

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 .

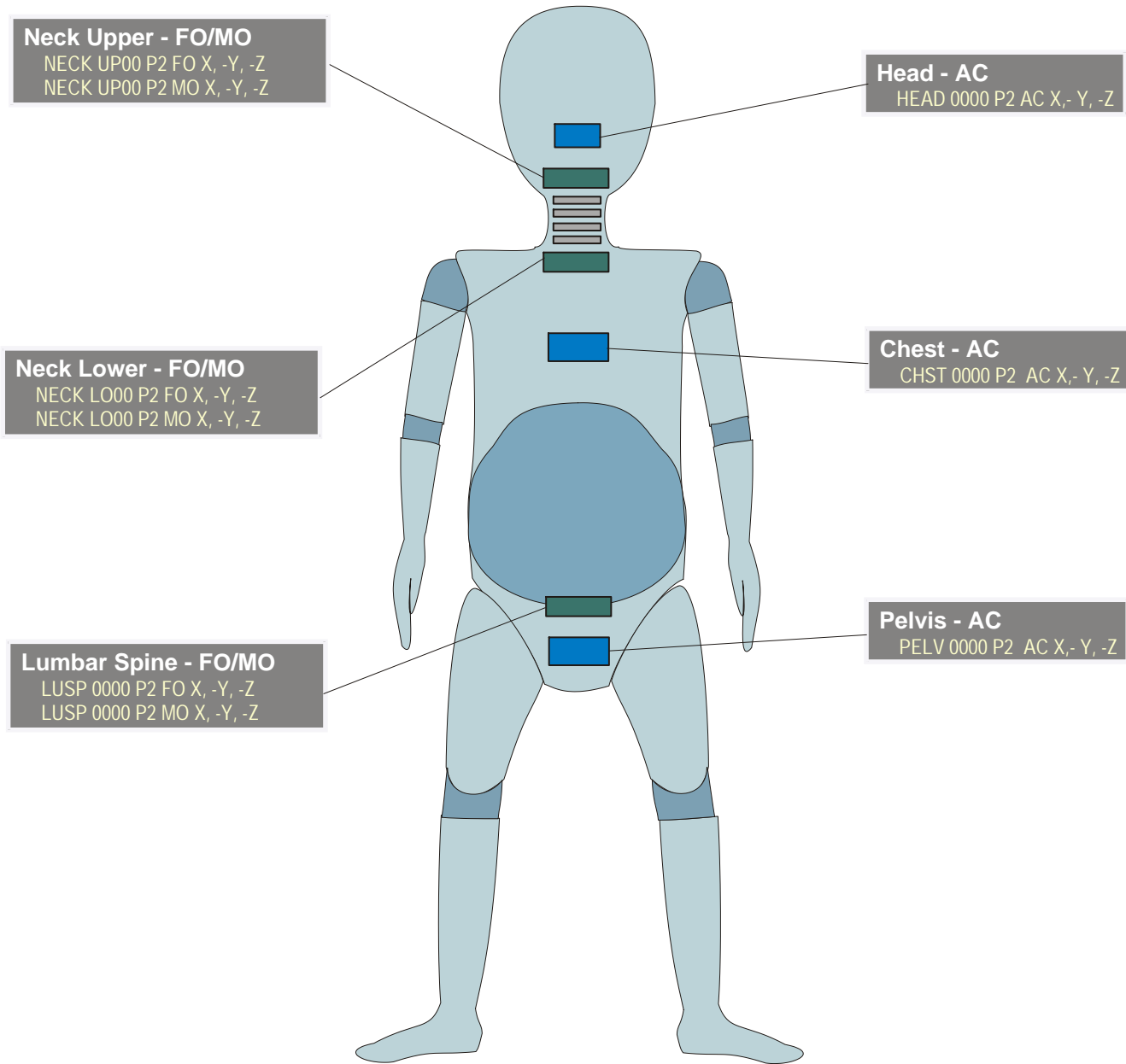
Figures are maintained and updated in parallel for both major versions. File name references will be identical to version 1.

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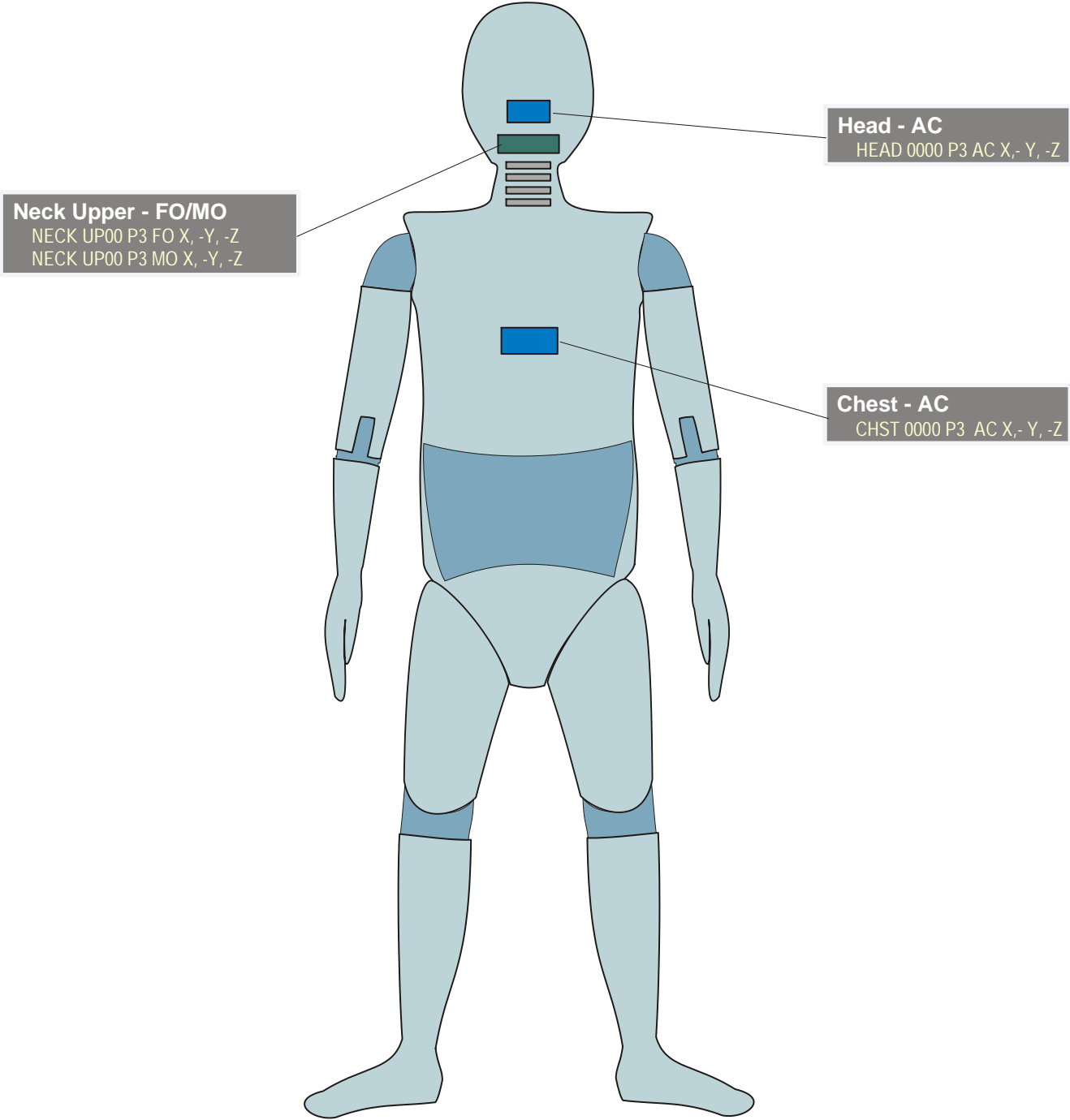
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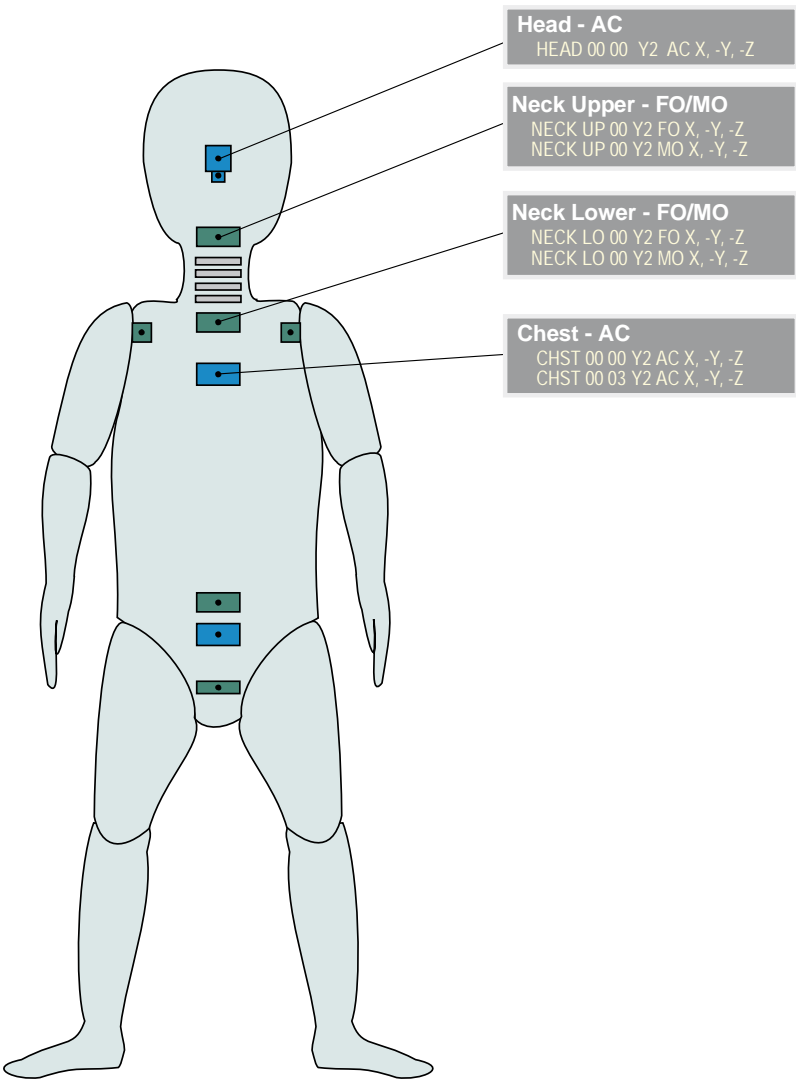
P3 TNO P 3 year old

Valid since Version 1.1





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



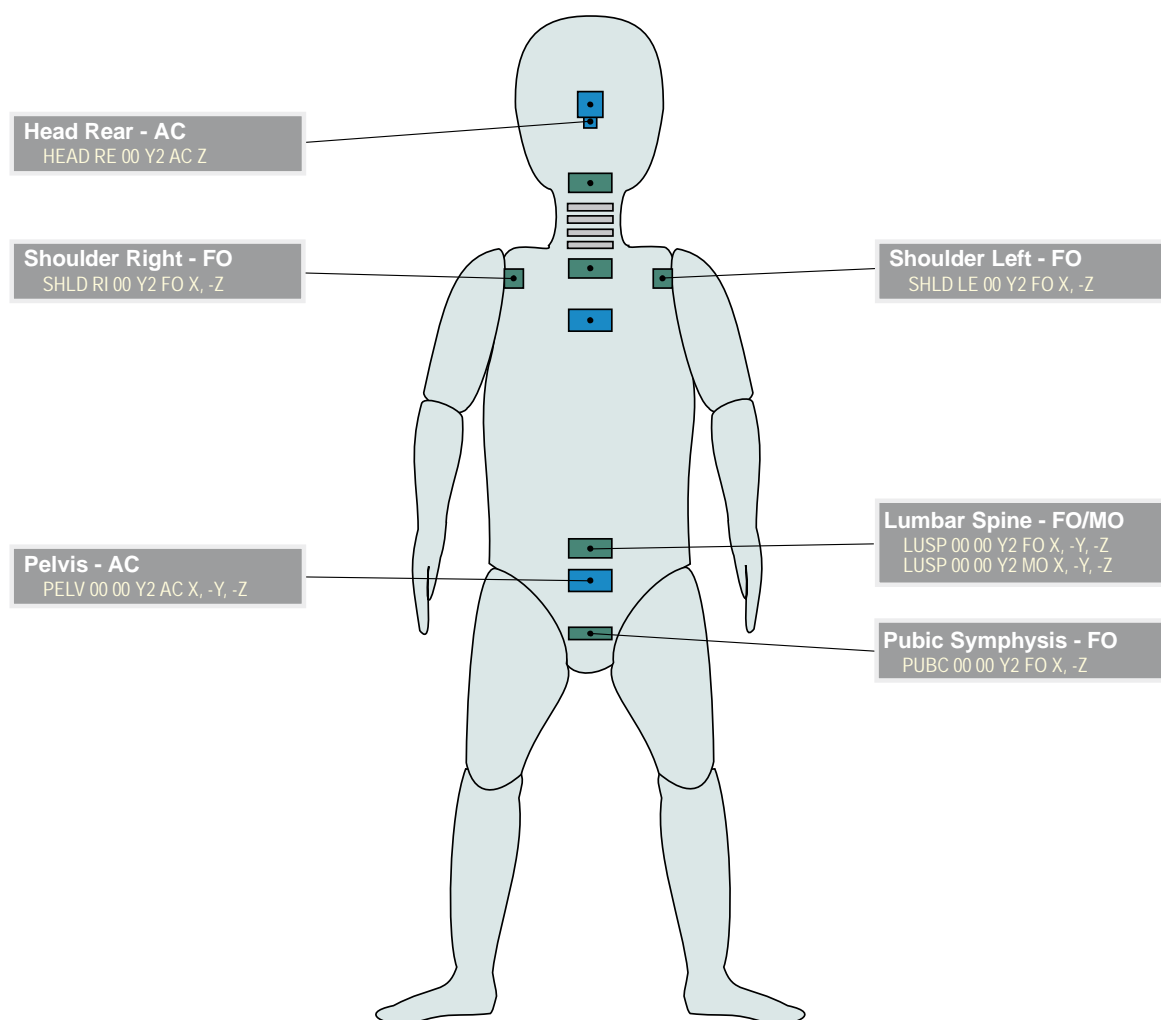
Y2 CRABI 12 month old (2)

Valid since Version

1.6

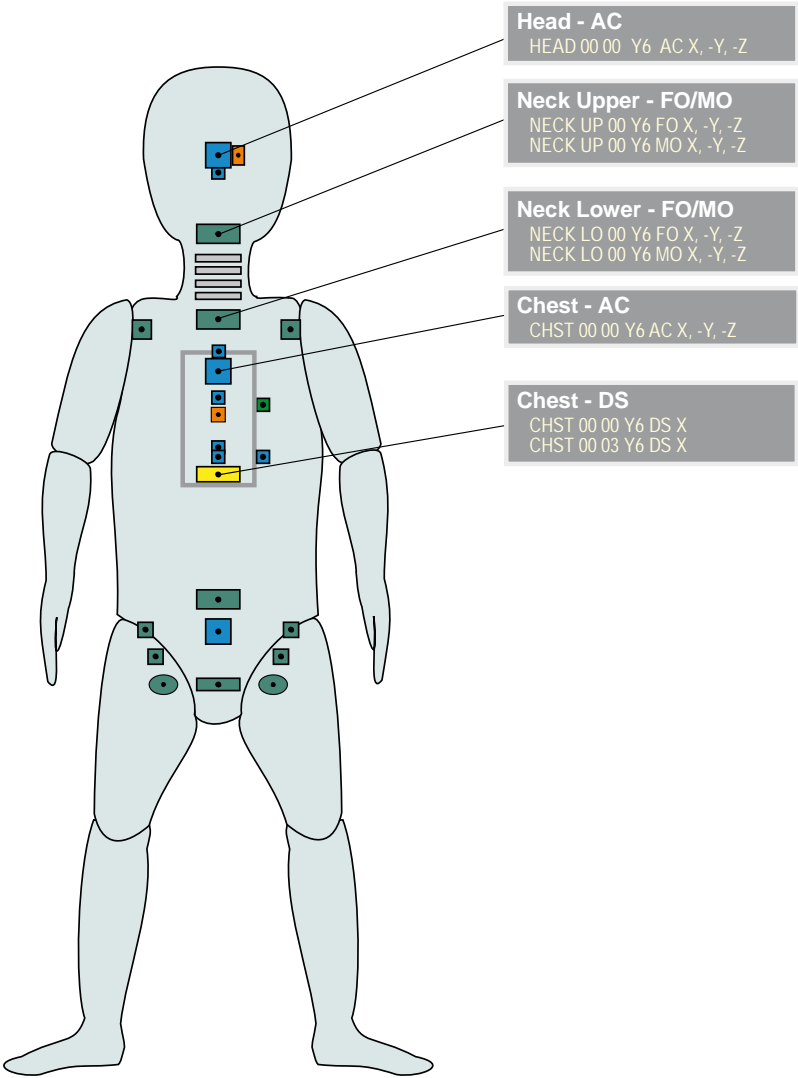


ISO/TS 13499 – RED C : 2010(E)
Y2, CRABI 12 Month Old Infant Dummy
Additional Instrumentation
2011-12-20





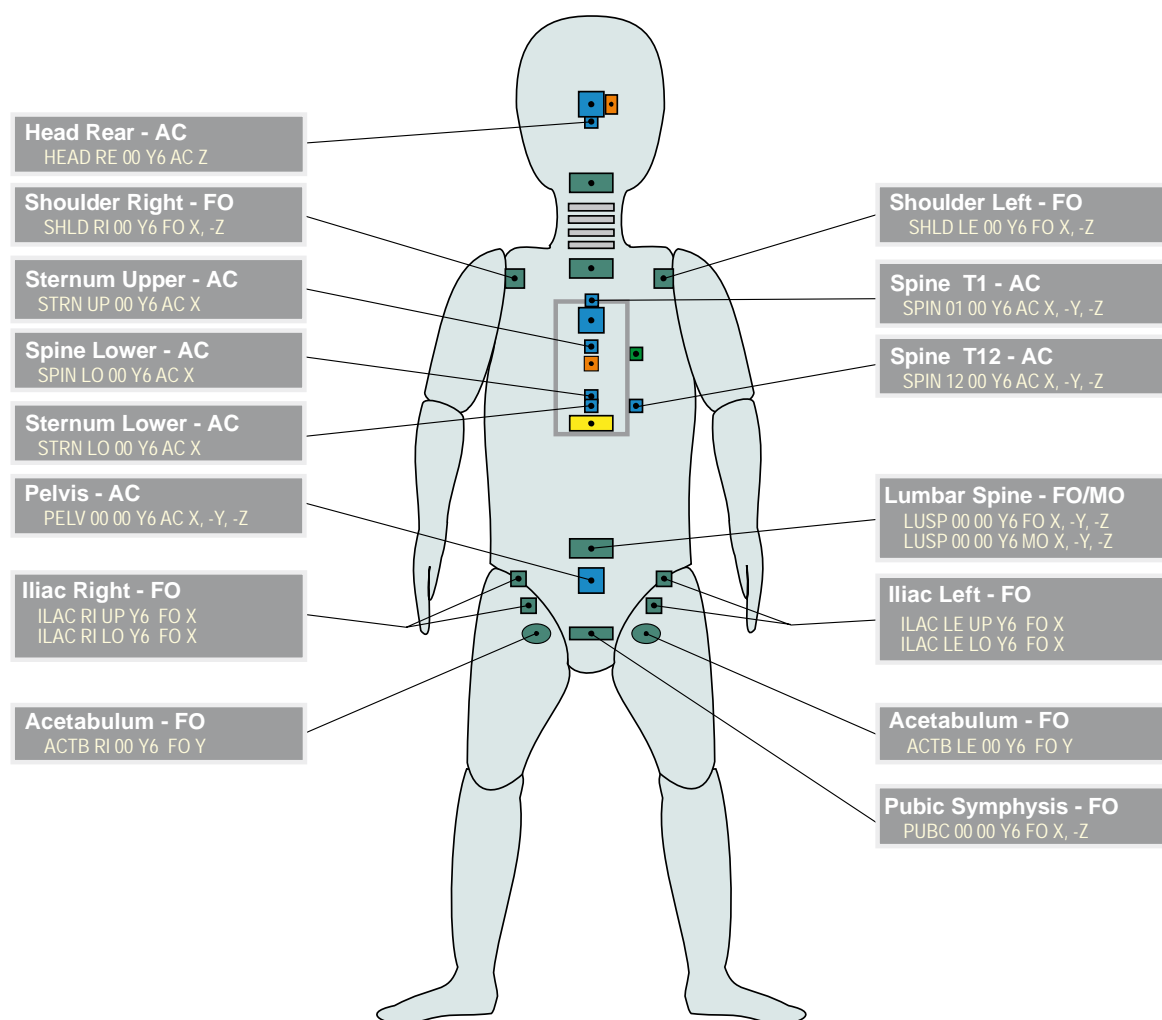
ISO/TS 13499 – RED C : 2010(E)
Y6, Hybrid III 3 Year Old Child Dummy
Standard Instrumentation
2013-07-10



Y6 H III - 3 year old (2)

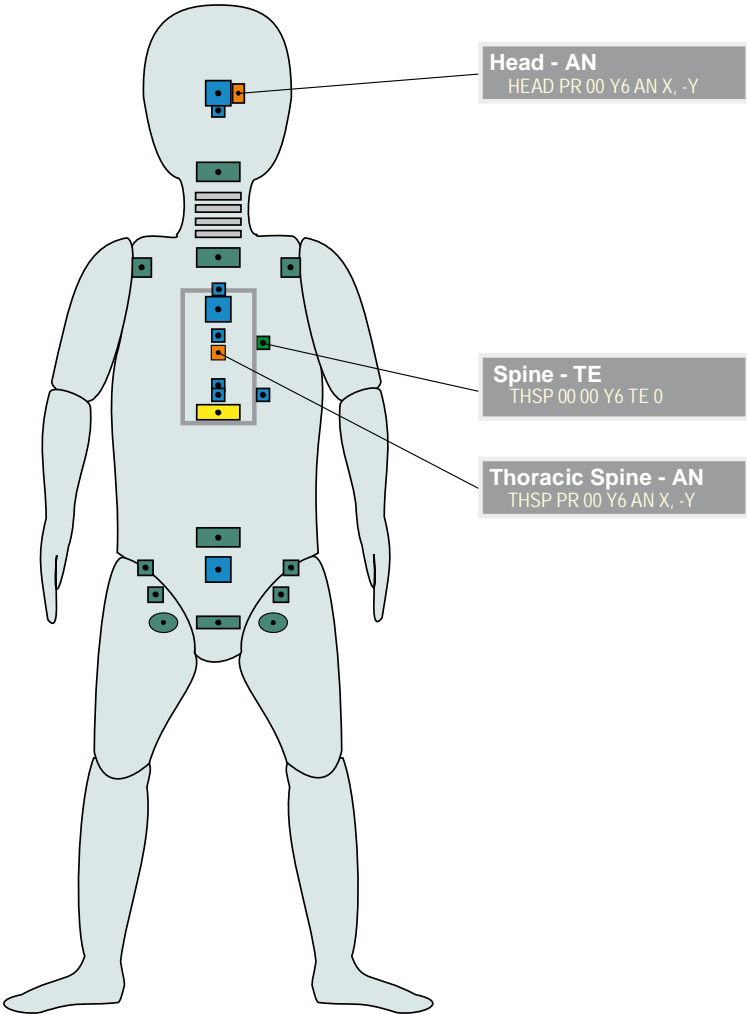
Valid since Version 1.6.1
NPRM Level "A"

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





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



Y7 H III - 6 year old (1)

Valid since Version 1.6.1

NPRM Level "I" and also Subpart S (6 Year weighted)

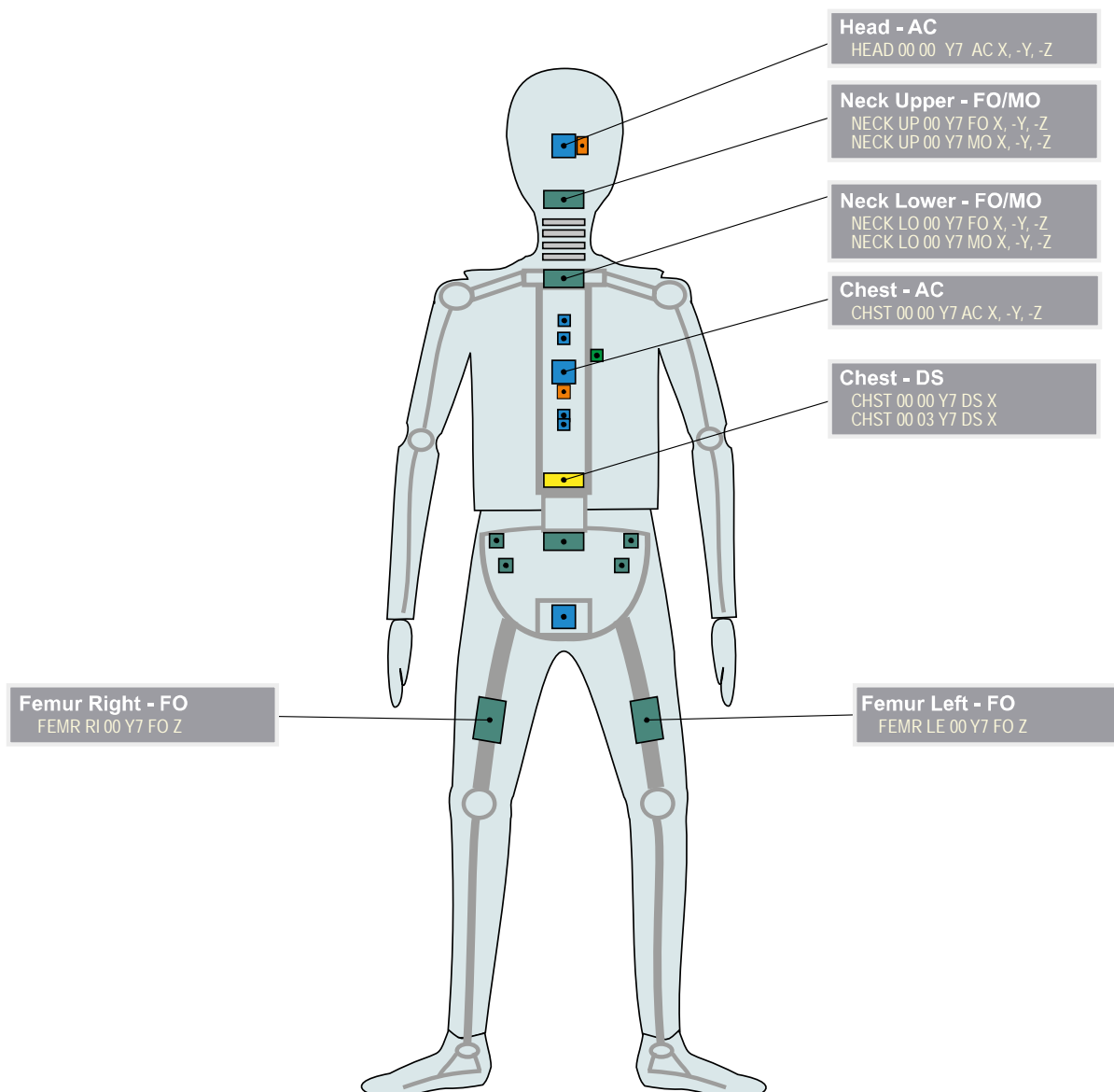


ISO/TS 13499 – RED C : 2010(E)

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

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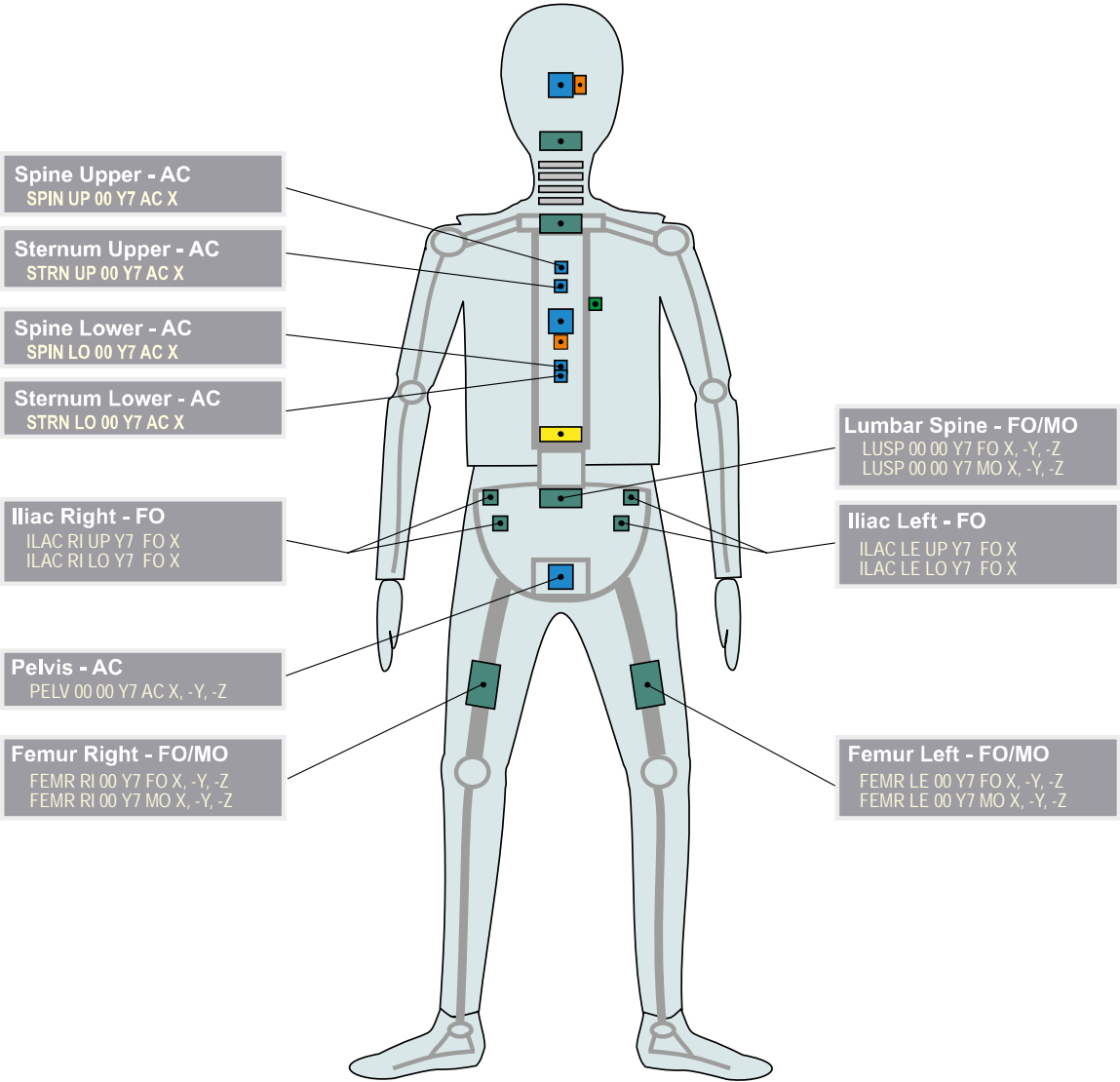
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.
and Dirk Vetter, IATmbH

ISO_Y7_1_162p2_20171213.EMF

-> Y7 <- 1 of 3



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



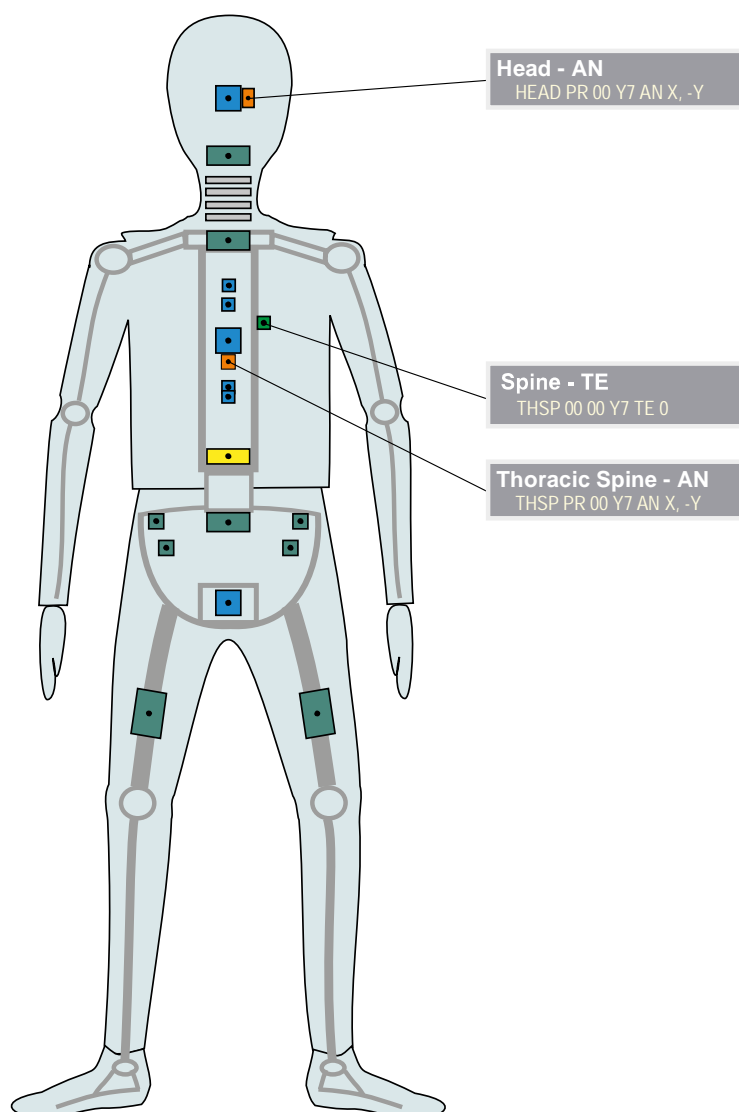
All codes can also be used with the 6-Year weighted Dummy (Subpart S).
Replace in Fine Location 3 the “Y7” with “YW”.

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".

ISO-Y7_20171213

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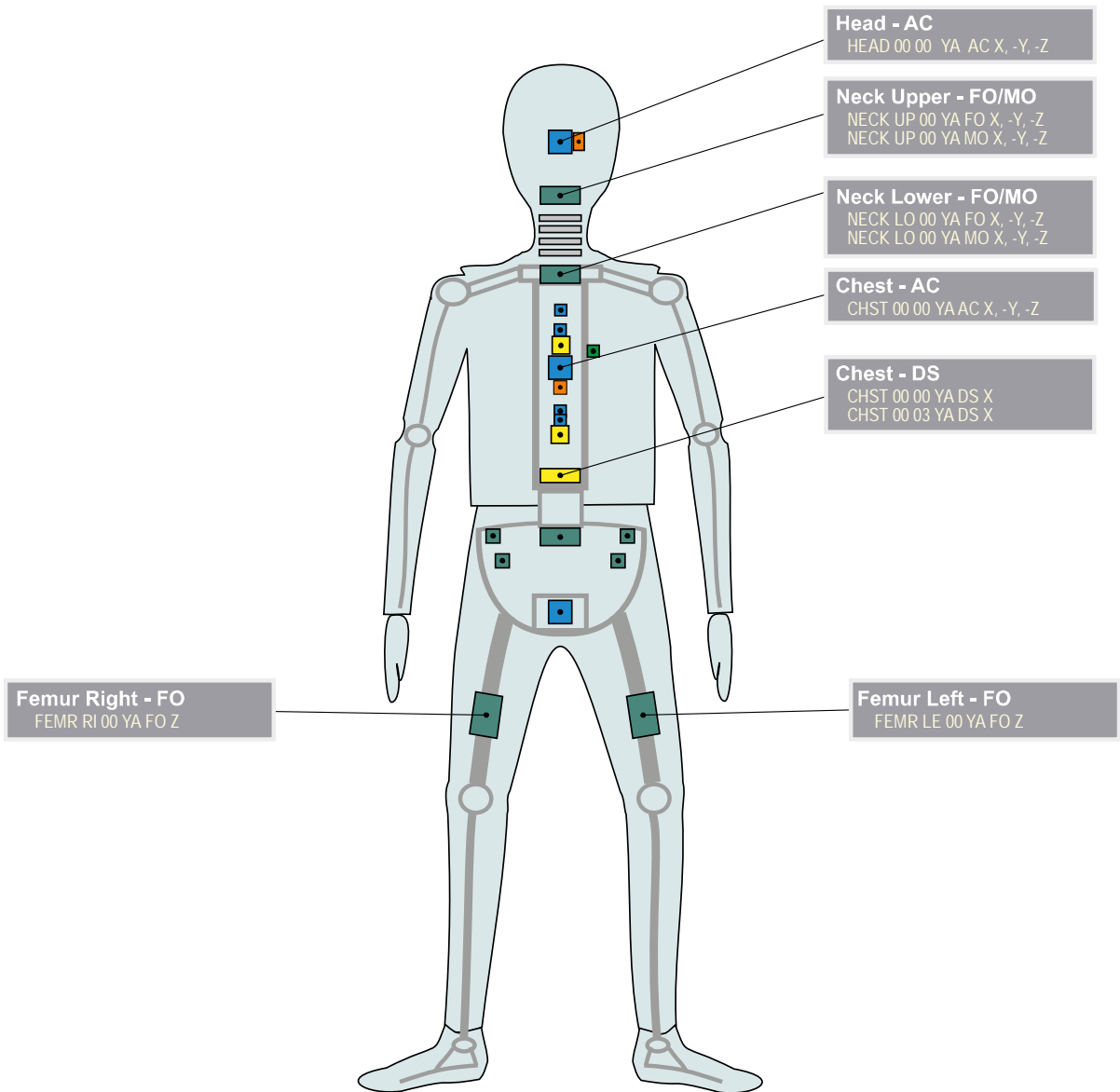
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.
and Dirk Vetter, IATmbH

ISO_Y7_3_162p2_20171213.EMF

-> Y7 <- 3 of 3



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

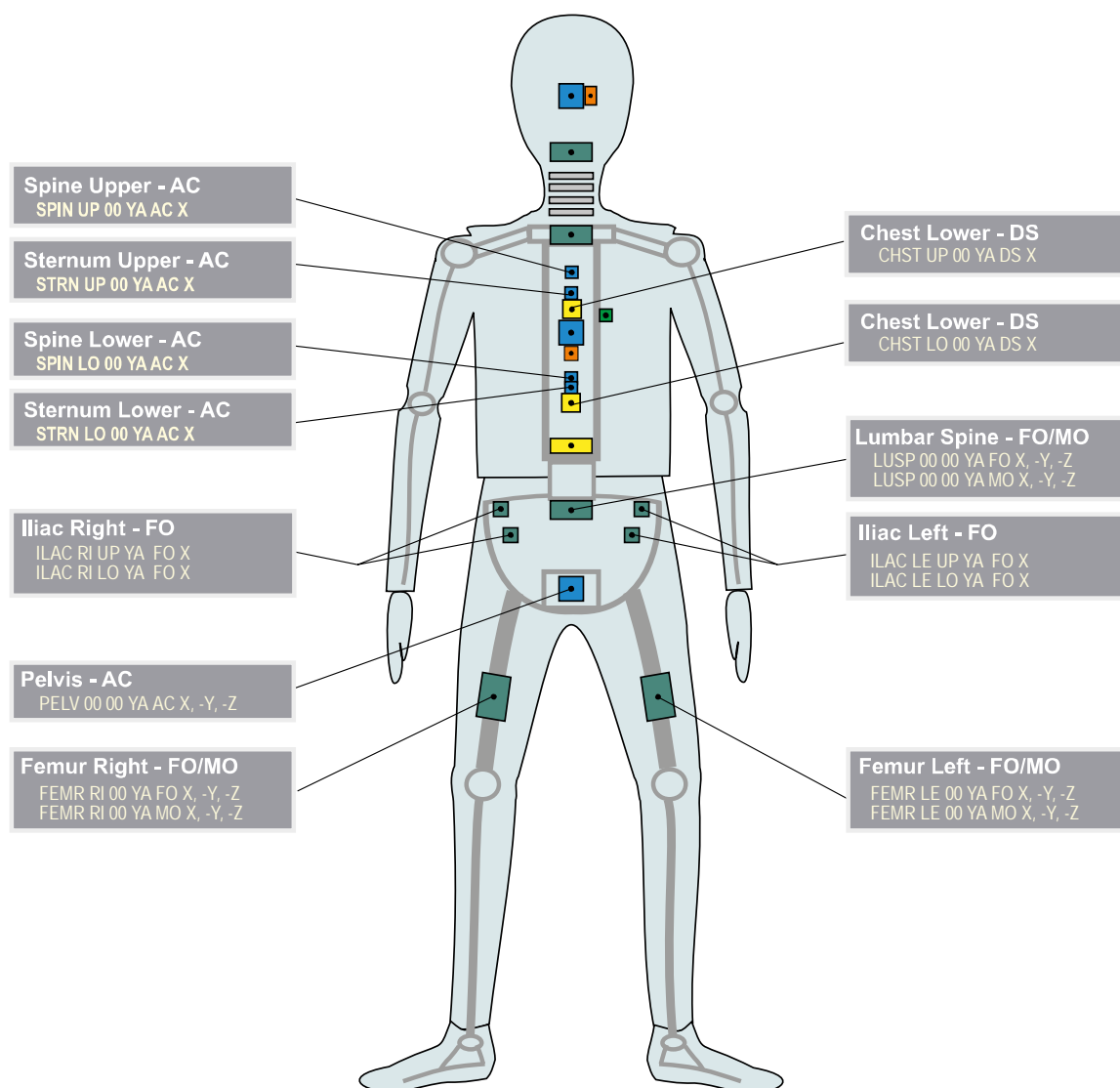


YA H III - 10 year old (2)

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



ISO-YA_20190718

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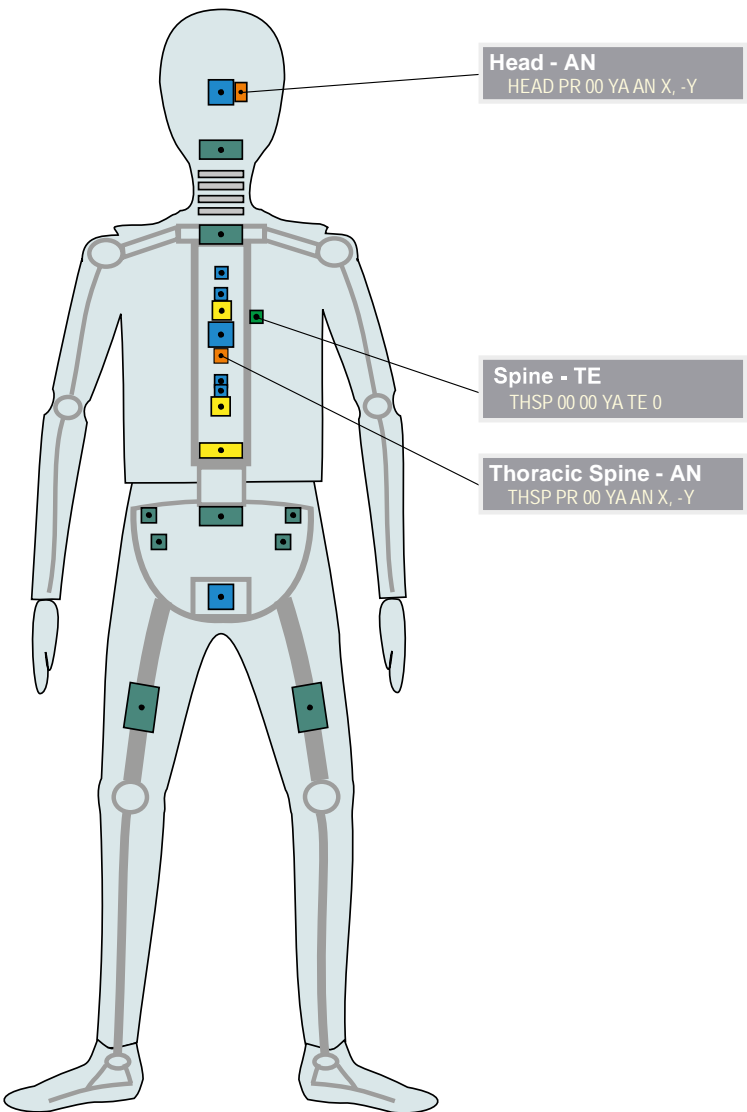
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.
and Dirk Vetter, IAT mbH

ISO_YA_2_162_20190718.EMF

-> YA <- 2 of 3



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



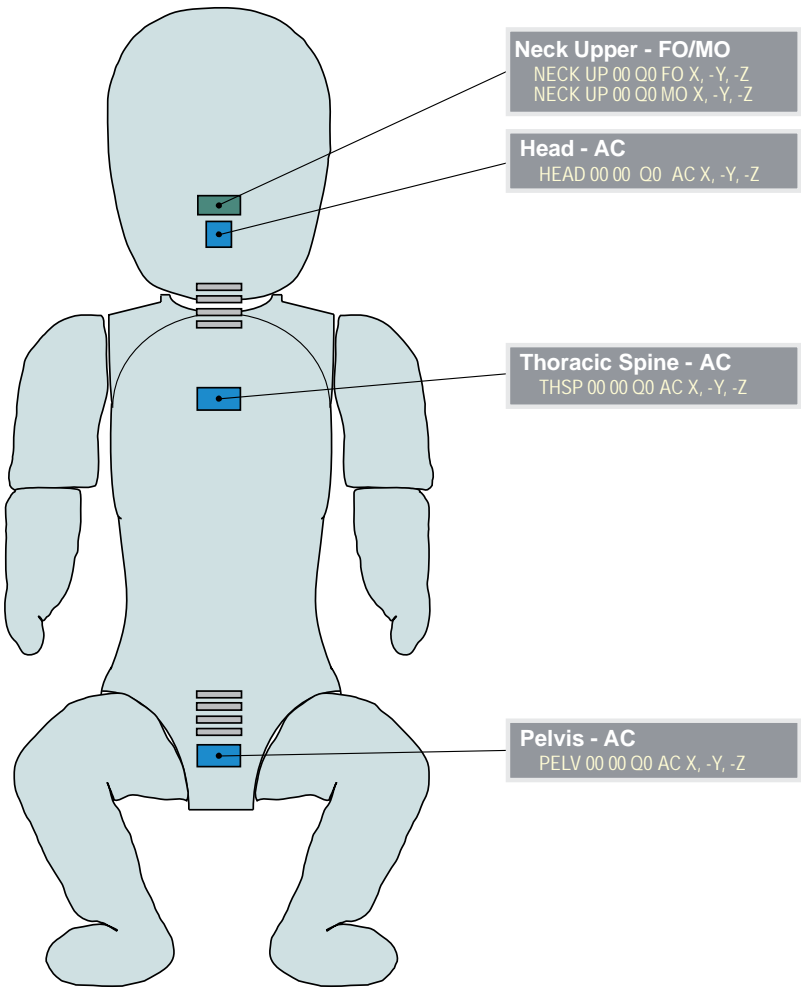
Q0 Q0 newborn


Valid since Version 1.6



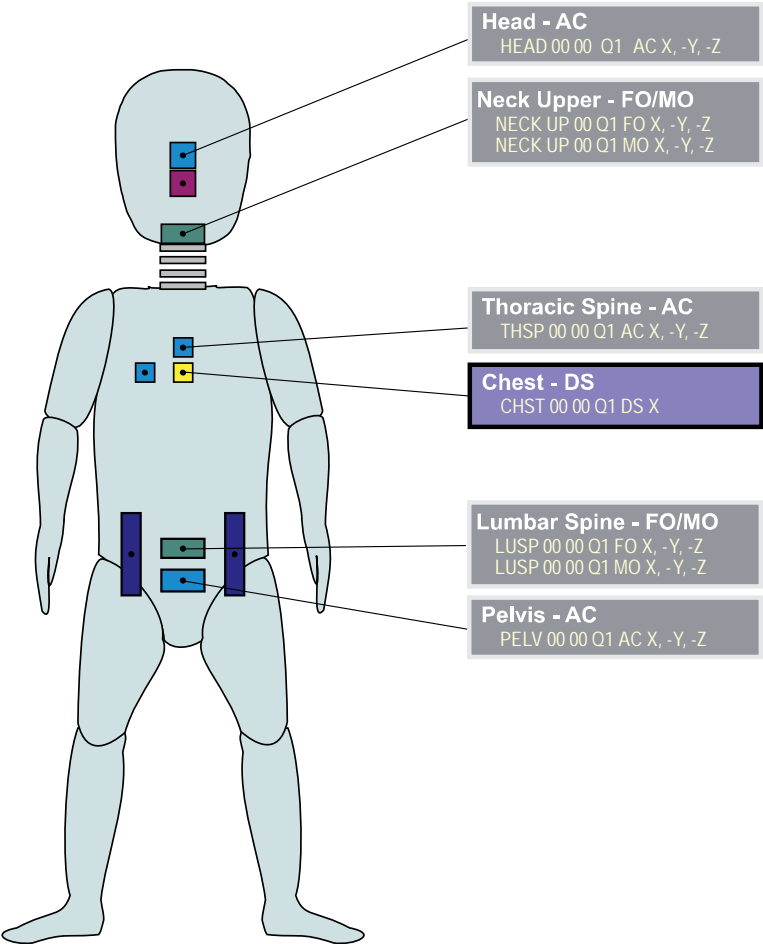
ISO/TS 13499 – RED C : 2012(E)
Q0, 6-week Old Infant Dummy

2012-01-24






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.]]

