ISO TC 22/SC 12

Date: 2020-06-04

ISO/TS 13499 - RED C : 2020 E

ISO/TC 22/SC 12/WG 3

Secreteriat: AFNOR

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 1.6.2 —

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

Document type: Related electronic document
Document language: E

ISO MME Database 251 - Data Release 1.6.2

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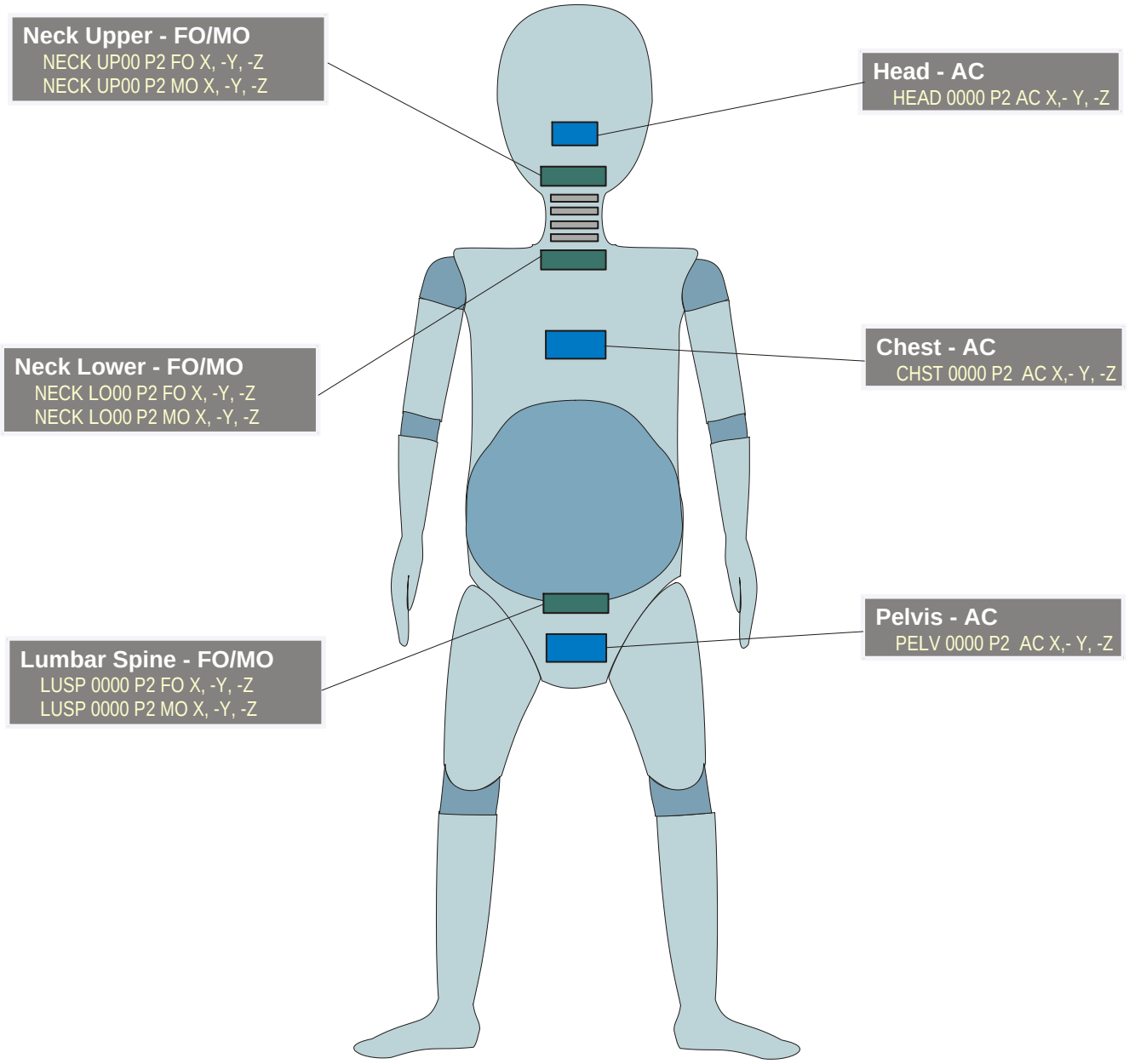
P2 TNO P 1½ year old

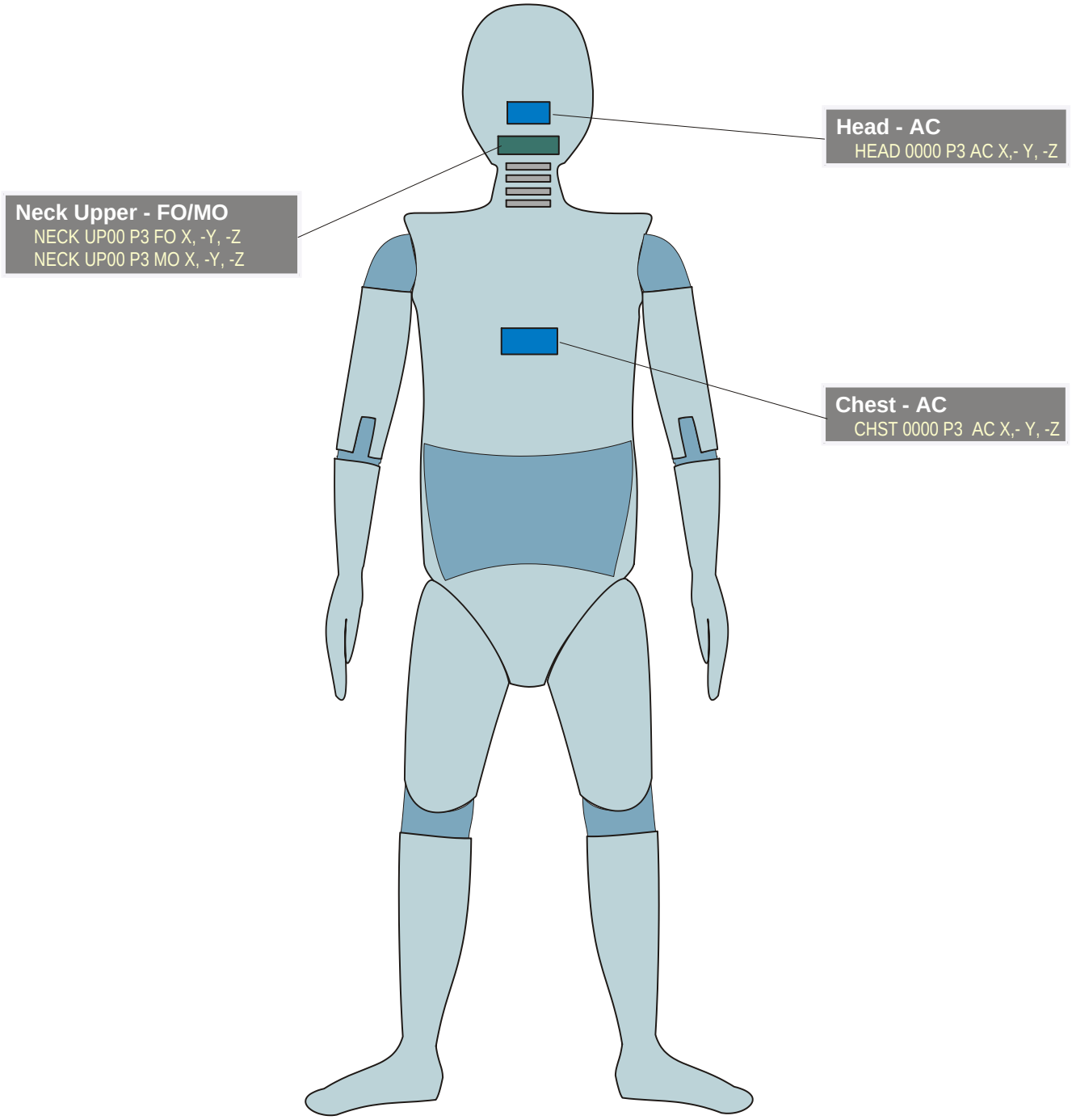
Valid since Version **1.1**



P2_1_11.wmf

P3 TNO P 3 year old

Valid since Version **1.1**



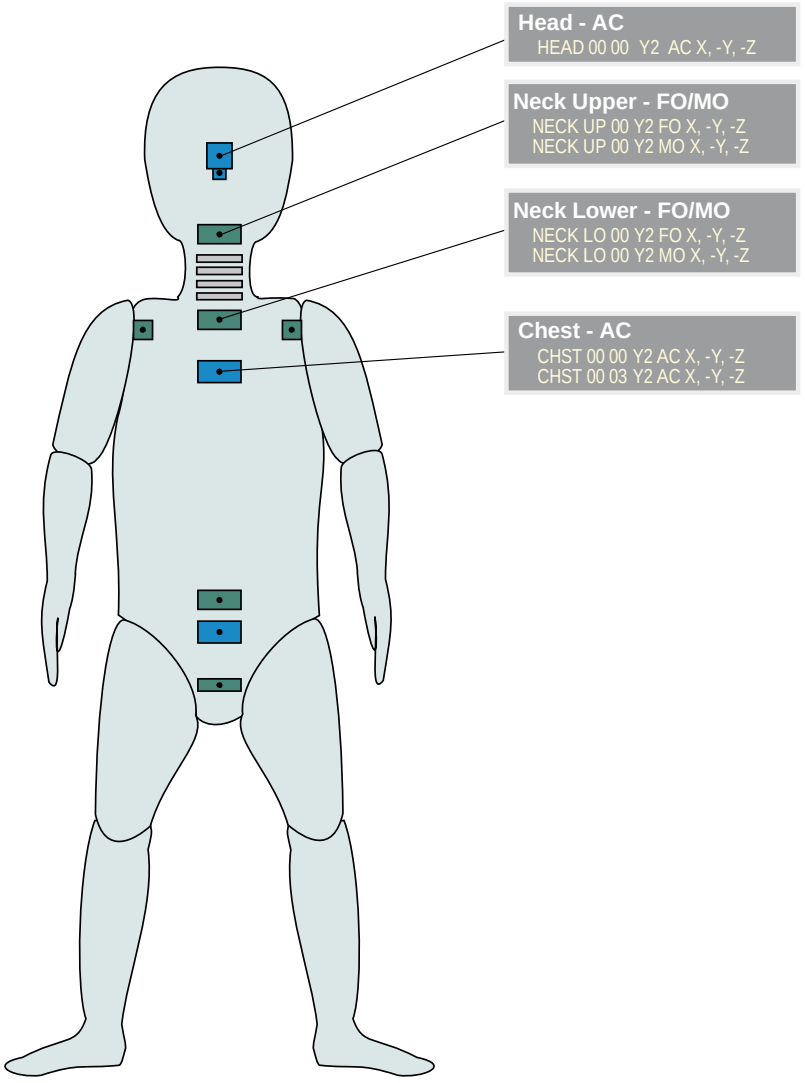
P3_1_11.WMF

-> P3 <- 1 of 1

Y2 CRABI 12 month old (1)

Valid since Version **1.6**

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



ISO-Y2_20111220

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Maintained by Paul Wellicome, MIRA Ltd.

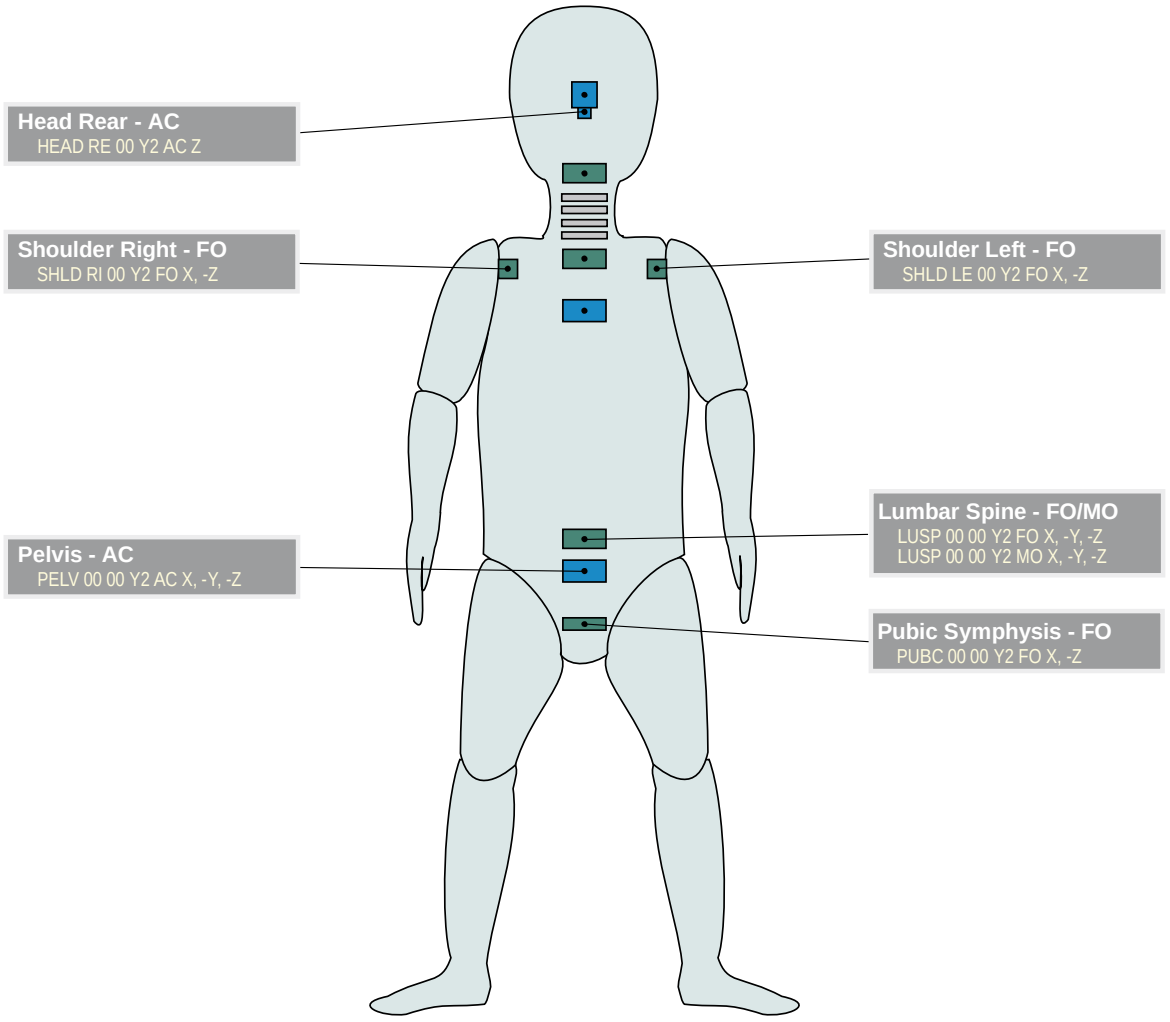
ISO_Y2_1_16_20111220.EMF

-> Y2 <- 1 of 1

Y2 CRABI 12 month old (2)

Valid since Version **1.6**

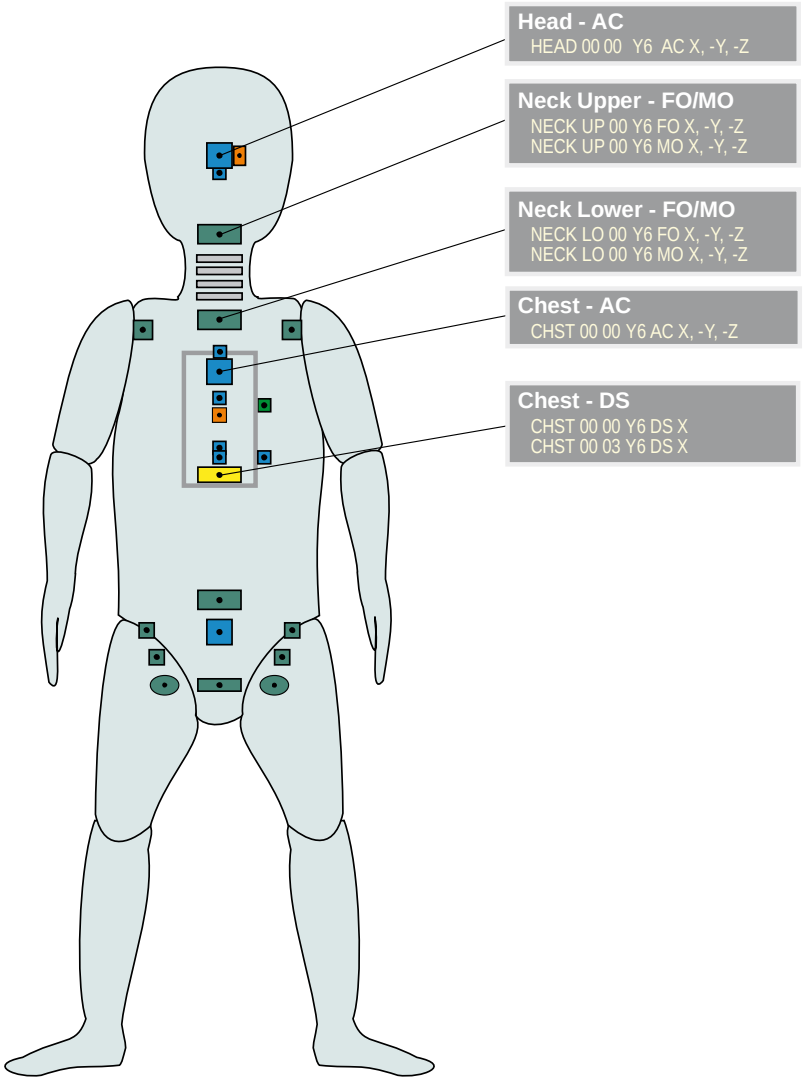
ISO/TS 13499 – RED C : 2010(E)
Y2, CRABI 12 Month Old Infant Dummy
Additional Instrumentation
2011-12-20



Y6 H III - 3 year old (1)

Valid since Version **1.6.1**
NPRM Level "A"

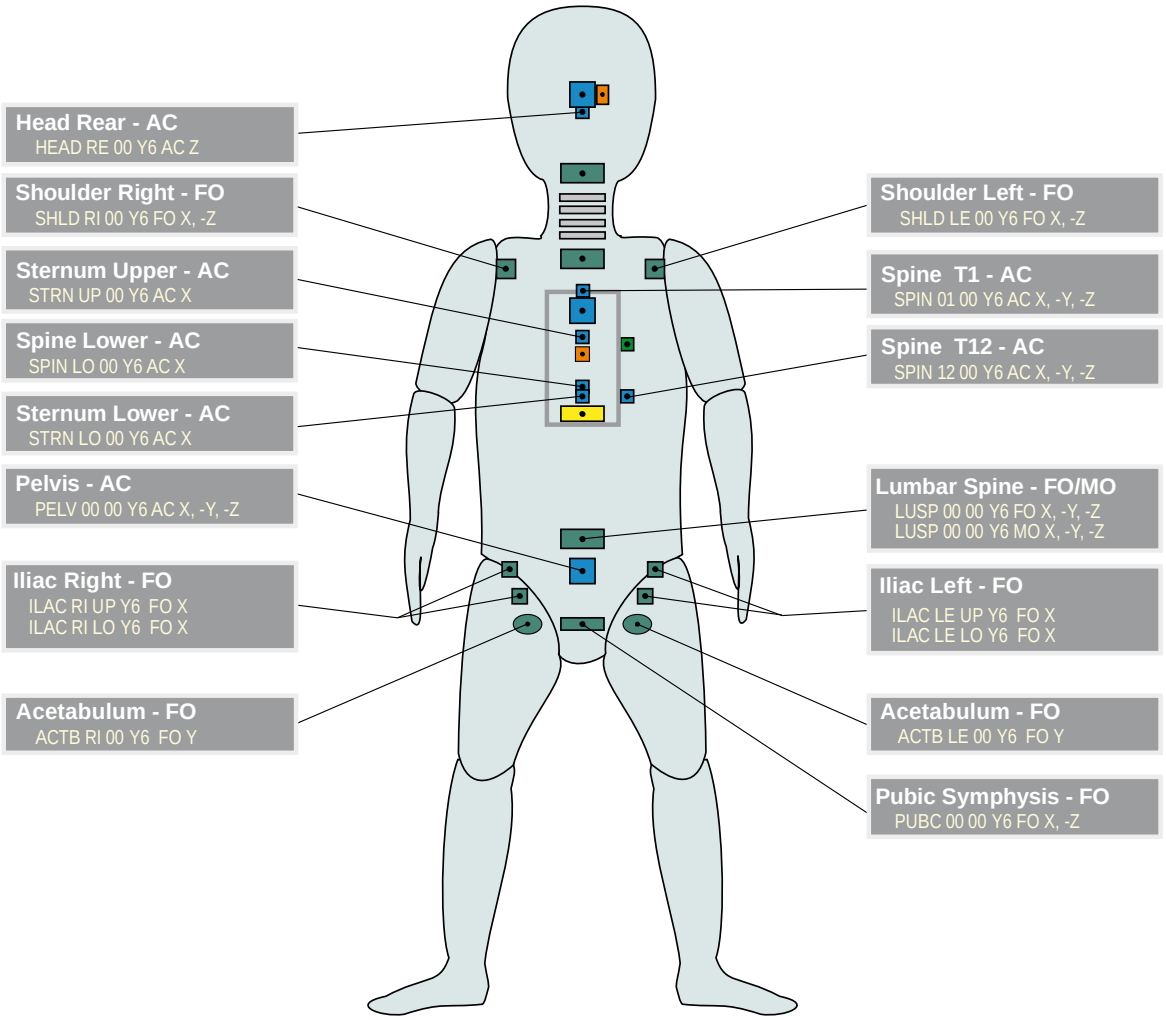
ISO/TS 13499 – RED C : 2010(E)
Y6, Hybrid III 3 Year Old Child Dummy
Standard Instrumentation
2013-07-10



Y6 H III - 3 year old (2)

Valid since Version **1.6.1**
NPRM Level "A"

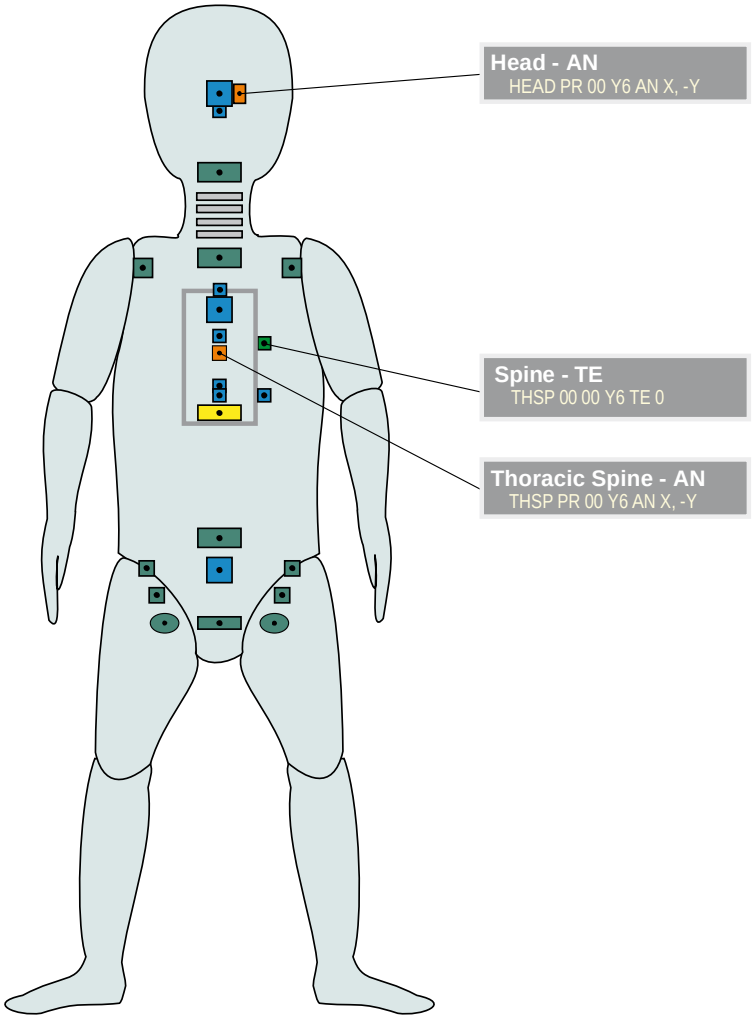
ISO/TS 13499 – RED C : 2010(E)
Y6, Hybrid III 3 Year Old Child Dummy
Additional Instrumentation
2013-07-10



Y6 H III - 3 year old (3)

Valid since Version **1.6.1**
NPRM Level "A"

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

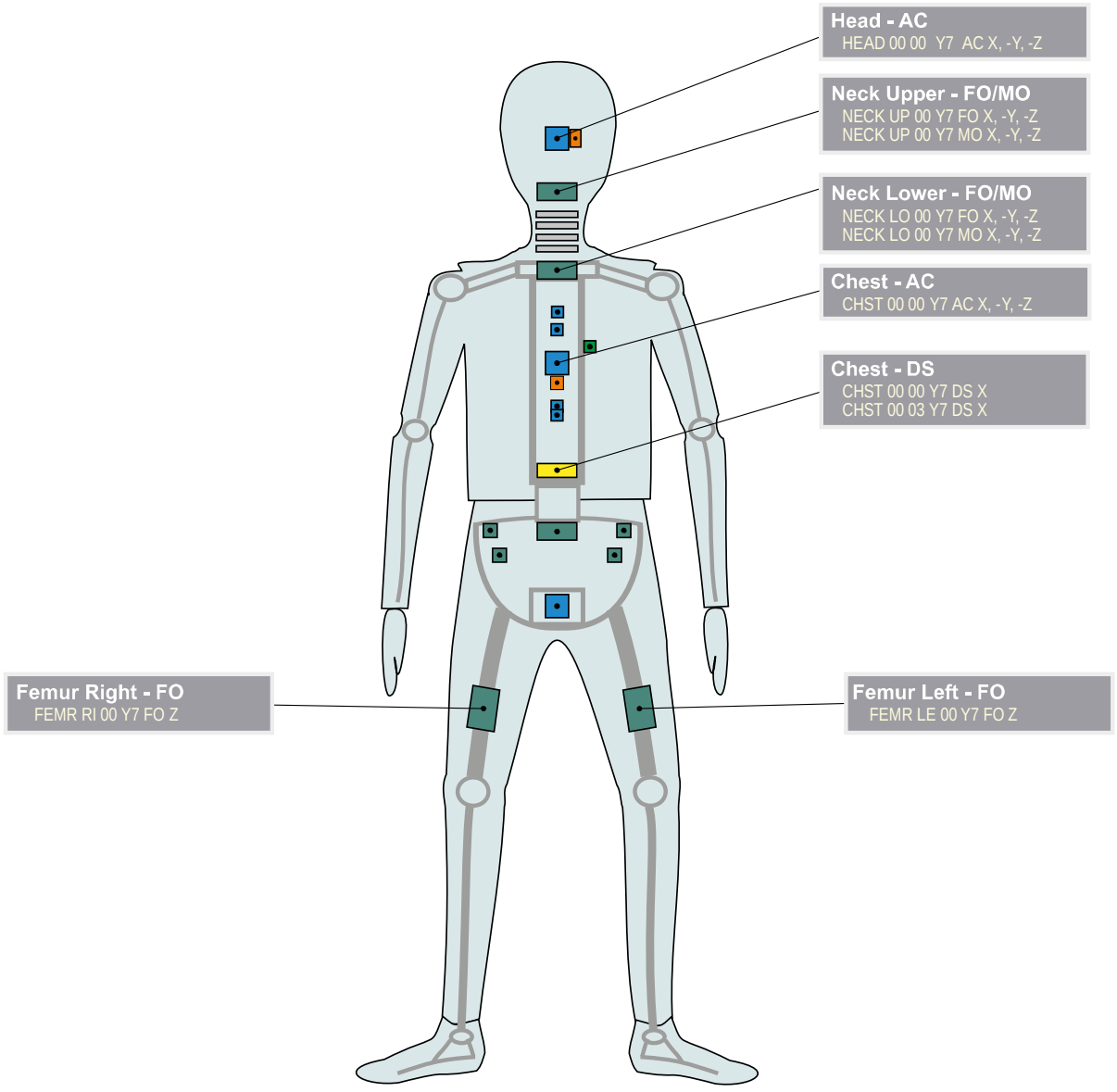


Y7 H III - 6 year old (1)

Valid since Version **1.6.1**

NPRM Level "I" and also Subpart 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-Y7_20171213

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

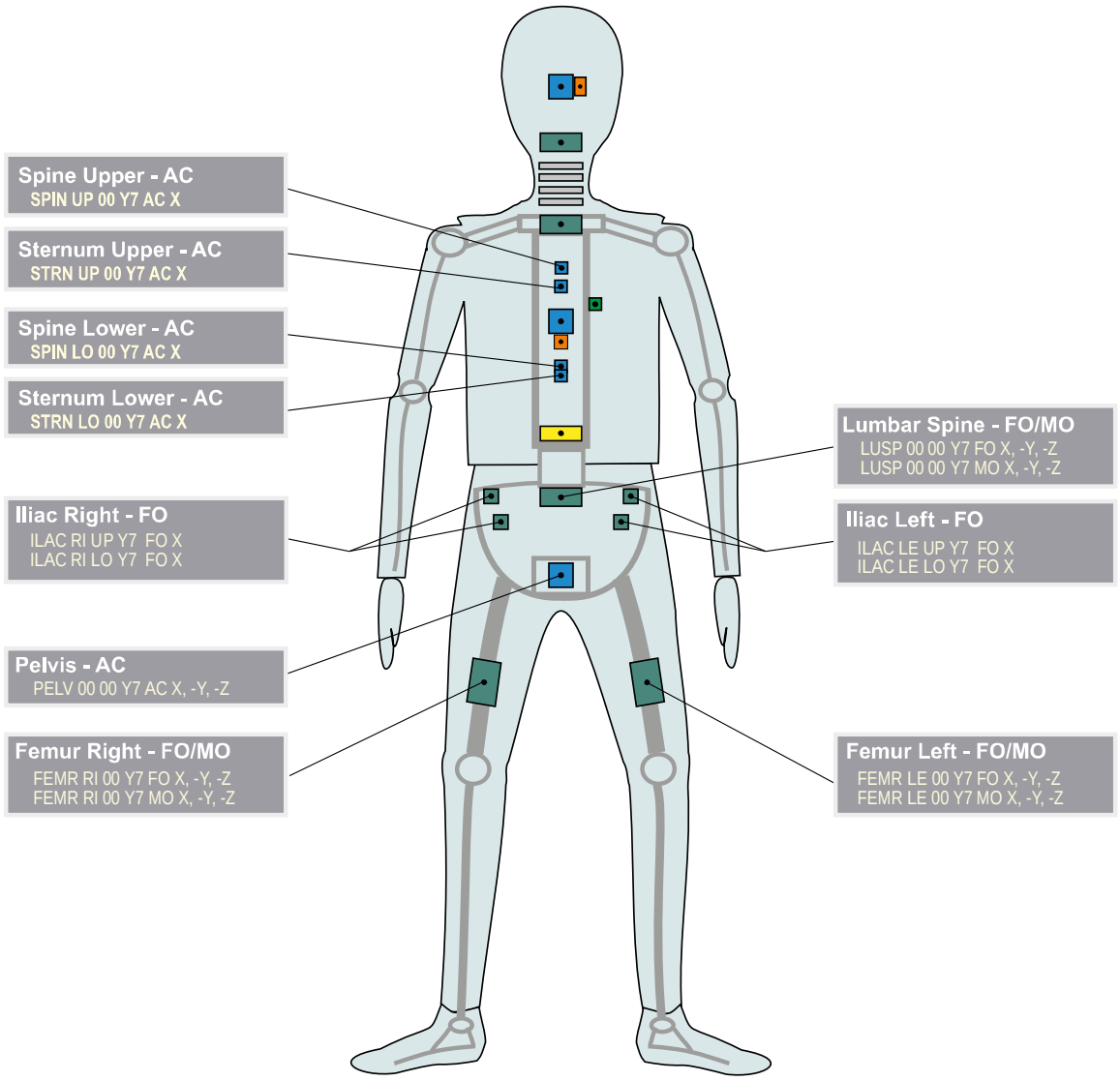
ISO_Y7_1_162p2_20171213.EMF

Y7 H III - 6 year old (2)

Valid since Version **1.6.1**

NPRM Level "I" and also Subpart 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)
Additional Instrumentation
2017-12-13



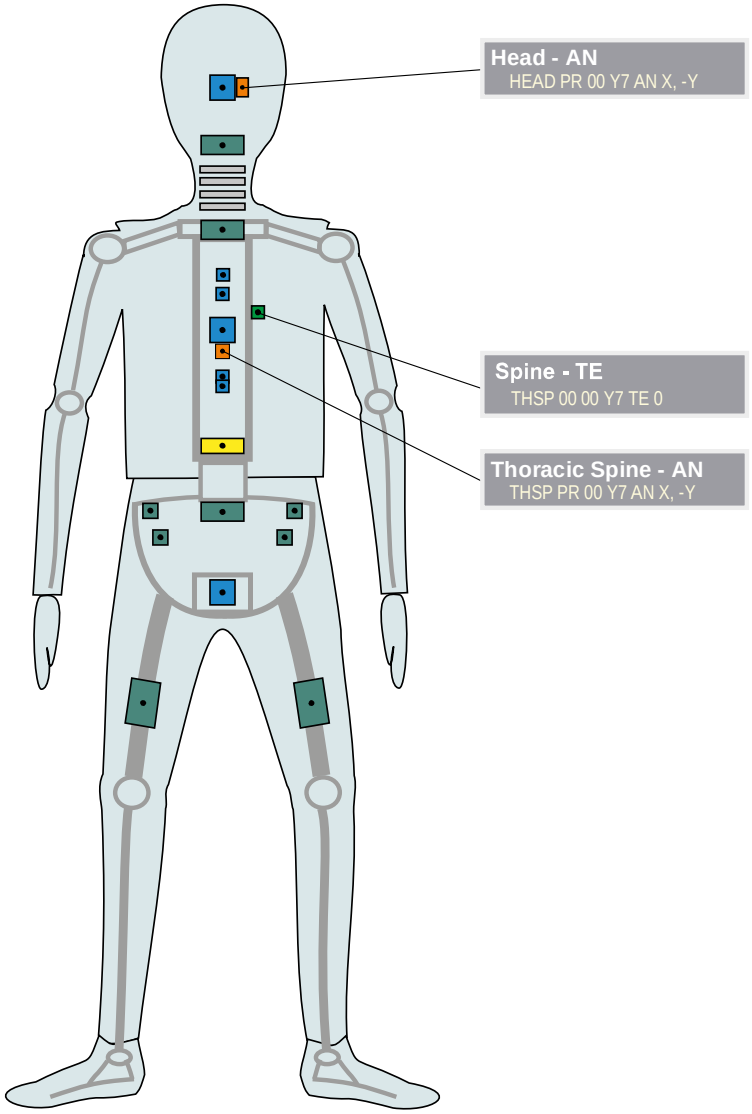
All codes can also be used with the 6-Year weighted Dummy (Subpart S). ·
Replace in Fine Location 3 the "Y7" with "YW". ·

Y7 H III - 6 year old (3)

Valid since Version **1.6.1**

NPRM Level "I" and also Subpart 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

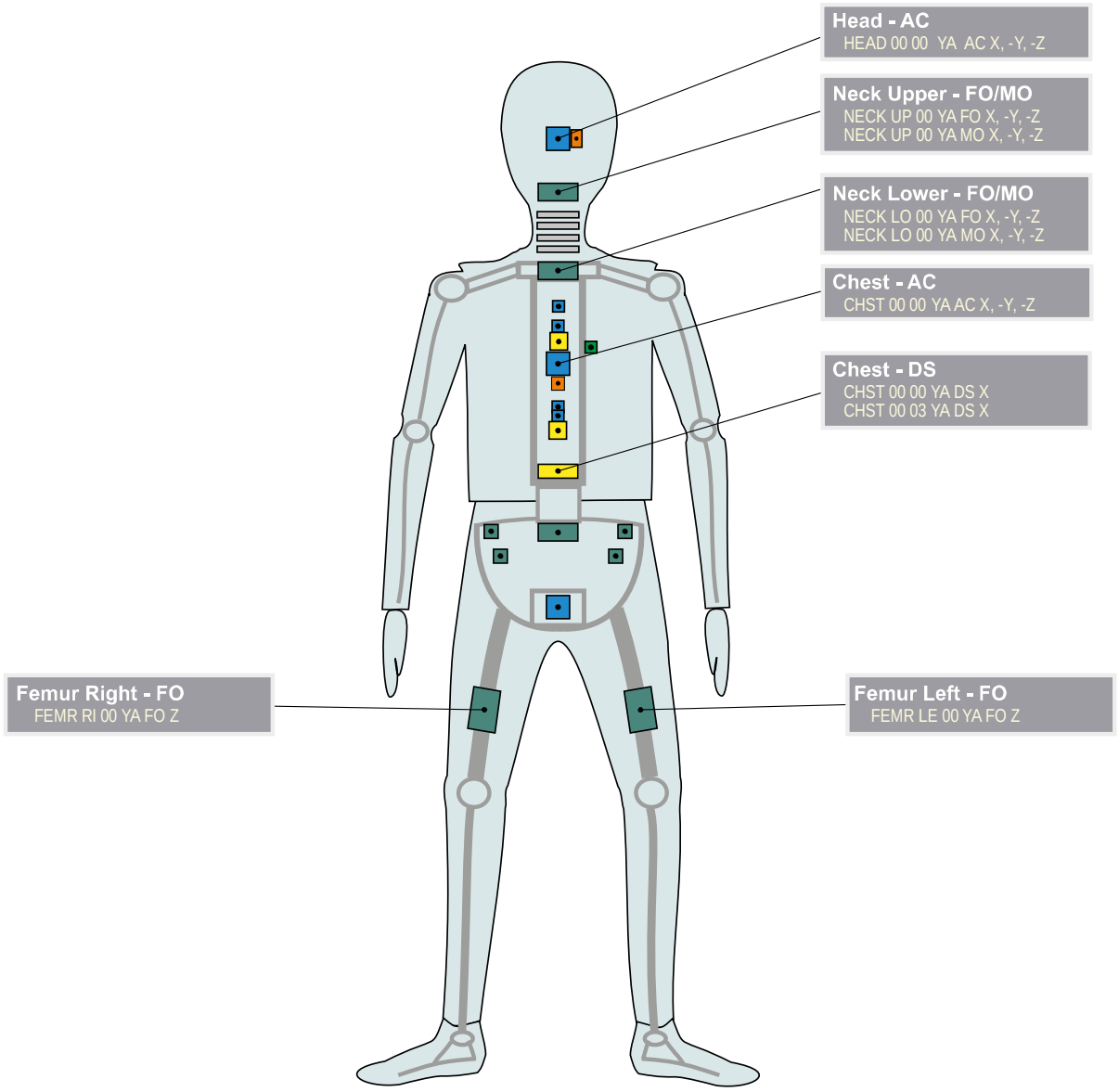


All codes can also be used with the 6-Year weighted Dummy (Subpart S). ·
Replace in Fine Location 3 the “Y7” with “YW”.·

YA H III - 10 year old (1)

Valid since Version **1.6.2**
Subpart T - Hybrid III 10-Year-Old

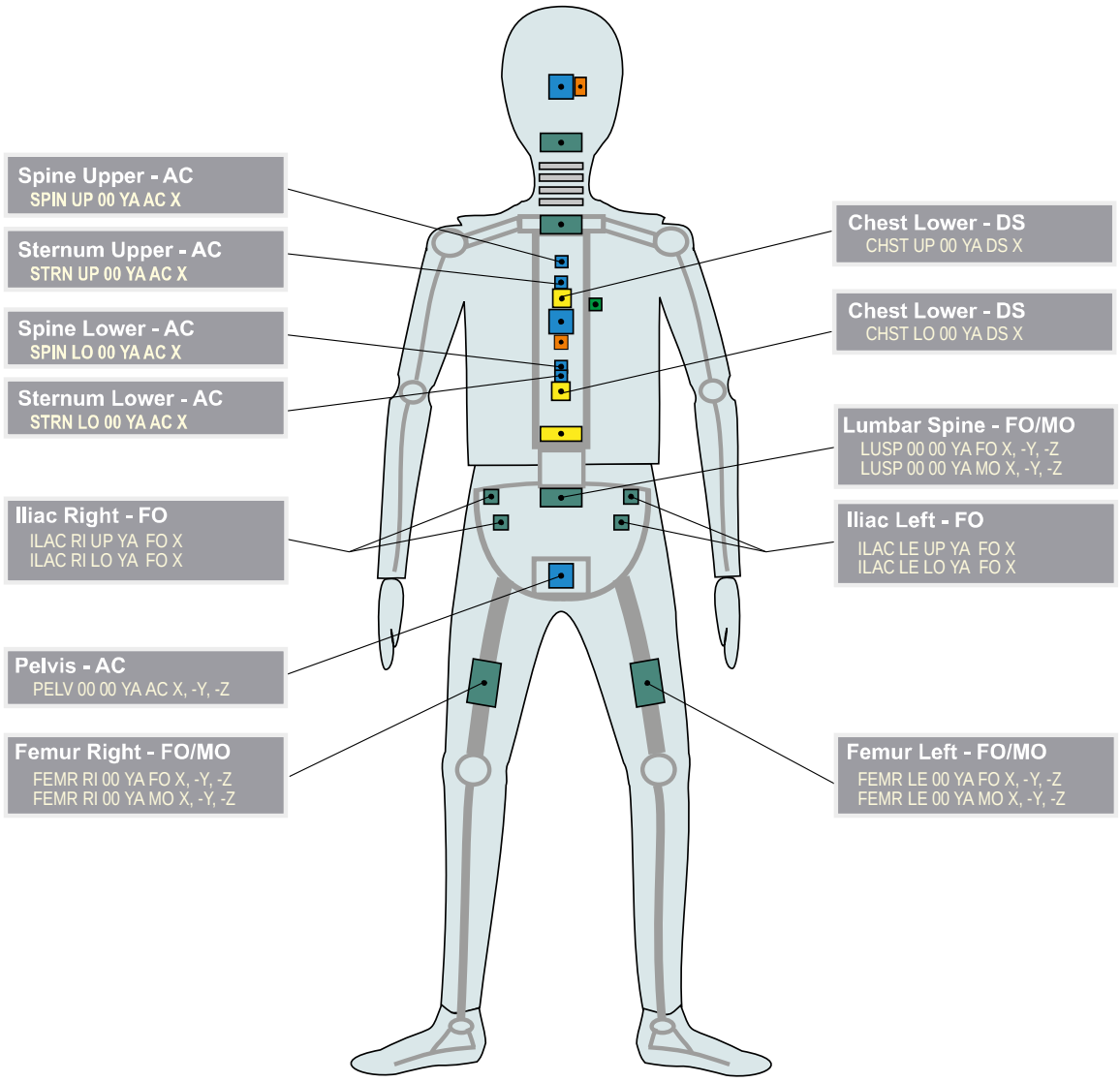
ISO/TS 13499 – RED C : 2019
YA, Hybrid III 10-Year Old Child Dummy
Standard Instrumentation
2019-07-18



YA H III - 10 year old (2)

Valid since Version **1.6.2**
Subpart T - Hybrid III 10-Year-Old

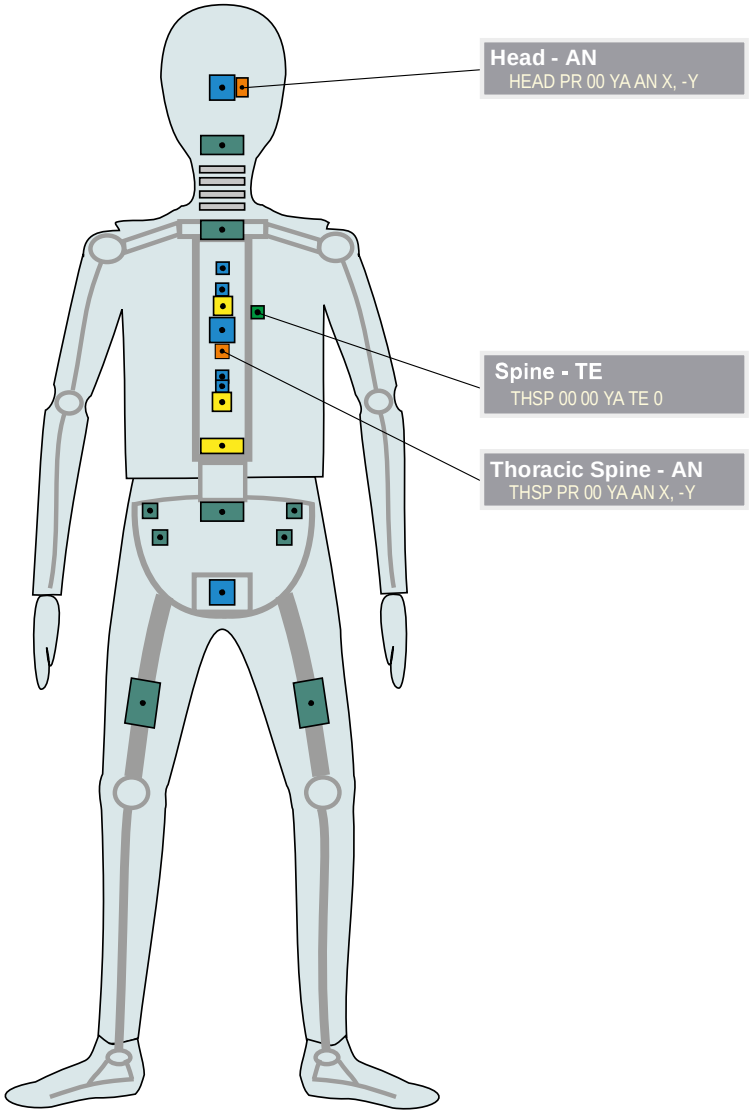
ISO/TS 13499 – RED C : 2019
YA, Hybrid III 10-Year Old Child Dummy
Additional Instrumentation
2019-07-18



YA H III - 10 year old (3)

Valid since Version **1.6.2**
Subpart T - Hybrid III 10-Year-Old

ISO/TS 13499 – RED C : 2019
YA, Hybrid III 10-Year Old Child Dummy
Static measurements, other channels
2019-07-18

