項 次	規 章 名 稱	修訂內容	新增項目	頁碼	說明
1	2.1成人保護評等規章	◎		1	參考 Euro NCAP 成人保護評等規章 9.3 版，修訂前方偏置撞擊及前座鞭甩評等分數。
2	3.1前方偏置撞擊試驗規章	◎		33	參考 Euro NCAP 前方偏置撞擊試驗規章 1.1.4 版，修訂試驗速度、碰撞壁偏置量及駕駛座人偶型號，新增業者應提交資料之要求。
3	3.5前座鞭甩試驗規章	◎		122	參考 Euro NCAP 前座鞭甩試驗規章 4.2 版，修訂靜態量測方法、動態試驗人偶與感測器及脈衝規範。
4	3.7膝部撞擊區域之台車試驗程序規章	◎		295	參考 Euro NCAP 膝部撞擊區域之台車試驗程序規章 4.1 版，修訂脈衝要求、新增膝部空氣囊相關靜態開展試驗要求。
5	3.16緊急救援、事故脫困及安全技術試驗規章	◎		333	參考 Euro NCAP 緊急救援、事故脫困及安全技術試驗規章 2.3 版，修訂緊急救援資訊規範及事故脫困試驗項目，新增安全技術相關試驗及評等計分方式。

2.1成人保護評等規章

Euro NCAP Assessment Protocol – Adult Occupant Protection Version 9.3

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2 METHOD OF ASSESSMENT The starting point for the assessment of adult occupant protection is the dummy response data recorded in the different test configurations. All criteria used are calculated according to Technical Bulletin 21. Initially, each relevant body area is given a score based on the measured dummy parameters. These scores can be adjusted after the test	**2 METHOD OF ASSESSMENT** The starting point for the assessment of adult occupant protection is the dummy response data recorded in five different test configurations: frontal impact in offset and full overlap, side impact, pole impact and (low speed) rear impact. All criteria used are calculated according to Technical Bulletin 17. Initially, each relevant body area is given a score based	2.1.1 評等方法 成人保護之評等係由多種不同試驗型態之人偶響應數據紀錄開始。首先，依照所測得之人偶參數，給予每個相關身體部位一項分數，該分數於試驗後得再依照補充規定(Supplementary requirement)進行調整，例如前方撞擊試驗將考慮是否調整原始分數，以反映乘員的運動學	2.1.1 評等方法 成人保護之評等係由五種不同試驗型態之人偶響應數據紀錄開始：前方偏置撞擊、前方全寬撞擊、側方撞擊、側方立柱撞擊以及（低速）後方撞擊。首先，依照所測得之人偶參數，給予每個相關身體部位一項分數，該分數於試驗後得再依照補充規定(Supplementary requirement)進行

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based on supplementary requirements. E.g. for frontal impact, consideration is given to whether the original score should be adjusted to reflect occupant kinematics or sensitivity to small changes in contact location, which might influence the protection of different sized occupants in different seating positions. The assessment also considers the structural performance of the car by taking account of such aspects as steering wheel displacement, pedal movement, foot well distortion and displacement of the A pillar. The adjustments (or modifiers) based on both inspection and geometrical considerations are applied to the body area assessments to which they are most relevant.	on the measured dummy parameters. These scores can be adjusted after the test based on supplementary requirements. E.g. for frontal impact, consideration is given to whether the original score should be adjusted to reflect occupant kinematics or sensitivity to small changes in contact location, which might influence the protection of different sized occupants in different seating positions. The assessment also considers the structural performance of the car by taking account of such aspects as steering wheel displacement, pedal movement, foot well distortion and displacement of the A pillar. The adjustments (or modifiers) based on both inspection and geometrical considerations are applied to the body area assessments to which they are most relevant.	(Kinematic)或在接觸位置上些微改變的靈敏度，該等因素可能影響不同座椅位置上各種體型乘員之保護程度。此評等亦考量車輛之結構性能，將方向盤位移、踏板位移、腳踏區變形及 A 柱位移等面向納入考慮。依照查驗(Inspection)與幾何學考量，調整（或扣分）將適用於最相關之身體部位評等。	調整，例如前方撞擊試驗將考慮是否調整原始分數，以反映乘員的運動學(Kinematic)或在接觸位置上些微改變的靈敏度，該等因素可能影響不同座椅位置上各種體型乘員之保護程度。此評等亦考量車輛之結構性能，將方向盤位移、踏板位移、腳踏區變形及 A 柱位移等面向納入考慮。依照查驗(Inspection)與幾何學考量，調整（或扣分）將適用於最相關之身體部位評等。
For frontal MPDB impact, the score for each body area is based on the driver data, unless part of the passenger fared less well. It is stated that the judgement	For frontal offset impact, the score for each body area is based on the driver data, unless part of the passenger fared less well. It is stated that the judgement	(修訂不影響 TNCAP 規章)	針對前方偏置撞擊試驗，除非乘客部分表現更不佳，否則每個身體部位之分數係使用駕駛數據，故本項試驗主要係依照駕駛進行判

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relates primarily to the driver. For frontal full width, the score is based on driver and rear passenger. Side impact and pole impact results relate to the struck-side occupant only, while Whiplash results cover front and rear occupants. No attempt is made to rate the risk of life threatening injury any differently from the risk of disabling injury. Similarly, no attempt is made to rate the risk of the more serious but less frequent injury any differently from the risk of less serious but more frequent injury. Care has been taken to try to avoid encouraging manufacturers from concentrating their attention on areas which would provide little benefit in accidents.	relates primarily to the driver. For frontal full width, the score is based on driver and rear passenger. Side impact and pole impact results relate to the struck-side occupant only, while Whiplash results cover front and rear occupants. No attempt is made to rate the risk of life threatening injury any differently from the risk of disabling injury. Similarly, no attempt is made to rate the risk of the more serious but less frequent injury any differently from the risk of less serious but more frequent injury. Care has been taken to try to avoid encouraging manufacturers from concentrating their attention on areas which would provide little benefit in accidents.		斷。針對前方全寬撞擊試驗，係依照駕駛與後座乘客之分數進行計算。側方撞擊與側方立柱撞擊試驗結果僅與遭撞擊側之乘員有關，鞭甩試驗結果則包含第一排與後座乘員。危及生命風險與傷殘風險之差異不予評等；較嚴重但發生頻率低的傷害風險與較輕微但發生頻率高的傷害風險之差異亦不予評等，以避免車輛業者投入研發對於意外事故無太大助益的領域。
2.1 Points Calculation A sliding scale system of points scoring will be used to calculate points for each measured criterion. This involves two limits for each parameter, a more demanding limit (higher performance), below which a maximum score is	**2.1 Points Calculation** From Phase 3, a sliding scale system of points scoring has been used to calculate points for each measured criterion. This involves two limits for each parameter, a more demanding limit (higher performance), below which a maximum	2.1.1.1 分數計算 (修訂不影響 TNCAP 規章)	2.1.1.1 分數計算 使用浮動計算法(Sliding scale system)計算每個量測標準之分數。此包括每一參數之兩個限制值，其中一個為較嚴格限制值(較高性能)，低於該限制值則可獲得最高分，及另一個較不嚴格限制

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obtained and a less demanding limit (lower performance), beyond which no points are scored. In frontal, side, and pole impacts, the maximum score for each body region is four points; for rear impact protection, it is three points* . Where a value falls between the two limits, the score is calculated by linear interpolation.	score is obtained and a less demanding limit (lower performance), beyond which no points are scored. In frontal, side, and pole impacts, the maximum score for each body region is four points; for rear impact protection, it is three points* . Where a value falls between the two limits, the score is calculated by linear interpolation.		值（較低性能），超出該限制值則無法得分。前方、側方與立柱撞擊試驗中，每個身體部位最高分為 4 分；後方撞擊保護則為 3 分（僅頸部以三項個別試驗條件下所得之分數加總為基礎）。若數值介於兩個限制值之間，則以線性插值法計算分數。
3 MOBILE PROGRESSIVE DEFORMABLE BARRIER FRONTAL IMPACT ASSESSMENT **3.1 Criteria and Limit Values** The basic assessment criteria used for frontal impact, with the higher and lower performance limits for each parameter, are summarised below. Where multiple criteria exist for an individual body region, the lowest scoring parameter is used to determine the performance of that region. The lowest scoring body region of driver or passenger is used to determine the score. For the MPDB impact, capping is applied on the critical body regions: head, neck and chest (see 2.1.1).	**3 OFFSET DEFORMABLE BARRIER FRONTAL IMPACT ASSESSMENT** **3.1 Criteria and Limit Values** The basic assessment criteria used for frontal impact, with the upper and lower performance limits for each parameter, are summarised below. Where multiple criteria exist for an individual body region, the lowest scoring parameter is used to determine the performance of that region. The lowest scoring body region of driver or passenger is used to determine the score. For the frontal offset deformable barrier impact, capping is applied on the critical body regions: head,	2.1.2 前方偏置撞擊移動式漸進可變形碰撞壁評等 2.1.2.1 標準與限制值 前方偏置撞擊適用之基本評等標準如下摘要所述，包括每個參數之較高性能與較低性能限制值。若單一身體部位使用多重標準，則該部位性能判定將使用最低分之參數。依照駕駛或乘客最低的身體部位得分決定分數。前方偏置撞擊移動式漸進可變形碰撞壁試驗之底線限制適用於頭部、頸部及胸部重要身體部位（如 2.1.1.1.1）。	2.1.2 前方偏置撞擊可變形碰撞壁評等 2.1.2.1 標準與限制值 前方偏置撞擊適用之基本評等標準如下摘要所述，包括每個參數之較高性能與較低性能限制值。若單一身體部位使用多重標準，則該部位性能判定將使用最低分之參數。依照駕駛或乘客最低的身體部位得分決定分數。前方偏置撞擊可變形碰撞壁試驗之底線限制適用於頭部、頸部及胸部重要身體部位（如 2.1.1.1.1）。

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	neck and chest (see 2.1.1).		
3.1.1 Driver's Head and Neck	**3.1.1 Head**	2.1.2.1.1 駕駛頭部及頸部	2.1.2.1.1 頭部
3.1.1.1 Vehicles with Steering Wheel Airbags	**3.1.1.1 Drivers with Steering Wheel Airbags and Passengers**	2.1.2.1.1.1 配備方向盤空氣囊之車輛	2.1.2.1.1.1 配備方向盤空氣囊之駕駛與乘客
If a steering wheel airbag is fitted the following criteria are used to assess the protection of the head for the driver. These criteria are always used for the passenger.	If a steering wheel airbag is fitted the following criteria are used to assess the protection of the head for the driver. These criteria are always used for the passenger.	若配備方向盤空氣囊，則應依照下列標準進行駕駛頭部保護評等，且該標準亦適用於乘客。	若配備方向盤空氣囊，則應依照下列標準進行駕駛頭部保護評等，且該標準亦適用於乘客。
Note: HIC15 levels above 1000 have been recorded with airbags, where there is no hard contact and no established risk of internal head injury. A hard contact is assumed if the peak resultant head acceleration exceeds 80g or if there is other evidence of hard contact.	*Note: HIC15 levels above 1000 have been recorded with airbags, where there is no hard contact and no established risk of internal head injury. A hard contact is assumed if the peak resultant head acceleration exceeds 80g or if there is other evidence of hard contact.*	若沒有硬碰撞，則給予 4 分。若有硬碰撞（頭部合成加速度峰值超過 80g，或有其他硬碰撞證據），則應使用下列限制值：	若沒有硬碰撞，則給予 4 分。若有硬碰撞（頭部合成加速度峰值超過 80g，或有其他硬碰撞證據），則應使用下列限制值：
If there is no hard contact a score of 4 points is awarded. If there is hard contact, the following limits are used:	If there is no hard contact a score of 4 points is awarded. If there is hard contact, the following limits are used:		
(see table A below)	Higher performance limit HIC_{15} 500 Resultant Acc. 3 msec exceedence 72g Lower performance and capping limit HIC_{15} 700 (20% risk of injury ≧ AIS3	(see table B below)	較高性能限制值 HIC15 500 合成加速度累積時間超過 3ms 72g 較低性能限制值與底線限制

Table A:

		Higher limit	Lower limit	Capping limit
HIC_{15}	-	500.00	700.00	700.00
Resultant Acc 3msec exceedance	g	72.00	80.00	80.00

Table B:

		較高限制	較低限制	底線限制
HIC_{15}	-	500.00	700.00	700.00
合成加速度累積時間超過 3ms	g	72.00	80.00	80.00

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Monitoring of CAE simulation based brain injury criteria is currently underway with application to be implemented in 2025.	[1,2]) Resultant Acc. 3 msec exceedence 80g	目前仍持續以 CAE 模擬為基礎之腦損傷標準進行監測，後續將導入應用。	HIC15 700 合成加速度累積時間超過 3ms 80g
3.1.1.2 Vehicles with No Steering Wheel Airbag If no steering wheel airbag is fitted, the driver will be awarded 0 points for the head and neck.	**3.1.1.2 Drivers with No Steering Wheel Airbag** If no steering wheel airbag is fitted, and the following requirements are met in the frontal impact test: HIC_{15} <700 Resultant Acc. 3 msec exceedence <80g then 6.8 kg spherical headform test specified in ECE Regulation 12 [3] are carried out on the steering wheel. The tester attempts to choose the most aggressive sites to test and it is expected that two tests will be required, one aimed at the hub and spoke junction and one at the rim and spoke junction. The assessment is then based on the following criteria: Higher performance limit Resultant peak Acc. 80g Resultant Acc. 3 msec exceedence 65g Lower performance and capping limit HIC_{15} 700	2.1.2.1.1.2 未備方向盤空氣囊之車輛 若未配備方向盤空氣囊，則駕駛之頭部及頸部給予 0 分。	2.1.2.1.1.2 未配備方向盤空氣囊之駕駛 若未配備方向盤空氣囊，且前方偏置撞擊試驗符合下列要求： HIC15<700 合成加速度累積時間超過 3ms<80g 則針對方向盤執行 UN R12 規定 6.8 公斤球體之頭部模型試驗。檢測機構應挑選最嚴苛處且執行兩項試驗，一項試驗是對準方向盤中心(Hub and spoke junction)，另一項試驗則是對準方向盤邊緣與輻條之接合處 (Rim and spoke junction)。接著依照下列標準進行評等： 較高性能限制值 合成加速度峰值 80g 合成加速度累積時間超過 3ms 65g 較低性能限制值與底線限制 HIC15 700 合成加速度峰值 120g

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<tr>
<td></td>
<td>Resultant peak Acc. 120g
Resultant Acc. 3 msec exceedence 80g
From the face form tests, a maximum of 2 points are awarded for performance better than the lower limits. For values worse than the lower performance limit, no points are awarded.
The results from the worst performing test are used for the assessment. This means that for cars, not equipped with a steering wheel airbag, the maximum score obtainable for the driver's head is 2 points.</td>
<td></td>
<td>合成加速度累積時間超過 3ms 80g
頭部模型(Face form)試驗中，其性能優於較高性能限制值時最高可給予 2 分。若超出較低性能限制值，則給予 0 分。
評等時將使用試驗分數最低之結果，亦即針對未配備方向盤空氣囊之車輛，駕駛頭部最高可獲得 2 分。</td>
</tr>
<tr>
<td>3.1.2 Driver's Neck
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Shear</td><td>kN</td><td>1.90</td><td>3.10</td><td>3.10</td></tr>
<tr><td>Tension</td><td>kN</td><td>2.70</td><td>3.30</td><td>3.30</td></tr>
<tr><td>Extension</td><td>Nm</td><td>42.00</td><td>57.00</td><td>57.00</td></tr>
</table></td>
<td>3.1.2 Neck
Higher performance limit
Shear 1.9kN @ 0 msec, 1.2kN @ 25 - 35msec, 1.1kN @ 45msec
Tension 2.7kN @ 0 msec, 2.3kN @ 35msec, 1.1kN @ 60msec
Extension 42Nm
Lower performance and capping limit
Shear 3.1kN @ 0msec, 1.5kN @ 25 - 35msec, 1.1kN @ 45msec*
Tension 3.3kN @ 0msec, 2.9kN @ 35msec, 1.1kN @ 60msec*</td>
<td>2.1.2.1.2 駕駛頭部
<table>
<tr><th></th><th></th><th>較 高 限制</th><th>較 低 限制</th><th>底線 限制</th></tr>
<tr><td>剪力</td><td>kN</td><td>1.90</td><td>3.10</td><td>3.10</td></tr>
<tr><td>張力</td><td>kN</td><td>2.70</td><td>3.30</td><td>3.30</td></tr>
<tr><td>拉伸力</td><td>Nm</td><td>42.00</td><td>57.00</td><td>57.00</td></tr>
</table></td>
<td>2.1.2.1.2 頸部
較高性能限制值
剪力 1.9kN @ 0 ms, 1.2kN @ 25 - 35ms, 1.1kN @ 45ms
張力 2.7kN @ 0 ms, 2.3kN @ 35ms, 1.1kN @ 60ms
拉伸力 42Nm
較低性能限制值與底線限制
剪力 3.1kN @ 0ms, 1.5kN @ 25 - 35ms, 1.1kN @ 45ms
張力 3.3kN @ 0ms, 2.9kN @ 35ms, 1.1kN @ 60ms</td>
</tr>
</table>

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<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td></td><td>Extension 57Nm* (Significant risk of injury [4]) (*EEVC Limits)
Note: Neck Shear and Tension are assessed from cumulative exceedence plots, with the limits being functions of time. By interpolation, a plot of points against time is computed. The minimum point on this plot gives the score. Plots of the limits and colour rating boundaries are given in Appendix I.</td><td></td><td>拉伸力 57Nm
上述頸部剪力與張力係依照累積超越曲線圖(Cumulative exceedance plots)進行評等，其為限制值對時間的函數。藉由線性插值法計算時間軸上的數值曲線。曲線上最低分即為其分數。限制值曲線與不同顏色之評分範圍請參考 2.1.7。</td></tr>
<tr><td>3.1.3 Driver's Chest and Abdomen
3.1.3.1 Driver's Chest
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Max Compression of all 4 ribs</td><td>mm</td><td>35.00</td><td>60.00</td><td>60.00</td></tr>
</table>
3.1.3.2 Driver's Abdomen
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Max Compression of (left or right)</td><td>mm</td><td>NA</td><td>88.00</td><td>NA</td></tr>
</table></td>
<td>3.1.3 Chest
Higher performance limit
Compression 22mm (5% risk of injury ≧ AIS3 [5])
Viscous Criterion 0.5m/sec (5% risk of injury ≧ AIS4)
Lower performance and capping limit
Compression 42mm
Viscous Criterion 1.0m/sec (25% risk of injury ≧ AIS4)</td>
<td>2.1.2.1.3 駕駛胸部及腹部
2.1.2.1.3.1 駕駛胸部
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>四根肋骨之最大壓縮量</td><td>mm</td><td>35.00</td><td>60.00</td><td>60.00</td></tr>
</table>
2.1.2.1.3.2 駕駛腹部
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>最大壓縮量(左側或右側)</td><td>mm</td><td>NA</td><td>88.00</td><td>N/A</td></tr>
</table></td>
<td>2.1.2.1.3 胸部
較高性能限制值
壓縮量 22mm
黏滯指數 0.5m/s
較低性能限制值與底線限制
壓縮量 42mm
黏滯指數 1.0m/s</td></tr>
</table>

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr>
<td>
3.1.4 Driver's Knee, Femur and Pelvis
3.1.4.1 Driver's Pelvis
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Acetabulum compression</td><td>kN</td><td>3.28</td><td>4.10</td><td>NA</td></tr>
</table>
3.1.4.2 Driver's Upper leg
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Femur compression</td><td>kN</td><td>3.80</td><td>9.07 @ 0 ms
7.56 @ ≥10ms</td><td>NA</td></tr>
<tr><td>Knee slider compression</td><td>mm</td><td>6.00</td><td>15.00</td><td>NA</td></tr>
</table>
Note: Femur compression is assessed from a cumulative exceedence plot, with the limits being functions of time. By interpolation, a plot of points against time is computed. The minimum point on this plot gives the score. Plots of the limits and colour rating boundaries are given in
</td>
<td>
3.1.4 Knee, Femur and Pelvis
Higher performance limit
Femur compression 3.8kN (5% risk of pelvis injury [6])
Knee slider compressive displacement 6mm
Lower performance limit
Femur Compression 9.07kN @ 0msec, 7.56kN @ 10msec* (Femur fracture limit [4])
Knee slider compressive displacement 15mm* (Cruciate ligament failure limit [4,7])
(*EEVC Limit)
Note: Femur compression is assessed from a cumulative exceedence plot, with the limits being functions of time. By interpolation, a plot of points against time is computed. The minimum point on this plot gives the score. Plots of the limits and colour rating boundaries are
</td>
<td>
2.1.2.1.4 駕駛膝部、股骨及骨盆
2.1.2.1.4.1 駕駛骨盆
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>髖臼壓縮力</td><td>kN</td><td>3.28</td><td>4.10</td><td>NA</td></tr>
</table>
2.1.2.1.4.2 駕駛上腿部
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>股骨壓縮力</td><td>kN</td><td>3.80</td><td>9.07 @ 0 ms
7.56 @ ≥10ms</td><td>NA</td></tr>
<tr><td>膝部滑動壓縮量</td><td>mm</td><td>6.00</td><td>15.00</td><td>NA</td></tr>
</table>
上述股骨壓縮力係依照累積超越曲線圖進行評等，其為限制值對時間的函數。藉由線性插值法計算時間軸上的數值曲線。曲線上最低分即為其分數。限制值曲線與不同顏色之評分範圍請參考 2.1.7。
</td>
<td>
2.1.2.1.4 膝部、股骨及骨盆
膝部、股骨與骨盆部位係依照股骨壓縮力進行評等：
較高性能限
股骨壓縮力 3.8kN
膝部錯位移動量 6mm
較低性能限制值
股骨壓縮力 9.07kN @0ms
7.56kN @≥10ms
膝部錯位移動量 15mm
上述股骨壓縮力係依照累積超越曲線圖進行評等，其為限制值對時間的函數。藉由線性插值法計算時間軸上的數值曲線。曲線上最低分即為其分數。限制值曲線與不同顏色之評分範圍請參考 2.1.7。
上述股骨壓縮力係依照累積超越曲線圖進行評等，其為限制值對時間的函數。藉由線性插值法計算時間軸上的數值曲線。曲線上最低分即為其分數。限制值曲線與不同顏色之評分範圍請參考 2.1.7。
</td>
</tr>
</table>

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td>Appendix I. The Lumbar forces and moments are measured for monitoring purpose only.</td><td>given in Appendix I. The Lumbar forces and moments are measured for monitoring purpose only.</td><td>腰椎受力(Lumbar Forces)及力矩之量測僅供監測用。</td><td>腰椎受力(Lumbar Forces)及力矩之量測僅供監測用。</td></tr>
<tr><td>3.1.5 Driver's Lower Leg, Foot and Ankle
3.1.5.1 Driver's Lower Leg
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Tibia Index</td><td>-</td><td>0.40</td><td>1.30</td><td>NA</td></tr>
<tr><td>Tibia compression</td><td>kN</td><td>2.00</td><td>8.00</td><td>NA</td></tr>
</table>
3.1.5.2 Driver's Foot/Ankle
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Pedal rearward displacement</td><td>mm</td><td>100.00</td><td>200.00</td><td>NA</td></tr>
</table>
Notes:
1. Pedal displacement is measured for all pedals with no load applied to them.
2. If any of the pedals are designed to completely release from their mountings during the impact, no account is taken of</td>
<td>3.1.5 Lower Leg
Higher performance limit
Tibia Index 0.4
Tibia Compression 2kN
Lower performance limit
Tibia Index 1.3*
Tibia Compression 8kN* (10% risk of fracture [4,8])
(*EEVC Limits)

3.1.6 Foot/Ankle
Higher performance limit
Pedal rearward displacement 100mm
Lower performance limit
Pedal rearward displacement 200mm

Notes:
1. Pedal displacement is measured for all pedals with no load applied to them.
2. If any of the pedals are designed to completely release from their mountings during the impact, no account is taken of</td>
<td>2.1.2.1.5 駕駛下腿部、足部及腳踝
2.1.2.1.5.1 駕駛下腿部
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>脛骨指數</td><td>-</td><td>0.40</td><td>1.30</td><td>NA</td></tr>
<tr><td>脛骨壓縮力</td><td>kN</td><td>2.00</td><td>8.00</td><td>NA</td></tr>
</table>
2.1.2.1.5.2 駕駛足部及腳踝
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>踏板向後位移</td><td>mm</td><td>100.0</td><td>200.0</td><td>NA</td></tr>
</table>
上述足部/腳踝應依下述事項判定：
(1)踏板位移量係於所有踏板皆未受力之情況下進行量測。
(2)若踏板設計為撞擊時完全脫離固定件，則試驗時踏板脫離且踏板移動無受阻，不視為踏板位移。</td>
<td>2.1.2.1.5 下腿部
較高性能限制值
脛骨指數 0.4
脛骨壓縮力 2kN
較低性能限制值
脛骨指數 1.3
脛骨壓縮力 8kN

2.1.2.1.6 足部/腳踝
較高性能限制值
踏板向後位移 100mm
較低性能限制值
踏板向後位移 200mm

上述足部/腳踝應依下述事項判定：
(1)踏板位移量係於所有踏板皆未受力之情況下進行量測。
(2)若踏板設計為撞擊時完全脫離固定件，則試驗時踏板脫離且踏板移動無受阻，不視為踏板位移。</td></tr>
</table>

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td>the pedal displacement provided that release occurred in the test and that the pedal retains no significant resistance to movement.
3. If a mechanism is present to move the pedal forwards in an impact, the resulting position of the pedal is used in the assessment.</td><td>the pedal displacement provided that release occurred in the test and that the pedal retains no significant resistance to movement.
3. If a mechanism is present to move the pedal forwards in an impact, the resulting position of the pedal is used in the assessment.
4. The passenger's foot/ankle protection is not currently assessed.</td><td>(3)若撞擊時有機構將踏板向前移動，則將使用踏板最終位置進行評等。</td><td>(3)若撞擊時有機構將踏板向前移動，則將使用踏板最終位置進行評等。
(4)乘客之足部/腳踝保護目前不納入評等。</td></tr>
<tr><td>3.1.6 Passenger's Head and Neck
3.1.6.1 Passenger's Head
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>HIC15</td><td>-</td><td>500.00</td><td>700.00</td><td>700.00</td></tr>
<tr><td>Resultant Acc 3msec exceedance</td><td>g</td><td>72.00</td><td>80.00</td><td>80.00</td></tr>
</table>
3.1.6.2 Passenger's Neck
<table>
<tr><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
</table></td><td></td><td>2.1.2.1.6 乘客頭部及頸部
2.1.2.1.6.1 乘客頭部
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>HIC15</td><td>-</td><td>500.00</td><td>700.00</td><td>700.00</td></tr>
<tr><td>合成加速度累積時間超過 3ms</td><td>g</td><td>72.00</td><td>80.00</td><td>80.00</td></tr>
</table>
2.1.2.1.6.2 乘客頸部
<table>
<tr><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
</table></td><td></td></tr>
</table>

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr>
<td>
<table>
<tr><td>Shear</td><td>kN</td><td>1.90 @ 0ms
1.20 @25-35ms
1.10 @ 45ms</td><td>3.10 @ 0ms
1.50 @ 25-35ms
1.10 @ 45ms</td><td>3.10 @ 0ms
1.50 @ 25-35ms
1.10 @ 45ms</td></tr>
<tr><td>Tension</td><td>kN</td><td>2.70 @ 0ms
2.30 @ 35ms
1.10 @ 60ms</td><td>3.30 @ 0ms
2.90 @ 35ms
1.10 @ 60ms</td><td>3.30 @ 0ms
2.90 @ 35ms
1.10 @ 60ms</td></tr>
<tr><td>Extension</td><td>Nm</td><td>42.00</td><td>57.00</td><td>57.00</td></tr>
</table>
Note: Neck Shear and Tension are assessed from cumulative exceedence plots, with the limits being functions of time. By interpolation, a plot of points against time is computed. The minimum point on this plot gives the score. Plots of the limits and colour rating boundaries are given in Appendix I.
</td>
<td></td>
<td>
<table>
<tr><td>剪力</td><td>kN</td><td>1.90 @ 0ms
1.20 @25-35ms
1.10 @ 45ms</td><td>3.10 @ 0ms
1.50 @ 25-35ms
1.10 @ 45ms</td><td>3.10 @ 0ms
1.50 @ 25-35ms
1.10 @ 45ms</td></tr>
<tr><td>張力</td><td>kN</td><td>2.70 @ 0ms
2.30 @ 35ms
1.10 @ 60ms</td><td>3.30 @ 0ms
2.90 @ 35ms
1.10 @ 60ms</td><td>3.30 @ 0ms
2.90 @ 35ms
1.10 @ 60ms</td></tr>
<tr><td>拉伸力</td><td>Nm</td><td>42.00</td><td>57.00</td><td>57.00</td></tr>
</table>
上述頸部剪力與張力係依照累積超越曲線圖(Cumulative exceedance plots)進行評等，其為限制值對時間的函數。藉由線性插值法計算時間軸上的數值曲線。曲線上最低分即為其分數。限制值曲線與不同顏色之評分範圍請參考 2.1.7。
</td>
<td></td>
</tr>
</table>

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td>
3.1.7 Passenger’s Chest
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Compression</td><td>mm</td><td>22.00</td><td>42.00</td><td>42.00</td></tr>
<tr><td>Viscous Criterion</td><td>m/s</td><td>0.50</td><td>1.00</td><td>1.00</td></tr>
</table>
</td><td></td><td>
2.1.2.1.7 乘客之胸部
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>壓縮量</td><td>mm</td><td>22.00</td><td>42.00</td><td>42.00</td></tr>
<tr><td>黏滯指數</td><td>m/s</td><td>0.50</td><td>1.00</td><td>1.00</td></tr>
</table>
</td><td></td></tr>
<tr><td>
3.1.8 P Passenger’s Knee, Femur and Pelvis
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>Femur compression</td><td>kN</td><td>3.80</td><td>9.07 @ 0 ms
7.56 @ ≥10ms</td><td>NA</td></tr>
<tr><td>Knee slider compression</td><td>mm</td><td>6.00</td><td>15.00</td><td>NA</td></tr>
</table>
Note: Femur compression is assessed from a cumulative exceedence plot, with the limits being functions of time. By interpolation, a plot of points against time is computed. The minimum point on this plot gives the score. Plots of the limits
</td><td></td><td>
2.1.2.1.8 乘客膝部、股骨及骨盆
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>股骨壓縮力</td><td>kN</td><td>3.80</td><td>9.07 @ 0 ms
7.56 @ ≥10ms</td><td>NA</td></tr>
<tr><td>膝部滑動壓縮量</td><td>mm</td><td>6.00</td><td>15.00</td><td>NA</td></tr>
</table>
上述股骨壓縮力係依照累積超越曲線圖進行評等，其為限制值對時間的函數。藉由線性插值法計算時間軸上的數值曲線。曲線上最低分即為其分數。限制值曲線
</td><td></td></tr>
</table>

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td>and colour rating boundaries are given in Appendix I.
The Lumbar forces and moments are measured for monitoring purpose only.</td><td></td><td>與不同顏色之評分範圍請參考 2.1.7。
腰椎受力(Lumbar force)及力矩之量測僅供監測用。</td><td></td></tr>
<tr><td>3.1.9 Passenger's Lower Leg
<table><tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr><tr><td>Tibia Index</td><td>-</td><td>0.40</td><td>1.30</td><td>NA</td></tr><tr><td>Tibia compression</td><td>kN</td><td>2.00</td><td>8.00</td><td>NA</td></tr></table></td><td></td><td>2.1.2.1.9 乘客下腿部
<table><tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr><tr><td>脛骨指數</td><td>-</td><td>0.40</td><td>1.30</td><td>NA</td></tr><tr><td>脛骨壓縮力</td><td>kN</td><td>2.00</td><td>8.00</td><td>NA</td></tr></table></td><td></td></tr>
<tr><td>3.2 Modifiers
3.2.1 Driver
The score generated from driver dummy data may be modified where the protection for different sized occupants or occupants in different seating positions, or accidents of slightly different severity, can be expected to be worse than that indicated by the dummy readings or deformation data alone. There is no limit to the number of modifiers that can be applied. The concepts behind the modifiers are explained in Section 7.
3.2.1.1 Head
Brain Injury – DAMAGE</td><td>3.2 Modifiers
3.2.1 Driver
The score generated from driver dummy data may be modified where the protection for different sized occupants or occupants in different seating positions, or accidents of slightly different severity, can be expected to be worse than that indicated by the dummy readings or deformation data alone. There is no limit to the number of modifiers that can be applied. The concepts behind the modifiers are explained in Section 8.
3.2.1.1 Head</td><td>2.1.2.2 扣分
2.1.2.2.1 駕駛
由於乘員體型差異、乘員坐姿不同，或車禍嚴重程度差異，若實際撞擊結果可預期較駕駛人偶數據或變形數據更為嚴重，則可修正駕駛人偶數據所產生之分數，且扣分並無數量限制。
2.1.2.2.1.1 頭部
(1)腦部損傷指標(DAMAGE)</td><td>2.1.2.2 扣分
2.1.2.2.1 駕駛
由於乘員體型差異、乘員坐姿不同，或車禍嚴重程度差異，若實際撞擊結果可預期較駕駛人偶數據或變形數據更為嚴重，則可修正駕駛人偶數據所產生之分數，且扣分並無數量限制。
2.1.2.2.1.1 頭部</td></tr>
</table>

2025 年版 Euro NCAP 規章	2019 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
Where the DAMAGE criterion exceeds the values detailed below, a modifier will be applied to the driver's head assessment. The criterion will be calculated as defined in Technical Bulletin TB 035. DAMAGE ≥ 0.42 and <0,47 -1 point DAMAGE ≥ 0.47 -2 points		當 DAMAGE 評估指標超過下列數值，將對駕駛人偶頭部評等給予扣分。該評估指標應依據 Euro NCAP 技術通報 TB 035 進行計算。 (A)DAMAGE ≥ 0.42 且<0.47，扣 1 分。 (B)DAMAGE ≥ 0.47，扣 2 分	
Unstable Contact on the Airbag ... Hazardous Airbag Deployment … Incorrect Airbag Deployment ….	Unstable Contact on the Airbag … Hazardous Airbag Deployment … Incorrect Airbag Deployment … Unstable Contact on a Steering Wheel without an Air Bag If, during the forward movement of the head, its centre of gravity moves radially outwards further than the outside edge of the steering wheel rim, head contact is deemed to be unstable. The score is reduced by one point. If for any other reason head contact on the steering wheel is unstable, such as detachment of the steering wheel from the column, the	(2)空氣囊不穩定接觸 … (3)具危險性之空氣囊開展 … (4)不正確之空氣囊開展 …	(1)空氣囊不穩定接觸 … (2)具危險性之空氣囊開展 … (3)不正確之空氣囊開展 … (4)未配備方向盤空氣囊之不穩定接觸 頭部向前移動過程中，若頭部重心放射朝外側移動超過方向盤外緣，則頭部接觸將視為不穩定，應扣 1 分。若任何原因使頭部與方向盤之接觸不穩定，例如方向盤脫離轉向機柱，則亦應扣分。

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	modifier is also applied.		
3.2.1.3 Abdomen& Pelvis Submarining (Driver) The score for the Knee, Femur & Pelvis is reduced by 4 points when submarining occurs. The modifier is applied when a sudden drop in any of the two iliac forces measured is seen within 1ms and when the submarining is confirmed on the high speed film or post test stills. (參考 Euro NCAP 2026 相關 Technical Bulletin CP 007) **3.2.1.4 Knee & Femur** Variable Contact ... **3.2.1.5 Lower Leg** … **3.2.1.6 Foot & Ankle** **…**	**3.2.1.3** Knee, Femur & **Pelvis** Variable Contact … **3.2.1.4 Lower Leg** … **3.2.1.5 Foot & Ankle** **…**	2.1.2.2.1.3 腹部及骨盆 (1)潛滑(Submarining)(駕駛) 於 1ms 內測得兩個髂骨任一髂骨力發生突然下降，且高速影像或試驗後圖像證實有潛滑現象時，則膝部、股骨與骨盆之分數應扣 4 分。 (參考 Euro NCAP 2026 相關 Technical Bulletin CP 007) 2.1.2.2.1.4 膝部及股骨 … 2.1.2.2.1.5 下腿部 … 2.1.2.2.1.6 足部與腳踝 …	2.1.2.2.1.3 膝部、股骨與骨盆 (1)可變接觸(Variable contact) … 2.1.2.2.1.4 下腿部 … 2.1.2.2.1.5 足部與腳踝 …
3.2.4 Passenger Door Opening Forces after the Impact Refer to the Rescue and Extrication protocol for further details of post-test assessment.	**3.2.4 Passenger Door Opening Forces after the Impact** The force required to unlatch and open each side door to an angle of 45 degrees is measured after the impact. A record is also made of any doors which unlatch or	2.1.2.2.4 撞擊後車門開啟力量 試驗後評等之詳細資訊，參見「緊急救援、事故脫困及安全技術試驗規章」。	2.1.2.2.4 撞擊後車門開啟力量 撞擊後測量每側車門解鎖並開啟至 45 度所需之力量，並記錄撞擊後任何無法解鎖或開啟之車門。 車門開啟力量分類如下：

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	open in the impact. Currently, this information is not used in the assessment but it may be referred to in the text of the published reports. Door opening forces are categorised as follows: Opens normally Normal hand force is sufficient Limited force ≤ 100N Moderate force > 100N to < 500N Extreme hand force ≥ 500N Tools had to be used Tools necessary		正常開啟 一般的手力即可 有限力量 ≤100N 中等力量 >100N 且<500N 極大手力 ≥500N 須要使用工具 須要工具
3.3 Compatibility Assessment The Compatibility assessment is a 0 to -8 point penalty applied to the overall MPDB test score. The compatibility assessment is based upon three parameters, the post-test barrier deformation, the occupant load criterion (OLC) and bottoming out of the deformable barrier face. For further details of the compatibility assessment calculation see Technical bulletin TB027. The maximum compatibility assessment penalty will not exceed -8 points.		2.1.2.3 碰撞相容性評等 碰撞相容性評等將對 MPDB 最終試驗總分進行 0 至-8 分之扣分。碰撞相容性評等以三項參數為基礎，即試驗後碰撞壁變形、乘員負載指數（OLC）及可變形碰撞壁面觸底。碰撞相容性評等扣分最高不超過 8 分。	

