hybrid III 5% Female (5)

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

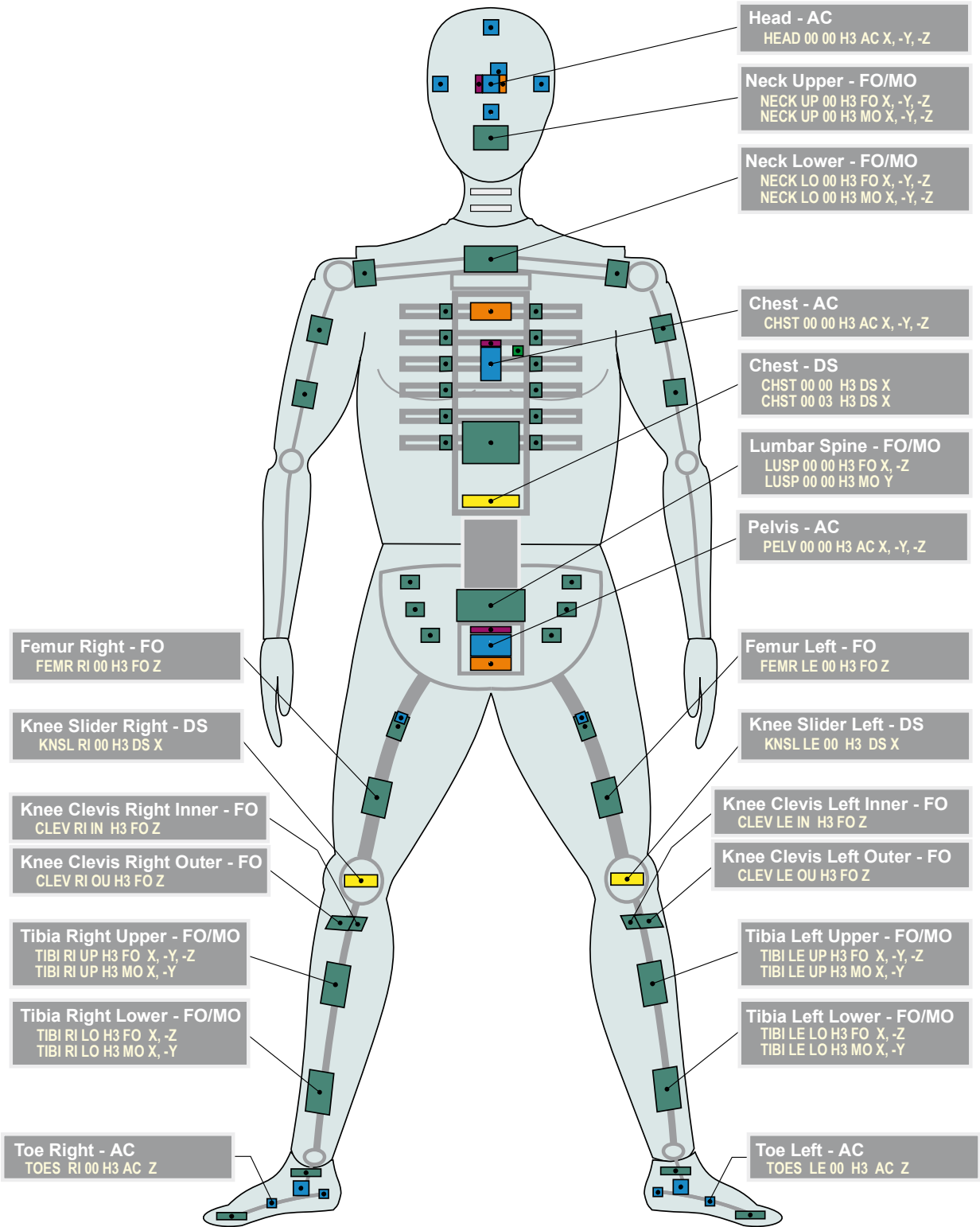


ISO-HF\_20130410

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

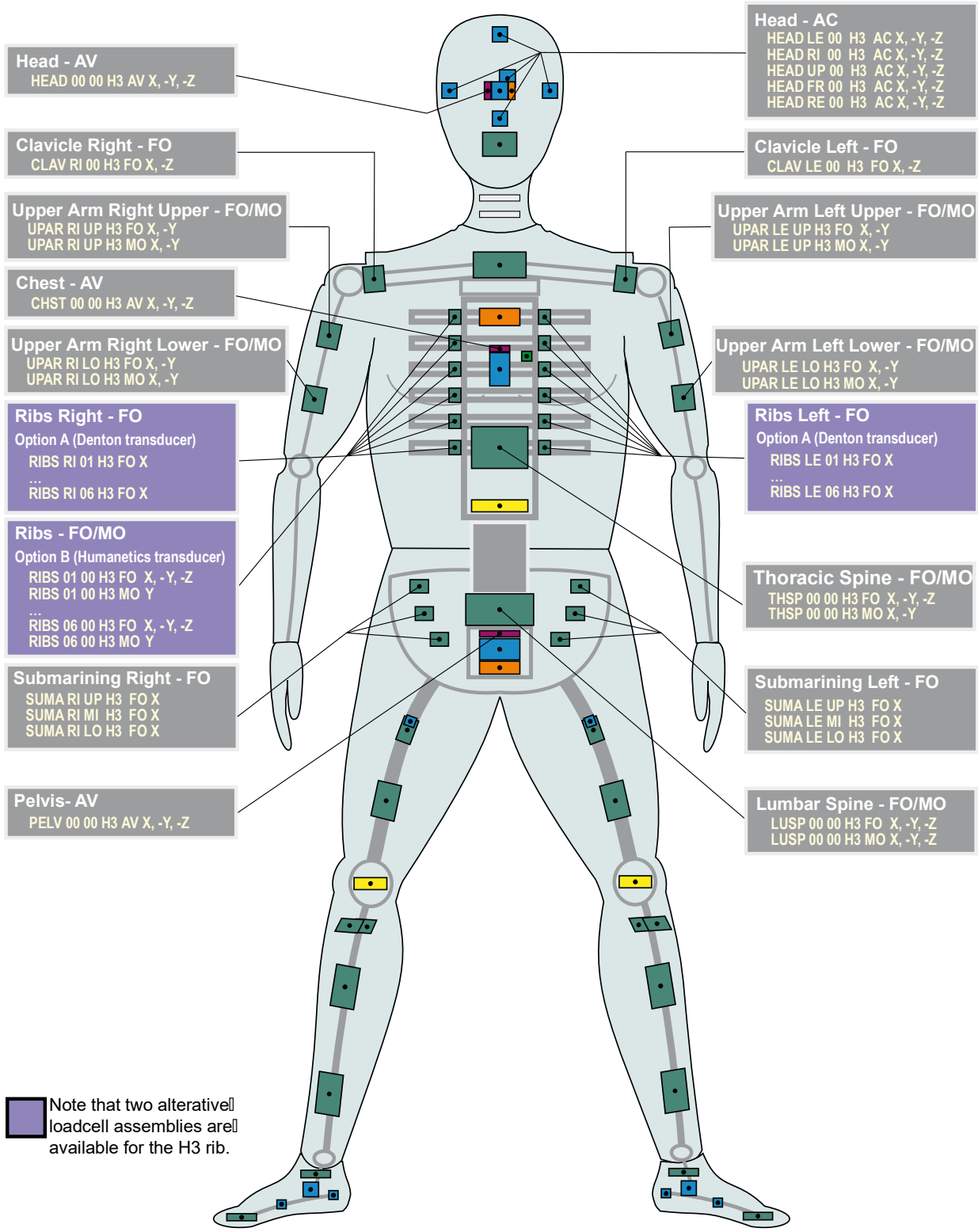
H3 Hybrid III 50% Male (2)

Valid since Version

1.6.1



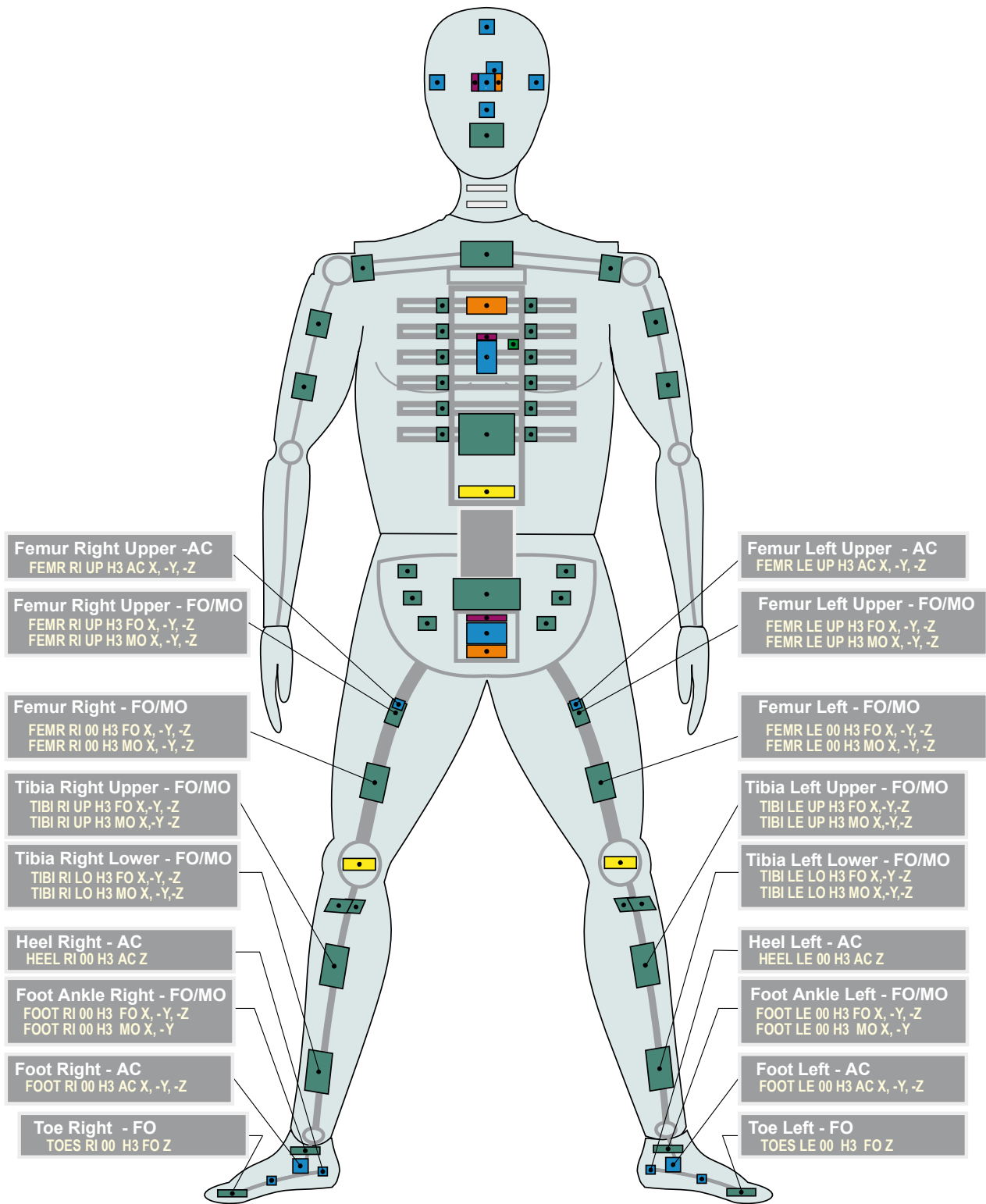
ISO/TS 13499 – RED C : 2012  
H3, Hybrid III 50% male  
Additional Instrumentation - Head, Torso and Pelvis  
2013-04-10



ISO-H3\_20130410



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



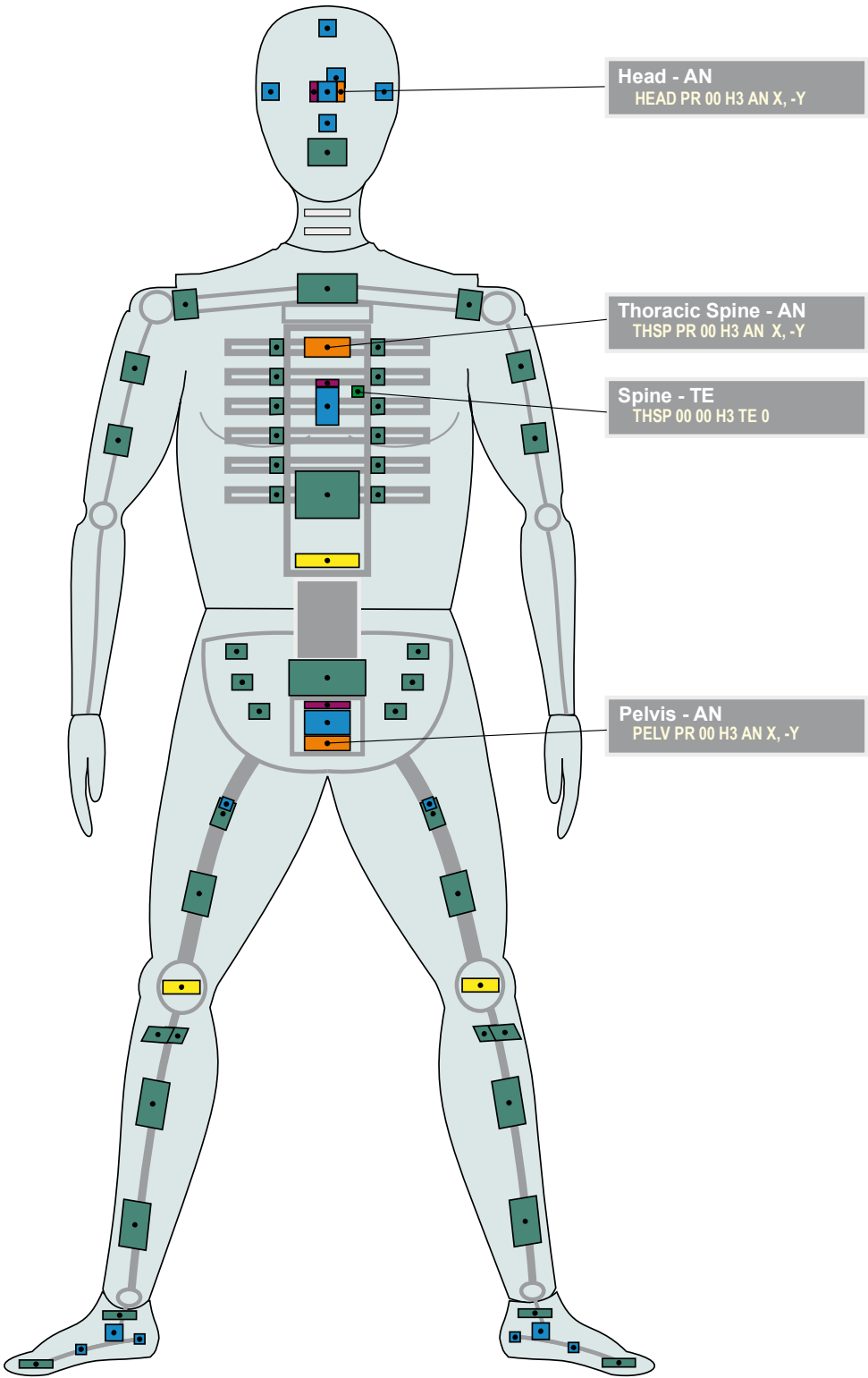
ISO-H3\_20130410

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

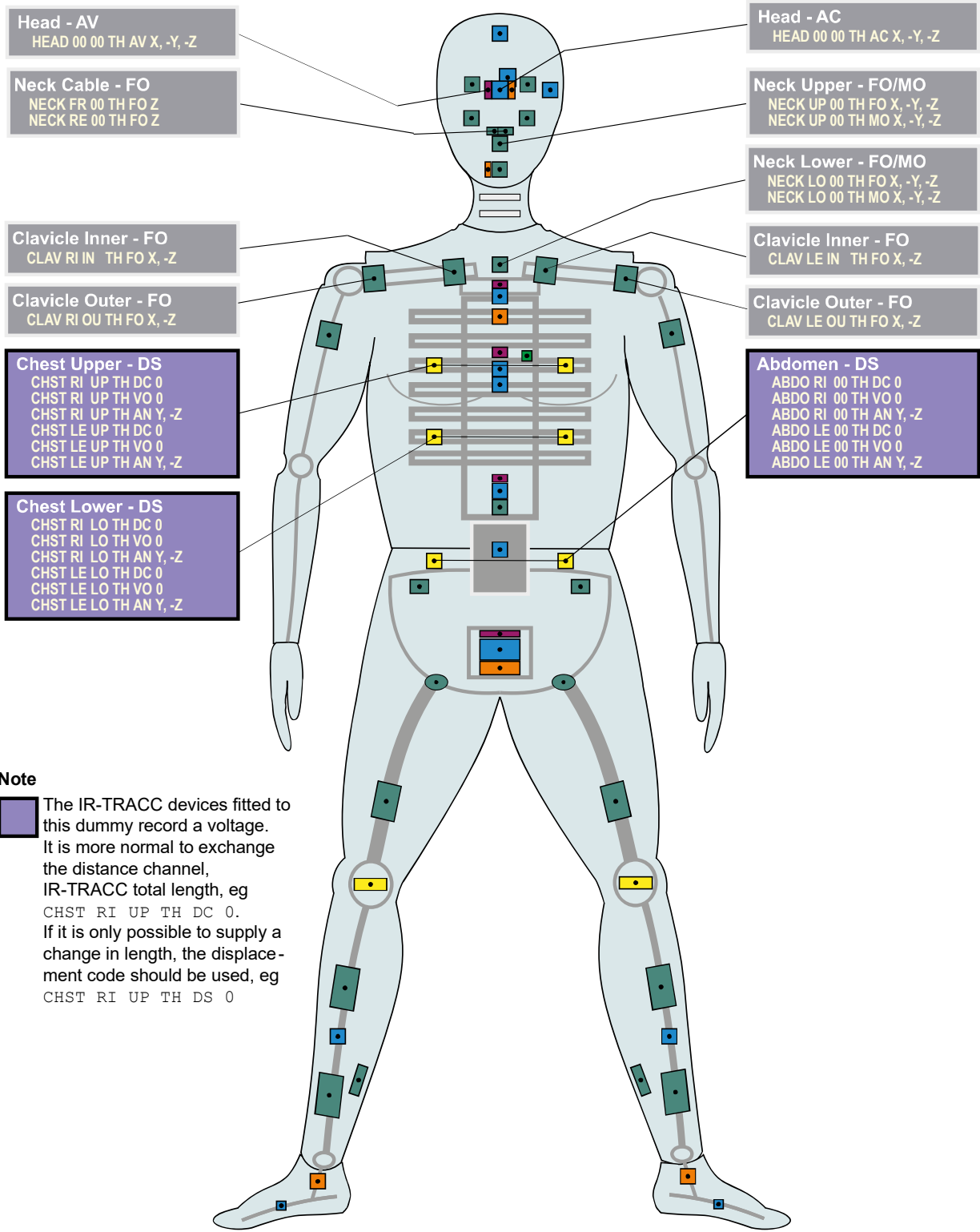


ISO-H3\_20130410

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

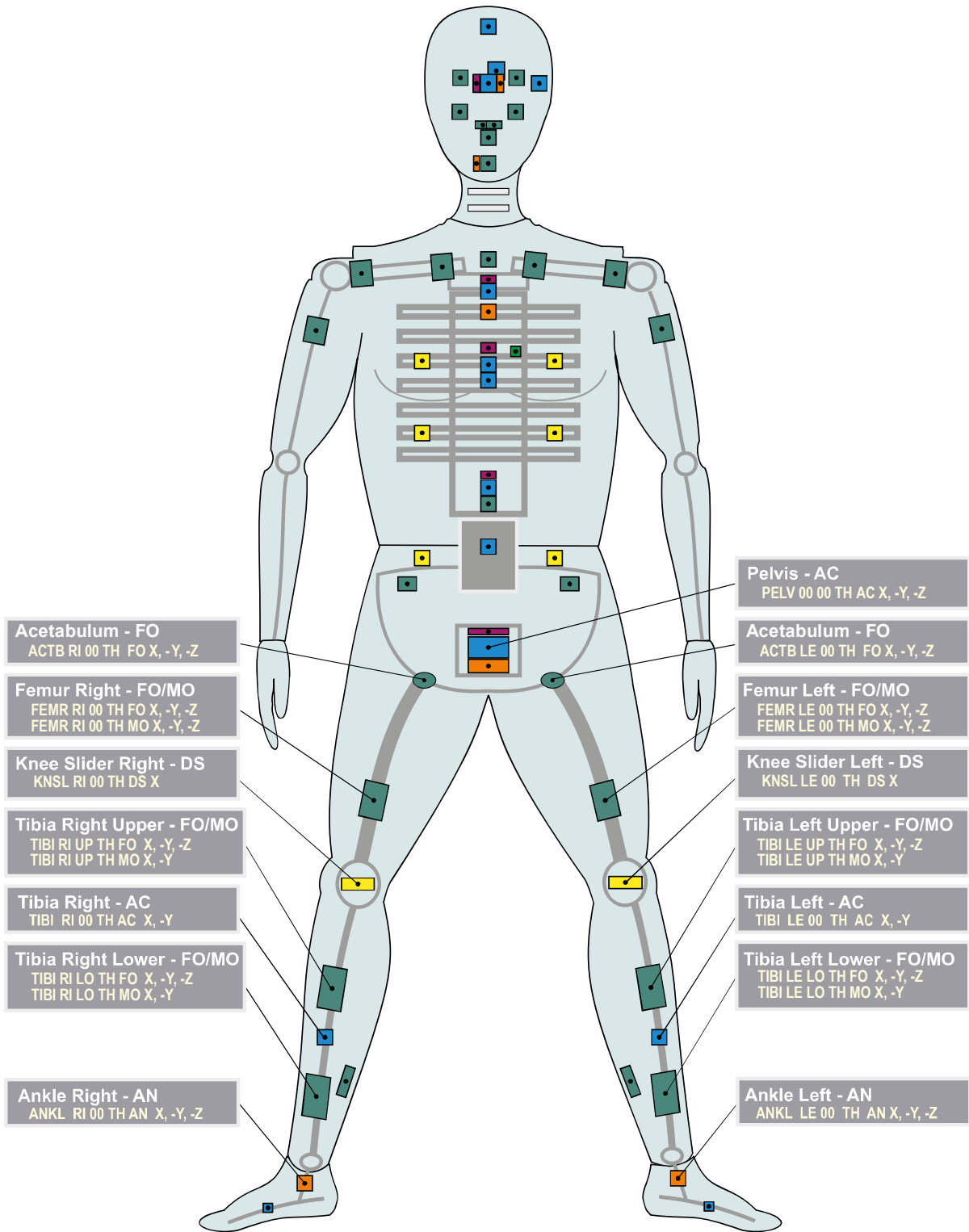


TH THOR 50th (2)