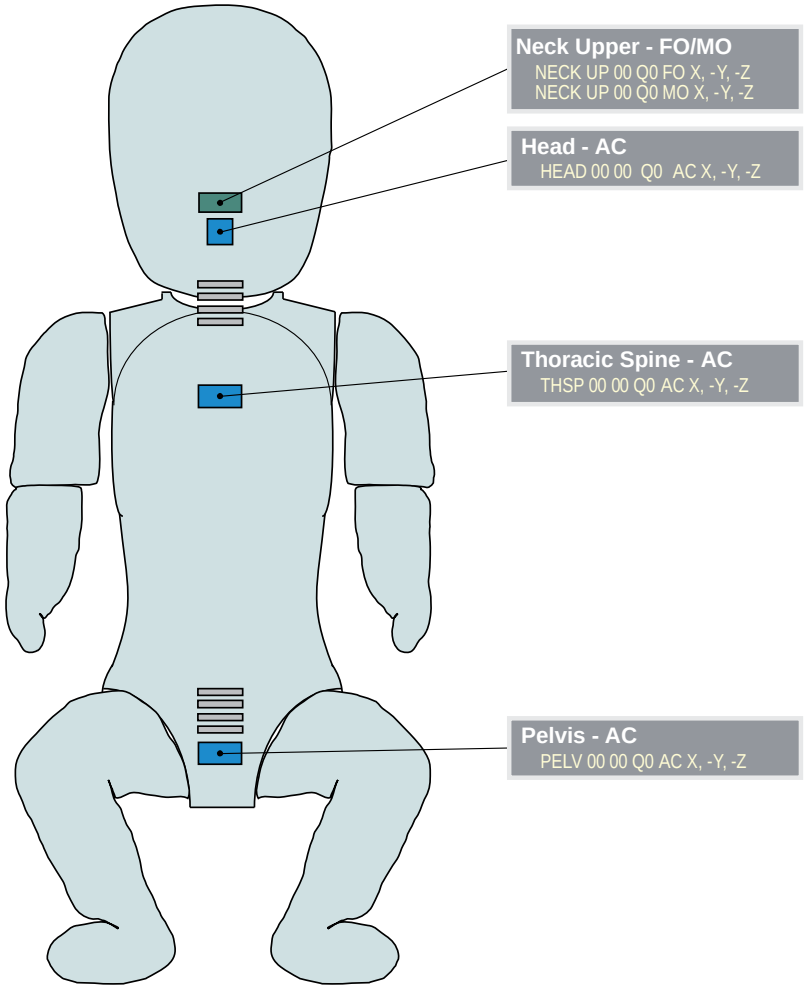


Q0 Q0 newborn

Valid since Version **1.6**

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

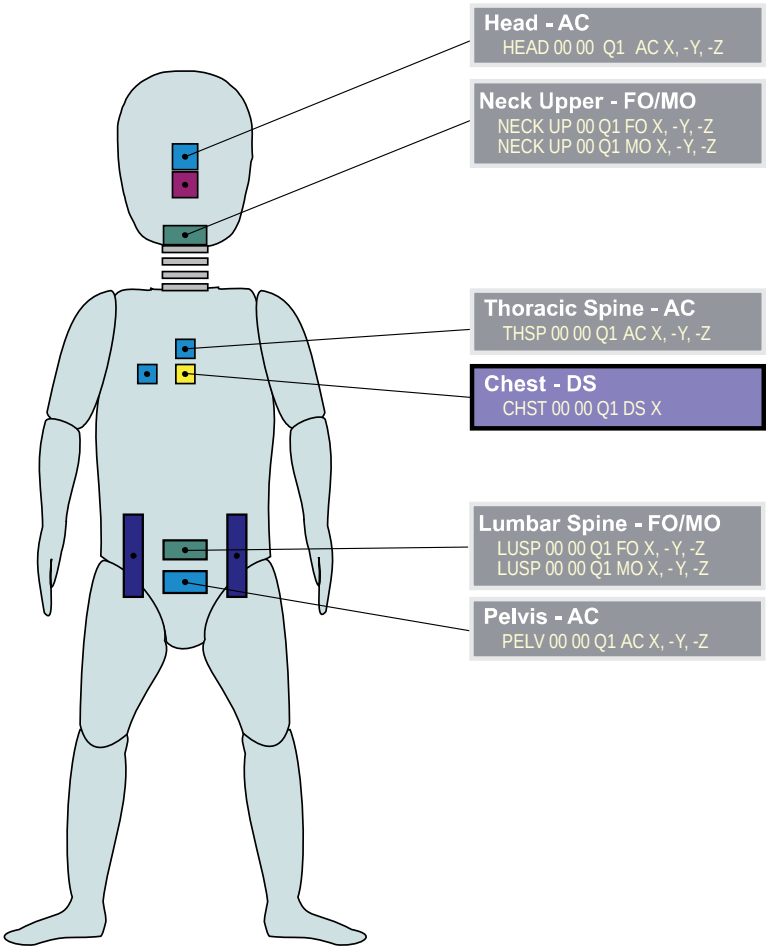
2012-01-24



Q1 Q1 (1)

Valid since Version **1.6.2.p1**

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



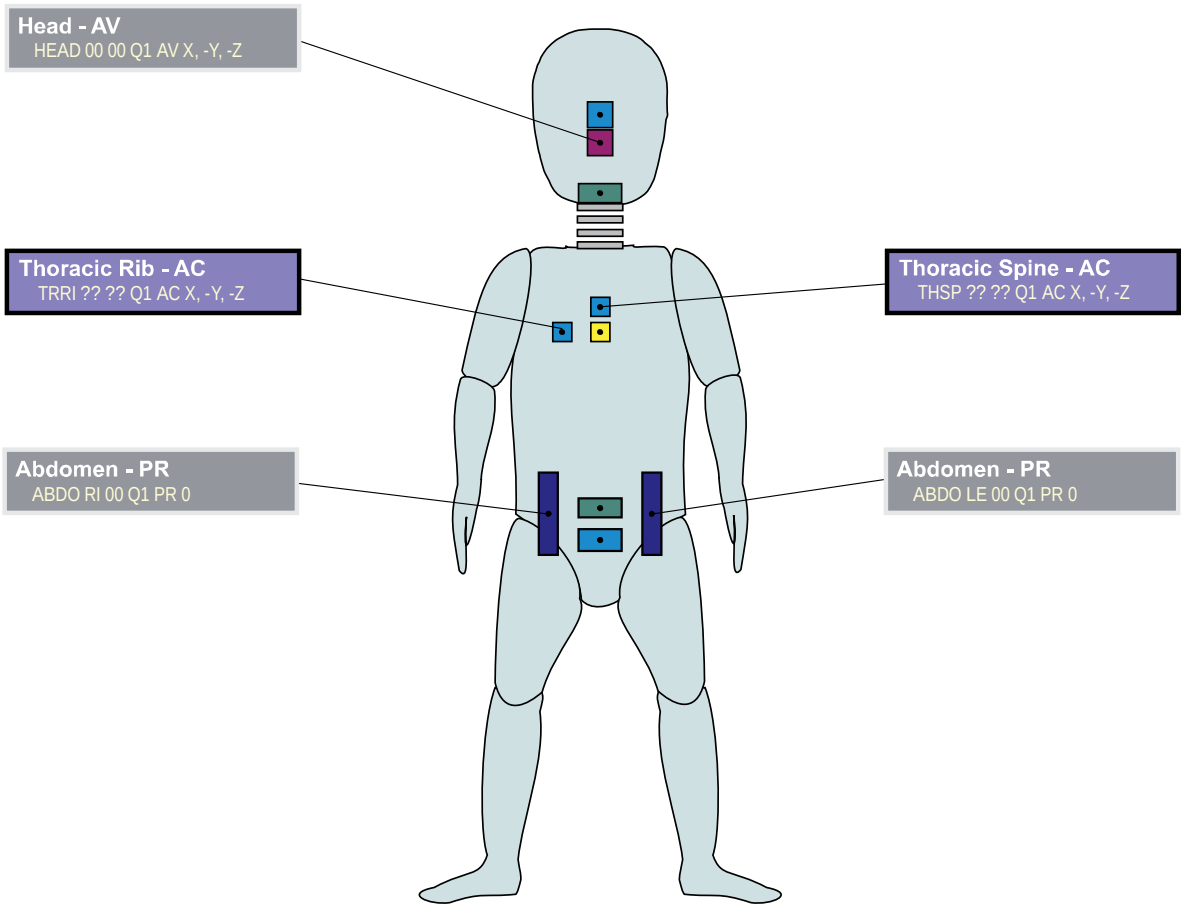
Frontal Impact

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.

Q1 Q1 (2)

Valid since Version **1.6.2.p1**

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

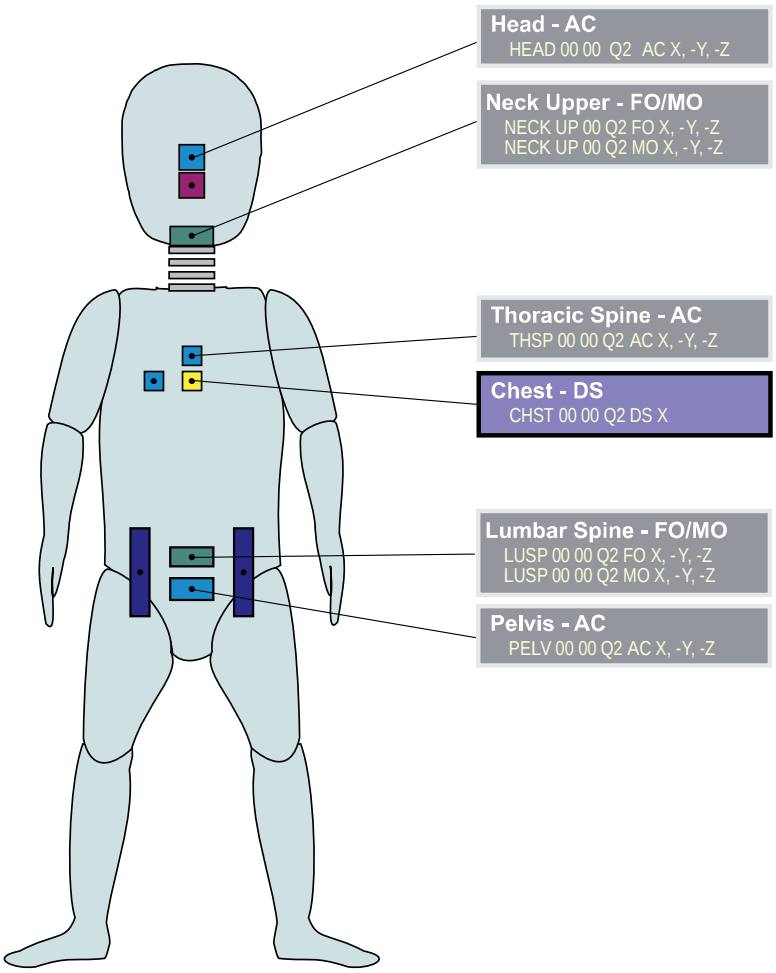


Note that sensor locations are not fixed: transducers are taped in position as required.
ISO Codes used must reflect the chosen position.
FL1 should reflect the side, LE or RI, for these channels, if used.

Q2 Q1 1/2 (1)

Valid since Version **1.6.2.p1**

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



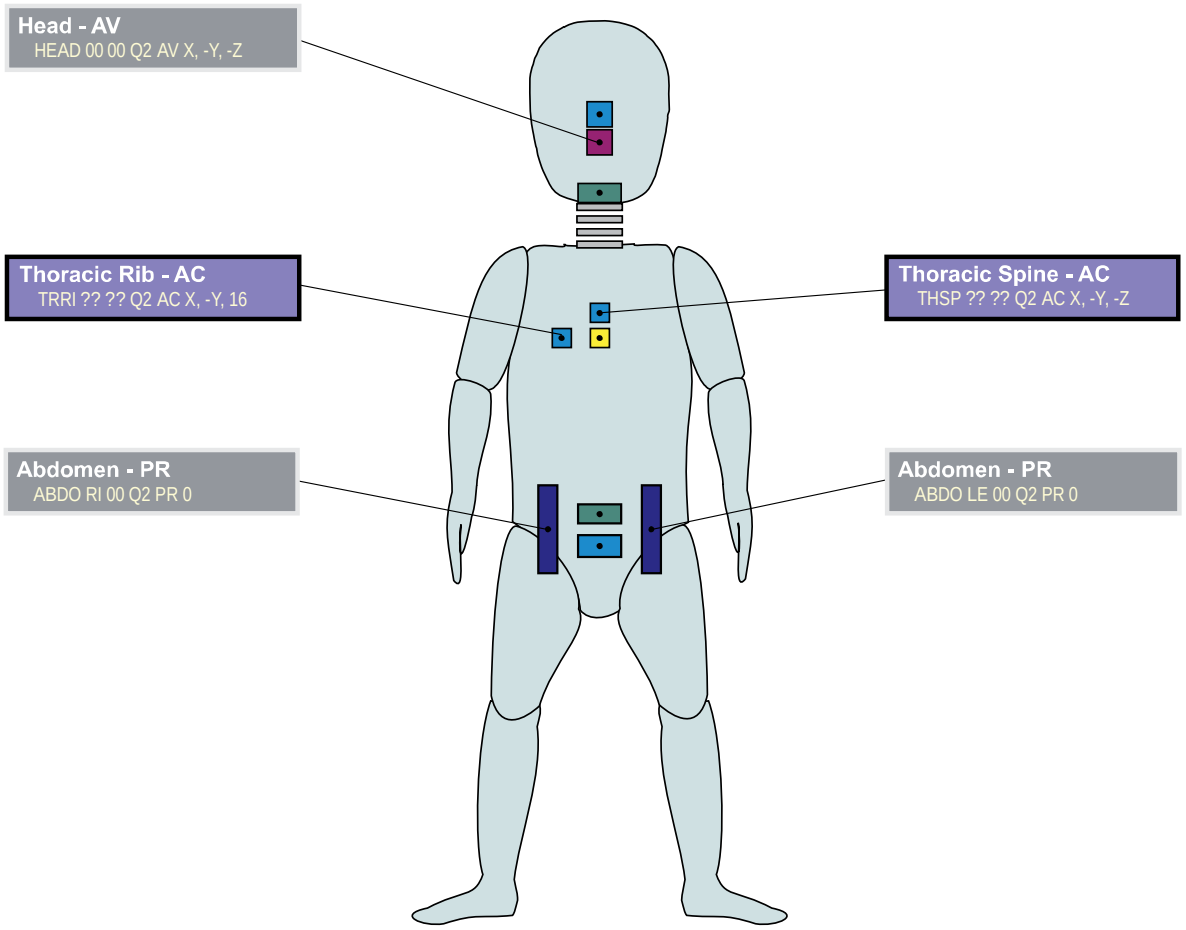
Frontal Impact

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.

Q2 Q1 1/2 (2)

Valid since Version **1.6.2.p1**

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

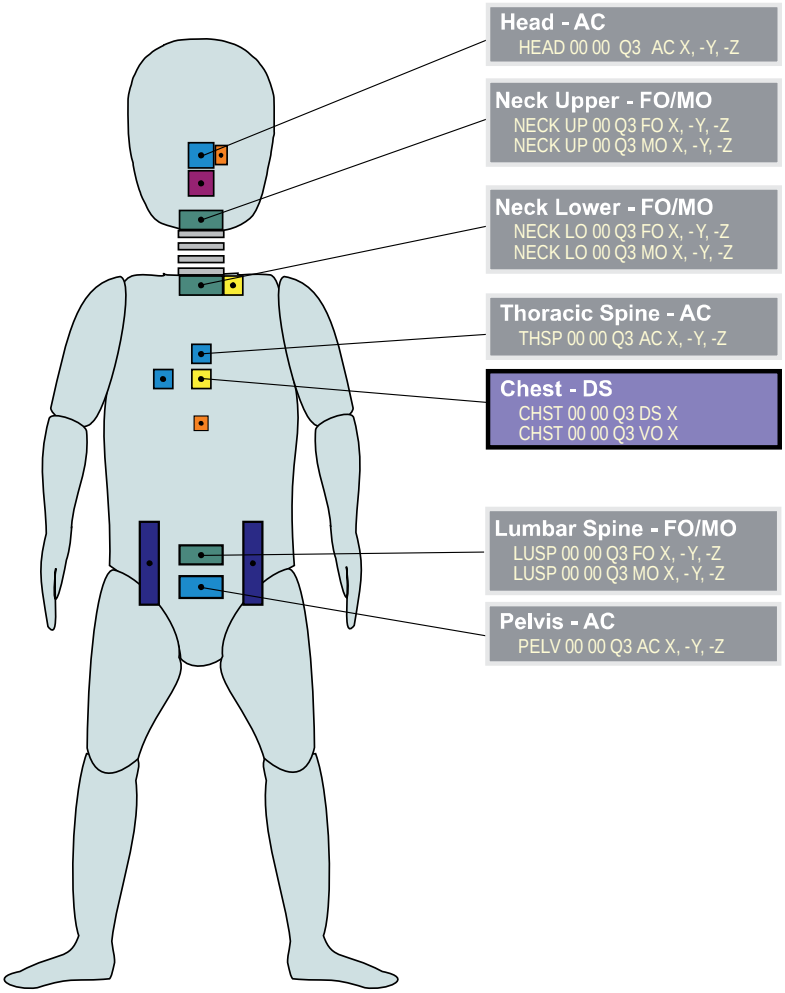


Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q3 Q3 (1)

Valid since Version **1.6.2.p1**

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

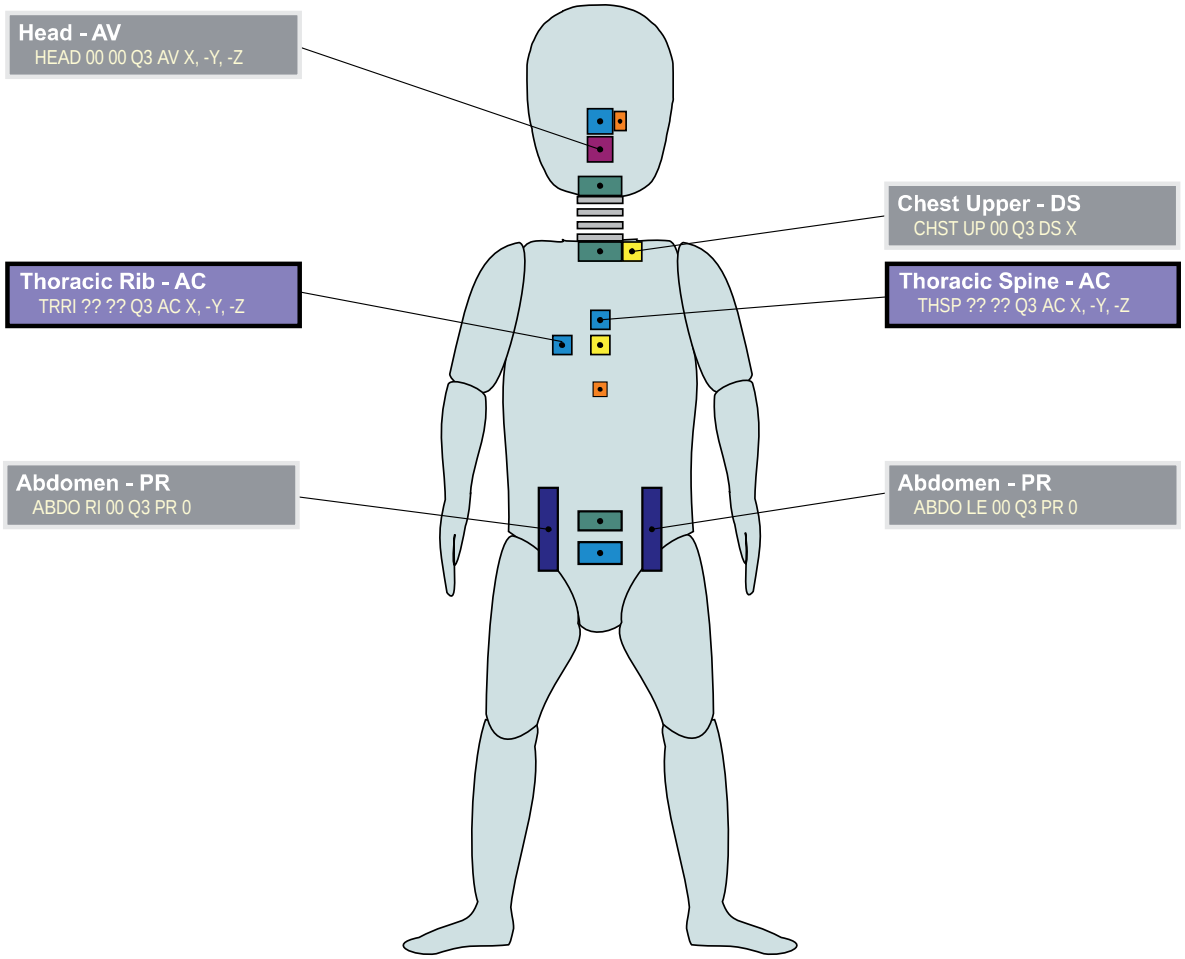


Note that the IR-TRACC device fitted to this dummy records a voltage.
It is more normal to exchange the displacement channel.

Q3 Q3 (2)

Valid since Version **1.6.2.p1**

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

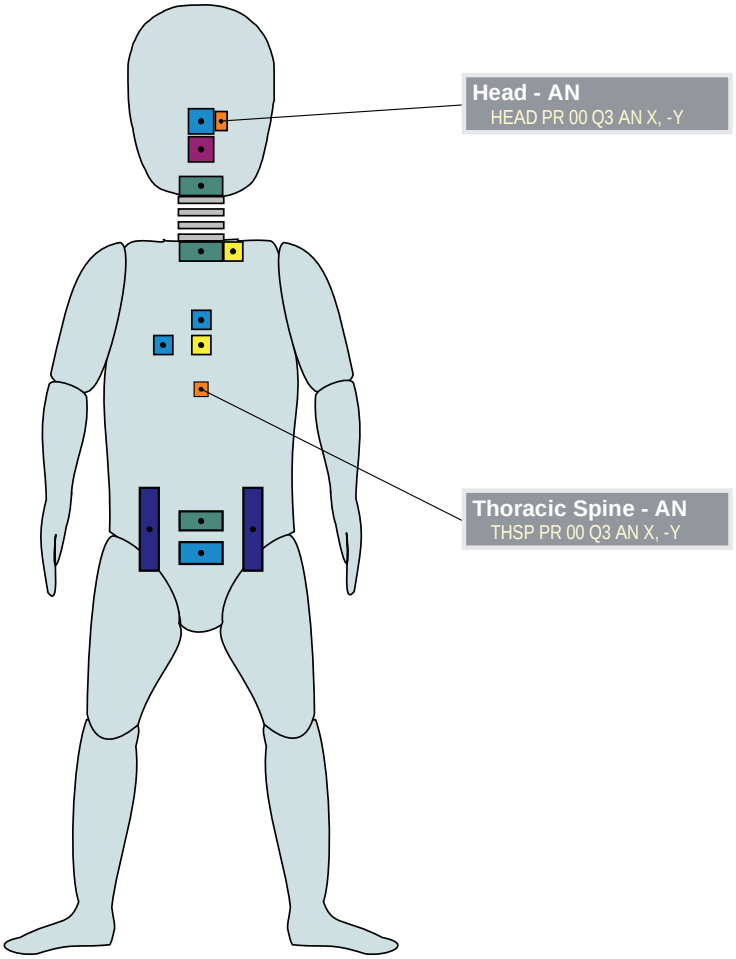


Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q3 Q3 (3)

Valid since Version **1.6.2.p1**

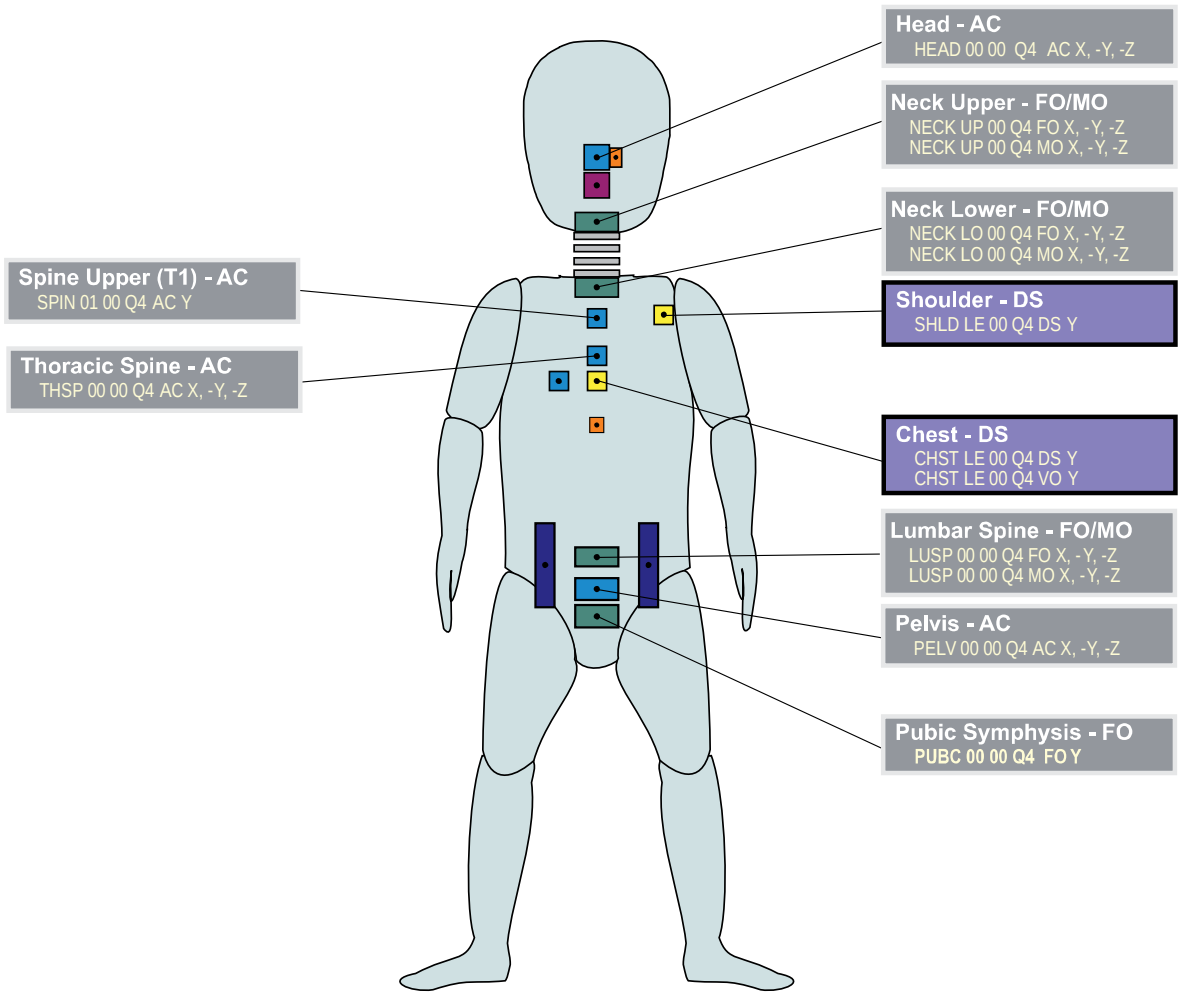
ISO/TS 13499 – RED C : 2012(E)
Q3, Advanced 3-year old child dummy: frontal impact (Q3)
Static measurements, other channels
2015-11-25



Q3s Q3s Side Impact (1)

Valid since Version **1.6.2.p1**

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



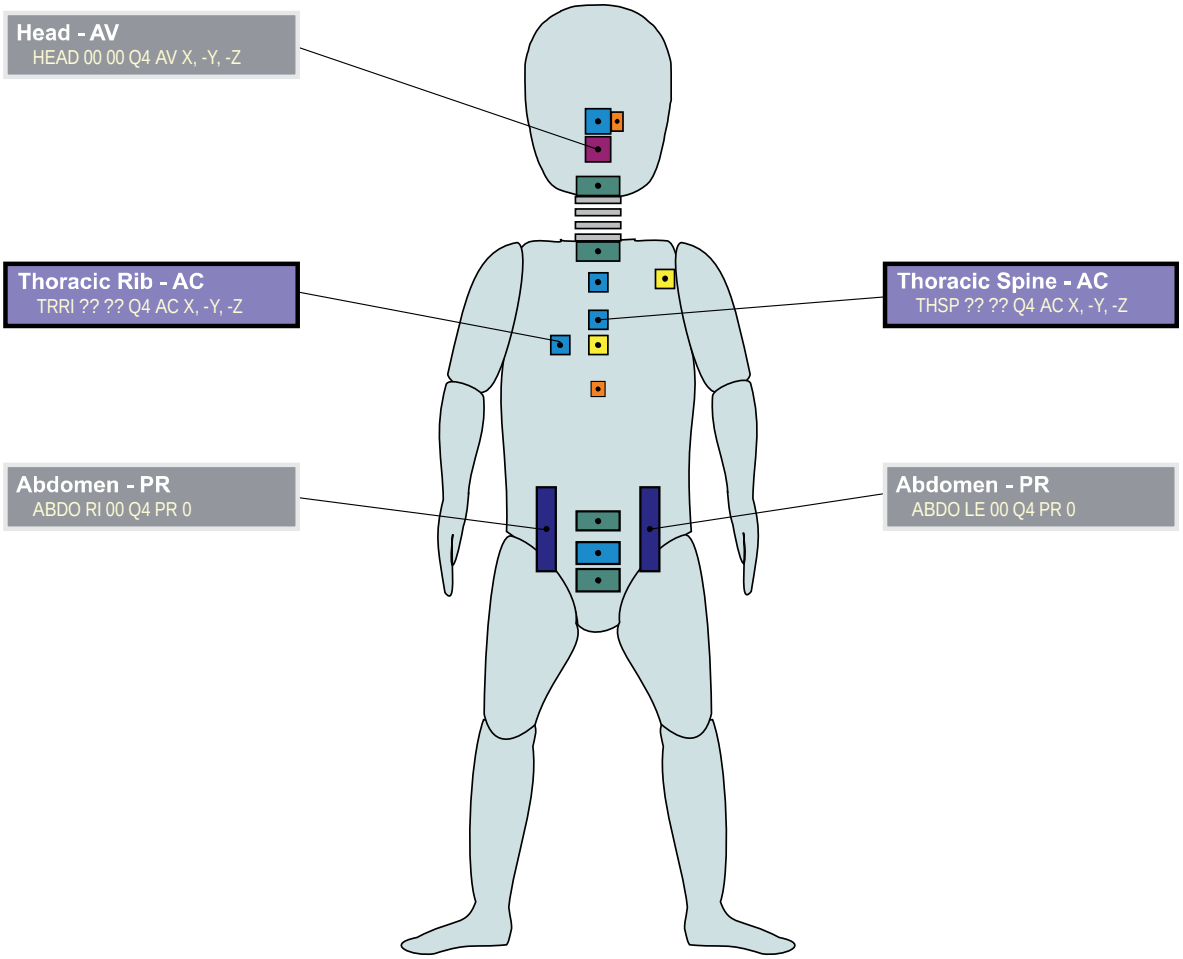
Left Side Impact, Front-View

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 **1.6.2.p1**

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

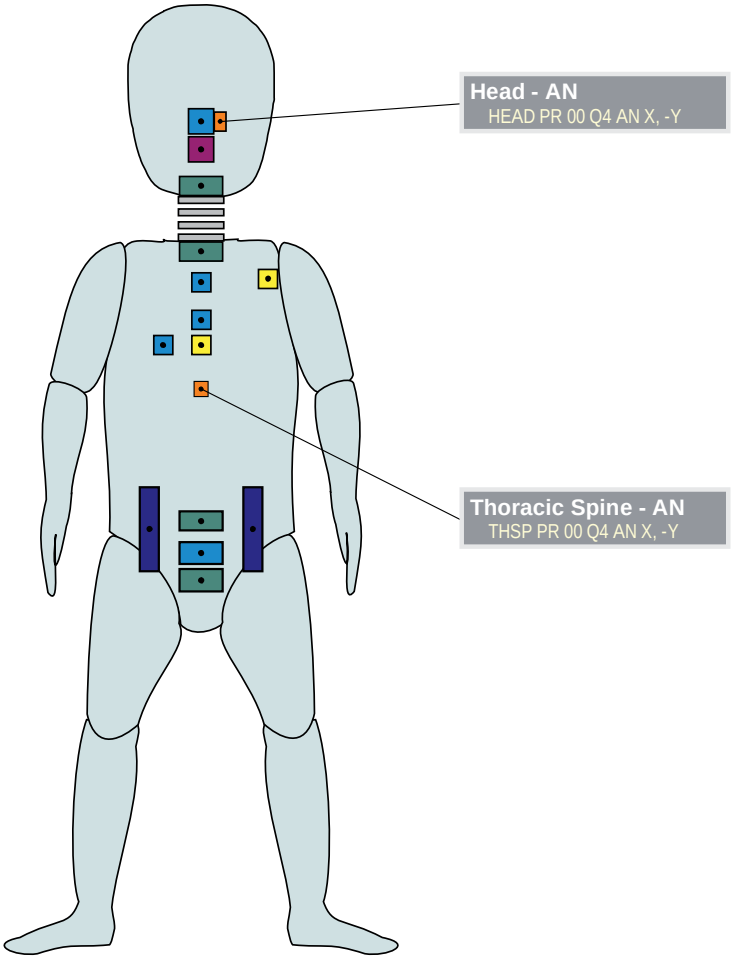


Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q3s Q3s Side Impact (3)

Valid since Version **1.6.2.p1**

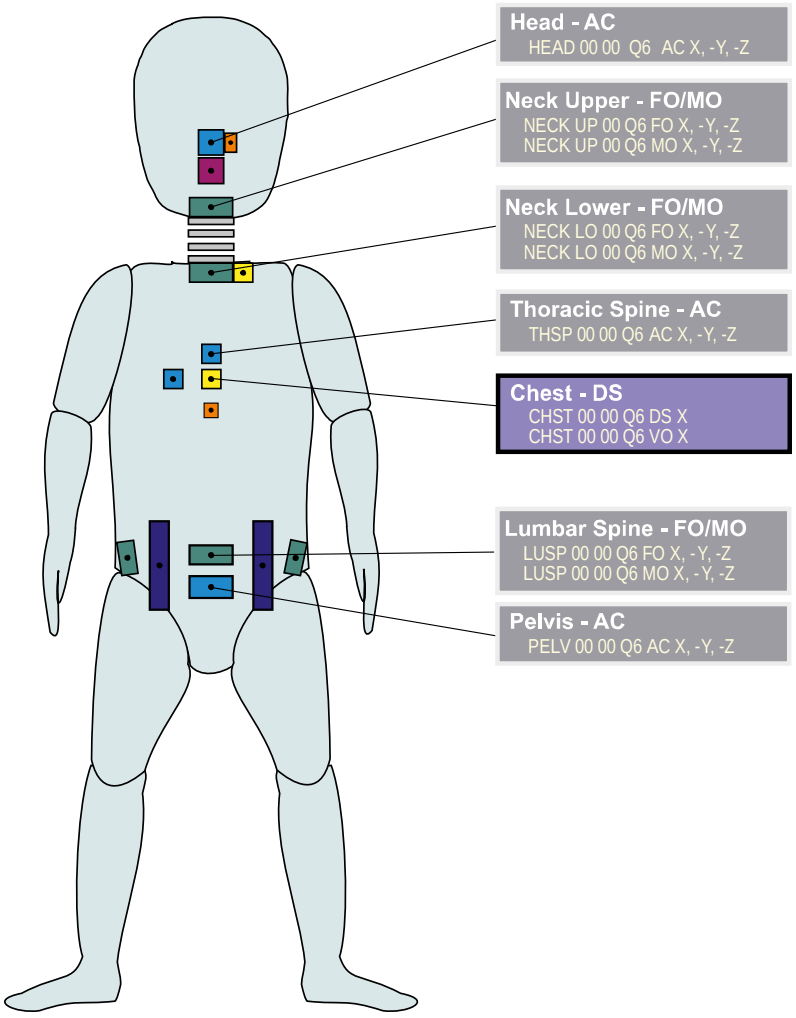
ISO/TS 13499 – RED C : 2012(E)
Q4, Advanced 3-year old child dummy: side impact (Q3s)
Static measurements, other channels
2015-11-25



Q6 Q6 (1)

Valid since Version **1.6.2.p1**

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.

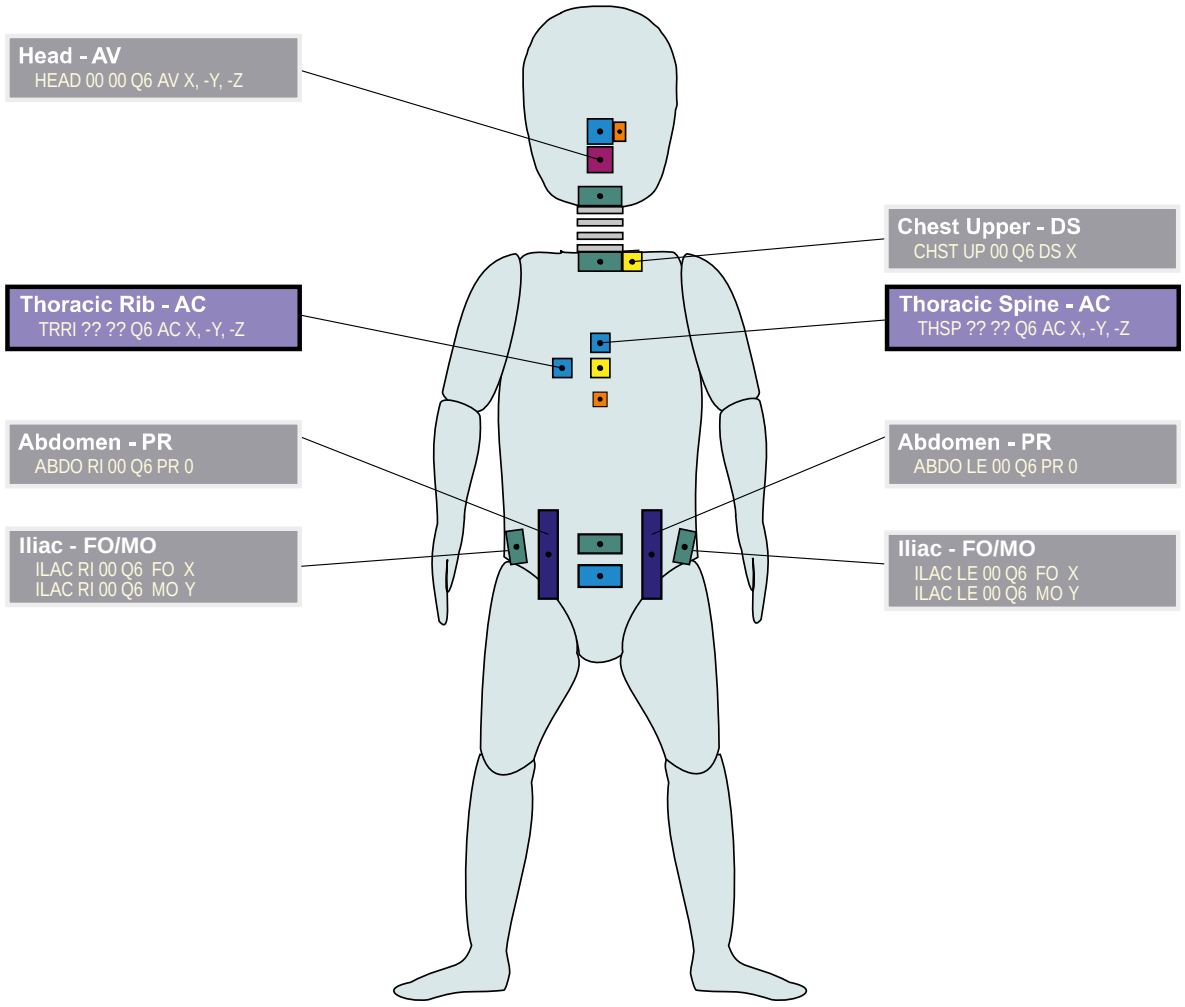
Right-hand side impact: CHST RI 00 Q6 DS Y and CHST RI 00 Q6 VO Y..

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

Q6 Q6 (2)

Valid since Version **1.6.2.p1**

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

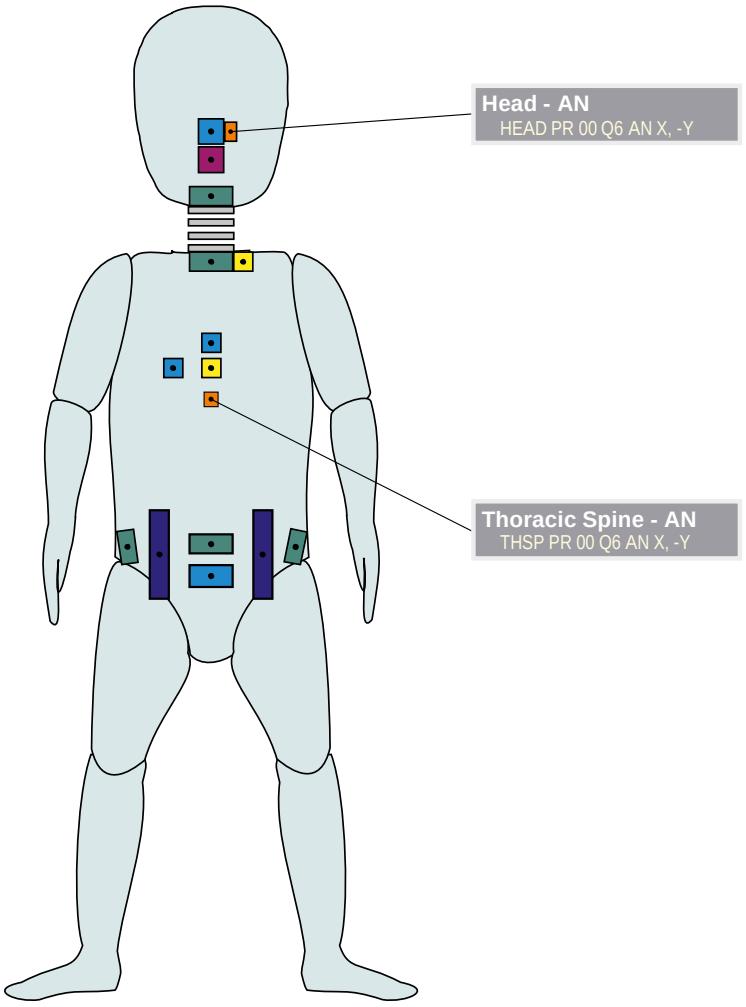


Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.

Q6 Q6 (3)

Valid since Version **1.6.2.p1**

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

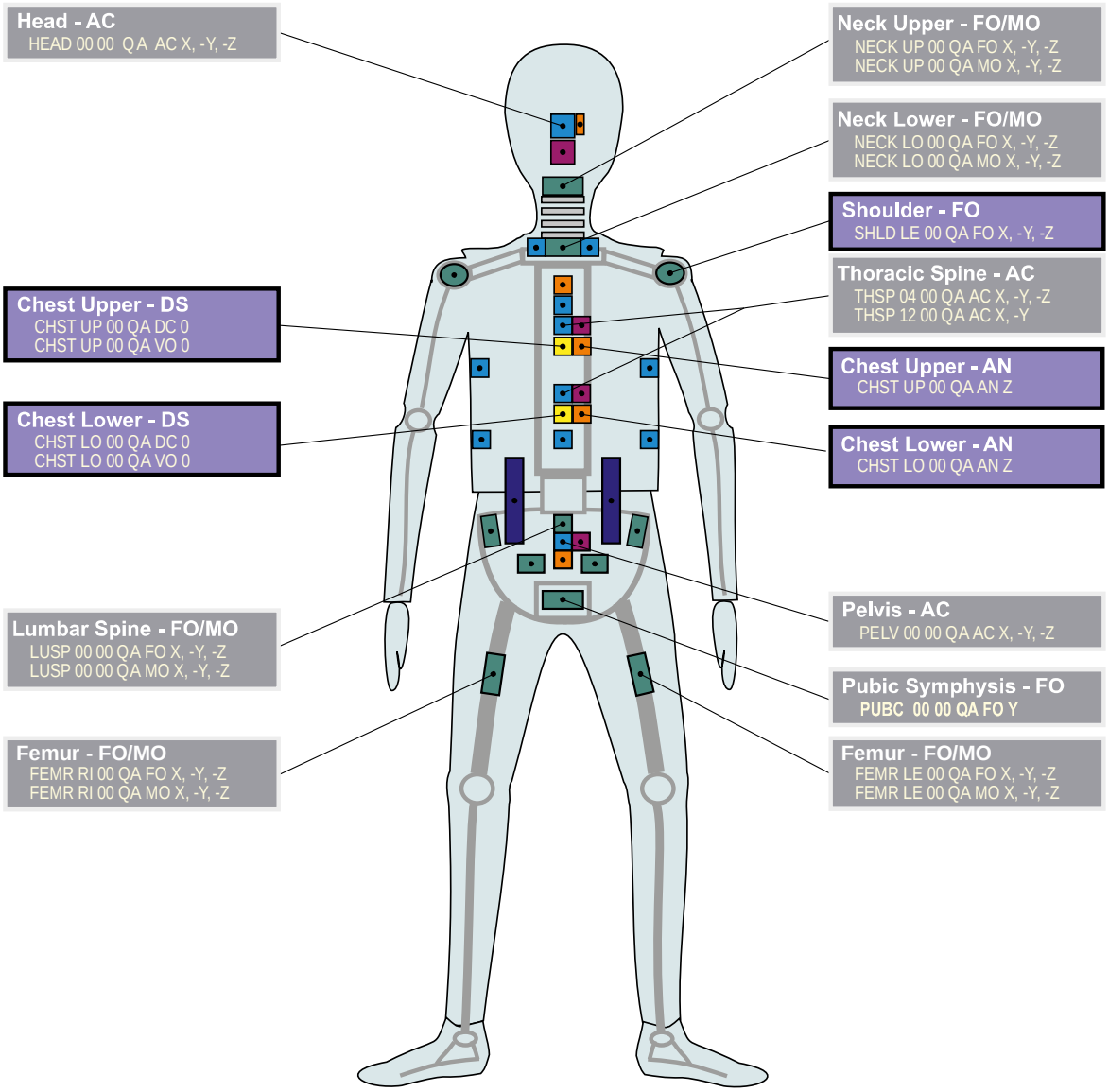


Q10 Q10 (1)

Valid since Version **1.6.2.p1**

ISO/TS 13499 – RED C : 2019
QA, Advanced 10-year old child dummy
QB, Advanced 10-year old child dummy, EuroNCAP variant
Standard Instrumentation
2019-07-18

Note: For QB dummy, FL3 will read QB



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 QA AN Z and CHST LE LO QA AN 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 QA AN Z and CHST RI LO QA AN 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.