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3.3.1 Barrier Deformation The standard deviation assessment of the post-test barrier deformation measurements ranges from 50mm – 150mm. **3.3.2 Occupant Load Criterion** The OLC is based upon the trolley deceleration and ranges from 25g - 40g. **3.3.3 Barrier Face Bottoming Out** The bottoming out criterion is based upon a barrier face penetration depth of 630mm that has been caused by a load bearing structure in an area that is larger than 40mm x 40mm. Where bottoming out occurs, a -2 point penalty will be added to the barrier deformation and OLC penalty.		2.1.2.3.1 碰撞壁變形 試驗後，碰撞壁變形之標準差評估範圍為 50mm 至 150mm。 2.1.2.3.2 乘員負載指數 乘員負載指數係以台車之減速度為基礎，其範圍介於 25g 至 40g。 2.1.2.3.3 可變形碰撞壁表面觸底 觸底標準係依據可變形碰撞壁表面 630mm 穿透深度，且該深度由承受負載結構造成 40mm x 40mm 或更大面積。發生觸底情形時，碰撞壁變形及乘員負載指數扣分將再多扣 2 分。	
3.4 Scoring & Visualisation … For frontal impact, the body regions are grouped together, with the score for the grouped body region being that of the worst performing region or limb. The grouped regions are: Head and Neck (4 points), Chest and Abdomen (4 points),	**3.3 Scoring & Visualisation** … For frontal impact, the body regions are grouped together, with the score for the grouped body region being that of the worst performing region or limb. The grouped regions are: Head and Neck (4 points), Chest (4 points), Knee, Femur,	2.1.2.4 評分與圖示說明 … 針對前方偏置撞擊，身體部位會歸類一起，其分數將使用表現最差部位或四肢之分數。身體部位歸類包括：頭部與頸部（4 分）、胸部與腹部（4 分）、骨盆與上腿部（即左右股骨與膝部滑動）（4	2.1.2.3 評分與圖示說明 … 針對前方偏置撞擊，身體部位會歸類一起，其分數將使用表現最差部位或四肢之分數。身體部位歸類包括：頭部與頸部（4 分）、胸部（4 分）、膝部、股骨與骨盆（即左右股骨與膝部滑動）（4 分）以

<table>
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<tr><td>Pelvis and Upper Leg (i.e. left and right femur and knee slider) (4 points) and Lower Leg and Foot (i.e. left and right lower leg and foot and ankle) (4 points). Results are shown separately for driver and passenger. …</td><td>Pelvis (i.e. left and right femur and knee slider) (4 points) and Leg and Foot (i.e. left and right lower leg and foot and ankle) (4 points). Results are shown separately for driver and passenger. …</td><td>分）以及下腿部與足部（即左右下腿部、足部與腳踝）(4 分)。駕駛及乘客之評等結果將個別呈現。…</td><td>及腿部與足部（即左右下腿部、足部與腳踝）(4 分)。駕駛及乘客之評等結果將個別呈現。…</td></tr>
<tr><td>6 WHIPLASH SEAT ASSESSMENT
…
6.1 Front Seat Whiplash Assessment
6.1.1 Criteria and Limit Values
6.1.1.1 Static Assessments
6.1.1.1.1 Head Restraint Geometry Assessment
The assessment is based on the worst performing parameter from either the height or backset:
<table><tr><th>Test position</th><th>Lower limit</th><th>Higher limit</th></tr><tr><td>Effective Height</td><td>755mm</td><td>825mm</td></tr><tr><td>Backset</td><td>45mm</td><td>NA</td></tr></table>The geometry assessment has two points allocated to it ranging from plus one to minus one. Effective height is calculated using a sliding scale between the two specified limits. Backset is evaluated on a</td><td>6 WHIPLASH SEAT ASSESSMENT
…
6.1 Front Seat Whiplash Assessment
6.1.1 Criteria and Limit Values
6.1.1.1 Static Assessments
6.1.1.1.1 Head Restraint Geometry Assessment
The assessment is based on the worst performing parameter from either the height or backset:
Higher performance limit:
Height: 0mm below top height of HPM & HRMD
Backset: 40mm
Lower performance limit:
Height: 80mm below top height of HPM & HRMD
Backset: 100mm
The geometric assessment will be based on</td><td>2.1.5 座椅鞭甩評等
…
2.1.5.1 第一排座椅鞭甩評等
2.1.5.1.1 標準與限制值
2.1.5.1.1.1 靜態評等
2.1.5.1.1.1.1 頭枕幾何評等
本項係依照頭枕高度或頭枕間隙(Backset)之最差性能參數進行評等：
<table><tr><th>試驗位置</th><th>較低限制</th><th>較高限制</th></tr><tr><td>有效高度</td><td>755mm</td><td>825mm</td></tr><tr><td>頭枕間隙</td><td>45mm</td><td>NA</td></tr></table>頭枕幾何評等共計 2 分，分數範圍從 1 分至-1 分。有效高度係使用兩限制值間之浮動計算法(Sliding scale)計算分數。頭枕間隙係根據通過/不通過進行評估。</td><td>2.1.5 座椅鞭甩評等
…
2.1.5.1 第一排座椅鞭甩評等
2.1.5.1.1 標準與限制值
2.1.5.1.1.1 靜態評等
2.1.5.1.1.1.1 頭枕幾何評等
本項係依照頭枕高度或頭枕間隙(Backset)之最差性能參數進行評等：
較高性能限制值：
頭枕高度：HPM 及 HRMD 頂端下方 0mm
頭枕間隙： 40mm
較低性能限制值：
頭枕高度：HPM 及 HRMD 頂端下方 80mm
頭枕間隙： 100mm
幾何評等(Geometric assessment)係</td></tr>
</table>

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pass/fail basis. A Backset of 45mm or more will score -1 points, Backest values below the limit will score 1 point.	the average height and backset taken from at least 9 measurements obtained across all of the seats provided for assessment. A minimum of three drops per seat shall be performed to ensure consistent measurements are obtained on each individual seat. Where obvious outlying HRMD/HPM measurements occur, further installations shall beundertaken on that seat to ascertain whether differences are due to the individual installation or seat to seat variability. Where a seat has a non-reversible head restraint and qualifies for a geometric assessment in the deployed position, additional seats shall be provided by the vehicle manufacturer for measurement. The geometry assessment has two points allocated to it ranging from plus one to minus one.	頭枕間隙 45mm 以上將給予-1 分，頭枕間隙低於限制值將給予 1 分。	依照平均頭枕高度及頭枕間隙進行評等，且從所有受評座椅蒐集至少九個量測數值，每個座椅應至少執行三次量測，以確保每個獨立座椅皆可獲得一致之量測。若有明顯 HRMD/HPM 量測值偏離，則該座椅應進一步安裝/調整，以確認此偏離是因個別安裝或座椅間變異所造成。若座椅配備不可逆(Non-reversible)之頭枕，且於開展位置符合幾何評等者，則車輛業者應提供量測用之額外座椅。 頭枕幾何評等共計 2 分，分數範圍從 1 分至-1 分。
6.1.1.1.2 Worst Case Geometry 1/n points (where n = the number of front seats) will be available for each front seat	**6.1.1.1.2 Worst Case Geometry** 1/n points (where n = the number of front seats) will be available for each front seat	2.1.5.1.1.1.2 最嚴苛幾何(Worst case geometry) 在最嚴苛幾何評等中，每個第一排	2.1.5.1.1.1.2 最嚴苛幾何(Worst case geometry) 在最嚴苛幾何評等中，每個第一排

<table>
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<tr><td>scoring more than 0 points in the worst case geometry assessment. For seats where the occupant must adjust the head restraint, the worst case geometry shall be measured in the lowest and rearmost position regardless of whether or not the seat is equipped with an active head restraint. Alternatively, a means of ensuring that the head restraint is correctly positioned for different sized occupants without specific occupant action shall be offered. For these automatically adjusting head restraints, the worst case geometry assessment shall be measured in the position as obtained in Section 4.6.1 of the Euro NCAP Whiplash Testing Protocol. This credit will only be available to seats performing well dynamically, with a raw score greater than 3.00 points after capping and all modifiers have been applied.
<table><tr><th>Lowest and rearmost position</th><th>Limit</th></tr><tr><td>Effective Height</td><td>790mm</td></tr><tr><td>Backset</td><td>70mm</td></tr></table></td><td>scoring more than 0 points in the worst case geometry assessment. For seats where the occupant must adjust the head restraint, the worst case geometry shall be measured in the lowest and rearmost position regardless of whether or not the seat is equipped with an active head restraint. The assessment will be based on the average height and backset taken from at least 9 measurements in the down and back position obtained across all of the seats provided for assessment. A minimum of 3 drops per seat shall be performed to ensure consistent measurements are obtained on each individual seat. Alternatively, a means of ensuring that the head restraint is correctly positioned for different sized occupants without specific occupant action shall be offered. For these automatically adjusting head restraints, the worst case geometry assessment shall be measured in the position as obtained in Section 5.6 of the Euro NCAP Whiplash Testing Protocol. This credit will only be</td><td>座椅之分數只要超過零分，即可獲得 1 除以 n 分（n=第一排座椅數)。對於乘員必須調整頭枕之座椅，不論該座椅是否配備主動式頭枕，最嚴苛幾何應於頭枕最低且最後之位置進行量測。或者，應該提供在不需乘員調整下可確保不同體型之乘員其頭枕位置皆正確之方法。對於自動調整式頭枕，最嚴苛幾何評等之量測位置，應依照 TNCAP 前座鞭甩試驗規章 3.5.3.6 規定。本項分數僅給予動態性能表現良好之座椅，該座椅於底線限制及扣分後之分數應大於 3.00 分。
<table><tr><th>最低且最後方位置</th><th>限制</th></tr><tr><td>有效高度</td><td>790mm</td></tr><tr><td>頭枕間隙</td><td>70mm</td></tr></table></td><td>座椅之分數只要超過零分，即可獲得 1 除以 n 分（n=第一排座椅數)。對於乘員必須調整頭枕之座椅，不論該座椅是否配備主動式頭枕，最嚴苛幾何應於頭枕最低且最後之位置進行量測。依照平均頭枕高度及頭枕間隙進行評等，且從所有受評座椅之頭枕最低且最後之位置蒐集至少九個量測數值，每個座椅應至少執行三次量測，以確保每個獨立座椅皆可獲得一致之量測。或者，應該提供在不需乘員調整下可確保不同體型之乘員其頭枕位置皆正確之方法。對於自動調整式頭枕，最嚴苛幾何評等之量測位置，應依照 TNCAP 前座鞭甩試驗規章 3.5.3.6 規定。本項分數僅給予動態性能表現良好之座椅，該座椅於底線限制及扣分後之分數應大於 4.50 分。</td></tr>
</table>

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	available to seats performing well dynamically, with a raw score greater than 4.50 points after capping and all modifiers have been applied.		
For the dynamic test of self adjusting head restraints, the seat should be set in the position as obtained in Section 4.6.1. of the Euro NCAP Whiplash Testing Protocol and the corresponding head restraint height should be used irrespective of whether this is the mid height position of the head restraint itself.	For the dynamic test of self adjusting head restraints, the seat should be set in the position as obtained in Section 5.6. of the Euro NCAP Whiplash Testing Protocol and the corresponding head restraint height should be used irrespective of whether this is the mid height position of the head restraint itself.	(修訂不影響 TNCAP 規章)	針對可自行調整頭枕之動態試驗，該座椅應調整至 TNCAP 前座鞭甩試驗規章 3.5.3.6 規定位置，且應使用相應之頭枕高度，不論其是否為頭枕之中間高度位置。
The individual front seats are scored separately for this feature as cars have been encountered in which different provisions are made for the driver and front passenger seats and the system also allows for cars with three front seats. Where the manufacturer can provide evidence that the front seats are equivalent in terms of the worst case geometry assessment, the seats will be scored equally.Where this is not the case, the manufacturer will be asked to provide an additional seat for assessment.	The individual front seats are scored separately for this feature as cars have been encountered in which different provisions are made for the driver and front passenger seats and the system also allows for cars with three front seats. Where the manufacturer can provide evidence that the front seats are equivalent in terms of the worst case geometry assessment, the seats will be scored equally. Where this is not the case, the manufacturer will be asked to provide an additional seat for assessment.		針對此特點，獨立的第一排座椅分開評分，因為車輛針對駕駛及第一排乘客座椅有不同規定，且該系統亦允許前座具有三個座椅之車輛。若車輛業者可提供佐證資料，說明第一排所有座椅之最嚴苛幾何評等皆為等效，則座椅將給予相同分數。若非如此，則車輛業者應提供額外座椅供評等用。

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	† Formerly referred to as “Ease of Adjustment”.		
6.1.1.2 Dynamic Assessments A sliding scale system of points scoring shall be applied with two limits for each seat design parameter, a more demanding higher performance limit, below which a maximum score is obtained and a less demanding lower performance limit, beyond which no points are scored. Where a value falls between the two limits, the score is calculated by linear interpolation.	**6.1.1.2 Dynamic Assessments** A sliding scale system of points scoring shall be applied with two limits for each seat designparameter, a more demanding higher performance limit, below which a maximum score is obtained and a less demanding lower performance limit, beyond which no points are scored. Where a value falls between the two limits, the score is calculated by linear interpolation.	2.1.5.1.1.2 動態評等 每個座椅設計參數之兩個限制值，以浮動計算法計分，其中一個為較嚴格限制值（較高性能），低於該限制值則可獲得最高分，以及另一個較不嚴格限制值（較低性能），超出該限制值則無法得分。若數值介於兩者之間，則以線性插值法計算分數。	2.1.5.1.1.2 動態評等 每個座椅設計參數之兩個限制值，以浮動計算法計分，其中一個為較嚴格限制值（較高性能），低於該限制值則可獲得最高分，以及另一個較不嚴格限制值（較低性能），超出該限制值則無法得分。若數值介於兩者之間，則以線性插值法計算分數。
The maximum score for each parameter is 1.0 point, with a maximum of 3.0 points available per test. For both tests, the score for each of the three assessment parameters is calculated with the overall score for a single dynamic test being the sum of the scores for NIC, upper neck shear and upper neck tension. Capping limits are used for all parameters. For T1 acceleration and THRC, capping will only be applied where both parameters exceed the respective capping	The maximum score for each parameter is 0.50 points, with a maximum of 3 points available per test. For each of the tests, the score for each of the seven parameters is calculated. The overall score for a single dynamic test is the sum of the scores for NIC, Nkm, Head rebound velocity, neck shear and neck tension, plus the maximum score from either T1 acceleration or head restraint contact time (T-HRC-start). The high severity pulse will be subject to an additional seatback	每個參數最高分為 1.0 分，每項試驗最高分為 3.0 分。針對兩項試驗，計算三個評等參數中每一個參數之個別分數，單一動態測試之整體分數為 NIC、上頸部剪力(Neck shear)及上頸部張力(Neck tension)分數之總和。所有參數皆適用底線限制。針對 T1 加速度及頭枕接觸時間(T-HRC 開始)，僅當兩者皆超過其底線限制值才適用底線限制。執行高強度脈衝時，應進行額外之椅背變形評等，若	每個參數最高分為 0.50 分，每項試驗最高分為 3 分。針對每項試驗，計算七個參數之個別分數。單一動態試驗之整體分數為 NIC、Nkm、頭部反彈速度(Head rebound velocity)、頸部剪力(Neck shear)與頸部張力(Neck tension)分數之總和，並加上 T1 加速度或頭枕接觸時間（T-HRC 開始）之最高分數。執行高強度脈衝時，應進行額外之椅背變形評等，若變形幅度大於或等於 32.0 度，則

<table>
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<tr>
<td>limits. The high severity pulse will be subject to an additional seatback deflection assessment where a three point penalty will be applied to seats with a rotation of 32.0° or greater.</td>
<td>deflection
assessment where a three point penalty will be applied to seats with a rotation of 32.0° or greater.
In the medium term, seat translation may also need to be controlled but, for the interim solution, only rotational control of the seat back is specified. The relevant performance criteria for each pulse are detailed below.
6.1.1.2.1 Low Severity Pulse
<table>
<tr><th>Criterion*</th><th>Higher performance</th><th>Lower performance</th><th>Capping limit</th></tr>
<tr><td>NIC</td><td>9.00</td><td>15.00</td><td>18.30</td></tr>
<tr><td>Nkm</td><td>0.12</td><td>0.35</td><td>0.5</td></tr>
<tr><td>Rebound velocity (m/s)</td><td>3.0</td><td>4.4</td><td>4.7</td></tr>
<tr><td>Upper Neck Shear Fx (N)</td><td>30</td><td>110</td><td>187</td></tr>
<tr><td>Upper Neck Tension Fz(N)</td><td>270</td><td>610</td><td>734</td></tr>
<tr><td>T1</td><td>9.40</td><td>12.00</td><td>14.10</td></tr>
</table></td>
<td>變形幅度大於或等於 32.0 度，則應倒扣 3 分。</td>
<td>應倒扣 3 分。目前僅明定椅背之變形控制，但中期而言，也應控制座椅平移。針對各個強度脈衝，相關性能標準詳述如下：
2.1.5.1.1.2.1 低強度脈衝 (Low severity pulse)
<table>
<tr><th>標準*</th><th>較高性能</th><th>較低性能</th><th>底線限制</th></tr>
<tr><td>NIC</td><td>9.00</td><td>15.00</td><td>18.30</td></tr>
<tr><td>Nkm</td><td>0.12</td><td>0.35</td><td>0.50</td></tr>
<tr><td>反彈速度(m/s)</td><td>3.0</td><td>4.4</td><td>4.7</td></tr>
<tr><td>上頸部剪力 F_x（N）</td><td>30</td><td>110</td><td>187</td></tr>
<tr><td>上頸部張力 F_z</td><td>270</td><td>610</td><td>734</td></tr>
</table></td>
</tr>
</table>

2025 年版 Euro NCAP 規章	2019 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章

2025 年版 Euro NCAP 規章

6.1.1.2.1 Medium Severity Pulse

		Higher limit	Lower limit	Capping limit
NIC	m^2/s^2	11.00	24.00	27.00
Nkm	-	-	-	0.69
Rebound velocity	m/s	-	-	5.20
Upper Neck Shear Fx (+ve)	N	30.00	190.00	290.00
Upper Neck Shear Fx (-ve)	N	-	-	360.00
Upper Neck Tension Fz	N	360.00	750.00	900.00

2019 年版 Euro NCAP 規章

acceleration (g)			
T-HRC (s)	61	83	95

* All parameters calculated until T-HRC-end, except rebound velocity.

6.1.1.2.2 Medium Severity Pulse

Criterion*	Higher performance	Lower performance	Capping limit
NIC	11.00	24.00	27.00
Nkm	0.15	0.55	0.69
Rebound velocity (m/s)	3.2	4.8	5.2
Upper Neck Shear Fx (N)	30	190	290
Upper Neck Tension Fz(N)	360	750	900
T1 acceleration (g)	9.30	13.10	15.55
T-HRC	57	82	92

* All parameters calculated until THRC-

修訂 TNCAP 條文草案(第三版)

2.1.5.1.1.2.1 中強度脈衝(Medium severity pulse)

		較高限制	較低限制	底線限制
NIC	m^2/s^2	11.00	24.00	27.00
Nkm	-	-	-	0.69
反彈速度	m/s	-	-	5.20
上頸部剪力 Fx (+ve)	N	30.00	190.00	290.00
上頸部剪力 Fx (-ve)	N	-	-	360.00
上頸部張力 Fz	N	360.00	750.00	900.00
上頸部伸展	Nm	-	-	30.00

對應 TNCAP 第二版規章

（N）			
T1 加速度（g）	9.40	12.00	14.10
T-HRC 開始（ms）	61	83	95

備註：*除了反彈速度外，所有參數皆計算到 T-HRC 結束為止。

2.1.5.1.1.2 中強度脈衝(Medium severity pulse)

標準*	較高性能	較低性能	底線限制
NIC	11.00	24.00	27.00
Nkm	0.15	0.55	0.69
反彈速度（m/s）	3.2	4.8	5.2
上頸部剪力 F_x（N）	30	190	290
上頸部張力 F_z（N）	360	750	900
T1 加速度（g）	9.30	13.10	15.55

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr>
<td><table>
<tr><td>Upper Neck Extension MyOC</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>Upper Neck Flexion MyOC</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>Lower Neck Shear Fx (ABS)</td><td>N</td><td>-</td><td>-</td><td>360.00</td></tr>
<tr><td>Lower Neck Extension My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>Lower Neck Flexion My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>T1 acceleration</td><td>g</td><td>-</td><td>-</td><td>15.55</td></tr>
<tr><td>T-HRC start</td><td>ms</td><td>-</td><td>-</td><td>92.00</td></tr>
</table></td>
<td>end, except rebound velocity.</td>
<td><table>
<tr><td>MyOC</td><td></td><td></td><td></td><td></td></tr>
<tr><td>上頸部前屈 MyOC</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>下頸部剪力 Fx (ABS)</td><td>N</td><td>-</td><td>-</td><td>360.00</td></tr>
<tr><td>下頸部伸展 My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>下頸部前屈 My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>T1 加速度</td><td>g</td><td>-</td><td>-</td><td>15.55</td></tr>
<tr><td>T-HRC開始(ms)</td><td>ms</td><td>-</td><td>-</td><td>92.00</td></tr>
</table>
備註：1.除了反彈速度外，所有參數皆計算到 T-HRC 結束為止。
2.ABS 係指評估參數之絕對值。</td>
<td><table>
<tr><td>T-HRC開始(ms)</td><td>57</td><td>82</td><td>92</td></tr>
</table>
備註：*除了反彈速度外，所有參數皆計算到 T-HRC 結束為止。</td>
</tr>
</table>

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<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
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<td>
* All parameters calculated until THRC-end, except rebound velocity.
ABS indicates that the absolute value of the parameter is evaluated.
6.1.1.2.2 High Severity Pulse
<table>
<tr><th></th><th></th><th>Higher limit</th><th>Lower limit</th><th>Capping limit</th></tr>
<tr><td>NIC</td><td>m^2/s^2</td><td>13.00</td><td>23.00</td><td>25.50</td></tr>
<tr><td>Nkm</td><td>-</td><td>-</td><td>-</td><td>0.78</td></tr>
<tr><td>Rebound velocity</td><td>m/s</td><td>-</td><td>-</td><td>6.00</td></tr>
<tr><td>Upper Neck Shear Fx (+ve)</td><td>N</td><td>30.00</td><td>210.00</td><td>364.00</td></tr>
<tr><td>Upper Neck Shear Fx (-ve)</td><td>N</td><td>-</td><td>-</td><td>360.00</td></tr>
<tr><td>Upper Neck Tension Fz</td><td>N</td><td>470.00</td><td>770.00</td><td>1024.00</td></tr>
<tr><td>Upper Neck Extension MyOC</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>Upper Neck Flexion</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
</table>
</td>
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6.1.1.2.3 High Severity Pulse
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<tr><th>Criterion*</th><th>Higher performance</th><th>Lower performance</th><th>Capping limit</th></tr>
<tr><td>NIC</td><td>13.00</td><td>23.00</td><td>25.50</td></tr>
<tr><td>Nkm</td><td>0.22</td><td>0.47</td><td>0.78</td></tr>
<tr><td>Rebound velocity (m/s)</td><td>4.1</td><td>5.5</td><td>6.0</td></tr>
<tr><td>Upper Neck Shear Fx (N)</td><td>30</td><td>210</td><td>364</td></tr>
<tr><td>Upper Neck Tension Fz(N)</td><td>470</td><td>770</td><td>1024</td></tr>
<tr><td>T1 acceleration (g)</td><td>12.50</td><td>15.90</td><td>17.78</td></tr>
<tr><td>T-HRC</td><td>53</td><td>80</td><td>92</td></tr>
<tr><td>Seatback Deflection assessment</td><td colspan="3">32.0°</td></tr>
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</td>
<td>
2.1.5.1.1.2.2 高強度脈衝 (High severity pulse)
<table>
<tr><th></th><th></th><th>較高限制</th><th>較低限制</th><th>底線限制</th></tr>
<tr><td>NIC</td><td>m^2/s^2</td><td>1300</td><td>23.00</td><td>25.50</td></tr>
<tr><td>Nkm</td><td>-</td><td>-</td><td>-</td><td>0.78</td></tr>
<tr><td>反彈速度</td><td>m/s</td><td>-</td><td>-</td><td>6.00</td></tr>
<tr><td>上頸部剪力 Fx (+ve)</td><td>N</td><td>30.00</td><td>210.00</td><td>364.00</td></tr>
<tr><td>上頸部剪力 Fx (-ve)</td><td>N</td><td>-</td><td>-</td><td>360.00</td></tr>
<tr><td>上頸部張力 Fz</td><td>N</td><td>470.00</td><td>770.00</td><td>1024.00</td></tr>
<tr><td>上頸部伸展 MyOC</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>上頸部前屈 MyOC</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
</table>
</td>
<td>
2.1.5.1.1.2.3 高強度脈衝 (High severity pulse)
<table>
<tr><th>標準*</th><th>較高性能</th><th>較低性能</th><th>底線限制</th></tr>
<tr><td>NIC</td><td>13.00</td><td>23.00</td><td>25.50</td></tr>
<tr><td>Nkm</td><td>0.22</td><td>0.47</td><td>0.78</td></tr>
<tr><td>反彈速度（m/s）</td><td>4.1</td><td>5.5</td><td>6.0</td></tr>
<tr><td>上頸部剪力 Fx（N）</td><td>30</td><td>210</td><td>364</td></tr>
<tr><td>上頸部張力 Fz（N）</td><td>470</td><td>770</td><td>1024</td></tr>
<tr><td>T1 加速度（g）</td><td>12.50</td><td>15.90</td><td>17.80</td></tr>
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<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr>
<td>
<table>
<tr><td>MyOC</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Lower Neck Shear Fx (ABS)</td><td>N</td><td>-</td><td>-</td><td>360.00</td></tr>
<tr><td>Lower Neck Extension My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>Lower Neck Flexion My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>T1 acceleration</td><td>g</td><td>-</td><td>-</td><td>17.80</td></tr>
<tr><td>T-HRC start</td><td>ms</td><td>-</td><td>-</td><td>92.00</td></tr>
<tr><td>Seatback Deflection</td><td>deg</td><td>-</td><td>-</td><td>32.00</td></tr>
</table>
* All parameters calculated until THRC-end, except rebound velocity.
ABS indicates that the absolute value of the parameter is evaluated.
</td>
<td>* All parameters calculated until THRC-end, except rebound velocity.</td>
<td>
<table>
<tr><td>下頸部剪力 Fx (ABS)</td><td>N</td><td>-</td><td>-</td><td>360.00</td></tr>
<tr><td>下頸部伸展 My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>下頸部前屈 My</td><td>Nm</td><td>-</td><td>-</td><td>30.00</td></tr>
<tr><td>T1 加速度</td><td>g</td><td>-</td><td>-</td><td>17.80</td></tr>
<tr><td>T-HRC 開始（ms）</td><td>ms</td><td>-</td><td>-</td><td>92.00</td></tr>
<tr><td>椅背變形</td><td>度</td><td>-</td><td>-</td><td>32.00</td></tr>
</table>
備註：1.除了反彈速度外，所有參數皆計算到 T-HRC 結束為止。
2.ABS 係指評估參數之絕對值。
</td>
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<tr><td>T-HRC 開始（ms）</td><td>53</td><td>80</td><td>92</td></tr>
<tr><td>椅背變形評等</td><td colspan="3">32.0°</td></tr>
</table>
備註：*除了反彈速度外，所有參數皆計算到 T-HRC 結束為止。
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<tr>
<td>6 WHIPLASH SEAT ASSESSMENT
…
6.3 Scoring
6.3.1 Front Whiplash Score
6.3.1.1 Raw Score
The protocol allows for a maximum score</td>
<td>6 WHIPLASH SEAT ASSESSMENT
…
6.3 Scoring
6.3.1 Front Whiplash Score
6.3.1.1 Raw Score
The protocol allows for a maximum score</td>
<td>2.1.5 座椅鞭甩評等
…
2.1.5.3 評分
2.1.5.3.1 第一排座椅鞭甩評分
2.1.5.3.1.1 原始分數
透過執行二強度之鞭甩試驗，在沒</td>
<td>2.1.5 座椅鞭甩評等
…
2.1.5.3 評分
2.1.5.3.1 第一排座椅鞭甩評分
2.1.5.3.1.1 原始分數
透過執行三種強度之鞭甩試驗，在</td>
</tr>
</table>

2025 年版 Euro NCAP 規章	2019 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
of 8 points as a result of carrying out the two severities of whiplash test, assuming no negative modifiers have been applied. This score is known as the raw score and its components are explained below.	of 11 points as a result of carrying out the three severities of whiplash test, assuming no negative modifiers have been applied. This score is known as the raw score and its components are explained below.	有調整扣分之情況下，最高分為 8 分。此為原始分數，分數構成詳述如下。	沒有調整扣分之情況下，最高分為 11 分。此為原始分數，分數構成詳述如下。
Each severity of whiplash test pulse results in a maximum of 3 points being awarded based on the measured criteria. One point is awarded for each of NIC, upper neck Fx and Fz. If any of NIC, Nkm, Head rebound velocity, neck shear, tension or moment reach the capping limit, no score is given for that pulse. Additionally, if both T1 and head restraint contact time reach the capping limit, no score is given for the pulse. The sum of the scores from the dynamic tests is then subject to the application of the modifiers.	Each severity of whiplash test pulse results in a maximum of 3 points being awarded based on the measured criteria. Half a point is awarded for each of NIC, Nkm, Head rebound velocity, Fx and Fy. A further half point is awarded on the basis of the best score from either T1 acceleration or head restraint contact time (T-HRC). If any of NIC, Nkm, Head rebound velocity, neck shear or tension exceed the capping limit, no score is given for that pulse. Additionally, if both T1 and head restraint contact time exceed the lower performance limit and either one also exceeds the relevant capping limit, no score is given for the pulse. The sum of the scores from the dynamic tests is then subject to the application of the	根據量測標準，每種強度脈衝之鞭甩試驗結果最高給予 3 分。每項 NIC、上頸部 F_x 及 F_z 給予 1 分。若 NIC、Nkm、頭部反彈速度、頸部剪力、頸部張力或頸部力矩其中任一項超過底線限制，則該脈衝強度將不給予分數。此外，若 T1 與頭枕接觸時間皆超過底線限制，則該脈衝強度將不給予分數。動態試驗分數加總後，再決定是否適用扣分。	根據量測標準，每種強度脈衝之鞭甩試驗結果最高給予 3 分。每項 NIC、Nkm、頭部反彈速度、F_x 及 F_y 給予 0.5 分。此外，T1 加速度或頭枕接觸時間(T-HRC)取兩者當中最為高分者再給予 0.5 分。 若 NIC、Nkm、頭部反彈速度、頸部剪力或頸部張力其中任一項超過底線限制，則該脈衝強度將不給予分數。此外，若 T1 與頭枕接觸時間皆超過較低性能限制值，且其中任一項亦超過對應之底線限制，則該脈衝強度將不給予分數。動態試驗分數加總後，再決定是否適用扣分。

<table>
<tr><th>2025 年版 Euro NCAP 規章</th><th>2019 年版 Euro NCAP 規章</th><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
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<td>
<table>
<tr><th></th><th>Points available</th></tr>
<tr><td>Static assessments</td><td></td></tr>
<tr><td>HR geometry</td><td>-1 to +1 points</td></tr>
<tr><td>Worst case geometry</td><td>1 point</td></tr>
<tr><td>Dynamic assessments</td><td></td></tr>
<tr><td>Medium severity pulse</td><td>3 points</td></tr>
<tr><td>High severity pulse</td><td>3 points</td></tr>
<tr><td>Modifiers</td><td></td></tr>
<tr><td>Seatback deflection</td><td>-3 points</td></tr>
<tr><td>Dummy artefact loading</td><td>-2 points</td></tr>
<tr><td>Maximum points</td><td>8 points</td></tr>
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6.3.1.2 Scaled Front Whiplash Score
The raw score is scaled from a maximum
</td>
<td>
modifiers.
<table>
<tr><th></th><th>Points available</th></tr>
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<tr><td>HR geometry</td><td>-1 to +1 points</td></tr>
<tr><td>Worst case geometry</td><td>1 point</td></tr>
<tr><td>Dynamic assessments</td><td></td></tr>
<tr><td>Low severity pulse</td><td>3 points</td></tr>
<tr><td>Medium severity pulse</td><td>3 points</td></tr>
<tr><td>High severity pulse</td><td>3 points</td></tr>
<tr><td>Modifiers</td><td></td></tr>
<tr><td>Seatback deflection</td><td>-3 points</td></tr>
<tr><td>Dummy artefact loading</td><td>-2 points</td></tr>
<tr><td>Maximum points</td><td>11 points</td></tr>
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6.3.1.2 Scaled Front Whiplash Score
The raw score is scaled from a maximum
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<tr><td>靜態評等</td><td></td></tr>
<tr><td>頭枕幾何</td><td>-1 至 1 分</td></tr>
<tr><td>最嚴苛幾何</td><td>1 分</td></tr>
<tr><td>動態評等</td><td></td></tr>
<tr><td>中強度脈衝</td><td>3 分</td></tr>
<tr><td>高強度脈衝</td><td>3 分</td></tr>
<tr><td>扣分</td><td></td></tr>
<tr><td>椅背變形</td><td>-3 分</td></tr>
<tr><td>人偶部件負載</td><td>-2 分</td></tr>
<tr><td>最高分數</td><td>8 分</td></tr>
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2.1.5.3.1.2 按比例計算第一排座椅鞭甩評分
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<table>
<tr><th></th><th>可給予分數</th></tr>
<tr><td>靜態評等</td><td></td></tr>
<tr><td>HR 幾何</td><td>-1 至 1 分</td></tr>
<tr><td>最嚴苛幾何</td><td>1 分</td></tr>
<tr><td>動態評等</td><td></td></tr>
<tr><td>低強度脈衝</td><td>3 分</td></tr>
<tr><td>中強度脈衝</td><td>3 分</td></tr>
<tr><td>高強度脈衝</td><td>3 分</td></tr>
<tr><td>扣分</td><td></td></tr>
<tr><td>椅背變形</td><td>-3 分</td></tr>
<tr><td>人偶部件負載</td><td>-2 分</td></tr>
<tr><td>最高分數</td><td>11 分</td></tr>
</table>
2.1.5.3.1.2 按比例計算第一排座椅鞭甩評分
</td>
</tr>
</table>

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of 8 points to a maximum of 3.0 points. Scaled scores less than zero are set to zero points.	of 11 points to a maximum of 1.5 points. Scaled scores less than zero are set to zero points.	將原始分數以最高分 8 分按比例調降至滿分 3.0 分。若按比例計算後之分數小於 0 分，則以 0 分計。	將原始分數以最高分 11 分按比例調降至滿分 1.5 分。若按比例計算後之分數小於 0 分，則以 0 分計。
6.3 Scoring **6.3.2 Rear Whiplash Score** **6.3.2.2 Scaled Rear Whiplash Score** The raw score is scaled down to a total maximum of one point for rear whiplash.	**6.3 Scoring** **6.3.2 Rear Whiplash Score** **6.3.2.2 Scaled Rear Whiplash Score** The raw score is scaled down to a total maximum of half a point for rear whiplash.	2.1.5.3 評分 2.1.5.3.2 第二排座椅鞭甩評分 2.1.5.3.2.2 按比例計算後座鞭甩評分 將原始分數按比例調降至後座鞭甩滿分 1 分。	2.1.5.3 評分 2.1.5.3.2 第二排座椅鞭甩評分 2.1.5.3.2.2 按比例計算後座鞭甩評分 將原始分數按比例調降至後座鞭甩滿分 0.5 分。
6.4 Visualisation **6.4.1 Front Whiplash Visualisation** For whiplash, the protection provided for the neck of a front seat adult occupant is presented visually using a coloured head and neck graphic. The colour used is based on the scaled points (rounded to three decimal places), as follows: Green 'Good' 2.250 – 3.000 points Orange 'Marginal' 1.125 – 2.249 points Red 'Poor' 0.000 – 1.124 points **6.4.2 Rear Whiplash Visualisation** The protection provided for the neck of the rear seat occupant is presented visually using a coloured head and neck graphic.	**6.4 Visualisation** **6.4.1 Front Whiplash Visualisation** For whiplash, the protection provided for the neck of a front seat adult occupant is presented visually using a coloured head and neck graphic. The colour used is based on the scaled points (rounded to three decimal places), as follows: Green 'Good' 1.125 – 1.500 points Orange 'Marginal'0.563 – 1.124 points Red 'Poor' 0.000 – 0.562 points **6.4.2 Rear Whiplash Visualisation** The protection provided for the neck of the rear seat occupant is presented visually using a coloured head and neck graphic.	2.1.5.4 圖示說明 2.1.5.4.1 第一排座椅鞭甩圖示說明 鞭甩試驗中，針對第一排座椅成人乘員頸部保護，於頸部圖示上以顏色區塊進行圖示說明。用色係依照按比例計算分數（四捨五入取至小數點第三位），如下： 綠　「優」　2.250-3.000 分 橘　「尚可」1.125-2.249 分 紅　「不良」0.000-1.124 分 2.1.5.4.2 後座鞭甩圖示說明 針對後座乘員頸部保護，於頸部圖示上以顏色區塊進行圖示說明。用色係依照按比例計算分數（四	2.1.5.4 圖示說明 2.1.5.4.1 第一排座椅鞭甩圖示說明 鞭甩試驗中，針對第一排座椅成人乘員頸部保護，於頸部圖示上以顏色區塊進行圖示說明。用色係依照按比例計算分數（四捨五入取至小數點第三位），如下： 綠　「優」　1.125-1.500 分 橘　「尚可」0.563-1.124 分 紅　「不良」0.000-0.562 分 2.1.5.4.2 後座鞭甩圖示說明 針對後座乘員頸部保護，於頸部圖示上以顏色區塊進行圖示說明。用色係依照按比例計算分數（四