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

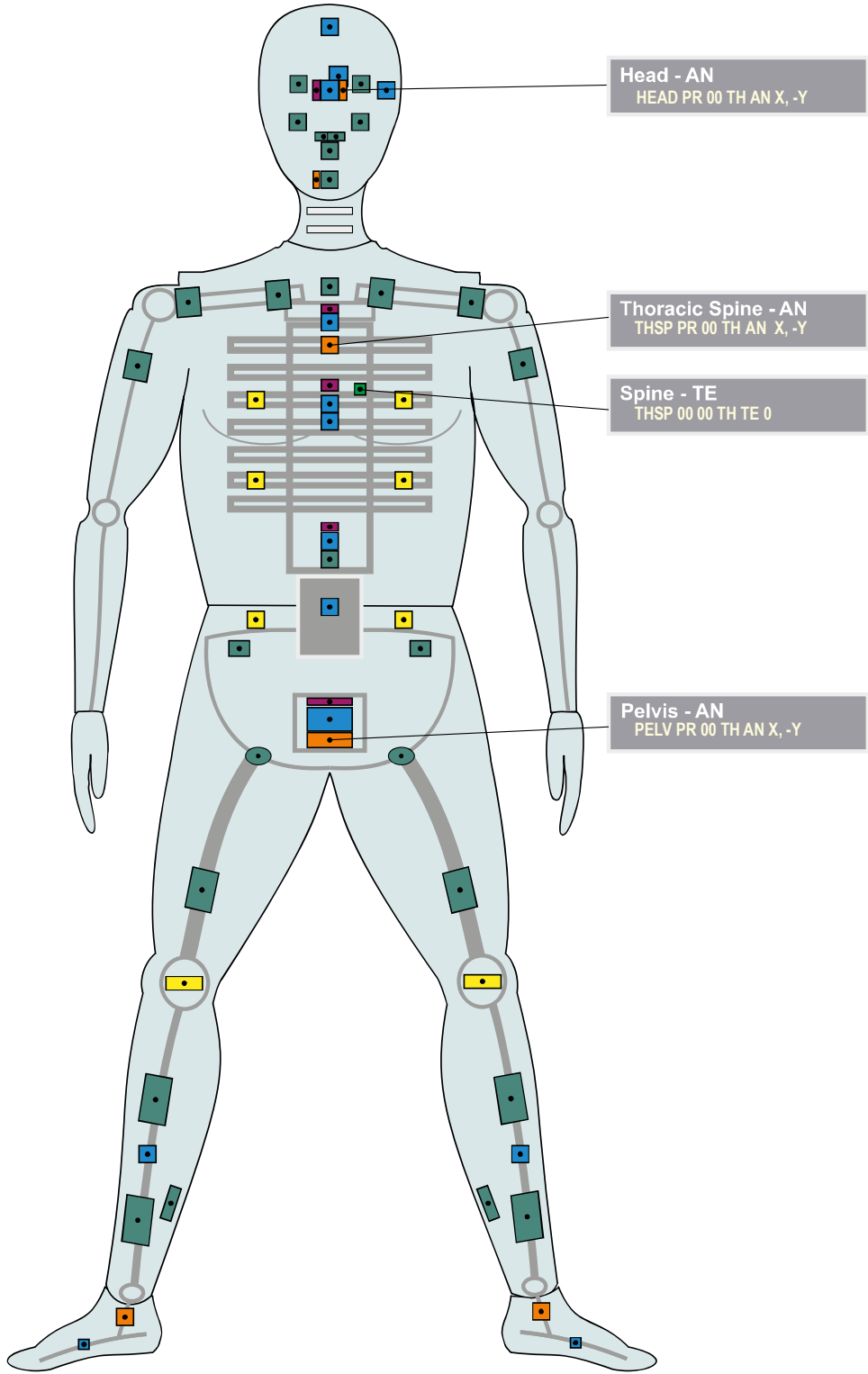
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellcome, HORIBA MIRA Ltd.  
and Dirk Vetter, IAT mbH

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

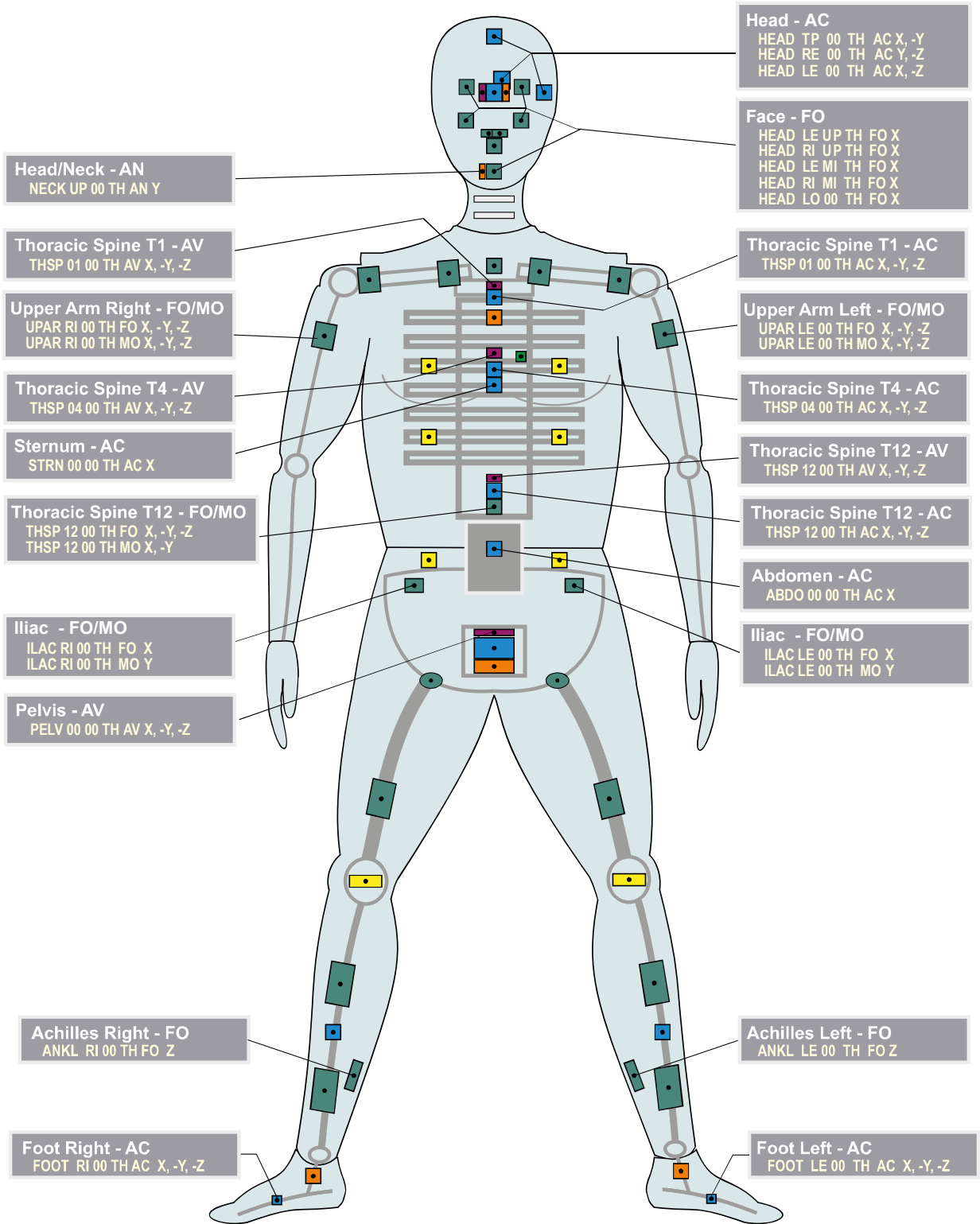
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, HORIBA MIRA Ltd.  
and Dirk Vetter, IAT mbH

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

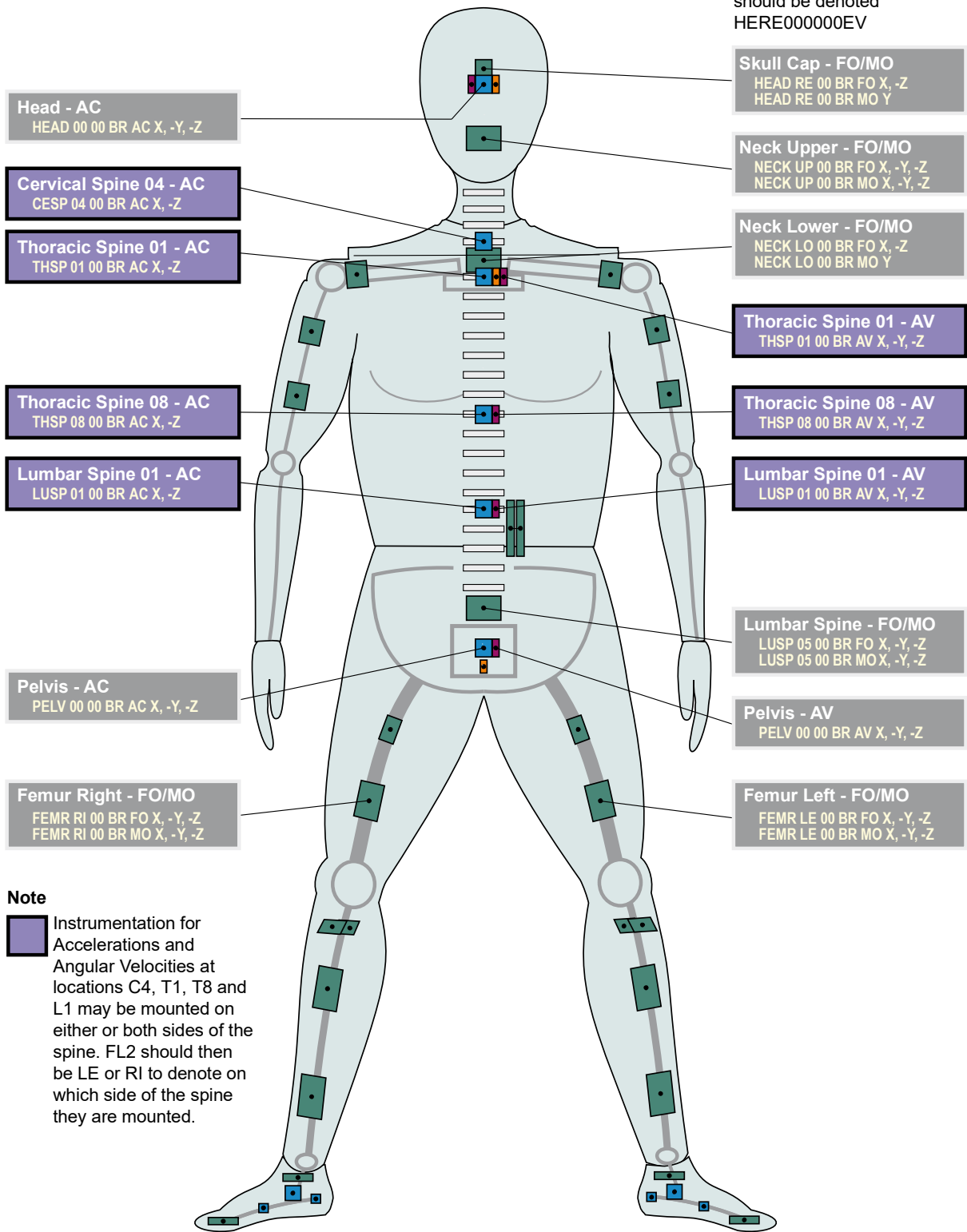
ISO\_TH\_3\_162p2\_20171213.EMF

-> 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



**Note**  
Instrumentation for Accelerations and Angular Velocities at locations C4, T1, T8 and L1 may be mounted on either or both sides of the spine. FL2 should then be LE or RI to denote on which side of the spine they are mounted.

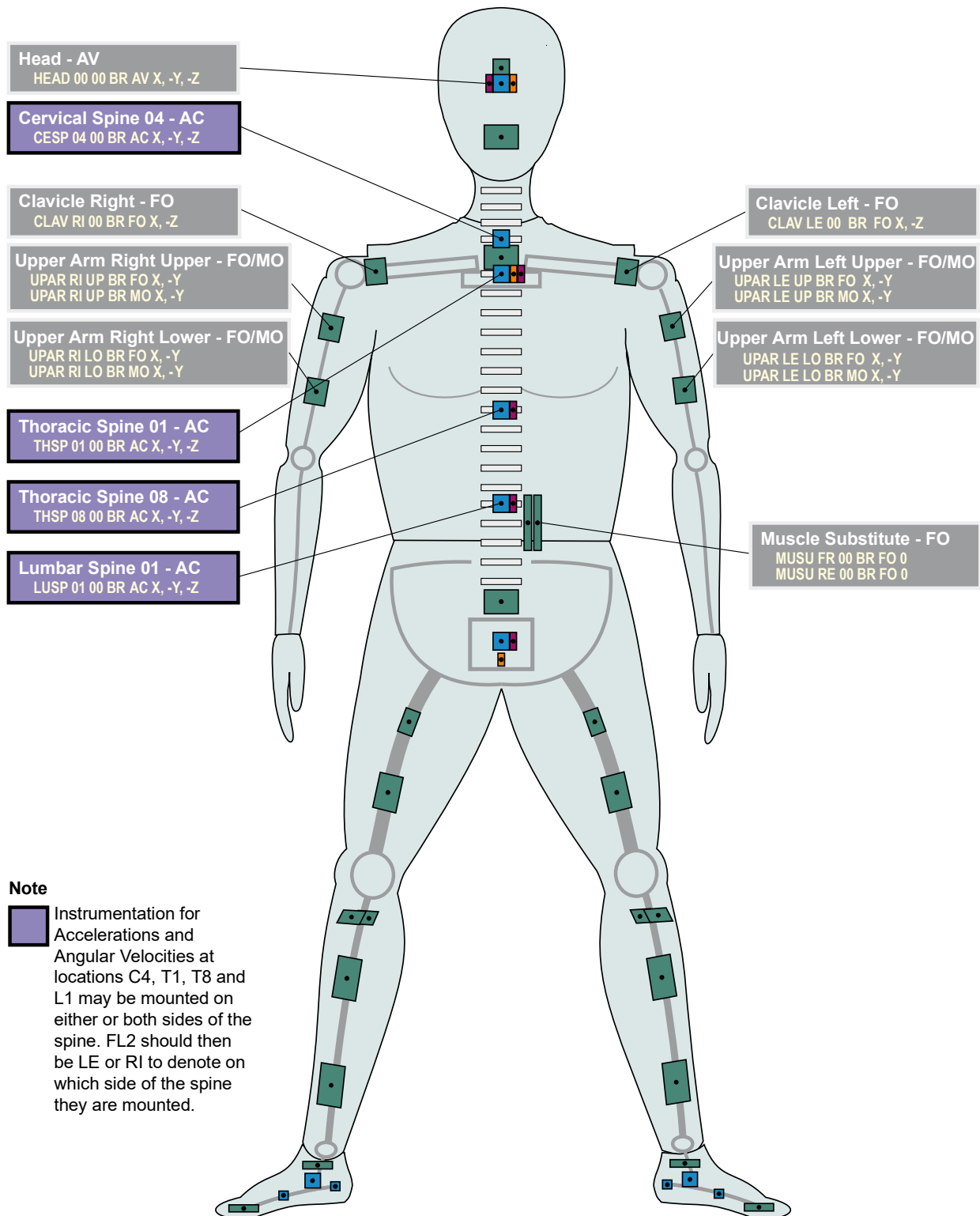


ISO/TS 13499 – RED C : 2012

BR, BioRID II 50% male

Additional Instrumentation - Upper Torso

2013-07-10



ISO-BR\_20130710

Page 2 of 4

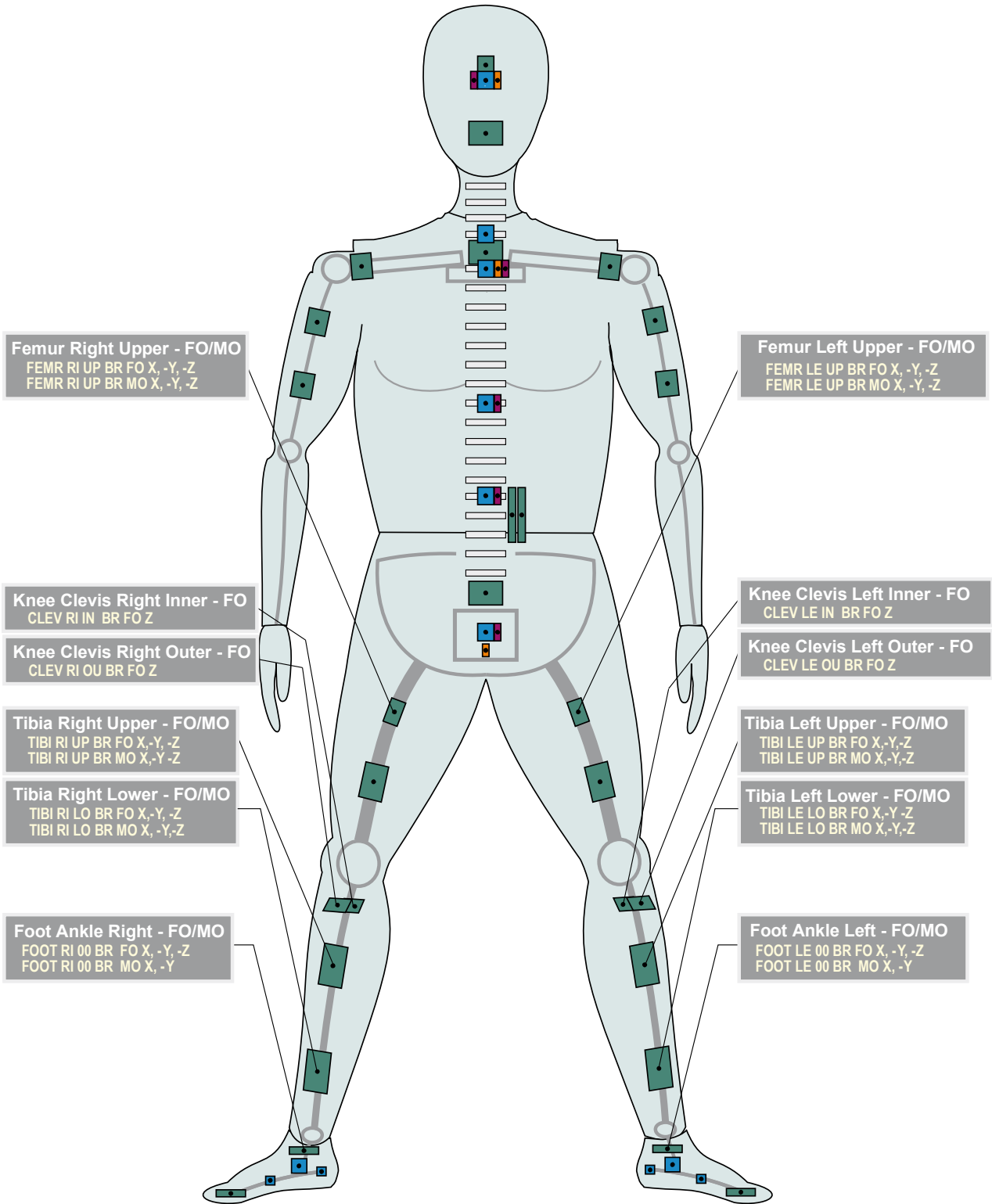
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Paul Wellicome, MIRA Ltd.

ISO\_BR\_2\_161\_20130710.EMF

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

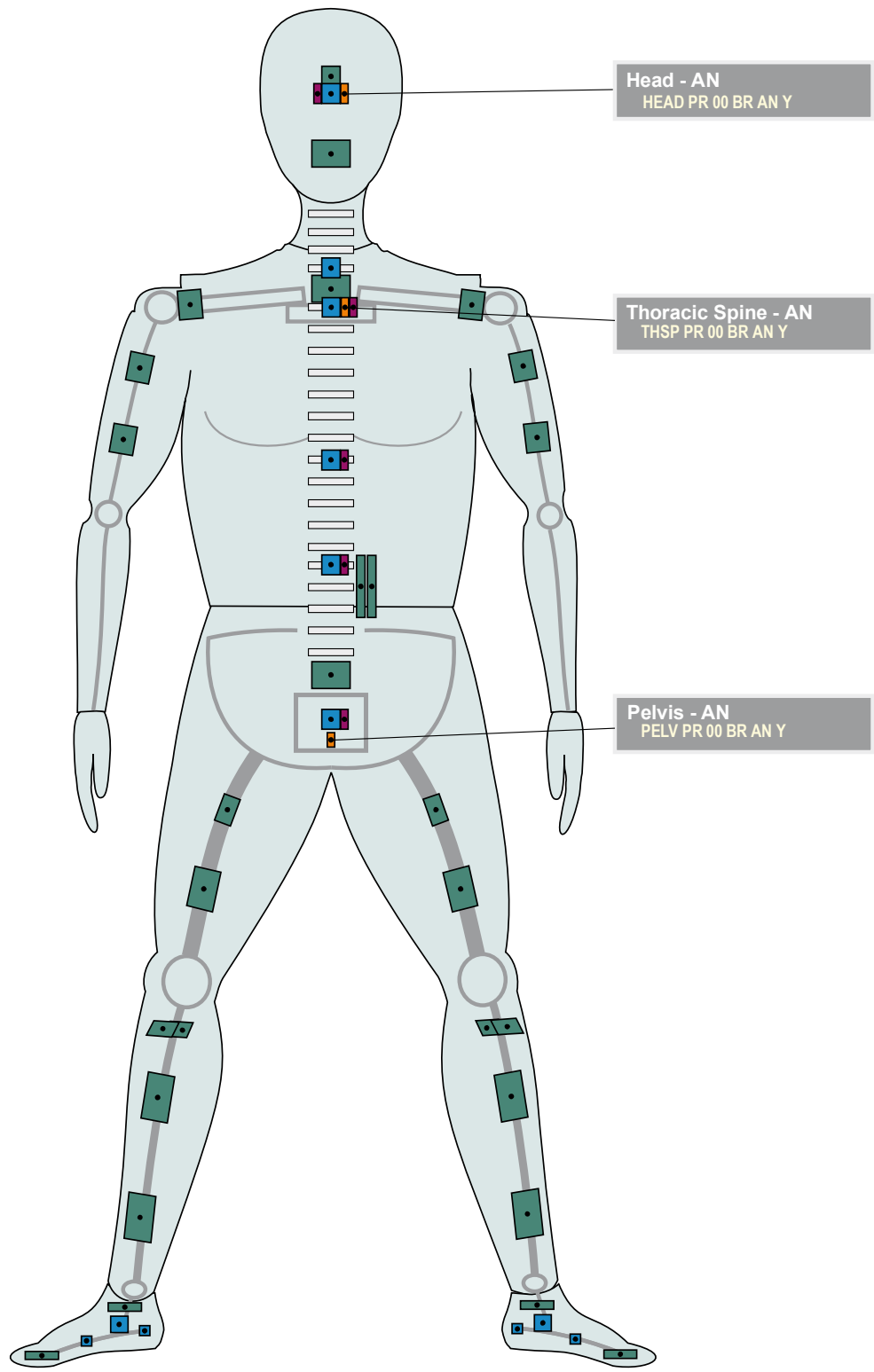


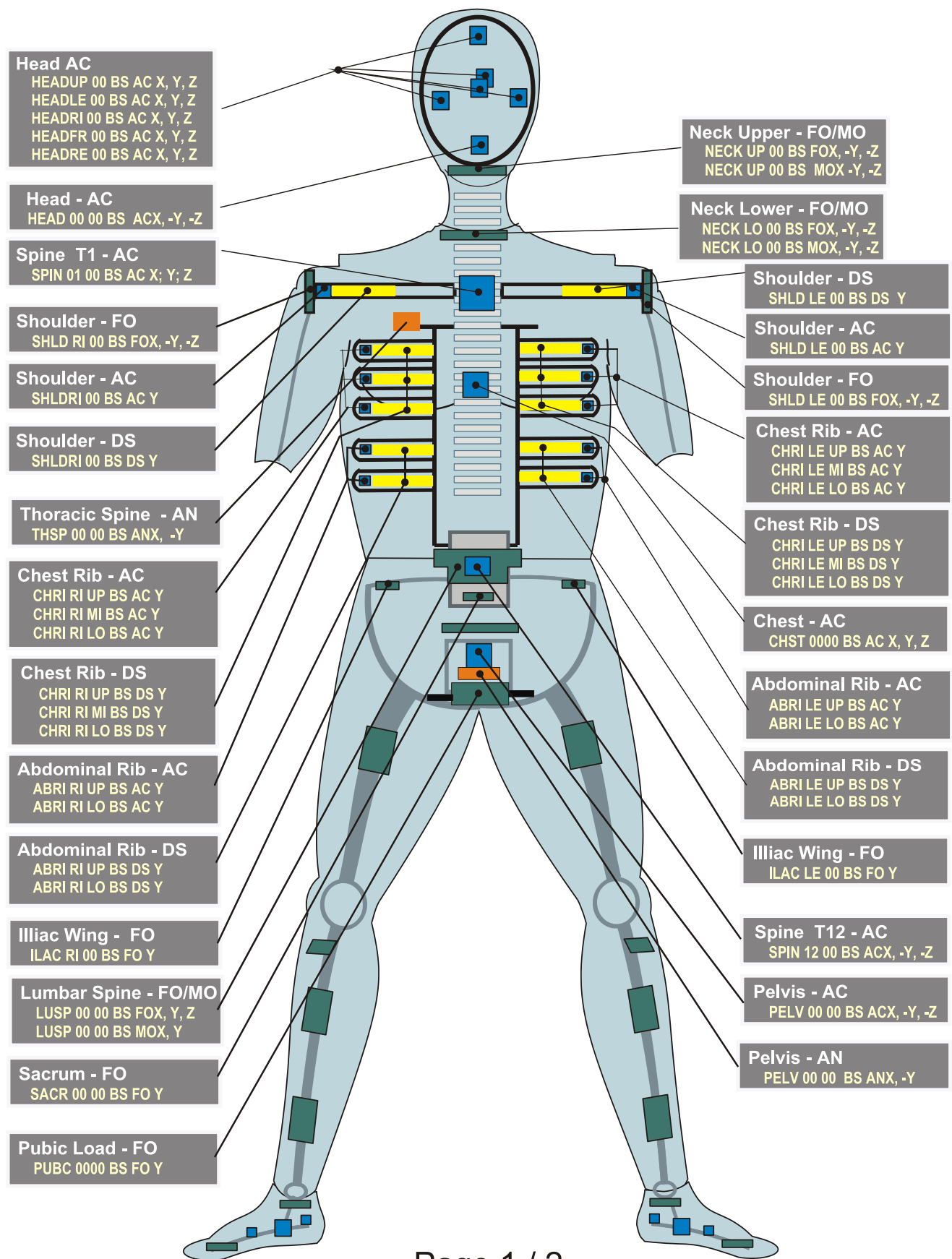
ISO/TS 13499 – RED C : 2012  
BR, BioRID II 50% male  
Additional Instrumentation - Legs  
2013-07-10