ISO-QA_20190718

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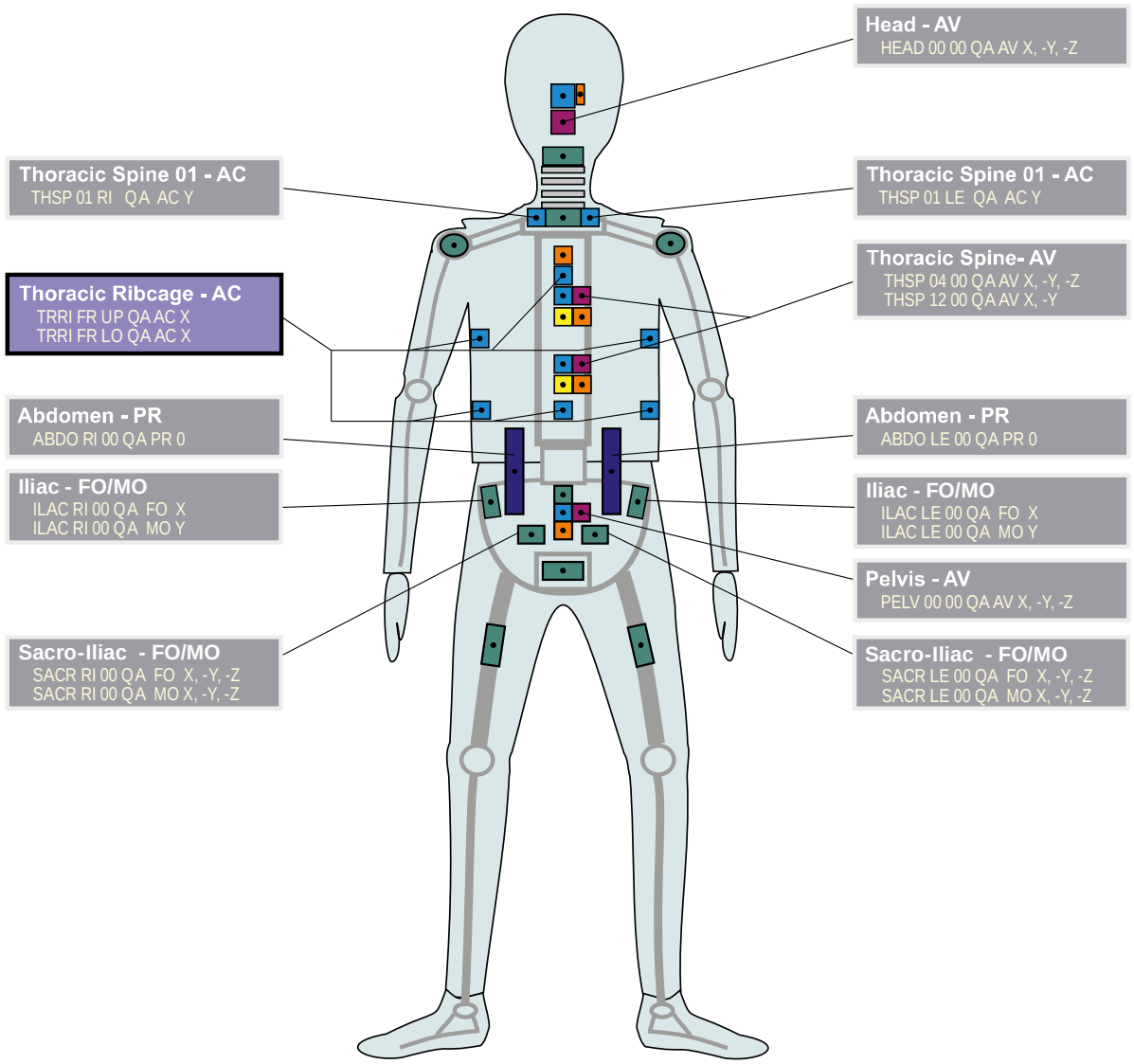
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd. and Dirk Vetter, IAT mbH

Q10 Q10 (2)

Valid since Version **1.6.2.p1**

ISO/TS 13499 – RED C : 2019
QA, Advanced 10-year old child dummy
QB, Advanced 10-year old child dummy, EuroNCAP variant
Additional Instrumentation
2019-07-18

Note: For QB dummy, FL3 will read QB



Frontal Impact

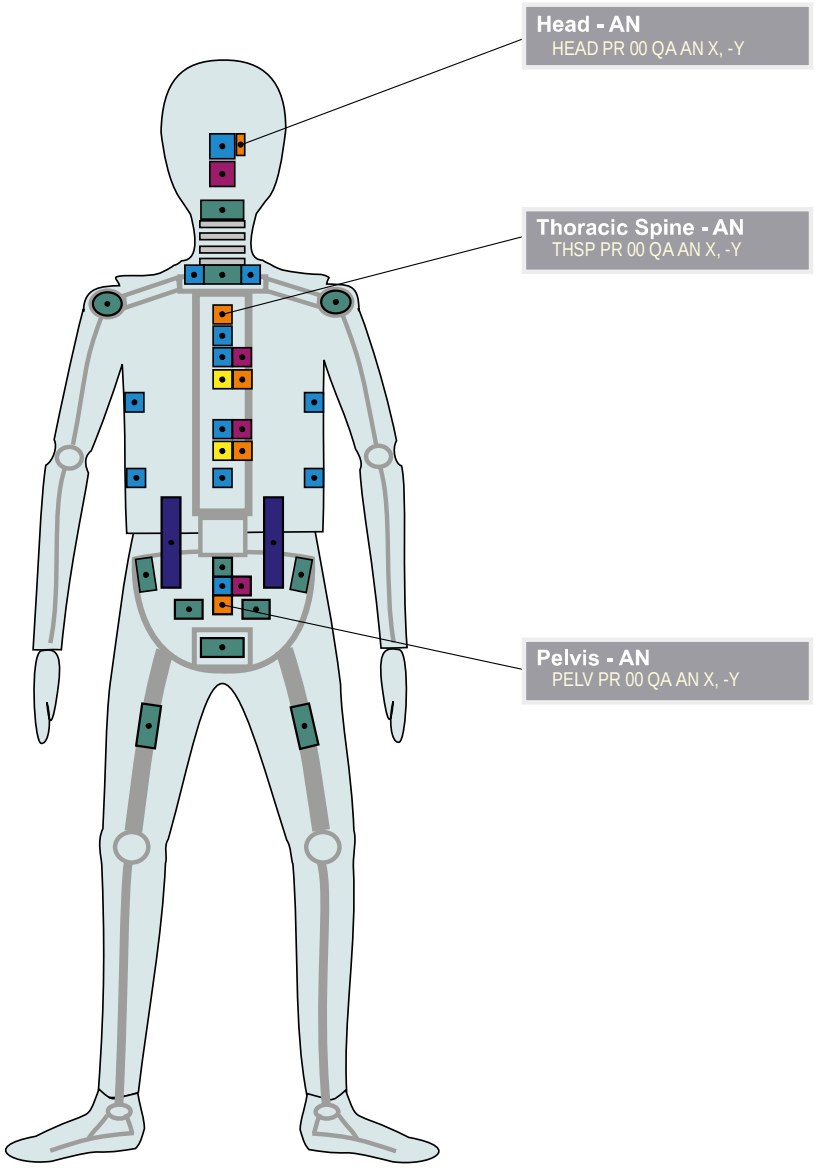
Note that sensor orientation is different for side impact configurations. ▪
ISO Codes used must reflect the chosen orientation. ▪
Left-hand side impact: TRRI LE UP QA AC Y and TRRI LE LO QA AC Y. ▪
Right-hand side impact: TRRI RI UP QA AC Y and TRRI RI LO QA AC Y.

Q10 Q10 (3)

Valid since Version **1.6.2.p1**

ISO/TS 13499 – RED C : 2019
QA, Advanced 10-year old child dummy
QB, Advanced 10-year old child dummy, EuroNCAP variant
Static measurements, other channels
2019-07-18

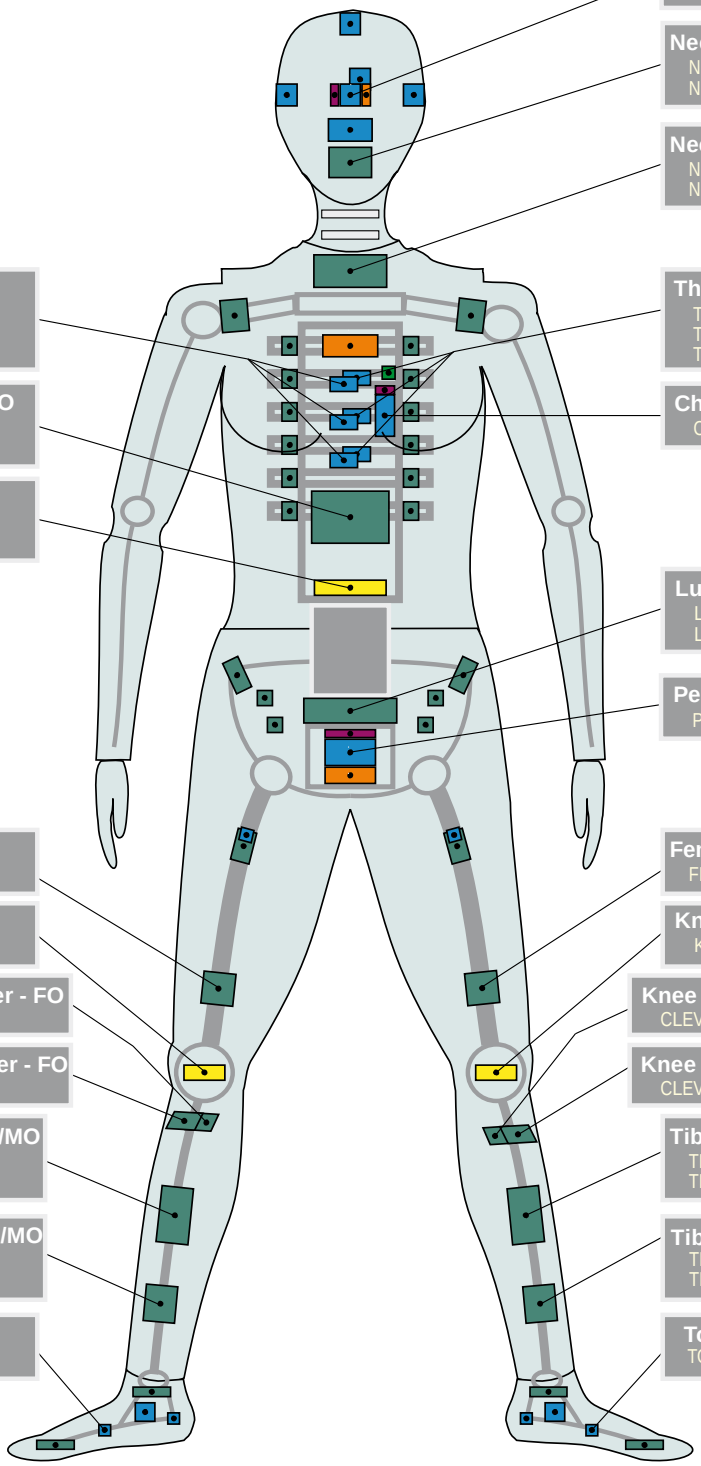
Note: For QB dummy, FL3 will read QB



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



Head - AC
HEAD 00 00 HF AC X, -Y, -Z

Neck Upper - FO/MO
NECK UP 00 HF FO X, -Y, -Z
NECK UP 00 HF MO X, -Y, -Z

Neck Lower - FO/MO
NECK LO 00 HF FO X, -Y, -Z
NECK LO 00 HF MO X, -Y, -Z

Sternum - AC
STRN UP 00 HF AC X
STRN MI 00 HF AC X
STRN LO 00 HF AC X

Thoracic Spine - AC
THSP UP 00 HF AC X
THSP MI 00 HF AC X
THSP LO 00 HF AC X

Thoracic Spine - FO/MO
THSP 00 00 HF FO X, -Y, -Z
THSP 00 00 HF MO X, -Y

Chest - AC
CHST 00 00 HF AC X, -Y, -Z

Chest - DS
CHST 00 00 HF DS X
CHST 00 03 HF DS X

Lumbar Spine - FO/MO
LUSP 00 00 HF FO X, -Y, -Z
LUSP 00 00 HF MO X, -Y, -Z

Pelvis - AC
PELV 00 00 HF AC X, -Y, -Z

Femur Right - FO
FEMR RI 00 HF FO Z

Femur Left - FO
FEMR LE 00 HF FO Z

Knee Slider Right - DS
KNSL RI 00 HF DS X

Knee Slider Left - DS
KNSL LE 00 HF DS X

Knee Clevis Right Inner - FO
CLEV RI IN HF FO Z

Knee Clevis Left Inner - FO
CLEV LE IN HF FO Z

Knee Clevis Right Outer - FO
CLEV RI OU HF FO Z

Knee Clevis Left Outer - FO
CLEV LE OU HF FO Z

Tibia Right Upper - FO/MO
TIBI RI UP HF FO X, -Y, -Z
TIBI RI UP HF MO X, -Y

Tibia Left Upper - FO/MO
TIBI LE UP HF FO X, -Y, -Z
TIBI LE UP HF MO X, -Y

Tibia Right Lower - FO/MO
TIBI RI LO HF FO X, -Z
TIBI RI LO HF MO X, -Y

Tibia Left Lower - FO/MO
TIBI LE LO HF FO X, -Z
TIBI LE LO HF MO X, -Y

Toe Right - AC
TOES RI 00 HF AC Z

Toe Left - AC
TOES LE 00 HF AC Z

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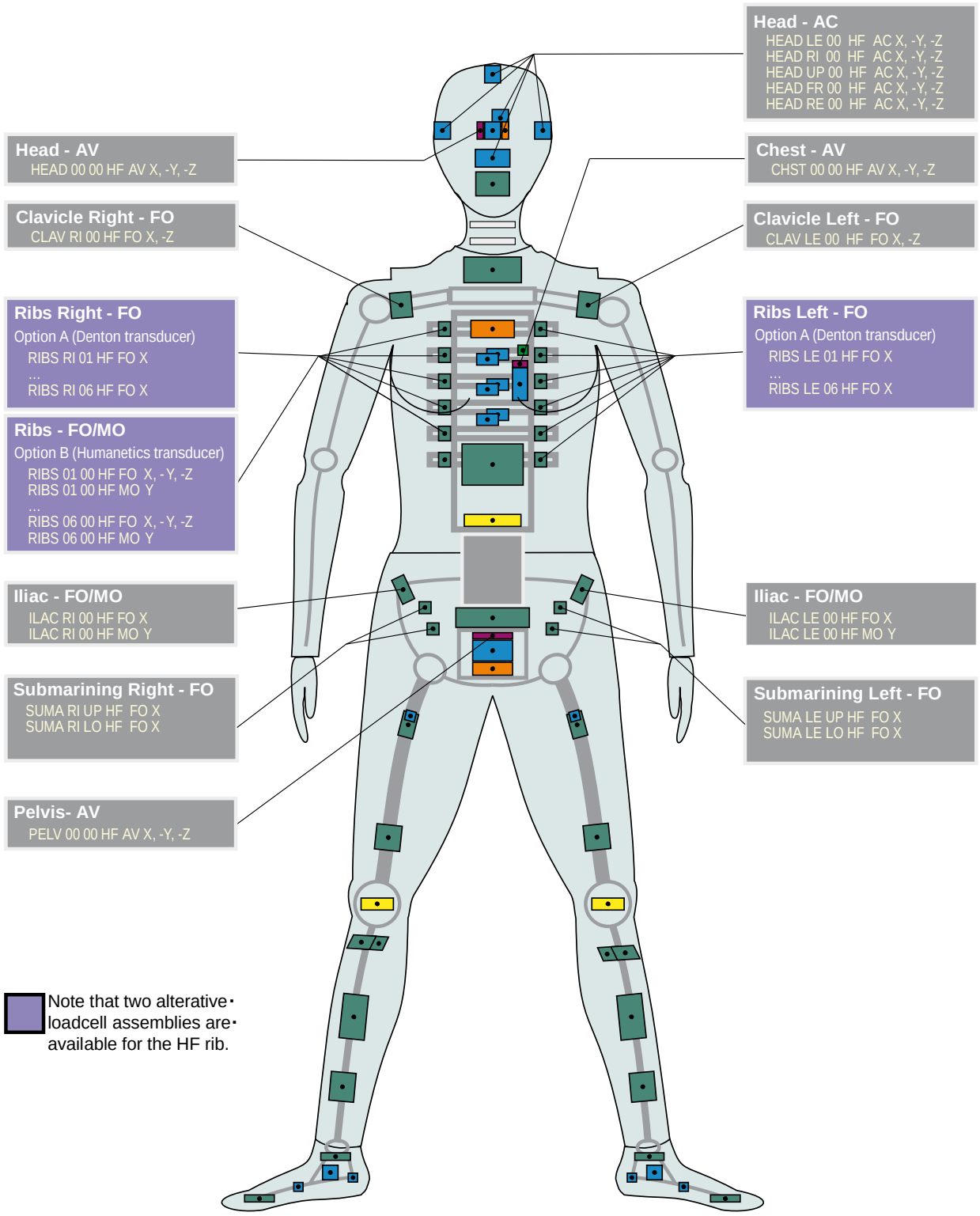
ISO_HF_1_161_20130410.EMF

-> HF <- 1 of 5

HF Hybrid III 5% Female (2)

Valid since Version **1.6.1**

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



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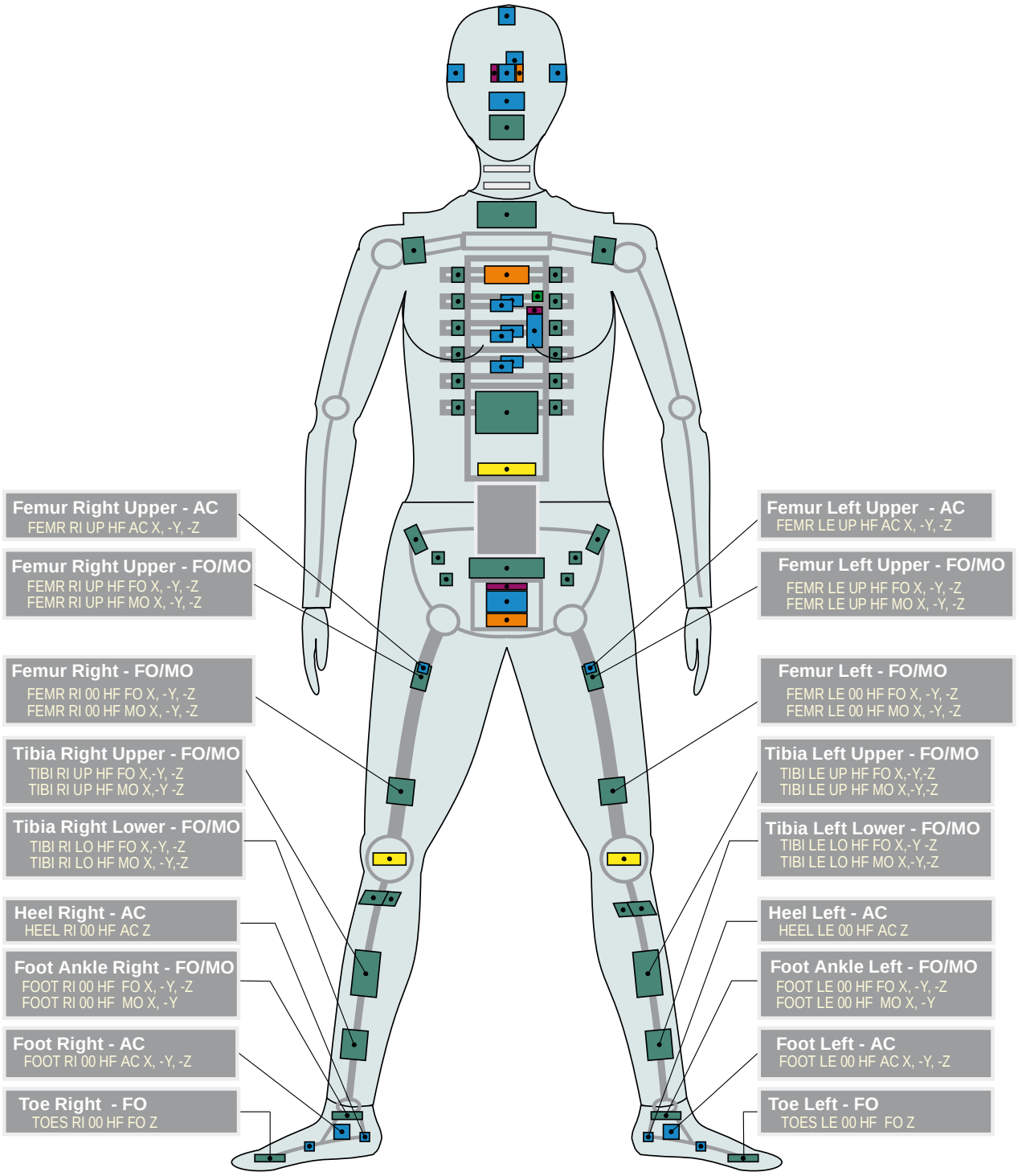
HF Hybrid III 5% Female (3)

Valid since Version **1.6.1**

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



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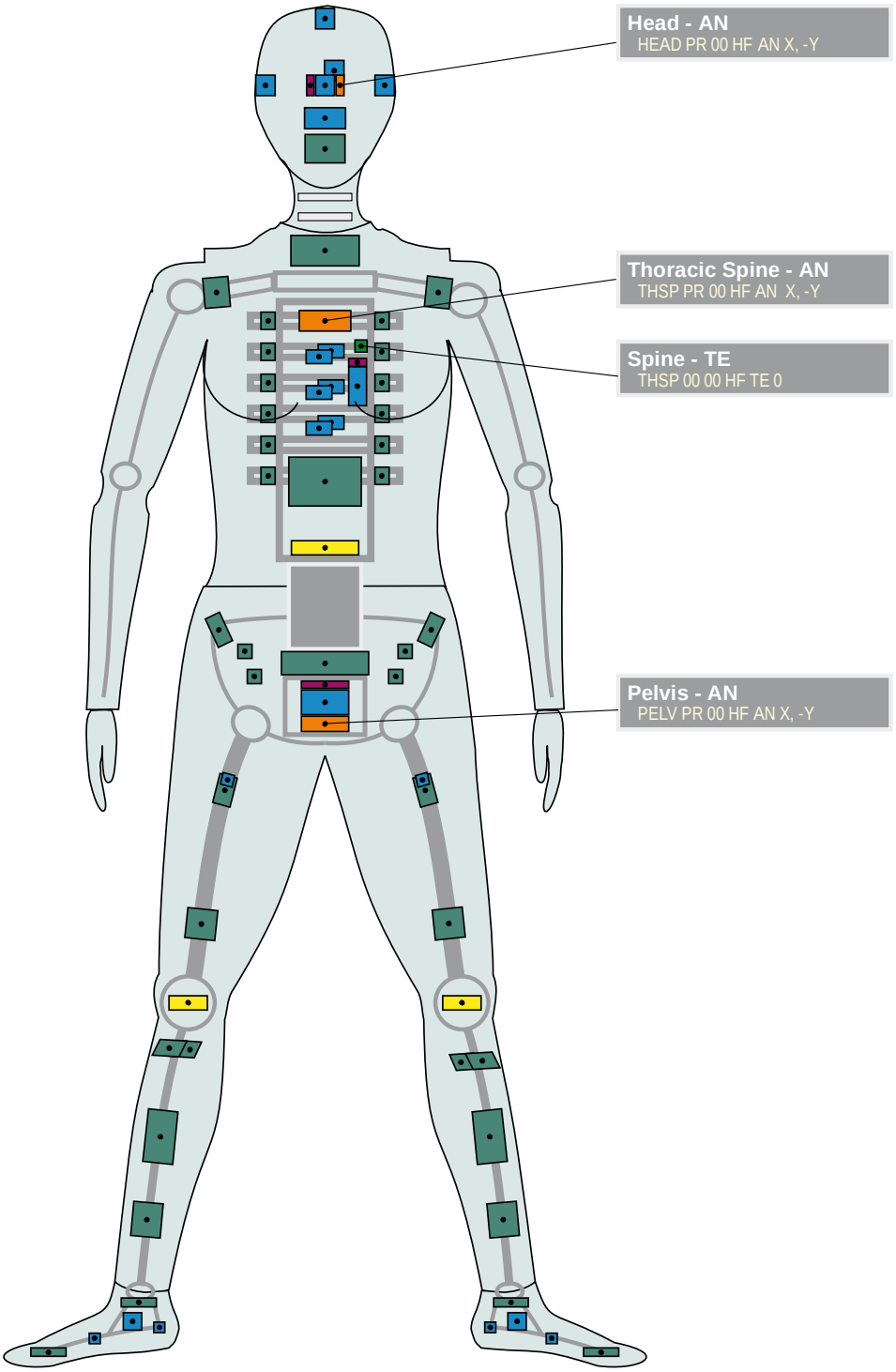
ISO_HF_3_161_20130410.EMF

-> HF <- 3 of 5

HF Hybrid III 5% Female (4)

Valid since Version **1.6.1**

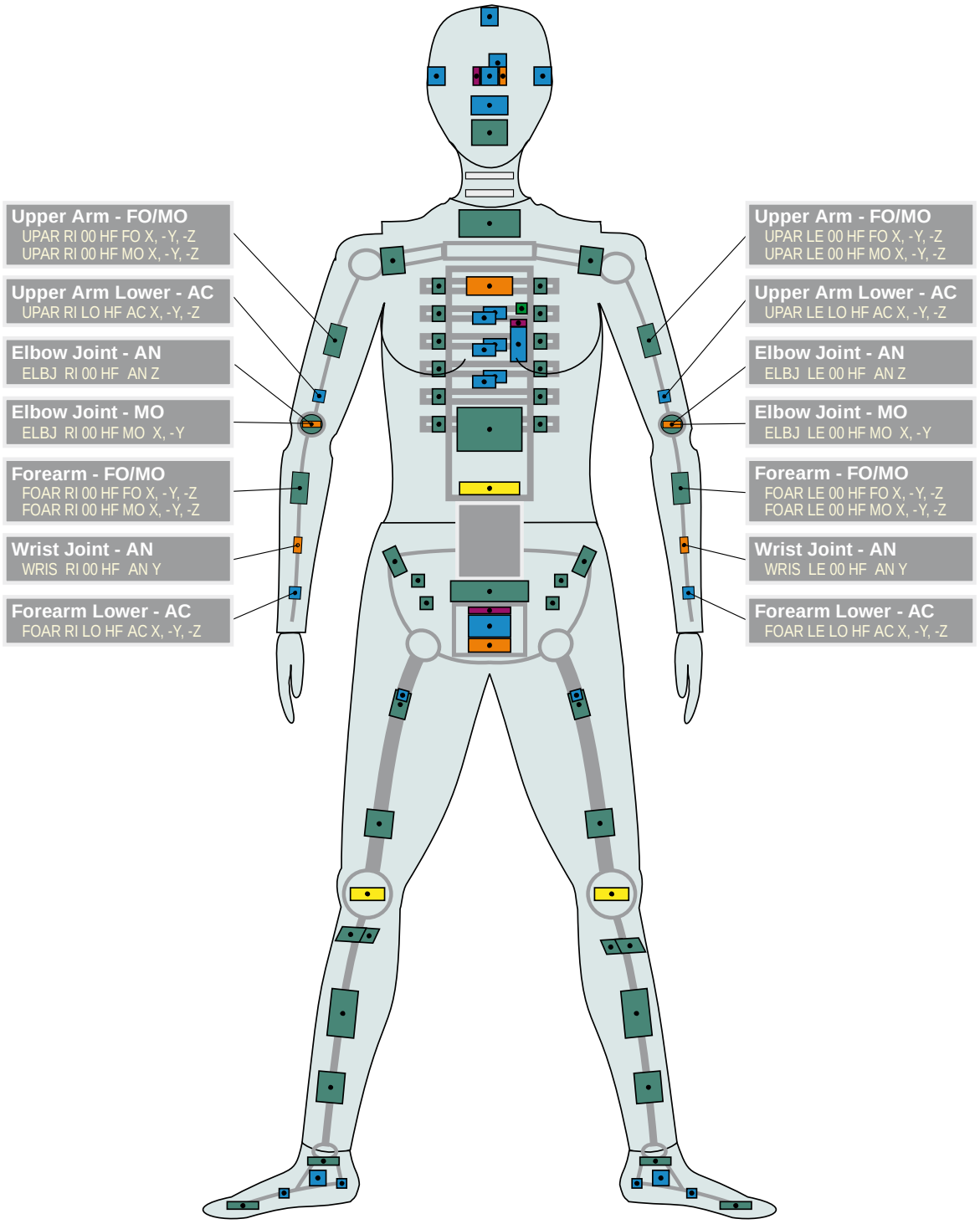
ISO/TS 13499 – RED C : 2012(E)
HF, Hybrid III 5% female
Static measurements, other channels
2013-04-10



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

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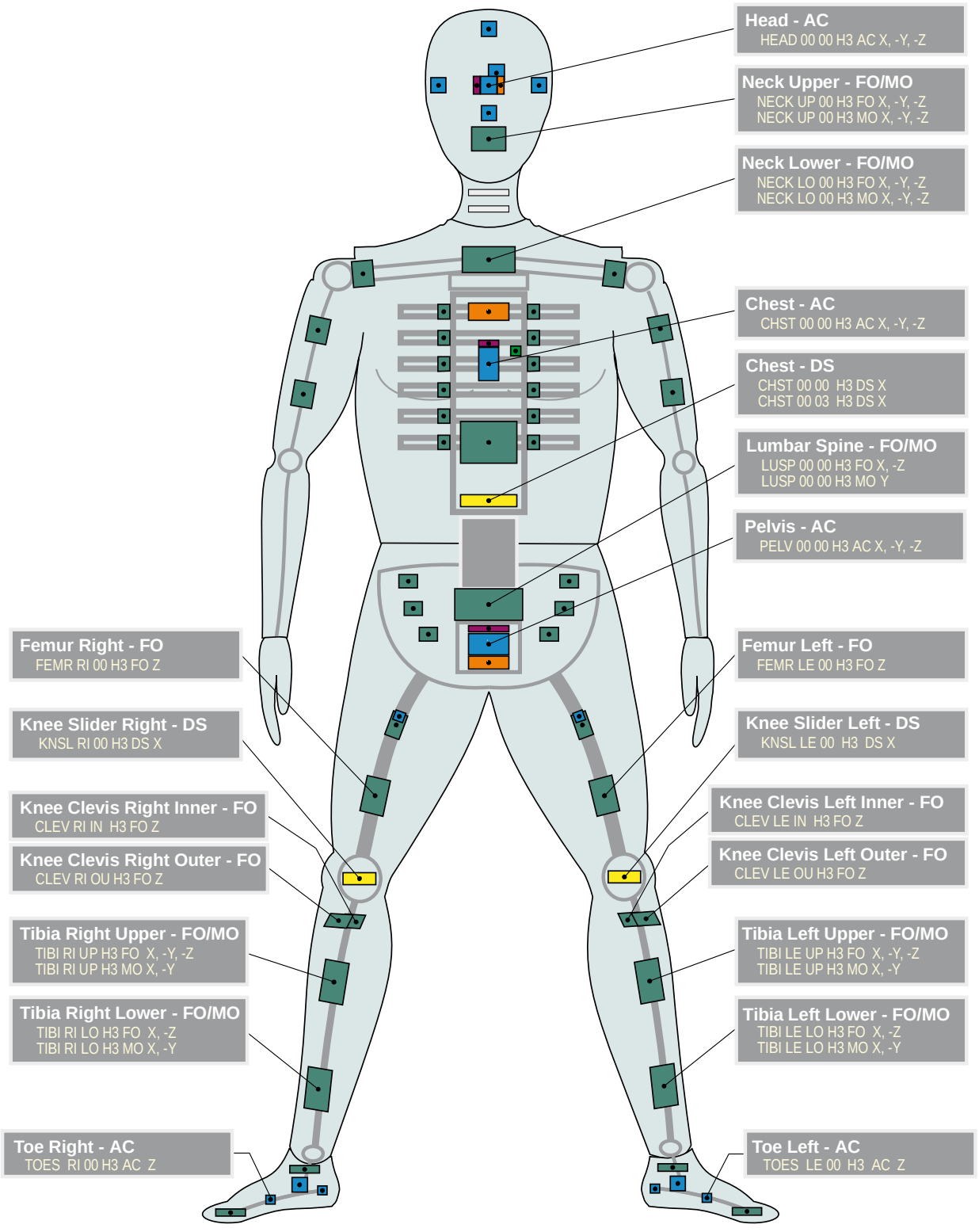
ISO_HF_5_161_20130410.EMF

-> HF <- 5 of 5

H3 Hybrid III 50% Male (1)

Valid since Version **1.6.1**

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



ISO-H3_20130410

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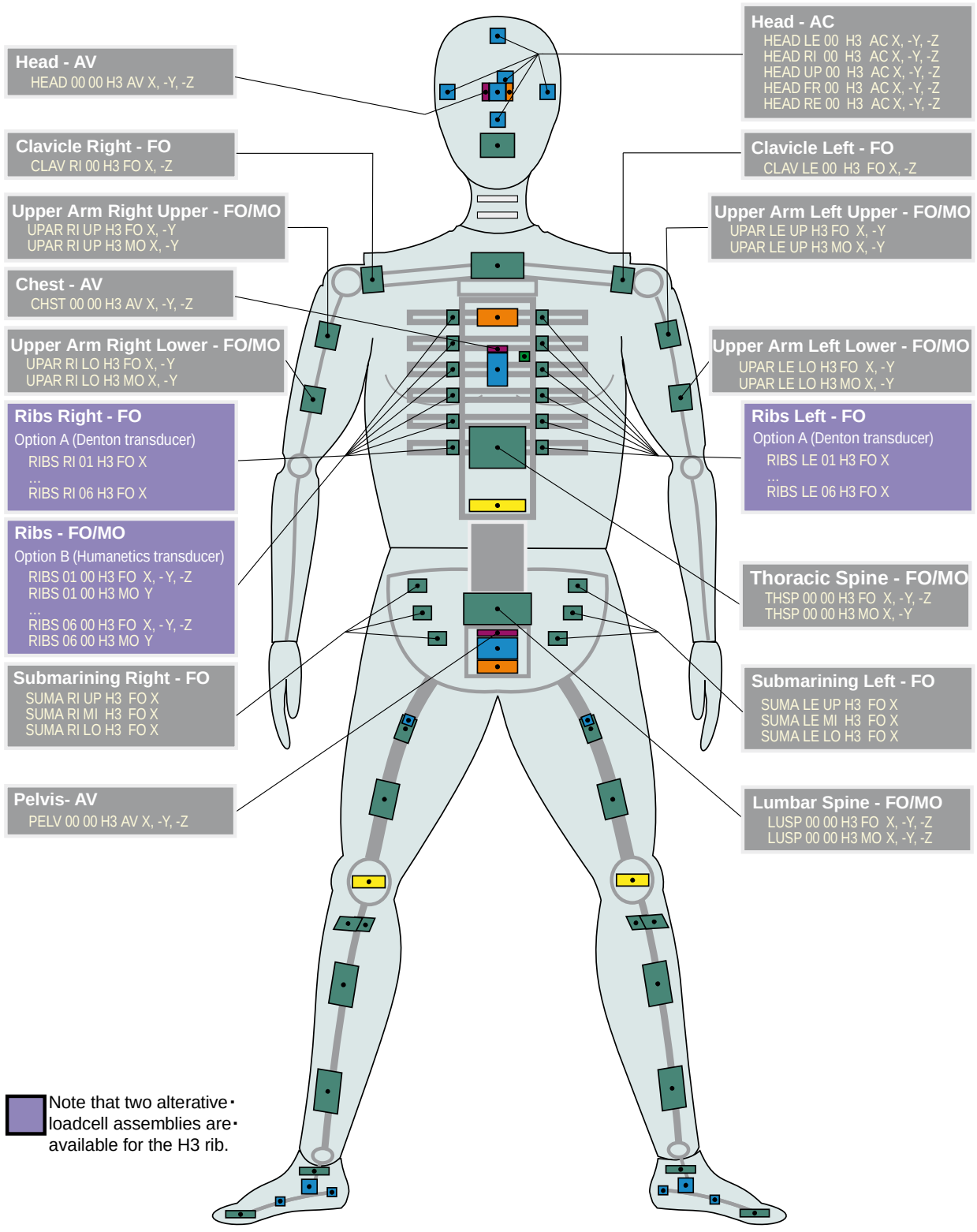
ISO_H3_1_161_20130410.EMF

-> H3 <- 1 of 4

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

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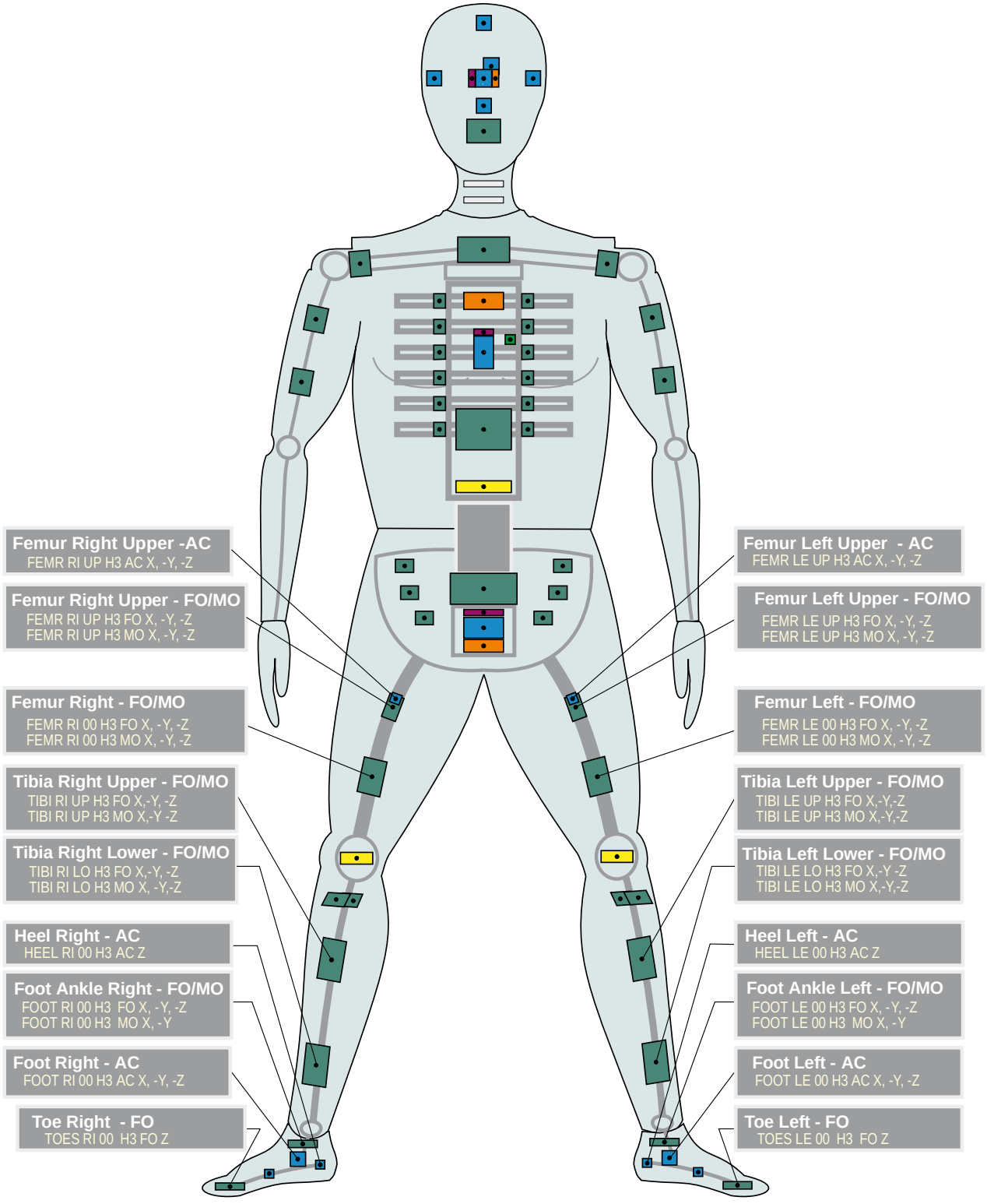
ISO_H3_2_161_20130410.EMF

-> H3 <- 2 of 4

H3 Hybrid III 50% Male (3)

Valid since Version **1.6.1**

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



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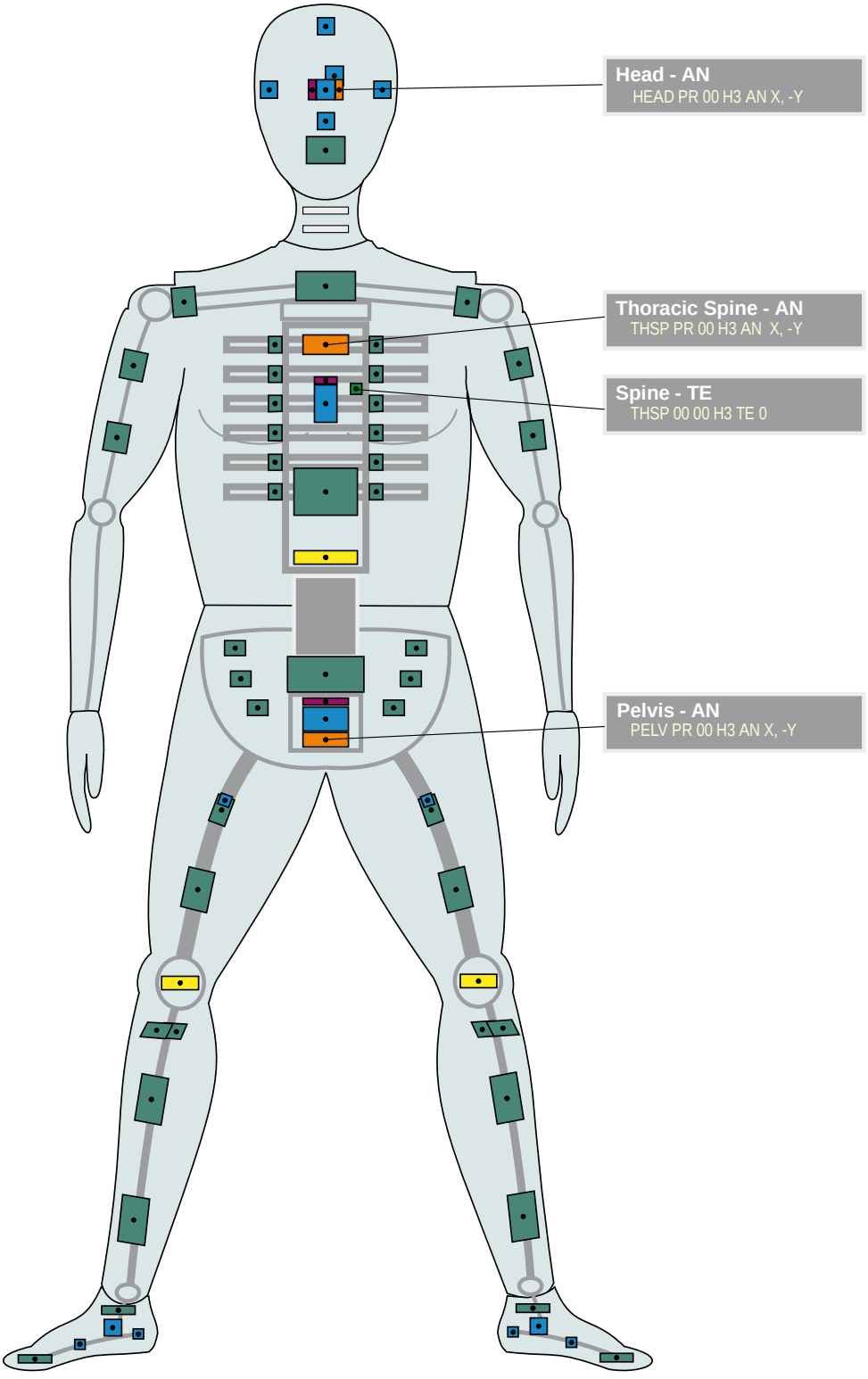
ISO_H3_3_161_20130410.EMF

-> H3 <- 3 of 4

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



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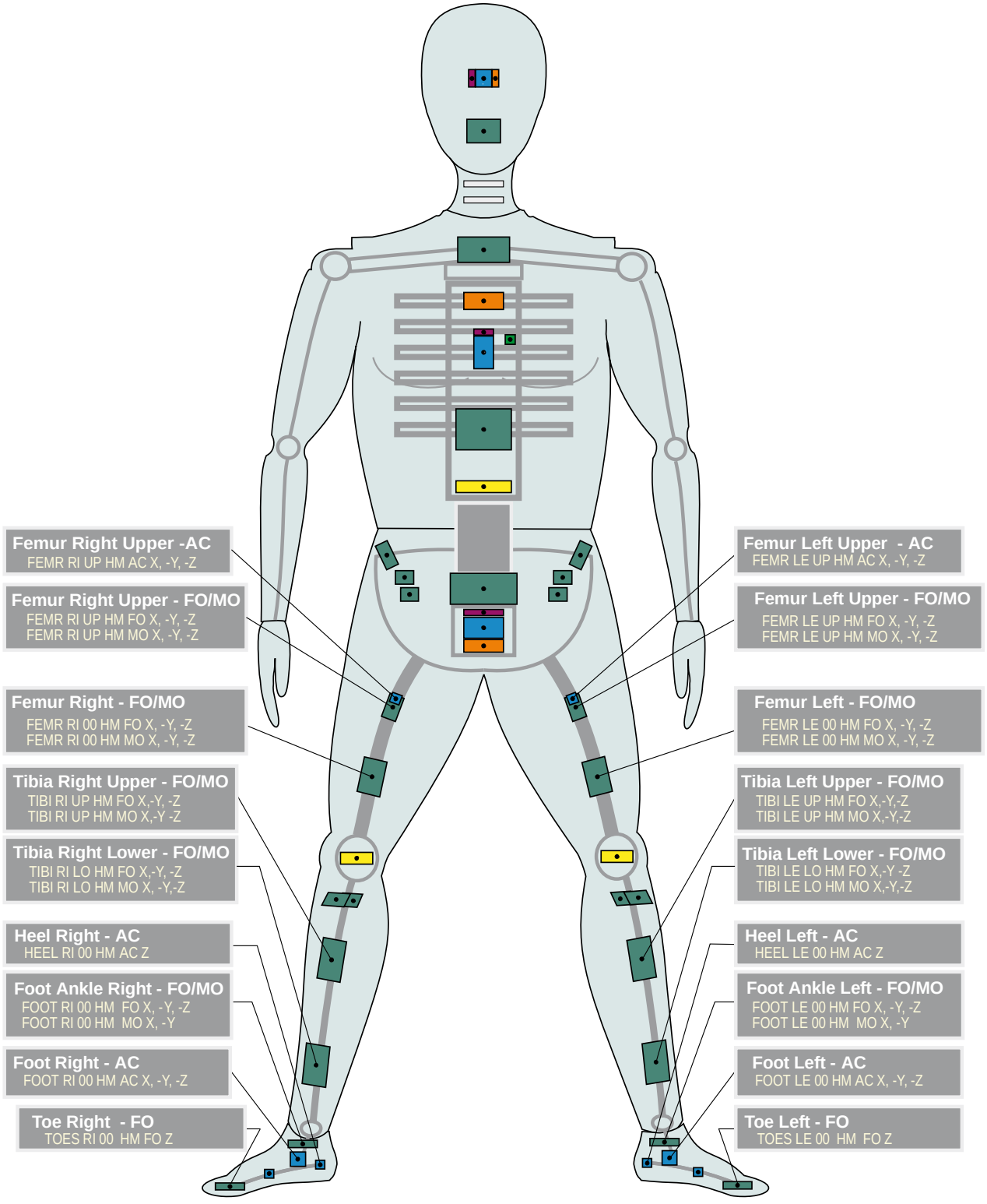
ISO_H3_4_161_20130410.EMF