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The colour used is based on the scaled points (rounded to three decimal places), as follows: Green 'Good' 0.667 – 1.000 points Orange 'Marginal' 0.333 – 0.666 points Red 'Poor' 0.000 – 0.332 points	The colour used is based on the scaled points (rounded to three decimal places), as follows: Green 'Good' 0.375 – 0.500 points Orange 'Marginal' 0.188 – 0.374 points Red 'Poor' 0.000 –0.187 points	捨五入取至小數點第三位)，如下： 綠 「優」 0.667-1.000 分 橘 「尚可」0.333-0.666 分 紅 「不良」0.000-0.332 分	捨五入取至小數點第三位)，如下： 綠 「優」 0.375-0.500 分 橘 「尚可」0.188-0.374 分 紅 「不良」0.000-0.187 分
7 RESCUE, EXTRICATION AND SAFETY … For details of the assessment refer to the Rescue, Extrication and Safety Test and Assessment Protocol.	7 AEB CITY SYSTEMS … (舊版規章原有緊急煞車輔助之市區系統之章節)	2.1.6 緊急救援、事故脫困及安全技術評等 … 試驗後評等之詳細資訊，參見「3.16 緊急救援、事故脫困及安全技術試驗規章」。	2.1.6 緊急煞車輔助之市區系統評等 … (原 2.1.6 節緊急煞車輔助系統(市區道路)評等內容移至 2.4 安全輔助評等規章)

3.1前方偏置撞擊試驗規章

MPDB FRONTAL IMPACT TESTING PROTOCOL Version 1.1.4

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1 VEHICLE PREPARATION	**1 VEHICLE PREPARATION**	3.1.1 車輛整備	3.1.1 車輛整備
1.2.4 Place an 80kg mass on each of the front seats representing driver and passenger occupants.	1.2.4 Place a mass of equivalent to a Hybrid-III dummy (88kg with instrumentation and cables) on each of the front seats.	3.1.1.2.4 於第一排兩張座椅分別放置80kg之重量，以模擬駕駛及乘客。	3.1.1.2.4 將相當於 Hybrid III 百分之五０成年男性人偶之重量（加上感測器及資料擷取系統與電纜共 88kg）放置第一排座椅。
1.2.5 Place 50kg in the luggage compartment of the vehicle. The normal luggage compartment should be used, i.e. rear seats should not be folded to increase the luggage capacity. Spread the weights as evenly as possible over the base of the luggage compartment. If the weights cannot be evenly distributed, concentrate weights towards the centre of the compartment.	1.2.5 Place 36kg in the luggage compartment of the vehicle. The normal luggage compartment should be used i.e. rear seats should not be folded to increase the luggage capacity. Spread the weights as evenly as possible over the base of the luggage compartment. If the weights cannot be evenly distributed, concentrate weights towards the centre of the compartment.	3.1.1.2.5 在行李廂放置50kg重量，並應使用一般狀態之行李廂，即不應摺疊後排座椅來增加行李廂容量，且該重量盡可能均勻攤放於行李廂底部，若無法均勻放置，則將重量集中於行李廂中間。	3.1.1.2.5 在行李廂放置36kg重量，並應使用一般狀態之行李廂，即不應摺疊後排座椅來增加行李廂容量，且該重量盡可能均勻攤放於行李廂底部，若無法均勻放置，則將重量集中於行李廂中間。
1.3 Vehicle Width and Overlap	**1.3 Vehicle Width and Overlap**	3.1.1.3 車輛寬度與重疊	3.1.1.3 車輛寬度與重疊
1.3.3 Determine the centreline of the vehicle and mark a line on the bonnet and bumper on the centreline of the car.	Determine the centre-line of the vehicle. Calculate 10% of the vehicle width and mark a line on the bonnet and bumper which is this distance from the centre line on the steering-wheel side of the car. The distance from this line to the widest point on the steering wheel side of the car will	3.1.1.3.3 判定車輛中線，於前方車蓋（引擎蓋）及保險桿上畫線標示此中線。	3.1.1.3.3 判定車輛中線。計算車輛寬度 10%的數值，接著測量車輛中線往方向盤一側距離車輛寬度10%之位置，並於前方車蓋(引擎蓋)及保險桿上畫線標示此位置。該線至車輛方向盤側最寬點之距離，即為與可變形碰撞壁重疊之

	be the overlap with the deformable barrier.		區域。並於此時進行撞擊前車輛潰縮量測，詳細操作說明參見3.1.2。
1.4 Vehicle Preparation Care should be taken during vehicle preparation that the ignition is not switched on with the battery or airbag disconnected. This will result in an airbag warning light coming on and the airbag system will need to be reset. 1.4.7 Place an 80kg mass on each of the front seats with the seats in their test positions.	**1.4 Vehicle Preparation** Care should be taken during vehicle preparation that the ignition is not switched on with the battery or airbag disconnected. This will result in an airbag warning light coming on and the airbag system will need to be reset. The manufacturer will need to be contacted if this occurs. 1.4.7 Place weights equivalent to a Hybrid-III dummy (88kg) in each of the front seats of the car (with the seats in their mid-positions).	3.1.1.4 車輛整備 車輛整備時，應避免在電池或空氣囊未連接狀態下啟動點火系統，否則將導致空氣囊指示燈亮起而必須重新設定空氣囊系統。 … 3.1.1.4.7 於駕駛座及第一排乘客座分別放置80kg之重量，座椅皆應調整至試驗位置。	3.1.1.4 車輛整備 車輛整備時，應避免在電池或空氣囊未連接狀態下啟動點火系統，否則將導致空氣囊指示燈亮起而必須重新設定空氣囊系統。若有此情況發生，則須聯繫車輛業者。 … 3.1.1.4.7 將相當於 Hybrid III 百分之五0成年男性人偶（88kg）的重量分別置於車輛駕駛座及第一排乘客座（座椅皆調整至中間位置）。
2 INTRUSION MEASUREMENTS **2.1 Before Test** 2.1.6 Where available, apply the manufacturer's co-ordinate system onto the vehicle so that three defined locations are established. 2.1.7 Alternatively, locate the vehicle axis reference frame centrally to the rear of the vehicle, see Figure 1.	**2 INTRUSION MEASUREMENTS** **2.1 Before Test** 2.1.6 Locate the vehicle axis reference frame (see Figure 1) centrally to the rear of the vehicle. 2.1.7 Level the reference frame.	3.1.2 潰縮量測 3.1.2.1 試驗前 3.1.2.1.6 依實際狀況，可將車輛業者之座標系統套用至車輛，並訂定三個定義位置。 3.1.2.1.7 或者，將車輛座標軸參考框架放置車輛後方正中央（如圖1）。	3.1.2 潰縮量測 3.1.2.1 試驗前 3.1.2.1.6 將車輛座標軸參考框架放置車輛後方正中央（如圖 1）。 3.1.2.1.7 將測量參考框架調整至水平狀態。

Figure 1 Setting up axis reference frame （請參考末頁圖表）		圖 1：設置座標軸參考框架 (請參考末頁圖表)	
2.1.8 Level the reference frame.	2.1.8 Measure and record the stud heights of the reference frame. These will be used after the test to help reset the reference frame, if required.	3.1.2.1.8 將測量參考框架調整至水平狀態。	3.1.2.1.8 測量並記錄參考框架的框柱高度，如有需要，此數據於試驗後使用，以協助重設參考框架。
2.1.9 Measure and record the stud heights of the reference frame. These will be used after the test to help reset the reference frame, if required.	2.1.9 If it is necessary to lean on the vehicle to reach the following points, the vehicle should be supported to maintain the ride heights during measuring.	3.1.2.1.9 測量並記錄參考框架的之框柱高度，如有需要，此數據於試驗後使用，以協助重設參考框架。	3.1.2.1.9 若需要倚靠車輛以觸及下列幾點，則測量期間應支撐車輛以保持輪弧距地高。
2.1.10 If it is necessary to lean on the vehicle to reach the following points, the vehicle should be supported to maintain the ride heights during measuring.	2.1.10 Set up the vehicle co-ordinate axes in the 3D arm or similar device.	3.1.2.1.10 若需要倚靠車輛以觸及下列幾點，則測量期間應支撐車輛以保持輪弧距地高。	3.1.2.1.10 在 3D 量測手臂或類似裝置中設定車輛座標軸。
2.1.11 Set up the vehicle co-ordinate axes in the 3D arm or similar device.	2.1.11 Mark and record the position of at least 5 datum points on the rear of the vehicle. These points should be on structures which are not expected to be deformed in the test and should be positioned such that they have wide spaced locations in three dimensions and can all be reached with the 3D measuring system in one position.	3.1.2.1.11 在 3D 量測手臂或類似裝置中設定車輛座標軸。	3.1.2.1.11 標示並記錄車輛後方至少五個基準點的位置，且該基準點應位於試驗中不會變形的結構上，且各點應定位於三維空間中具有寬間隔之位置，並可從某個位置利用 3D 量測系統觸及所有基準點。
2.1.12 Mark and record the position of at least 5 datum points on the rear of the vehicle. These points should be on	2.1.12 Working on the passenger side of the vehicle determine and mark the positions on the B-post which are:	3.1.2.1.12 標記並記錄車後方至少五個基準點的位置，且該基準點應位於試驗中不會變形的結構	3.1.2.1.12 從車輛乘客側作業，於 B 柱上判定並標示以下位置： (1) 距門檻上方 100mm 處。

structures which are not expected to be deformed in the test and should be positioned such that they have wide spaced locations in three dimensions and can all be reached with the 3D measuring system in one position.	a) at a distance of 100 mm above the sill. b) at a distance of 100 mm beneath the lowest level of the side window aperture. All points should be as close as possible to the rubber sealing strip around the door aperture.	上，且各點應定位於三維空間中具有寬間隔之位置，並可從某個位置利用 3D 量測系統觸及所有基準點。	(2) 側邊車窗框最低處下方 100mm 處。 各點應盡可能接近門框(Door aperture)附近的橡膠封條。
2.1.13 Working on the passenger side of the vehicle determine and mark the positions on the B-post which are: a) at a distance of 100 mm above the sill. b) at a distance of 100 mm beneath the lowest level of the side window aperture. All points should be as close as possible to the rubber sealing strip around the door aperture.	2.1.13 Measure and record the pre-impact positions of the two door aperture points.	3.1.2.1.13 從車輛乘客側作業，於 B 柱上判定並標示以下位置： (1)距門檻上方 100mm 處。 (2)側邊車窗框最低處下方 100mm 處。 各點應盡可能接近門框(Door aperture)附近的橡膠封條。	3.1.2.1.13 測量並記錄撞擊前乘客側兩個車門框點位置。
2.1.14 Measure and record the pre-impact positions of the two door aperture points.	2.1.14 Working on the driver’s side of the vehicle determine and mark the positions on the B-post which are: a) at a distance of 100 mm above the sill. b) at a distance of 100 mm beneath the lowest level of the side window aperture. All points should be as close as possible to the rubber sealing strip around the door aperture.	3.1.2.1.14 測量並記錄撞擊前乘客側兩個車門框點位置。	3.1.2.1.14 從車輛駕駛側作業，於 A 柱及 B 柱上判定並標示以下位置： (1) 距門檻上方 100mm 處。 (2) 側邊車窗框最低處下方 100mm 處。 各點應盡可能接近門框附近的橡膠封條。
2.1.15 Working on the driver’s side of the vehicle determine and mark the positions	2.1.15 Use the arm to measure the pre-impact positions of the centre of the top	3.1.2.1.15 從車輛駕駛側作業，於 A 柱及 B 柱上判定並標示以下位	3.1.2.1.15 使用量測手臂測量撞擊前之轉向機柱頂端中心位置及四

on the A and B posts which are: a) at a distance of 100 mm above the sill. b) at a distance of 100 mm beneath the lowest level of the side window aperture. All points should be as close as possible to the rubber sealing strip around the door aperture.	of the steering-column and the four door aperture points.	置： (1)距門檻上方 100mm 處。 (2)側邊車窗框最低處下方 100mm 處。 各點應盡可能接近門框附近的橡膠封條。	個車門框點位置。
2.1.16 Use the arm to measure the pre-impact positions of the centre of the top of the steering-column and the four door aperture points.	2.1.16 Record the position of the centre of the un-depressed clutch, brake and accelerator pedals and where applicable foot operated parking brake. If the pedal is adjustable, set it to the mid position or a reasonable variation from this in accordance with the manufacturer's recommendations for the 50th percentile position.	3.1.2.1.16 使用量測手臂測量撞擊前轉向機柱頂端中心位置及四個車門框點位置。	3.1.2.1.16 記錄未踩下之離合器踏板、煞車踏板、加速踏板及腳踏式駐煞車(依實際情況)之中心位置。若踏板可調整，將其設置於中間位置或依車輛業者第 50 百分位建議之合理調整位置。
2.1.17 Record the position of the centre of the un-depressed clutch, brake and accelerator pedals and where applicable foot operated parking brake. If the pedal is adjustable, set it to the mid position or a reasonable variation from this in accordance with the manufacturer's recommendations for the 5th percentile position.	2.1.17 Replace the steering wheel and airbag assembly. Check that all bolts are securely fastened. Ensure that all connections to the airbag are replaced and check the dashboard light to confirm the circuit is functional.	3.1.2.1.17 記錄未踩下之離合器踏板、煞車踏板及加速踏板及腳踏式駐煞車（依實際情況）之中心位置。若踏板位置可調，則將其調整至中間位置，或依車輛業者建議之合理調整位置。	3.1.2.1.17 將方向盤及空氣囊總成重新裝回，且確認所有螺栓是否鎖緊，以及確保空氣囊所有接線都已接好，並檢查儀表板燈號以確認電路為正常運作。
2.1.18 Replace the steering wheel and		3.1.2.1.18 將方向盤與空氣囊總成	

airbag assembly. Check that all bolts are securely fastened. Ensure that all connections to the airbag are replaced and check the dashboard light to confirm the circuit is functional.		重新裝回，且確認所有螺栓是否鎖緊，以及確保空氣囊所有接線皆已接好，並檢查儀表板燈號以確認電路為正常運作。	
2.2 After Test	**2.2 After Test**	3.1.2.2 試驗後	3.1.2.2 試驗後
2.2.1 Before dummy removal measure the distance between all foot pedals and a fixed point in the footwell, e.g. seat runner, seat mounting bolt. If access cannot be gained remove the dummies, according to Section 9.7, taking care not to disturb any pedals and then record the measurement. This measurement should be re-checked before the pedals are measured with the 3D measuring system. If the pedal has moved re-position the pedal using the measurement taken previously.	2.2.1 Before dummy removal measure the distance between all foot pedals and a fixed point in the footwell e.g. seat runner, seat mounting bolt. If access cannot be gained to remove the dummies, according to Section 7.5, taking care not to disturb any pedals and then record the measurement. This measurement should be re-checked before the pedals are measured with the 3D measuring system. If the pedal has moved re-position the pedal using the measurement taken previously.	3.1.2.2.1 移除人偶前，測量所有腳踏板與駕駛腳踏區(Footwell)一固定點（例如座椅滑軌或座椅固定螺栓）之間的距離。若無法進行量測，則得依照 3.1.9.7 說明移除人偶，避免干擾任何踏板，接著記錄量測數據。該量測數據應在 3D 量測系統測量踏板前重新檢查一次。若踏板已移動，則使用先前量測數據重新設置踏板位置。	3.1.2.2.1 移除人偶前，測量所有腳踏板與駕駛腳踏區(Footwell)一固定點（例如座椅滑軌或座椅固定螺栓）之間的距離。若無法進行量測，則得依照 3.1.7.5 說明移除人偶，避免干擾任何踏板，接著記錄量測數據。該量測數據應在 3D 量測系統測量踏板前重新檢查一次。若踏板已移動，則使用先前量測數據重新設置踏板位置。
2.2.2 Remove the dummies according to Section 9.7 and remove the data acquisition and emergency abort equipment (if fitted) from the luggage compartment.	2.2.2 Remove the dummies according to Section 7.5 and remove the data acquisition and emergency abort equipment (if fitted) from the luggage compartment.	3.1.2.2.2 依照 3.1.9.7 說明移除人偶，並從行李廂移除資料擷取設備及緊急中止設備（依實際安裝狀況）。	3.1.2.2.2 依照 3.1.7.5 說明移除人偶，並從行李廂移除資料擷取設備及緊急中止設備（依實際安裝狀況）。
2.2.5 If the axes cannot be redefined from any three of the datum points relocate the	2.2.5 If the axes cannot be redefined from any three of the datum points relocate the	3.1.2.2.5 若無法從任三個基準點重新定義座標軸，則將座標軸參	3.1.2.2.5 若無法從任三個基準點重新定義座標軸，則將座標軸參

axis reference frame in the same position as in Section 2.1.7. Set the studs of the frame to the same heights as in Section 2.1.9, see Figure 2. The frame should now be in the same position relative to the car as it was before impact. Set up the measurement axes from the frame.	axis reference frame in the same position as in Section 2.1.6. Set the studs of the frame to the same heights as in Section 2.1.8, see Figure 2. The frame should now be in the same position relative to the car as it was before impact. Set up the measurement axes from the frame.	考框架重新定位於 3.1.2.1.7 的相同位置。將框柱設定於 3.1.2.1.9 相同高度（如圖 2）。參考框架應位於車輛撞擊前之相同位置，並設定為量測座標軸。	考框架重新定位於 3.1.2.1.6 的相同位置。將框柱設定於 3.1.2.1.8 相同高度（如圖 2）。參考框架應位於車輛撞擊前之相同位置，並設定為量測座標軸。
2.2.6 Record the post-impact positions of the B-post points on the passenger's side of the vehicle.	2.2.6 Record the post-impact positions of the B-post points on the unstruck passenger's side of the vehicle.	3.1.2.2.6 撞擊後，記錄車輛乘客側 B 柱各點之位置。	3.1.2.2.6 撞擊後，記錄車輛非受撞擊乘客側 B 柱各點之位置。
2.2.7 Compare the vertical co-ordinate of the B-post sill point before and after the test.	2.2.7 Compare the vertical co-ordinate of the B-post sill point before (Section 2.1.12) and after (Section 2.2.6) the test.	3.1.2.2.7 比較 B 柱門檻點試驗前與試驗後之垂直座標。	3.1.2.2.7 比較 B 柱門檻點試驗前(3.1.2.1.12)及試驗後(3.1.2.2.6)的垂直座標。
2.2.9 Record the post-impact co-ordinates of the centre of the steering column, the centre of the clutch, brake and accelerator pedals, and where applicable a foot operated parking brake, with no load applied to them and in the blocked position (loaded with 200N to produce the maximum moment about the pedal pivot), the door aperture points. Prior to the 'blocked' pedal measurement, i.e. with the 200N applied, the brake fluid shall be removed to avoid the build-up of hydraulic pressure. If the steering	2.2.9 Working on the struck side of the vehicle, record the post-impact co-ordinates of the entre of the steering column, the centre of the clutch, brake and accelerator pedals, and where applicable a foot operated parking brake, with no load applied to them and in the blocked position (loaded with 200N to produce the maximum moment about the pedal pivot), the door aperture points. Prior to the 'blocked' pedal measurement, i.e. with the 200N applied, the brake fluid shall be removed to avoid the build up of	3.1.2.2.9 記錄撞擊後門縫點座標、轉向機柱中心座標、離合器踏板、煞車踏板及加速踏板之中心座標，若有腳踏式駐煞車亦須測量，並記錄踏板未為施加任何負載及位於鎖定位置（施加 200N 以產生踏板樞軸最大力矩）之數據。在量測「鎖定」的踏板前（即施加 200N 負載），應移除煞車液以避免液壓升高。若轉向機柱於撞擊期間因轉向機柱套管(Capsule)剪應力而脫離，應於測量前重新朝上及橫向擺放，以最後接觸任	3.1.2.2.9 從車輛受撞擊側作業，記錄撞擊後門縫點座標、轉向機柱中心座標、離合器踏板、煞車踏板及加速踏板之中心座標，若有腳踏式駐煞車亦須測量，並記錄踏板未施加任何負載及位於鎖定位置（施加 200N 以產生踏板樞軸最大力矩）之數據。在量測「鎖定」的踏板前（即施加 200N 負載），應移除煞車液以避免液壓升高。若轉向機柱於撞擊期間因轉向機柱套管(Capslue)剪應力而脫落，應於測量前重新朝上及橫向

column has become detached during impact due to the operation of the shear capsules, the column should be repositioned before measurement in the upward and lateral directions so that it is in contact with whatever structure(s) last constrained it from further movement. If any of the foot pedals become detached do not take a measurement of that pedal.	hydraulic pressure. If the steering column has become detached during impact due to the operation of the shear capsules, the column should be repositioned before measurement in the upward and lateral directions so that it is in contact with whatever structure(s) last constrained it from further movement. If any of the foot pedals become detached do not take a measurement of that pedal.	何結構限制其進一步移動。若有任何腳踏板脫落，請勿測量該腳踏板。	擺放，以最後接觸任何結構限制其進一步移動。若有任何腳踏板脫落，請勿測量該腳踏板。
2.2.10 Transform the post impact longitudinal and vertical measurements (x’,z’) using the following equations. … $$\begin{bmatrix} X' \\ Z' \end{bmatrix} = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} \begin{bmatrix} x' \\ z' \end{bmatrix}$$	2.2.10 Transform the post impact longitudinal and vertical measurements (x’,z’) using the following equations.… $$\begin{bmatrix} X' \\ Z' \end{bmatrix} = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} \begin{bmatrix} x' \\ z' \end{bmatrix}$$ Where θ is the angle determined in Section 2.2.8. X and Z should now be in the same frame of reference as the pre-impact measurements.	3.1.2.2.10 利用下列方程式轉換撞擊後的縱向及垂直量測數據（x'及 z'）。 $$\begin{bmatrix} X' \\ Z' \end{bmatrix} = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} \begin{bmatrix} x' \\ z' \end{bmatrix}$$	3.1.2.2.10 利用下列方程式轉換撞擊後的縱向及垂直量測數據（x'及 z'）。 $$\begin{bmatrix} X' \\ Z' \end{bmatrix} = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} \begin{bmatrix} x' \\ z' \end{bmatrix}$$ 其中 θ 為 3.1.2.2.8 決定的角度，X 及 Z 應與撞擊前量測值位於相同參考框架。此處假設撞擊時非受撞擊乘客側 B 柱門檻點未垂直或橫向位移。
2.2.11 Where θ is the angle determined in Section 2.2.8. X and Z should now be in the same frame of reference as the pre-impact measurements, assuming that the point on the passenger’s side B-post sill	2.2.11 From the pre-impact and adjusted post-impact data collected, determine a) the longitudinal, lateral and vertical movement of the centre of the top of the steering column.	3.1.2.2.11 其中 θ 為 3.1.2.2.8 決定的角度，X 及 Z 應與撞擊前量測值位於相同參考框架。此處假設撞擊時乘客側 B 柱門檻點未垂直或橫向移位。	3.1.2.2.11 根據收集撞擊前及撞擊後調整的數據，判定： (1) 轉向機柱頂端中心之縱向、橫向及垂直移動量。 (2) 所有腳踏板之縱向及垂直移

is not displaced vertically or laterally during the impact.	b) the longitudinal and vertical movement of all of the foot operated pedals the rearward movement of the A-post at waist level. c) the reduction in width of the door aperture at waist and sill levels.		動量。腰線處(Waist level) A 柱之向後移動量。 (3) 腰線處及門檻之門框寬度減少程度。
2.2.12 From the pre-impact and adjusted post-impact data collected, determine a) the longitudinal, lateral and vertical movement of the centre of the top of the steering column. b) the longitudinal and vertical movement of all of the foot operated pedals. c) the rearward movement of the A-post at waist level. d) the reduction in width of the door aperture at waist and sill levels. 2.2.13 Record these intrusion measurements in the test details. Figure 2 Re-setting axis reference frame （請參考末頁圖表）	2.2.12 Record these intrusion measurements in the test details.	3.1.2.2.12 根據收集撞擊前與撞擊後調整的數據，判定： (1)轉向機柱頂端中心之縱向、橫向及垂直移動量。 (2)所有腳踏板之縱向及垂直移動量。 (3)腰線處(Waist level)A 柱之向後移動量。 (4)腰線處及門檻之開框寬度減少程度。 3.1.2.2.13 將潰縮數據記錄於試驗資料。 圖 2：試驗後重設座標軸參考框架 (請參考末頁圖表)	3.1.2.2.12 將潰縮數據記錄於試驗資料。
3 DUMMY PREPARATION AND CERTIFICATION **3.1 General** 3.1.1 A THOR 50th percentile male test	**3 DUMMY PREPARATION AND CERTIFICATION** **3.1 General** 3.1.1 Hybrid III test dummies should be	3.1.3 人偶整備及查驗(Certification) 3.1.3.1 通則 3.1.3.1.1 THOR 百分之五0成年男	3.1.3 人偶整備及查驗(Certification) 3.1.3.1 通則 3.1.3.1.1 Hybrid III 百分之五0成年

dummy shall be used on the front driver's seat and shall conform to the specification detailed in Technical Bulletin TB026.	used for the front seat driver and passenger positions. They should conform to U.S. Department of transportation, Code of Federal Regulations Part 572 Subpart E and ECE Regulation No. 94, except for modifications and additions stated later - See Section 3.3.	性試驗人偶應安裝於駕駛座，該人偶應符合 Euro NCAP 技術通報 TB026(Technical Bulletin TB026)之規格。	男性試驗人偶應安裝於駕駛座及第一排乘客座，且除本文件後續所提到的調整及配件外(3.1.3.3)，應符合美國運輸部聯邦法規(Code of Federal Regulation, CFR) 572 部 E 分部(Part 572 E)及 UN R94 之規定。
3.1.2 A Hybrid III 50th percentile male test dummy shall be used on the front passenger's position. It shall conform to U.S. Department of Transportation, Code of Federal Regulations Part 572 Subpart E and ECE Regulation No. 94, except for modifications and additions stated later - See Section 3.6. 3.1.3 Details of the child dummy preparation and certification are contained in the Euro NCAP Child Occupant Protection Testing Protocol.	3.1.2 Details of the child dummy preparation and certification are contained in the Euro NCAP Child Occupant Protection Testing Protocol.	3.1.3.1.2 Hybrid III 百分之五0成年男性試驗人偶應安裝於第一排乘客座，且除本文件後續所提到的調整及配件外（3.1.3.6），該人偶應符合美國運輸部聯邦法規(Code of Federal Regulations, CFR) 572 部 E 分部及 UN R94 之規定。 3.1.3.1.3 關於兒童人偶之整備細節及查驗，詳見「兒童保護試驗規章」。	3.1.3.1.2 關於兒童人偶之整備細節及查驗，詳見 3.8 兒童保護試驗規章。
3.2 THOR dummy certification Full details of the THOR certification requirements are available in the documents mentioned in Technical Bulletin TB026. No manufacturer shall have access to any pre-test information	**3.2 Dummy Certification** Full details of the certification procedure for the Hybrid-III dummy are available elsewhere (see Part 572 Subpart E of US Department of Transportation Code of Federal Regulations), SAE J2856 and	3.1.3.2 THOR 百分之五0成年男性人偶查驗 THOR 百分之五0成年男性人偶查驗程序之完整資訊參見 Euro NCAP 技術通報 TB026 所述文件。車輛業者皆不得於試驗前蒐	3.1.3.2 人偶查驗 Hybrid III 百分之五0成年男性人偶查驗程序之完整資訊參見 CFR Part 572 E、SAE J2856 與 UN R94 法規附件 10。關於 TNCAP 使用

regarding any of the test equipment to be used by Euro NCAP or be permitted to influence its selection in any way.	Annex 10 of ECE Regulation No. 94). No manufacturer shall have access to any pre-test information regarding any of the test equipment to be used by Euro NCAP, or be permitted to influence its selection in any way.	集任何資訊，亦不得以任何方式影響設備之挑選。	之試驗設備，車輛業者皆不得於試驗前蒐集任何資訊，亦不得以任何方式影響設備之挑選。
3.2.1 The THOR shall be re-certified after every THREE impact tests.	3.2.1 The Hybrid-III dummies shall be re-certified after every THREE impact tests.	3.1.3.2.1 人偶每經 3 次撞擊試驗後，應重新進行 THOR 百分之五０成年男性人偶查驗。	3.1.3.2.1 人偶每經 3 次撞擊試驗後，應重新進行 Hybrid III 百分之五０成年男性人偶查驗。
3.2.2 If an injury criterion reaches or exceeds its normally accepted limit (eg HIC of 700) then that part shall be re-certified.	3.2.2 The chest shall be certified according to the frequency above and should meet both the low speed thorax test as prescribed by SAE J2779, as well as the full certification test detailed in CFR572. Additionally, chest potentiometer calibration and polynomial post processing shall also be performed as detailed in SAE J2517. See Technical Bulletin 005 for more details.	3.1.3.2.2 若某傷害指數達到或超過其正常可接受範圍（如頭部傷害指數(HIC)達 700），該部位應重新查驗。	3.1.3.2.2 人偶胸部應依照上述頻率進行查驗，且應同時符合 SAE J2779 規定之低速胸腔試驗及 CFR 572 所述之整體查驗試驗。此外，胸部電位器校正及多項式後製處理也應依 SAE J2517 規定執行。
3.2.3 If any part of a dummy is broken in a test then the part shall be replaced with a fully certified component.	3.2.3 The knee slider shall be certified to SAE J2876 after every THREE impact tests and as specified in SAE J2856 after every NINE impact tests. See Technical Bulletin 006 for more details.	3.1.3.2.3 若人偶任一部位於試驗中損壞，該部位應以完整查驗之零件(Fully certified component)替換。	3.1.3.2.3 膝部滑動在每經 3 次撞擊試驗後應重新進行 SAE J2876 查驗，每 9 次撞擊試驗後應重新進行 SAE J2856 查驗。
3.2.4 Copies of the dummy certification certificates will be provided as part of the	3.2.4 If an injury criterion reaches or exceeds its normally accepted limit (eg	3.1.3.2.4 人偶查驗證書副本應檢附於完整試驗報告。	3.1.3.2.4 若某傷害指數(Injury criterion)達到或超過其正常可接

full report for a test.	HIC of 700) then that part of the dummy shall be re-certified. 3.2.5 If any part of a dummy is broken in a test then the part shall be replaced with a fully certified component. 3.2.6 Copies of the dummy certification certificates will be provided as part of the full report for a test.		受範圍（如頭部傷害指數(HIC)達700），則該部位應重新查驗。
3.3 THOR Dummy preparation	**3.3 Additions and Modifications to the Hybrid III Dummies**	3.1.3.3 THOR 百分之五0成年男性人偶整備	3.1.3.3 Hybrid III 百分之五0成年男性人偶配件及調整
3.3.1 Instrumentation is to be fitted to the dummy in accordance with Section 4.1.	3.3.1 The additions and modifications which will change the dynamic behaviour of the test dummies from Part 572E specification dummies are:	3.1.3.3.1 依 3.1.4.1 步驟於人偶身上安裝感測及資料擷取系統。	3.1.3.3.1 以下配件及調整會影響試驗人偶動態行為，與 Part 572 E 的規格不同：
3.3.2 The THOR dummy shall be equipped with a modified spine box set to the ‘slouched’ position which is equivalent to +9°.	3.3.2 Roller ball-bearing knees shall be fitted.	3.1.3.3.2 於 THOR 百分之五0成年男性人偶身上安裝修改後之脊椎箱(Spine box)，設定為低頭垂肩姿勢(Slouched position)，角度為+9˚。	3.1.3.3.2 應安裝滾珠軸承式膝部套件。
3.3.3 THOR neck shields shall not be used for the driver.	3.3.3 Extra instrumentation is also fitted such as enhanced instrumented lower legs and a 6-axis neck. See Section 4 for a full instrumentation list.	3.1.3.3.3 駕駛不應使用 THOR 頸部護套(Neck shield)。	3.1.3.3.3 須加裝額外感測器及資料擷取系統，例如增加下腿部與六軸型頸部之感測器及資料擷取系統。詳細感測器及資料擷取系統設置清單參見 3.1.4。
3.3.4 The standard THOR shoulder pad	3.3.4 Foam neck shields (Part 93051-1-DN	3.1.3.3.4 應使用標準 THOR 肩部	3.1.3.3.4 若配備前方保護之空氣

shall be used unless, before testing, the OEMidentifies an issue of the shoulder belt slipping towards the neck. In which case, theTHOR dummy shall be equipped with the modified shoulder pad as defined in TB 029. The modified shoulder pad shall be used for all vehicles published from 1st Jan 2025. 3.3.5 Care must be taken when fitting the THOR dummy jacket to ensure that the jacket is fitted correctly around the shoulder pads. 3.3.6 For H-point positioning, the tool defined in SBL-A shall be used. 3.3.7 THOR shall be clothed with formfitting cotton stretch pants which must not cover the dummy's knees. The torso shall be clothed with the jacket only. 3.3.8 The feet of the THOR shall be fitted with rubber soled shoes equivalent to those specified in MIL-S13192 rev P, size 11EEE.	or equivalent) must be fitted to the driver and passenger if a frontal protection airbag is present.	襯墊，除非車輛業者於試驗前提出肩部安全帶滑移至頸部之問題。在此情況下，THOR 人偶應配備 Euro NCAP 技術通報 TB 029 所定義之改良型肩部襯墊。 3.1.3.3.5 安裝 THOR 人偶上衣時，必須特別注意以確保上衣正確安裝於肩部襯墊周圍。 3.1.3.3.6 H 點設置時，應使用 SBL-A 所定義之工具。 3.1.3.3.7 THOR 百分之五0成年男性人偶應穿著合身之彈性棉質短褲，褲子不可蓋住人偶膝部。上半身應僅穿著夾克。 3.1.3.3.8 THOR 百分之五0成年男性人偶應穿著相當於 MIL-S13192 所規定之橡膠底鞋（尺碼 11EEE）。	囊，則須在駕駛人偶與乘客人偶上安裝泡棉護頸(Foam neck shields)（Part 93051-1-DN 或同等物）。
3.4 THOR Dummy Test Condition	**3.4 Hybrid III Dummy Clothing and Footwear**	3.1.3.4 THOR 百分之五0成年男性人偶試驗條件	3.1.3.4 人偶衣著及鞋履
3.4.1 Dummy Temperature	3.4.1 Each dummy will be clothed with	3.1.3.4.1 人偶溫度	3.1.3.4.1 每個人偶應穿著合身之彈

	formfitting cotton stretch garments with short sleeves and pants which should not cover the dummy's knees.		性棉質短袖上衣，褲子不可蓋住人偶膝部。
3.4.1.1 The dummy shall have a stabilised temperature in the range of 19°C to 22°C.		3.1.3.4.1.1 人偶的溫度必須穩定，介於 19˚C 至 22˚C 之間。	
3.4.1.2 A stabilised temperature shall be obtained by soaking the dummy in temperatures that are within the range specified above for at least 1 hour prior to the test.		3.1.3.4.1.2 為達穩定溫度，試驗前應將人偶放置(Soaking)上述溫度範圍內至少 1 小時。	
3.4.1.3 Measure the temperature of the driver dummy for at least 5 hours before test at intervals not exceeding 10 minutes and not exceeding 5 minutes before test.		3.1.3.4.1.3 試驗前至少 5 小時開始，每隔一段時間（不得超過 10 分鐘）測量駕駛人偶溫度，且試驗前 5 分鐘內須測量 1 次。	
3.4.1.4 The dummy shall be equipped with onboard temperature sensor that is attached in accordance with ISO TR 27957 to either the left or right hand side of rib 4.		3.1.3.4.1.4 依據 ISO TR 27957 規定，於人偶左側或右側 4 號肋骨處安裝溫度感測器。	
3.4.1.5 A copy of the temperature readings is to be supplied as part of the standard output of the test.		3.1.3.4.1.5 試驗產出資料中，應檢附一份溫度數值。	
3.4.2 Dummy Joints	3.4.2 Each dummy shall be fitted with shoes equivalent to those specified in MIL-S13192 rev P. (size 11EEE)	3.1.3.4.2 人偶關節	3.1.3.4.2 每個人偶應穿著相當於 MIL-S13192 所規定的鞋子(尺碼 11EEE)。

3.4.2.1 Stabilise the dummy temperature by soaking in the required temperature range for at least 1 hour. 3.4.2.2 Set the torque on the shoulder screws to obtain a 1-2g holding force of the arm on its pivot. 3.4.2.3 For adjustable joints in the legs, the tensioning screw or bolt which acts on the constant friction surfaces shall be adjusted to obtain a 1-2g holding force. 3.4.2.4 The dummy joint stiffnesses shall be set as close as possible to the time of the test and not more than 24 hours before the test. 3.4.2.5 Maintain the dummy temperature within the permissible temperature range between the time of setting the limbs and up to a maximum of 10 minutes before the time of the test. 3.4.2.6 After switching on the data acquisition, the air inside the dummy and also the sensors may warm up whereas the dummy itself is still at a lower temperature. Such sudden temperature rises do not reflect the actual dummy temperature and may be ignored as long		3.1.3.4.2.1 將人偶放置於指定溫度範圍內至少 1 小時，以穩定其溫度。 3.1.3.4.2.2 調整肩部螺絲之扭矩，使手臂於其樞軸之維持力達 1 至 2g。 3.1.3.4.2.3 對於腿部之可調整關節，應調整作用於常摩擦面之張緊螺絲或螺拴，使其維持力達 1 至 2g。 3.1.3.4.2.4 設定人偶關鬆緊度應盡可能接近試驗時間，無論如何不可超過試驗前 24 小時。 3.1.3.4.2.5 從設置四肢關節之鬆緊度至試驗前 10 分鐘此段期間內，將人偶溫度維持於允許之溫度範圍內。 3.1.3.4.2.6 開啟資料擷取系統後，人偶內空氣及感測器可能升溫，而人偶本身溫度仍處於較低溫度。此突然溫度升高並非反映人偶實際溫度，因此只要持續時間不超過 20 分鐘，則可被忽略。	

as they do not exceed a duration of 20 minutes.			
3.5 Hybrid III Dummy Certification Full details of the certification procedure for the Hybrid-III dummy are available elsewhere (see Part 572 Subpart E of US Department of Transportation Code of Federal Regulations), SAE J2856 and Annex 10 of ECE Regulation No. 94). No manufacturer shall have access to any pre-test information regarding any of the test equipment to be used by Euro NCAP or be permitted to influence its selection in any way.	**3.5 Hybrid III Dummy Test Condition**	3.1.3.5 Hybrid III 百分之五０成年男性人偶查驗 Hybrid III 百分之五０成年男性人偶查驗程序之完整資訊參見 CFR Part 572 E、SAE J2856 與 UN R94 法規附件 10。關於 TNCAP 使用之試驗設備，車輛業者皆不得於試驗前蒐集任何資訊，亦不得以任何方式影響設備之挑選。	3.1.3.5 人偶試驗條件
3.5.1 The Hybrid-III dummies shall be re-certified after every THREE impact tests.	3.5.1 Dummy Temperature	3.1.3.5.1 人偶每經 3 次撞擊試驗後，應重新進行 Hybrid III 百分之五０成年男性人偶查驗。	3.1.3.5.1 人偶溫度
	3.5.1.1 The dummy shall have a stabilised temperature in the range of 19°C to 22°C.		3.1.3.5.1.1 人偶的溫度必須穩定，介於 19℃至 22℃之間。
	3.5.1.2 A stabilised temperature shall be obtained by soaking the dummy in temperatures that are within the range specified above for at least 5 hours prior to the test.		3.1.3.5.1.2 為達穩定溫度，試驗前應將人偶放置(Soaking)於上述溫度範圍內至少 5 小時。
	3.5.1.3 Measure the temperature of the		3.1.3.5.1.3 將電子紀錄溫度計放入