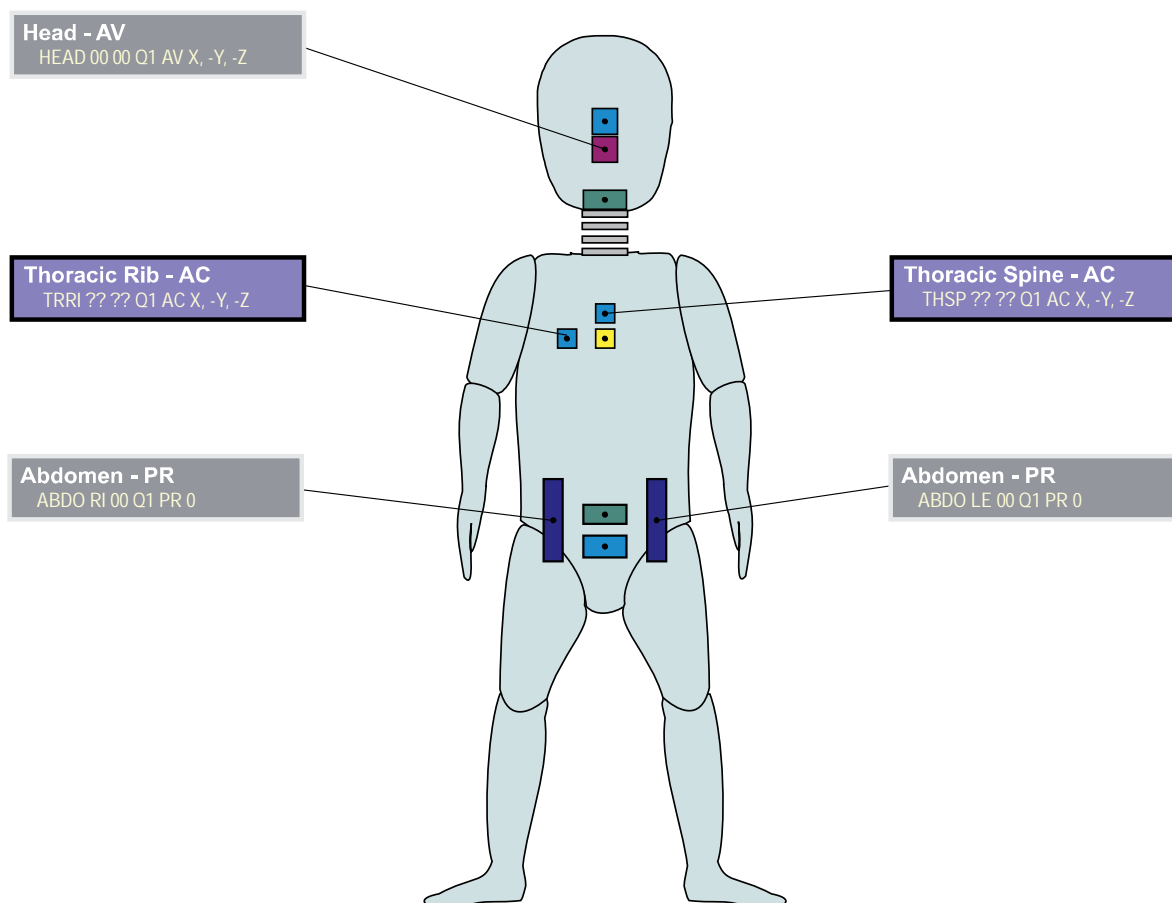
Left-hand side impact: CHST LE 00 Q1 DS Y.]]
Right-hand side impact: CHST RI 00 Q1 DS Y.

Q1 Q1 (2)

Valid since Version 1.6.2.p1



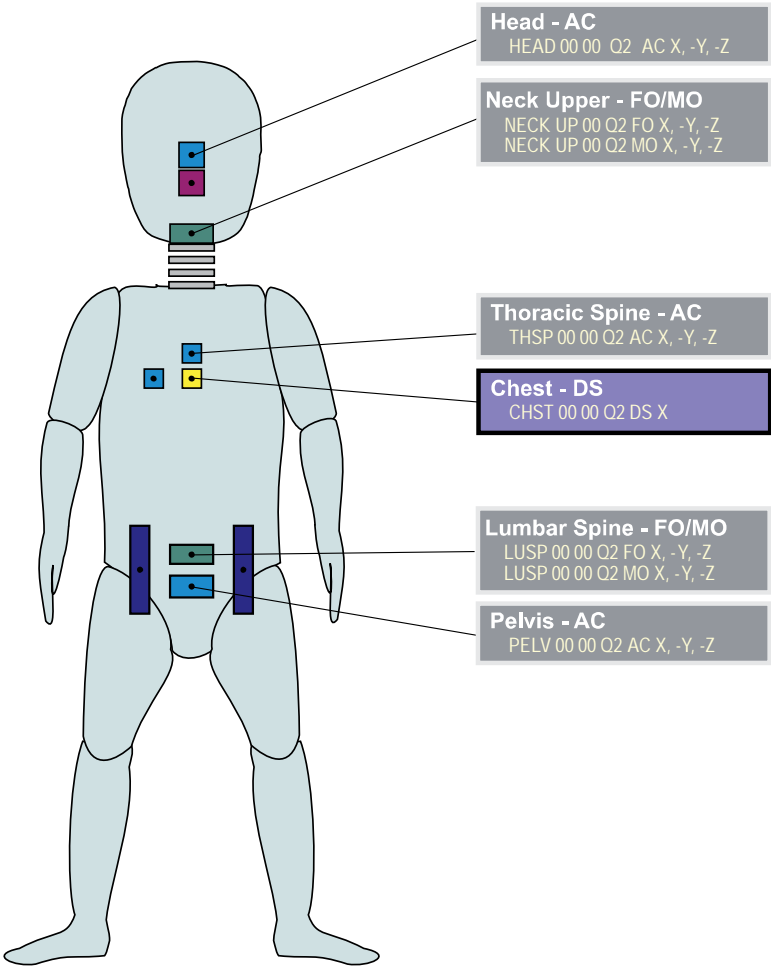
ISO/TS 13499 – RED C : 2012(E)
Q1, Advanced 1-year old Dummy
Additional Instrumentation
2015-11-25



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.



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



Frontal Impact

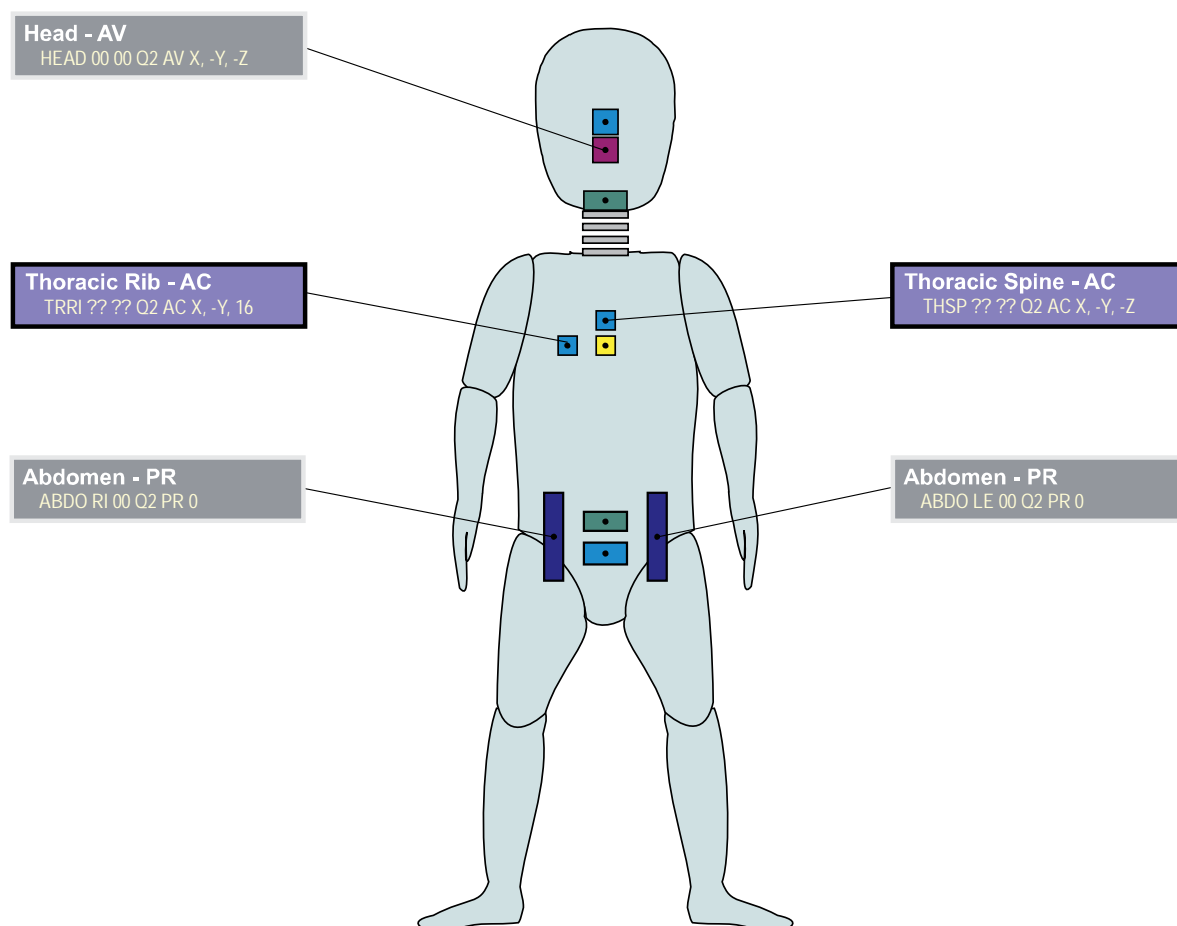
Note that sensor orientation is different for side impact configurations.
ISO Codes used must reflect the chosen orientation.[]
Left-hand side impact: CHST LE 00 Q2 DS Y.[]
Right-hand side impact: CHST RI 00 Q2 DS Y.

Q2 Q1 1/2 (2)

Valid since Version 1.6.2.p1



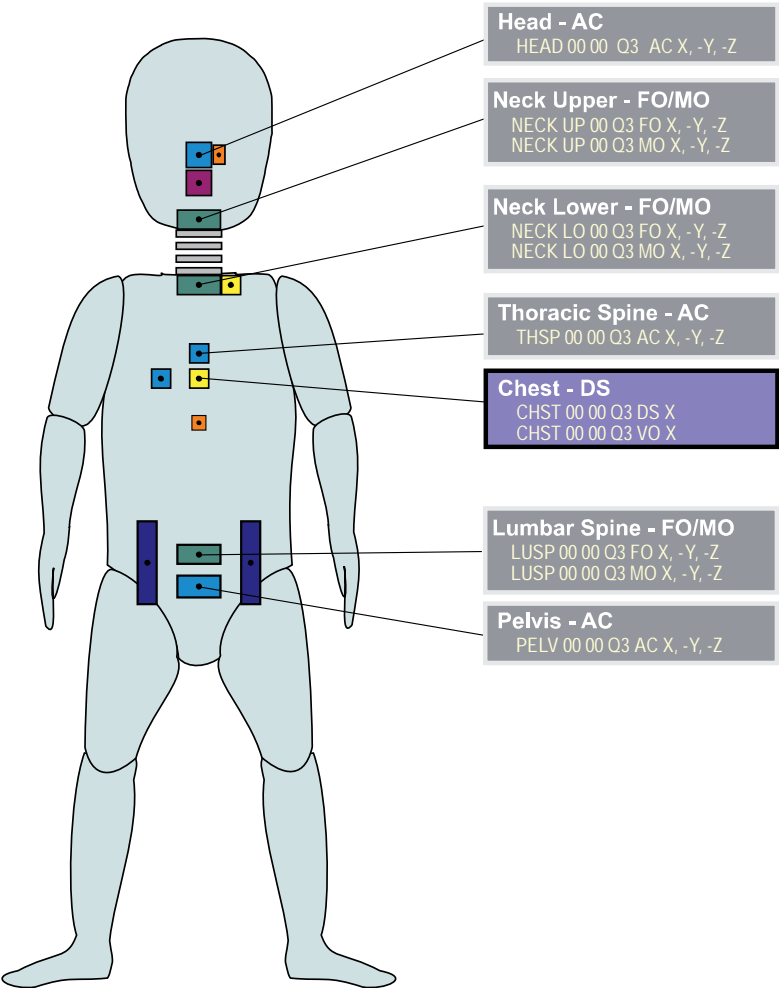
ISO/TS 13499 – RED C : 2012(E)
Q2, Advanced 1.5-year old child dummy (Q1.5)
Additional Instrumentation
2015-11-25




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.



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



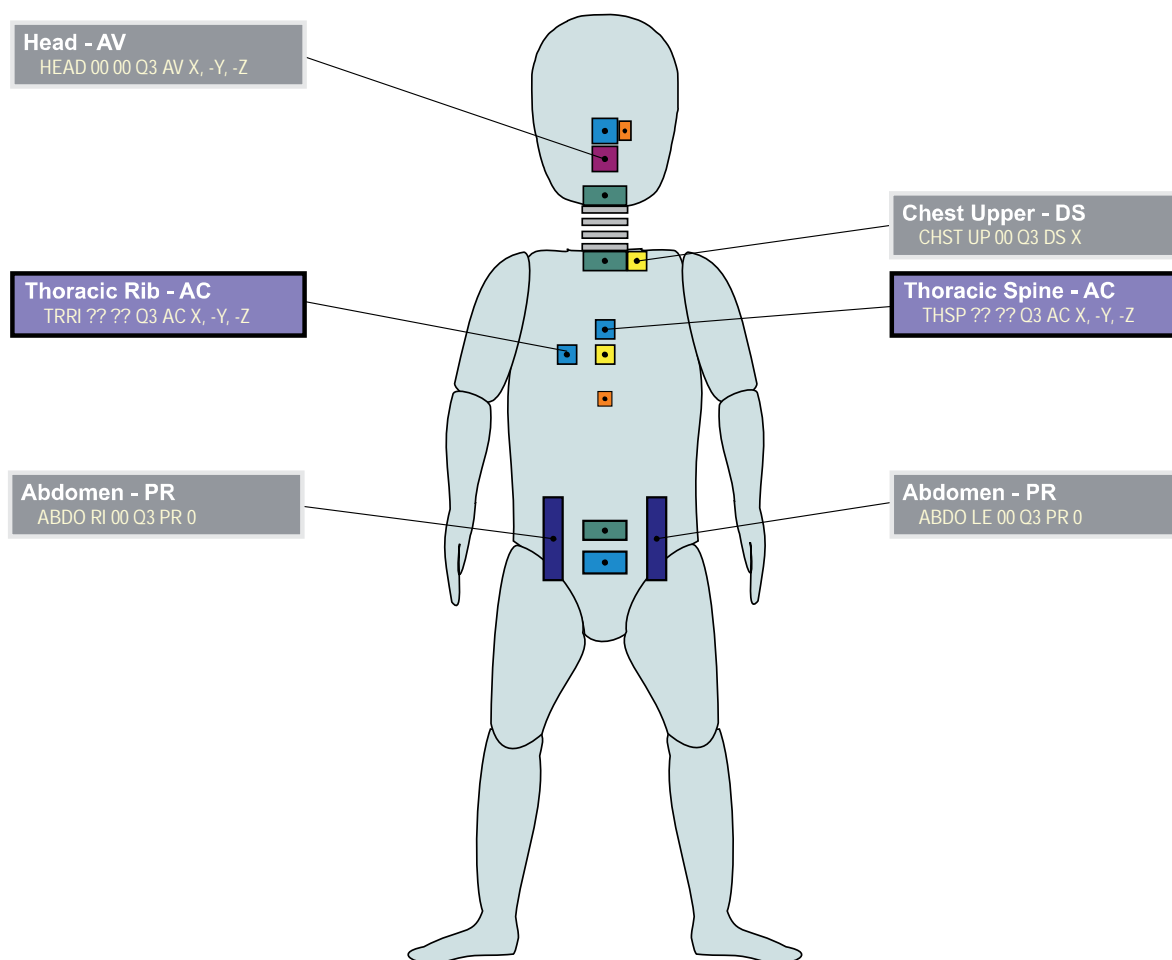
 Note that the IR-TRACC device fitted to this dummy records a voltage. It is more normal to exchange the displacement channel.

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.

ISO_Q3_20151125

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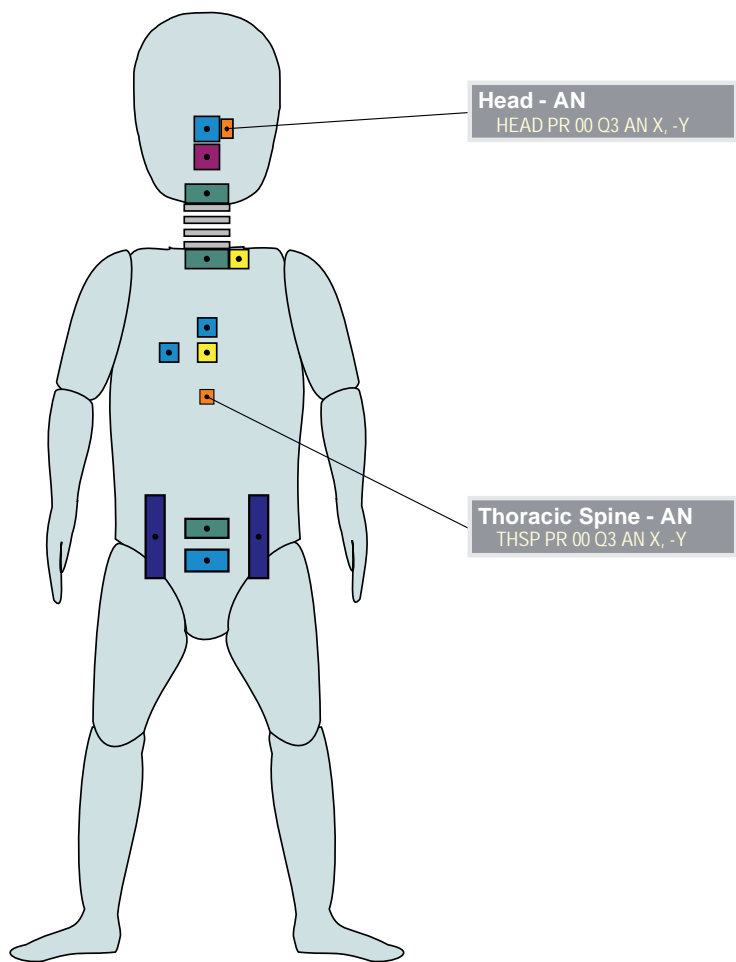
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.

ISO_Q3_2_162p1_20151125.EMF

-> Q3 <- 2 of 3



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

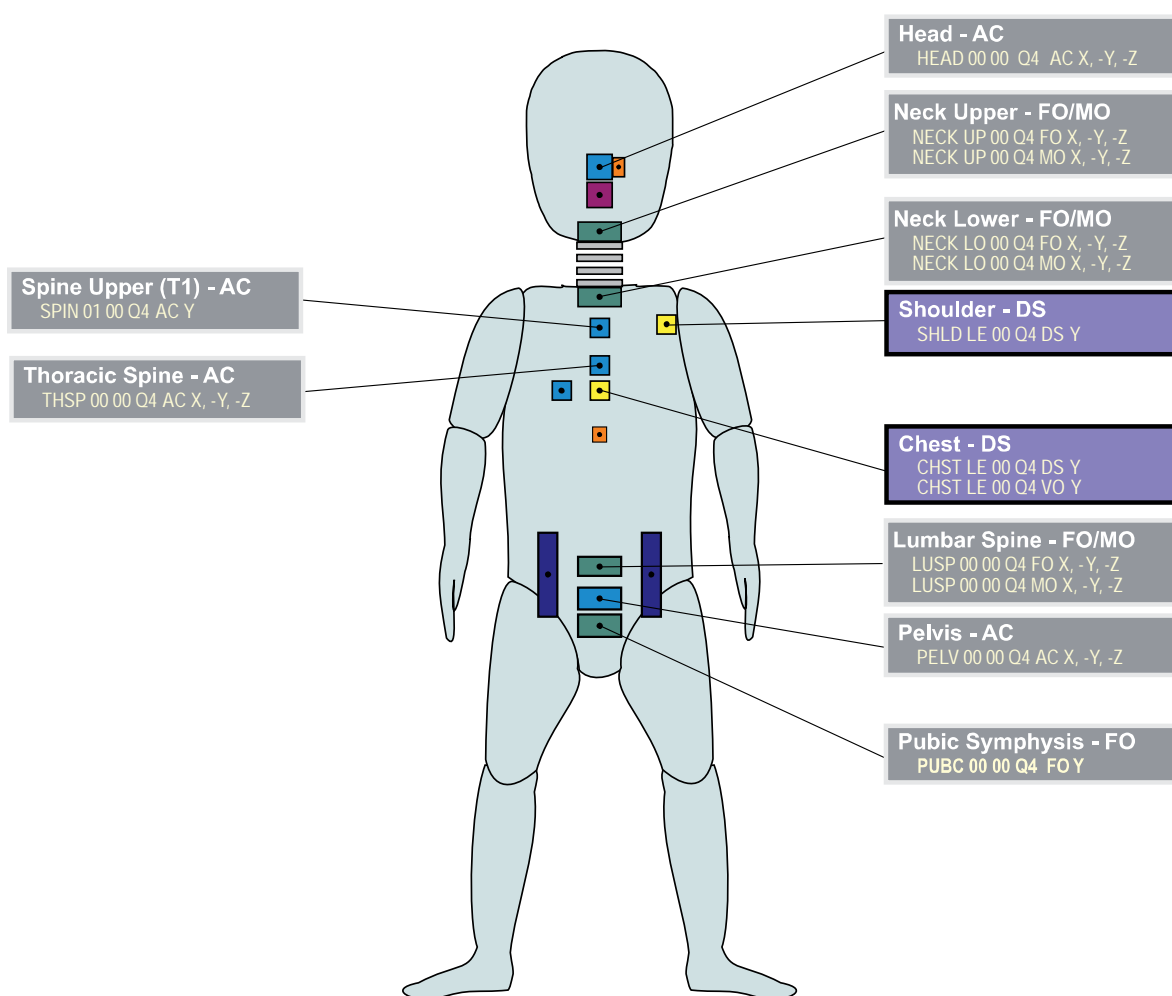


ISO/TS 13499 – RED C : 2012(E)

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.

ISO-Q4_20151125

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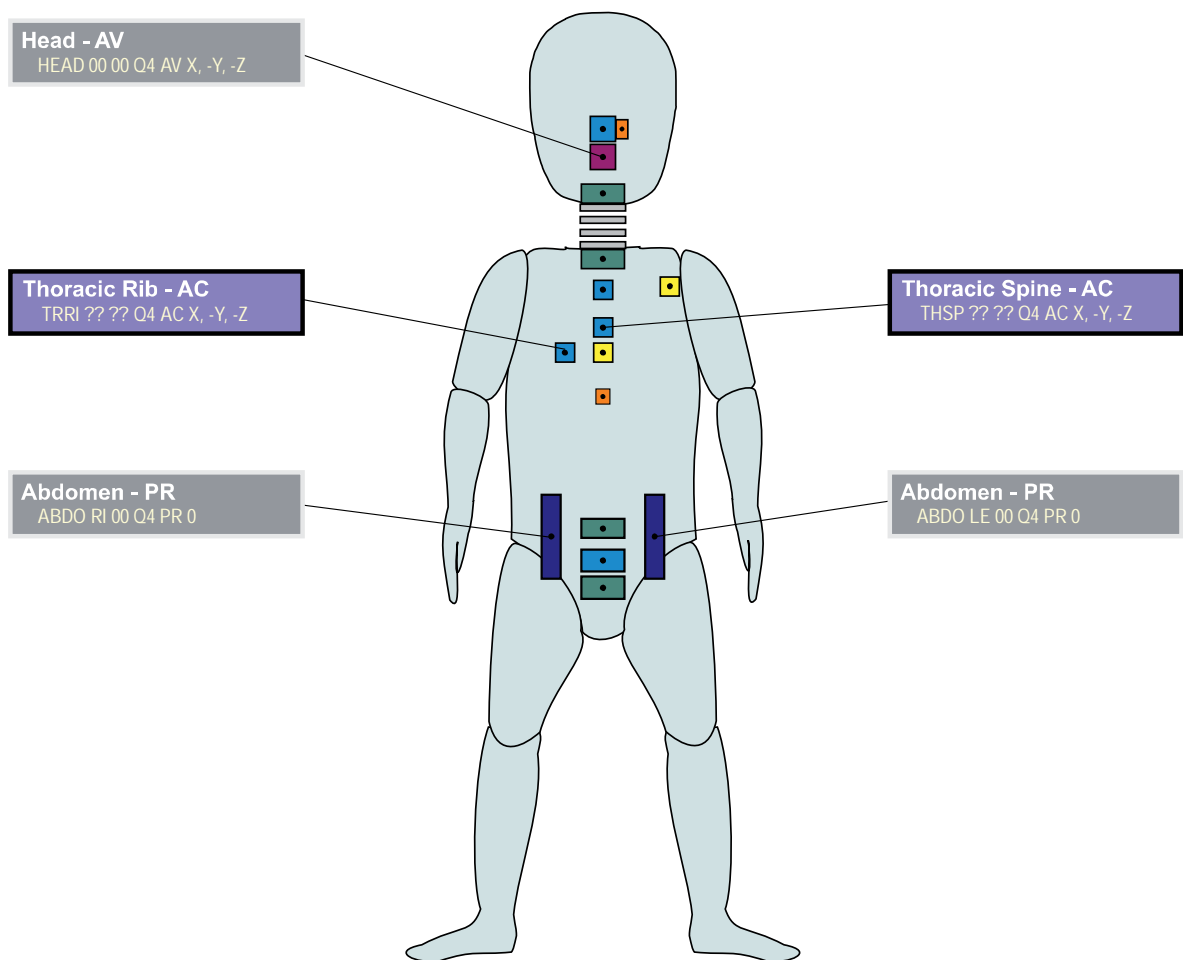
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force II
Maintained by Paul Wellcome, HORIBA MIRA Ltd.

ISO_Q4_1_162p1_20151125.EMF

-> Q3s <- 1 of 3



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



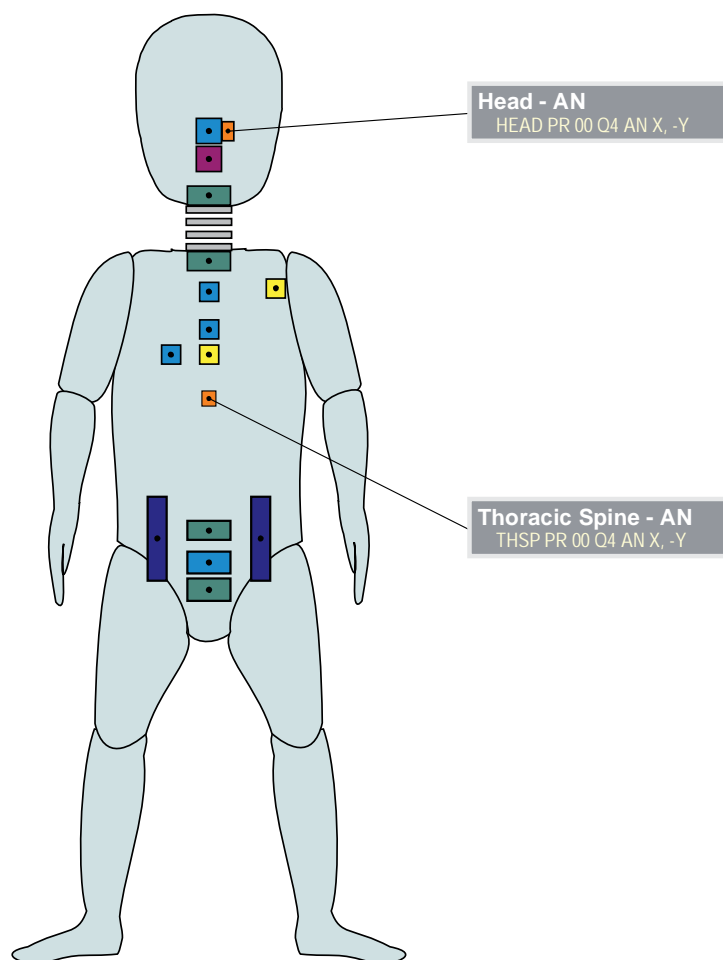
Note that sensor locations are not fixed: transducers are taped in position as required. ISO Codes used must reflect the chosen position. FL1 should reflect the side, LE or RI, for these channels, if used.


Q3s Q3s Side Impact (3)

Valid since Version 1.6.2.p1

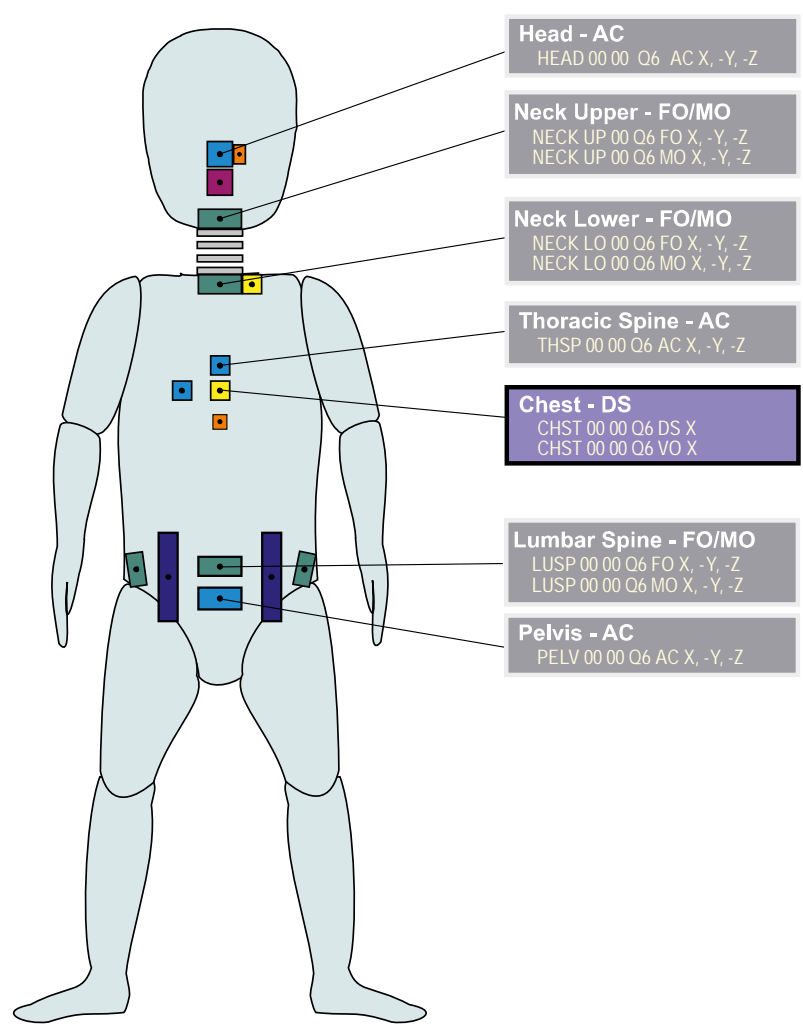


ISO/TS 13499 – RED C : 2012(E)
Q4, Advanced 3-year old child dummy: side impact (Q3s)
Static measurements, other channels
2015-11-25






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

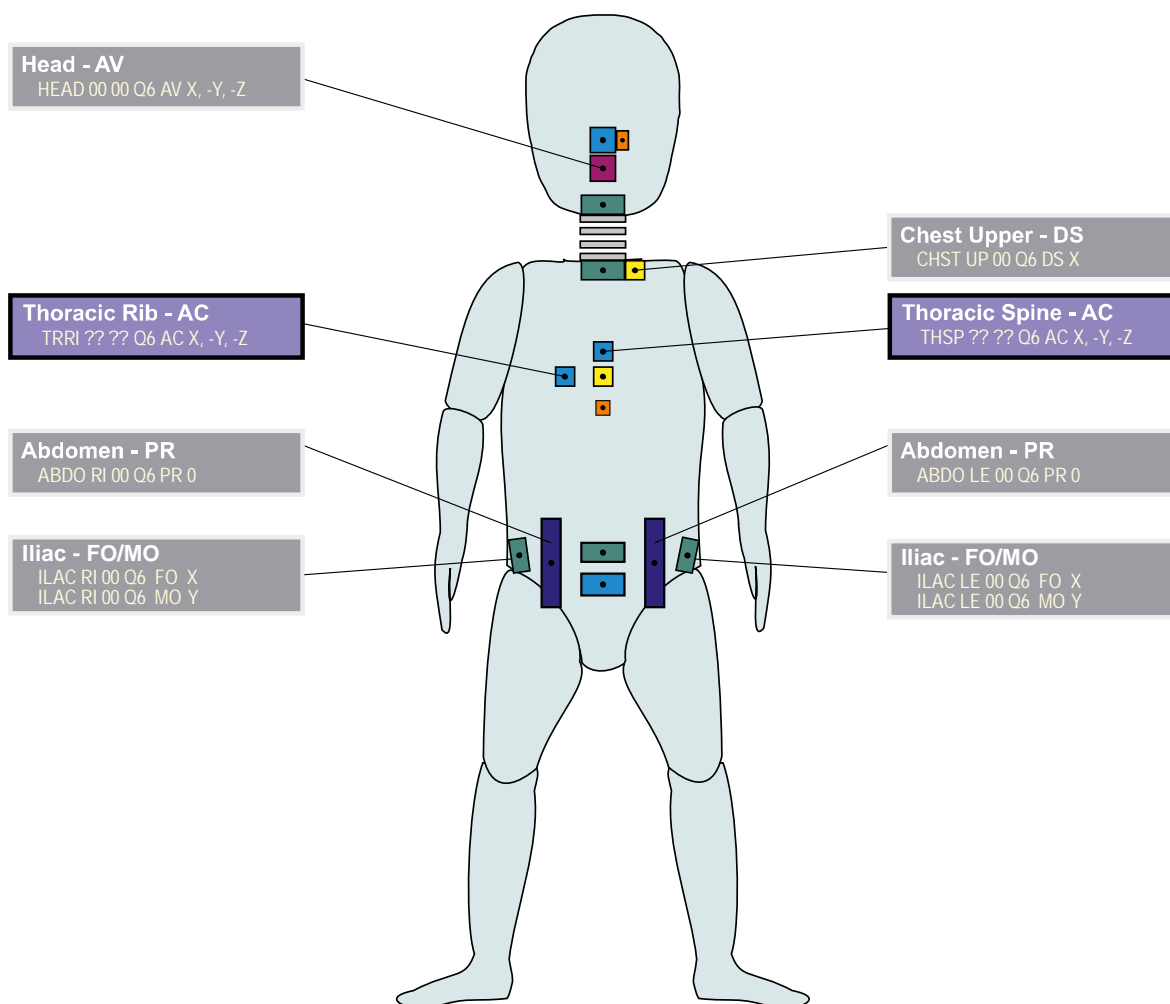
Q6 (2)

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.

ISO-Q6_20170405

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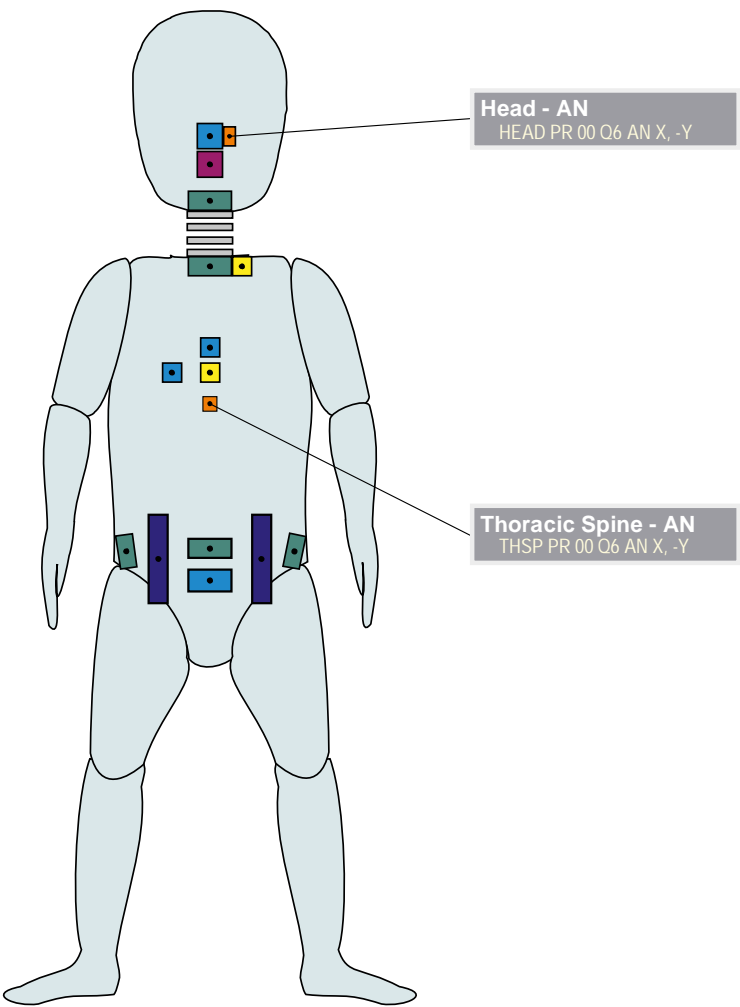
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.