-> H3 <- 4 of 4

HM Hybrid III 95% Male (3)

Valid since Version **1.6.1**

ISO/TS 13499 – RED C : 2012
HM, Hybrid III 95% male
Additional Instrumentation - Legs
2013-04-10



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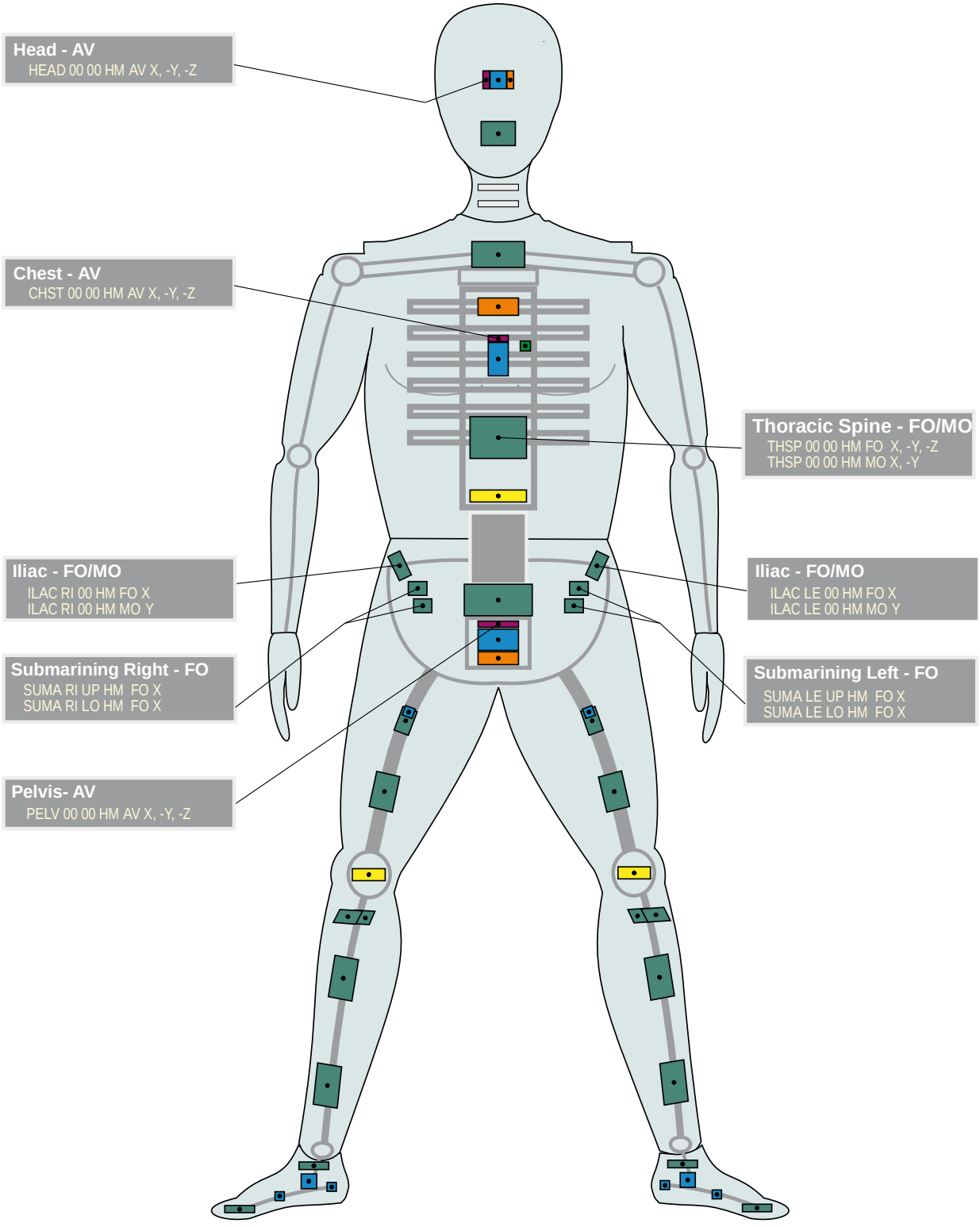
ISO_HM_3_161_20130410.EMF

-> HM <- 3 of 4

HM Hybrid III 95% Male (2)

Valid since Version **1.6.1**

ISO/TS 13499 – RED C : 2012
HM, Hybrid III 95% male
Additional Instrumentation - Head, Torso and Pelvis
2013-04-10



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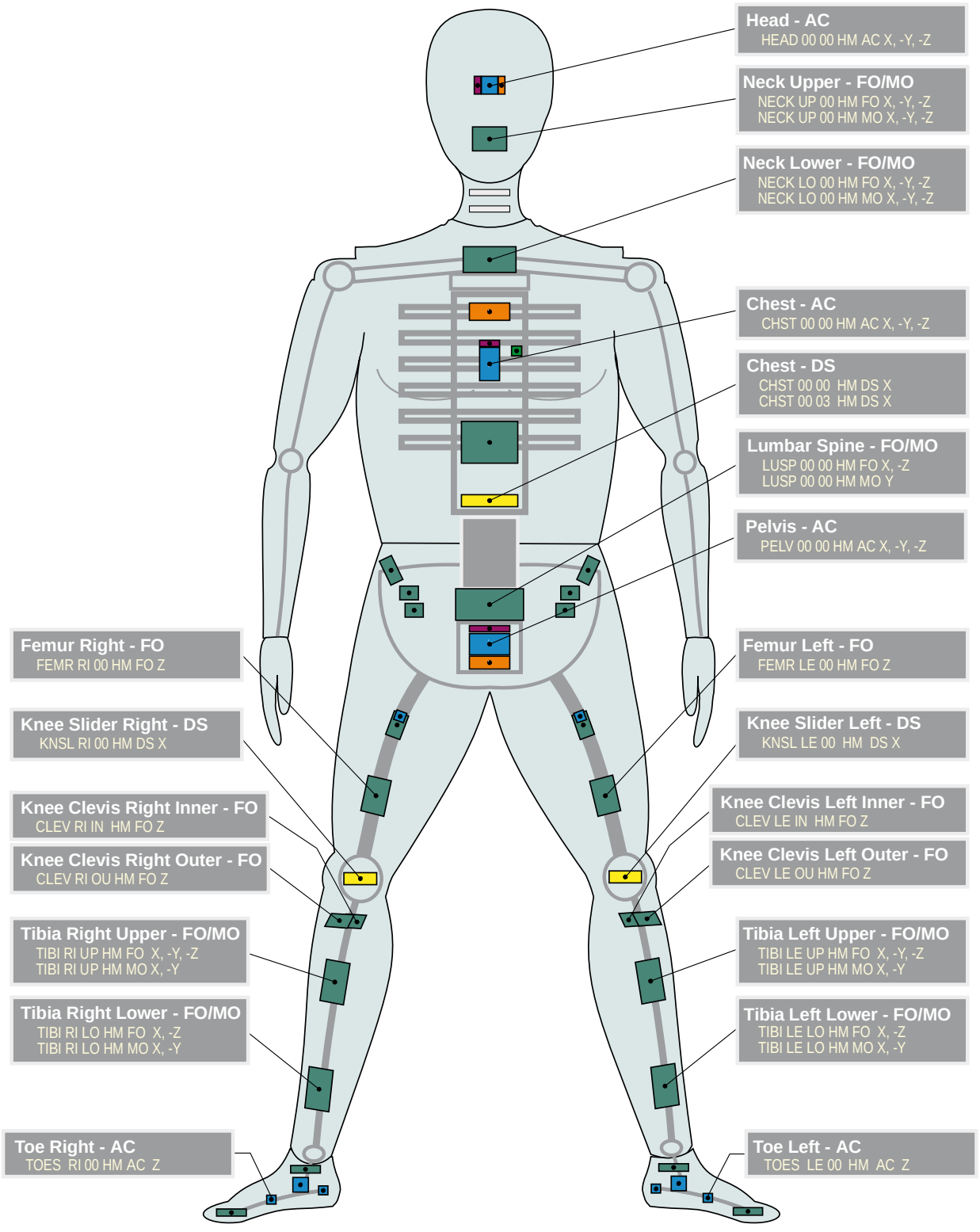
ISO_HM_2_161_20130410.EMF

-> HM <- 2 of 4

HM Hybrid III 95% Male (1)

Valid since Version **1.6.1**

ISO/TS 13499 – RED C : 2012
HM, Hybrid III 95% male
Standard Instrumentation
2013-04-10



ISO-HM_20130410

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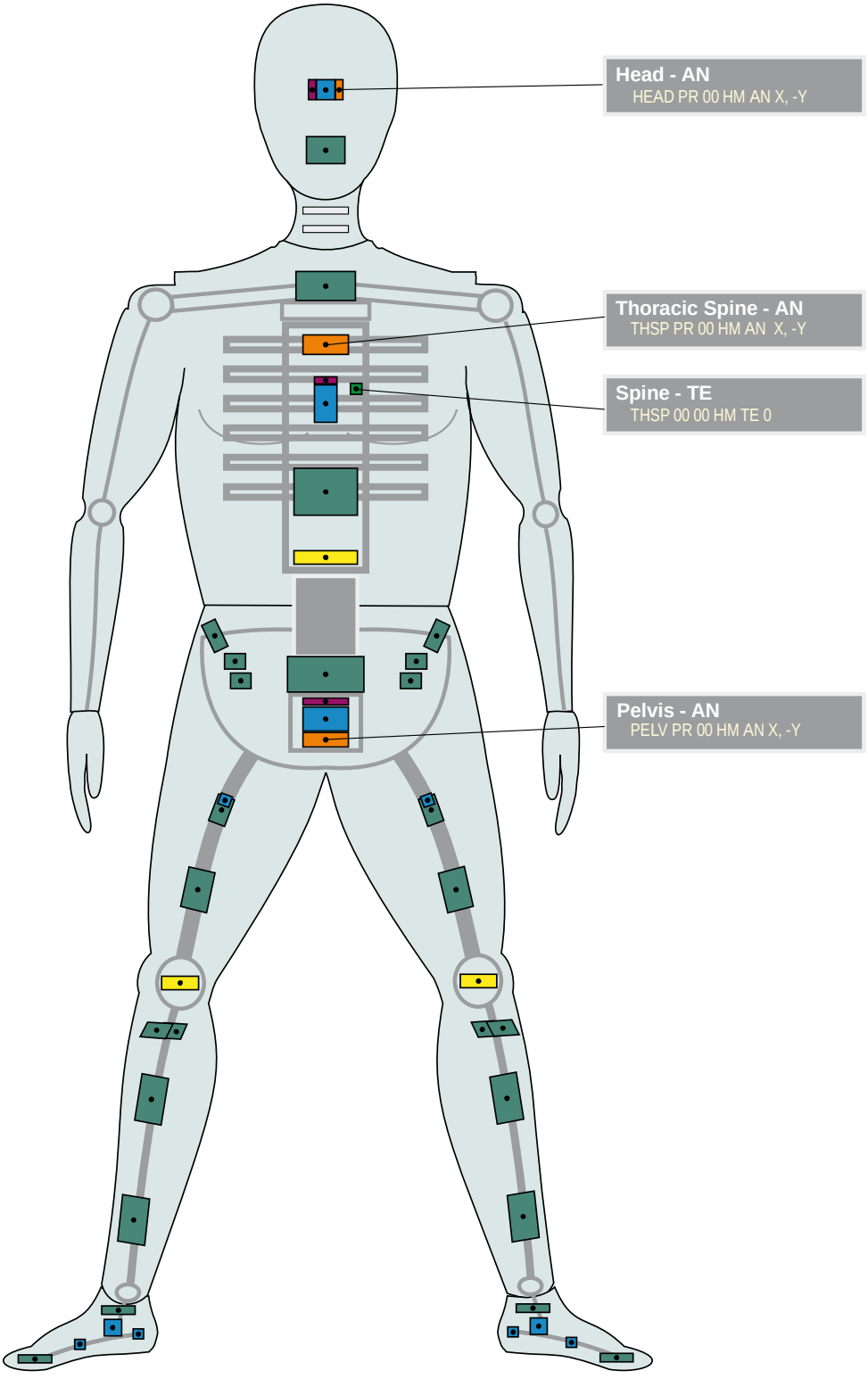
ISO_HM_1_161_20130410.EMF

-> HM <- 1 of 4

HM Hybrid III 95% Male (4)

Valid since Version **1.6.1**

ISO/TS 13499 – RED C : 2012
HM, Hybrid III 95% male
Static measurements, other channels
2013-04-10



ISO-HM_20130410

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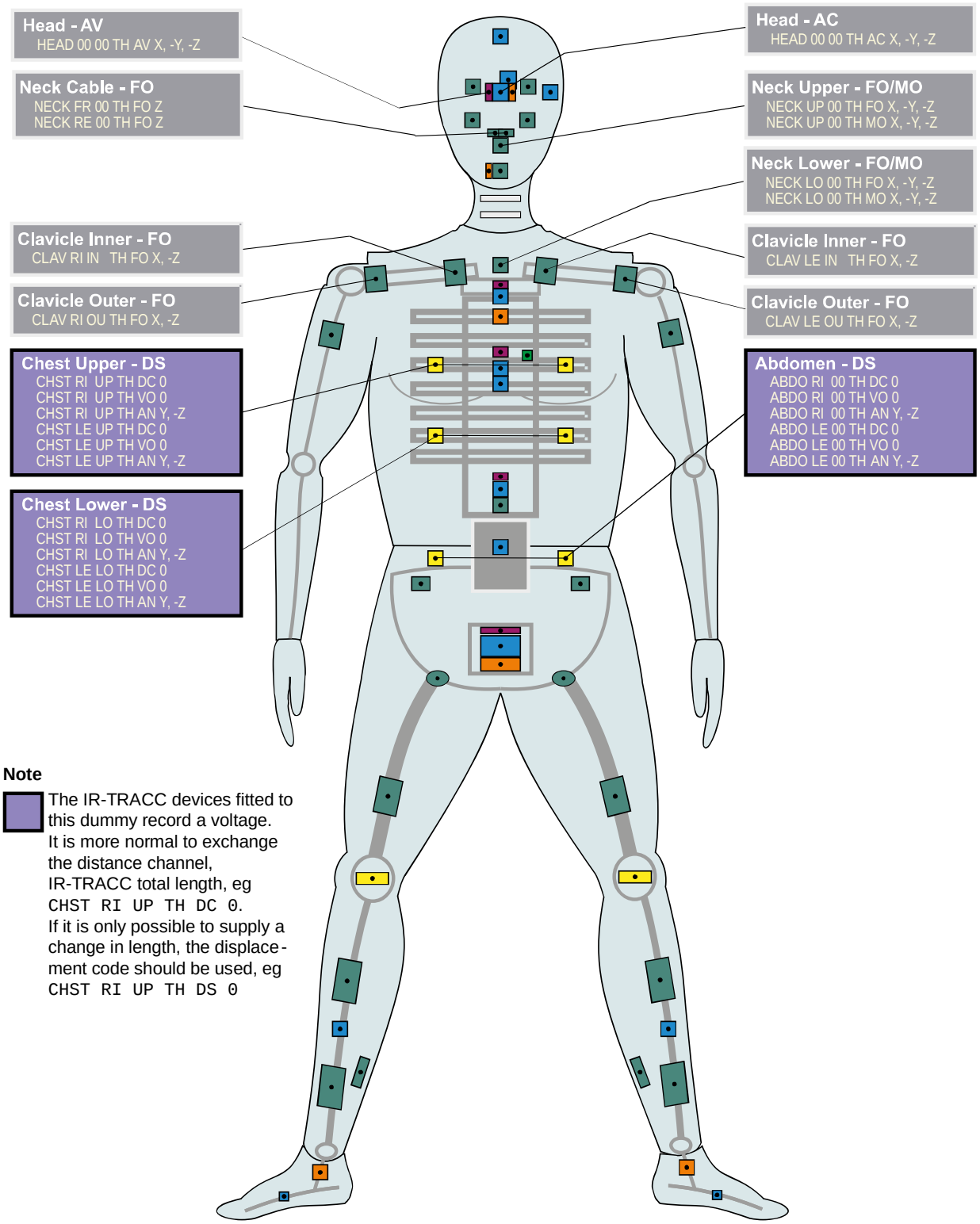
ISO_HM_4_161_20130410.EMF

-> HM <- 4 of 4

TH THOR 50th (1)

Valid since Version **1.6.2.p1**

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



Note

The IR-TRACC devices fitted to this dummy record a voltage. It is more normal to exchange the distance channel, IR-TRACC total length, eg `CHST RI UP TH DC 0`. If it is only possible to supply a change in length, the displacement code should be used, eg `CHST RI UP TH DS 0`

ISO-TH_20171213

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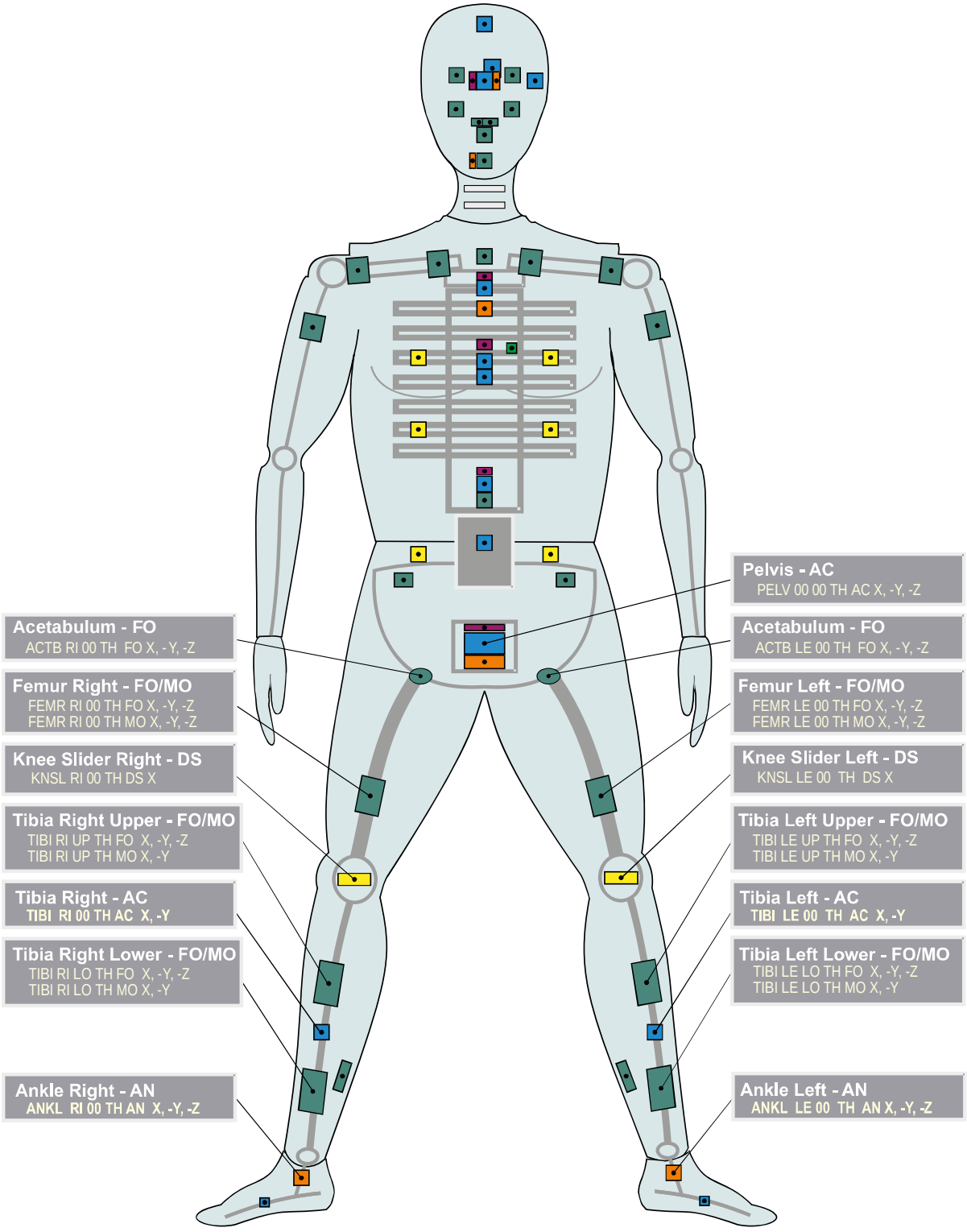
ISO_TH_1_162p2_20171213.EMF

-> TH <- 1 of 4

TH THOR 50th (2)

Valid since Version **1.6.2.p1**

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



ISO-TH_20171213

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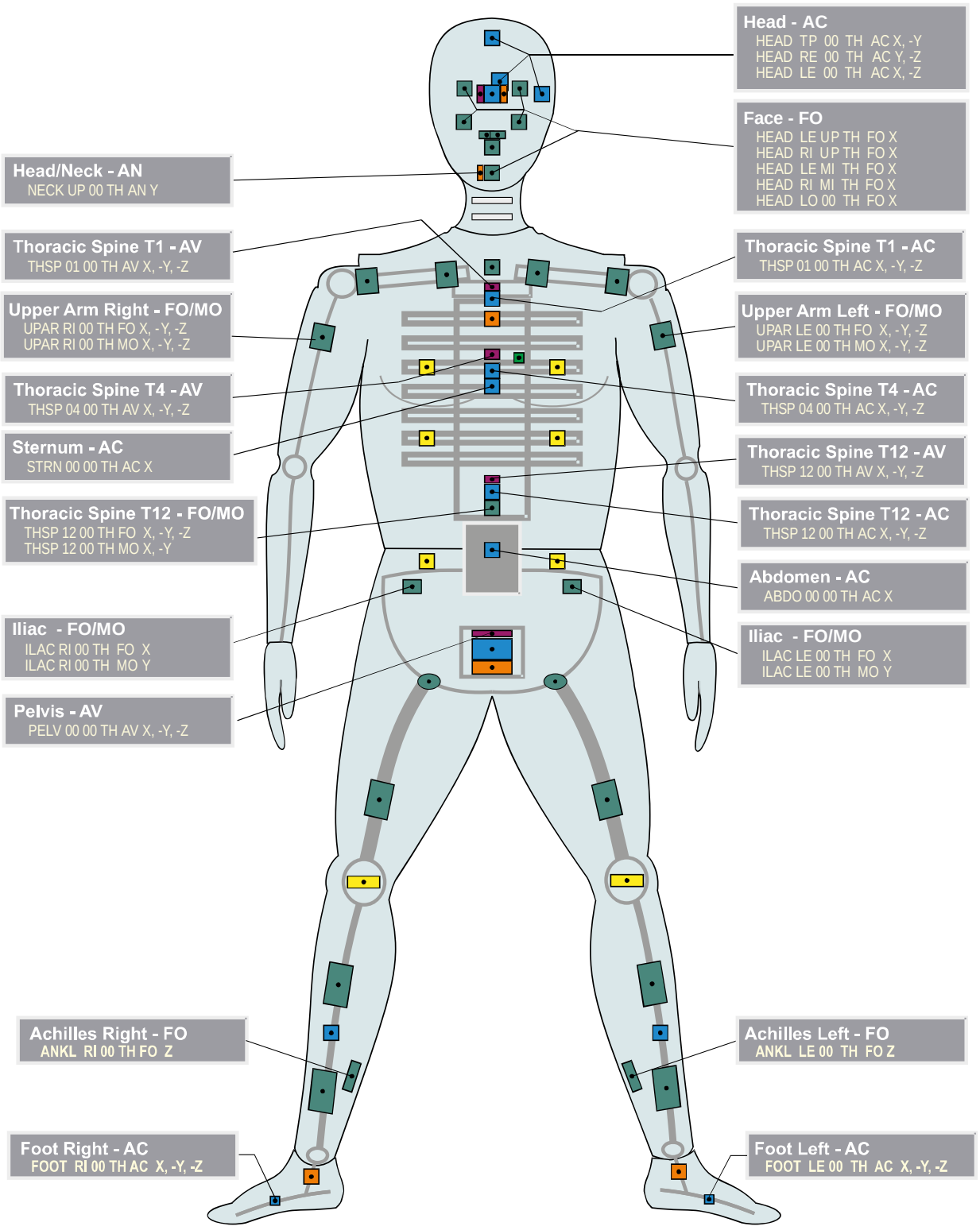
and Dirk Vetter, IAT mbH

ISO_TH_2_162p2_20171213.EMF

TH THOR 50th (3)

Valid since Version **1.6.2.p1**

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



ISO-TH_20171213

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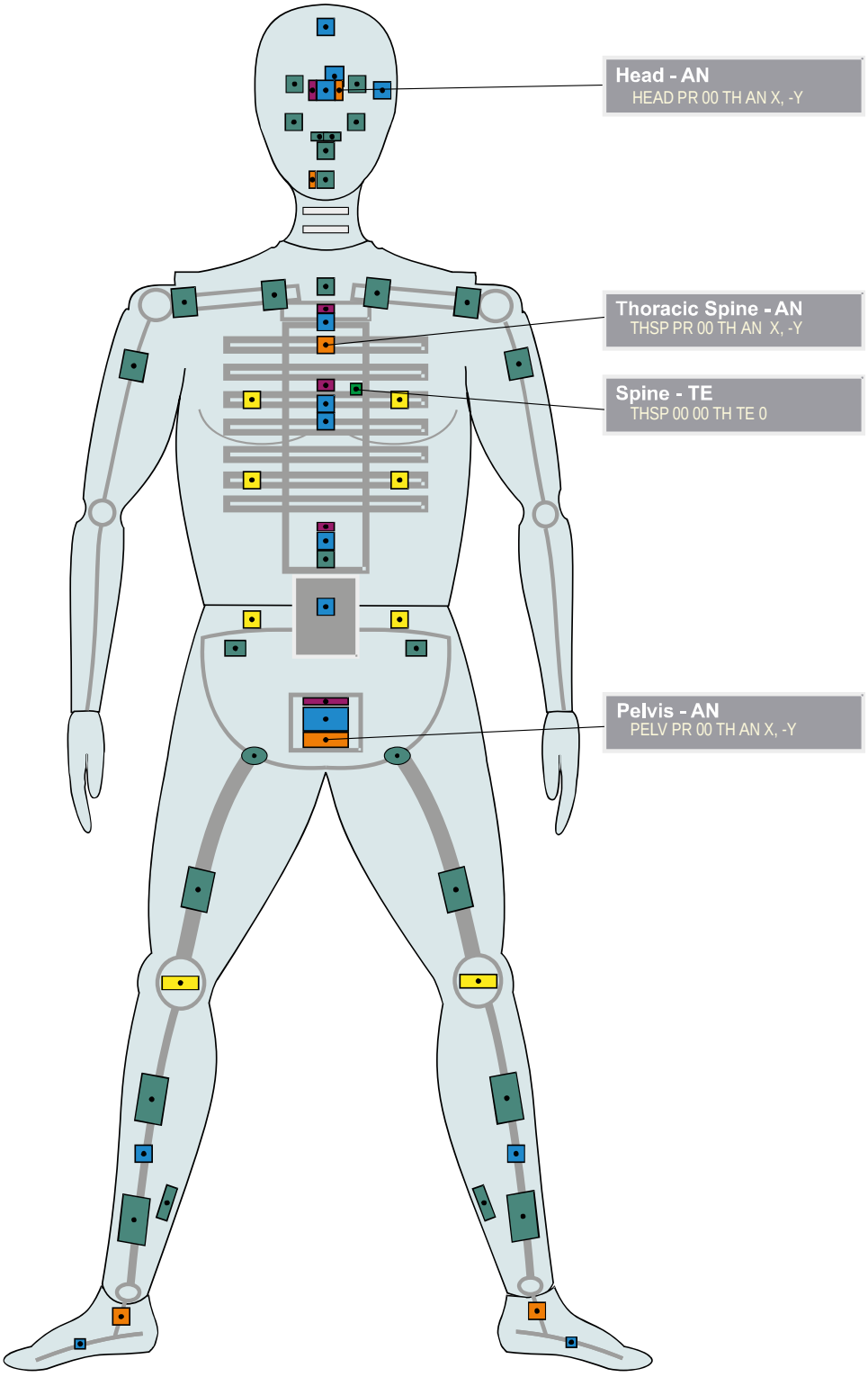
TH THOR 50th (4)

Valid since Version **1.6.2.p2**

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



ISO-TH_20171213

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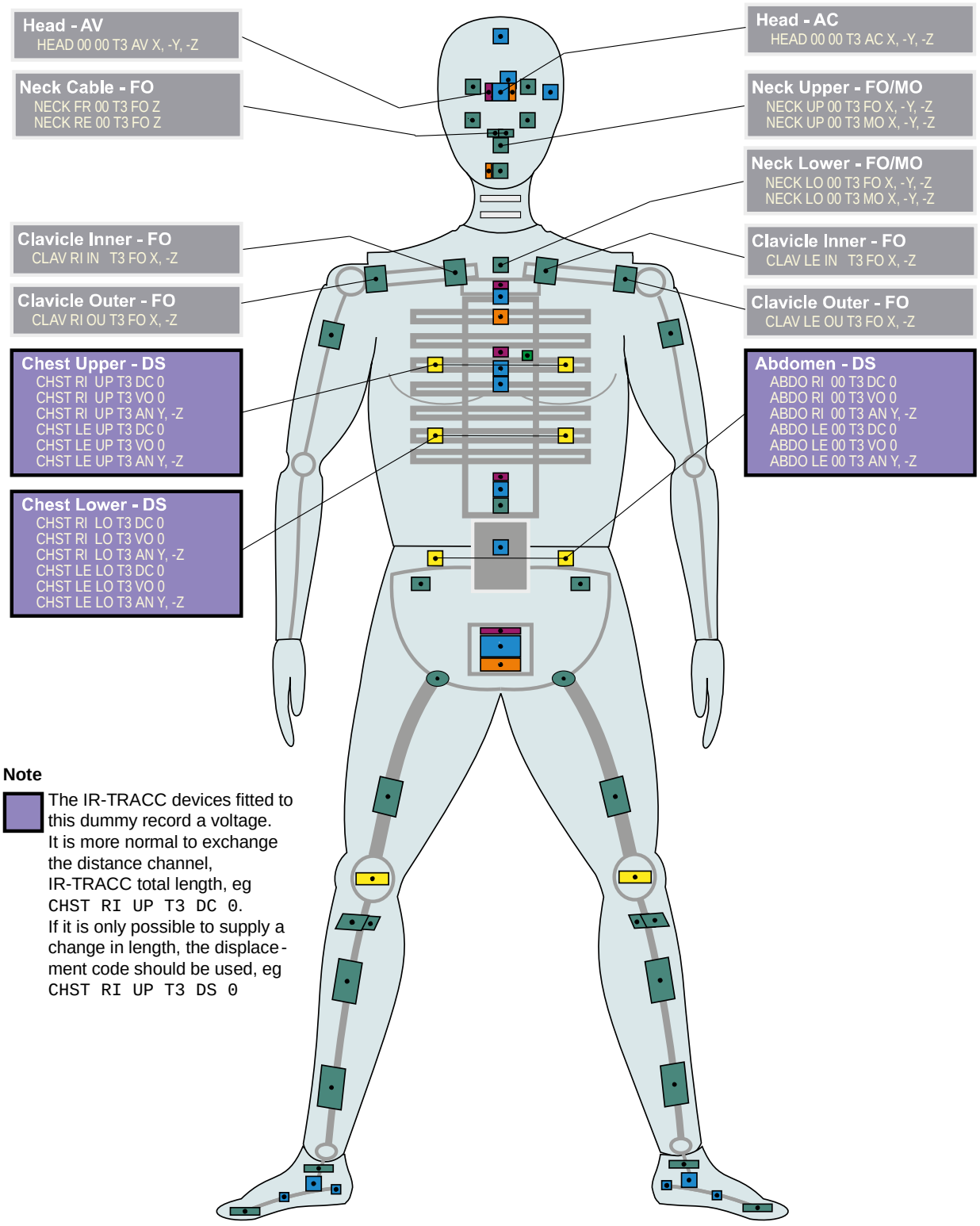
ISO_TH_4_162p2_20171213.EMF

-> TH <- 4 of 4

T3 THOR with H3 Legs (1)

Valid since Version **1.6.2.p3**

ISO/TS 13499 – RED C : 2018
T3, THOR 50% male + H3 50% Lower Legs
Standard Instrumentation: Upper Body
2018-03-21



Note

The IR-TRACC devices fitted to this dummy record a voltage. It is more normal to exchange the distance channel, IR-TRACC total length, eg `CHST RI UP T3 DC 0`. If it is only possible to supply a change in length, the displacement code should be used, eg `CHST RI UP T3 DS 0`

ISO-T3_20180321

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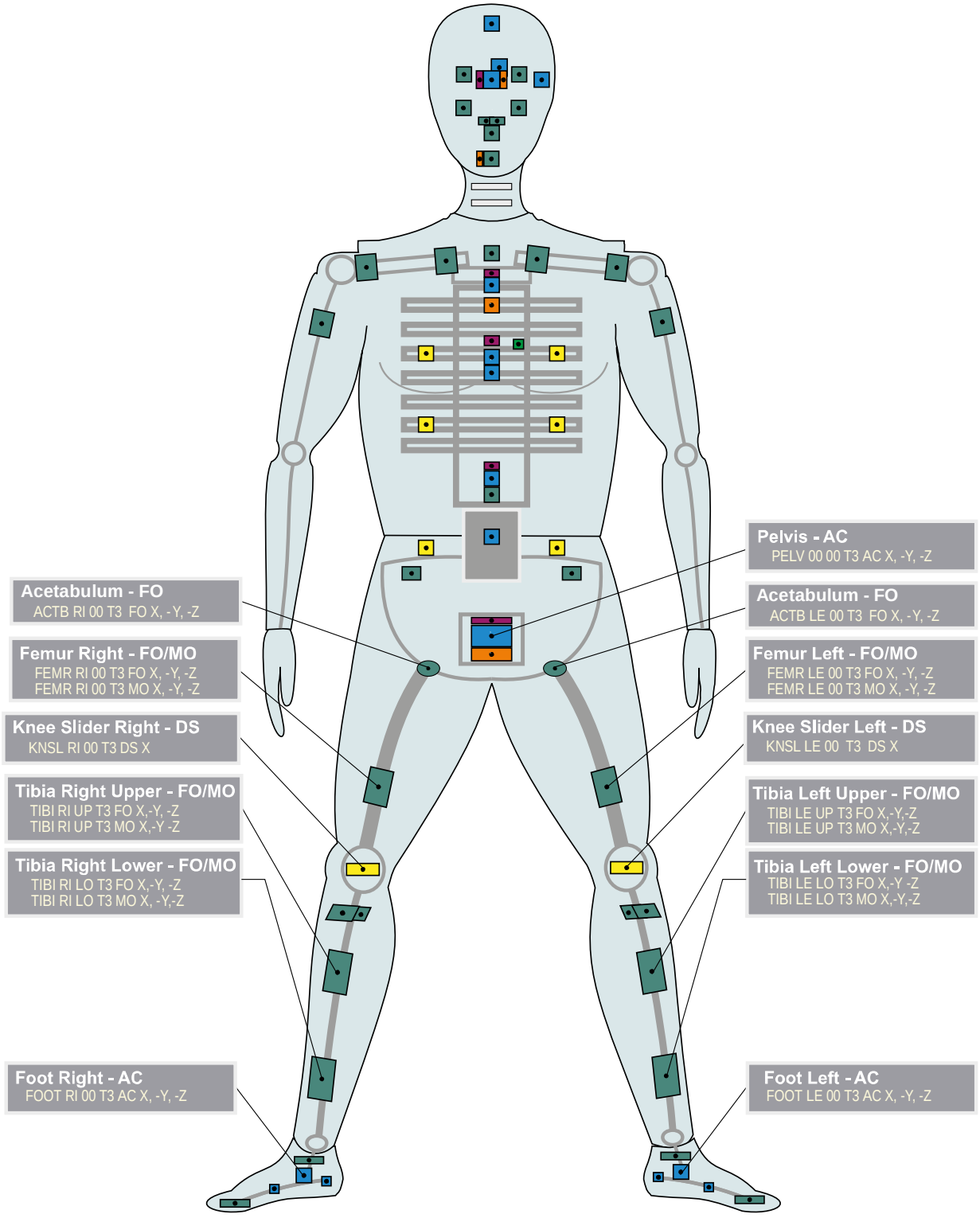
T3 THOR with H3 Legs (2)

Valid since Version **1.6.2.p3**

ISO/TS 13499 – RED C : 2018
T3, THOR 50% male + H3 50% Lower Legs
Standard Instrumentation: Lower Body
2018-03-21



ISO-T3_20180321

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and Dirk Vetter, IAT mbH

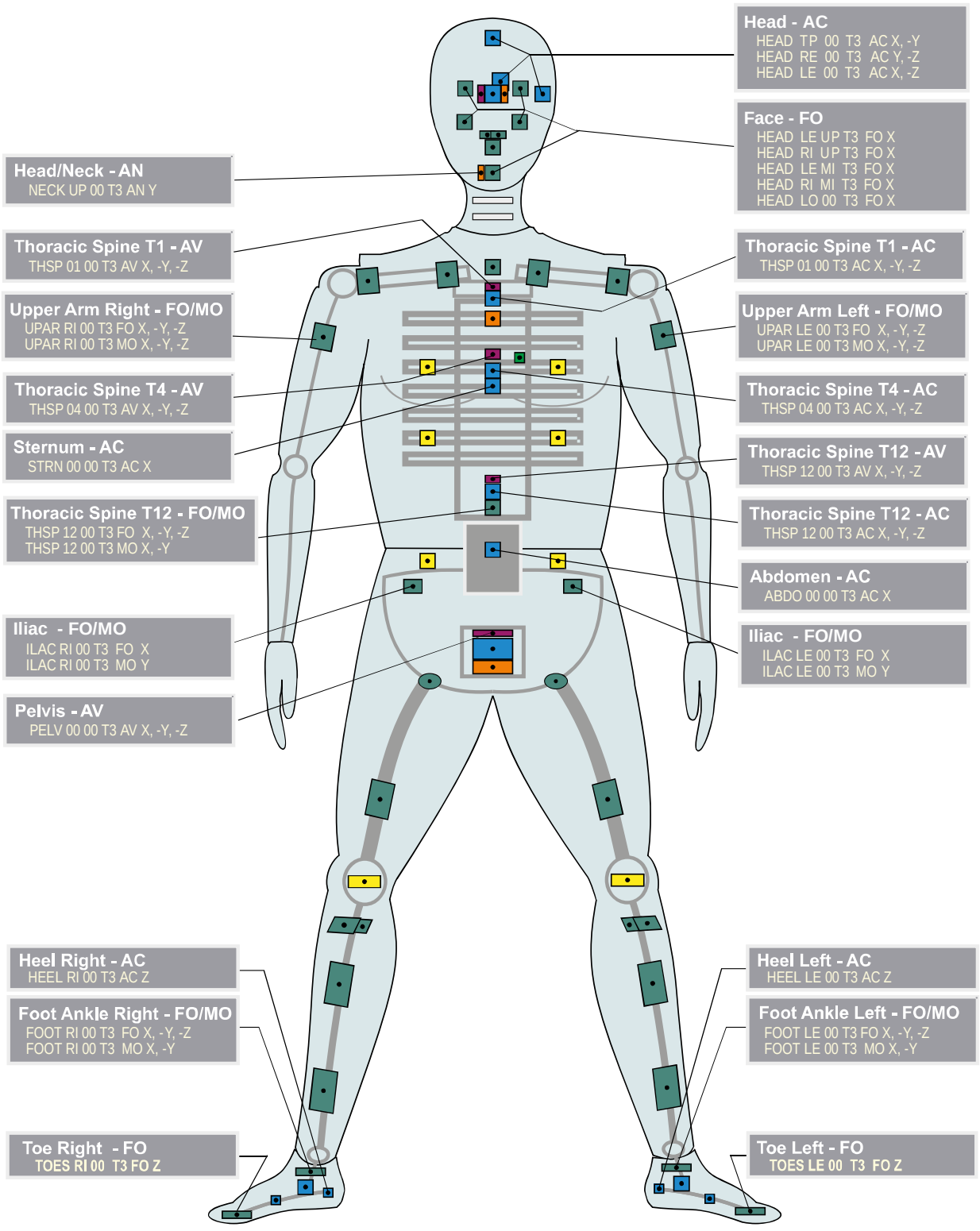
ISO_T3_2_162p3_20180321.EMF

-> T3 <- 2 of 4

T3 THOR with H3 Legs (3)

Valid since Version **1.6.2.p3**

ISO/TS 13499 – RED C : 2018
T3, THOR 50% male + H3 50% Lower Legs
Additional Instrumentation: Upper and Lower Body
2018-03-21



ISO-T3_20180321

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and Dirk Vetter, IAT mbH

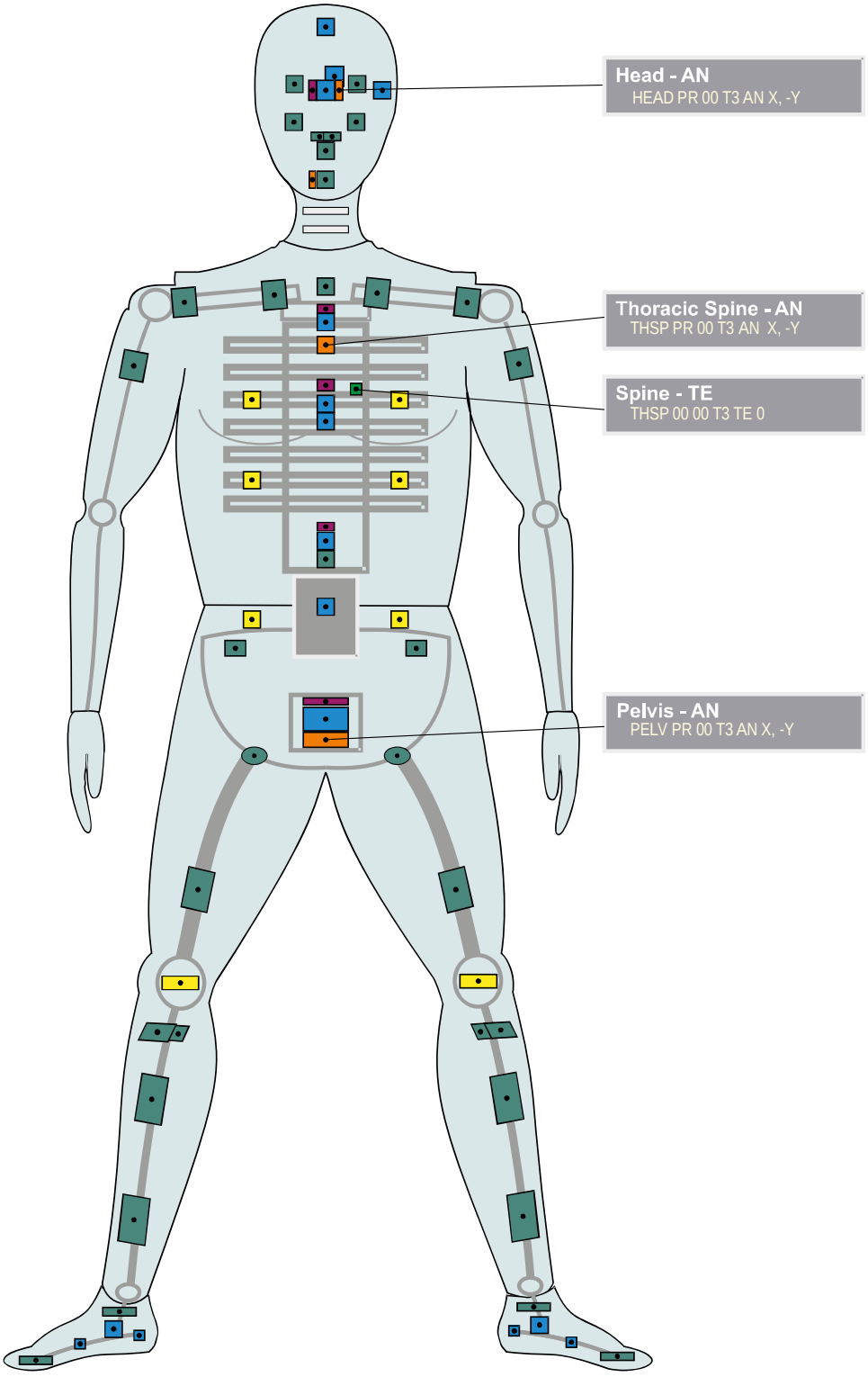
ISO_T3_3_162p3_20180321.EMF

-> T3 <- 3 of 4

T3 THOR with H3 Legs (4)

Valid since Version **1.6.2.p3**

ISO/TS 13499 – RED C : 2018
T3, THOR 50% male + H3 50% Lower Legs
Static measurements, other channels
2018-03-21



