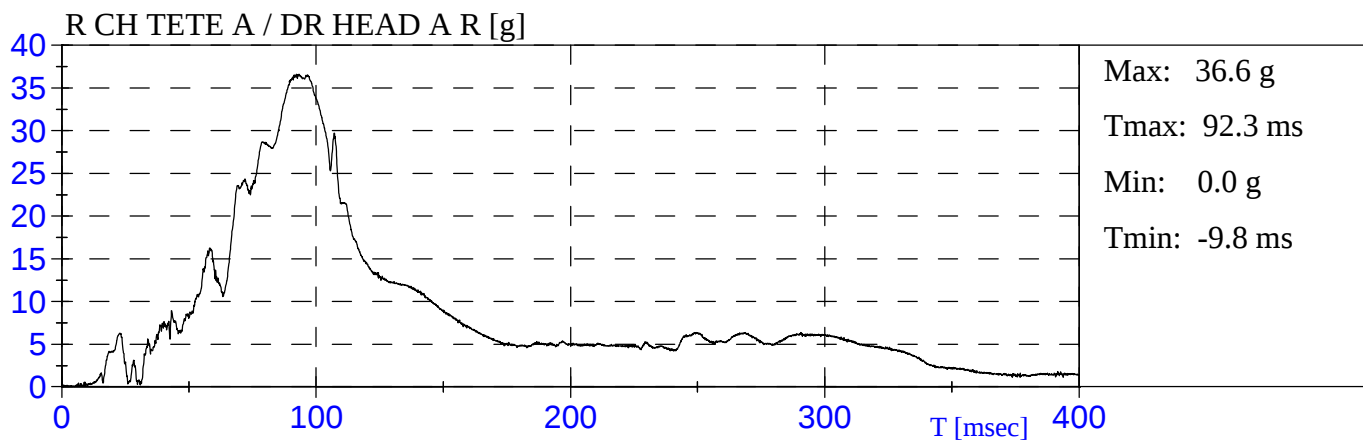
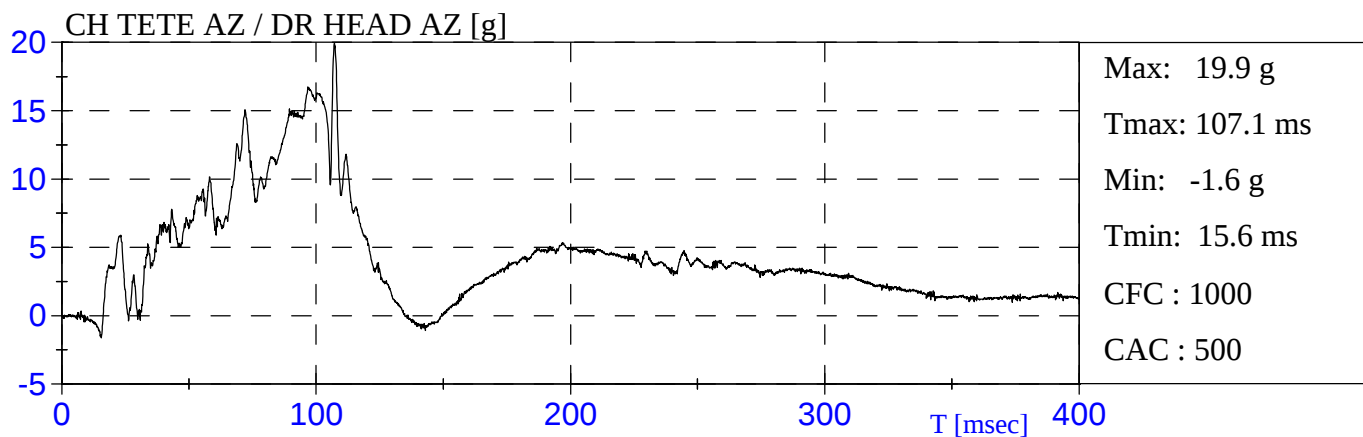
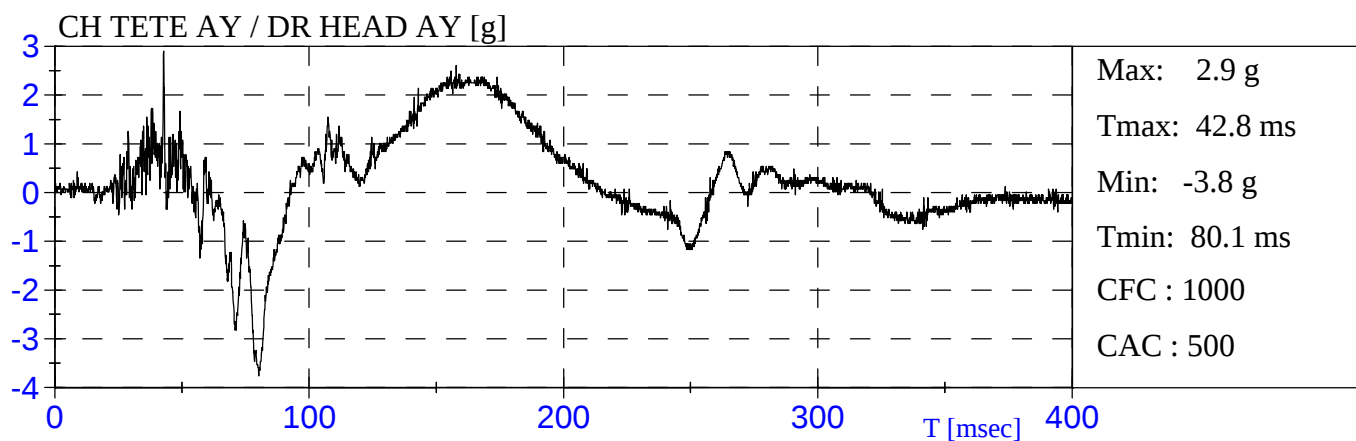
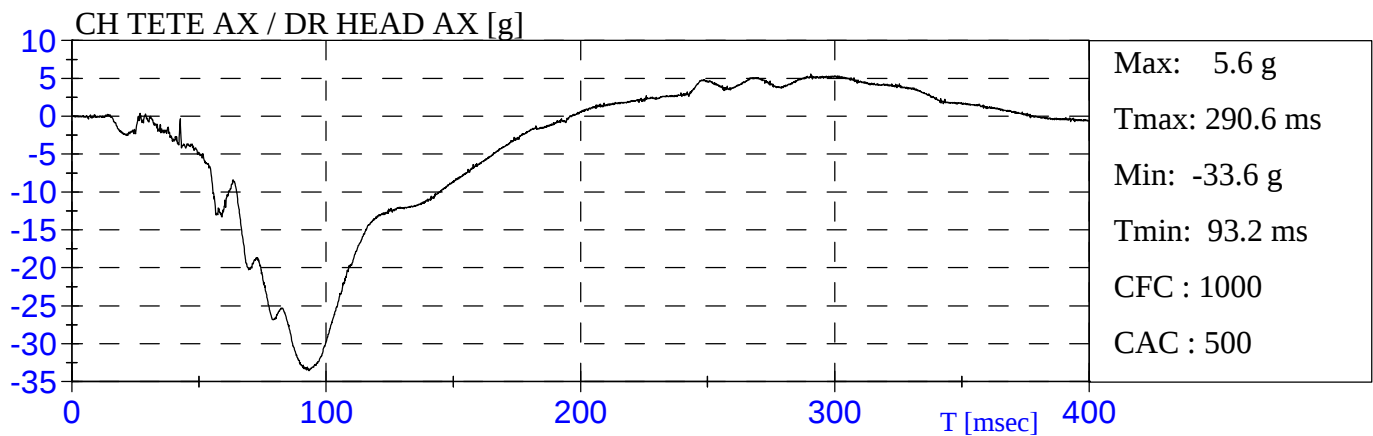
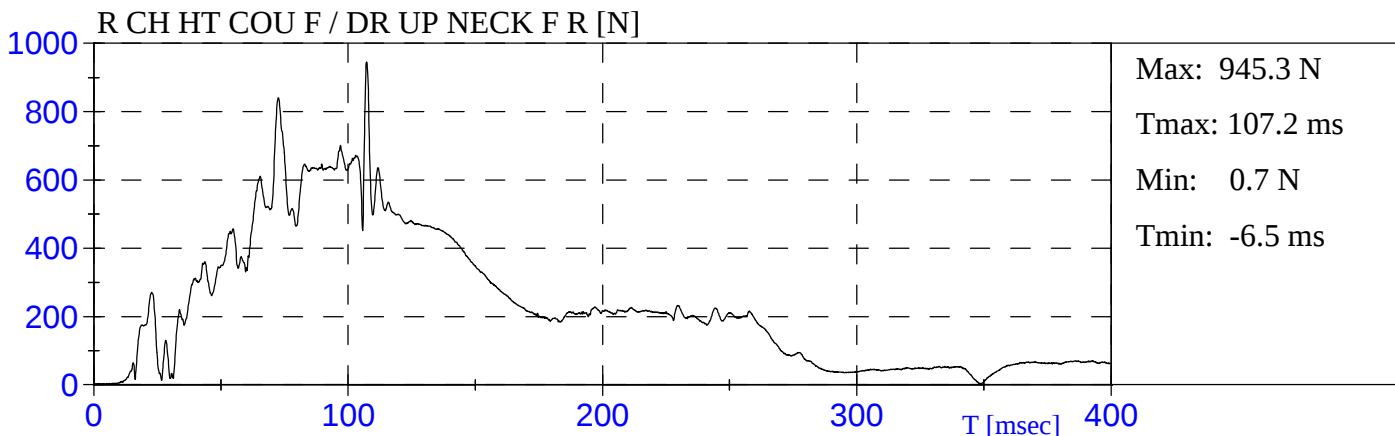
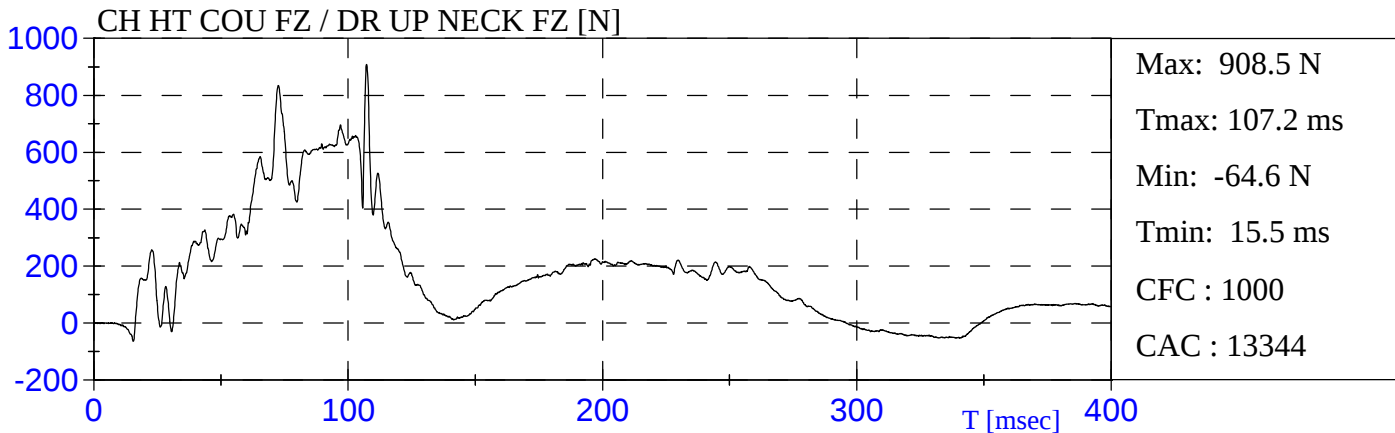
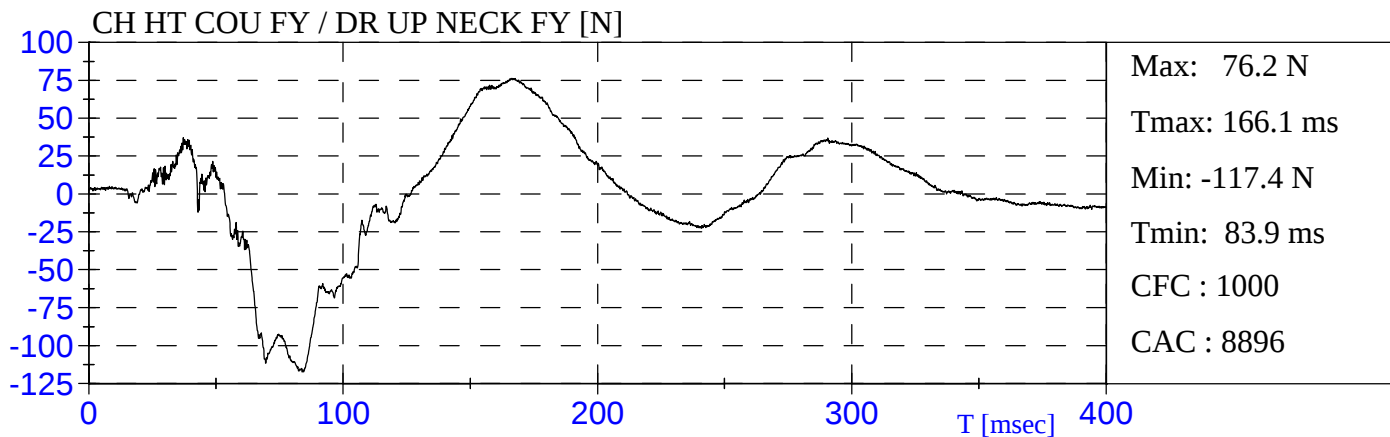
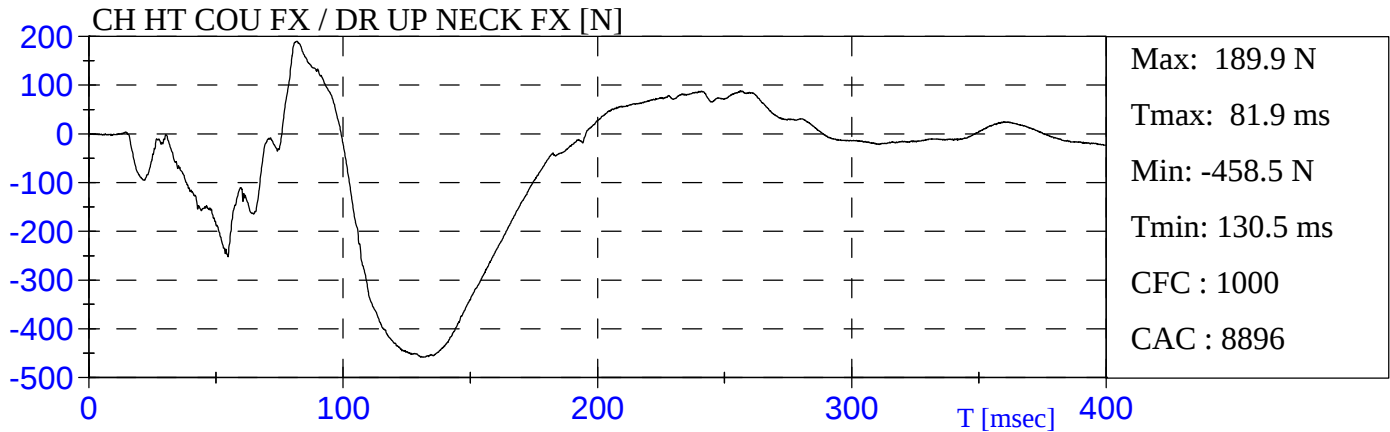




Nom du client Client Name	TRANSPORT CANADA
Type de véhicule Type of Vehicle	SATURN ION 2004
Numéro de TC Tc Number	TC04-116
Numéro de contrat Contract No	04-6008
Acquisition de données selon Data Acquisition according to	SAE J211/1 MAR 95
Date de l'essai Test date	2004-02-24
Titre du projet Project Title	COLLISION DE RECHERCHE COLLISION FRONTALE RESEARCH COLLISION TEST FRONTAL CRASH
MANNEQUIN / DUMMY	
Chauffeur Driver	HYBRID III 50% M
Passager Passenger	HYBRID III 50% M
Passager 1 (arrière center) Passenger 1 (rear center)	HYBRID III 6Y
Passager 2 (arrière droit) Passenger 2 (rear right)	HYBRID III 6Y

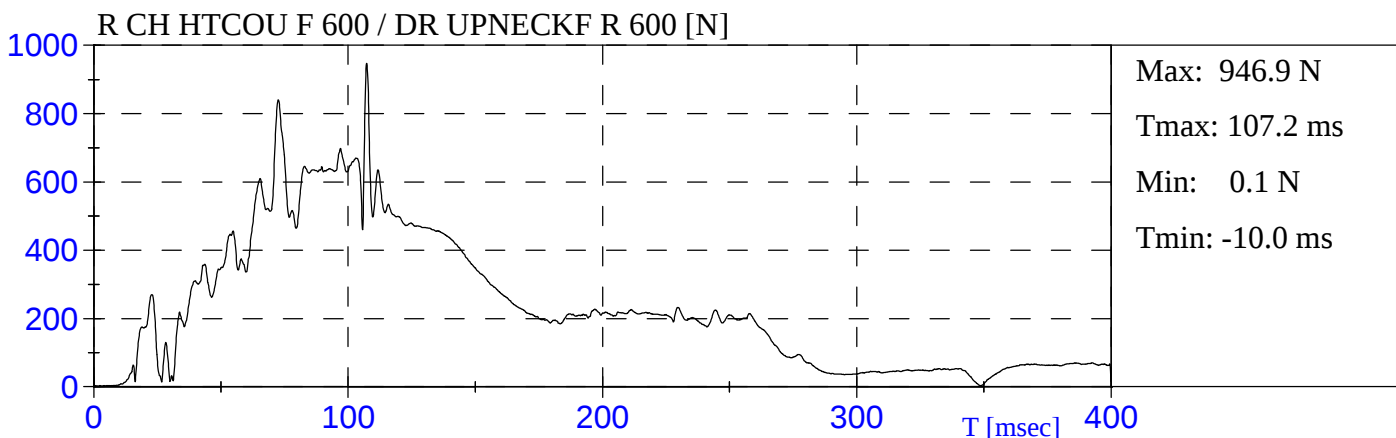
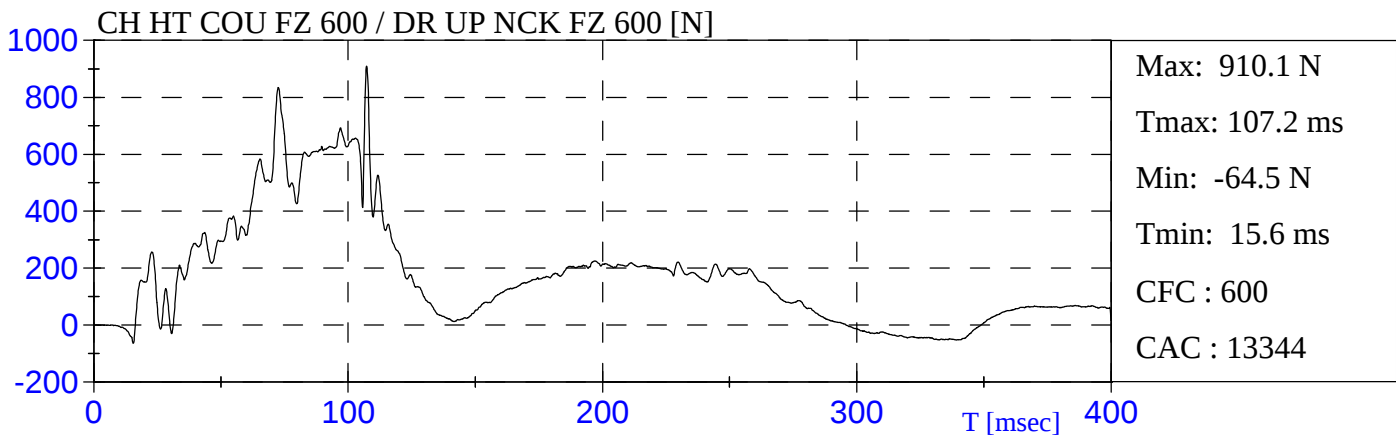
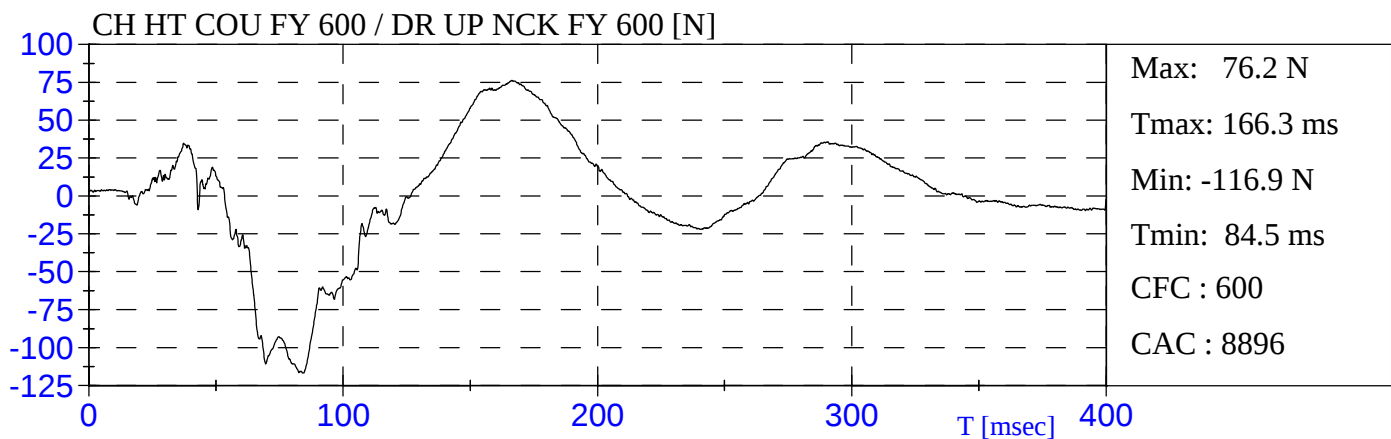
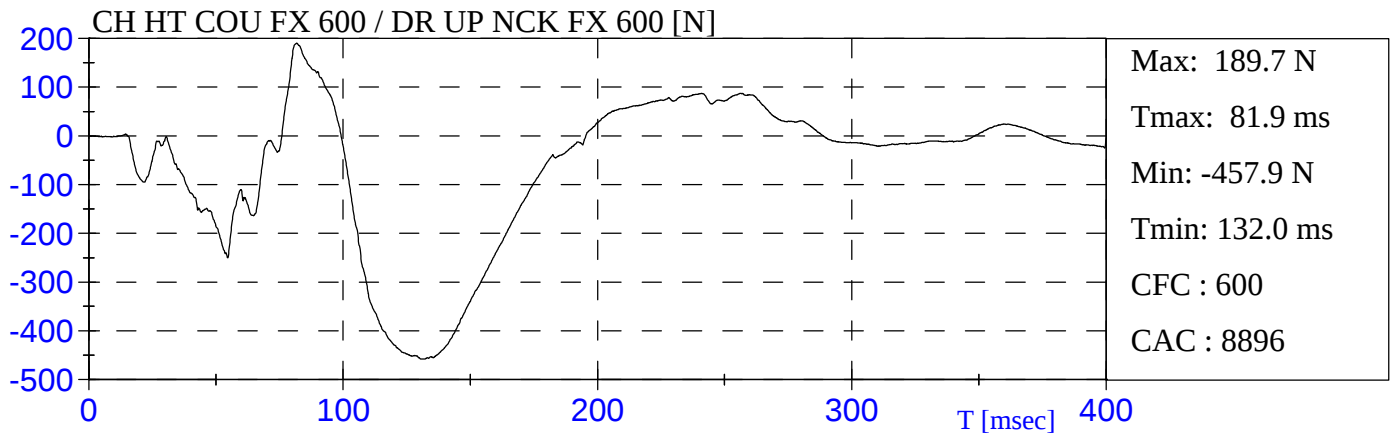


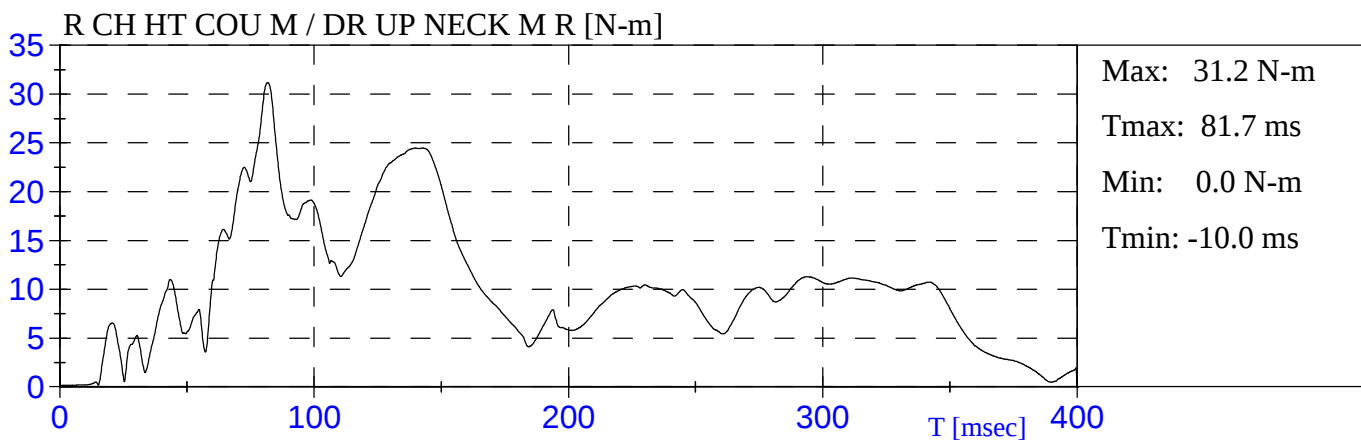
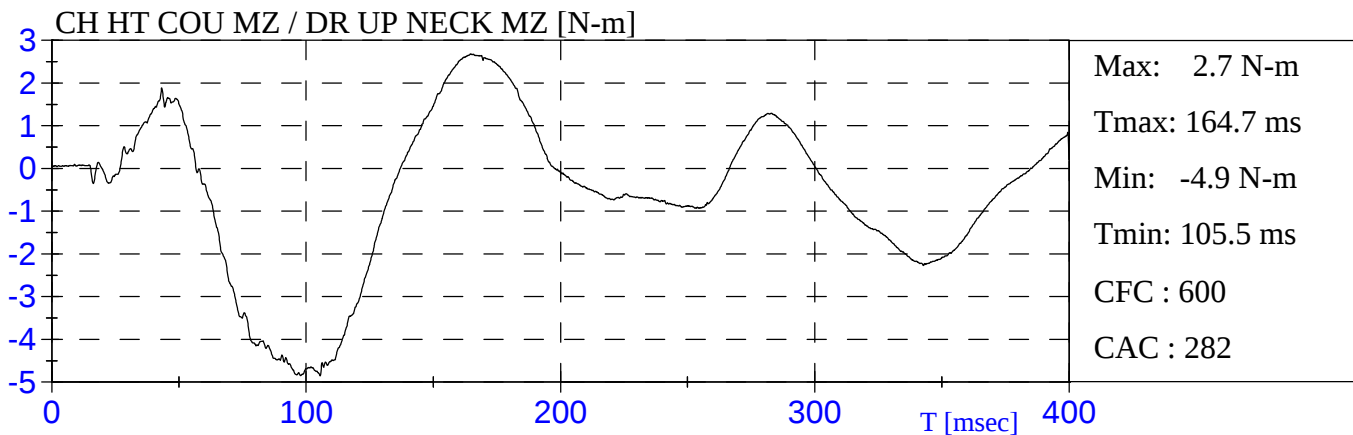
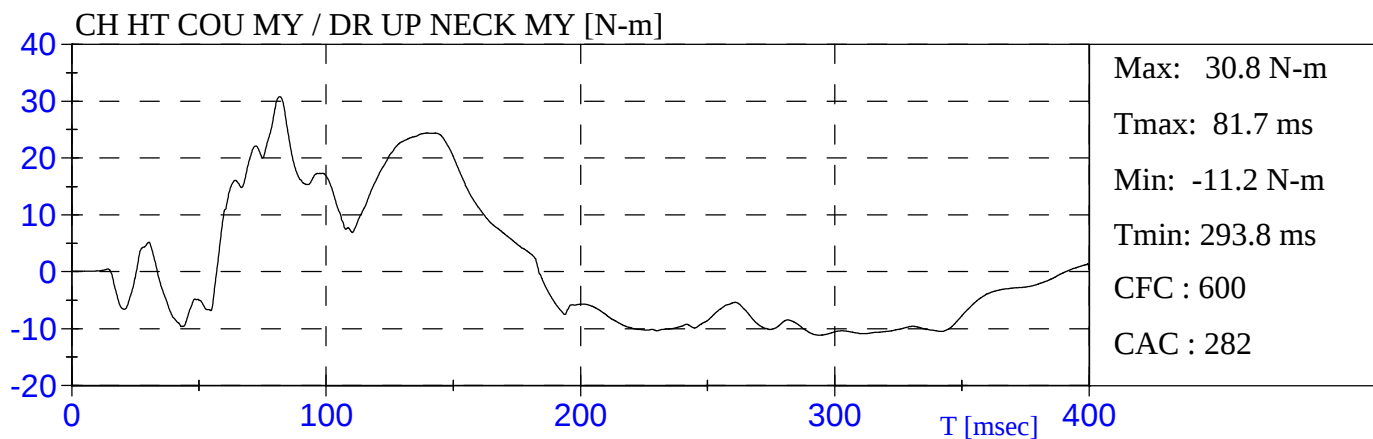
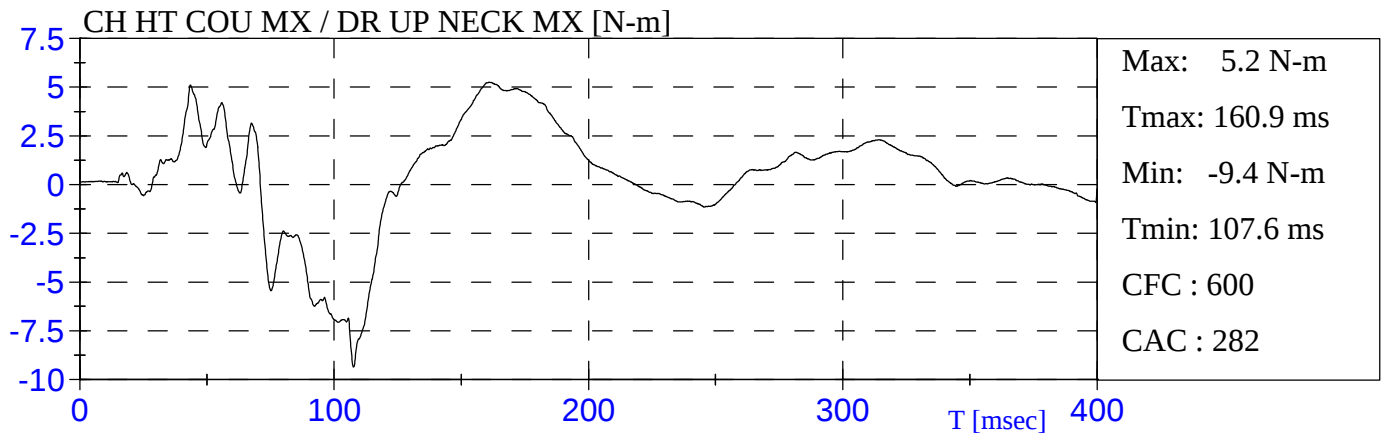


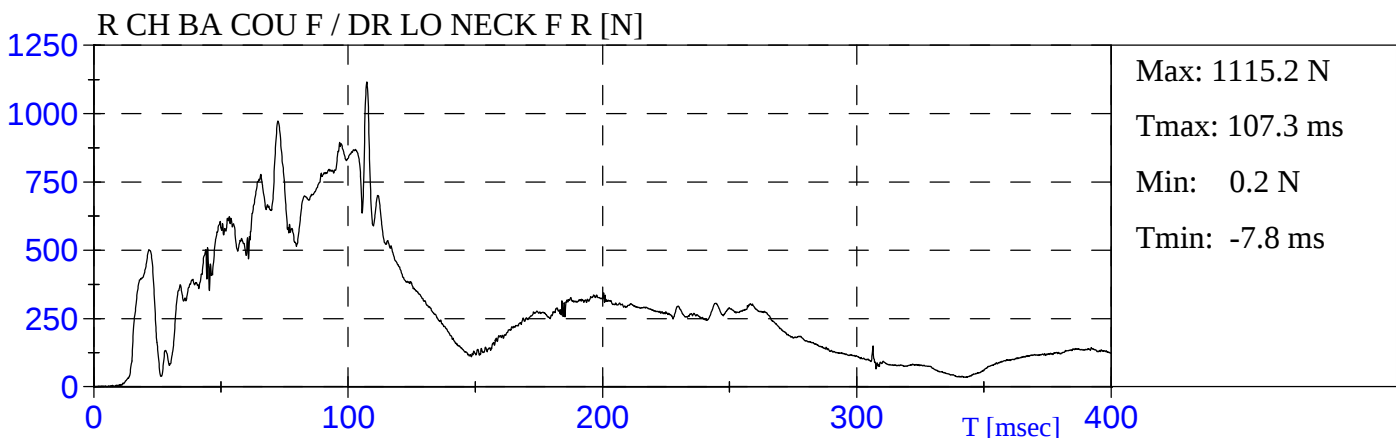
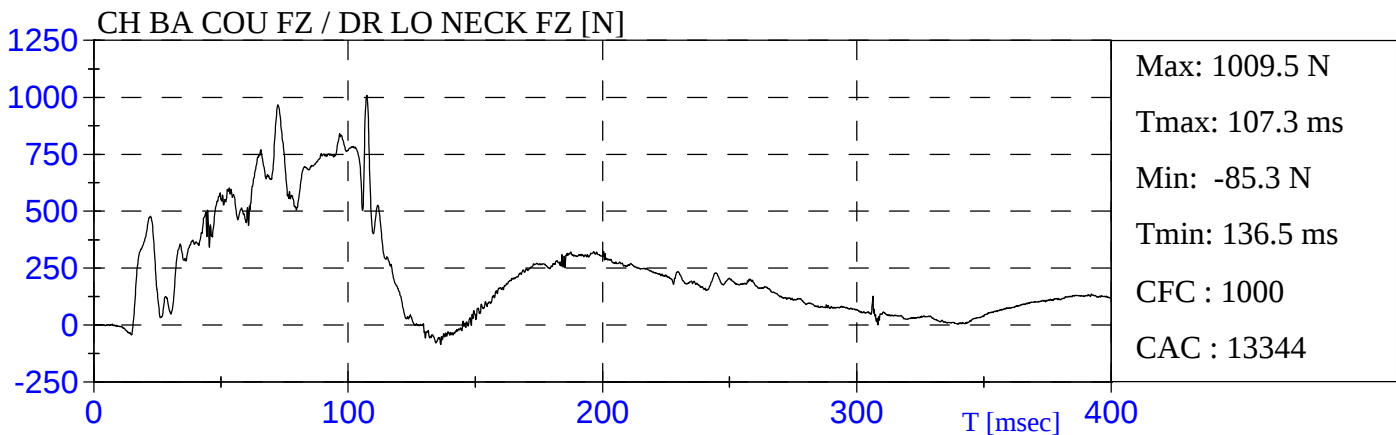
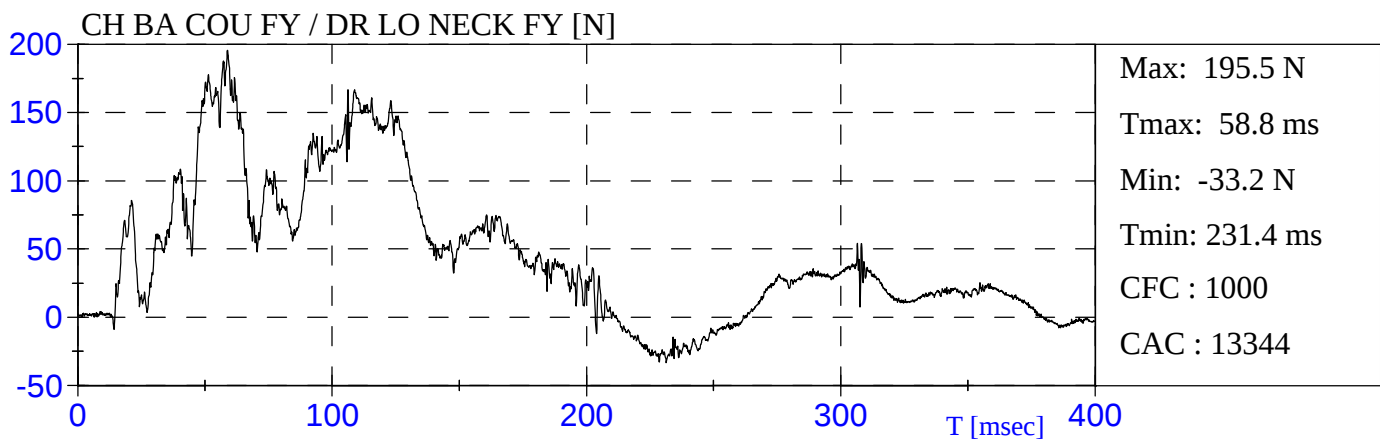
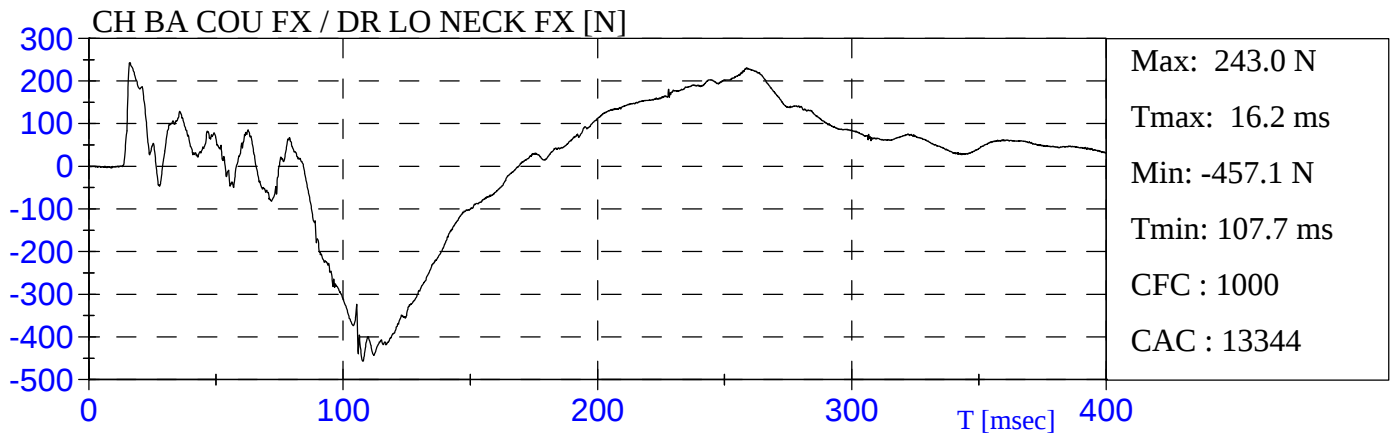


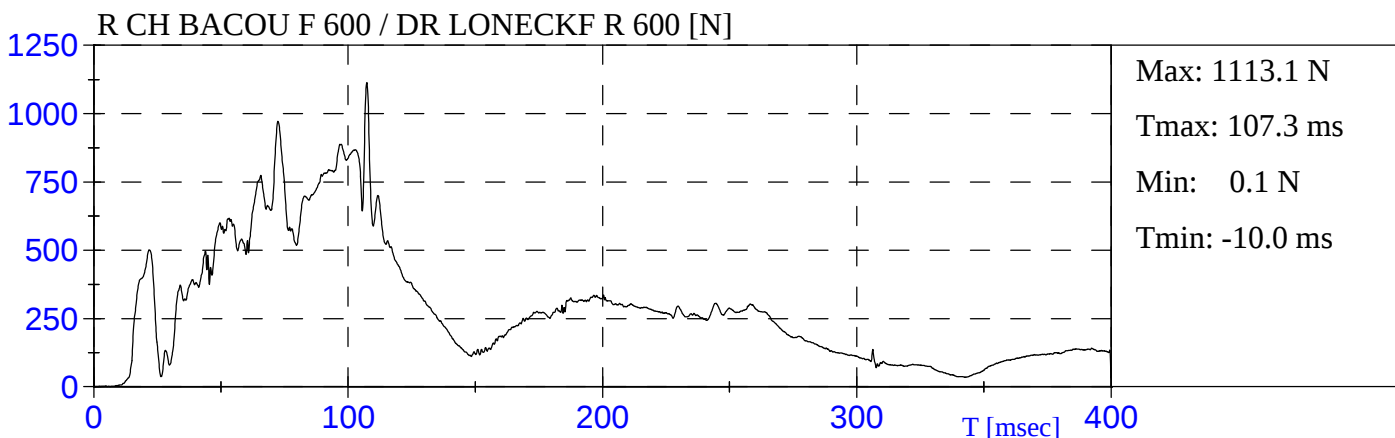
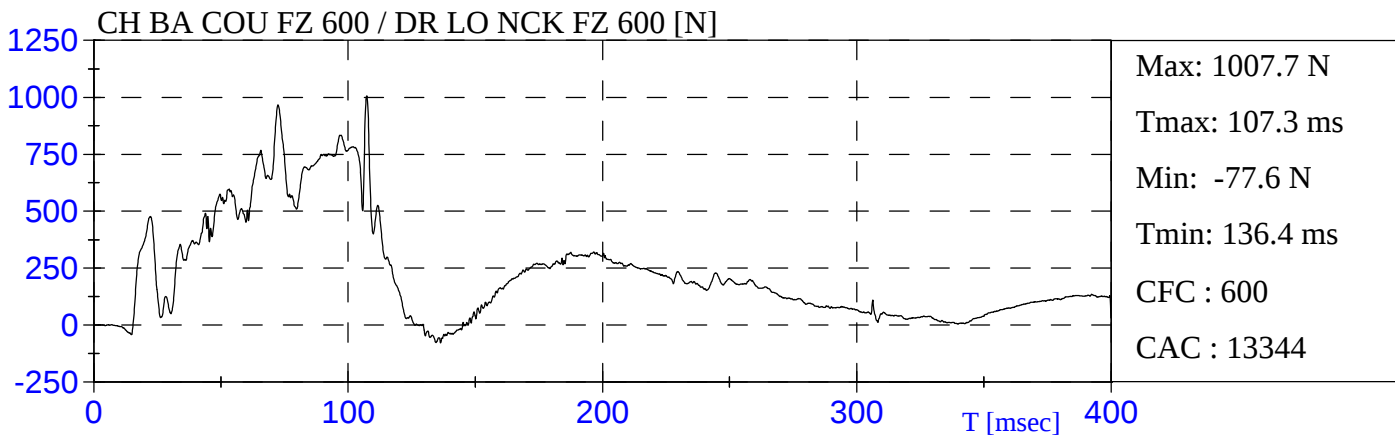
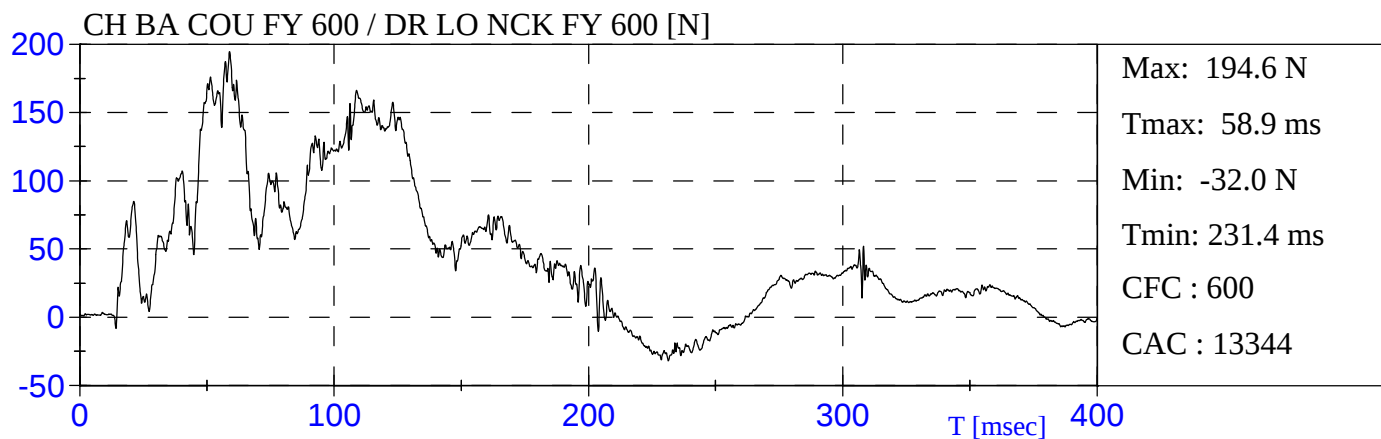
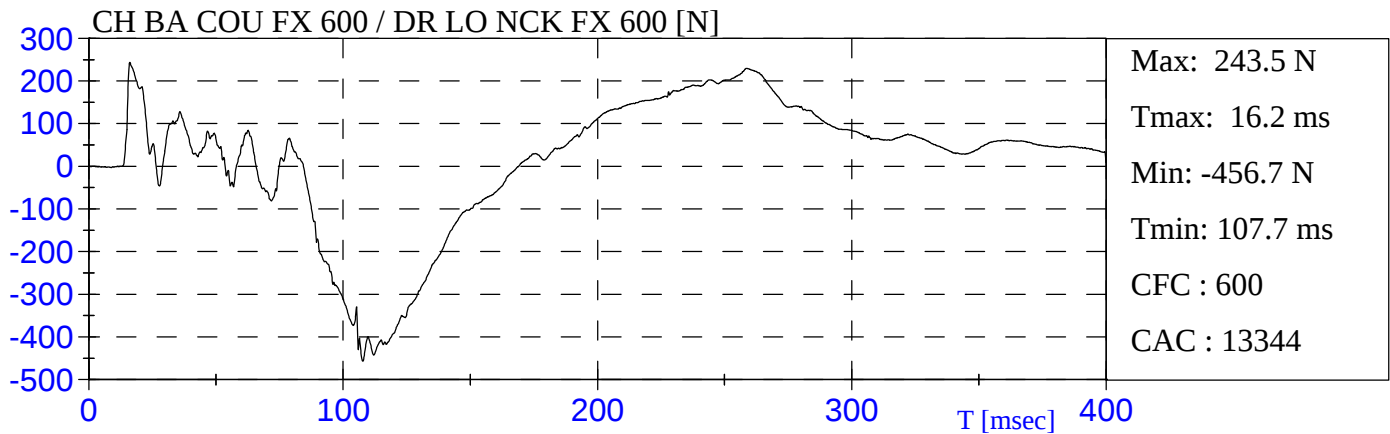
SATURN ION 2004

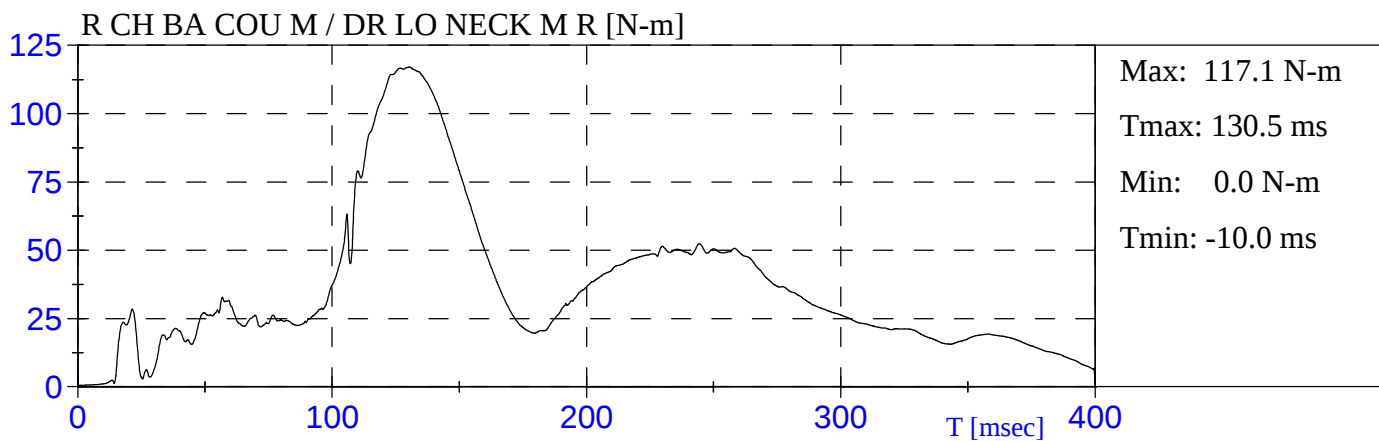
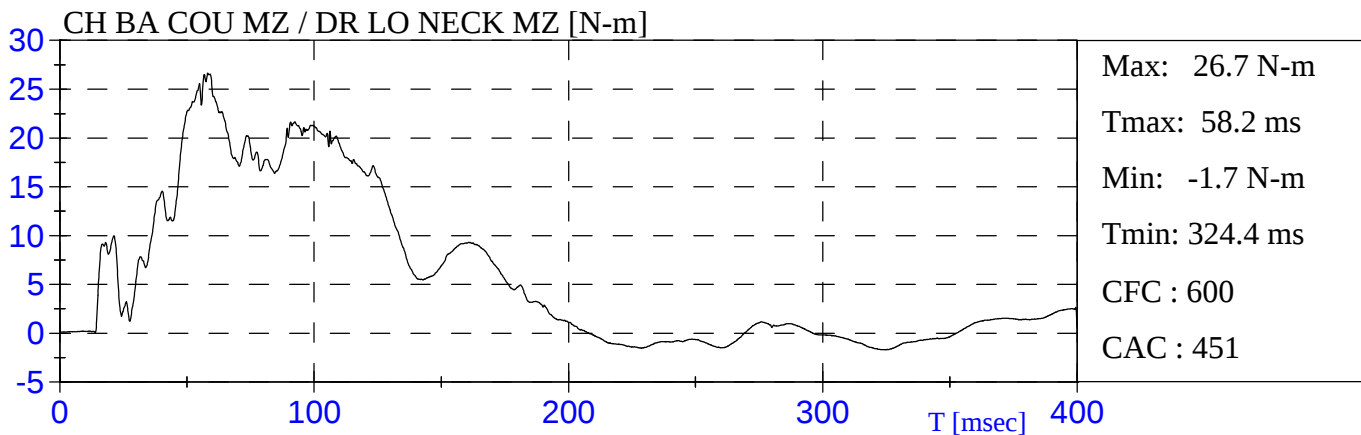
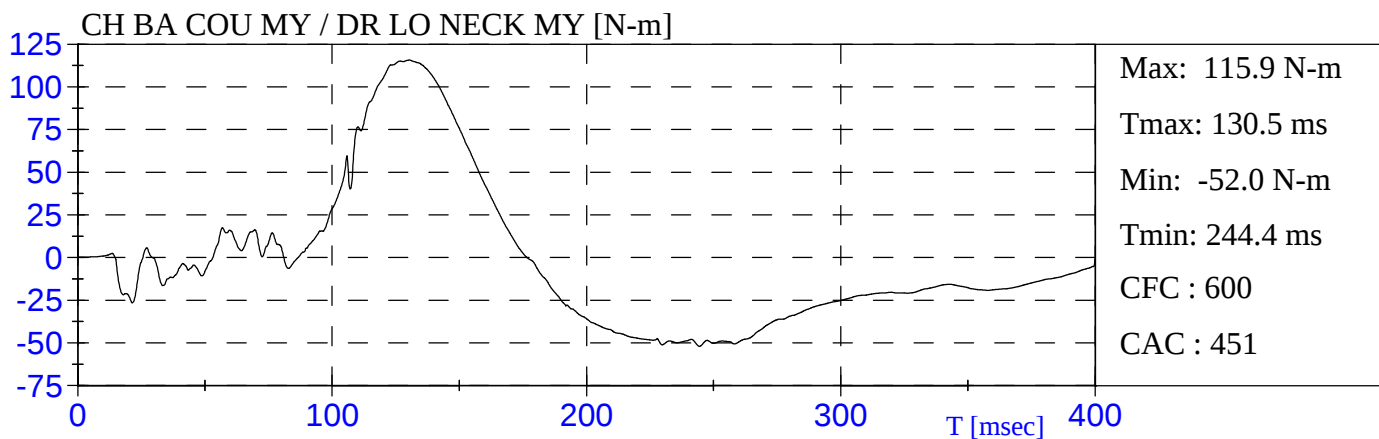
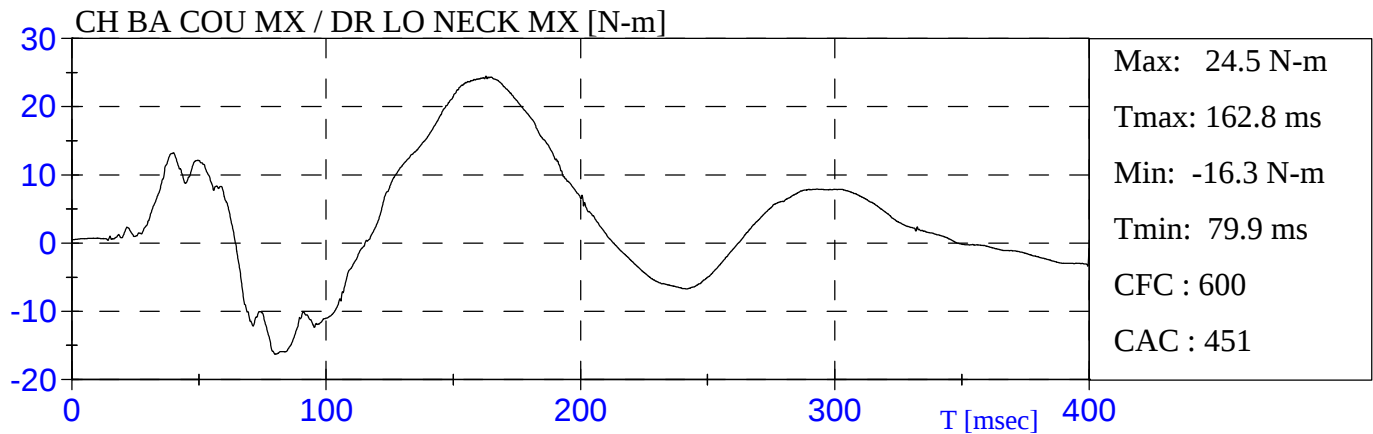
N° TC / TC No.: TC04-116