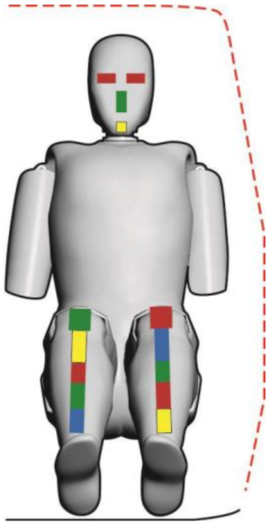
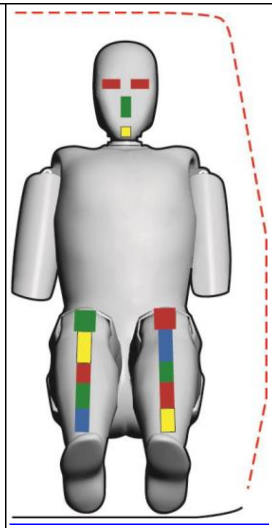
	dummy using a recording electronic thermometer placed inside the dummy's flesh. The temperature should be recorded at intervals not exceeding 10 minutes.		人偶胸口內量測人偶溫度，量測記錄間隔最多不應超過 10 分鐘。
	3.5.1.4 A printout of the temperature readings is to be supplied as part of the standard output of the test.		3.1.3.5.1.4 試驗產出資料中，應檢附一份溫度數值。
3.5.2 The chest shall be certified according to the frequency above and shall meet both the low speed thorax test as prescribed by SAE J2779, as well as the full certification test detailed in CFR572. Additionally, chest potentiometer calibration and polynomial post processing shall also be performed as detailed in SAE J2517. See Technical Bulletin TB005 for more details.	3.5.2 Dummy Joints All constant friction joints should have their 'stiffness' set by the following method.	3.1.3.5.2 人偶胸部應依照上述頻率進行查驗，且應同時符合 SAE J2779 規定之低速胸腔試驗及 CFR 572 所述之整體查驗試驗。此外，胸部電位器校正及多項式後製處理也應依 SAE J2517 規定執行。	3.1.3.5.2 人偶關節 所有常摩擦關節應依下列方法設定其關節鬆緊度(Stiffness)。
3.5.3 The knee slider shall be certified to SAE J2876 after every THREE impact tests and as specified in SAE J2856 after every NINE impact tests. See Technical Bulletin TB006 for more details.	3.5.3 Dummy face painting	3.1.3.5.3 膝部滑動在每經 3 次撞擊試驗後應重新進行 SAE J2876 查驗，每 9 次撞擊試驗後應重新進行 SAE J2856 查驗。	3.1.3.5.3 人偶臉部塗色
3.5.4 If an injury criterion reaches or exceeds its normally accepted limit (eg HIC of 700) then that part of the dummy		3.1.3.5.4 若某傷害指數達到或超過其正常可接受範圍（如頭部傷害指數(HIC)達 700），則該部位應	

shall be re-certified. 3.5.5 If any part of a dummy is broken in a test then the part shall be replaced with a fully certified component. 3.5.6 Copies of the dummy certification certificates will be provided as part of the full report for a test.		重新查驗。 3.1.3.5.5 若人偶任一部位於試驗中損壞，該部位應以完全查驗之零件(Fully certified component)替換。 3.1.3.5.6 人偶查驗證書副本應檢附於完整試驗報告。	
3.6 Additions and Modifications to the Hybrid III Dummy The additions and modifications which will change the dynamic behaviour of the test dummies from Part 572E specification dummies are:	**3.6 Post Test Dummy Inspection**	3.1.3.6 Hybrid III 百分之五0成年男性人偶之配件及調整 以下配件及調整會影響試驗人偶動態行為，與 Part 572 E 的規格不同：	3.1.3.6 試驗後人偶檢查
3.6.1 Instrumentation is to be fitted to the dummy in accordance with Section 4.2.	3.6.1 The dummies should be visually inspected immediately after the test. Any lacerations of the skin or breakages of a dummy should be noted in the test specification. A dummy may have to be re-certified in this case. Refer to Section 3.2.	3.1.3.6.1 依照 3.1.4.2 步驟於人偶身上安裝感測及資料擷取系統。	3.1.3.6.1 試驗後應立即以目視檢查所有人偶狀況。若有任何斷裂或皮膚破裂之情形，應記錄於試驗資料，此時人偶參考 3.1.3.2 重新查驗。
3.6.2 Roller ball-bearing knees shall be fitted. 3.6.3 A foam neck shield (Part 93051-1-DN or equivalent) must be fitted to the passenger if a frontal protection airbag is present.		3.1.3.6.2 應安裝滾珠軸承式膝部套件。 3.1.3.6.3 若配備前方保護之空氣囊，則須在乘客人偶上安裝泡棉護頸（Part 93051-1-DN 或同等物）。	

3.7 Hybrid III Dummy Clothing and Footwear 3.7.1 The Hybrid III shall be clothed with formfitting cotton stretch garments with short sleeves and pants which must not cover the dummy's knees. 3.7.2 The Hybrid III shall be fitted with rubber soled shoes equivalent to those specified in MIL-S13192 rev P, size 11EEE. **3.8 Hybrid III Dummy Test Condition** 3.8.1 Dummy Temperature 3.8.1.1 The passenger dummy shall have a stabilised temperature in the range of 19°C to 22°C. 3.8.1.2 A stabilised temperature shall be obtained by soaking the dummy in temperatures that are within the range specified above for at least 1 hour prior to the test. 3.8.1.3 Measure the temperature of the driver dummy for at least 5 hours before test at intervals not exceeding 10 minutes and not exceeding 5 minutes before test. 3.8.1.4 A printout of the temperature		3.1.3.7 Hybrid III 百分之五０成年男性人偶衣著及鞋履 3.1.3.7.1 Hybrid III 人偶應穿著合身之彈性棉質短袖上衣，褲子不可蓋住人偶膝部。 3.1.3.7.2 Hybrid III 人偶應穿著相當於 MIL-S13192 所規定的橡膠底鞋（尺碼 11EEE）。 3.1.3.8 Hybrid III 百分之五０成年男性人偶試驗條件 3.1.3.8.1 人偶溫度 3.1.3.8.1.1 乘客人偶的溫度必須穩定，介於 19˚C 至 22˚C 之間。 3.1.3.8.1.2 為達穩定溫度，試驗前應將人偶放置(Soaking)上述溫度範圍內至少 1 小時。 3.1.3.8.1.3 試驗前至少 5 小時開始，每隔一段時間（不得超過 10 分鐘）測量人偶溫度，且試驗前 5 分鐘內須測量 1 次。 3.1.3.8.1.4 試驗產出資料中，應檢	

readings is to be supplied as part of the standard output of the test. 3.8.2 Dummy Joints 3.8.2.1 All constant friction joints shall have their 'stiffness' set by the following method. 3.8.2.2 Stabilise the dummy temperature by soaking in the required temperature range for at least 5 hours. 3.8.2.3 The tensioning screw or bolt which acts on the constant friction surfaces shall be adjusted until the joint can just hold the adjoining limb in the horizontal. When a small downward force is applied and then removed, the limb should continue to fall. 3.8.2.4 The dummy joints stiffness shall be set as close as possible to the time of the test and not more than 24 hours before the test. 3.8.2.5 Maintain the dummy temperature within the range 19º to 22ºC between the time of setting the limbs and up to a maximum of 10 minutes before the time of the test. **3.9 Dummy painting and marking**		附一份溫度數值。 3.1.3.8.2 人偶關節 3.1.3.8.2.1 所有常摩擦關節應依下列方法設定其關節鬆緊度(Stiffness)。 3.1.3.8.2.2 將人偶放置於指定溫度範圍內至少 5 小時，以穩定其溫度。 3.1.3.8.2.3 作用於常摩擦面的張緊螺絲或螺拴應進行調整，直到人偶關節可讓相連的四肢保持水平。向下輕壓然後移開時，四肢應持續往下。 3.1.3.8.2.4 設定人偶關節鬆緊度應盡可能接近試驗時間，無論如何不可超過試驗前 24 小時。 3.1.3.8.2.5 從設置四肢關節之鬆緊度至試驗前 10 分鐘這段期間內，將人偶的溫度維持於 19℃至 22℃之範圍內。 3.1.3.9 人偶塗色與標記	

3.9.1 The adult dummies shall have masking tape placed on the areas to be painted using the sizes detailed below. The tape shall be completely covered with the following coloured paints. The paint shall be applied close to the time of the test to ensure that the paint will still be wet on impact. Child dummy painting is detailed in the Euro NCAP COP testing protocol. Driver & passenger Eyebrows (left and right) Red Nose Green Chin Yellow Left Knee Red Right Knee Green Left Tibia (top to bottom) Blue, Green, Red, Yellow Right Tibia (top to bottom) Yellow, Red, Green, Blue		3.1.3.9.1 應於成年人偶預定塗色之區域，以下方詳列之範圍黏貼紙膠帶。膠帶應徹底塗滿下列指定顏色，顏料應於接近試驗時間時塗上，以確保撞擊時顏料未乾。兒童人偶之塗色詳見「兒童保護試驗規章」。 駕駛與乘客 眉毛（左、右） 紅 鼻子 綠 下巴 黃 左膝 紅 右膝 綠 左脛骨（上至下） 藍、綠、紅、黃 右脛骨（上至下） 黃、紅、綠、藍	

 Paint Area Sizes: Eyebrow 25 x 100mm, single stri edge at the same height moulding hole on side of h Nose 25 x 40mm strip, vertical centre line beneath eyebro Chin 25 x 25mm square, centre Knee (L/R) 45 x 45mm square, knee ce bottom edge level with top Tibia (L/R) 25mm x 50mm, 4 adjacen leg centre line with top ed top of tibia flesh. **3.10 Post Test Dummy Inspection** 3.10.1 All dummies shall be visually inspected immediately after the test.		 塗色區域範圍： 眉毛 25 x 100mm，單一長 與頭部兩側頭皮模具 鼻子 25 x 40mm，長條形， 沿著鼻子中線 下巴 25 x 25mm，正方形， 膝部(左、右) 45 x 45mm，正方形， 底部邊緣與脛骨肌肉 脛骨(左、右) 25mm x 50mm，腿部 鄰及頂端與脛骨肌肉 3.1.3.10 試驗後人偶檢查 3.1.3.10.1 試驗後應立即以目視檢 查所有人偶狀況。	

3.10.2 Any lacerations of the skin or breakages must be noted in the test details, a dummy may have to be re-certified in this case. Refer to Section 3.2. 3.10.3 Any screws that have become loose or detached shall be re-tightened to the required torque or replaced as necessary.		3.1.3.10.2 若有任何斷裂或皮膚撕裂之情形，應記錄於試驗資料。此時人偶參考 3.1.3.2 重新查驗。 3.1.3.10.3 若有任何螺絲鬆開或脫離，應重新鎖緊至指定扭矩，若需要也可替換。	
4 INSTRUMENTATION The Channel Amplitude Class (CAC) for each transducer shall be chosen to cover the Minimum Amplitude listed in the table. In order to retain sensitivity, CACs which are orders of magnitude greater than the Minimum Amplitude may not be used. A transducer shall be re-calibrated if it reaches its CAC during any test. All instrumentation shall be re-calibrated after one year, regardless of the number of tests for which it has been used. A list of instrumentation along with calibration dates must be supplied as part of the standard results of the test. The transducers are mounted according to procedures laid out in SAE J211. The sign convention used for configuring the	**4 INSTRUMENTATION** All instrumentation shall be calibrated before the test programme. The Channel Amplitude Class (CAC) for each transducer shall be chosen to cover the Minimum Amplitude listed in the table. In order to retain sensitivity, CACs which are orders of magnitude greater than the Minimum Amplitude should not be used. A transducer shall be re-calibrated if it reaches its CAC during any test. All instrumentation shall be re-calibrated after one year, regardless of the number of tests for which it has been used. A list of instrumentation along with calibration dates should be supplied as part of the standard results of the test. The transducers mounting and sign	3.1.4 感測器及資料擷取系統設置 (Instrumentation) 每個轉換器的通道振幅等級 (Channel Amplitude Class，CAC) 之選擇應涵蓋表格中所列之最低振幅。為維持靈敏度，不應使用數量級(Orders of magnitude)超過最低振幅之 CAC。若轉換器於任何試驗過程中達到其 CAC，則應重新進行校正。無論進行多少試驗，所有感測器及資料擷取系統每年皆應重新校正。試驗標準結果資料中應包含所有感測器及資料擷取系統清單及相應校正日期。轉換器安裝程序參見 SAE J211。轉換器配置設定所使用之符號通則(Sign convention)參見 SAE J211(2007)。	3.1.4 感測器及資料擷取系統設置 (Instrumentation) 所有感測器及資料擷取系統皆須於試驗前進行校正。每個轉換器的通道振幅等級 (Channel Amplitude Class，CAC)之選擇應涵蓋表格中所列之最低振幅。為維持靈敏度，不應使用數量級 (Orders of magnitude)超過最低振幅之 CAC。若轉換器於任何試驗過程中達到其 CAC，則應重新進行校正。無論進行多少試驗，所有感測器及資料擷取系統每年皆應重新校正。試驗標準結果資料中應包含所有感測器及資料擷取系統清單及相應校正日期。轉換器配置設定所使用之符號通則 (Sign convention) 參見 SAE

<table>
<tr>
<td>transducers is stated in SAE J211 (2007). Details of the child dummy instrumentation is contained in the Euro NCAP Child Occupant Protection Testing Protocol.</td>
<td>convention are according to SAE J211 (1995).</td>
<td>兒童人偶感測器及資料擷取系統參見「兒童保護試驗規章」。</td>
<td>J211(1995)。</td>
</tr>
<tr>
<td>4.1 THOR Dummy Instrumentation

4.1.1 The THOR dummy shall be instrumented to record the channels listed below, additional channels may be recorded.</td>
<td>4.1 Dummy Instrumentation
The Hybrid III dummies to be used shall be instrumented to record the channels listed below. Details of the child dummy instrumentation is contained in the Euro NCAP Child Occupant Protection Testing Protocol.
<table>
<tr><th>Location</th><th>Parameter</th><th></th><th>Minimum Amplitude</th><th>Driver No of channels</th><th>Passenger No of channels</th></tr>
<tr><td>Head</td><td>Accelerations, A_x A_y A_z</td><td></td><td>250g</td><td>3</td><td>3</td></tr>
<tr><td>Neck</td><td>Forces</td><td>F_x F_y</td><td>9kN</td><td>2</td><td>2</td></tr>
<tr><td></td><td></td><td>F_z</td><td>14kN</td><td>1</td><td>1</td></tr>
<tr><td></td><td>Moments, M_x M_y M_z</td><td></td><td>290Nm</td><td>3</td><td>3</td></tr>
<tr><td>Chest</td><td>Accelerations, A_x A_y A_z</td><td></td><td>150g</td><td>3</td><td>3</td></tr>
<tr><td></td><td>Deflection, D_{chest}</td><td></td><td>100mm</td><td>1</td><td>1</td></tr>
<tr><td>Pelvis</td><td>Accelerations, A_x A_y A_z</td><td></td><td>150g</td><td>3</td><td>3</td></tr>
<tr><td>Lumbar Spine</td><td>Forces, F_x F_z</td><td></td><td></td><td>2</td><td>2</td></tr>
<tr><td></td><td>Moments, M_y</td><td></td><td></td><td>1</td><td>1</td></tr>
<tr><td>Femurs (L & R)</td><td>Forces, F_z</td><td></td><td>20kN</td><td>2</td><td>2</td></tr>
<tr><td>Knees (L & R)</td><td>Displacements, D_{knee}</td><td></td><td>19mm</td><td>2</td><td>2</td></tr>
<tr><td>Upper Tibia (L & R)</td><td>Forces, F_x F_z</td><td></td><td>12kN</td><td>4</td><td>4</td></tr>
<tr><td></td><td>Moments, M_x M_y</td><td></td><td>400Nm</td><td>4</td><td>4</td></tr>
<tr><td>Lower Tibia[2] (L & R)</td><td>Forces, F_x F_z (F_y)</td><td></td><td>12kN</td><td>4</td><td>4</td></tr>
<tr><td></td><td>Moments, M_x M_y</td><td></td><td>400Nm</td><td>4</td><td>4</td></tr>
<tr><td></td><td>Total Channels per Dummy</td><td></td><td></td><td>39</td><td>39</td></tr>
<tr><td></td><td>Total Channels</td><td></td><td></td><td colspan="2">78</td></tr>
</table>
</td>
<td>3.1.4.1 THOR 人偶感測器及資料擷取系統設置
3.1.4.1.1 THOR 人偶感測器及資料擷取系統應設定至得以記錄下列頻道。另可記錄額外頻道。</td>
<td>3.1.4.1 人偶感測器及資料擷取系統設置
試驗使用之 Hybrid III 百分之五0成年男性人偶應記錄下列頻道。關於兒童人偶的整備細節及驗證，詳見 3.8 兒童保護試驗規章。
<table>
<tr><th>位置</th><th>參數</th><th></th><th>最低振幅</th><th>駕駛頻道數量</th><th>乘客頻道數量</th></tr>
<tr><td>頭部</td><td>加速度，A_x A_y A_z</td><td></td><td>250g</td><td>3</td><td>3</td></tr>
<tr><td>頸部</td><td>力</td><td>F_x F_y</td><td>9kN</td><td>2</td><td>2</td></tr>
<tr><td></td><td></td><td>F_z</td><td>14kN</td><td>1</td><td>1</td></tr>
<tr><td></td><td>力矩，M_x M_y M_z</td><td></td><td>290Nm</td><td>3</td><td>3</td></tr>
<tr><td>胸部</td><td>加速度，A_x A_y A_z</td><td></td><td>150g</td><td>3</td><td>3</td></tr>
<tr><td></td><td>偏離，D_{chest}</td><td></td><td>100mm</td><td>1</td><td>1</td></tr>
<tr><td>骨盆</td><td>加速度，A_x A_y A_z</td><td></td><td>150g</td><td>3</td><td>3</td></tr>
<tr><td>腰部脊椎</td><td>力，F_x F_z</td><td></td><td></td><td>2</td><td>2</td></tr>
<tr><td></td><td>力矩，M_y</td><td></td><td></td><td>1</td><td>1</td></tr>
<tr><td>股骨（左&右）</td><td>力，F_z</td><td></td><td>20kN</td><td>2</td><td>2</td></tr>
<tr><td>膝部（左&右）</td><td>位移，D_{knee}</td><td></td><td>19mm</td><td>2</td><td>2</td></tr>
<tr><td>上脛骨（左&右）</td><td>力，F_x F_z</td><td></td><td>12kN</td><td>4</td><td>4</td></tr>
<tr><td></td><td>力矩，M_x M_y</td><td></td><td>400Nm</td><td>4</td><td>4</td></tr>
<tr><td>下脛骨[1]（左&右）</td><td>力，F_x F_z(F_y)</td><td></td><td>12kN</td><td>4</td><td>4</td></tr>
<tr><td></td><td>力矩，M_x M_y</td><td></td><td>400Nm</td><td>4</td><td>4</td></tr>
<tr><td></td><td>每個人偶頻道總數</td><td></td><td></td><td>39</td><td>39</td></tr>
<tr><td></td><td>頻道總數</td><td></td><td></td><td colspan="2">78</td></tr>
</table>
備註：1.兩個人偶是否測量 F_y 數據由檢測機構酌情決定。</td>
</tr>
<tr>
<td>4.1.2 Only in-dummy data acquisition systems are to be used.
4.1.3 The test laboratory must check that acetabulum sensor orientation and post processing is in accordance with the specification detailed in TB021.
（請參考末頁圖表）</td>
<td></td>
<td>3.1.4.1.2 僅允許使用安裝於人偶體內之資料擷取系統。
3.1.4.1.3 檢測機構必須檢查位於髖臼感測器(Acetabulum sensor)之方向及後處理(Post processing)是否符合 Euro NCAP 技術通報 TB021 之規定。</td>
<td></td>
</tr>
</table>

<table>
<tr><td></td><td></td><td>(請參考末頁圖表)</td><td></td></tr>
<tr><td>4.2 Hybrid III Dummy Instrumentation</td><td>4.2 Vehicle Instrumentation</td><td>3.1.4.2 Hybrid III 人偶感測器及資料擷取系統設置</td><td>3.1.4.2 車輛感測器及資料擷取系統設置</td></tr>
<tr><td>4.2.1 The Hybrid III dummy to be used shall be instrumented to record the channels listed below, additional channels may be recorded.
(請參考末頁圖表)</td><td>4.2.1 The vehicle is to be fitted with an accelerometer on each B-post. The accelerometers are to be fitted in the fore/aft direction (Ax)</td><td>3.1.4.2.1 Hybrid III 人偶感測器及資料擷取系統應設定至得以記錄下列頻道。另可記錄額外頻道。
(請參考末頁圖表)</td><td>3.1.4.2.1 在車輛上每側 B 柱安裝加速規。加速規須安裝在車頭/車尾方向(Ax)。</td></tr>
<tr><td>4.3 Vehicle Instrumentation</td><td>4.3 Summary of Total Channels
<table><tr><td>1× Driver Hybrid-III</td><td>39</td></tr><tr><td>1× Passenger Hybrid-III</td><td>39</td></tr><tr><td>1× Q10</td><td>30</td></tr><tr><td>1× Q6</td><td>13</td></tr><tr><td>1× Vehicle</td><td>7</td></tr><tr><td>Total Channels per Test</td><td>128</td></tr></table></td><td>3.1.4.3 車輛感測器及資料擷取系統設置</td><td>3.1.4.3 頻道總數
<table><tr><td>1 x 駕駛 Hybrid III</td><td>39</td></tr><tr><td>1 x 乘客 Hybrid III</td><td>39</td></tr><tr><td>1 x Q10</td><td>30</td></tr><tr><td>1 x Q6</td><td>13</td></tr><tr><td>1 x 車輛</td><td>7</td></tr><tr><td>每次試驗頻道總數</td><td>128</td></tr></table></td></tr>
<tr><td>4.3.1 Remove carpet and the necessary interior trim to gain access to the sill directly below the B-post.
4.3.2 Securely attach a mounting plate for the accelerometer horizontally on to the sill, without adversely affecting seat belt retractors and/or pretensioners.
4.3.3 Fix the accelerometer to the mounting plate. Ensure the accelerometer is horizontal to a tolerance of ±1 degree and parallel to the X-axis of</td><td></td><td>3.1.4.3.1 移除地毯及其他需移除之內飾板，露出 B 柱正下方之門檻(Sill)。
3.1.4.3.2 將加速規的安裝板水平穩固地固定在門檻上，但不影響安全帶捲收器及/或安全帶預負載裝置正常作動。
3.1.4.3.3 將加速規固定在安裝板上，確認加速規為水平狀態（容許誤差±1 度），並與車輛 X 軸平行。</td><td></td></tr>
</table>

the vehicle. 4.3.4 Attach lightweight (<100g) seatbelt loadcells to the shoulder section of the driver and passenger seatbelts and to the shoulder section of the Q10 and Q6 shoulder seatbelts. The calibration procedure for the loadcells is detailed in Technical Bulletin TB016. 4.3.5 Where the fitment of the shoulder belt loadcell significantly influences the natural position of the belt, the loadcell may be supported from above with the use of a weak non-metallic wire or thread. 4.3.6 Where loadcells are to be placed on any seatbelts equipped with pretensioners, ensure that the loadcell is placed far enough away from the D-loop to ensure there is no interaction as the pretensioner fires. Where any CRS lock-off does not allow the loadcell to be placed a sufficient distance from the D-loop do not attach the loadcell. （請參考末頁圖表） **4.4 Trolley and Barrier Instrumentation** （請參考末頁圖表）		3.1.4.3.4 在駕駛與乘客安全帶肩部及 Q10 與 Q6 安全帶肩部各加上輕量（<100g）荷重計。 3.1.4.3.5 肩部安全帶荷重計嚴重影響安全帶之自然位置時，可使用細的非金屬線纜或線繩從上方支撐荷重計。 3.1.4.3.6 若要在配有預負載裝置之安全帶上放置荷重計，則須確保荷重計之位置與導帶環保持一定距離，以確保預負載裝置啟動時不會相互作用。若因任何兒童保護裝置之鎖定裝置導致荷重計無法將保持足夠距離，則勿放置荷重計。 (請參考末頁圖表) 3.1.4.4 台車與碰撞壁感測器及資料擷取系統設置	

<table>
<tr><td></td><td></td><td>(請參考末頁圖表)</td><td></td></tr>
<tr>
<td>5 PASSENGER COMPARTMENT ADJUSTMENT</td>
<td>5. PASSENGER COMPARTMENT ADJUSTMENT

<table>
<tr><th>Adjustment³</th><th>Required Setting</th><th>Notes</th><th>Methods</th></tr>
<tr><td>Seat fore/aft</td><td>Mid position</td><td>May be set to first notch rearwards of mid position if not lockable at mid position</td><td>See Section 5.1</td></tr>
<tr><td>Seat base tilt</td><td>Manufacturer's design position</td><td>Permissible up to mid position, otherwise lowest</td><td>See Section 5.1.11</td></tr>
<tr><td>Seat height</td><td>Lowest position</td><td></td><td></td></tr>
<tr><td>Seat back angle (as defined by torso angle)</td><td>Manufacturer's design position</td><td>Otherwise 25° to vertical
As defined by Torso angle</td><td>See Section 6.1.1</td></tr>
<tr><td>Seat lumbar support</td><td>Manufacturer's design position</td><td>Otherwise fully retracted</td><td>See Section 5.1.12</td></tr>
<tr><td>Front head restraint height & tilt</td><td>Mid locking position</td><td>As whiplash test position. If there is any interference with the rear of the dummy head, move the HR to the most rearward position.</td><td>See Section 6.2 Whiplash testing protocol</td></tr>
<tr><td>Front seat belt anchorage (where adjustable)</td><td>Manufacturer's 50th percentile design position</td><td>If no design position then set to mid-position, or nearest notch upwards</td><td></td></tr>
<tr><td>Steering wheel - vertical</td><td>Mid position</td><td></td><td>See Section 5.3</td></tr>
<tr><td>Steering wheel - horizontal</td><td>Mid position</td><td></td><td>See Section 5.2</td></tr>
<tr><td>Rear seat fore/aft (where adjustable)</td><td>Manufacturer's design position</td><td>Where no details are provided in the handbook, set to mid</td><td></td></tr>
<tr><td>Rear seat back angle (where adjustable)</td><td>Manufacturer's design position</td><td>Otherwise 25° to Vertical</td><td>See Section 5.1</td></tr>
<tr><td>Rear seat facing</td><td>Forwards</td><td></td><td></td></tr>
<tr><td>Rear head restraint height & tilt</td><td>As recommended in vehicle handbook</td><td>Where no details are provided in the handbook, set to mid or next lowest position for height and mid locking position for tilt. Must not interfere with child/CRS installation.</td><td>See Section 6.2 Whiplash testing protocol.</td></tr>
<tr><td>Rear seat belt anchorage (where adjustable)</td><td>As recommended in vehicle handbook for CRS installation</td><td>If no recommendation then set to mid-position, or nearest notch upwards</td><td></td></tr>
<tr><td>Arm-rests (Front seats)</td><td>Lowered position</td><td>May be left up if dummy positioning does not allow lowering</td><td></td></tr>
<tr><td>Arm-rests (Rear seats)</td><td>Stowed position</td><td></td><td></td></tr>
<tr><td>Glazing</td><td>Front - Lowered
Rear - Lowered or Removed</td><td>This applies to opening windows only</td><td></td></tr>
<tr><td>Gear change lever</td><td>In the neutral position</td><td></td><td></td></tr>
<tr><td>Pedals</td><td>Normal position of rest</td><td></td><td></td></tr>
<tr><td>Doors</td><td>Closed, not locked</td><td></td><td></td></tr>
<tr><td>Roof</td><td>Lowered</td><td>Where applicable</td><td></td></tr>
<tr><td>Sun visors</td><td>Stowed position</td><td></td><td></td></tr>
<tr><td>Rear view mirror</td><td>Normal position of use</td><td></td><td></td></tr>
</table>

3. Adjustments not listed will be set to mid-positions or nearest positions rearward, lower or outboard.</td>
<td>3.1.5 車室(Passenger compartment)調整</td>
<td>3.1.5 車室(Passenger compartment)調整

<table>
<tr><th>調整¹</th><th>設置規定</th><th>註記</th><th>方法</th></tr>
<tr><td>座椅前後位置</td><td>中間位置</td><td>若無法鎖定於中間位置，則可設定於中間位置向後第一個段位</td><td>如 3.1.5.1</td></tr>
<tr><td>座椅底座傾斜度</td><td>車輛業者設計位置</td><td>座椅底座傾斜度最多允許至中間位置，否則為最低位置</td><td>如 3.1.5.1.11</td></tr>
<tr><td>座椅高度</td><td>最低位置</td><td></td><td></td></tr>
<tr><td>座椅椅背角度</td><td>車輛業者設計位置</td><td>否則，如軀幹角度所定義傾斜 25 度</td><td>如 3.1.6.1.1</td></tr>
<tr><td>座椅腰部支撐</td><td>車輛業者設計位置</td><td>否則，完全縮回</td><td>如 3.1.5.1.12</td></tr>
<tr><td>第一排座椅頭枕高度及傾斜度</td><td>中間鎖定位置</td><td>同鞭甩試驗位置，頭枕若會影響人偶頭部後方，則將頭枕移到最後方的位置</td><td>如「前座鞭甩試驗規章」3.5.5.2</td></tr>
<tr><td>第一排座椅安全帶固定裝置（若可調整）</td><td>車輛業者之第 50 百分位設計位置</td><td>若無設計位置，設定至中間位置或至向上最近的段位</td><td></td></tr>
<tr><td>方向盤—垂直</td><td>中間位置</td><td></td><td>如 3.1.5.3</td></tr>
<tr><td>方向盤—水平</td><td>中間位置</td><td></td><td>如 3.1.5.2</td></tr>
<tr><td>後排座椅前後位置（若可調整）</td><td>車輛業者設計位置</td><td>若手冊未提供詳細資訊，則設為中間位置</td><td></td></tr>
<tr><td>後排座椅椅背角度（若可調整）</td><td>車輛業者設計位置</td><td>否則垂直向後傾斜 25 度</td><td>如 3.1.5.1</td></tr>
<tr><td>後排座椅面對方向</td><td>朝前</td><td></td><td></td></tr>
<tr><td>後排座椅頭枕高度及傾斜度</td><td>如車主手冊建議</td><td>手冊若未提供相關資訊，則將高度調整至中間或中間次低之位置，將傾斜度調整至中間鎖定位置。不可影響兒童人偶/兒童保護裝置安裝。</td><td>如「前座鞭甩試驗規章」3.5.5.2</td></tr>
<tr><td>後排座椅安全帶固定裝置(若可調整)</td><td>如車主手冊對於兒童保護裝置之建議</td><td>若無建議，則調整至中間位置或中間向上最接近的段位</td><td></td></tr>
<tr><td>扶手(第一排座椅)</td><td>使用位置</td><td>若人偶放置後扶手無法位於使用位置，則可保持於非使用位置</td><td></td></tr>
<tr><td>扶手(後排座椅)</td><td>收納位置</td><td></td><td></td></tr>
<tr><td>車窗</td><td>前車窗—降下
後車窗—降下或移除</td><td>僅適用於可開啟之車窗</td><td></td></tr>
<tr><td>排檔桿</td><td>空檔</td><td></td><td></td></tr>
<tr><td>踏板</td><td>未踩踏之正常位置</td><td></td><td></td></tr>
<tr><td>車門</td><td>關閉但不上鎖
(除自動門鎖外)</td><td>自動門鎖參見 3.16 緊急救援及事故脫困試驗規章。</td><td></td></tr>
<tr><td>車頂</td><td>降下</td><td>依實際狀況</td><td></td></tr>
<tr><td>遮陽板</td><td>收合位置</td><td></td><td></td></tr>
</table>

<table>
<tr><td>[illegible]</td><td>[illegible]</td><td></td><td></td></tr>
<tr><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td></tr>
</table></td>
</tr>
<tr>
<td>5.1 Overview of Settings
(請參考末頁圖表)</td>
<td>5.1 Determination of and Setting the Fore/aft, Tilt and Lumbar Settings of Seat</td>
<td>3.1.5.1 設定綜覽
(請參考末頁圖表)</td>
<td>3.1.5.1 座椅前後位置、傾斜度與腰部支撐設定</td>
</tr>
<tr>
<td>5.2 Determination of and Setting the Fore/Aft, Tilt and Lumbar Settings of Seat
Prior to manikin installation, set an initial driver and passenger seat position as follows:
• Seat track should be in its most rearward locking position.
• Seat height should be set to its lowest position.</td>
<td>5.2 Setting the Steering Wheel Horizontal Adjustment</td>
<td>3.1.5.2 座椅前後位置、傾斜度與腰部支撐設定

人偶安裝前，依照下列步驟進行駕駛座與第一排乘客座初始設置：

(1)座椅滑軌(Seat track)應位於最後端之鎖定位置。
(2)座椅高度應設置於最低位置。</td>
<td>3.1.5.2 方向盤水平調整設置</td>
</tr>
</table>