ISO-T3_20180321

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and Dirk Vetter, IAT mbH

ISO_T3_4_162p3_20180321.EMF

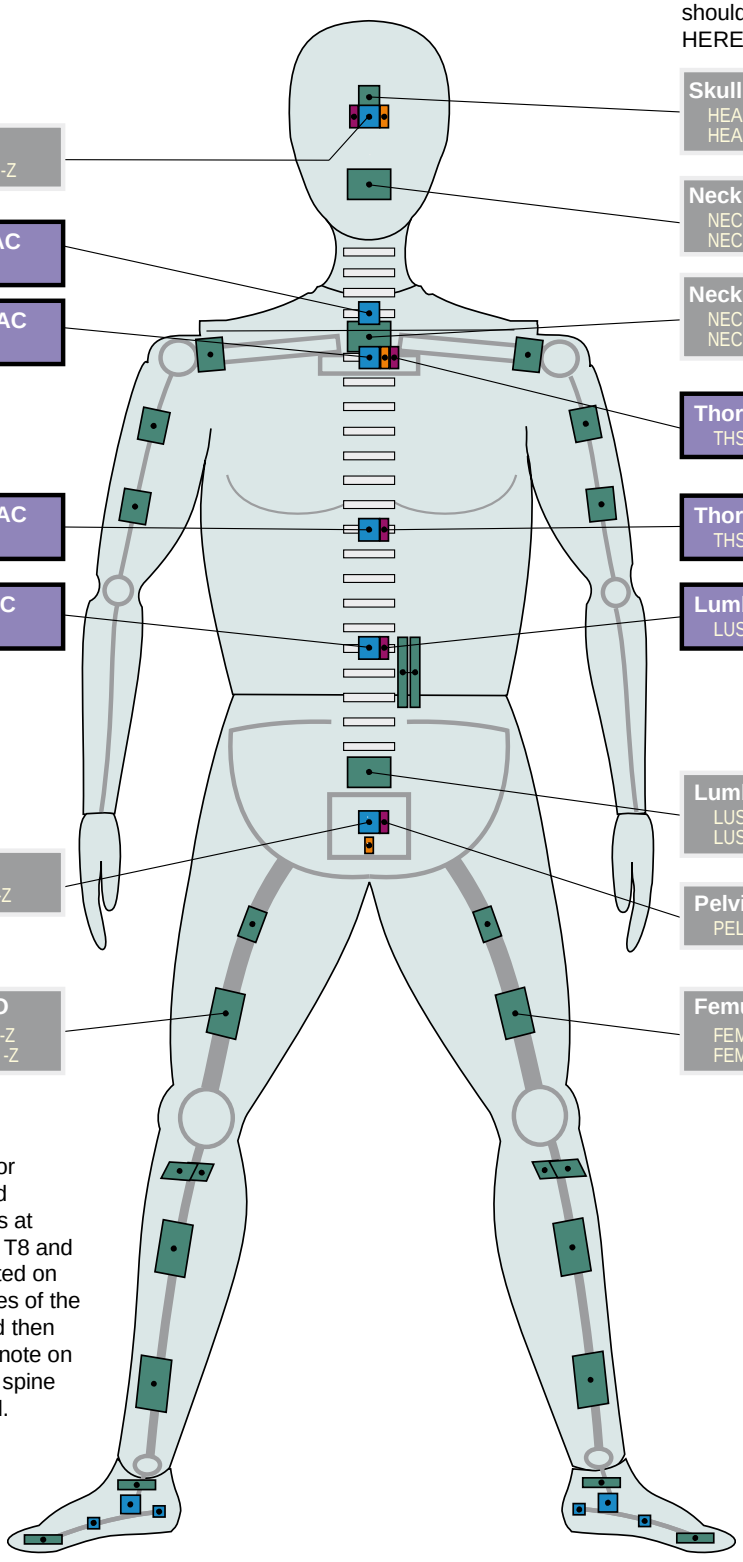
-> T3 <- 4 of 4

BR BioRID (1)

Valid since Version **1.6.1**

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



Head - AC
HEAD 00 00 BR AC X, -Y, -Z

Cervical Spine 04 - AC
CESP 04 00 BR AC X, -Z

Thoracic Spine 01 - AC
THSP 01 00 BR AC X, -Z

Thoracic Spine 08 - AC
THSP 08 00 BR AC X, -Z

Lumbar Spine 01 - AC
LUSP 01 00 BR AC X, -Z

Pelvis - AC
PELV 00 00 BR AC X, -Y, -Z

Femur Right - FO/MO
FEMR RI 00 BR FO X, -Y, -Z
FEMR RI 00 BR MO X, -Y, -Z

Skull Cap - FO/MO
HEAD RE 00 BR FO X, -Z
HEAD RE 00 BR MO Y

Neck Upper - FO/MO
NECK UP 00 BR FO X, -Y, -Z
NECK UP 00 BR MO X, -Y, -Z

Neck Lower - FO/MO
NECK LO 00 BR FO X, -Z
NECK LO 00 BR MO Y

Thoracic Spine 01 - AV
THSP 01 00 BR AV X, -Y, -Z

Thoracic Spine 08 - AV
THSP 08 00 BR AV X, -Y, -Z

Lumbar Spine 01 - AV
LUSP 01 00 BR AV X, -Y, -Z

Lumbar Spine - FO/MO
LUSP 05 00 BR FO X, -Y, -Z
LUSP 05 00 BR MO X, -Y, -Z

Pelvis - AV
PELV 00 00 BR AV X, -Y, -Z

Femur Left - FO/MO
FEMR LE 00 BR FO X, -Y, -Z
FEMR LE 00 BR MO X, -Y, -Z

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-BR_20130710

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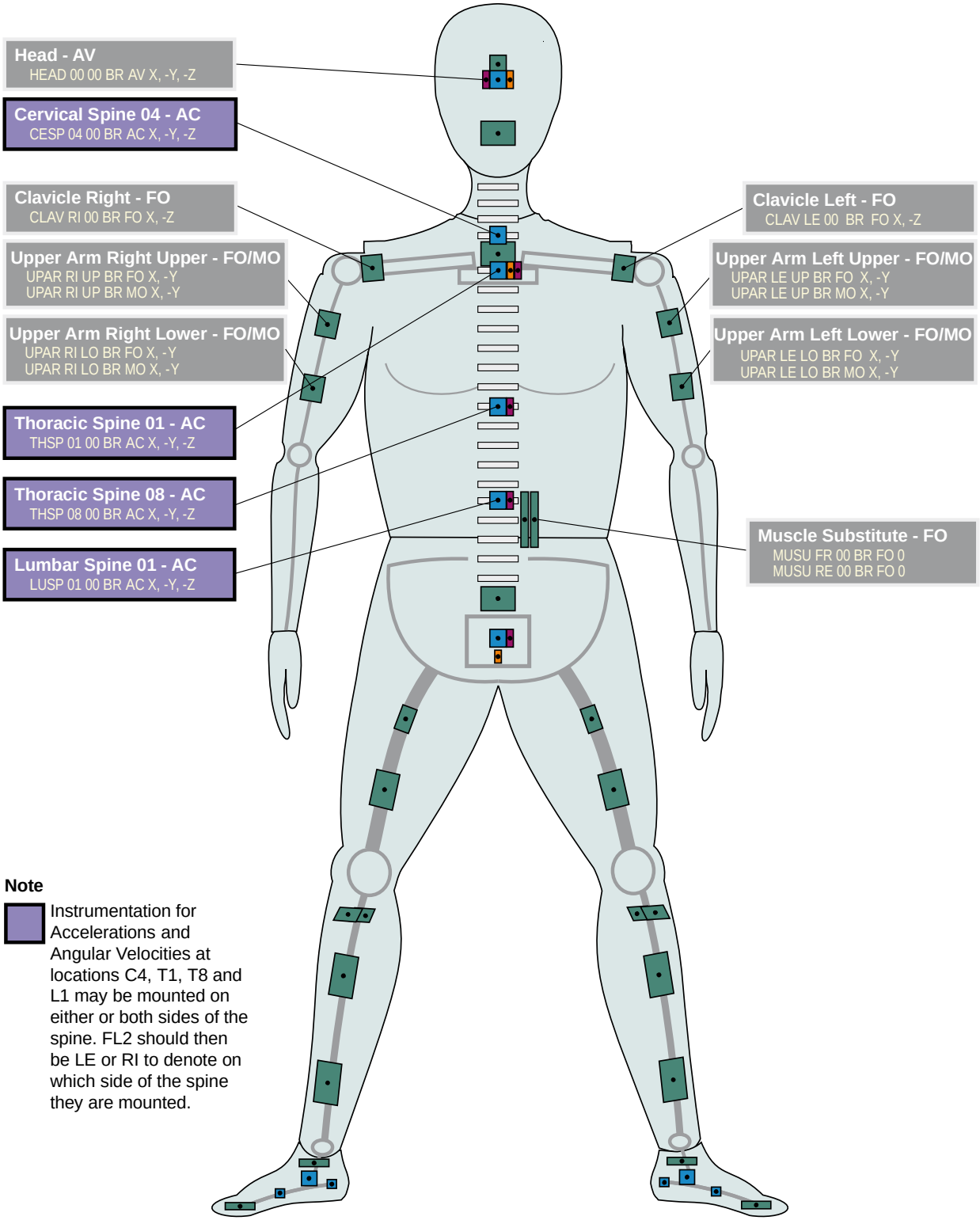
BR BioRID (2)

Valid since Version **1.6.1**

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



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-BR_20130710

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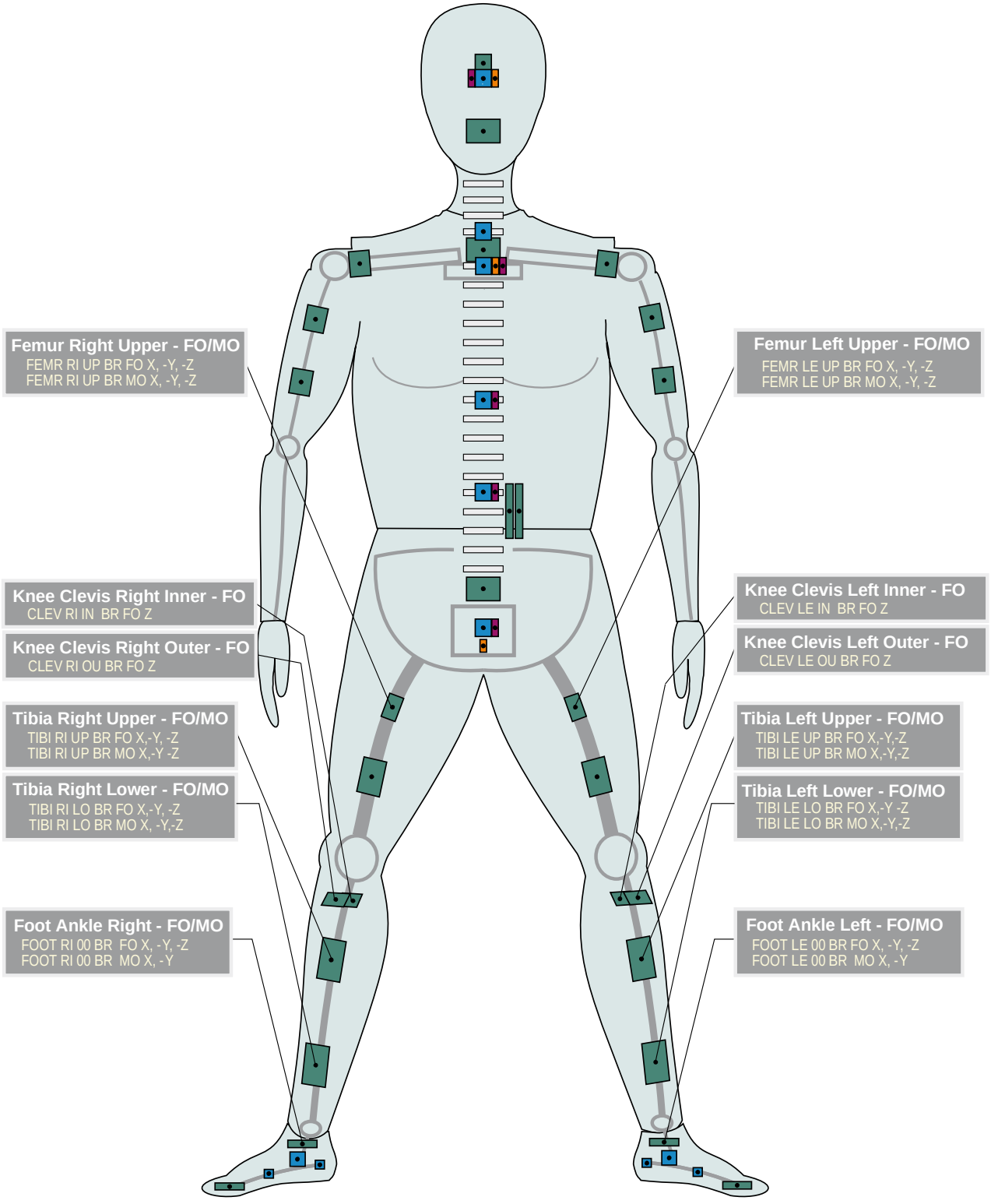
BR BioRID (3)

Valid since Version **1.6.1**

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



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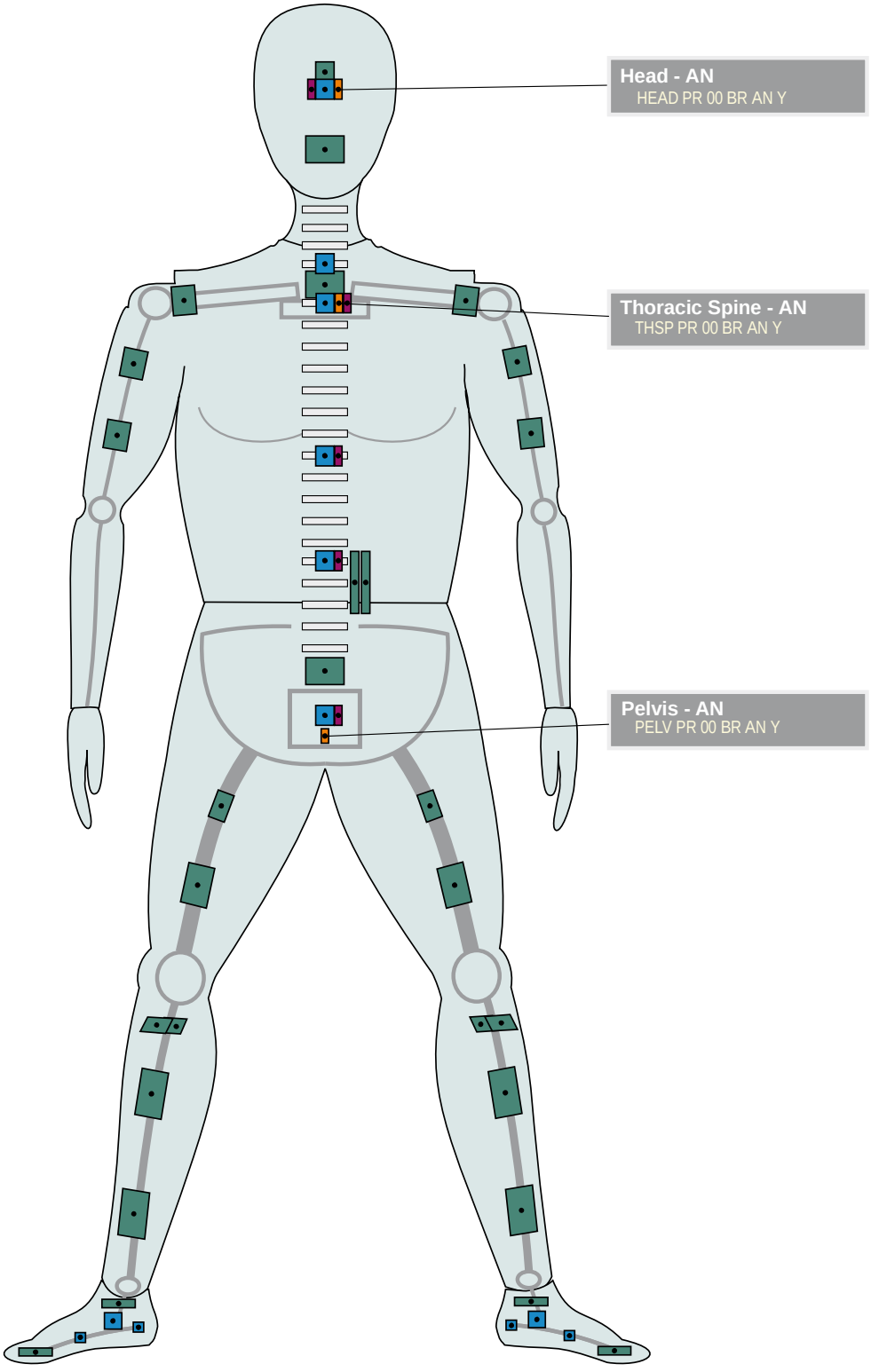
ISO_BR_3_161_20130710.EMF

-> BR <- 3 of 4

BR BioRID (4)

Valid since Version **1.6.1**

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



ISO-BR_20130710

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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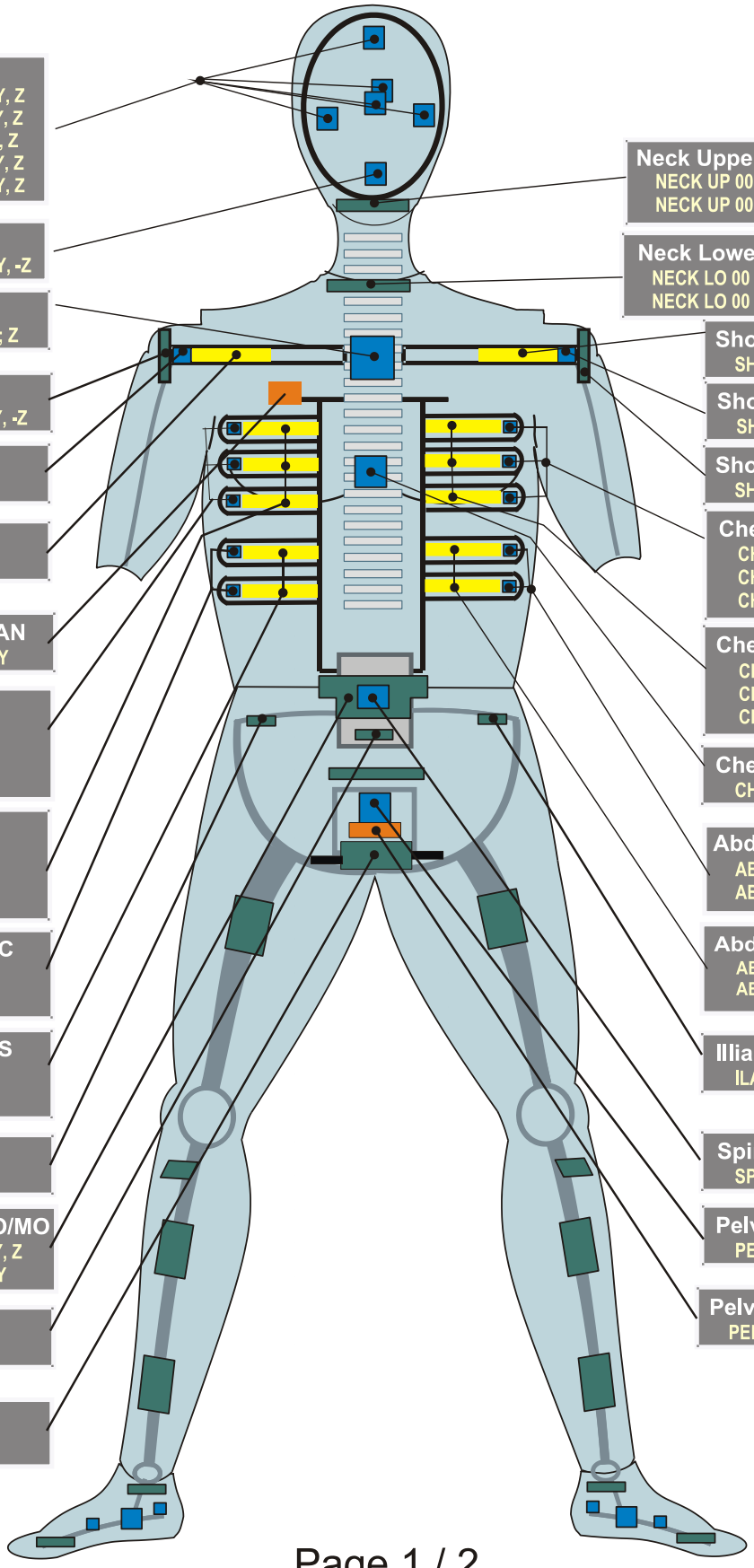
ISO_BR_4_161_20130710.EMF

-> BR <- 4 of 4

BS **Bio-SID**

Valid since Version **1.3**



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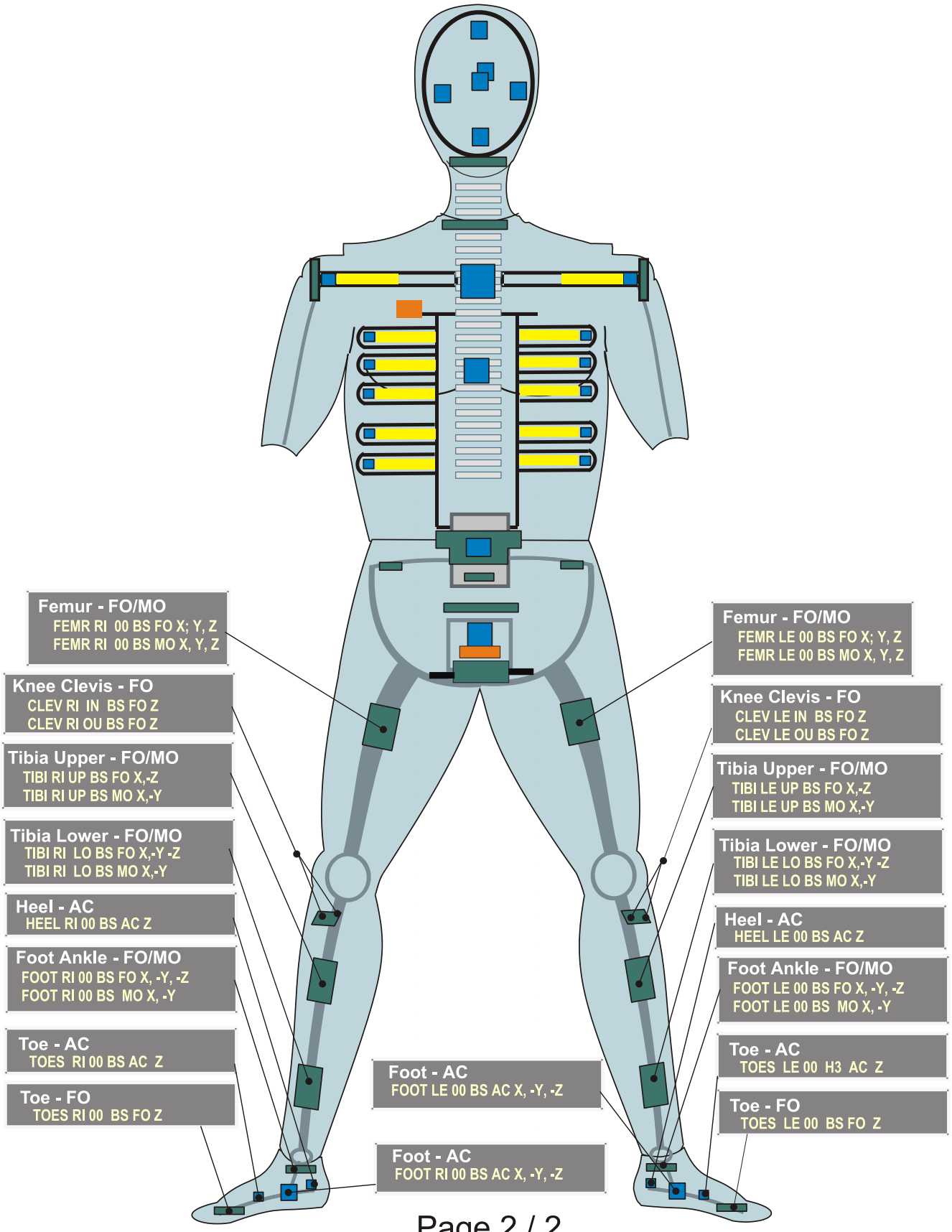
BS_1_13.WMF

-> BS <- 1 of 2

BS **Bio-SID** Valid since Version **1.3**



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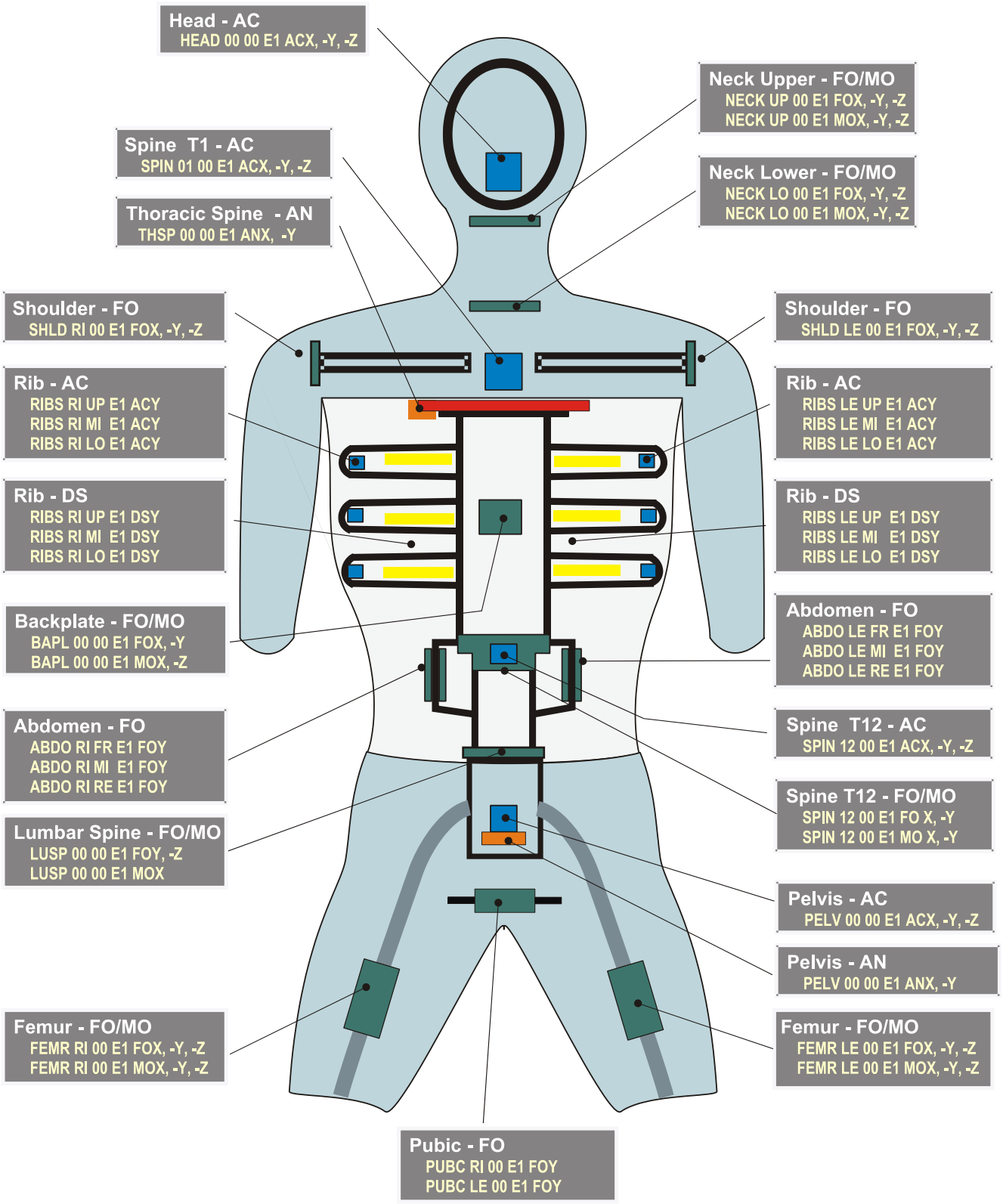
BS_2_13.WMF -> BS <- 2 of 2

E1 EuroSID I

Valid since Version 1.2



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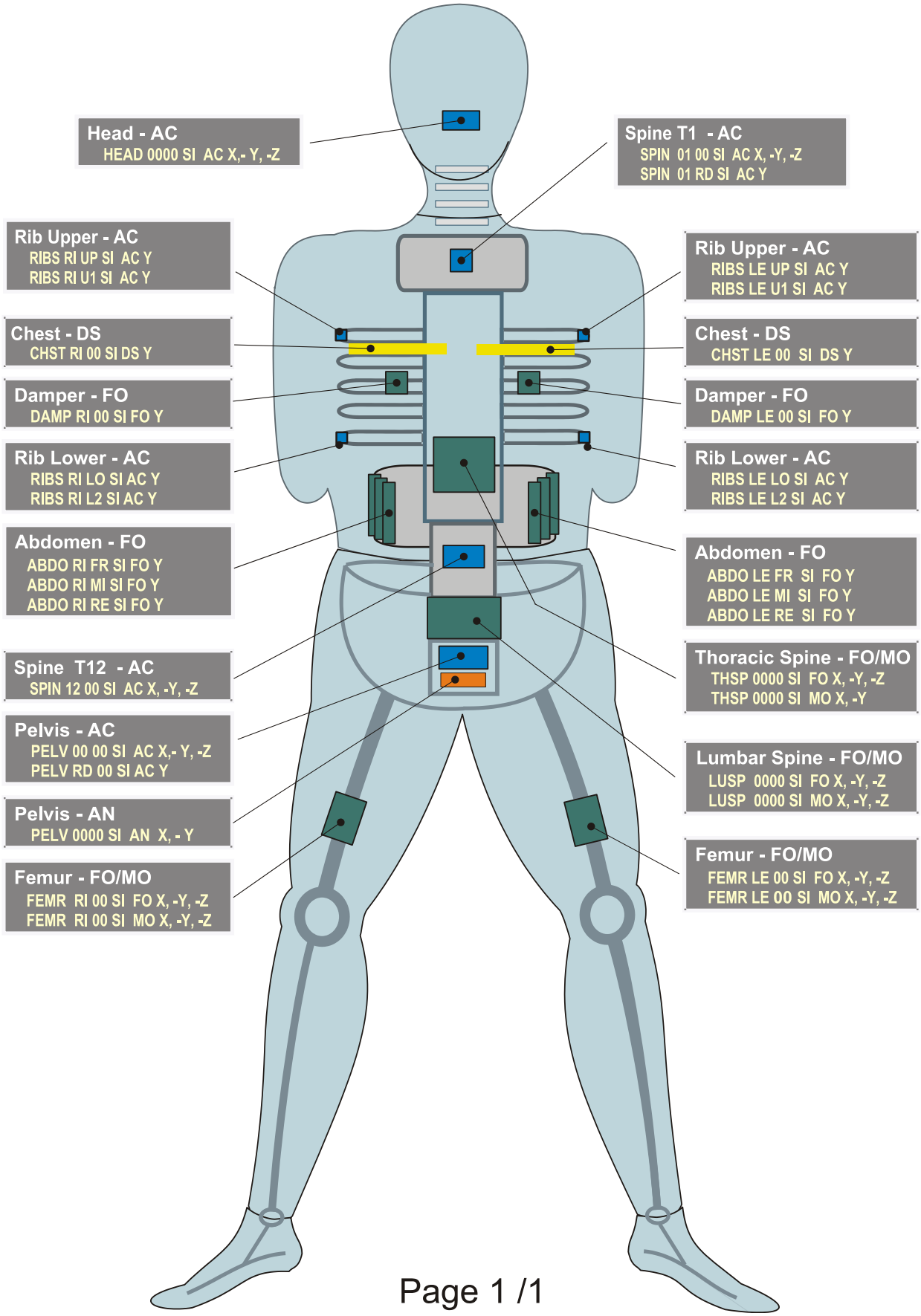
E1_1_12.WMF

-> E1 <- 1 of 1

SI **US SID** Valid since Version **1.2**



Page 1 /1

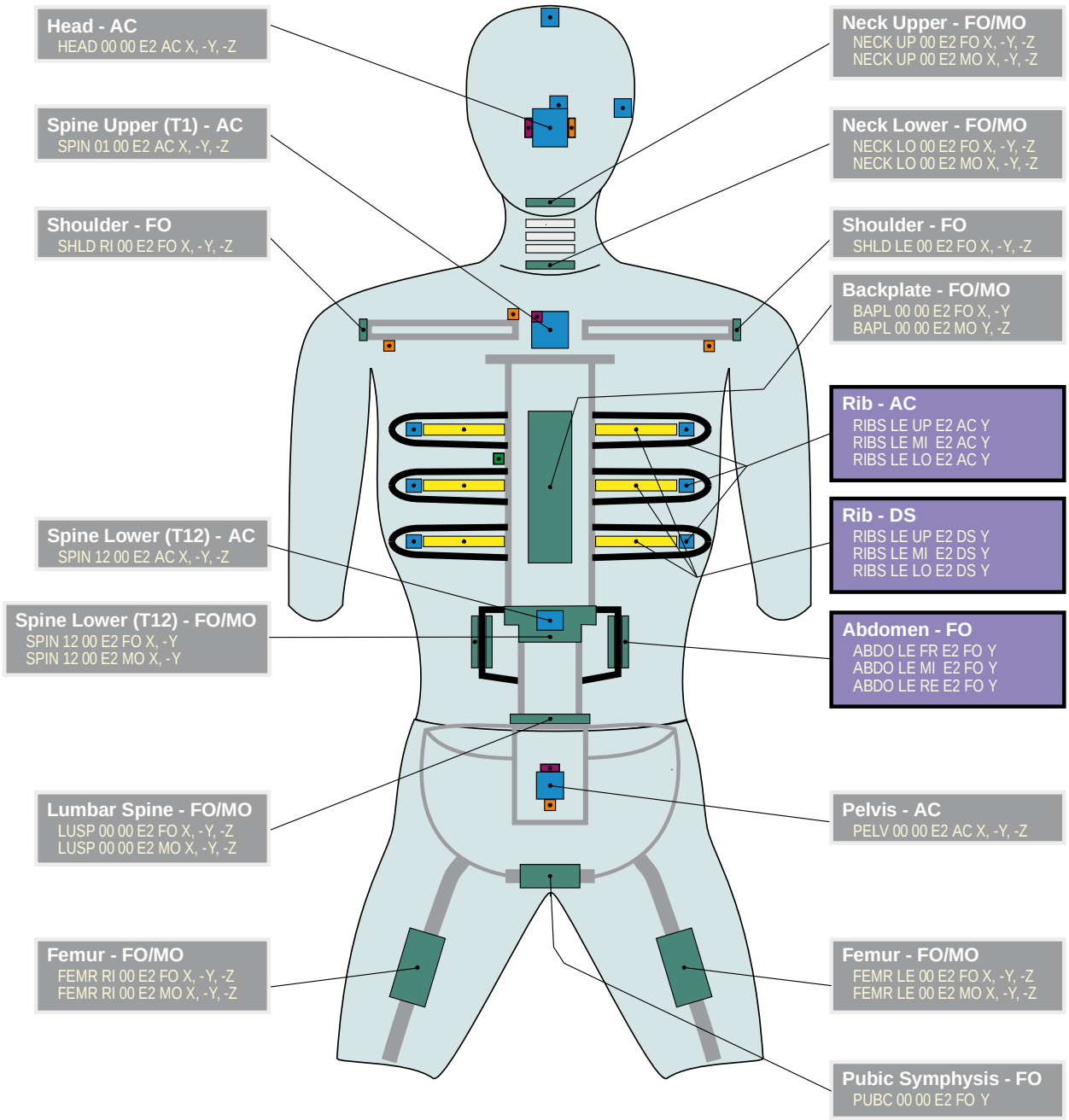
SI_1_12.WMF -> SI <- 1 of 1

E2+ER ES-2 & ES-2re (1)

Valid since Version **1.6.1**

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

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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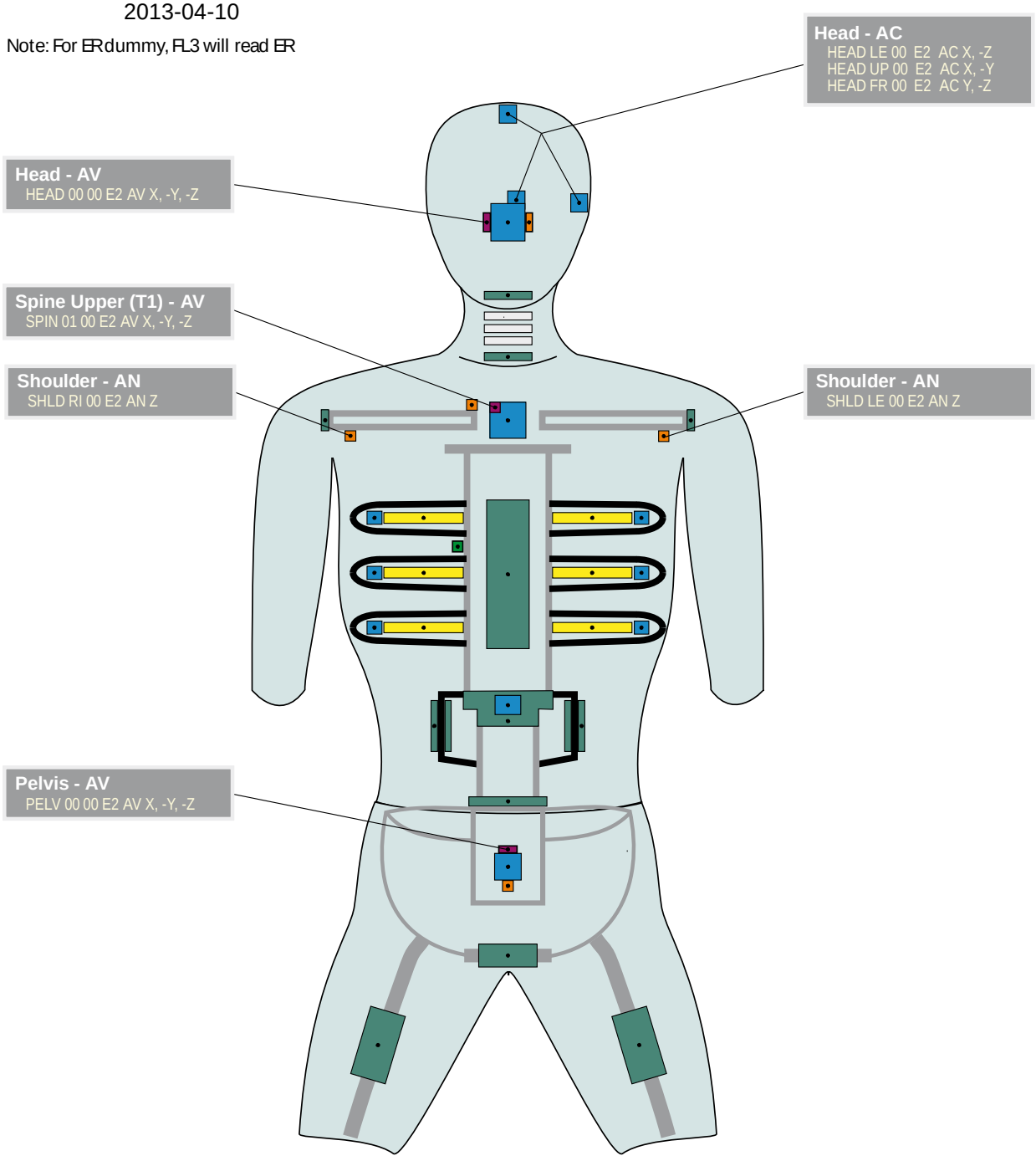
E2+ER ES-2 & ES-2re (2)

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 ER dummy, FL3 will read ER

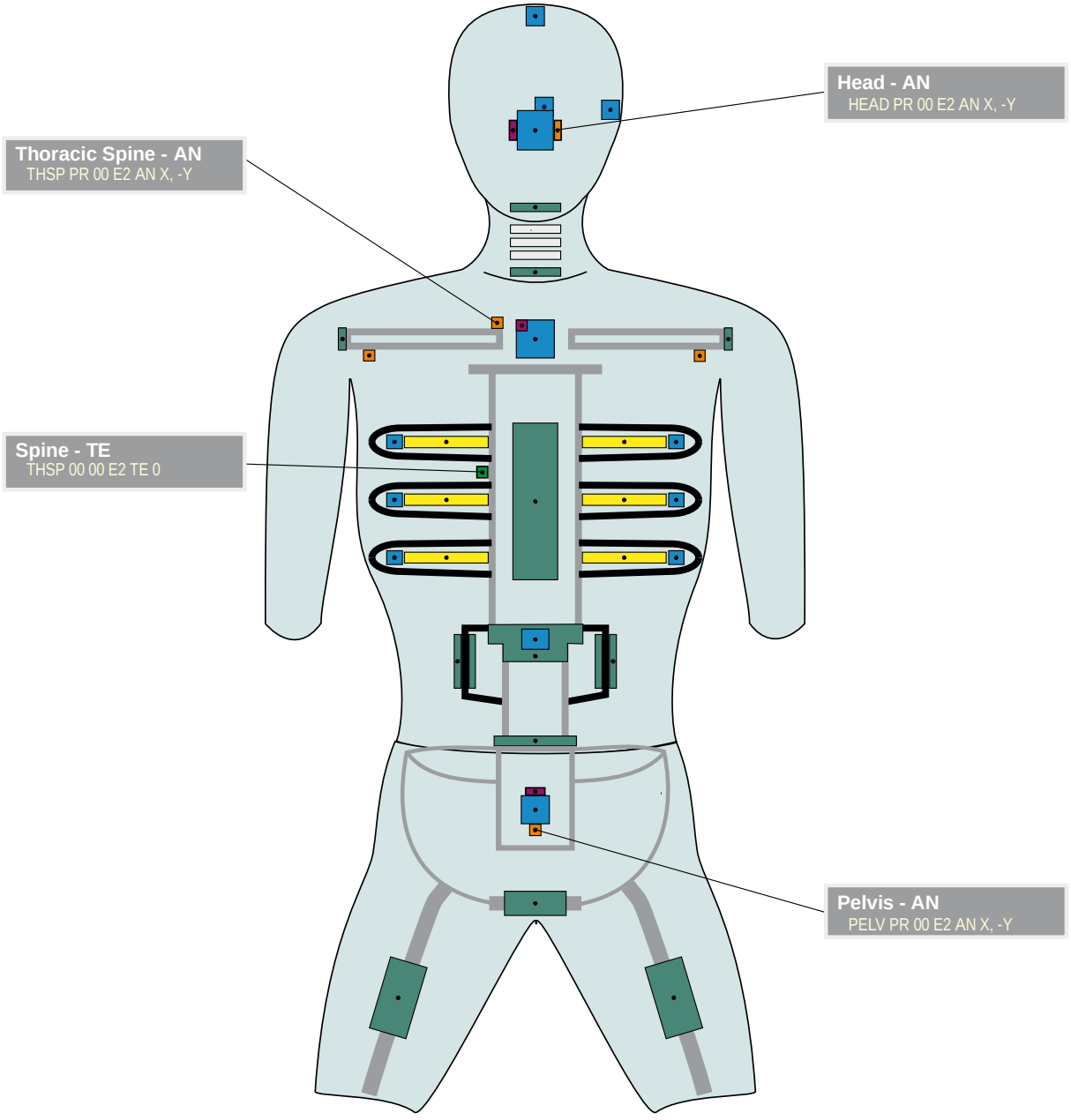


E2+ER ES-2 & ES-2re (3)

Valid since Version **1.6.1**

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

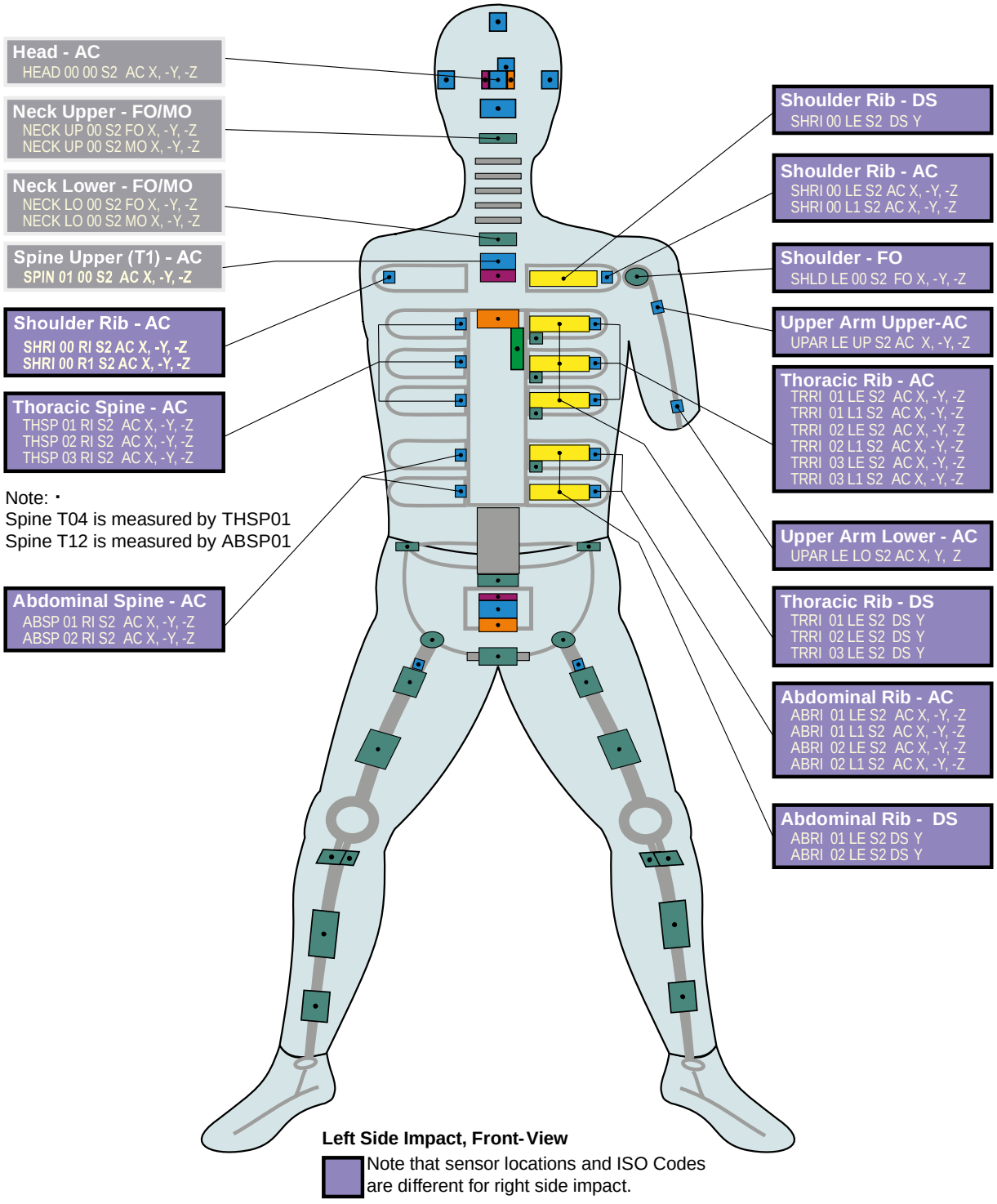
Note: For ER dummy, FL3 will read ER



S2 SID IIs (1)

Valid since Version **1.6.2**

ISO/TS 13499 – RED C : 2019(E)
S2, SID IIs
Standard Instrumentation (upper body)
2019-07-17