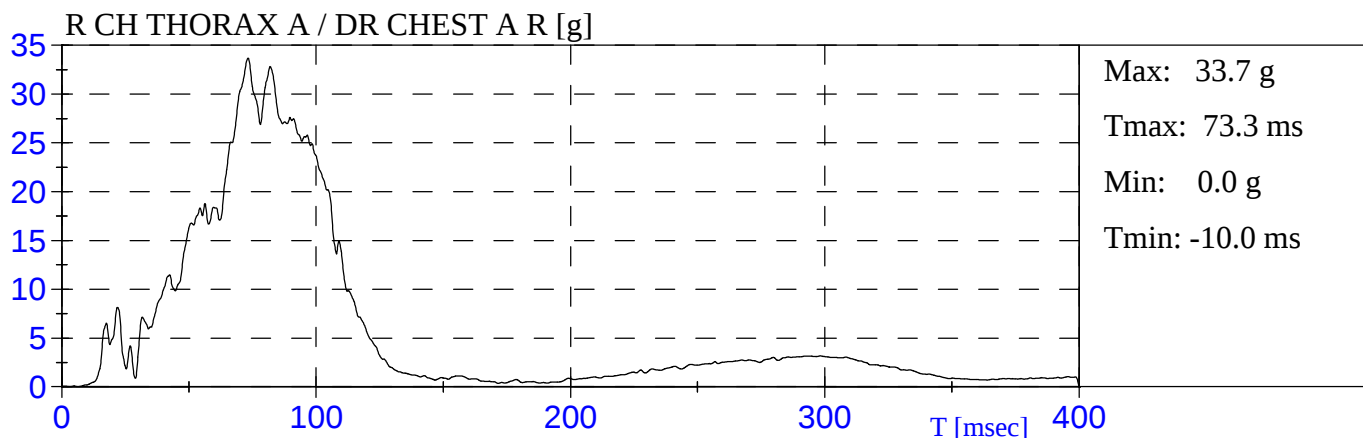
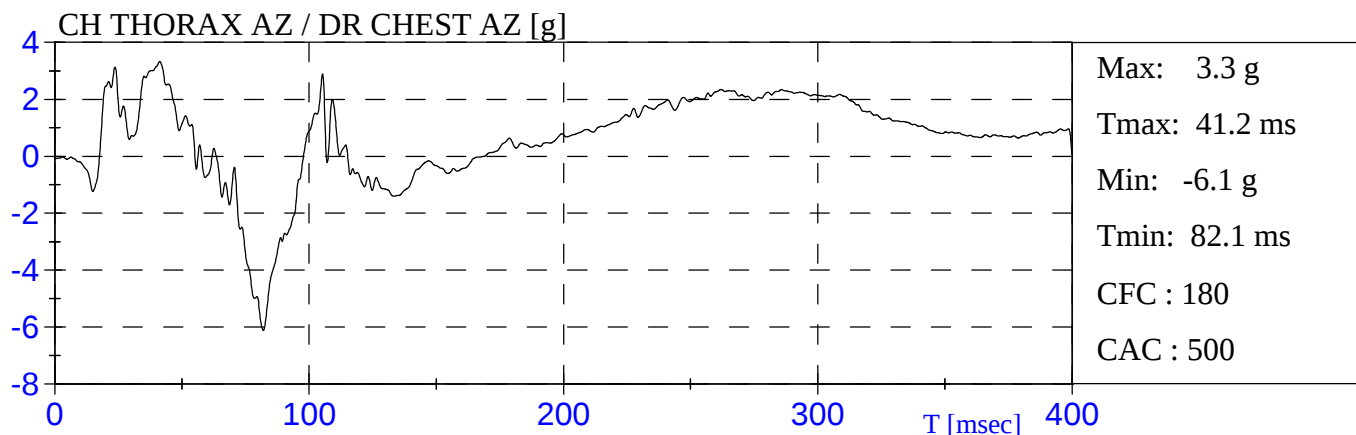
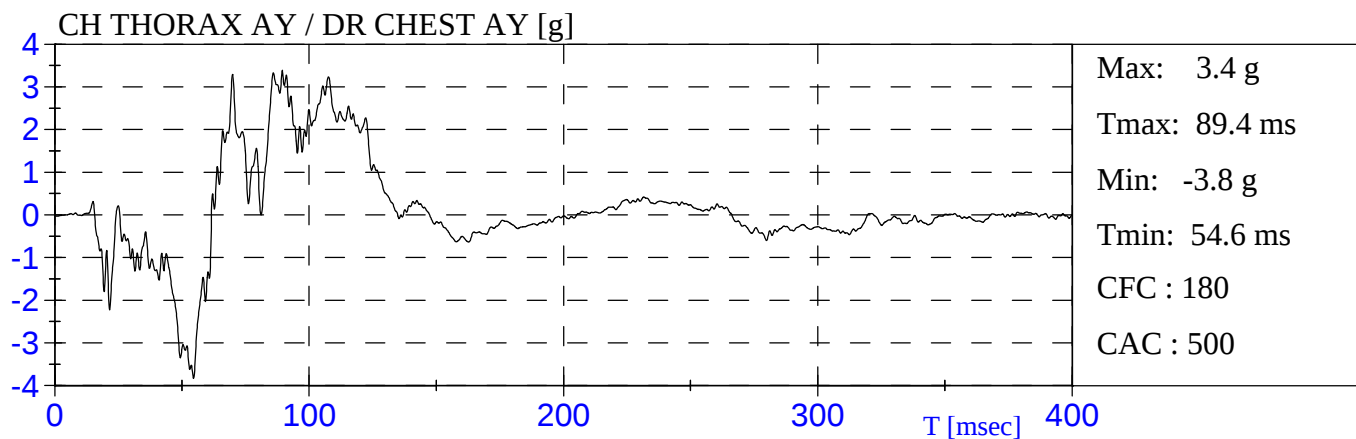
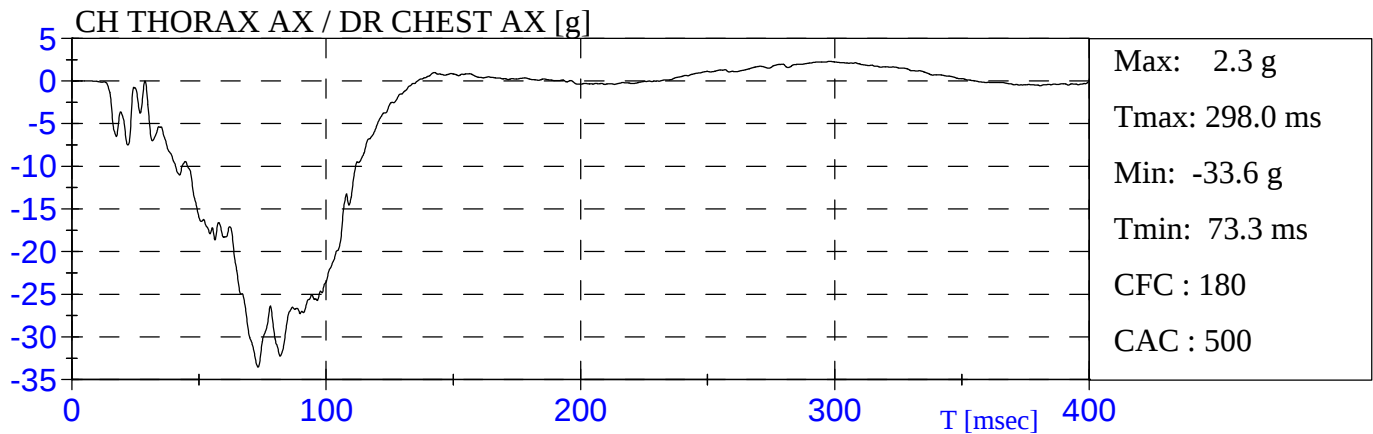








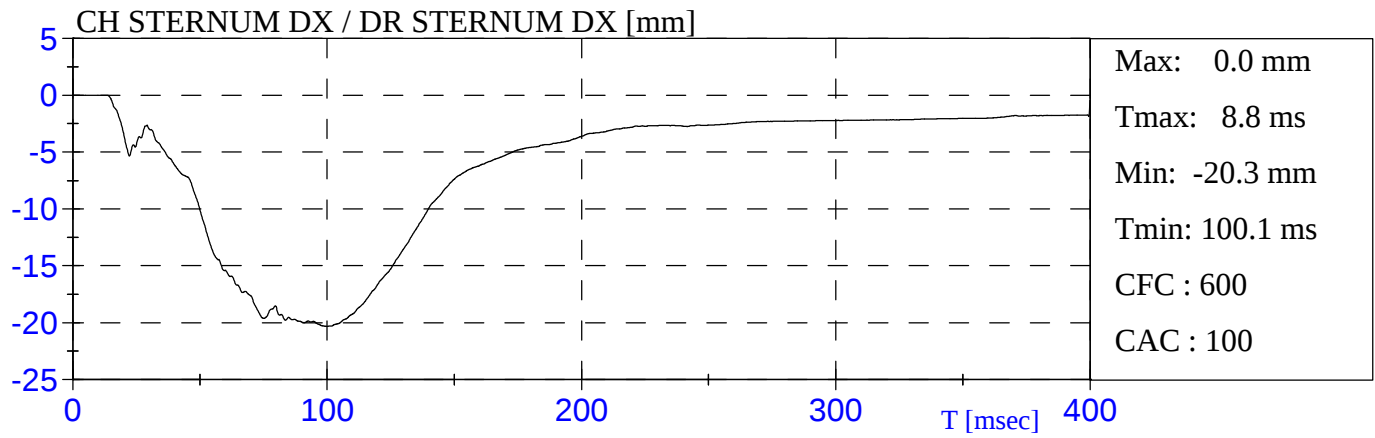






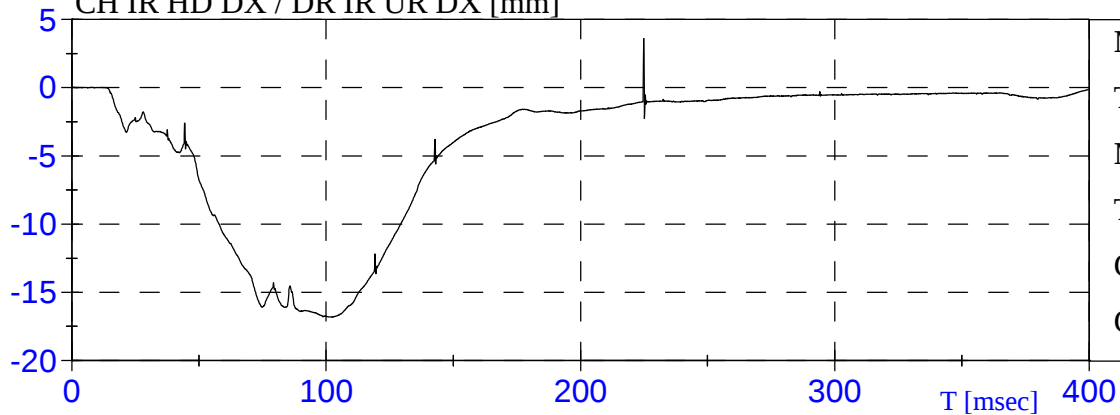
COLLISION FRONTALE
FRONTAL CRASH
SATURN ION 2004

Date: 2004-02-24
N° TC / TC No.: TC04-116



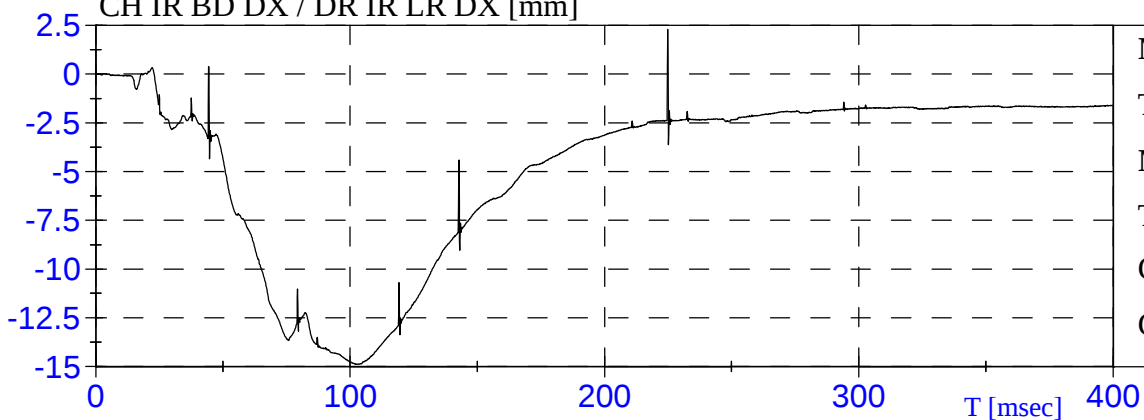


CH IR HD DX / DR IR UR DX [mm]



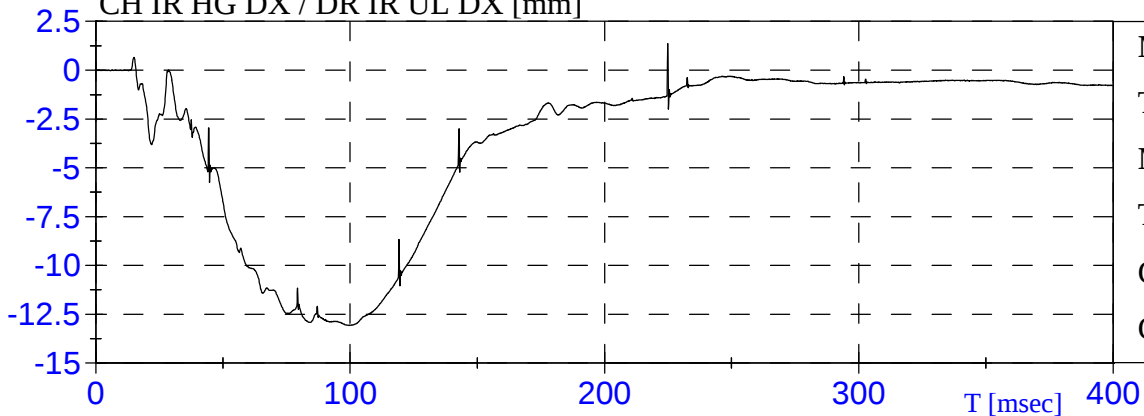
Max: 3.6 mm
Tmax: 224.9 ms
Min: -16.8 mm
Tmin: 102.4 ms
CFC : 1000
CAC : 120

CH IR BD DX / DR IR LR DX [mm]



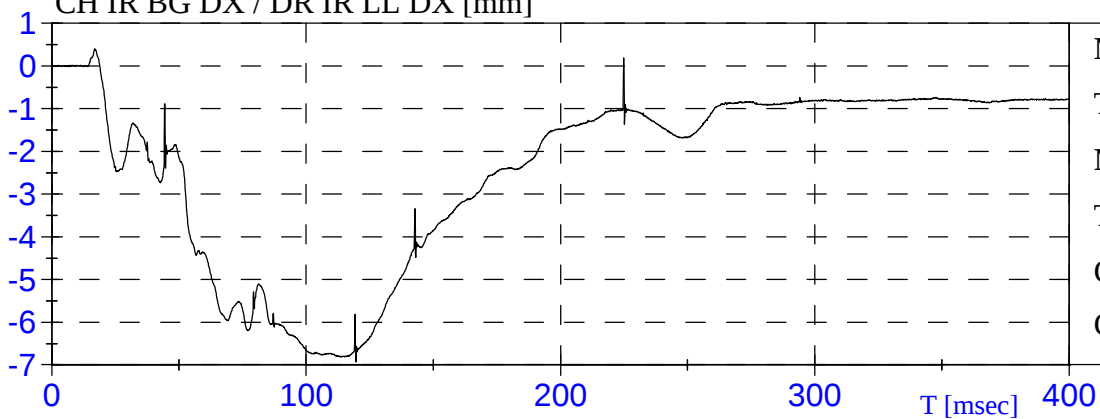
Max: 2.3 mm
Tmax: 224.9 ms
Min: -14.9 mm
Tmin: 102.6 ms
CFC : 1000
CAC : 120

CH IR HG DX / DR IR UL DX [mm]

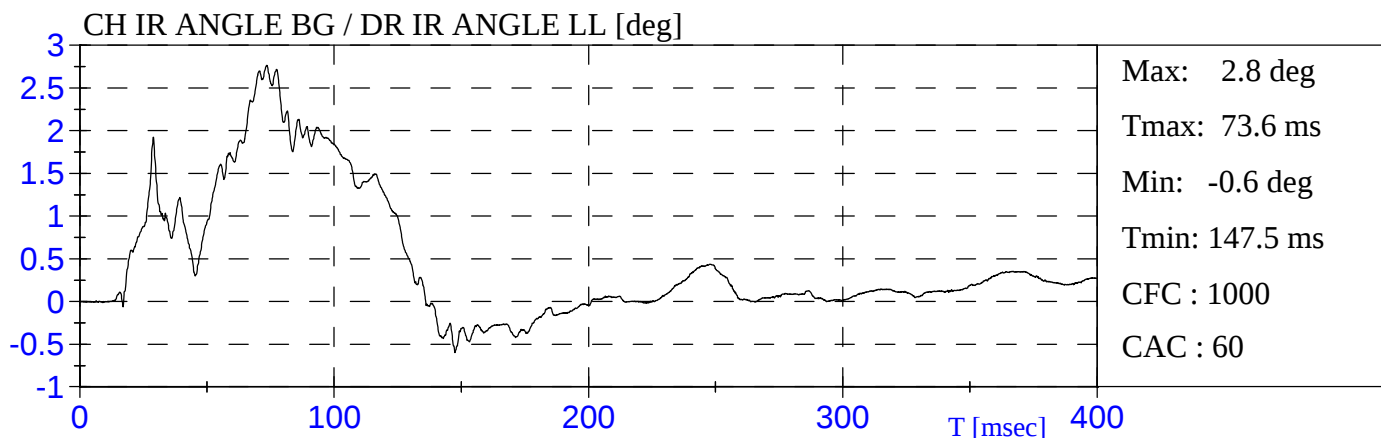
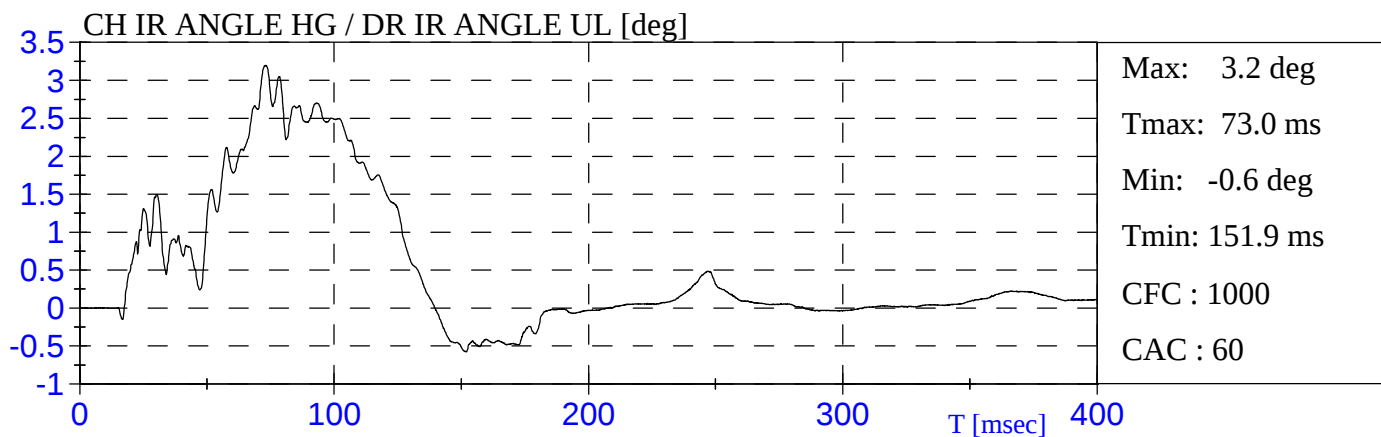
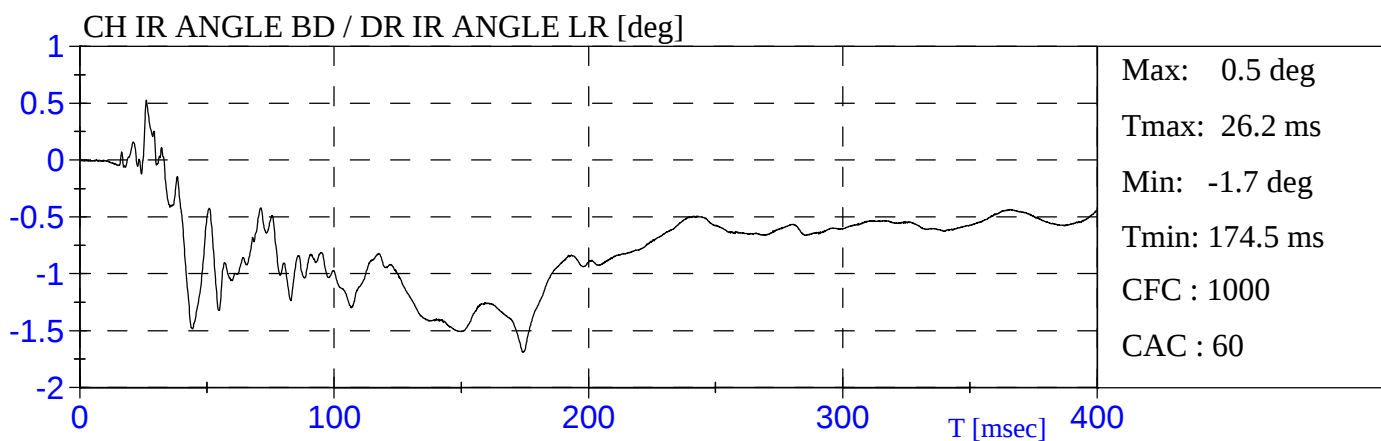
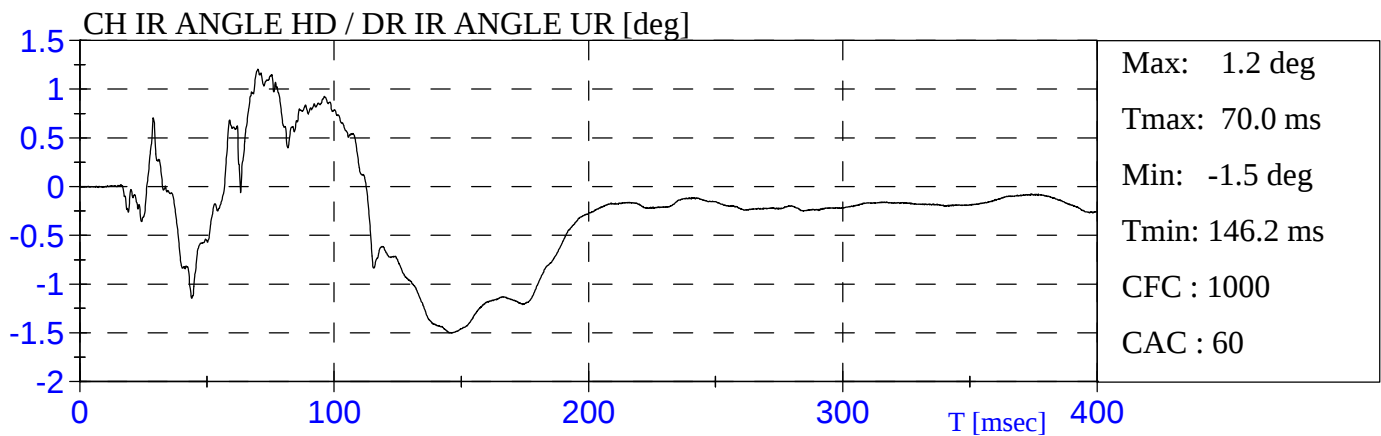


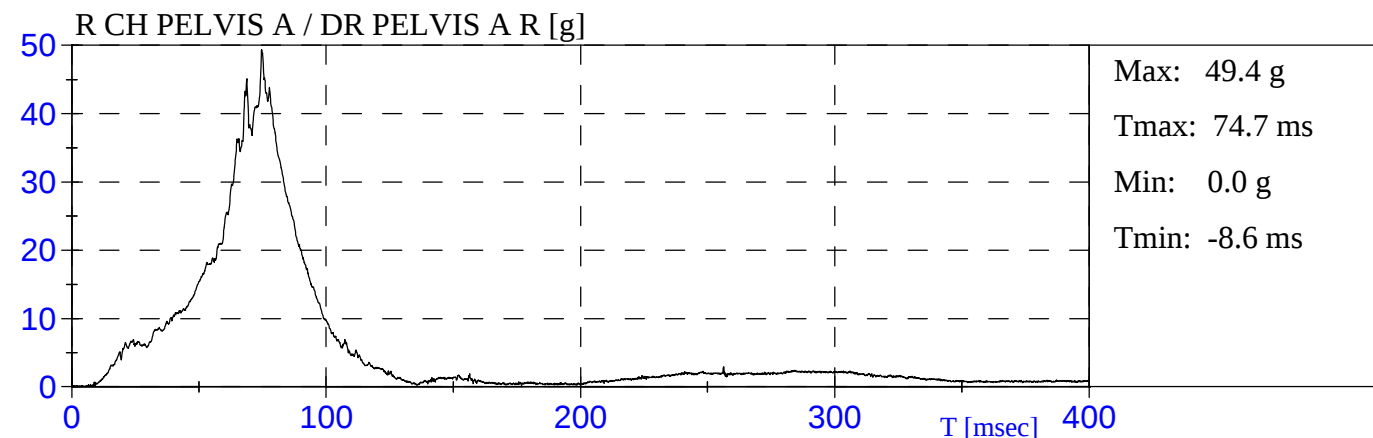
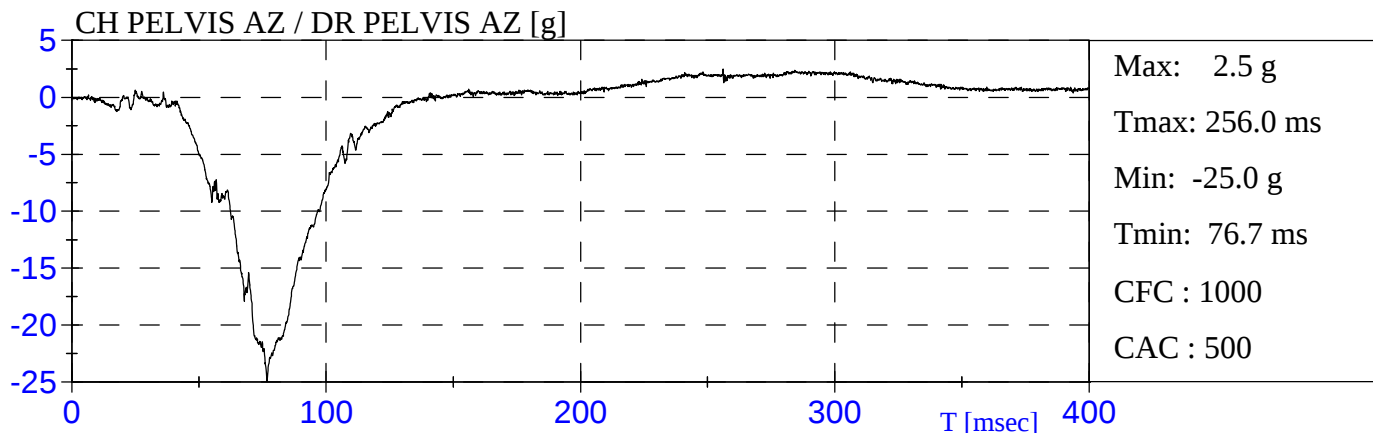
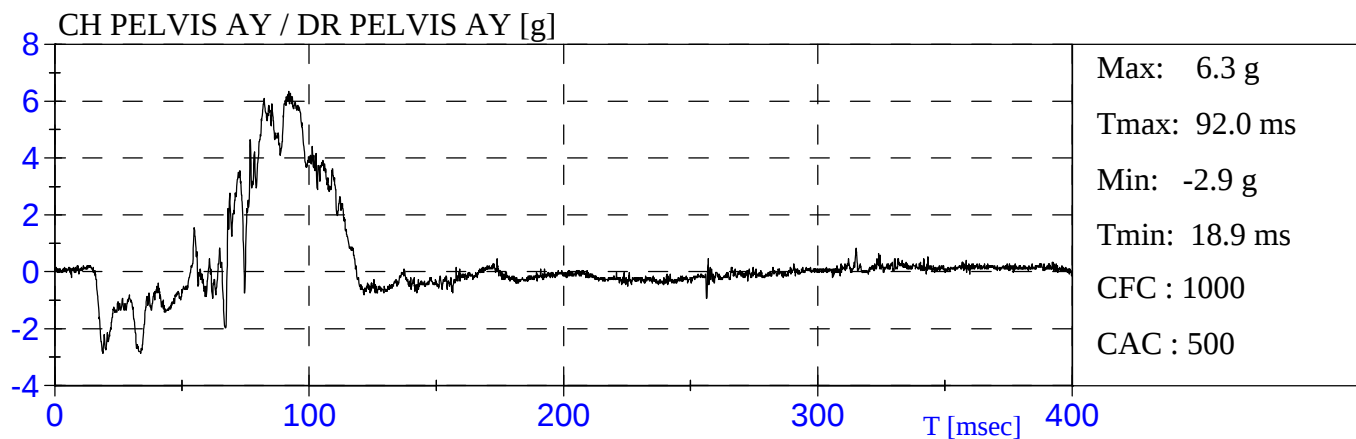
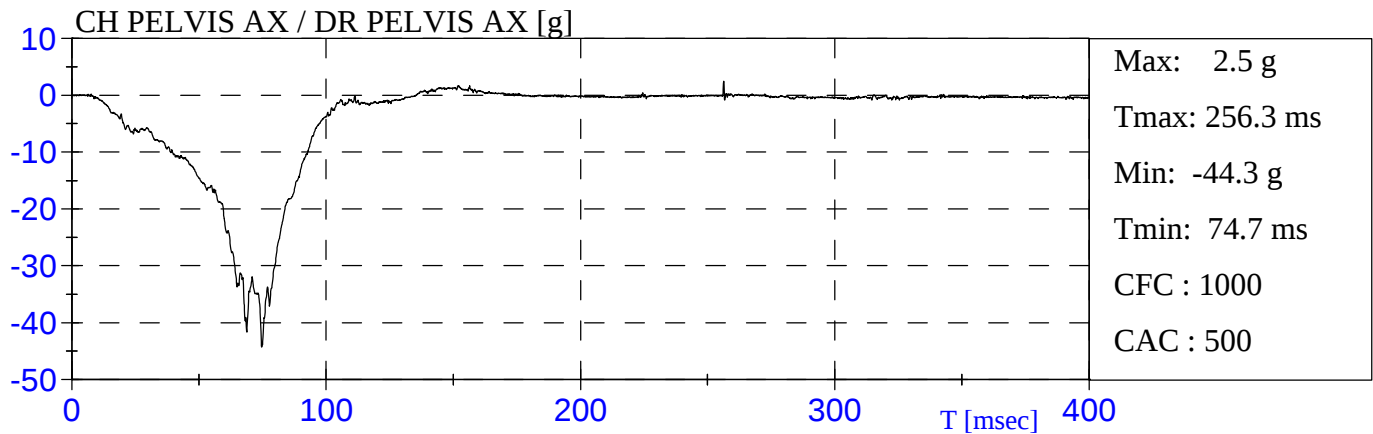
Max: 1.4 mm
Tmax: 224.9 ms
Min: -13.1 mm
Tmin: 99.8 ms
CFC : 1000
CAC : 120

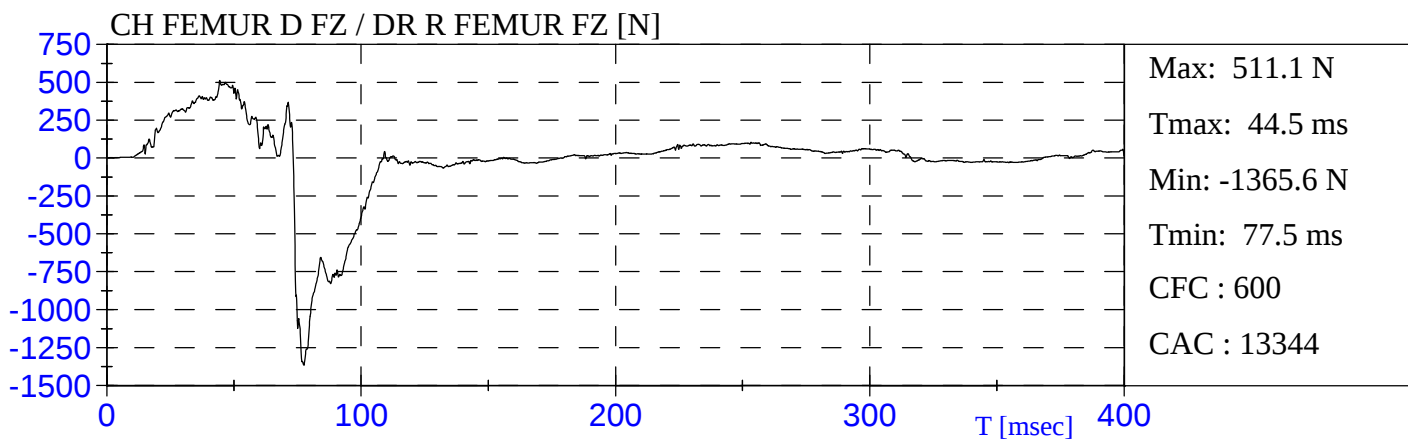
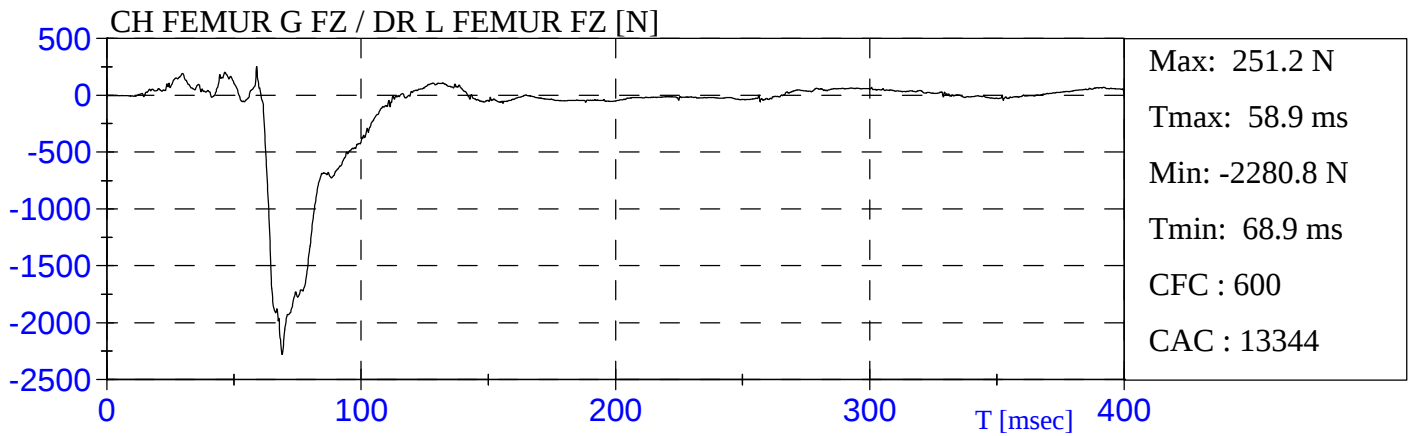
CH IR BG DX / DR IR LL DX [mm]

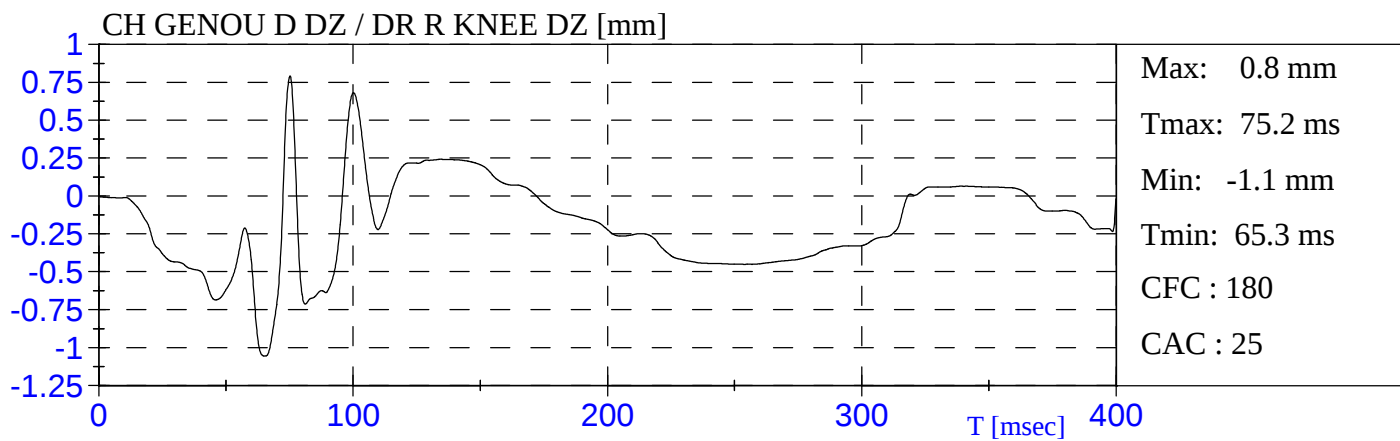
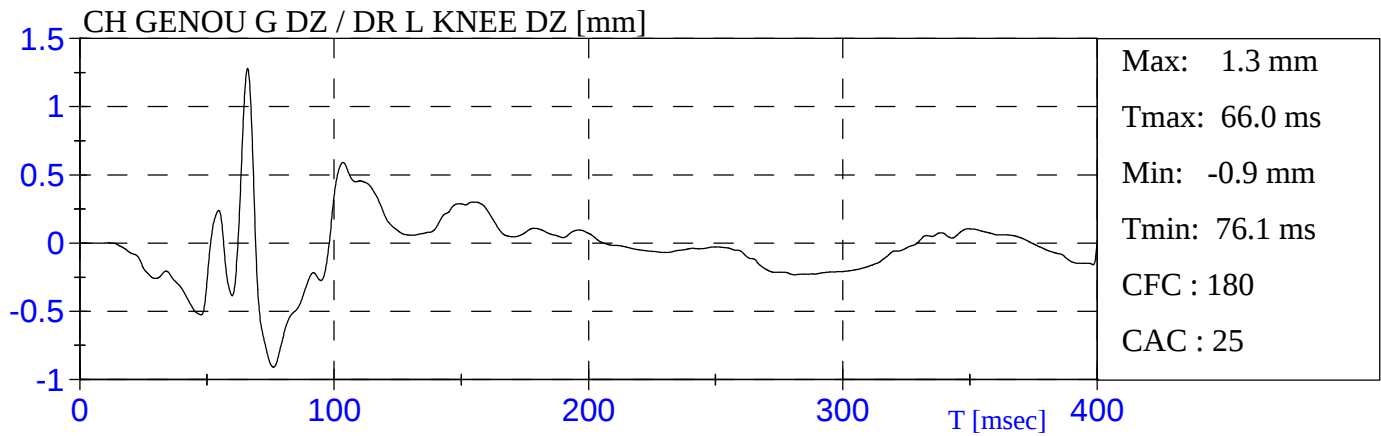


Max: 0.4 mm
Tmax: 17.0 ms
Min: -6.9 mm
Tmin: 119.6 ms
CFC : 1000
CAC : 120











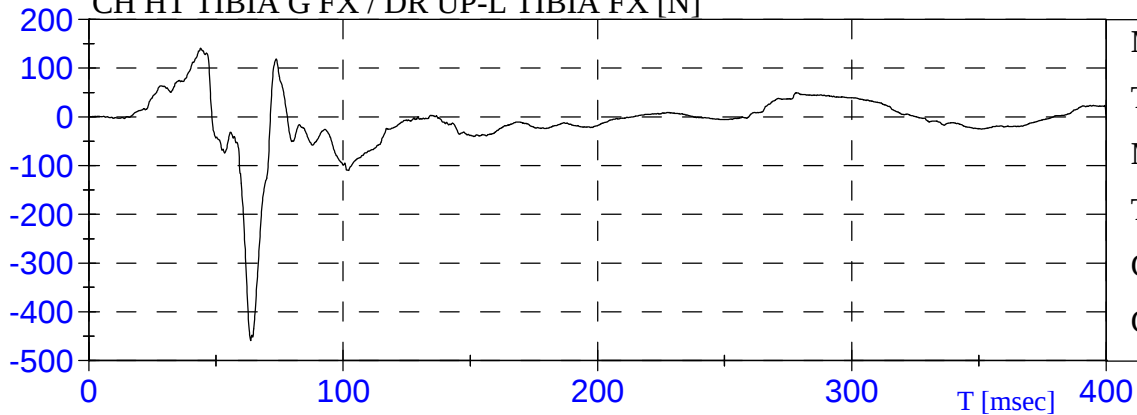
COLLISION FRONTALE
FRONTAL CRASH

Date: 2004-02-24

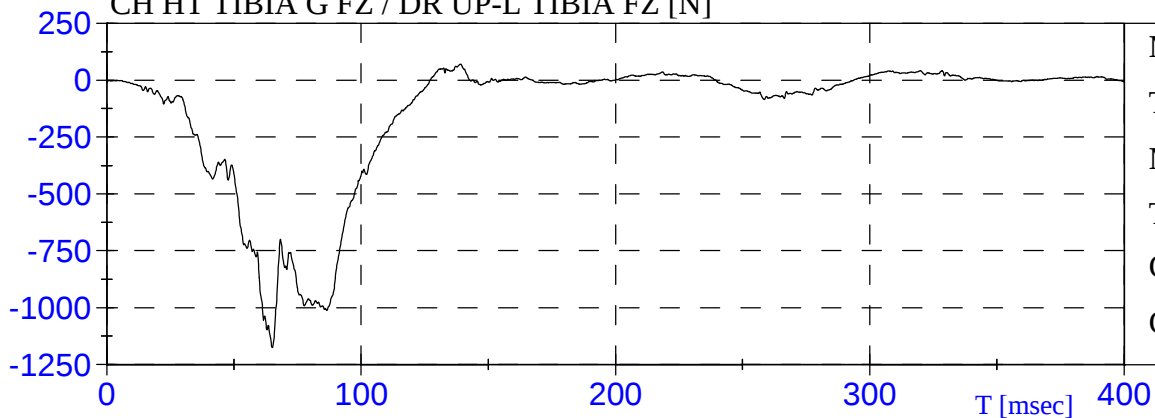
SATURN ION 2004

N° TC / TC No.: TC04-116

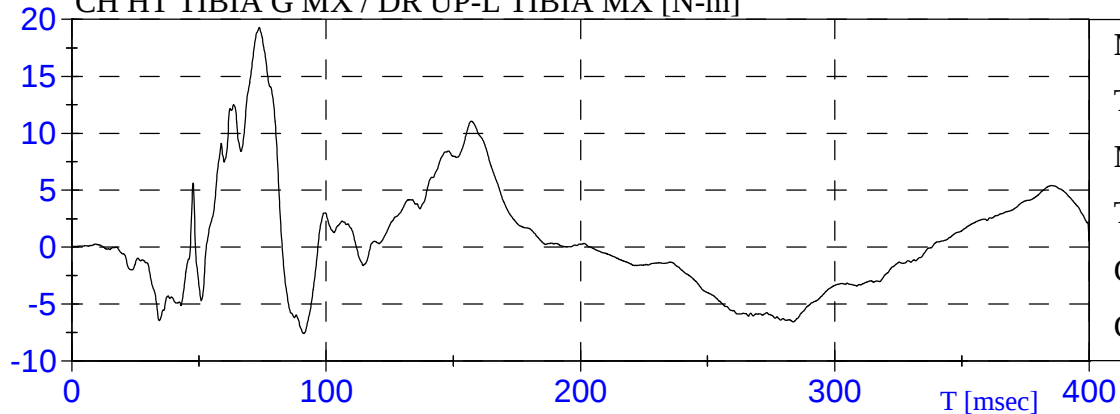
CH HT TIBIA G FX / DR UP-L TIBIA FX [N]



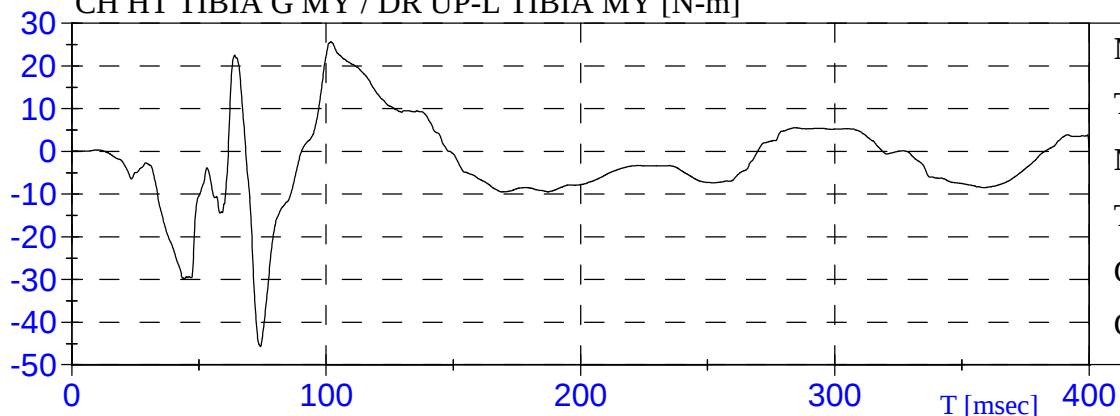
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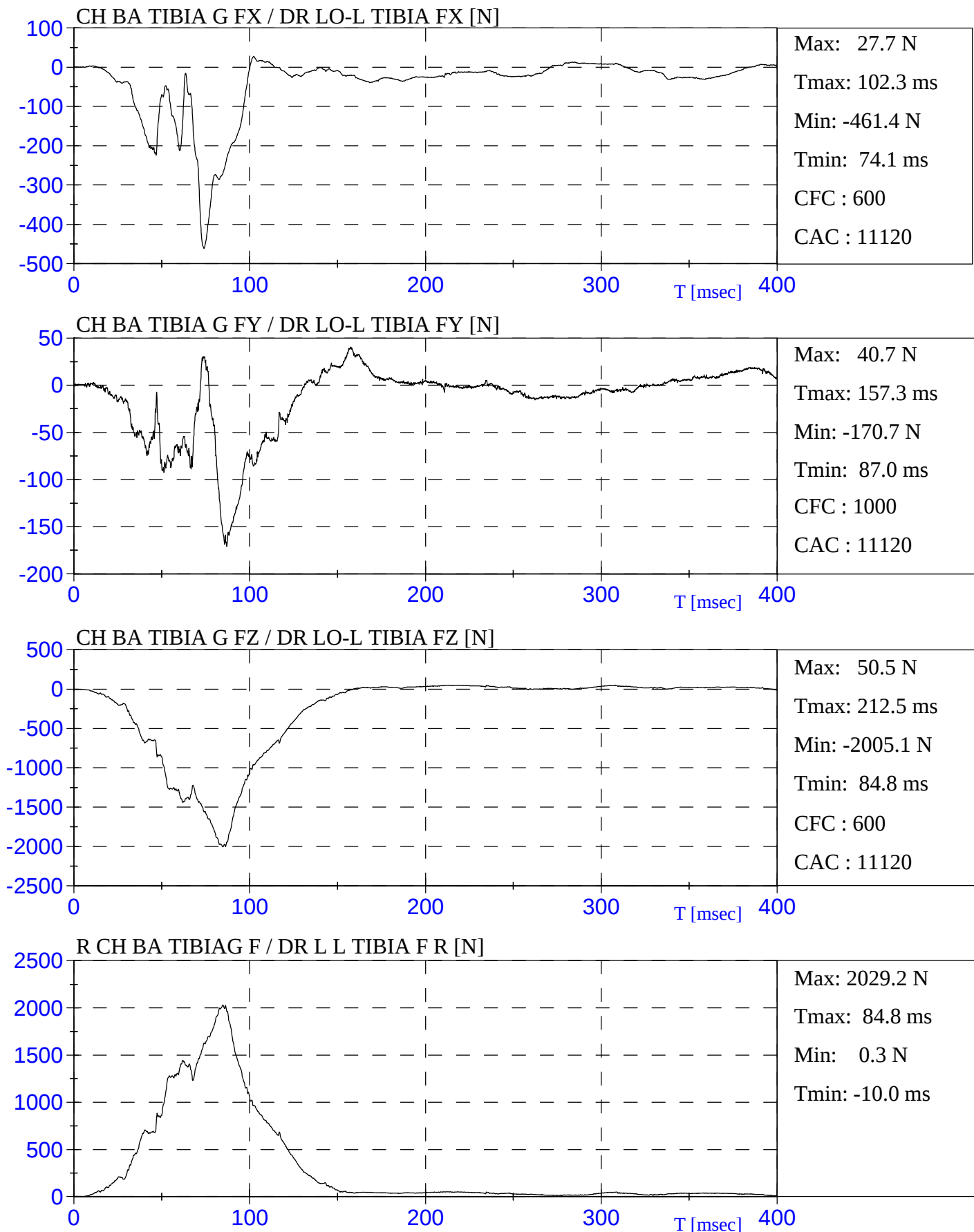


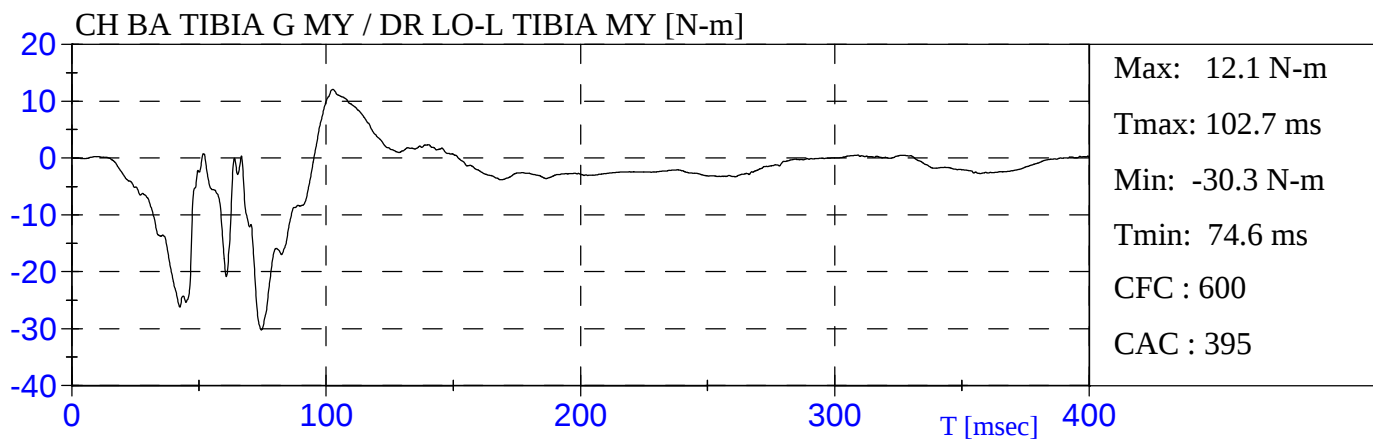
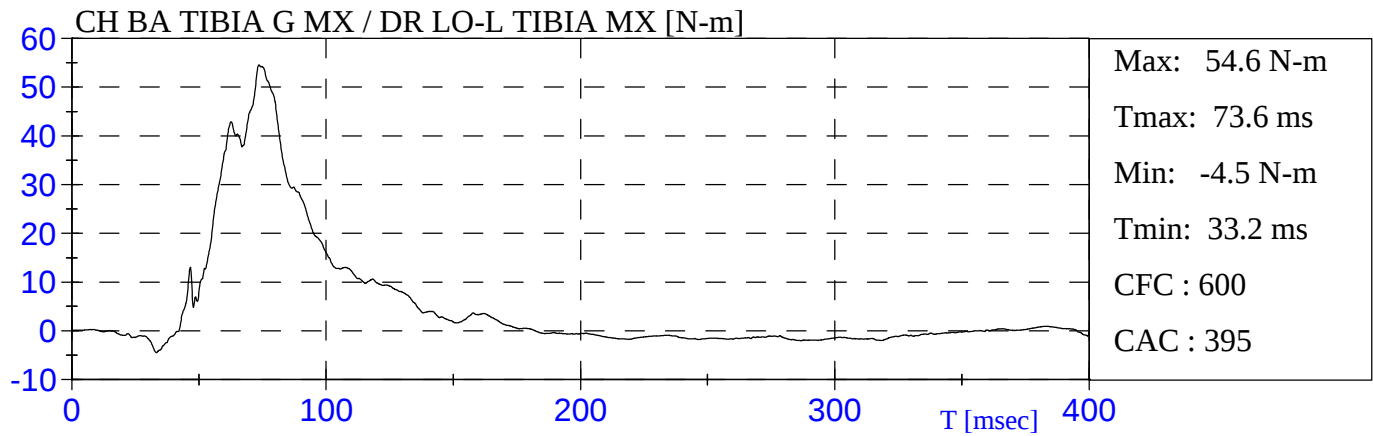
CH HT TIBIA G MX / DR UP-L TIBIA MX [N-m]

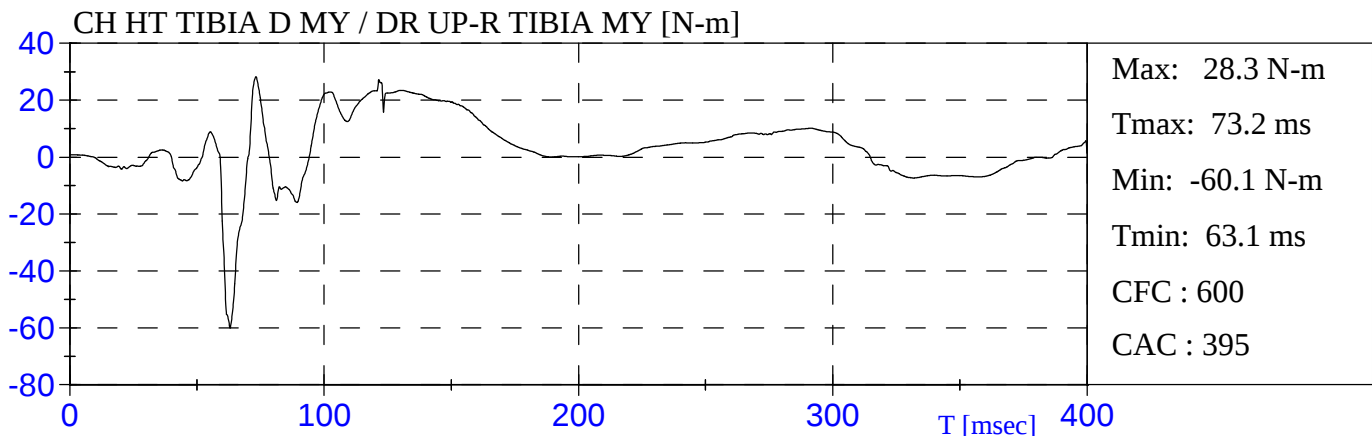
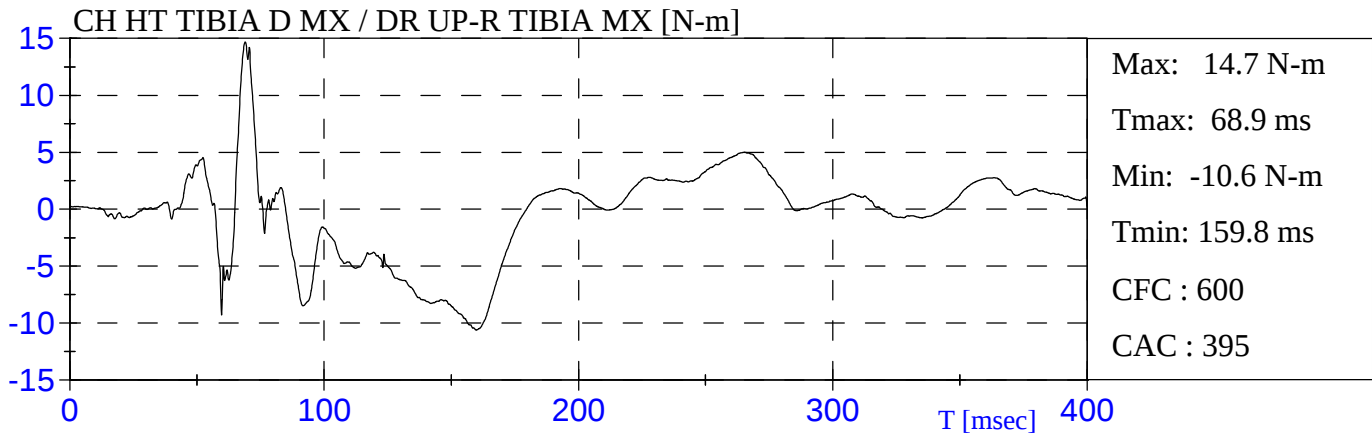
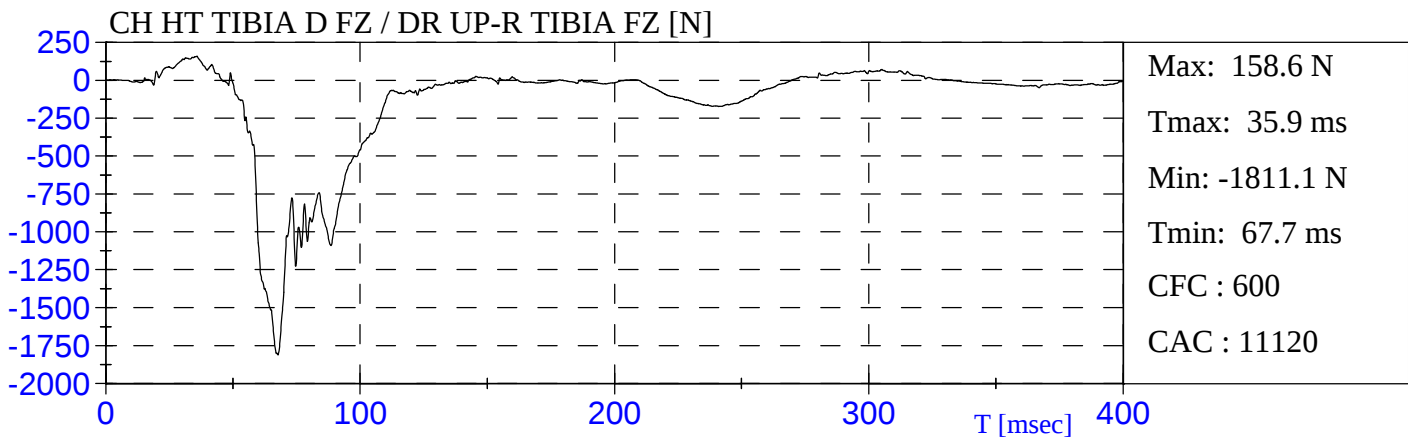
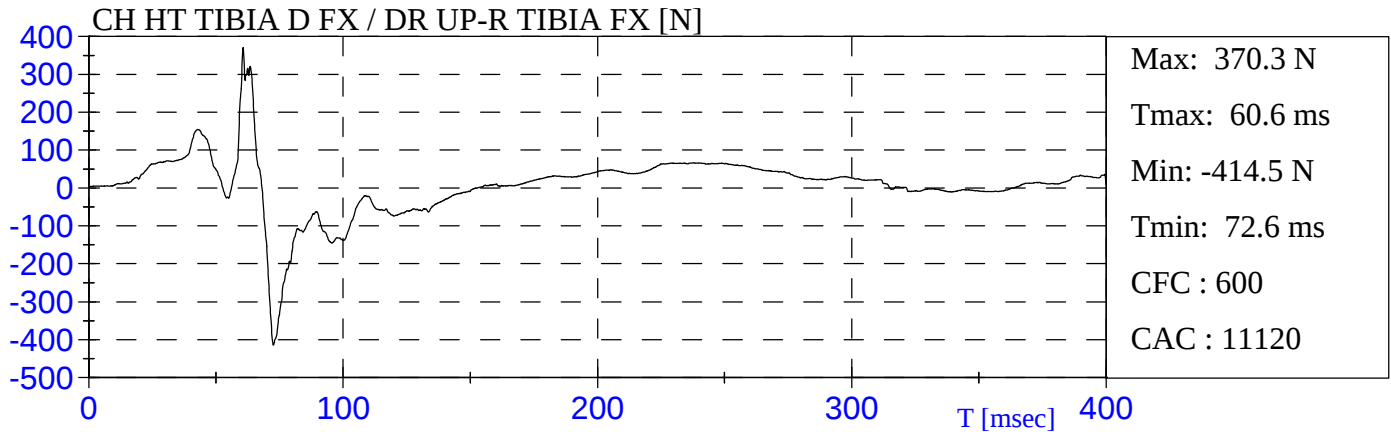