• Seat tilt shall be set to the extreme of its range that puts the cushion angle closest to zero (horizontal). • Cushion height should be set to its lowest position. • Cushion tilt should be set to the extreme of its range that puts the cushion angle closest to zero (horizontal). • Lumbar support should be set to its most rearward or least prominent position. • Seat back, approximate design position. • Upper seat back, if separately adjustable from the lower portion should be rotated fully rearward. • Cushion extension should be set to its most rearward or least extended position. • Side bolsters should be set to the widest position. • Arm Rests should be set in the lowered position. • Any other adjustments, fully retracted.		(3)座椅傾斜度應設置於其調整範圍內，使座墊角度接近零度（水平）。 (4)座墊高度應設置於最低位置。 (5)座墊傾斜度應設置於其調整範圍內，使座墊角度接近零度（水平）。 (6)腰部支撐(Lumbar support)應設置於最後端或最不突出位置。 (7)座椅椅背應設置於設計位置。 (8)椅背上方若與下半部可分開調整，則應完全後傾。 (9)座墊延伸裝置應設置於最後端或延伸幅度最小之位置。 (10)側邊支撐應設置於最寬位置。 (11)扶手應處於使用位置。 (12)其他調整項目皆應完全收起。	
5.2.1 The manufacturer's seat fore/aft position which corresponds to the 95th percentile male seating position will have been provided. Where no 95th	5.2.1 Choose a part of the facia that is adjacent to the steering column and can be used as a reference.	3.1.5.2.1 車輛業者應提供第 95 百分位男性座椅位置之座椅前/後位置資訊。若無提供第 95 百分位座椅位置，則將座椅調整至完全	3.1.5.2.1 選擇與轉向機柱相鄰且可作為參考基準的儀表板部位。

seating position is provided, the seat shall be positioned 90mm rearward of the fully forward position or in the mid travel position, whichever is more forward.		向前再往後 90mm 之位置或中間位置（取兩者當中較前端者）。	
5.2.2 Place a mark on the moving part of seat runner close to the unmoving seat guide.	5.2.2 Move the steering wheel to the most forward position of its travel.	3.1.5.2.2 在座椅移動件(Seat runner)上放置一標記，其接近固定之座椅滑軌(Seat guide)處。	3.1.5.2.2 將方向盤移至其移動距離最前方的位置。
5.2.3 Move the seat to its most forward position of travel.	5.2.3 Mark the steering column in line with an unmoving part of the facia. This corresponds to the most forward travel of the steering wheel.	3.1.5.2.3 將座椅移動至最前方的位置。	3.1.5.2.3 以儀表板之參考基準點在轉向機柱上進行標記，並作為方向盤移動至最前方的標記位置。
5.2.4 Mark the unmoving seat guide in line with the mark on the seat runner. This corresponds to the seat in its most forward position.	5.2.4 Move the steering wheel to the most rearwards position of its travel.	3.1.5.2.4 在固定之座椅滑軌處標記與移動件標記對齊之點。此為座椅最前方的位置，並作為座椅最前方的位置。	3.1.5.2.4 將方向盤後移至其移動距離最後方之位置。
5.2.5 Move the seat to the position of its travel provided for the 95th percentile male.	5.2.5 Mark the steering column in line with an unmoving part of the facia. This corresponds to the most rearwards travel of the steering wheel.	3.1.5.2.5 將座椅移動至第 95 百分位男性位置。	3.1.5.2.5 以儀表板之參考基準點在轉向機柱上進行標記，並作為方向盤移動至最後方之標記位置。
5.2.6 Mark the unmoving seat guide in line with the mark on the seat runner. This corresponds to the 95th percentile male's seating position.	5.2.6 Measure the distance between the forwards and rearwards marks on the steering column. Place a third mark on the steering column mid-way between the forwards and rearwards marks. This corresponds to the centre of travel of the	3.1.5.2.6 在固定之座椅滑軌處標記與移動件標記對齊之點，並作為第 95 百分位男性之座椅位置。	3.1.5.2.6 測量轉向機柱上最前及最後方標記之間的距離。在轉向機柱上判定最前與最後標記中間的位置，做第三個標記，並作為方向盤移動範圍的中點。

	steering wheel.		
5.2.7 Measure the distance between the forwards and rearwards marks. Place a third mark on the seat guide mid-way between the forwards and rearwards marks.	5.2.7 Move the steering wheel so that the mark on the steering column aligns with the facia.	3.1.5.2.7 測量前方與後方兩標記間之距離。在固定上最前方與最後方中間位置放置第三個標記。	3.1.5.2.7 移動方向盤，讓轉向機柱上的標記與儀表板的參考基準點對齊。
5.2.8 Move the seat so that the mark on the seat runner aligns with the mark on the seat guide.	5.2.8 Lock the steering column at this position. The steering wheel is now in its mid-position of travel. The vehicle will be tested with the steering wheel in this position.	3.1.5.2.8 移動座椅，使移動件之標記與滑軌上之標記對齊。	3.1.5.2.8 將轉向機柱鎖定於此位置。方向盤現在位於移動範圍之中間位置。車輛受驗時，方向盤將位於此位置。
5.2.9 Lock the seat at this position. Ensure that the seat is fully latched in its runners on both sides of the seat. The seat is now defined as being at its ‘mid seating position’. The vehicle will be tested with the seat in this position.		3.1.5.2.9 將座椅鎖定於此位置。確保座椅兩側皆完全卡入滑軌。此座椅現位於「中間位置」。車輛進行試驗時，座椅應位於此位置。	
5.2.10 If the seat will not lock in this position, move the seat to the first locking position that is rear of the mid seating position. The vehicle will be tested with the seat in this position.		3.1.5.2.10 若座椅無法於此位置鎖定，則將其移動至中間位置向後第一個鎖定位置。車輛進行試驗時，座椅應位於此位置。	
5.2.11 If the seat cushion is adjustable for tilt it may be set to any angle from the flattest up to its mid position according to the manufacturer’s design position for		3.1.5.2.11 若座墊傾斜度可調整，則依車輛業者宣告第 50 百分位男性座椅設計位置進行設置，調整至最低(Flattest)至中間位置之	

the 50th male. The same seat tilt setting must be used for frontal and side impact. 5.2.12 If the seat back is adjustable for lumbar support it shall be set to the fully retracted position.		任何角度。前方與側方撞擊所使用之座椅傾斜度必須相同。 3.1.5.2.12 若椅背的腰部支撐可調整，則應調整至完全縮回位置。	
5.3 Setting the Steering Wheel Horizontal Adjustment 5.3.1 Choose a part of the facia that is adjacent to the steering column and can be used as a reference. 5.3.2 Move the steering wheel to the most forward position of its travel. 5.3.3 Mark the steering column in line with an unmoving part of the facia. This corresponds to the most forward travel of the steering wheel. 5.3.4 Move the steering wheel to the most rearwards position of its travel. 5.3.5 Mark the steering column in line with an unmoving part of the facia. This corresponds to the most rearwards travel of the steering wheel. 5.3.6 Measure the distance between the forwards and rearwards marks on the steering column. Place a third mark on the steering column mid-way between	**5.3 Setting the Steering Wheel Vertical Adjustment** A method that is in principle the same as Section 5.2 should be used to determine and set the steering wheel vertical adjustment to the mid position. It is unlikely that the same part of the facia used during the setting procedures for the horizontal adjustments could be used for the vertical adjustment. Care should be taken to avoid unintentional adjustment of the horizontal setting during the vertical adjustment procedure.	3.1.5.3 方向盤水平調整設置 3.1.5.3.1 選擇與轉向機柱相鄰且可作為參考基準的儀表板部位。 3.1.5.3.2 將方向盤移至其移動距離最前方的位置。 3.1.5.3.3 以儀表板之參考基準點在轉向機柱上進行標記，並作為方向盤移動至最前方的標記位置。 3.1.5.3.4 將方向盤後移至其移動距離最後方之位置。 3.1.5.3.5 以儀表板之參考基準點在轉向機柱上進行標記，並作為方向盤移動至最後方之標記位置。 3.1.5.3.6 測量轉向機柱上最前及最後方標記之間的距離。在轉向機柱上判定最前與最後標記中間的位置，做第三個標記，並作為	3.1.5.3 方向盤垂直調整設置 使用與 3.1.5.2 相同的方式尋找並垂直調整方向盤至中間位置。在設置程序中，水平調整所用之儀表板參考基準點不會與垂直調整時的參考基準點相同。因此，進行垂直調整程序時，應避免調整方向盤之水平設置。

the forwards and rearwards marks. This corresponds to the centre of travel of the steering wheel.		方向盤移動範圍的中點。	
5.3.7 Move the steering wheel so that the mark on the steering column aligns with the facia.		3.1.5.3.7 移動方向盤，讓轉向機柱上的標記與儀表板的參考基準點對齊。	
5.3.8 Lock the steering column at this position. The steering wheel is now in its mid-position of travel. The vehicle will be tested with the steering wheel in this position.		3.1.5.3.8 將轉向機柱鎖定於此位置。方向盤現在位於移動範圍之中間位置。車輛進行試驗時，方向盤將位於此位置。	
5.4 Setting the Steering Wheel Vertical Adjustment	**5.4 Marking Q10 & Q6 Child Dummy Head Excursion**	3.1.5.4 方向盤垂直調整設置	3.1.5.4 標記 Q10 與 Q6 兒童試驗人偶頭部偏移線
5.4.1 A method that is in principle the same as Section 5.3 should be used to determine and set the steering wheel vertical adjustment to the mid position.	5.4.1 If applicable, position the rear seats in accordance with the adjustments detailed in Section 5.	3.1.5.4.1 使用與 3.1.5.3 相同的方式尋找並垂直調整方向盤至中間位置。	3.1.5.4.1 依照 3.1.5 所述之調整方式設置後排座椅位置（依實際狀況）。
5.4.2 It is unlikely that the same part of the facia used during the setting procedures for the horizontal adjustments could be used for the vertical adjustment.	5.4.2 Install the H-point machine in accordance with the procedure detailed in Section 6.1.1 of the Euro NCAP Frontal Full Width Impact Testing Protocol. Mark the H-point location of the 5th female occupant on the vehicle.	3.1.5.4.2 在設置程序中，水平調整所用之儀表板參考基準點不會與垂直調整時的參考基準點相同。	3.1.5.4.2 依照 TNCAP 前方全寬撞擊試驗規章 3.2.6.1.1 說明之程序安裝 H 點人體模型。在車上標記第 5 百分位成年女性乘員之 H 點位置。
5.4.3 Care should be taken to avoid unintentional adjustment of the horizontal setting during the vertical	5.4.3 The vehicle should be clearly marked on both sides to define a scale of at least 400-600mm (50mm increments)	3.1.5.4.3 進行垂直調整程序時，應避免調整方向盤之水平設置。	3.1.5.4.3 在車輛兩側清楚標示第 5 百分位成年女性 H 點向前 400 至 600mm 之範圍（每 50mm 畫一標

adjustment procedure.	forward of the H-point location of the 5th female occupant. The intention is that these marks should be clearly visible on the high speed film. Markings shall be applied to the exterior top and waist level of the door as well as inside the car at waist level.		記)，以確保在高速影片中能清楚看到該標記。標記必須畫在車輛外部頂端與車門腰線處，車內腰線處亦須畫上該標記。
5.5 Marking Q10 & Q6 Child Dummy Head Excursion	**5.5 Marking the Cr-Point**	3.1.5.5 標記 Q10 與 Q6 兒童試驗人偶頭部偏移線	3.1.5.5 標記 Cr 點
5.5.1 If applicable, position the rear seats in accordance with the adjustments detailed in Section 5.1.	5.5.1 Were the Q10 is to be seated on a booster cushion that does not have R44 approval, it will be necessary to mark the C-rpoint on the vehicle.	3.1.5.5.1 依照 3.1.5.1 所述之調整方式設置後排座椅位置（依實際狀況）。	3.1.5.5.1 若 Q10 乘坐於未取得 UN R44 認證之增高型座墊，則必須於車輛上標記 Cr 點。
5.5.2 Install the H-point machine in accordance with the procedure detailed in Section 6.1.1 of the Euro NCAP Frontal Full Width Impact Testing Protocol. Mark the H-point location of the 5th female occupant on the vehicle.	5.5.2 With the Gabarit positioned as specified in ECE Regulation 16, the positions of the back and bottom planes of the device will be defined using the 3D Measuring arm, targets will be applied to the top and side surfaces of the Gabarit to help in this process. The intersection of these planes will define the Cr point for the seating position in question.	3.1.5.5.2 依照 TNCAP 前方全寬撞擊試驗規章 3.2.6.1.1 說明之程序安裝 H 點人體模型。在車上標記第 5 百分位成年女性乘員之 H 點位置。	3.1.5.5.2 依照 UN R16 規定將治具(Gabarit)定位，以 3D 量測手臂確認該治具之後方與底部表面位置，量測過程中將於治具頂部與側方表面加裝目標圖標(Target)以協助量測。兩個表面之交點即為此座椅位置之 Cr 點。
5.5.3 The vehicle should be clearly marked on both sides to define a scale of at least 400-600mm (50mm increments)		3.1.5.5.3 在車輛兩側清楚標示第 5 百分位成年女性 H 點向前 400 至 600mm 之範圍(每 50mm 畫一標	

forward of the H-point location of the 5th female occupant. The intention is that these marks should be clearly visible on the high speed film. Markings shall be applied to the exterior top and waist level of the door as well as inside the car at waist level.		記)，以確保在高速影片中能清楚看到該標記。標記必須畫在車輛外部頂端與車門腰線處，車內腰線處亦須畫上該標記。	
5.5.4 The 450mm and 550mm excursion lines shall be clearly distinguished from the other markings in some way, for example using a different colour. These lines shall also be marked on the vehicle in locations that are clearly visible to the onboard cameras. Alternatively, it is acceptable for the lines across the vehicle to be superimposed during post film processing.		3.1.5.5.4 450mm 與 550mm 之標記線應與其他標記線清楚區隔，例如以不同顏色劃記。該標記線亦須畫在車上攝影機能清楚看見的位置，或得使用影片後製方式加上該標記。	
5.6 Marking the Cr-Point		3.1.5.6 標記 Cr 點	
5.6.1 Where the Q10 is to be seated on a booster cushion that does not have R44 approval, it will be necessary to mark the Cr-point on the vehicle.		3.1.5.6.1 若 Q10 乘坐於未取得 UN R44 認證之增高型座墊，則必須於車輛上標記 Cr 點。	
5.6.2 With the Gabarit positioned as specified in ECE Regulation 16, the positions of the back and bottom planes of the device will be defined using the 3D		3.1.5.6.2 依照 UN R16 規定將治具(Gabarit)定位，以 3D 量測手臂確認該治具之後方與底部表面位置，量測過程中將於治具頂部與	

Measuring arm, targets will be applied to the top and side surfaces of the Gabarit to help in this process. The intersection of these planes will define the Cr-point for the seating position in question.		側方表面加裝目標圖標(Target)以協助量測。兩個表面之交點即為此座椅位置之 Cr 點。	
6 DUMMY POSITIONING AND MEASUREMENTS **6.1 Determine the H-point location with the H-Point machine** If the seat is new and has never been sat upon, a person of mass 75 ± 10kg should sit on the seat for 1 minute twice to flex the cushions. The seat shall have been at room temperature and not been loaded for at least 1 hour previous to any installation of the machine. Position the three-dimensional H-point manikin (i.e., H-point machine) specified in Society of Automotive Engineers (SAE) Surface Vehicle Standard J826, revised July 1995, Devices for Use in Defining and Measuring Vehicle Seating	**6 DUMMY POSITIONING AND MEASUREMENTS** The following chapter deals with all aspects of seating the dummy in the vehicle to be tested. **6.1 Determine the H-point of the driver's seat** The device to be used is the H-point machine as described in SAE J826. If the seat is new and has never been sat upon, a person of mass 75 ± 10kg should sit on the seat for 1 minute twice to flex the cushions. The seat shall have been at room temperature and not been loaded for at least 1 hour previous to any installation of the machine.	3.1.6 人偶定位及量測 3.1.6.1 以 H 點人體模型決定 H 點位置 若座椅全新且從未使用過，則應由重量 75±10kg 之人員坐 1 分鐘，進行兩次，以使座墊收縮。座椅應處於室溫，且於人體模型安裝前至少 1 小時內，不得有負載。 將美國汽車工程學會（Society of Automotive Engineers，SAE）1995 年 7 月修訂之《表面車輛標準 J826》（Surface Vehicle Standard J826）指定之 3-D H 點人體模型（即 H 點機器），用於定義及量測車輛座椅之裝置如下放置；	3.1.6 人偶定位及量測 3.1.6.1 決定駕駛座 H 點 使用之裝置為 SAE J826 規定之 H 點人體模型（H 點機器，H-point machine）。 若座椅全新且從未使用過，則應由重量 75 ± 10kg 之人員坐 1 分鐘，進行兩次，以使座墊收縮。座椅應處於室溫，且於人體模型安裝前至少 1 小時內，不得有負載。

Accommodation in the seat as follows; 6.1.1 Set the seat back so that the seat back angle is as close as possible to the manufacturer's design angle for the H-point manikin, which must be reasonable for normal use. …	6.1.1 Set the seat back so that the torso of the dummy is as close as possible to the manufacturer's reasonable recommendations for normal use. …	3.1.6.1.1 調整椅背，使椅背角度盡可能接近車輛業者正常使用建議之 H 點人體模型設計角度。車輛業者若無建議，則設定為垂直向後 25 度。	3.1.6.1.1 調整椅背，使 H 點人體模型的軀幹盡可能接近車輛業者正常使用建議。車輛業者若無建議，則設定為垂直向後 25 度。
6.2 Determine the H-point of the Passenger's Seat	**6.2 Determine the H-point of the Passenger's Seat**	3.1.6.2 決定乘客座 H 點	3.1.6.2 決定乘客座 H 點
6.2.1 Follow the procedure for the determination of the driver's H-point ensuring that	Follow the procedure for the determination of the driver's H-point ensuring that ….	3.1.6.2.1 依照決定駕駛座 H 點位置之程序進行，須確保雙腳與人體模型中線的距離與決定駕駛座 H 點的距離相同，且將雙腳掌平放於在地板上。	
6.3 Adult Dummy Placement If the vehicle has only two side doors, it may be necessary to fit the child restraint systems and child dummies before setting up the dummies in the front seats.	**6.3 Dummy Installation** It is the intention that the dummy should not be left to sit directly on the seat for more than 2 hours prior to the test. It is acceptable for the dummy to be left in the vehicle for a longer period, provided that the dummy position is checked no more than 1 hour prior to test. It is not acceptable for the dummy to be left in the vehicle overnight or for a similarly lengthy period.	3.1.6.3 成人人偶放置 若車輛僅有兩個側門，可能須先安裝兒童保護裝置及兒童人偶，再於第一排座椅設置人偶。	3.1.6.3 人偶安裝 試驗前，人偶不應直接坐在座椅上超過 2 小時。若試驗前 1 小時內檢查人偶定位，則允許人偶放置車內較長時間。不應將試驗人偶整晚留置車內或類似長度的時間。
6.3.1 Ensure that the seat is in the correct position as defined by Section 6.1. 6.3.2 Place the adult dummies in the seats		3.1.6.3.1 確保座椅位於 3.1.6.1 定義之正確位置。 3.1.6.3.2 將成人人偶放置於座椅，	

with the torso against the seat back, the upper arms against the seat back and the lower arms and hands against the outside of the upper leg. 6.3.3 It is the intention that the dummy should not be left to sit directly on the seat for more than 6 hours prior to the test. It is not acceptable for the dummy to be left in the vehicle overnight or for a similarly lengthy period.		軀幹及上臂靠著椅背，下臂及手部放置於大腿外側。 3.1.6.3.3 試驗前，人偶不應直接坐在座椅上超過 6 小時，亦不應將試驗人偶整晚留置車內或類似長度的時間。	
6.4 THOR Dummy Positioning The seat settings shall not be adjusted for dummy positioning with the exception of the fore/aft travel to establish the knee gap where required. If the dummy cannot be positioned within the tolerances below after three attempts then it is to be placed as close to the tolerance limits as possible. Record this in the test details.	**6.4 Dummy Placement** If the vehicle has only two side doors, it may be necessary to fit the child restraint systems and child dummies (section 6.6) before setting up the Hybrid-III dummies in the front seats.	3.1.6.4 THOR 人偶定位 除了需要在座椅前/後位置建立膝部間隙外，人偶定位時不應調整座椅設置。若經過三次嘗試，仍無法於公差範圍內定位人偶，則應盡可能接近公差範圍放置人偶，並將此資訊記錄於試驗資料。	3.1.6.4 人偶放置 若車輛僅有兩扇側門，可能需先安裝兒童保護裝置與兒童人偶（3.1.6.6），再於第一排座椅設置 Hybrid III 百分之五0成年男性人偶。
6.4.1 Arms The driver's upper arms shall be adjacent to the torso as far as is possible.	6.4.1 Ensure that the seat is in the correct position as defined by Section 6.1	3.1.6.4.1 手臂 駕駛的手臂應盡可能緊鄰軀幹。	3.1.6.4.1 確保座椅位於 3.1.5.1 定義之正確位置。
6.4.2 Torso and shoulders The driver's back shall be in contact with the seat back and the centre line of the	6.4.2 Place the dummy in the seat with the torso against the seat back, the upper arms against the seat back and the lower	3.1.6.4.2 軀幹及肩部 駕駛背部應與座椅椅背接觸，人偶中線應與座椅中線對齊。用手將	3.1.6.4.2 將人偶放置於座椅，軀幹及上臂靠著椅背，下臂及手部放置於大腿外側。

dummy shall be lined up with the centre line of the seats. Push the shoulders of the dummy fully rearward by hand. 6.4.3 H-point The dummy's H-point shall be within a square of ±13mm in Z and ±13mm in X of a point 20mm upward and 20mm forwards of the H-point as determined in Section 6.1. Record the position of the dummy H-point in the test details. 6.4.4 Pelvic Angle Measure the pelvic angle using the tilt angle sensor. Verify that the pelvic angle is 0°± 1° (X) and 33° ± 2.5° (Y). Record the measured angle in the test details. 6.4.5 Torso Measure the torso angle using the neck T1 tilt angle sensor. Verify that the angle is 0°± 1° (X) and ± 1° (Y) with respect to the manufacturers neck T1 design angle. The THOR torso angle might be different to the H-point manikin design angle. If there is no manufacturer's recommendation, record the measured angle in the test details. 6.4.6 If there are difficulties with dummy	arms and hands against the outside of the upper leg.	人偶肩部完全向後推。 3.1.6.4.3 H 點 人偶 H 點應位於 3.1.6.1 所決定之 H 點向上 20mm 及向前 20mm 之位置，Z 軸±13mm 及 X 軸±13mm 之方形範圍內。將人偶 H 點位置記錄於試驗資料。 3.1.6.4.4 骨盆角度 使用傾斜角度感測器測量骨盆角度。驗證骨盆角度為 0˚±1˚（X 軸）及 33˚±2.5˚（Y 軸）。將測得角度記錄於試驗資料。 3.1.6.4.5 軀幹 使用頸部 T1 傾斜角度感測器測量軀幹角度。驗證該角度相對於車輛業者頸部 T1 設計角度為 0˚±1˚（X 軸）及±1˚（Y 軸）。THOR 軀幹角度可能與 H 點人體模型設計角度不同。車輛業者若無建議，則將測得角度記錄於試驗資料。 3.1.6.4.6 若人偶定位有困難，則應	

positioning, the H-point location shall be the priority followed by the pelvic angle and then the torso angle. 6.4.7 Hands The driver's hands shall have their palms placed against the steering wheel at a position of a quarter to three. The thumbs should be lightly taped to the wheel for the test. 6.4.8 Head If there is contact between the head restraint and head that does not results in forwards movement of the CoG, do not adjust head restraint. If the head CoG is pushed forwards by the head restraint, firstly move the head restraint rearwards in X, then in Z if required. If there is still interference and no further adjustment of the head restraint is possible continue with the test. Record the head angle in the test details. 6.4.9 Legs If the knees are in contact with the facia or the gap is less than 30mm, move the dummy and seat rearwards until a gap of 30mm is achieved, or to the nearest		優先設定 H 點位置，接著骨盆角度，以及軀幹角度。 3.1.6.4.7 手部 駕駛雙手手掌應置於方向盤 2 點 45 分的位置。大拇指應以膠帶輕微黏貼於方向盤上。 3.1.6.4.8 頭部 若頭枕與頭部間有接觸且不會造成重心向前移動，則不調整頭枕。若頭枕使頭部重心向前移動，則先將頭枕向後 X 軸方向移動，若需要再向 Z 軸移動。若仍有影響，且無法進一步調整頭枕，則繼續進行試驗。將頭部角度記錄於試驗資料。 3.1.6.4.9 腿部 若膝部與儀表板接觸或間隙小於 30mm，則將人偶與座椅向後移動，直到達到 30mm 間隙，或向後移至最近段位。膝部 U 型肌肉	

notch rearwards. It must be possible to pass a sphere if 30mm diameter between the knee clevis flesh and facia (the tibia flesh shall be ignored). Record the new H-point location within the test details. The upper legs shall be in contact with the seat cushion as far as possible. Set the initial distance apart of the outboard metal surfaces of the knee clevis flanges of each dummy to 270mm ± 10mm. When the left foot is placed on a footrest or the right foot is positioned onto the accelerator pedal as described in 6.4.10 below, the initial distance between the knees may be ignored. The femur and tibia for each leg shall be as close as possible to a vertical plane. 6.4.10 Feet The driver dummy's right foot shall rest on the undepressed accelerator pedal with the heel on the floor. To keep the upper and lower legs in the same vertical plane, move the upper leg accordingly. If the foot cannot be placed on the pedal then it should be placed as far forwards as possible with the foot perpendicular to		與儀表板間必須能通過直徑 30mm 之球體（應忽略脛骨肌肉）。將新的 H 點位置記錄於試驗資料。 上腿部應盡可能接觸座墊。將各人偶膝部 U 形凸緣之外側金屬表面初始距離設置為 270mm±10mm。左腳放於置腳板時或右腳如 3.1.6.4.10 所述放於加速踏板時，可忽略兩膝間的初始距離。雙腿股骨及脛骨應盡可能靠近垂直平面。 3.1.6.4.10 足部 駕駛人偶的右腳掌應置於未踩下之加速踏板，腳跟著地。移動上腿部，使上腿部及下腿部位於同一垂直平面。若足部無法放置踏板上，則應盡可能向前放置，使脛骨保持垂直位置，並與踏板中線對齊。若有專用置腳板，能維持正常坐姿，則將左腳完全置於	

the lower tibia, in line with the centre line of the pedal. If a dedicated foot-rest is present, place the left foot fully on this rest providing a normal seating position can still be achieved. Keep the legs in the same vertical plane. The knee gap requirement of 270mm ± 10mm may be ignored in this case. Where there is no footrest, position the left foot at an equal distance from centre line of seat as the right leg is from centre line. The left foot should be placed as flat as possible on the toe-board parallel to the centre line of the vehicle. Note the knee gap in the test details.		該踏腳板。將雙腿維持於相同垂直平面。在此情況下，可忽略膝部距離 270mm±10mm 之要求。若無踏腳板，則將左腳置於與右腳距離座椅中線相等位置。左腳應盡可能平放於踏腳板且與車輛中心線平行。將膝部距離記錄於試驗資料。	
6.4.11 Seat belt		3.1.6.4.11 安全帶	
6.4.11.1 Where possible, initially position the upper seat belt anchorage in the manufacturers 50th percentile design position. If no design position is provided, set the adjustable upper seat belt anchorage to the mid-position or nearest notch upward.		3.1.6.4.11.1 依實際狀況，先將安全帶上部固定器調整至車輛業者第 50 百分位設計位置。若無提供設計位置，則將可調整的安全帶上部固定器設於中間位置或向上最接近的段位。	
6.4.11.2 Carefully place the seat belt across the dummy and lock as normal. It will be necessary to re-position the hands as		3.1.6.4.11.2 將安全帶小心圍繞試驗人偶，並正常扣上。手部須如 3.1.6.4.7 所述重新放置。	

described in Section 6.4.7. 6.4.11.3 Remove the slack from the lap section of the webbing until it is resting gently around the pelvis of the dummy. Only minimal force should be applied to the webbing when removing the slack. The route of the lap belt should be as natural as possible. 6.4.11.4 Place one finger behind the diagonal section of the webbing at the height of the dummy sternum. Pull the webbing away from the chest horizontally forward and allow it to retract in the direction of the D-loop using only the force provided by the retractor mechanism. Repeat this step three times, only. 6.4.11.5 After following the above steps, the seatbelt should lie in a natural position across the dummy sternum assembly and shoulder clavicle. 6.4.11.6 To check for a straight belt routing, a line laser could be used to visualise the optimal belt routing between D-loop and belt buckle. Position a line laser in front of the		3.1.6.4.11.3 消除腰部織帶鬆弛，直到織帶輕輕繞過貼合人偶骨盆周圍。消除織帶鬆弛部分時，應盡可能使用最小的力道。腰部安全帶(Lap belt)路徑應盡可能平順自然。 3.1.6.4.11.4 將一隻手指置於織帶對角線部位後方且人偶胸骨高度處。將織帶水平往前拉，遠離胸部，並讓織帶僅依捲收器機構的力道向導帶環(D-loop)方向捲收。重複此步驟三次。 3.1.6.4.11.5 依上述步驟執行後，安全帶應圍繞人偶胸骨總成及肩部鎖骨，處於自然位置。 3.1.6.4.11.6 為檢查安全帶圍繞是否平直，可使用雷射標線器顯現導帶環與安全帶帶扣間之安全帶最佳圍繞。於人偶垂直及縱向平面前方放置雷射標線器（例如與	

dummy in the vertical and longitudinal plane (e.g. on the steering wheel centre where this is in the same longitudinal plane as the vehicle seat) and align the laser line with D-loop and buckle. The belt should be routed parallel to this line provided a natural position across the dummy sternum and shoulder clavicle is maintained.		車輛座椅相同縱向平面之方向盤中心處)，並將雷射標線與導帶環及帶扣對齊。若人偶胸骨及肩部鎖骨處於自然位置，則安全帶圍繞應與此線平行。	
6.4.11.7 Where the belt is close to or in contact with the neck shield and the upper belt anchorage is adjustable, the anchorage should be lowered and steps 6.4.11.3 and 6.4.11.4 repeated.		3.1.6.4.11.7 若安全帶接近或接觸頸部且安全帶上部固定器可調整，則應降低該固定器，並重複步驟 3.1.6.4.11.3 及 3.1.6.4.11.4。	
6.4.11.8 Once the belt is positioned the location of the belt should be marked across the dummy chest to ensure that no further adjustments are made. Mark also the belt at the level of the D-loop to be sure that the initial tension is maintained during test preparation.		3.1.6.4.11.8 安全帶位置調整好後，應於人偶胸部標記安全帶位置，以確保不再有調整。同時，在安全帶上於導帶環處標記，以利於試驗準備期間維持初始張力。	
6.4.11.9 Measure the vertical distance between the dummy chin and the top of the diagonal webbing at the dummy centreline.		3.1.6.4.11.9 測量人偶下巴與人偶中線織帶對角線部分頂部間之垂直距離。	
6.4.11.10 Measure the horizontal distance		3.1.6.4.11.10 測量人偶中線織帶對	

between the top of the diagonal webbing at the dummy centreline and the door/window. 6.4.11.11 Where the fitment of the shoulder belt loadcell (Section 4.3.4) significantly influences the natural position of the belt, the loadcell may be supported from above with the use of a weak non-metallic wire or thread 6.4.11.12 If the vehicle is moved following the dummy positioning, verify that the dummy position has not changed. Detail any changes in the test report 6.4.11.13 If a test run is aborted and the vehicle is brought to a standstill using an emergency braking method, the dummy placement procedure shall be repeated.		角線部分頂部與車門/車窗間之水平距離。 3.1.6.4.11.11 肩部安全帶荷重計（3.1.6.4.3.4）嚴重影響安全帶之自然位置時，可使用細的非金屬線纜或繩線從上方支撐荷重計。 3.1.6.4.11.12 若車輛在人偶定位後有所移動，則須驗證人偶位置並無改變。詳細列出任何改變於試驗報告。 3.1.6.4.11.13 若試驗未完成而中止，且車輛是使用緊急煞車系統完全煞停，則應重複人偶設置程序。	
6.5 Passenger Dummy Placement	**6.5 DUMMY Positioning** Dummy positioning should be carried out immediately before the test and the vehicle should not be moved or shaken thereafter until the test has begun. If a test run is aborted and the vehicle brought to a standstill using an emergency braking method, the dummy placement procedure should be repeated.	3.1.6.5 乘客人偶放置	6.5 人偶定位 人偶應於試驗前放置，自此之後至試驗開始前，車輛不應移動或晃動。若試驗未完成而中止，且車輛是使用緊急煞車系統完全煞停，則應重複人偶設置程序。若經過三次嘗試，仍無法於公差範圍內定位人偶，則應盡可能接近公差範圍放置人偶，並將此資訊

	If the dummy, after three attempts cannot be positioned within the tolerances below then it is to be placed as close to the tolerance limits as possible. Record this in the test details.		記錄於試驗資料。
6.5.3 Head … – Adjust the neck bracket the minimum to ensure that the transverse instrumentation platform is level within limits. – Adjust the H-point within the limit (par. 6.5.1) – Adjust the pelvic angle within the limits (par. 6.5.2) Record the measured angle in the test details when the dummy is in its final position.	6.5.3 Head … –Adjust the H-point within the limit (par. 6.5.1) –Adjust the pelvic angle within the limits (par. 6.5.2) –Adjust the neck bracket the minimum to ensure that the transverse instrumentation platform is level within limits. Record the measured angle in the test details.	3.1.6.5.3 頭部 … –(1)為確保橫向儀器平台於規定範圍內呈水平狀態，應盡可能僅少頸部支撐座(Neck bracket)之調整量。 –(2)將H點調整至規定範圍內（如3.1.6.5.1）。 –(3)將骨盆角度調整至規定範圍內（如3.1.6.5.2）。 確定人偶最後位置後，將量測角度記錄於試驗資料。	3.1.6.5.3 頭部 … –將 H 點調整至規定範圍內（如3.1.6.5.1）。 –將骨盆角度調整至規定範圍內（如3.1.6.5.2）。 –為確保橫向儀器平台於規定範圍呈水平狀態，應盡可能減少頸部支撐座(Neck bracket)之調整量。
6.5.4 Arms The passenger's arms shall be adjacent to the torso and in contact with the seat back.	6.5.4 Arms The driver's upper arms shall be adjacent to the torso as far as is possible. The passenger's arms shall be adjacent to the torso and in contact with the seat back.	3.1.6.5.4 手臂 乘客的上臂應盡可能緊鄰軀幹且與椅背接觸。	3.1.6.5.4 手臂 駕駛的上臂應盡可能緊鄰軀幹。乘客的手臂應緊鄰軀幹且與椅背接觸。
6.5.5 Hands The passenger's hands shall be placed with the palms in contact with the outside of	6.5.5 Hands The driver dummy's hands shall have their palms placed against the steering wheel	3.1.6.5.5 手部 乘客的手掌應與雙腿外側接觸，小拇指與座墊接觸。	3.1.6.5.5 手部 駕駛人偶雙手手掌應放於方向盤 2 點 45 分的位置。大拇指應以膠帶

the legs and the little finger in contact with the seat cushion.	at a position of a quarter to three. The thumbs should be lightly taped to the wheel. The passenger’s hands should be placed with the palms in contact with the outside of the legs and the little finger in contact with the seat cushion.		輕微黏貼於方向盤上。乘客的手掌應與腿部外側接觸，小指與座墊接觸。
6.5.6 Torso The passenger’s back shall be in contact with the seat back and the centre line of the dummy shall be lined up with the centre line of the seats.	6.5.6 Torso The dummies’ backs should be in contact with the seat back and the centre line of the dummies should be lined up with the centre line of their respective seats.	3.1.6.5.6 軀幹 乘客背部應接觸椅背，其中心線應與座椅中線對齊。	3.1.6.5.6 軀幹 人偶背部應接觸椅背，其中心線應與各自的座椅中線對齊。
6.5.7 Legs The upper legs shall be in contact with the seat cushion as far as possible. The distance apart of the outside metal surfaces of the knees of each dummy shall be 270mm ± 10mm. The femur and tibia for each leg shall be as close as possible to a vertical plane.	6.5.7 Legs The upper legs of both dummies shall be in contact with the seat cushion as far as possible. The distance apart of the outside metal surfaces of the knees of each dummy shall be 270mm ± 10mm. When the left foot is placed on a footrest or the right foot is positioned onto the accelerator pedal as described in6.5.8 below, the distance between the knees may be altered.. The legs of the dummies should be in vertical longitudinal planes as far as is possible.	3.1.6.5.7 腿部 上腿部應盡可能接觸座墊。每個人偶膝蓋外部金屬表面間之距離應為 270mm±10mm。雙腿股骨與脛骨應盡可能靠近垂直平面。	3.1.6.5.7 腿部 人偶上腿部應盡可能接觸座墊。於人偶膝蓋外部金屬表面進行測量時，人偶兩膝間初始距離應為 270mm ± 10mm。左腳放於置腳板時或右腳如下列 3.1.6.5.8 所述放於加速踏板時，兩膝之間的距離得以改變。人偶雙腿應盡可能位於垂直縱向平面。
6.5.8 Feet	6.5.8 Feet	3.1.6.5.8 足部	3.1.6.5.8 足部

The passenger dummy's feet shall be placed with the heel as far forwards as possible and the feet as flat as possible. Both feet shall be parallel to the centre line of the vehicle.	The driver dummy's right foot shall rest on the undepressed accelerator pedal with the heel on the floor. If the foot cannot be placed on the pedal then it should be placed as far forwards as possible with the foot perpendicular to the lower tibia, in line with the centre line of the pedal. The left foot should be placed as flat as possible on the toe-board parallel to the centre line of the vehicle. If any part of the left foot is in contact with a foot-rest or wheel arch when in this position then place the foot fully on this rest providing a normal seating position can still be achieved. Keep the legs in the same vertical longitudinal plane. The knee gap requirement of 270mm ± 10mm may be ignored in this case. Note the knee gap in the test details. The passenger dummy's feet shall be placed with the heel as far forwards as possible and the feet as flat as possible. Both feet shall be parallel to the centre line of the vehicle.	人偶雙腳之腳跟應盡可能向前放置，且雙腳盡可能平放。雙腳應與車輛中心線平行。	駕駛人偶的右腳掌應放置於未踩下之加速踏板，腳跟著地。若足部無法放置踏板上，則應儘可能向前放置使脛骨保持垂直的位置，並與踏板中線對齊。左腳應與車輛中心線平行盡量平放於踏腳板(Toe-board)。位於此姿勢時，若左腳任何部分與置腳板或輪拱(Wheel arch)接觸，則將整個左腳放於置腳板，仍能完成正常設置。將雙腿維持於同樣的垂直縱向平面，於此情況，可忽略膝蓋距離270mm ± 10mm 的規定。在試驗資料中註記最後的膝蓋距離。乘客人偶的足部應儘可能腳跟著地，且儘可能平放。雙腳應與車輛中心線平行。
6.5.9 Seat belt As detailed in Section 6.4.11.	6.5.9 Seat belt	3.1.6.5.9 安全帶 詳見 3.1.6.4.11 節。	3.1.6.5.9 安全帶