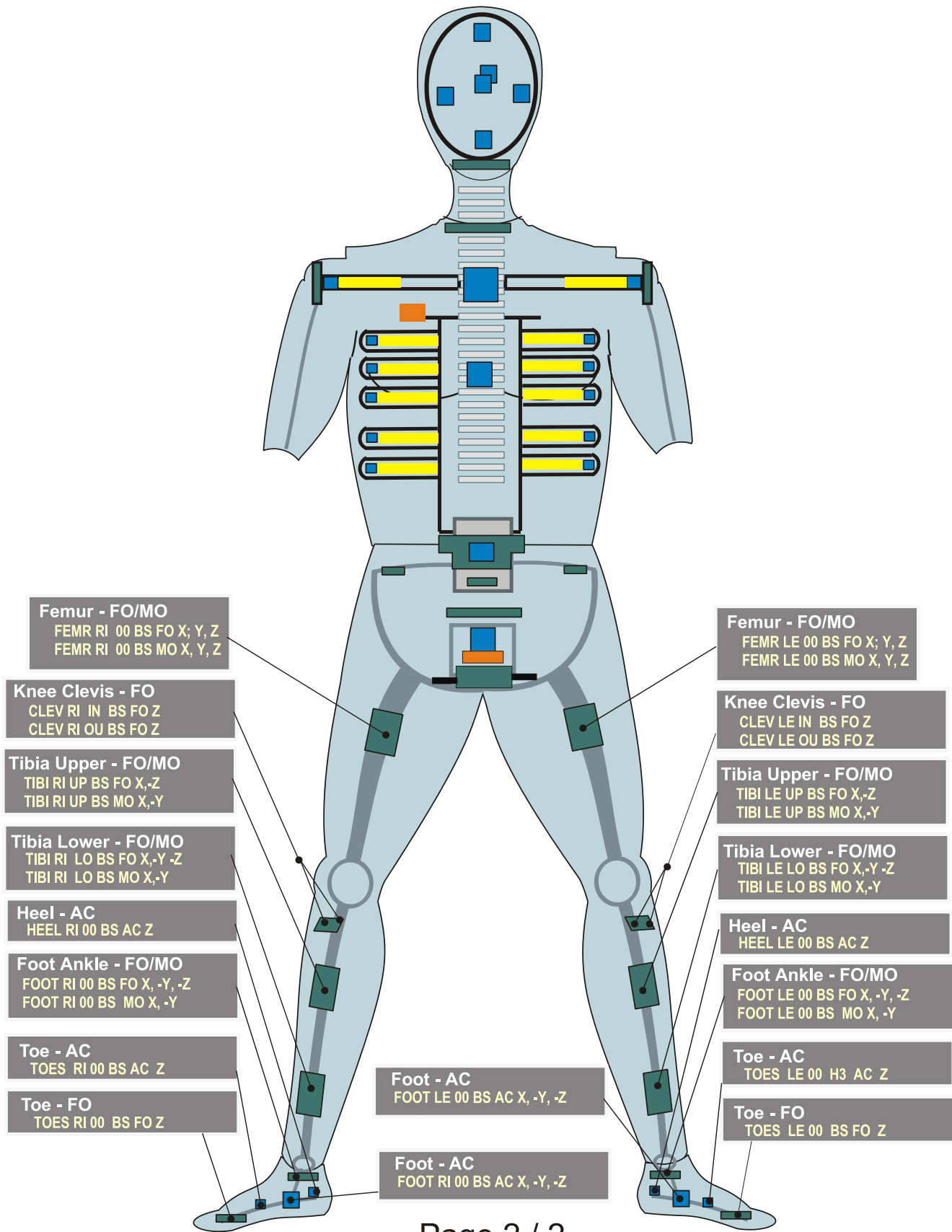


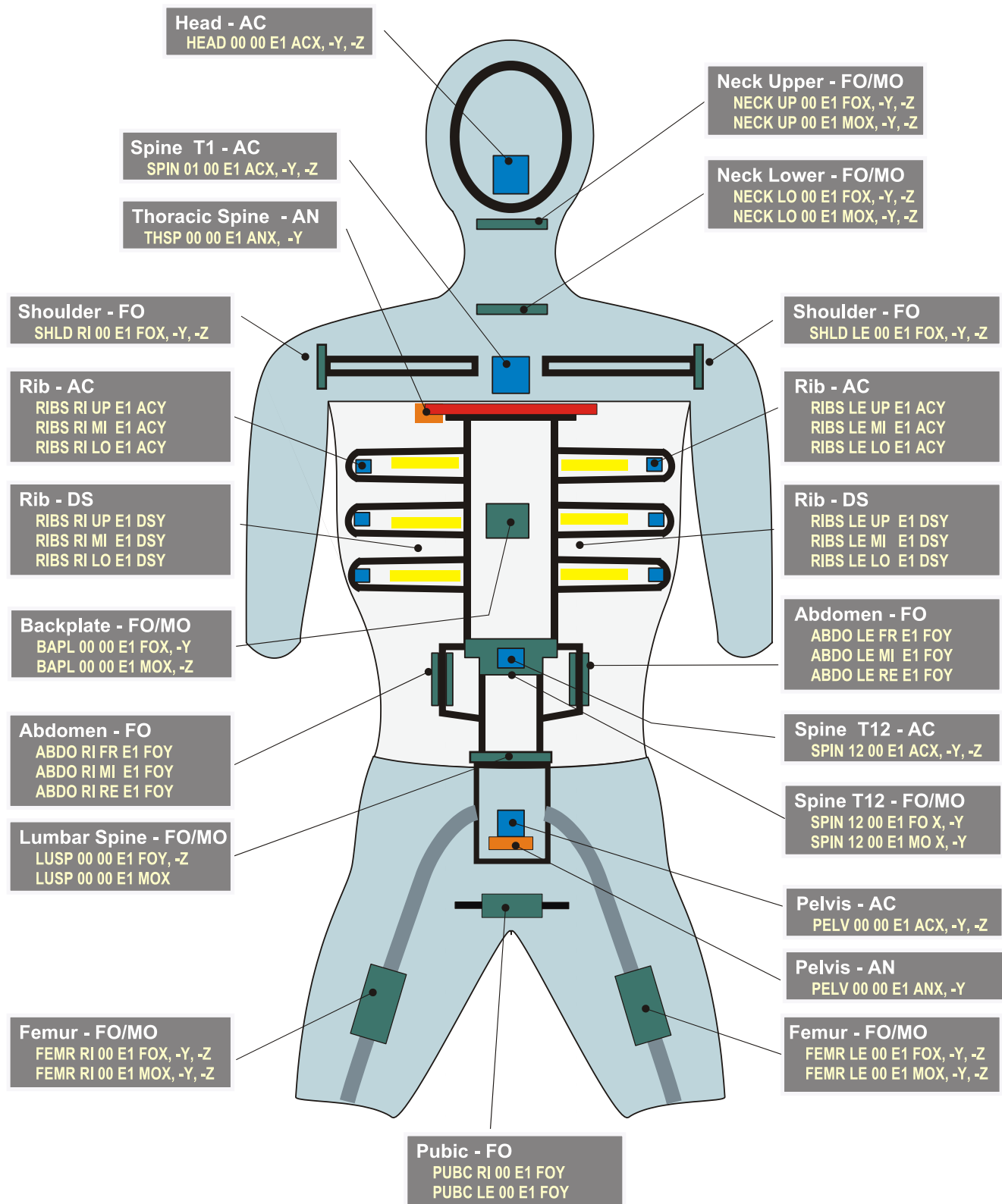
ISO/TS 13499 – RED C : 2012  
BR, BioRID II 50% male  
Static measurements, other channels  
2013-07-10







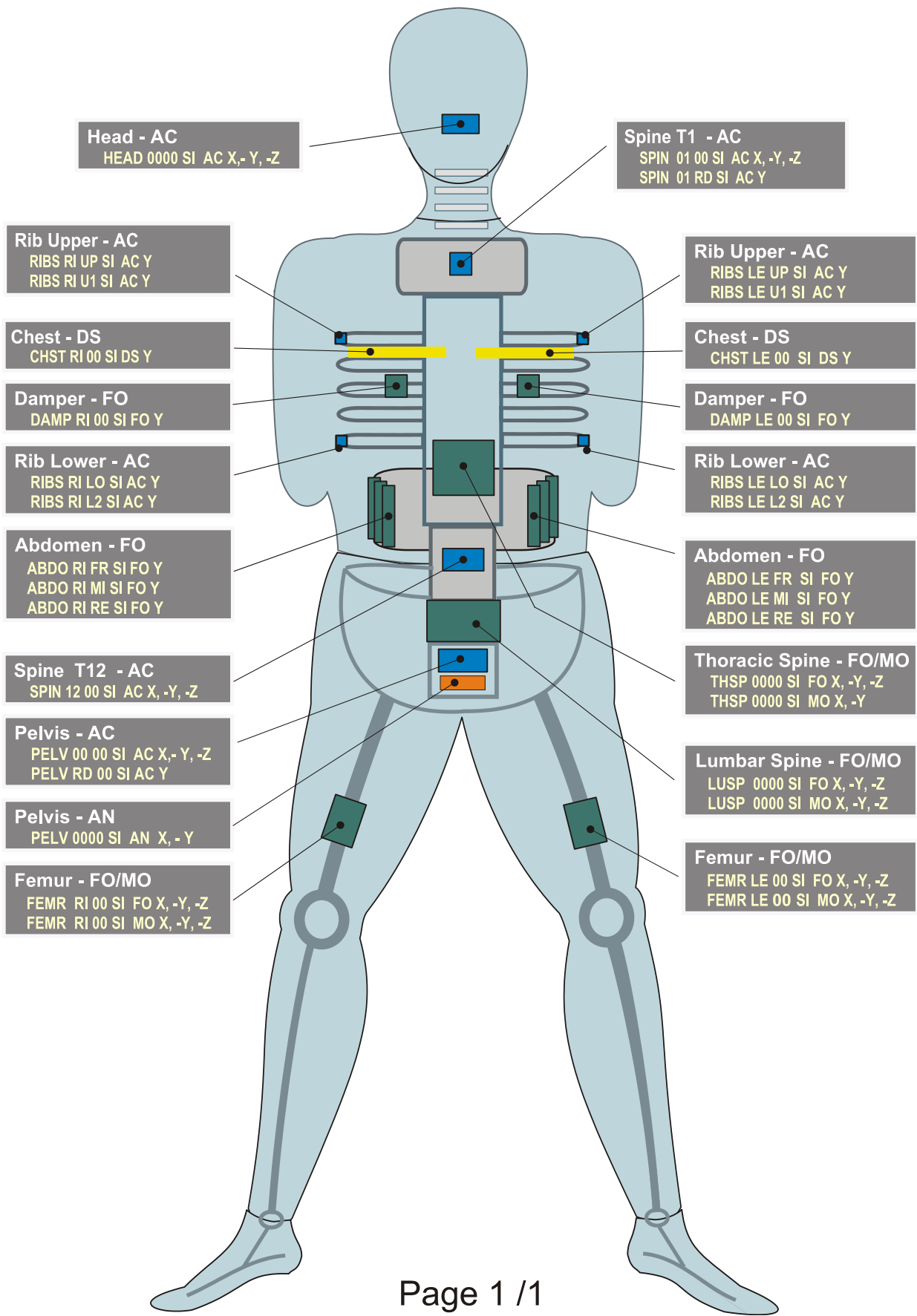




SI US SID

Valid since Version

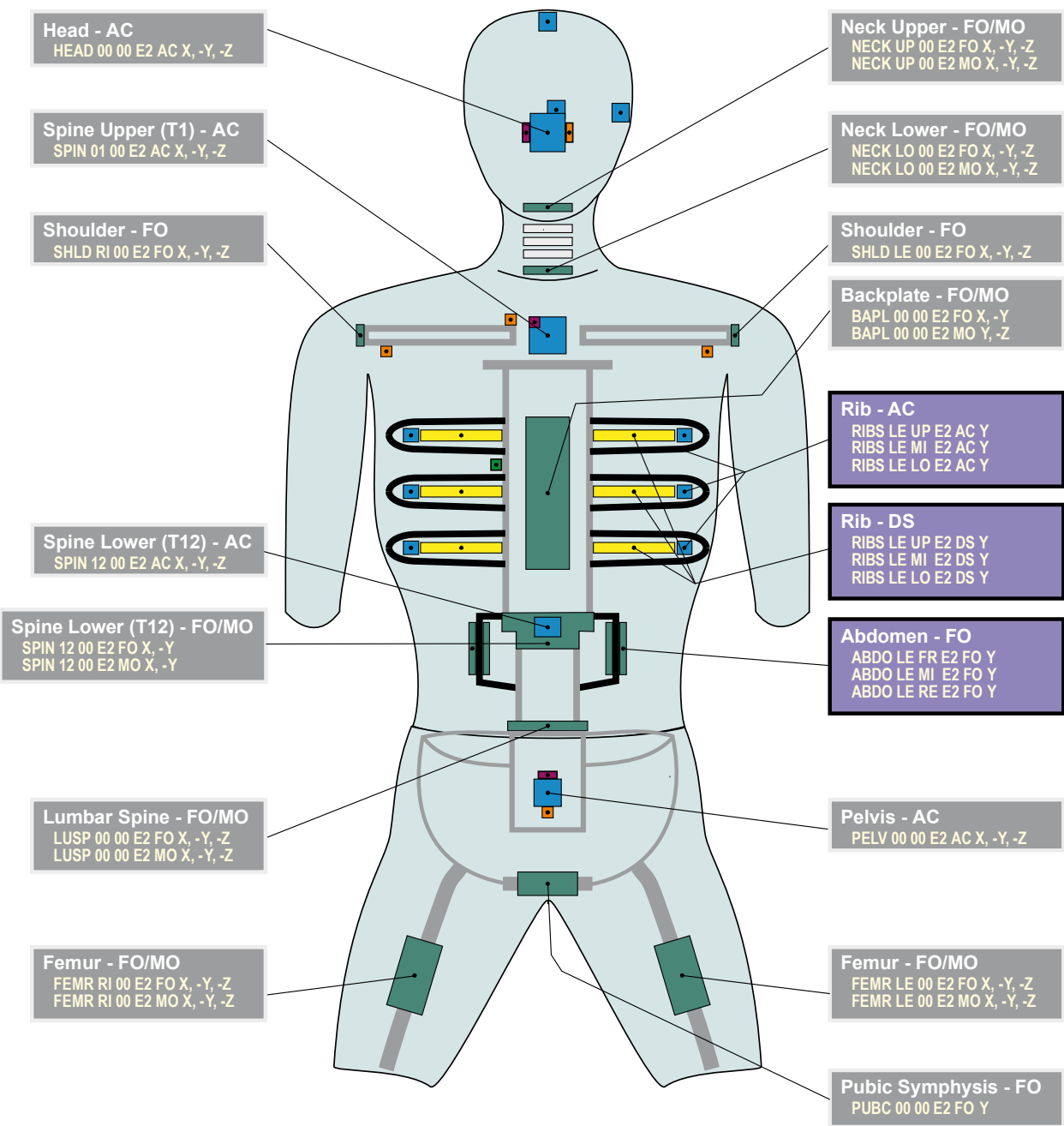
1.2





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

Note: For ERdummy, 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

E2+ER ES-2 & ES-2re (2)