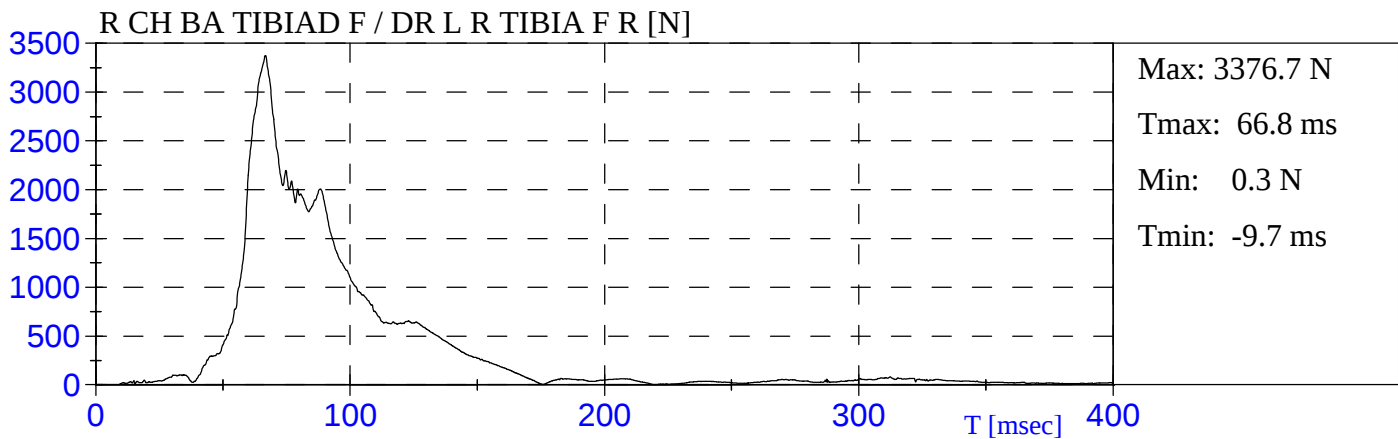
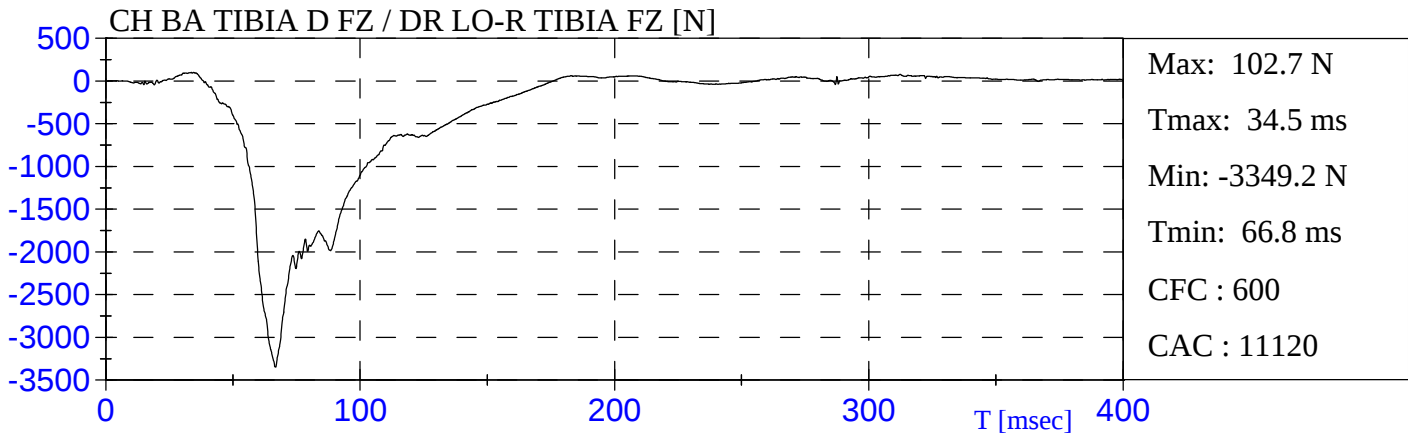
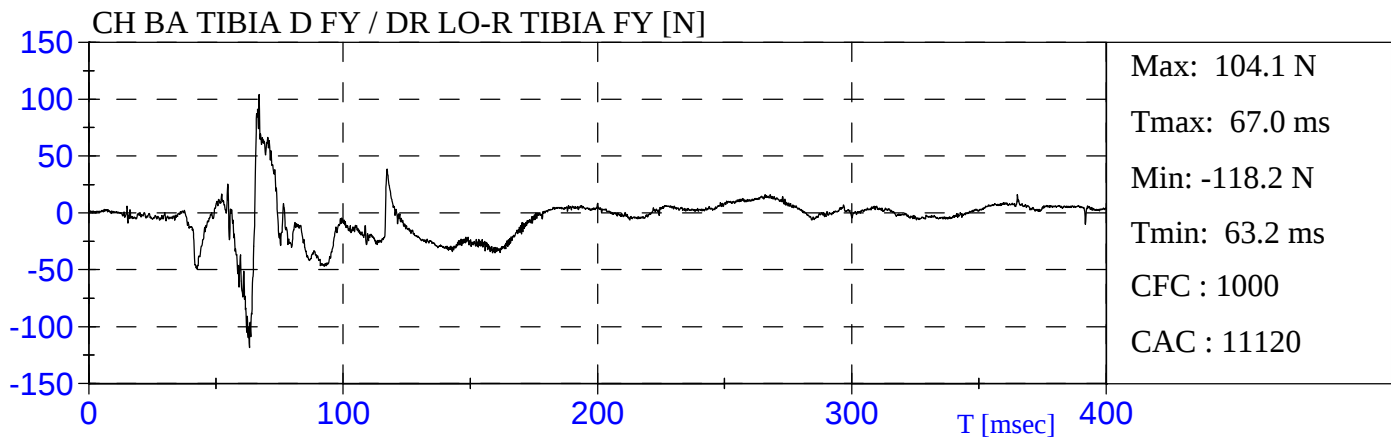
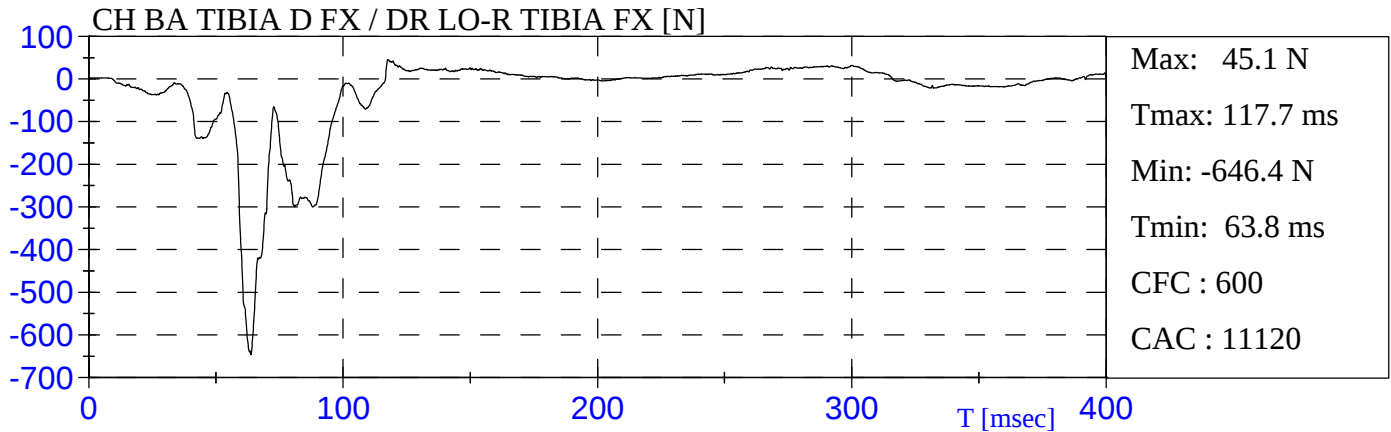
CH HT TIBIA G MY / DR UP-L TIBIA MY [N-m]

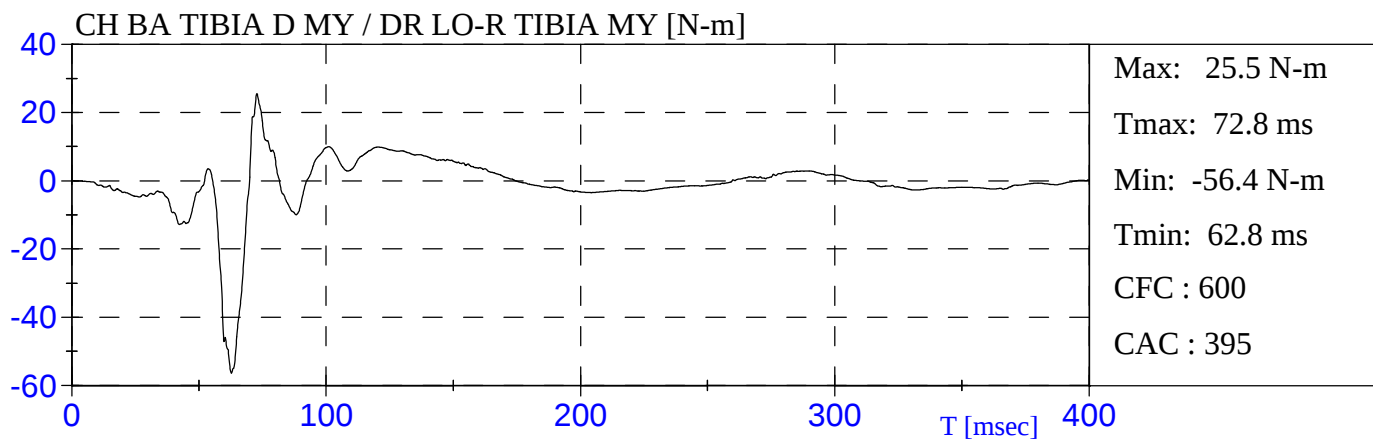
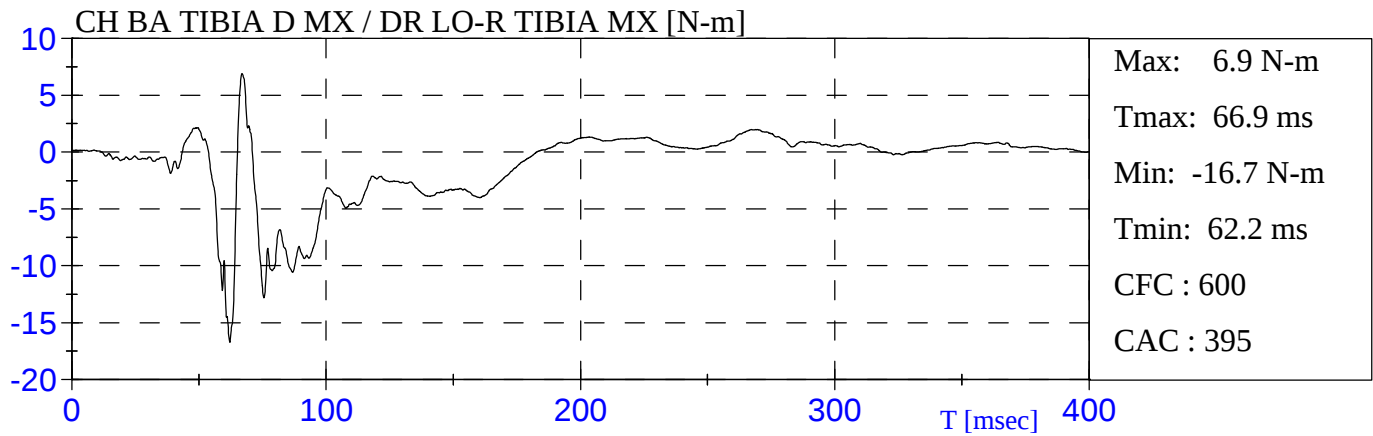


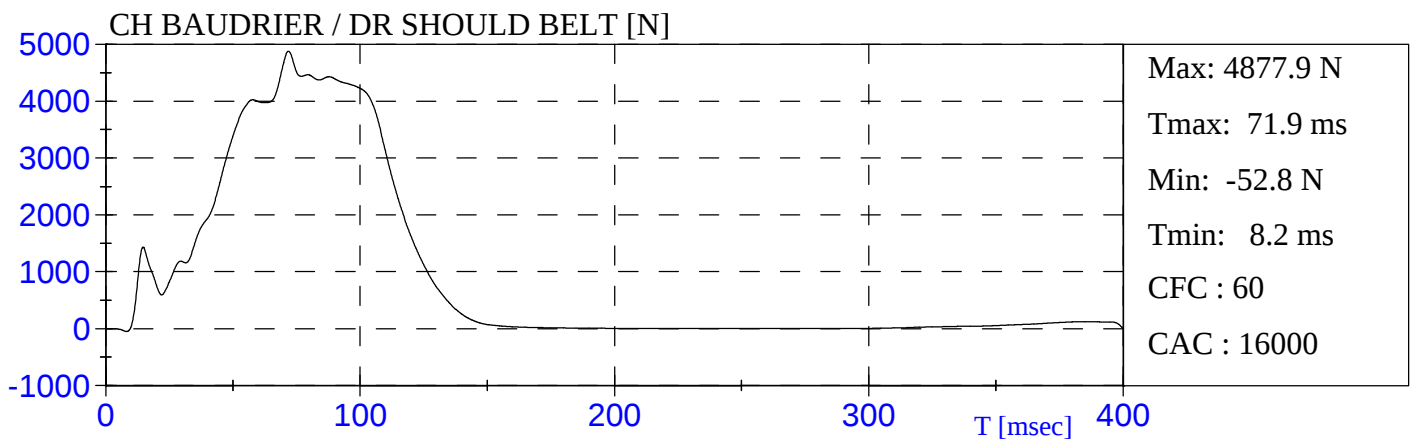
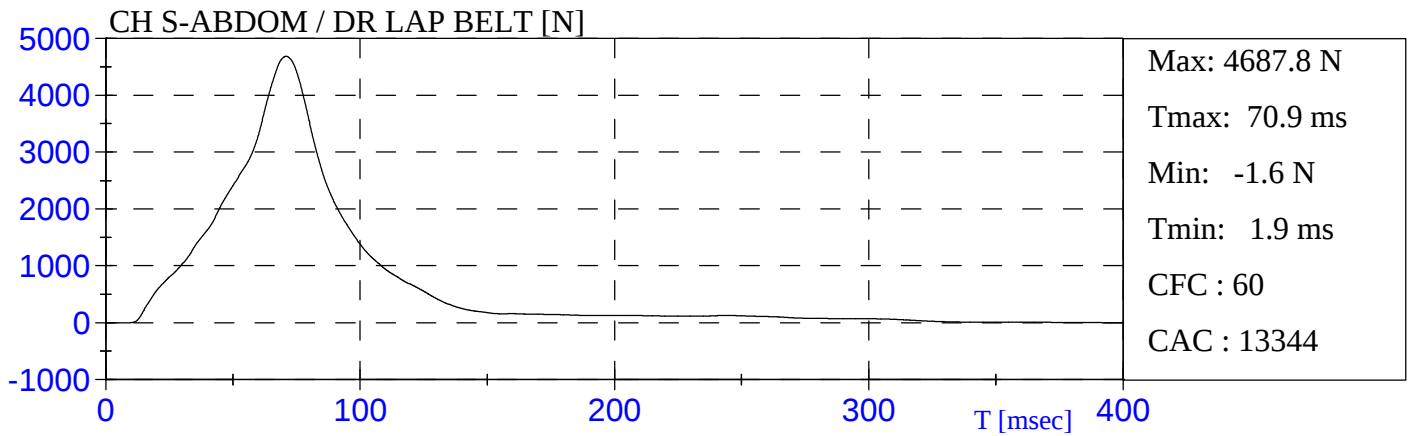


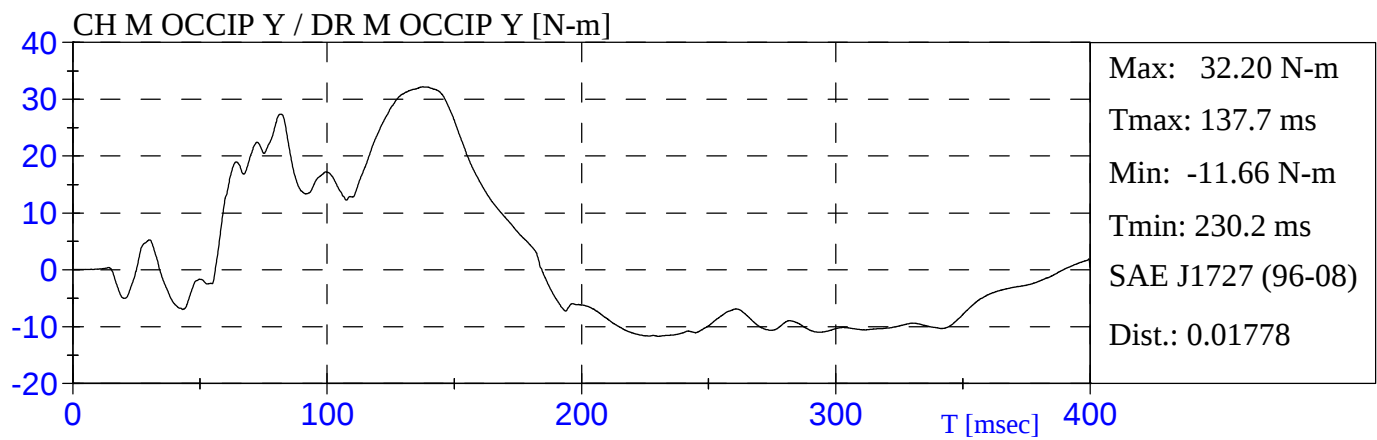


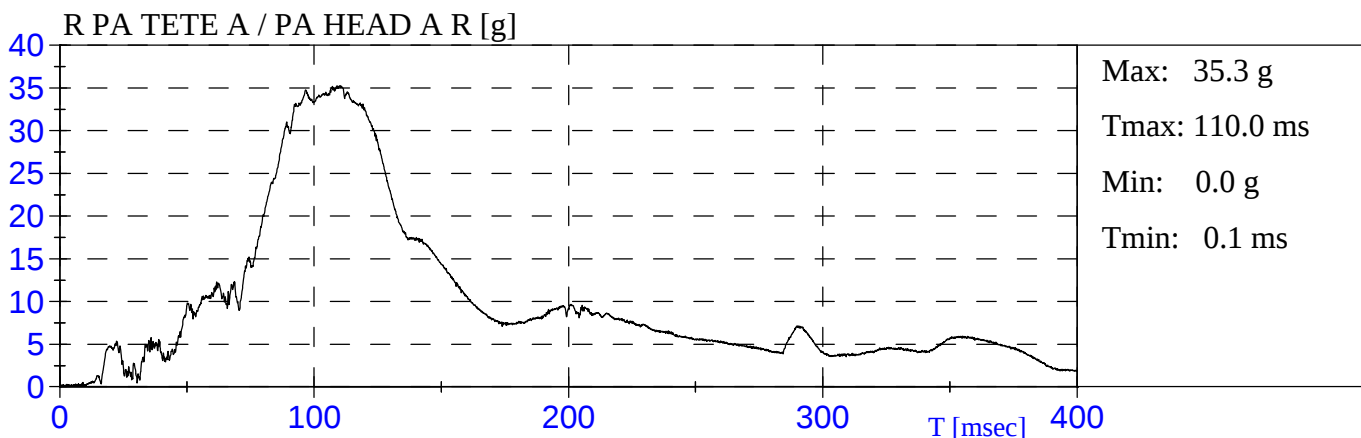
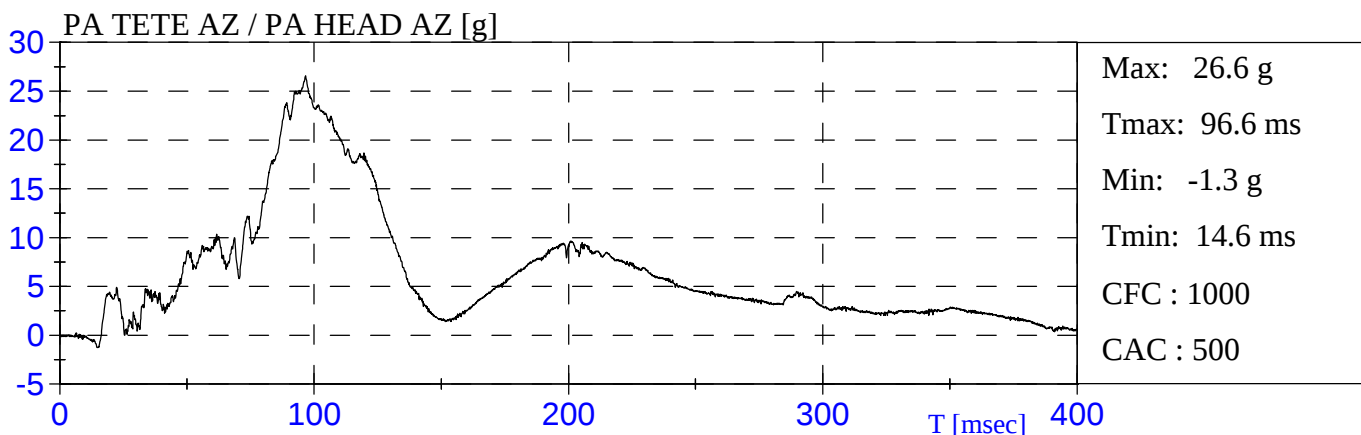
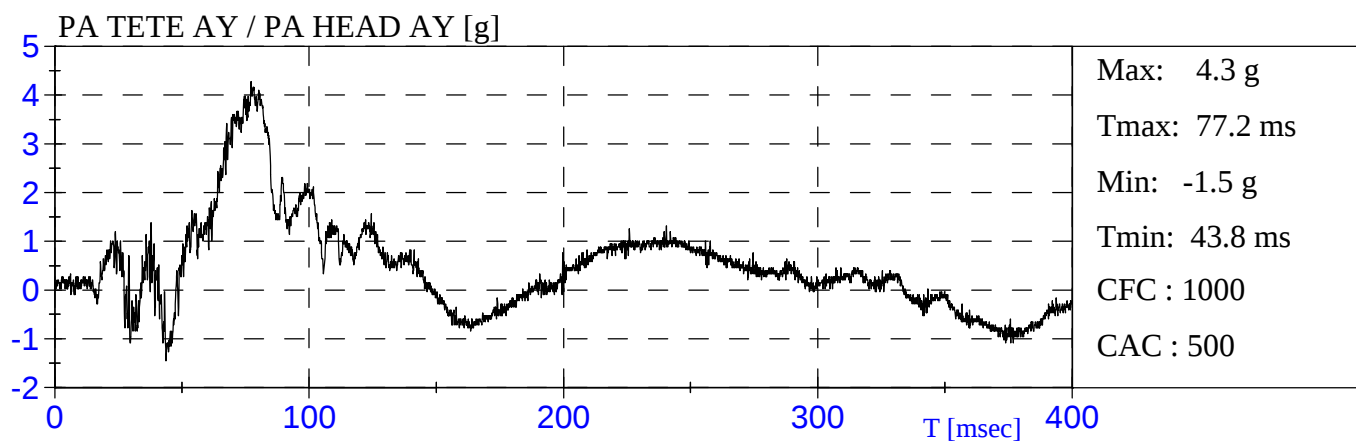
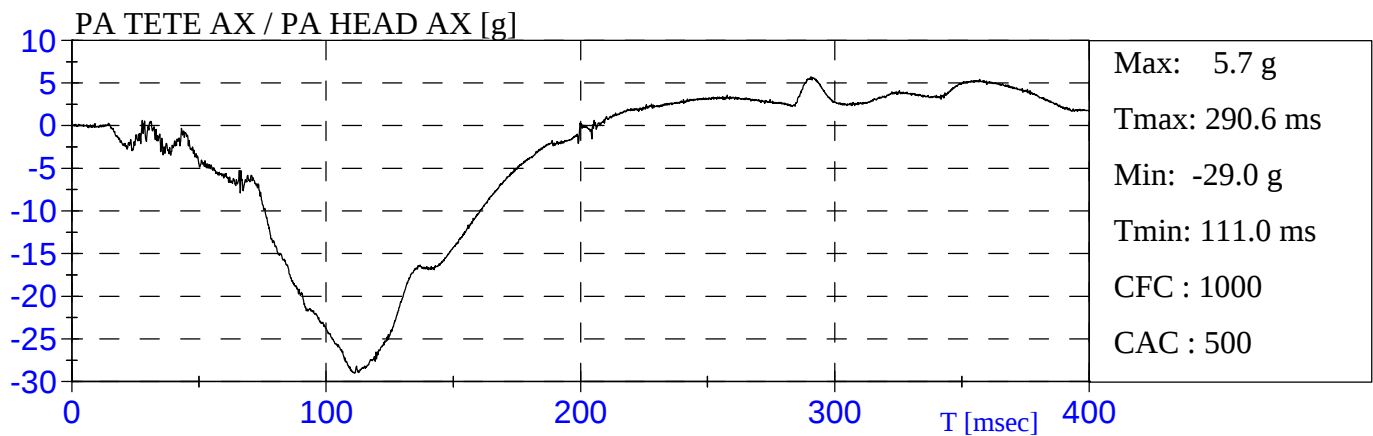


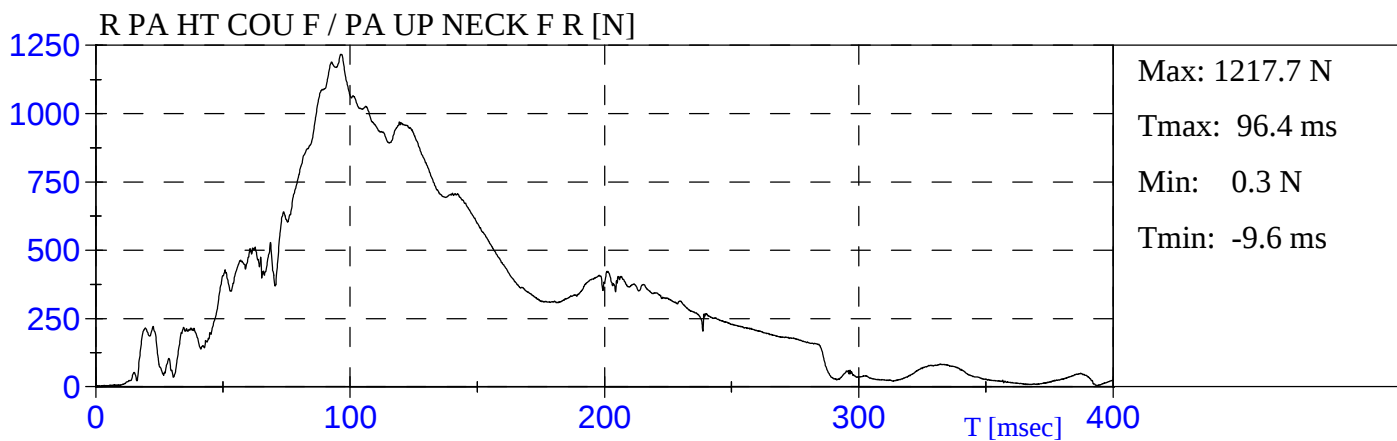
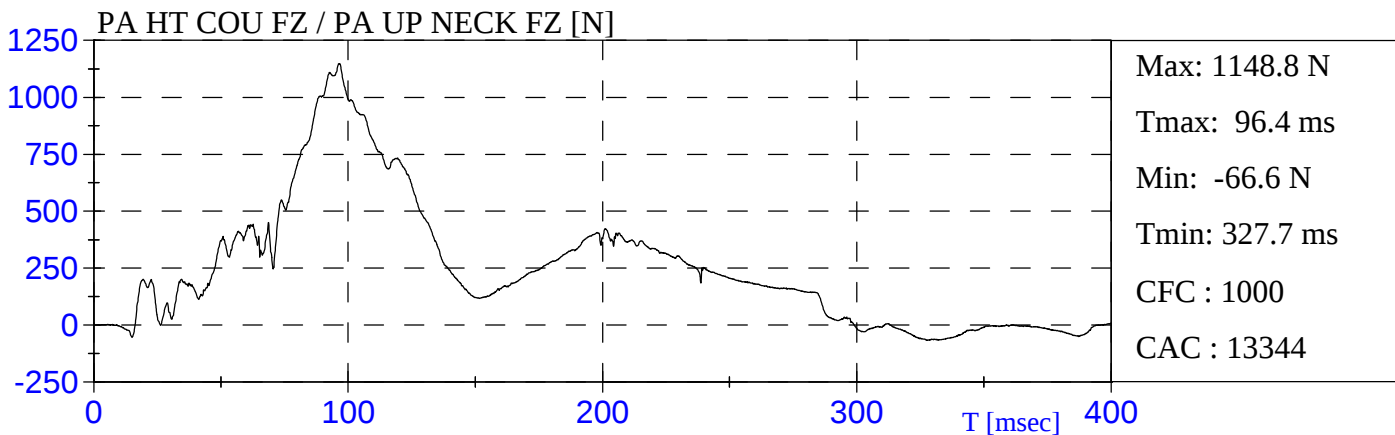
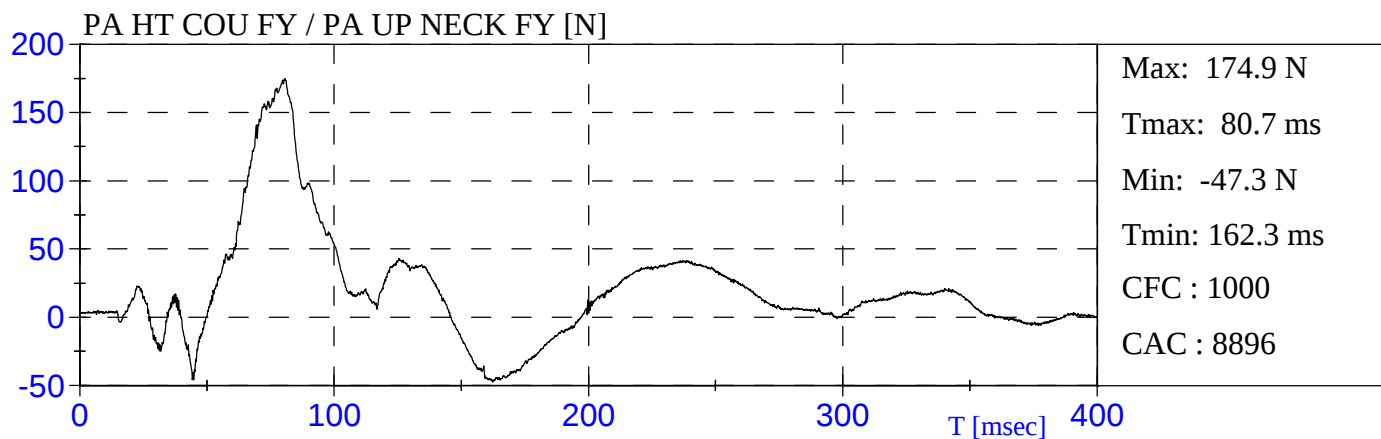
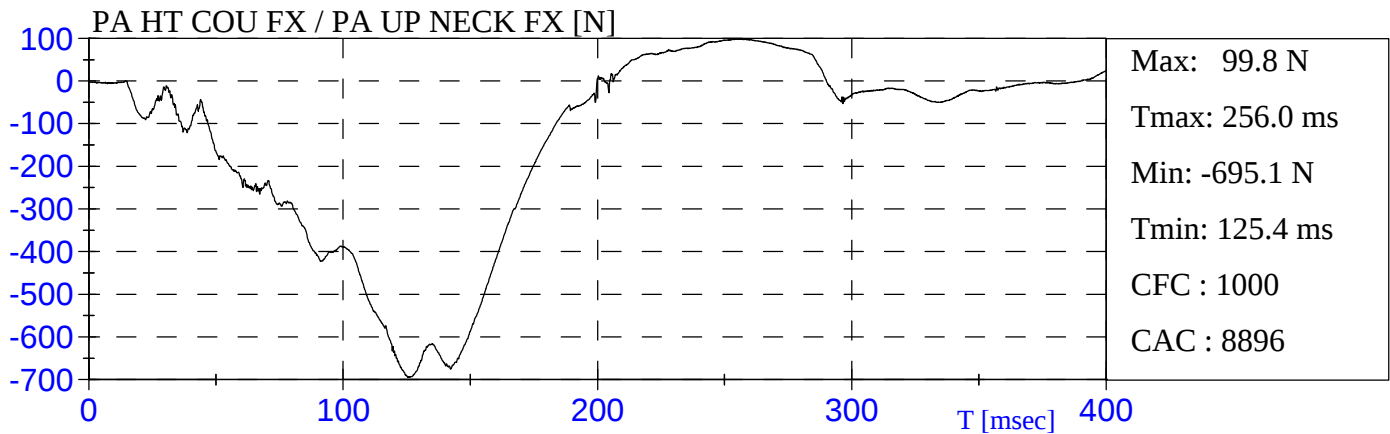


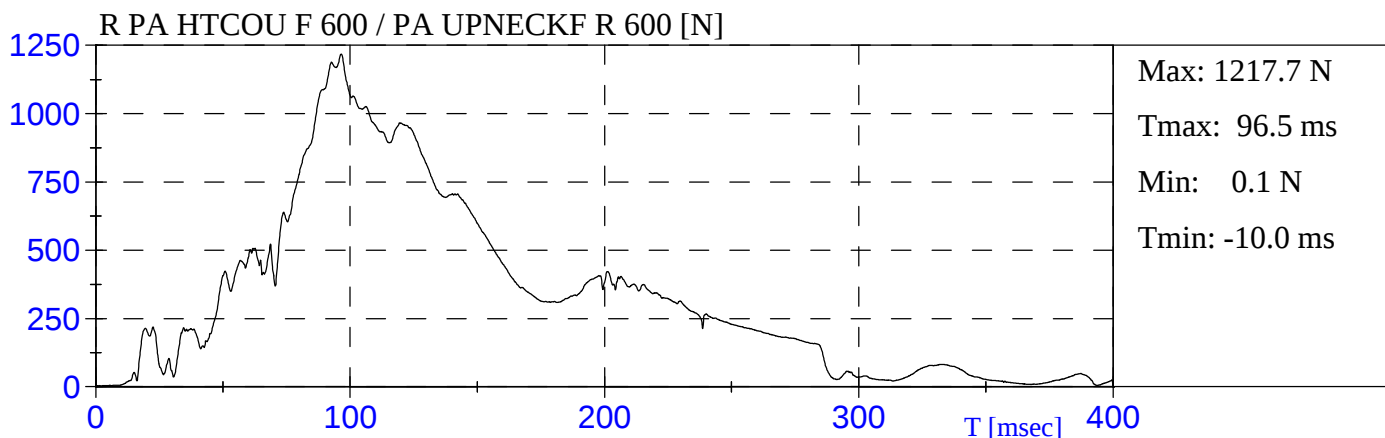
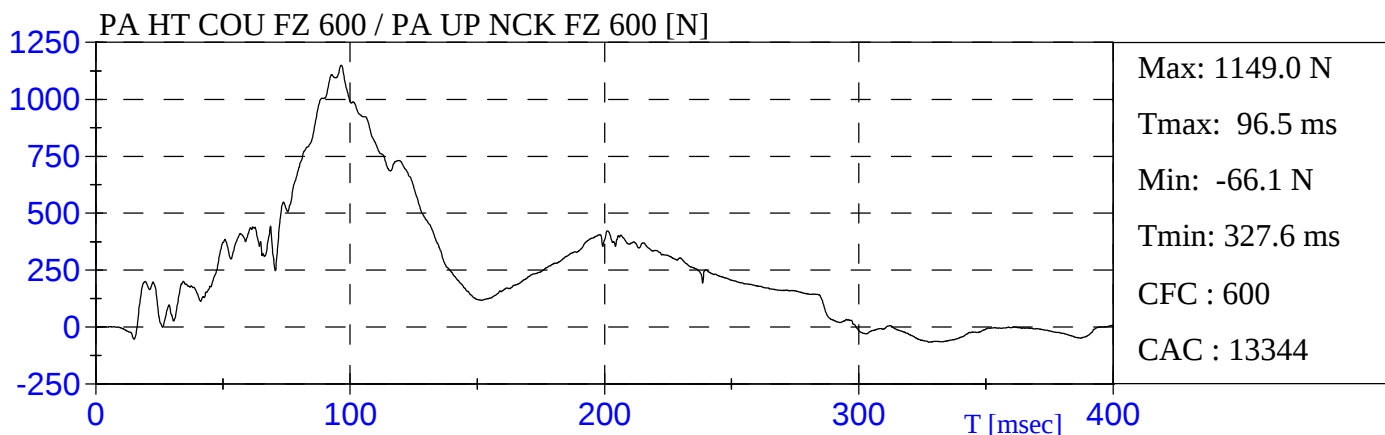
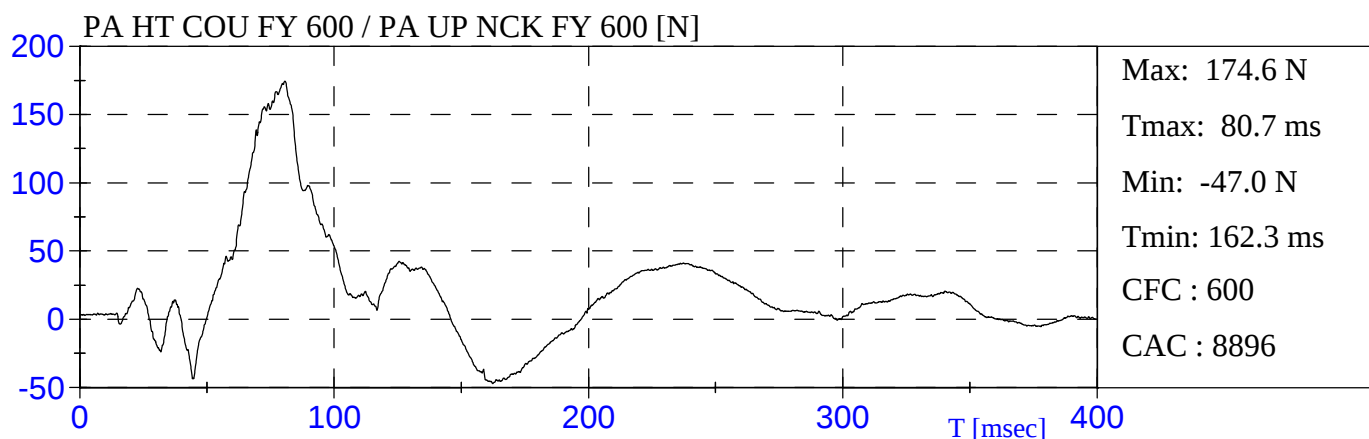
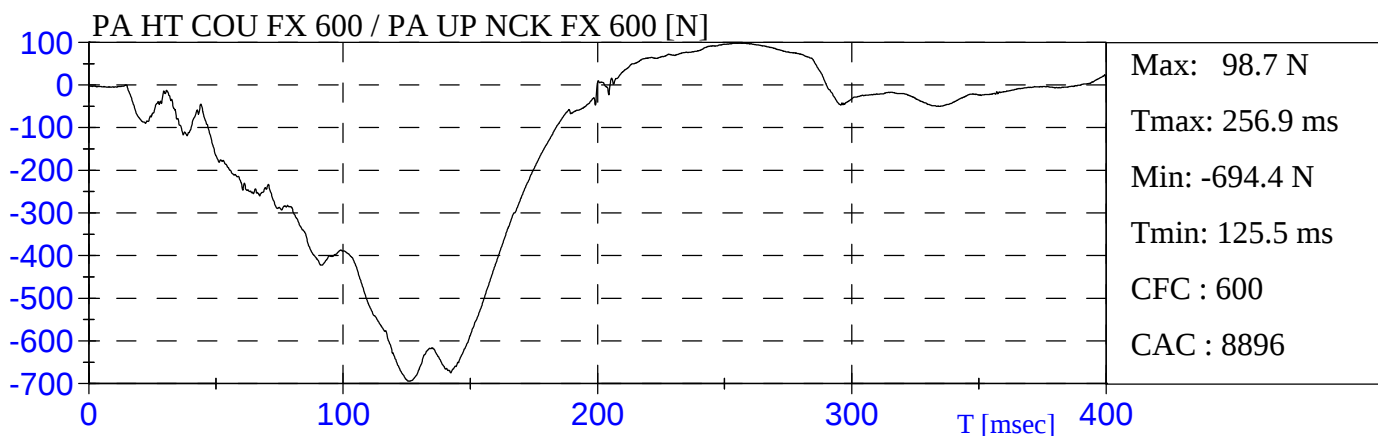


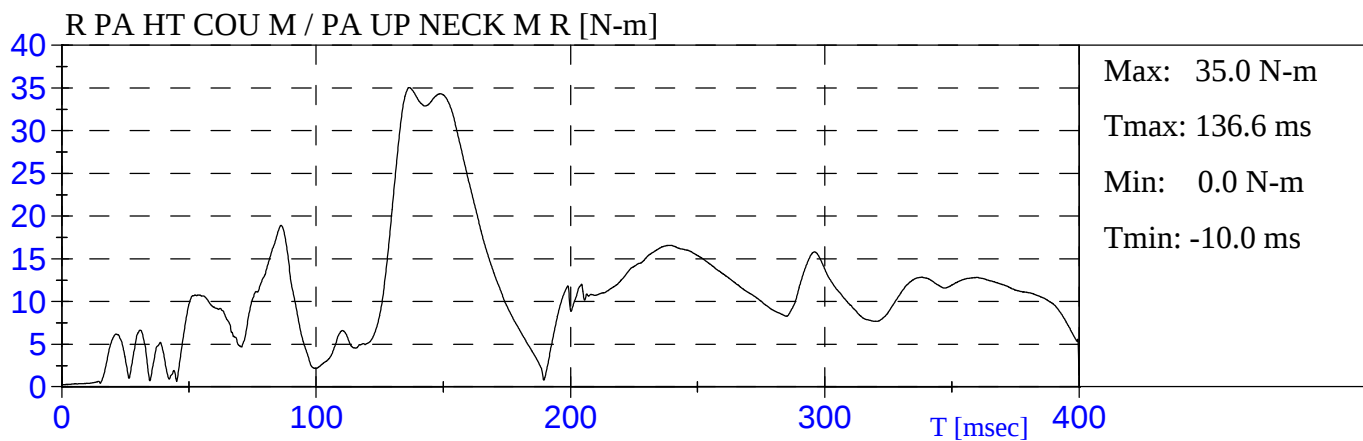
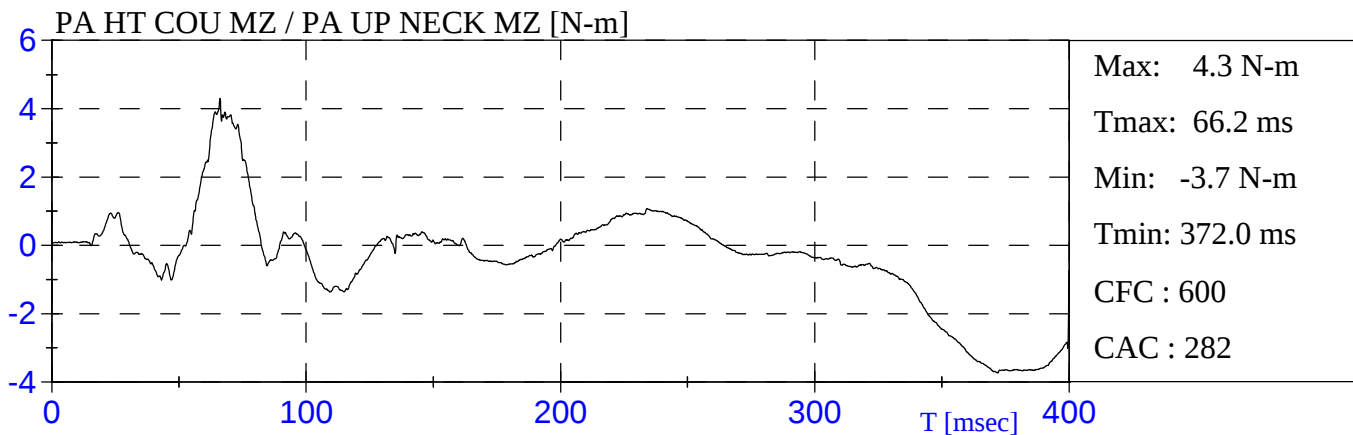
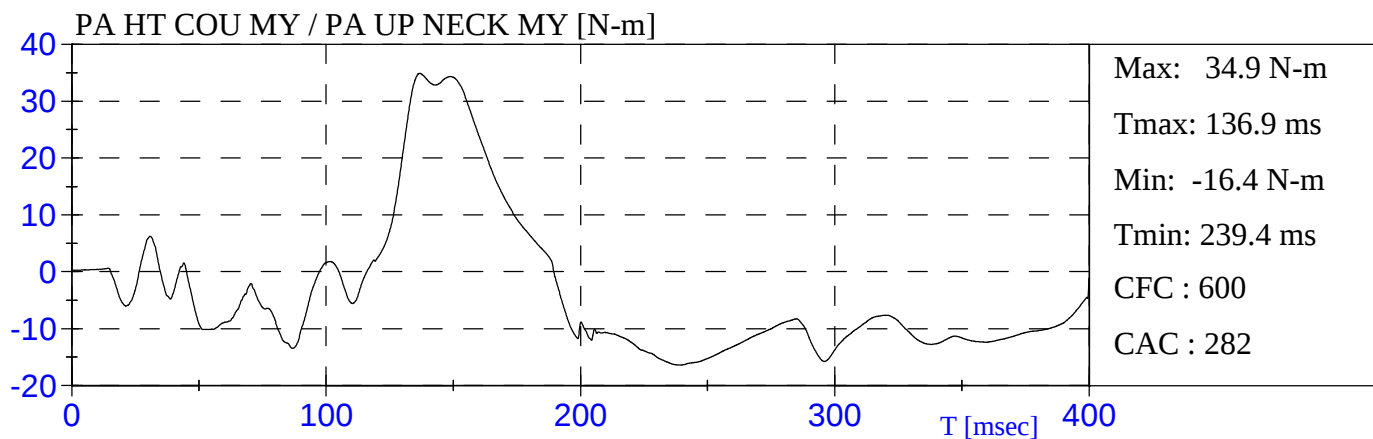
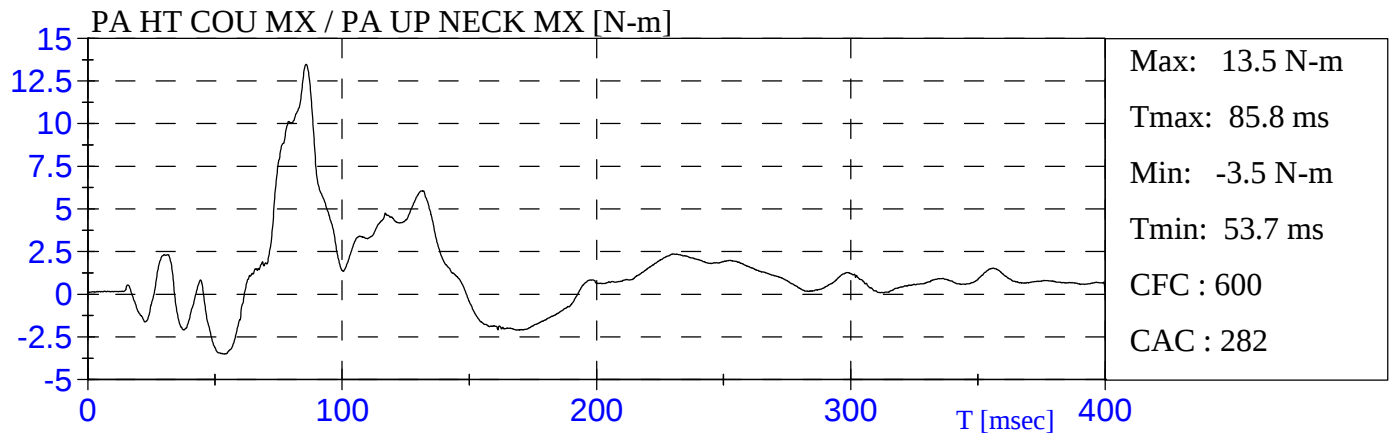


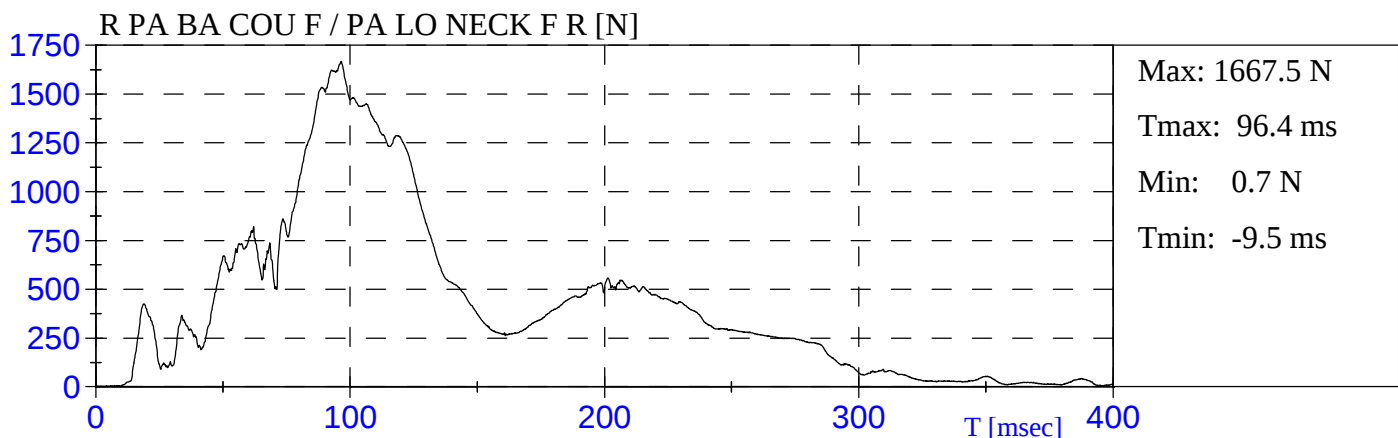
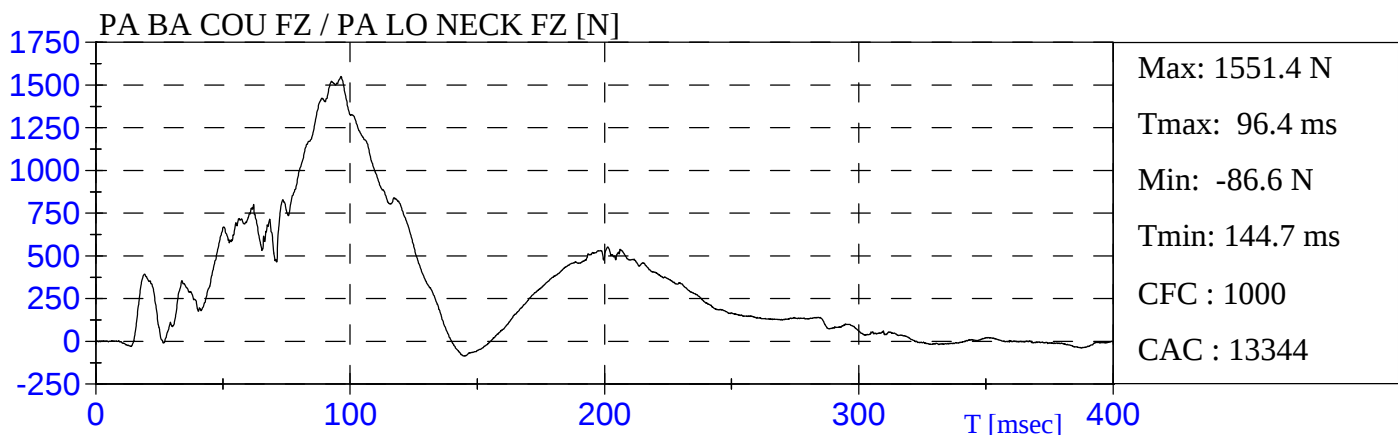
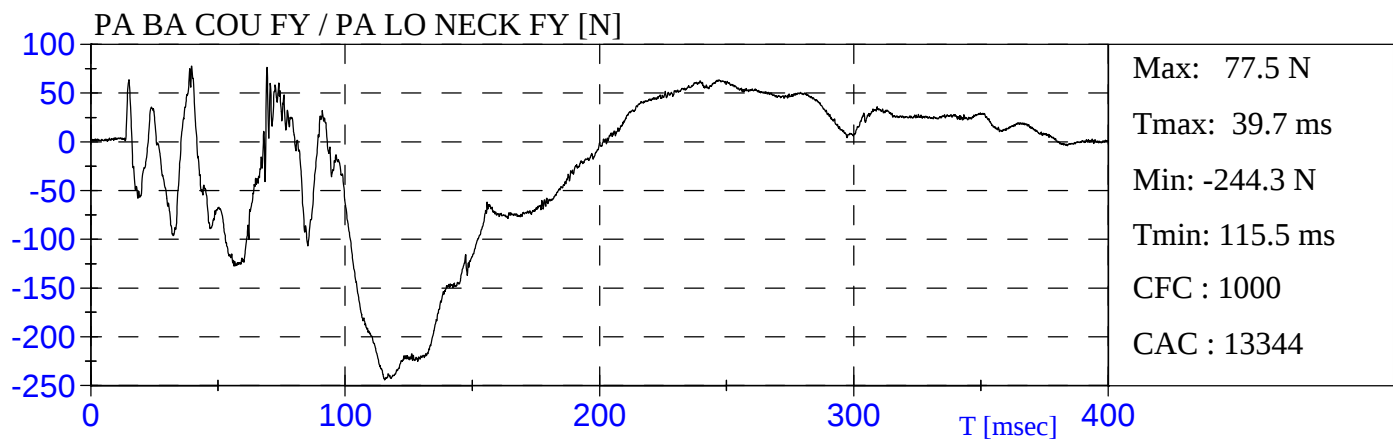
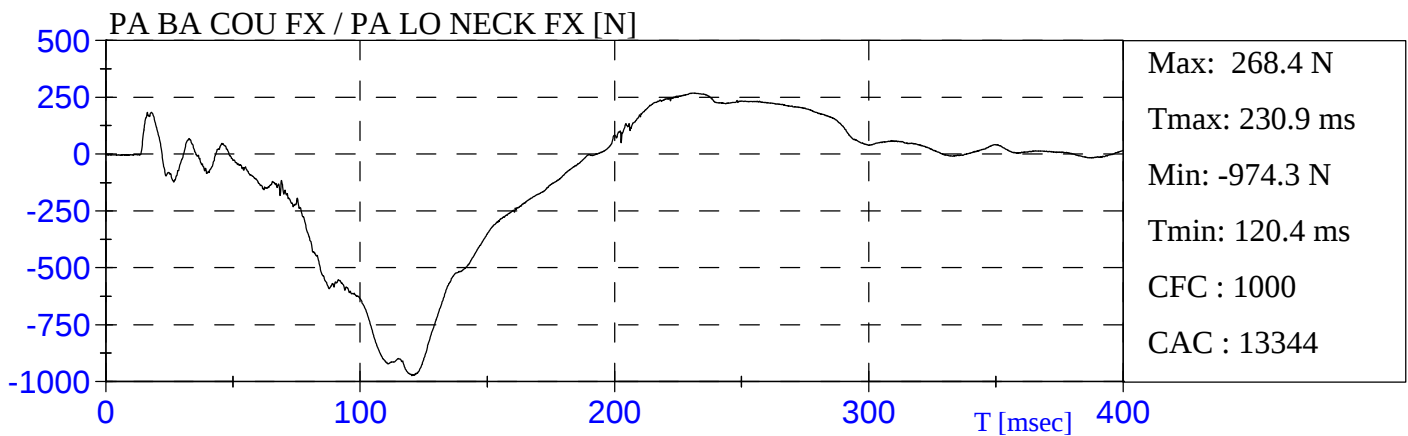