6.6 Child Restraint System (CRS) Installation and Child Dummy Placement …	**6.6 Child Restraint System (CRS) Installation and Child Dummy Placement** **…** PLEASE NOTE: ALL PASSENGER COMPARTMENT SETTINGS MUST BE THE SAME FOR FRONTAL AND SIDE IMPACTS WITH THE EXCEPTION OF SEAT HEIGHT, GLAZING AND HEAD RESTRAINT HEIGHT	3.1.6.6 兒童保護裝置（CRS）安裝與兒童人偶放置 兒童人偶與 CRS 安裝程序，詳見「兒童保護試驗規章」。	3.1.6.6 兒童保護裝置(CRS)安裝與兒童人偶放置 兒童人偶與 CRS 安裝程序，詳見 3.8 兒童保護試驗規章。且除座椅高度、車窗與頭枕高度外，前方撞擊及側方撞擊之所有車室設置必須相同。
6.7 Dummy Positioning Measurements The following measurements are to be recorded prior to the test after the dummy settling and positioning procedures have been carried out, see Figure 3. （請參考末圖表）	**6.7 Hybrid III Dummy Measurements** Details of the child dummy measurements are contained in the Euro NCAP Child Occupant Protection Testing Protocol.	3.1.6.7 人偶位置量測 應於試驗前完成人偶放置及位置調整程序後記錄下列量測值，如圖 3 所示。 (請參考末頁圖表)	3.1.6.7 Hybrid III 百分之五０成年男性人偶量測值 應於試驗前完成人偶放置及位置調整程序後記錄下列量測值。關於兒童人偶之量測細節，詳見 3.8 兒童保護試驗規章。
7 BARRIER AND TROLLEY The trolley will be fitted with the Progressive Deformable Barrier (PDB) conforming to the specifications of Technical Bulletin TB022, see Figure 4.	**7 TEST PARAMETERS** An on-board data acquisition unit will be used. This equipment will be triggered by a contact plate at the point of first contact (t=0) and will record digital information at a sample rate of 20kHz (alternatively a sample rate of 10kHz may be used). The equipment conforms	3.1.7 碰撞壁與台車 台車應配備符合 Euro NCAP 技術通報 TB022 規定之漸進可變形碰撞壁(PDB)，如圖 4 所示。	3.1.7 試驗參數 使用車載資料擷取設備進行試驗。此設備將由首次接觸點（t=0）的接觸板觸發，並以 20kHz 之採樣頻率（也可改用 10kHz）記錄數位資訊，該設備應符合 SAE J211 要求。 試驗前，請確認電池有電(Live

	to SAE J211. If the vehicle is fitted with a brake pedal retraction mechanism which requires a vacuum present in the brake system, the engine may be ran for a predetermined time, specified by the manufacturer.		battery)且連接妥當，鑰匙插入點火開關並開啟，且儀表板上的空氣囊指示燈（依實際狀況）顯示正常。 若該車輛配備煞車踏板回收機制使煞車系統需處於真空狀態，則得依車輛業者指定之時間讓引擎先運轉。
7.1 Trolley Preparation	**7.1 Deformable Barrier** Fix a deformable barrier as specified in UNECE Regulation 94 to the concrete block. The height of this barrier should be 200mm ±5mm from the ground.	3.1.7.1 台車整備	3.1.7.1 可變形碰撞壁(Deformable barrier) 在混凝土塊上固定一符合 UN R94 規定之可變形碰撞壁，且該碰撞壁距地高應為 200mm ± 5mm。
7.1.1 The mobile progressive deformable barrier (MPDB) includes both an impactor and a trolley.		3.1.7.1.1 移動式漸進可變形碰撞壁(MPDB)包含一個碰撞塊及一輛台車。	
7.1.2 The total mass shall be 1400 ± 20kg.		3.1.7.1.2 總重量應為 1400±20kg。	
7.1.3 The centre of gravity shall be situated in the longitudinal median vertical plane within 10mm, 1000 ± 30mm behind the front axle and 500 ± 30mm above the ground.		3.1.7.1.3 重心應位於距離縱向中心垂直平面 10mm 之內、前軸後方 1000±30mm、距地高 500±30mm 處。	
7.1.4 The distance between the front face of the impactor and the centre of gravity of the barrier shall be 2290 ± 30mm.		3.1.7.1.4 碰撞塊前方表面與碰撞壁重心之距離應為 2290±30mm。	
7.1.5 The height of the barrier shall be such		3.1.7.1.5 撞擊前，碰撞壁左右兩側	

that the lowest part of the front face of the barrier is 150mm ± 5mm above ground level measured statically prior to impact at the left and right hand side of the barrier face. 7.1.6 The outboard edge of the MPDB must be 850 ± 10mm from the centreline of the trolley. 7.1.7 The front and rear track width of the trolley shall be 1500 ± 10mm. 7.1.8 The wheelbase of the trolley shall be 3000 ± 10mm. 7.1.9 The interface plate between the deformable barrier face should be 1700mm wide and 645mm high 7.1.10 The trolley may be fitted with an emergency abort system. This is optional, the test facility may elect to test without an abort system. 7.1.11 Inflate all tyres of the trolley to the same pressure. 7.1.12 Measure the wheelbase of the trolley, left and right. 7.1.13 Ensure that the weight distribution is as even as possible left to right. 7.1.14 Record in the test details the final		高度應滿足下述靜態量測要求：碰撞塊前方表面最低處距地高為150mm±5mm。 3.1.7.1.6 MPDB 外緣與台車中線距離須為 850±10mm。 3.1.7.1.7 台車前後輪距應為 1500±10mm。 3.1.7.1.8 台車軸距應為 3000±10mm。 3.1.7.1.9 可變形碰撞壁間之介面板 (Interface plate) 應為寬1700mm，高 645mm。 3.1.7.1.10 台車可配備緊急中止系統。此為非強制選項，可選擇無此系統的試驗設備進行試驗。 3.1.7.1.11 將台車所有輪胎充氣至相同胎壓。 3.1.7.1.12 測量台車左側及右側軸距。 3.1.7.1.13 確保重量盡可能左右平均分佈。 3.1.7.1.14 將各輪測得之最終重量	

weights measured at each of the wheels. 7.1.15 The trolley construction should be such that there are no structures above the barrier face upper mounting flange that are likely to be contacted by the vehicle. Figure 4 MPDB trolley （請參考末頁圖表）		記錄於試驗資料。 3.1.7.1.15 台車結構應確保碰撞壁表面上部安裝凸緣上方不得有結構與車輛接觸。 圖 4：MPDB 台車 (請參考末頁圖表)	
8 BARRIER FACE MEASUREMENT For measuring the deformation of the PDB barrier a 3D measuring system shall be used (e.g. 3D measurement arm with attachable scan module). This system must be capable of recording three dimensional co-ordinates of single points, as well as clouds of points (scanner). A tolerance of +/- 1mm is applicable to such a system. **8.1 Before Test** 8.1.1 Measure the four corner points of the undeformed barrier front plane. 8.1.2 Set up an axis system using the following elements: - Point (point of origin): Lower right corner (seen from direction of motion) - Vector (Y): from the left lower corner		3.1.8 碰撞壁表面量測 測量碰撞壁之變形應使用 3D 量測系統(例如可附加掃描模組之 3D 量測臂)。系統必須能記錄單一點之三次元座標以及點雲（掃描儀器)。該類系統可有+/-1mm 容許誤差。 3.1.8.1 試驗前 3.1.8.1.1 測量未變形碰撞壁正面平面之四個角點。 3.1.8.1.2 使用下列元素設置軸系統： (1)點(原點)：右下角(從運動方向看) (2)向量(Y 軸)：從左下角點至右下	

point to the right lower corner point - Plane (YZ): best-fit plane from all four corner points （請參考末頁圖表） 8.1.3 Mark and measure at least four reference points each on the left and right side of the barrier back plate where the sheet metal is folded up to build a stiff border. The points shall be spread over the whole length of the border and placed in different height levels to allow a proper realignment of the measurement system after crash. （請參考末頁圖表） 8.1.4 Mark and measure at least four reference points on the non-struck side rear honeycomb layer. **8.2 After Test** 8.2.1 If the vehicle and barrier face are still connected, care must be taken to separate the two with minimal deformation of the honeycomb. If the two cannot be separated without deforming the honeycomb, remove the barrier from the trolley and try to manoeuvre the barrier face to make		角點 (3)面（YZ 軸）：四個角點之最適平面 (請參考末頁圖表) 3.1.8.1.3 於碰撞壁後方底板左側及右側分別標記與測量至少四個參考點，參考點標記於金屬板折起形成之堅硬邊界。這些點應分散於邊界整個長度上，並位於不同高度，使碰撞後量測系統能正確重新校準。 (請參考末頁圖表) 3.1.8.1.4 於非撞擊側後方蜂巢鋁層上標記並測量至少四個參考點。 3.1.8.2 試驗後 3.1.8.2.1 若車輛及碰撞壁表面仍連在一起，則應小心將兩者分開，盡可能不讓蜂巢鋁變形。若無法在不使蜂巢鋁形之情況下將兩者分開，則將碰撞壁自台車移除，並嘗試調整碰撞壁表面使其易於分開。若仍無法成功，則應移除車輛結構（例如縱樑及橫樑）。可	

separation easier. If this is not successful, vehicle structures should be removed, such as the longitudinals and cross beam. It may be necessary to remove the front wheels and side wing to gain better access to the vehicle structures.		能須移除前輪及側葉子板，以觸及車輛結構。	
8.2.2 Clean the surface of the barrier from fluids, rough dirt, glass, plastic pieces, loose tape, etc.		3.1.8.2.2 清潔碰撞壁表面液體、粗糙污物、玻璃、塑膠碎片、鬆脫膠帶等。	
8.2.3 Eliminate mechanical artefacts: In some cases it might be that deformation has occurred that was not caused by the impact but would influence the results in an undesired way. These artefacts should be corrected and documented before the final scan of the barrier surface.		3.1.8.2.3 排除機械誤差： 部分情況下，變形可能並非由撞擊所造成，但會因而影響結果。在對碰撞壁表面進行最終掃描前，應修正並記錄相關誤差。	
8.2.3.1 In case of different honeycomb layers separating at the adhesive joints, try to bring them back in contact without further deformation of the honeycomb structure (e.g. with the help of a ratchet strap). To make this easier, remove the cover sheet metal from top and bottom of the barrier. （請參考末頁圖表）		3.1.8.2.3.1 若接合處不同蜂巢鋁層分開，則試著重新接回且不讓蜂巢鋁結構進一步變形（例如透過棘輪綁帶）。為使操作更容易，移除碰撞壁頂部與底部之金屬蓋板。 (請參考末頁圖表)	

8.2.3.2 It may be that the cover sheet metal is bent outward due to car parts getting hooked during rebound (this usually happens at borders of holes punched in by longitudinal beams). In this case, reform the cover sheet metal to match to the contour of the honeycomb.		3.1.8.2.3.2 可能因車輛組件於反彈過程中被鉤住，造成金屬蓋板外彎（通常發生於縱樑穿孔邊界處）。在此情況下，重塑金屬蓋板以搭配蜂巢鋁輪廓。	
8.2.3.3 Sometimes parts of the longitudinal beams may get stuck in the barrier. In this case the barrier scan may be split up in two or more segments. First scan the barrier surface as far as possible without needing to remove the part of the car. Then carefully remove the part with as little influence on the original barrier surface as possible. After that scan the bottom of the hole that is now accessible.		3.1.8.2.3.3 部分縱梁有時可能會卡在碰撞壁內。在此情況下，碰撞壁掃描可分為兩個或更多段。首先，在不需移除車輛組件之情況下，盡可能掃描碰撞壁面。接著，小心移除組件，盡可能不要影響原始碰撞壁表面。之後，掃描現在可接觸到之孔底部。	
8.2.3.4 Cracks that are obviously not caused by intrusion shall be filled with clay before scanning (from edge to edge of the cover sheet metal). （請參考末頁圖表）		3.1.8.2.3.4 明顯非因侵入造成之裂縫應於掃描前先以黏土填平（金屬蓋板之一邊至另一邊）。 (請參考末頁圖表)	
8.2.4 Where necessary paint any areas of bare metal on the surface (e.g. with bright priming coat) to enhance scanning quality in these areas.		3.1.8.2.4 依實際狀況，於表面任何裸金屬區塗漆（例如塗上明亮底漆）以提升這些區域掃描品質。	

8.2.5 Align the barrier to the measurement system with the help of the eight reference points (left and right side of the flange plate) measured before crash. If the honeycomb has separated from the backplate, the reference points on the unstruck side of the rear honeycomb layer described in 8.1.4 should be used.		3.1.8.2.5 藉由碰撞前測量之八個參考點（凸緣板左側及右側），將碰撞壁與量測系統對齊。若蜂巢鋁已與背板分離，則應使用 3.1.8.1.4 所述後方蜂巢鋁層非撞擊側之參考點。	
8.2.6 Scan the barrier surface to get a point cloud of the deformed surface. An area of the size of the undeformed barrier surface (projected to the deformed barrier surface in X direction) is sufficient.		3.1.8.2.6 掃描碰撞壁表面，以取得變形表面之點雲。未變形碰撞壁表面尺寸（於 X 方向上投影至變形碰撞壁表面）之面積即足夠。	
8.2.7 Create a mesh from this point cloud. As parameter a maximum edge length of 10mm shall be used. If available, medium smoothing and data reduction can be applied.		3.1.8.2.7 根據點雲建立網格。作為參數，最大邊緣長度應為 10mm。若有，可應用中位數平滑法（Medium smoothing）及資料簡化。	
8.2.8 Create a grid of points with an equal distance of 20mm centered on the undeformed barrier surface. This will be a number of 1400 points in total. （請參考末頁圖表）		3.1.8.2.8 在未變形碰撞壁表面以 20mm 之相等距離建立網格點，共有 1400 點。 (請參考末頁圖表)	
8.2.9 The grid points shall be projected on the mesh of the scanned barrier surface		3.1.8.2.9 網格點應沿 X 軸投影至掃描之碰撞壁表面網格上。	

along the X axis. （請參考末頁圖表） It may be that some points do not hit the mesh (e.g. because of holes in the mesh). This can be ignored if the points are not in the assessment area. Points in the assessment area should be placed as close as possible to the desired position by considering the X value of the neighbouring grid points or the surrounding mesh surface. 8.2.10 Finally, the co-ordinates of the grid points should be exported to the assessment file.		(請參考末頁圖表) 可能部分量測點未落在網格上（例如因為網格存在孔洞所致)。若該量測點不在評等區域則可忽略。凡位於評估區域內之量測點，應盡可能貼近目標位置放置，可透過參考相鄰網格點之 X 值或周圍網格曲面加以判定。 3.1.8.2.10 最後，網格點之座標應輸出至評估檔案。	
9 TEST PARAMETERS **9.1 Test set-up** An on-board data acquisition unit will be used. This equipment will be triggered by a contact plate at the point of first contact (t=0) and will record digital information at a sample rate of 20kHz (alternatively a sample rate of 10kHz may be used). The equipment conforms to SAE J211. BEFORE THE TEST, ENSURE THAT THE LIVE BATTERY IS		3.1.9 試驗參數 3.1.9.1 試驗設置 使用車載資料擷取設備進行試驗。此設備將由首次接觸點（t=0）的接觸板觸發，並以 20kHz 之採樣頻率（也可改用 10kHz）記錄數位資訊，該設備應符合 SAE J211 要求。 試驗前，請確認電池有電(Live battery)且連接妥當，鑰匙插入點	

CONNECTED, A SINGLE KEY IS IN THE IGNITION, THE IGNITION IS ON AND THAT THE AIRBAG LIGHT ON THE DASHBOARD ILLUMINATES AS NORMAL (WHERE FITTED).		火開關並開啟，且儀表板上的空氣囊指示燈（依實際狀況）顯示正常。	
If the vehicle is fitted with a suspension system, pedal retraction system or any other system which requires running of the engine just before test execution, the engine should be run for a predetermined time, specified by the manufacturer.		若該車輛配備懸吊系統、踏板回收系統或其他需要引擎於試驗前運轉的系統，則應依照車輛業者指定之時間讓引擎先運轉。	
9.2 Impact Speed		3.1.9.2 撞擊速度	
9.2.1 Measure the speed of both the test vehicle and the trolley as near as possible to the point of impact.		3.1.9.2.1 測量受驗車輛與台車兩者速度之位置應盡可能靠近撞擊點。	
9.2.2 Record the actual test speeds in the test details.		3.1.9.2.2 將實際試驗速度記錄於試驗資料。	
TARGET SPEED FOR VEHICLE AND TROLLEY = 50km/h ± 1km/h		車輛及台車目標速度=50km/h±1km/h	
9.3 Post-Impact Braking		3.1.9.3 撞擊後煞車	
9.3.1 A method may be employed to prevent secondary impacts from the rebounding vehicle or trolley. This may be an emergency braking system on the vehicle and trolley or another method,		3.1.9.3.1 可採用方法避免車輛或台車反彈造成二次撞擊。其可為車輛與台車之緊急煞車系統或其他方式，惟僅能於首次撞擊後致動。	

but must only be activated only after the first impact is complete.			
9.3.2 Do NOT start the braking at the point of initial impact.		3.1.9.3.2 不應於首次撞擊點開啟煞車。	
9.3.3 The OEM will be asked to supply an OLC curve for the vehicle. Braking must NOT begin until 100ms after the vehicle velocity has reached zero.		3.1.9.3.3 車輛業者應提供該車輛乘員負載指數(OLC)曲線。煞車必須至車輛速度達到零後 100ms 後才可致動。	
9.4 Impact Angle		3.1.9.4 撞擊角度	
9.4.1 Measure the impact angle of both the test vehicle and the trolley as near as possible to the point of impact.		3.1.9.4.1 測量受驗車輛與台車撞擊角度之位置應盡可能靠近撞擊點。	
9.4.2 Record the actual angle in the test details.		3.1.9.4.2 將實際角度記錄於試驗資料中。	
9.4.3 TARGET IMPACT ANGLE = 0 degrees ± 2 degrees		3.1.9.4.3 目標撞擊角度=0 度±2 度。	
9.5 Alignment		3.1.9.5 對準	
9.5.1 With the vehicle offered up against the barrier, tape a small rivet as near as possible to the edge of the deformable barrier which is to be struck.		3.1.9.5.1 車輛移置碰撞壁前方，將一小鉚釘以膠帶盡可能靠近要撞擊之可變形碰撞壁邊緣。	
9.5.2 Mark the point on the bumper of the vehicle where the pin would strike if an exact overlap of 50% of the vehicle width was achieved.		3.1.9.5.2 小鉚釘應撞擊車輛保險桿上車寬 50%重疊處之標示點。	
9.5.3 After the test, if the mark made by the		3.1.9.5.3 試驗後，若小鉚釘所留下	

pin is not within the tolerance square detailed below, film analysis will be used to try to assess the alignment. Both the horizontal and vertical alignments shall be noted in the test report. 9.5.4 TARGET OVERLAP = 50% ± 25mm 9.5.5 TARGET VERTICAL ALIGNMENT = ± 25mm Figure 5 MPDB test set-up (請參考末頁圖表) **9.6 After Test** 9.6.1 Refer to the Rescue and Extrication protocol for further details of post-test assessment. **9.7 Dummy Removal** 9.7.1 Before dummy removal, refer to the Rescue and Extrication protocol for seat belt buckle unlatching. 9.7.2 Do not move the driver or passenger seats. Try to remove the dummies. 9.7.3 If the dummies cannot be removed with the seats in their original positions, recline the seat back and try again. Note any entrapment of the dummies. 9.7.4 If the dummies can still not be		的記號非位於下述之矩形範圍內，則應分析影片以評估實際之對準情形。水平及垂直對準皆須記錄於試驗報告。 3.1.9.5.4 目標重疊量=50%±25mm 3.1.9.5.5 目標垂直對準=±25mm 圖 5：MPDB 試驗設置 (請參考末頁圖表) 3.1.9.6 試驗後 3.1.9.6.1 試驗後評等之詳細資訊，詳見「緊急救援、事故脫困及安全技術試驗規章」。 3.1.9.7 人偶移除 3.1.9.7.1 人偶移除前，參見「緊急救援、事故脫困及安全技術試驗規章」之安全帶帶扣解開。 3.1.9.7.2 在不移動駕駛或乘客座椅下嘗試移除人偶。 3.1.9.7.3 若無法在座椅原始位置移除人偶，則將椅背後傾，再嘗試移除一次，並記下人偶受困之任何情形。 3.1.9.7.4 若仍無法移除人偶，嘗試	

removed, try to slide the seats back on their runners. 9.7.5 If the dummies can still not be moved, the seats can be cut out of the car. 9.7.6 Record the method used to remove the dummies.		將座椅沿滑軌向後移動。 3.1.9.7.5 若仍無法移除人偶，得將座椅自車輛卸除。 3.1.9.7.6 記錄移除人偶所使用的方法。	

(2025 年 Euro NCAP 規章)

4.1.3

Location	**Parameter**		**Minimum amplitude**	**Driver No of channels**
Head	Acceleration, Ax Ay Az		250g	3
	Angular rate sensor		4000deg/sec	3
	Tilt sensor,X Y		NA	2
Skull spring	Force		5kN	2
Upper Neck	Force	Fx Fy	9kN	2
		Fz	14kN	1
	Moment, Mx My Mz		290Nm	3
Neck	Tilt sensor, X Y		NA	2
T1	Acceleration, Ax Ay Az		200g	3
T4	Acceleration, Ax Ay Az		200g	3
Clavicle (L&R)	Force		10kN	8
Thorax	Compression, DC0		100mm	4
	Angle, Y Z		50deg	8
	Tilt Sensor, X Y		NA	2
Mid Sternum	Acceleration,Ax		200g	1
Abdomen	Compression,DC0		100mm	2
	Angle, Y Z		50deg	4
	Acceleration, Ax		200g	1
T12	Acceleration, Ax Ay Az		200g	3
	Force, Fx Fy Fz		5kN	3
	Moment, Mx My		300Nm	2
	Tilt Sensor, X Y		NA	2
Pelvis	Acceleration, Ax Ay Az		200g	3
	Tilt sensor, X Y		NA	2
ASIS (L & R)	Force, Fx,		9kN	2
	Moment, My		220Nm	2

Location	Parameter	Minimum amplitude	Driver No of channels
Acetabulum (L & R)	Force, Fx Fy Fz	5kN	6
Femurs (L & R)	Force, Fx Fy Fz	20kN	6
	Moment, Mx My Mz	400Nm	6
Knees (L & R)	Displacement, Dknee	19mm	2
Upper Tibia (L & R)	Force, Fx Fz	12kN	4
	Moment,Mx My	400Nm	4
Lower Tibia (L & R)	Force, Fx Fz	12kN	4
	Moment, Mx My	400Nm	4
	Total Channels dynamic, (rate sensor)		**99**
	Tilt Sensors (static)		**10**

(修正後 TNCAP 規章草案)

3.1.4.1.3

位置	參數	最低振幅	駕駛頻道數量
頭部	加速度，A_x A_y A_z	250g	3
	角速度感測器	4000deg/sec	3
	傾斜感測器，X Y	NA	2
頭顱彈簧(Skull spring)	力	5kN	2
上頸部	力 F_x F_y	9kN	2
	F_z	14kN	1
	力矩，M_x M_y M_z	290Nm	3
頸部	傾斜感測器，X Y	NA	2
T1	加速度，A_x A_y A_z	200g	3
T4	加速度，A_x A_y A_z	200g	3
鎖骨（左&右）	力	10kN	8
胸部	壓縮量，DC0	100mm	4
	角度，Y Z	50deg	8
	傾斜感測器，X Y	NA	2
胸骨中段	加速度，A_x	200g	1
腹部	壓縮量，DC0	100mm	2
	角度，Y Z	50deg	4
	加速度，A_x	200g	1
T12	加速度，A_x A_y A_z	200g	3
	力，F_x F_y F_z	5kN	3
	力矩，M_x M_y	300Nm	2
	傾斜感測器，X Y	NA	2
骨盆	加速度，A_x A_y A_z	200g	3
	傾斜感測器，X Y	NA	2
ASIS（左&右）	力，F_x	9kN	2

位置	**參數**	**最低振幅**	**駕駛頻道數量**
	力矩，M_y	220Nm	2
髖臼（左&右）	力，F_x F_y F_z	5kN	6
股骨（左&右）	力，F_x F_y F_z	20kN	6
	力矩，M_x M_y M_z	400Nm	6
膝部（左&右）	位移，D_{knee}	19mm	2
上脛骨（左&右）	力，F_x F_z	12kN	4
	力矩，M_x M_y	400Nm	4
下脛骨（左&右）	力，F_x F_z	12kN	4
	力矩，M_x M_y	400Nm	4
	動態特性頻道總數（速率感測器）		**99**
	傾斜感測器（靜態特性）		**10**

(2025 年 Euro NCAP 規章)

4.2.1

Location	**Parameter**		**Minimum Amplitude**	**No of channels**
Head	Acceleration, A_x, A_y, A_z		250g	3
Neck	Force	F_x, F_y	9kN	2
		F_z	14kN	1
	Moment, M_x, M_y, M_z		290Nm	3
Chest	Acceleration, A_x, A_y, A_z		150g	3
	Deflection, D_{chest}		100mm	1
Pelvis	Acceleration, A_x, A_y, A_z		150g	3
Lumbar Spine	Force, F_x, F_z		5kN	2
	Moment, M_y		300Nm	1
Femurs (L & R)	Force, F_z		20kN	2
Knees (L & R)	Displacement, D_{knee}		19mm	2
Upper Tibia (L & R)	Force, F_x, F_z		12kN	4
	Moment, M_x, M_y		400Nm	4
Lower Tibia (L & R)	Force, F_x, F_z		12kN	4
	Moment, M_x, M_y		400Nm	4
	Total Channels		**39**	

(修正後 TNCAP 規章草案)

3.1.4.2.1

位置	參數		最低振幅	頻道數量
頭部	加速度，A_x A_y A_z		250g	3
頸部	力	F_x F_y	9kN	2
		F_z	14kN	1
	力矩，M_x M_y M_z		290Nm	3
胸部	加速度，A_x A_y A_z		150g	3
	偏離，D_{chest}		100mm	1
骨盆	加速度，A_x A_y A_z		150g	3
腰部脊椎	力，F_x F_z		5kN	2
	力矩，M_y		300Nm	1
股骨（左&右）	力，F_z		20kN	2
膝部（左&右）	位移，D_{knee}		19mm	2
上脛骨（左&右）	力，F_x F_z		12kN	4
	力矩，M_x M_y		400Nm	4
下脛骨（左&右）	力，F_x F_z		12kN	4
	力矩，M_x M_y		400Nm	4
	頻道總數			**39**

(2025 年 Euro NCAP 規章)

4.3. Vehicle Instrumentation

VEHICLE

Location	**Parameter**	**Minimum Amplitude**	**No of channels**
B-Post LHS	Acceleration, Ax	150g	1
B-Post RHS	Acceleration, Ax	150g	1
Driver Seatbelt Shoulder Section	Force, Fdiagonal	16kN	1
Passenger Seatbelt Shoulder Section	Force, Fdiagonal	16kN	1
Q10 Seatbelt shoulder section	Force, Fdiagonal	16kN	1
Q6 Seatbelt shoulder section	Force, Fdiagonal	16kN	1
Battery (including secondary batteries)	V Supply voltage, V	15V	1
	Total Channels per Vehicle		**7**

(修正後 TNCAP 規章草案)

3.1.4.3 車輛感測器及資料擷取系統設置

車輛

位置	**參數**	**最低振幅**	**頻道數量**
左側B柱	加速度，A_x	150g	1
右側B柱	加速度，A_x	150g	1
駕駛安全帶肩部	力，$F_{diagonal}$	16kN	1
乘客安全帶肩部	力，$F_{diagonal}$	16kN	1

Q10安全帶肩部	力，$F_{diagonal}$	16kN	1
Q6安全帶肩部	力，$F_{diagonal}$	16kN	1
電池(包含任何二次電池)	供電電壓，V	15V	1
	每台車輛頻道總數		**7**

(2025 年 Euro NCAP 規章)

4.4 Trolley and Barrier Instrumentation

TROLLEY

Location	Parameter	Minimum Amplitude	No of channels
Trolley C of G	Acceleration, Ax Ay Az	150g	3
Trolley C of G Backup sensor	Acceleration, Ax Ay Az	150g	3
	Total Channels		6

TOTAL CHANNELS

1x Driver	99
1x Passenger	39
1x Q10	30
1x Q6	13
1x Vehicle	7
1x Trolley	6
TOTAL	**194**

(修正後 TNCAP 規章草案)

3.1.4.4 台車與碰撞壁感測器及資料擷取系統設置

台車

位置	**參數**	**最低振幅**	**頻道數量**
台車重心	加速度，A_x A_y A_z	150g	3
台車重心 備用感測器	加速度，A_x A_y A_z	150g	3
	頻道總數		6

頻道總數

1x 駕駛	99
1x 乘客	39
1x Q10	30
1x Q6	13
1x 車輛	7
1x 台車	6
總數	**194**

(2025 年 Euro NCAP 規章)

5.1 Overview of Settings

Adjustment	Required setting	Notes	Methods
Front seat fore/aft	Mid position between fully forward and 95th	May be set to first notch rearwards of mid position if not lockable at mid position	
Front seat cushion tilt	Manufacturer's design position	Permissible up to mid position, otherwise lowest	See TB028
Front seat height	Lowest position		
Front seat torso angle	Manufacturer's design position	Where no design position is given, set to, 25° to vertical, as defined by torso angle	Use SAE manikin to set torso angle where applicable
Front seat lumbar support	Fully retracted		
Front seat cushion length	Fully retracted		
Front head restraint height & tilt	See Section 6, Whiplash testing protocol	As whiplash test position. If there is any interference with the rear of the dummy head, reposition the HR to obtain the largest possible distance to the dummy head.	
Front seat belt anchorage	Manufacturer's 50th percentile design position	If no design position, then set to mid position, or nearest notch upwards	Webbing must not be in contact with the neck.
Steering wheel	Mid vertical and horizontal		
Rear seat facing	Forwards		
Rear seat lateral position	Most outboard		
Rear seat fore/aft	Manufacturer's design position	Where no details are provided in the handbook, set to mid	
Rear seat cushion tilt	Manufacturer's design position	Permissible up to mid position, otherwise lowest	Use SAE manikin
Rear seat height	Manufacturer's design position	Where no design position is given, set to lowest	
Rear seat torso angle	Manufacturer's design position	Where no design position is given, set to 25° to vertical, as defined by torso angle	
Rear seat lumbar support	Fully retracted		

Adjustment	Required setting	Notes	Methods
Rear seat cushion length	Fully retracted		
Rear head restraint height & tilt	As recommended in vehicle handbook.	Where no details are provided in the handbook, set to mid or next lowest position for height and mid locking position for tilt. Must not interfere with child/CRS installation	See Section 6 Whiplash testing protocol.
Rear seat belt anchorage	As recommended in vehicle handbook for CRS installation	If no design position, then set to mid position or nearest notch upwards	
Arm-rests (Front seats)	Lowered	May be left up if dummy positioning does not allow lowering	
Arm-rests (Rear seats)	Stowed		
Side window glazing	Front - lowered Rear - lowered or removed	This applies to opening windows only	
Gear change lever	In the neutral position		
Parking brake	Disengaged		
Pedals	Normal position of rest	Adjustable pedals in mid	
Doors	Closed, not locked	For automatic door locks, refer to the Rescue and Extrication protocol. Rear child locks disengaged.	
Roof	Lowered/stowed		
Sunroof	Open or removed		
Sun visors	Stowed		
Front passenger airbag	Enabled	Care with automatic sensing systems that do not detect dummy	

Adjustments not listed will be set to mid positions or nearest positions rearward, lowest or outboard.

(修正後 TNCAP 規章草案)

3.1.5.1 設定綜覽

調整	設置規定	註記	方法
第一排座椅前後位置	完全朝前與第95百分位設計位置之中間位置	若無法鎖定於中間位置，則可設定至中間位置向後第一個段位	
第一排座墊傾斜度	車輛業者設計位置	最多允許至中間位置，否則為最低位置	參見Euro NCAP技術通報TB028
第一排座椅高度	最低位置		
第一排座椅軀幹角度	車輛業者設計位置	若無設計位置，則設定至垂直向後傾斜25度（如軀幹角度所定義）	依實際狀況，使用SAE人體模型設定軀幹角度
第一排座椅腰部支撐	完全縮回		
第一排座椅座墊長度	完全縮回		
第一排座頭枕高度及傾斜度	如「前座鞭甩試驗規章」3.5.5	同鞭甩試驗位置。頭枕若會影響人偶頭部後方，則將頭枕移至距離人偶頭部最遠位置	
第一排座椅安全帶固定器（若可調整）	初始為車輛業者之第50百分位設計位置	若無設計位置，則設定至中間位置或至向上最近的段位	織帶不得與頸部接觸
方向盤	垂直及水平皆為中間位置		
後排座椅面對方向	朝前		
後排座椅橫向位置	最外側		
後排座椅前後位置（若可調整）	車輛業者設計位置	若手冊未提供詳細資訊，則設定至中間位置	
後排座椅座墊傾斜度	車輛業者設計位置	最多允許至中間位置，否則最低位置	依實際狀況，使用SAE人體模型進行設定
後排座椅高度	車輛業者設計位置	若無設計位置，則設定至最低位置	
後排座椅軀幹角度	車輛業者設計位置	若無設計位置，則設定至垂直向後傾斜25度（如軀幹角度所定義）	
後排座椅腰部支撐	完全縮回		
後排座椅座墊長度	完全縮回		
後排座椅頭枕高度及傾斜度	如車輛手冊建議	若手冊未提供相關資訊，則將高度設定至中間或向下最接近的位置，將傾斜度設定至中間鎖定位	如「後座鞭甩試驗規章」

調整	設置規定	註記	方法
		置。不可影響兒童人偶/兒童保護裝置安裝。	
後排座椅安全帶固定器	如車主手冊對於兒童保護裝置安裝建議	若無設計位置，則設定至中間位置或至向上最近的段位。	
扶手（第一排座椅）	使用位置	若人偶放置後扶手無法位於使用位置，則可保持於非使用位置	
扶手（後排座椅）	收納位置		
車窗	前車窗—降下 後車裝—降下或移除	僅適用於可開啟之車窗	
排檔桿	空檔		
駐煞車	未致動		
踏板	未踩踏之正常位置	若為可調整式踏板，則設定至中間位置	
車門	關閉但不上鎖 (除自動門鎖外)	自動門鎖參見「緊急救援、事故脫困及安全技術試驗規章」。後門兒童安全鎖處於解鎖狀態。	
車頂	降下/收納		
天窗	開啟或移除		
遮陽板	收合位置		
照後鏡	正常使用位置		
第一排乘客空氣囊	啟動	請注意無法偵測到人偶之自動偵測系統	

備註：未列出之調整將設定至中間位置，或向後、向下或向外最接近的位置。

(2025 年 Euro NCAP 規章)

6.7 Dummy Positioning Measurements

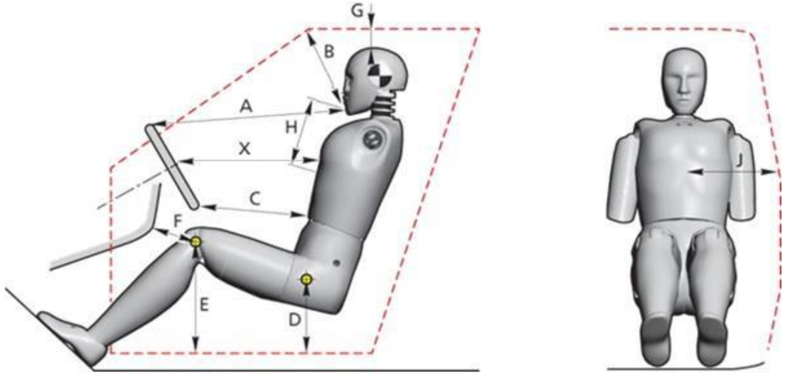


Figure 3 Dummy measurements

Driver		**Passenger**	
A	Chin to top of rim	A	Chin to facia
B	Chin to top edge of glass	B	Chin to top edge of glass
C	Stomach to rim	C	Stomach to facia*
D	H-point to top of sill	D	H-point to top of sill
E	Knee bolt to top edge of sill	E	Knee bolt to top edge of sill
F	Knee bolt to top edge of bolster	F	Knee bolt to top edge of bolster*
G	Head to roof surface	G	Head to roof surface
H	Chin to webbing (vertically)	H	Chin to webbing (vertically)
J	Belt webbing to door (horizontally)	J	Belt webbing to door (horizontally)

Driver		**Passenger**	
X	Wheel centre to chest (horizontally)	X	200mm below chin to closest part of facia (horizontally)
θ	Neck Angle	θ	Neck Angle
	H-Point Co-ordinates (to vehicle)		H-Point Co-ordinates (to vehicle)
α	Seat back angle (as defined by torso angle of SAE manikin)	α	Seat back angle (as defined by torso angle of SAE manikin)
β	Head		NA
γ	T1 neck		NA
ε	Pelvis (x and y)		NA

(修正後 TNCAP 規章草案)

3.1.6.7 人偶位置量測

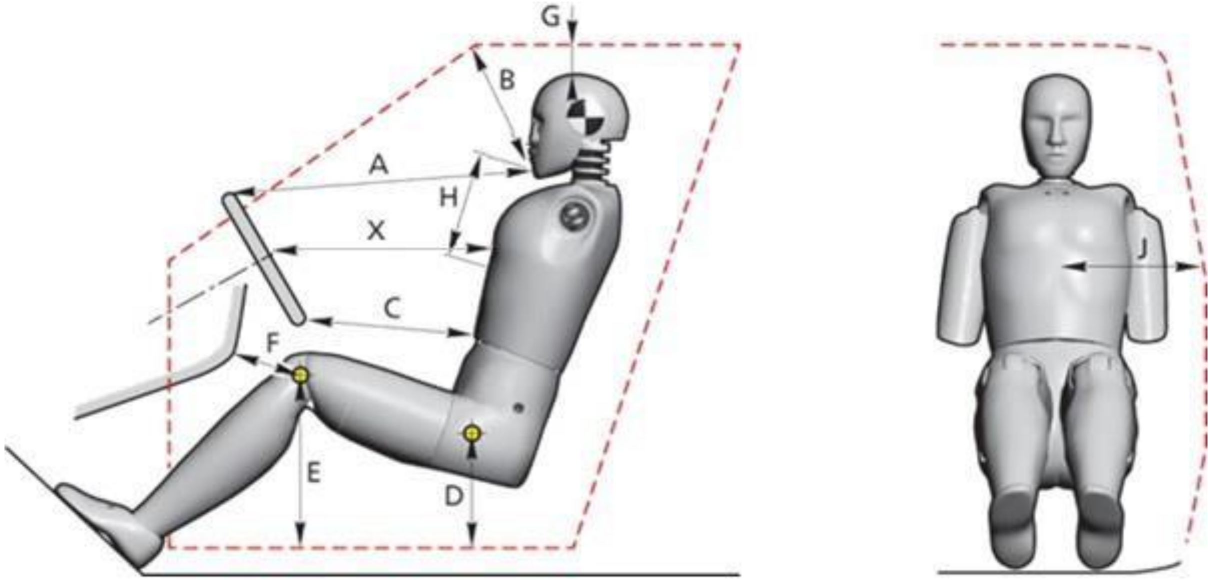


圖 3：人偶量測

駕駛座		乘客座	
A	下巴至方向盤邊緣	A	下巴至儀表板
B	下巴至擋風玻璃上方邊緣	B	下巴至擋風玻璃上方邊緣
C	腹部至方向盤邊緣	C	腹部到儀表板
D	H點至門檻頂端	D	H點至門檻頂端
E	膝關節至門檻頂端	E	膝關節至門檻頂端
F	膝關節至飾板邊緣	F	膝關節至飾板邊緣
G	頭部至車頂表面	G	頭部至車頂表面

駕駛座		乘客座	
H	下巴至織帶（垂直）	H	下巴至織帶（垂直）
J	安全帶織帶至車門（水平）	J	安全帶織帶至車門（水平）
X	方向盤中心至胸部（水平）	X	下巴以下200mm至最靠近儀表板部位（水平）
θ	頸部角度	θ	頸部角度
	H點座標（至車輛）		H點座標（至車輛）
α	椅背角度（如SAE人體模型軀幹角度之定義）	α	椅背角度（如SAE人體模型軀幹角度之定義）
β	頭部		不適用
γ	T1頸部		不適用
ε	骨盆（X軸及Y軸）		不適用