ISO_Q6_2_162p2_20170405.EMF

-> Q6 <- 2 of 3



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

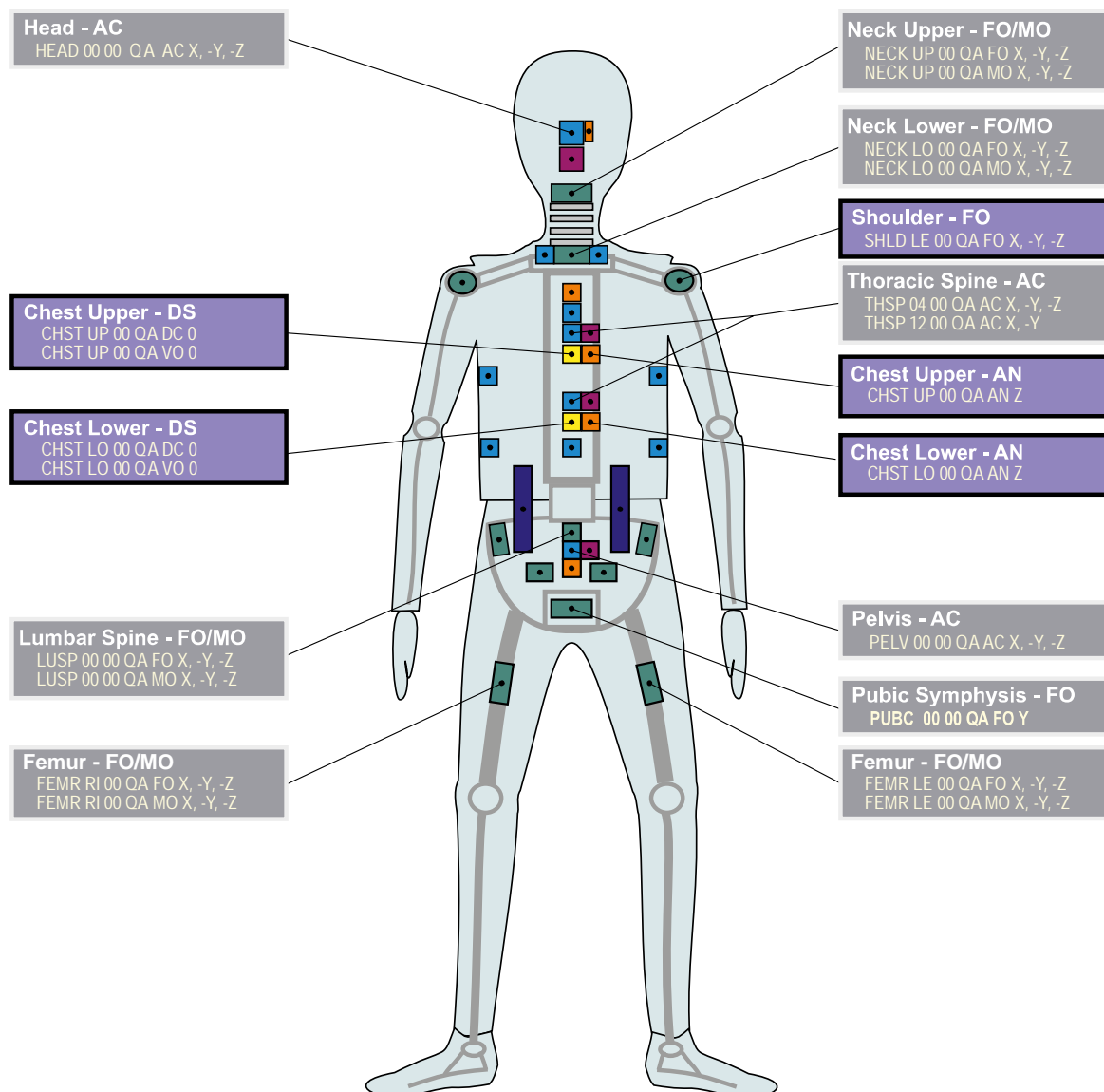
QA, Advanced 10-year old child dummy

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 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.

ISO-QA_20190718

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

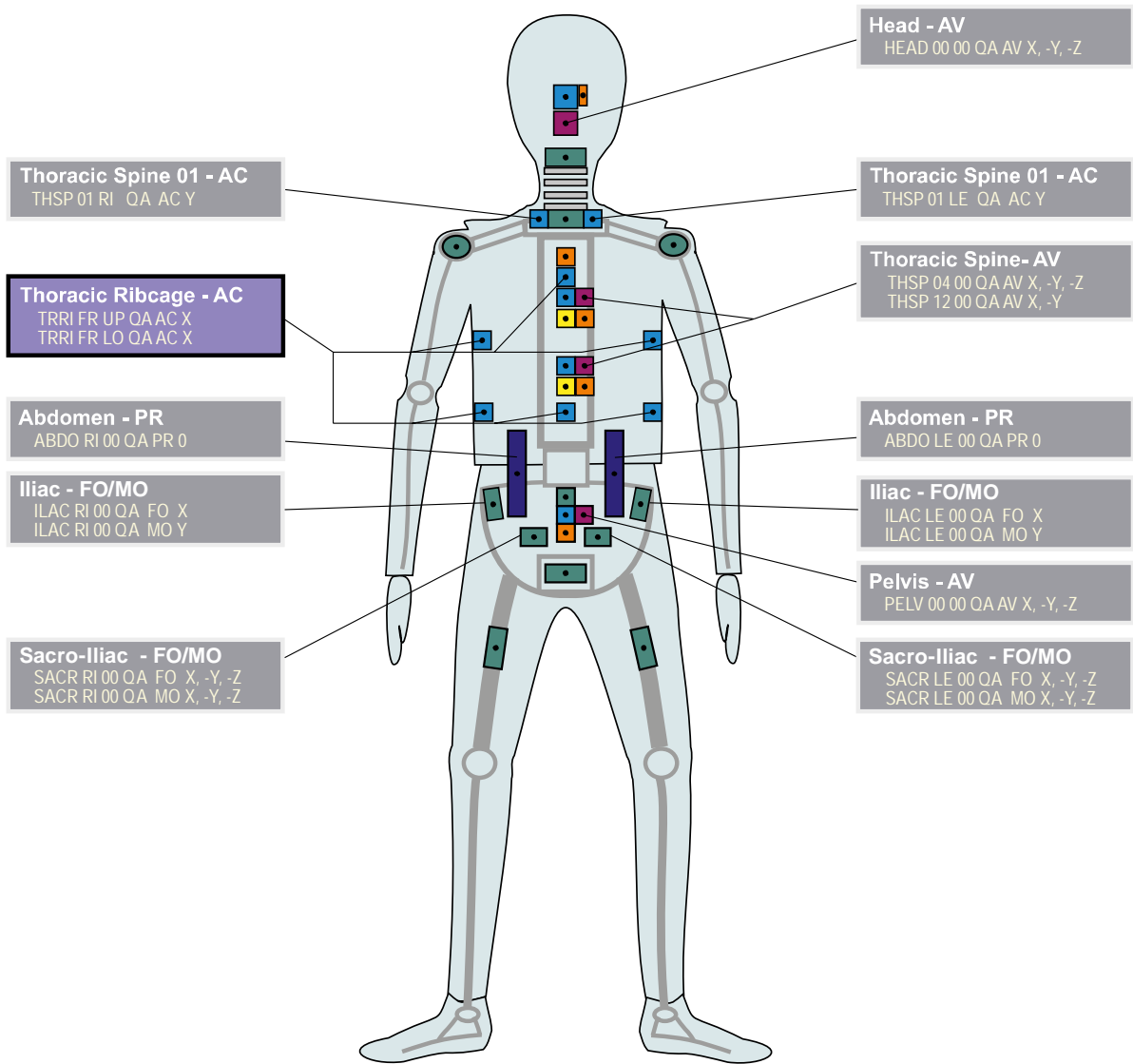
ISO_QA_1_162_20190718.EMF

-> Q10 <- 1 of 3



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

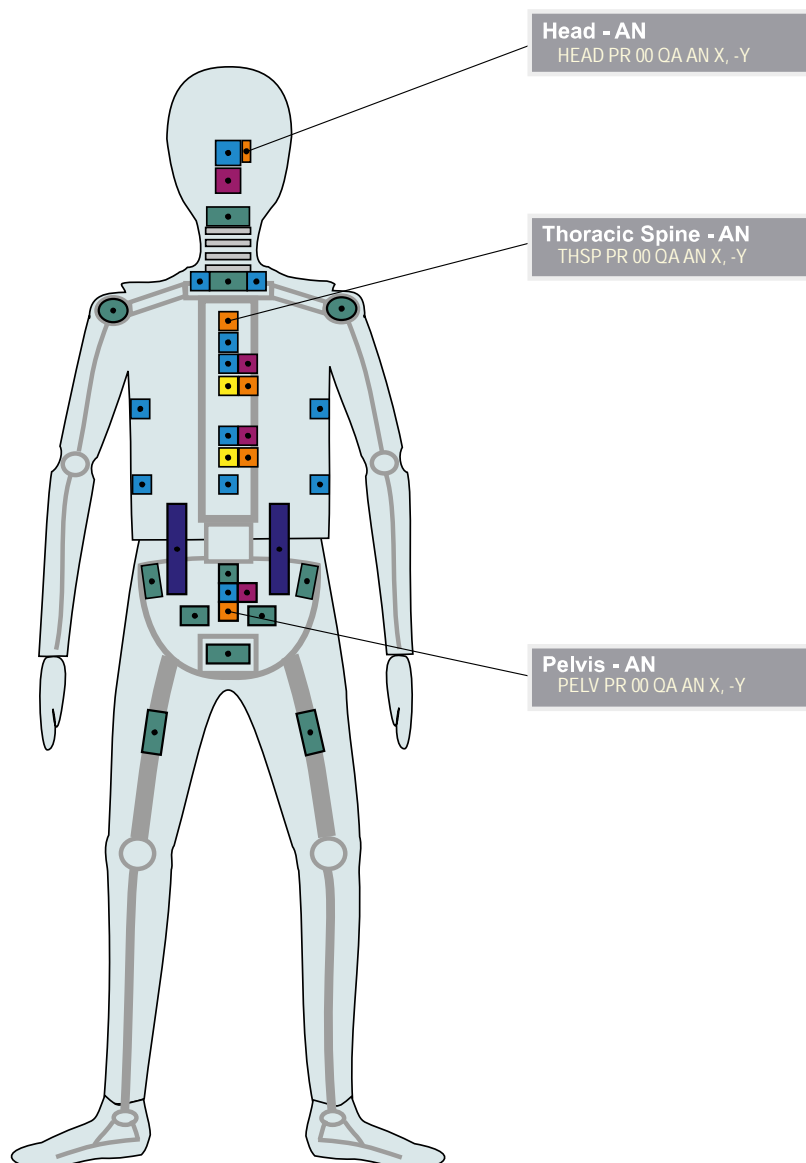
QA, Advanced 10-year old child dummy

QB, Advanced 10-year old child dummy, EuroNCAP variant

Static measurements, other channels

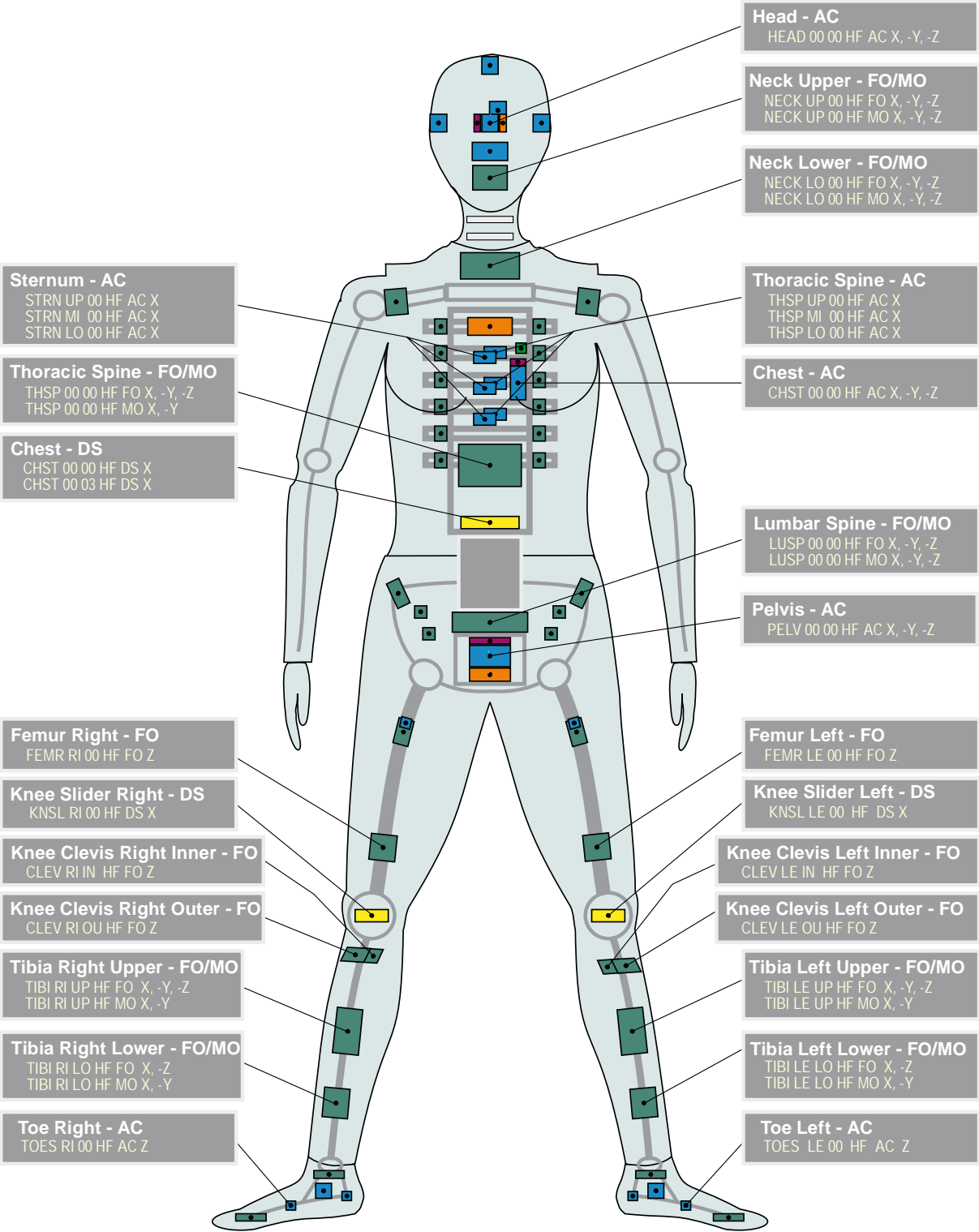
2019-07-18

Note: For QB dummy, FL3 will read QB





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



HF

Hybrid III 5% Female (2)

Valid since Version

1.6.1

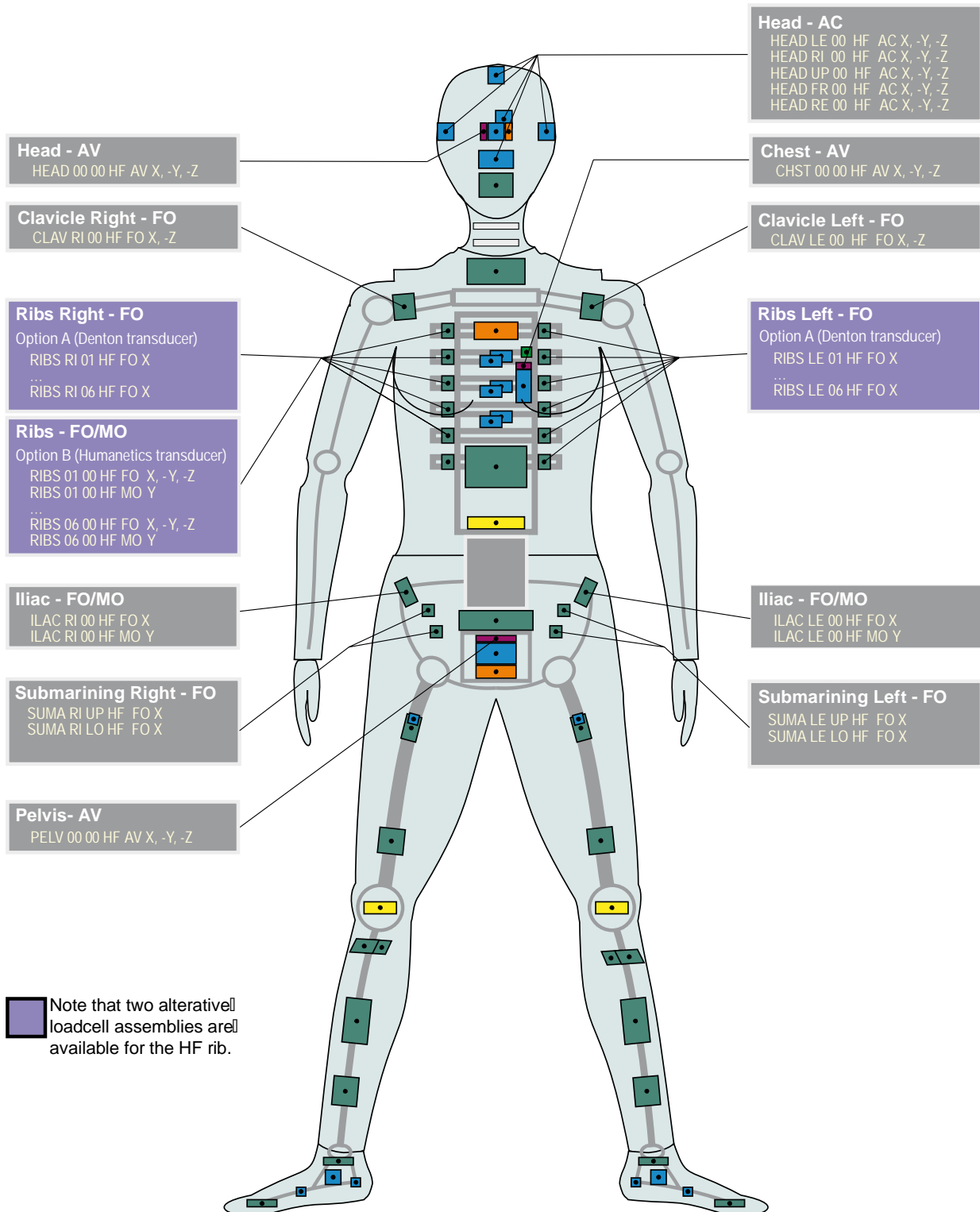


ISO/TS 13499 – RED C : 2012(E)

HF, Hybrid III 5% female

Additional Instrumentation - Head, Torso and Pelvis

2013-04-10



ISO-HF_20130410

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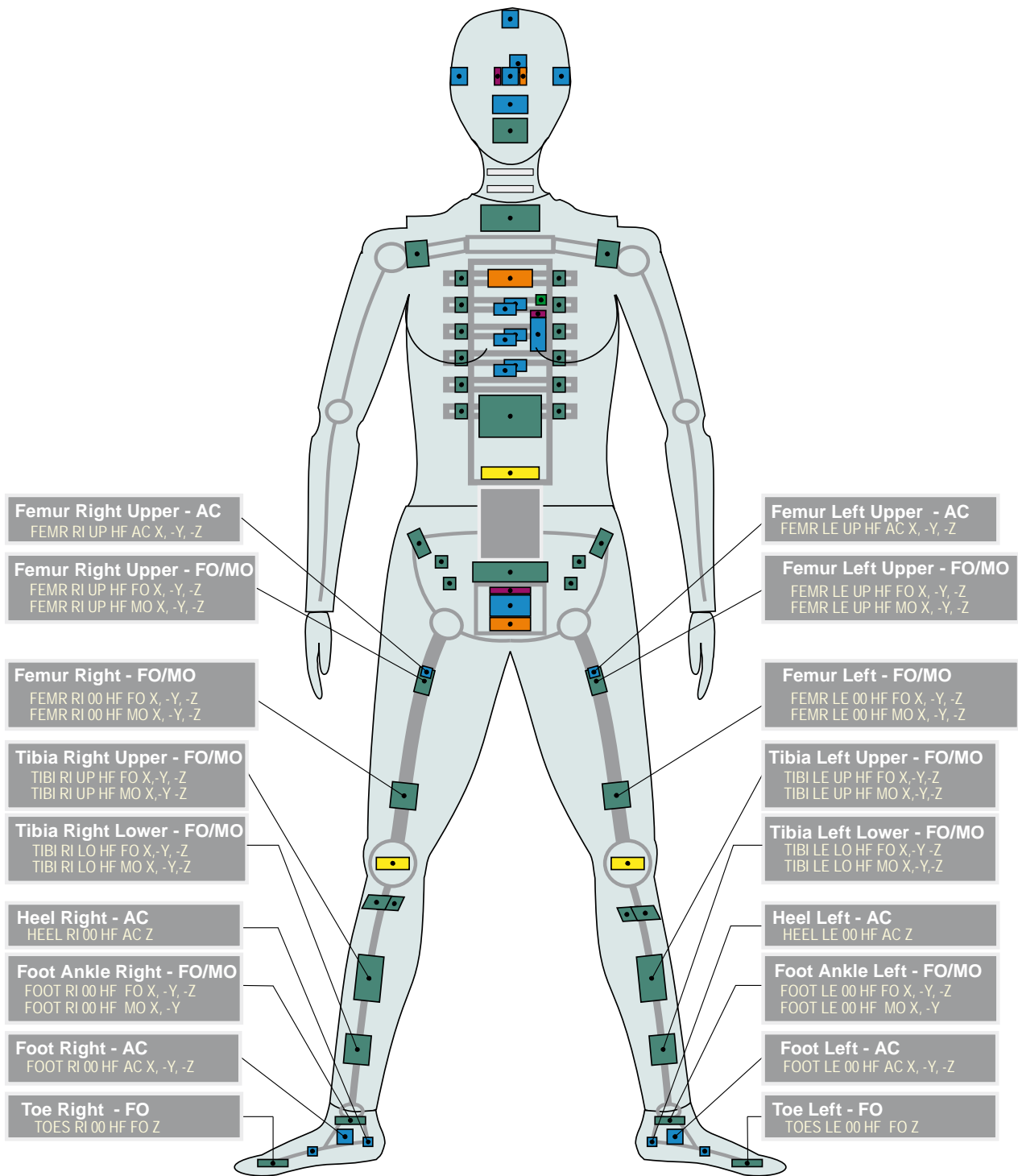
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
 Maintained by Paul Wellicome, MIRA Ltd.

ISO_HF_2_161_20130410.EMF

-> HF <- 2 of 5



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



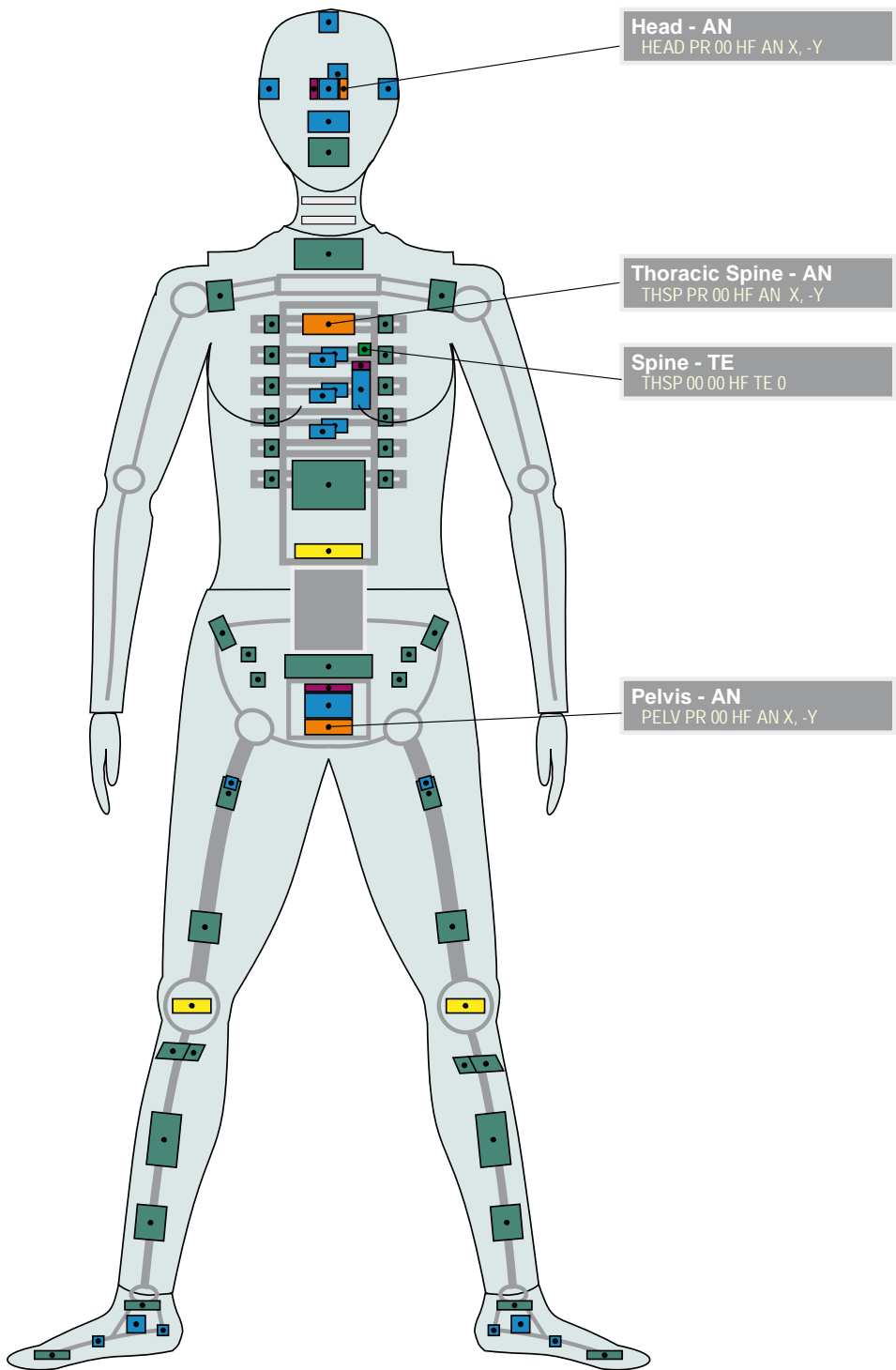
ISO-HF_20130410

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

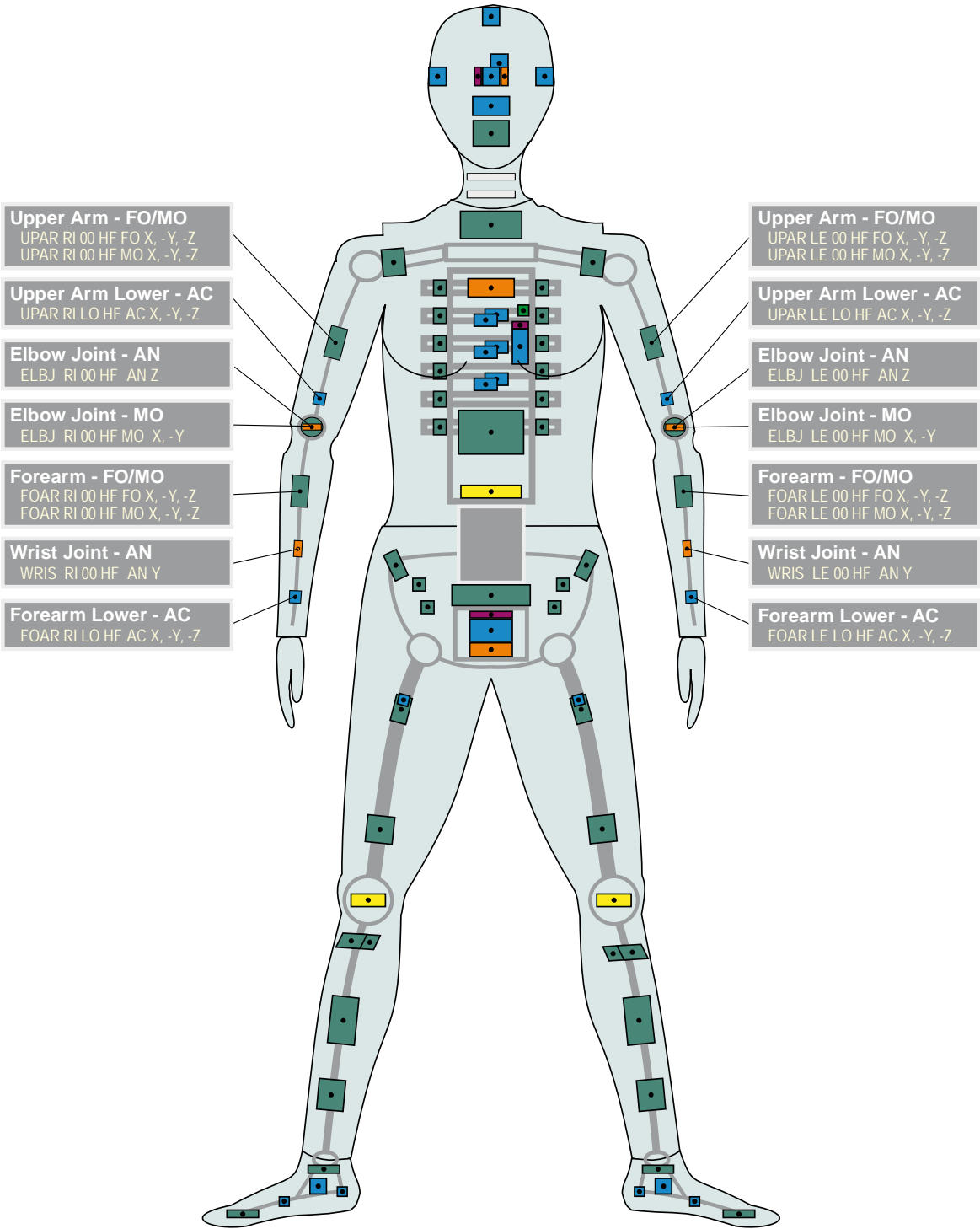


ISO-HF_20130410

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



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



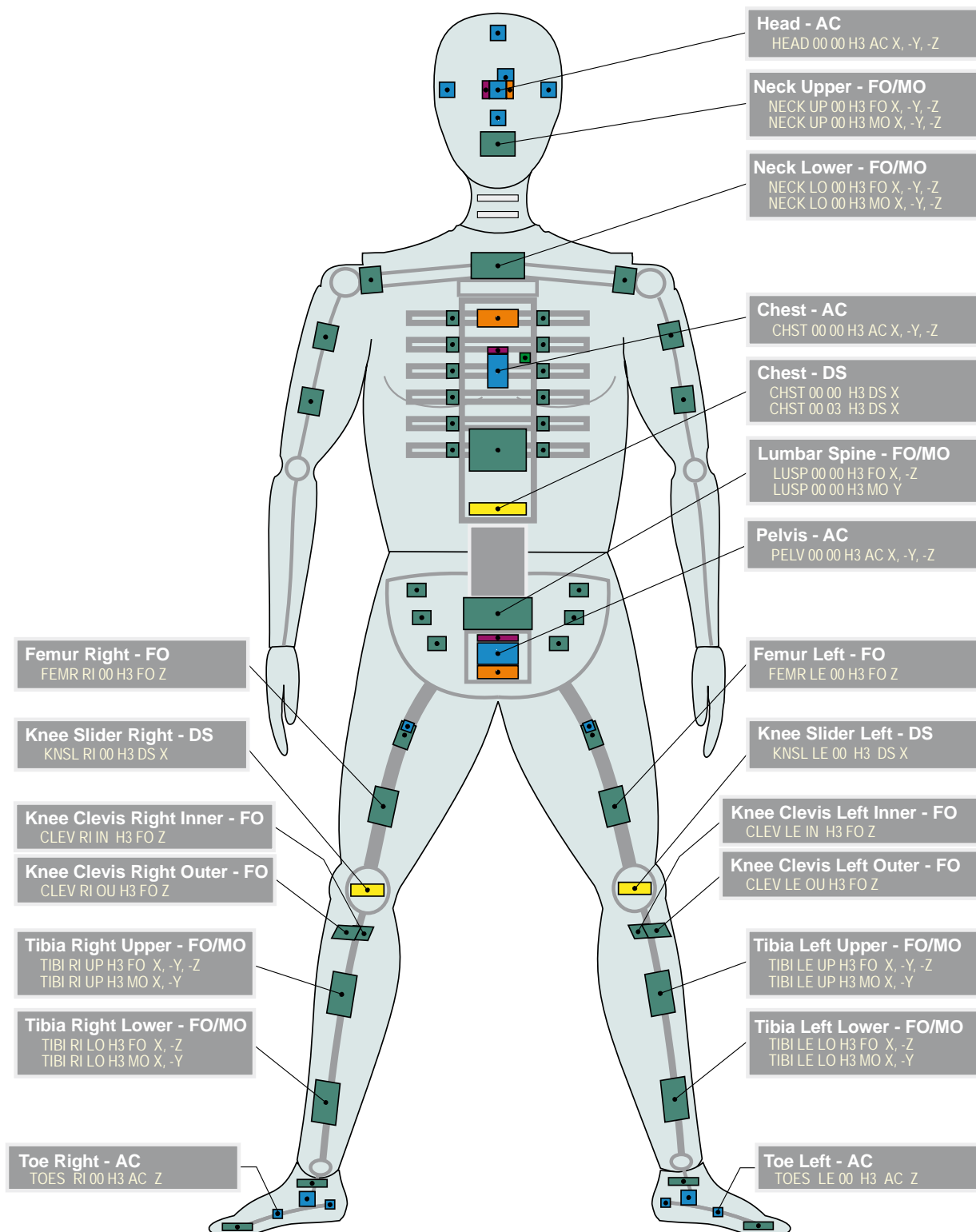
H3 Hybrid III 50% Male (1)

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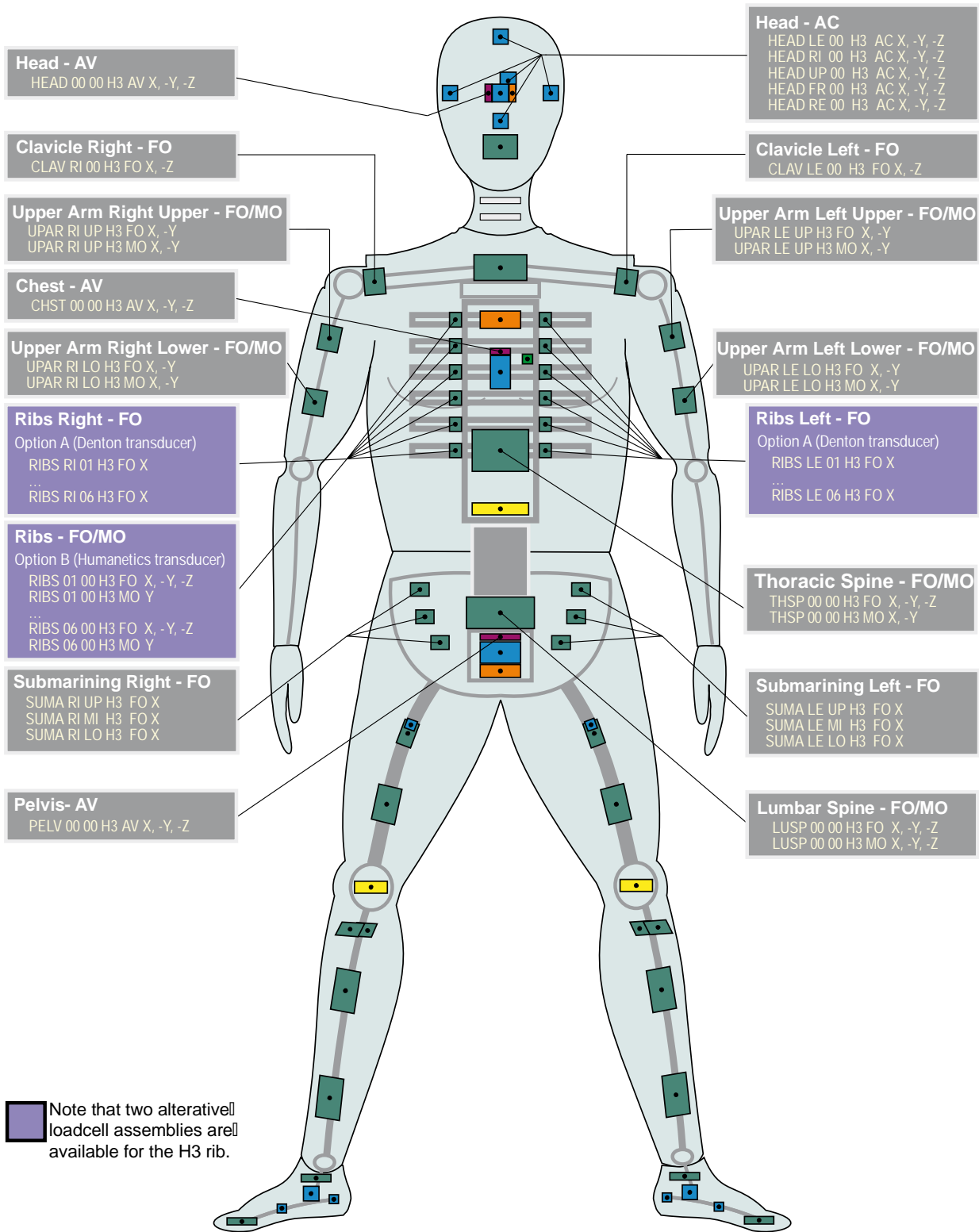
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.

ISO_H3_1_161_20130410.EMF

-> H3 <- 1 of 4



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



ISO-H3_20130410

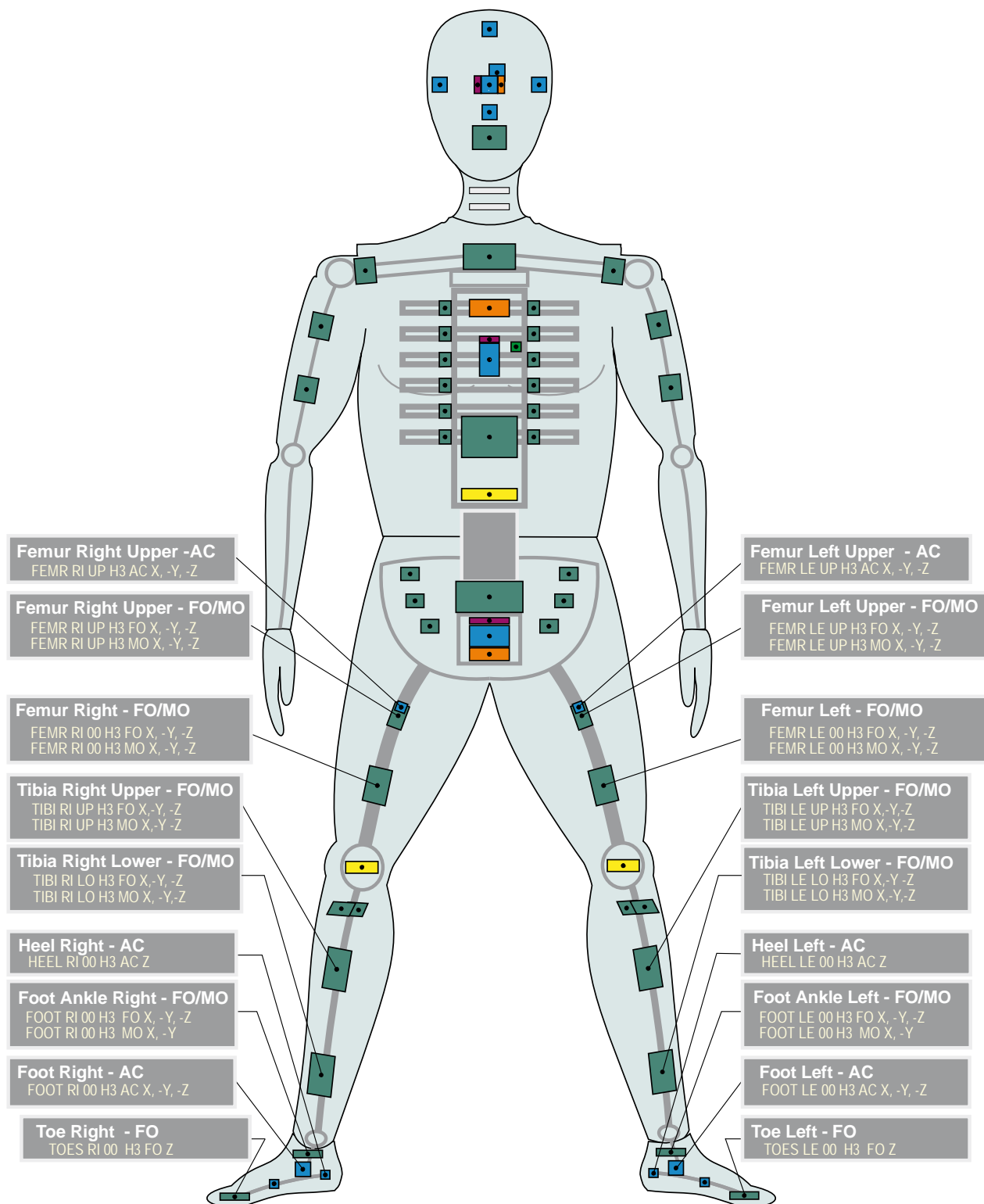
H3 Hybrid III 50% Male (3)

Valid since Version

1.6.1



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



ISO-H3_20130410

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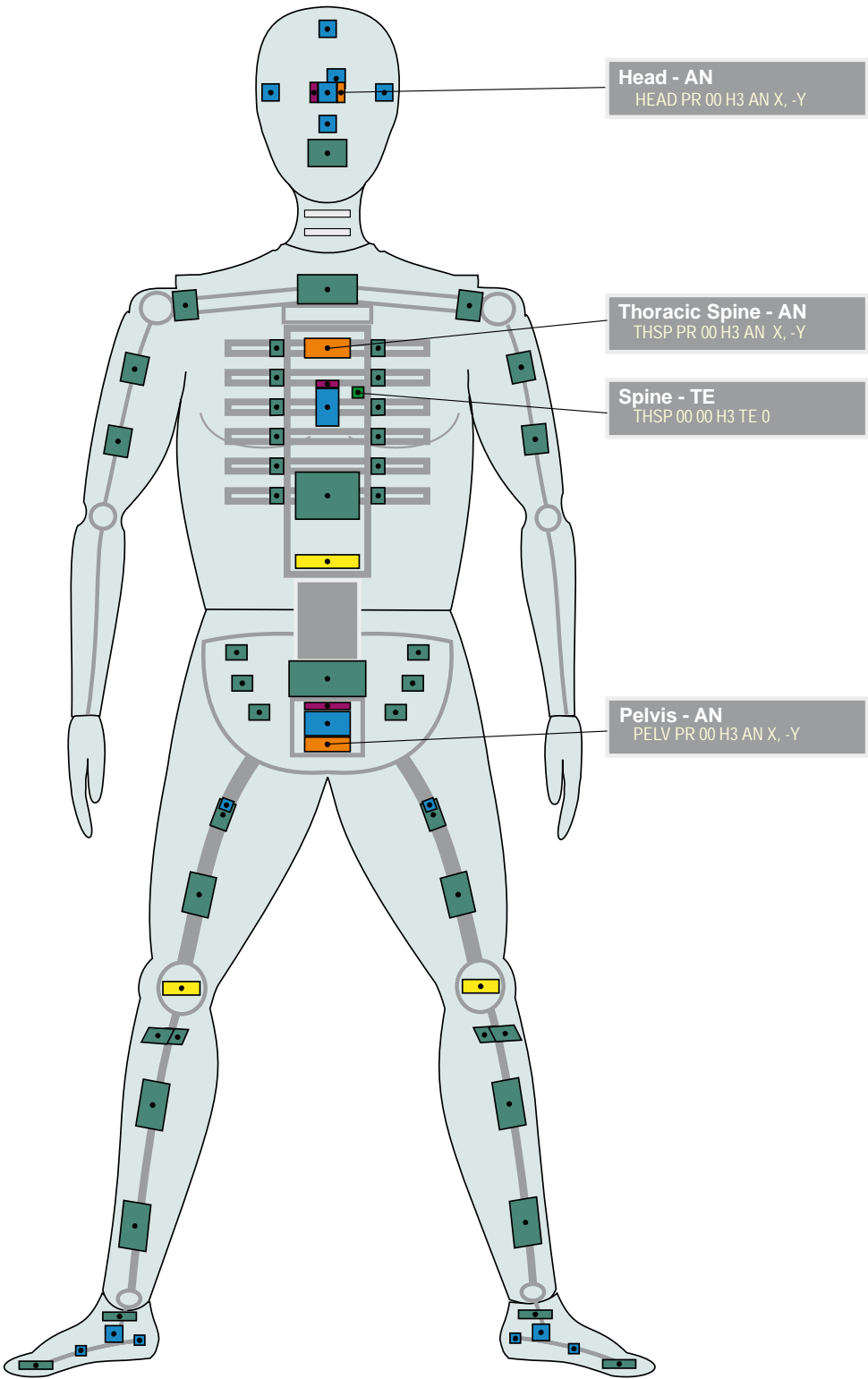
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.