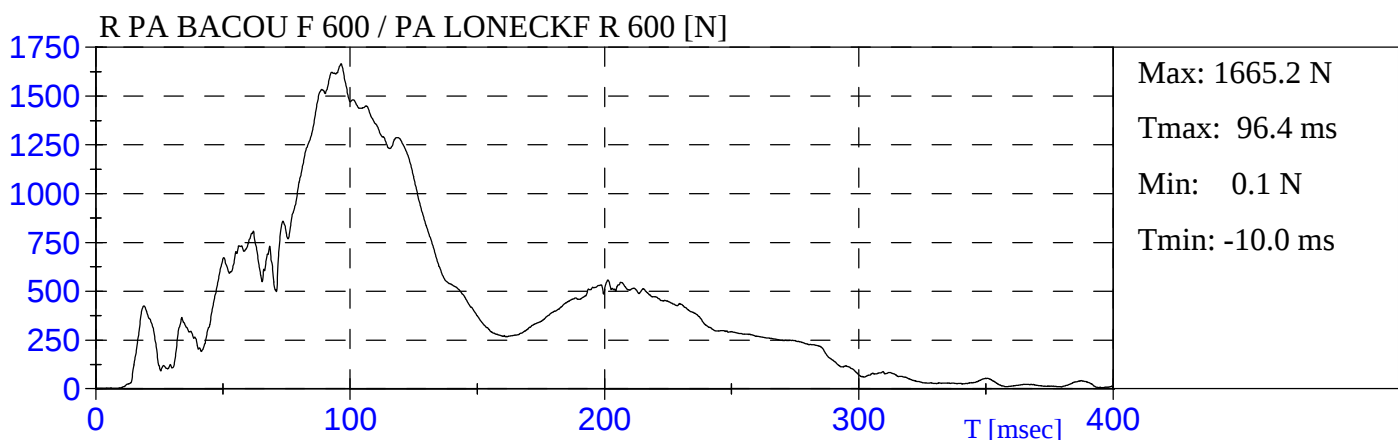
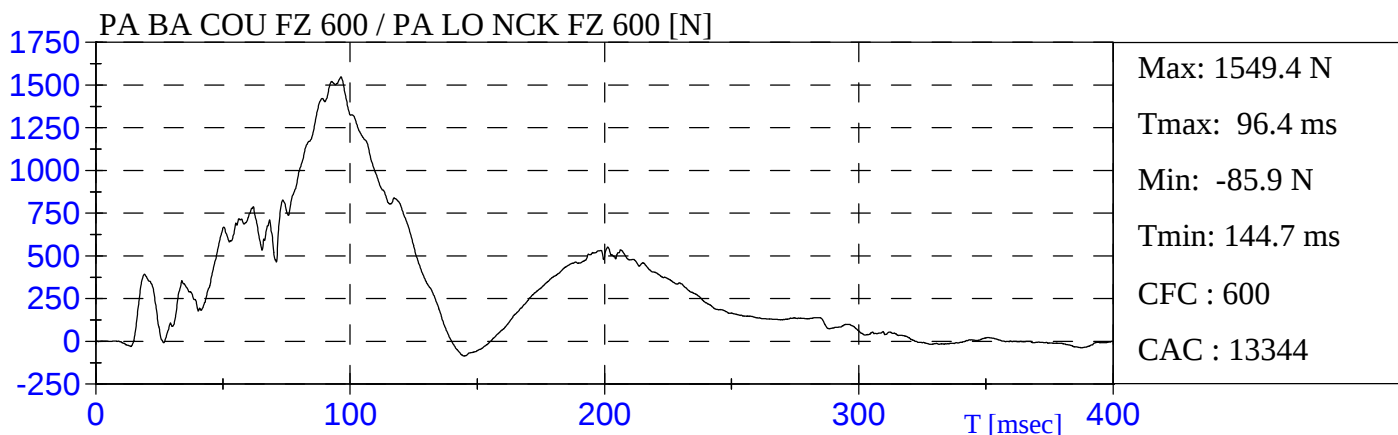
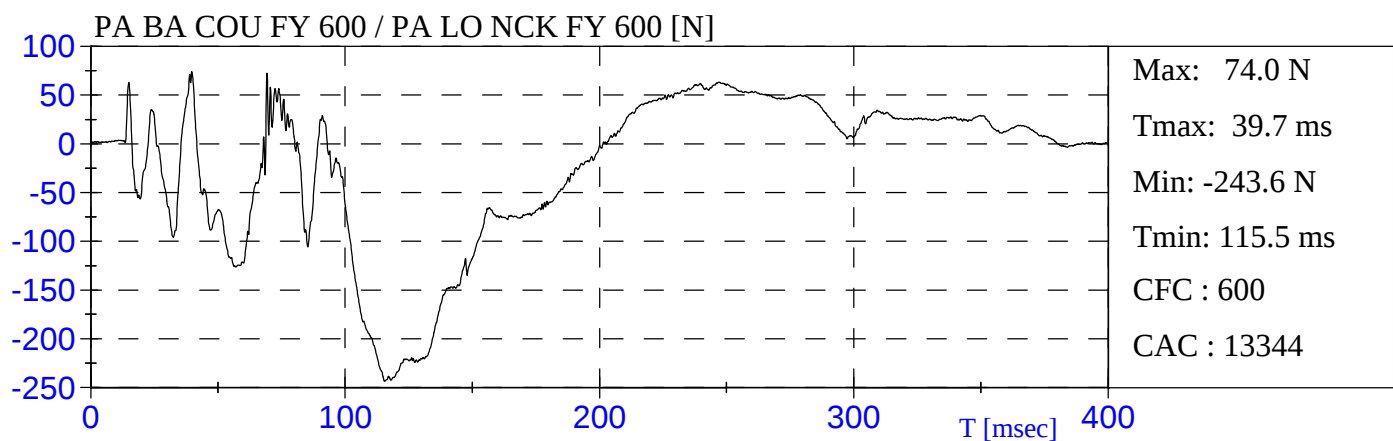
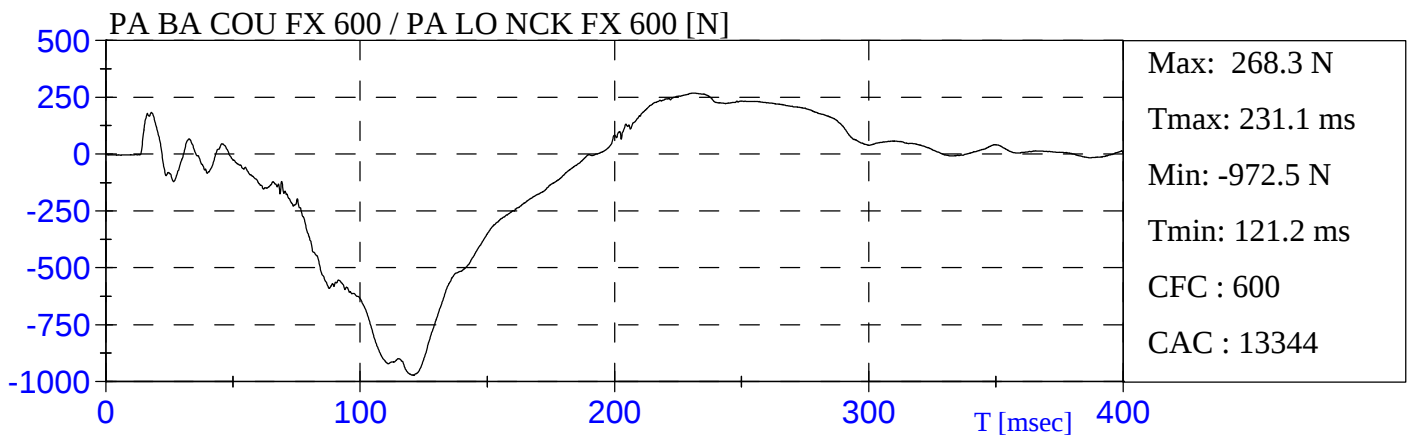




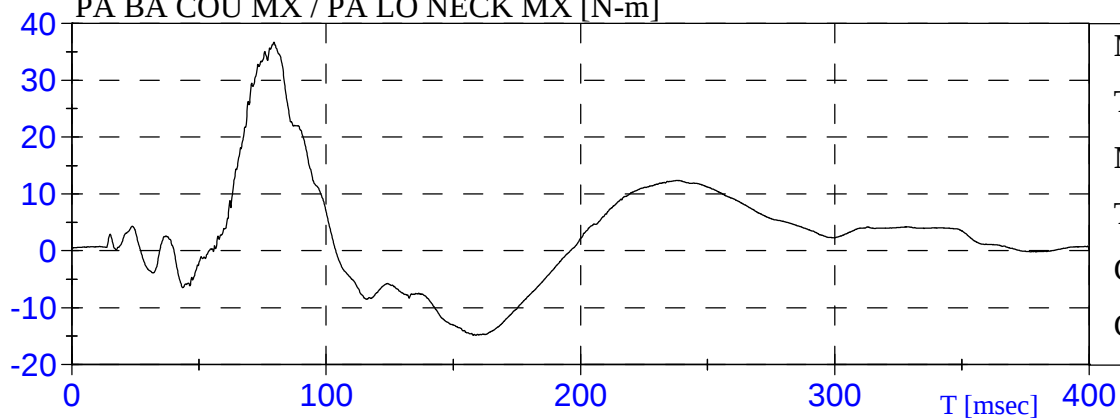






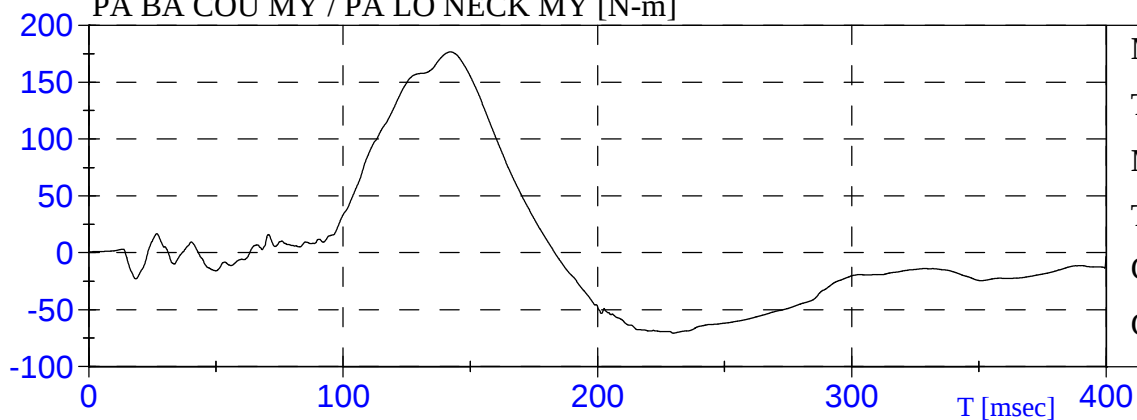


PA BA COU MX / PA LO NECK MX [N-m]



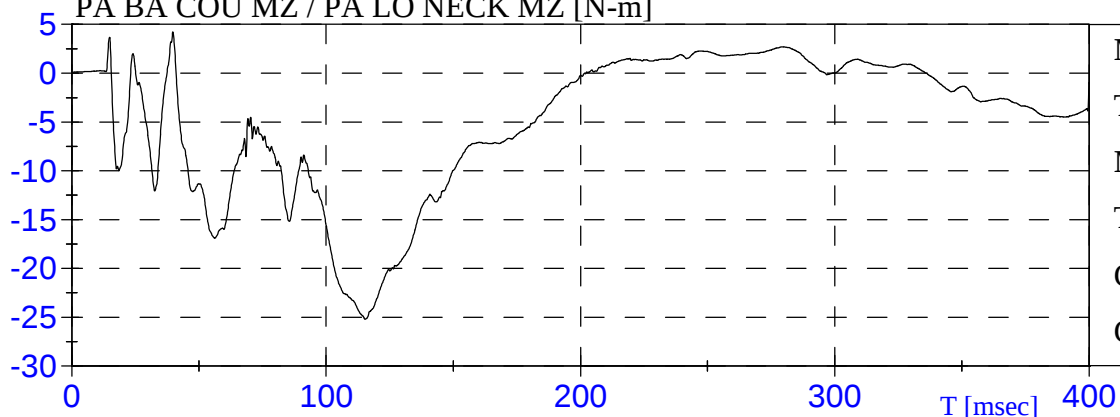
Max: 36.7 N-m
Tmax: 79.5 ms
Min: -14.9 N-m
Tmin: 158.9 ms
CFC : 600
CAC : 451

PA BA COU MY / PA LO NECK MY [N-m]



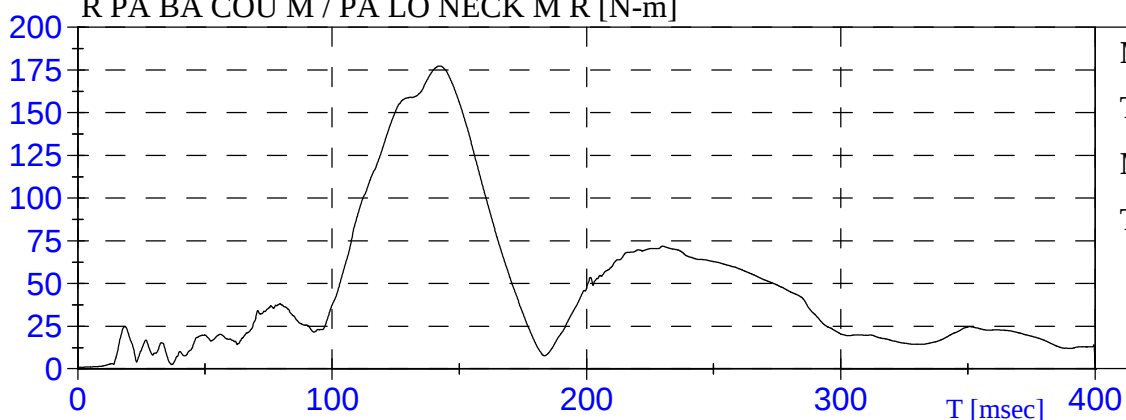
Max: 176.5 N-m
Tmax: 142.1 ms
Min: -70.7 N-m
Tmin: 229.8 ms
CFC : 600
CAC : 451

PA BA COU MZ / PA LO NECK MZ [N-m]

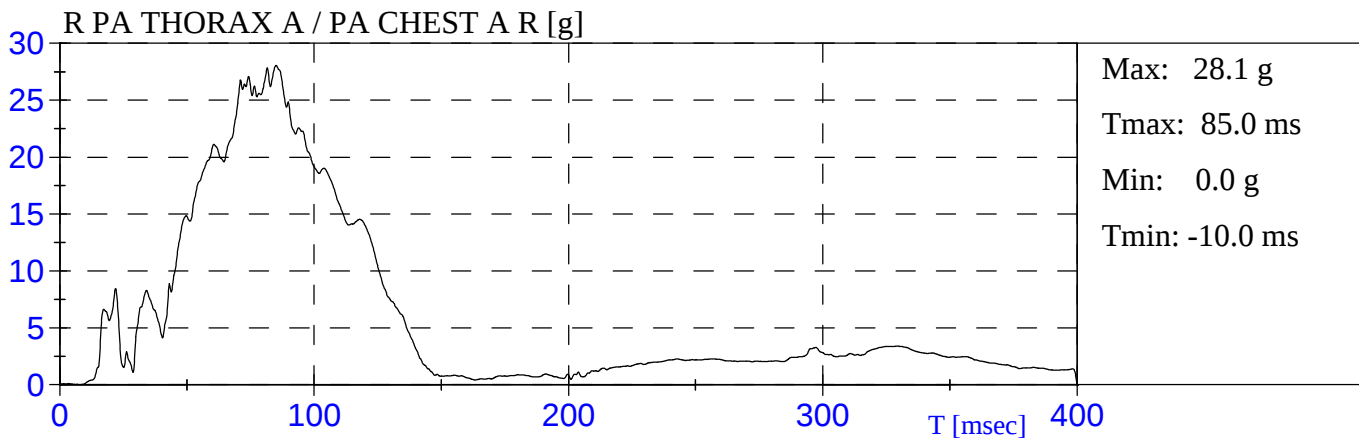
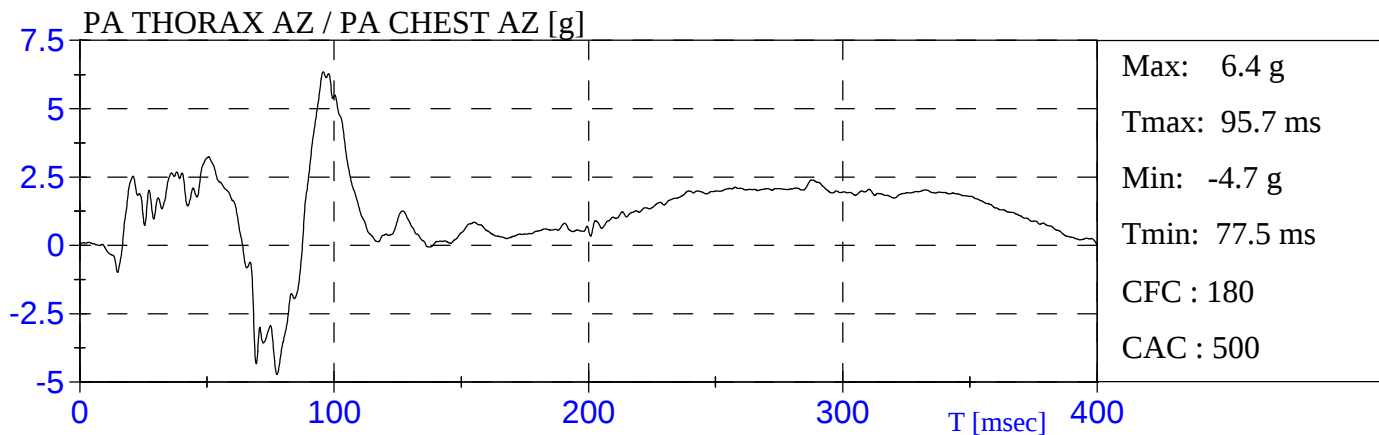
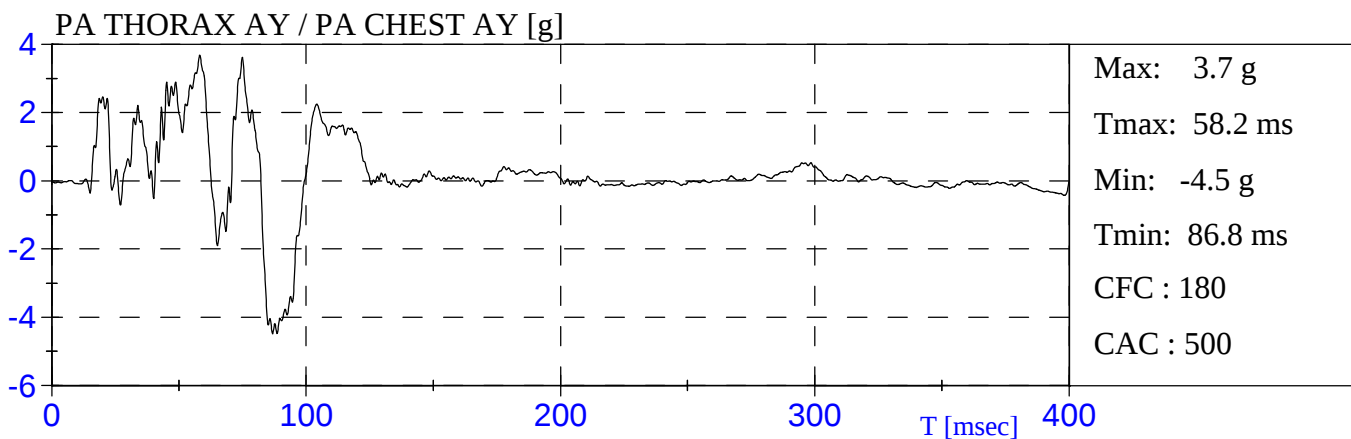
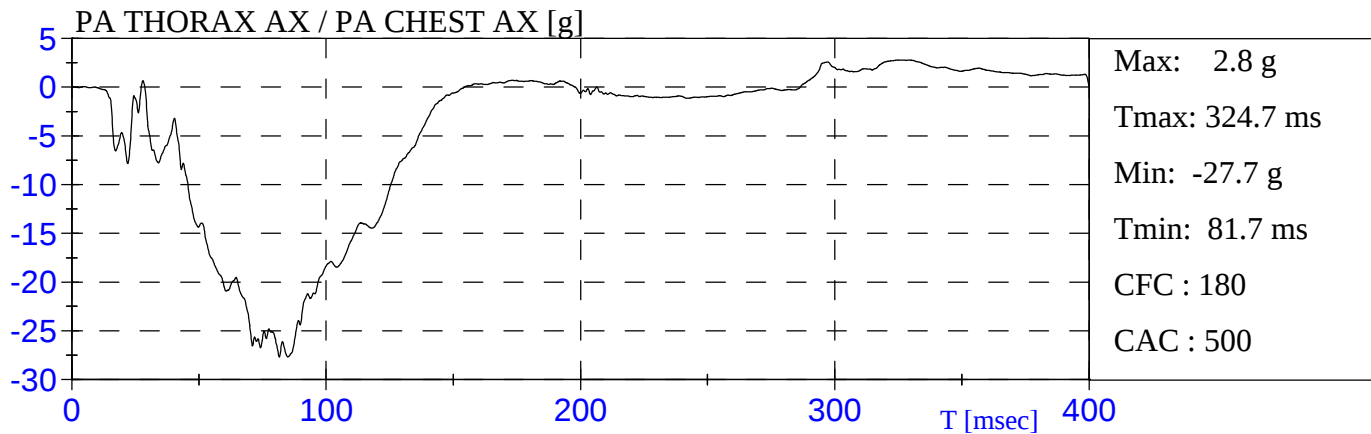


Max: 4.3 N-m
Tmax: 39.7 ms
Min: -25.2 N-m
Tmin: 115.2 ms
CFC : 600
CAC : 451

R PA BA COU M / PA LO NECK M R [N-m]



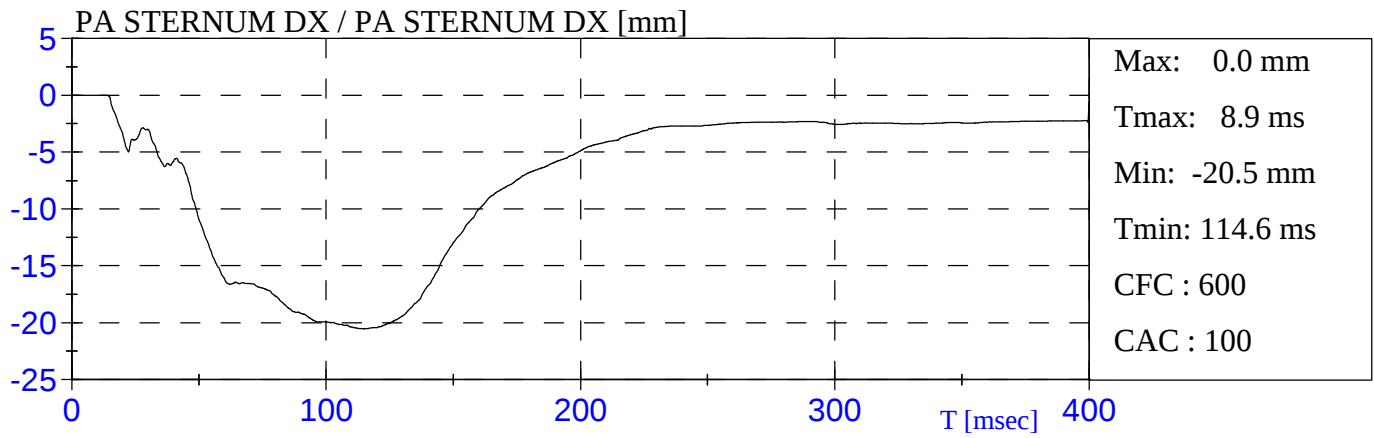
Max: 177.3 N-m
Tmax: 142.2 ms
Min: 0.0 N-m
Tmin: -10.0 ms

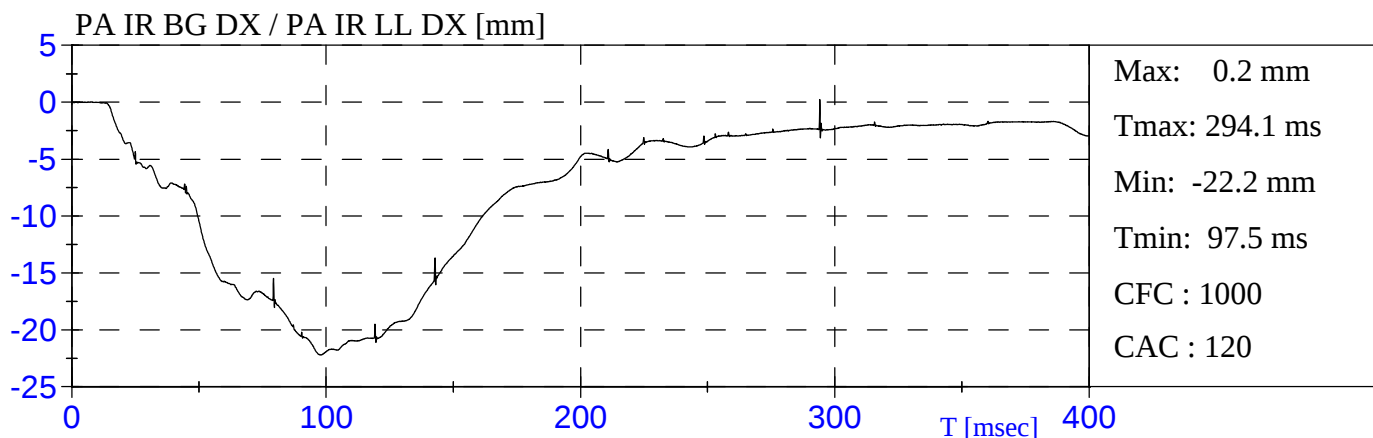
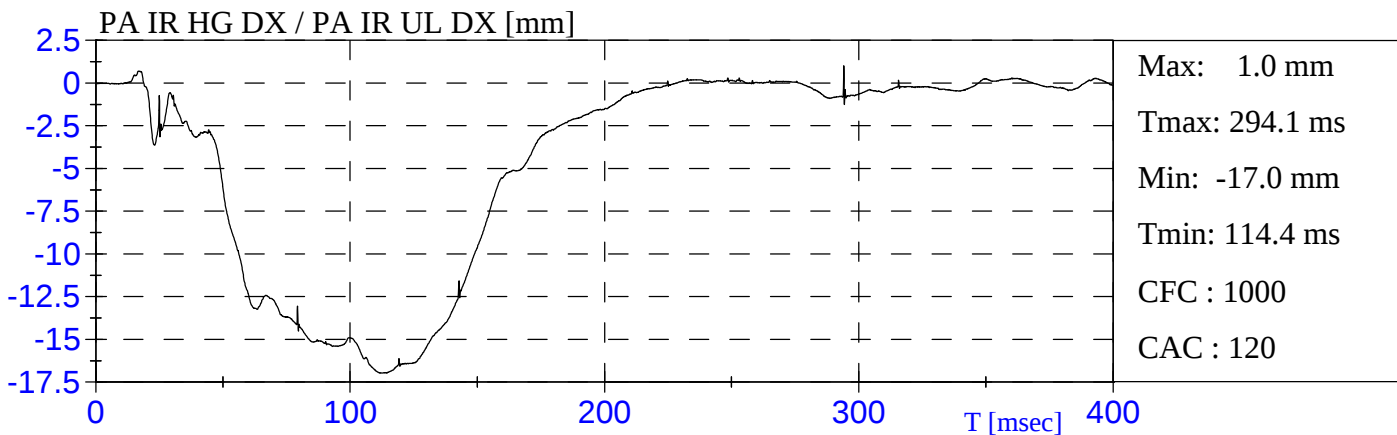
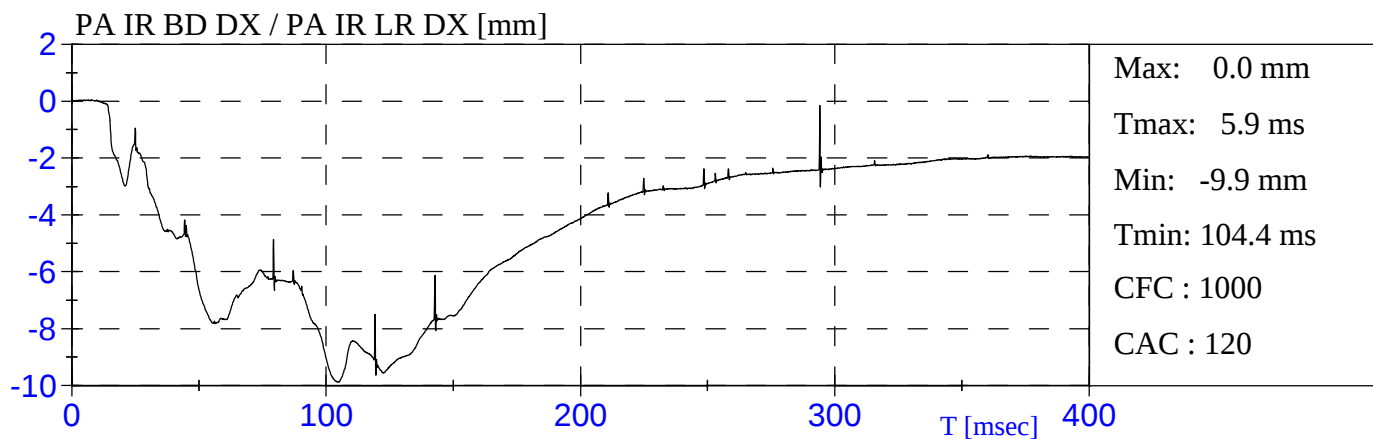
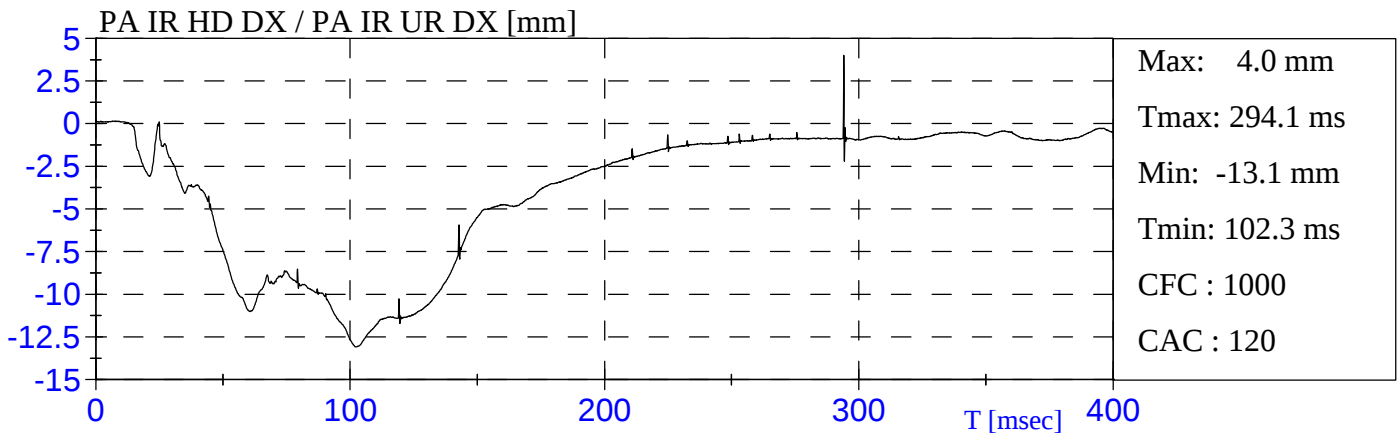




COLLISION FRONTALE
FRONTAL CRASH
SATURN ION 2004

Date: 2004-02-24
N° TC / TC No.: TC04-116

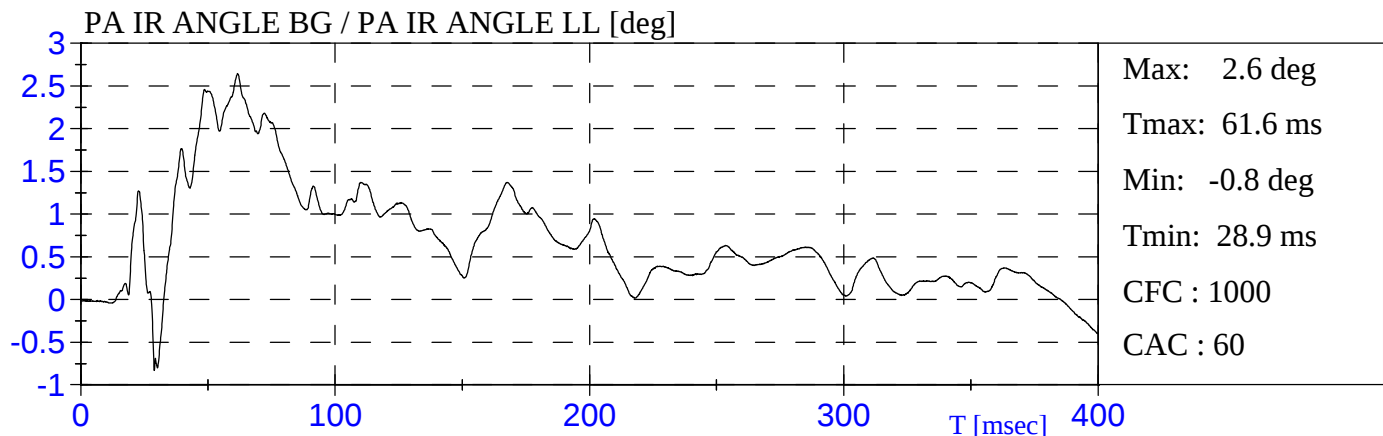
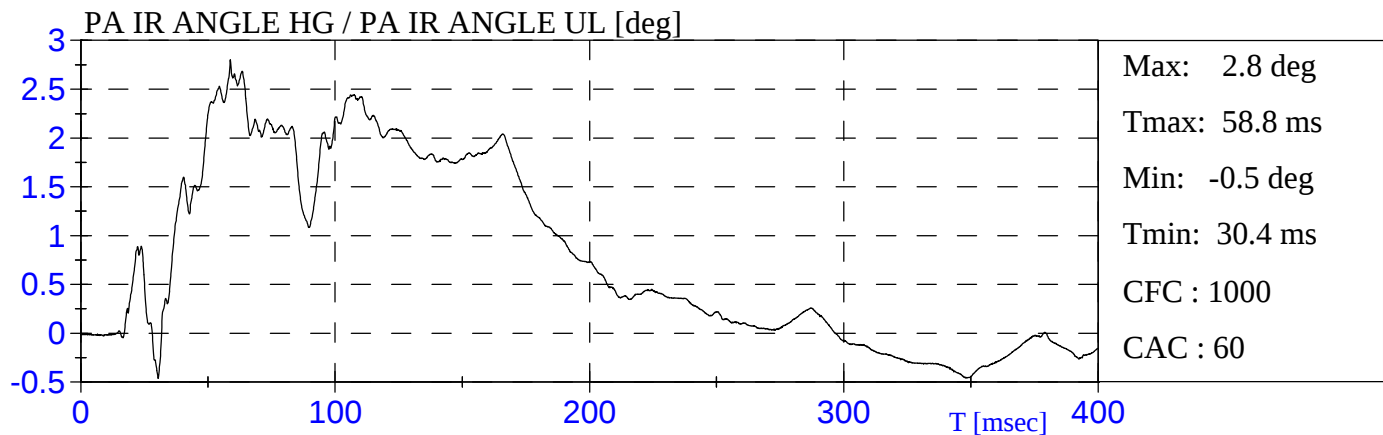
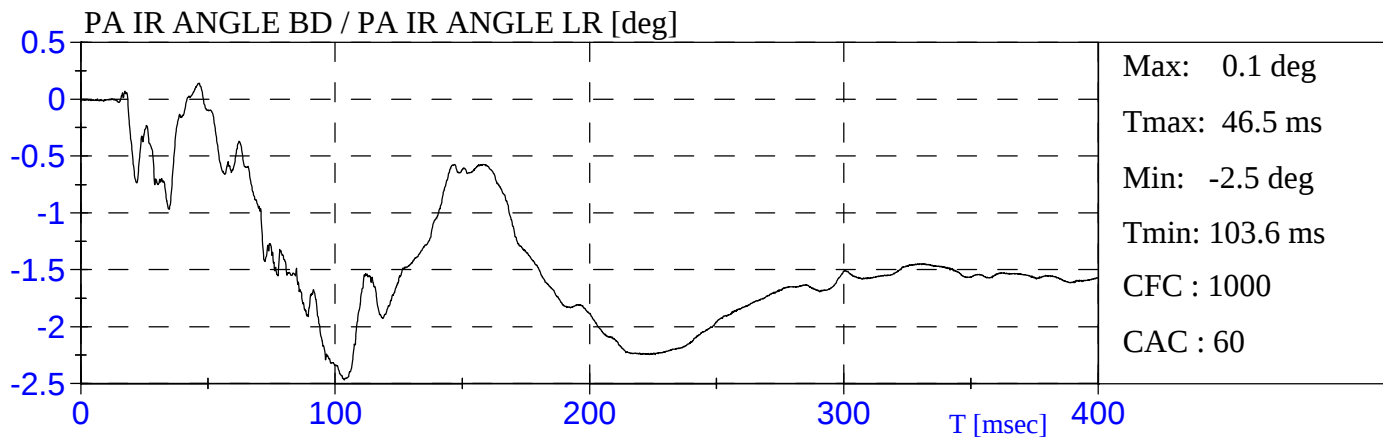
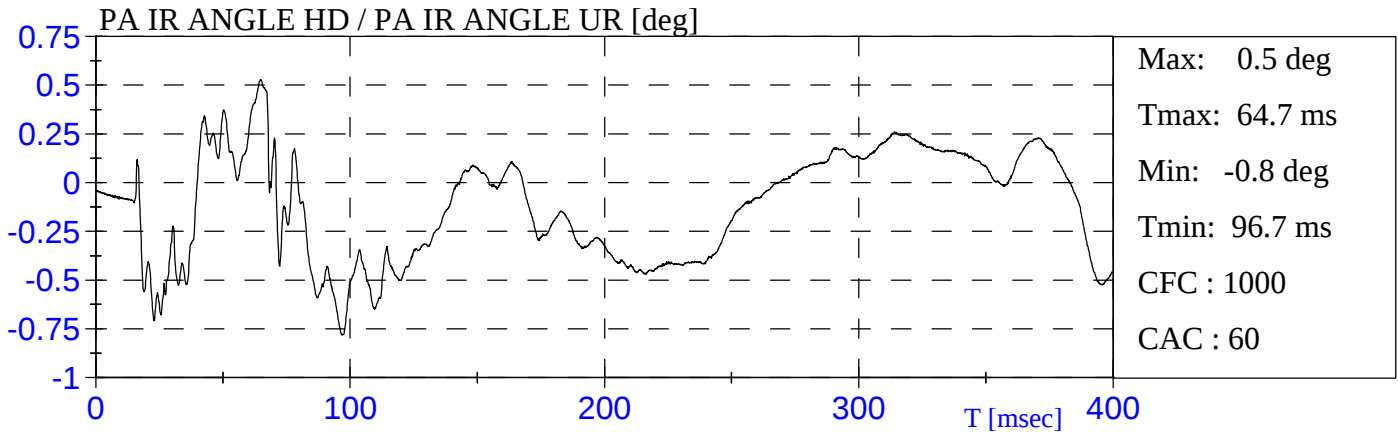


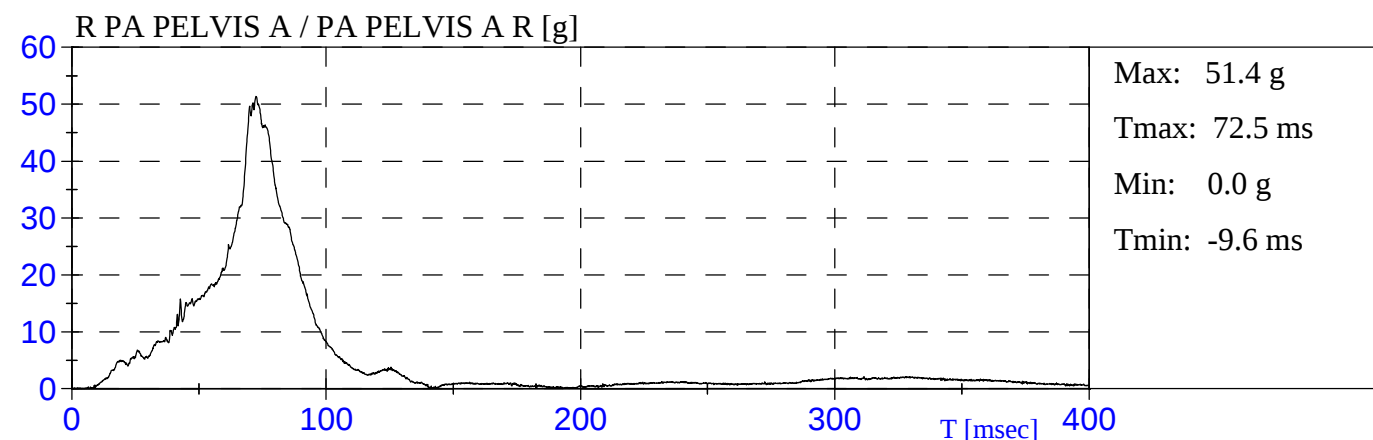
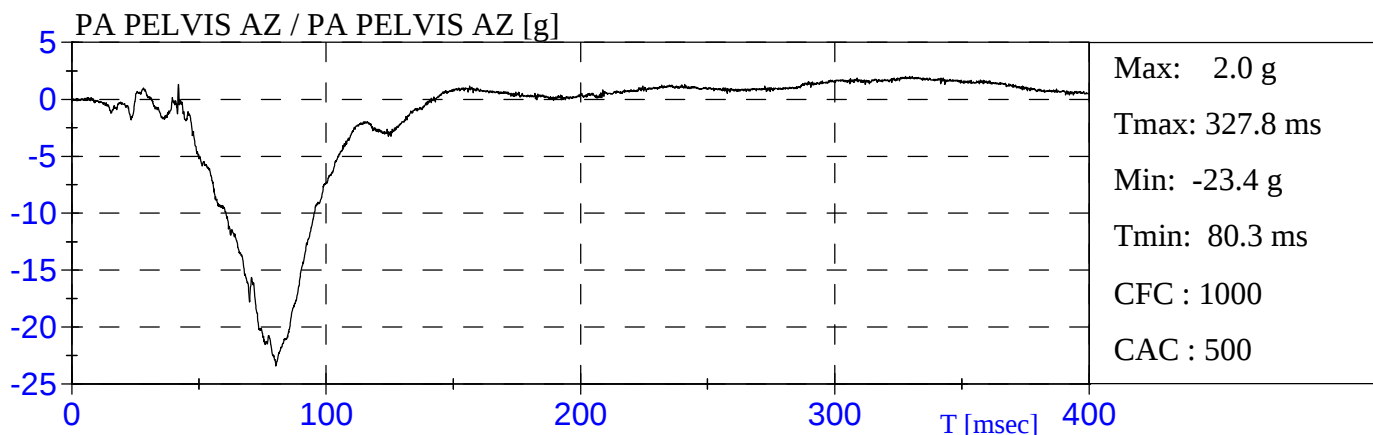
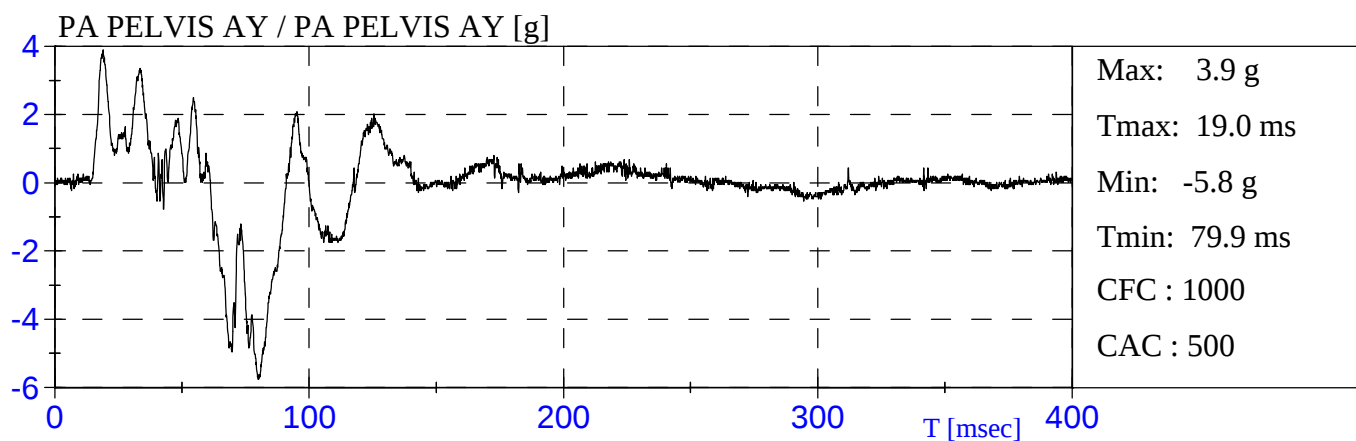
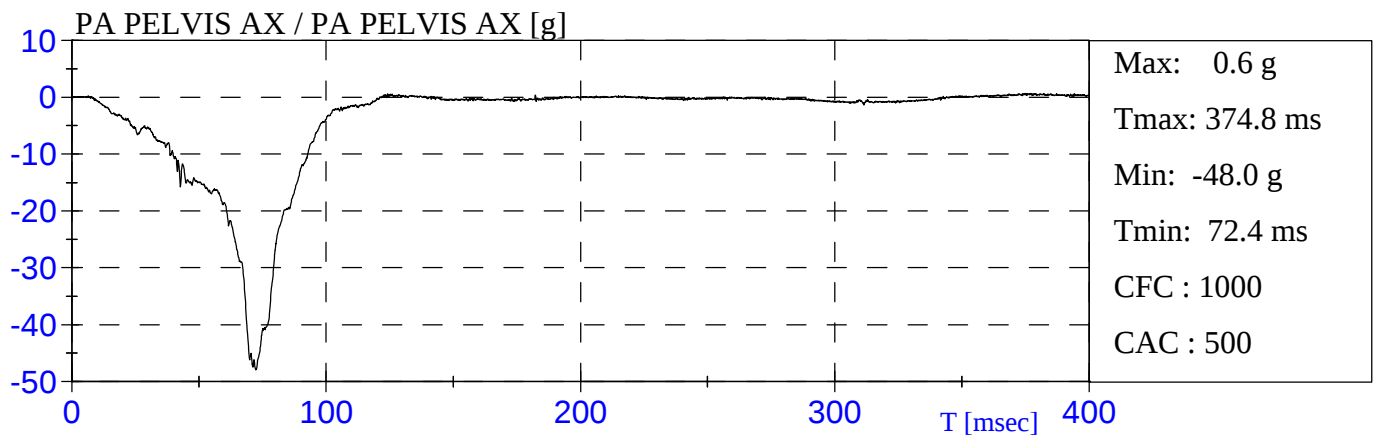


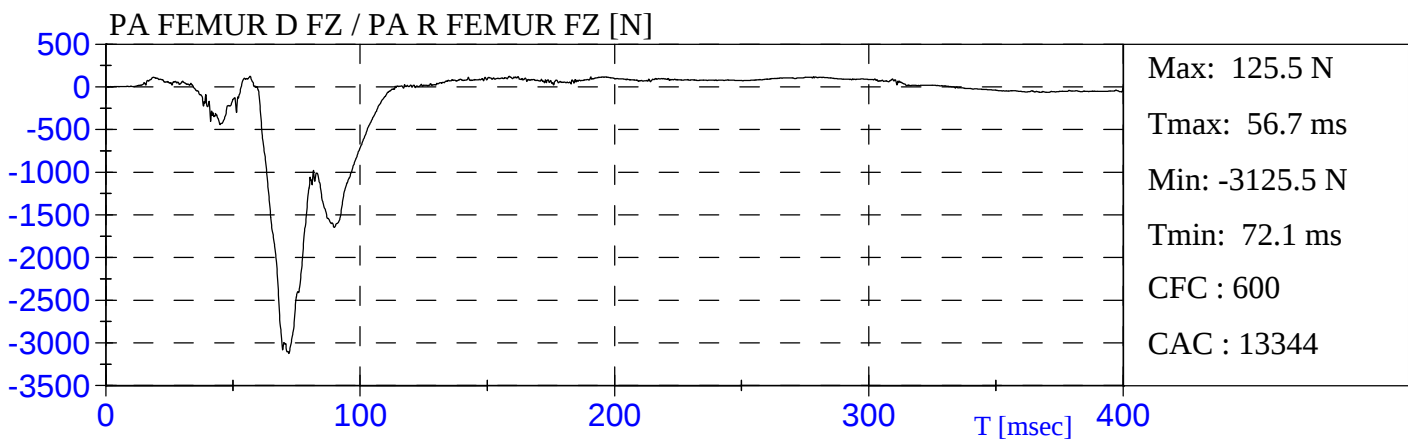
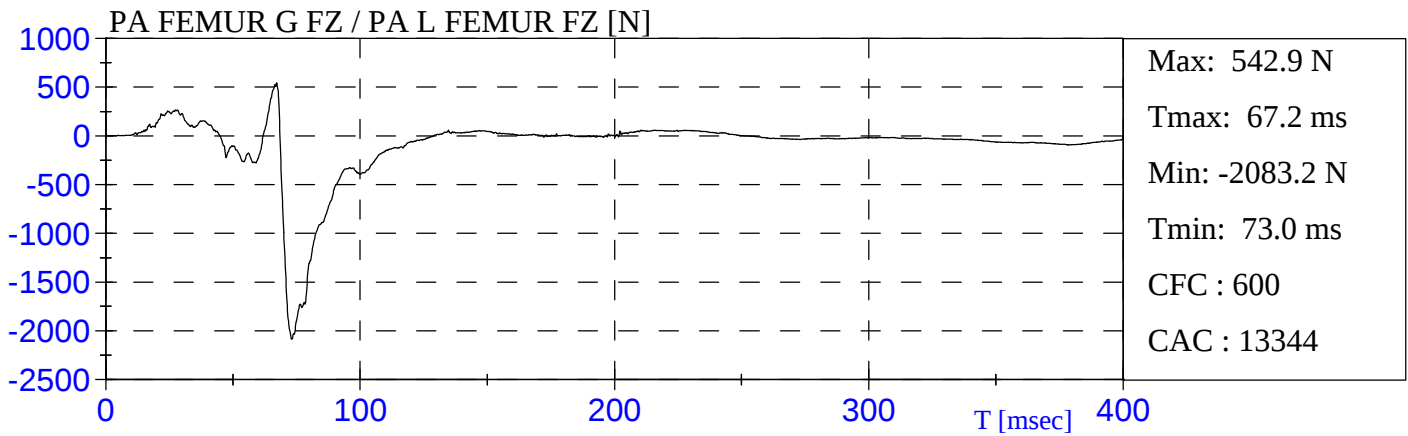


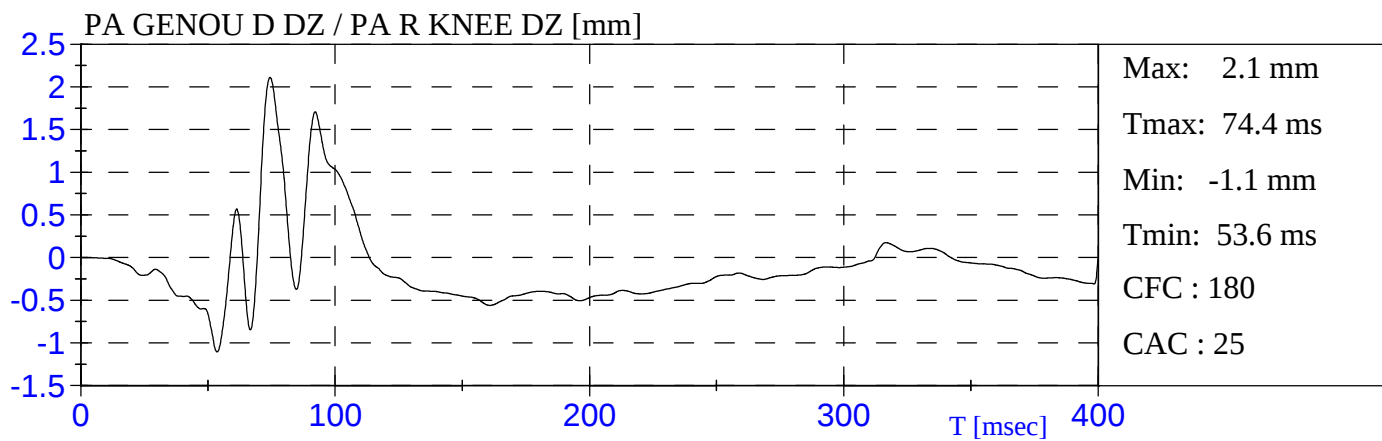
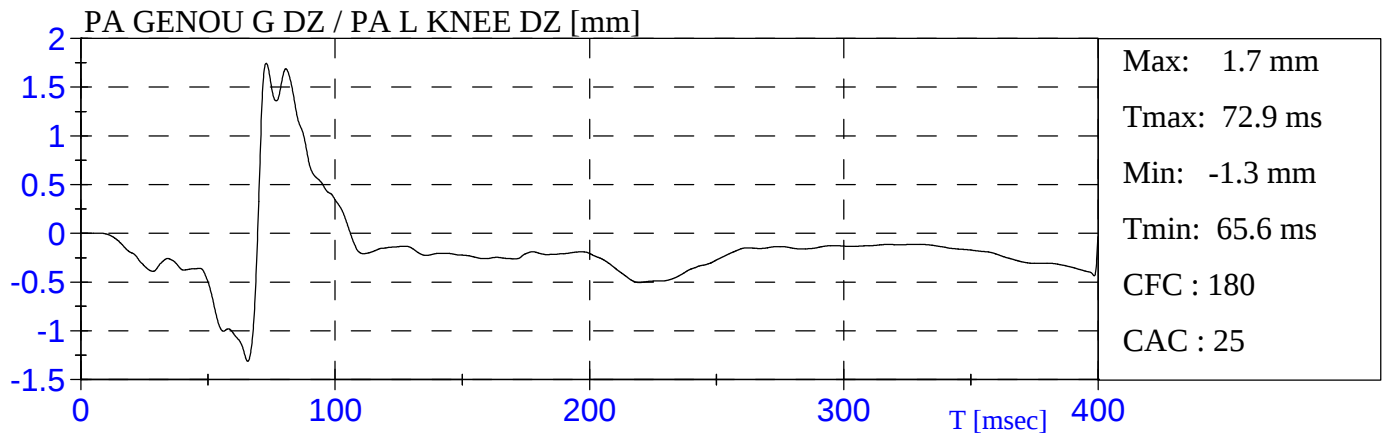
SATURN ION 2004