Left Side Impact, Front-View

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

ISO-S2_20190717

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force·
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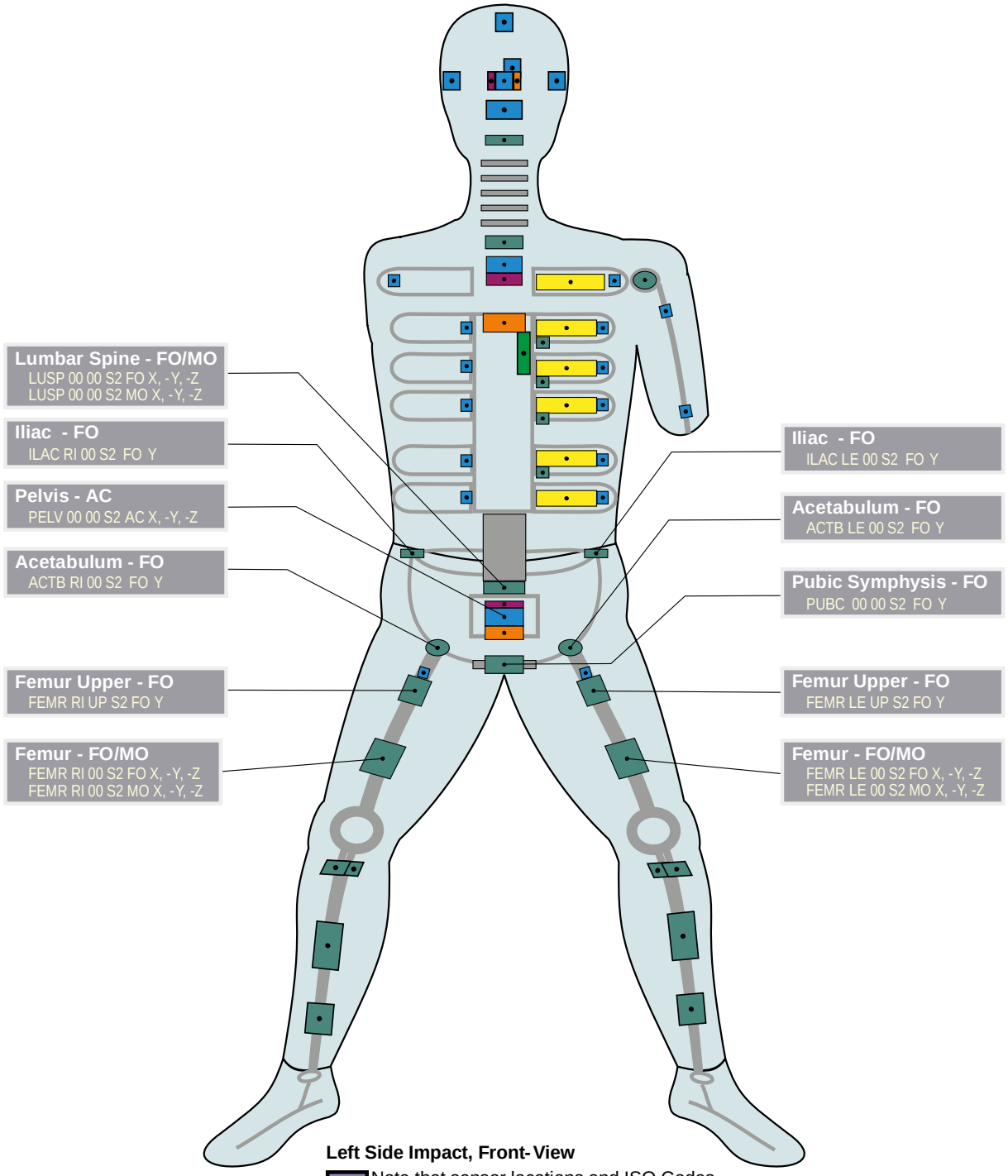
ISO_S2_1_162_20190719.EMF

-> S2 <- 1 of 5

S2 SID IIs (2)

Valid since Version **1.6.2**

ISO/TS 13499 – RED C : 2019(E)
S2, SID IIs
Standard Instrumentation (lower body)
2019-07-17



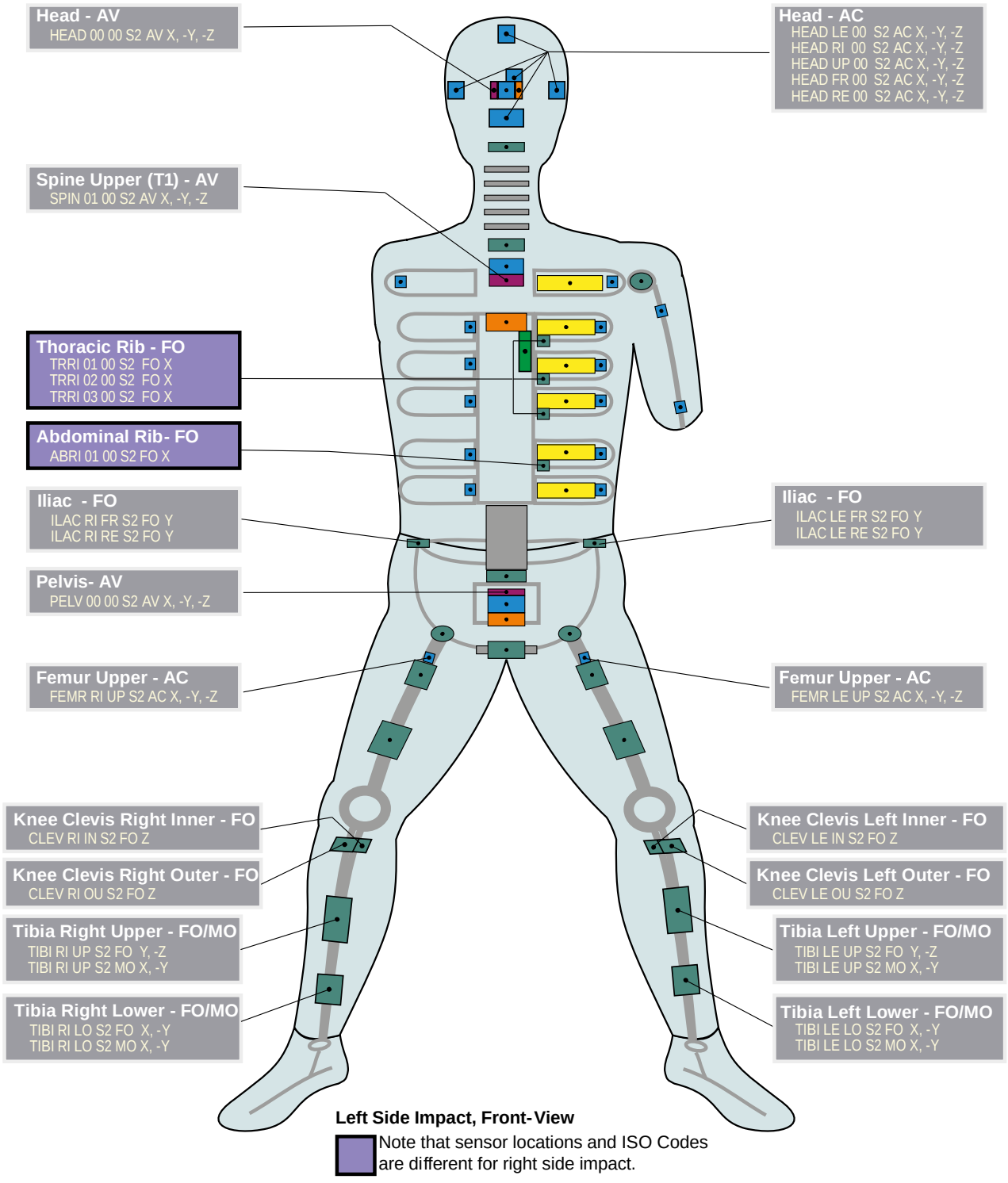
Left Side Impact, Front-View

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

S2 SID IIs (3)

Valid since Version **1.6.2**

ISO/TS 13499 – RED C : 2019(E)
S2, SID IIs
Additional Instrumentation
2019-07-17



Left Side Impact, Front-View

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

ISO-S2_20190717

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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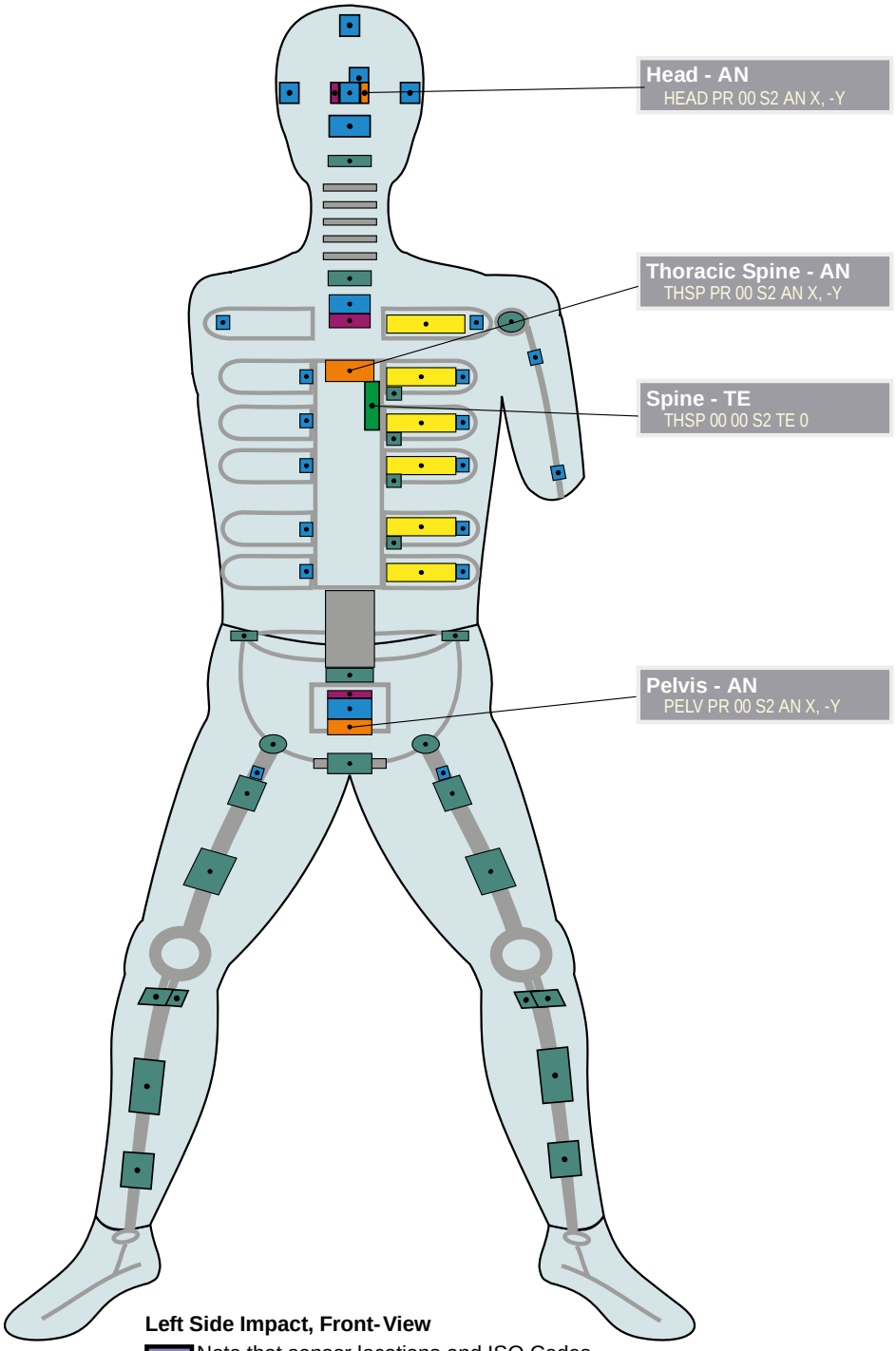
ISO_S2_3_162_20190719.EMF

-> S2 <- 3 of 5

S2 SID IIs (4)

Valid since Version **1.6.2**

ISO/TS 13499 – RED C : 2019(E)
S2, SID IIs
Static measurements, other channels
2019-07-17



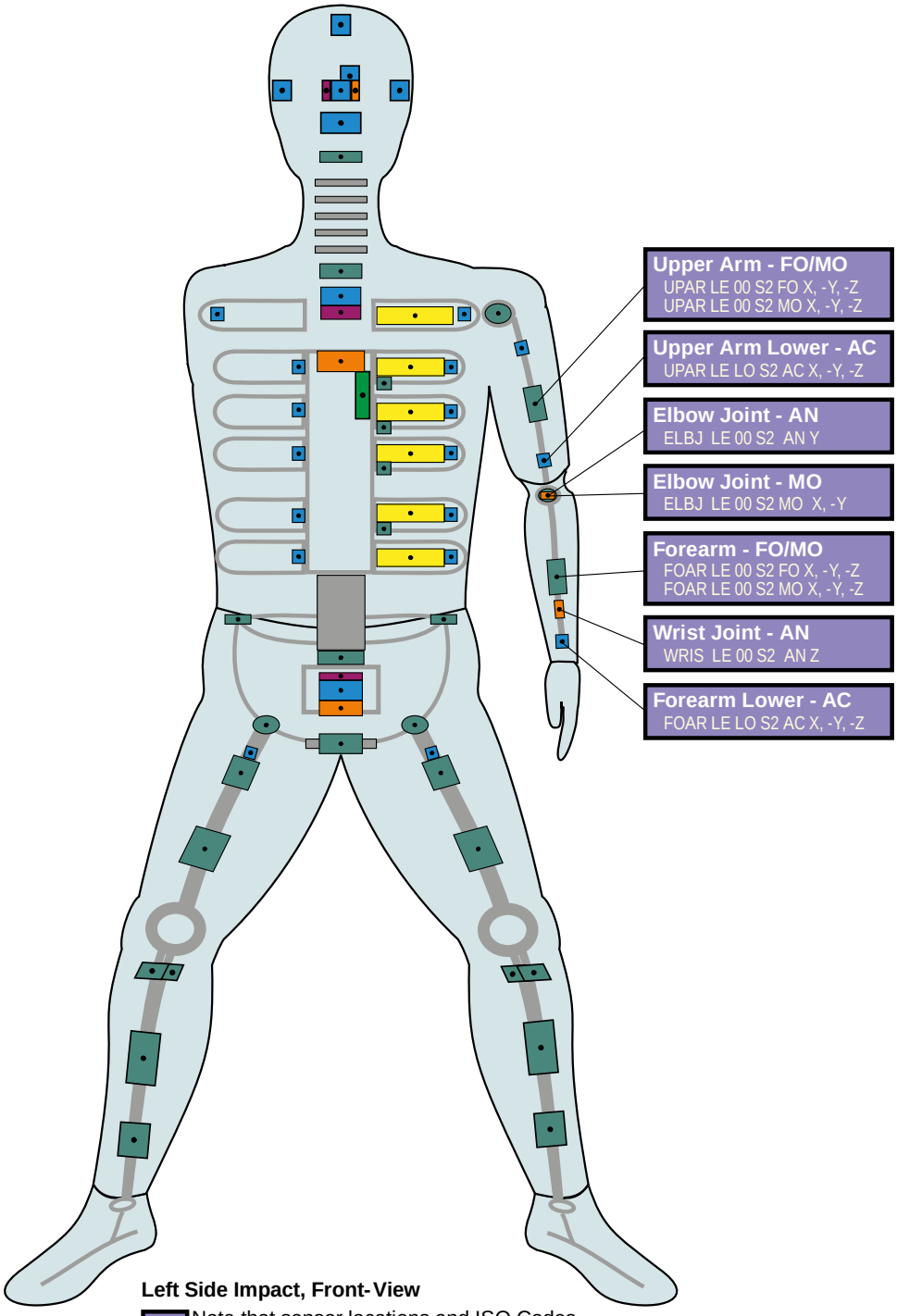
Left Side Impact, Front-View

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

S2 SID IIs (5)

Valid since Version **1.6.2**

ISO/TS 13499 – RED C : 2019(E)
S2, SID IIs
Additional Instrumentation: Instrumented arm
2019-07-17



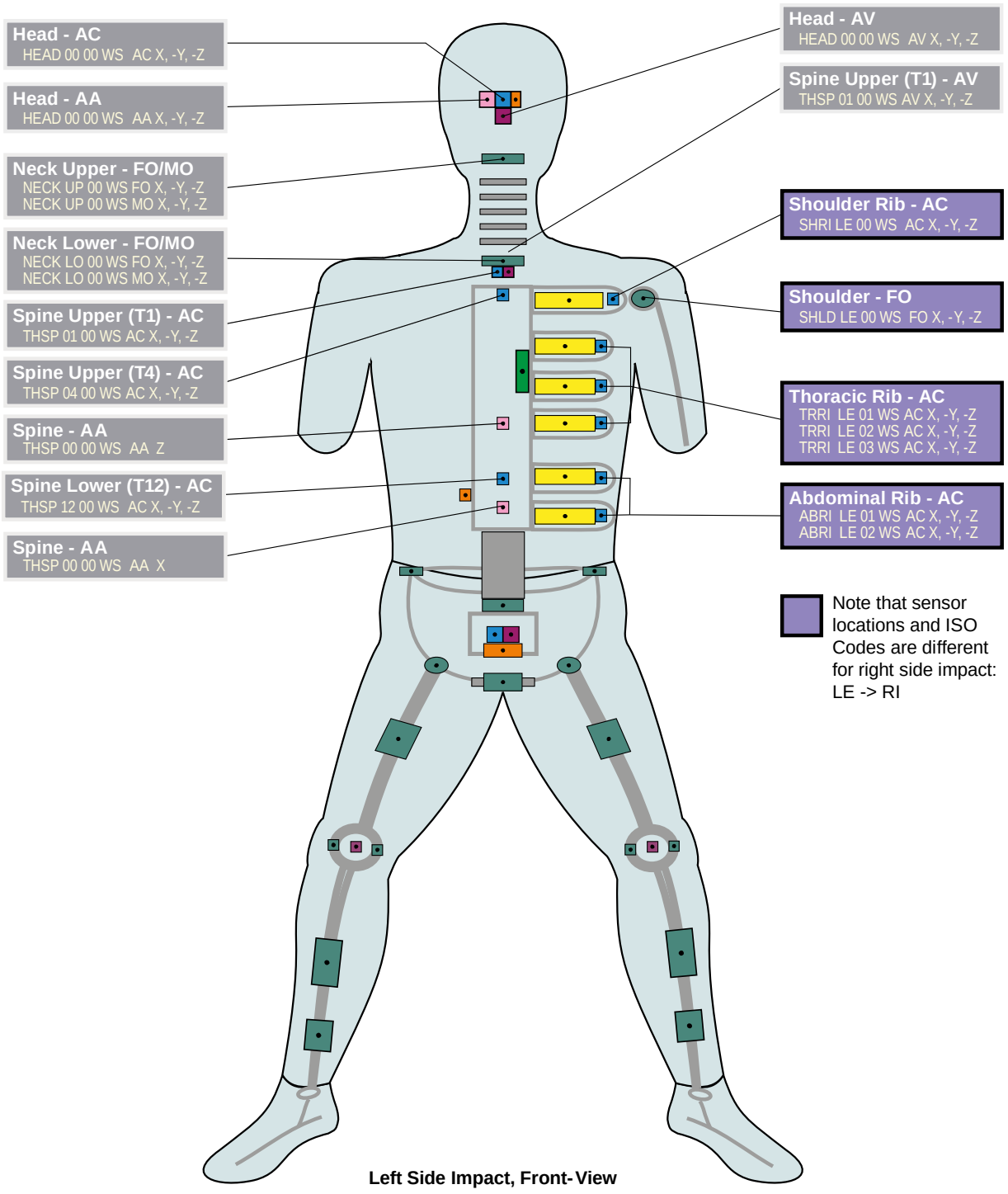
Left Side Impact, Front-View

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

WS WorldSID (1)

Valid since Version **1.6.1**

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

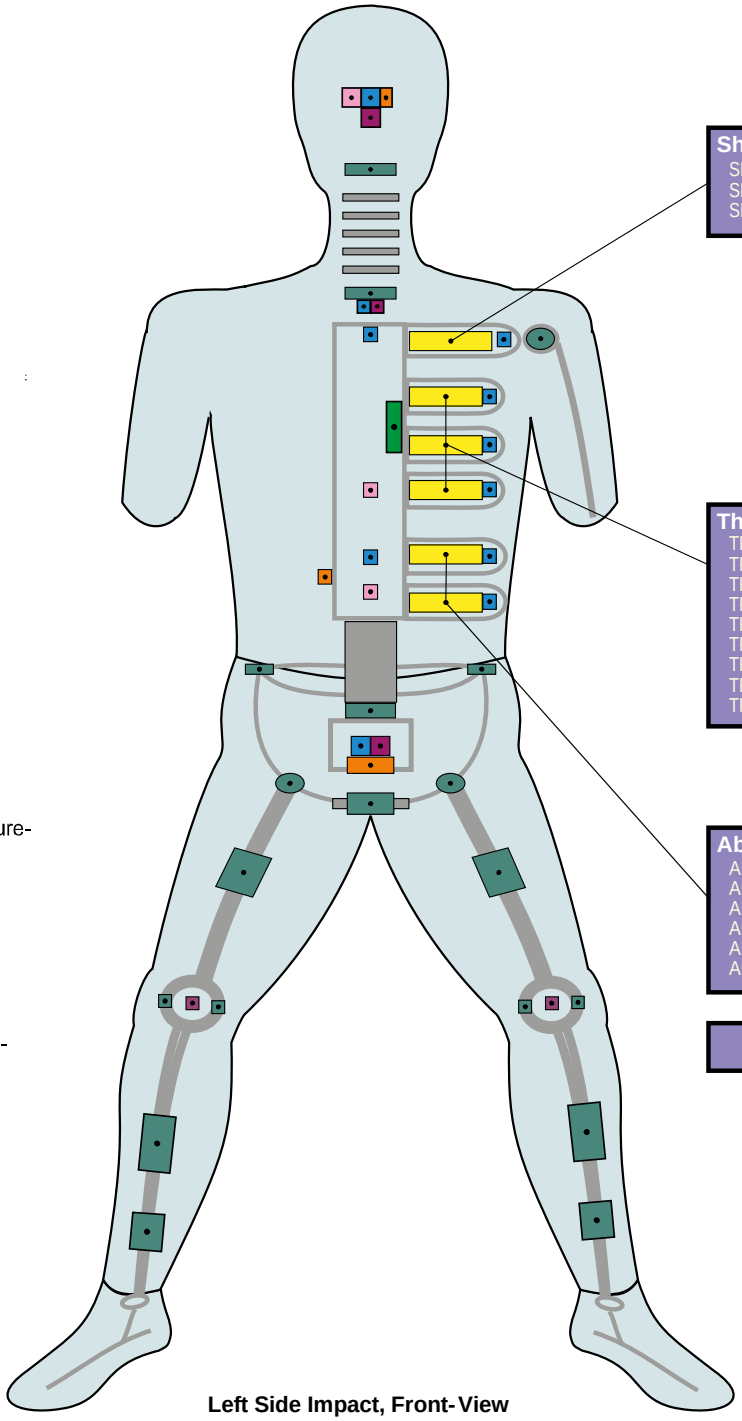


Left Side Impact, Front-View

WS WorldSID (2)

Valid since Version **1.6.1**

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.

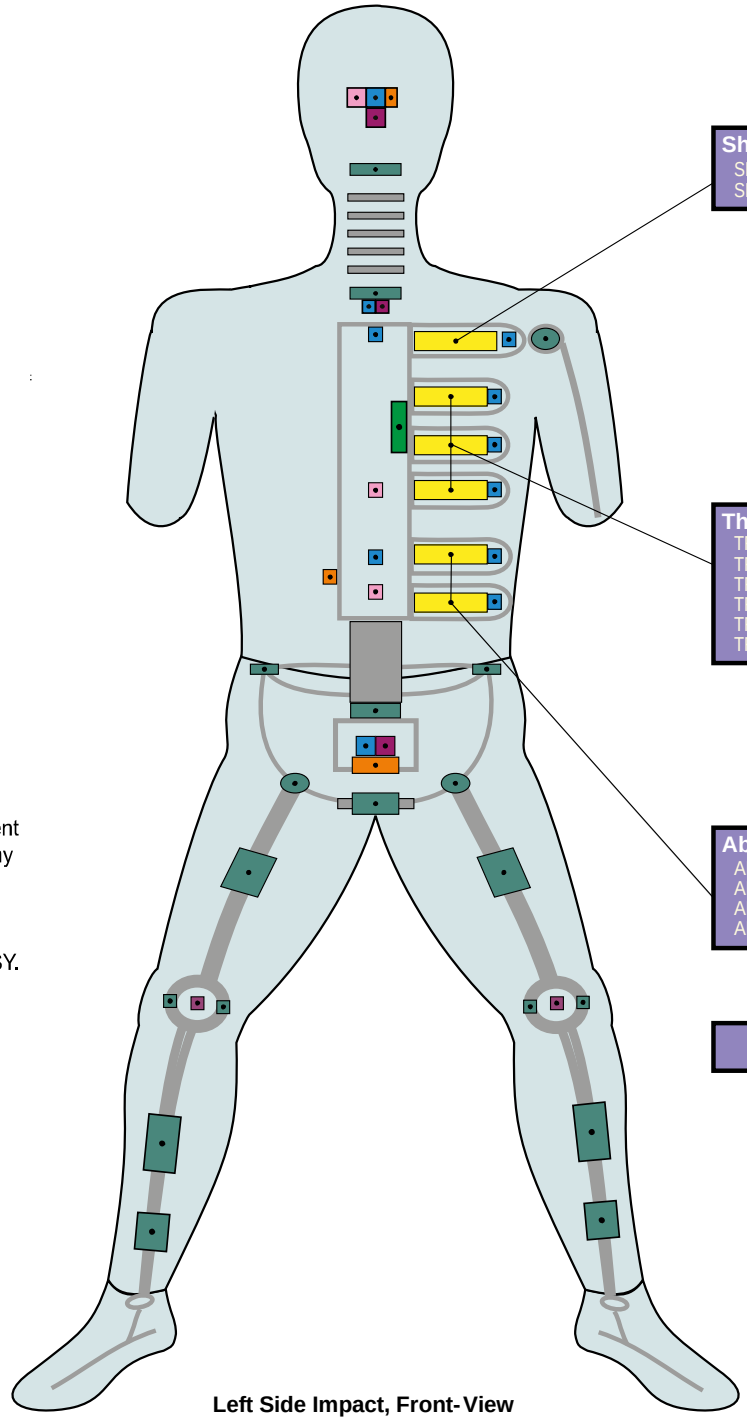
Note that sensor locations and ISO Codes are different for right side impact: LE -> RI

Left Side Impact, Front-View

WS WorldSID (3)

Valid since Version **1.6.1**

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.

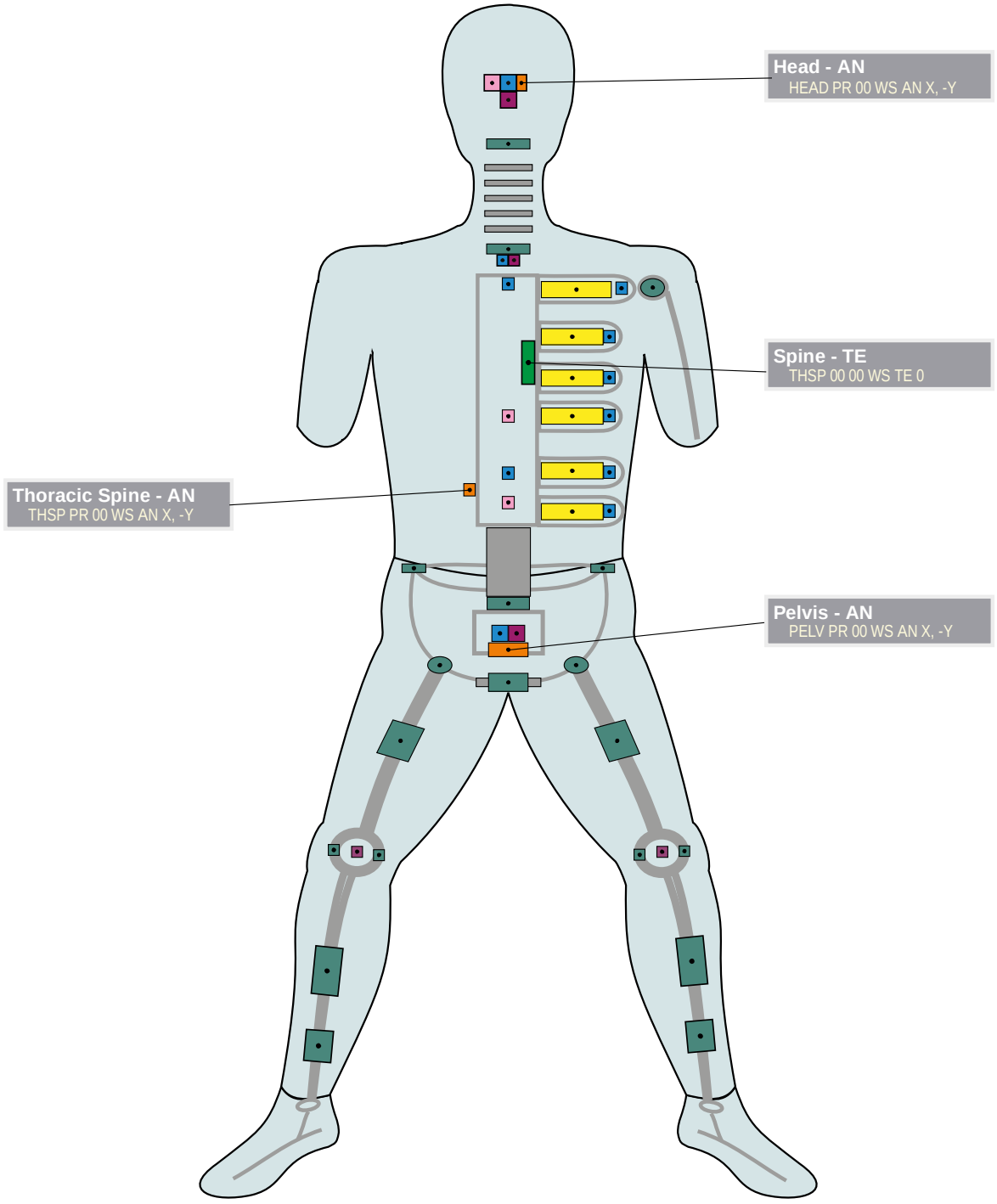
Note that sensor locations and ISO Codes are different for right side impact: LE -> RI

Left Side Impact, Front-View

WS WorldSID (5)

Valid since Version **1.6.1**

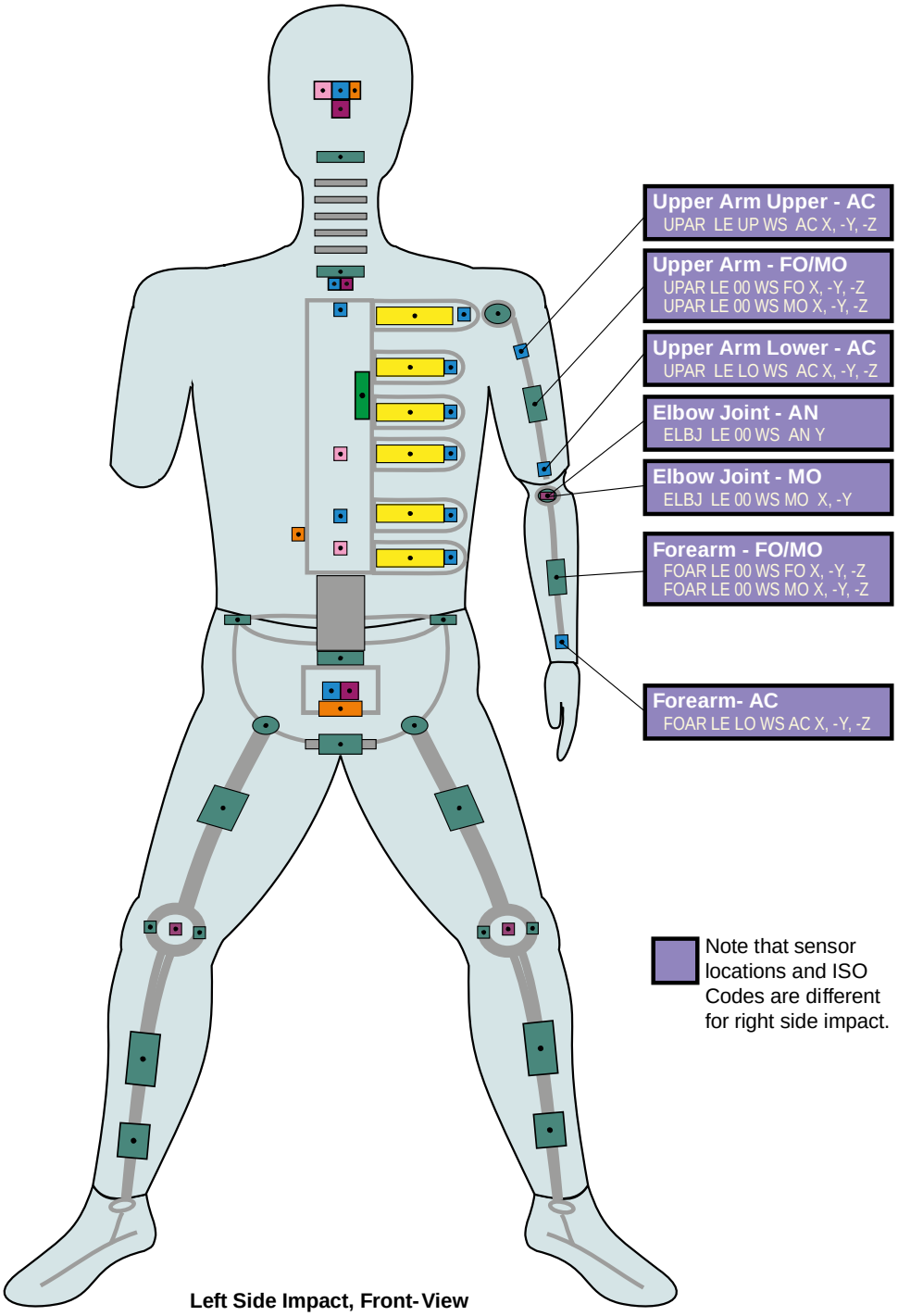
ISO/TS 13499 – RED C : 2012(E)
WS, WorldSID 50th percentile dummy
Static measurements, other channels
2017-04-20



WS WorldSID (6)

Valid since Version **1.6.1**

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

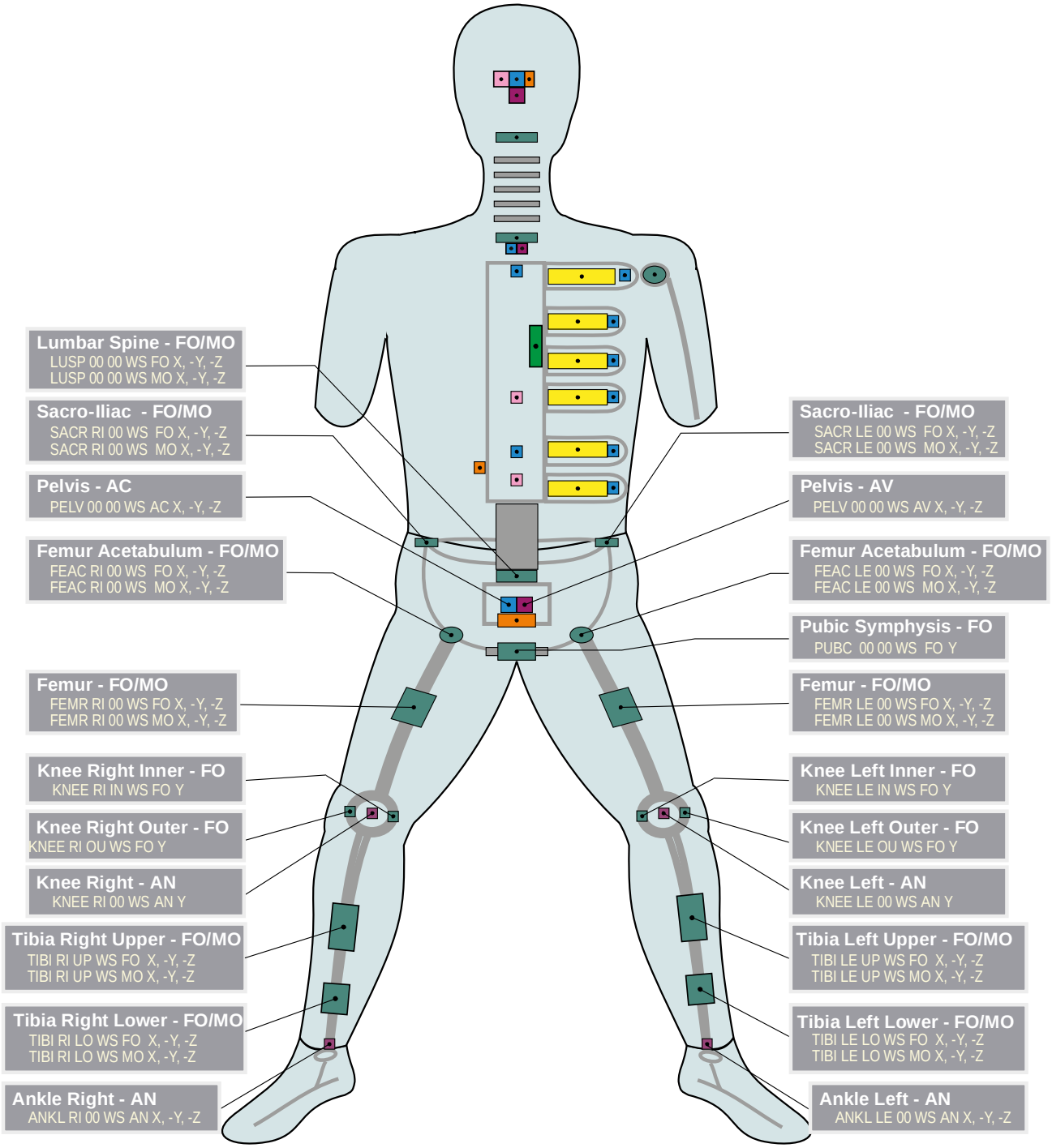


Left Side Impact, Front-View

WS WorldSID (4)

Valid since Version **1.6.1**

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



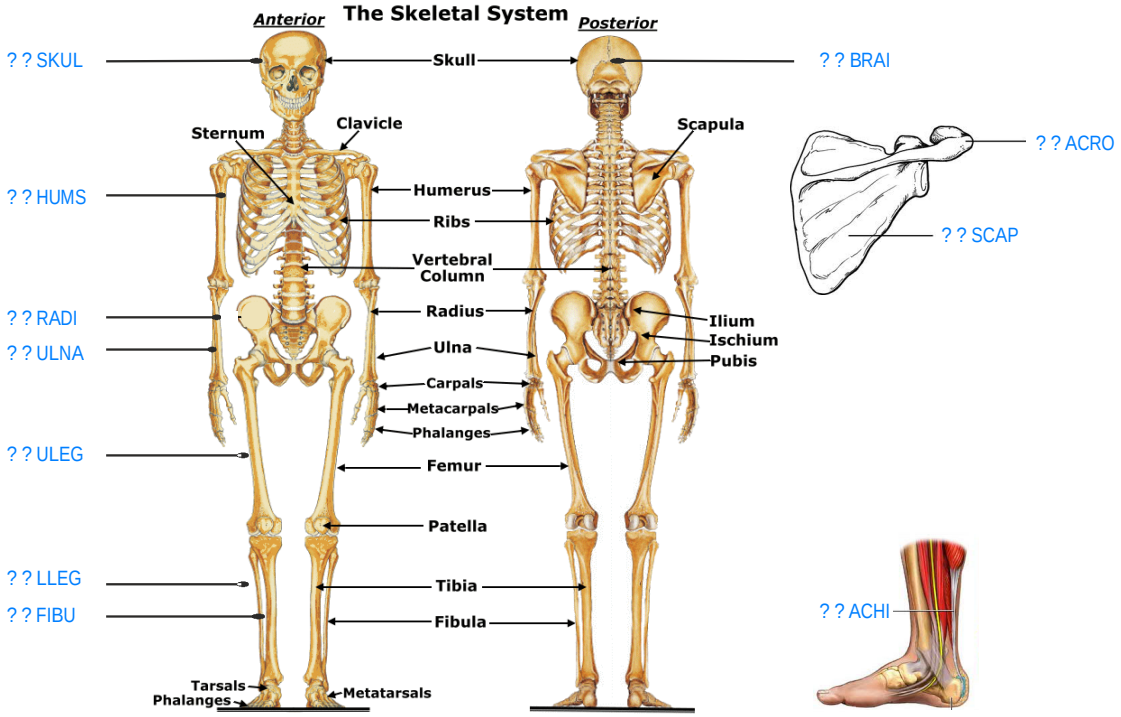
HUM Human Models

Valid since Version **1.6.2.p2**

Human Models; specific Main Locations

ISO/TS 13499 - RED C : 2017
Human Model

2017-09-13



? ? 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

ISO_HuMo_16R2

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

ISO_HuMo_162p2_20170913.EMF

-> HUM <- 1 of 1

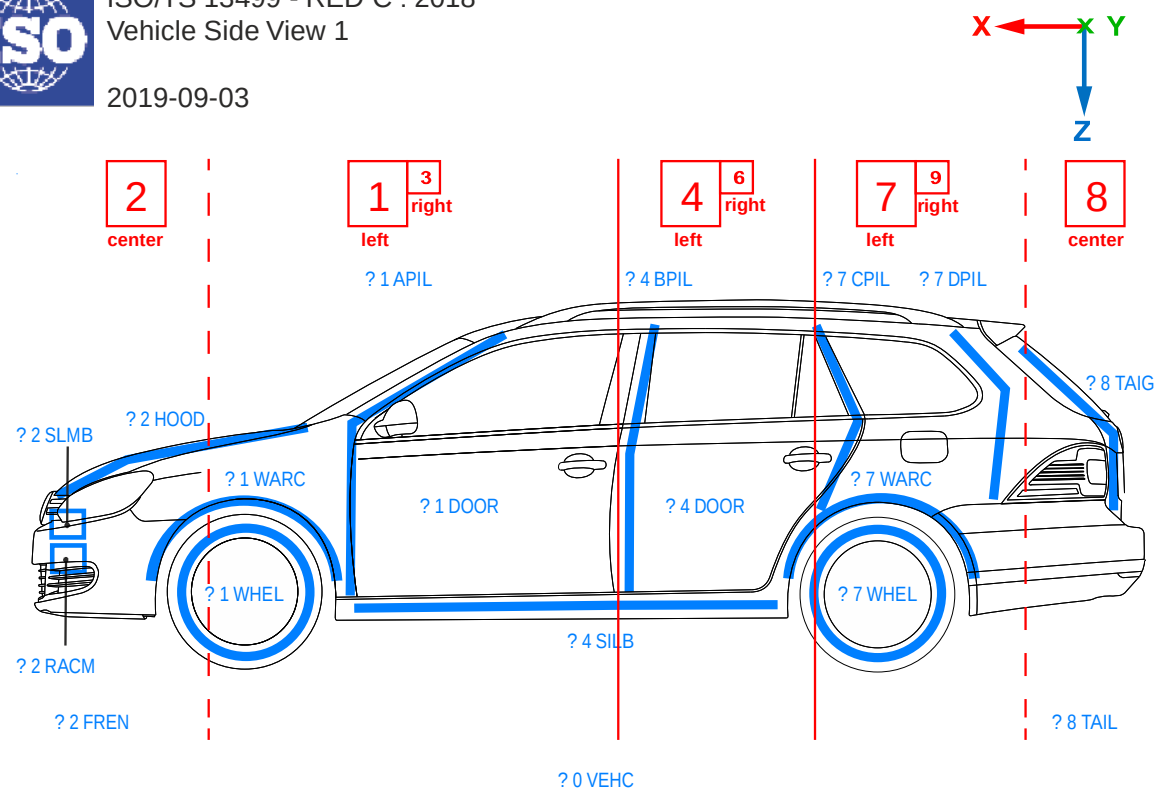
VEH_S1 Vehicle left side

Valid since Version **1.6.2.p2**

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

ISO/TS 13499 - RED C : 2018
Vehicle Side View 1

2019-09-03



picture only from the left side of the vehicle

? 1 APIL	A-Pillar left
? 3 APIL	A-Pillar right
? 4 BPIL	B-Pillar left
? 6 BPIL	B-Pillar right
? 7 CPIL	C-Pillar left
? 9 CPIL	C-Pillar right
? 7 DPIL	D-Pillar left
? 9 DPIL	D-Pillar right
? 4 SILB	Sill Beam left
? 6 SILB	Sill Beam right
? 1 WHEL	Wheel front left
? 3 WHEL	Wheel front right
? 7 WHEL	Wheel rear left
? 9 WHEL	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

? 1 DOOR	Door front left
? 3 DOOR	Door front right
? 4 DOOR	Door rear left
? 6 DOOR	Door rear 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

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

ISO_VEH_S1_162_20190903.EMF

-> VEH_S1 <- 1 of 8

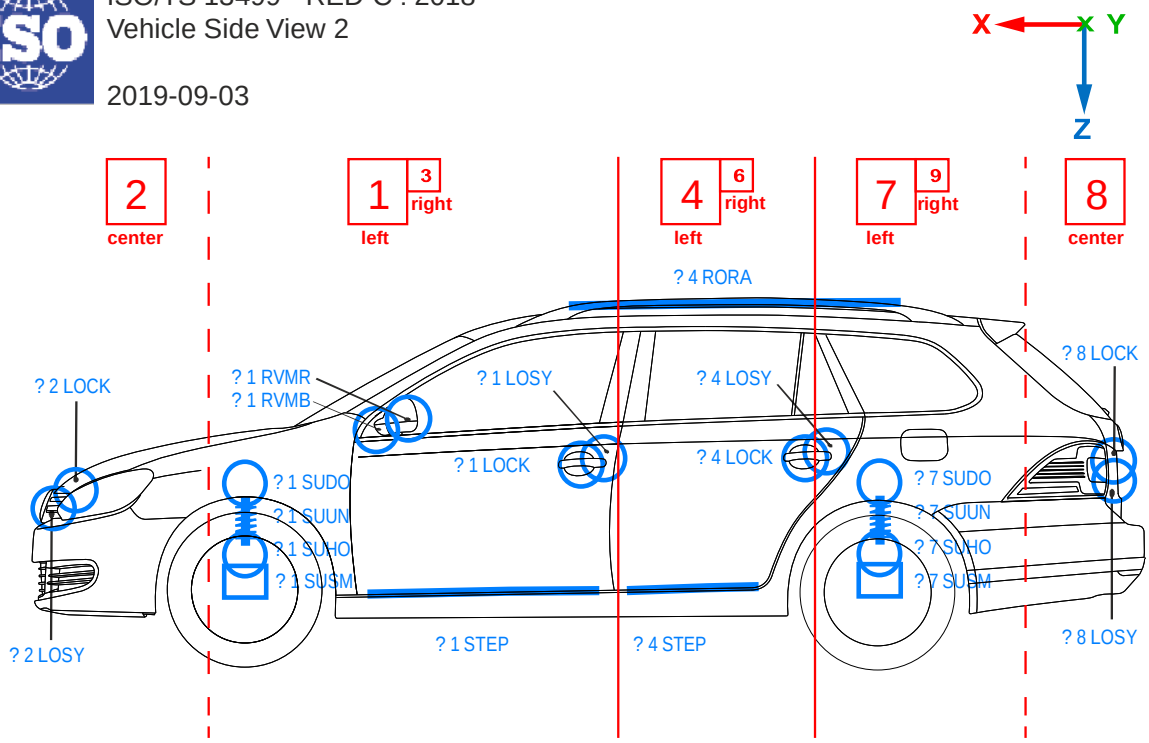
VEH_S2 Vehicle left side

Valid since Version **1.6.2.p2**

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

ISO/TS 13499 - RED C : 2018
Vehicle Side View 2

2019-09-03



picture only from the left side of the vehicle

? 1 LOSY	Locking System front left
? 3 LOSY	Locking System front right
? 4 LOSY	Locking System rear left
? 6 LOSY	Locking System rear right
? 2 LOSY	Locking System front
? 8 LOSY	Locking System rear
? 1 LOCK	Lock front left
? 3 LOCK	Lock front right
? 4 LOCK	Lock rear left
? 6 LOCK	Lock rear right
? 2 LOCK	Lock front
? 8 LOCK	Lock rear
? 4 RORA	Roof Rack left
? 6 RORA	Roof Rack right
? 1 STEP	Step front left
? 3 STEP	Step front right
? 4 STEP	Step rear left
? 7 STEP	Step rear right