ISO_H3_3_161_20130410.EMF

-> H3 <- 3 of 4



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.

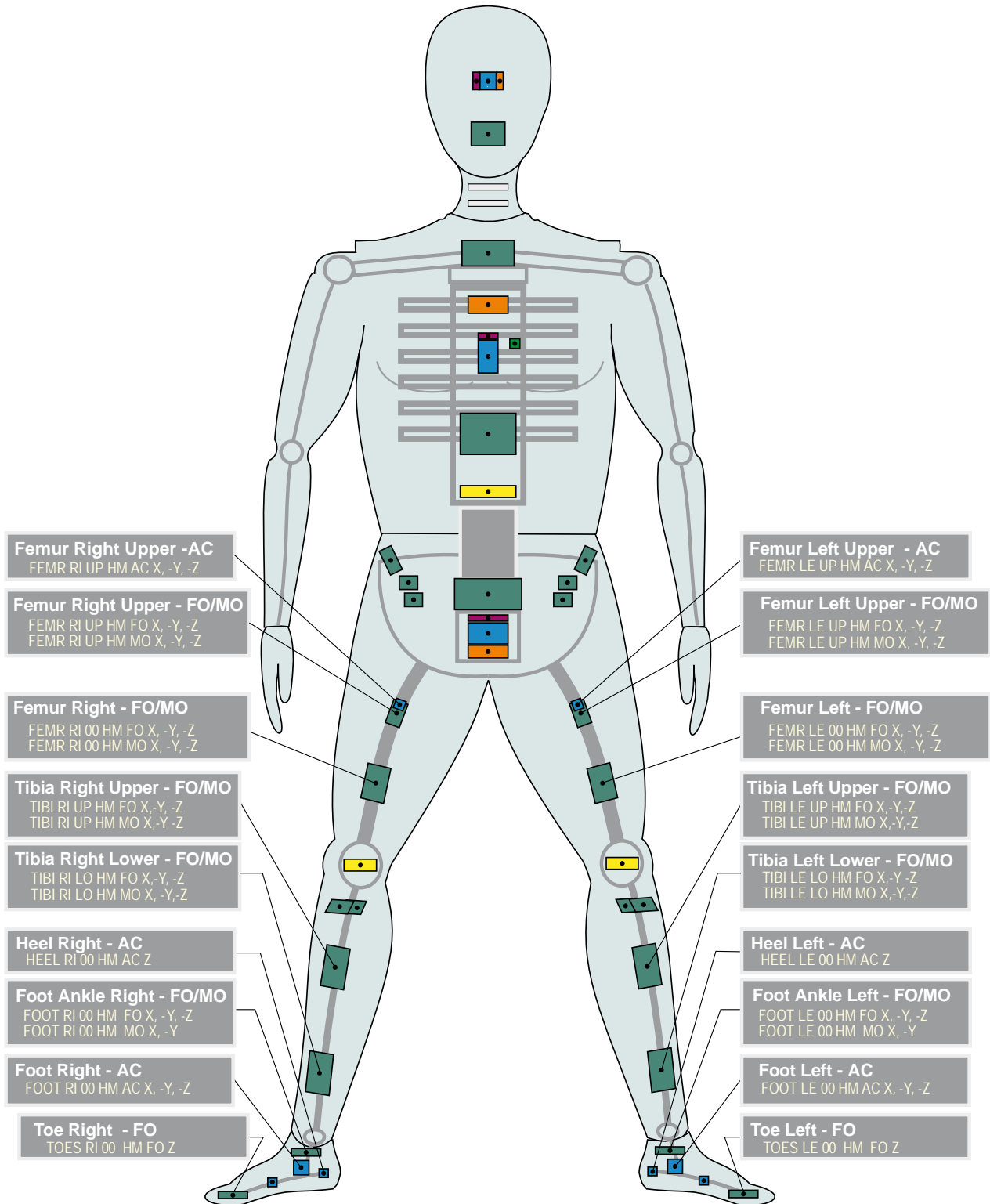
HM Hybrid III 95% Male (3)

Valid since Version

1.6.1



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



ISO-HM_20130410

Page 3 of 4

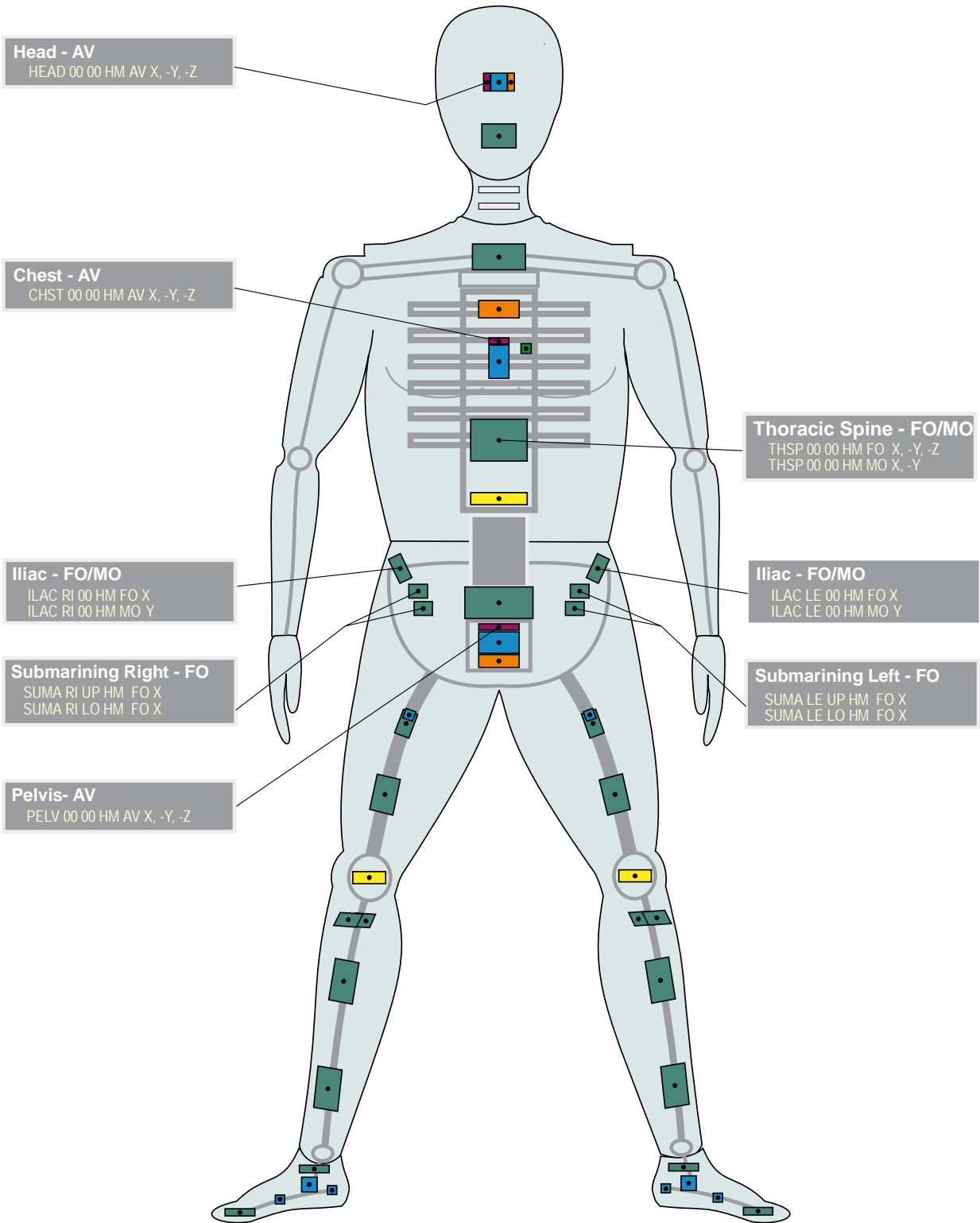
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.

ISO_HM_3_161_20130410.EMF

-> HM <- 3 of 4



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



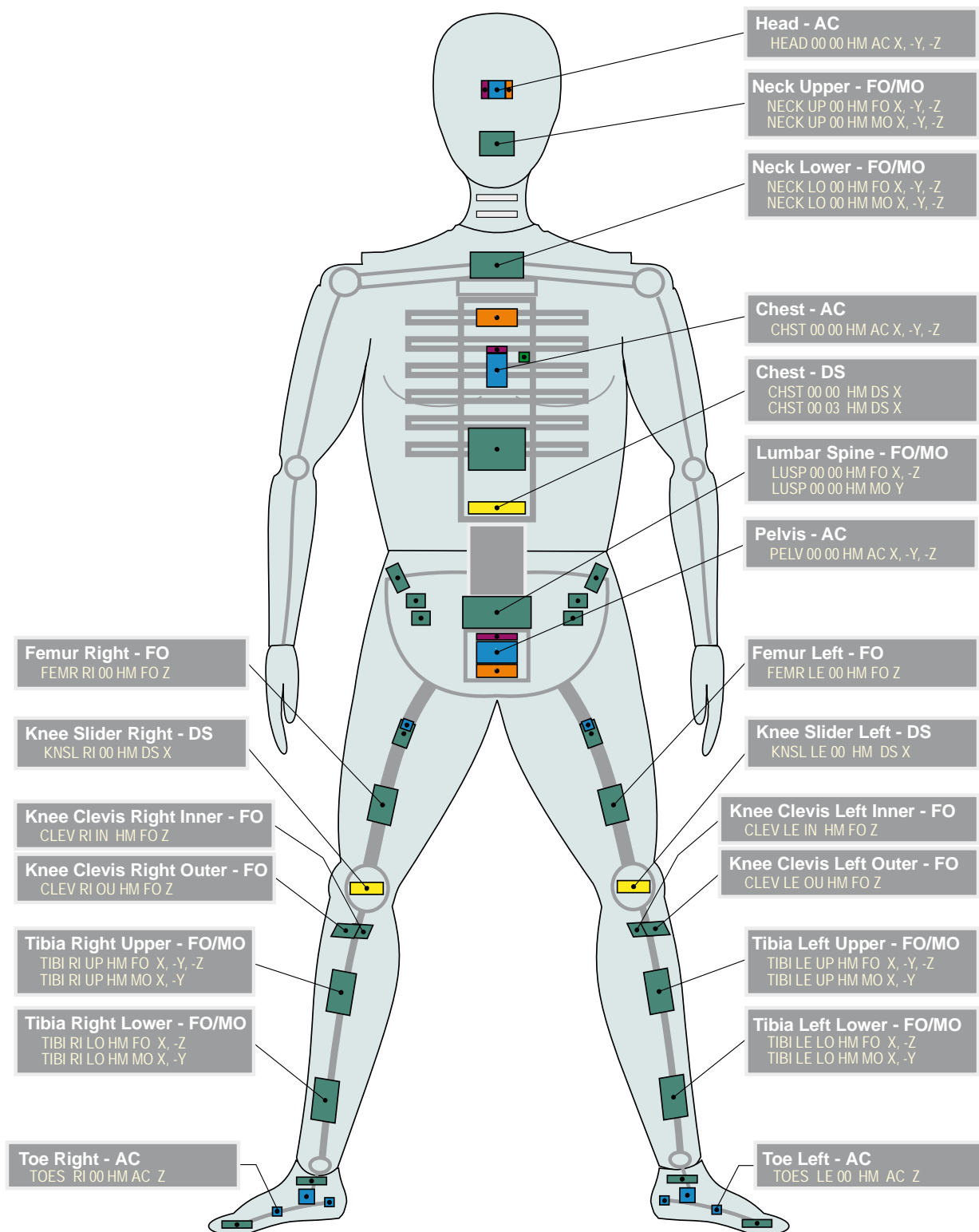
HM Hybrid III 95% Male (1)

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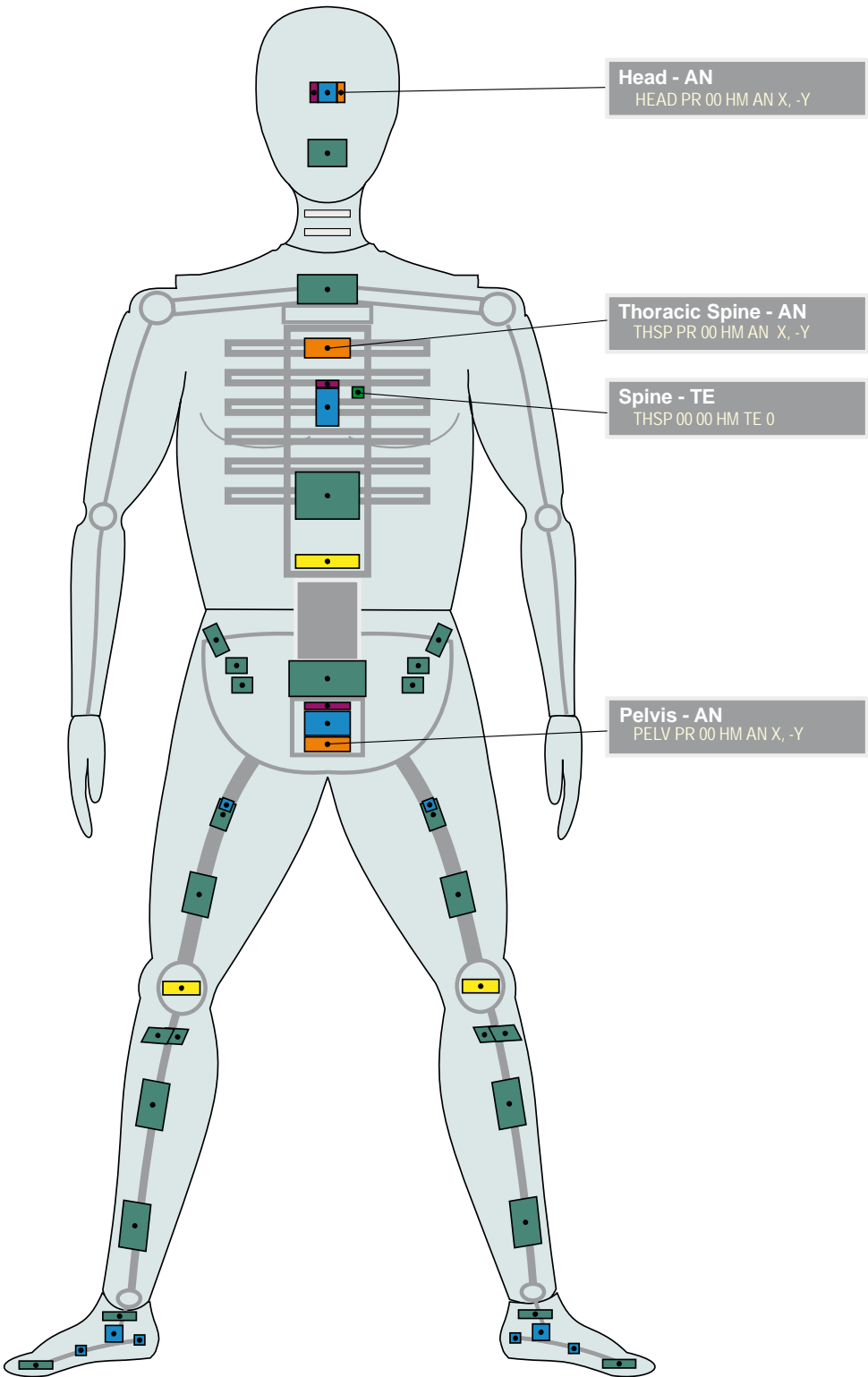
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.

ISO_HM_1_161_20130410.EMF

-> HM <- 1 of 4



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



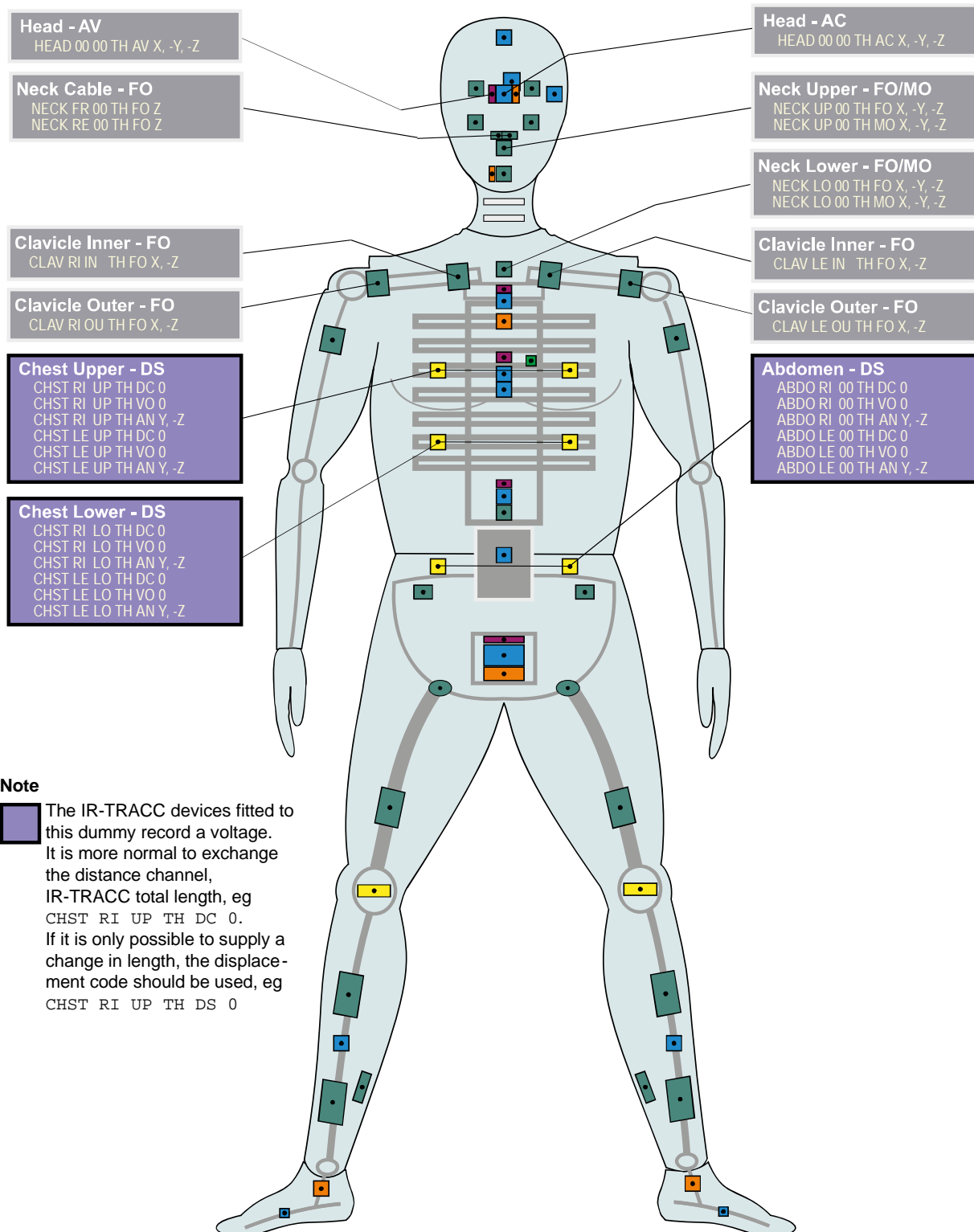
ISO-HM_20130410

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



ISO-TH_20171213

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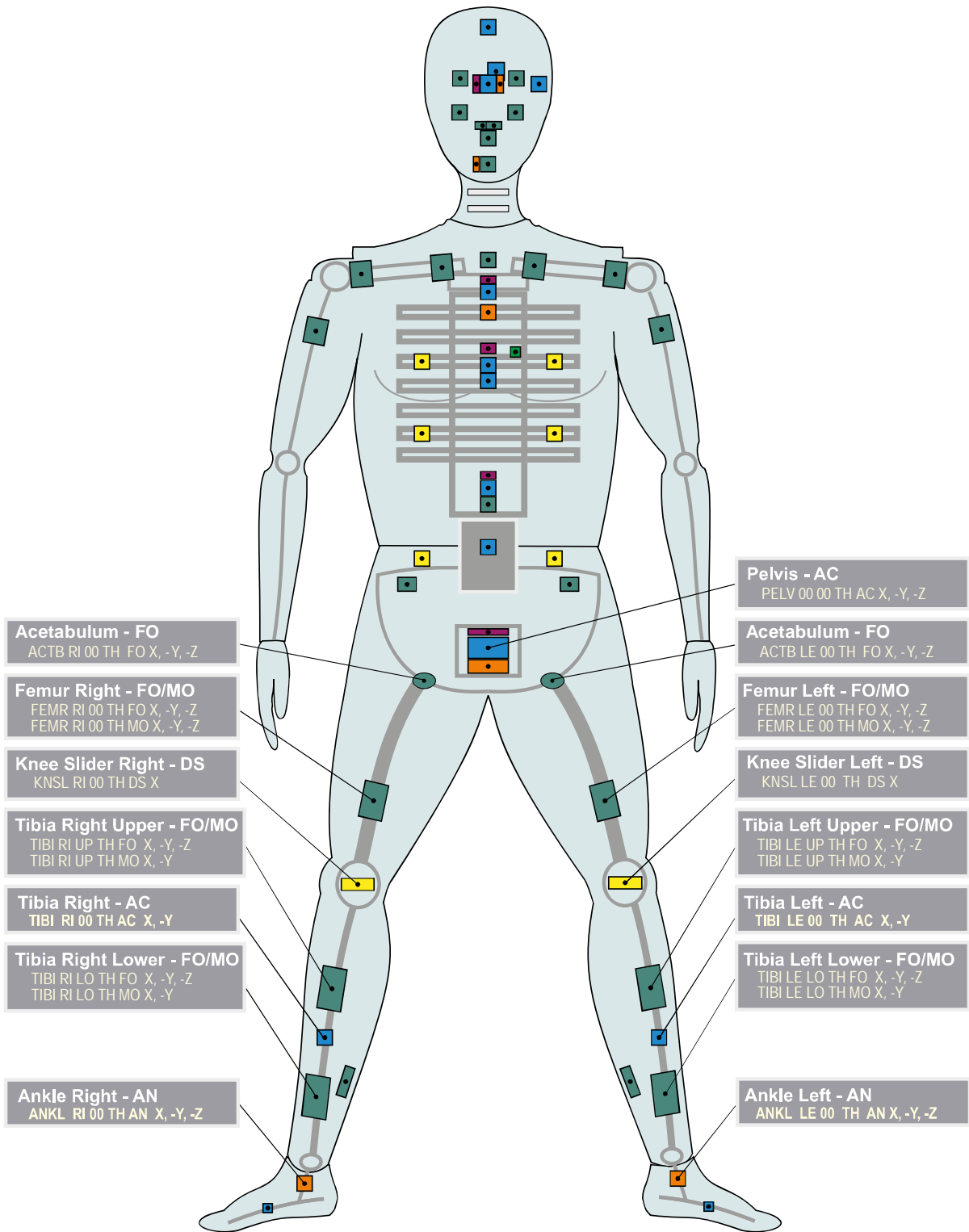
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.
and Dirk Vetter, IAT mbH

ISO_TH_1_162p2_20171213.EMF

-> TH <- 1 of 4



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



ISO-TH_20171213

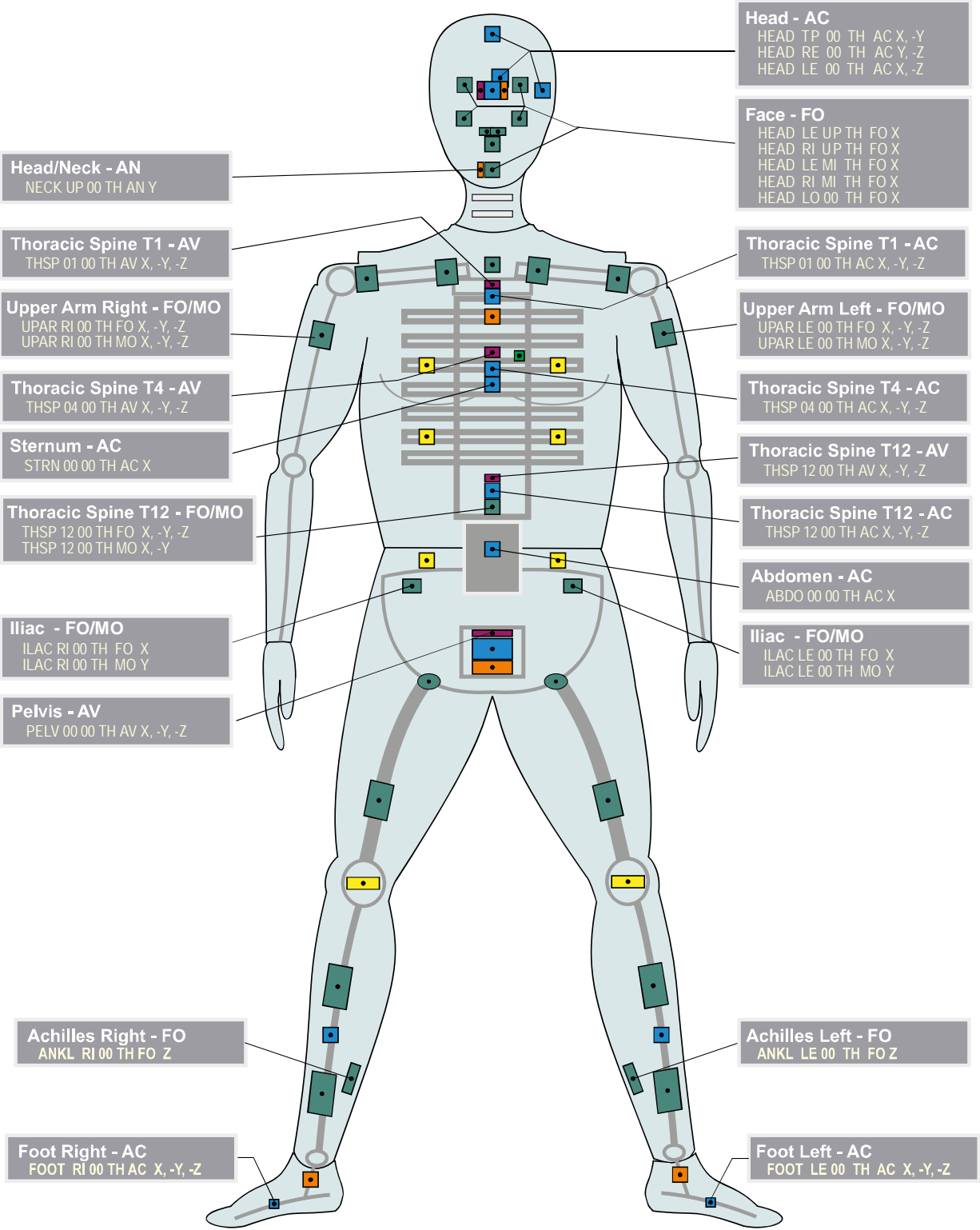
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.
and Dirk Vetter, IAT mbH

TH THOR 50th (3)

Valid since Version 1.6.2.p1



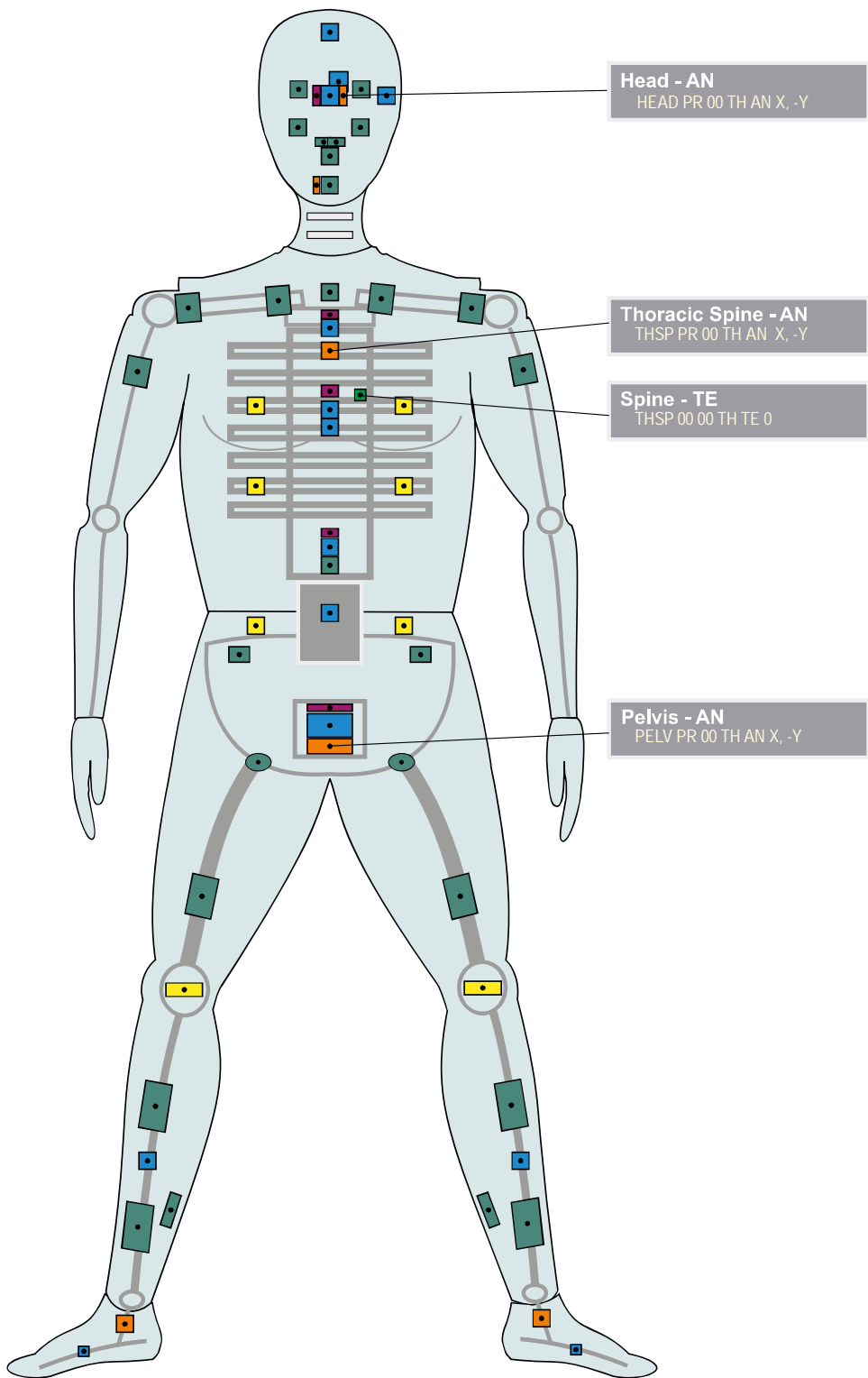
ISO/TS 13499 – RED C : 2017
TH, THOR 50% male
Additional Instrumentation: Upper and Lower Body
2017-12-13



ISO-TH_20171213



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



ISO-TH_20171213

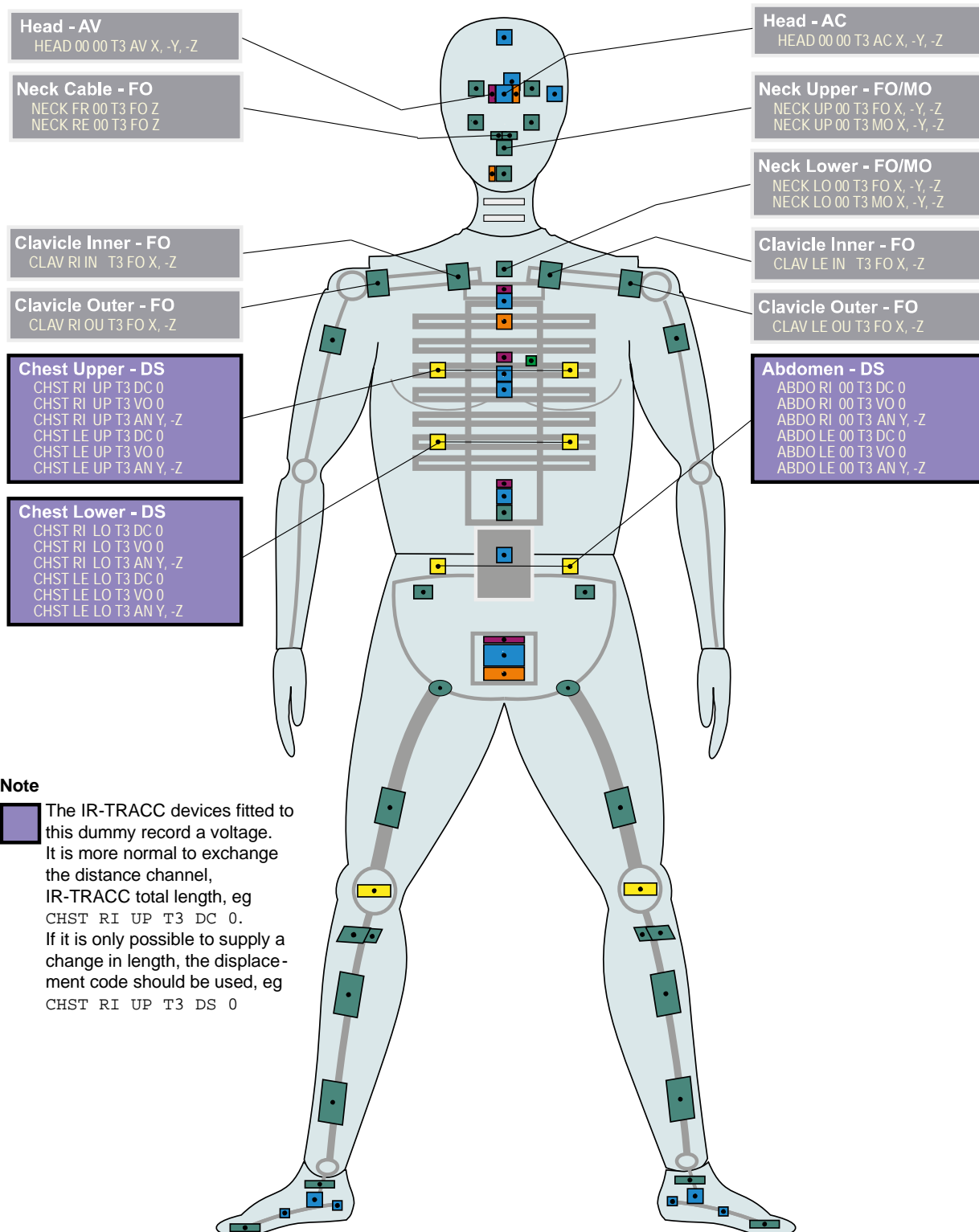
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.
and Dirk Vetter, IAT mbH

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



ISO-T3_20180321

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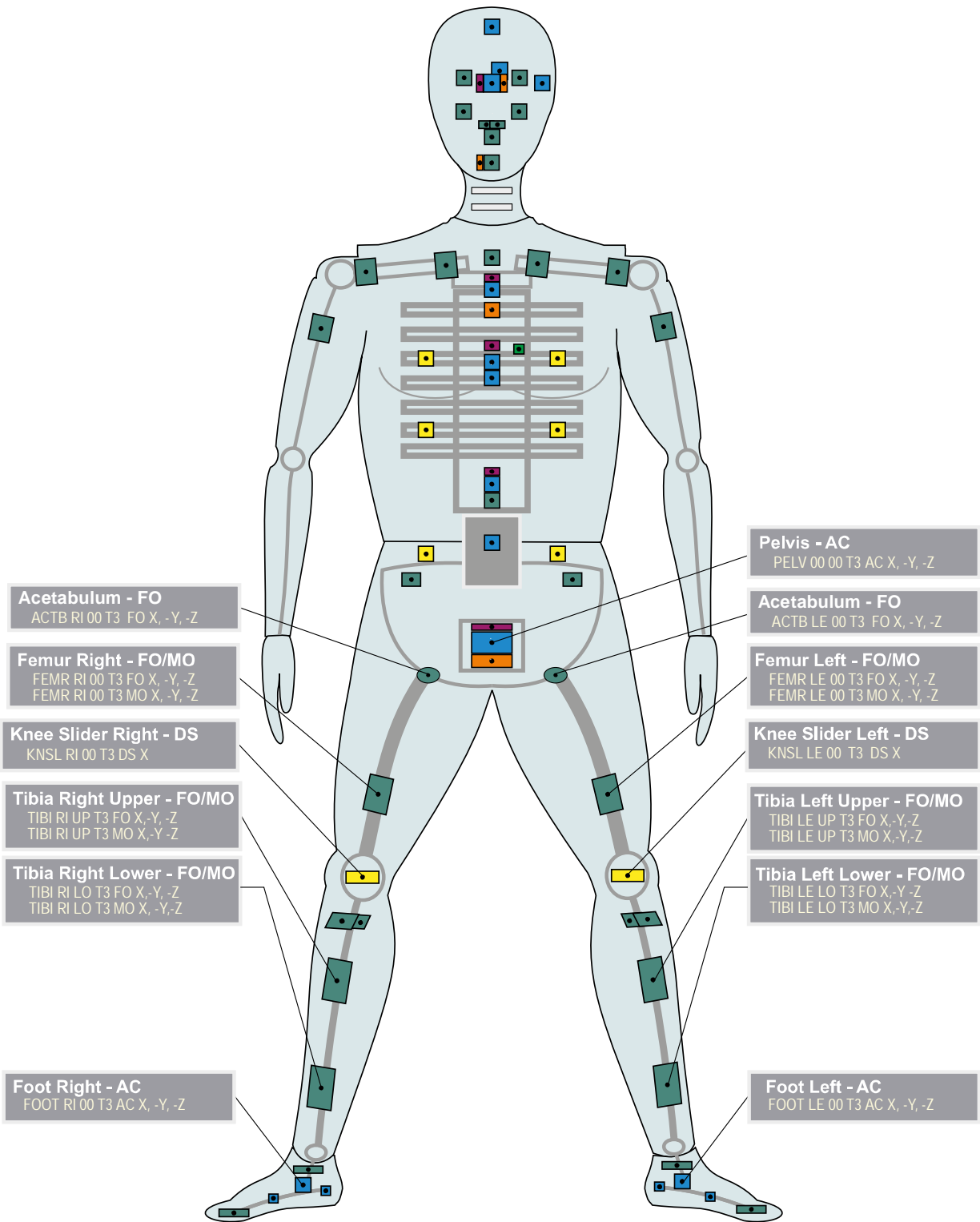
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.
and Dirk Vetter, IAT mbH

ISO_T3_1_162p3_20180321.EMF

-> T3 <- 1 of 4



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



ISO-T3_20180321

T3 THOR with H3 Legs (3)