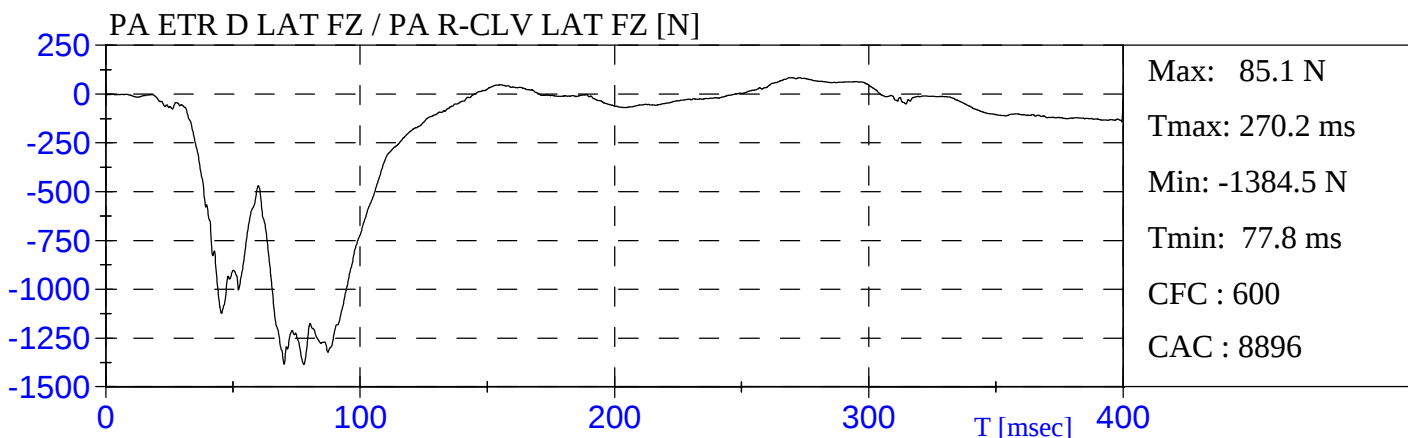
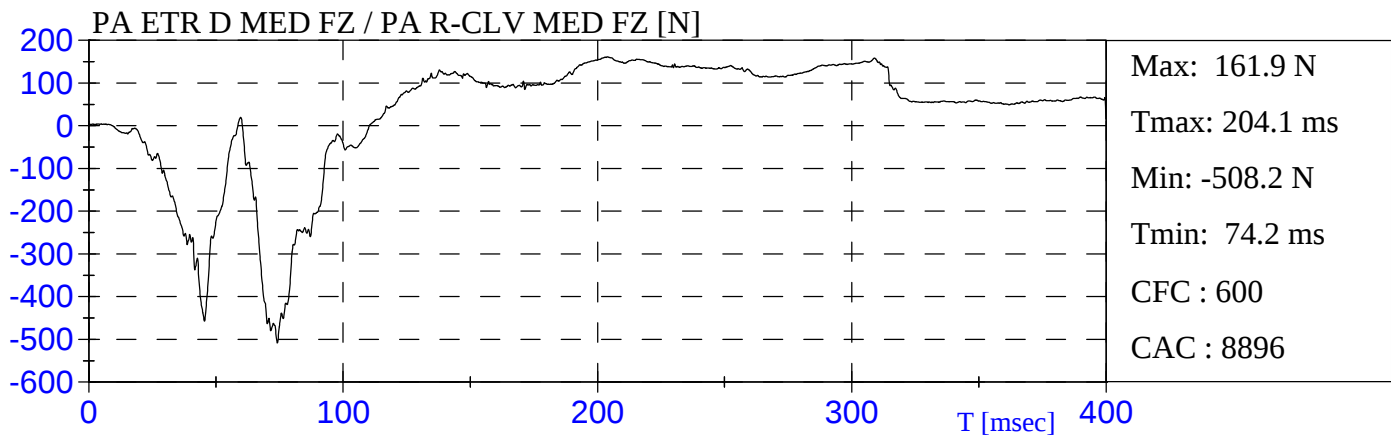
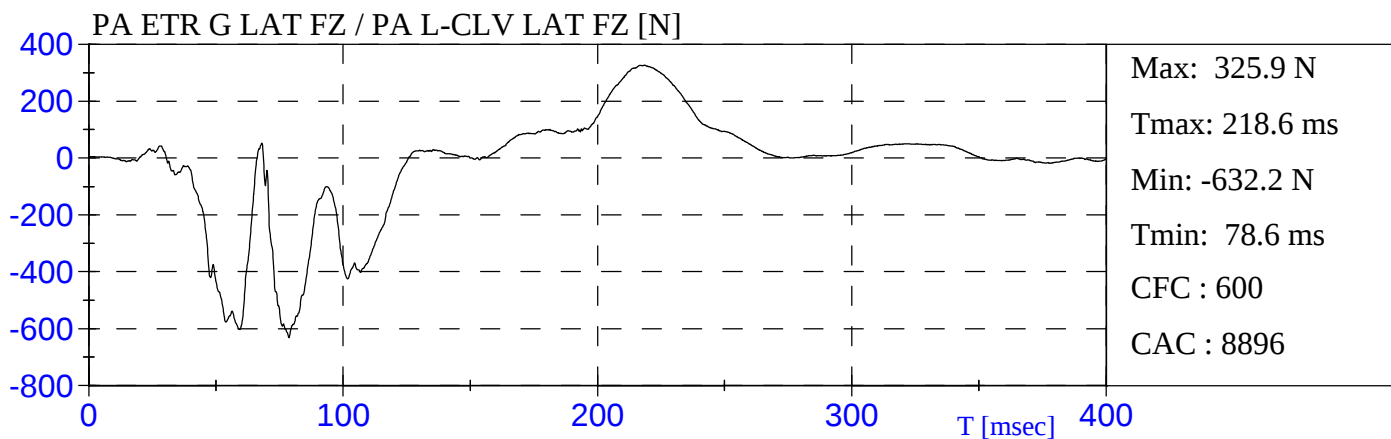
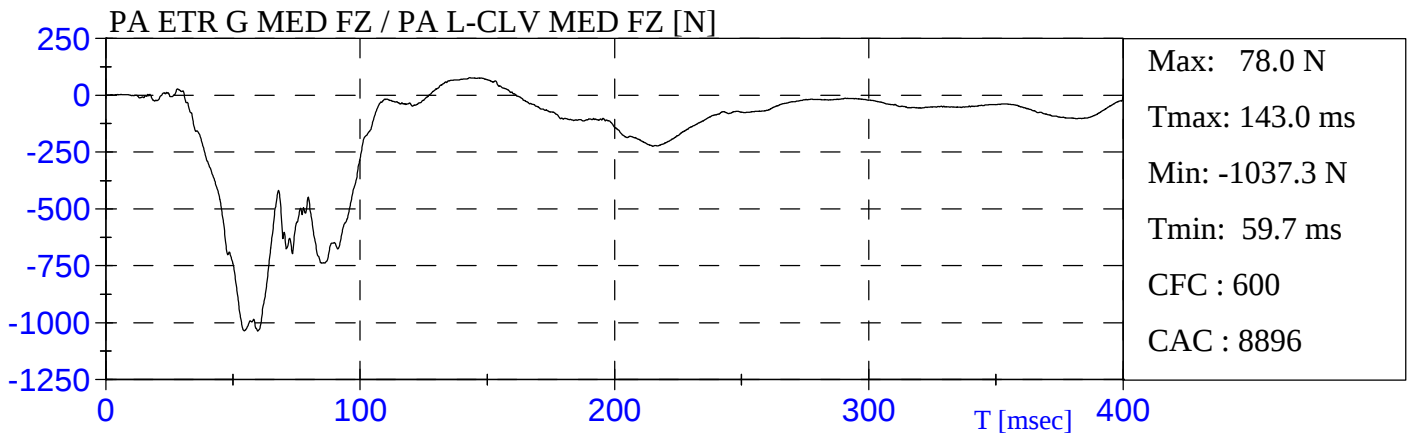
N° TC / TC No.: TC04-116

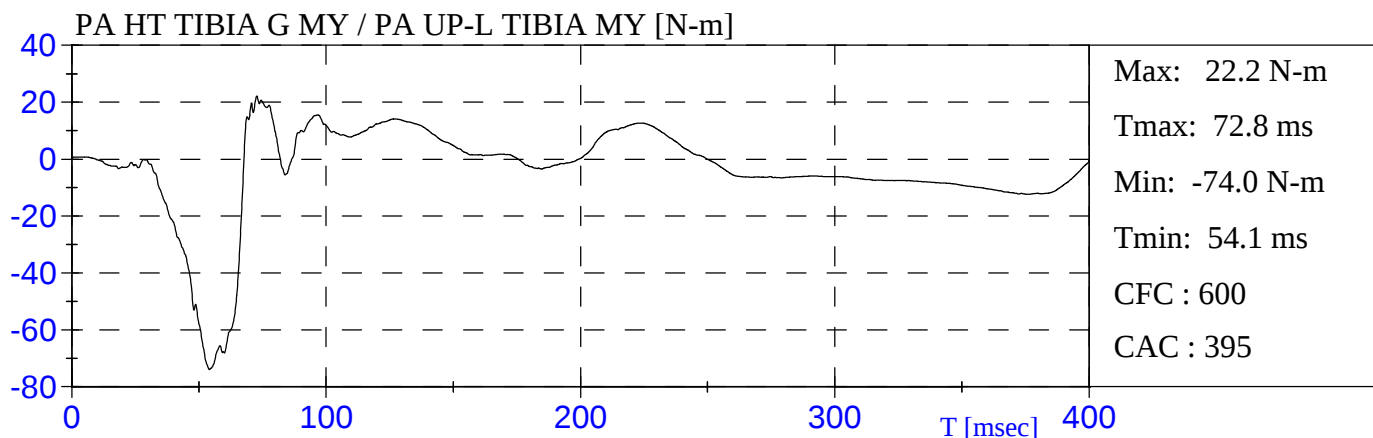
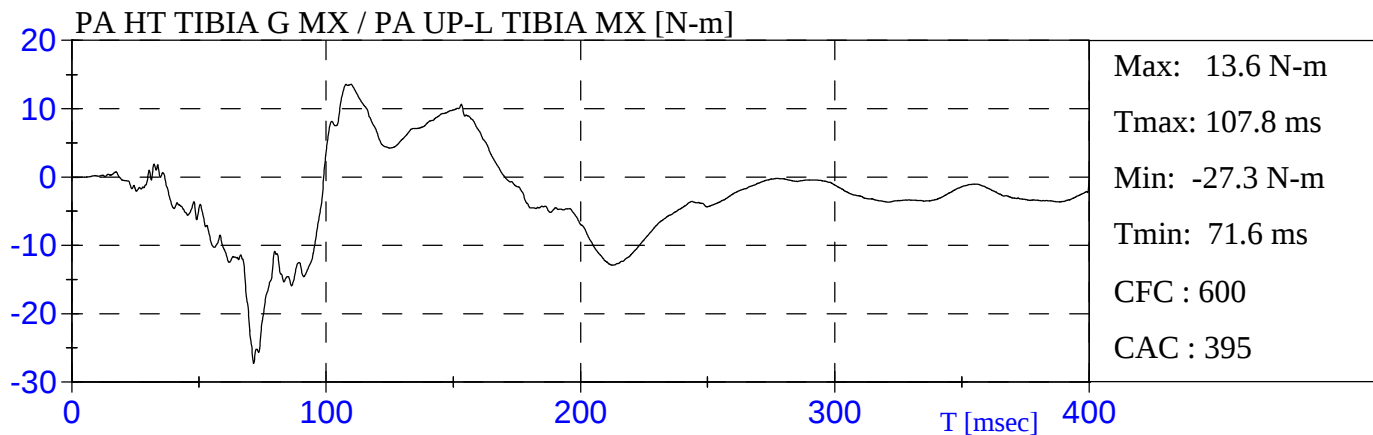
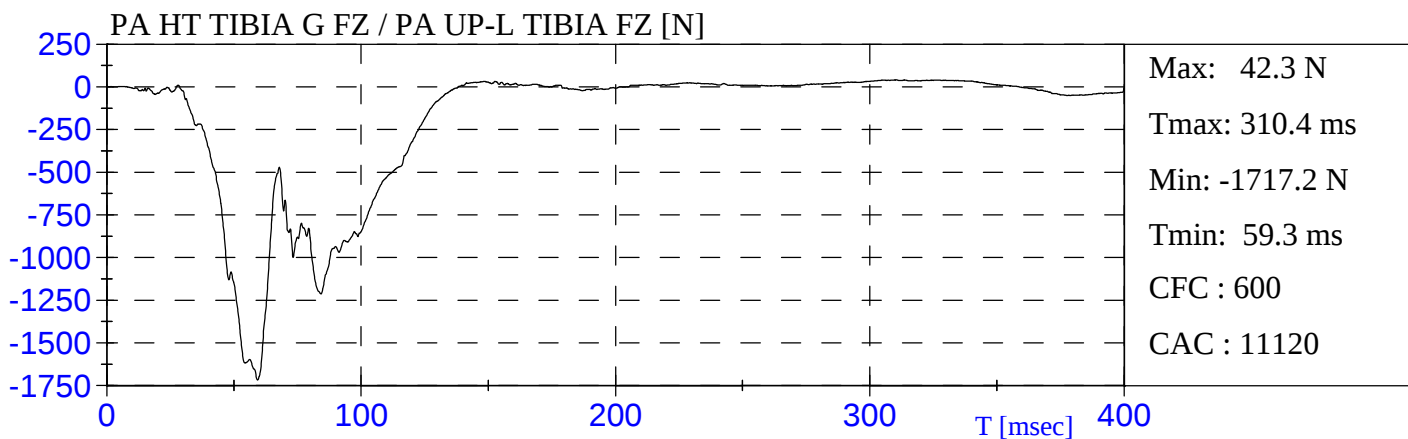
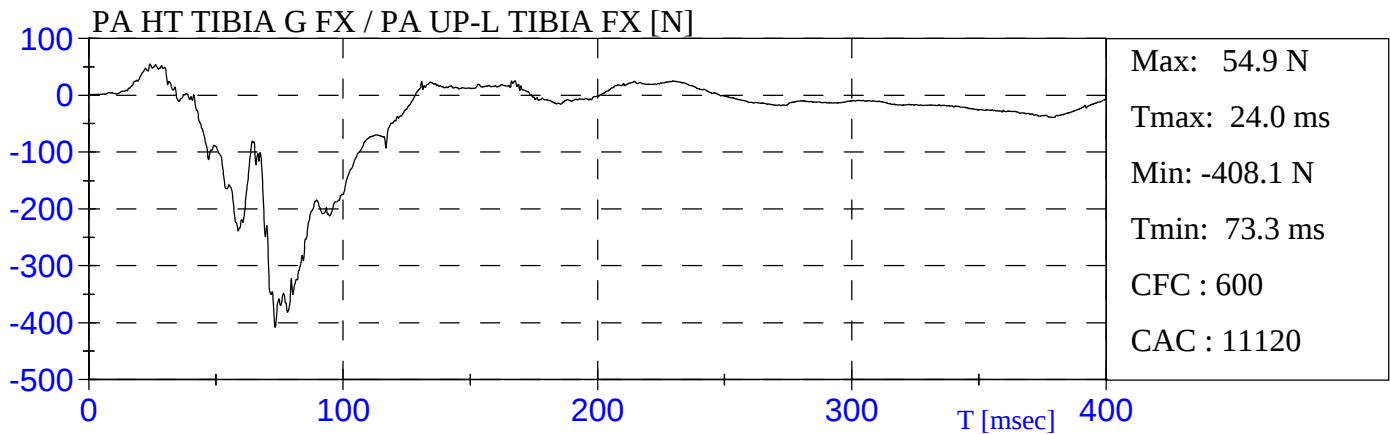






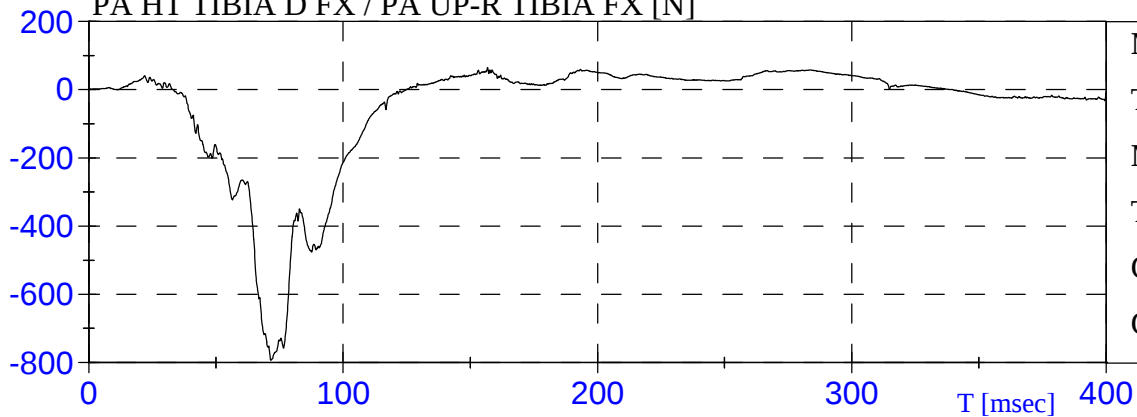




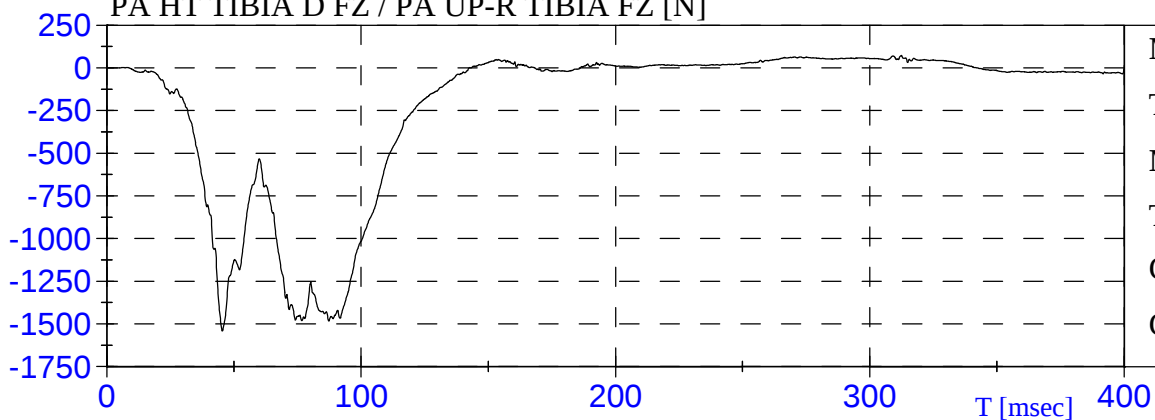




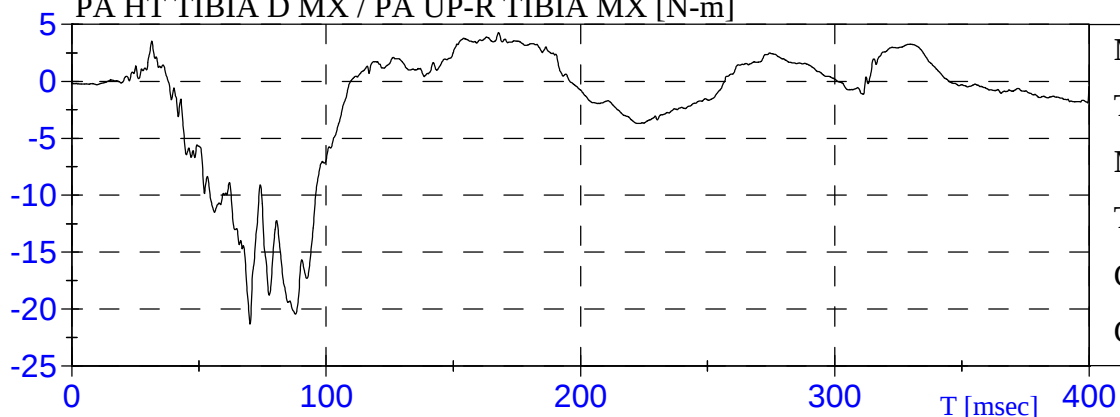
PA HT TIBIA D FX / PA UP-R TIBIA FX [N]



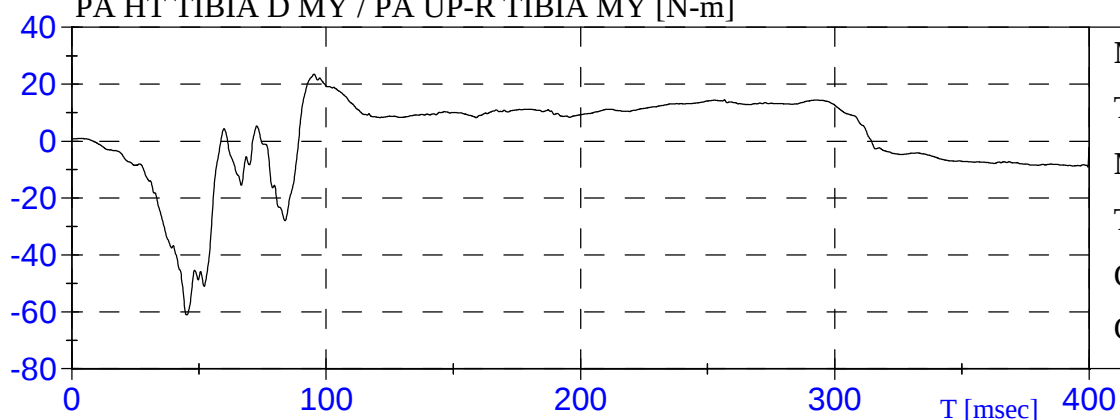
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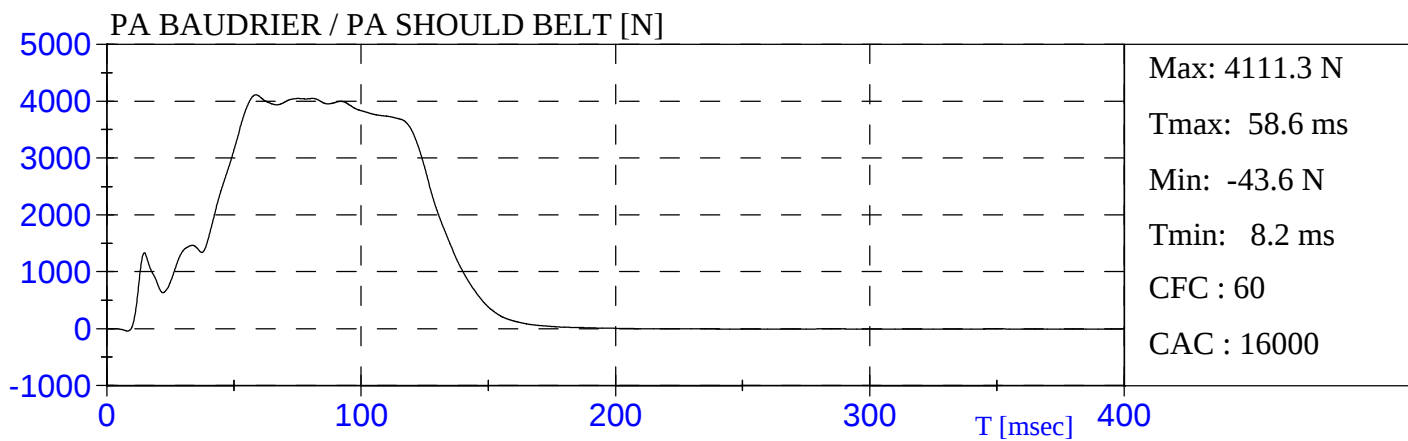
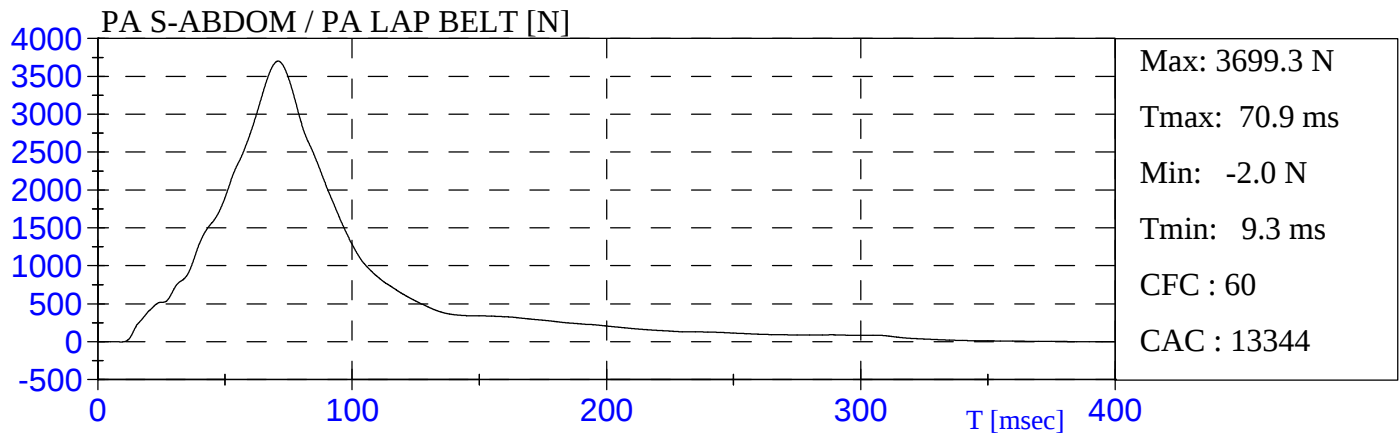


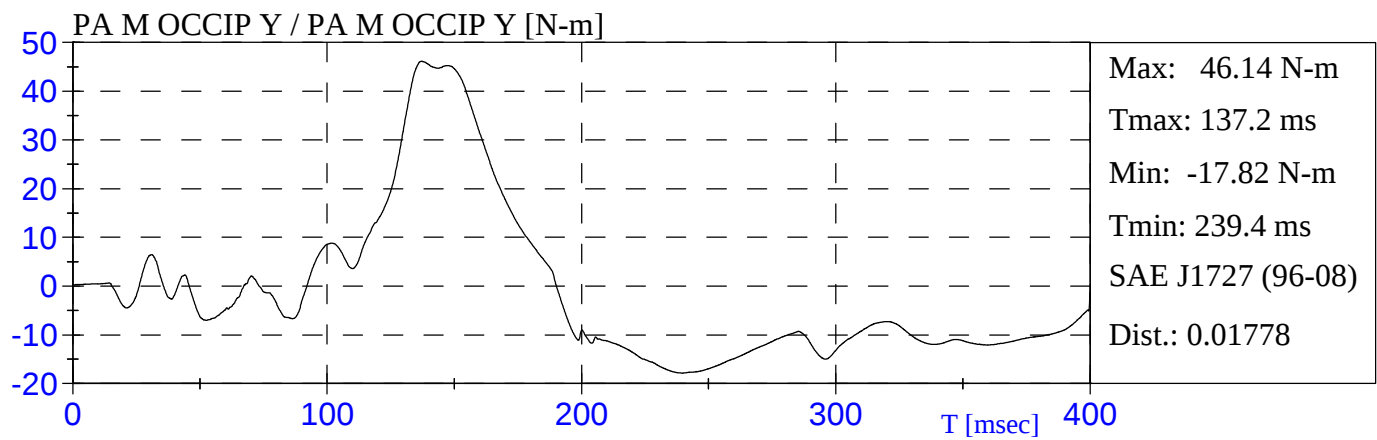
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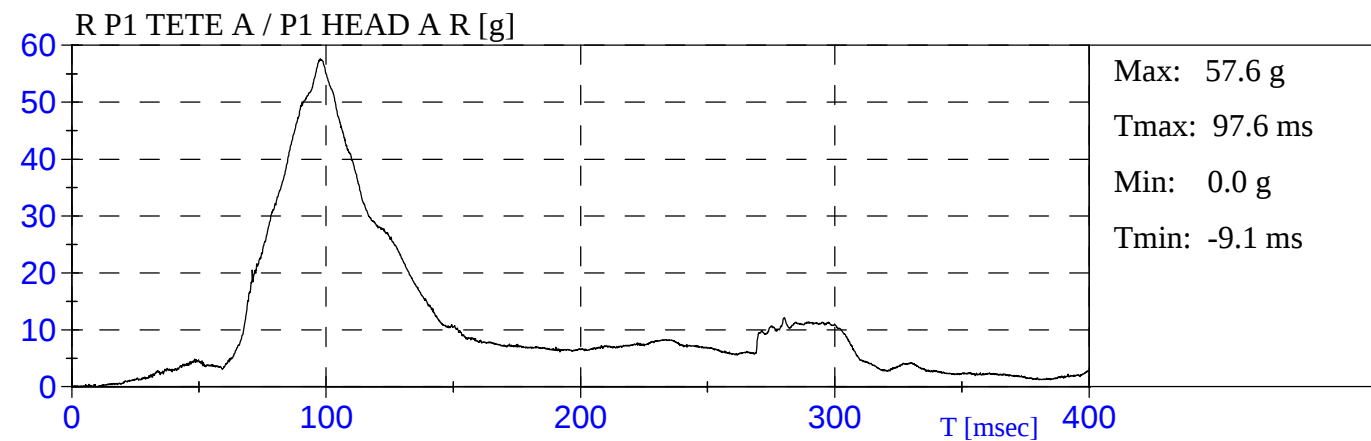
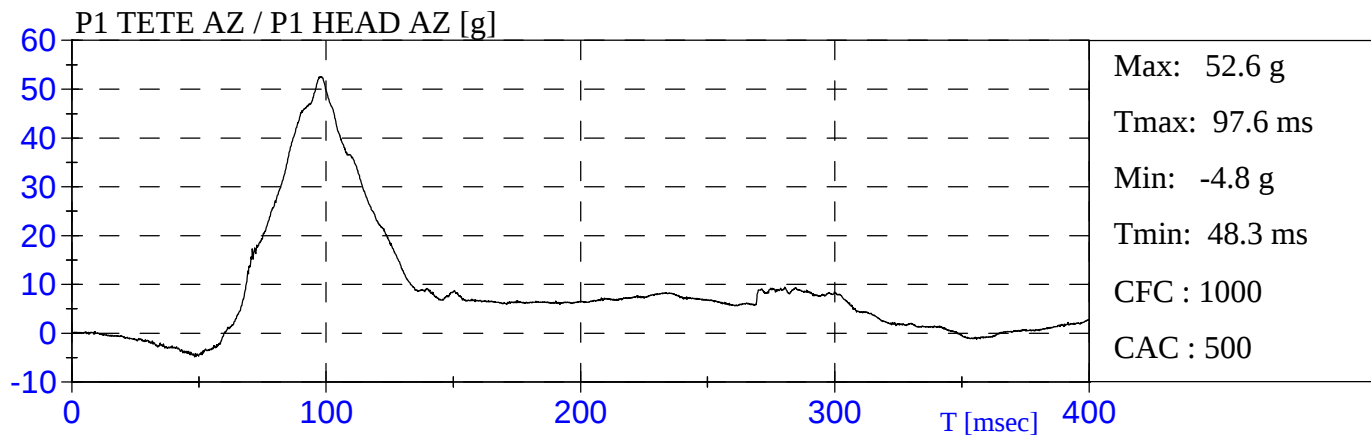
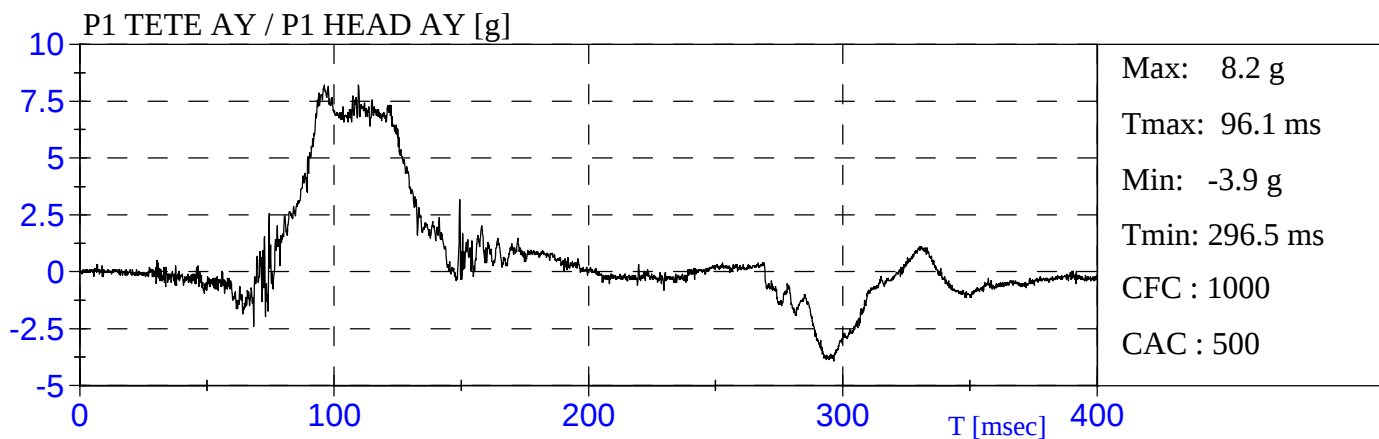
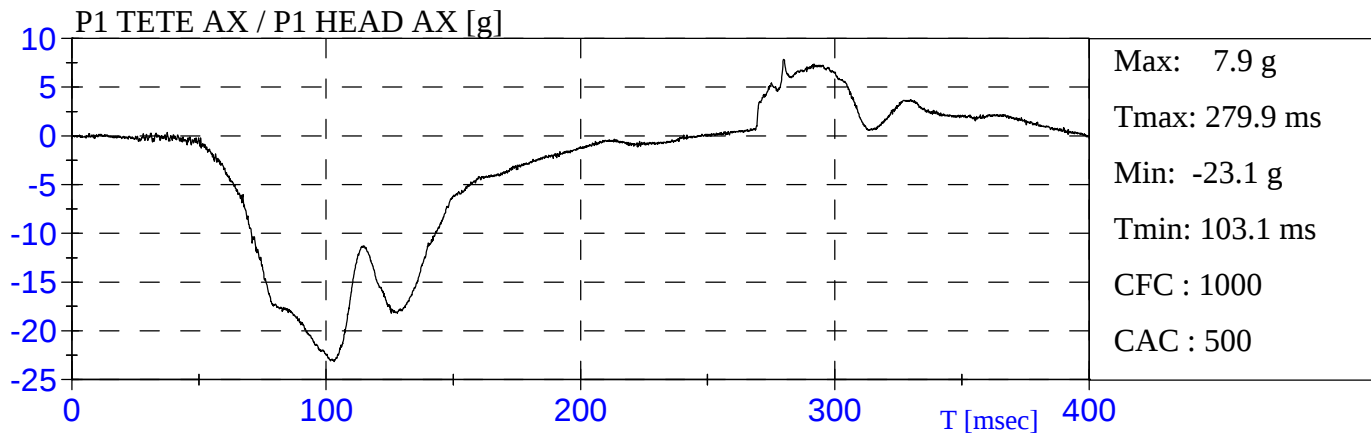


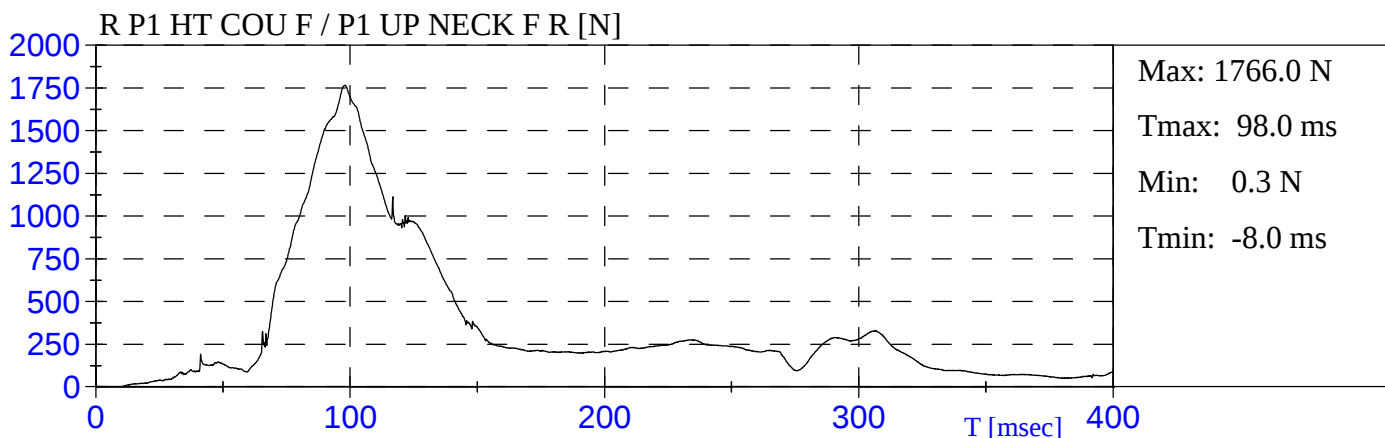
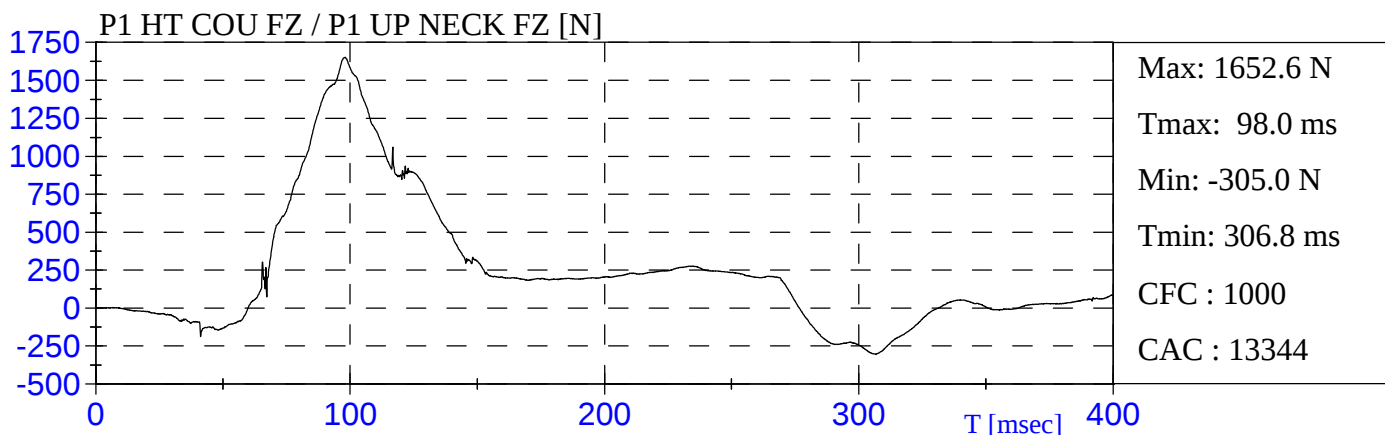
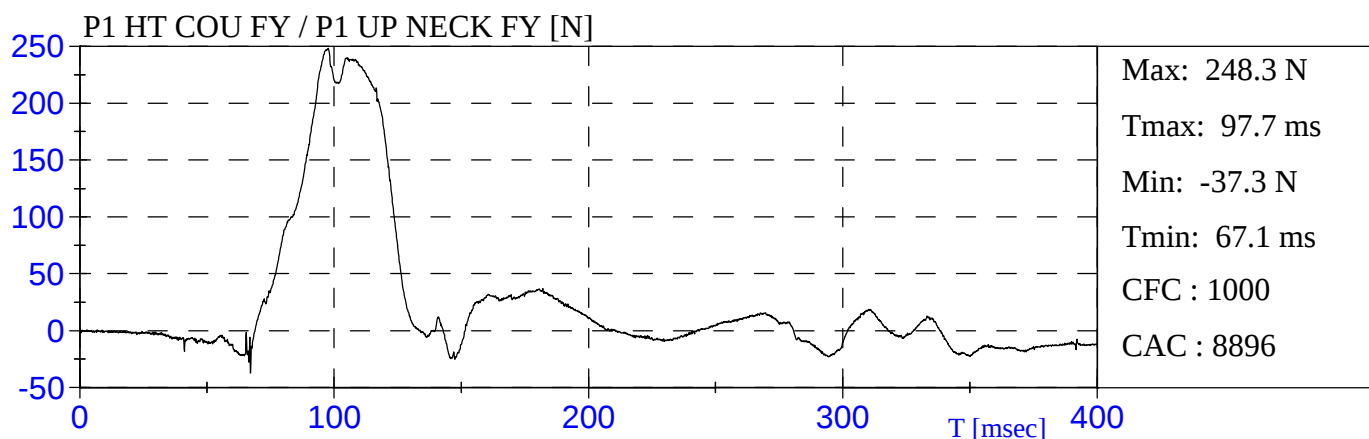
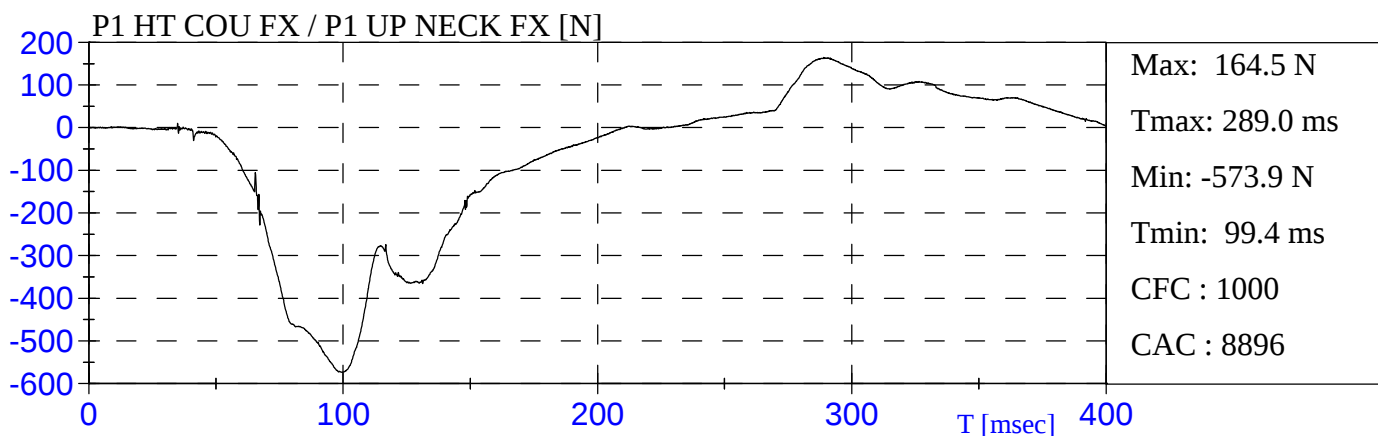
PA HT TIBIA D MY / PA UP-R TIBIA MY [N-m]

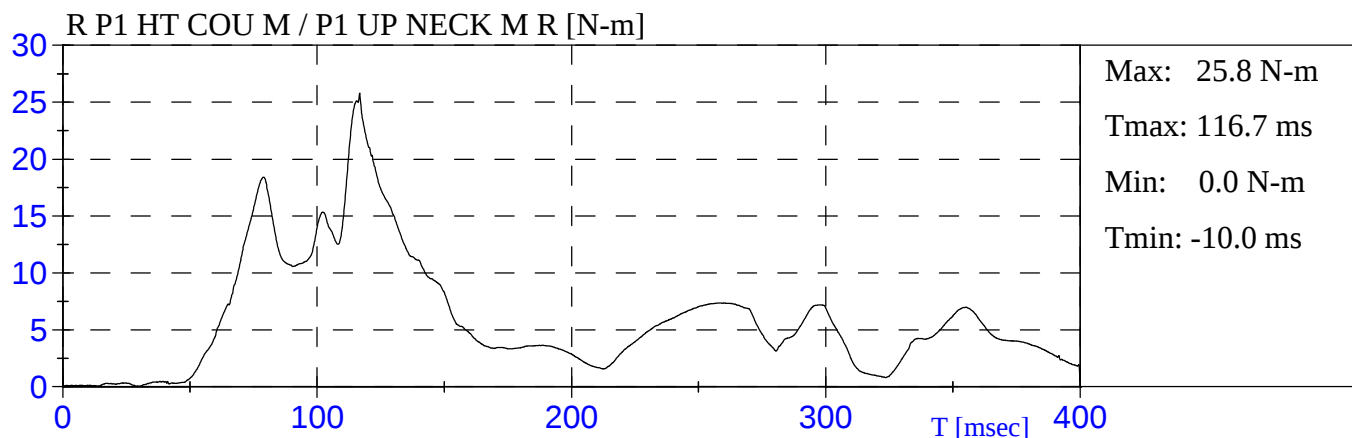
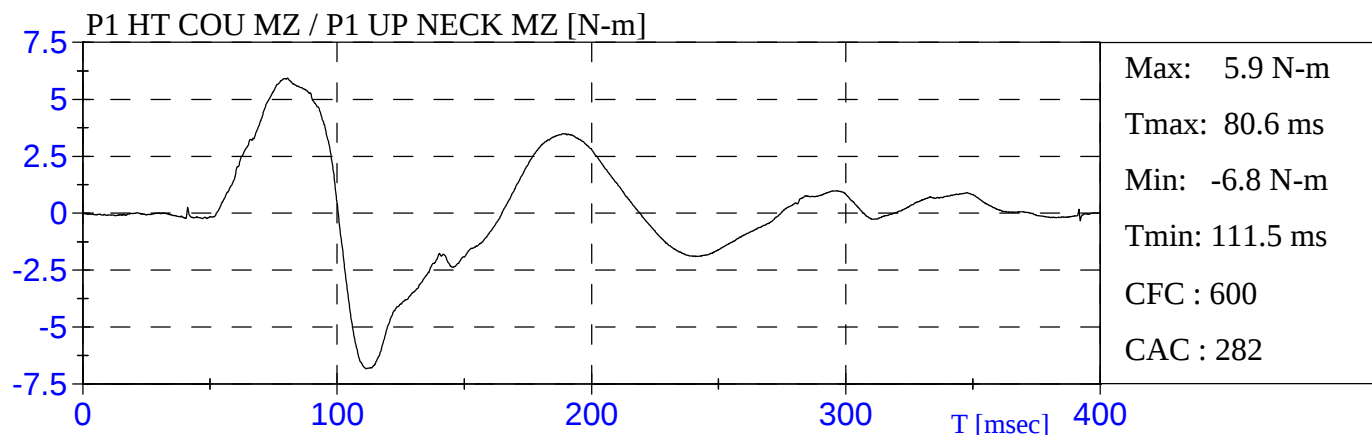
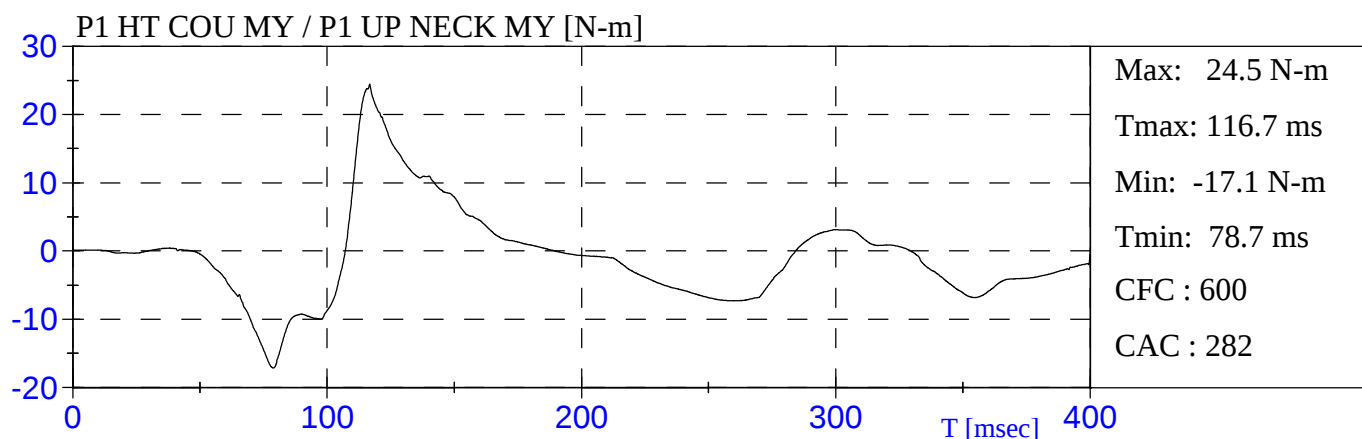
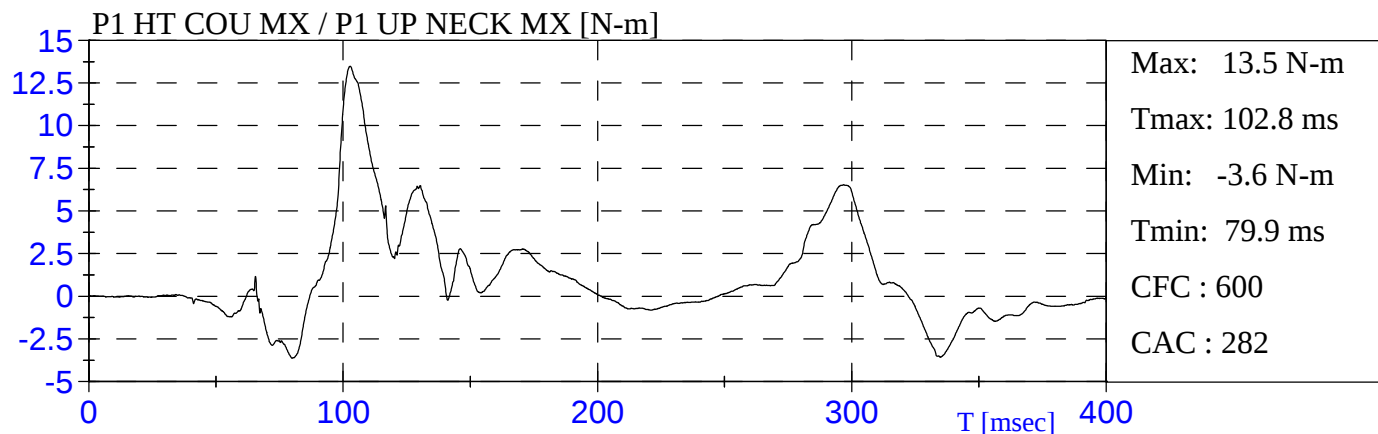


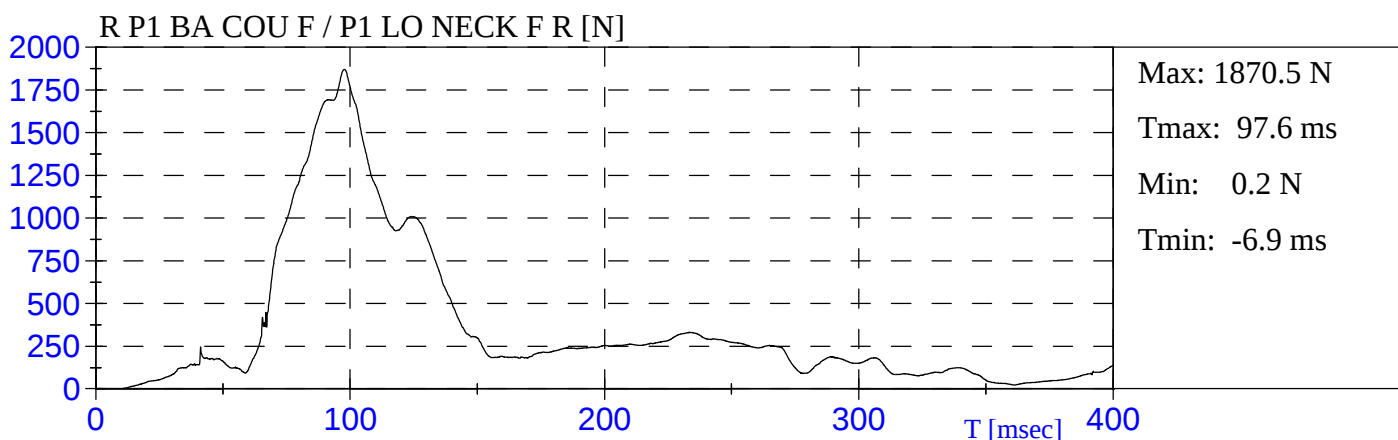
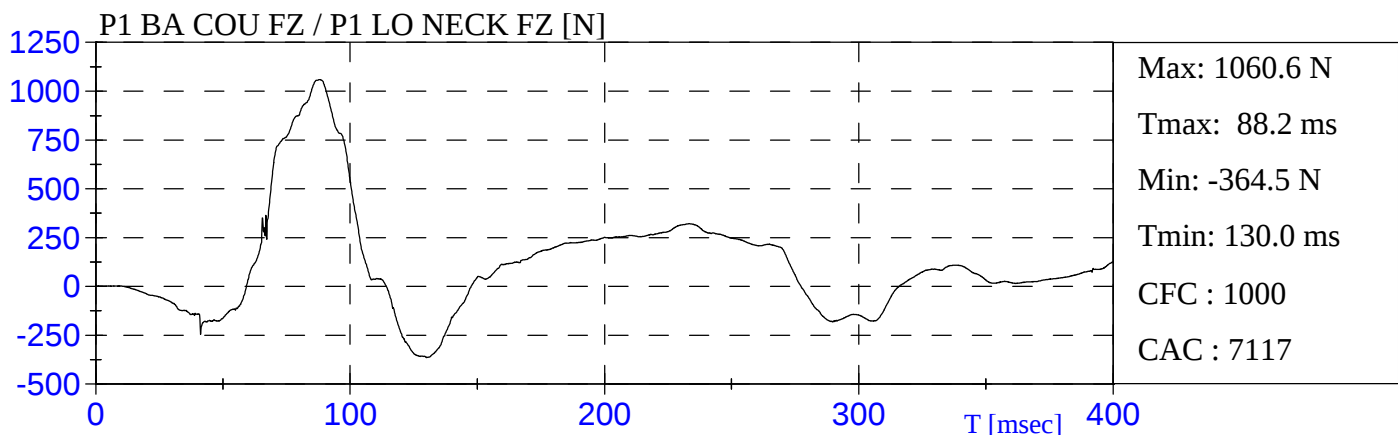
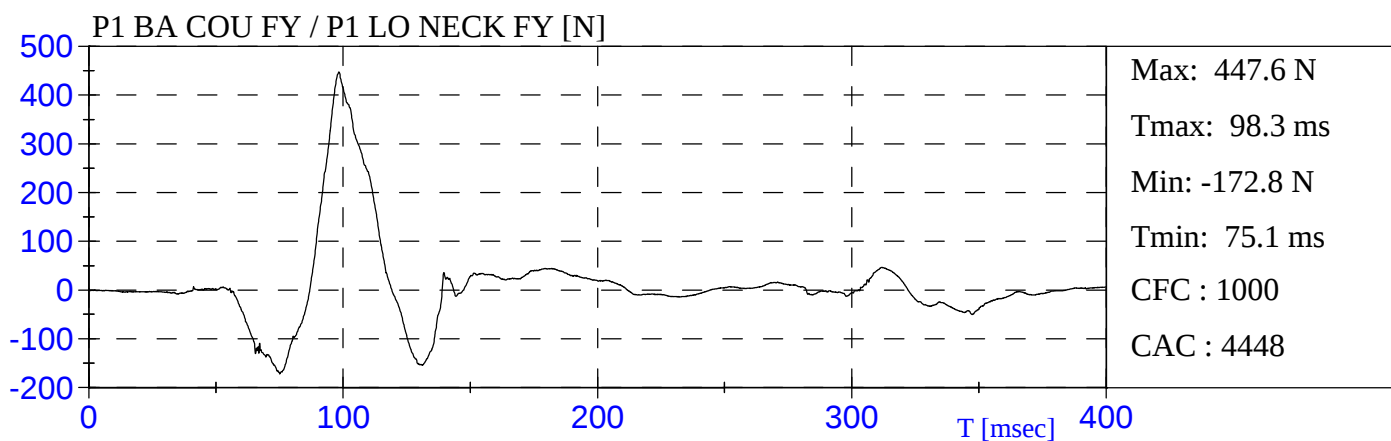
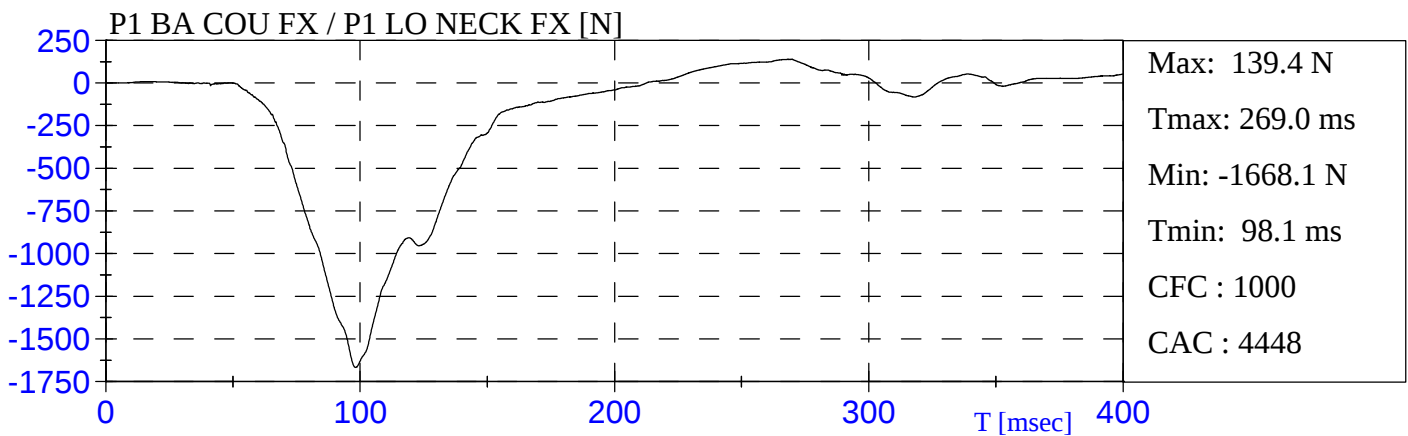