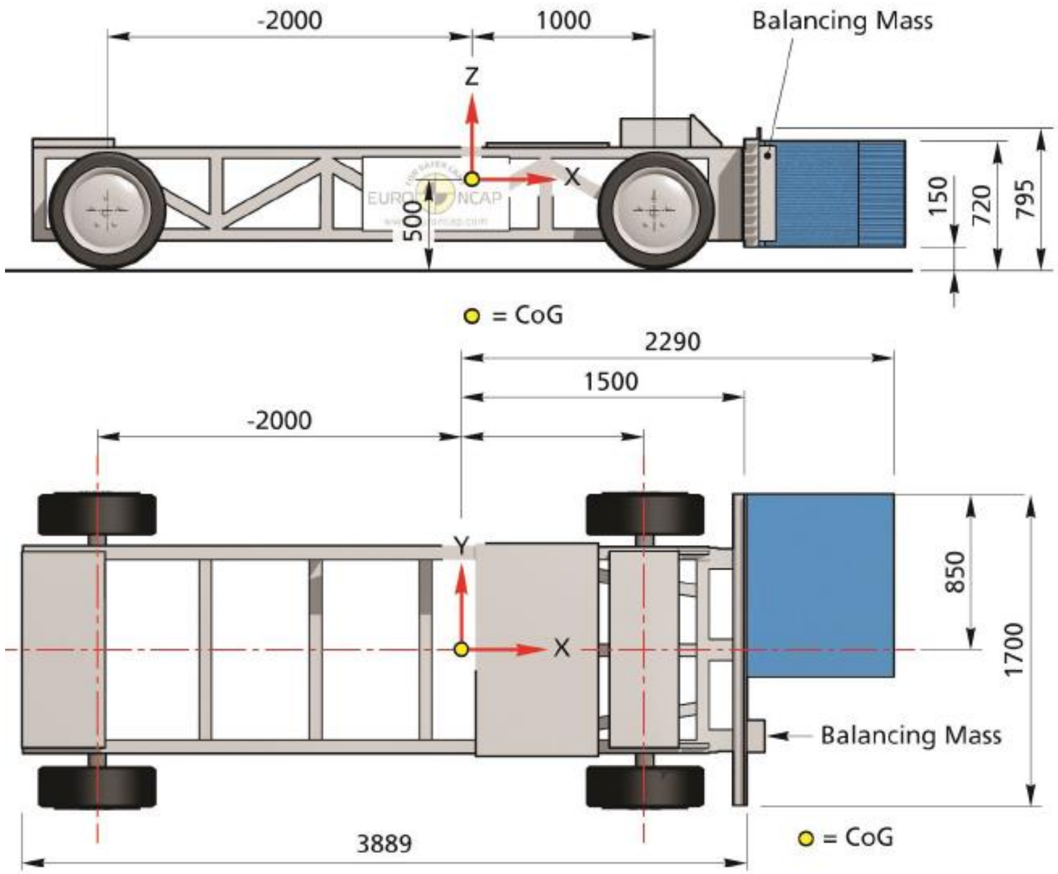
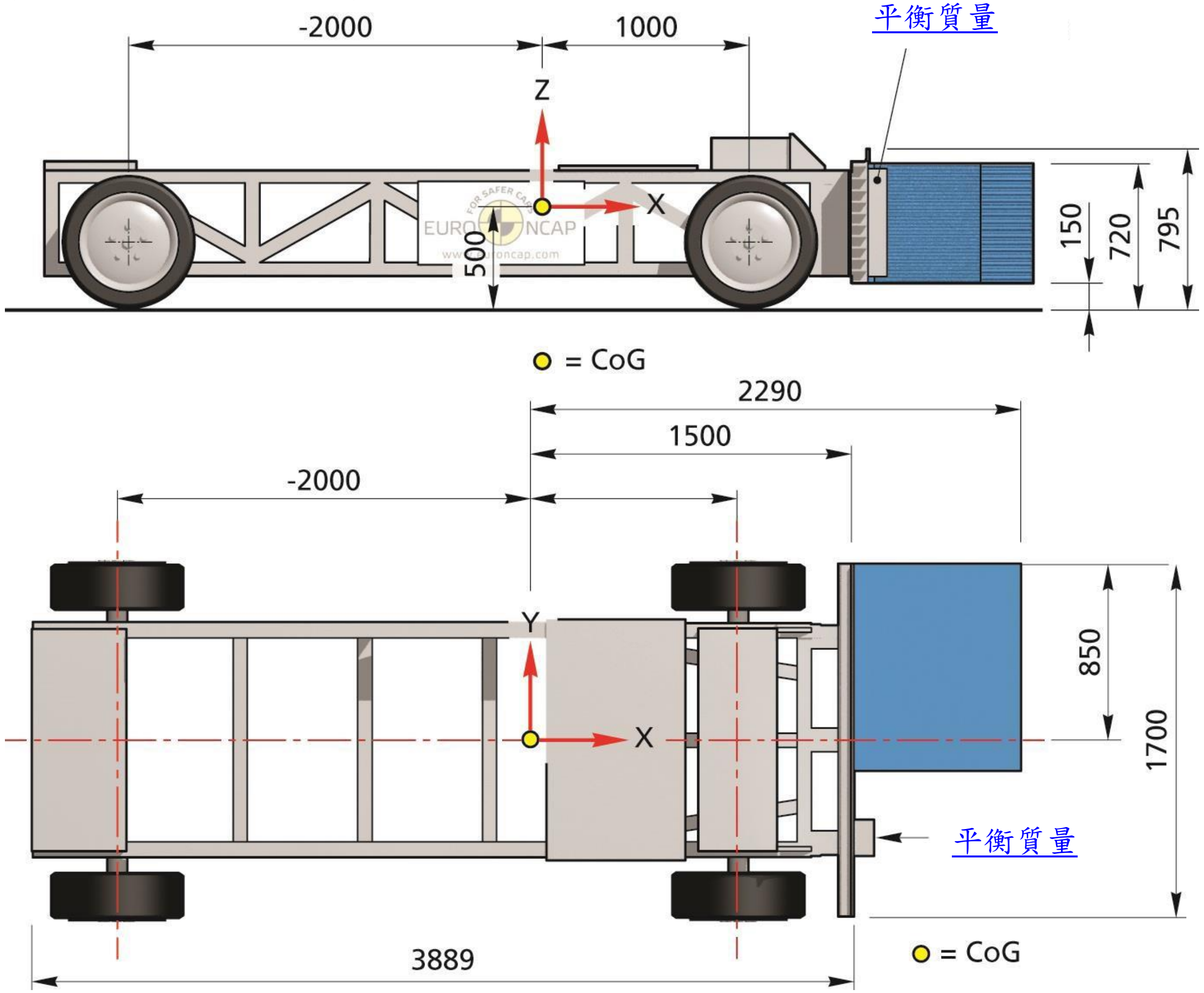


Figure 4 MPDB trolley



-2000
1000
平衡質量
Z
X
EURO NCAP
500
150
720
795
= CoG
2290
1500
-2000
Y
X
850
1700
平衡質量
3889
= CoG

圖 4：MPDB 台車

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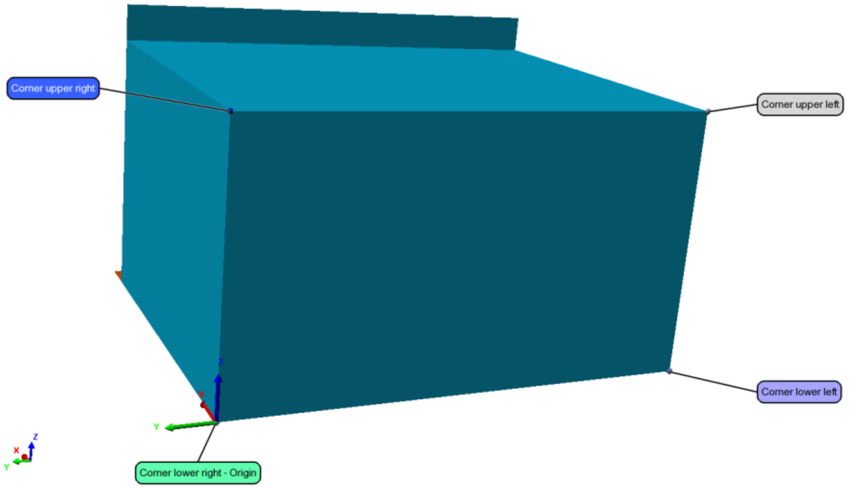
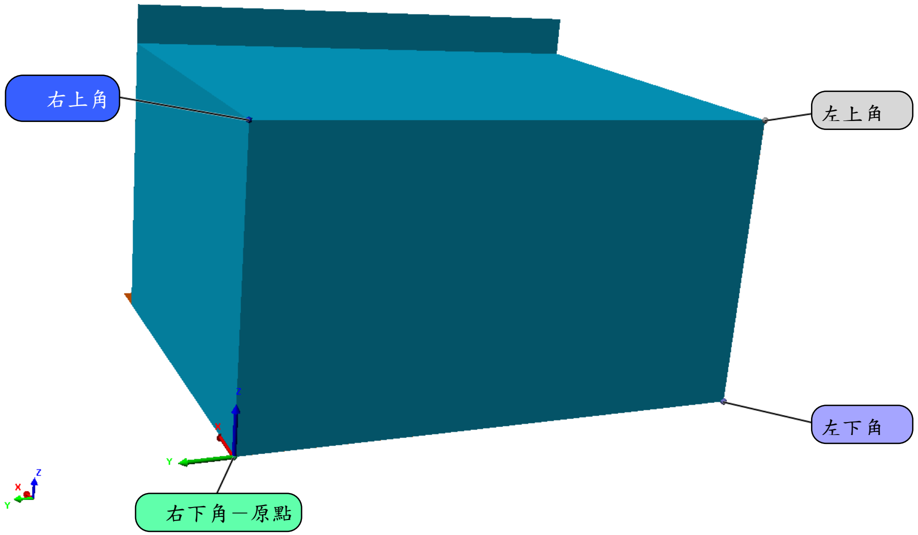
8.1.2



(修正號 TNCAP 規章草案)

3.1.8.1.2



(2025 年 Euro NCAP 規章)

8.1.3

(修正後 TNCAP 規章草案)

3.1.8.1.3

(2025 年 Euro NCAP 規章)

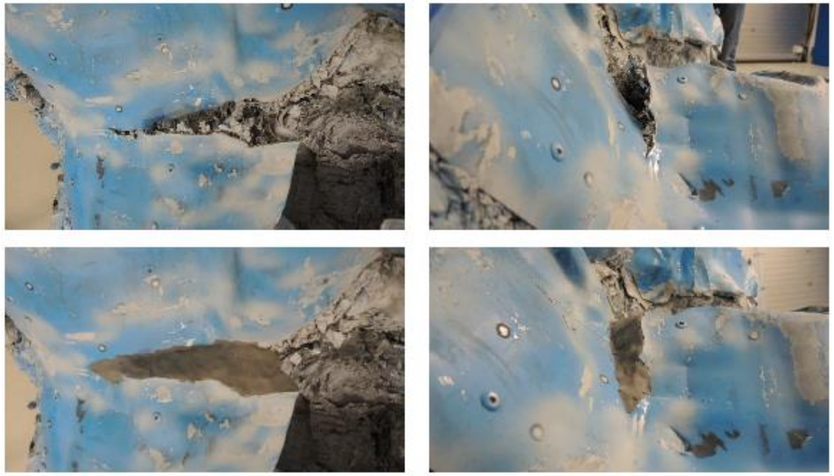
8.2.3.1

(修正後 TNCAP 規章草案)

3.1.8.2.3.1

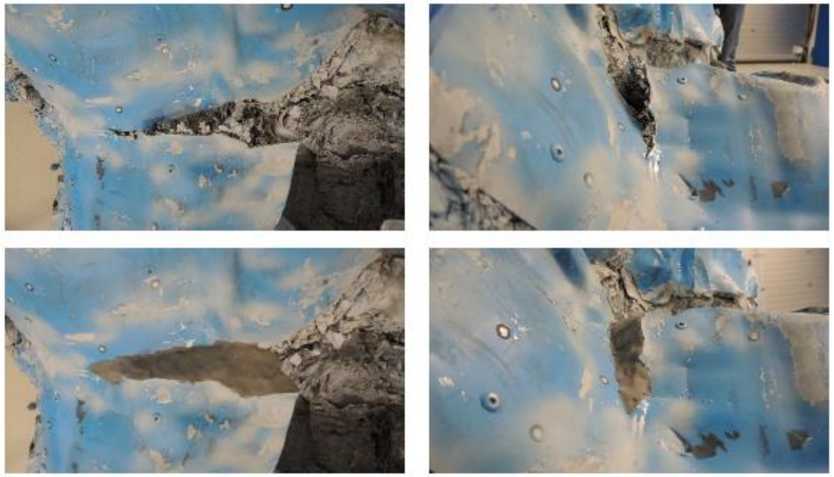
(2025 年 Euro NCAP 規章)

8.2.3.4



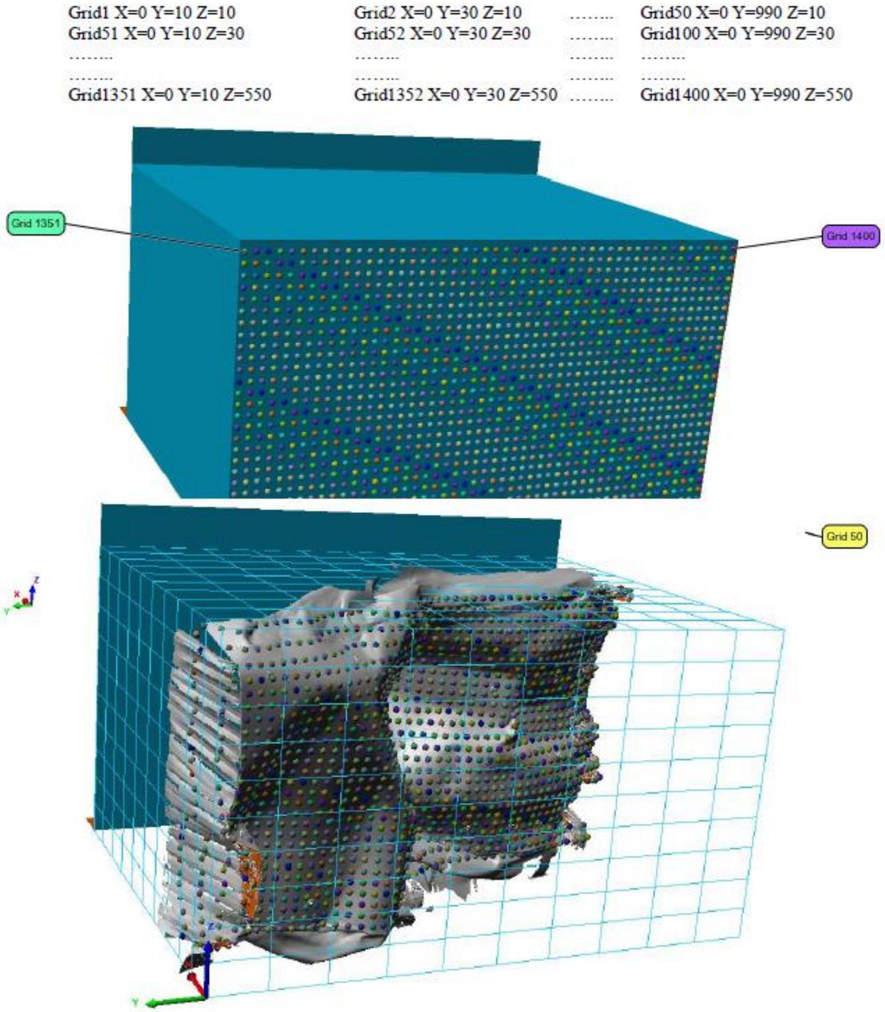
(修正後 TNCAP 規章草案)

3.1.8.2.3.4



(2025 年 Euro NCAP 規章)

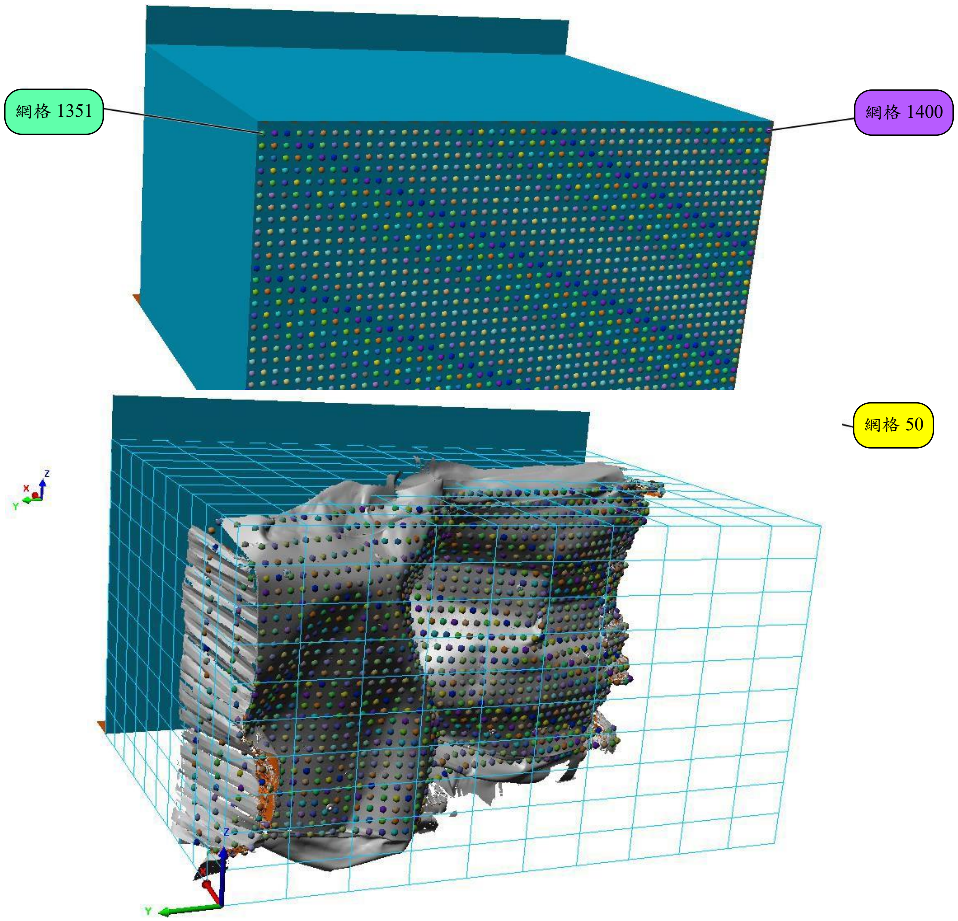
8.2.8



(修正後 TNCAP 規章草案)

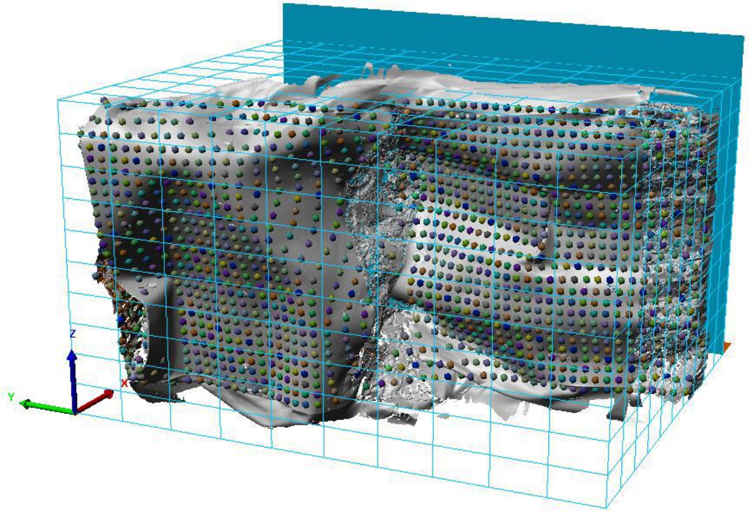
3.1.8.2.8

網格1 X=0 Y=10 Z=10	網格2 X=0 Y=30 Z=10	… …..	網格50 X=0 Y=990 Z=10
網格51 X=0 Y=10 Z=30	網格52 X=0 Y=30 Z=30	… …..	網格100 X=0 Y=990 Z=30
……..	……..	… …..	……..
……..	……..	… …..	……..
網格1351 X=0 Y=10 Z=550	網格1352 X=0 Y=30 Z=550	… …..	網格1400 X=0 Y=990 Z=550


網格 1351
網格 1400
網格 50

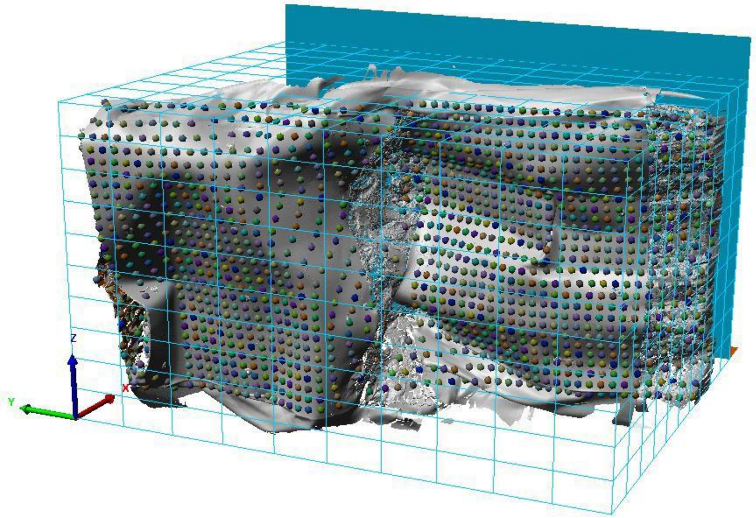
(2025 年 Euro NCAP 規章)

8.2.9



(修正後 TNCAP 規章草案)

3.1.8.2.9



(2025 年 Euro NCAP 規章)

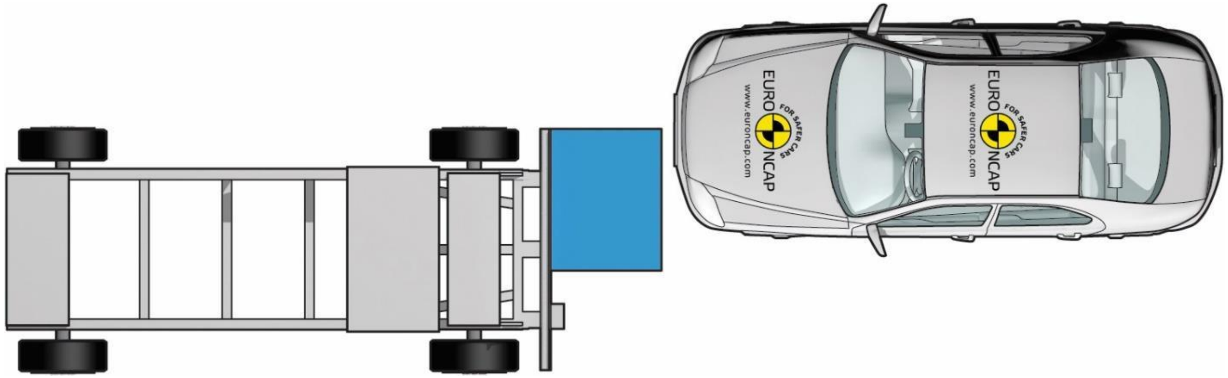


Figure 5 MPDB test set-up

(修正後 TNCAP 規章草案)

圖 5：MPDB 試驗設置

3.5前座鞭甩試驗規章

THE DYNAMIC ASSESSMENT OF CAR SEATS FOR NECK INJURY PROTECTION TESTING PROTOCOL Version 4.2

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2 DEFINITIONS For the purpose of this procedure, the following definitions shall apply: 2.1 Backset means the horizontal distance between the front surface of the head restraint and the rearmost point of the head. 2.1.1 In the context of this protocol, backset is defined as the difference between the Contact Point CPx (marked on the headrest for the different positions to be assessed) and the X-coordinate obtained from applying the formula in the second column of Appendix IV. 2.1.2 BioRID Reference Backset means the backset as determined in accordance with Section 6.3.1. 2.1.3 BioRID Backset is defined as the horizontal measurement between the back surface of the BioRID head and the selected reference point on the front surface of the head restraint. 2.1.4 Design torso angle means the angle	**2 DEFINITIONS** For the purpose of this procedure, the following definitions shall apply:	3.5.1 名詞釋義 3.5.1.1 頭枕間隙(Backset)：係指頭枕前方表面與頭部最後端點之水平距離。 3.5.1.1.1 頭枕間隙(Backset)：係指接觸點 CPx（於不同評估位置之頭枕上標記）與應用 3.5.14 第二欄公式所獲得 X 座標之間的差值。 3.5.1.1.2 BioRID 頭枕間隙參考距離 (Reference Backset)：係依 3.5.5.3.1 所測得之間隙。 3.5.1.1.3 BioRID 頭枕間隙(BioRID Backset)：係指 BioRID 頭部後方表面與頭枕前方表面選定參考點間之水平量測距離。 3.5.1.1.4 軀幹設計角度(Design	3.5.1 名詞釋義

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with the H-Point machine between a vertical line through the R-point and the torso line in a position which corresponds to the design position of the seat back specified by the vehicle manufacturer.		torso angle)：依照車輛業者指定椅背設計位置，使用 H 點人體模型，通過 R 點垂直線與軀幹線之間的夾角。	
2.2 Effective top of the head restraint means the highest point on the centreline of the head restraint, determined in accordance with Section 6.2 and is designated as intersection point (IP).		3.5.1.2 頭枕有效頂端(Effective top of the head restraint)：係指依照 3.5.5.2 所決定頭枕中心線上之最高點，並定義為交點(Intersection Point，IP)。	
2.3 Head restraint means, at any designated seating position, a device that limits rearward displacement of a seated occupant's head relative to the occupant's torso and that has a height equal to or greater than 700 mm at any point between two vertical longitudinal planes passing at 85 mm on either side of the [torso line], in any position of backset and height adjustment, as measured in accordance with Section 6.2.	2.1 Head Restraint means a device designed to limit the rearward displacement of an adult occupant's head in relation to the torso in order to reduce the risk of injury to the neck in the event of a rear impact.	3.5.1.3 頭枕(Head Restraint)：係指任一指定座椅位置上，用以限制乘員頭部相對於其軀幹向後位移之裝置，且在頭枕間隙及高度調整於任何位置下，依照 3.5.5.2 測量通過軀幹線兩側各 85 mm 之兩個垂直縱向平面間之任一點，其高度大於或等於 700 mm。	3.5.1.1 頭枕(Head Restraint)：指裝置的功能可限制成人乘員頭部對其軀幹所作之相對向後移動，以降低事故時乘員頸椎之危險風險。
2.4 Head Restraint Measurement Position Definitions		3.5.1.4 頭枕量測位置定義	3.5.5.1 頭枕量測位置定義
2.4.1 Down is defined as the lowest achievable position of an adjustable head		3.5.1.4.1 向下(Down)：定義為無論其他調整（例如傾斜度）且在不	3.5.5.1.1 向下(Down)：定義為無論其他調整（例如傾斜度）且在不

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restraint regardless of other adjustments (e.g. tilt) and without using tools. The lowest position should be assessed from the point of view of a seated occupant, and without using a third hand.		使用工具之情況下，可調整式頭枕可達到之最低位置。最低位置應從該座位乘員之角度評估，且無需他人協助。	使用工具之情況下，可調整式頭枕可達到之最低位置。最低位置應從該座位乘員之角度評估，且無需他人協助。
2.4.2 Up is defined as the highest adjusted détente position of an adjustable head restraint (taking into account locking détente positions, as defined in Section 2.9, only).		3.5.1.4.2 向上(Up)：定義為可調整式頭枕可調升之最高靜止位置(Détente position)(如 3.5.1.9 定義之鎖定靜止位置)。	3.5.5.1.2 向上(Up)：定義為可調整式頭枕可調升之最高靜止位置(Détente position)(如 3.5.1.1.6 定義之鎖定靜止位置)。
2.4.3 Back is defined as the most rearward adjusted position of an adjustable head restraint, or if this is difficult to ascertain, “back” should be taken as the position which results in the greatest backset when set at the test height.		3.5.1.4.3 向後(Back)：定義為可調整式頭枕最後端之調整位置；若難以確定，則「向後」應視為頭枕設定於試驗高度時，可產生最大頭枕間隙之位置。	3.5.5.1.3 向後(Back)：定義為可調整式頭枕最後端之調整位置；若難以確定，則「向後」應視為頭枕設定於試驗高度時，可產生最大 HRMD 頭枕間隙之位置。
2.4.4 Forward is defined as the most forward locking adjusted position of an adjustable head restraint, or if this is difficult to ascertain, “forward” should be taken as the position which results in the least backset when set at the test height.		3.5.1.4.4 向前(Forward)：定義為可調整式頭枕最前端之調整位置；若難以確定，則「向前」應視為頭枕設定於試驗高度時，可產生最小頭枕間隙之位置。	3.5.5.1.4 向前(Forward)：定義為可調整式頭枕最前端之調整位置；若難以確定，則「向前」應視為頭枕設定於試驗高度時，可產生最小 HRMD 頭枕間隙之位置。
2.5 Integrated Head Restraint or Fixed Head Restraint means a head restraint formed by the upper part of the seat back,	2.1.1 Integrated Head Restraint or Fixed Head Restraint means a head restraint formed by the upper part of the seat back,	3.5.1.5 整合式頭枕(Integrated Head Restraint)或固定式頭枕(Fixed Head Restraint)：指椅背上半部所	3.5.1.1.1 整合式頭枕(Integrated Head Restraint)或固定式頭枕(Fixed Head Restraint)：指椅背上

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or a head restraint that is not height adjustable and/or cannot be detached from the seat or the vehicle structure except by the use of tools or following the partial or total removal of the seat furnishings.	or a head restraint that is not height adjustable and/or cannot be detached from the seat or the vehicle structure except by the use of tools or following the partial or total removal of the seat furnishings.	構成之頭枕，或高度無法調整及/或除非使用工具，或是將座椅部分或全部移除，否則無法與座椅或車體結構拆離之頭枕。	半部所構成之頭枕，或高度無法調整及/或除非使用工具，或是將座椅部分或全部移除，否則無法與座椅或車體結構拆離之頭枕。
2.5.1 Adjustable Head Restraint means a head restraint that is capable of being positioned to fit the anthropometry of the seated occupant. The device may permit horizontal displacement, referred to as "tilt" adjustment and/or vertical displacement, known as "height" adjustment.	2.1.2 Adjustable Head Restraint means a head restraint that is capable of being positioned to fit the anthropometry of the seated occupant. The device may permit horizontal displacement, referred to as "tilt" adjustment and/or vertical displacement, known as "height" adjustment.	3.5.1.5.1 可調整式頭枕(Adjustable Head Restraint)：係指可調整以符合乘坐乘員之人體測量學(Anthropometry)之頭枕。該裝置可允許水平位移（即「傾斜度」調整）及/或垂直位移（即「高度」調整）。	3.5.1.1.2 可調整式頭枕(Adjustable Head Restraint)：係指可調整以符合乘坐乘員之人體測量學(Anthropometry)之頭枕。該裝置可允許水平位移（即「傾斜度」調整）及/或垂直位移（即「高度」調整）。
2.5.2 Re-active Head Restraint means a device designed to improve head restraint geometry during an impact. It will usually be deployed by the occupant's mass within the seat operating a mechanism during the crash. They also usually re-set after loading to a pre-accident condition.	2.1.3 Re-active Head Restraint means a device designed to improve head restraint geometry during an impact. It will usually be deployed by the occupant's mass within the seat operating a mechanism during the crash. They also usually re-set after loading to a pre-accident condition.	3.5.1.5.2 感應式頭枕(Re-active Head Restraint)：設計用來改善撞擊時頭枕幾何位置之裝置，於碰撞事故發生時，通常由乘員重量觸發座椅內之操作機構。且於事故後通常須再重置(Re-set)。	3.5.1.1.3 感應式頭枕(Re-active Head Restraint)：設計用來改善撞擊時頭枕幾何位置之裝置，於碰撞事故發生時，通常由乘員重量觸發座椅內之操作機構。且於事故後通常須再重置(Re-set)。
2.5.3 Pro-active Head Restraint means a device designed to automatically improve head restraint geometry prior to an impact, which utilises sensors to trigger	2.1.4 Pro-active Head Restraint means a device designed to automatically improve head restraint geometry prior to an impact, which utilises sensors to trigger	3.5.1.5.3 主動式頭枕(Pro-active Head Restraint)：設計用來自動改善撞擊前頭枕幾何位置之裝置，利用感測器觸動火藥	3.5.1.1.4 主動式頭枕(Pro-active Head Restraint)：設計用來自動改善撞擊前頭枕幾何位置之裝置，利用感測器觸動火藥

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pyrotechnics, magnetic or other device to release stored energy in order to deploy head restraint or seatback elements. Such systems require no input from the occupant to operate. They are usually not re-settable following a deployment and remain in their deployed state.	pyrotechnics, magnetic or other device to release stored energy in order to deploy head restraint or seatback elements. Such systems require no input from the occupant to operate. They are usually not re-settable following a deployment and remain in their deployed state.	(Pyrotechnic)、磁性或以其他裝置釋放儲存之能量，藉此啟動頭枕或椅背機構。此類系統無須由乘員啟動，且啟動後通常無法重置，該裝置將保持於啟動後狀態。	(Pyrotechnic)、磁性或以其他裝置釋放儲存之能量，藉此啟動頭枕或椅背機構。此類系統無須由乘員啟動，且啟動後通常無法重置，該裝置將保持於啟動後狀態。
2.5.4 Automatically Adjusting Head Restraint means a head restraint that automatically adjusts its position depending on the stature of the seated occupant.	2.1.5 Automatically Adjusting Head Restraint means a head restraint that automatically adjusts its position depending on the stature of the seated occupant.	3.5.1.5.4 自動調整式頭枕(Automatically Adjusting Head Restraint)：係指自動依乘坐乘員之身高調整頭枕位置之頭枕。	3.5.1.1.5 自動調整式頭枕(Automatically Adjusting Head Restraint)：係指自動依乘坐乘員之身高調整頭枕位置之頭枕。
2.6 Head restraint height means the distance from the R50-point, measured parallel to the torso line to the effective top (IP) of the head restraint on a plane normal to the torso line.		3.5.1.6 頭枕高度(Head restraint height)：係指與軀幹線平行之R50 點量測至垂直於軀幹線平面上頭枕有效頂端（IP）之距離。	
2.7 H-point means the pivot centre of the torso and thigh of the H-point machine when installed in a vehicle seat in accordance with Section 5.1. The H-point is considered fixed in relation to the seat-cushion structure and is considered to move with it when the seat is adjusted in the X direction.		3.5.1.7 H 點：係指依 3.5.4.1 安裝於車輛座椅上，H 點人體模型之軀幹與大腿樞軸中心。H 點視為固定於座墊結構，並隨座椅於 X 方向調整時同步移動。	

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2.8 Intended for occupant use means, when used in reference to the adjustment of a seat and head restraint, adjustment positions used by seated occupants while the vehicle is in motion, and not those intended solely for the purpose of allowing ease of ingress and egress of occupants; access to cargo storage areas; and or storage of cargo in the vehicle.		3.5.1.8 供乘員使用(Intended for occupant use)：當用於座椅及頭枕之調整，指車輛行駛時供乘員使用之調節位置，不包括僅為了方便乘員進出、進入行李儲放區及/或車內儲放貨物而設計之調整位置。	
2.9 Locking refers to an adjustable head restraint fitted with a device to prevent inadvertent downward or rearward movement from its adjusted position, i.e. when a rear seat occupant uses a front seat head restraint as a hand hold to facilitate easy entry or exit from the vehicle. A locking device may be fitted to both the horizontal and vertical adjustments of the head restraint. A locking device shall incorporate a mechanism that requires intervention to allow downward/rearward head restraint adjustment after which the mechanism shall re-engage automatically.	2.1.6 Locking refers to an adjustable head restraint fitted with a device to prevent inadvertent downward or rearward movement from its adjusted position, i.e. when a rear seat occupant uses a front seat head restraint as a hand hold to facilitate easy entry or exit from the vehicle. A locking device may be fitted to both the horizontal and vertical adjustments of the head restraint. A locking device shall incorporate a mechanism that requires intervention to allow downward/rearward head restraint adjustment after which the mechanism shall re-engage automatically.	3.5.1.9 鎖定(Locking)：係指可調整式頭枕配備特定裝置，以避免頭枕從調整之位置意外往下或往後移動，即後座乘員利用前座頭枕作為扶手幫助進出車輛之情況。頭枕之水平及垂直調整皆可配備鎖定裝置。該裝置應有介入(Intervention)機構，於頭枕向下/向後調整後，此機構應自動重新嚙合。	3.5.1.1.6 鎖定(Locking)：係指可調整式頭枕配備特定裝置，以避免頭枕從調整之位置意外往下或往後移動，即後座乘員利用前座頭枕作為扶手幫助進出車輛之情況。頭枕之水平及垂直調整皆可配備鎖定裝置。該裝置應有介入(Intervention)機構，於頭枕向下/向後調整後，此機構應自動重新嚙合。