Valid since Version

1.6.2.p3

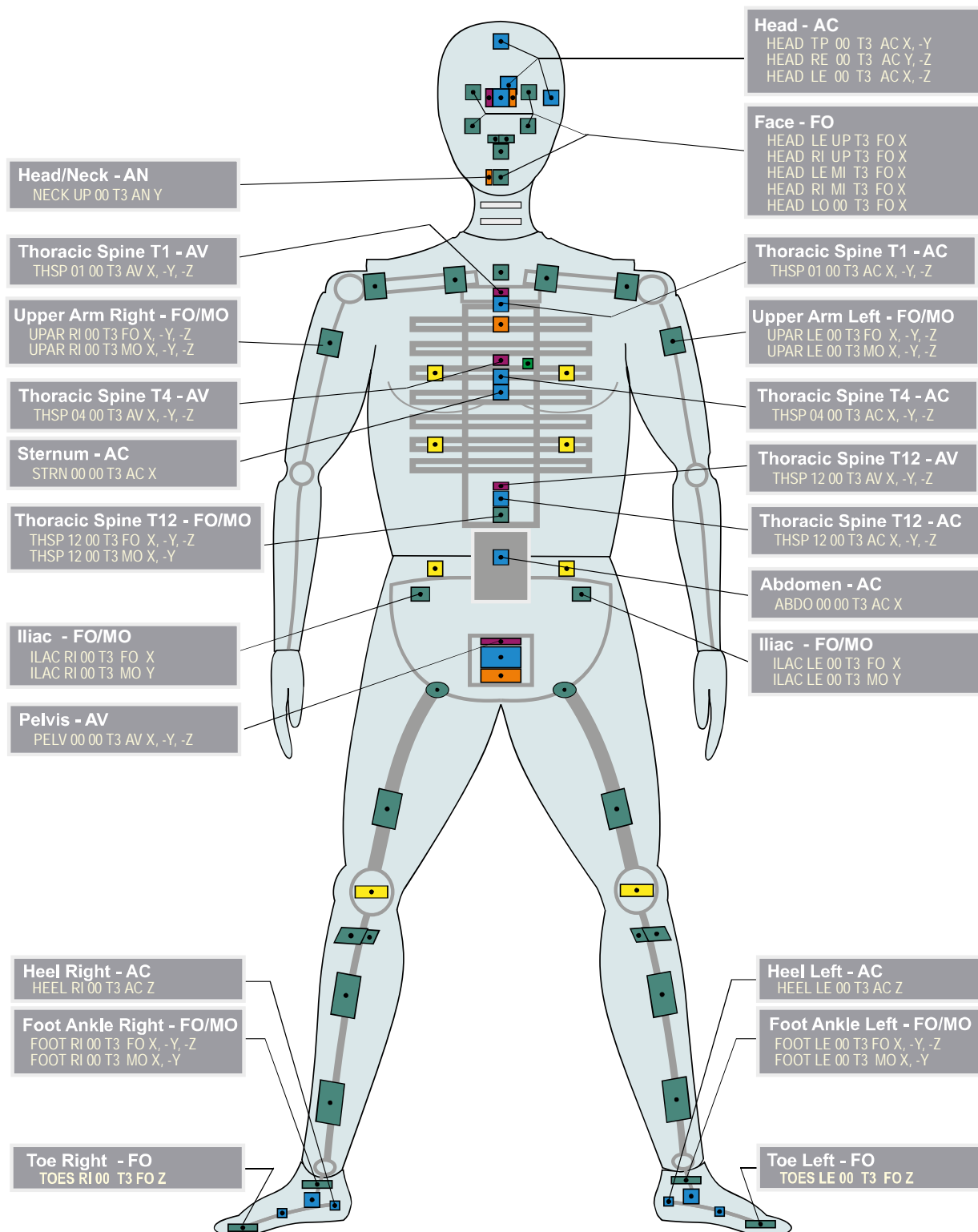


ISO/TS 13499 – RED C : 2018

T3, THOR 50% male + H3 50% Lower Legs

Additional Instrumentation: Upper and Lower Body

2018-03-21



ISO-T3_20180321

Page 3 of 4

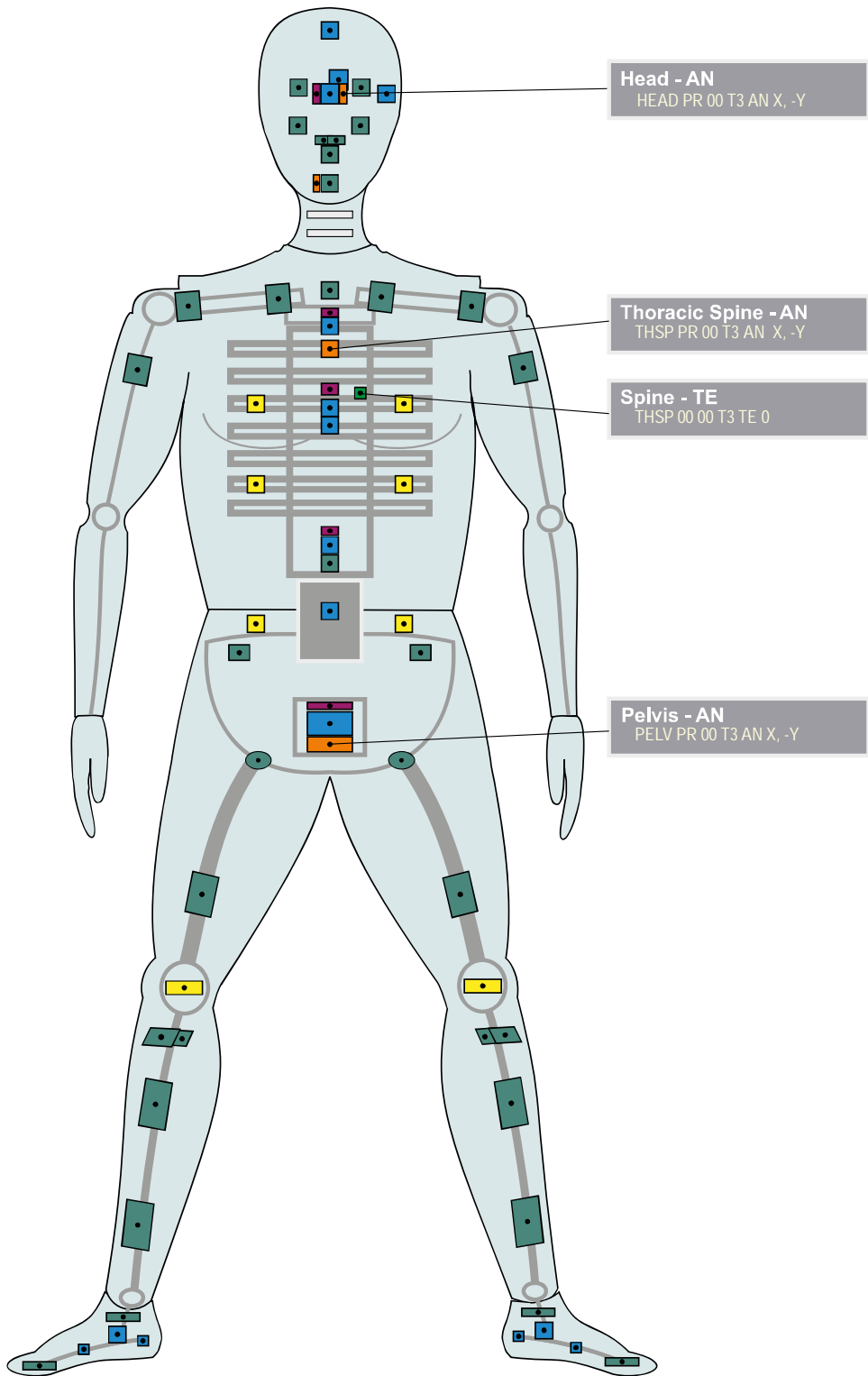
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.
and Dirk Vetter, IAT mbH

ISO_T3_3_162p3_20180321.EMF

-> T3 <- 3 of 4



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



ISO-T3_20180321

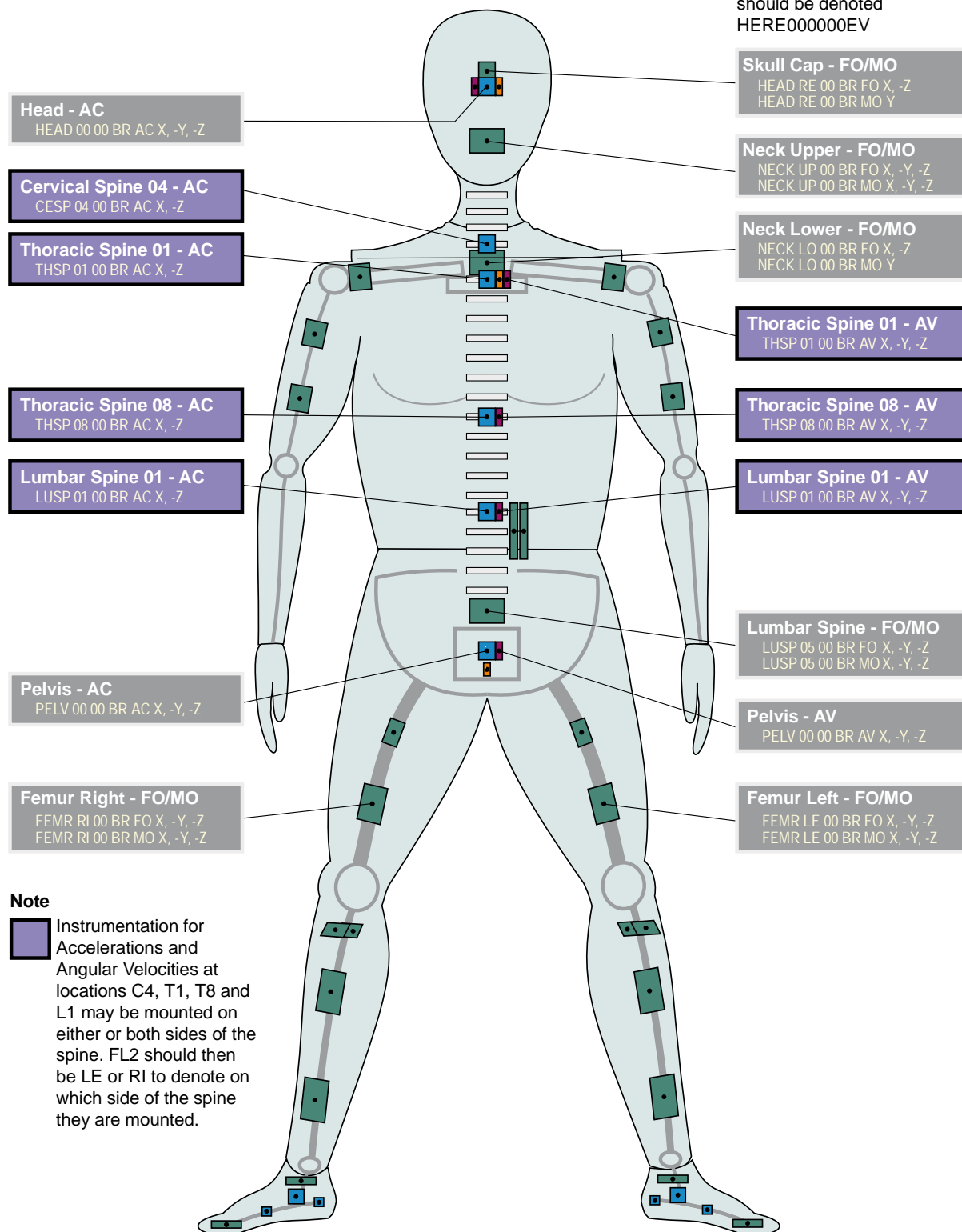
ISO TC 22 / SC 36 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, HORIBA MIRA Ltd.
and Dirk Vetter, IAT mbH



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

Note

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



ISO-BR_20130710

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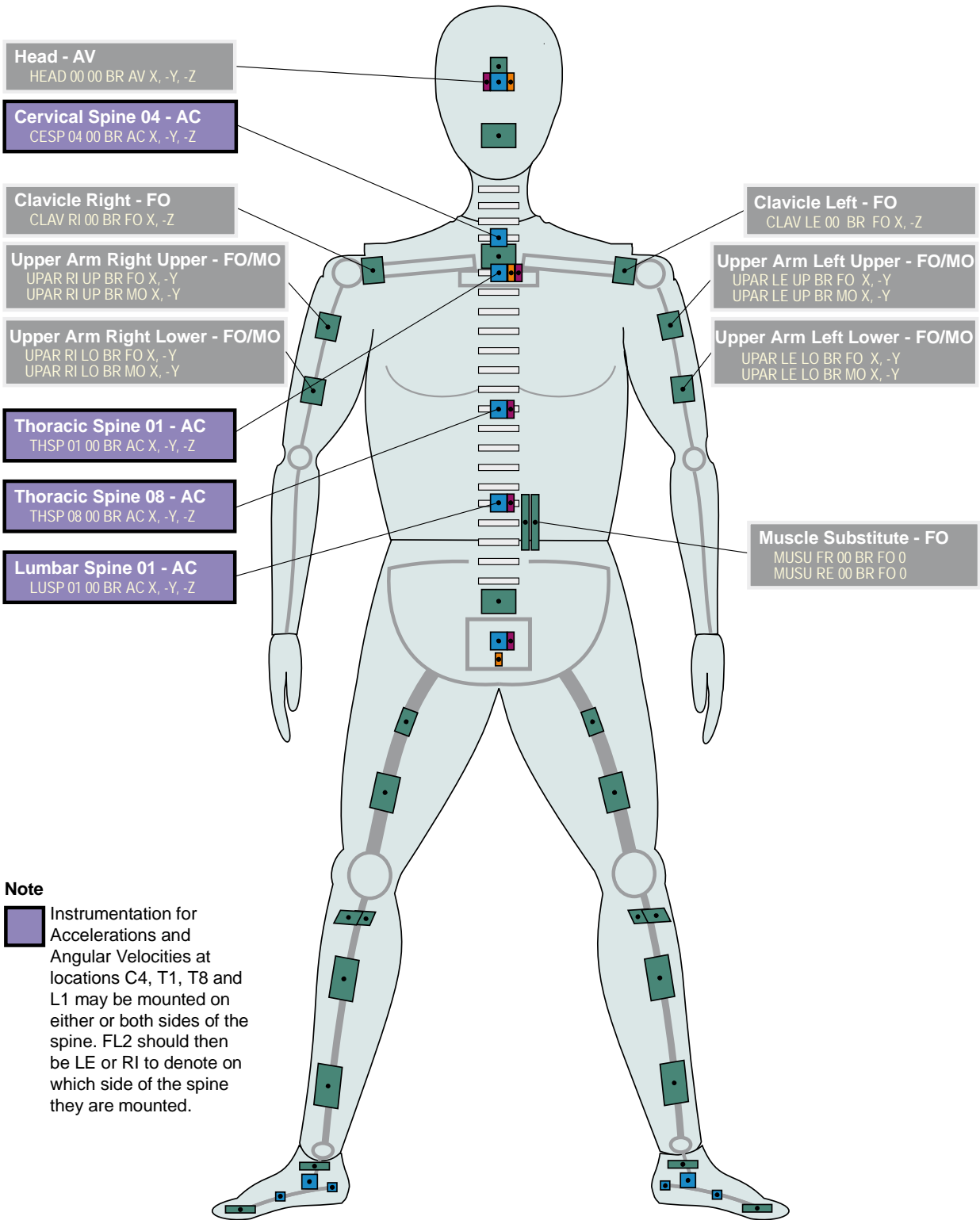
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.

ISO_BR_1_161_20130710.EMF

-> BR <- 1 of 4



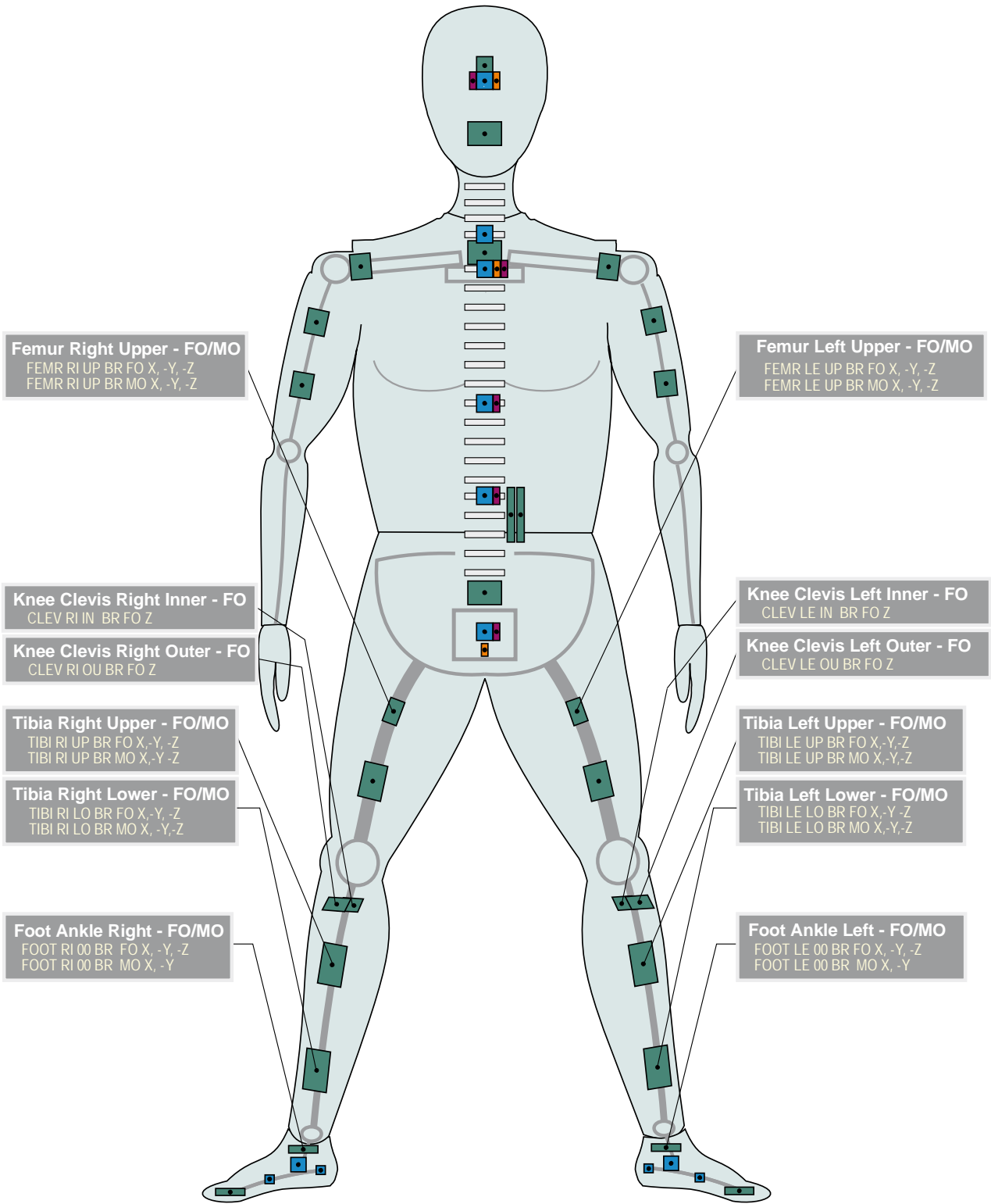
ISO/TS 13499 – RED C : 2012
BR, BioRID II 50% male
Additional Instrumentation - Upper Torso
2013-07-10



ISO-BR_20130710



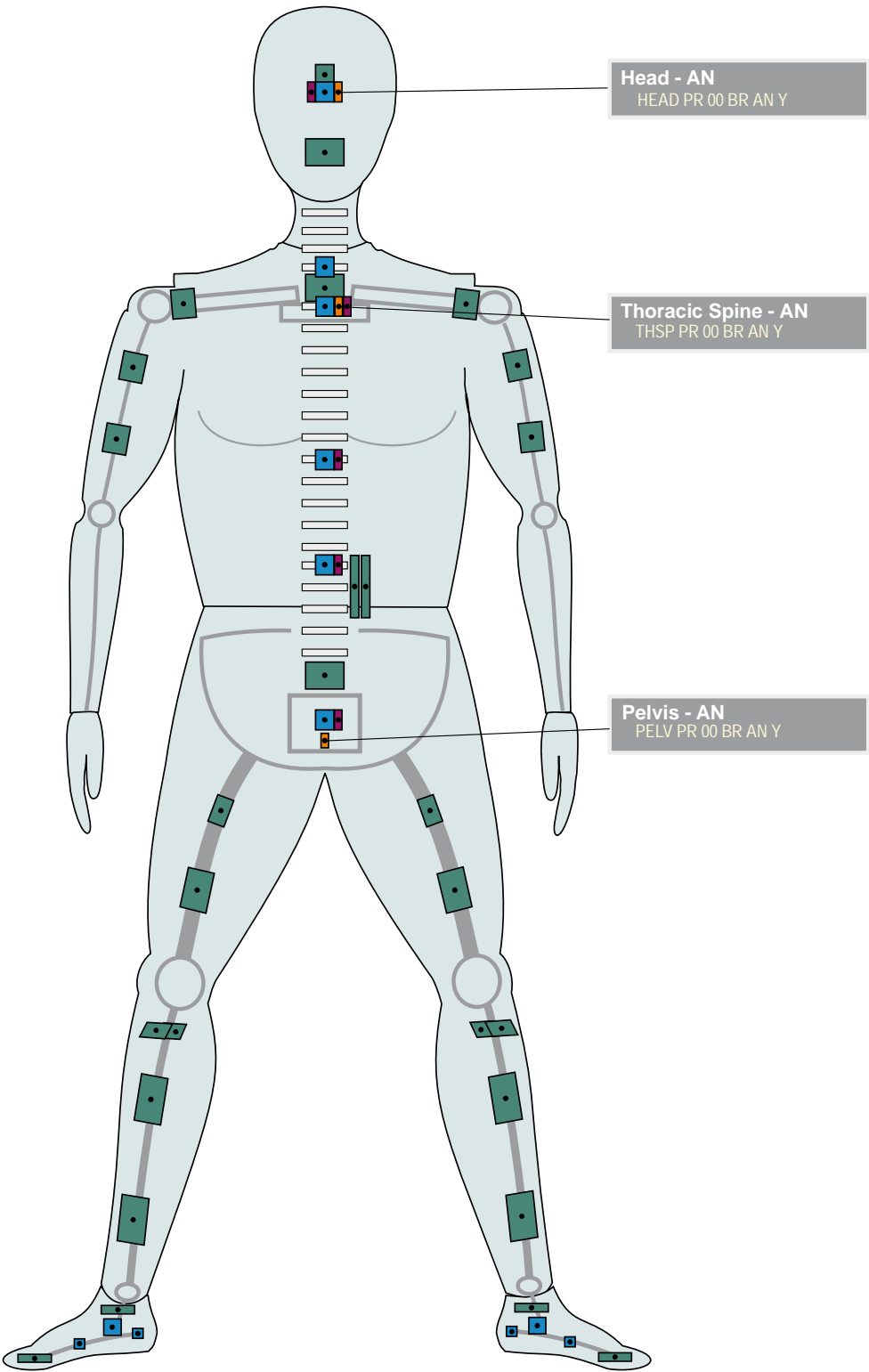
ISO/TS 13499 – RED C : 2012
BR, BioRID II 50% male
Additional Instrumentation - Legs
2013-07-10

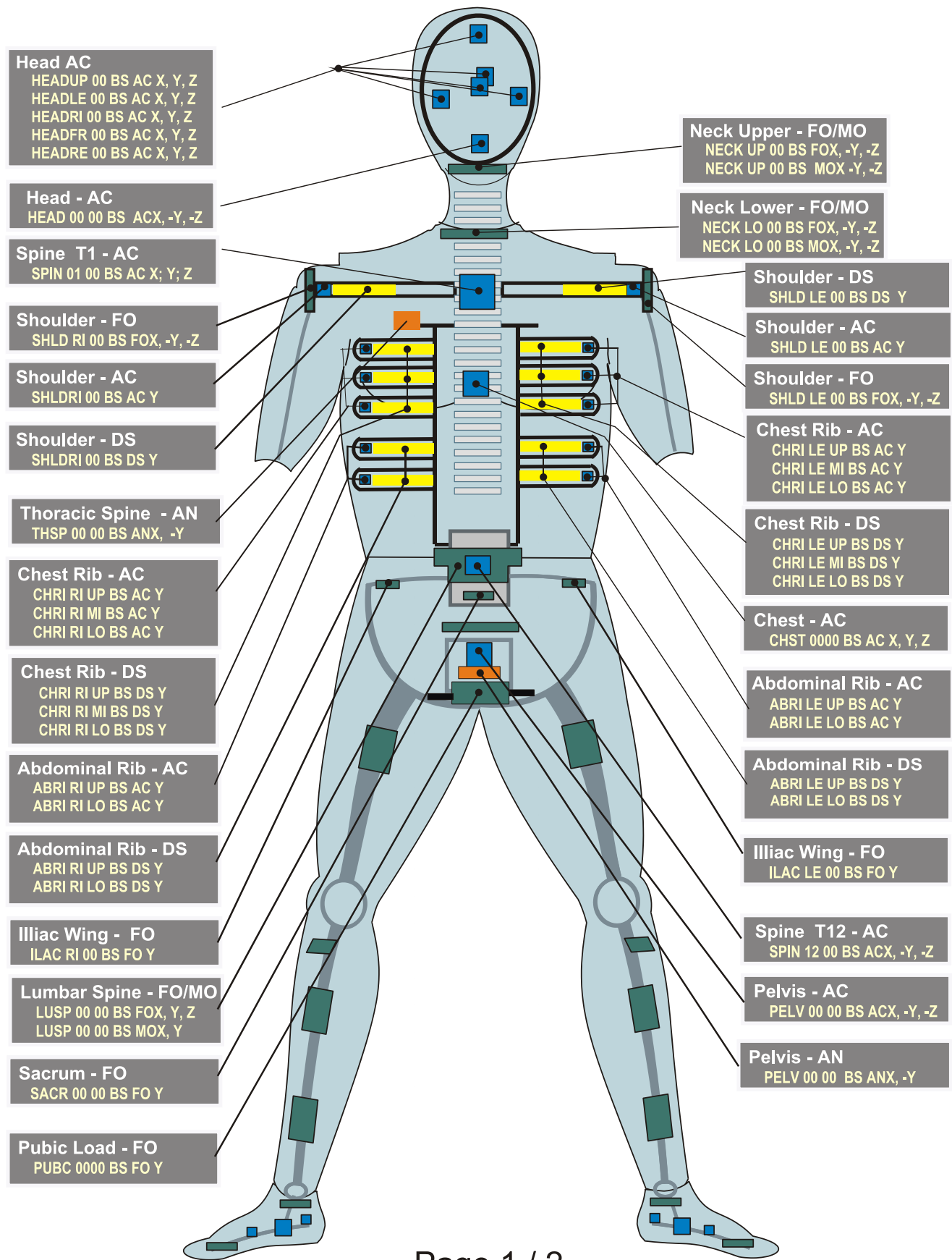


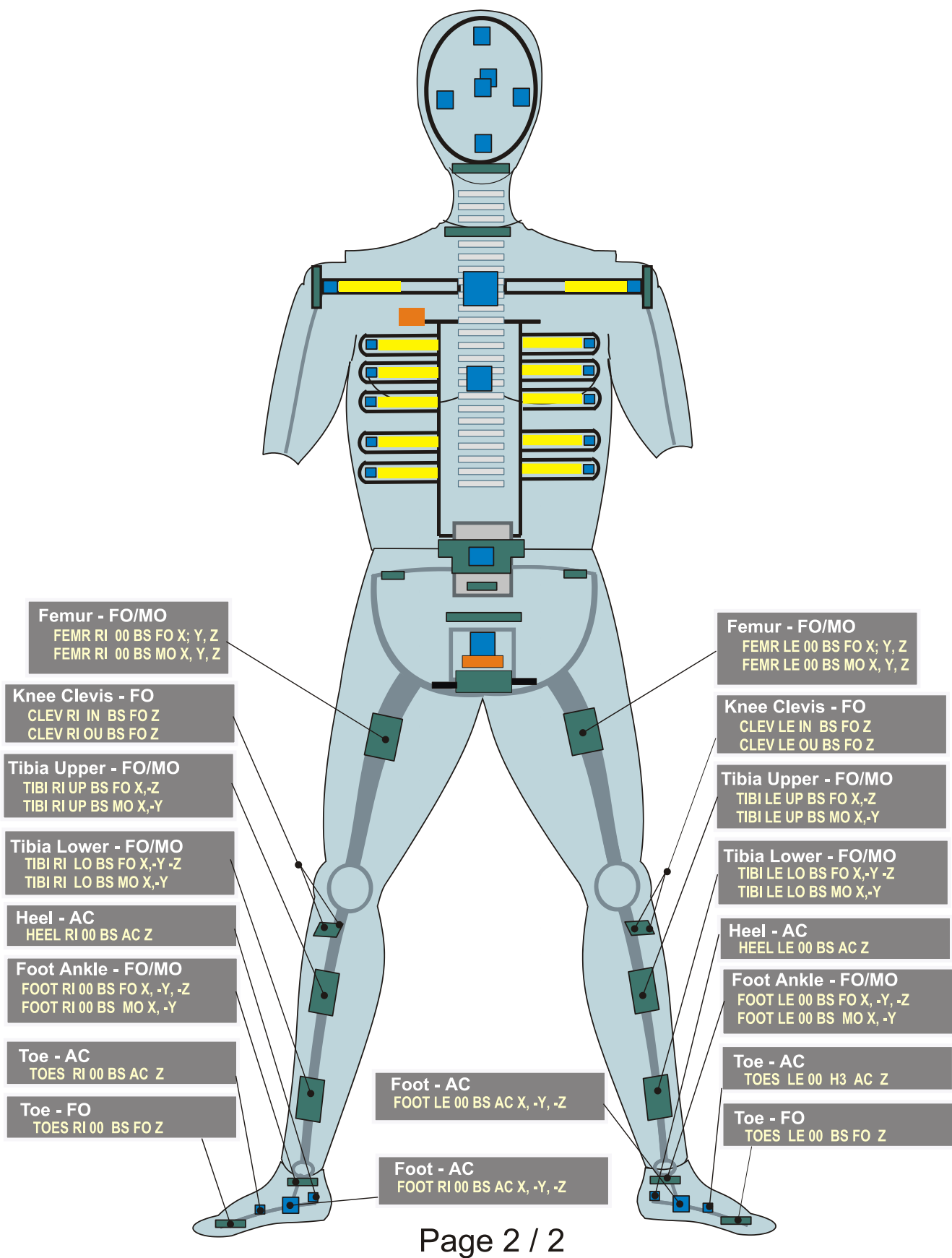
ISO-BR_20130710

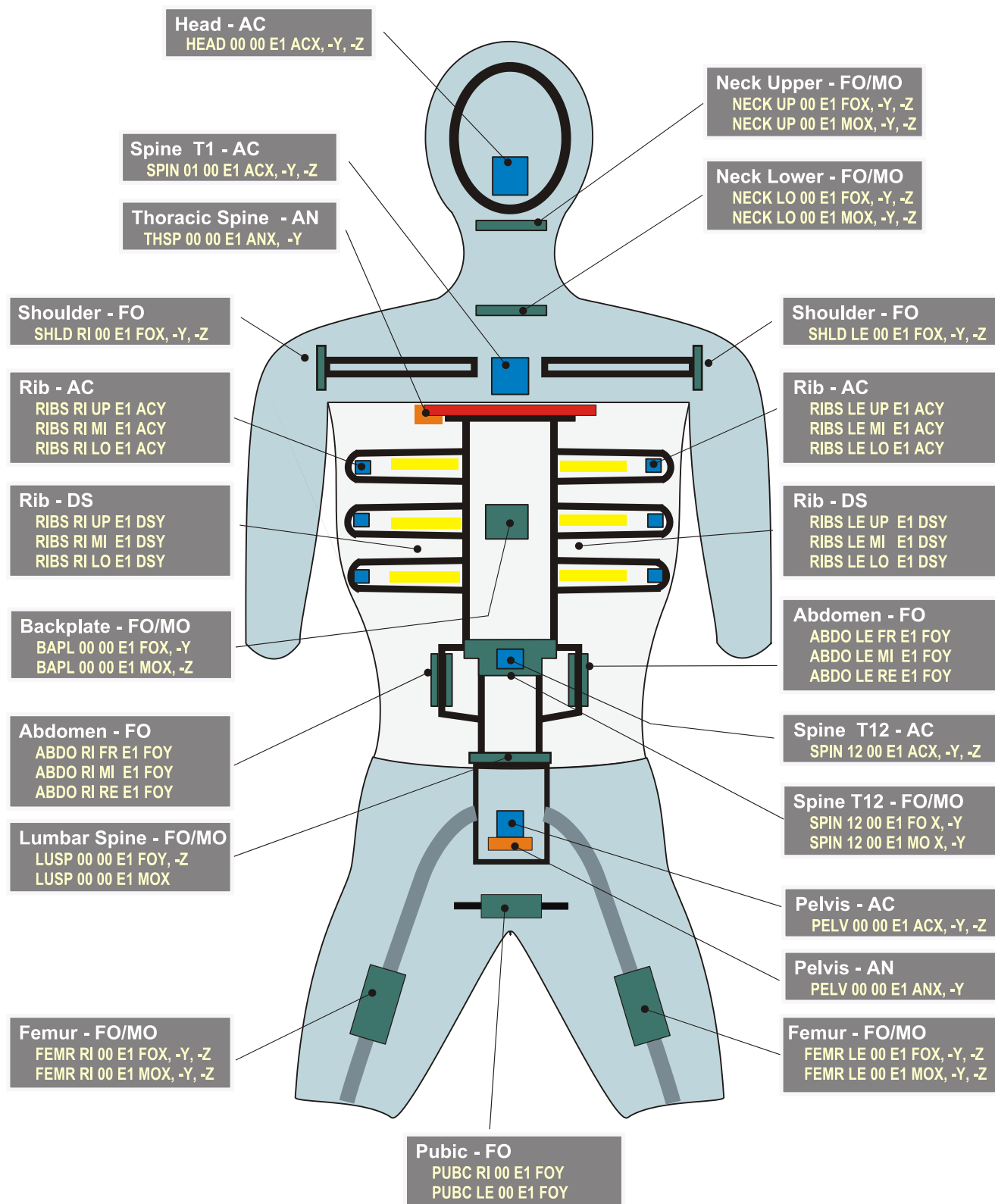


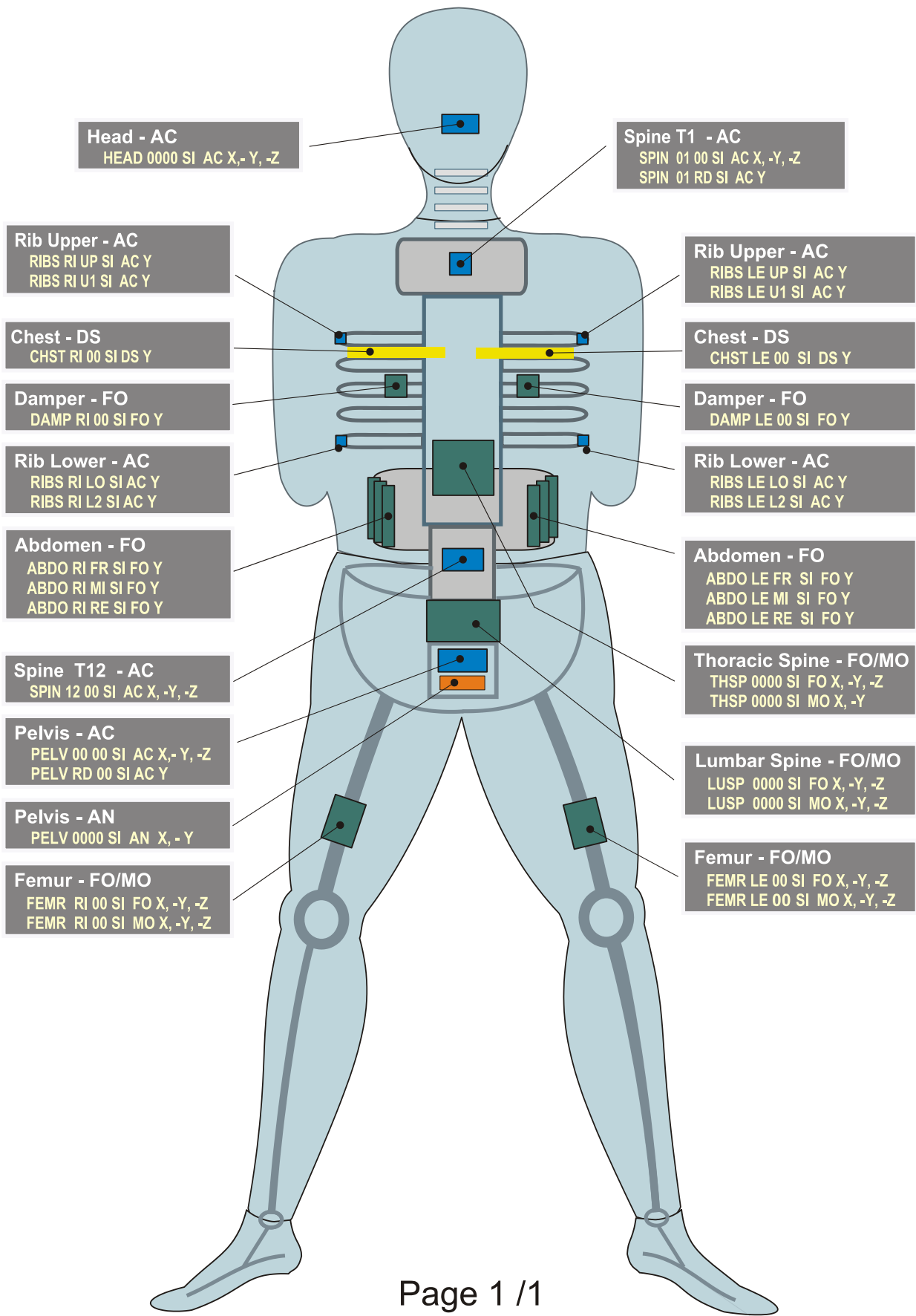
ISO/TS 13499 – RED C : 2012
BR, BioRID II 50% male
Static measurements, other channels
2013-07-10











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

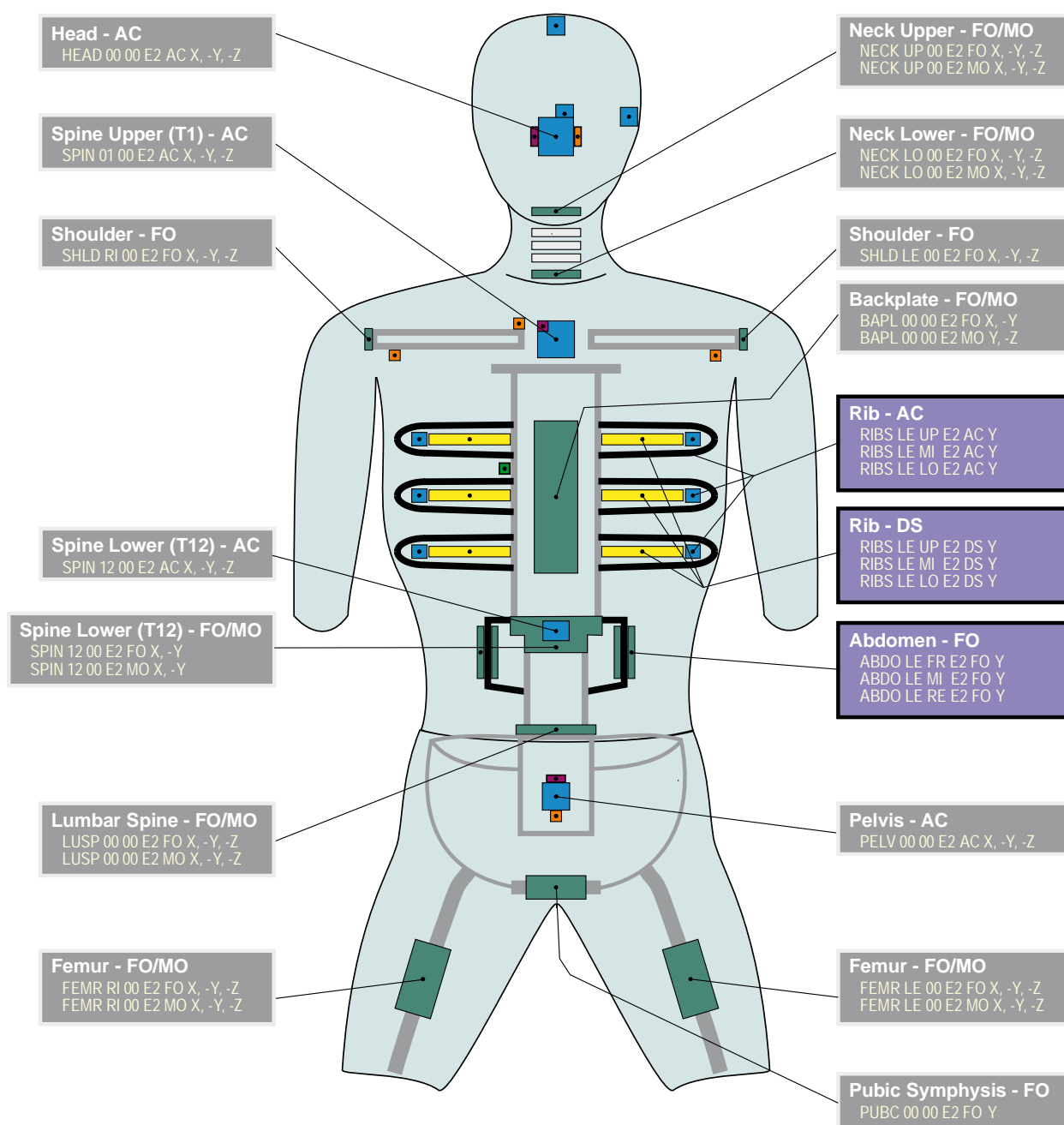
Valid since Version

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



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

Head - AV
HEAD 00 00 E2 AV X, -Y, -Z

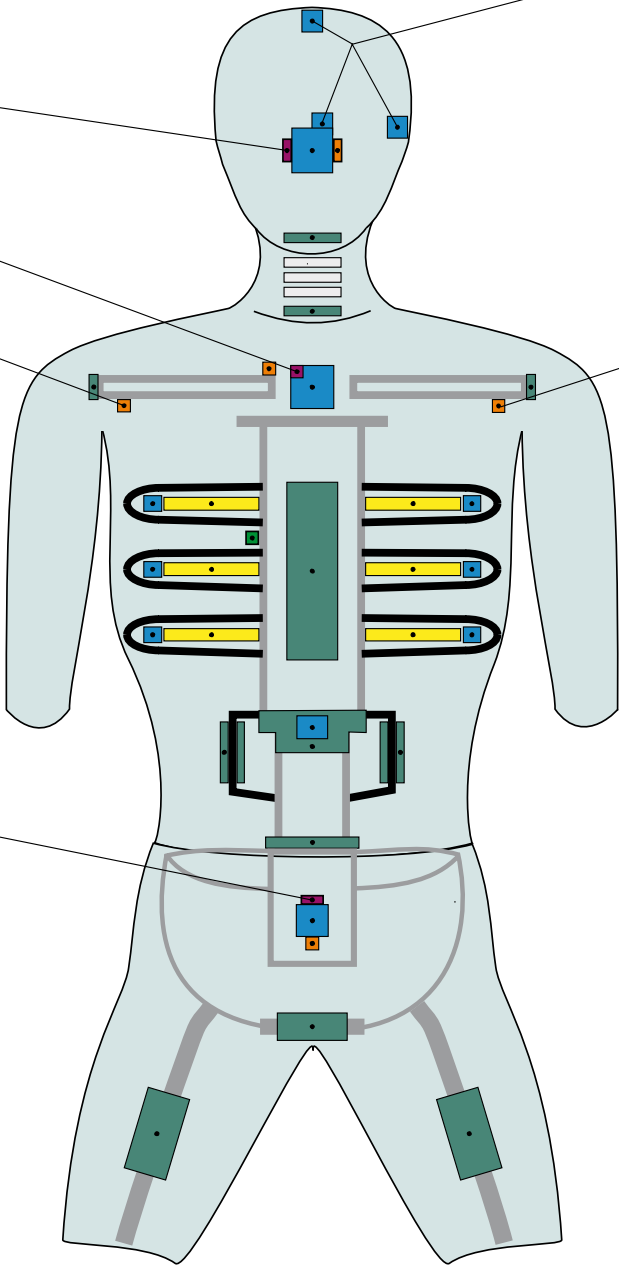
Spine Upper (T1) - AV
SPIN 01 00 E2 AV X, -Y, -Z