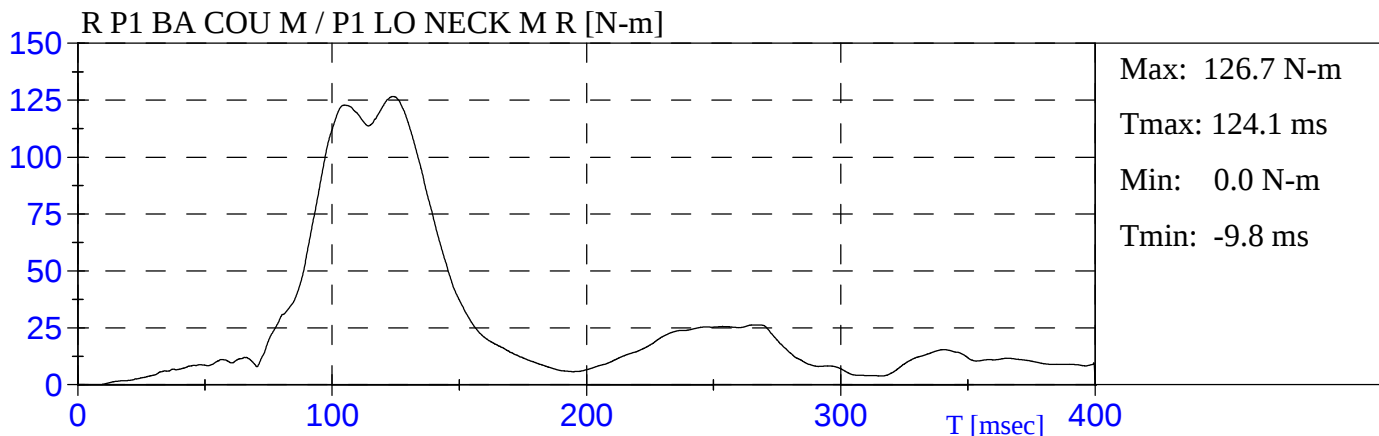
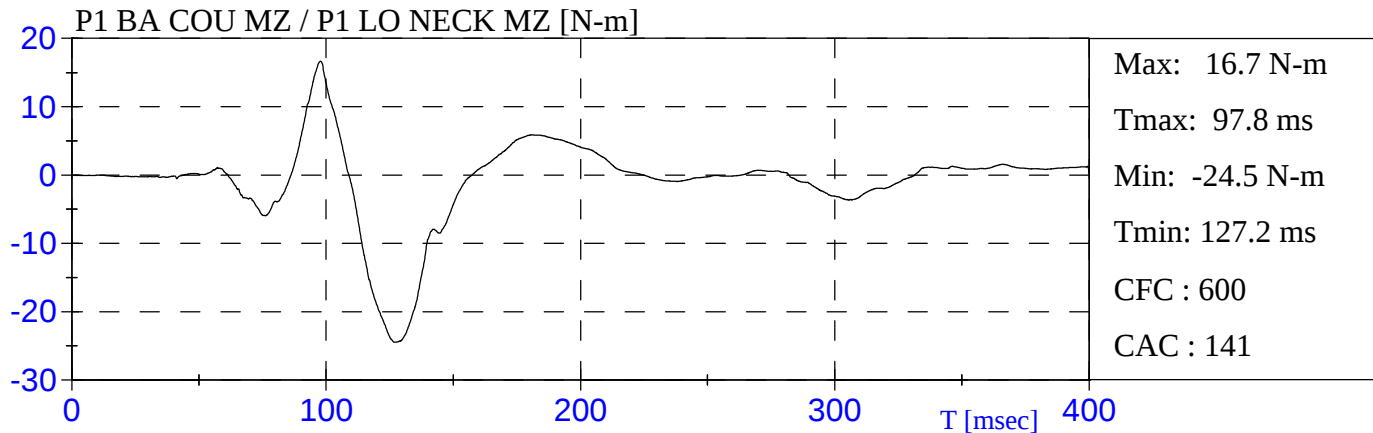
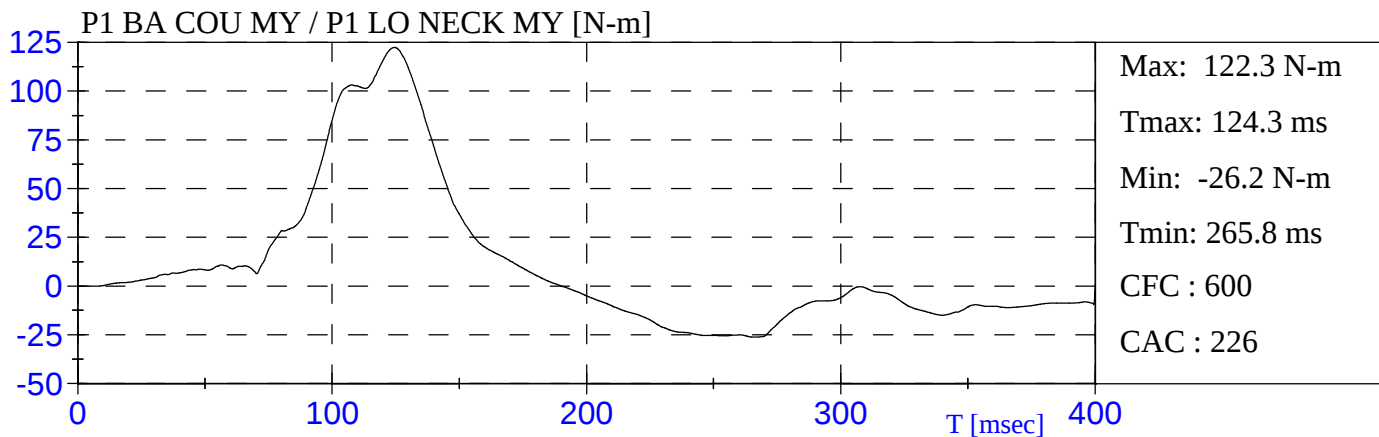
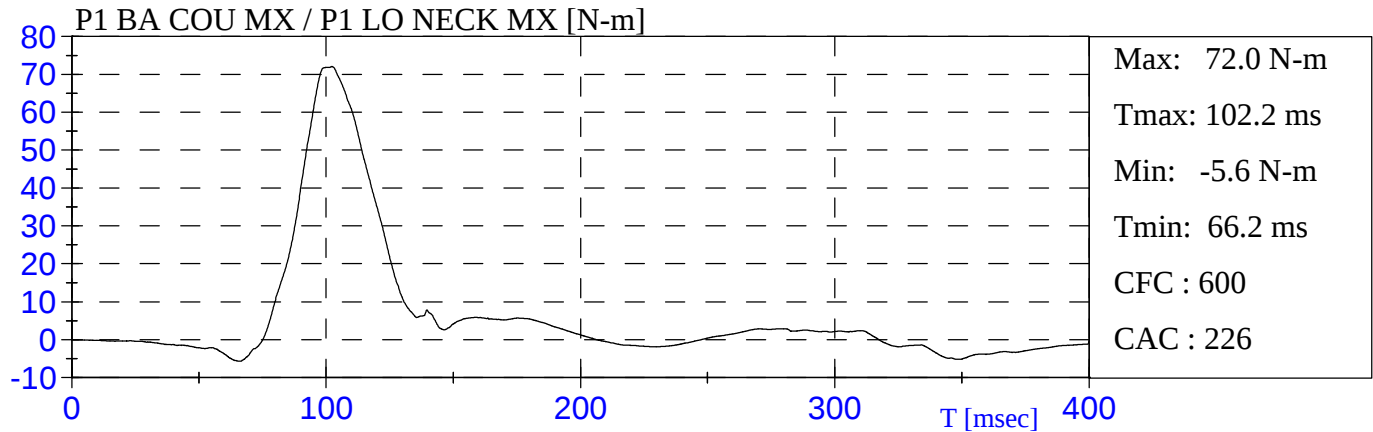


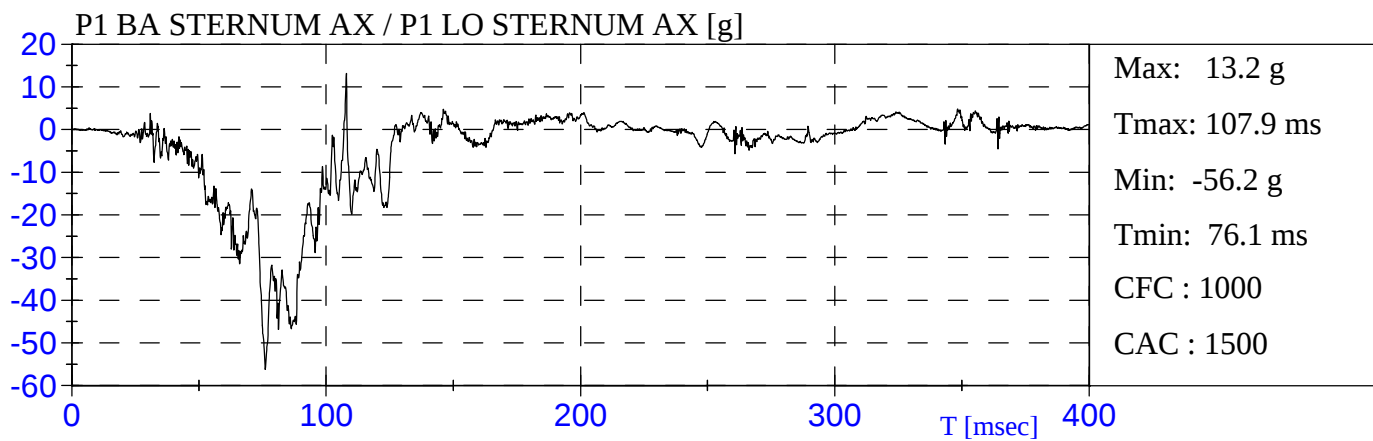
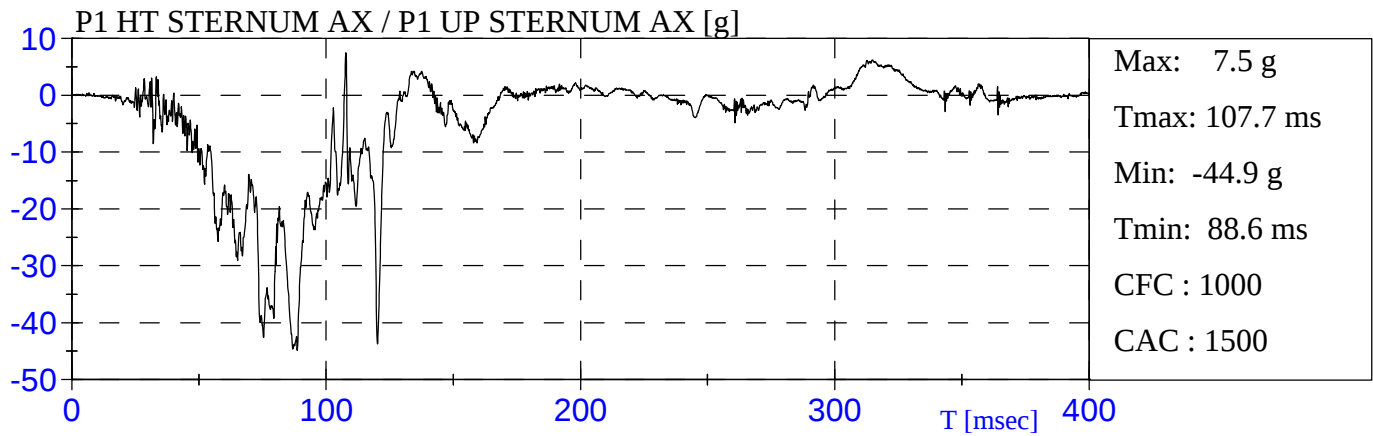


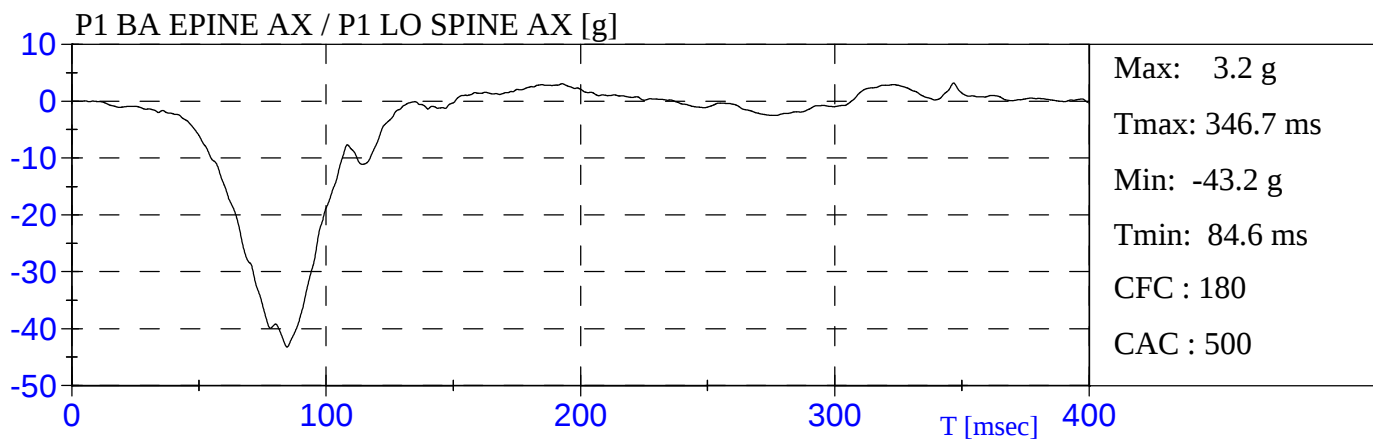
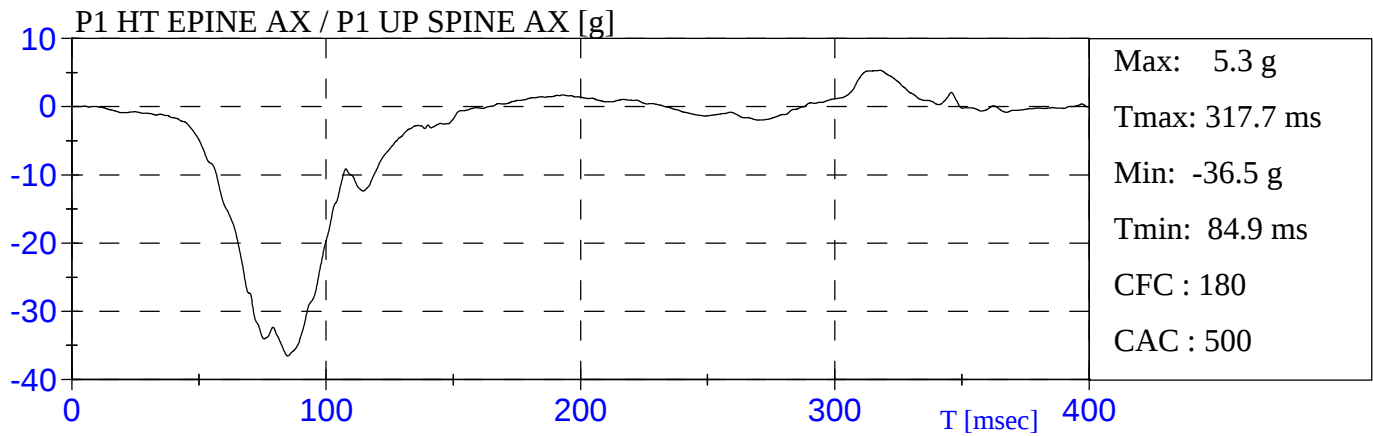


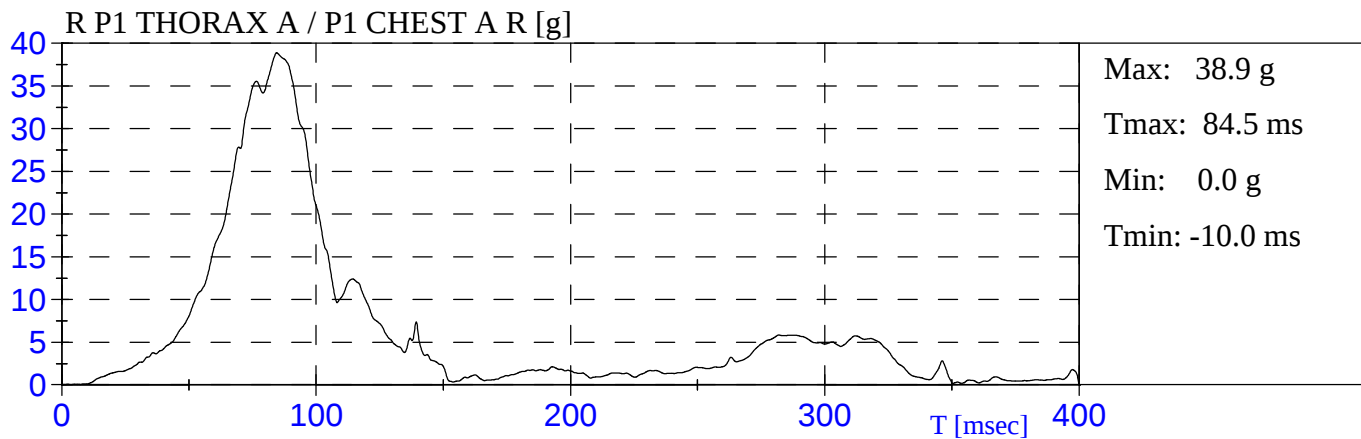
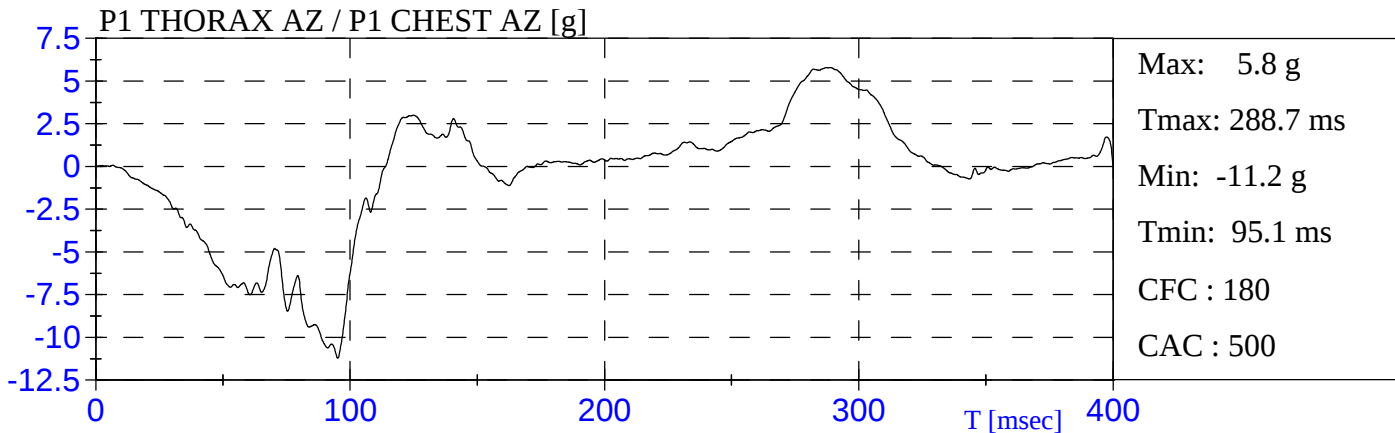
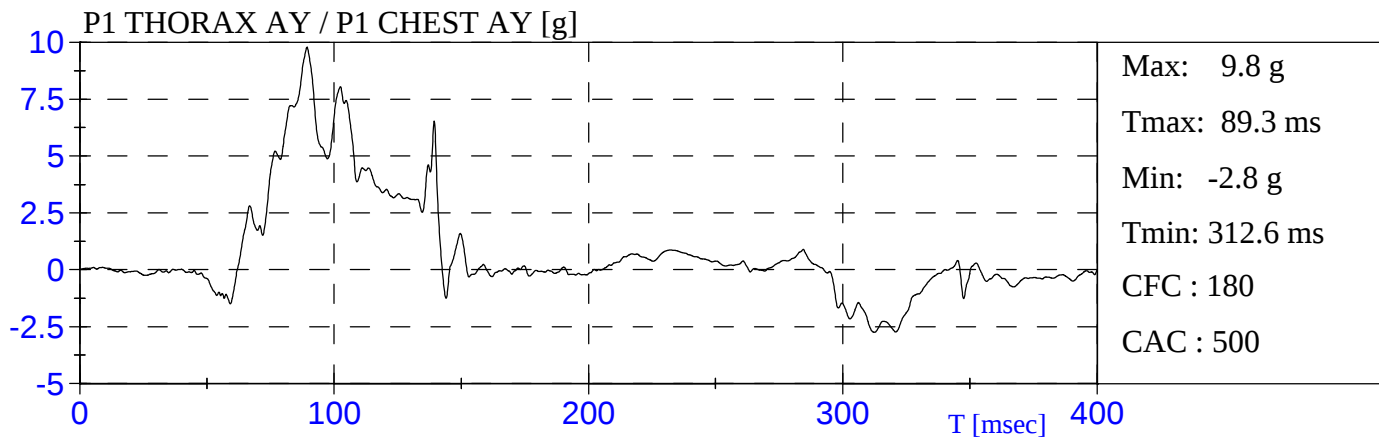
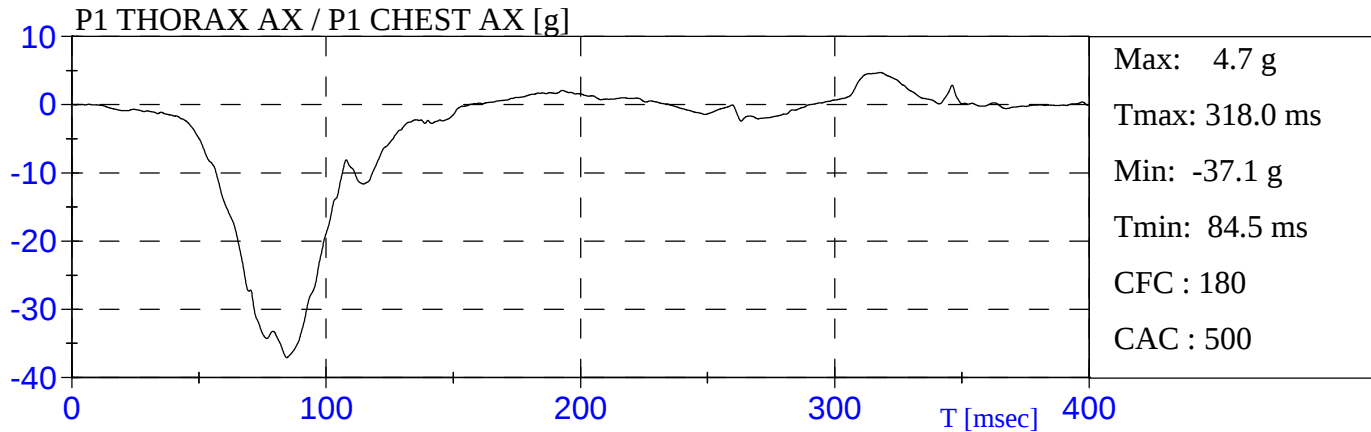








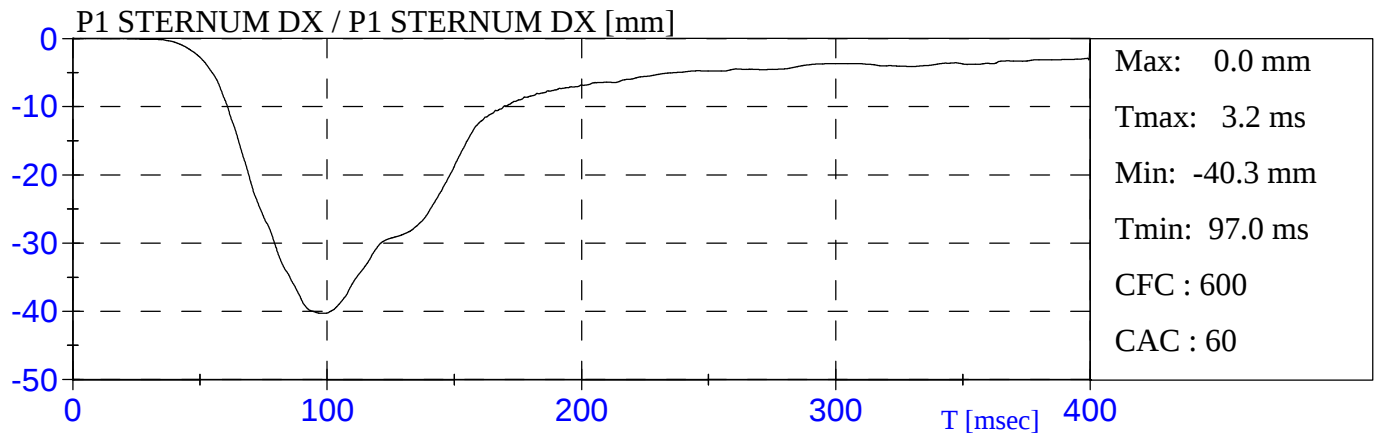


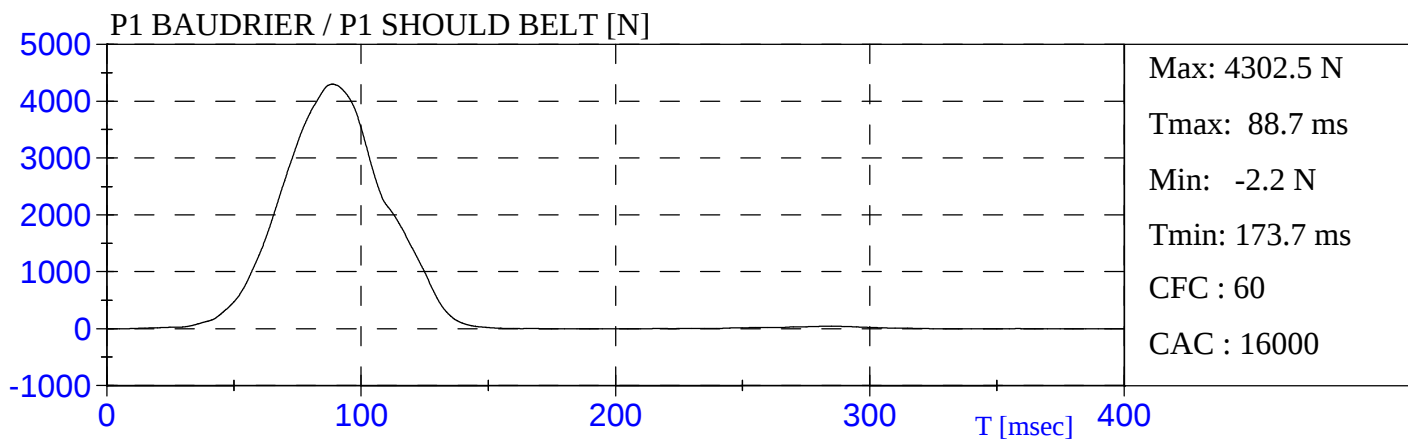
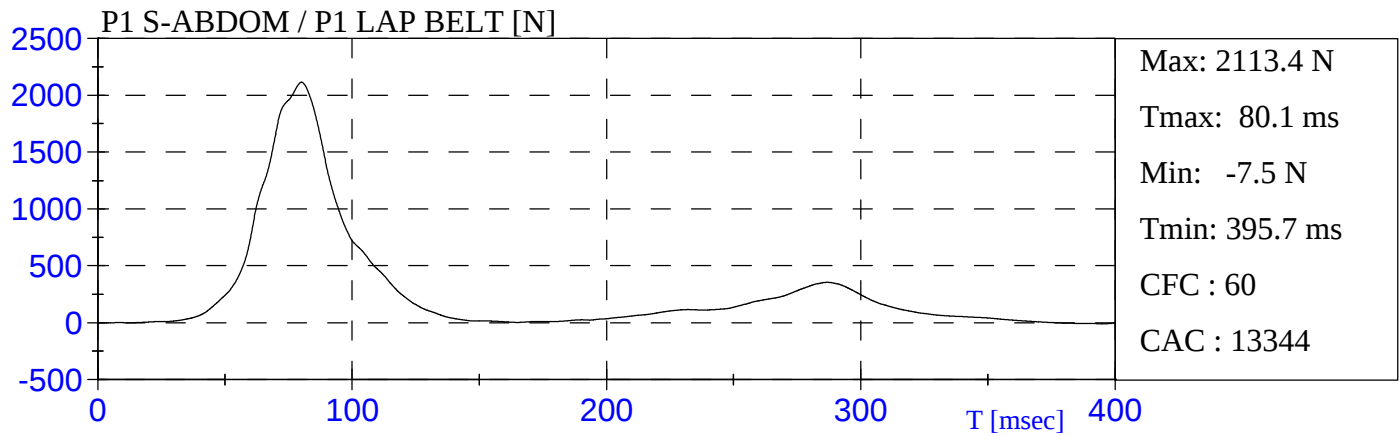


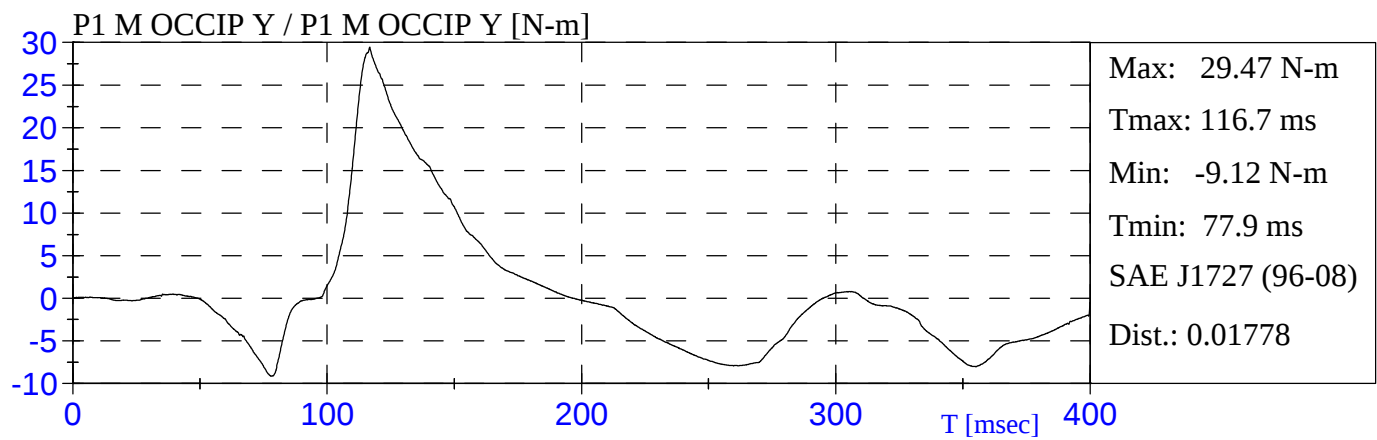


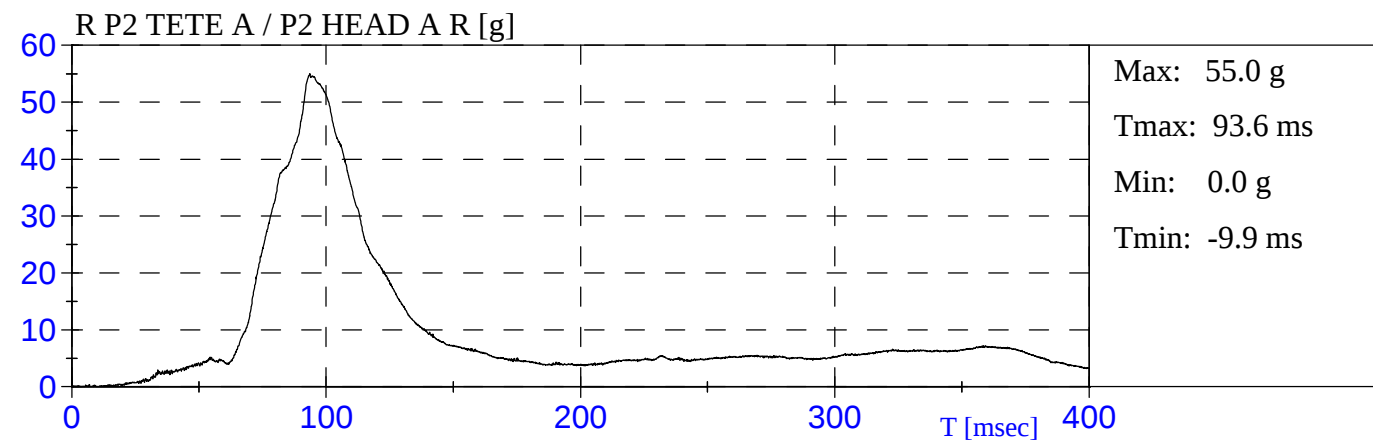
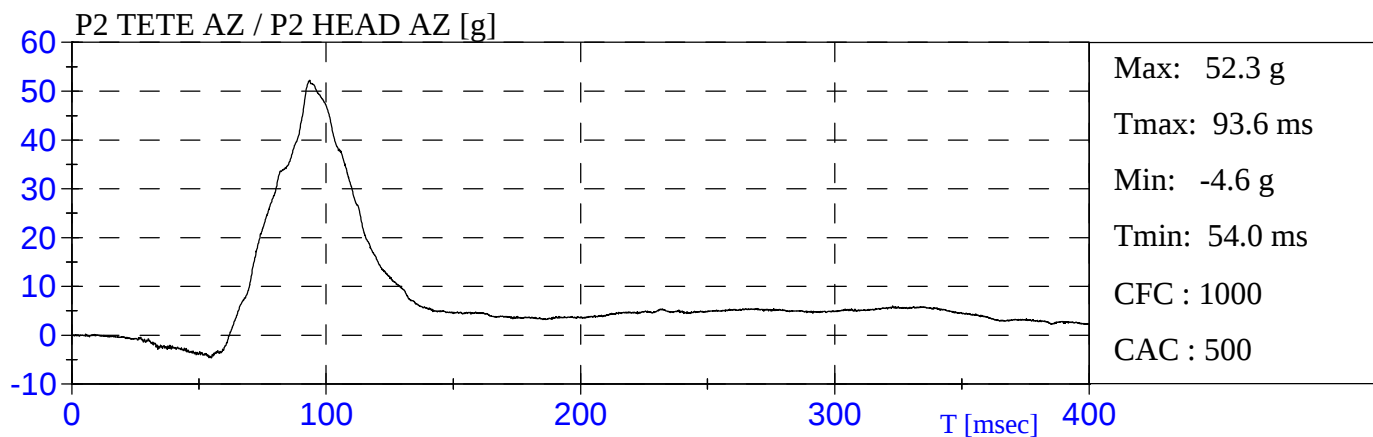
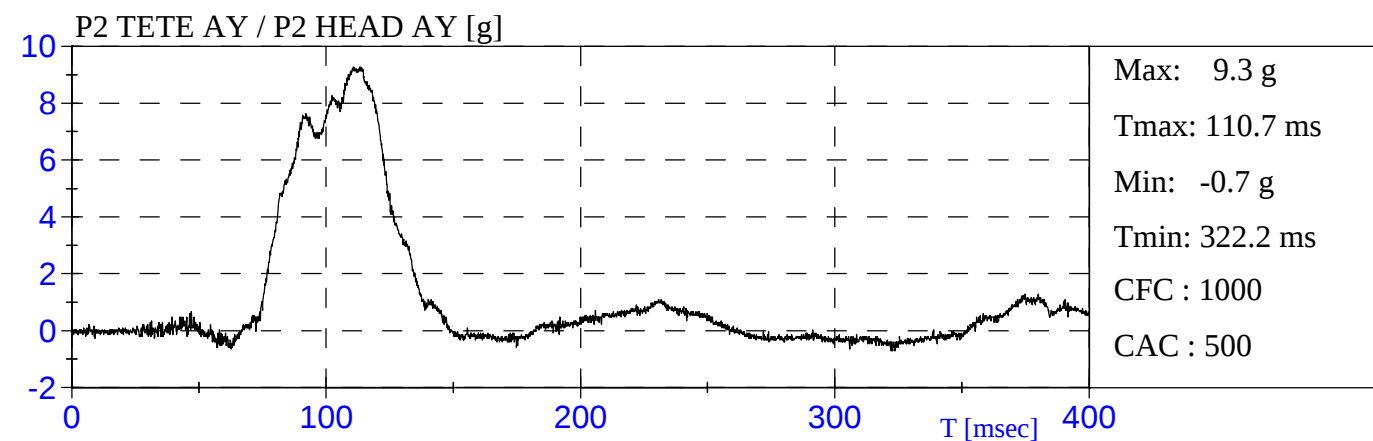
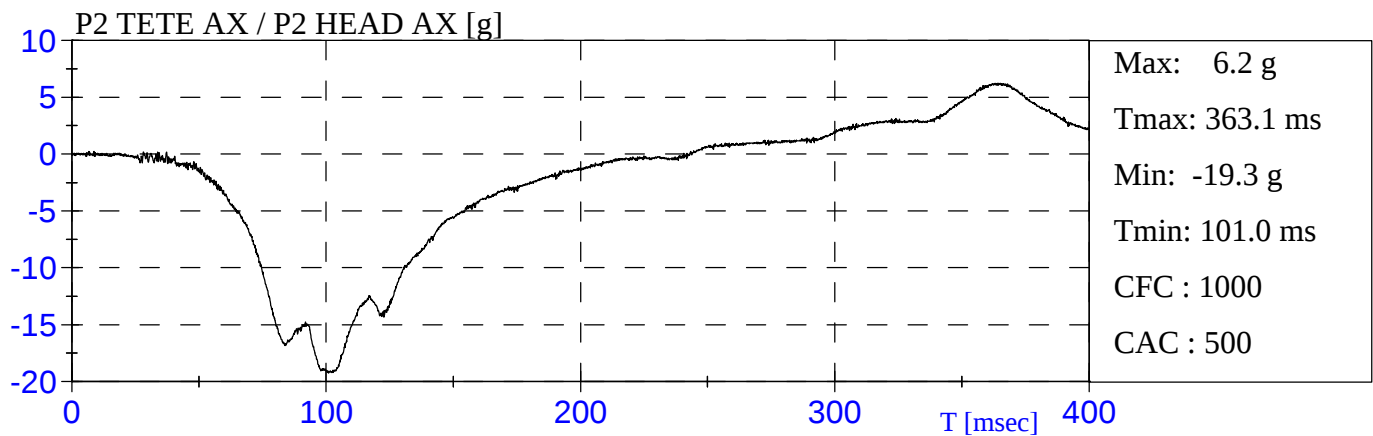
COLLISION FRONTALE
FRONTAL CRASH
SATURN ION 2004

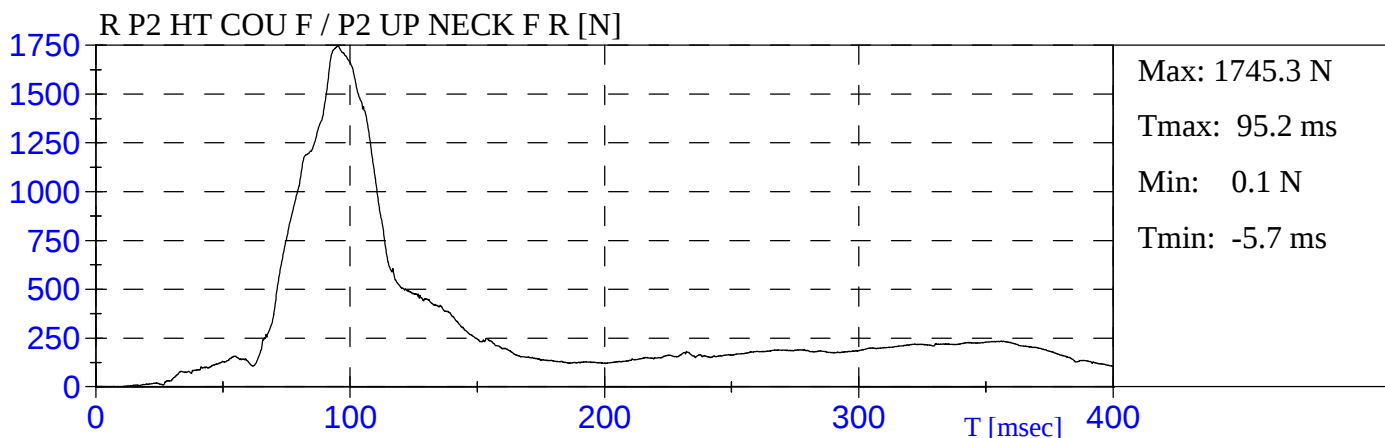
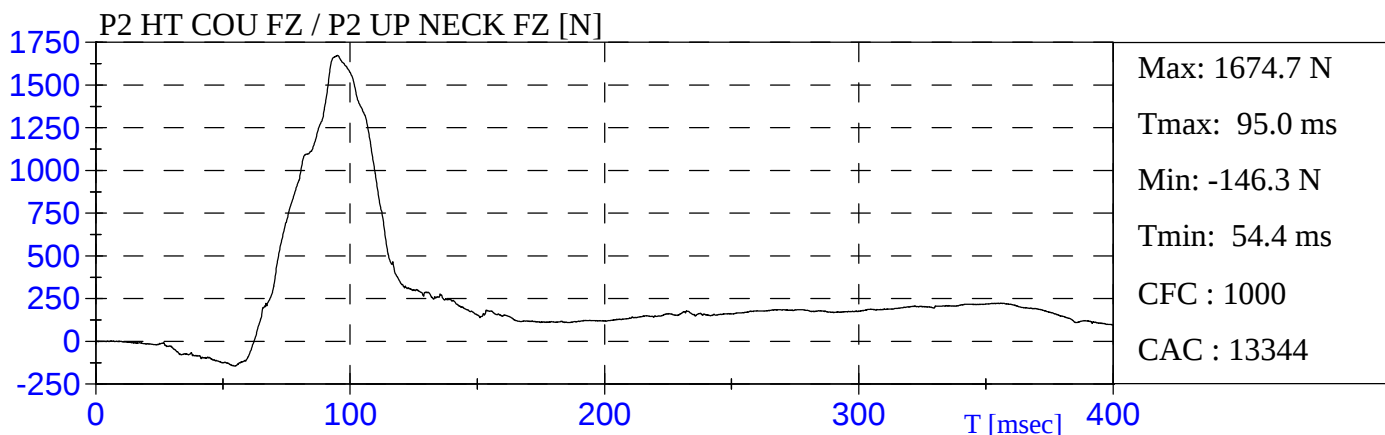
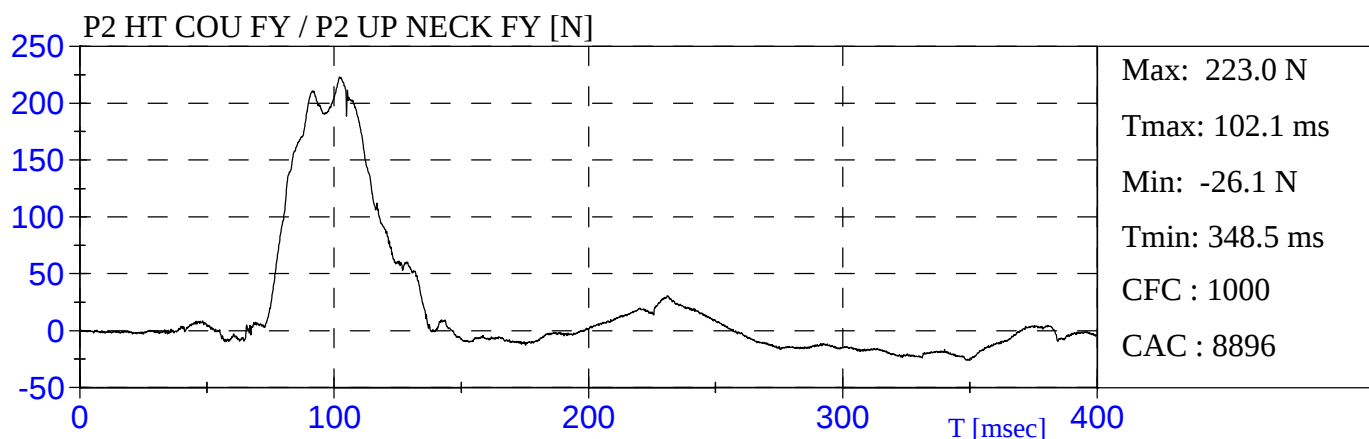
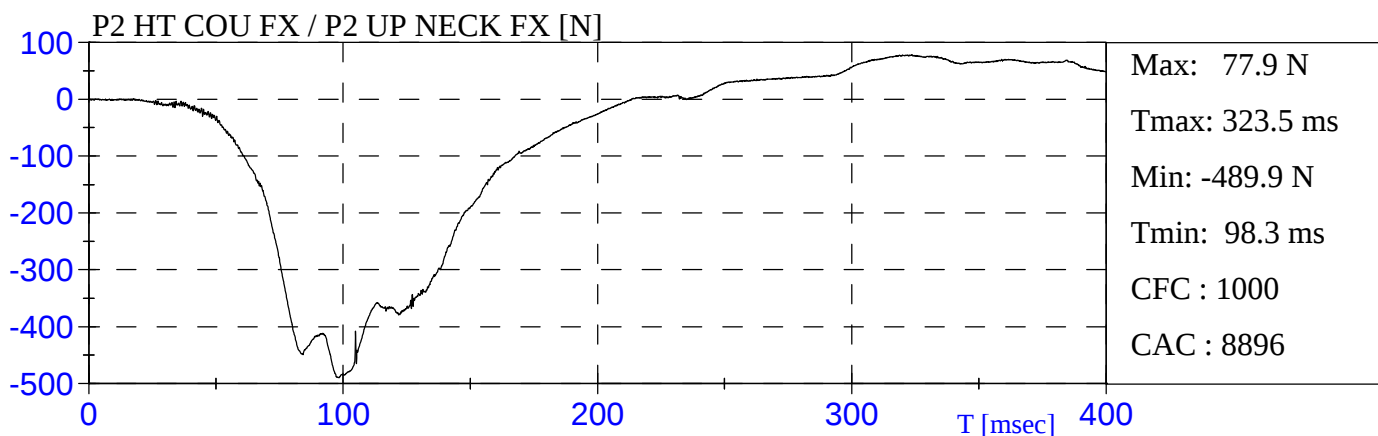
Date: 2004-02-24
N° TC / TC No.: TC04-116

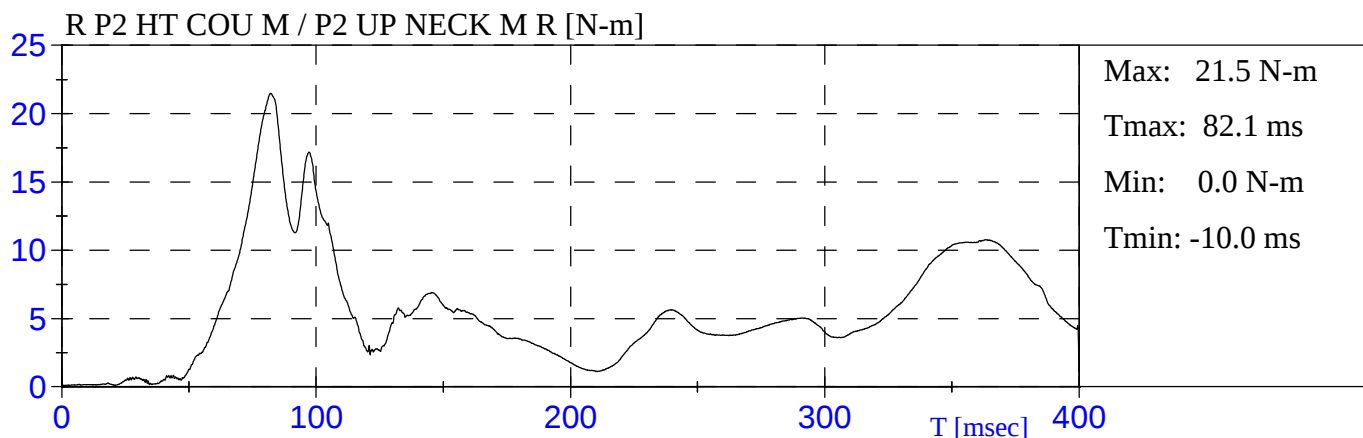
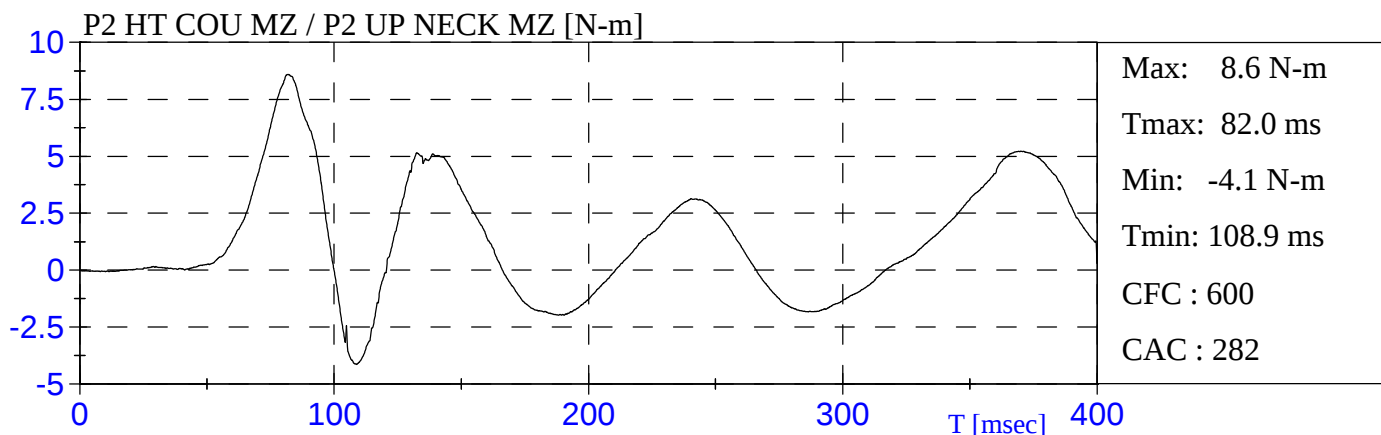
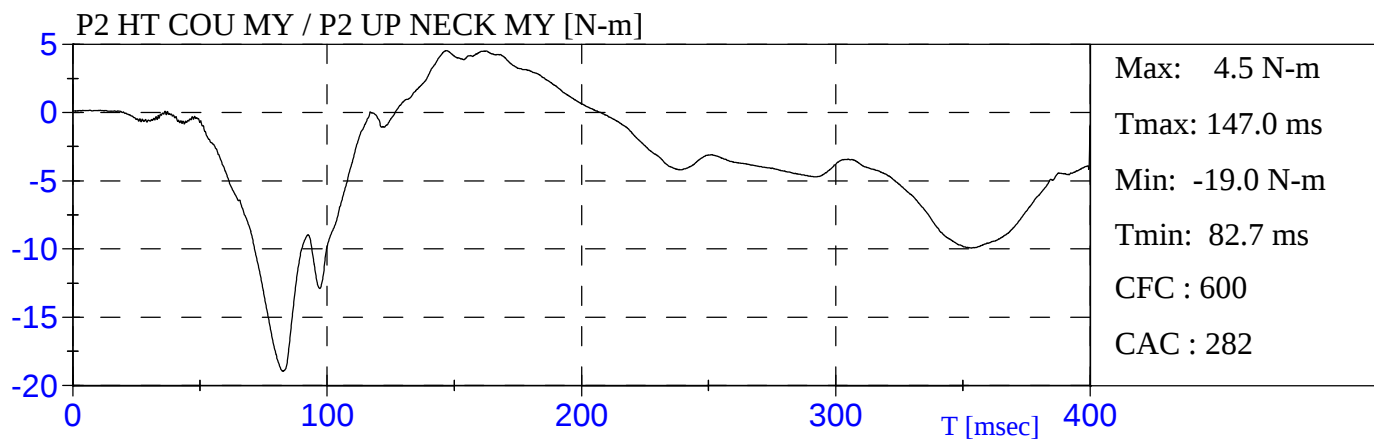
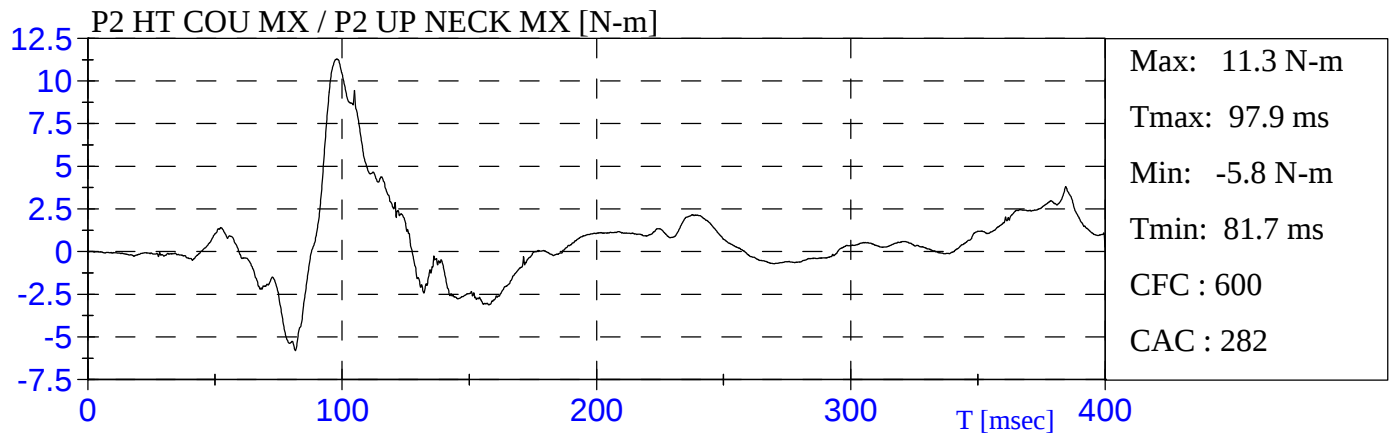