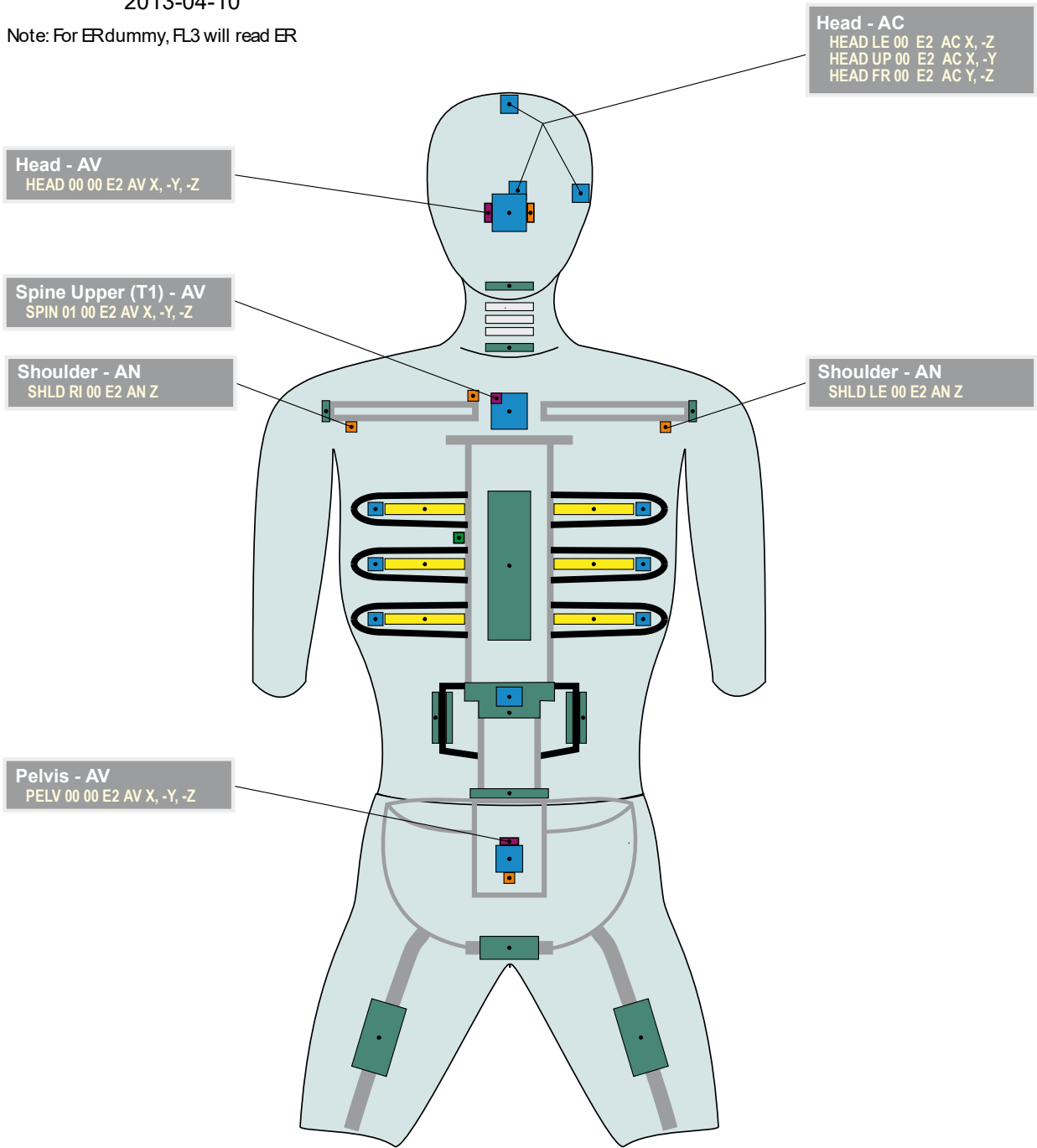
Valid since Version

1.6.1



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

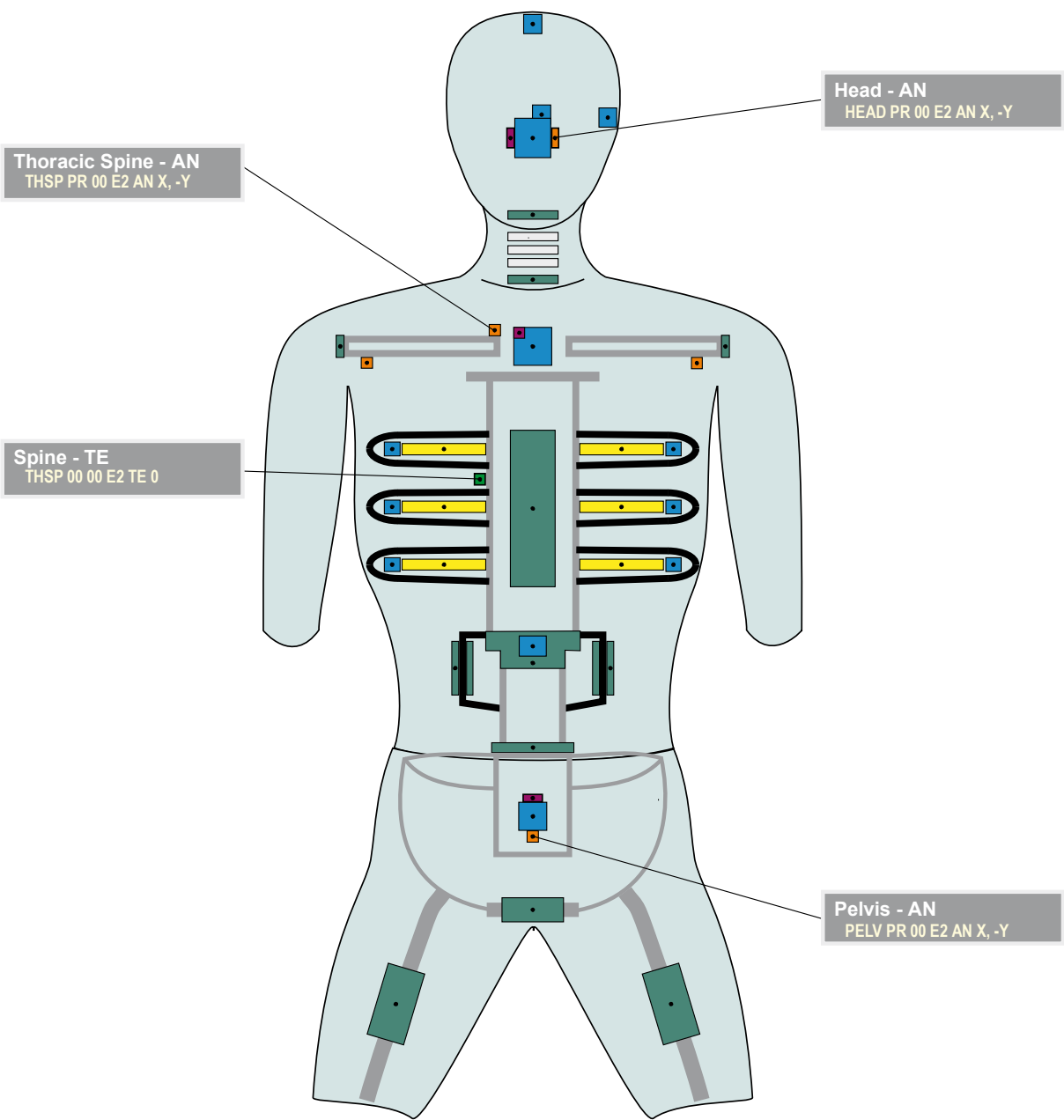
Note: For ERdummy, FL3 will read ER





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

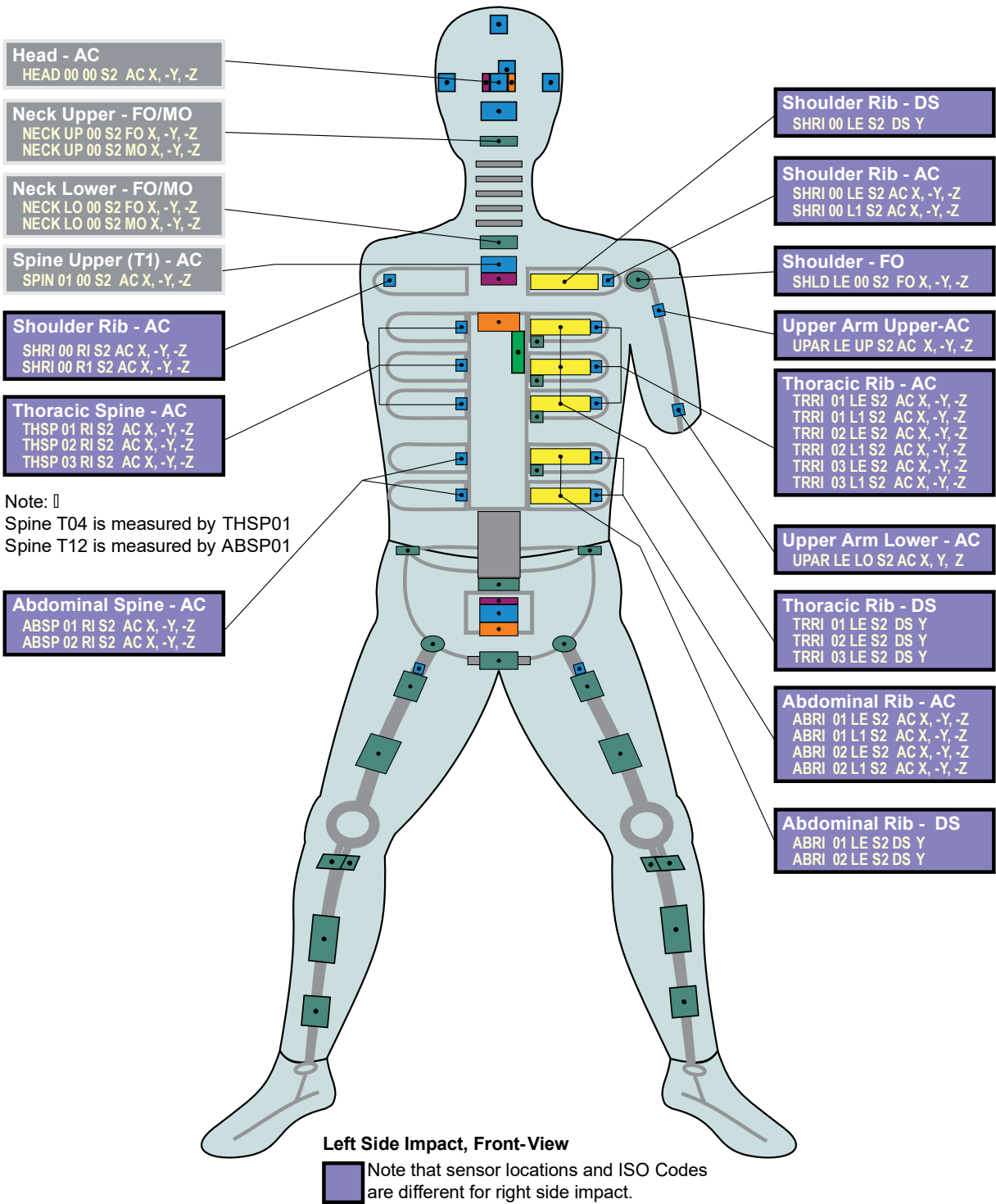


S2 SID IIs (1)

Valid since Version 1.6.1



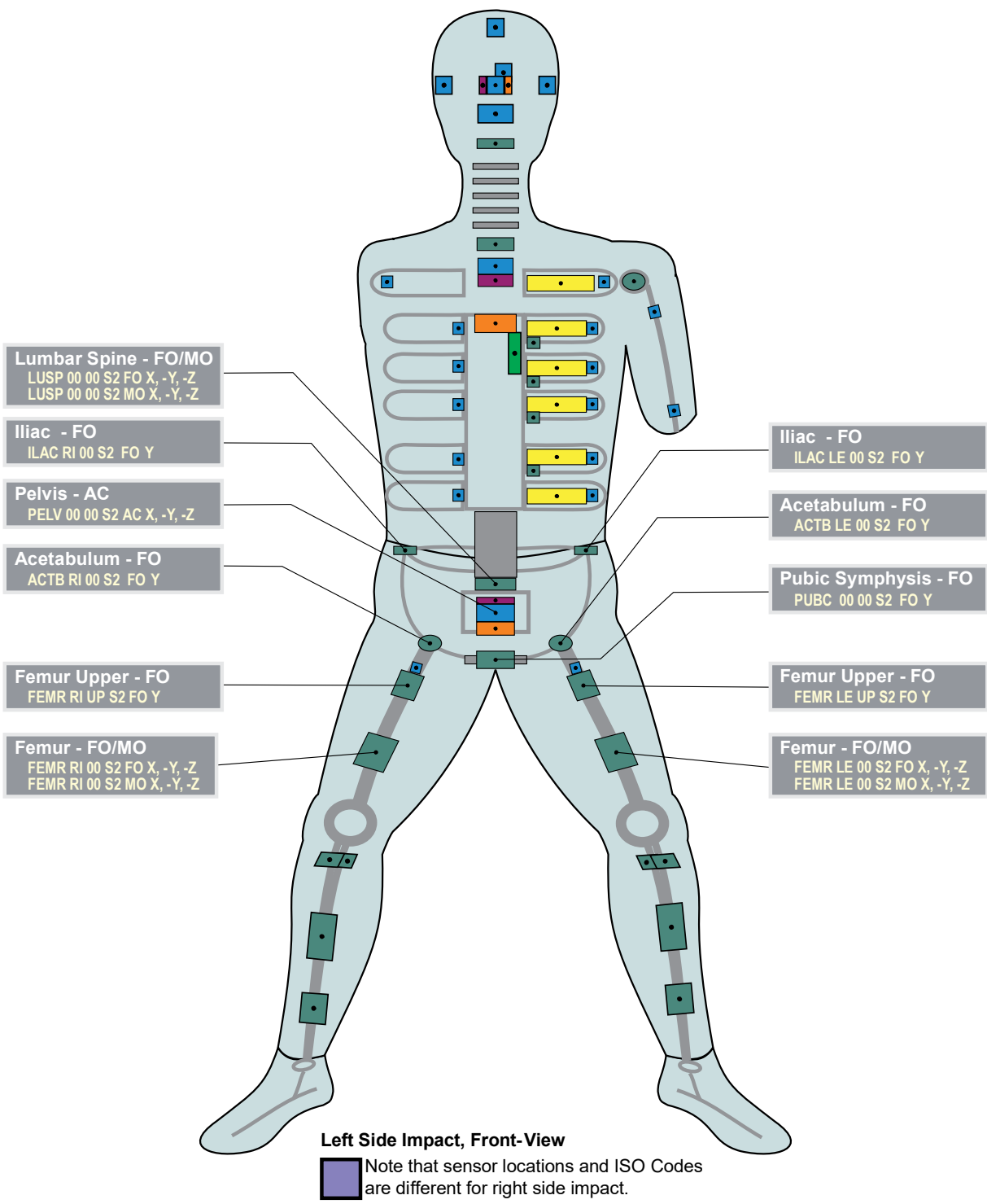
ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Standard Instrumentation (upper body)  
2013-04-09



ISO-S2\_20140409



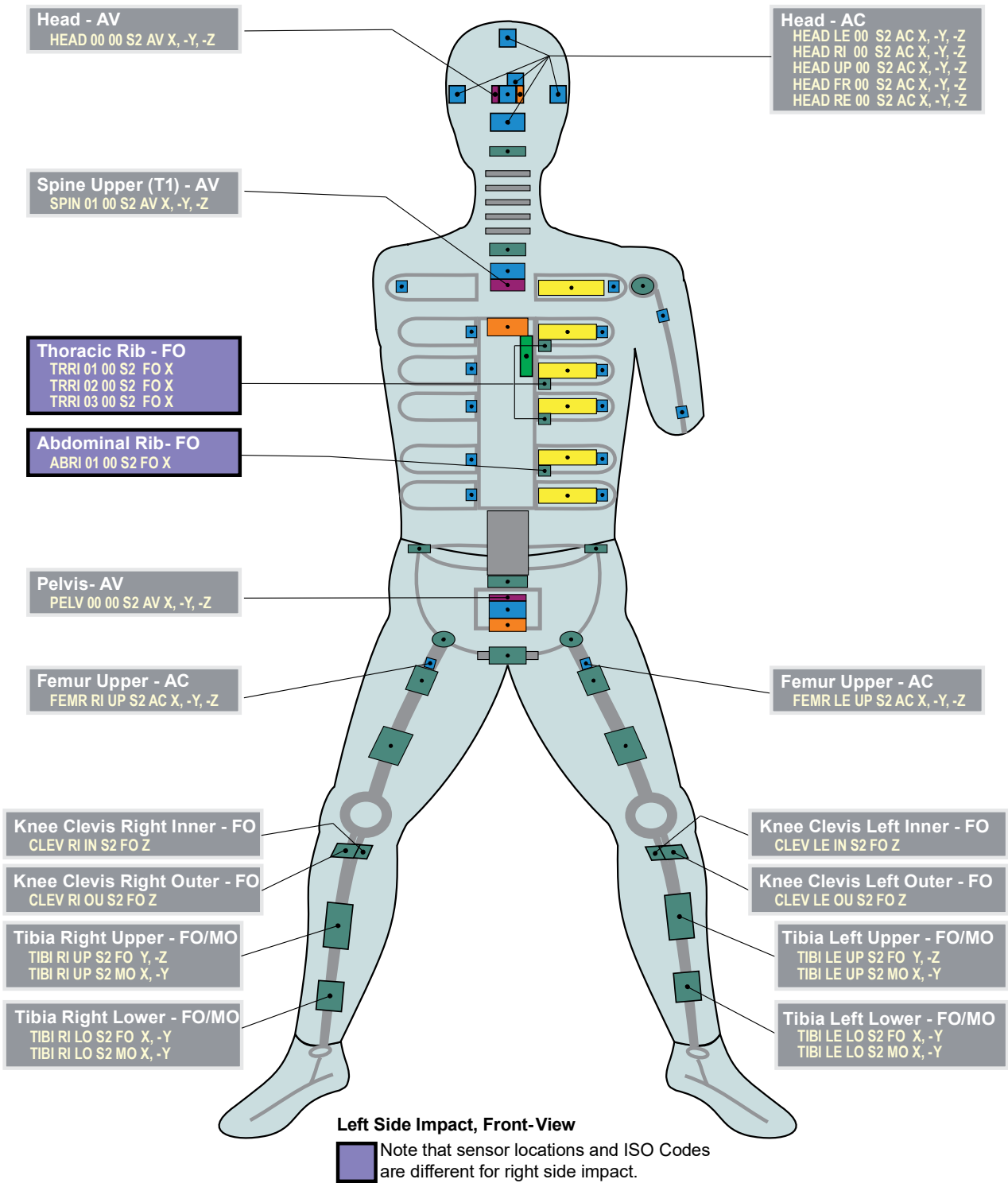
ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Standard Instrumentation (lower body)  
2013-04-09







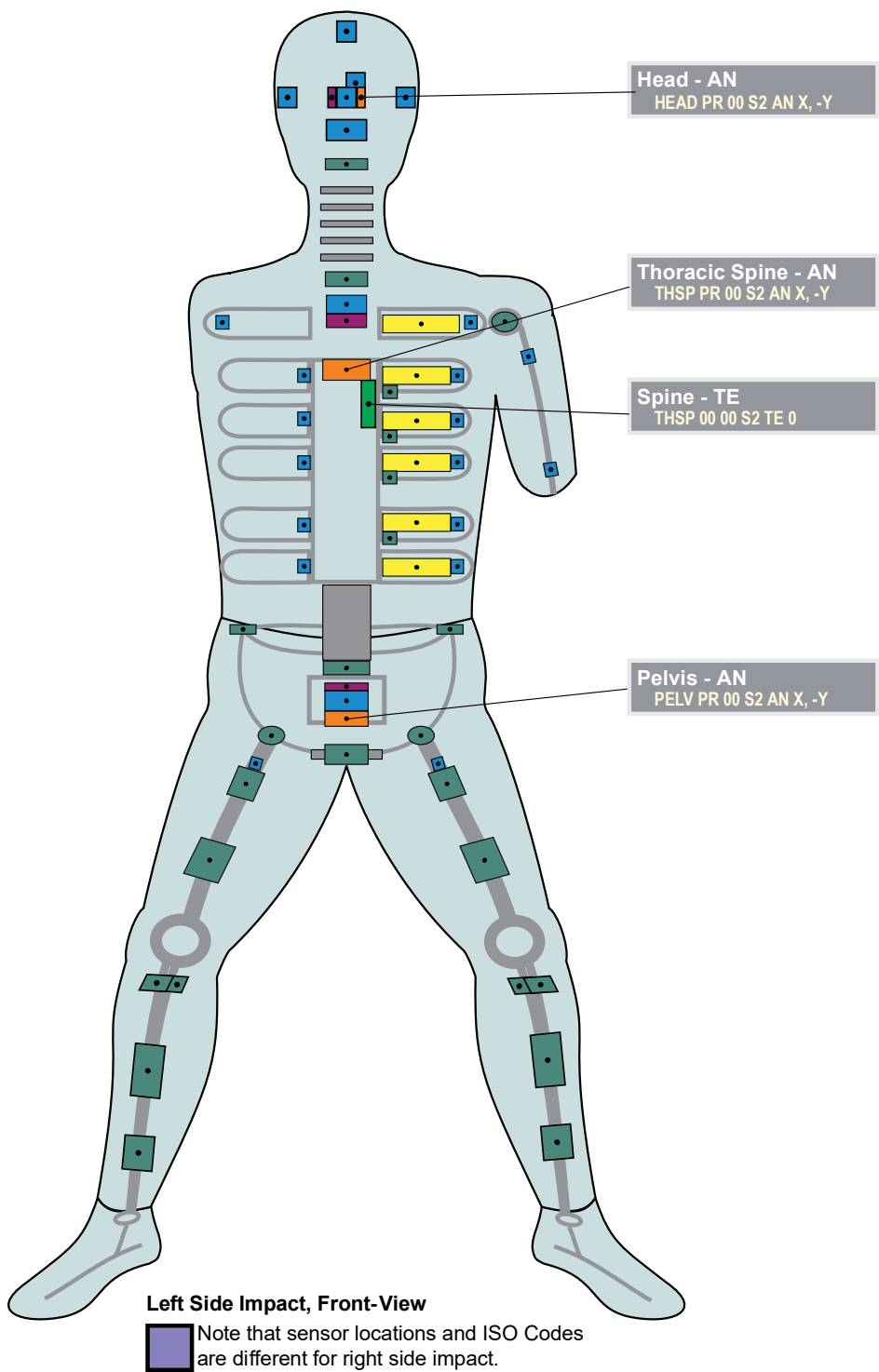
ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Additional Instrumentation  
2013-04-09



ISO-S2\_20140409

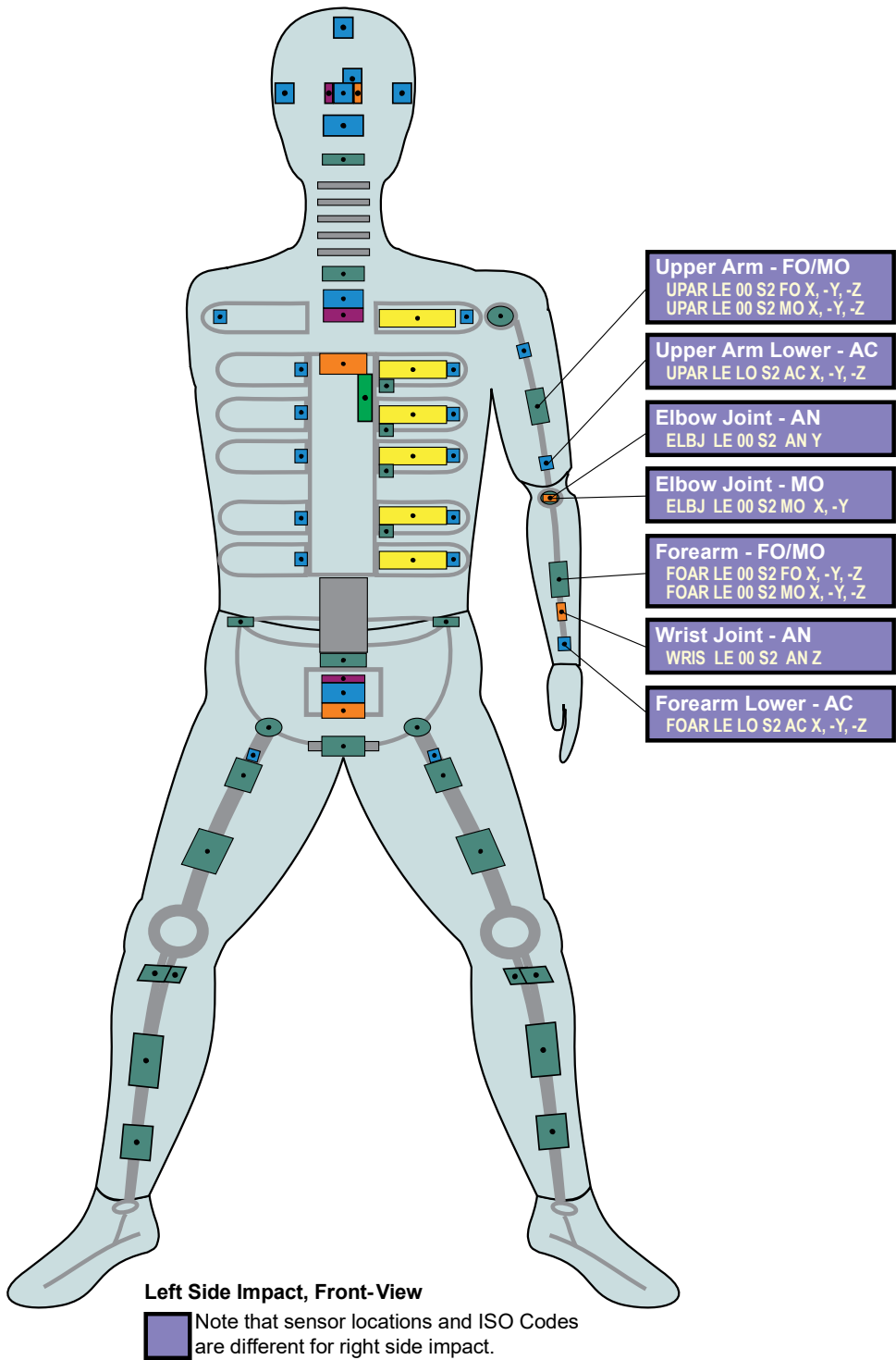


ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Static measurements, other channels  
2013-04-09



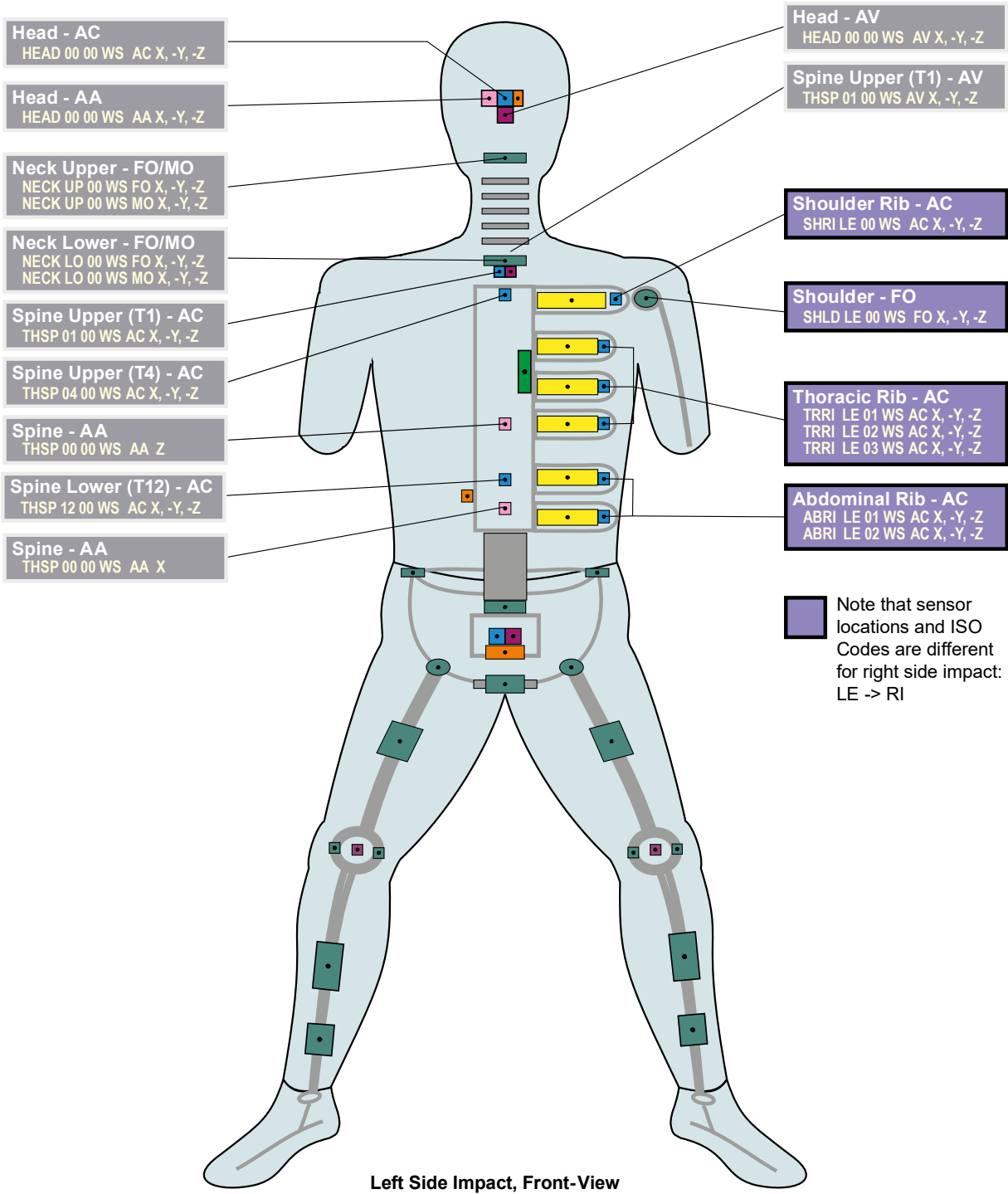


ISO/TS 13499 – RED C : 2012(E)  
S2, SID IIs  
Additional Instrumentation: Instrumented arm  
2013-04-09