Shoulder - AN
SHLD RI 00 E2 AN Z

Pelvis - AV
PELV 00 00 E2 AV X, -Y, -Z

Head - AC
HEAD LE 00 E2 AC X, -Z
HEAD UP 00 E2 AC X, -Y
HEAD FR 00 E2 AC Y, -Z

Shoulder - AN
SHLD LE 00 E2 AN Z



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

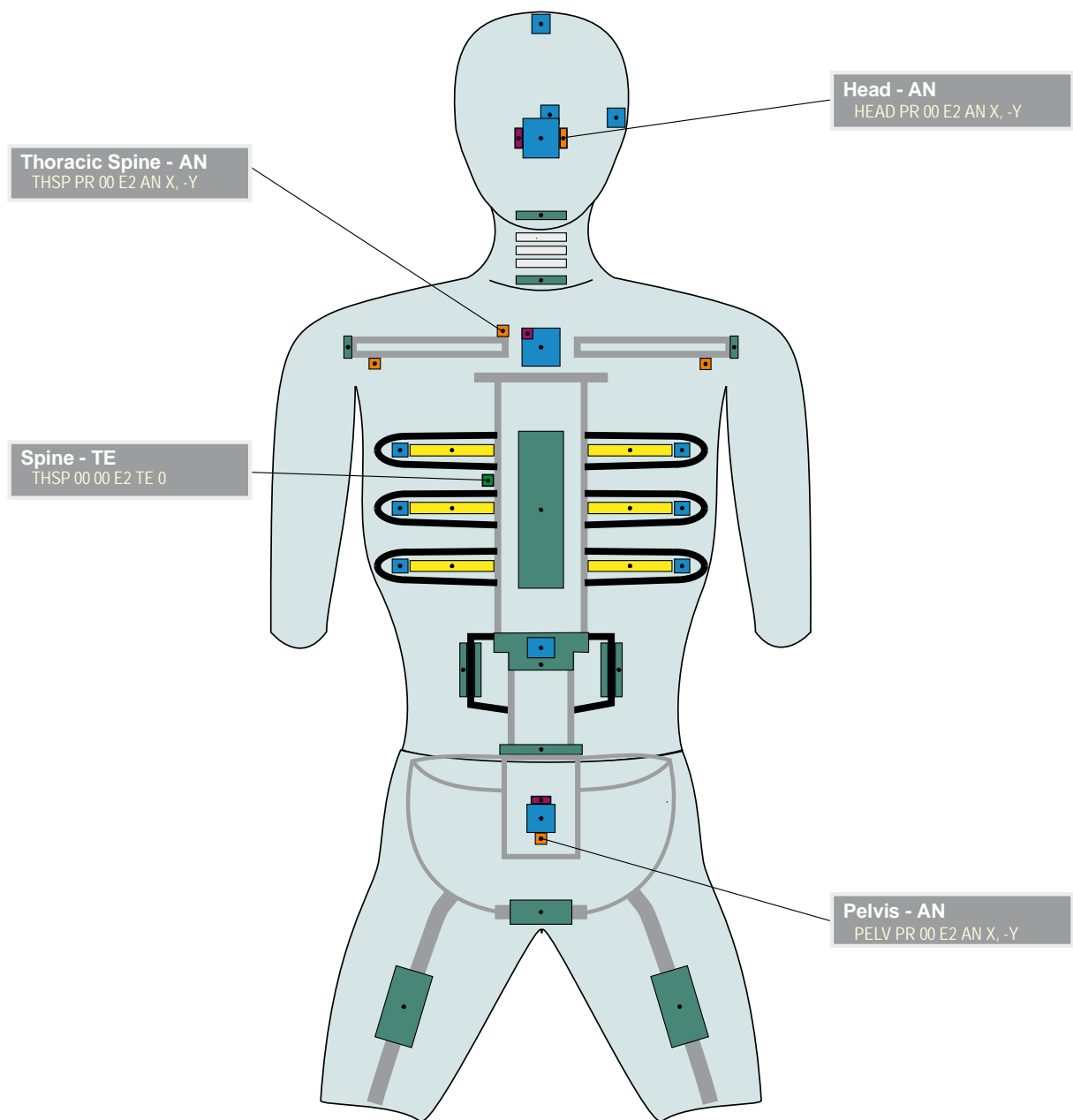
Valid since Version

1.6.1



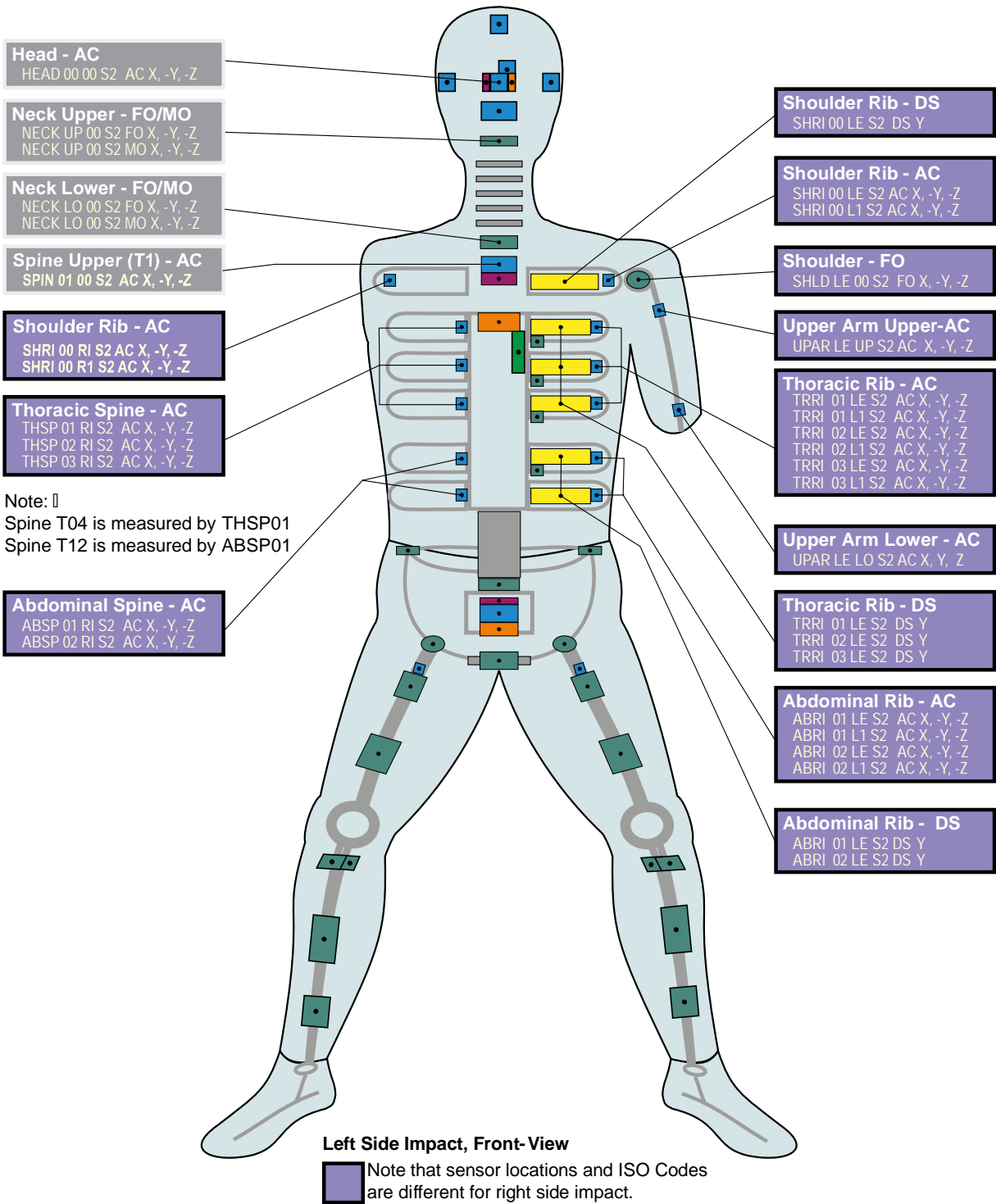
ISO/TS 13499 – RED C : 2012(E)
E2, ES-2 dummy
ER, ES2 Dummy with Rib Extension
Static measurements, other channels
2013-04-10

Note: For ERdummy, FL3 will read ER





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



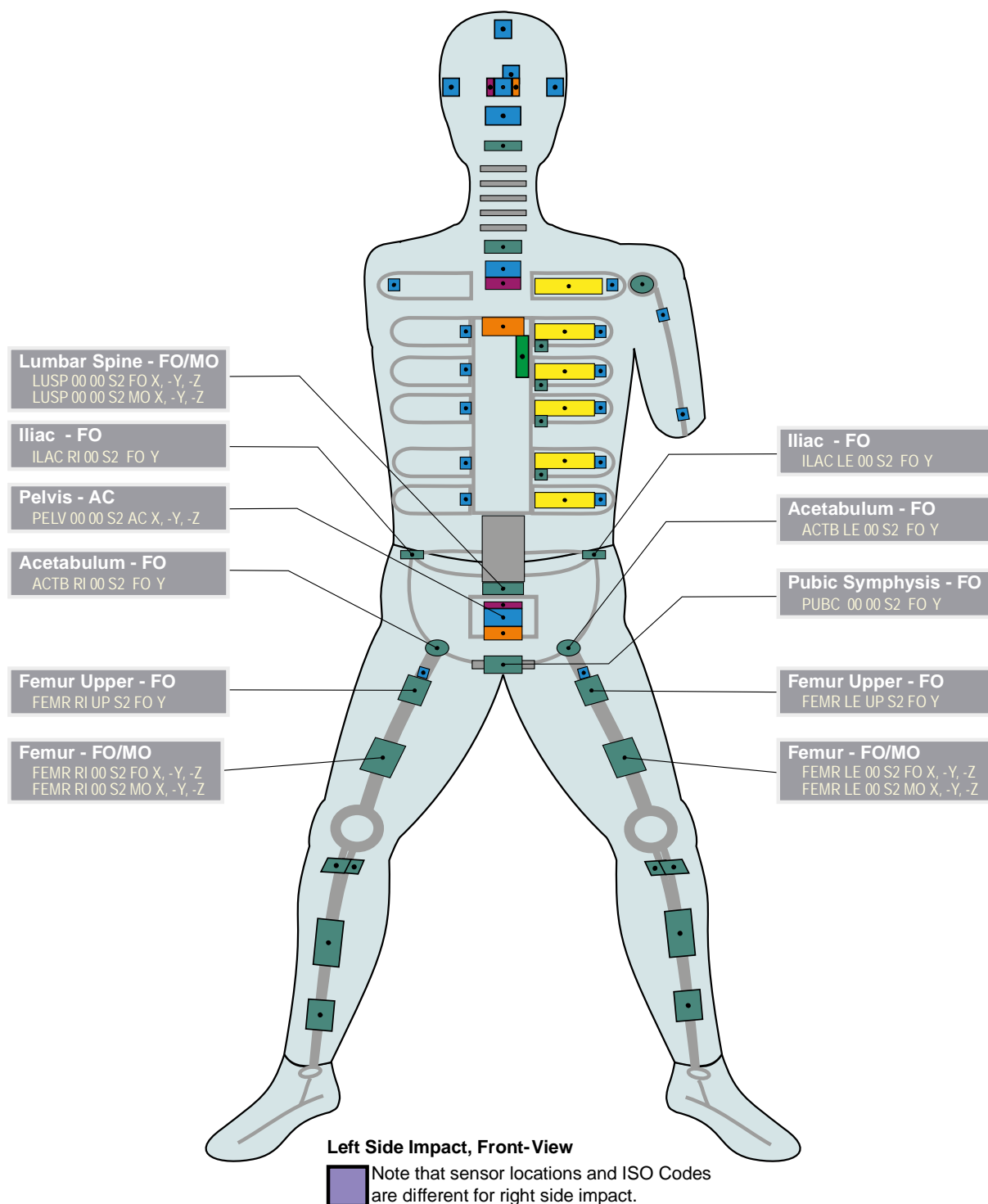
S2 SID IIs (2)

Valid since Version

1.6.2



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



ISO-S2_20190717

Page 2 of 5

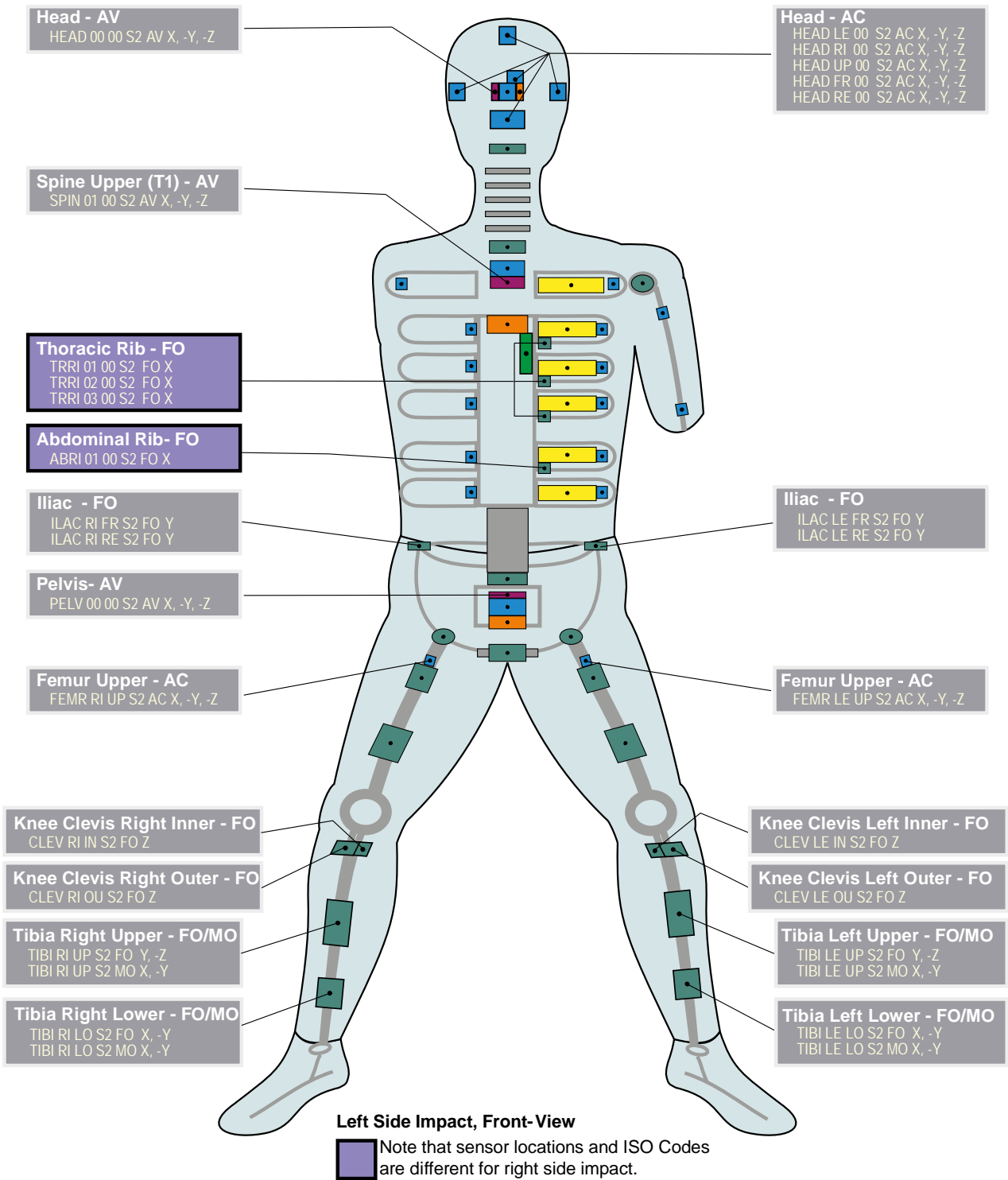
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force
Maintained by Paul Wellicome, MIRA Ltd.

ISO_S2_2_162_20190719.EMF

-> S2 <- 2 of 5



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



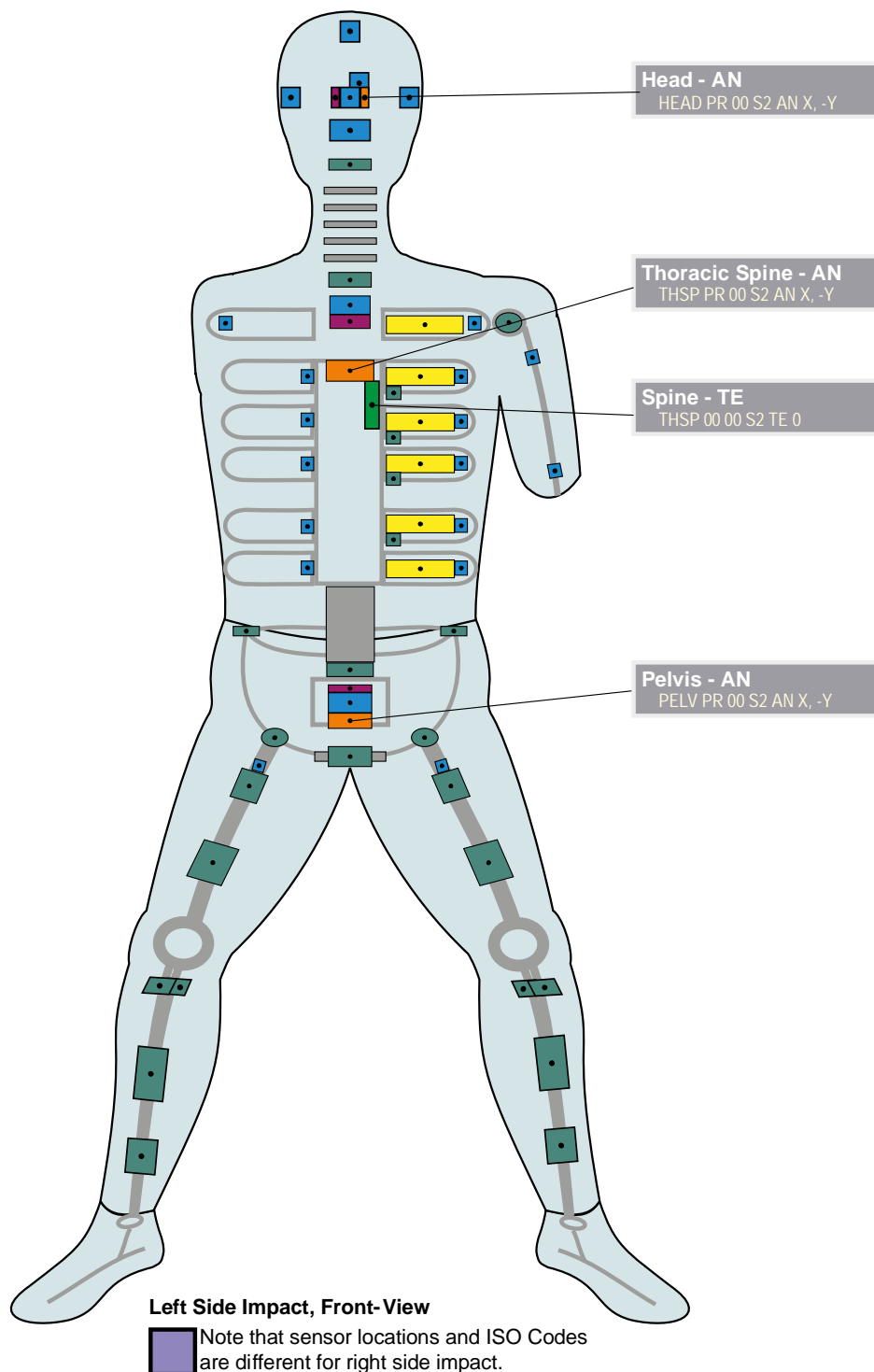
S2 SID IIs (4)

Valid since Version

1.6.2



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



ISO-S2_20190717

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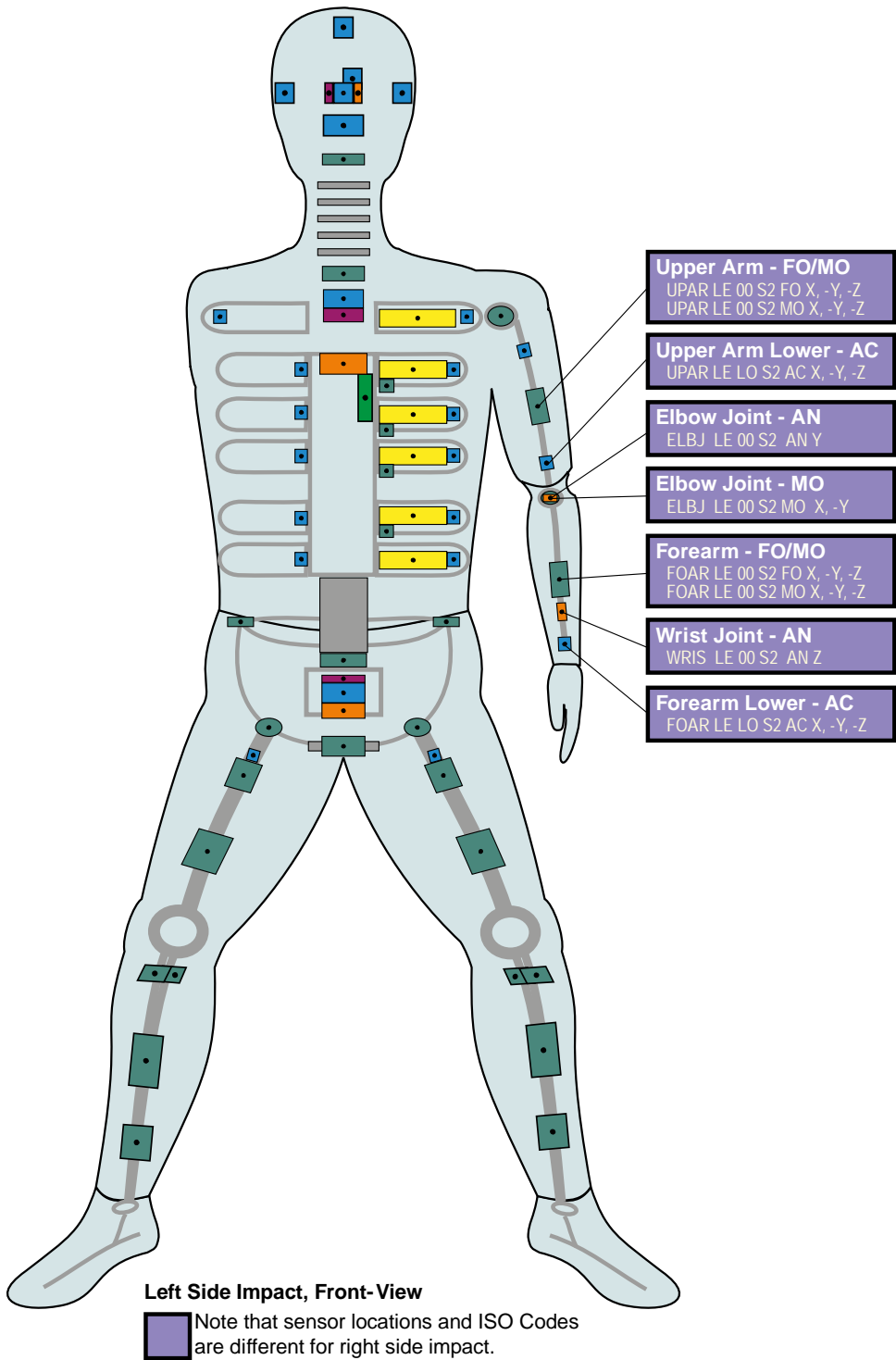
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force II
Maintained by Paul Wellicome, MIRA Ltd.

ISO_S2_4_162_20190719.EMF

-> S2 <- 4 of 5



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



WS

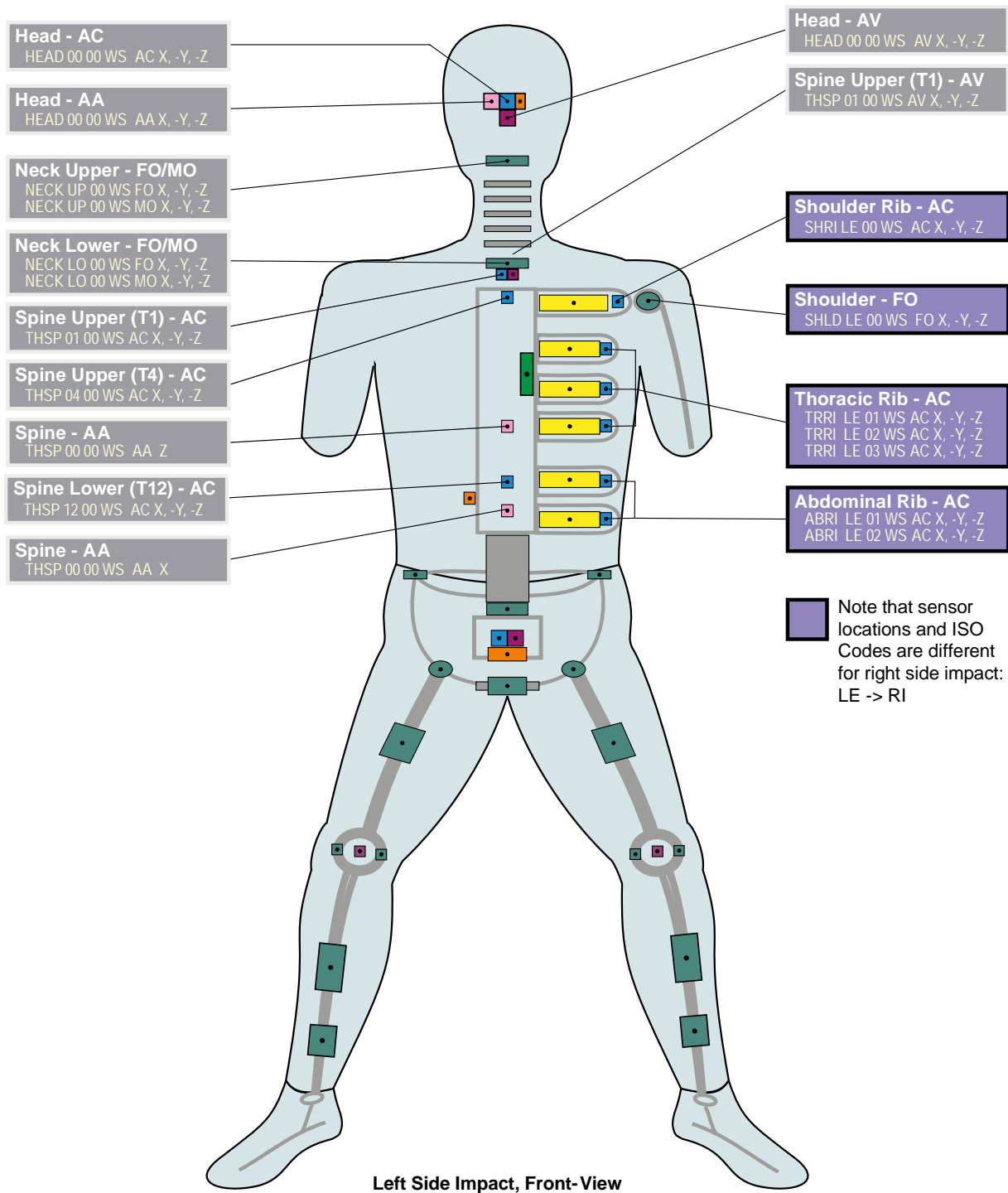
WorldSID (1)

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



ISO-WS_20170420

Page 1 of 6

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

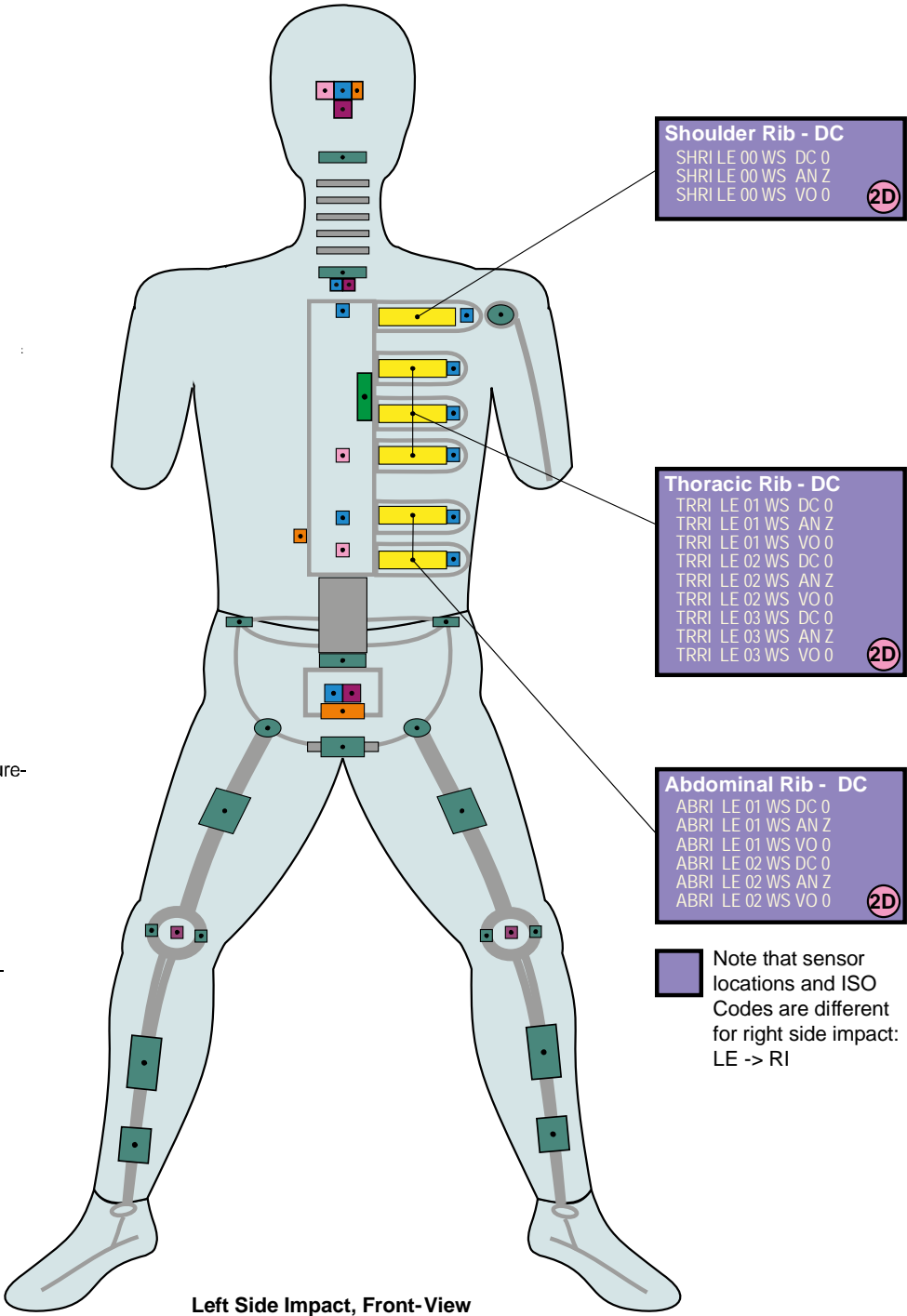
ISO_WS_1_162p2_20170420.EMF

-> WS <- 1 of 6



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.



WS

WorldSID (3)

Valid since Version

1.6.1



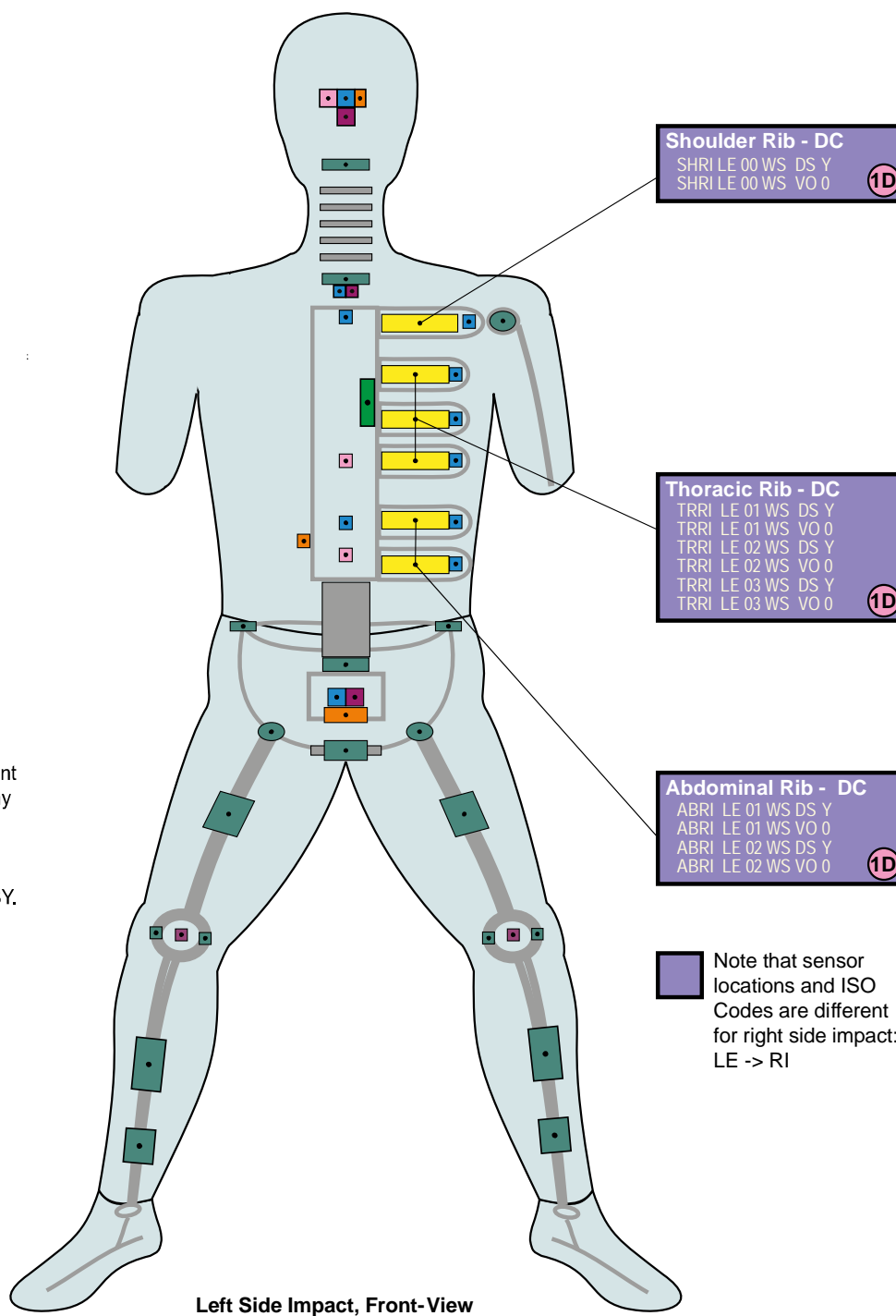
ISO/TS 13499 – RED C : 2012(E)

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.



ISO-WS_20170420

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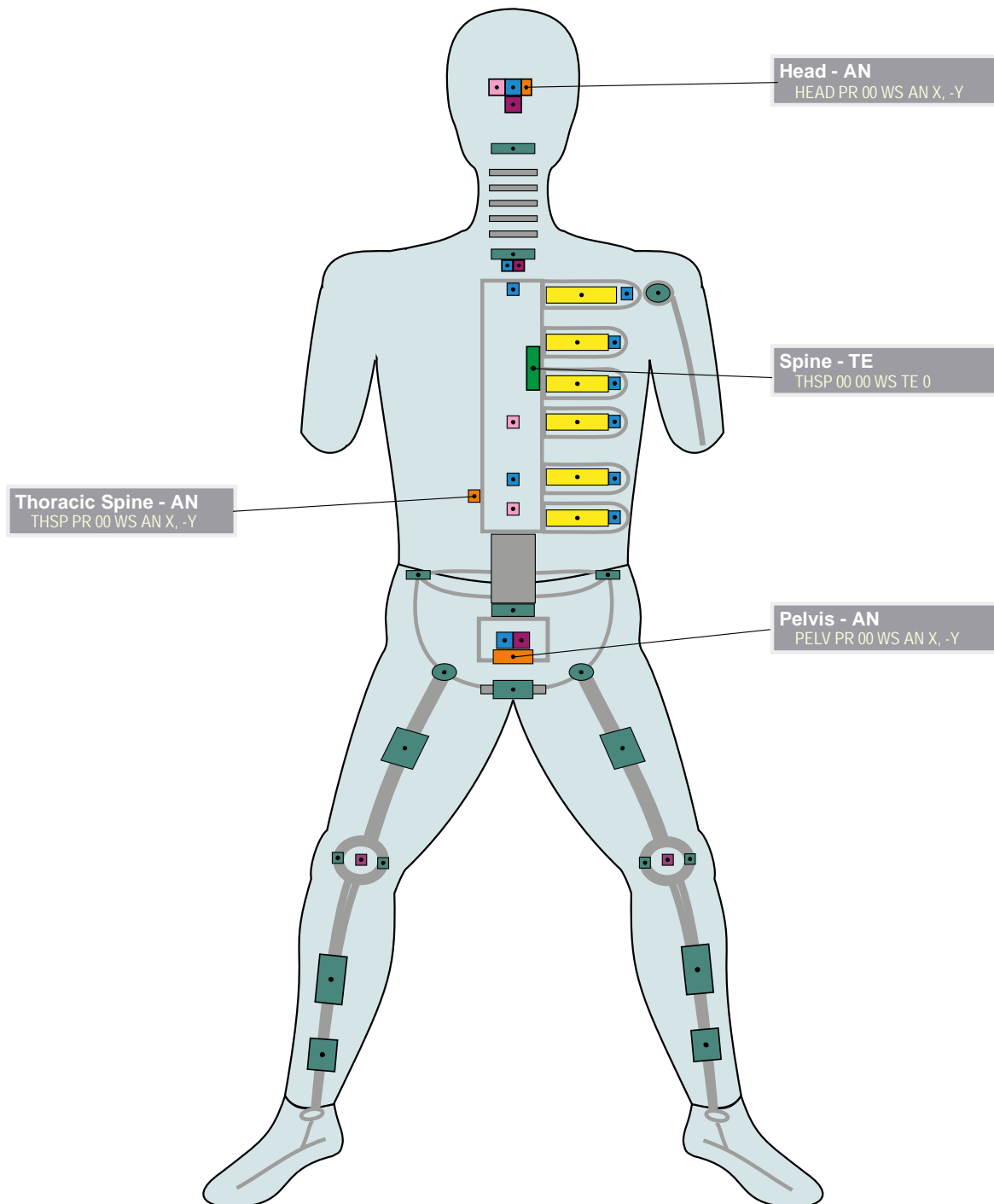
ISO TC 22 / SC 12 / WG 3 / ISO-MME Task Force II
Maintained by Paul Wellicome, HORIBA MIRA Ltd.