? 1 SUDO	Suspension Dome front left
? 3 SUDO	Suspension Dome front right
? 7 SUDO	Suspension Dome rear left
? 9 SUDO	Suspension Dome rear right
? 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
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ISO_VEH_S2_162_20190903.EMF

-> VEH_S2 <- 2 of 8

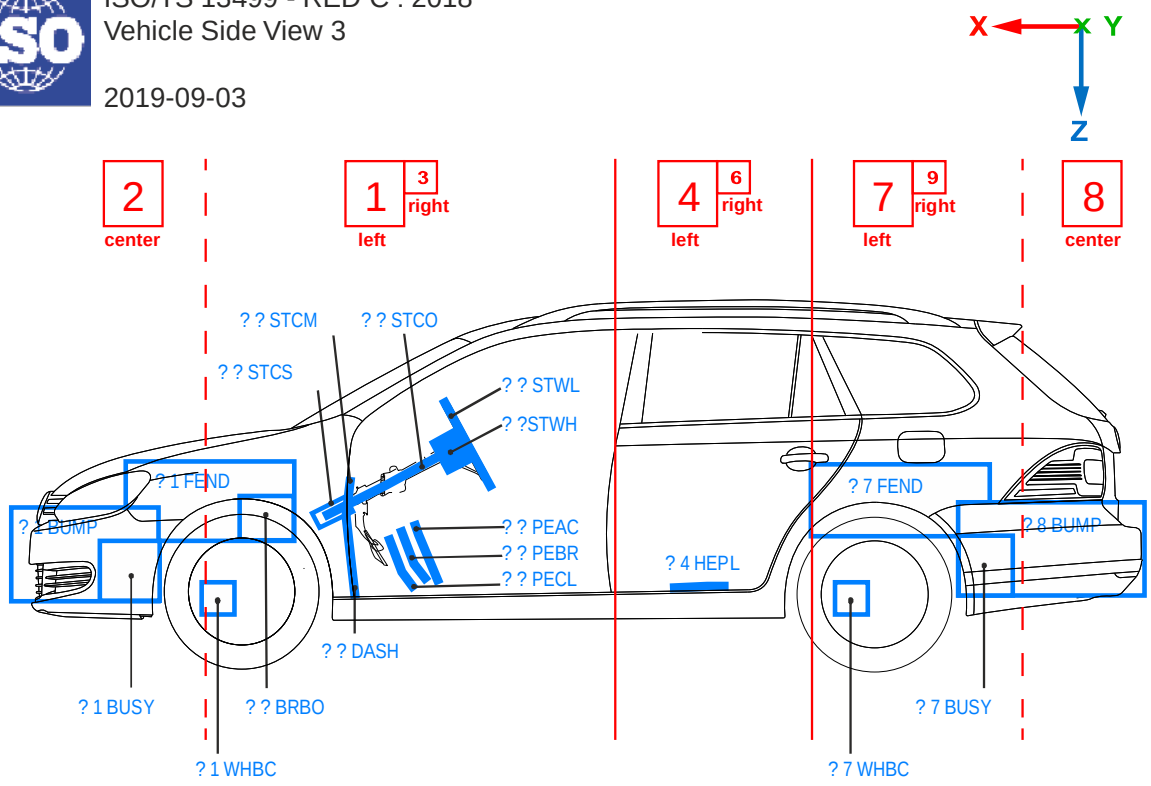
VEH_S3 Vehicle left side, open

Valid since Version **1.6.2.p2**

left side open; steering wheel, pedals

ISO/TS 13499 - RED C : 2018
Vehicle Side View 3

2019-09-03



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

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ISO_VEH_S3_162_20190903.EMF

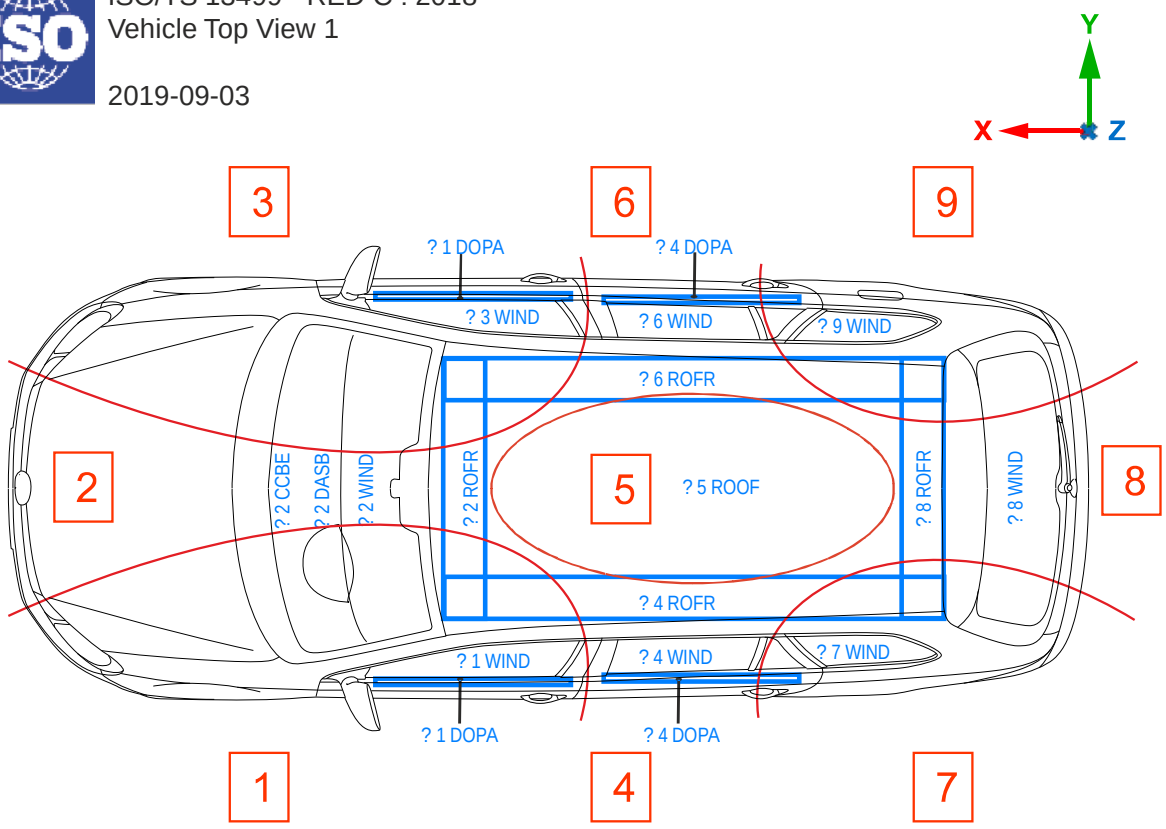
-> VEH_S3 <- 3 of 8

VEH_T1 Vehicle top

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

ISO/TS 13499 - RED C : 2018
Vehicle Top View 1

2019-09-03



? 1 WIND Window front left
? 2 WIND Window front
? 3 WIND Window front right
? 4 WIND Window middle left
? 6 WIND Window middle right
? 7 WIND Window rear left
? 8 WIND Window rear
? 9 WIND Window rear right

? 5 ROOF Roof

? 2 ROFR Roof Frame front
? 4 ROFR Roof Frame left
? 6 ROFR Roof Frame right
? 8 ROFR Roof Frame rear

? 2 DASB Dash Board
? 2 CCBE Cross Car Beam

? 1 DOPA Door Panel front left
? 3 DOPA Door Panel front right
? 4 DOPA Door Panel rear left
? 6 DOPA Door Panel rear right

ISO_VEH_16R2

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ISO_VEH_T1_162_20190903.EMF

-> VEH_T1 <- 4 of 8

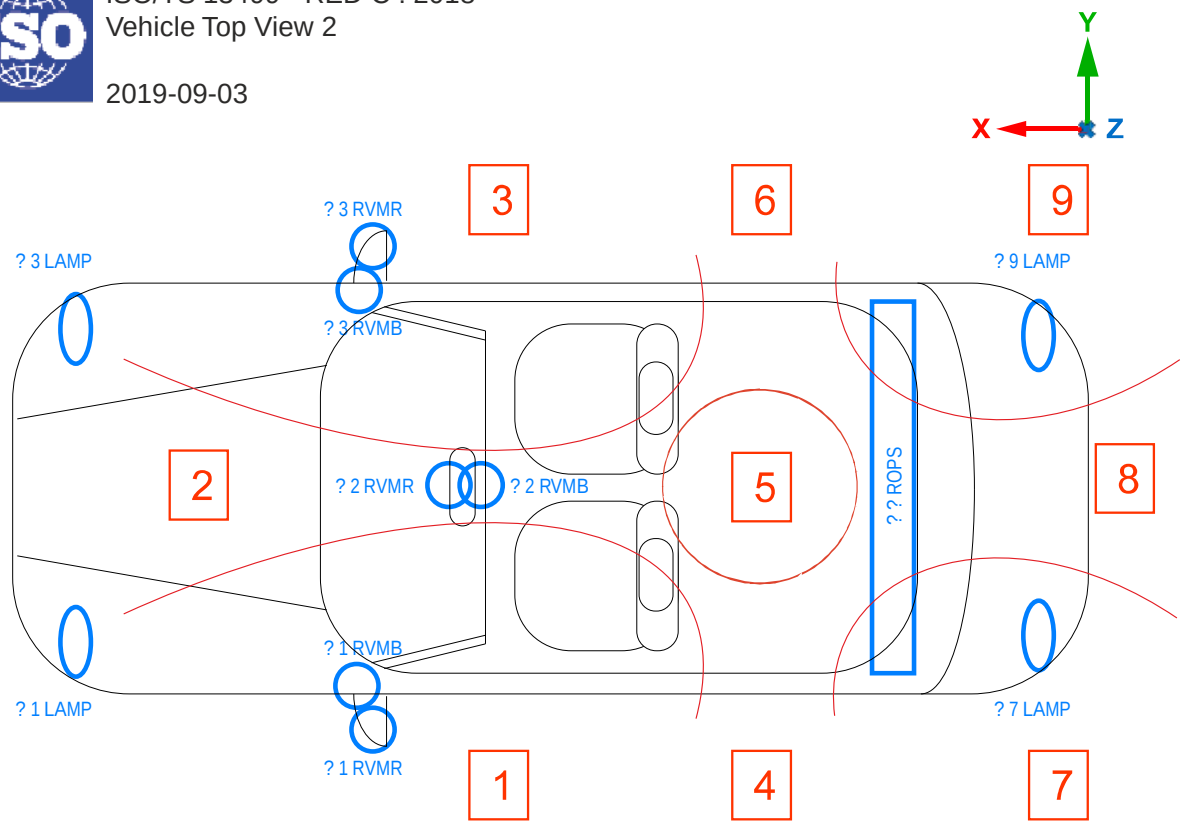
VEH_T2 Vehicle top

Valid since Version **1.6.2**

figure shows convertible, because of ROPS

ISO/TS 13499 - RED C : 2018
Vehicle Top View 2

2019-09-03



? ? ROPS Rollover Protection System

? 1 LAMP Headlamp left
? 3 LAMP Headlamp right
? 7 LAMP Taillight left
? 9 LAMP Taillight right

? 1 RVMR Rearview Mirror left
? 2 RVMR Rearview Mirror middle
? 3 RVMR Rearview Mirror right
? 1 RVMB Rearview Mirror Base left
? 2 RVMB Rearview Mirror Base middle
? 3 RVMB Rearview Mirror Base right

ISO_VEH_16R2

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ISO_VEH_T2_162_20190903.EMF

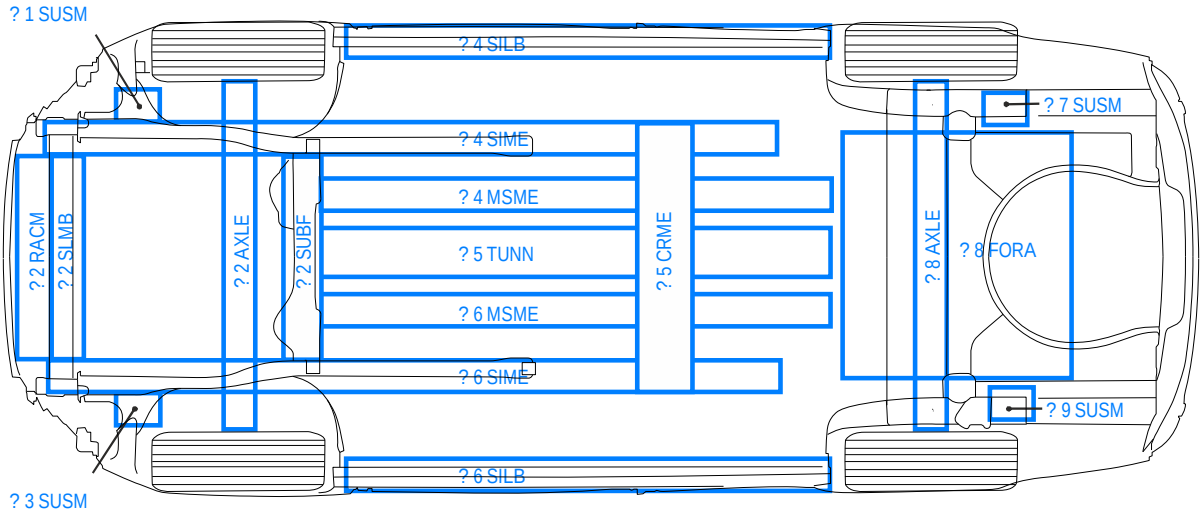
-> VEH_T2 <- 5 of 8

VEH_B1 Vehicle bottom

Valid since Version **1.6.2.p2**

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

ISO/TS 13499 - RED C : 2018
Vehicle Bottom View 1
Structure Elements
2019-09-03



? 2 AXLE Axle front
? 8 AXLE Axle rear
? 8 FORA Floor over Rear Axle

? 2 RACM Radiator Cross Member
? 2 SLMB Slam Beam
? 2 SUBF Subframe
? 1 SUSM Suspension Mount front left
? 3 SUSM Suspension Mount front right
? 7 SUSM Suspension Mount rear left
? 9 SUSM Suspension Mount rear right
? 5 CRME Cross Member

? 4 SILB Sill Beam left
? 6 SILB Sill Beam right
? 4 SIME Side Member left
? 6 SIME Side Member right
? 4 MSME Main Side Member left
? 6 MSME Main Side Member right
? 5 TUNN Tunnel

General Main Location

? ? FRAM Frame

ISO_VEH_16R2

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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ISO_VEH_B1_162_20190903.EMF

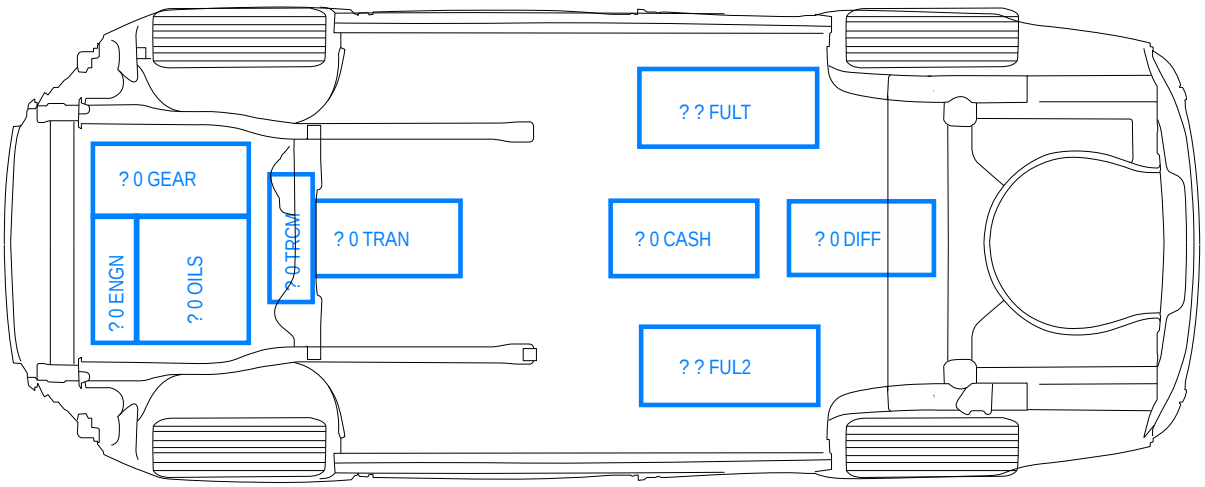
-> VEH_B1 <- 6 of 8

VEH_B2 Vehicle bottom

Valid since Version **1.6.2.p2**

engine, transmission, fuel tank, electrical components,

ISO/TS 13499 - RED C : 2018
Vehicle Bottom View 2
Traction Elements
2019-09-03



? 0 ENGN	Engine
? 0 GEAR	Gearbox
? 0 OILS	Oil Sump
? 0 TRCM	Transmission Cross Member
? 0 TRAN	Transmission
? 0 DIFF	Differential
? 0 CASH	Cardan Shaft
? ? FULT	Fuel Tank
? ? FUL2	Second Fuel Tank

ISO_VEH_16R2

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ISO_VEH_B2_162_20190903.EMF

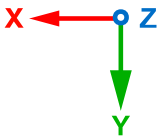
-> VEH_B2 <- 7 of 8

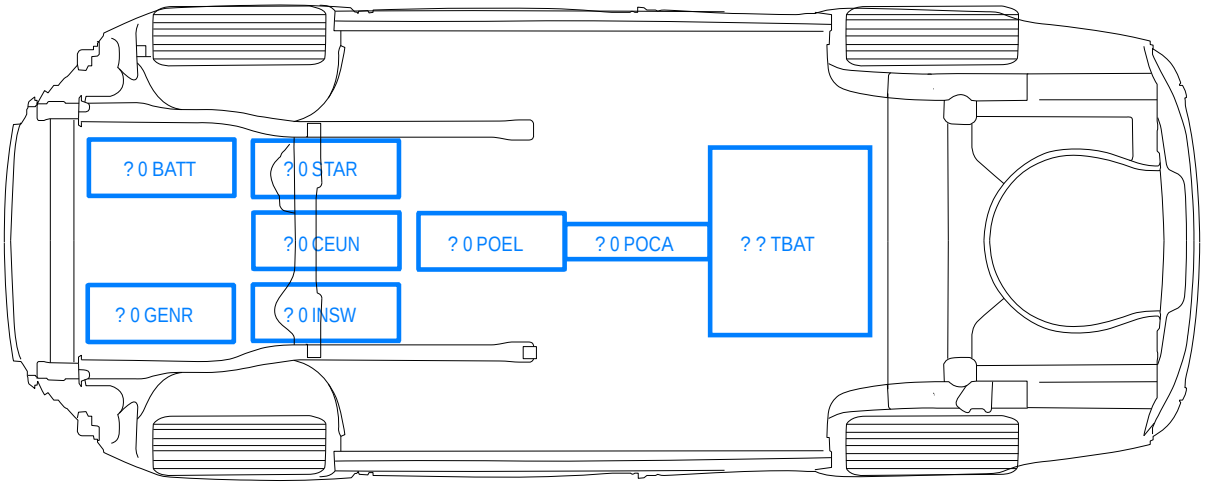
VEH_B3 Vehicle bottom

Valid since Version **1.6.2.p2**

electric elements

ISO/TS 13499 - RED C : 2018
Vehicle Bottom View 3
Electric Elements
2019-09-03





? 0 BATT Battery
? 0 GENR Generator
? 0 STAR Starter
? 0 INSW Inertia Switch
? 0 CEUN Central Unit

? 0 POEL Power Electronics
? 0 POCA Power Cable
? ? TBAT Traction Battery

ISO_VEH_16R2

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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ISO_VEH_B3_162_20190903.EMF

-> VEH_B3 <- 8 of 8

ACTIVE Active Safety

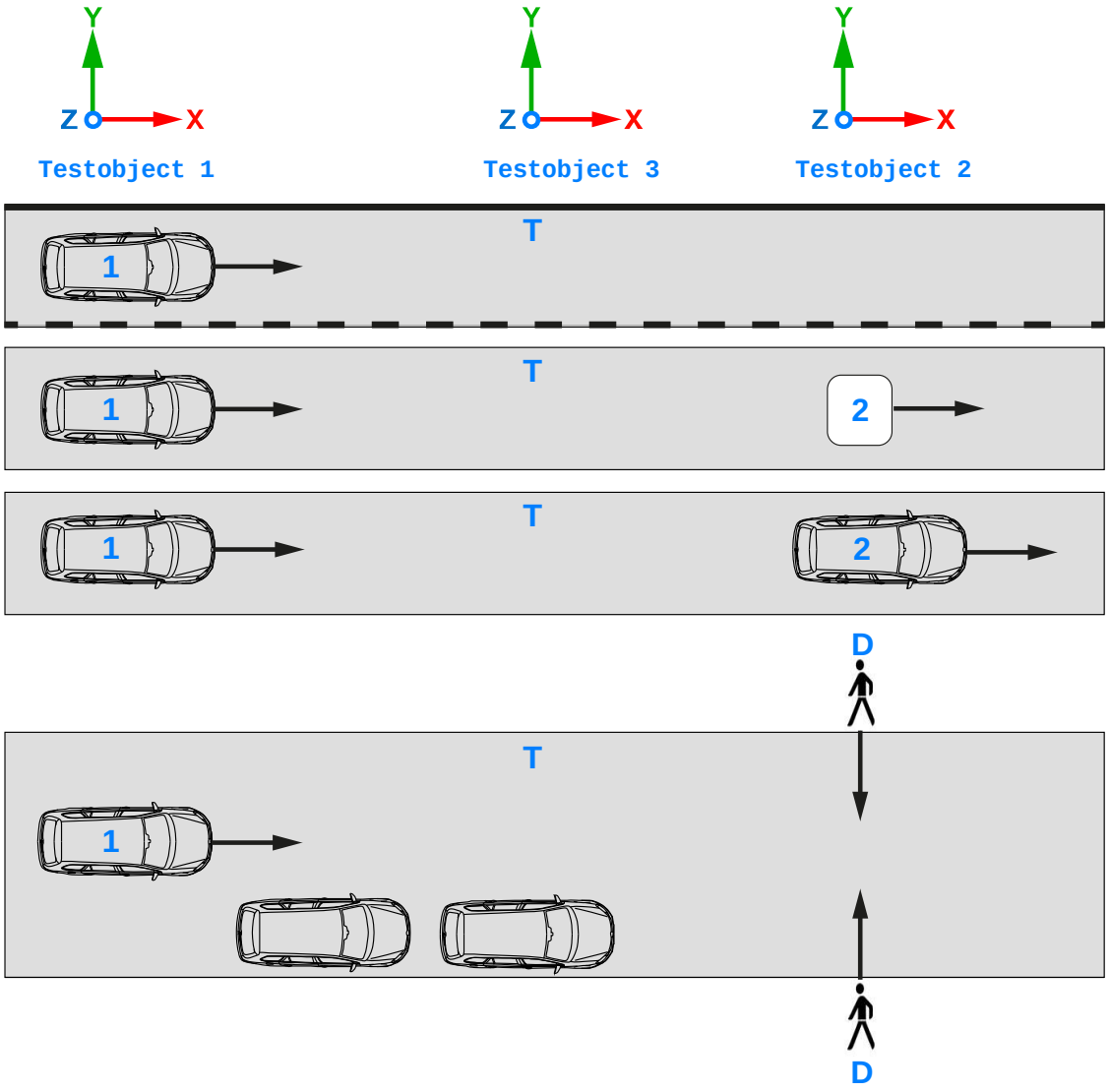
Valid since Version **1.6.2.p2**

Coding for Active Safety Tests

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 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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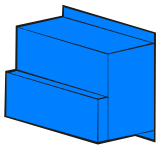
ISO_ACTIV_162p2_20161202.EMF

-> ACTIVE <- 1 of 1

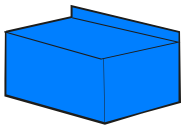
OBJ_1 Objects

Valid since Version **1.6.2**
deformable elements

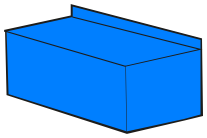
ISO/TS 13499 - RED C : 2016
Other Objects
Deformable Elements
2019-05-08



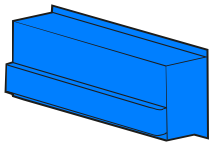
B 0 DEFO 00 00 DO **Frontal Impact**



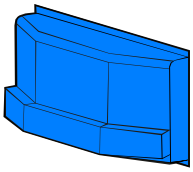
M 0 DEFO 00 00 DM **Frontal MPDB Impact**



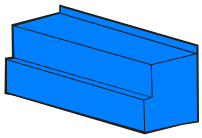
M 0 DEFO 00 00 DB **Frontal Oblique Impact**



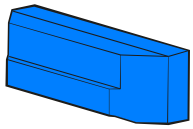
M 0 DEFO 00 00 DN **Rear and Side Impact**



M 0 DEFO 00 00 DI **Side Impact**



M 0 DEFO 00 00 DE **Side Impact**



M 0 DEFO 00 00 DA **Side Impact**

B 0 DEFO 00 00 DO Deformable Element for Frontal Offset Tests
M 0 DEFO 00 00 DM Deformable Element according ADAC MPDB Test
M 0 DEFO 00 00 DB Deformable Element according NHTSA Frontal Oblique Tests
M 0 DEFO 00 00 DN Deformable Element according NHTSA Rear and Side Tests
M 0 DEFO 00 00 DI Deformable Element according IIHS Test
M 0 DEFO 00 00 DE Deformable Element EuroNCAP Advanced 2000
M 0 DEFO 00 00 DA Deformable Element AEMDB

ISO_OBJ_16R2

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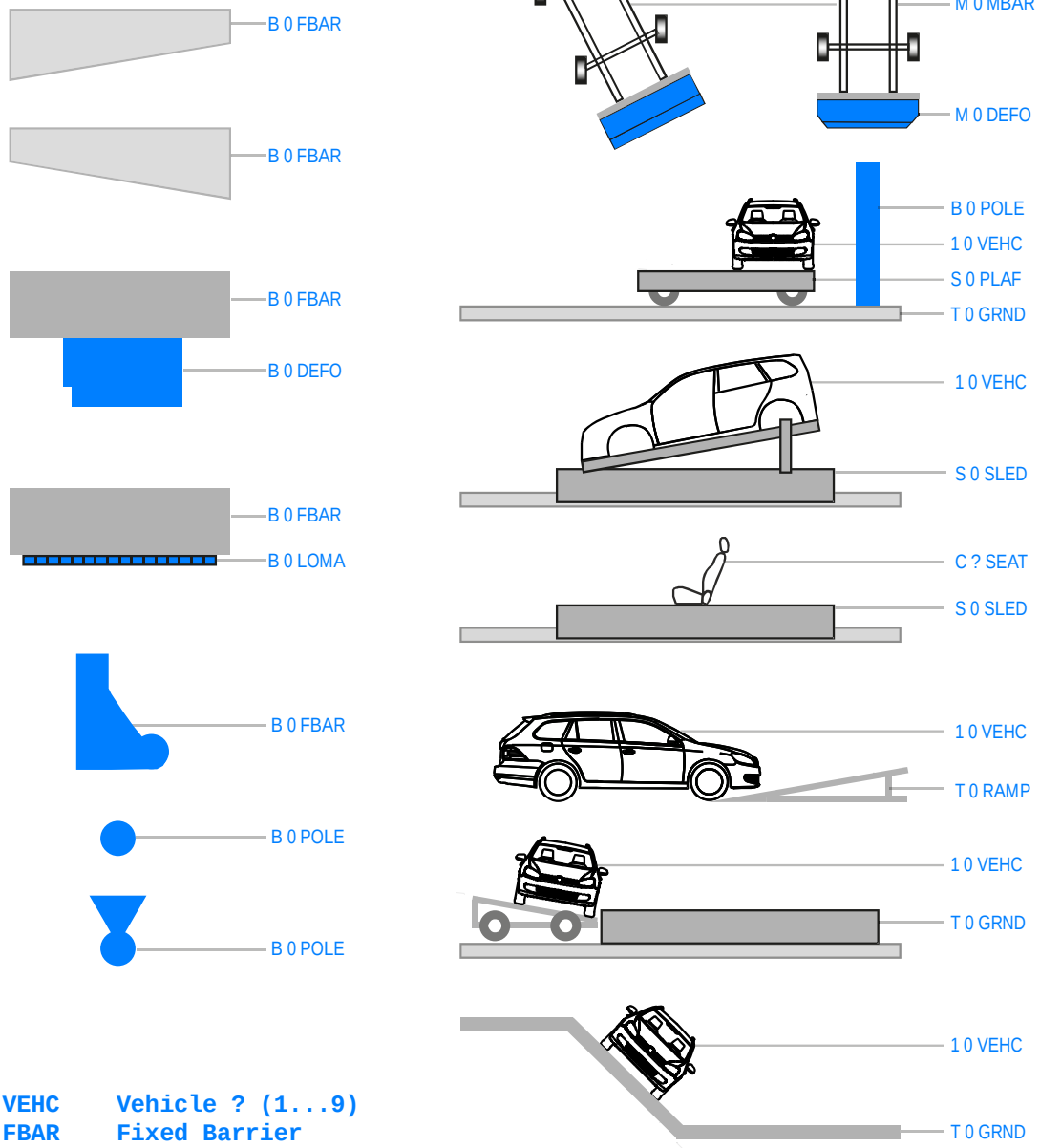
OBJ_2 Objects

Valid since Version **1.6.2**

other objects

ISO/TS 13499 - RED C : 2016
Other Objects

2019-05-08



? 0 VEHC	Vehicle ? (1...9)
B 0 FBAR	Fixed Barrier
B 0 POLE	Pole
M 0 MBAR	Mobile Barrier
? 0 LOMA	Load Cell Matrix
? 0 DEFO	Deformable Element
S 0 SLED	Sled
S 0 PLAF	Platform (e.g. Flying Floor)
C ? SEAT	Seat (for component tests without vehicle structure)
T 0 GRND	Surface/Plane of Sand Bed, Embankment or Testrig
T 0 RAMP	Ramp - part with variable height or angle to turn vehicles

ISO_OBJ_16R2

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ISO_OBJ_2_16R2_20190508.EMF

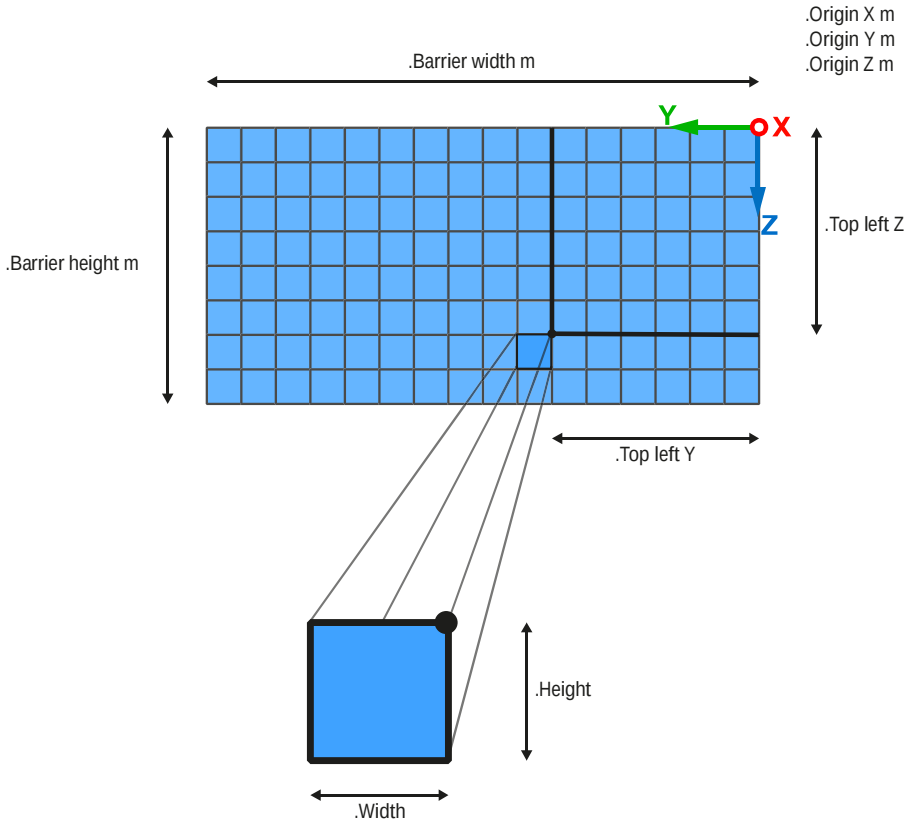
-> OBJ_2 <- 1 of 2

LOMA Load Cell Matrix

Valid since Version **1.6.2.p2**

Load Cell Matrix Configurations Coding Description

ISO/TS 13499 - RED C : 2015
Load Cell Matrix
Descriptors
2015-03-13



ISO_LOMA_16R2

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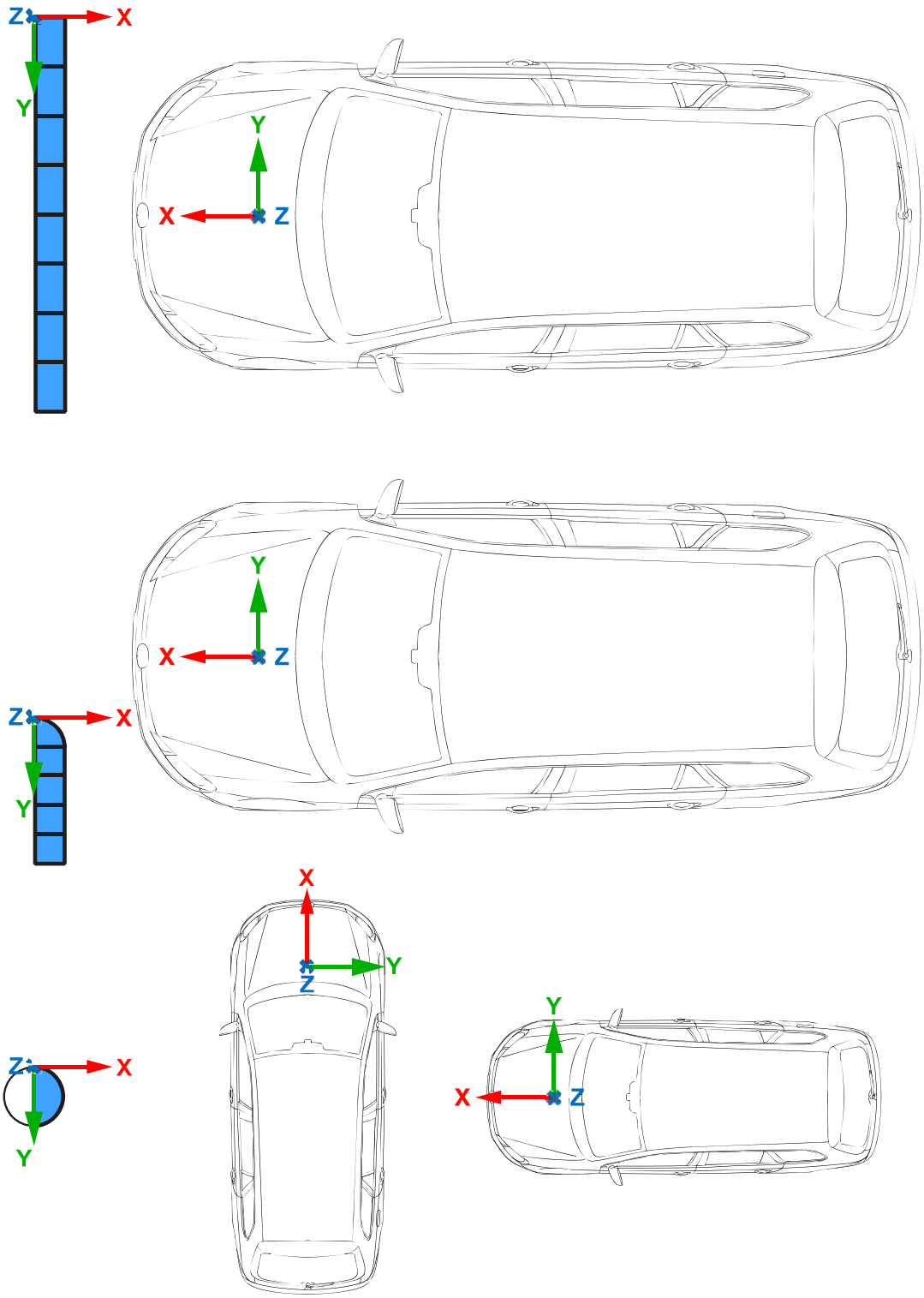
LOMA Load Cell Matrix

Valid since Version **1.6.2.p2**

Load Cell Matrix Configurations Top View

ISO/TS 13499 - RED C : 2015
Load Cell Matrix
Top View
2015-03-13



ISO_LOMA_16R2

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LOMA Load Cell Matrix

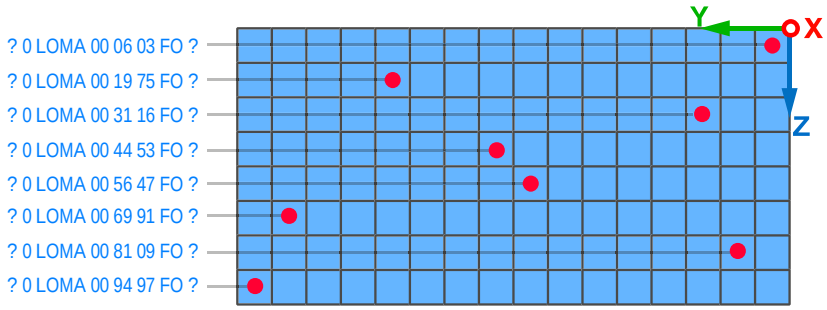
Valid since Version **1.6.2.p2**

Load Cell Matrix Configurations View from Vehicle

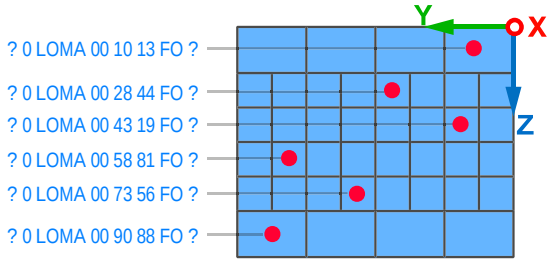
ISO/TS 13499 - RED C : 2015
Load Cell Matrix
View from vehicle
2015-03-13

Percentage Values F2=Row F3=Column

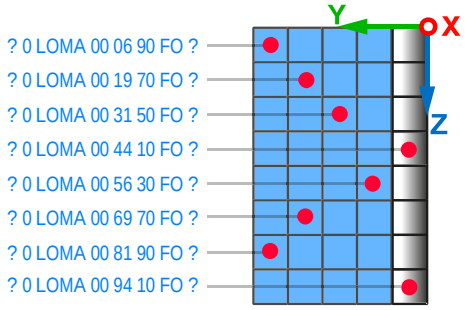
Fixed or Mobile Barrier - Regular Matrix



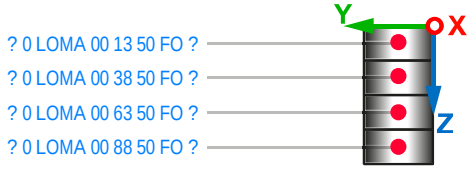
Fixed or Mobile Barrier - Irregular Matrix



Small Overlap



Pole



ISO_LOMA_16R2

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ISO_LOMA_2_162p2_20150313.EMF

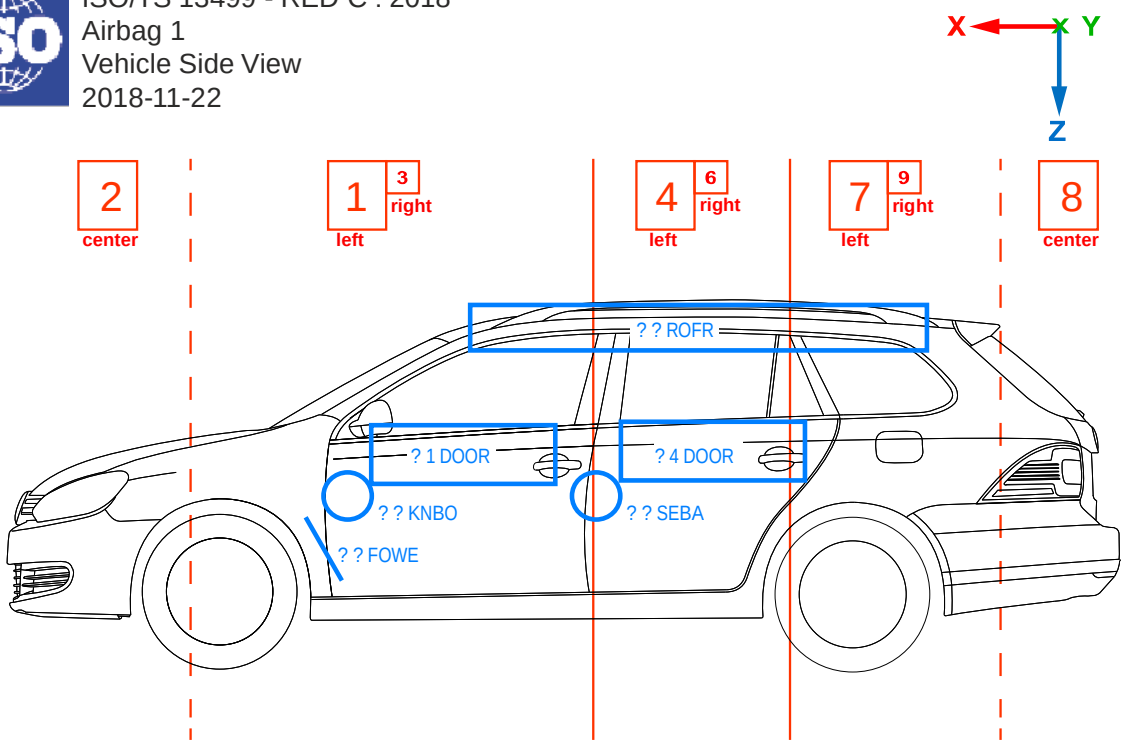
-> LOMA <- 2 of 3

AIRB Airbag (1)

Valid since Version **1.6.2**

door, knee, footwell, roof frame airbags

ISO/TS 13499 - RED C : 2018
Airbag 1
Vehicle Side View
2018-11-22



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)

? ? AIRB ???? AI	Interaction Airbag
? ? AIRB ???? GI	Interaction Generator

ISO_AIRB_16R2

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ISO_AIRB_1_162_20181122.EMF

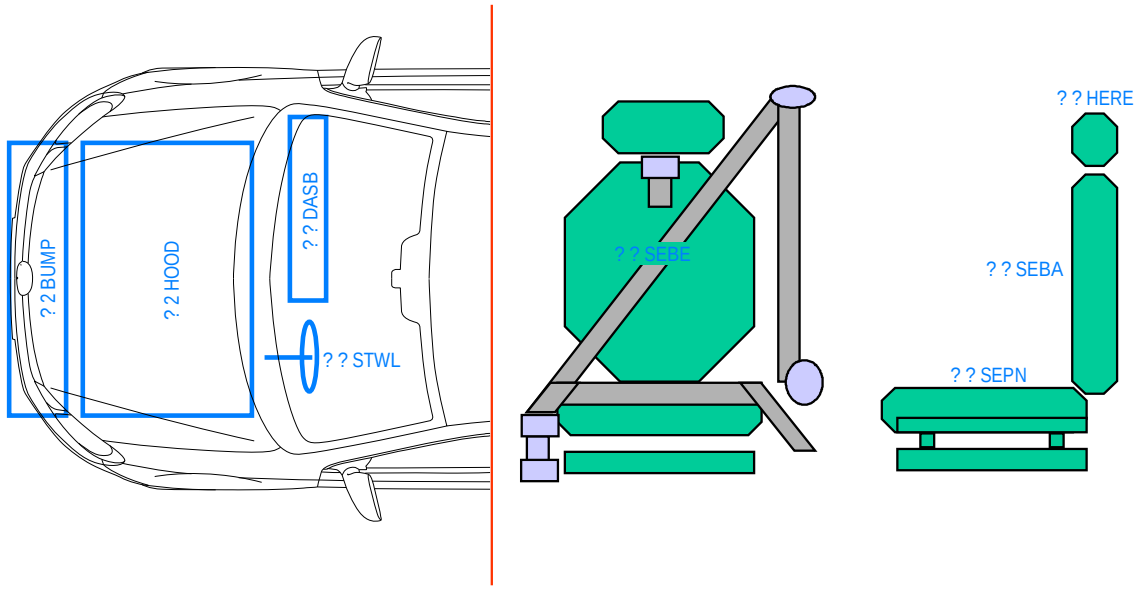
-> AIRB <- 1 of 2

AIRB Airbag (2)