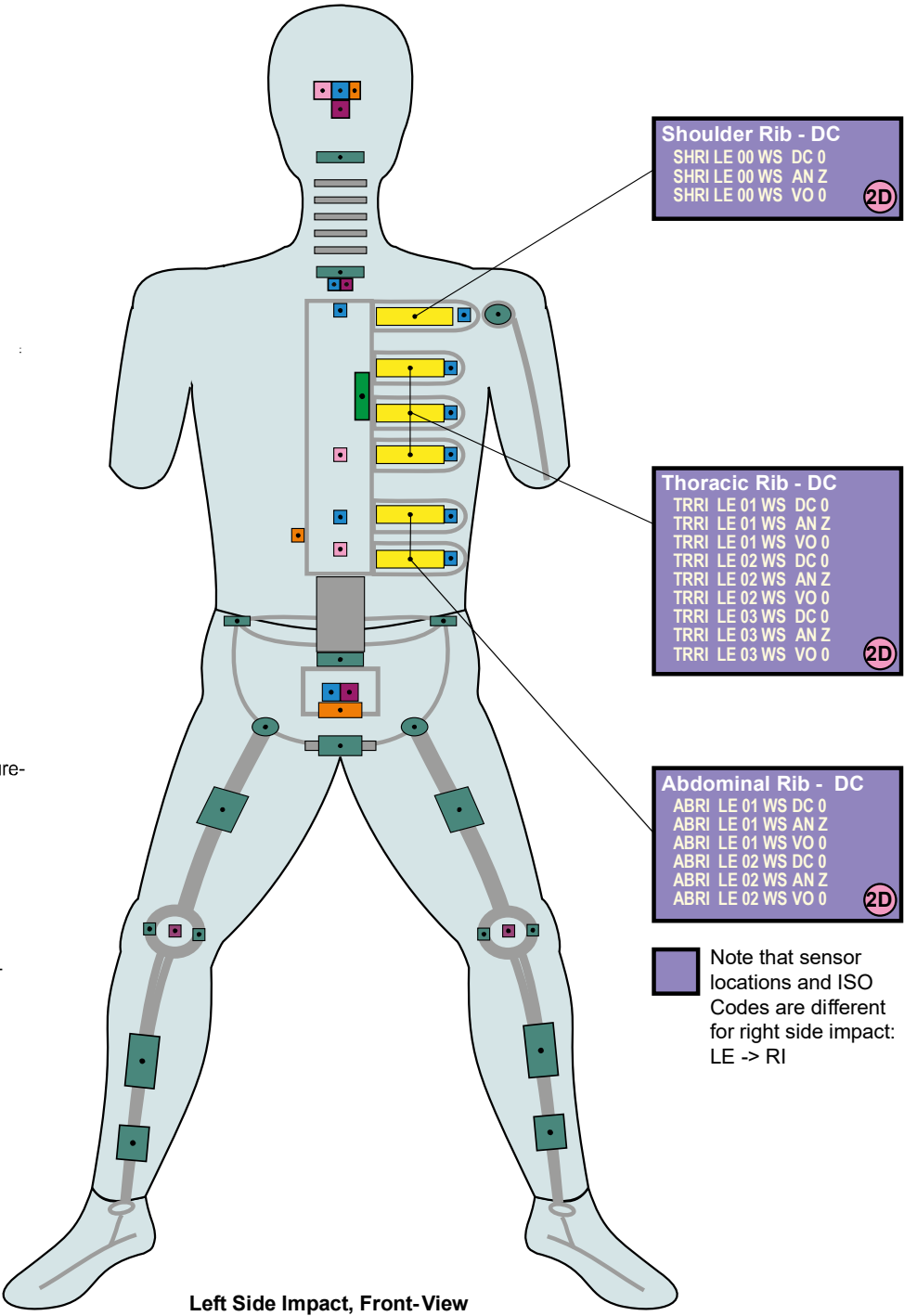
ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Standard Instrumentation (upper body)  
2017-04-20





ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Deflection Measurement (Shoulder, Thorax, Abdomen) 2D-Equipment  
2017-04-20

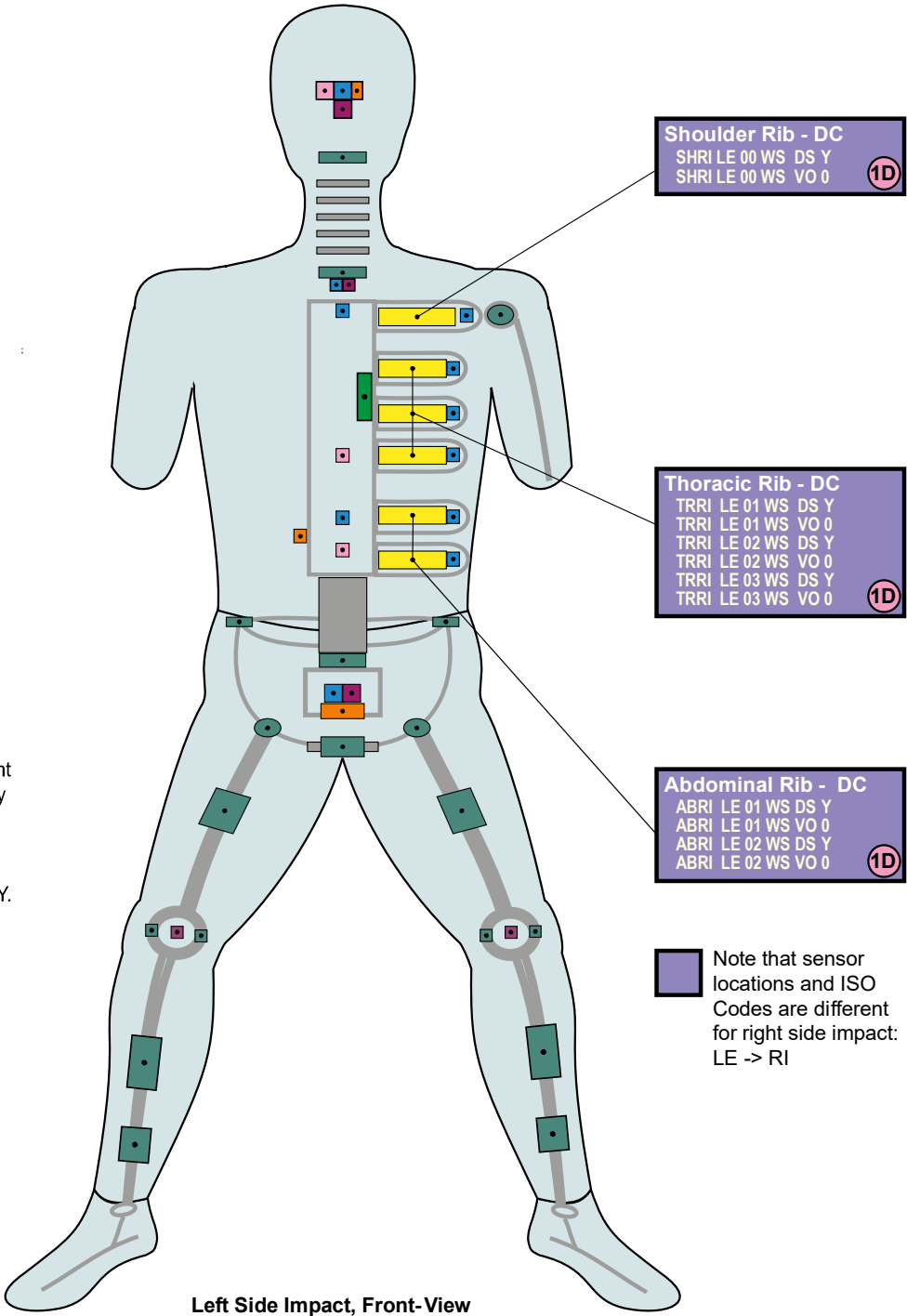
Note that the some measure-  
ment devices fitted to this  
dummy records a voltage.  
It is more normal to  
exchange the distance  
channel or total length  
channel (DC0). □  
If the DC0 channel is not  
available, DS0 is permissi-  
ble.





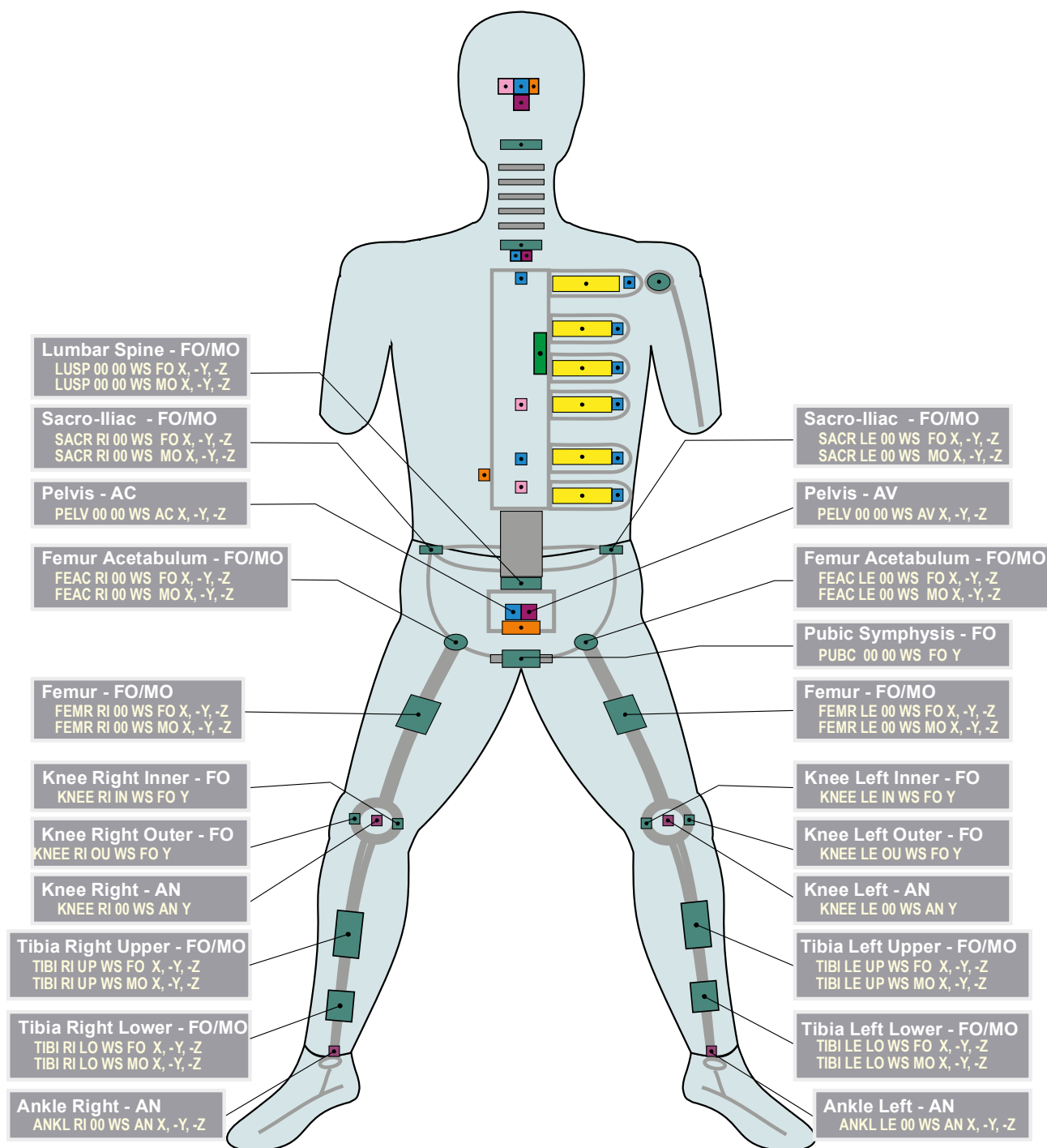
ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Deflection Measurement (Shoulder, Thorax, Abdomen) 1D Equipment  
2017-04-20

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



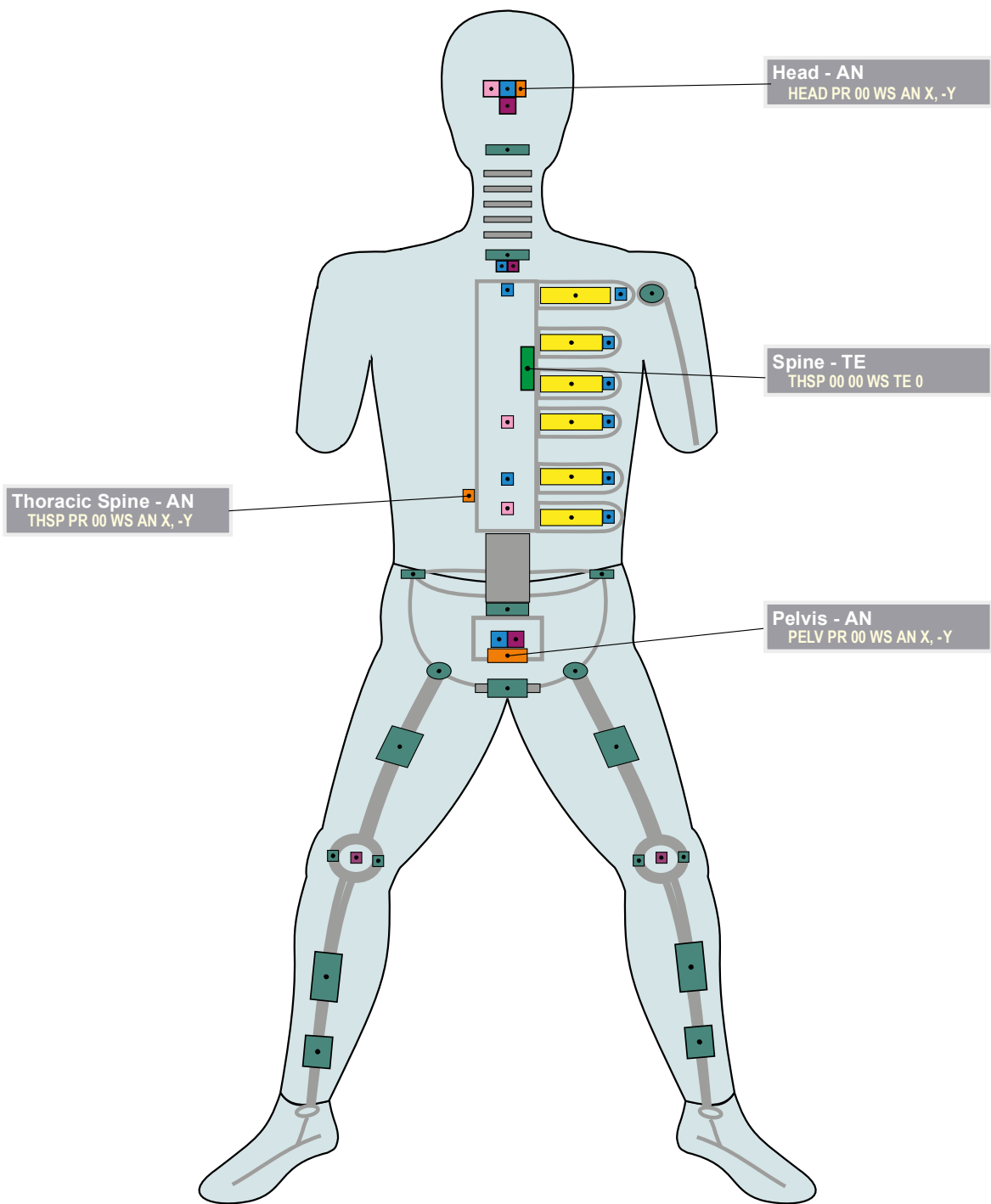


ISO/TS 13499 – RED C : 2012(E)  
 WS, WorldSID 50th percentile dummy  
 Standard Instrumentation (lower body)  
 2017-04-20





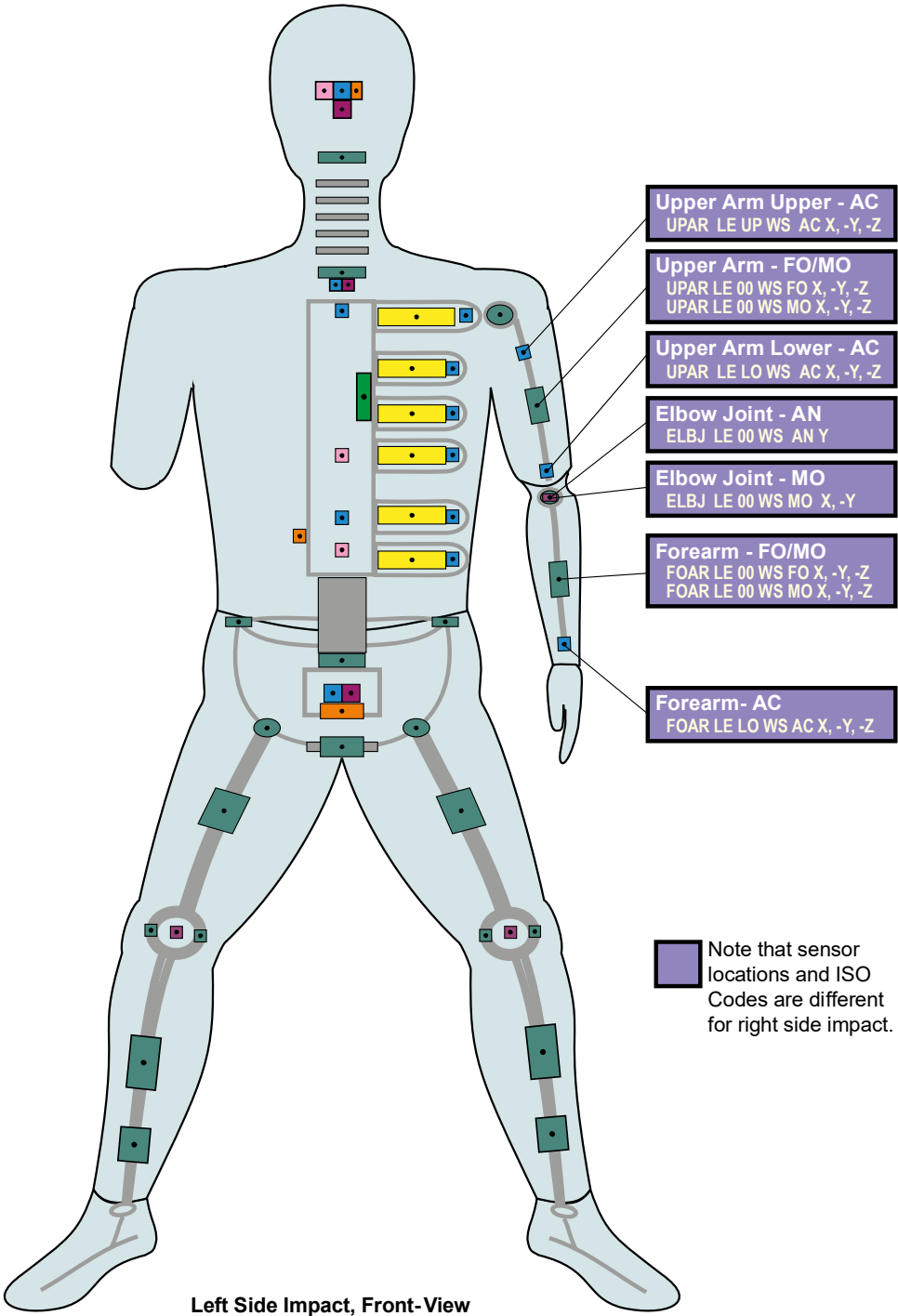
ISO/TS 13499 – RED C : 2012(E)  
WS, WorldSID 50th percentile dummy  
Static measurements, other channels  
2017-04-20








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





ISO/TS 13499 - RED C : 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 Vertebrae Column

Radius Ulna Ilium Ischium Pubis

Carpals Metacarpals Phalanges

Femur Patella Tibia Fibula

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 ...



ISO/TS 13499 - RED C : 2013

Vehicle Side View 1

2017-12-13

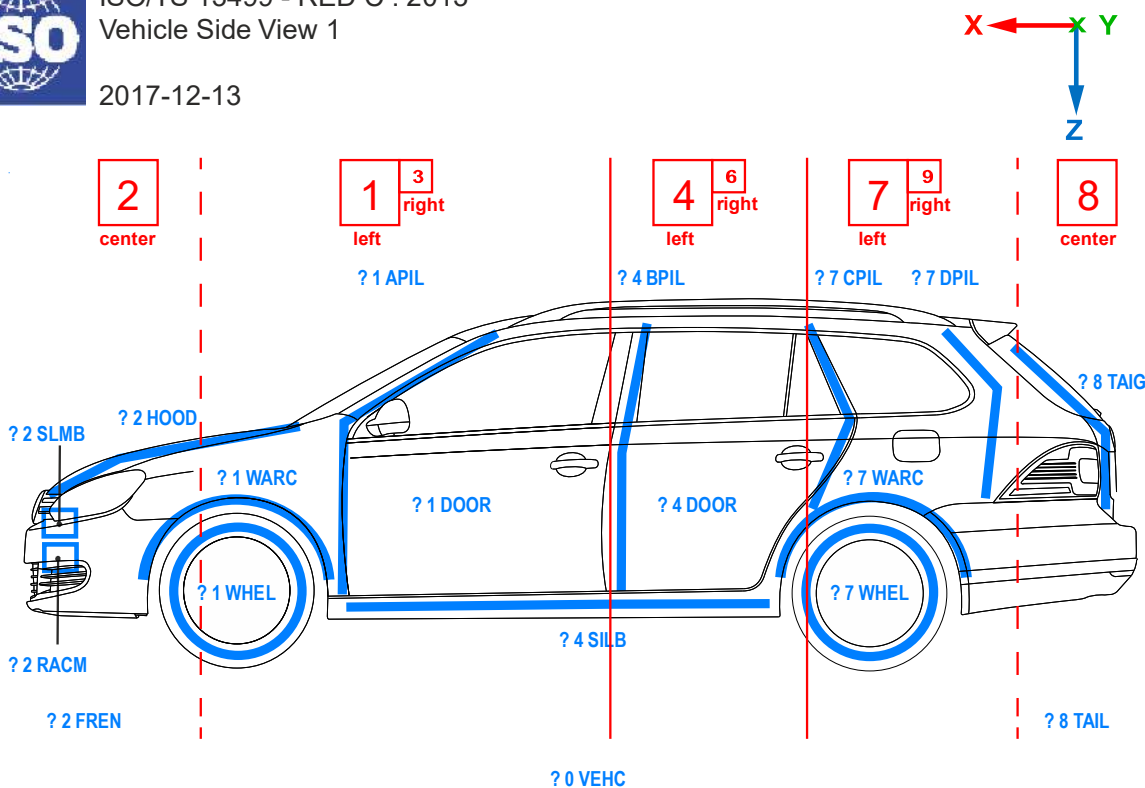


Diagram illustrating the vehicle side view (left side) with numbered callouts for various components. The diagram includes a coordinate system at the top right with X (red arrow left), Y (green arrow down), and Z (blue arrow down).