ISO_WS_3_162p2_20170420.EMF

-> WS <- 3 of 6

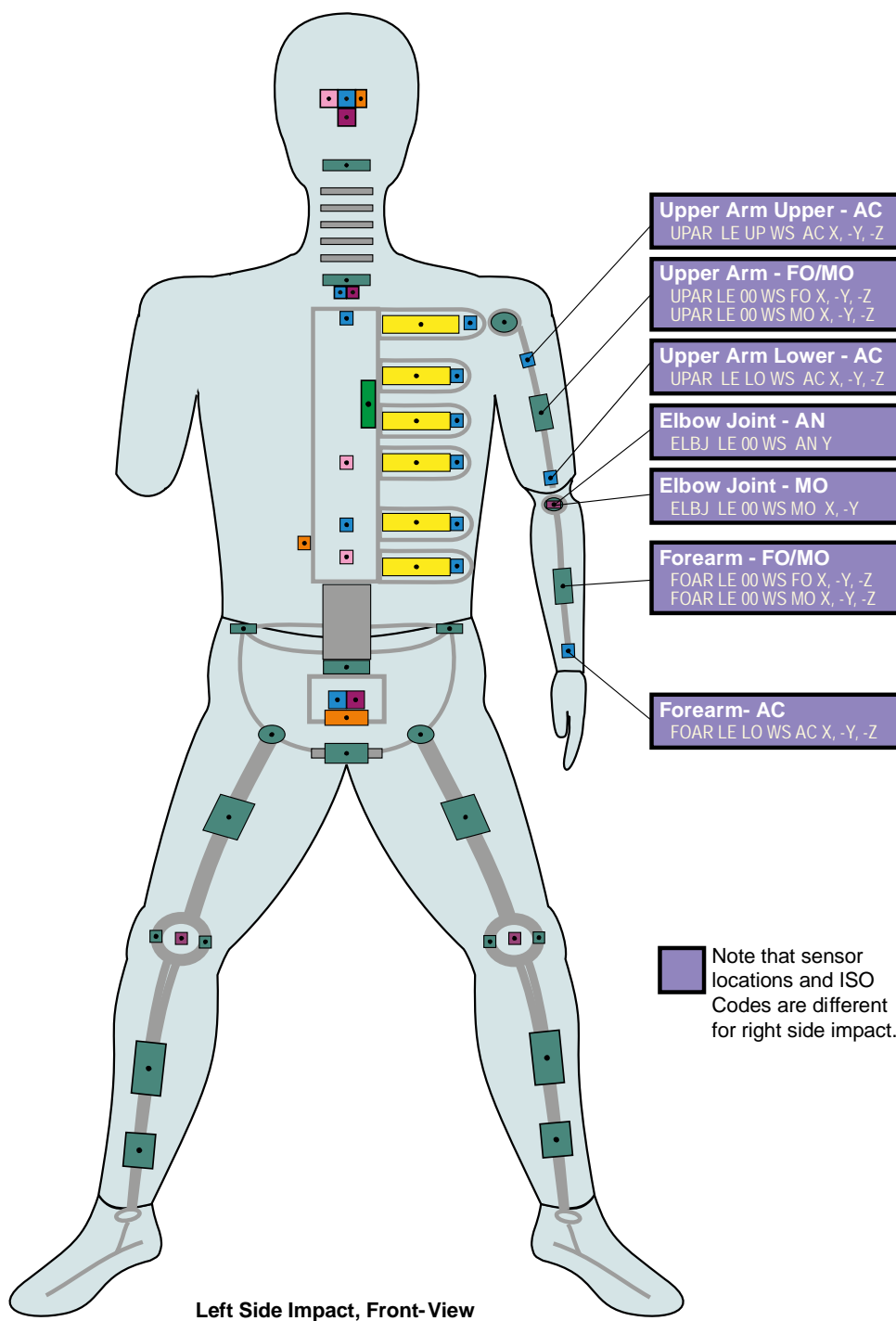


ISO/TS 13499 – RED C : 2012(E)
WS, WorldSID 50th percentile dummy
Static measurements, other channels
2017-04-20



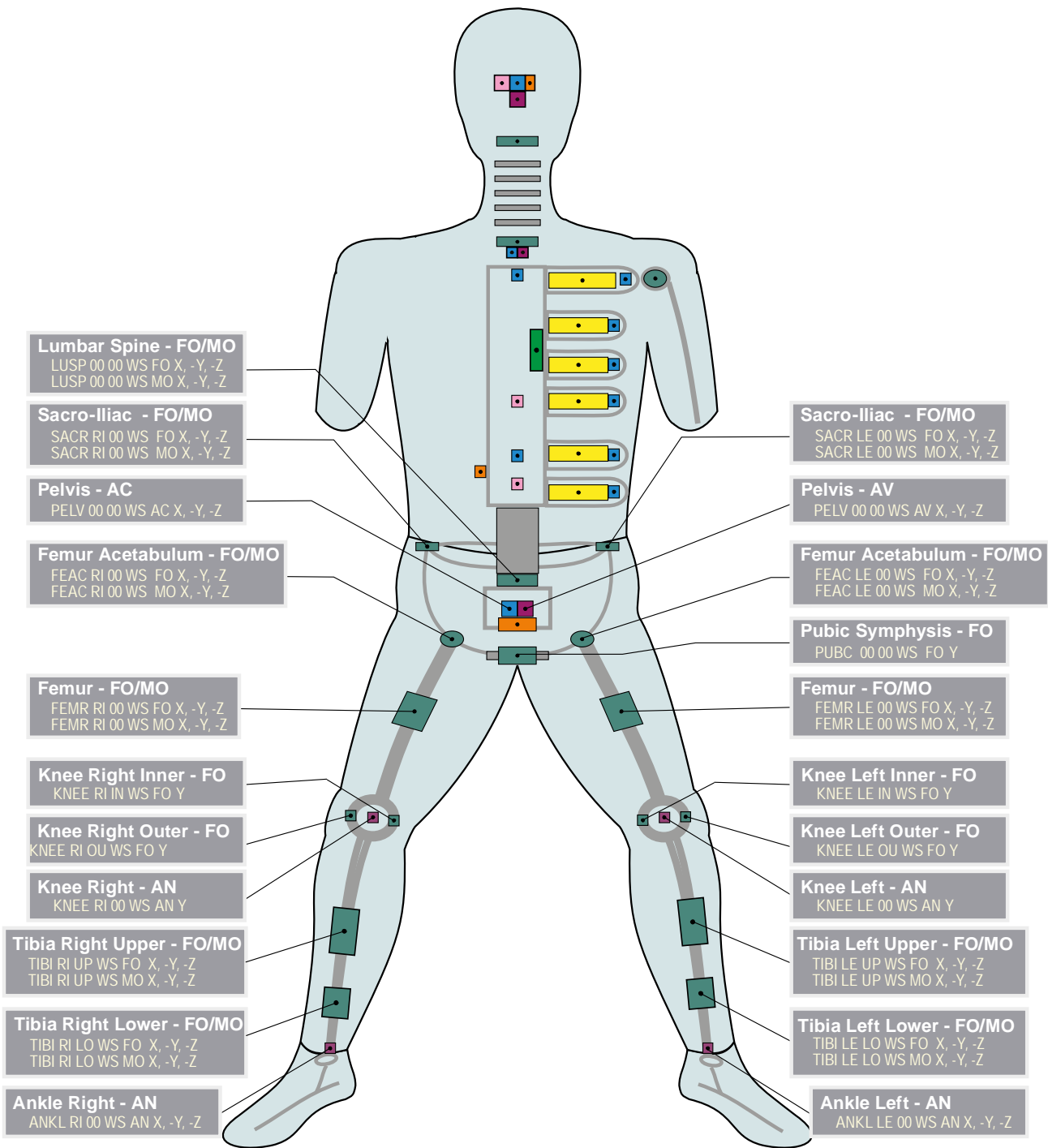



ISO/TS 13499 – RED C : 2012(E)
WS, WorldSID 50th percentile dummy
Additional Instrumentation: Instrumented arm
2017-04-20





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





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

The Skeletal System

Anterior *Posterior*

?? SKUL Skull

?? HUMS Sternum Clavicle Humerus Ribs Vertebra Column Radius Ulna Carpal Metacarpal Phalanx Femur Patella Tibia Fibula Tarsal Phalanx Metatarsal

?? BRAI Scapula Ilium Ischium Pubis

?? ACRO

?? SCAP

?? ACHI

?? LLEG

?? FIBU

?? RADI

?? ULNA

?? ULEG

?? 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

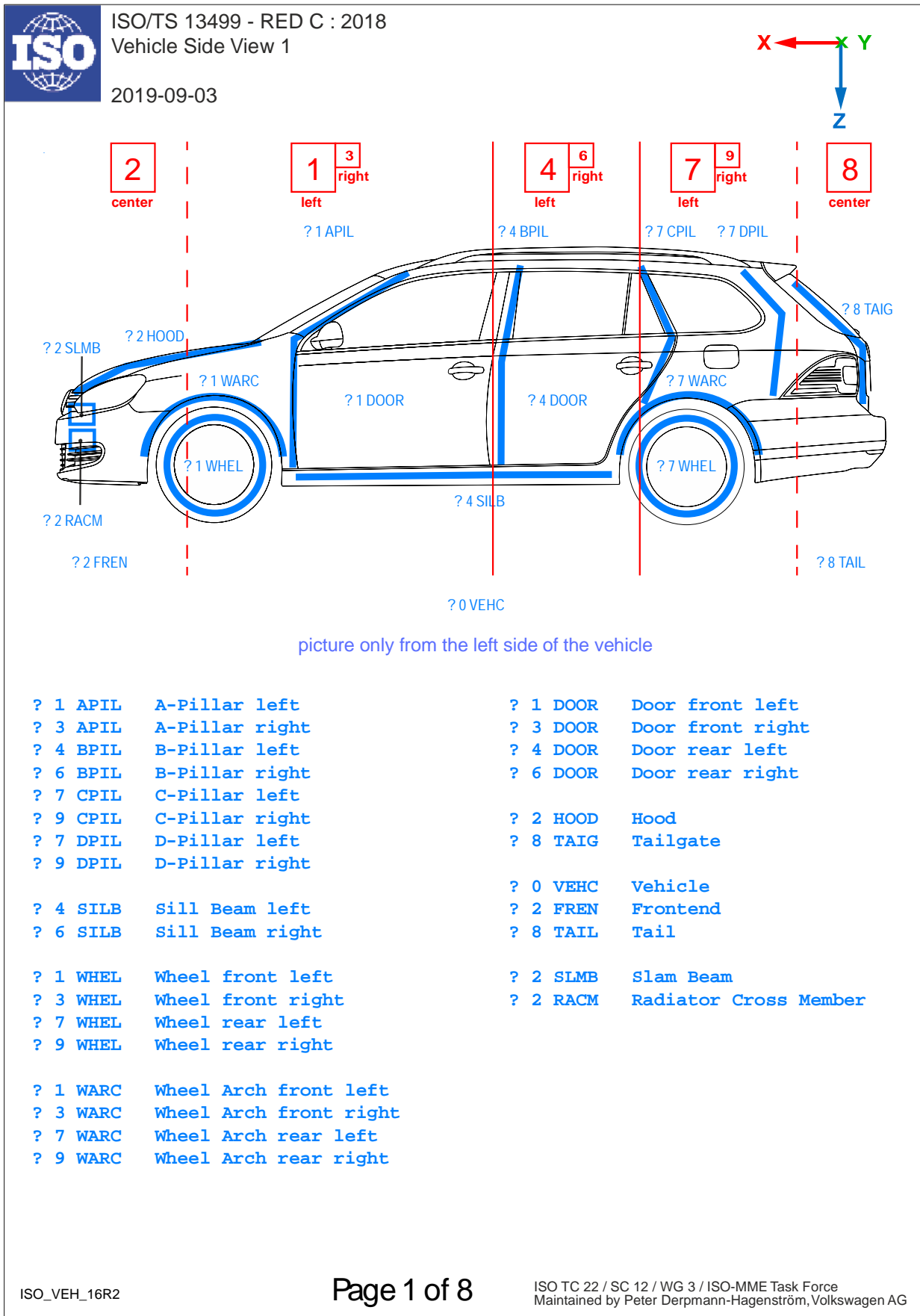
Page 1 of 1

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

VEH_S1 Vehicle left side

Valid since Version **1.6.2.p2**

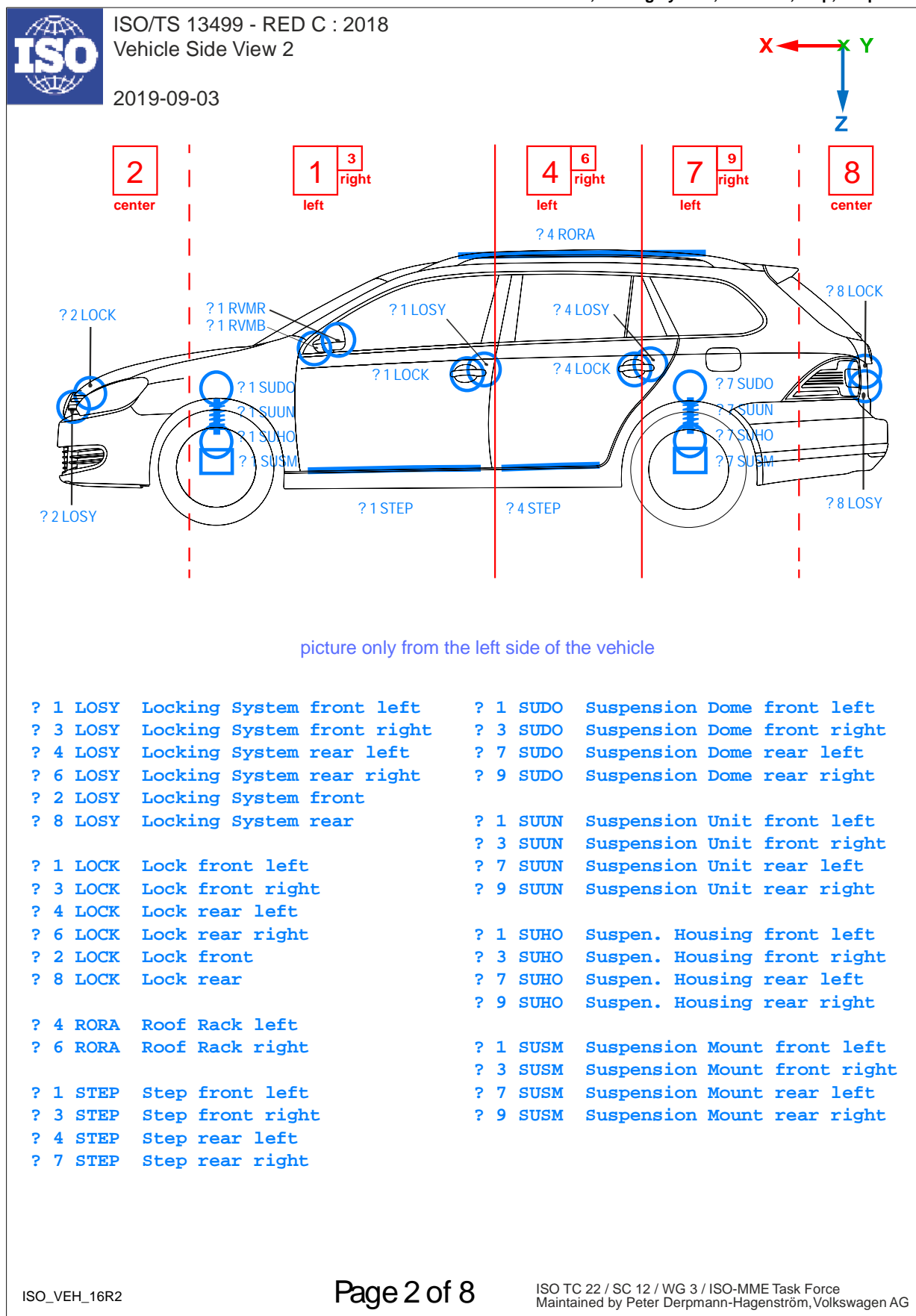
A,B,C,D-pillar, wheel, door, sillbeam, hood, tailgate, vehicle, frontend, tail, wheelarch ...



VEH_S2 Vehicle left side

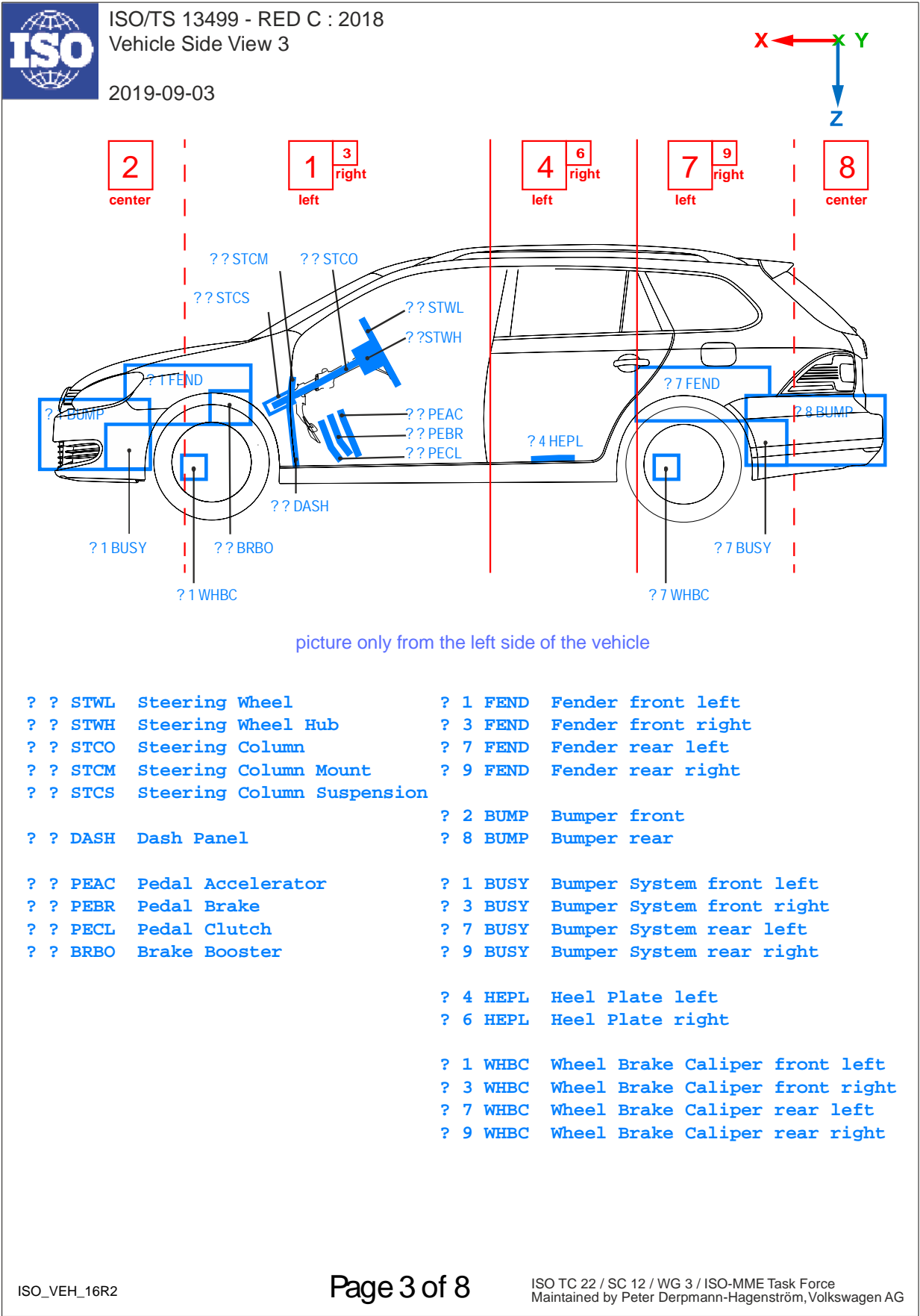
Valid since Version 1.6.2.p2

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



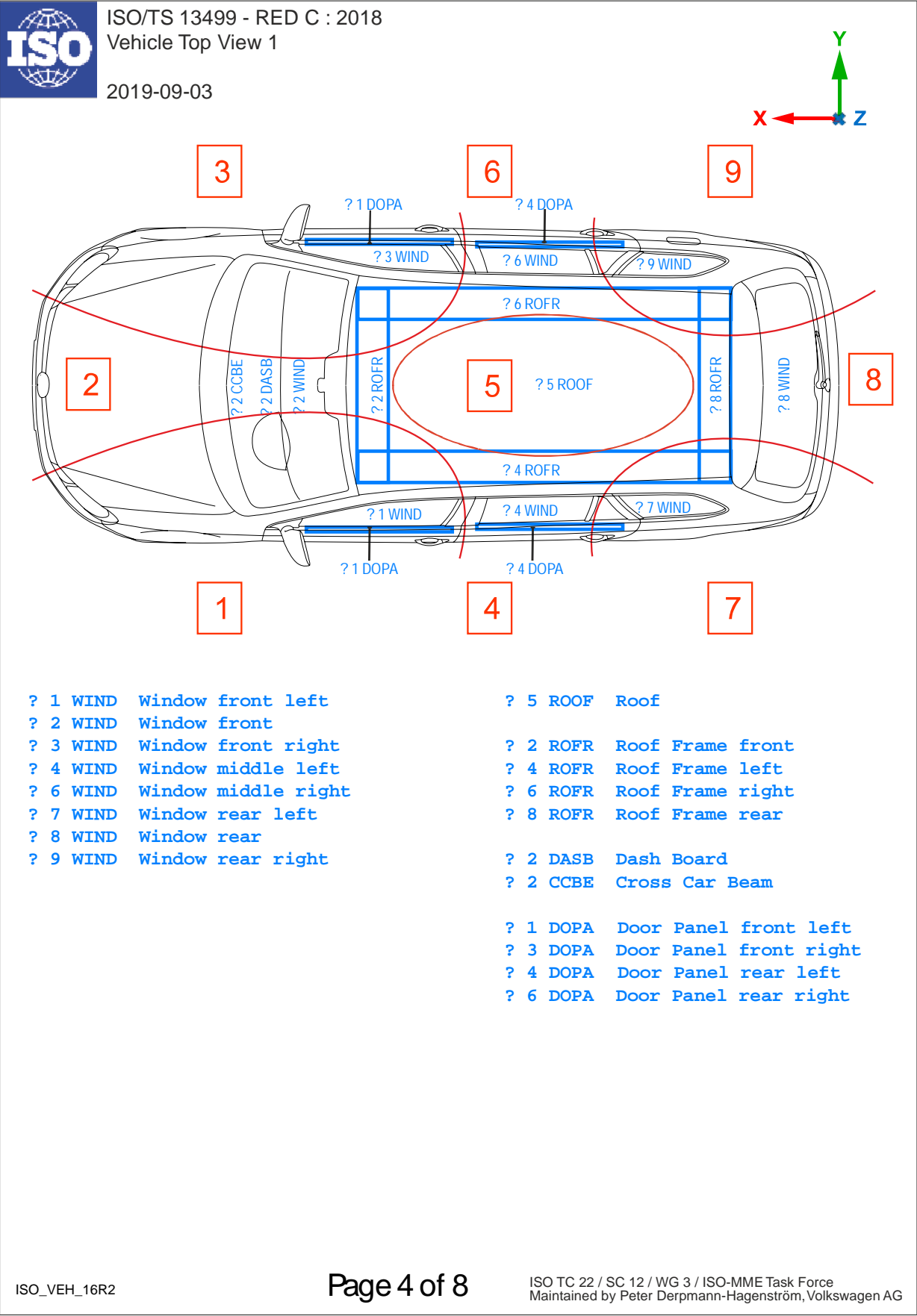
VEH_S3 Vehicle left side, open

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



VEH_T1 Vehicle top

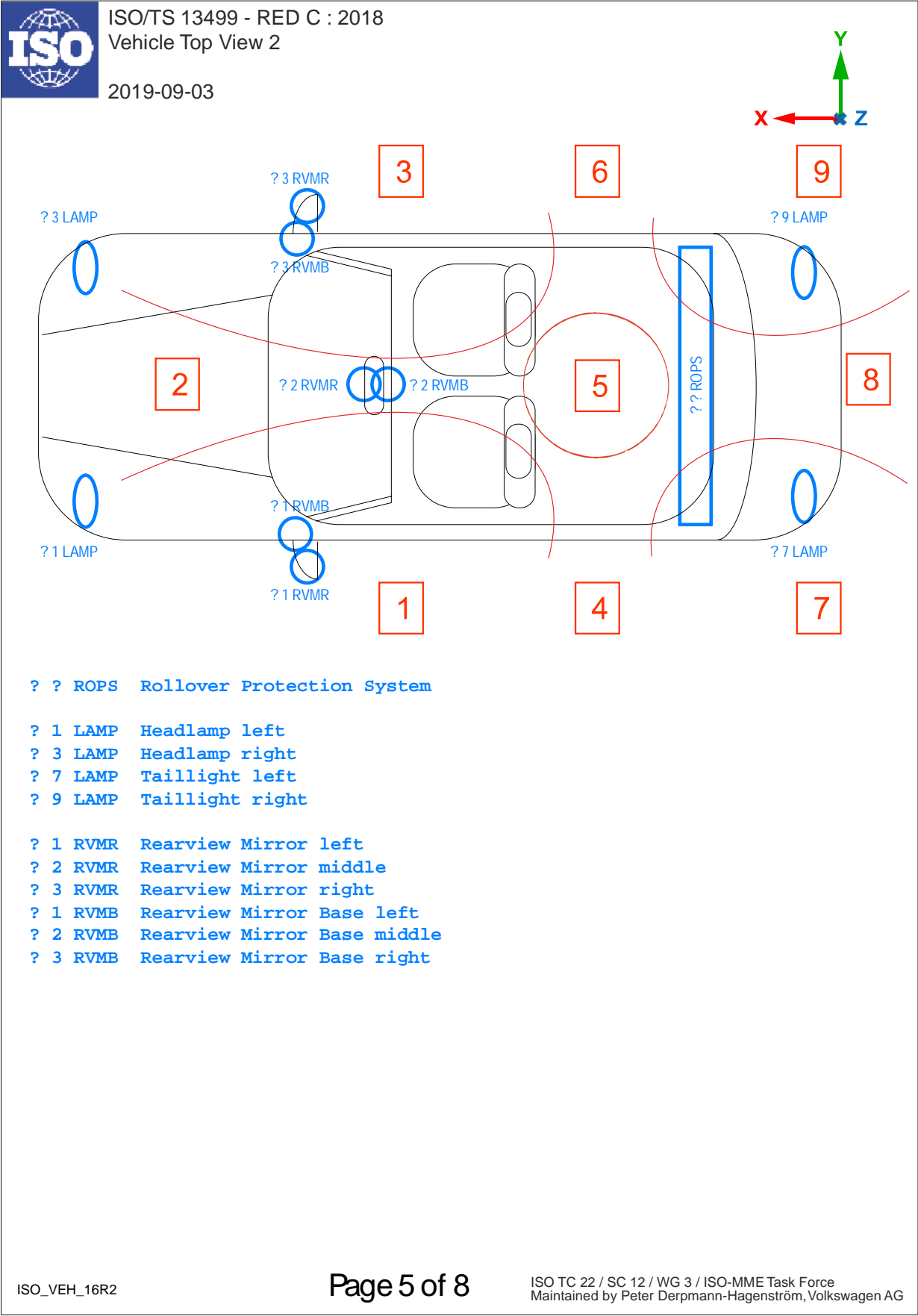
Valid since Version 1.6.2.p2
window, roof, roof frame, ...



VEH_T2 Vehicle top

Valid since Version 1.6.2

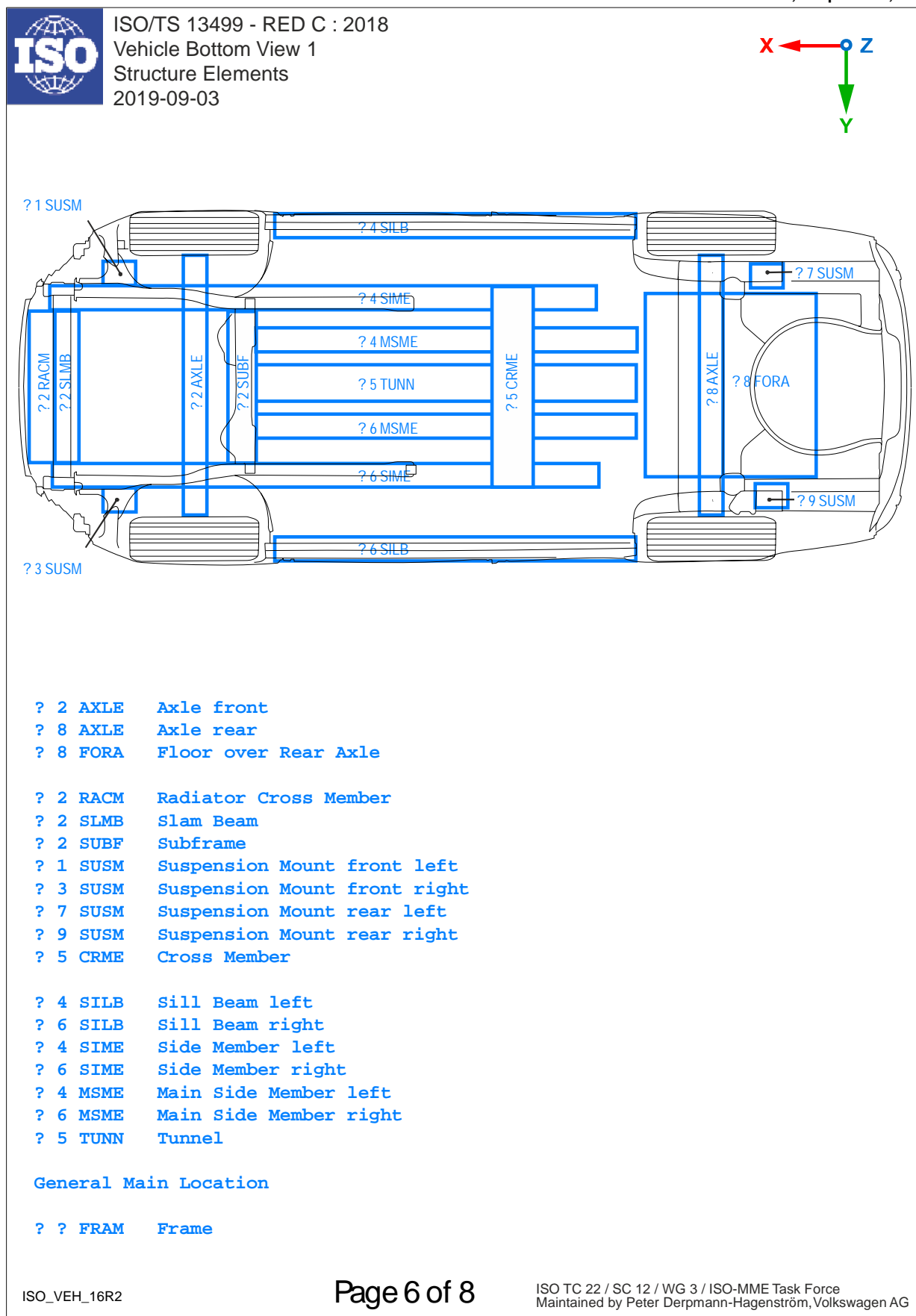
figure shows convertible, because of ROPS



VEH_B1 Vehicle bottom

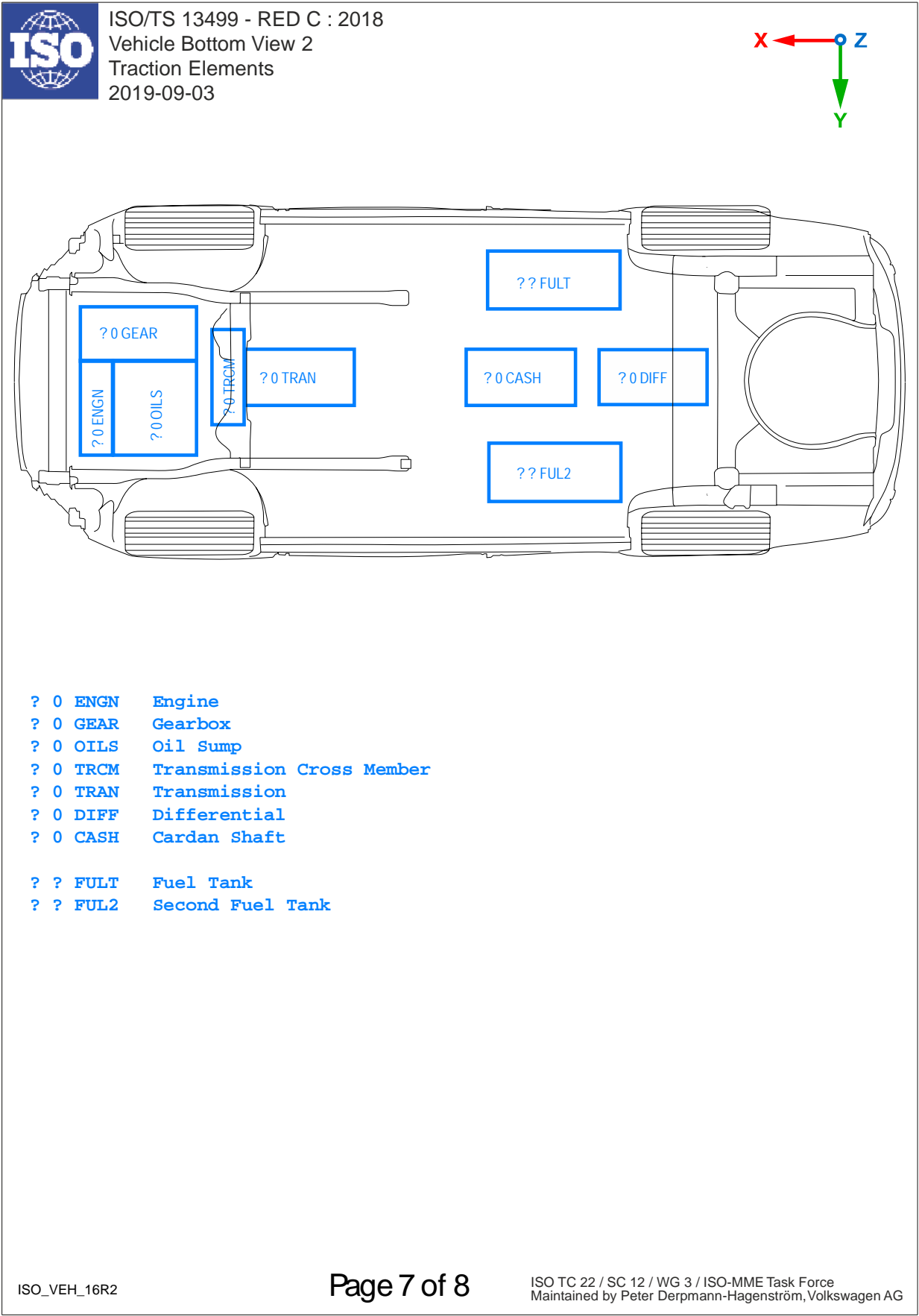
Valid since Version 1.6.2.p2

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



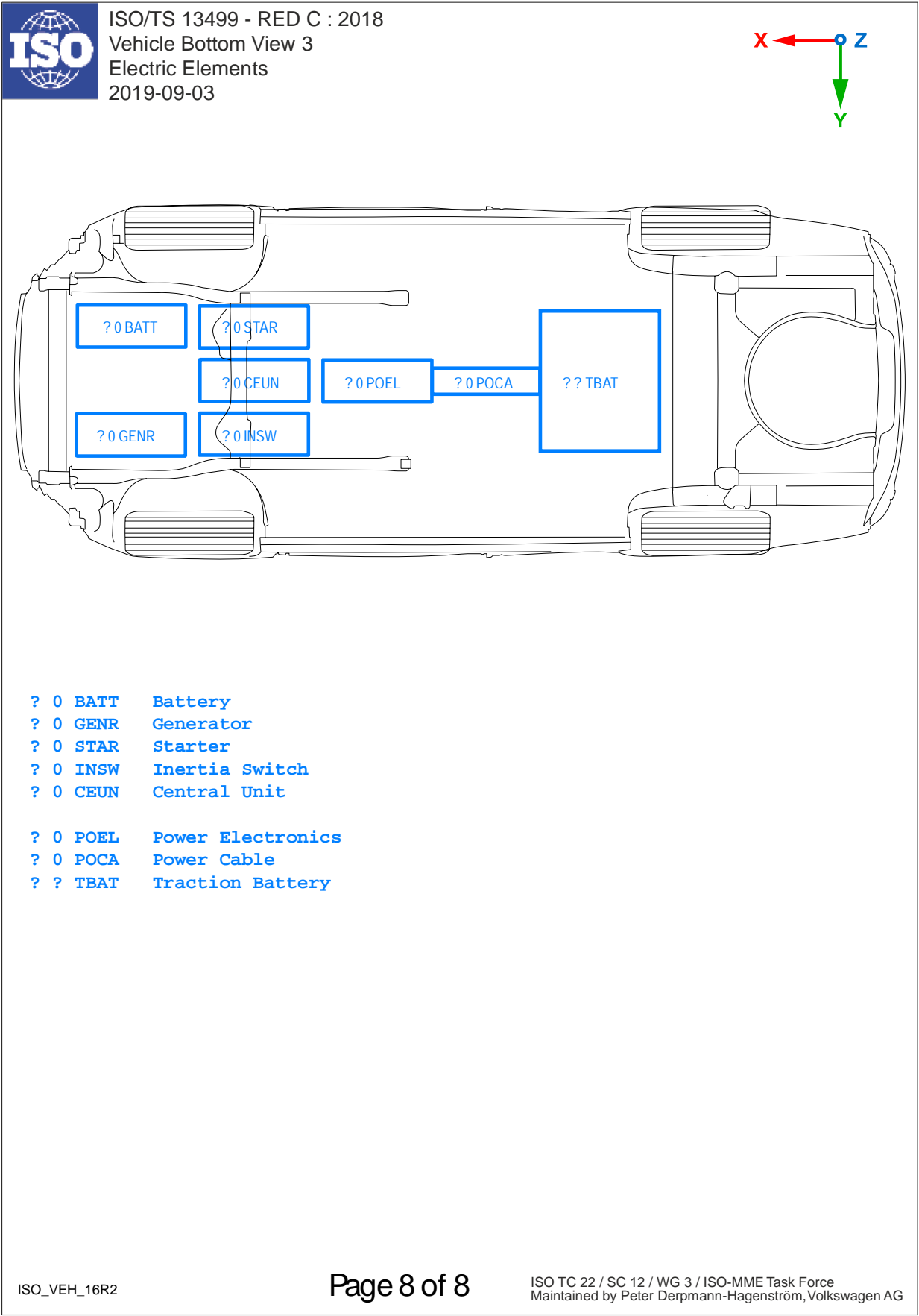
VEH_B2 Vehicle bottom

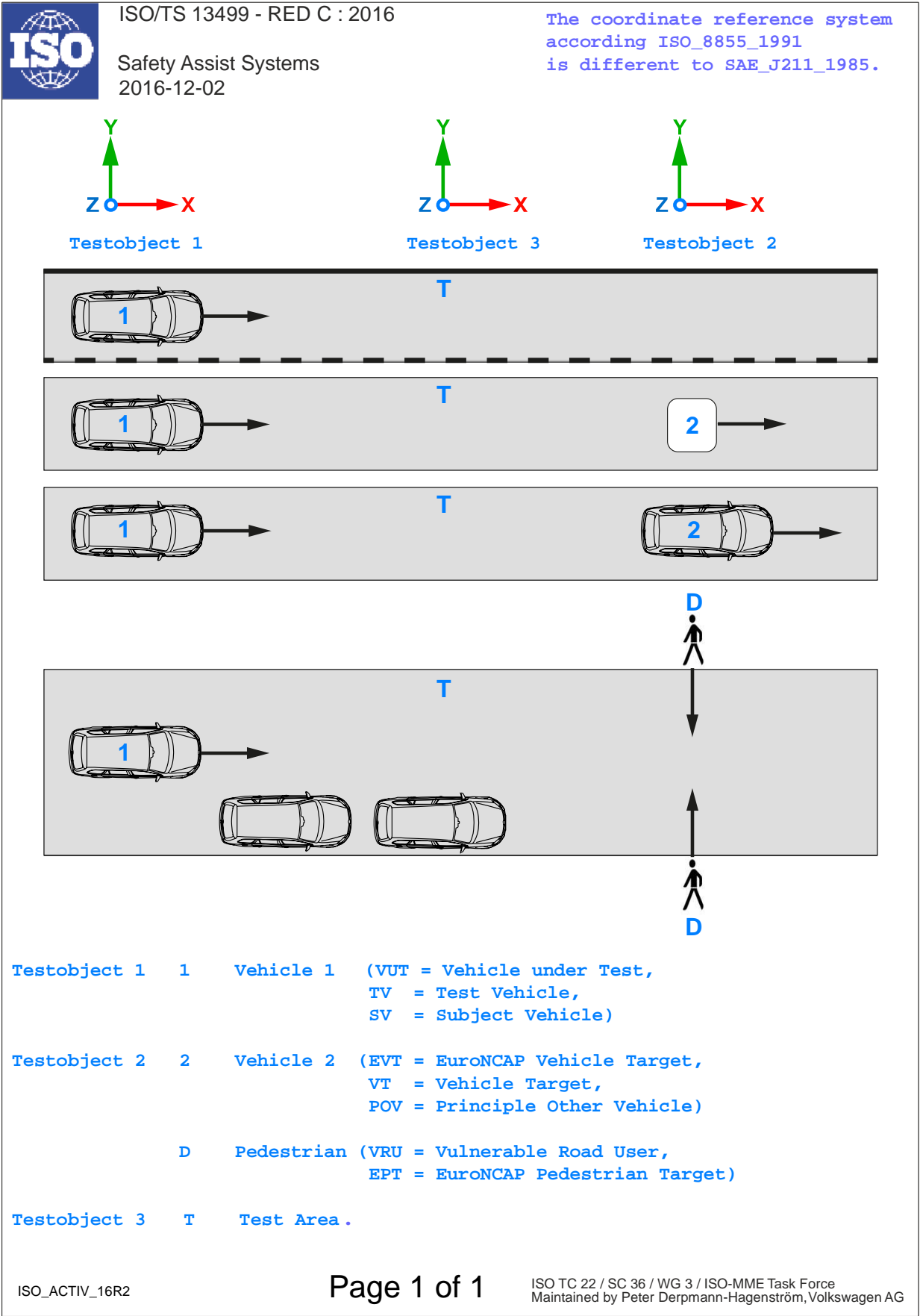
Valid since Version 1.6.2.p2
engine, transmission, fuel tank, electrical components,



VEH_B3 Vehicle bottom

Valid since Version 1.6.2.p2
electric elements



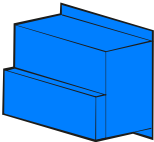


OBJ_1 Objects

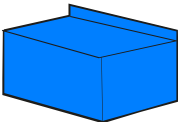
Valid since Version 1.6.2
deformable elements



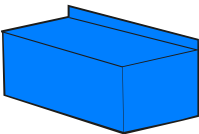
ISO/TS 13499 - RED C : 2016
Other Objects
Deformable Elements
2019-05-08



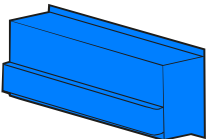
B 0 DEFO 00 00 DO Frontal Impact



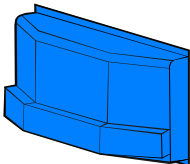
M 0 DEFO 00 00 DM Frontal MPDB Impact



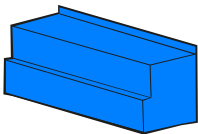
M 0 DEFO 00 00 DB Frontal Oblique Impact