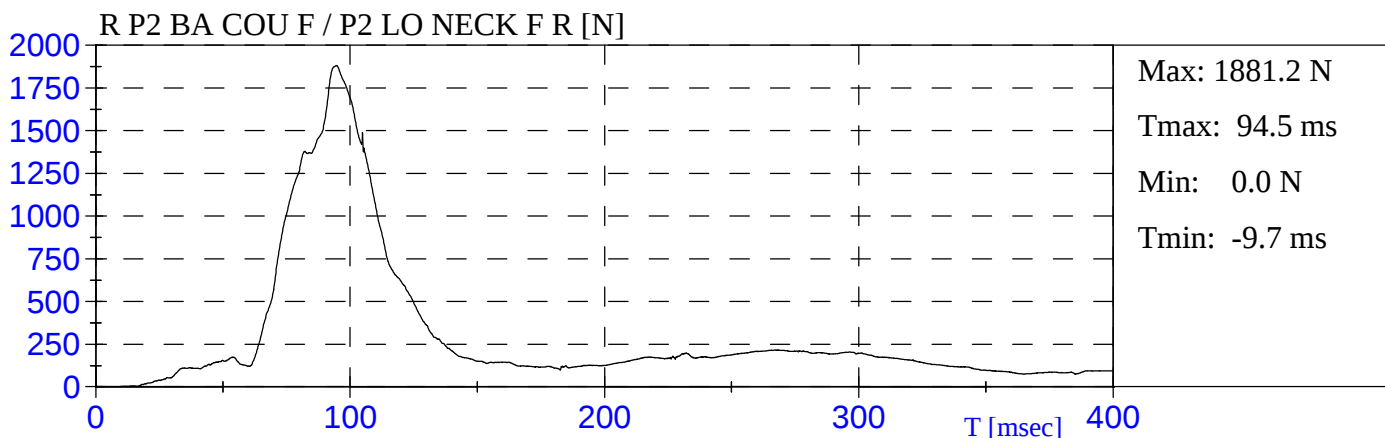
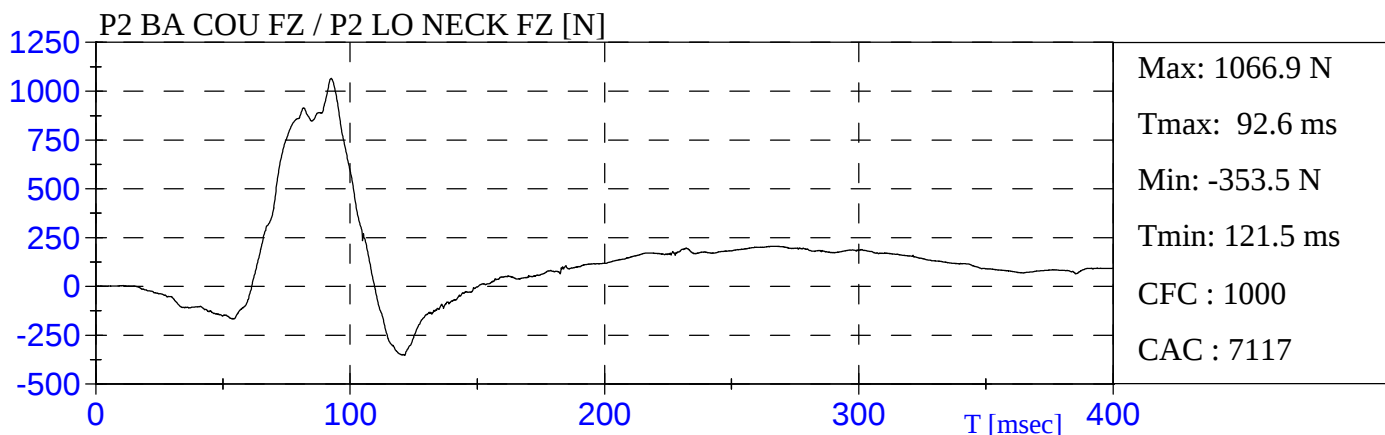
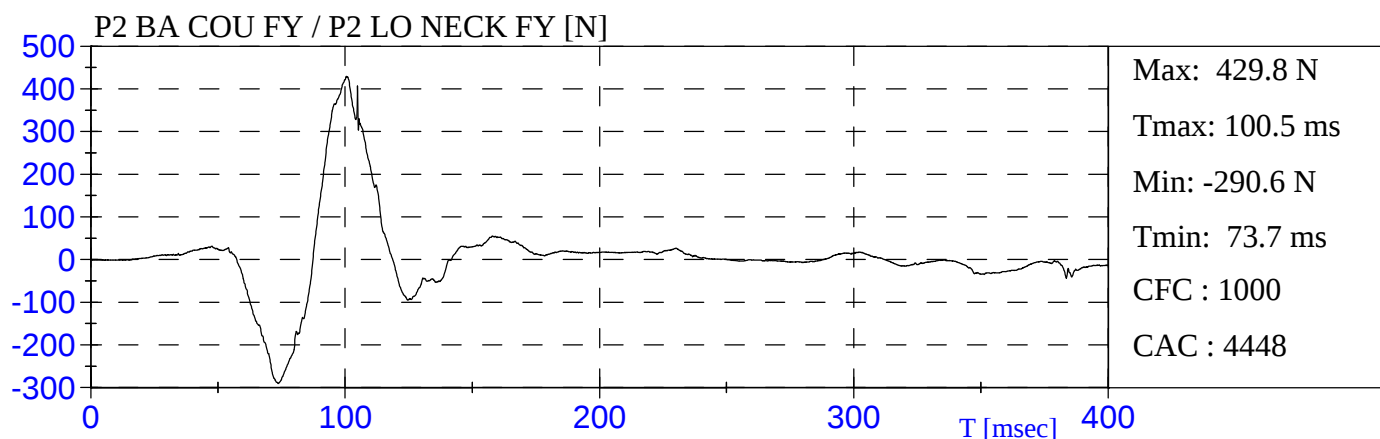
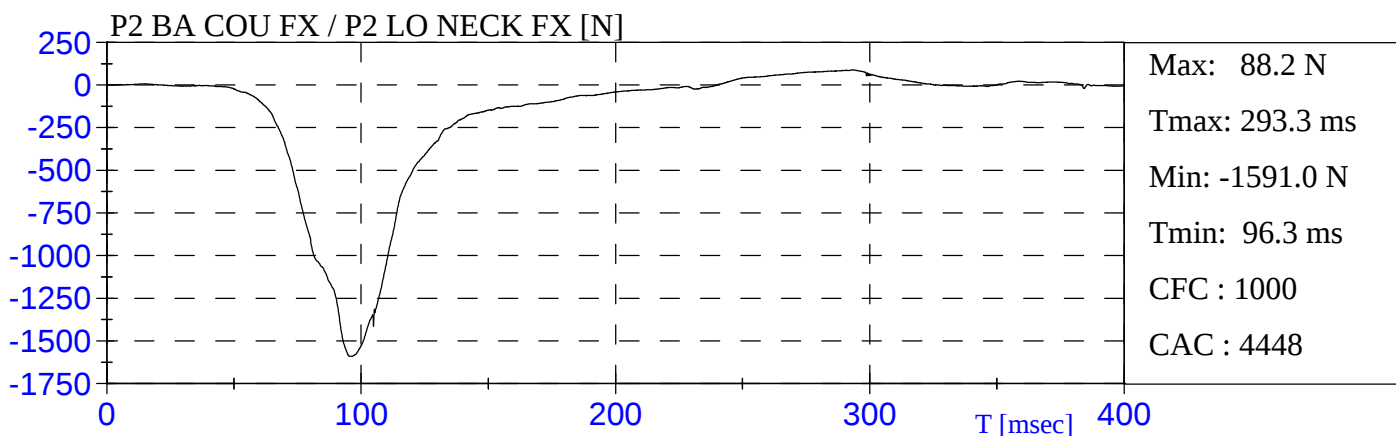


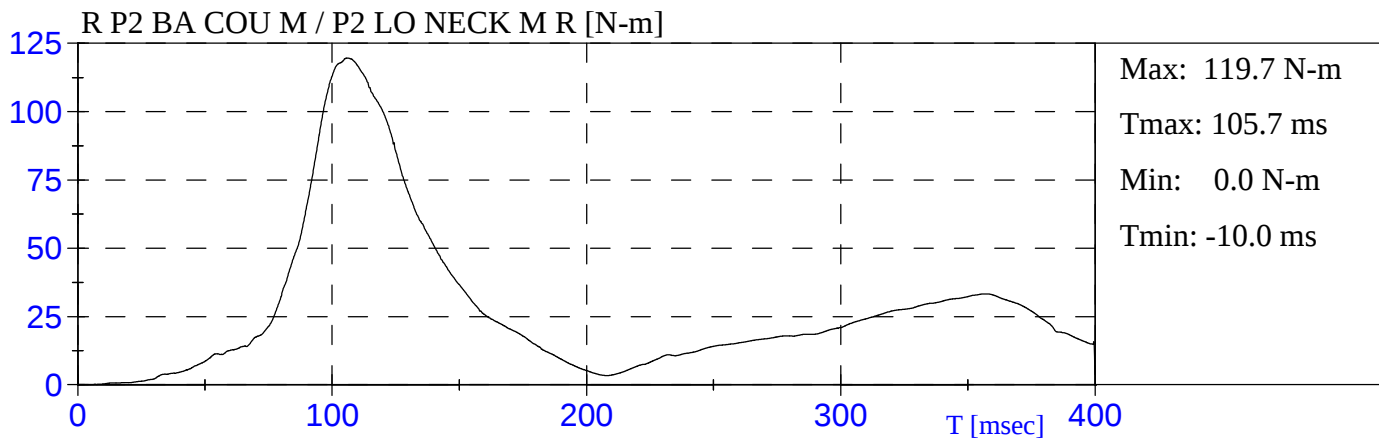
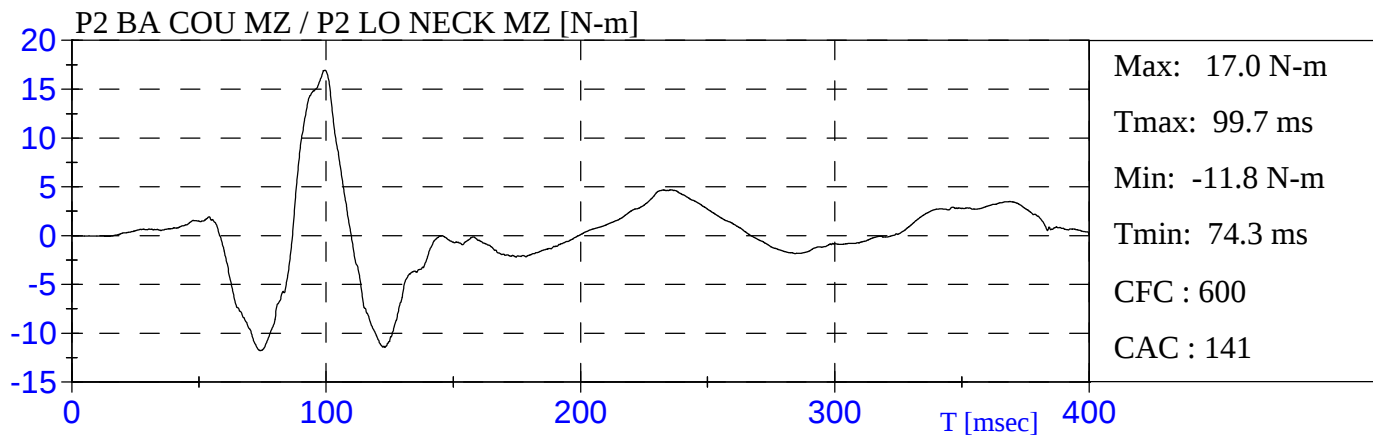
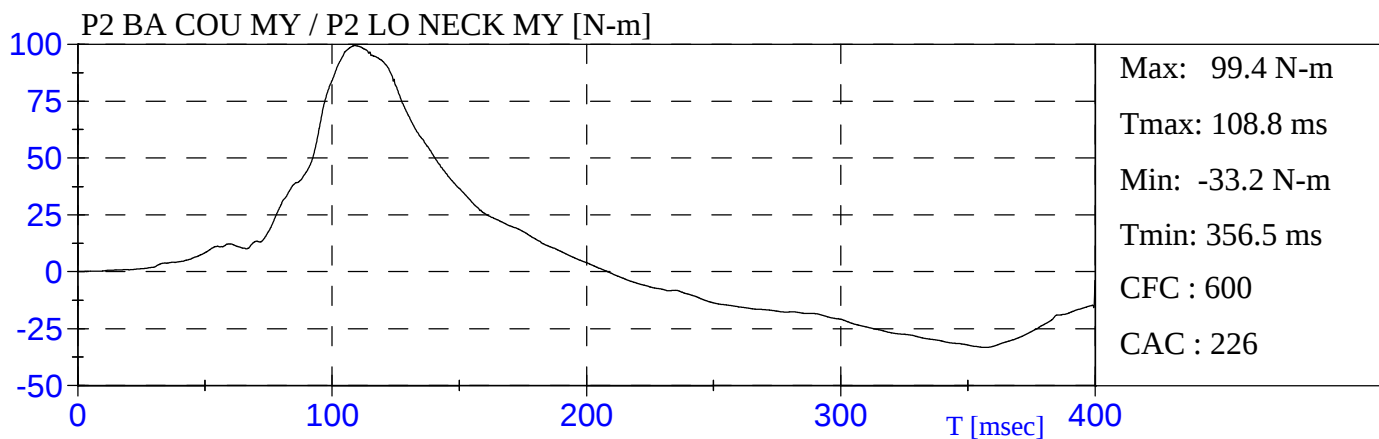
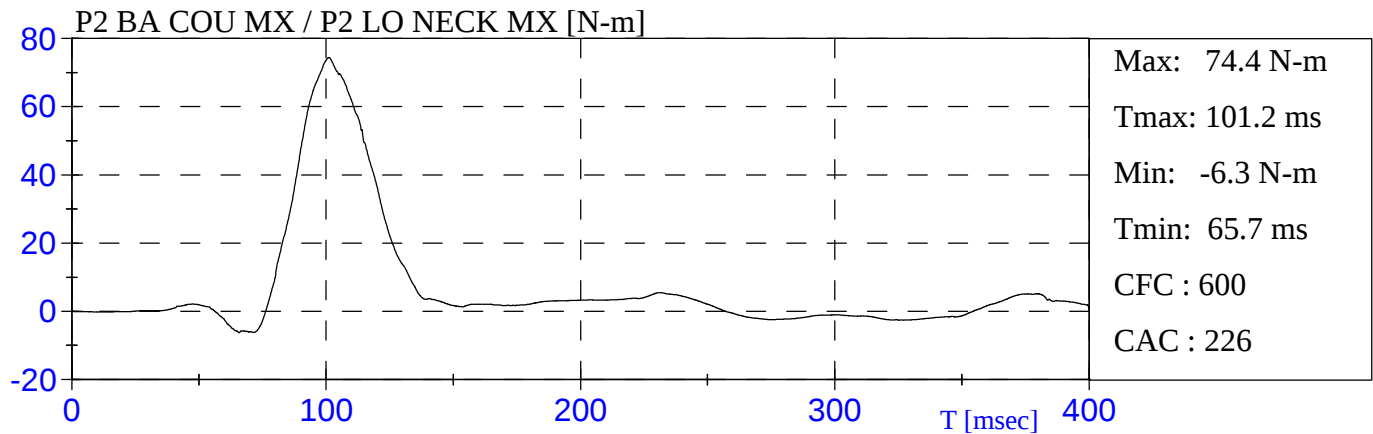


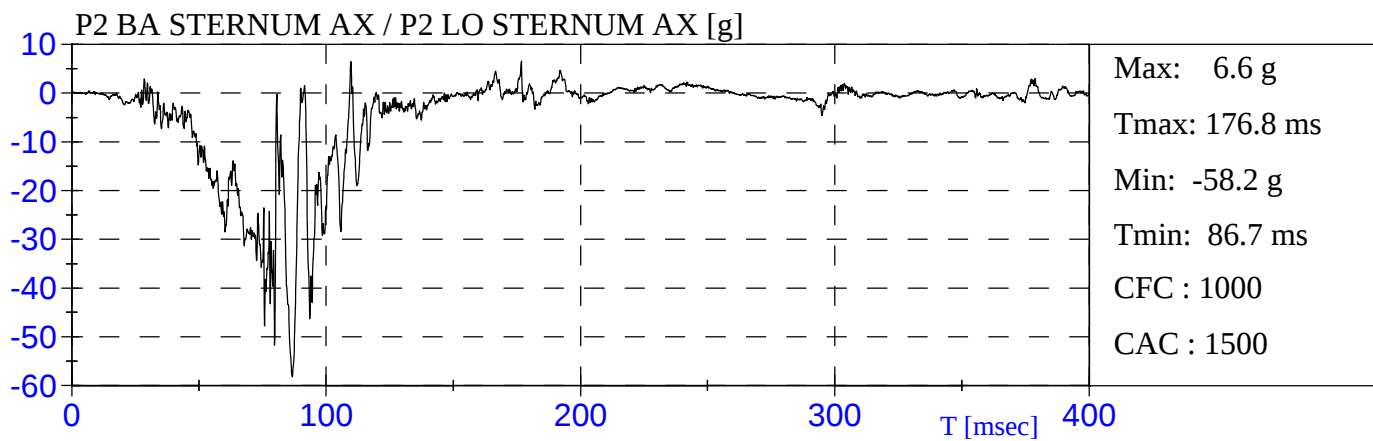
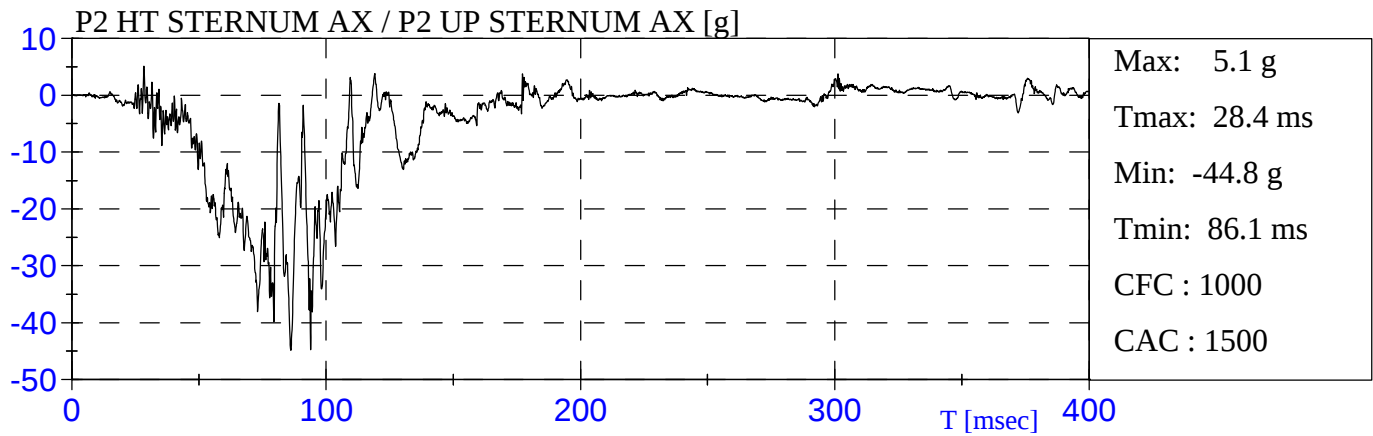


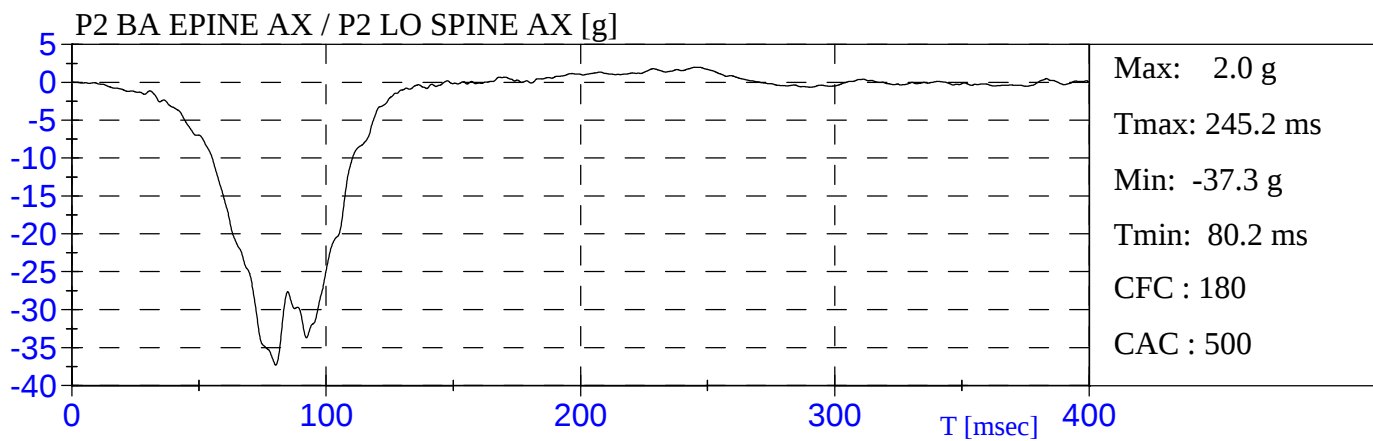
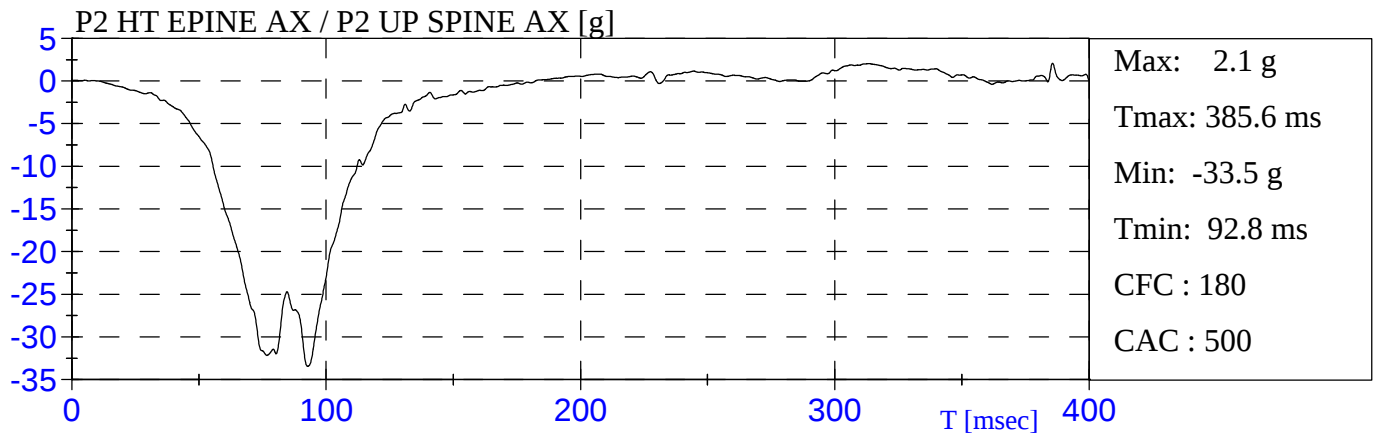




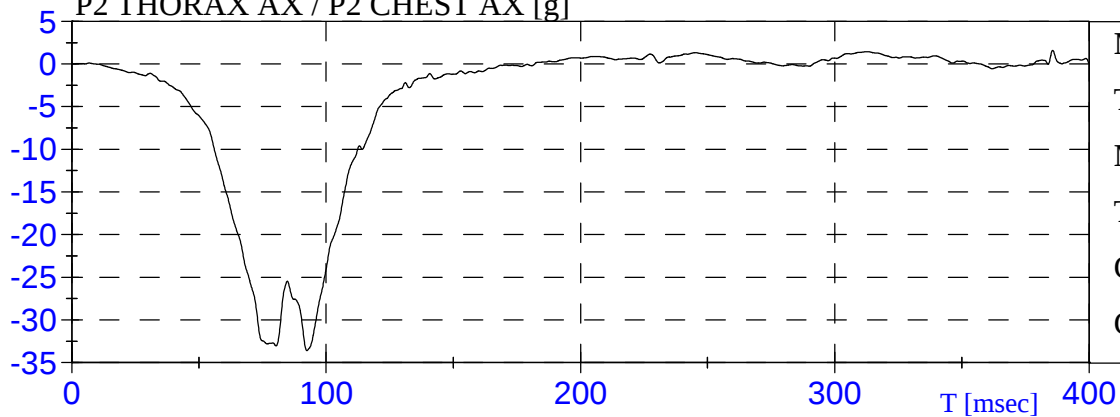






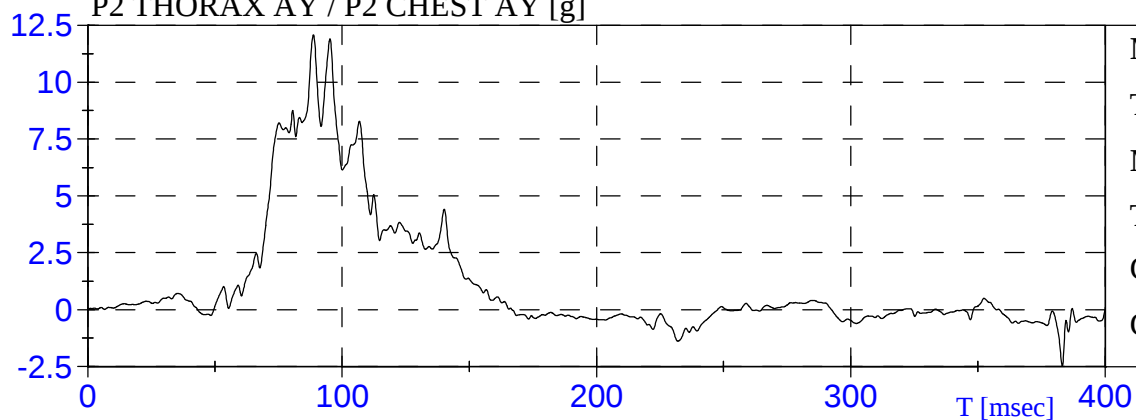


P2 THORAX AX / P2 CHEST AX [g]



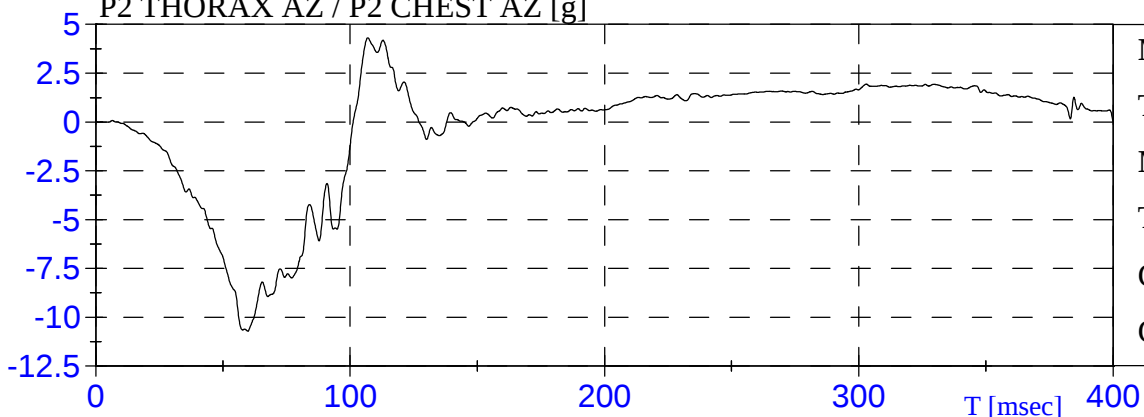
Max: 1.6 g
Tmax: 385.6 ms
Min: -33.6 g
Tmin: 92.5 ms
CFC : 180
CAC : 500

P2 THORAX AY / P2 CHEST AY [g]



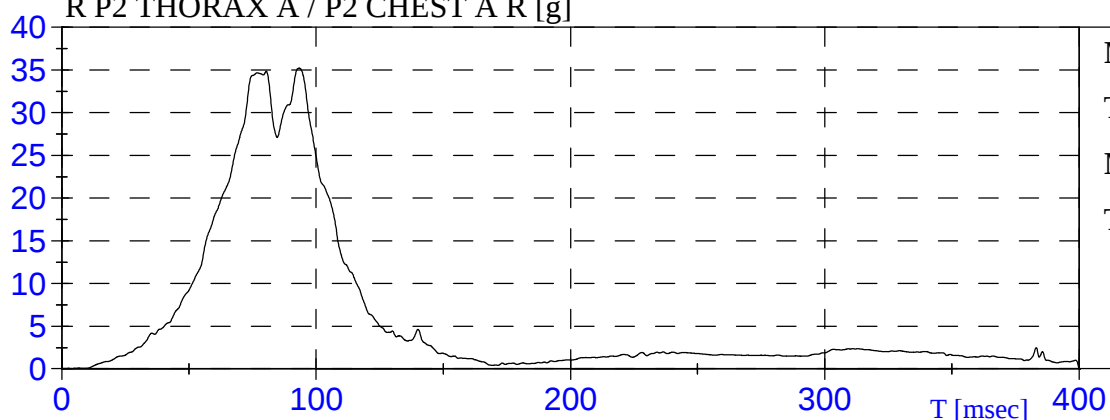
Max: 12.1 g
Tmax: 88.7 ms
Min: -2.5 g
Tmin: 383.2 ms
CFC : 180
CAC : 500

P2 THORAX AZ / P2 CHEST AZ [g]



Max: 4.3 g
Tmax: 106.9 ms
Min: -10.7 g
Tmin: 59.7 ms
CFC : 180
CAC : 500

R P2 THORAX A / P2 CHEST A R [g]

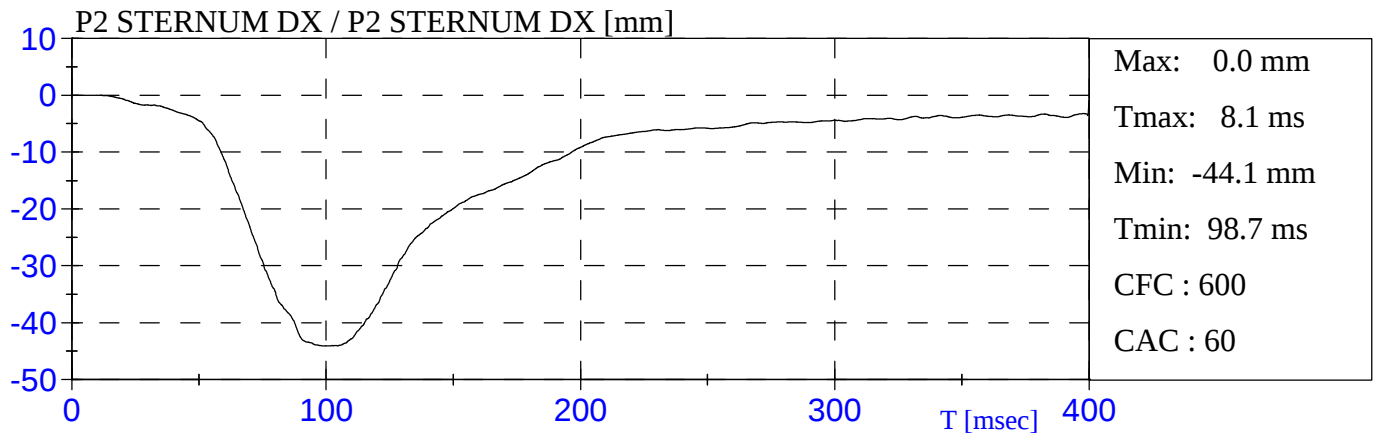


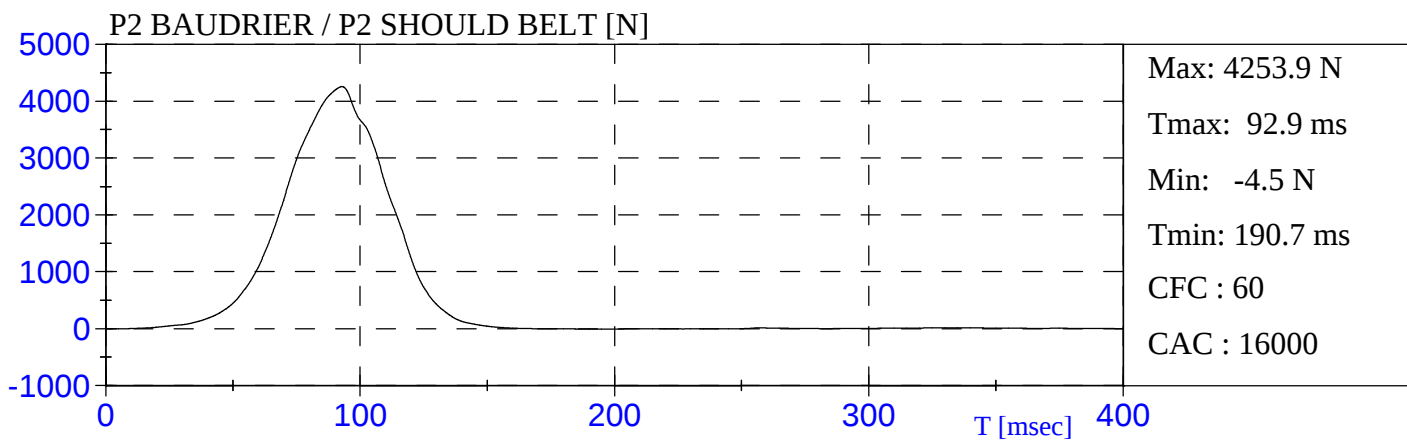
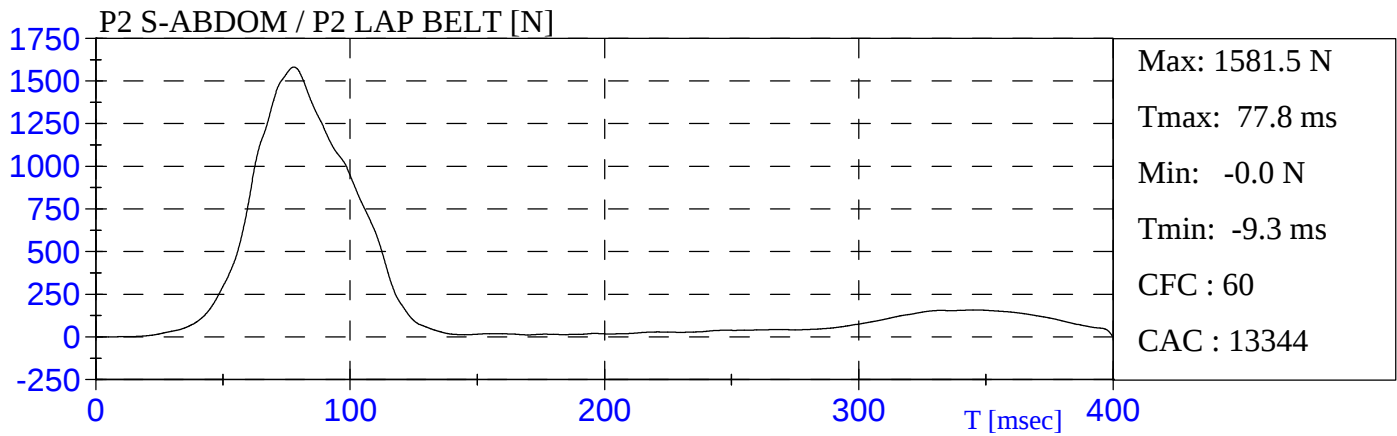
Max: 35.2 g
Tmax: 93.4 ms
Min: 0.0 g
Tmin: -10.0 ms

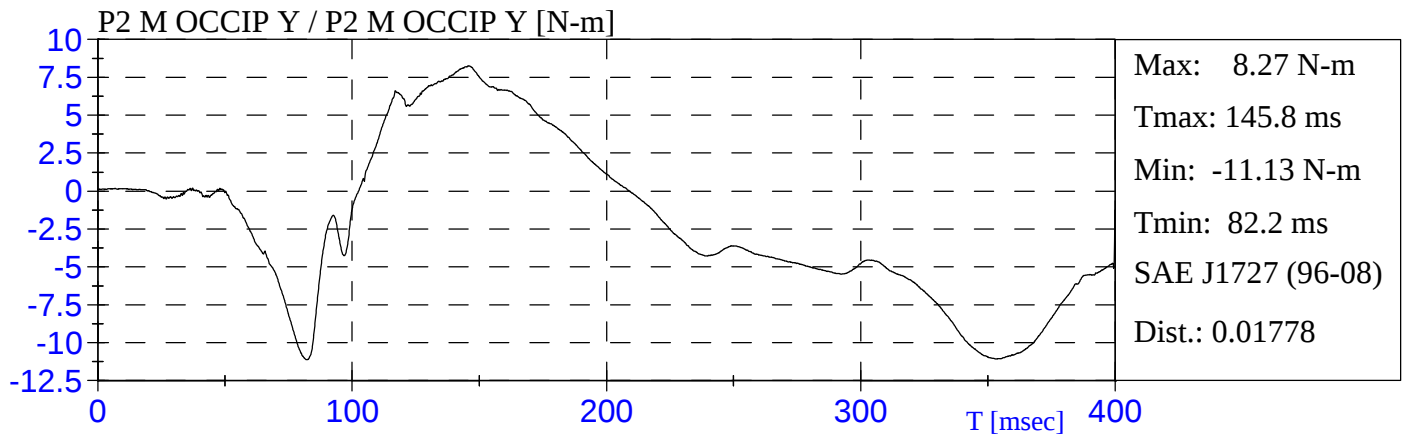


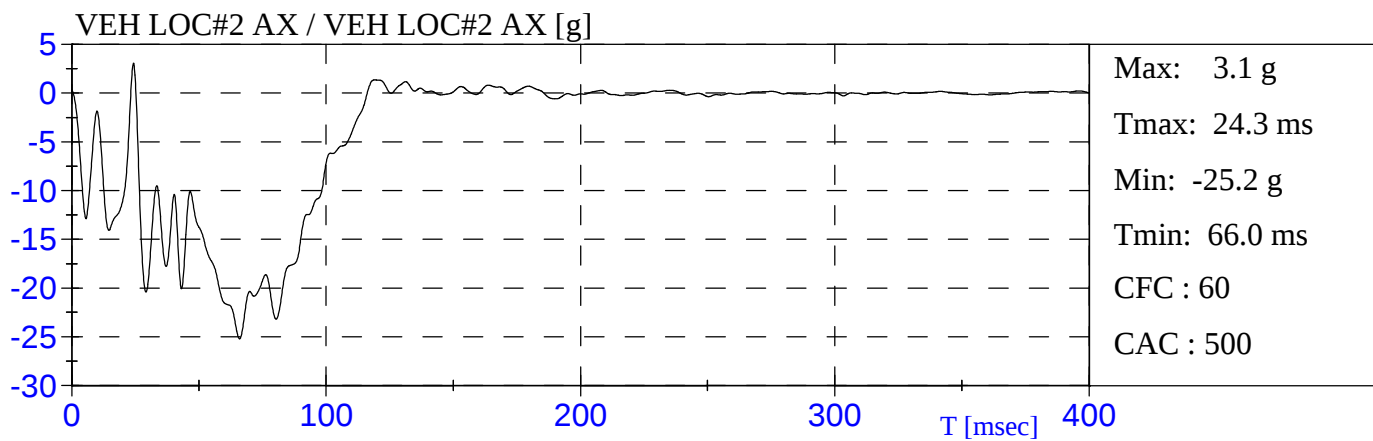
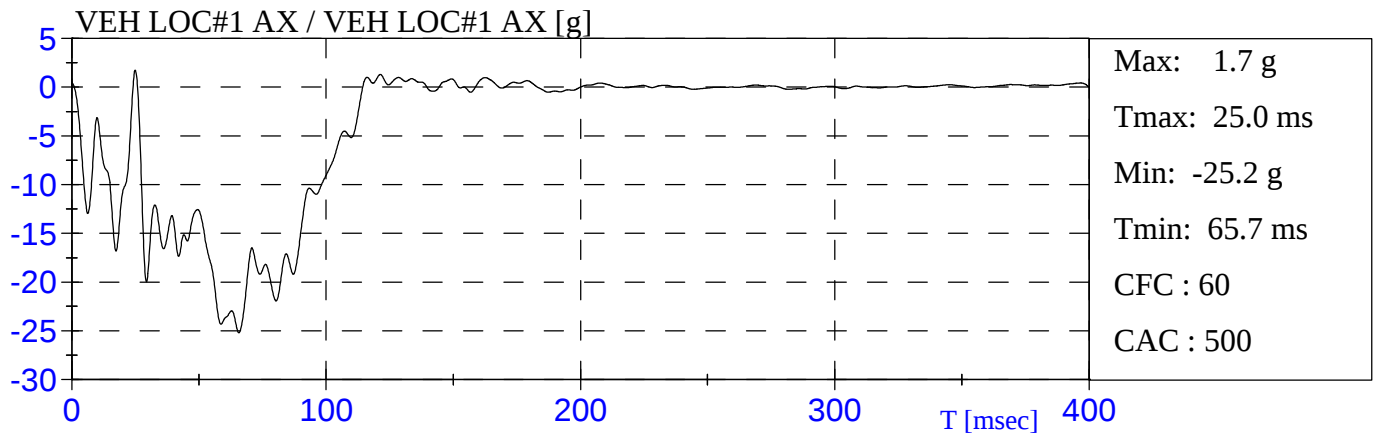
COLLISION FRONTALE
FRONTAL CRASH
SATURN ION 2004

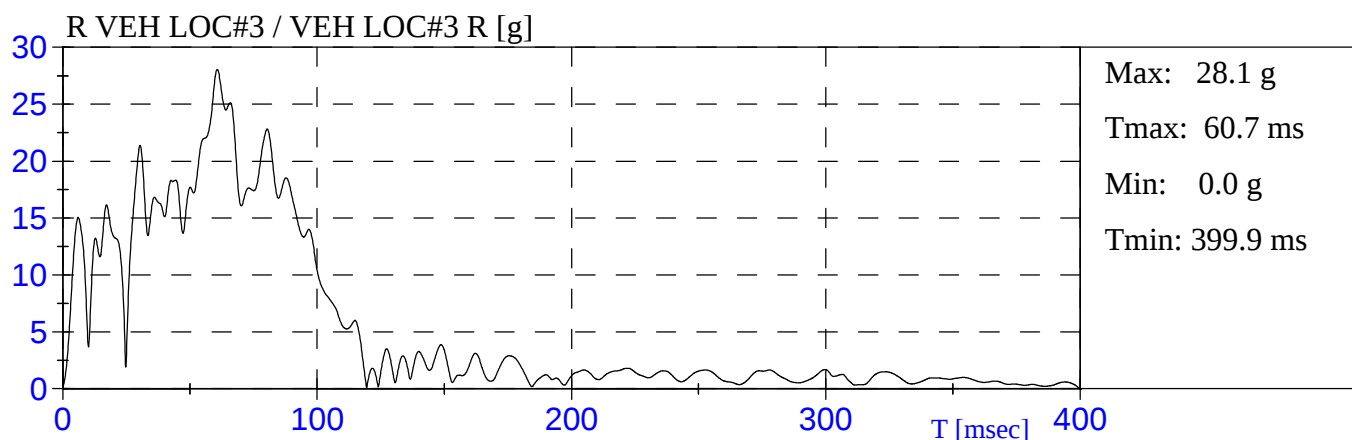
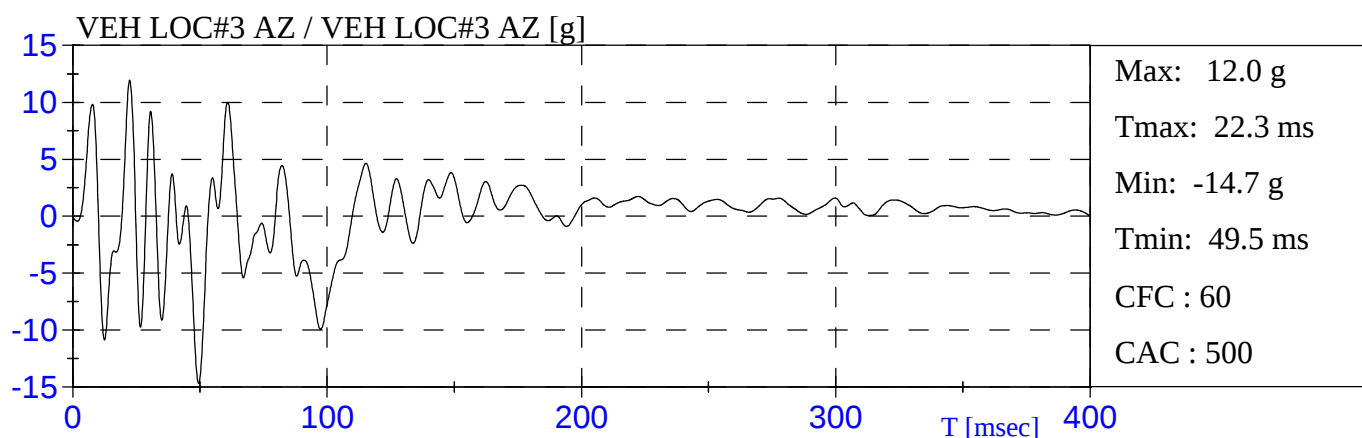
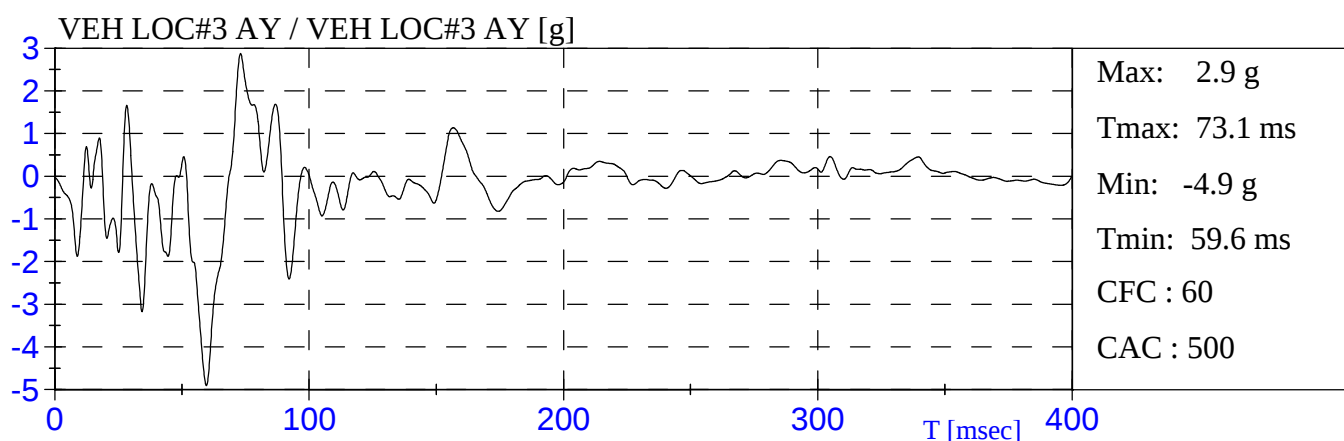
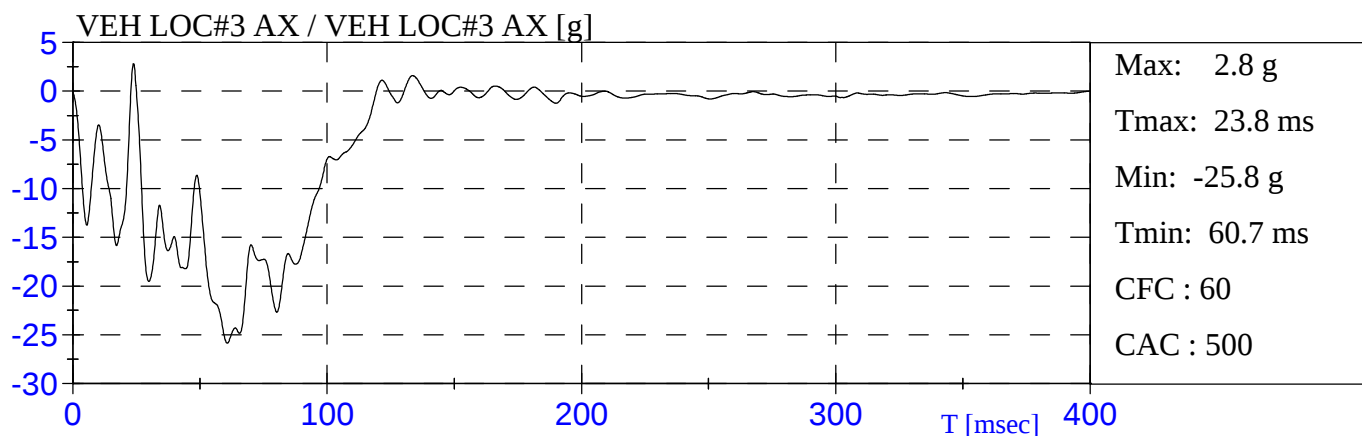
Date: 2004-02-24
N° TC / TC No.: TC04-116











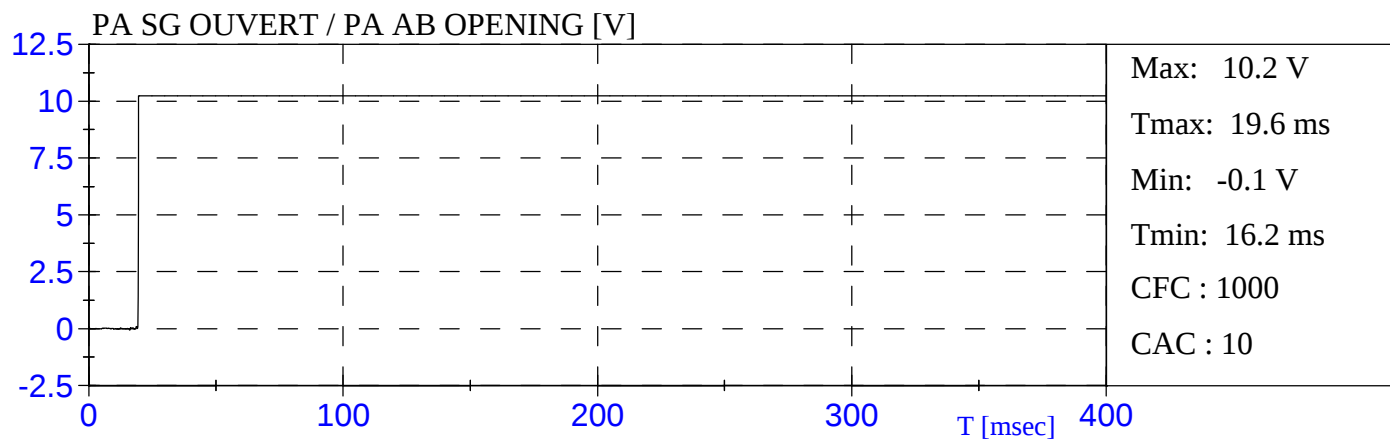
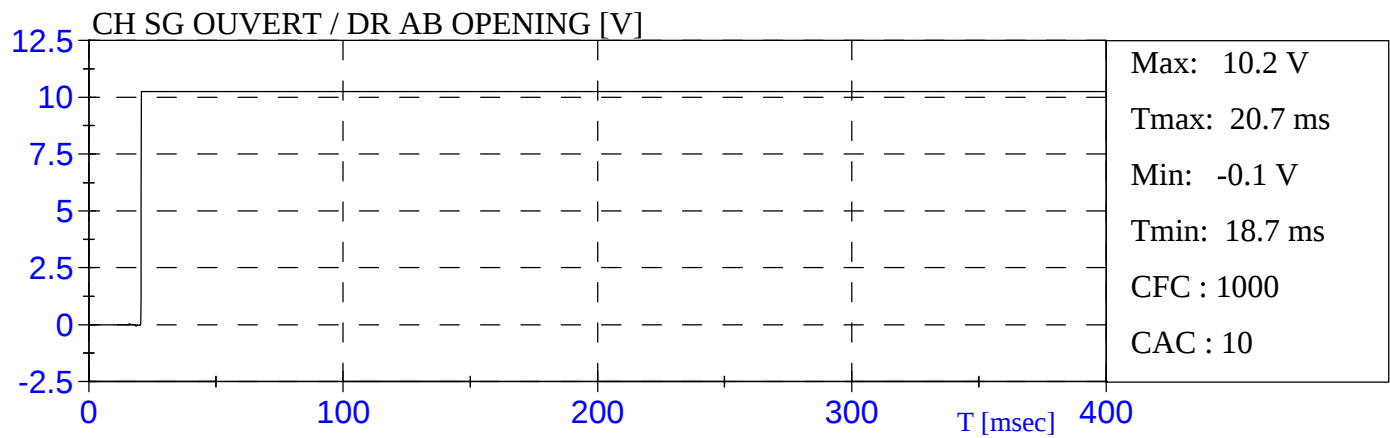


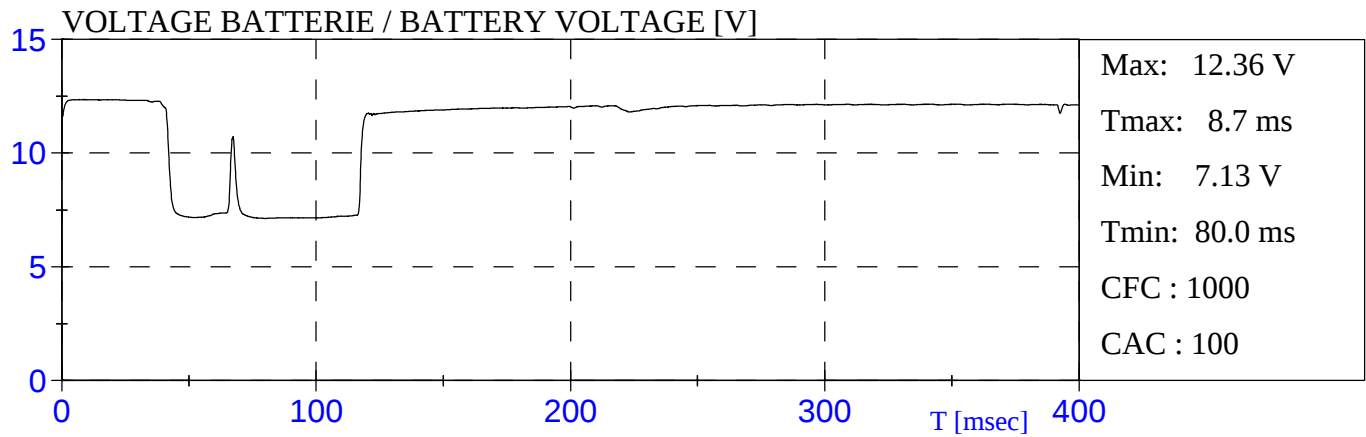
COLLISION FRONTALE
FRONTAL CRASH

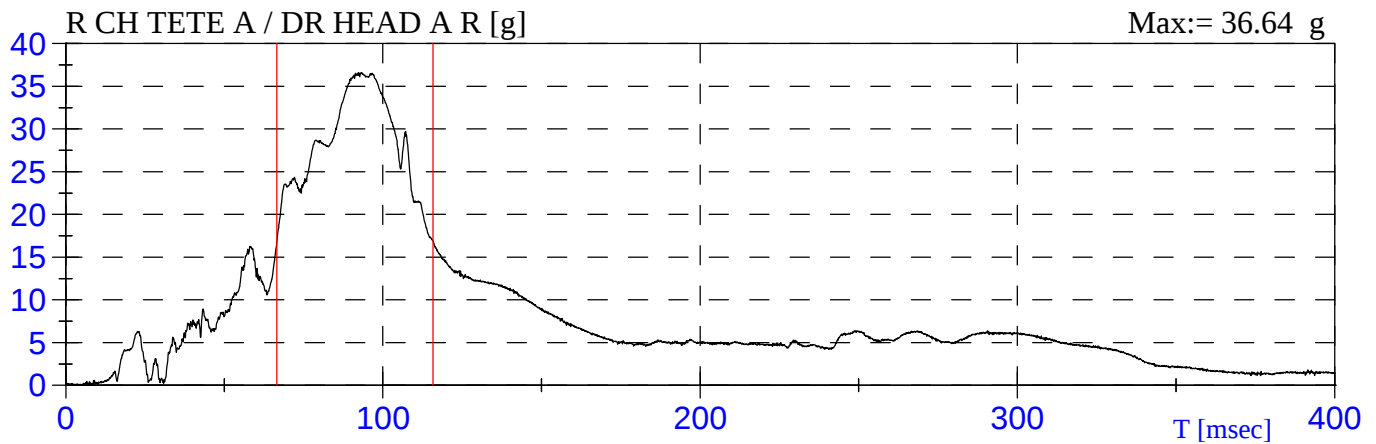
SATURN ION 2004

Date: 2004-02-24

N° TC / TC No.: TC04-116





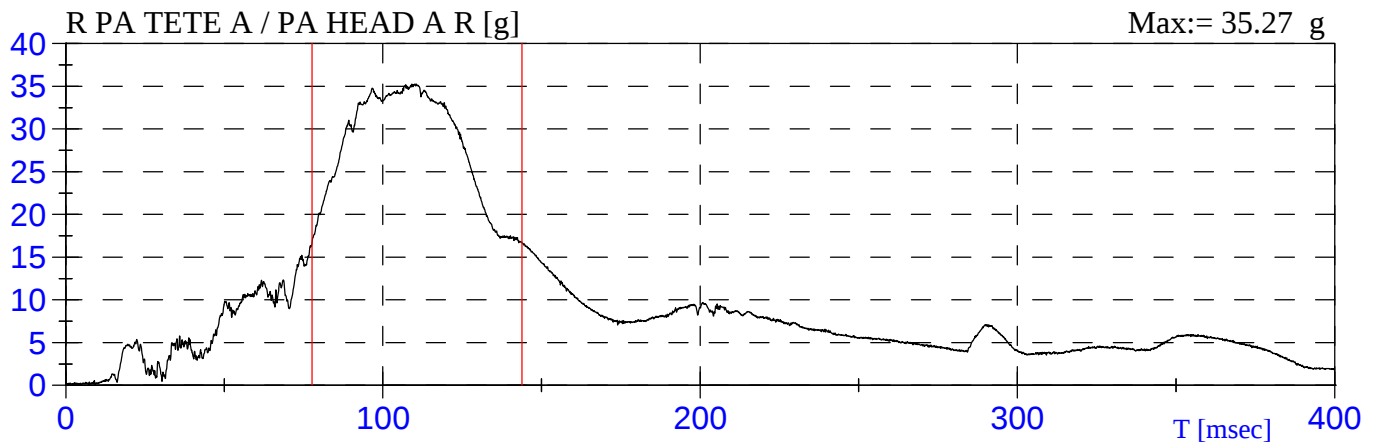


HEAD INJURY CRITERIA (HIC) *

CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 209	HIC(36ms):= 190	HIC(15ms):= 111
T1:= 66.5 ms	T1:= 72.8 ms	T1:= 86.6 ms
T2:= 115.8 ms	T2:= 108.8 ms	T2:= 101.6 ms