Numbered callouts (left side):

- 2 center
- 1 left
- 3 right
- 4 left
- 6 right
- 7 left
- 9 right
- 8 center

Component labels (left side):

- ? 1 APIL
- ? 4 BPIL
- ? 7 CPIL
- ? 7 DPIL
- ? 8 TAIG
- ? 2 SLMB
- ? 2 HOOD
- ? 1 WARC
- ? 1 DOOR
- ? 4 DOOR
- ? 7 WARC
- ? 2 RACM
- ? 2 FREN
- ? 4 SILB
- ? 7 WHEEL
- ? 8 TAIL
- ? 0 VEHC

picture only from the left side of the vehicle

? 1 APIL	A-Pillar left	? 1 DOOR	Door front left
? 3 APIL	A-Pillar right	? 3 DOOR	Door front right
? 4 BPIL	B-Pillar left	? 4 DOOR	Door rear left
? 6 BPIL	B-Pillar right	? 6 DOOR	Door rear right
? 7 CPIL	C-Pillar left		
? 9 CPIL	C-Pillar right		
? 7 DPIL	D-Pillar left		
? 9 DPIL	D-Pillar right		
		? 2 HOOD	Hood
		? 8 TAIG	Tailgate
		? 0 VEHC	Vehicle
		? 2 FREN	Frontend
		? 8 TAIL	Tail
		? 2 SLMB	Slam Beam
		? 2 RACM	Radiator Cross Member
? 1 WHEEL	Wheel front left		
? 3 WHEEL	Wheel front right		
? 7 WHEEL	Wheel rear left		
? 9 WHEEL	Wheel rear right		
? 1 WARC	Wheel Arch front left		
? 3 WARC	Wheel Arch front right		
? 7 WARC	Wheel Arch rear left		
? 9 WARC	Wheel Arch rear right		

ISO\_VEH\_16R2


Page 1 of 7

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

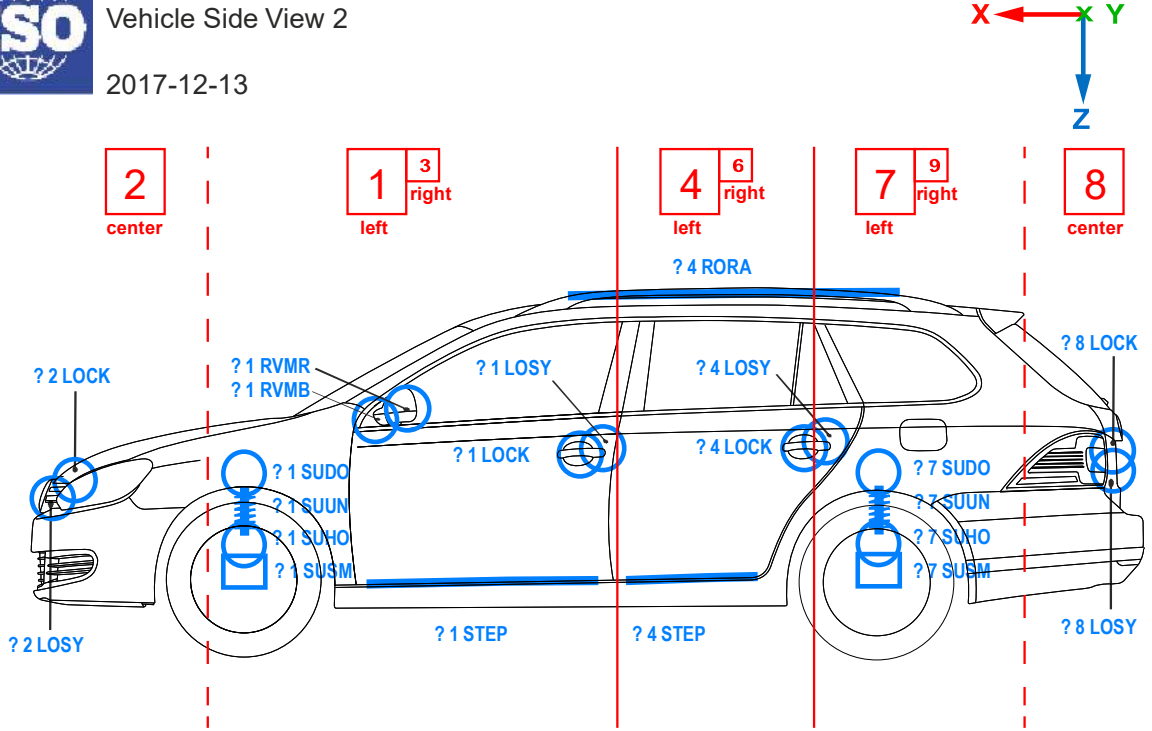
VEH\_S2 Vehicle left side

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

Page 2 of 7

ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
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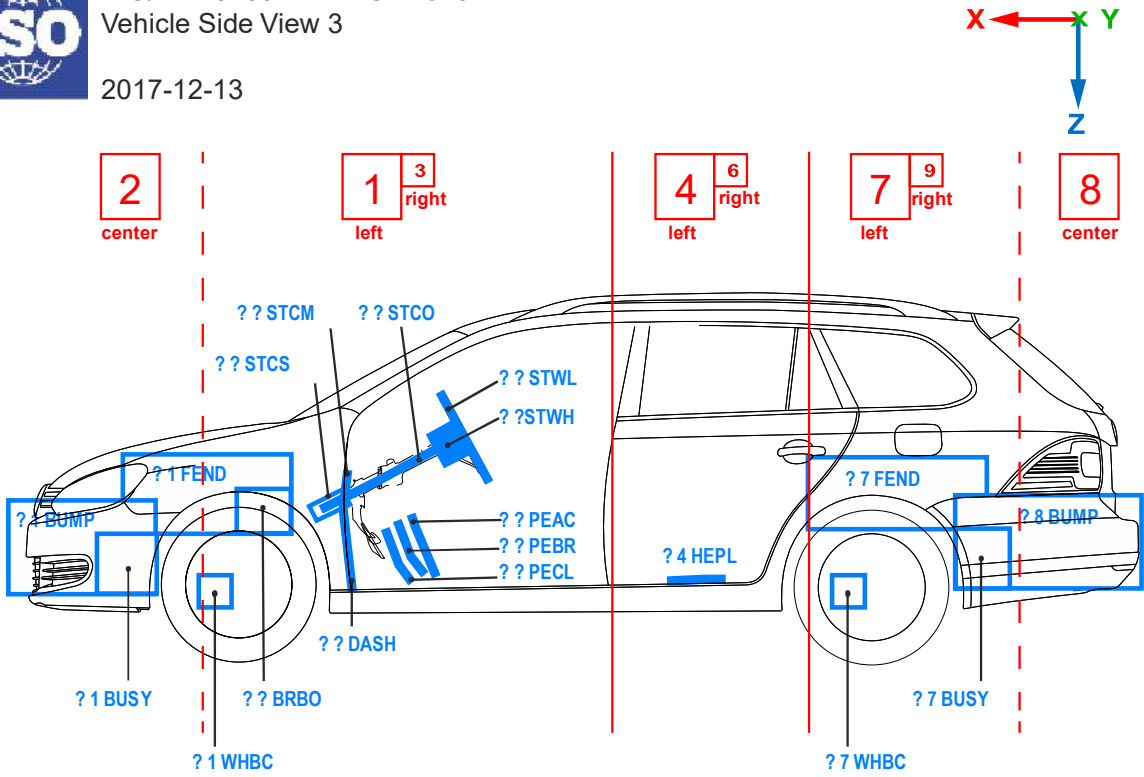
VEH\_S3 Vehicle left side, open

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



ISO/TS 13499 - RED C : 2013  
Vehicle Side View 3

2017-12-13



picture only from the left side of the vehicle

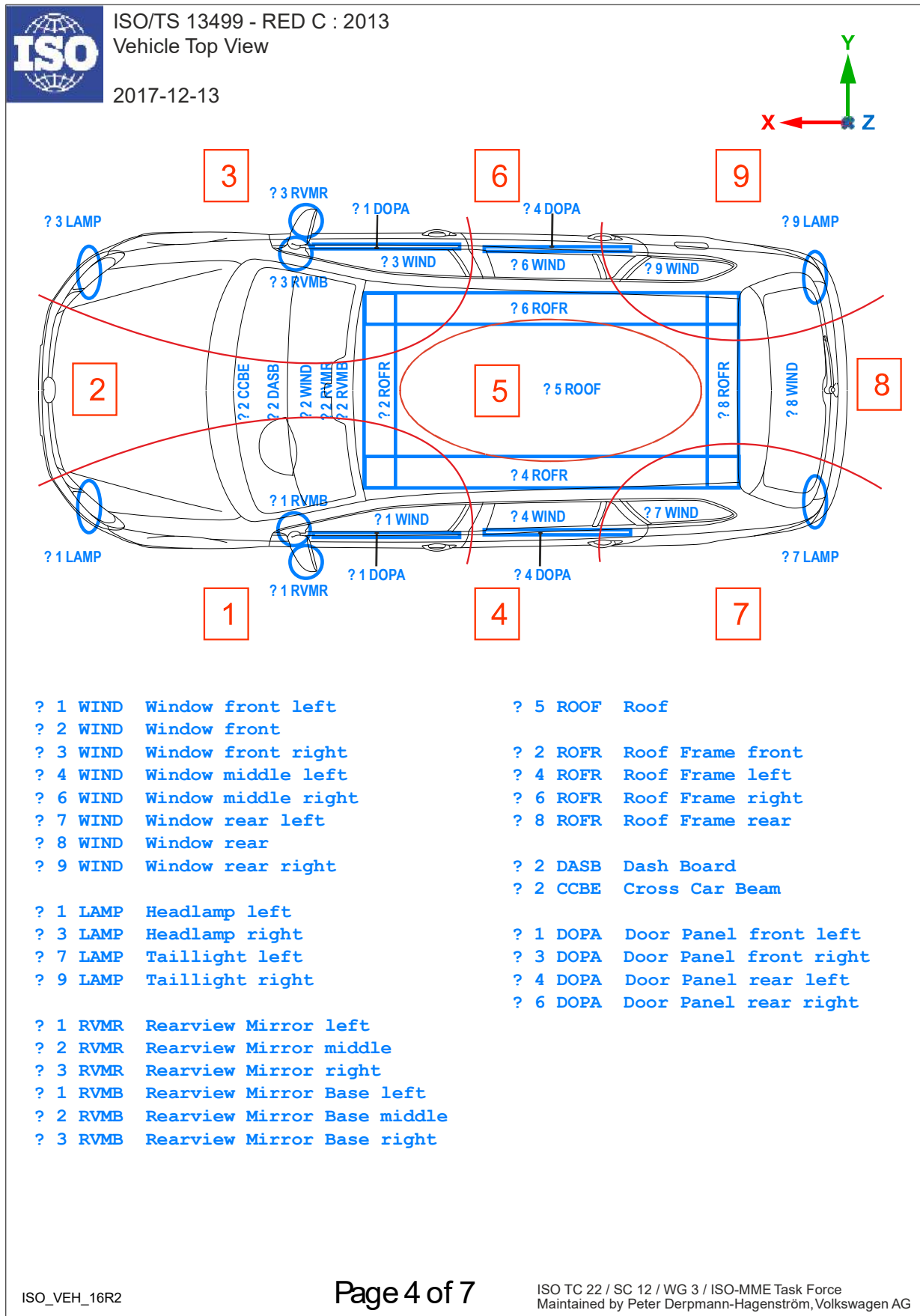
? ? STWL	Steering Wheel	? 1 FEND	Fender front left
? ? STWH	Steering Wheel Hub	? 3 FEND	Fender front right
? ? STCO	Steering Column	? 7 FEND	Fender rear left
? ? STCM	Steering Column Mount	? 9 FEND	Fender rear right
? ? STCS	Steering Column Suspension		
		? 2 BUMP	Bumper front
? ? DASH	Dash Panel	? 8 BUMP	Bumper rear
? ? PEAC	Pedal Accelerator	? 1 BUSY	Bumper System front left
? ? PEBR	Pedal Brake	? 3 BUSY	Bumper System front right
? ? PECL	Pedal Clutch	? 7 BUSY	Bumper System rear left
? ? BRBO	Brake Booster	? 9 BUSY	Bumper System rear right
		? 4 HEPL	Heel Plate left
		? 6 HEPL	Heel Plate right
		? 1 WHBC	Wheel Brake Caliper front left
		? 3 WHBC	Wheel Brake Caliper front right
		? 7 WHBC	Wheel Brake Caliper rear left
		? 9 WHBC	Wheel Brake Caliper rear right

ISO\_VEH\_16R2

Page 3 of 7

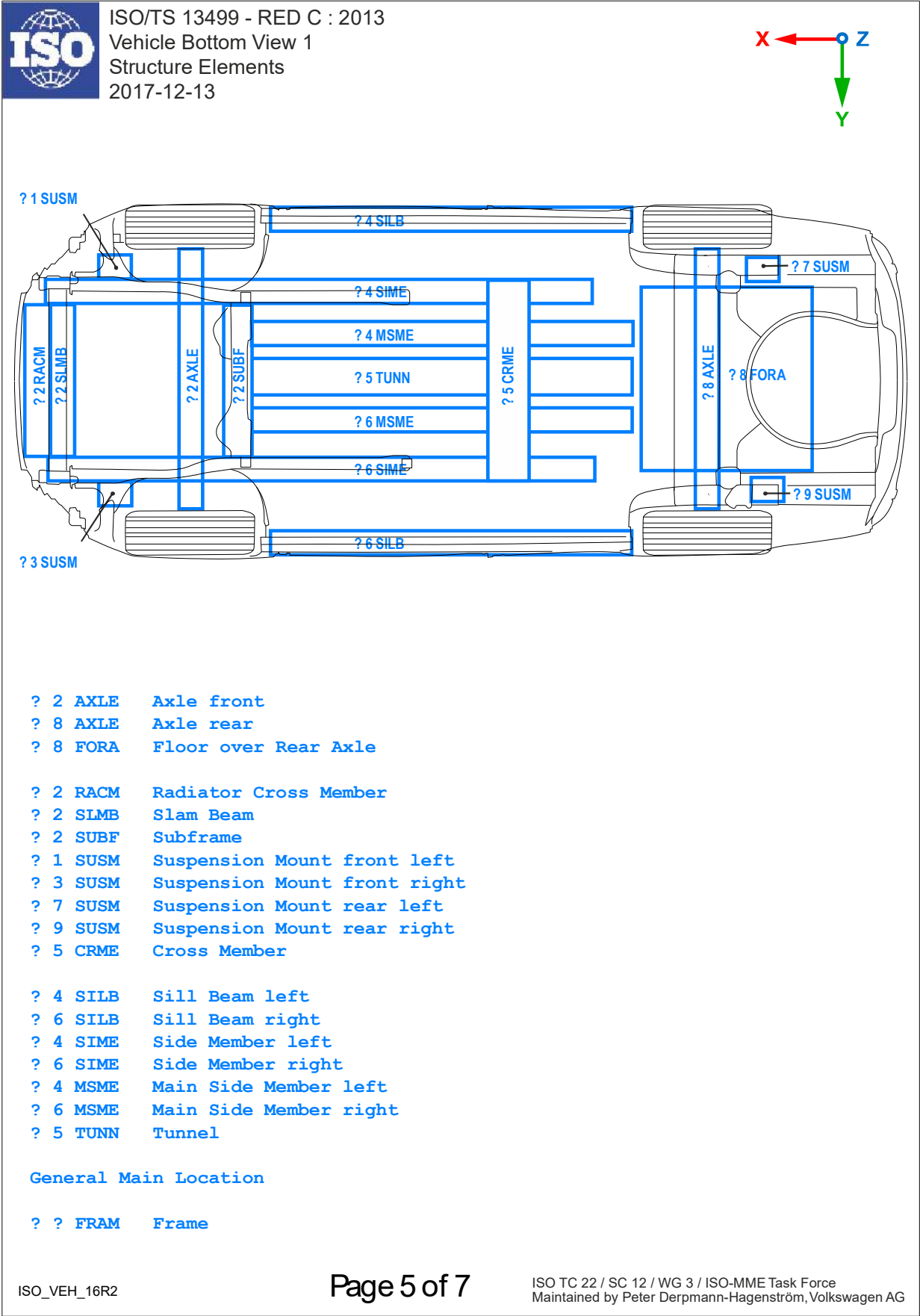
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Peter Derpmann-Hagenström, Volkswagen AG

## VEH\_T1 Vehicle top

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

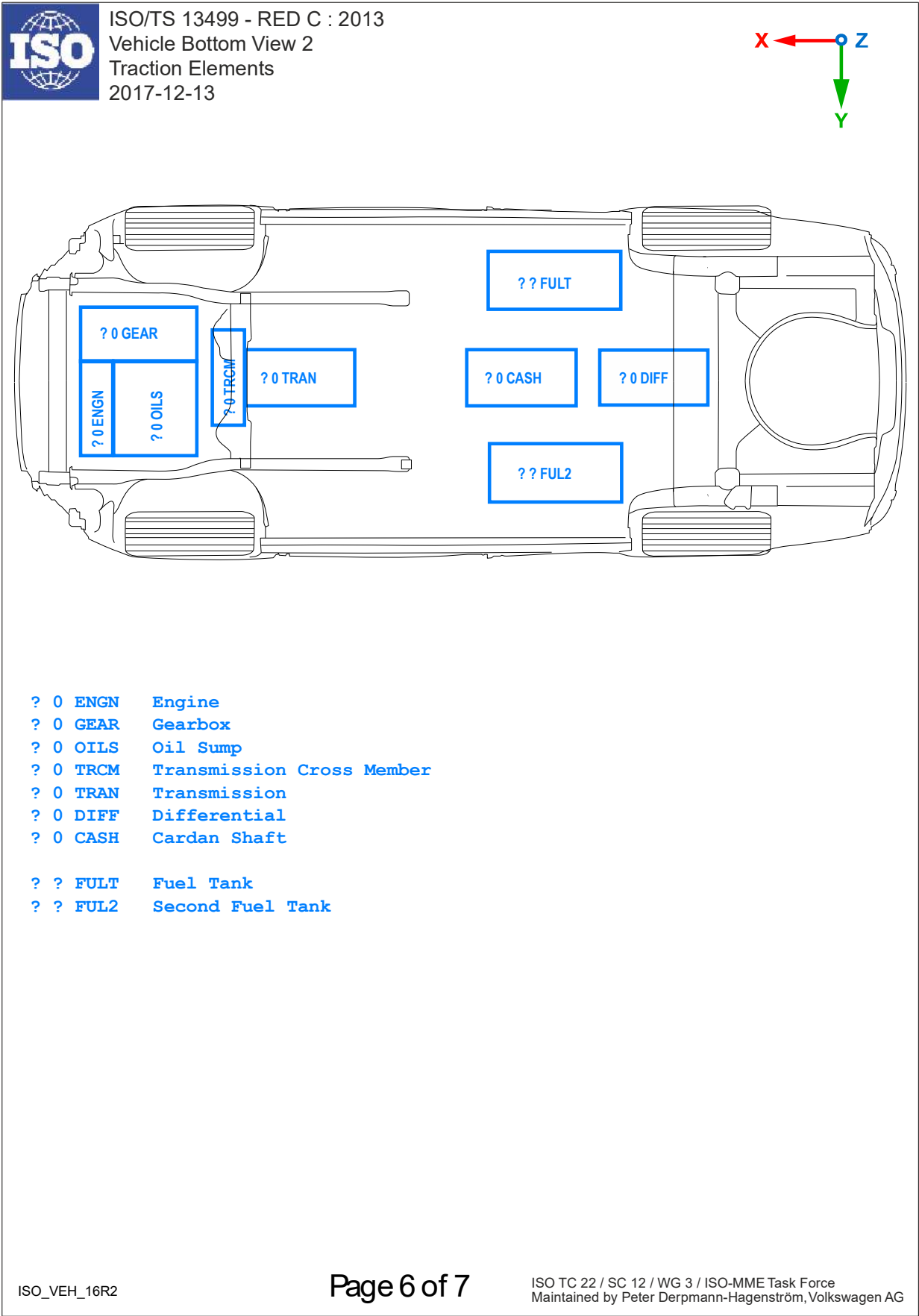
VEH\_B1 Vehicle bottom

Valid since Version 1.6.2p2  
side and cross members, suspension, axle, ...



VEH\_B2 Vehicle bottom

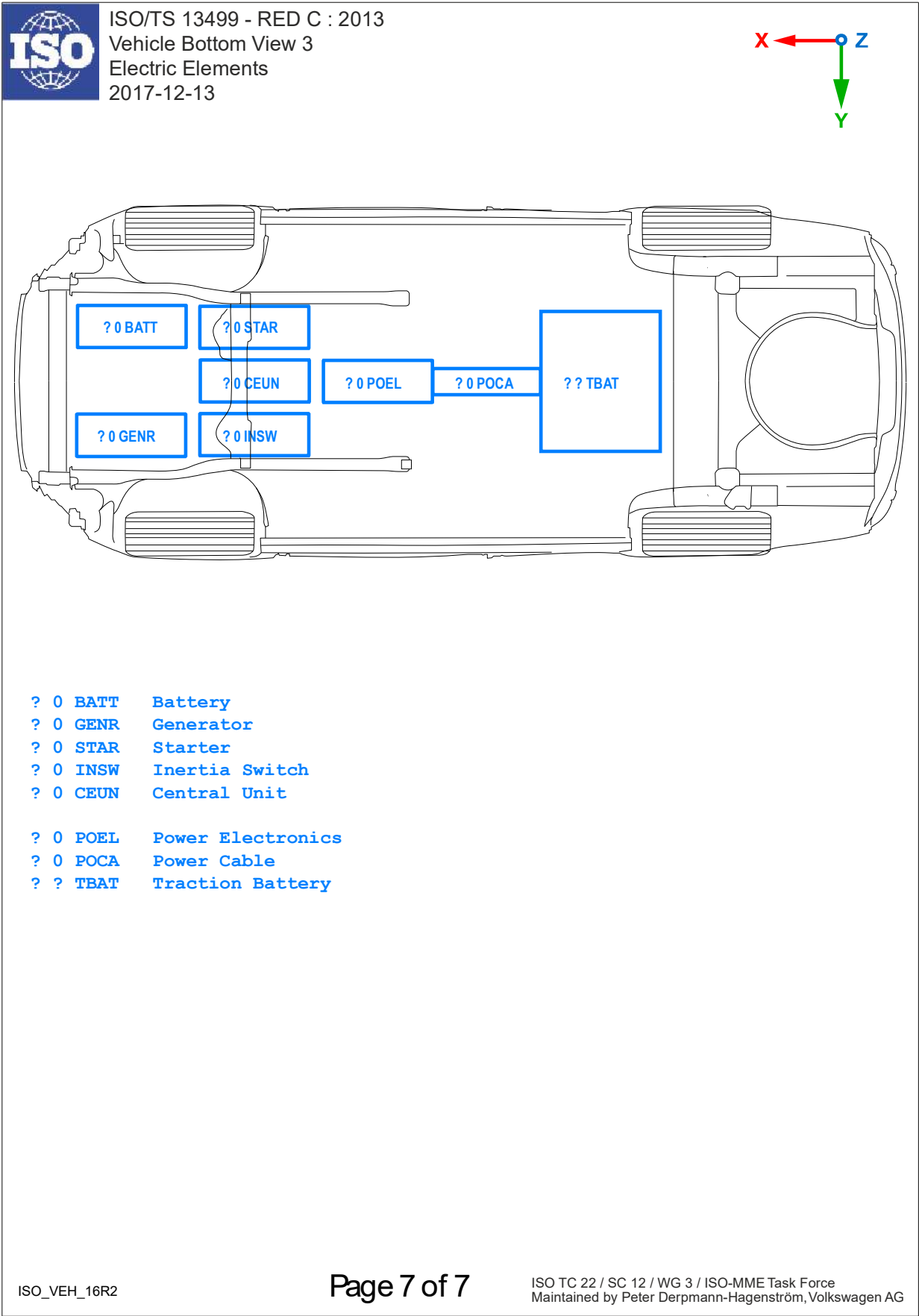
Valid since Version 1.6.2p2  
engine, transmission, fuel tank, electrical components,






VEH\_B3 Vehicle bottom

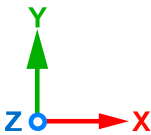
Valid since Version 1.6.2p2  
electric elements



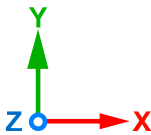


ISO/TS 13499 - RED C : 2016  
Safety Assist Systems  
2016-12-02

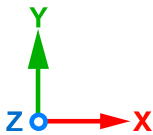
The coordinate reference system according ISO\_8855\_1991 is different to SAE\_J211\_1985.