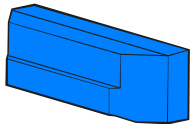
M 0 DEFO 00 00 DN Rear and Side Impact



M 0 DEFO 00 00 DI Side Impact

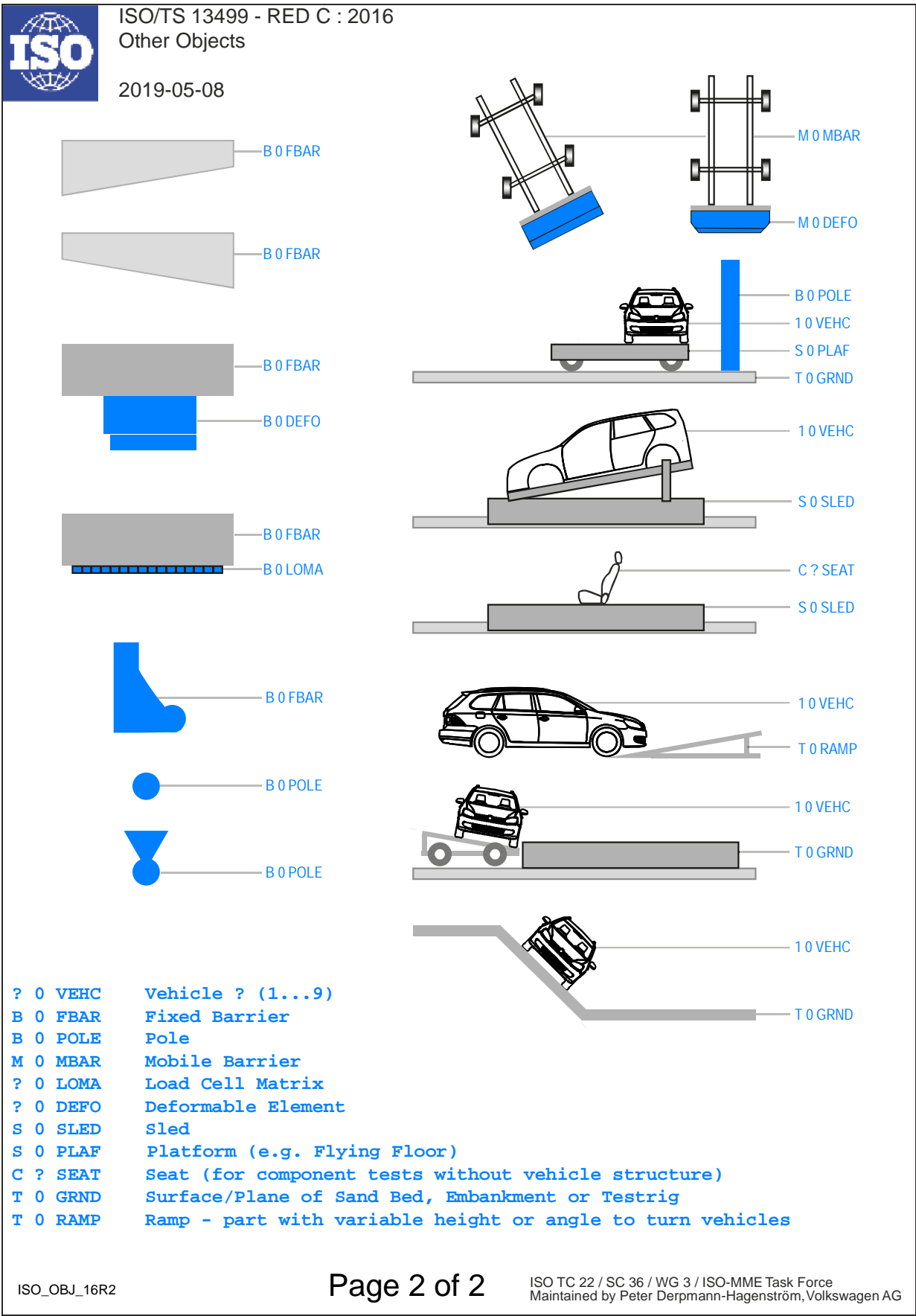


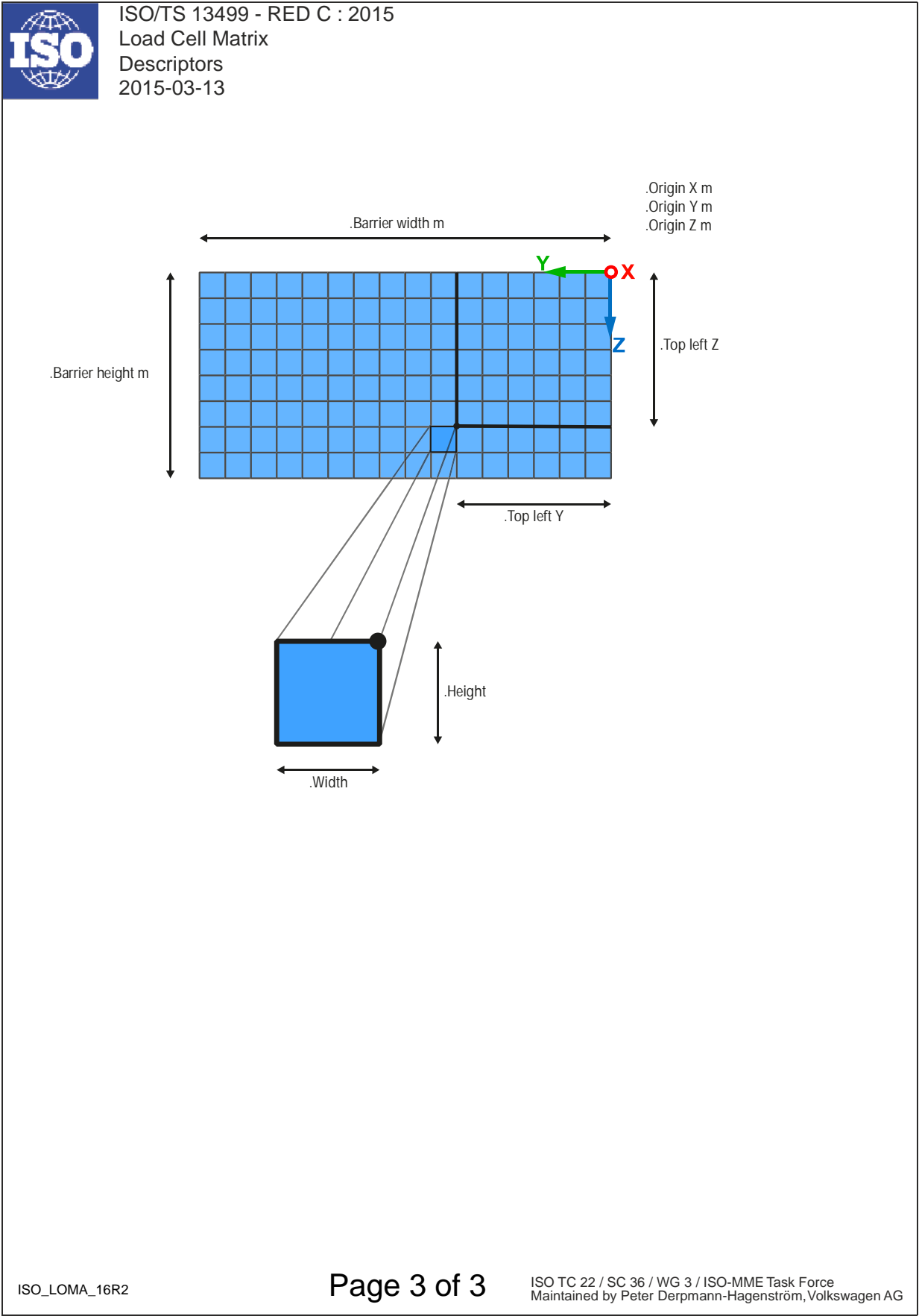
M 0 DEFO 00 00 DE Side Impact

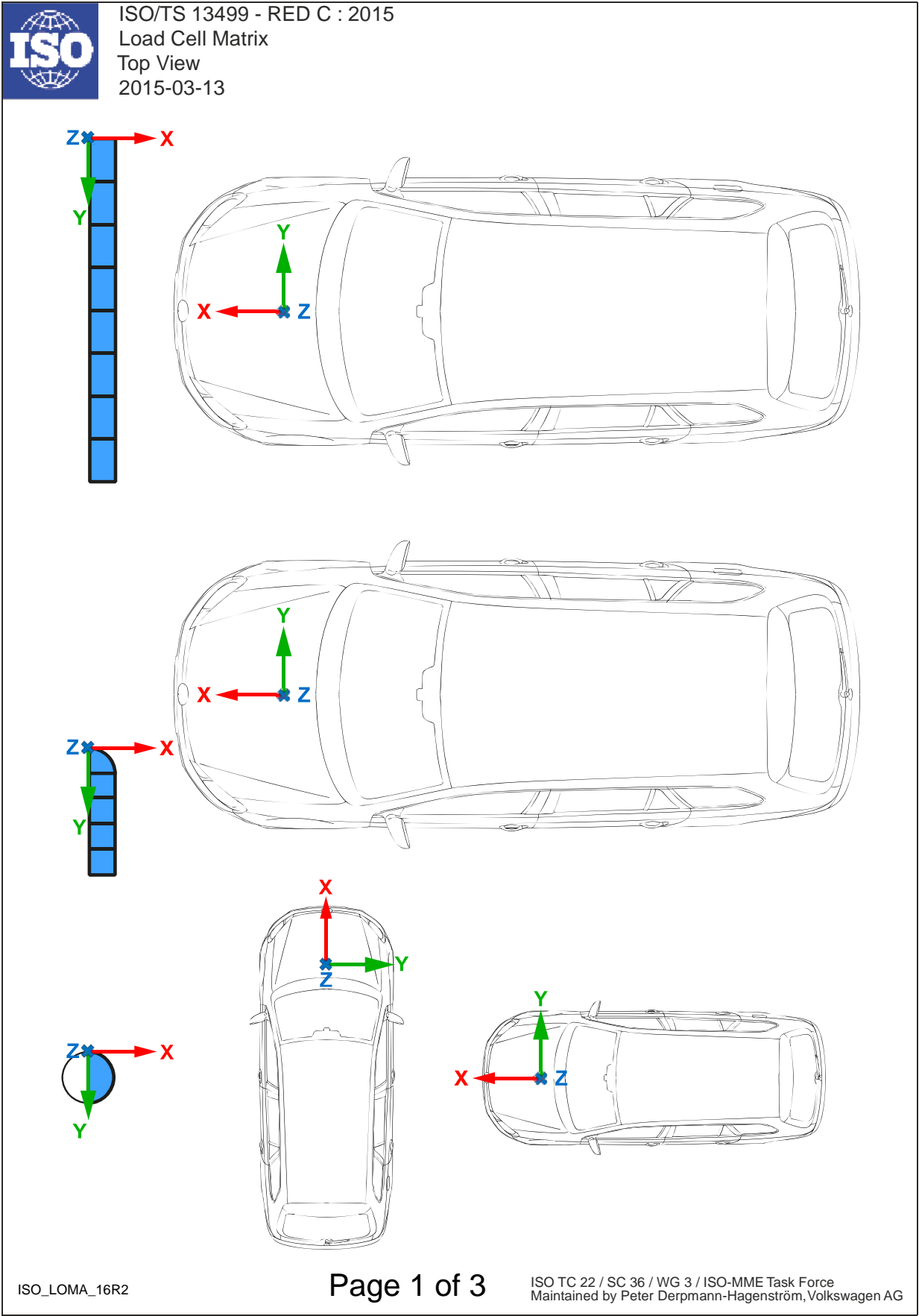



M 0 DEFO 00 00 DA Side Impact

- 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







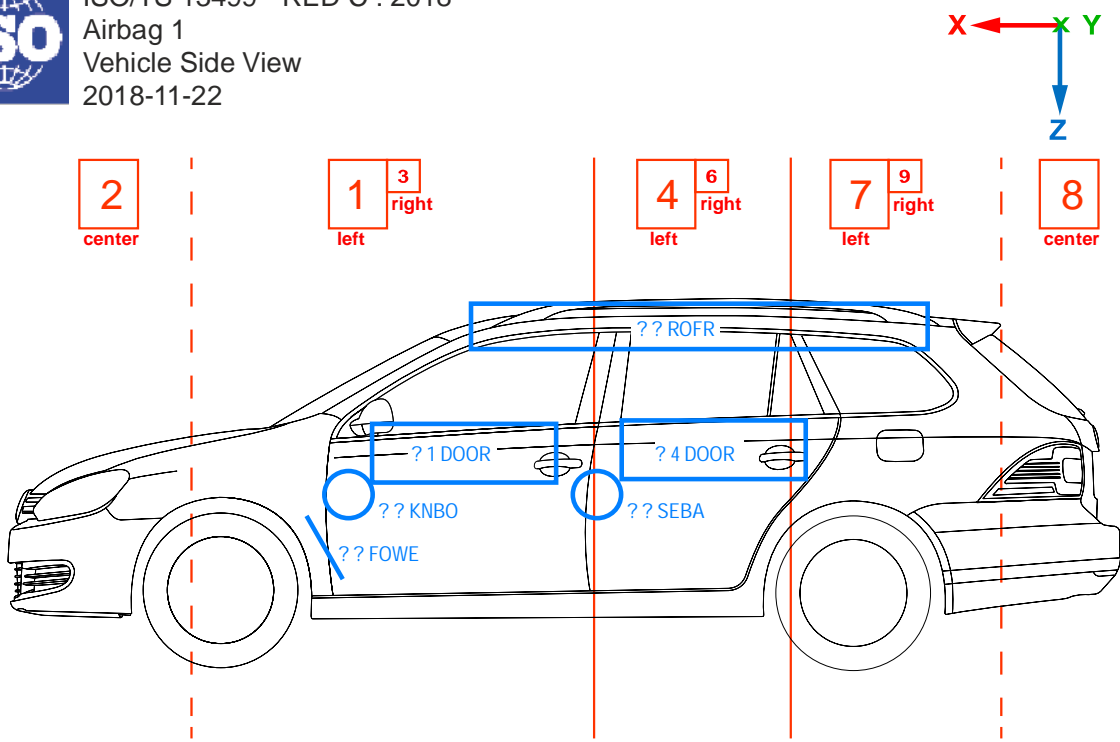


ISO/TS 13499 - RED C : 2018

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)

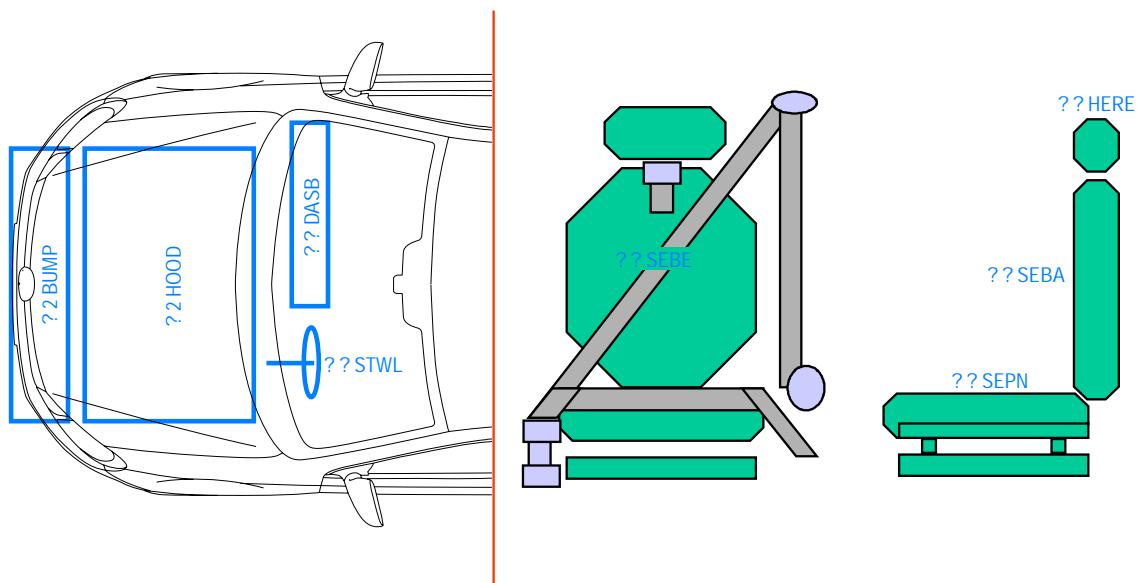
? ? AIRB ???? AI	Interaction Airbag
? ? AIRB ???? GI	Interaction Generator

ISO_AIRB_16R2

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AIRB Airbag (2)

Valid since Version 1.6.2
external, seat related airbagsISO/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

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

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 FEMR
D 0 KNEE
D 0 TIBI

PL PF

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

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 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 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

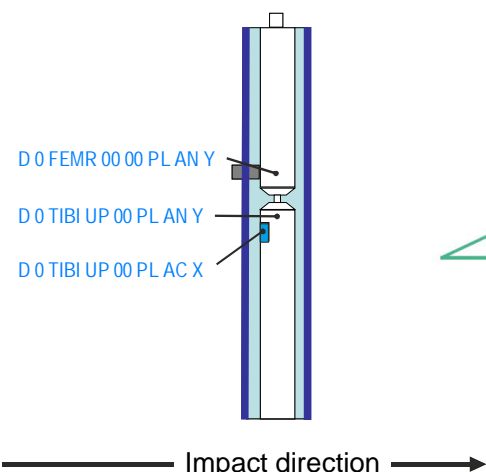
ISO_IMP_16R2

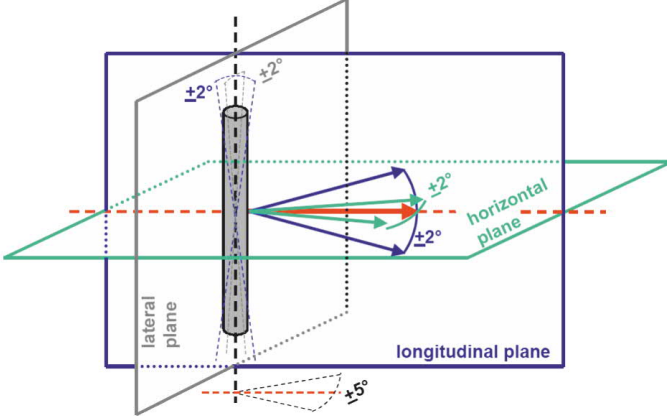
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ISO/TS 13499 - RED C : 2018
Impactors
Pedestrian Legform Impactor
2019-05-08





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

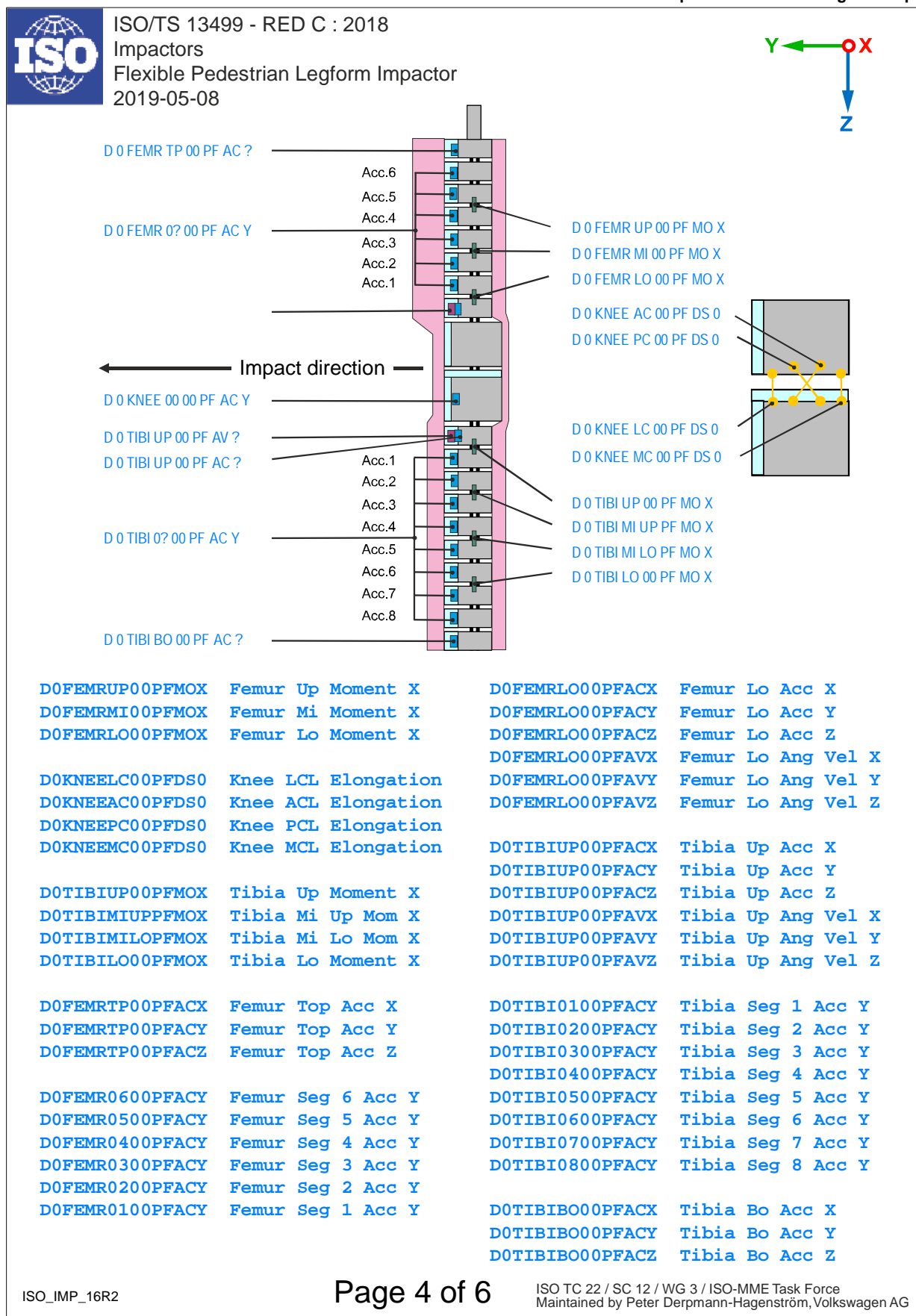
For compatibility to existing data the impact direction for this impactor defines the X coordinate of the local system.

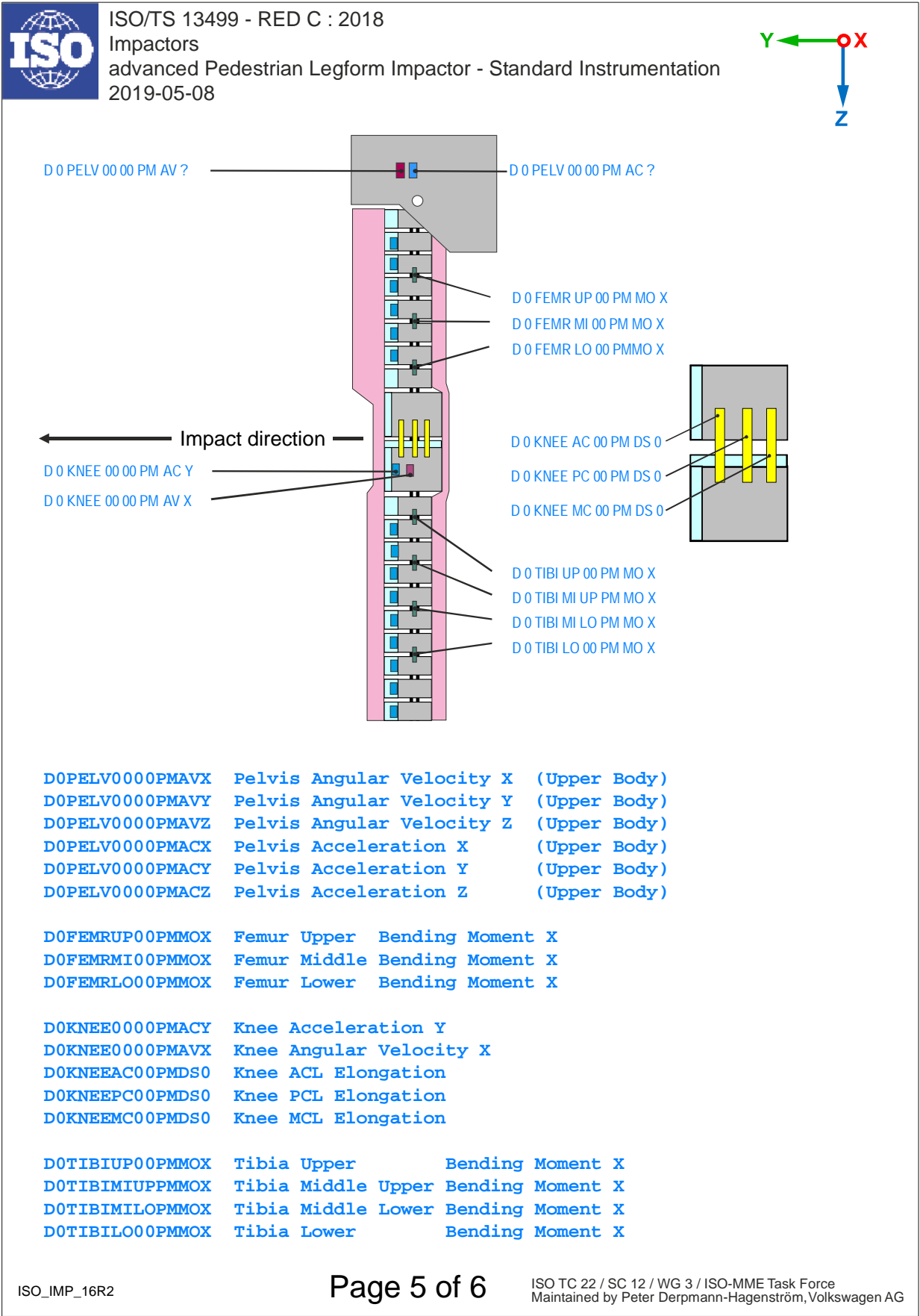
ISO_IMP_16R2

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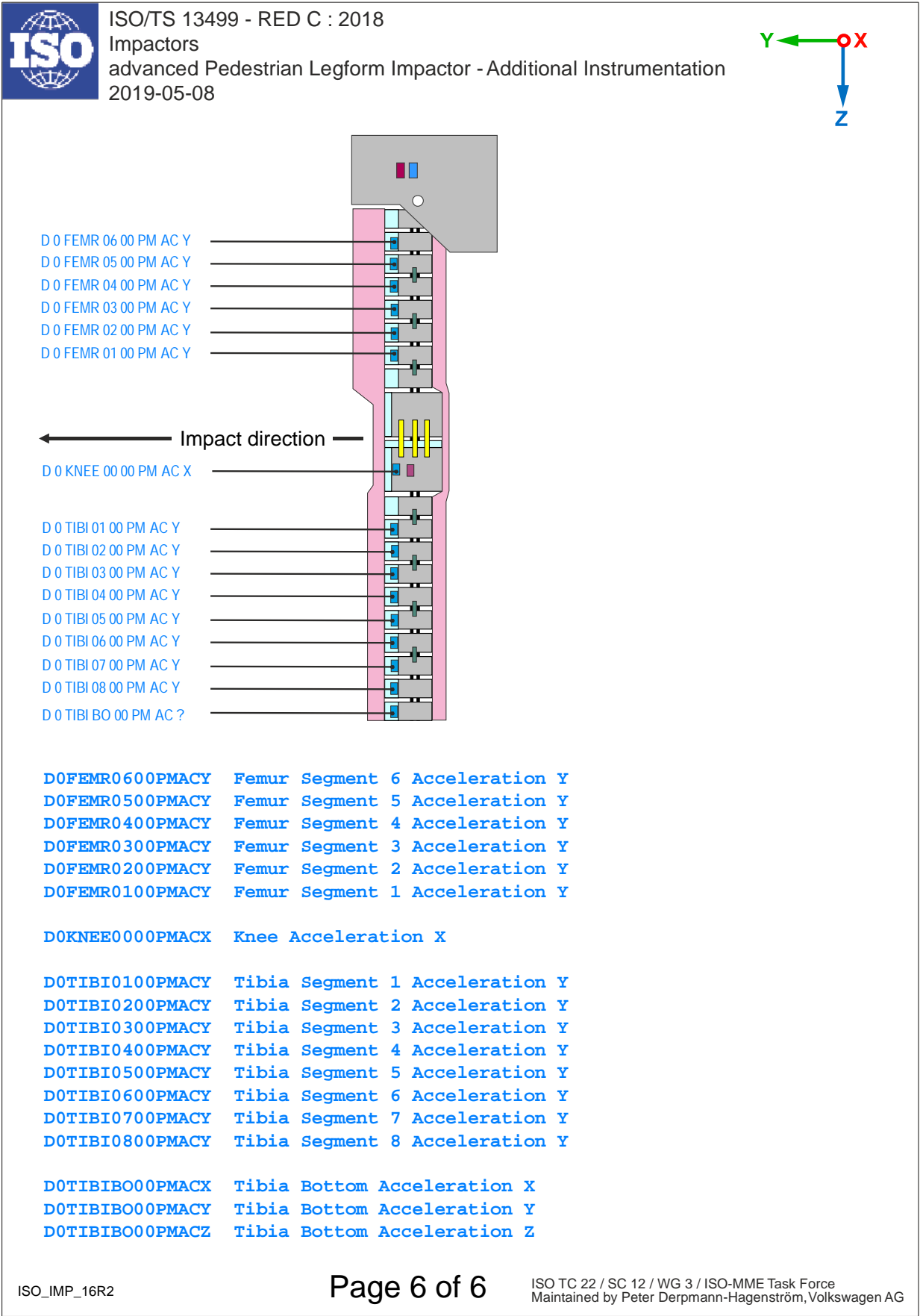
IMP Impactors: flexpli-legform

Valid since Version 1.6.2
pedestrian flexible legform impactor



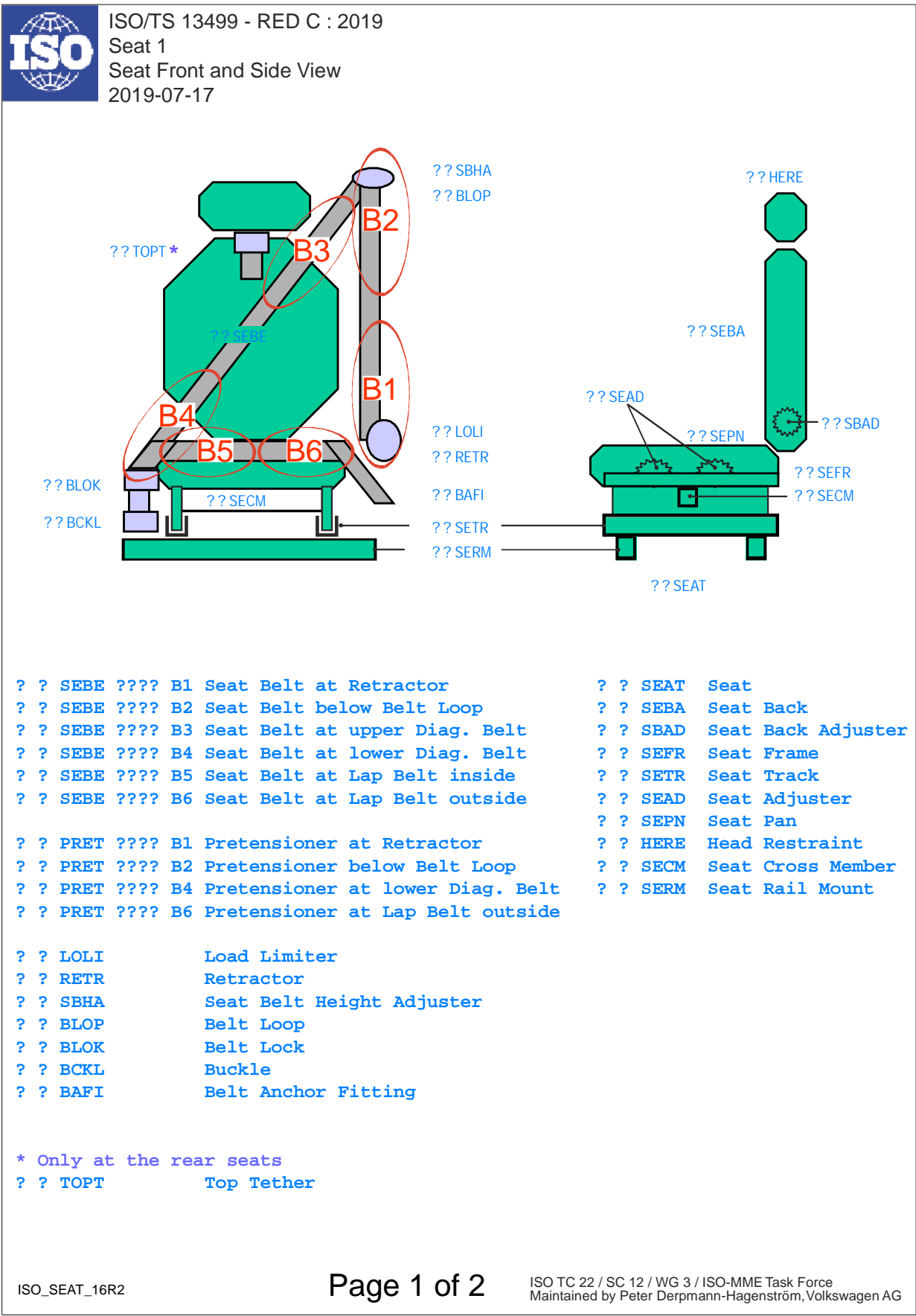
IMP Impactors: aPLI-legform

Valid since Version 1.6.2
Advanced Pedestrian Legform Impactor - Additional Instrumentation



SEAT_1 Seat

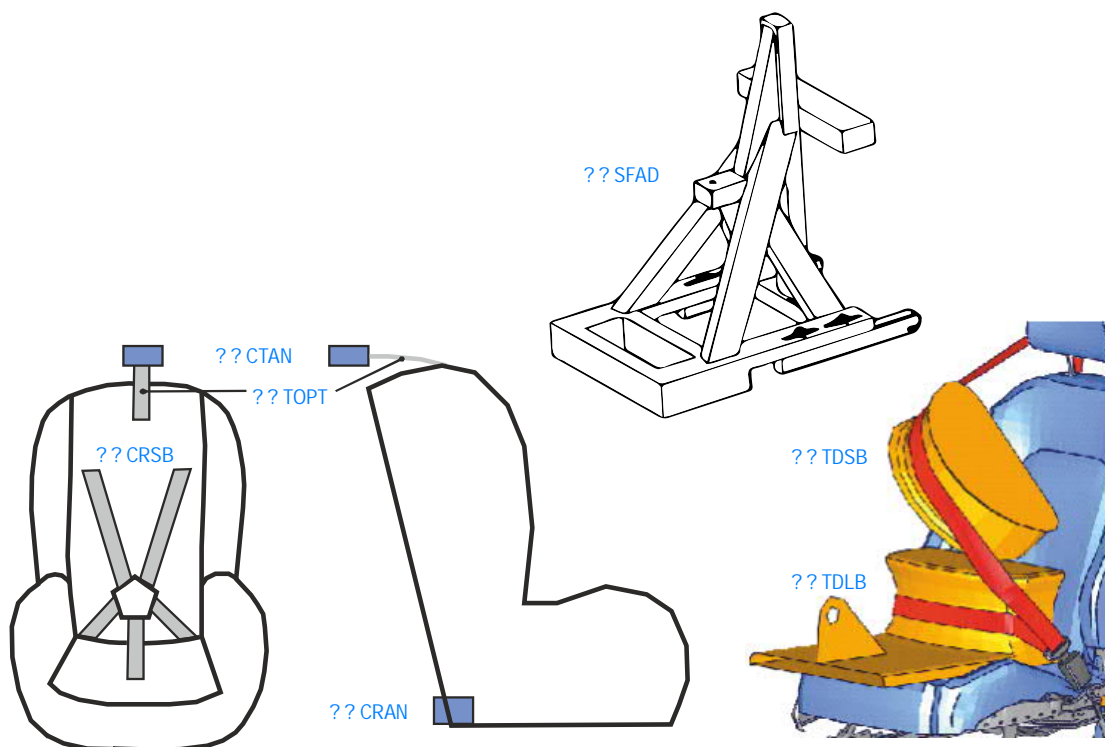
Valid since Version 1.6.1
belts and seat structure



SEAT_2 Seat and traction devices

Valid since Version 1.6.1
traction devices, Child restraint anchorage


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



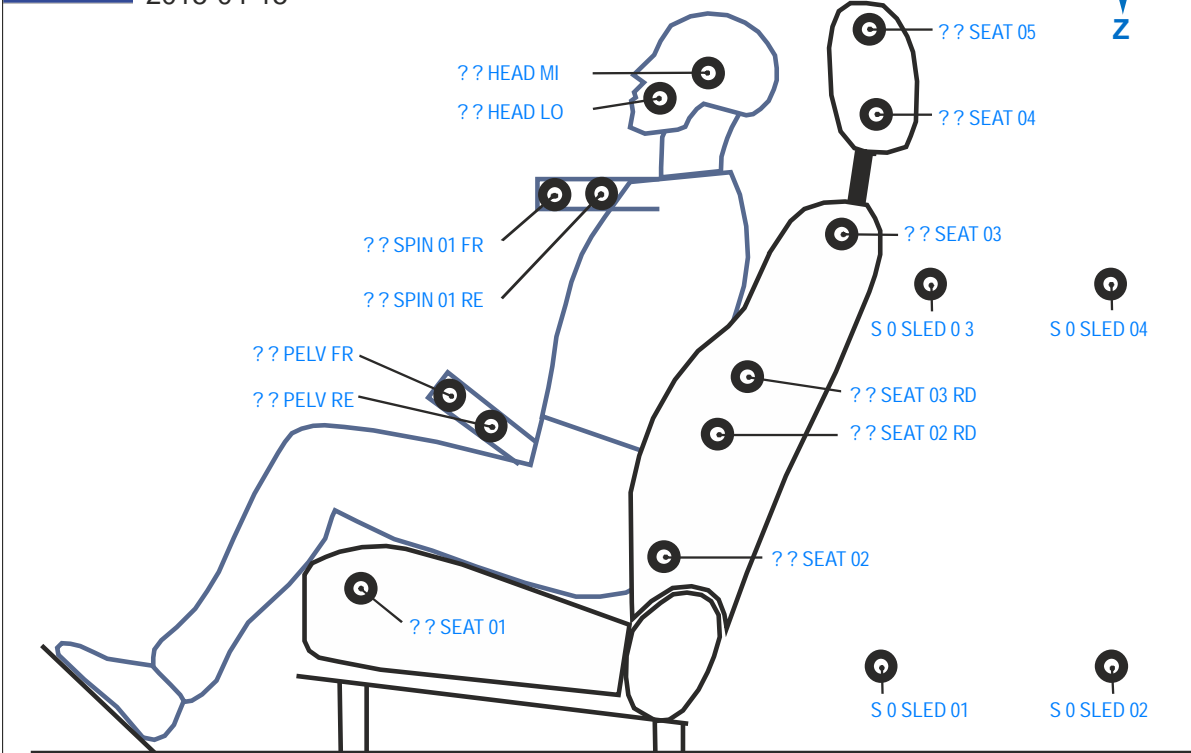
? ? TDSB Traction Device Shoulder Belt
? ? TDLB Traction Device Lap Belt

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

? ? SFAD Static Force Application Device



ISO/TS 13499 - RED C : 2015
Whiplash
Filmanalysis
2015-04-15



? ? 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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OTHER Chest Deflection Measurement

Valid since Version 1.6.2.p3

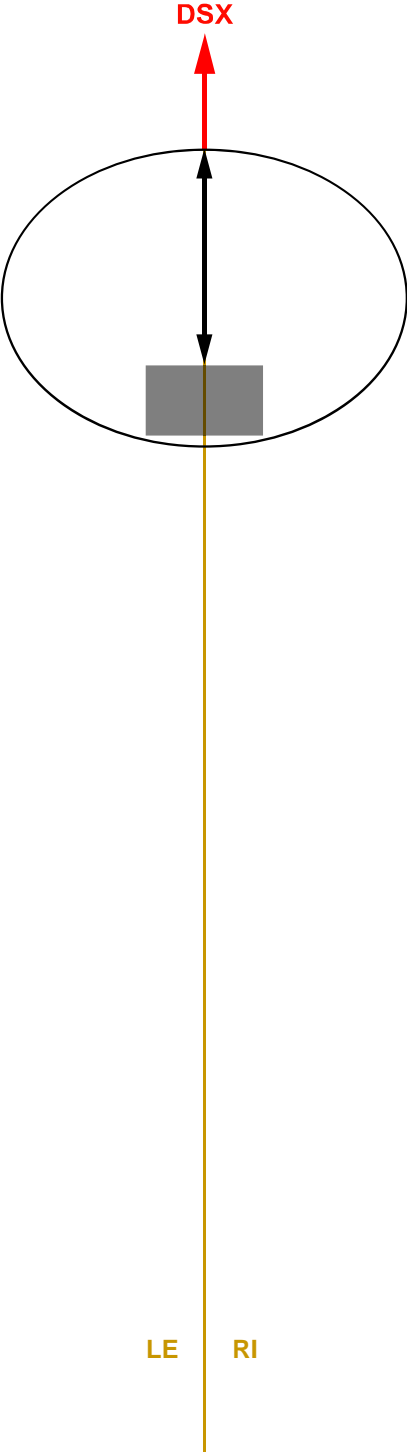
Chest Deflection Coding for different dummy types



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

X

Z **Y**



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

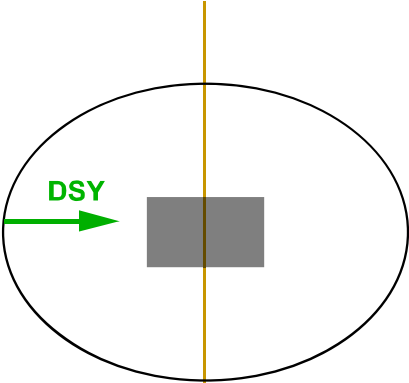
ISO_CHST_16R2

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

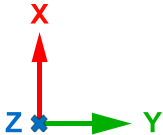
IR-TRACC 1D **Q3, Q4, Q6**
transducer:
CHST LE 00 ?? VOY
calculation:
CHST LE 00 ?? DSY

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

LE

RI

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



ISO_CHST_16R2

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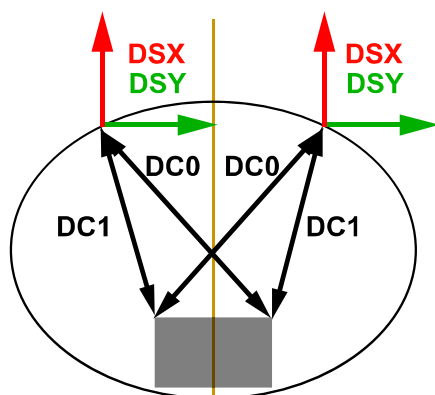
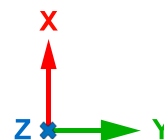
OTHER Chest Deflection Measurement

Valid since Version 1.6.2.p3

Chest Deflection Coding for different dummy types



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

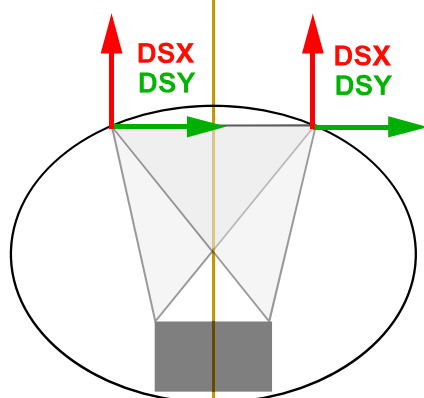
String Potentiometer **H3, HF**

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
```

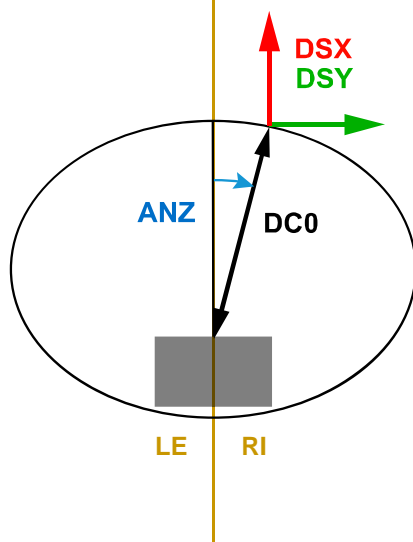
calculation:

```
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
```

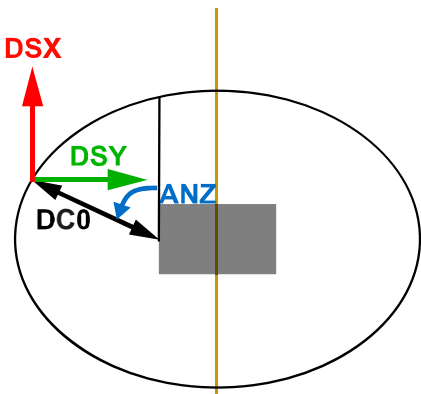
OTHER Chest Deflection Measurement

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 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.

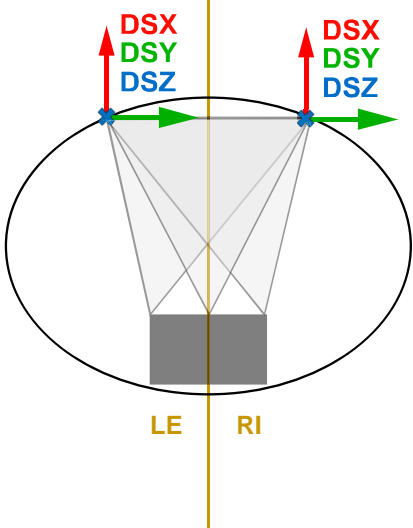
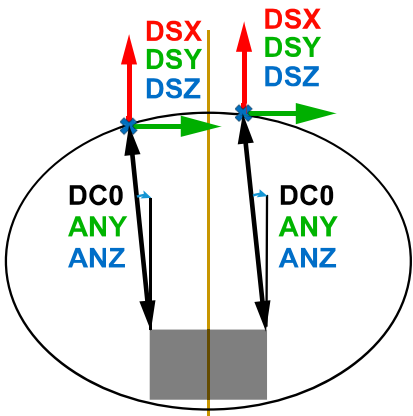
OTHER Chest Deflection Measurement

Valid since Version 1.6.2.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 ?? VOO
CHST LE UP ?? DC0
CHST LE UP ?? ANY
CHST LE UP ?? ANZ
CHST RI UP ?? VOO
CHST RI UP ?? DC0
CHST RI UP ?? ANY
CHST RI UP ?? ANZ
CHST LE LO ?? VOO
CHST LE LO ?? DC0
CHST LE LO ?? ANY
CHST LE LO ?? ANZ
CHST RI LO ?? VOO
CHST RI LO ?? DC0
CHST RI LO ?? ANY
CHST RI LO ?? ANZ

calculation:

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

RibEye H3, HF
calculation:

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

ISO_CHST_16R2


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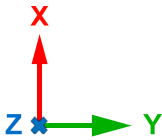
OTHER Chest Deflection Measurement

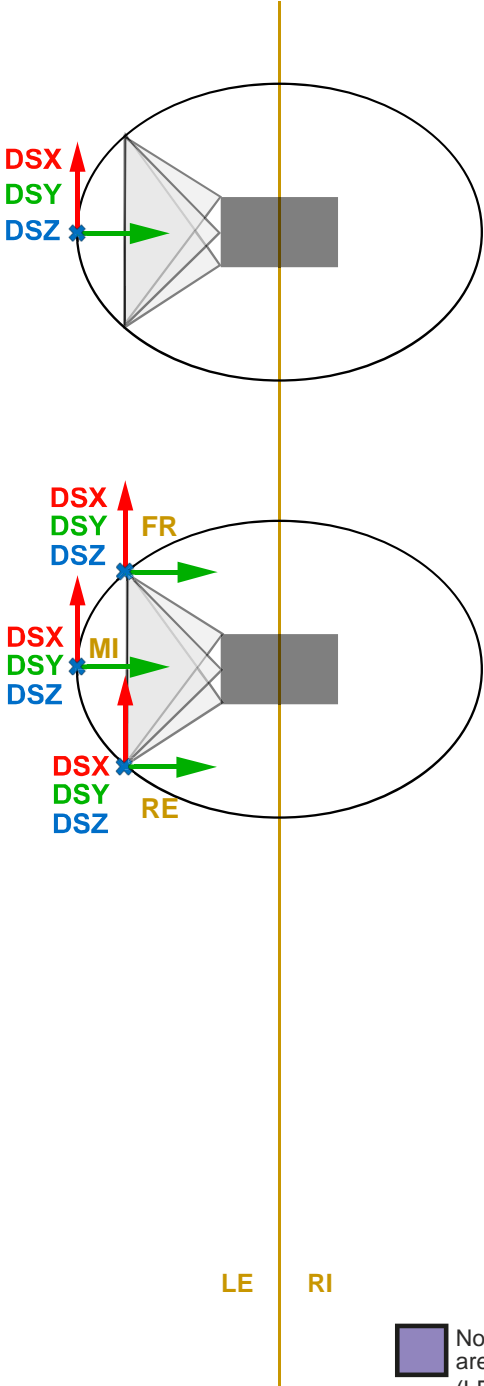
Valid since Version 1.6.2.p3

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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