* Selon / According To: SAE J1727 96-08

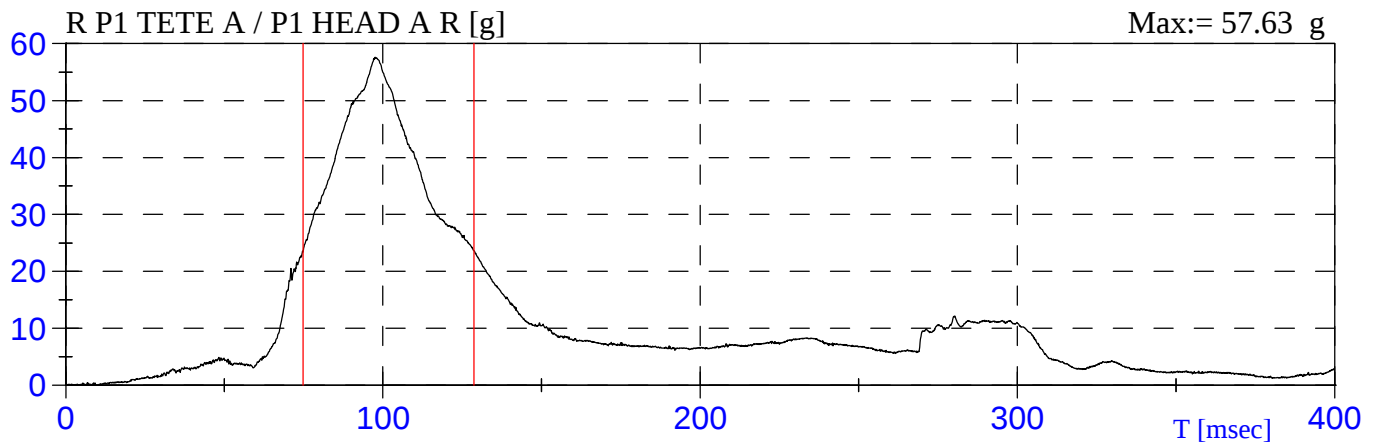


HEAD INJURY CRITERIA (HIC) *

CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 272	HIC(36ms):= 229	HIC(15ms):= 104
T1:= 77.7 ms	T1:= 88.1 ms	T1:= 100.5 ms
T2:= 143.9 ms	T2:= 124.1 ms	T2:= 115.5 ms

* Selon / According To: SAE J1727 96-08

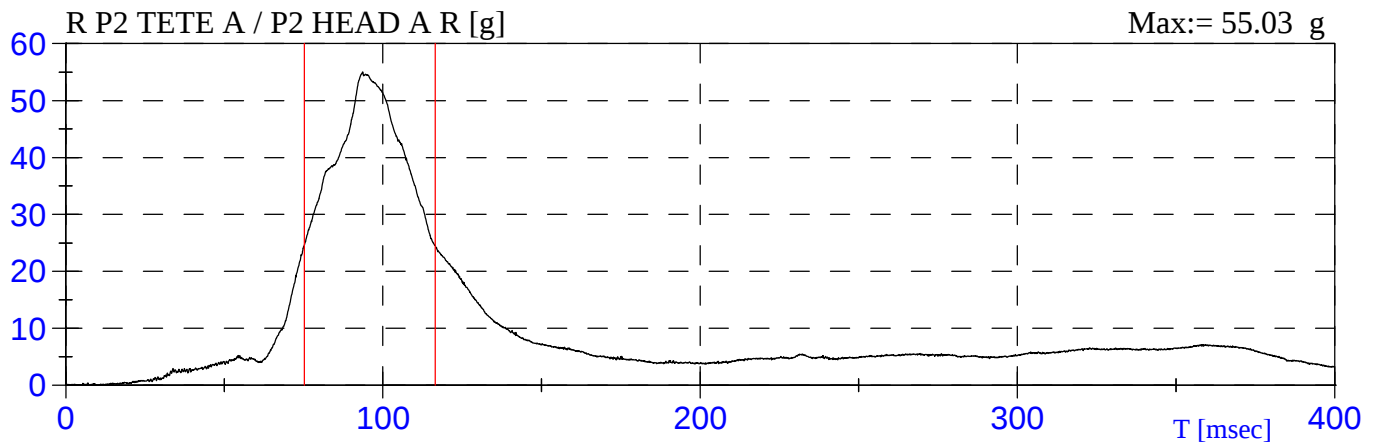


HEAD INJURY CRITERIA (HIC) *

CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 522	HIC(36ms):= 492	HIC(15ms):= 306
T1:= 74.9 ms	T1:= 79.5 ms	T1:= 89.4 ms
T2:= 128.7 ms	T2:= 115.5 ms	T2:= 104.4 ms

* Selon / According To: SAE J1727 96-08



HEAD INJURY CRITERIA (HIC) *

CRITÈRE DE BLESSURE DE LA TÊTE

HIC:= 439	HIC(36ms):= 434	HIC(15ms):= 276
T1:= 75.3 ms	T1:= 77.7 ms	T1:= 89.0 ms
T2:= 116.5 ms	T2:= 113.7 ms	T2:= 104.0 ms

* Selon / According To: SAE J1727 96-08

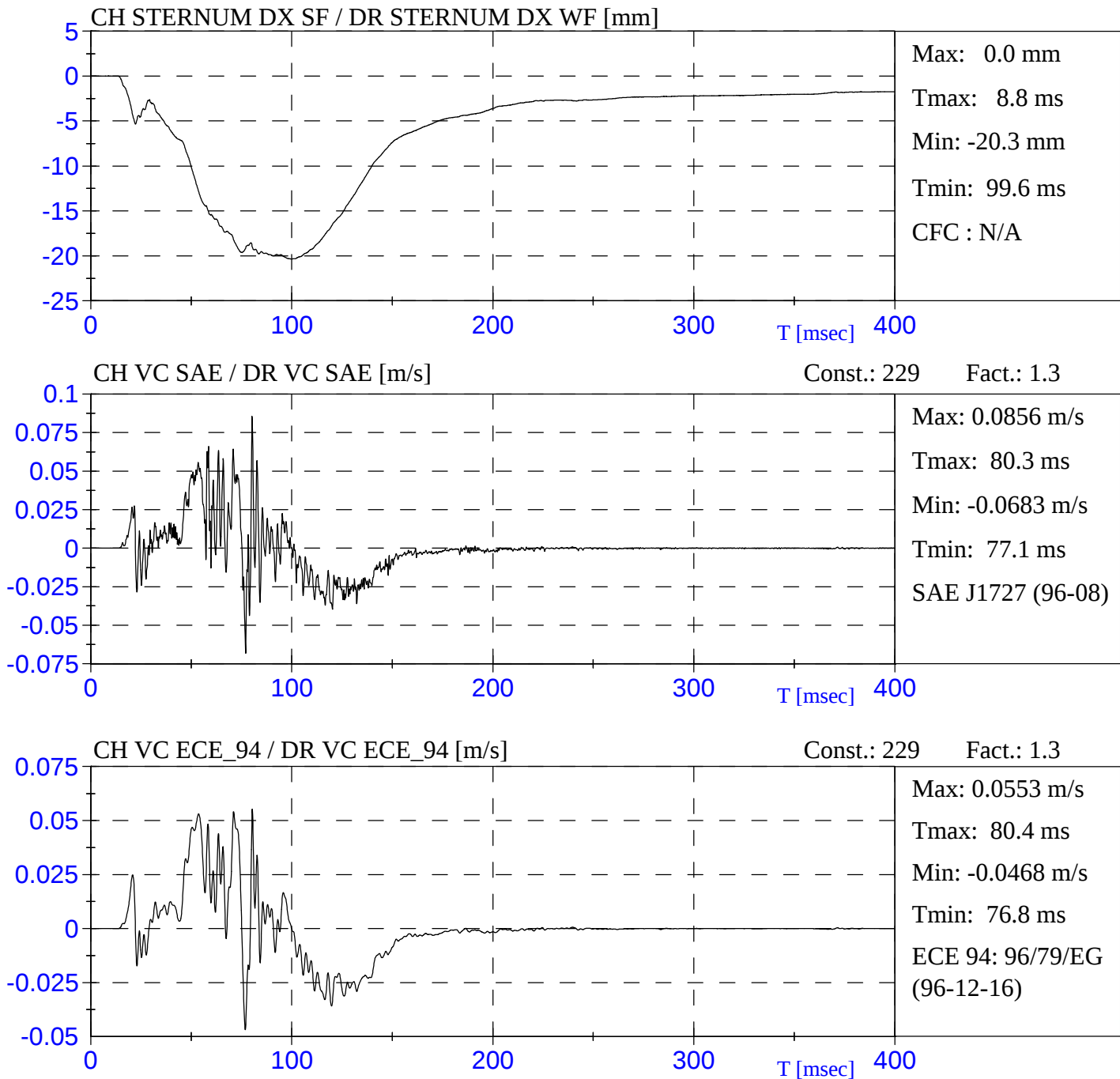


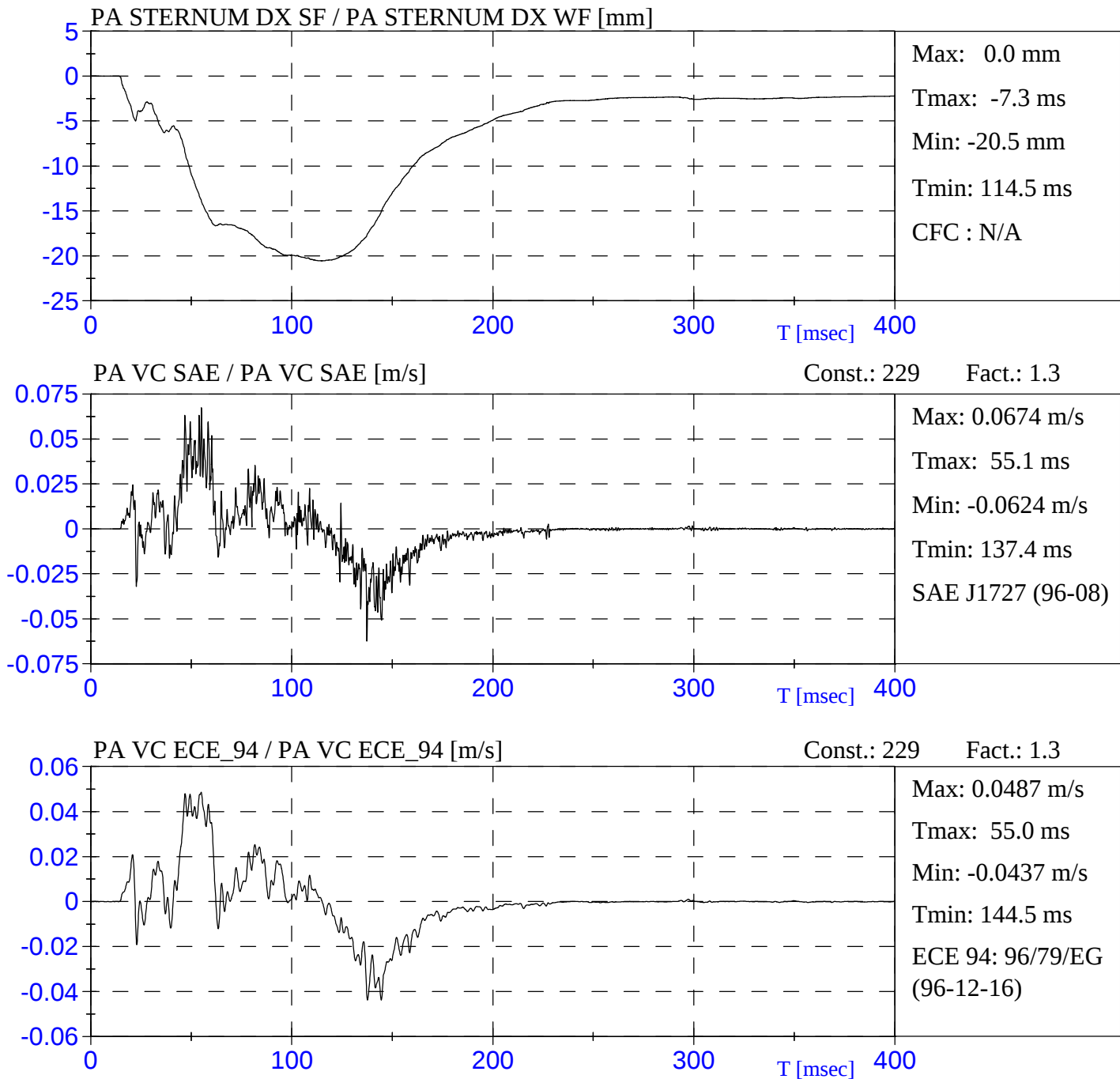
V•C

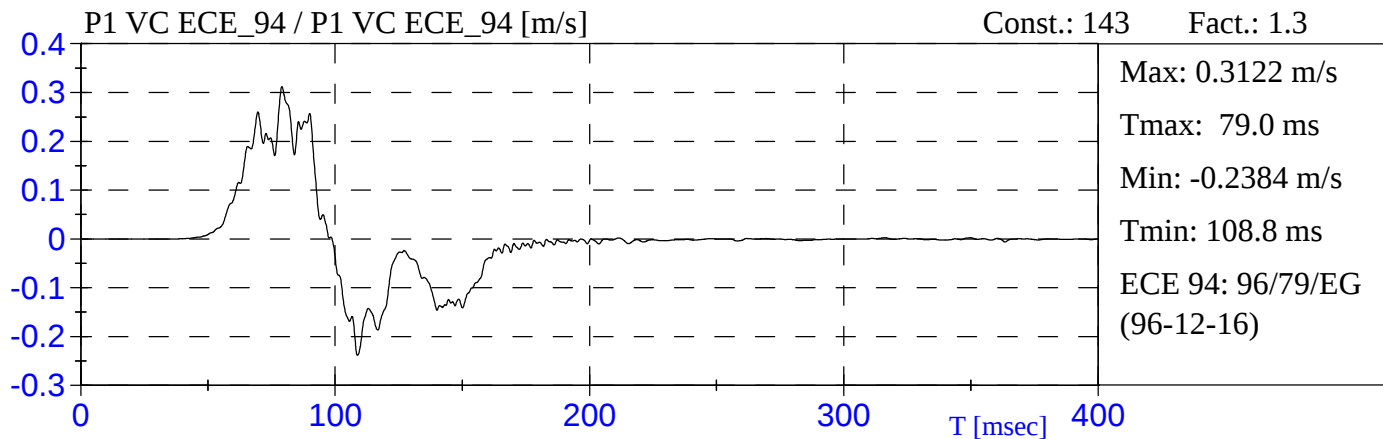
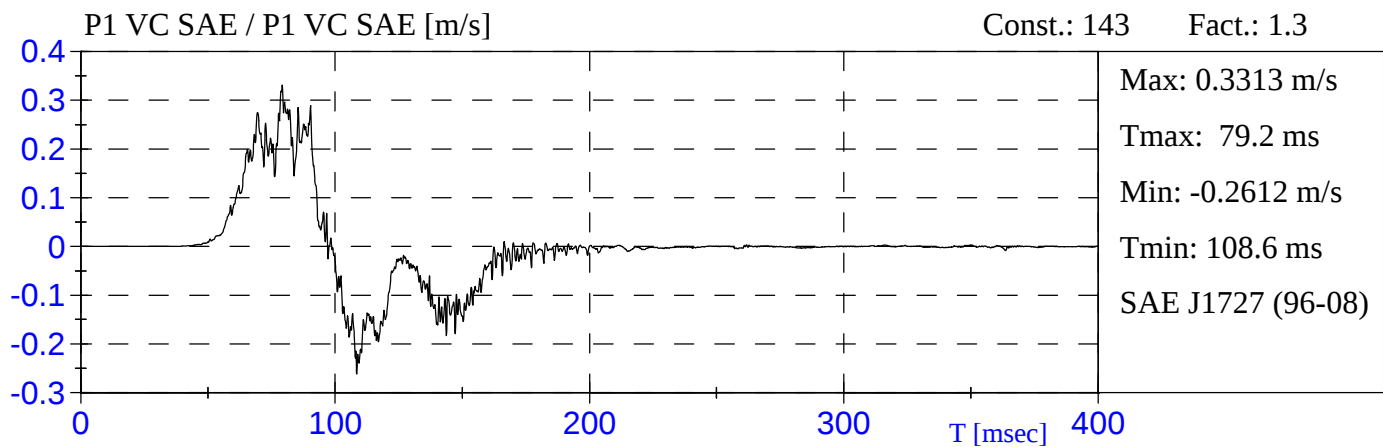
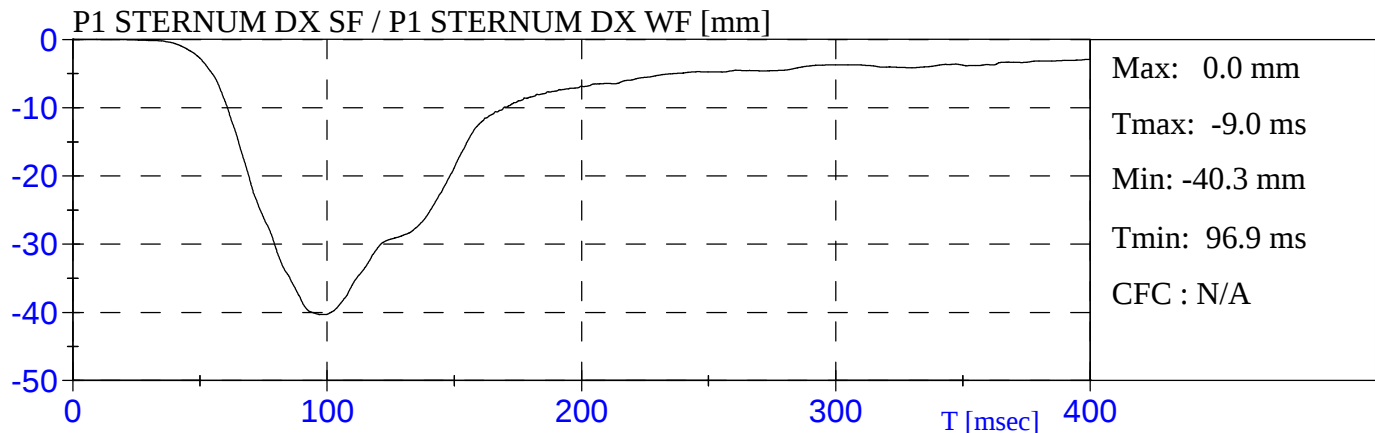
Date: 2004-02-24

SATURN ION 2004

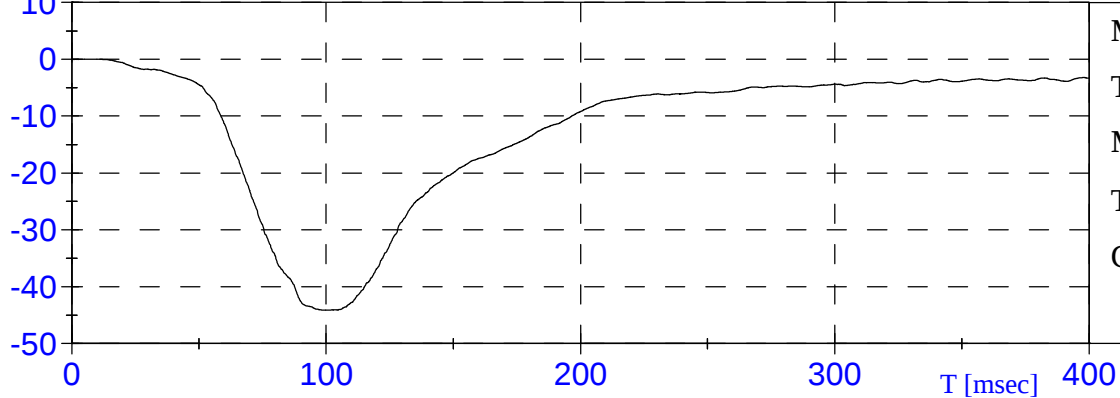
N° TC / TC No.: TC04-116







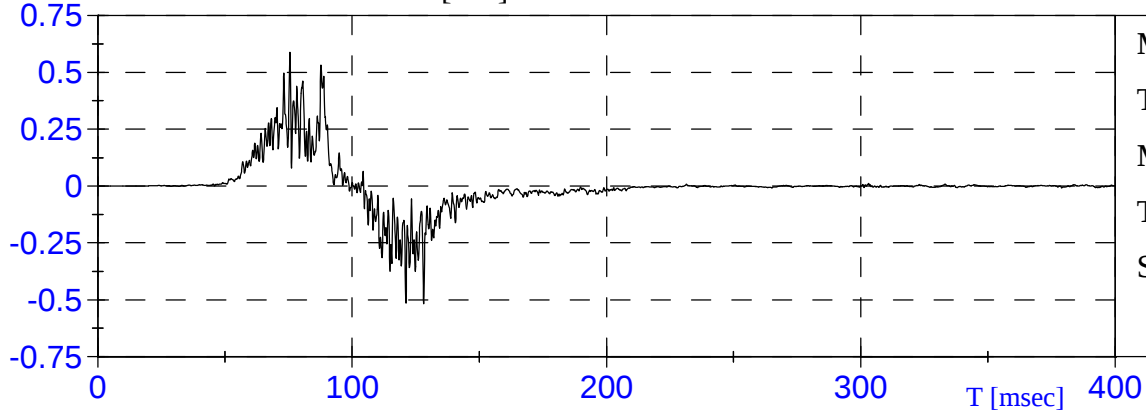
P2 STERNUM DX SF / P2 STERNUM DX WF [mm]



Max: 0.0 mm
Tmax: 8.0 ms
Min: -44.1 mm
Tmin: 104.6 ms
CFC : N/A

P2 VC SAE / P2 VC SAE [m/s]

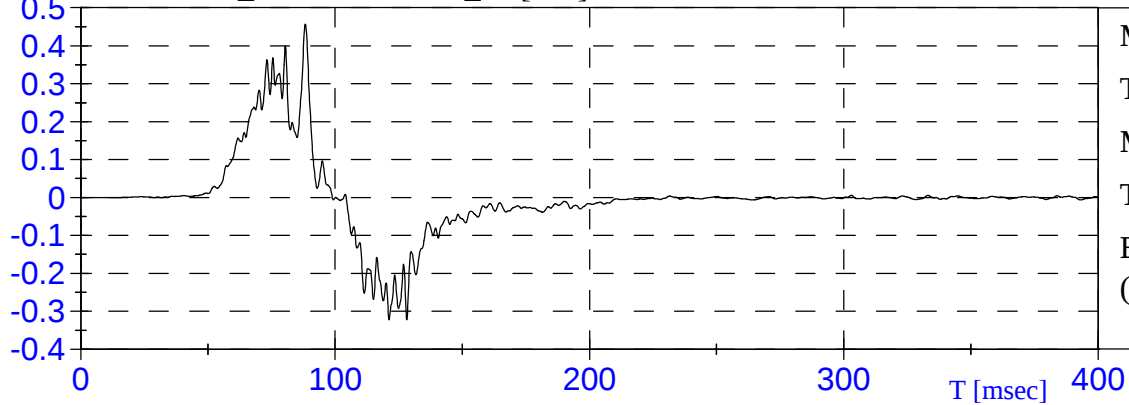
Const.: 143 Fact.: 1.3



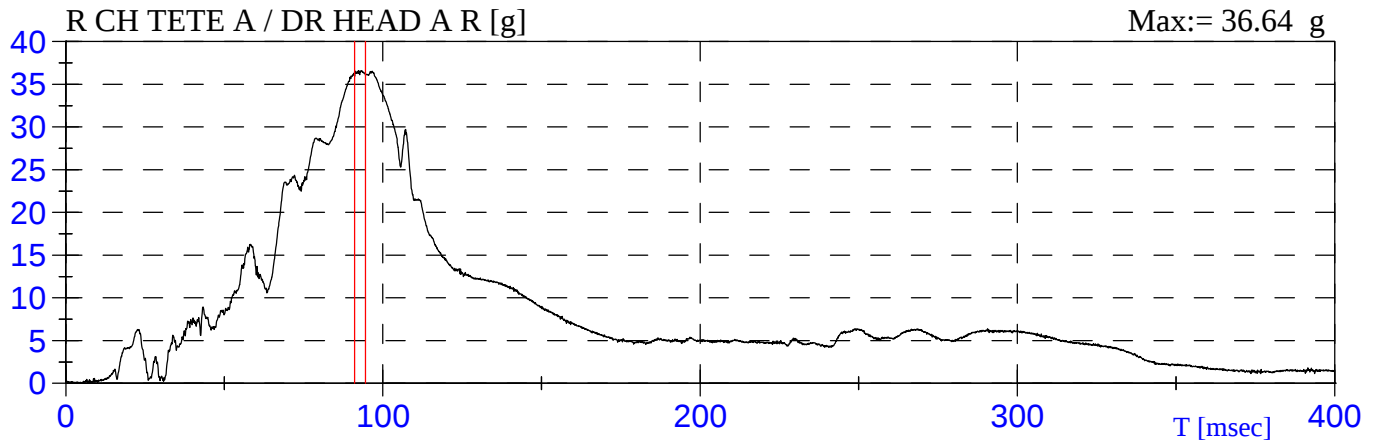
Max: 0.5886 m/s
Tmax: 75.6 ms
Min: -0.5174 m/s
Tmin: 128.2 ms
SAE J1727 (96-08)

P2 VC ECE_94 / P2 VC ECE_94 [m/s]

Const.: 143 Fact.: 1.3

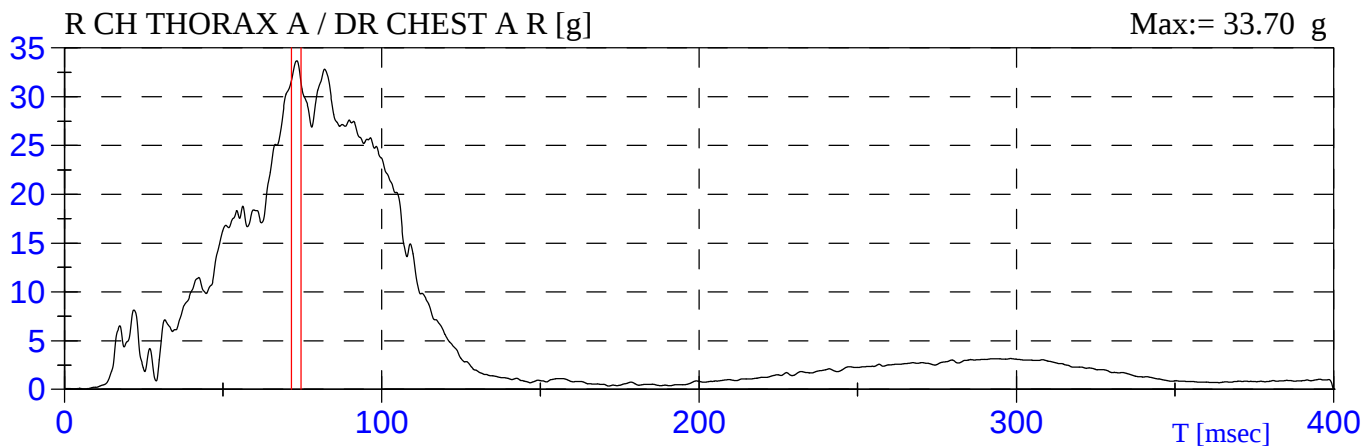


Max: 0.4570 m/s
Tmax: 88.2 ms
Min: -0.3226 m/s
Tmin: 121.2 ms
ECE 94: 96/79/EG
(96-12-16)



CLIP 3ms *

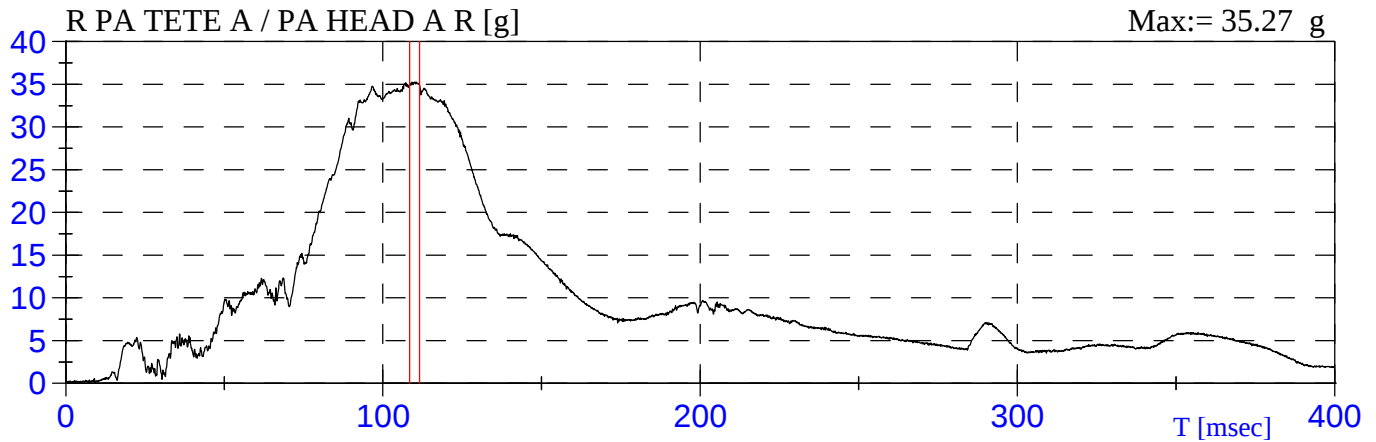
Acc. := 36.14 g	T1:= 91.2 ms	T2:= 94.5 ms
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CLIP 3ms *

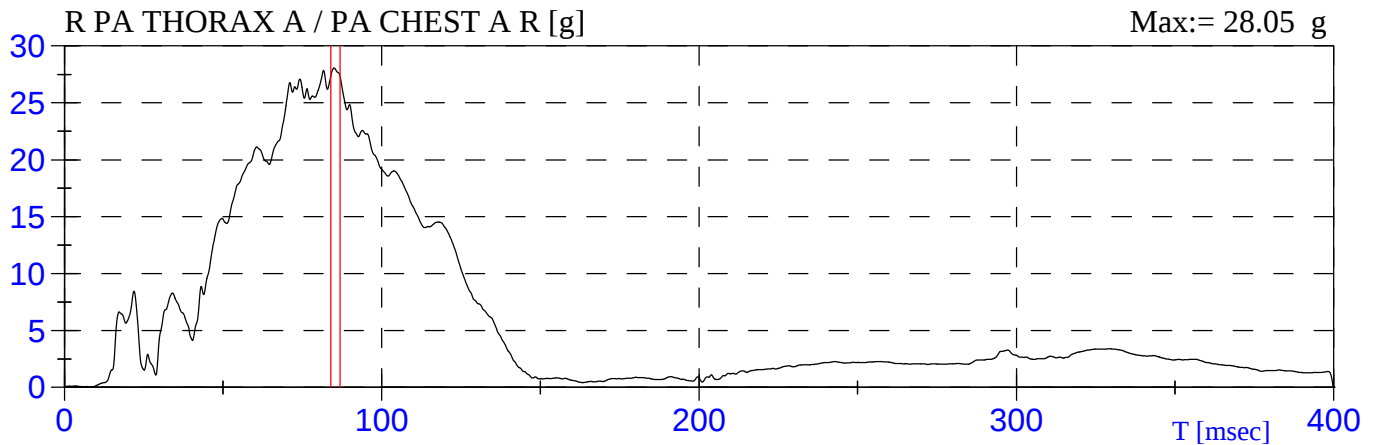
Acc. := 31.58 g	T1:= 71.5 ms	T2:= 74.5 ms
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* Selon / According To: NHTSA CLIP VERSION 2.1 5/95



CLIP 3ms *

Acc. := 34.92 g	T1:= 108.5 ms	T2:= 111.5 ms
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CLIP 3ms *

Acc. := 27.33 g	T1:= 83.9 ms	T2:= 86.9 ms
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* Selon / According To: NHTSA CLIP VERSION 2.1 5/95

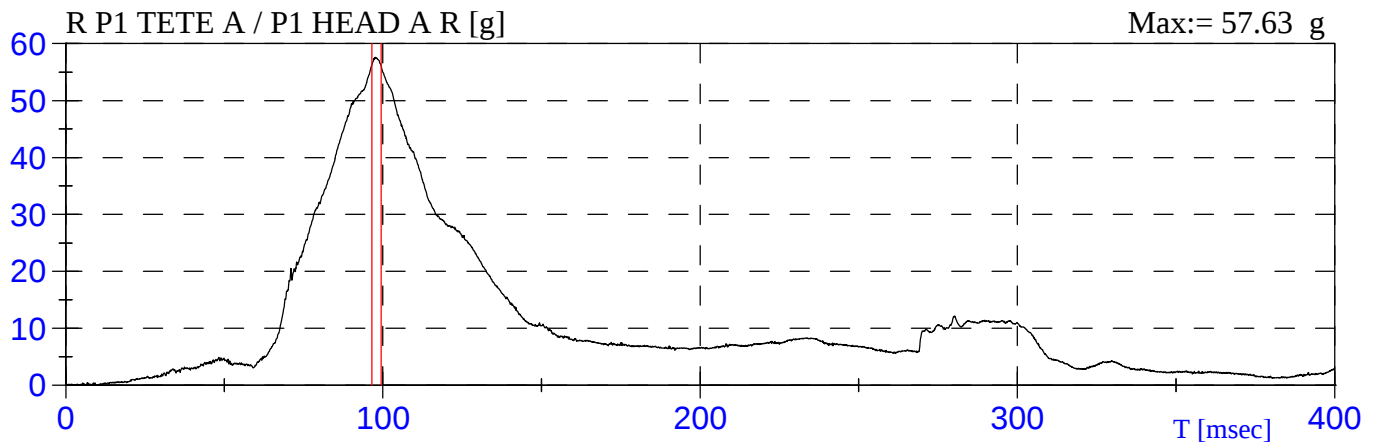


CLIP 3ms

Date: 2004-02-24

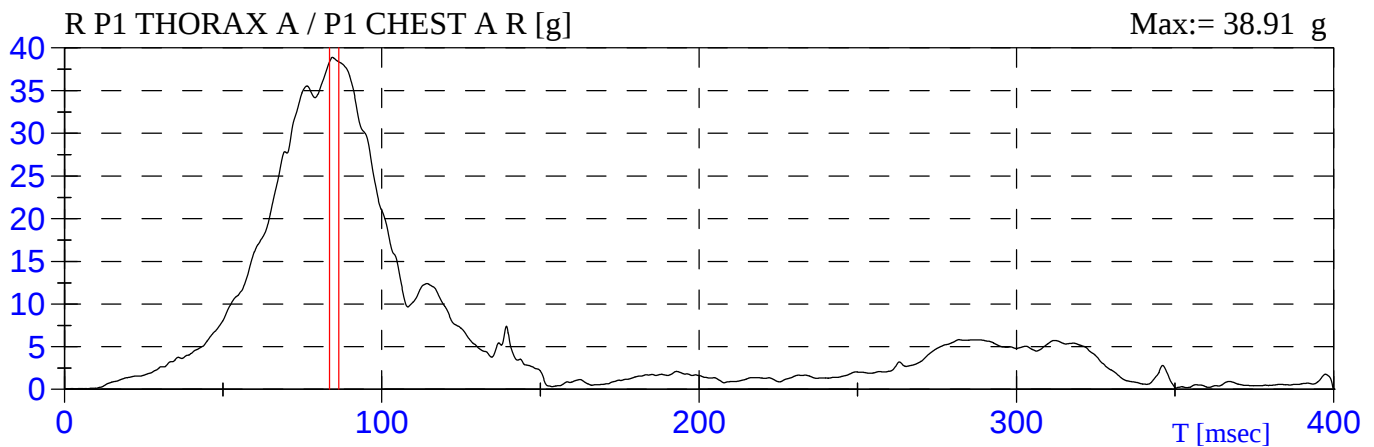
SATURN ION 2004

N° TC / TC No.: TC04-116



CLIP 3ms *

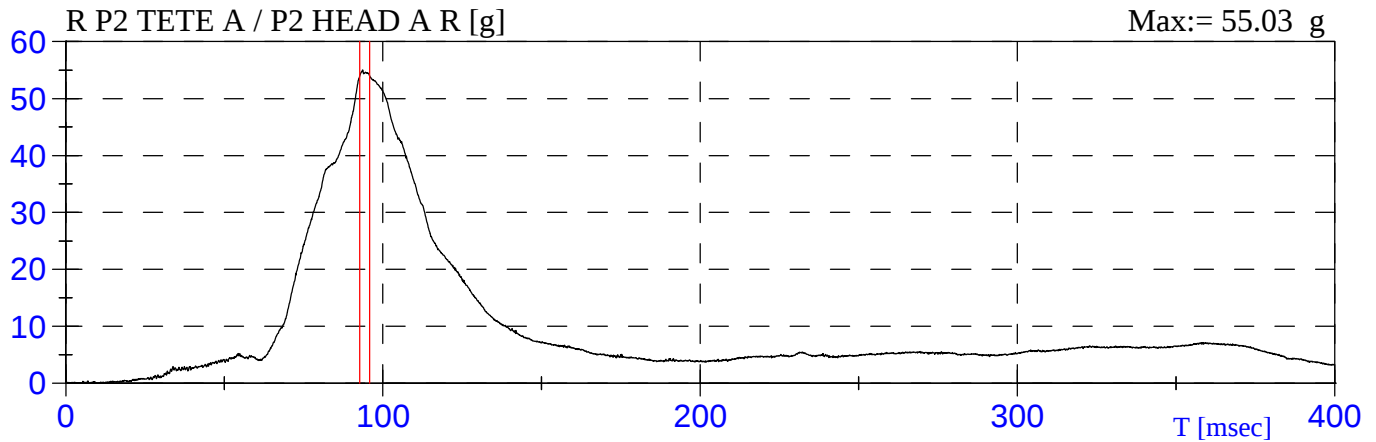
Acc. := 56.19 g	T1:= 96.5 ms	T2:= 99.5 ms
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CLIP 3ms *

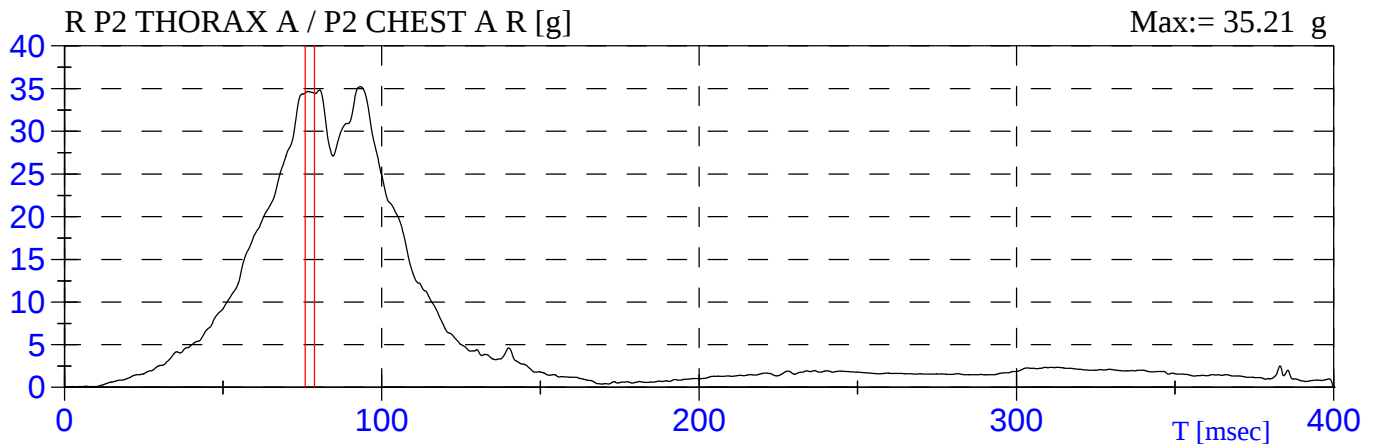
Acc. := 38.36 g	T1:= 83.5 ms	T2:= 86.5 ms
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* Selon / According To: NHTSA CLIP VERSION 2.1 5/95



CLIP 3ms *

Acc. := 54.08 g	T1:= 92.8 ms	T2:= 95.8 ms
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CLIP 3ms *

Acc. := 34.48 g	T1:= 75.8 ms	T2:= 78.8 ms
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* Selon / According To: NHTSA CLIP VERSION 2.1 5/95

INDEX DU TIBIA *
TIBIA INDEX *

TI Chauffeur / Driver

Mc := 225 N-m

Fc := 35.9 kN

TIBIA	GAUCHE / LEFT	DROIT / RIGHT
HAUT / UPPER	0.244	0.307
BAS / LOWER	0.319	0.336

TI Passager / Passenger

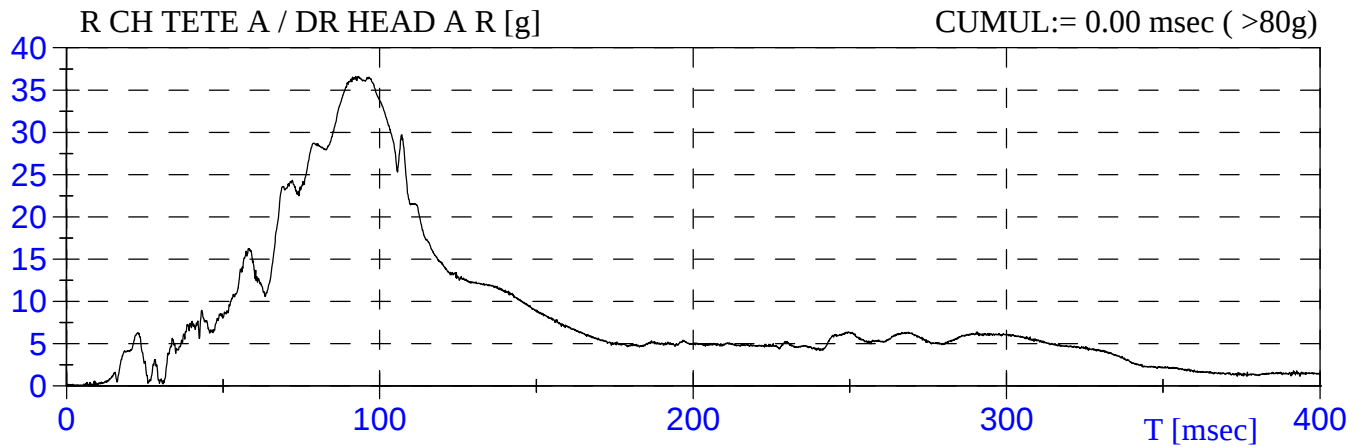
Mc := 225 N-m

Fc := 35.9 kN

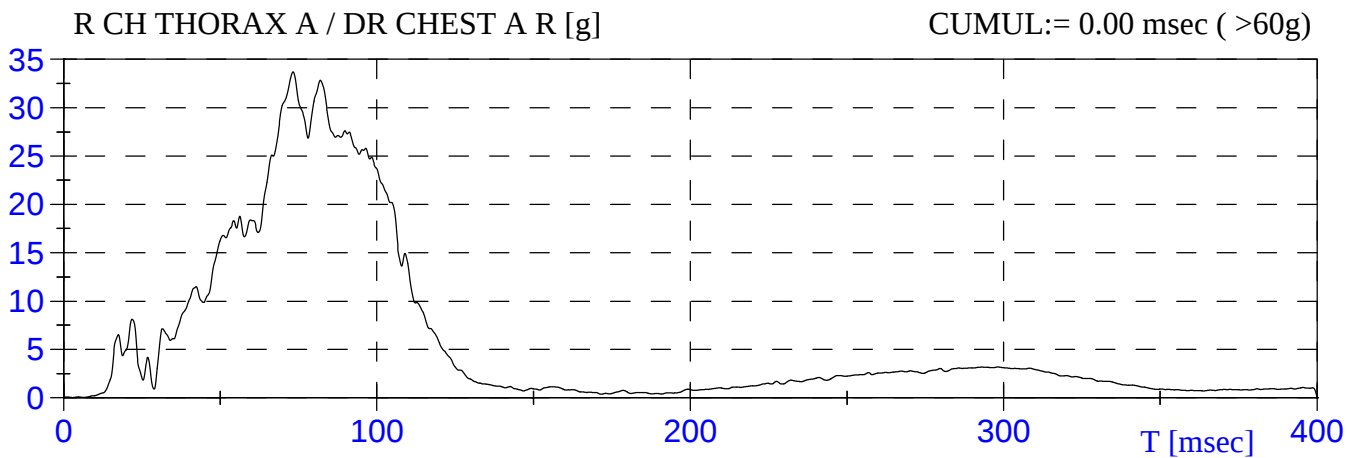
TIBIA	GAUCHE / LEFT	DROIT / RIGHT
HAUT / UPPER	0.376	0.316
BAS / LOWER	0.144	0.227

* Selon / According To: SAE J1727 AUG 96

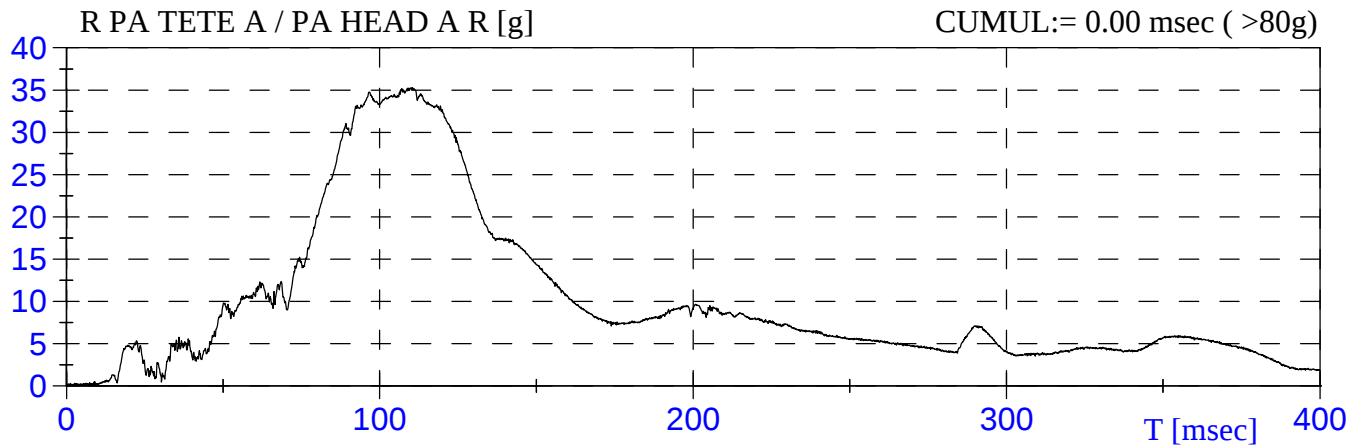
ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



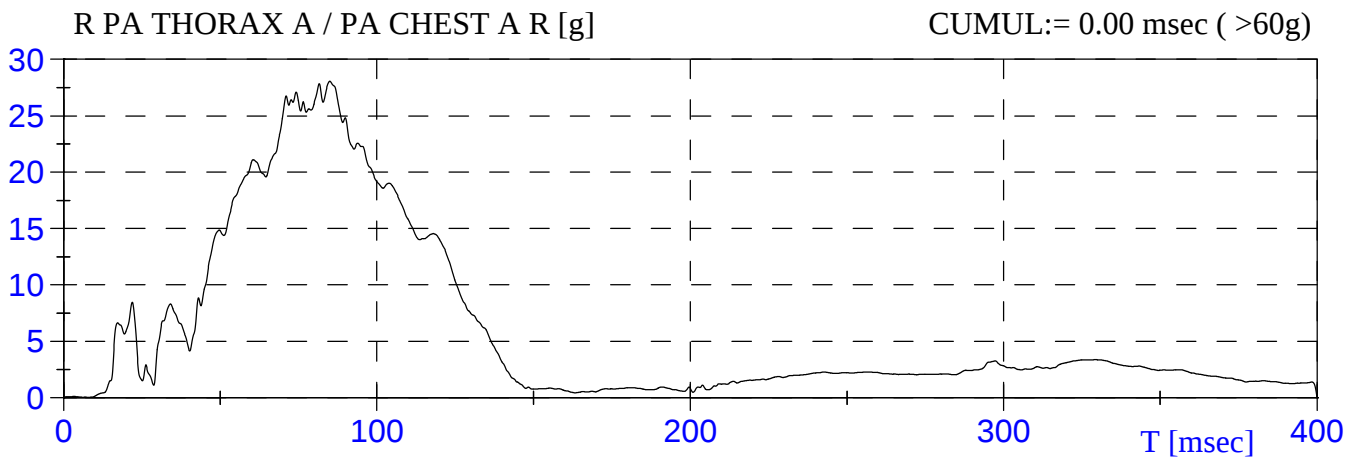
ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g



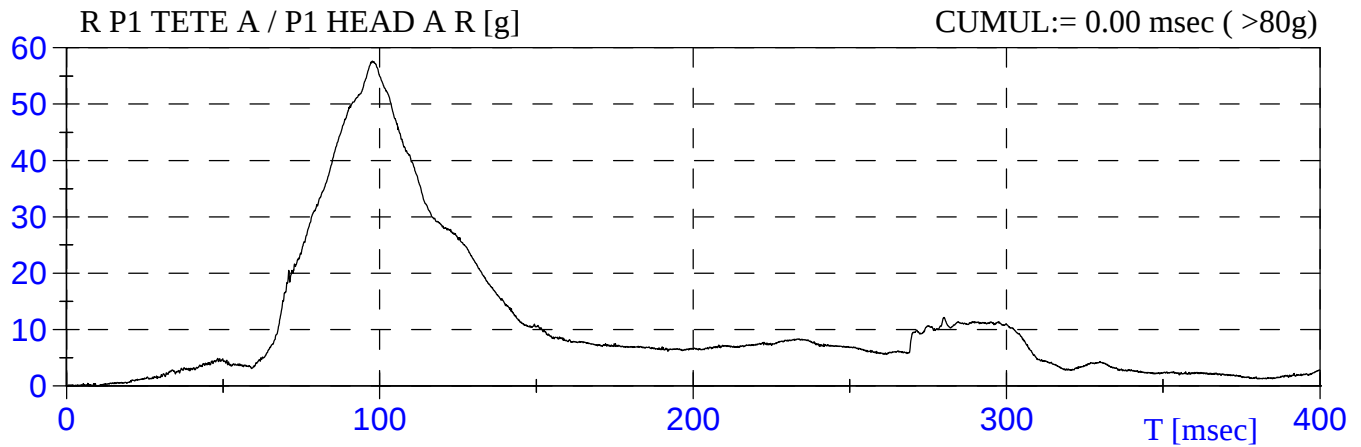
ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



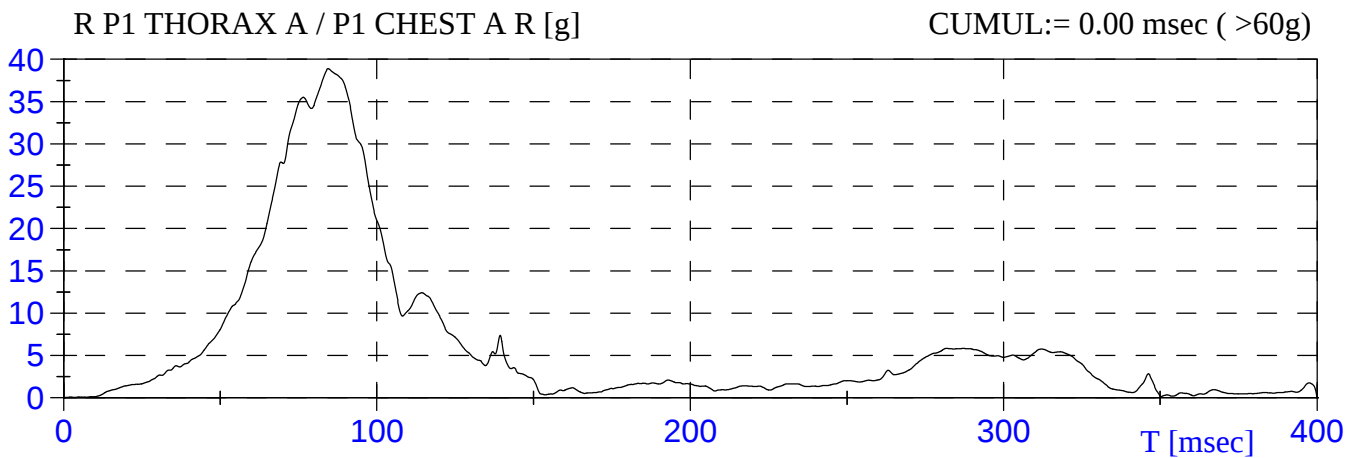
ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g



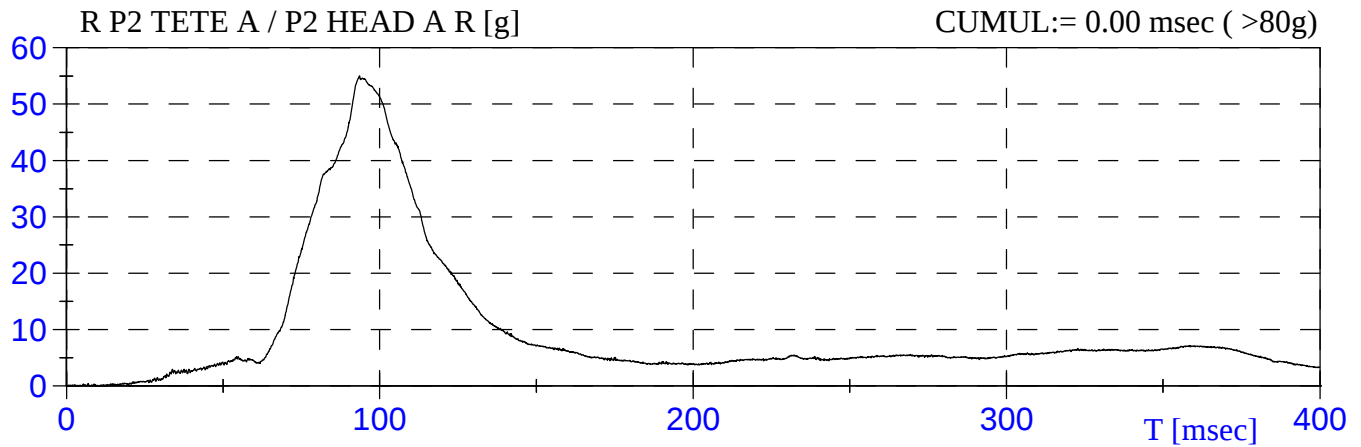
ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



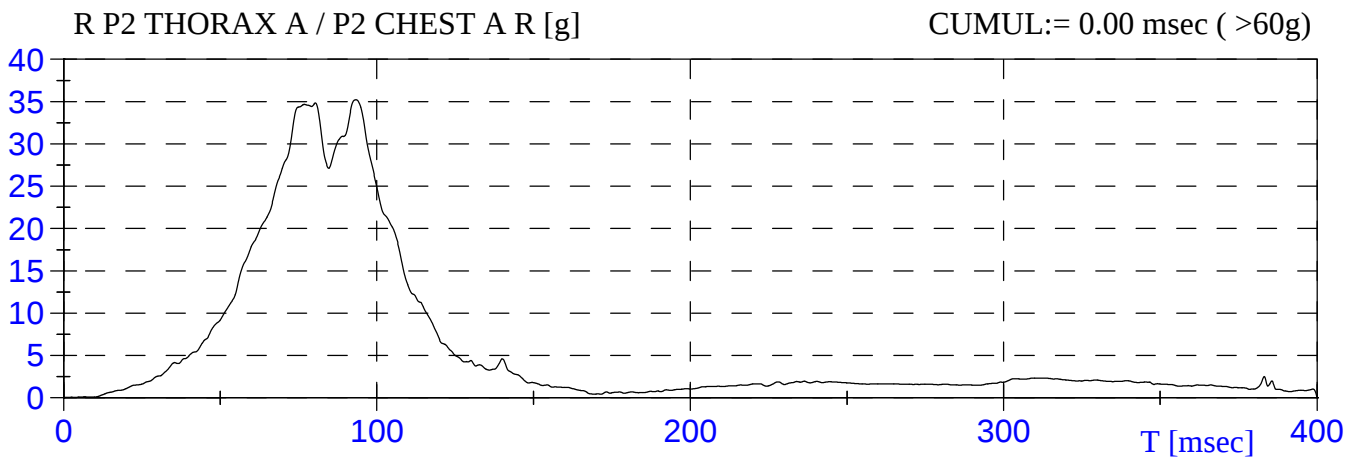
ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g



ACCÉLÉRATION DE LA TÊTE >80 g / HEAD ACCELERATION > 80 g



ACCÉLÉRATION DU THORAX >60 g / THORAX ACCELERATION > 60 g



Chauffeur / Driver

$N_{ij}^* = 0.20$

Valeurs critiques
Criticals Values

N tf	N te	Ncf	N ce	Tc	6806
				Cc	6160
0.20	0.12	0.02	0.08	Fc	310
				Ec	135

Passager / Passenger

$N_{ij}^* = 0.20$

Valeurs critiques
Criticals Values

N tf	N te	N cf	N ce	Tc	6806
				Cc	6160
0.20	0.19	0.01	0.10	Fc	310
				Ec	135

* Selon / According To: Federal Register 5/2000