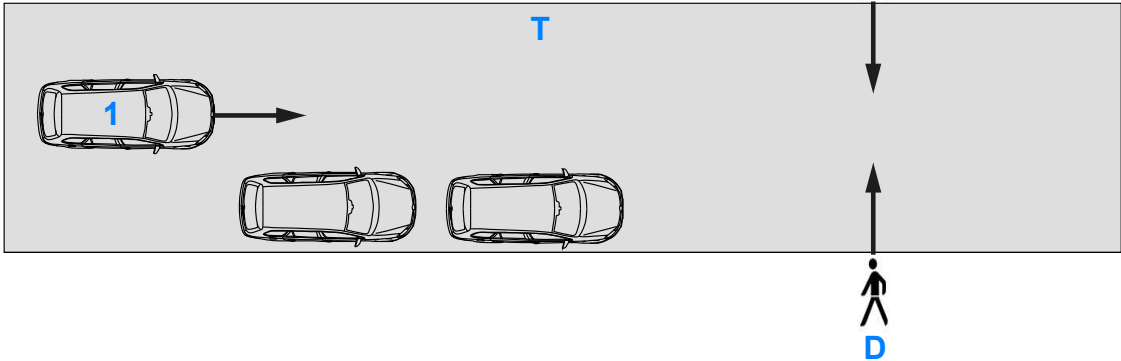
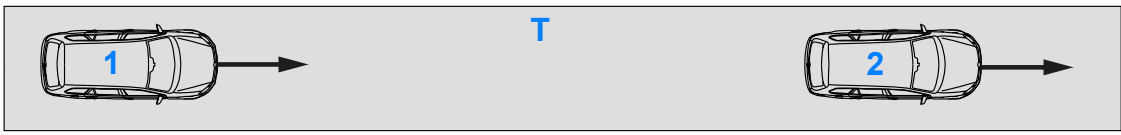

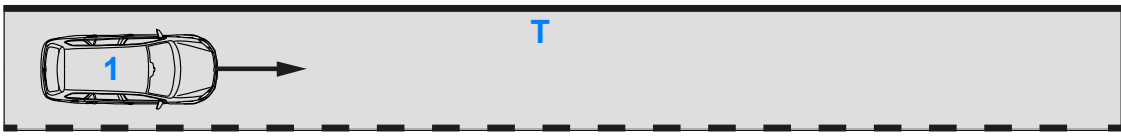
Testobject 1



Testobject 3



Testobject 2



Testobject 1    1    Vehicle 1    (VUT = Vehicle under Test,  
TV = Test Vehicle,  
SV = Subject Vehicle)

Testobject 2    2    Vehicle 2    (EVT = EuroNCAP Vehicle Target,  
VT = Vehicle Target,  
POV = Principle Other Vehicle)

D    Pedestrian (VRU = Vulnerable Road User,  
                          EPT = EuroNCAP Pedestrian Target)

Testobject 3    T    Test Area .

ISO\_ACTIV\_16R2

Page 1 of 1

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ISO\_ACTIV\_162p2\_20161202.EMF

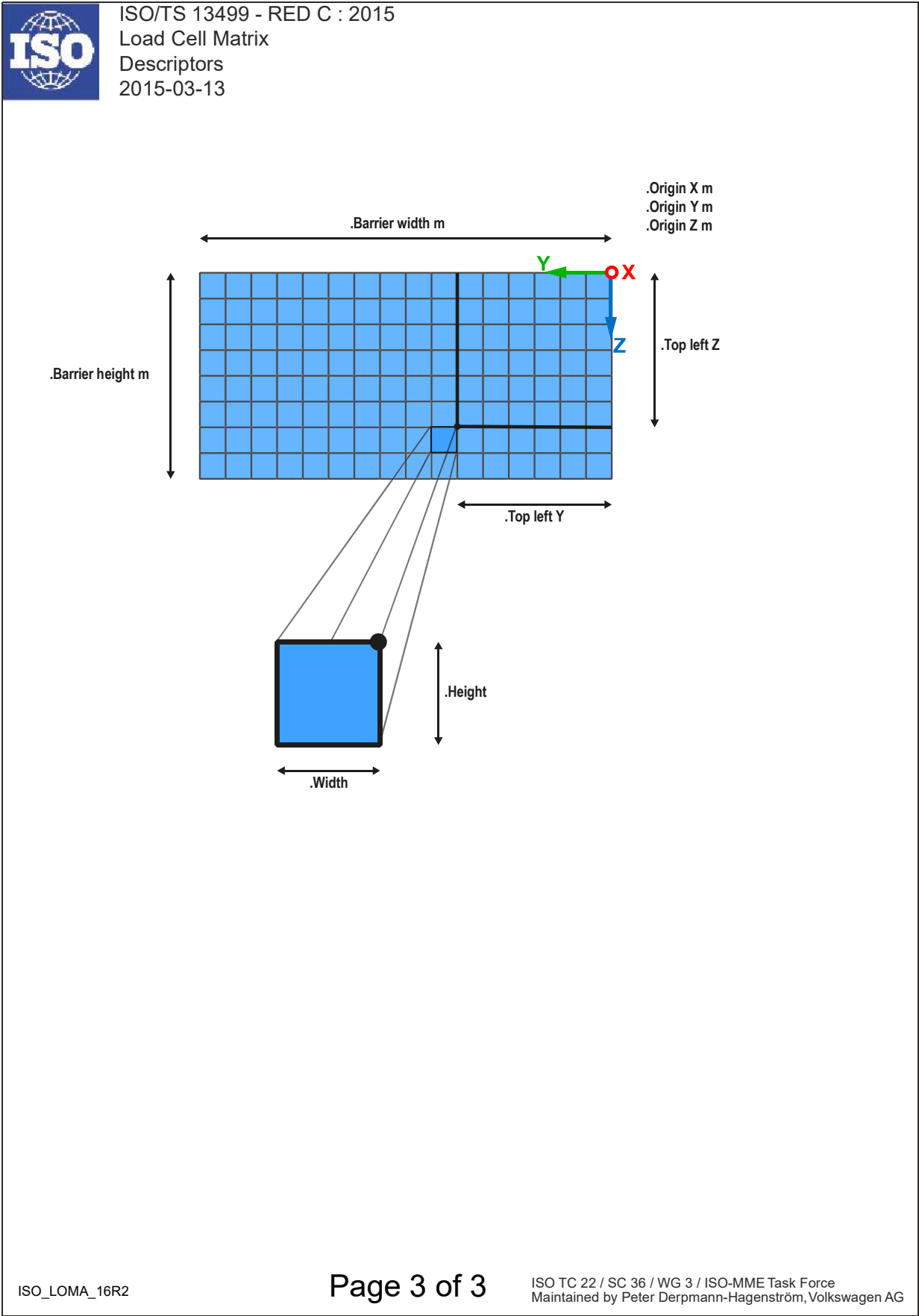
-> ACTIVE <- 1 of 1

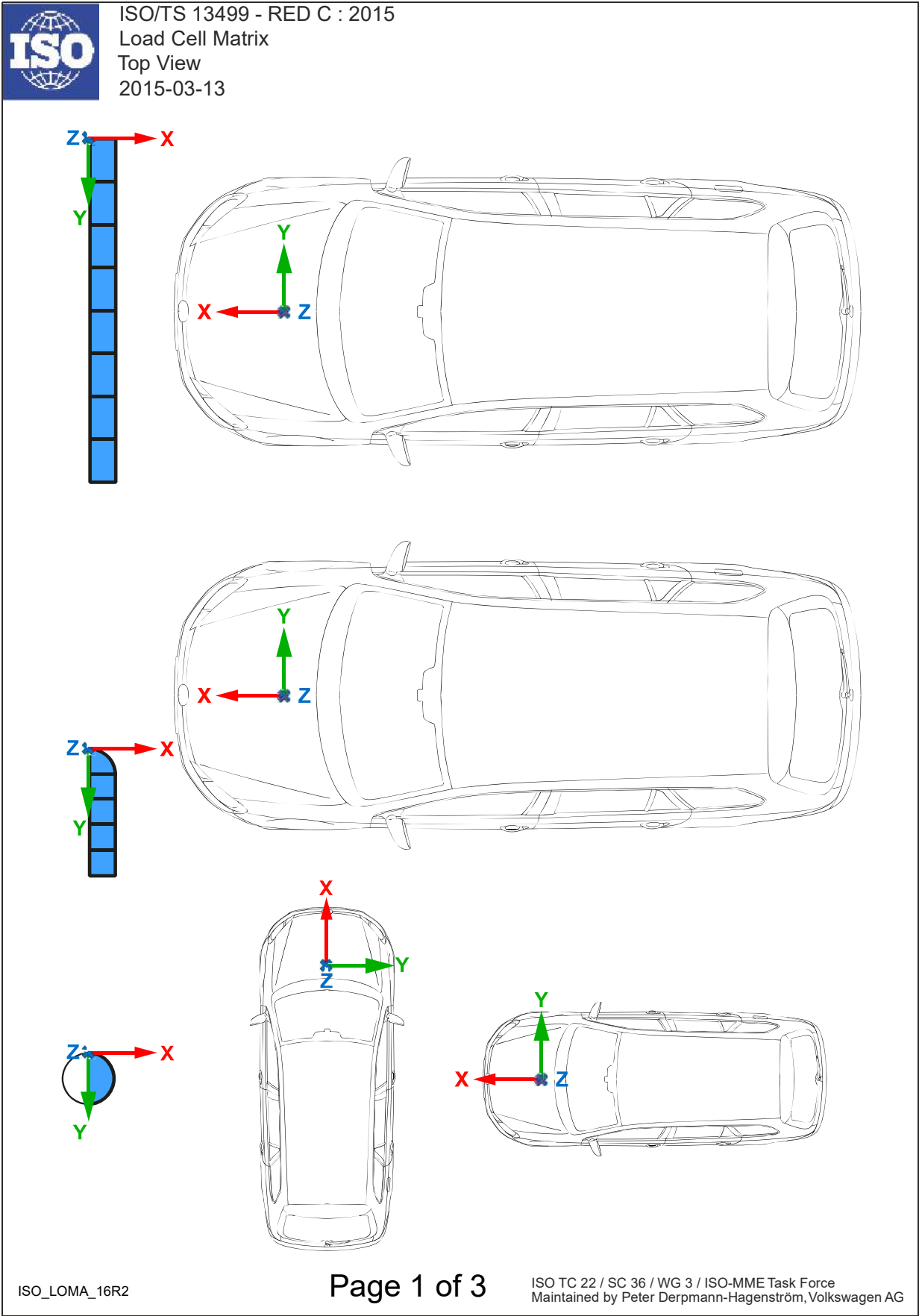
74

ISO MME Database 250 - Data Release 1.6.2p2


LOMA Load Cell Matrix

Valid since Version 1.6.2p2  
Load Cell Matrix Configurations Coding Description

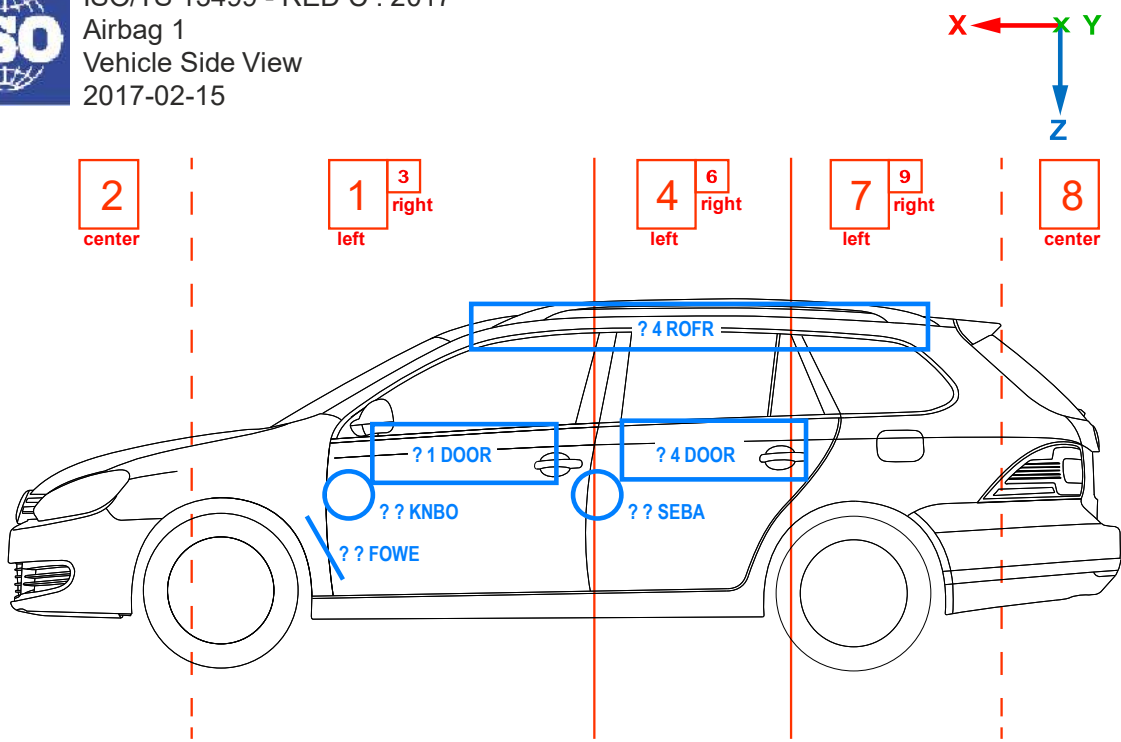








ISO/TS 13499 - RED C : 2017  
Airbag 1  
Vehicle Side View  
2017-02-15



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

Page 1 of 2

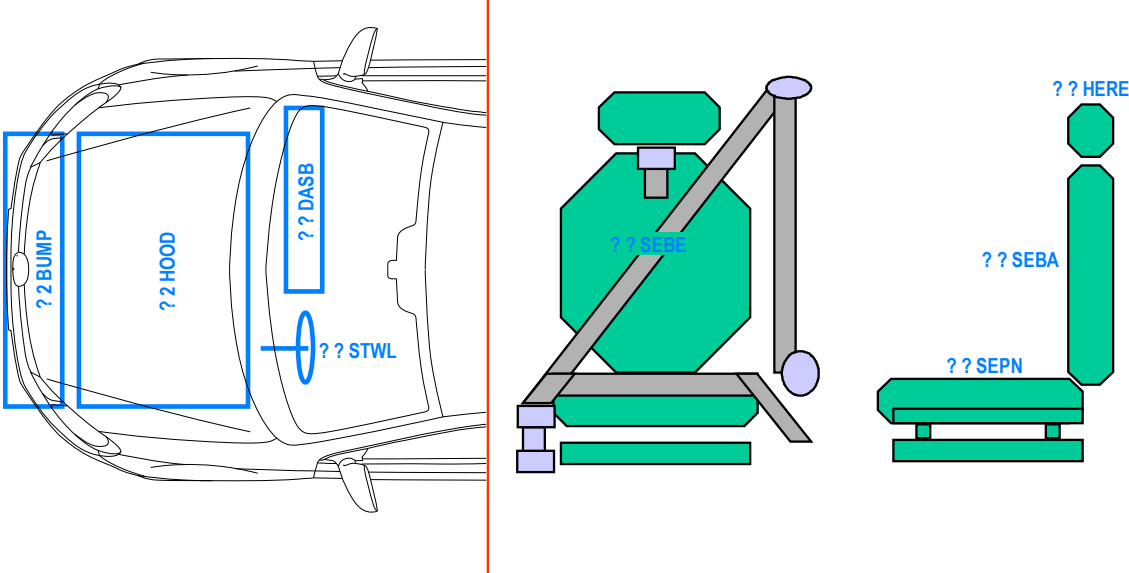
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
Maintained by Peter Derpmann-Hagenström, Volkswagen AG

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



**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.

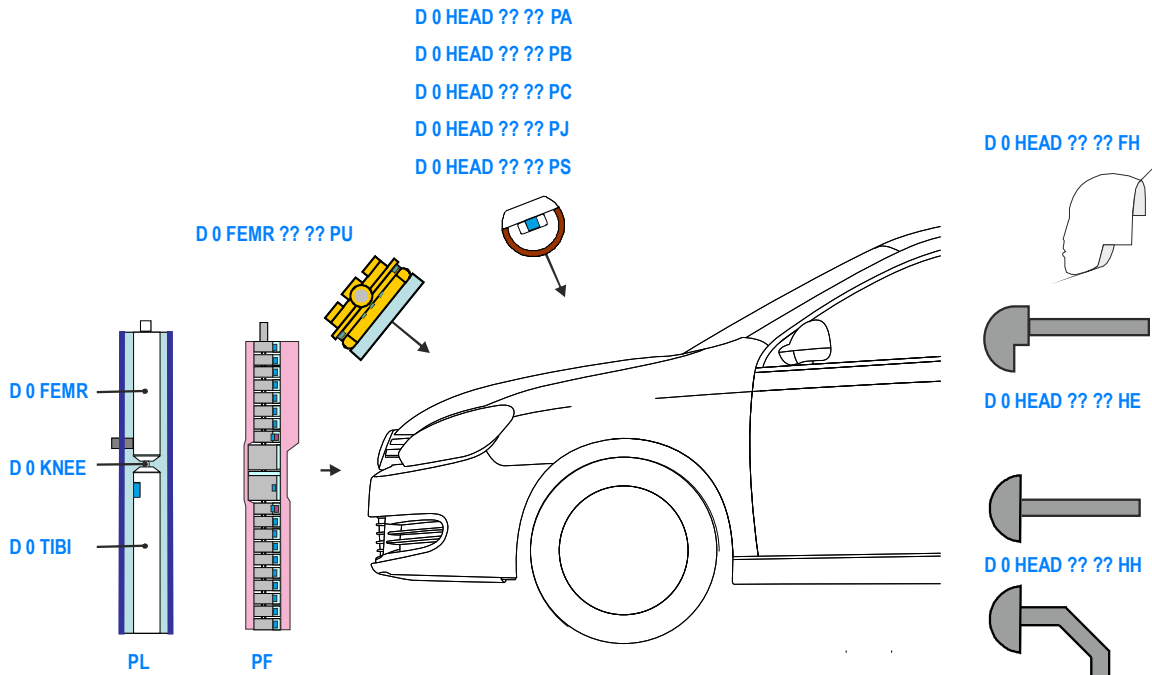
ISO\_AIRB\_16R2

Page 2 of 2

ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force  
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ISO/TS 13499 - RED C : 2013  
Impactors  
Overview  
2016-11-24



D 0 HEAD   ??   ??   PA  
D 0 HEAD   ??   ??   PB  
D 0 HEAD   ??   ??   PC  
D 0 HEAD   ??   ??   PJ  
D 0 HEAD   ??   ??   PS

D 0 FEMR   ??   ??   PU

D 0 HEAD   ??   ??   FH  
D 0 HEAD   ??   ??   HE  
D 0 HEAD   ??   ??   HH

PL    PF

D 0 HEAD   ??   ??   FH    Free Motion Headform  
D 0 HEAD   ??   ??   HE    Headform (e.g. Ejection Mitigation)  
D 0 HEAD   ??   ??   HH    Hemisphere Headform  
                                  (e.g. FMVSS201, FMVSS202a, ECE-R17, ECE-R21, GTR7)

D 0 HEAD   ??   ??   PA    Adult Headform  
D 0 HEAD   ??   ??   PB    ACEA Headform  
D 0 HEAD   ??   ??   PC    Child Headform  
D 0 HEAD   ??   ??   PJ    JARI Headform  
D 0 HEAD   ??   ??   PS    JARI Child Headform

D 0 FEMR   ??   ??   PU    Upper Legform Pedestrian Impactor

D 0 FEMR   ??   ??   PL    Legform Pedestrian Impactor (upper leg)  
D 0 KNEE   ??   ??   PL    Legform Pedestrian Impactor (knee region)  
D 0 TIBI    ??   ??   PL    Legform Pedestrian Impactor (lower leg)


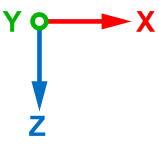
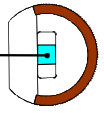
D 0 FEMR   ??   ??   PF    Flexible Legform Impactor (upper leg)  
D 0 KNEE   ??   ??   PF    Flexible Legform Impactor (knee region)  
D 0 TIBI    ??   ??   PF    Flexible Legform Impactor (lower leg)



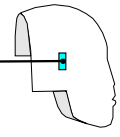
## IMP\_2 Impactors: head, upper legform

Valid since Version 1.6.2p1  
headforms and upper legform impactor

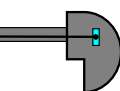
ISO/TS 13499 - RED C : 2013  
Impactors  
Headforms and Upper Legform Impactor  
2016-11-24

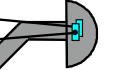
D 0 HEAD 00 00 P? AC ?




D 0 HEAD 00 00 FH AC ?



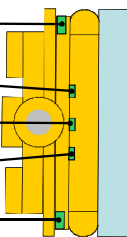
D 0 HEAD 00 00 HE AC ?



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

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

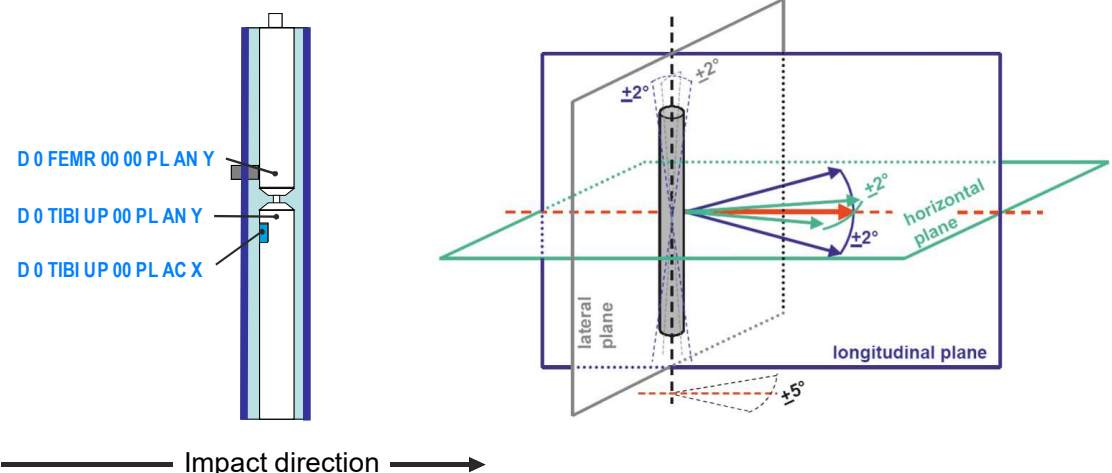
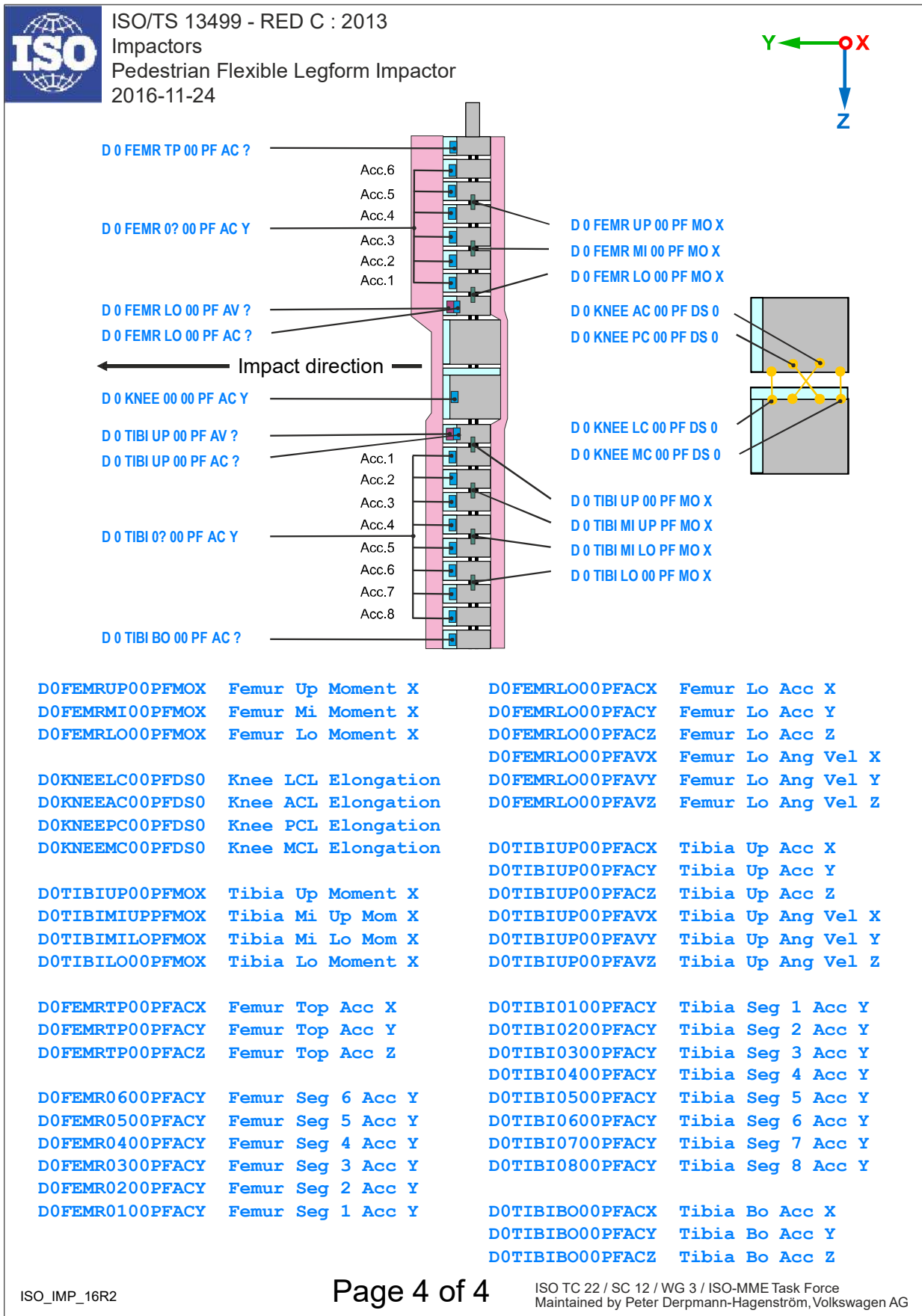


Diagram illustrating the impactor setup and measurement points. The impact direction is indicated by an arrow pointing right. The diagram shows the femur, tibia, and knee joint. Key measurement points and planes are labeled: D 0 FEMR 00 00 PL AN Y, D 0 TIBI UP 00 PL AN Y, D 0 TIBI UP 00 PL AC X, lateral plane, longitudinal plane, horizontal plane, and angles of  $\pm 2^\circ$  and  $\pm 5^\circ$ .