Valid since Version **1.6.2**

external, seat related airbags

ISO/TS 13499 - RED C : 2018
Airbag 2
Vehicle Top View and Seat
2018-11-22



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

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ISO_AIRB_2_162_20181122.EMF

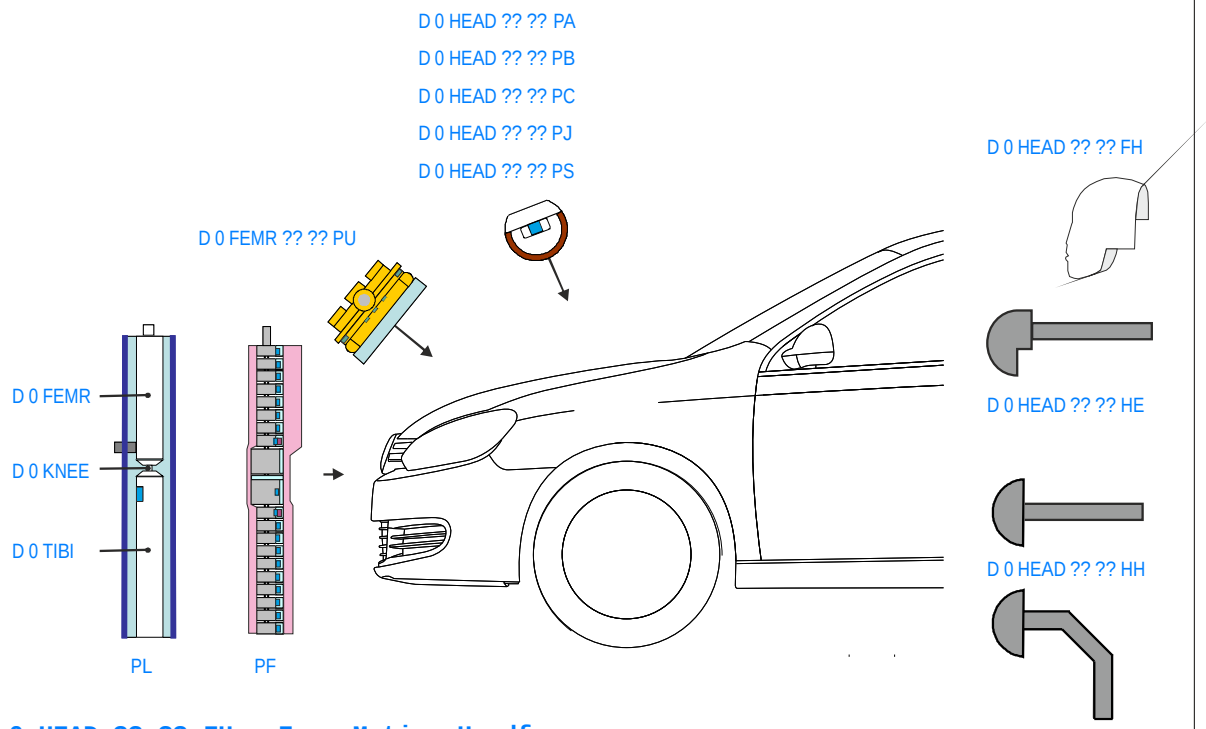
-> AIRB <- 2 of 2

IMP Impactors: vehicle front end

Valid since Version **1.6.2**

impactors overview

ISO/TS 13499 - RED C : 2018
Impactors
Overview
2019-05-08



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)

ISO_IMP_16R2

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ISO_IMP_1_162_20190508.EMF

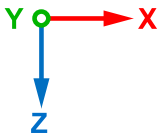
-> IMP <- 1 of 6

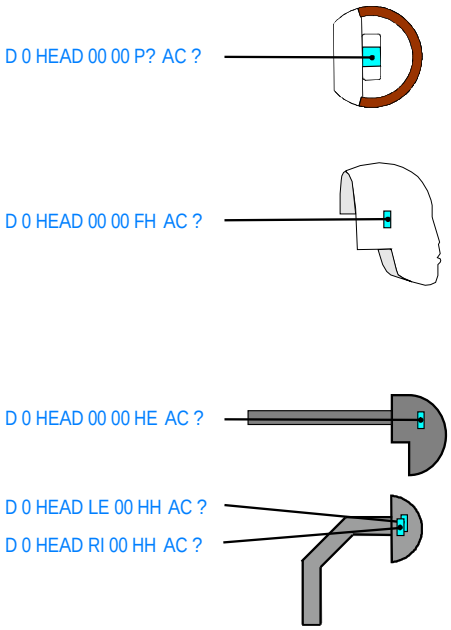
IMP Impactors: head, upper legform

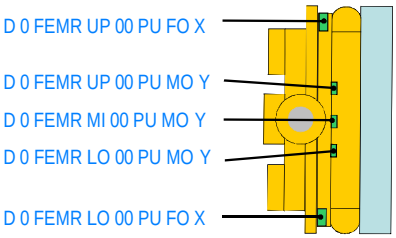
Valid since Version **1.6.2**

headforms and upper legform impactor

ISO/TS 13499 - RED C : 2018
Impactors
Headforms and Upper Legform Impactor
2019-05-08







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

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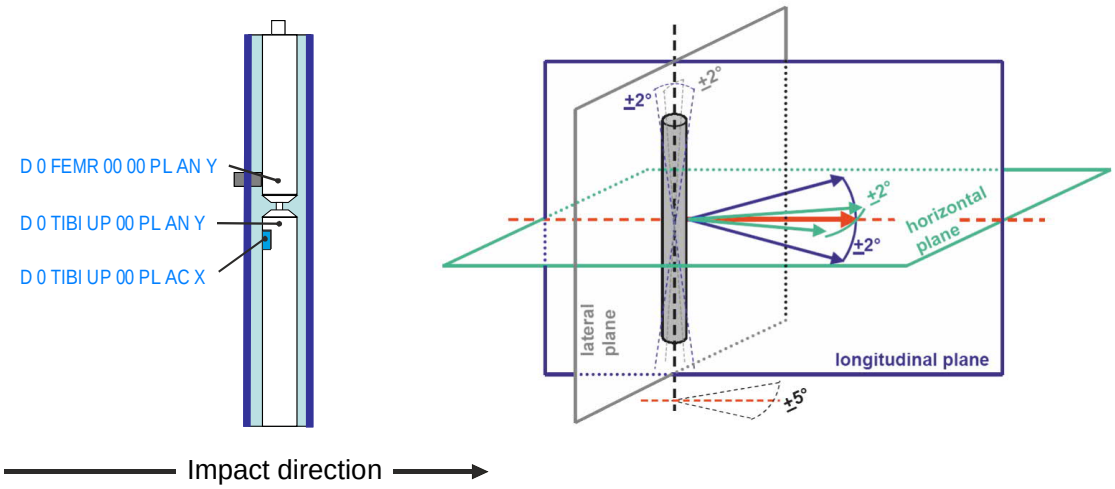
IMP Impactors: legform

Valid since Version **1.6.2**

pedestrian legform impactor

ISO/TS 13499 - RED C : 2018
Impactors
Pedestrian Legform Impactor
2019-05-08



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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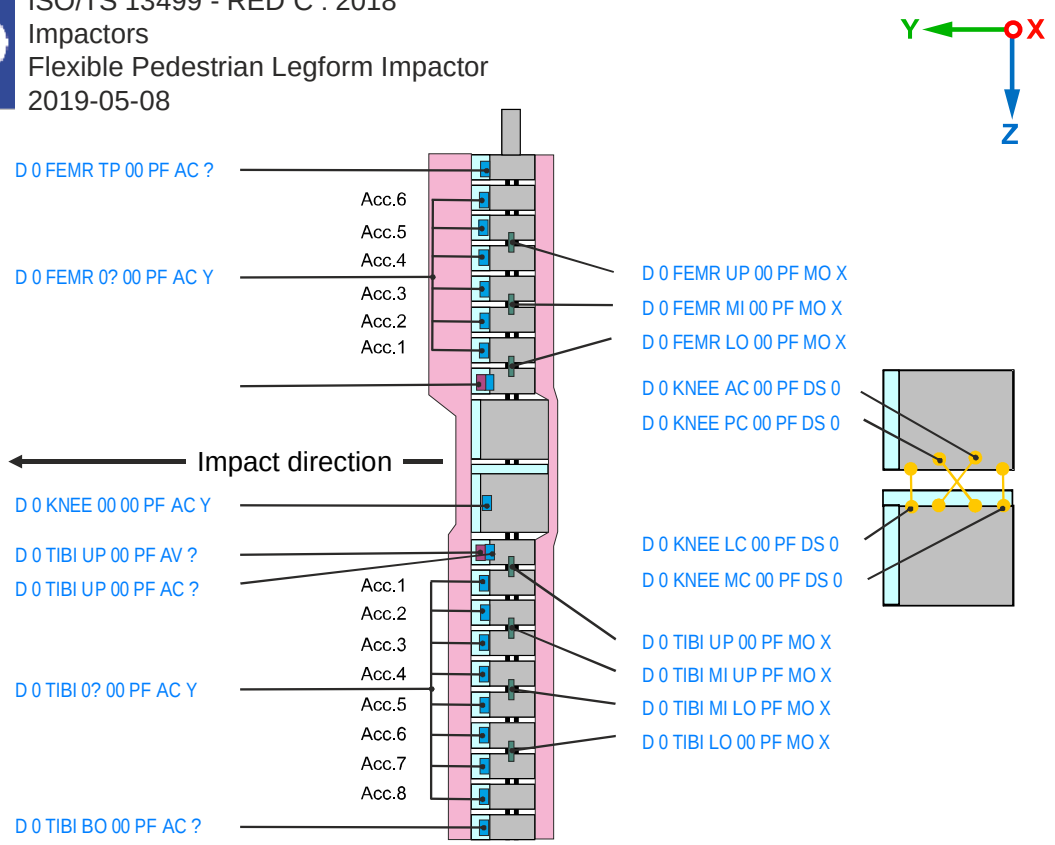
IMP Impactors: flexpli-legform

Valid since Version **1.6.2**

pedestrian flexible legform impactor

ISO/TS 13499 - RED C : 2018
Impactors
Flexible Pedestrian Legform Impactor
2019-05-08



D0FEMRUP00PFMOX	Femur Up Moment X
D0FEMRMI00PFMOX	Femur Mi Moment X
D0FEMRLO00PFMOX	Femur Lo Moment X
D0KNEELC00PFDS0	Knee LCL Elongation
D0KNEEAC00PFDS0	Knee ACL Elongation
D0KNEEPC00PFDS0	Knee PCL Elongation
D0KNEEMC00PFDS0	Knee MCL Elongation
D0TIBIUP00PFMOX	Tibia Up Moment X
D0TIBIMIUPPFMOX	Tibia Mi Up Mom X
D0TIBIMILOPFMOX	Tibia Mi Lo Mom X
D0TIBILO00PFMOX	Tibia Lo Moment X
D0FEMRTP00PFACX	Femur Top Acc X
D0FEMRTP00PFACY	Femur Top Acc Y
D0FEMRTP00PFACZ	Femur Top Acc Z
D0FEMR0600PFACY	Femur Seg 6 Acc Y
D0FEMR0500PFACY	Femur Seg 5 Acc Y
D0FEMR0400PFACY	Femur Seg 4 Acc Y
D0FEMR0300PFACY	Femur Seg 3 Acc Y
D0FEMR0200PFACY	Femur Seg 2 Acc Y
D0FEMR0100PFACY	Femur Seg 1 Acc Y

D0FEMRLO00PFACX	Femur Lo Acc X
D0FEMRLO00PFACY	Femur Lo Acc Y
D0FEMRLO00PFACZ	Femur Lo Acc Z
D0FEMRLO00PFAVX	Femur Lo Ang Vel X
D0FEMRLO00PFAVY	Femur Lo Ang Vel Y
D0FEMRLO00PFAVZ	Femur Lo Ang Vel Z
D0TIBIUP00PFACX	Tibia Up Acc X
D0TIBIUP00PFACY	Tibia Up Acc Y
D0TIBIUP00PFACZ	Tibia Up Acc Z
D0TIBIUP00PFAVX	Tibia Up Ang Vel X
D0TIBIUP00PFAVY	Tibia Up Ang Vel Y
D0TIBIUP00PFAVZ	Tibia Up Ang Vel Z
D0TIBI0100PFACY	Tibia Seg 1 Acc Y
D0TIBI0200PFACY	Tibia Seg 2 Acc Y
D0TIBI0300PFACY	Tibia Seg 3 Acc Y
D0TIBI0400PFACY	Tibia Seg 4 Acc Y
D0TIBI0500PFACY	Tibia Seg 5 Acc Y
D0TIBI0600PFACY	Tibia Seg 6 Acc Y
D0TIBI0700PFACY	Tibia Seg 7 Acc Y
D0TIBI0800PFACY	Tibia Seg 8 Acc Y
D0TIBIBO00PFACX	Tibia Bo Acc X
D0TIBIBO00PFACY	Tibia Bo Acc Y
D0TIBIBO00PFACZ	Tibia Bo Acc Z

ISO_IMP_16R2

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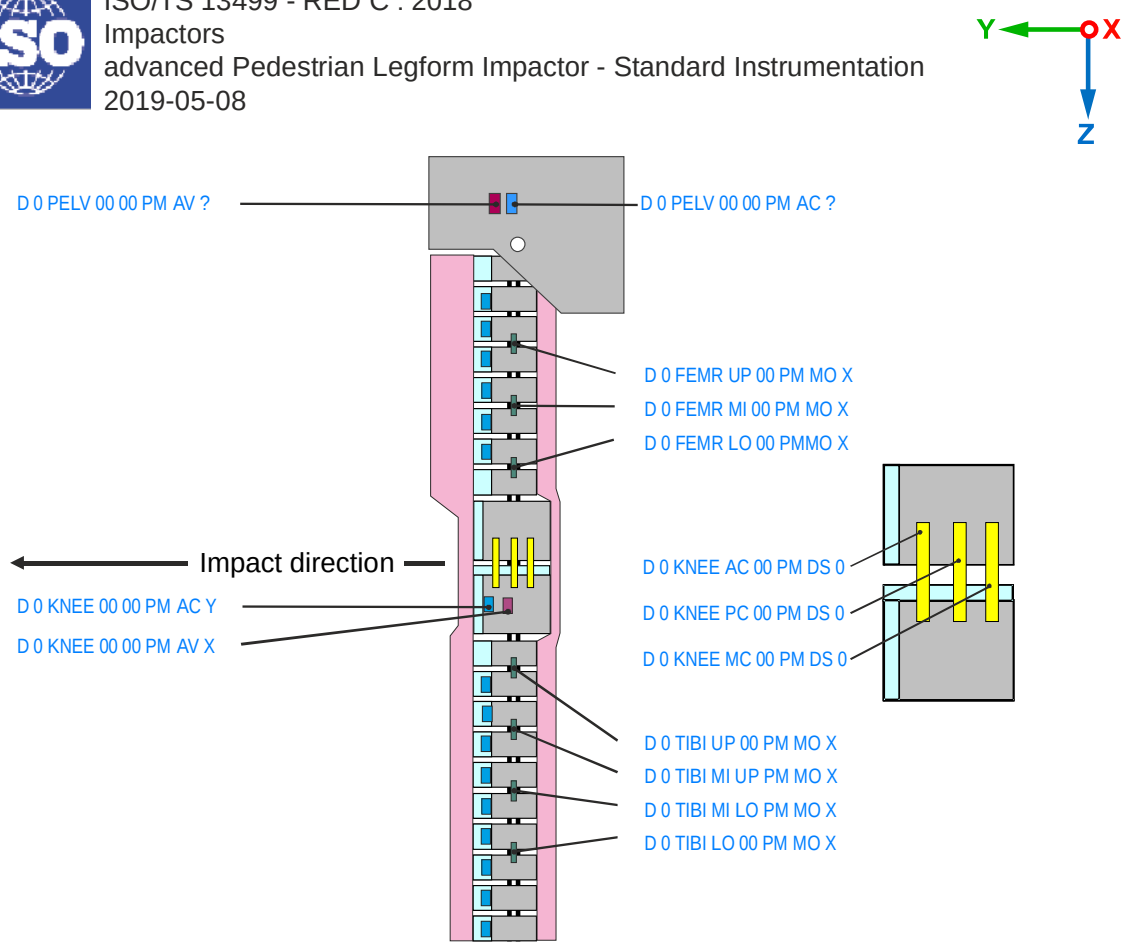
IMP Impactors: aPLI-legform

Valid since Version **1.6.2**

Advanced Pedestrian Legform aPLI

ISO/TS 13499 - RED C : 2018
Impactors
advanced Pedestrian Legform Impactor - Standard Instrumentation
2019-05-08



D0PELV0000PMAVX	Pelvis Angular Velocity X	(Upper Body)
D0PELV0000PMAVY	Pelvis Angular Velocity Y	(Upper Body)
D0PELV0000PMAVZ	Pelvis Angular Velocity Z	(Upper Body)
D0PELV0000PMACX	Pelvis Acceleration X	(Upper Body)
D0PELV0000PMACY	Pelvis Acceleration Y	(Upper Body)
D0PELV0000PMACZ	Pelvis Acceleration Z	(Upper Body)
D0FEMRUP00PMMOX	Femur Upper Bending Moment X	
D0FEMRMI00PMMOX	Femur Middle Bending Moment X	
D0FEMRLO00PMMOX	Femur Lower Bending Moment X	
D0KNEE0000PMACY	Knee Acceleration Y	
D0KNEE0000PMAVX	Knee Angular Velocity X	
D0KNEEAC00PMDS0	Knee ACL Elongation	
D0KNEEPC00PMDS0	Knee PCL Elongation	
D0KNEEMC00PMDS0	Knee MCL Elongation	
D0TIBIUP00PMMOX	Tibia Upper Bending Moment X	
D0TIBIMIUPPMMOX	Tibia Middle Upper Bending Moment X	
D0TIBIMILOPMMOX	Tibia Middle Lower Bending Moment X	
D0TIBILO00PMMOX	Tibia Lower Bending Moment X	

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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ISO_IMP_5_162_20190508.EMF

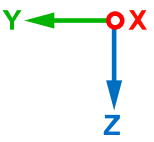
-> IMP <- 5 of 6

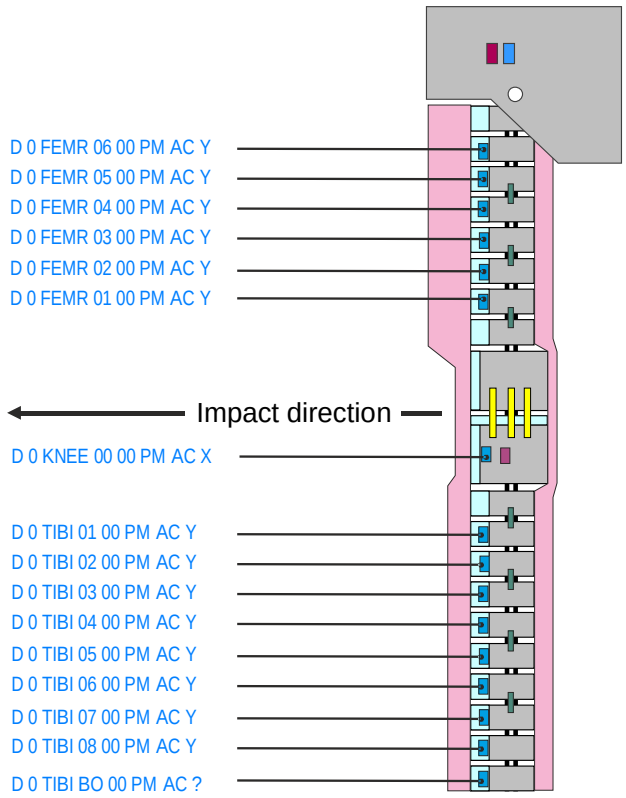
IMP Impactors: aPLI-legform

Valid since Version **1.6.2**

Advanced Pedestrian Legform aPLI (AC+)

ISO/TS 13499 - RED C : 2018
Impactors
advanced Pedestrian Legform Impactor - Additional Instrumentation
2019-05-08





D0FEMR0600PMACY Femur Segment 6 Acceleration Y
D0FEMR0500PMACY Femur Segment 5 Acceleration Y
D0FEMR0400PMACY Femur Segment 4 Acceleration Y
D0FEMR0300PMACY Femur Segment 3 Acceleration Y
D0FEMR0200PMACY Femur Segment 2 Acceleration Y
D0FEMR0100PMACY Femur Segment 1 Acceleration Y

D0KNEE0000PMACX Knee Acceleration X

D0TIBI0100PMACY Tibia Segment 1 Acceleration Y
D0TIBI0200PMACY Tibia Segment 2 Acceleration Y
D0TIBI0300PMACY Tibia Segment 3 Acceleration Y
D0TIBI0400PMACY Tibia Segment 4 Acceleration Y
D0TIBI0500PMACY Tibia Segment 5 Acceleration Y
D0TIBI0600PMACY Tibia Segment 6 Acceleration Y
D0TIBI0700PMACY Tibia Segment 7 Acceleration Y
D0TIBI0800PMACY Tibia Segment 8 Acceleration Y

D0TIBIBO00PMACX Tibia Bottom Acceleration X
D0TIBIBO00PMACY Tibia Bottom Acceleration Y
D0TIBIBO00PMACZ Tibia Bottom Acceleration Z

ISO_IMP_16R2

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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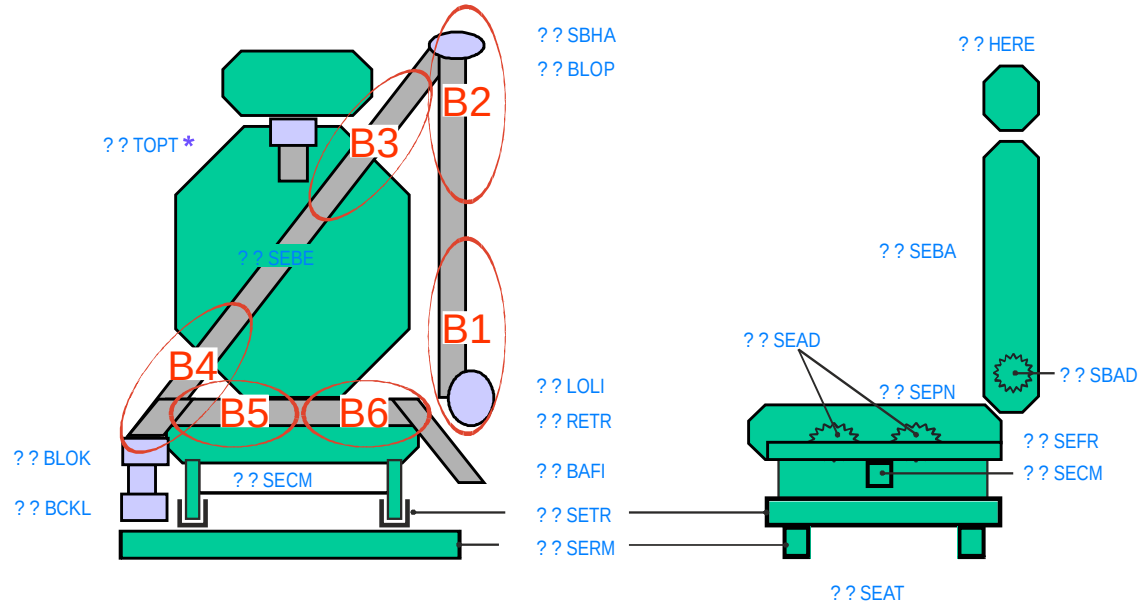
SEAT_1 Seat

Valid since Version **1.6.1**

belts and seat structure

ISO/TS 13499 - RED C : 2019
Seat 1
Seat Front and Side View
2019-07-17



? ? SEBE	???? B1 Seat Belt at Retractor	? ? SEAT	Seat
? ? SEBE	???? B2 Seat Belt below Belt Loop	? ? SEBA	Seat Back
? ? SEBE	???? B3 Seat Belt at upper Diag. Belt	? ? SBAD	Seat Back Adjuster
? ? SEBE	???? B4 Seat Belt at lower Diag. Belt	? ? SEFR	Seat Frame
? ? SEBE	???? B5 Seat Belt at Lap Belt inside	? ? SETR	Seat Track
? ? SEBE	???? B6 Seat Belt at Lap Belt outside	? ? SEAD	Seat Adjuster
		? ? SEPN	Seat Pan
? ? PRET	???? B1 Pretensioner at Retractor	? ? HERE	Head Restraint
? ? PRET	???? B2 Pretensioner below Belt Loop	? ? SECM	Seat Cross Member
? ? PRET	???? B4 Pretensioner at lower Diag. Belt	? ? SERM	Seat Rail Mount
? ? PRET	???? B6 Pretensioner at Lap Belt outside		

? ? LOLI	Load Limiter
? ? RETR	Retractor
? ? SBHA	Seat Belt Height Adjuster
? ? BLOP	Belt Loop
? ? BLOK	Belt Lock
? ? BCKL	Buckle
? ? BAFI	Belt Anchor Fitting

* Only at the rear seats

? ? TOPT	Top Tether

ISO_SEAT_16R2

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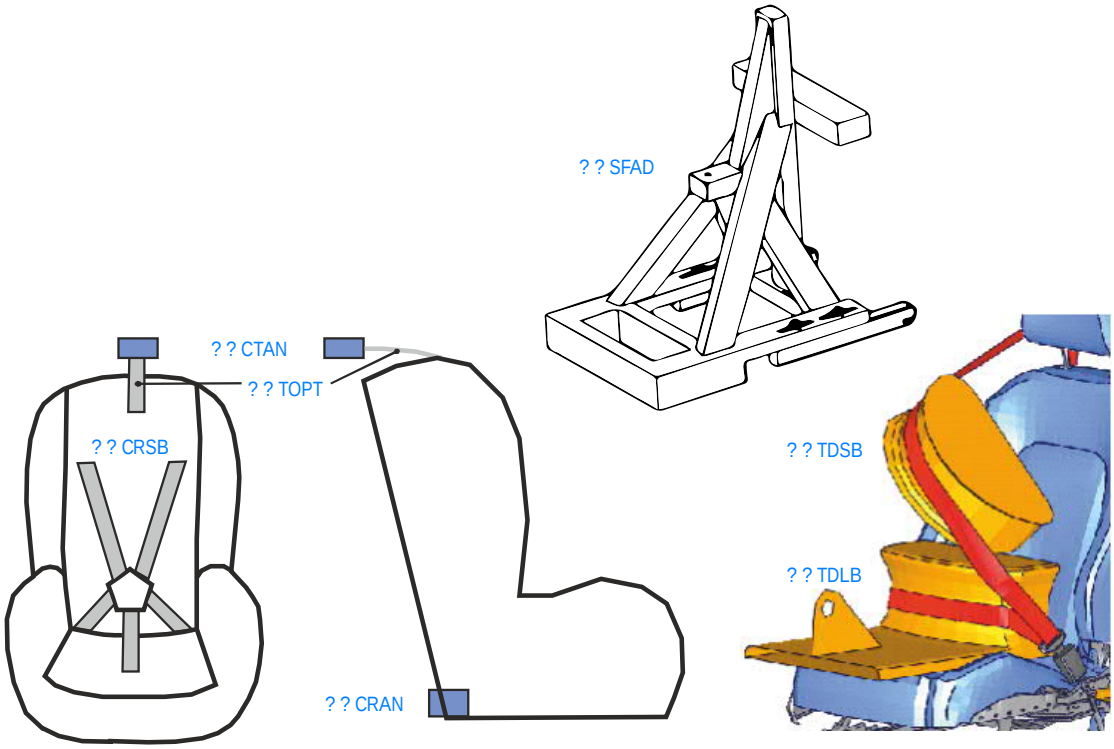
SEAT_2 Seat and traction devices

Valid since Version **1.6.1**

traction devices, Child restraint anchorage

ISO/TS 13499 - RED C : 2019
Seat 2
Child Restraint Systems
2019-07-17



? ? 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_16R2

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ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
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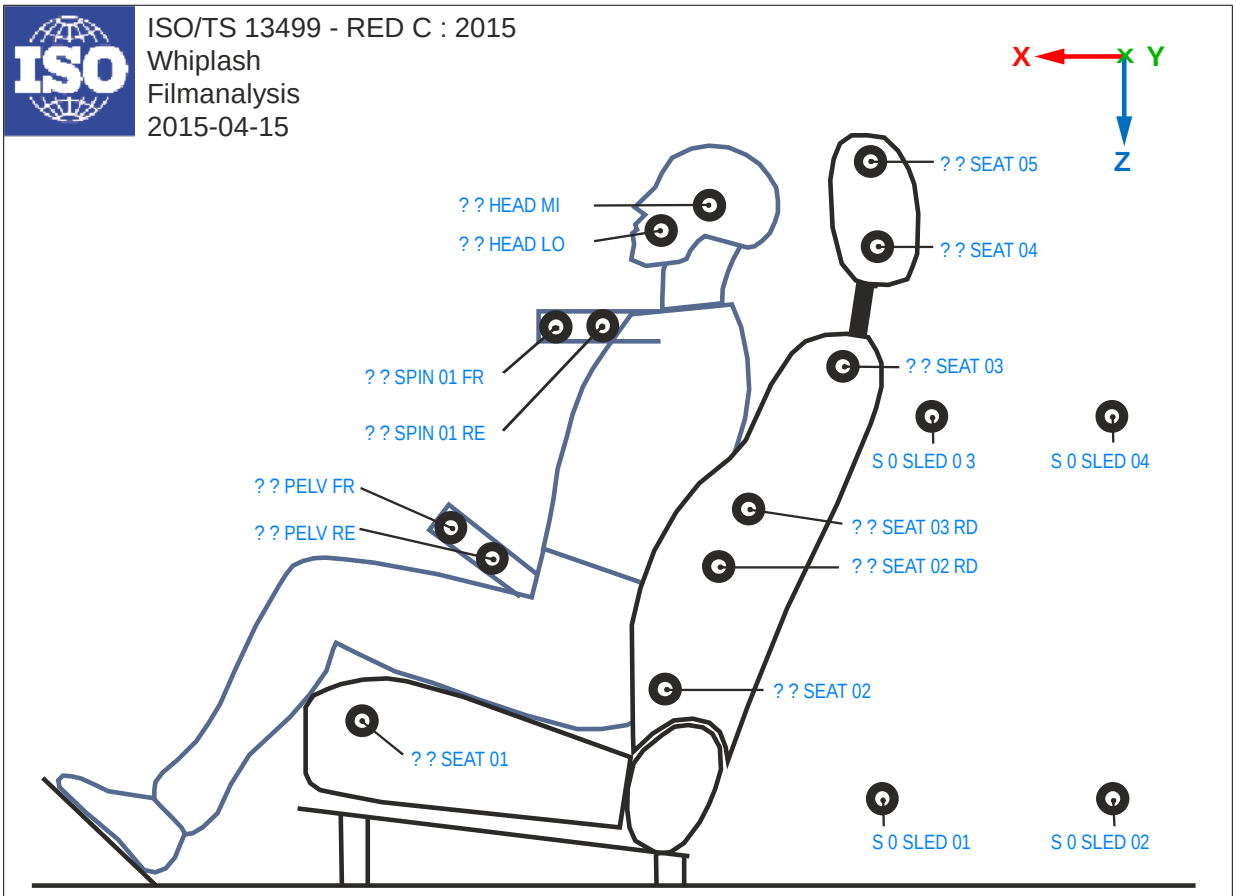
ISO_SEAT_2_162_20190717.EMF

-> SEAT_2 <- 2 of 2

WPL_1 Whiplash

Valid since Version **1.6.2.p2**
whiplash filmanalysis




```
? ? SEAT 01 00 00 DS ? V   ST1    Seat Base forward
? ? SEAT 02 00 00 DS ? V   ST2    Seat Back lower
? ? SEAT 02 RD 00 DS ? V   ST2'   Seat Back mid #1
? ? SEAT 03 00 00 DS ? V   ST3    Seat Back upper
? ? SEAT 03 RD 00 DS ? V   ST3'   Seat Back mid #2
? ? SEAT 04 00 00 DS ? V   ST4    Lower Head Restraint
? ? SEAT 05 00 00 DS ? V   ST5    Upper Head Restraint

? ? HEAD MI 00 BR DS ? V   DT6    Head CoG
? ? HEAD LO 00 BR DS ? V   DT7    Cheek
? ? SPIN 01 RE BR DS ? V   DT8    T1 Bracket proximal
? ? SPIN 01 FR BR DS ? V   DT9    T1 Bracket distal
? ? PELV RE 00 BR DS ? V   DT10   Pelvis Bracket proximal
? ? PELV FR 00 BR DS ? V   DT11   Pelvis Bracket distal

S 0 SLED 01 00 00 DS ? V   Ref1   Reference Point #1
S 0 SLED 02 00 00 DS ? V   Ref2   Reference Point #2
S 0 SLED 03 00 00 DS ? V   Ref3   Reference Point #3
S 0 SLED 04 00 00 DS ? V   Ref4   Reference Point #4

Test objects for the seat and the dummy should be S, 1 and C
Possible directions are X, Y, Z and R

? 0 HEAD 00 DI BR VE X V   Rebound velocity of head relative to sled
```

ISO_WPL_16R2

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ISO_WPL_1_162p2_20150415.EMF

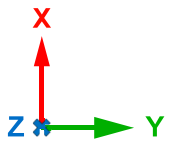
-> WPL_1 <- 1 of 1

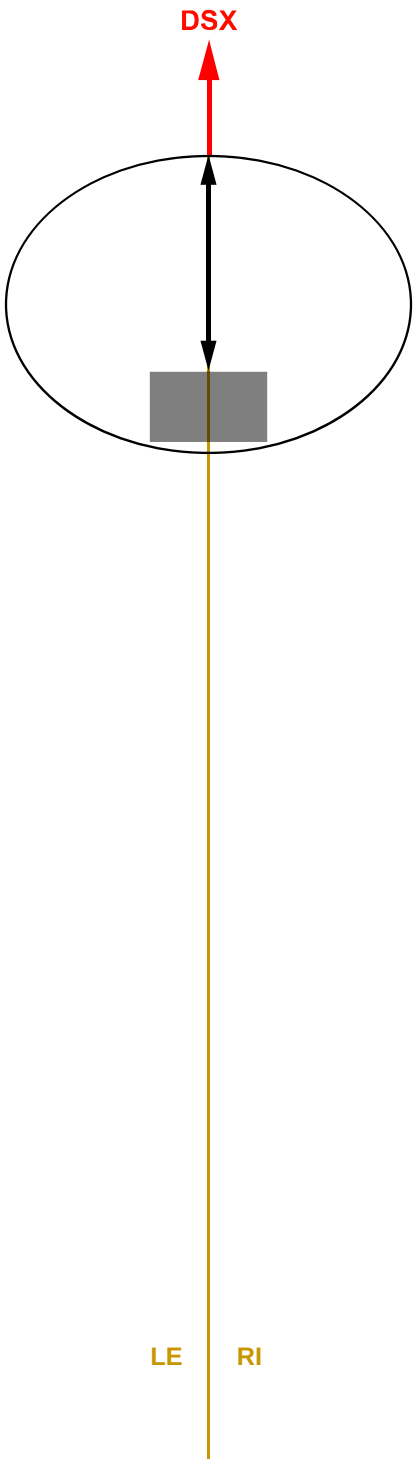
OTHER Chest Deflection Measurement

Valid since Version **1.6.2.p3**

Chest Deflection Coding for different dummy types

ISO/TS 13499 - RED C : 2018
Chest Deflection
1 Axis - Frontal Impact
2018-06-13





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

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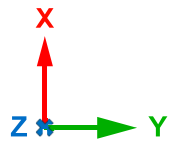
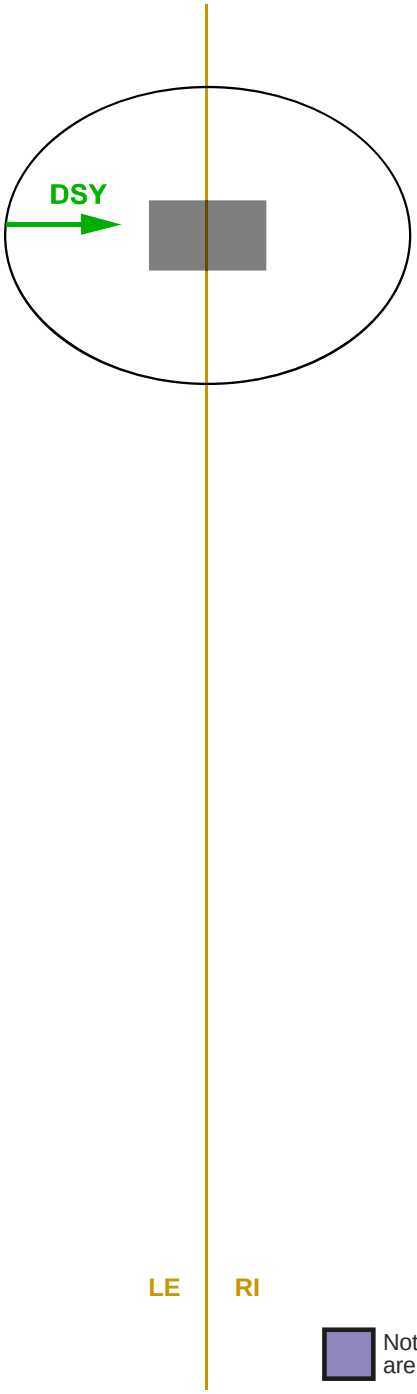
OTHER Chest Deflection Measurement

Valid since Version **1.6.2.p3**

Chest Deflection Coding for different dummy types

ISO/TS 13499 - RED C : 2018
Chest Deflection
1 Axis - Side Impact
2018-06-13





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.

ISO_CHST_16R2

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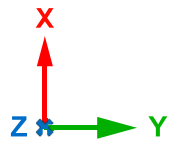
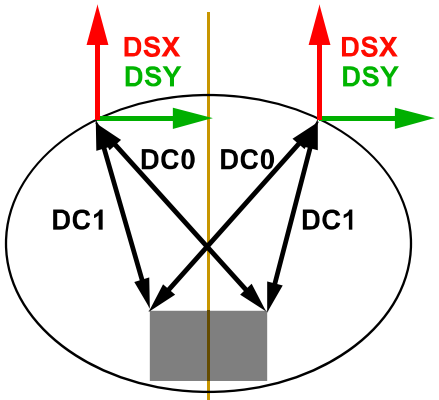
OTHER Chest Deflection Measurement

Valid since Version **1.6.2.p3**

Chest Deflection Coding for different dummy types

ISO/TS 13499 - RED C : 2018
Chest Deflection
2 Axis - Frontal Impact
2018-06-13

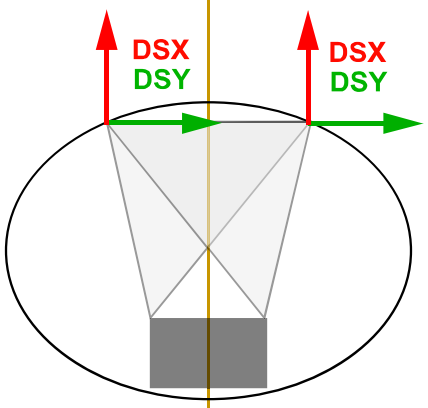




String Potentiometer **H3, HF**

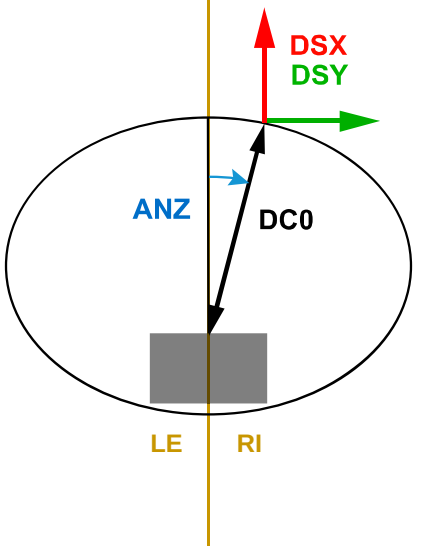
```
transducer:
CHST LE UP ?? DC 0,1
CHST RI UP ?? DC 0,1
CHST LE LO ?? DC 0,1
CHST RI LO ?? DC 0,1

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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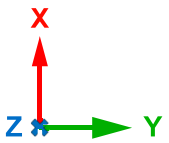
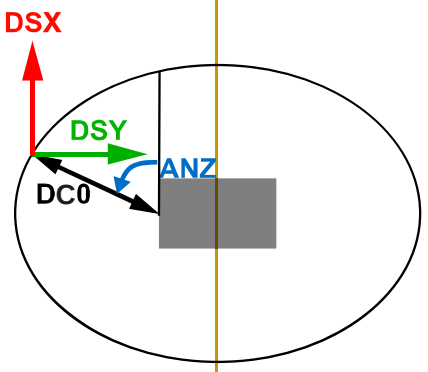
OTHER Chest Deflection Measurement

Valid since Version **1.6.2.p3**

Chest Deflection Coding for different dummy types

ISO/TS 13499 - RED C : 2018
Chest Deflection
2 Axis - Side Impact - Variant
2018-06-13





IR-TRACC 2D **WS**

transducer:

```
SHRI LE 00 WS VO0
SHRI LE 00 WS DC0
SHRI LE 00 WS ANZ
TRRI LE 0? WS VO0
TRRI LE 0? WS DC0
TRRI LE 0? WS ANZ
ABRI LE 0? WS VO0
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 VO0
CHST LE UP QA DC0
CHST LE UP QA ANZ
CHST LE LO QA VO0
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.

ISO_CHST_16R2

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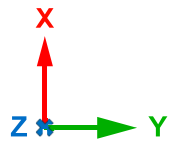
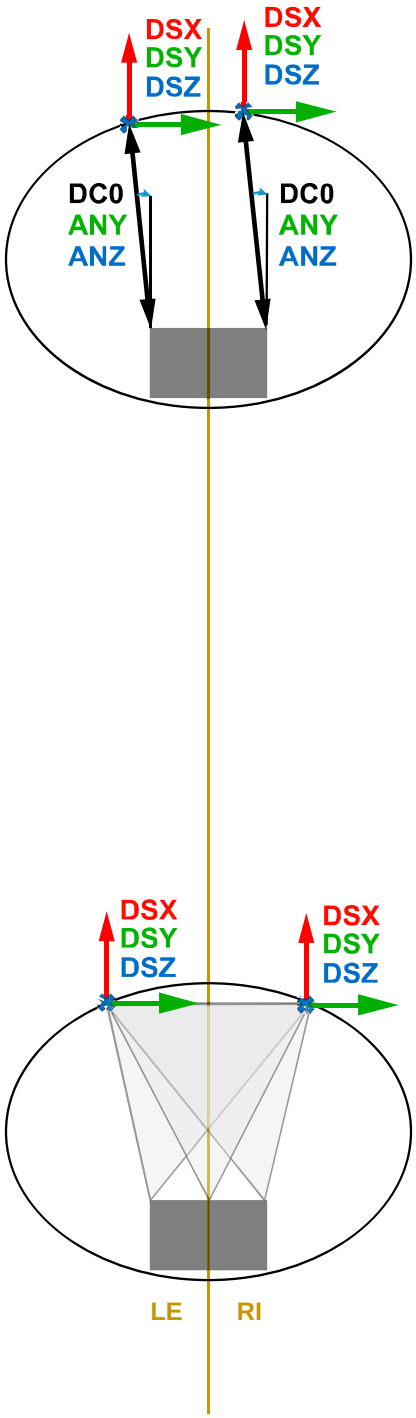
OTHER Chest Deflection Measurement

Valid since Version **1.6.2.p3**

Chest Deflection Coding for different dummy types

ISO/TS 13499 - RED C : 2018
Chest Deflection
3 Axis - Frontal Impact
2018-06-13





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

```
transducer:
CHST LE UP ?? VO0
CHST LE UP ?? DC0
CHST LE UP ?? ANY
CHST LE UP ?? ANZ
CHST RI UP ?? VO0
CHST RI UP ?? DC0
CHST RI UP ?? ANY
CHST RI UP ?? ANZ
CHST LE LO ?? VO0
CHST LE LO ?? DC0
CHST LE LO ?? ANY
CHST LE LO ?? ANZ
CHST RI LO ?? VO0
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

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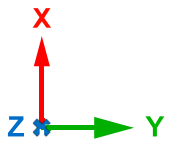
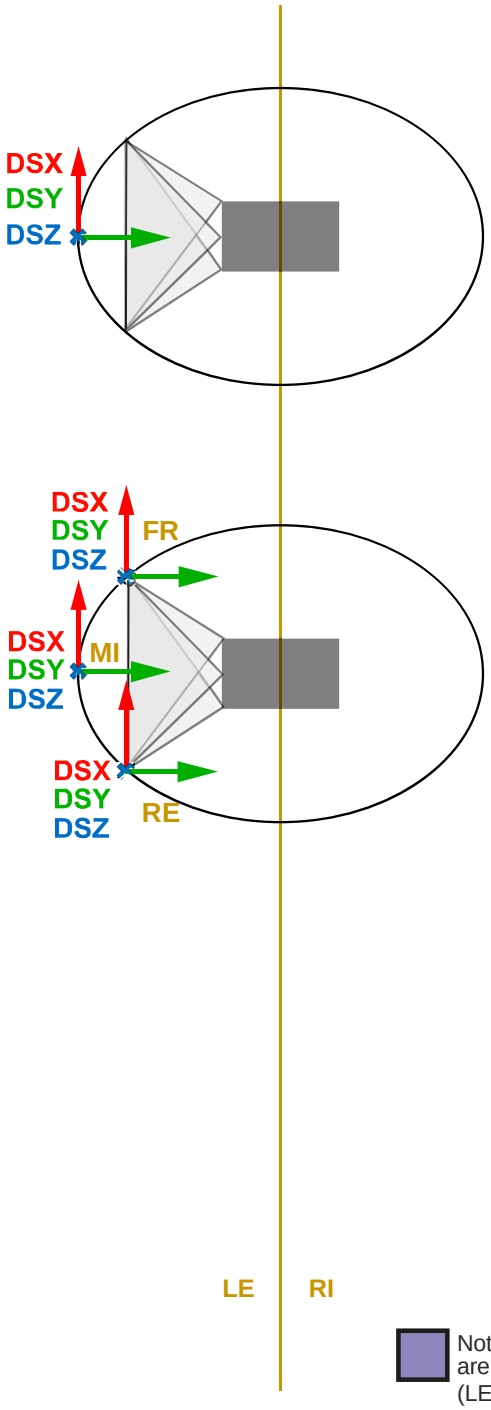
OTHER Chest Deflection Measurement

Valid since Version **1.6.2.p3**

Chest Deflection Coding for different dummy types

ISO/TS 13499 - RED C : 2013
Chest Deflection
3 Axis - Side Impact
2018-06-13





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 (2D IR-TRACC equiv):
SHRI LE 00 WS DS Y
TRRI LE 01 WS DS Y
TRRI LE 02 WS DS Y
TRRI LE 03 WS DS Y
ABRI LE 01 WS DS Y
ABRI LE 02 WS DS Y

calculation (1D IR-TRACC equiv):
SHRI LE 00 WS DS 0
TRRI LE 01 WS DS 0
TRRI LE 02 WS DS 0
TRRI LE 03 WS DS 0
ABRI LE 01 WS DS 0
ABRI LE 02 WS DS 0

optional channels (LED's):
SHRI LE FR,MI,RE WS DS X,Y,Z
TRRI LU FR,MI,RE WS DS X,Y,Z
TRRI LM FR,MI,RE WS DS X,Y,Z
TRRI LL FR,MI,RE WS DS X,Y,Z
ABRI LU FR,MI,RE WS DS X,Y,Z
ABRI LL FR,MI,RE WS DS X,Y,Z
```

Note that sensor locations and ISO Codes are different for right side impact.
(LE -> RI, LM -> RM, LU -> RU, LL -> RL)

ISO_CHST_16R2

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