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

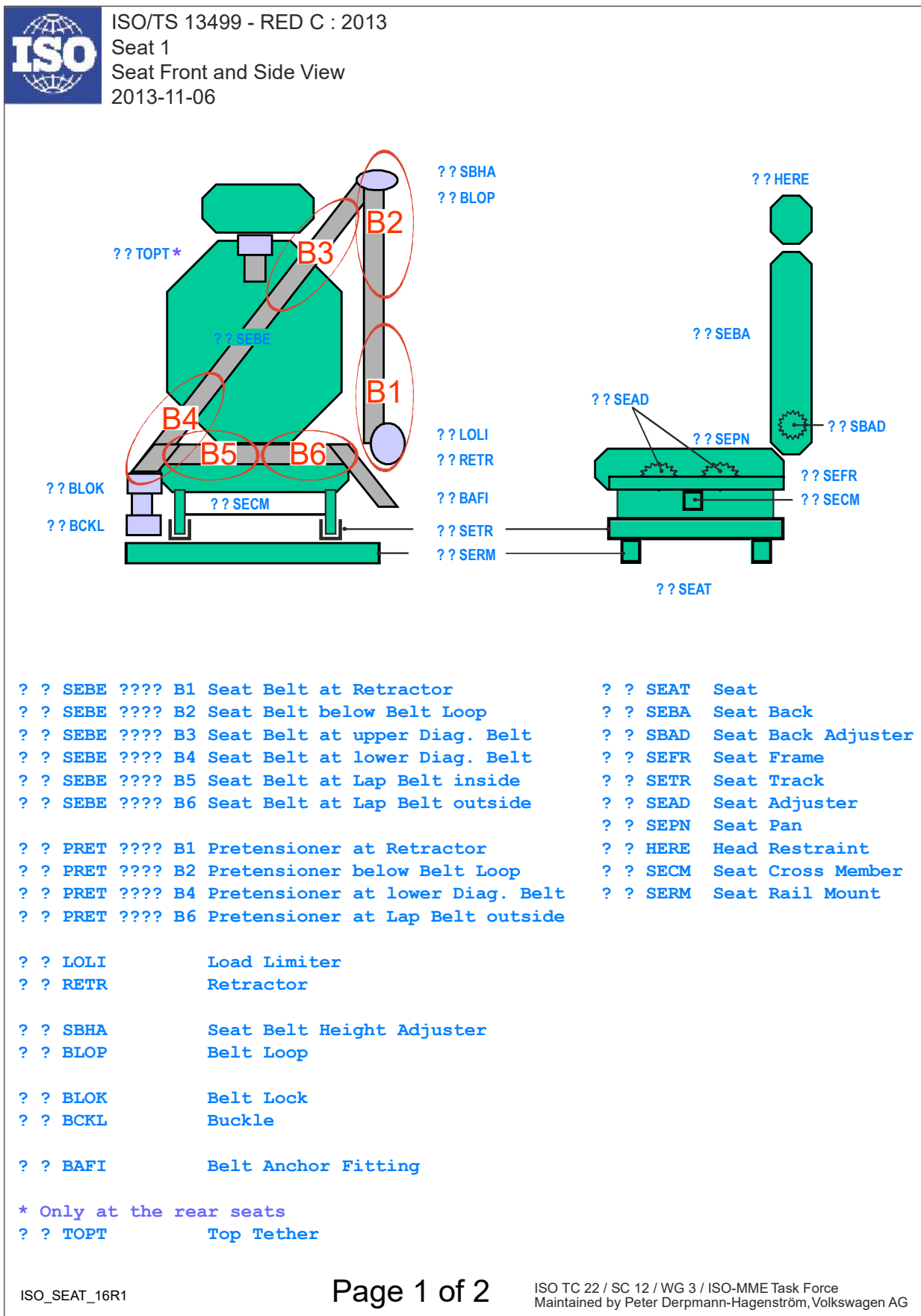
For compatibility to existing data the impact direction for this impactor defines the X coordinate of the local system.

## IMP\_4 Impactors: flexpli-legform

Valid since Version 1.6.1  
pedestrian flexible legform impactor


**SEAT\_1** Seat

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

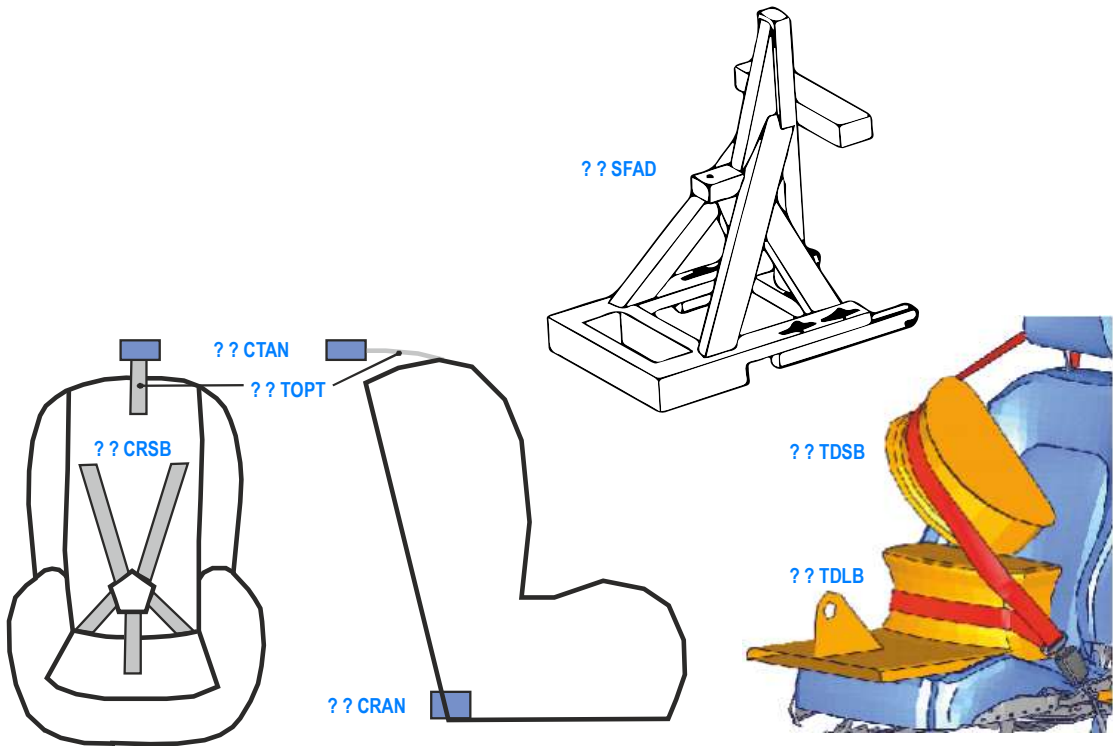


SEAT\_2 Seat and traction devices

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



?? CTAN

?? TOPT

?? CRSB

?? CRAN

?? SFAD

?? TDSB

?? TDLB

?? TDSB Traction Device Shoulder Belt

?? TDLB Traction Device Lap Belt

?? CTAN Child Tether Anchorage

?? CRAN Child Restraint Anchor

?? CRSB Child Restraint Seat Belt

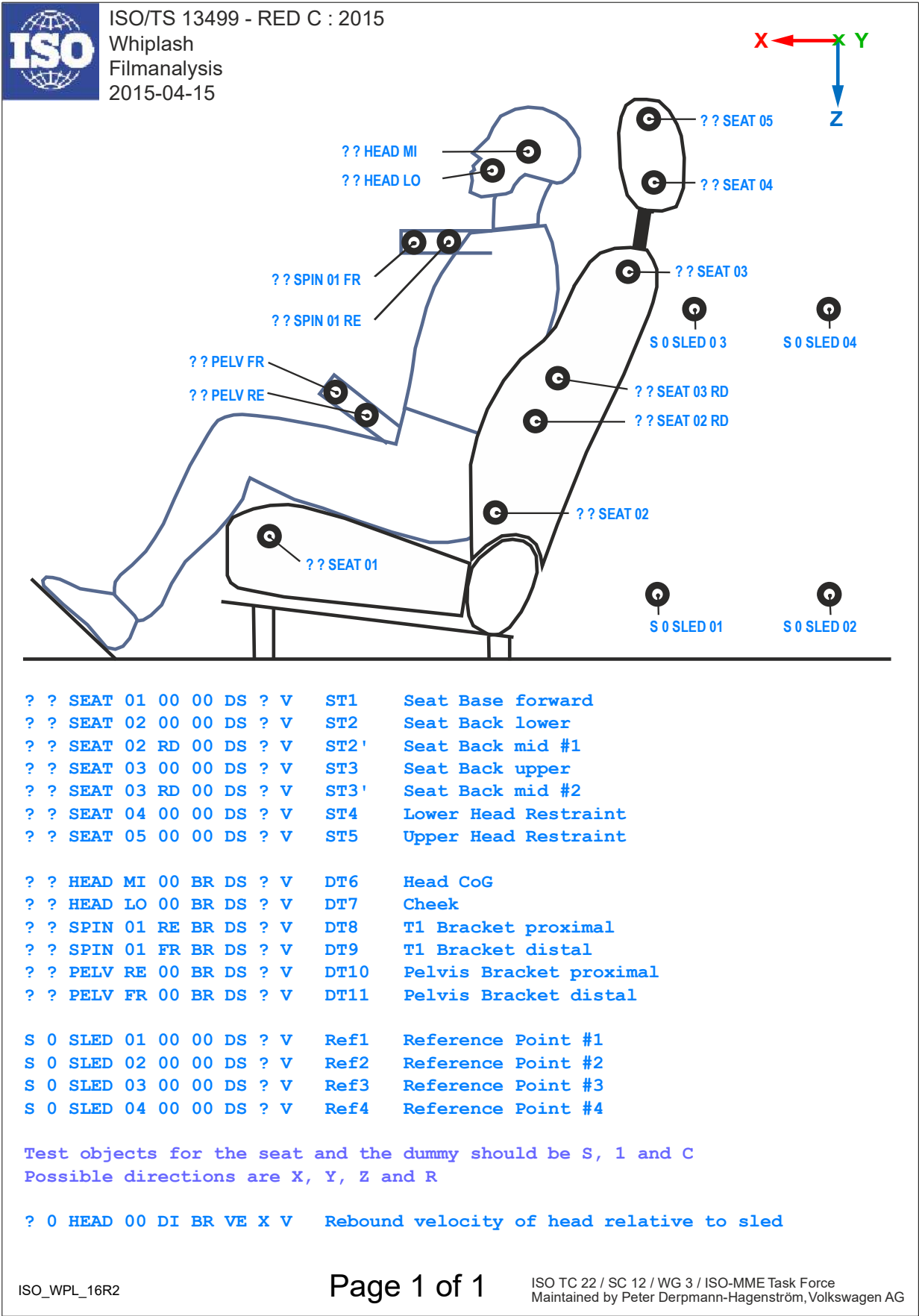
?? TOPT Top Tether

?? SFAD Static Force Application Device

ISO\_SEAT\_16R1


Page 2 of 2

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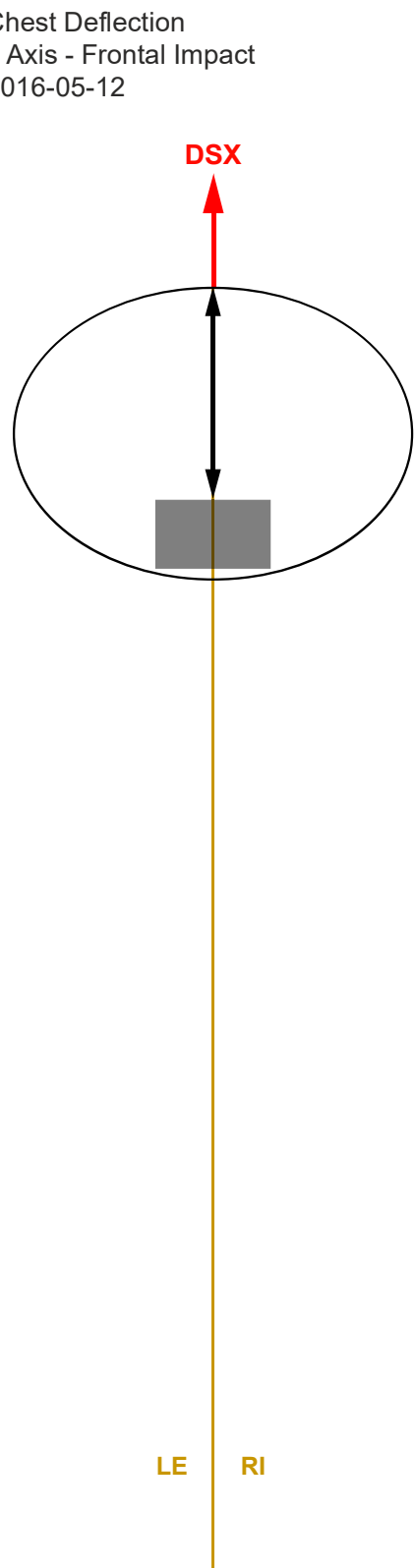


OTHER Chest Deflection Measurement

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



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

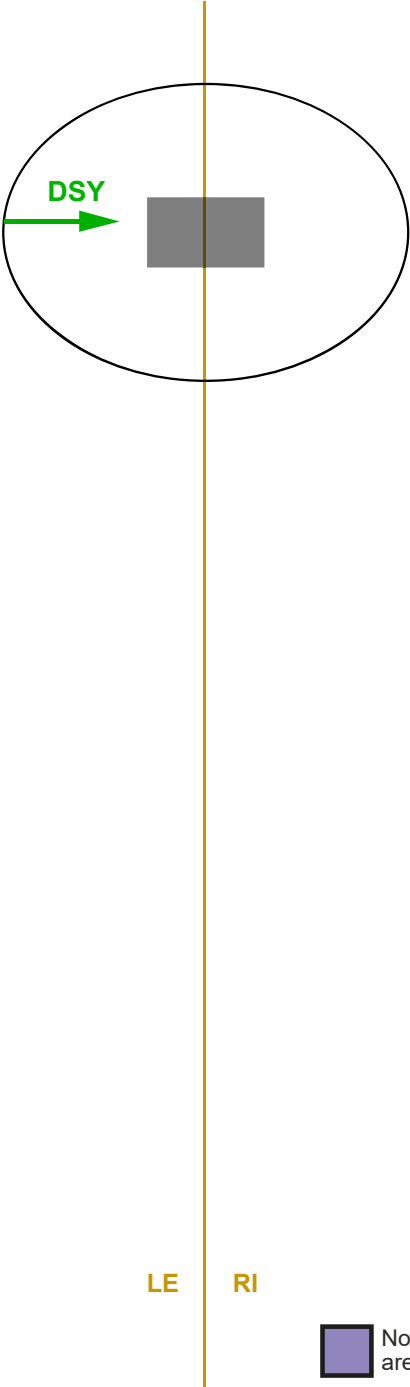
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OTHER Chest Deflection Measurement

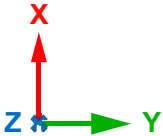
Valid since Version 1.6.2p1  
Chest Deflection Coding for different dummy types



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



LERI




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




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



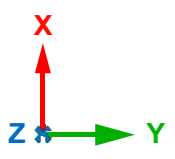
OTHER Chest Deflection Measurement

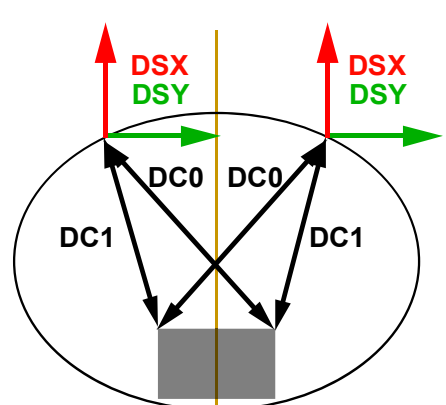
Valid since Version 1.6.2p1

Chest Deflection Coding for different dummy types



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





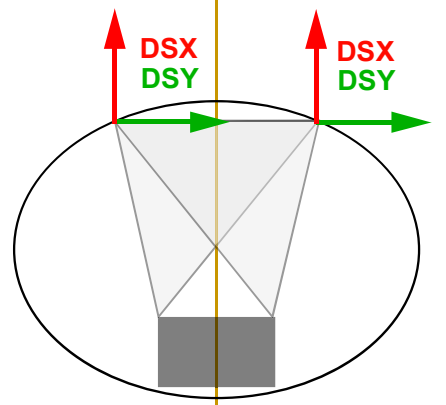
String Potentiometer **H3, HF**

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:

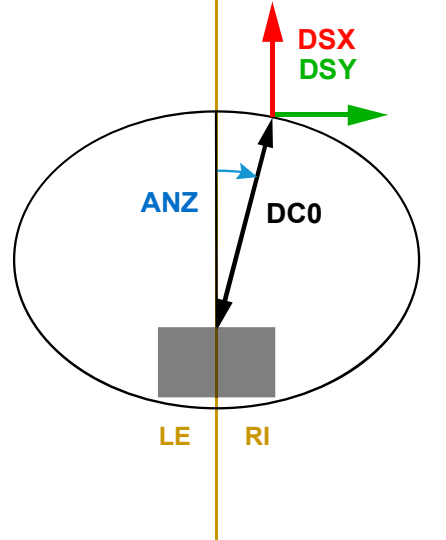
```
CHST LE UP ?? DS X,Y
CHST RI UP ?? DS X,Y
CHST LE LO ?? DS X,Y
CHST RI LO ?? DS X,Y
```



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

Page 3 of 6

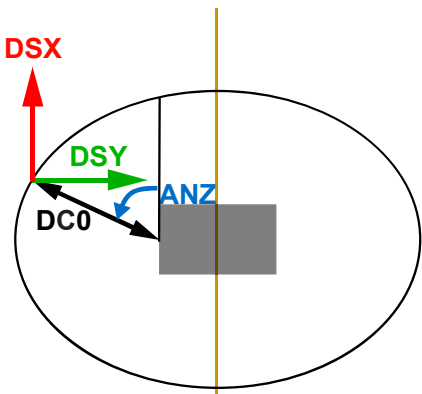
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OTHER Chest Deflection Measurement

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

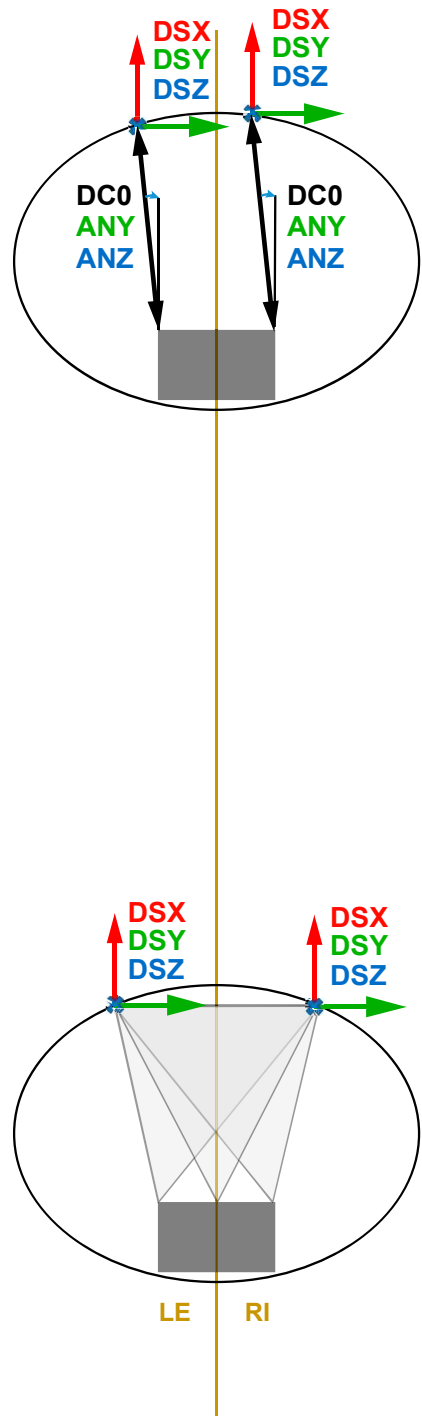


Diagram illustrating the chest deflection measurement setup. It shows two sensors (DSX, DSY, DSZ) positioned above the chest area, measuring deflection in three axes (X, Y, Z). The sensors are connected to two data channels (DC0, ANY, ANZ) for Left (LE) and Right (RI) sides. The diagram also shows the coordinate system (X, Y, Z) and the location of the sensors relative to the chest area.

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

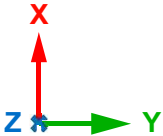
OTHER Chest Deflection Measurement

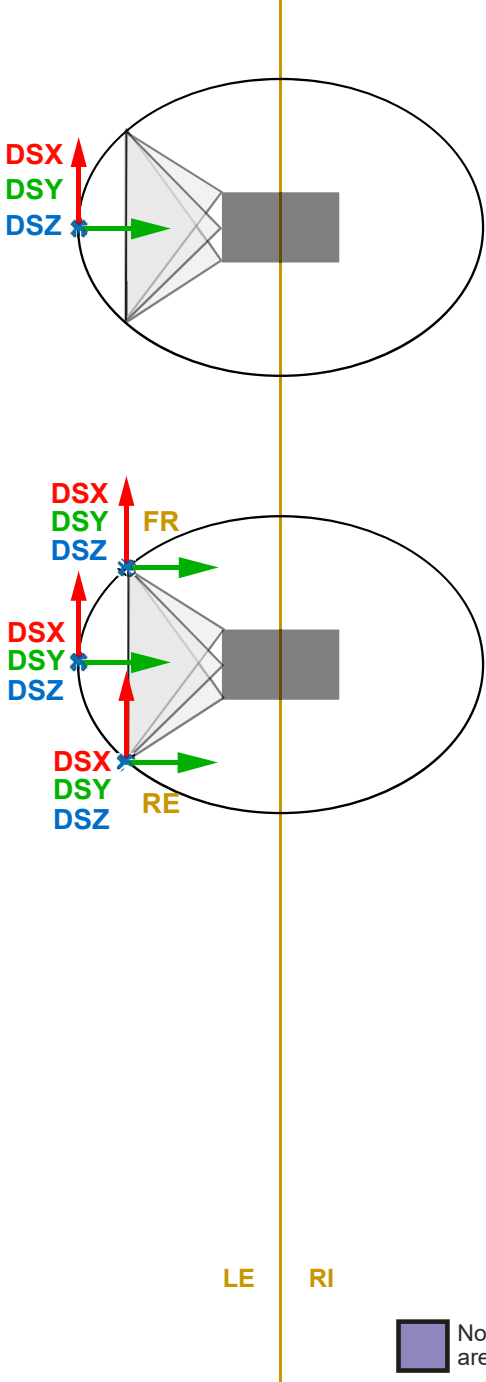
Valid since Version 1.6.2p1

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.

ISO\_CHST\_16R2

Page 6 of 6

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