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2.10 Longitudinal plane means any plane parallel to the vertical longitudinal zero plane of the vehicle. 2.11 R-point means a reference point defined for each seat by the manufacturer in relation to the vehicle's structure. 2.12 For the purpose of this protocol, R50-point means a design point defined by the vehicle manufacturer for the seated 50th percentile male for the designated seating position described in Section 4.6.		3.5.1.10 縱向平面(Longitudinal plane)：係指與車輛垂直縱向零平面平行之任一平面。 3.5.1.11 R 點：係指車輛業者針對每個座椅所定義相對於車輛結構之參考點。 3.5.1.12 R50 點：係指車輛業者針對 3.5.3.6 所述之指定座椅位置，為百分之五0成人男性定義之設計點。	
2.13 H-Point Manikin (HPM) means the device used for the determination of “H” points and actual torso angles. (SAE Standard J826, SAE Handbook, Vol 3, 1999). 2.14 Torso line means the centreline of the probe of the H-point machine with the probe in the fully rearward position.	**H-Point Manikin (HPM)** means the device used for the determination of “H” points and actual torso angles. (SAE Standard J826, SAE Handbook, Vol 3, 1999) modified according to the Insurance Corporation of British Columbia (ICBC) Instruction Manual for the HRMD, see 2.2 Appendix III.	3.5.1.13 H 點人體模型(H-Point Manikin，HPM)：用來判定 H 點及軀幹實際角度之裝置。(SAE J826 標準，SAE 手冊，卷 3，1999)。 3.5.1.14 軀幹線(Torso line)：係指於探測器(Probe)完全朝後之位置，該 H 點人體模型頭部空間探測器中心線。	3.5.1.2 H 點人體模型(H-Point Manikin，HPM)：用來判定 H 點及軀幹實際角度之裝置。(SAE J826 標準，SAE 手冊，卷 3，1999)依照卑詩保險公司(Insurance Corporation of British Columbia，ICBC)HRMD 指導手冊進行修改，參見 3.5.12。
2.15 Actual torso angle means the angle measured between a vertical line through the H-point and the torso line using the back angle quadrant on the H-point machine. The actual torso angle	2.3 HRMD (Head Restraint Measuring Device) means a separate head-shaped device used with the H-point machine to measure the static geometry of a vehicle head restraint. It was developed under the	3.5.1.15 軀幹實際角度：係指人體模型 H 點垂直線與軀幹線間之夾角，其乃使用 H 點人體模型背部角象限儀(Back angle quadrant)量測取得。理論上，軀幹實際角度	3.5.1.3 頭枕量測裝置(Head Restraint Measuring Device，HRMD)：此裝置須與 H 點人體模型搭配使用，用來測量頭枕靜態幾何位置，由 ICBC 贊助研發

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corresponds theoretically to the design torso angle. 2.16 Rebound means that the head bounced back after contacting the head restraint.	sponsorship of the Insurance Corporation of British Columbia (ICBC) -(SAE paper 1999-01-0639). The HRMD is equipped with two probes to measure head restraint height and backset. The height probe projects horizontally, level with the top of the head, to provide a reference line for the vertical measurement to the top of the restraint. The backset probe simulates the rear profile of the head and neck and projects horizontally, to provide the horizontal measurement to the restraint. 2.3.1 HRMD Height is defined as the vertical measurement between the height probe of the HRMD and the top of the head restraint. 2.3.2 HRMD Backset is defined as the horizontal measurement between the back surface of the HRMD head and the front surface of the head restraint as measured by the backset probe of the HRMD. 2.3.3 BioRID Reference Backset is derived from the horizontal measurement between the back surface of the HRMD	與軀幹設計角度吻合。 3.5.1.16 回彈(Rebound)：係指頭部接觸頭枕後向後彈回之現象。	（SAE 報告 1999-01-0639）。HRMD 配有兩個探測器，以測量頭枕高度(Head restraint height)及頭枕間隙(Backset)。HRMD 頭頂處水平投射至高度探測器，作為頭枕頂端垂直高度量測之參考線。頭枕間隙探測器模擬頭頸後方輪廓，並進行水平投射，以水平方向測量頭枕間隙。 3.5.1.3.1 HRMD 高度：定義為 HRMD 高度探測器與頭枕頂端之垂直量測距離。 3.5.1.3.2 HRMD 頭枕間隙：定義為使用 HRMD 頭枕間隙探測器測量 HRMD 頭部後方表面與頭枕前方表面之水平量測距離。 3.5.1.3.3 BioRID 頭枕間隙參考距離 (Reference Backset)：係由 HRMD 後方表面與頭枕前方表

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	and the selected reference point on the front surface of the head restraint. The BioRID Reference Backset is 15 mm greater than the HRMD backset and will be used to position the dummy prior to test. 2.3.4 BioRID Backset is defined as the horizontal measurement between the back surface of the BioRID head and the selected reference point on the front surface of the head restraint.		面選定參考點間之水平量測距離所衍伸而成。BioRID 頭枕間隙參考距離較 HRMD 頭枕間隙大 15mm，且試驗前人偶安裝時須進行距離補償。 3.5.1.3.4 BioRID 頭枕間隙(Backset)：定義為 BioRID 頭部後方表面與頭枕前方表面選定參考點間之水平量測距離。
2.17 Seat Movement Definitions. For an illustration of seat movement definitions, see Technical Bulletin TB028. (請參考末頁圖示)	2.4 Seat Movement Definitions. For an illustration of seat movement definitions, see Appendix V. (請參考末頁圖示)	3.5.1.17 座椅移動定義：相關圖示說明，參見 3.5.14。 (請參考末頁圖示)	3.5.1.4 座椅移動定義：相關圖示說明，參見 3.5.14。 (請參考末頁圖示)
3 COORDINATE SYSTEM **3.1 Sled Coordinates** … 3.1.3 Alternatively, specific vehicle coordinate systems provided by the manufacturer may be used if compliant with the requirements described in 3.1.1	**3 COORDINATE SYSTEM** **3.1 Sled Coordinates** …	3.5.2 座標系統 3.5.2.1 台車座標 … 3.5.2.1.3 若符合 3.5.3.1.1 所述要求，則亦可使用車輛業者提供指定之車輛座標系統。	3.5.2 座標系統 3.5.2.1 台車座標 …
4 SLED SEAT MOUNTING AND POSITIONING	**4 SLED SEAT MOUNTING AND POSITIONING**	3.5.3 台車座椅安裝及定位	3.5.3 台車座椅安裝及定位

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4.1 Packaging Issues 4.1.3 Where a bulkhead or similar structure prevents the target seat back angle from being achieved, the seat track shall be adjusted forward until the angle is achieved. …	**4.1 Packaging Issues** 4.1.3 The mid track seat position should allow a seat back angle of 25 degrees adjustment in all cases. Where a bulkhead or similar structure prevents this, the seat track shall be adjusted forward until 25 degrees is achieved. …	3.5.3.1 整備議題 3.5.3.1.3 若有隔板或類似結構導致椅背無法調整至目標角度，則座椅滑軌應向前移動，直到達成椅背角度。 …	3.5.3.1 整備議題 3.5.3.1.3 在所有情況下，座椅位於滑軌中間時，其椅背角度應有 25 度之調整空間。若有隔板或類似結構導致椅背無法調整，則應向前移動，直到椅背角度有 25 度之調整空間。 …
4.4 Heel Surface The heel surface is defined as the horizontal plane of the toe board (i.e. sled floor or movable footrest) on which the dummy's heel rests. Its target position is determined using the heel rest point location defined from the vehicle measurements, or from information provided by the vehicle manufacturer. An accurate height setting should be obtained at this stage; however an initial approximated horizontal position may be set. The final horizontal position will be obtained in Section 6.4.8. …	**4.4 Heel Surface** The heel surface is defined as the horizontal plane of the toe board (i.e. sled floor or movable footrest) on which the dummy's heel rests. Its target position is determined using the heel rest point location defined from the vehicle measurements, or from information provided by the vehicle manufacturer. An accurate height setting should be obtained at this stage; however an initial approximated horizontal position may be set. The final horizontal position will be obtained in Section 6.6.8. …	3.5.3.4 鞋跟表面(Heel surface) 鞋跟表面定義為人偶鞋跟擺放之踏腳板水平面（即台車地板或移動式腳板），以實車測量數據或車輛業者提供之資料作為鞋跟點(Heel rest point)位置。此階段可將鞋跟設置於正確高度，也可設置其初始之概略水平位置，最終水平位置將依 3.5.5.4.8 進行設置。 …	3.5.3.4 鞋跟表面(Heel surface) 鞋跟表面定義為人偶鞋跟擺放之踏腳板水平面（即台車地板或移動式腳板），以實車測量數據或車輛業者提供之資料作為鞋跟點(Heel rest point)位置。此階段可將鞋跟設置於正確高度，也可設置其初始之概略水平位置，最終水平位置將依 3.5.5.6.8 進行設置。 …
4.6 Seat Position 4.6.1 Seats with Automatically Adjusting	4.6 Seat Position 4.6.1 Seats with Automatically Adjusting	3.5.3.6 座椅位置 3.5.3.6.1 自動調整式頭枕座椅	3.5.3.6 座椅位置 3.5.3.6.1 自動調整式頭枕座椅

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Head Restraints. The BioRID UN dummy used for these dynamic tests represents a midsize adult male driver or vehicle occupant Consequently, seats equipped with head restraints that automatically adjust depending on other seat adjustments (e.g. seat track or height) should be set to a position most likely to be used by a seat occupant of the same size as the dummy. Therefore, the seat shall be adjusted to its mid track and mid height position. Since the seat's starting position can affect the final position of the head restraint, a consistent setup sequence should be followed. During setting of the mid/mid position, the seat should always be moved rearward from the forward most position, and downward from the fully up position. The seatback should then be positioned following the procedure in Section 5.1. All other seat settings that have not already been adjusted shall be set according to Section 4.6.2.	Head Restraints. The BioRID dummy used for these dynamic tests represents a midsize adult male driver or vehicle occupant. Consequently, seats equipped with head restraints that automatically adjust depending on other seat adjustments (e.g. seat track or height) should be set to a position most likely to be used by a seat occupant of the same size as the dummy. Therefore, the seat shall be adjusted to its mid track and mid height position.Since the seat's starting position can affect the final position of the head restraint, a consistent setup sequence should be followed. During setting of the mid/mid position, the seat should always be moved rearward from the forward most position, and downward from the fully up position. The seatback should then be positioned following the procedure in Section 5.3. All other seat settings that have not already been adjusted shall be set according 0.	動態性能試驗所使用之BioRID UN 人偶代表中等體型成年男性駕駛或車輛乘員。若座椅配備之頭枕會依其他調整（例如座椅滑軌或高度）而自動調整(Automatically adjust)者，則應將座椅設定於與人偶相同體型之乘員最可能使用之位置。因此，座椅應調整至滑軌及高度之中間位置。 由於座椅初始位置會影響頭枕最終位置，因此應維持一致之設置順序。於座椅滑軌及高度設定於中間位置時，座椅應從最前方位置往後移動，從最上方位置往下移動。然後，椅背應依照 3.5.4.1 之程序進行固定，座椅其他未調整處應依照 3.5.3.6.2 進行設置。	動態性能試驗所使用之 BioRID 人偶代表中等體型成年男性駕駛或車輛乘員。若座椅配備之頭枕會依其他調整（例如座椅滑軌或高度）而自動調整(Automatically adjust)者，則應將座椅設定於與人偶相同體型之乘員最可能使用之位置。因此，座椅應調整至滑軌及高度之中間位置。 由於座椅初始位置會影響頭枕最終位置，因此應維持一致之設置順序。於座椅滑軌及高度設定於中間位置時，座椅應從最前方位置往後移動，從最上方位置往下移動。然後，椅背應依照 3.5.4.3 之程序進行固定，座椅其他未調整處應依照 3.5.3.6.2 進行設置。
4.6.2 Setting Manual Seat Adjustments.	4.6.2 Setting Manual Seat Adjustments.	3.5.3.6.2 手動調整座椅	3.5.3.6.2 手動調整座椅

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The various seat adjustments possible on many modern vehicle seats should be set according to the following instructions. Because the setting of some adjustments may affect the adjustment range of other adjustments, the seat should be set by following the order of the procedure outlined here. The seat shall have been at room temperature for at least six hours and not loaded for at least one hour previous to the initial installation of the H-point manikin. Following this pre-conditioning, the seat set up may be undertaken. The seatback angle will be set in Section 5.1, the initial setting is not important so long as it doesn't interfere with other adjustments.	The various seat adjustments possible on many modern vehicle seats should be set according to the following instructions. Because the setting of some adjustments may affect the adjustment range of other adjustments, the seat should be set by following the order of the procedure outlined here. If the seat is new and has never been sat on, a person of mass 75kg ± 10kg should sit on the seat for 1 minute, twice, to flex the cushions. The seat shall have been at room temperature for at least six hours and not loaded for at least one hour previous to the initial installation of the H-point manikin. Following this pre-conditioning, the seat set up may be undertaken. The seatback angle will be set in Section 5.3, the initial setting is not important so long as it doesn't interfere with other adjustments. Seat adjustments	許多現代車輛座椅可執行各種功能調整，本項試驗應依照以下說明進行設置。由於部分座椅調整設置可能影響其他調整範圍，因此，座椅應依照此處列出之步驟依序設置。座椅應處於室溫至少六小時，且於 H 點人體模型初次安裝前至少一小時內，不得有負載。依此規定完成前置作業後，即可進行座椅設置。椅背角度將依 3.5.4.1 進行設置，只要不影響其他調整，其初始設置並不重要。	許多現代車輛座椅可執行各種功能調整，本項試驗應依照以下說明進行設置。由於部分座椅調整設置可能影響其他調整範圍，因此，座椅應依照此處列出之步驟依序設置。若座椅全新且從未使用過，則應由重量 75kg ± 10kg 之人員坐一分鐘，進行兩次，以使座墊壓縮。座椅應處於室溫至少六小時，且於 H 點人體模型初次安裝前至少一小時內，不得有負載。依此規定完成前置作業後，即可進行座椅設置。椅背角度將依 3.5.4.3 進行設置，只要不影響其他調整，其初始設置並不重要。
Seat adjustments should now be set using the sequence described in Section 4.6.2.1 to 4.6.2.9. Subsequent seat adjustments may affect the original position ofof a previous setting. If this is the case there	should now be set using the sequence described in Section 4.6.2.1 to 4.6.2.7. Subsequent seat adjustments may affect the original position of a previous setting. If this is the case there should be no re-	接著，依照 3.5.3.6.2.1 至 3.5.3.6.2.9 依序進行座椅調整。後續座椅調整可能影響之前設置的原始位置，若有此情況，無須重新調整先前設置。	接著，依照 3.5.3.6.2.1 至 3.5.3.6.2.7 依序進行座椅調整。後續座椅調整可能影響之前設置的原始位置，若有此情況，無須重新調整先前設置。

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should be no re-adjustment of the previous settings.	adjustment of the previous settings.		
4.6.2.1 Initial Adjustment of Seat Adjustment Controls. All seat controls should be set in sequence as follows. Technical Bulletin TB028 provides more detailed descriptions with illustration of each of these seat adjustments. …	4.6.2.1 Initial Adjustment of Seat Adjustment Controls. All seat controls should be set in sequence as follows. Appendix V provides more detailed descriptions with illustration of each of these seat adjustments. …	3.5.3.6.2.1 座椅調整控制器之初步調整 所有座椅控制器皆應依照下列步驟依序設置。3.5.14 提供各座椅調整之詳細說明及圖示。 …	3.5.3.6.2.1 座椅調整控制器之初步調整 所有座椅控制器皆應依照下列步驟依序設置。3.5.14 提供各座椅調整之詳細說明及圖示。 …
4.6.2.6 Adjust the lower and upper (where present) seatback angle to conform to the design position provided by the manufacturer. This may be done with the use of identifiable 'hard points' provided by the OEM on the seat frame, head restraint tubes, recliner or similar defined structures.		3.5.3.6.2.6 調整座椅靠背之下部角度及上部角度(若可調整),使其符合車輛業者所提供之設計位置。此調整可藉由車輛業者於座椅骨架、頭枕支柱管、傾倒機構或其他類似結構上所提供可識別之「硬點(Hard point)」來進行。	
4.6.2.7 If no seatback design position has been provided, adjust only the upper seatback angle to mid as detailed in 4.6.2.8.		3.5.3.6.2.7 若未提供椅背設計位置,則僅將椅背上部角度調整至中間位置,如 3.5.3.6.2.8 詳述。	
4.6.2.8 Adjusting Upper Seatback Angle. Measure the angle relative to vertical of the head restraint support post or some flat part of the seatback frame. Without	4.6.2.6 Adjusting Upper Seatback Angle. Measure the angle relative to vertical of the head restraint support post or some flat part of the seatback frame. Without	3.5.3.6.2.8 調整椅背上方角度以頭枕支柱(Head restraint support post)垂直面或椅背結構(Seatback frame)平坦部分為基準,量測椅	3.5.3.6.2.6 調整椅背上方角度以頭枕支柱(Head restraint support post)垂直面或椅背結構(Seatback frame)平坦部分為基準,量測椅

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changing the adjustment of the lower seatback, move the upper seatback to its most forward position and measure the angle of the head restraint post or seatback frame. Adjust the upper seatback rearward until the head restraint post or seatback frame angle is midway (± 0.5°) between the rearmost and forward most angles.	changing the adjustment of the lower seatback, move the upper seatback to its most forward position and measure the angle of the head restraint post or seatback frame. Adjust the upper seatback rearward until the head restraint post or seatback frame angle is midway (± 0.5°) between the rearmost and forward most angles.	背上半部之角度。在不改變椅背下半部設置情況下，將椅背上半部移至最前端位置，並量測頭枕支柱或椅背結構角度。往後調整椅背上半部，直至頭枕支柱或椅背結構角度介於其椅背最前與最後端角度中間（±0.5 度）。	背上半部之角度。在不改變椅背下半部設置情況下，將椅背上半部移至最前端位置，並量測頭枕支柱或椅背結構角度。往後調整椅背上半部，直至頭枕支柱或椅背結構角度介於其椅背最前與最後端角度中間（±0.5 度）。
4.6.2.9 Other Seat Adjustments. Seat adjustments not set in steps 4.6.2.2 to 4.6.2.6 shall remain in the initial adjustment as set in section 4.6.2.1. 4.6.2.10 If the seat is new and has never been sat on, a person of mass 75kg ± 10kg should sit on the seat for 1 minute, twice, to flex the cushions.	4.6.2.7 Other Seat Adjustments. Seat adjustments not set in steps 4.6.2.2 through 4.6.2.6 should remain in the initial adjustment as set in section 4.5.1.	3.5.3.6.2.9 其他座椅調整 3.5.3.6.2.2 至 3.5.3.6.2.6 未調整之座椅部分應維持於 3.5.3.6.2.1 之初始調整位置。 3.5.3.6.2.10 若座椅全新且從未使用過，則應由重量 75kg ± 10kg 之人員坐一分鐘，進行兩次，以使座墊壓縮。	3.5.3.6.2.7 其他座椅調整 3.5.3.6.2.2 至 3.5.3.6.2.6 未調整之座椅部分應維持於 3.5.3.6.2.1 之初始調整位置。
5 H-POINT MACHINE & DUMMY POSITIONING	**5. H-POINT MACHINE & DUMMY POSITIONING** 5.1 Introduction. The following section contains the current positioning procedure for use with the BioRID dummy. The entire process for a single installation and measurement using the	3.5.4 H 點人體模型 (H-Point Machine, HPM)與人偶設置	3.5.4 H 點人體模型 (H-Point Machine, HPM)與人偶設置 3.5.4.1 簡介 本節將說明 BioRID 人偶之設置程序。HPM 及 HRMD 單次安裝及量測之整體流程最多不得超過 15 分鐘。

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	HPM and HRMD should last approximately 15 minutes maximum per installation. 5.2 H-point Manikin and HRMD Preparation. The BioRID test position is based on reference measurements made with the H-point manikin (HPM) and HRMD. Parts of the following text contain excerpts from "A Procedure for Evaluating Motor Vehicle Head Restraints" (Issue 2, RCAR, February 2001). A specific pairing of manikin and HRMD must be used which have been certified together. Before using the combination, ensure that the build condition is correct. Remove the head room probe from the H-point machine and install the two washers (supplied with the HRMD) in the spaces remaining on the H-point pivot. The fit of the HRMD on the H-point machine should be confirmed. Lower the HRMD in position onto the torso weight hangers and onto the top edge of the channel between the torso weight hangers. Ensure that the		3.5.4.2 H 點人體模型及 HRMD 整備 BioRID 試驗位置係根據 H 點人體模型（HPM）及 HRMD 所測得之參考值進行設置。下列文字內容部份摘錄自〈車輛頭枕評估量程序〉（A Procedure for Evaluating Motor Vehicle Head Restraints）（第 2 期，RCAR，2001 年 2 月）。此試驗須使用經共同認證之特定人體模型與 HRMD 組合。使用此組合前，應確保構建條件正確。移除 H 點人體模型之頭部空間探測器(Head room probe)，於 H 點樞軸之剩餘空間安裝兩個墊圈(Washer)（來自 HRMD）。確認 HRMD 可安裝至 H 點人體模型。將 HRMD 裝至軀幹配重支架(Torso weight hanger)與軀幹配重支架間之通道頂端邊緣。確保 HRMD 可輕易組裝到位，而不受任何外力干擾人體模型位置。

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	HRMD fits easily into place without inducing forces which might disturb the manikin position.		
5.1 H-point Manikin Installation	5.3 H-point Manikin Installation	3.5.4.1 H 點人體模型安裝	3.5.4.3 H 點人體模型安裝
5.1.1 The seat shall be covered with a cotton cloth large enough to cover both cushions and seatback.	5.3.1 The seat shall be covered with a cotton cloth large enough to cover both cushions and seatback.	3.5.4.1.1 座椅應外罩一塊大小足以覆蓋座墊及椅背之棉布。	3.5.4.3.1 座椅應外罩一塊大小足以覆蓋座墊及椅背之棉布。
5.1.2 The cloth shall be tucked into the seat joint by an amount sufficient to prevent hammocking of the material.	5.3.2 The cloth shall be tucked into the seat joint by an amount sufficient to prevent hammocking of the material.	3.5.4.1.2 將棉布塞進座板與椅背連接處，避免棉布移動(Hammocking)。	3.5.4.3.2 將棉布塞進座板與椅背連接處，避免棉布移動(Hammocking)。
5.1.3 The H-point manikin shall be installed in the seat.	5.3.3 The H-point manikin shall be installed in the seat.	3.5.4.1.3 將 H 點人體模型安裝至座椅上。	3.5.4.3.3 將 H 點人體模型安裝至座椅上。
5.1.4 The lower legs shall be adjusted to the 50th percentile leg length setting, and the upper legs shall be adjusted to the 10th percentile leg length setting; these are the HPM settings closest to the Euro NCAP front and side impact protocol settings.	5.3.4 The lower legs shall be adjusted to the 50th percentile leg length setting, and the upper legs shall be adjusted to the 10th percentile leg length setting; these are the HPM settings closest to the Euro NCAP front and side impact protocol settings.	3.5.4.1.4 人體模型下腿部應調整至第 50 百分位腿長設置，上腿部則應調整至第 10 百分位腿長設置。此為最接近 TNCAP 前方偏置撞擊及側方撞擊試驗規章之 HPM 設置。	3.5.4.3.4 人體模型下腿部應調整至第 50 百分位腿長設置，上腿部則應調整至第 10 百分位腿長設置。此為最接近 TNCAP 前方偏置撞擊及側方撞擊試驗規章之 HPM 設置。
5.1.5 The legs shall be attached to the HPM and set to the 5th position (no.5) on the knee joint T-bar, which places the knees 250mm apart.	5.3.5 The legs shall be attached to the HPM and set to the 5th position (no.5) on the knee joint T-bar, which places the knees 250mm apart.	3.5.4.1.5 將雙腿連接至 HPM，並設置於膝部樞軸桿(Knee joint T-bar)五號位置(no.5)，兩膝間距 250mm。	3.5.4.3.5 將雙腿連接至 HPM，並設置於膝部樞軸桿(Knee joint T-bar)五號位置(no.5)，兩膝間距 250mm。
5.1.6 With the legs attached and the back pan tilted forward, the HPM shall be	5.3.6 With the legs attached and the back pan tilted forward, the HPM shall be	3.5.4.1.6 連接腿部後，將背板向前傾斜，座椅上的 HPM 之正中矢	3.5.4.3.6 連接腿部後，將背板向前傾斜，座椅上的 HPM 之正中矢

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positioned in the seat such that its mid-sagittal plane coincides with the longitudinal centreline of the seat. The centreline of the seat may be defined from features such as the head restraint support tubes or seatback and seat pan side bolsters. Particular attention should be paid to seats with asymmetric design.	positioned in the seat such that its mid-sagittal plane coincides with the longitudinal centreline of the seat. The centreline of the seat may be defined from features such as the head restraint support tubes or seatback and seat pan side bolsters. Particular attention should be paid to seats with asymmetric design.	狀切面(Mid-sagittal plane)應與座椅的縱向中心線重疊。座椅中心線可用座椅特徵來定義，如頭枕支撐管或椅背與座椅底板側邊支撐。應特別留意不對稱設計之座椅。	狀切面(Mid-sagittal plane)應與座椅的縱向中心線重疊。座椅中心線可用座椅特徵來定義，如頭枕支撐管或椅背與座椅底板側邊支撐。應特別留意不對稱設計之座椅。
5.1.7 The back pan shall be straightened to conform to the vehicle seat back.	5.3.7 The back pan shall be straightened to conform to the vehicle seat back.	3.5.4.1.7 背板應豎直，使其與車輛椅背一致。	3.5.4.3.7 背板應豎直，使其與車輛椅背一致。
5.1.8 The feet shall be placed as far forward as possible, with the heels resting on the heel plane and the feet positioned at 90° to the tibias. The toe pan shall be positioned sufficiently far away so as to avoid any interaction with the feet during the HPM installation process.	5.3.8 The feet shall be placed as far forward as possible, with the heels resting on the heel plane and the feet positioned at 90° to the tibias. The toe pan shall be positioned sufficiently far away so as to avoid any interaction with the feet during the HPM installation process.	3.5.4.1.8 人體模型足部應盡可能往前放，腳跟應放置腳跟平面(Heel plane)上，足部與脛骨呈 90 度。HPM 安裝過程中，腳踏底板應放置於遠處以避免與人體模型足部相互影響。	3.5.4.3.8 人體模型足部應盡可能往前放，腳跟應放置腳跟平面(Heel plane)上，足部與脛骨呈 90 度。HPM 安裝過程中，腳踏底板應放置於遠處以避免與人體模型足部相互影響。
5.1.9 The lower leg and thigh weights shall be attached to the HPM and the assembly shall be levelled.	5.3.9 The lower leg and thigh weights shall be attached to the HPM and the assembly shall be levelled.	3.5.4.1.9 將下腿部及大腿配重連接至 HPM，且總成應擺放於水平位置	3.5.4.3.9 將下腿部及大腿配重連接至 HPM，且總成應擺放於水平位置
5.1.10 The back pan shall be tilted forward to 45° from the seat back and the HPM assembly pushed rearward until the seat pan contacts the vehicle seat back. While maintaining the back pan at 45° to the	5.3.10 The back pan shall be tilted forward to 45° from the seat back and the HPM assembly pushed rearward until the seat pan contacts the vehicle seat back. While maintaining the back pan at 45 ° to the	3.5.4.1.10 背板應自椅背向前傾斜 45 度，將 HPM 總成往後推，直到座板與車輛椅背接觸。維持背板與椅背呈 45 度，使用柱塞(Plunger)或以推拉力計(Force	3.5.4.3.10 背板應自椅背向前傾斜 45 度，將 HPM 總成往後推，直到座板與車輛椅背接觸。維持背板與椅背呈 45 度，使用柱塞(Plunger)或以推拉力計(Force

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seat back, a horizontal rearward force of 100N shall be applied using the plunger if present or using a force gauge pressed against the hip angle quadrant structure.	seat back, a horizontal rearward force of 100N shall be applied using the plunger if present or using a force gauge pressed against the hip angle quadrant structure.	gauge）施加水平向後 100N 之力於臀部角度象限儀(Hip angle quadrant)及膝部樞軸桿套管正上方交會處。	gauge）施加水平向後 100N 之力於臀部角度象限儀(Hip angle quadrant)及膝部樞軸桿套管正上方交會處。
5.1.11 The load application shall be repeated and, while keeping the 100N applied, the back pan shall be returned to the vehicle seat back and the load then released. As the 100N is released, a small force should be maintained on the front of the T-bar to prevent any longitudinal movement. This support should be maintained until the end of Section 5.1.16 is reached.	5.3.11 The load application shall be repeated and, while keeping the 100N applied, the back pan shall be returned to the vehicle seat back and the load then released. As the 100N is released, a small force should be maintained on the front of the T-bar to prevent any longitudinal movement. This support should be maintained until the end of Section 5.3.17 is reached.	3.5.4.1.11 重覆施加負載。在施加 100N 狀態下，將背板靠回車輛椅背位置，而後再釋放負載。100N 之負載釋放時，膝部樞軸桿前方應有微幅支撐力，以防止其縱向移動，此支撐力應持續維持至 3.5.4.1.17 結束。	3.5.4.3.11 重覆施加負載。在施加 100N 狀態下，將背板靠回車輛椅背位置，而後再釋放負載。100N 之負載釋放時，膝部樞軸桿前方應有微幅支撐力，以防止其縱向移動，此支撐力應持續維持至 3.5.4.3.17 結束。
5.1.12 A check shall be made to determine that the HPM is level, facing directly forward, and located in the centreline of the seat.	5.3.12 A check shall be made to determine that the HPM is level, facing directly forward, and located in the centreline of the seat.	3.5.4.1.12 檢查 HPM 是否為水平狀態、面向正前方且位於座椅中心線上。	3.5.4.3.12 檢查 HPM 是否為水平狀態、面向正前方且位於座椅中心線上。
	5.3.13 As an approximation of the vehicle seat back position, it shall be placed such that the torso angle is about 21° before the buttock and chest weights are added. This angle may be varied according to the subjective estimate of the seat cushion stiffness or based on data provided by the		3.5.4.3.13 於 HPM 安裝臀部及胸部配重前，車輛椅背位置應調整至軀幹角度約為 21 度之位置。椅背角度可能因座墊硬度之主觀估計(Estimating)或車輛業者提供數據而有所差異。

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	manufacturer.		
	5.3.14 The HPM torso angle shall be measured by placing an inclinometer on the calibrated block (see Appendix II) located on the lower brace of the torso weight hanger.		3.5.4.3.14 將傾斜儀(Inclinometer)放置於軀幹配重下支架之校正墊塊 (Calibrated block) 上（如 3.5.11），測量 HPM 軀幹角度。
5.1.13 After estimating the vehicle seat back position, the right and left buttock weights shall be installed. The eight chest weights shall be installed by alternating left to right. Throughout the weight installation, maintain a light pressure to the T-bar preventing any longitudinal movement.	5.3.15 After estimating the vehicle seat back position, the right and left buttock weights shall be installed. The six chest weights (including the two larger weights) shall be installed by alternating left to right. The two larger HRMD chest weights shall be attached last, flat side down. Throughout the weight installation, maintain a light pressure to the T-bar preventing any longitudinal movement.	3.5.4.1.13 完成車輛椅背位置估計(Estimating)後，安裝左右臀部側配重。然後以左右交替方式安裝八個胸部配重。配重安裝過程中，應於膝部樞軸桿上(T-bar)持續施加輕微壓力，以防止 HPM 縱向移動。	3.5.4.3.15 完成車輛椅背位置估計(Estimating)後，安裝左右臀部側配重。然後以左右交替方式安裝六個胸部配重（包含兩個大型配重）。其中兩個大型 HRMD 胸部配重最後安裝，並向兩側推壓。配重安裝過程中，應於膝部樞軸桿上(T-bar)持續施加輕微壓力，以防止 HPM 縱向移動。
5.1.14 Where no OEM information has been provided regarding seat back angle, the HPM torso angle shall be measured by placing an inclinometer on the calibrated back angle surface of the H-point machine.		3.5.4.1.14 若車輛業者未提供椅背角度資訊，則應將傾斜儀放置於 H 點人體模型經校準之靠背角度表面上，量測 HPM 之軀幹角度。	
5.1.15 Tilting the back pan forward to a vertical position, the assembly shall be	5.3.16 Tilting the back pan forward to a vertical position, the assembly shall be	3.5.4.1.15 將背板向前傾斜至垂直位置，以垂直左右兩側 5 度搖晃	3.5.4.3.16 將背板向前傾斜至垂直位置，以垂直左右兩側 5 度搖晃

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rocked from side to side over a 10° arc, 5° in each direction. Where seat side bolsters prevent movement of up to 5°, the assembly should be rocked as far as permissible. This rocking shall be repeated twice, making a total of three complete cycles. Care should be taken to maintain support of the T-bar during the rocking action, and to ensure that no inadvertent exterior loads are applied. Ensure that the movements of the HPM feet not restricted during this step. If the feet change position, they should be allowed to remain in that attitude for the time being.	rocked from side to side over a 10° arc, 5° in each direction. Where seat side bolsters prevent movement of up to 5°, the assembly should be rocked as far as permissible. This rocking shall be repeated twice, making a total of three complete cycles. Care should be taken to maintain support of the T-bar during the rocking action, and to ensure that no inadvertent exterior loads are applied. Ensure that the movements of the HPM feet not restricted during this step. If the feet change position, they should be allowed to remain in that attitude for the time being.	HPM 總成。若因座椅側邊支撐而無法搖動至 5 度，則應在允許範圍內盡可能搖晃總成。重複搖晃兩次，總共三個完整循環。搖晃總成時，應注意維持膝部樞軸桿之支撐，並確保未施加額外之外部負載。執行上述操作時，不可將雙腳固定，允許雙腳部移動而無需調整。	HPM 總成。若因座椅側邊支撐而無法搖動至 5 度，則應在允許範圍內盡可能搖晃總成。重複搖晃兩次，總共三個完整循環。搖晃總成時，應注意維持膝部樞軸桿之支撐，並確保未施加額外之外部負載。執行上述操作時，不可將雙腳固定，允許雙腳部移動而無需調整。
5.1.16 Holding the T-bar to prevent the HPM from sliding forward on the seat cushion, the back pan shall be returned to the vehicle seat back, and the HPM shall be levelled.	5.3.17 Holding the T-bar to prevent the HPM from sliding forward on the seat cushion, the back pan shall be returned to the vehicle seat back, and the HPM shall be levelled.	3.5.4.1.16 握住膝部樞軸桿，以防止 HPM 於座墊上向前滑動，並將背板靠回椅背，且 HPM 應呈水平狀態。	3.5.4.3.17 握住膝部樞軸桿，以防止 HPM 於座墊上向前滑動，並將背板靠回椅背，且 HPM 應呈水平狀態。
5.1.17 To ensure a stable torso position, apply and release a horizontal rearward load, not to exceed 10N, to the back pan moulding at a height approximately at the centre of the torso weights.Care shall be	5.3.18 To ensure a stable torso position, apply and release a horizontal rearward load, not to exceed 10N, to the back pan moulding at a height approximately at the centre of the torso weights.Care shall be	3.5.4.1.17 為確保軀幹位置之穩定性，於背板之軀幹配重中心高度附近施加一個水平向後負載，其力量不超過 10N。應小心操作，以確保無向下或橫向之外部負載	3.5.4.3.18 為確保軀幹位置之穩定性，於背板之軀幹配重中心高度附近施加一個水平向後負載，其力量不超過 10N。應小心操作，以確保無向下或橫向之外部負載

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exercised to ensure that no exterior downward or lateral loads are applied to the HPM.	exercised to ensure that no exterior downward or lateral loads are applied to the HPM.	施加於 HPM。	施加於 HPM。
5.1.18 Each foot shall be alternately lifted off the floor via the instep until no additional forward foot movement is available.	5.3.19 Each foot shall be alternately lifted off the floor via the instep until no additional forward foot movement is available.	3.5.4.1.18 將左右腳交替抬離地面，直到足部不再向前移動。	3.5.4.3.19 將左右腳交替抬離地面，直到足部不再向前移動。
5.1.19 The 45 degree plane of the toe board should be moved toward the feet such that the tip of the toe lies between the 230mm and 270mm lines taking care not to disturb the position of the HPM. To facilitate easier setting of BioRID, the toe board should be moved such that the toes of the HPM feet are positioned nearer to the 230mm line.	5.3.20 The 45 degree plane of the toe board should be moved toward the feet such that the tip of the toe lies between the 230mm and 270mm lines taking care not to disturb the position of the HPM. To facilitate easier setting of BioRID, the toe board should be moved such that the toes of the HPM feet are positioned nearer to the 230mm line.	3.5.4.1.19 將 45 度之踏腳板平面朝雙腳移動，使 HPM 腳趾位於在 230mm 至 270mm 兩線之間，小心避免干擾 HPM 位置。為便於設置 BioRID，應移動踏腳板，使 HPM 之腳趾位置更接近 230mm 線。	3.5.4.3.20 將 45 度之踏腳板平面朝雙腳移動，使 HPM 腳趾位於在 230mm 至 270mm 兩線之間，小心避免干擾 HPM 位置。為便於設置 BioRID，應移動踏腳板，使 HPM 之腳趾位置更接近 230mm 線。
5.1.20 When each foot is in its final position, the heel shall be in contact with the floor, and the sole of the foot shall be in contact with the 45 degree plane of the toe pan between the 230mm and 270mm lines.	5.3.21 When each foot is in its final position, the heel shall be in contact with the floor, and the sole of the foot shall be in contact with the 45 degree plane of the toe pan between the 230mm and 270mm lines.	3.5.4.1.20 雙腳放置於最終位置時，其腳跟應接觸地板，腳趾應接觸 230mm 至 270mm 兩線間之 45 度腳踏底板。	3.5.4.3.21 雙腳放置於最終位置時，其腳跟應接觸地板，腳趾應接觸 230mm 至 270mm 兩線間之 45 度腳踏底板。
5.1.21 If the HPM is not level after the feet have been repositioned, a sufficient load shall be applied to the top of the seat pan	5.3.22 If the HPM is not level after the feet have been repositioned, a sufficient load shall be applied to the top of the seat pan	3.5.4.1.21 若 HPM 於雙腳重新放置後未呈水平狀態，則從座板上方施加足夠負載，以使其於車輛座	3.5.4.3.22 若 HPM 於雙腳重新放置後未呈水平狀態，則從座板上方施加足夠負載，以使其於車輛座

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to level it on the vehicle seat. This may be verified using the bubble gauge fitted to the manikin or alternatively by verifying with CMM that the H-point positions on both sides of the machine are within ± 2.5mm of each other. 5.1.22 Set the seat back angle to the manufacturers design position (±1°) for a 50th percentile male. If no design position is provided, set the seat to a torso angle of 25°±1°. Check that the actual torso angle is coincident (±1°) to the manufacturer's torso design specification. 5.1.23 If the actual torso angle is outside of this tolerance, remove the manikin and make the minimal adjustments to the lower seatback angle. 5.1.24 Reinstall the manikin from Section 5.1.3 onwards and check that it is coincident with the manufacturer's torso design specification (±1°). For example, if the torso design angle is 23.0° and the measured torso angle is 24.1°, adjust the angle until a measurement of 24.0° is	to level it on the vehicle seat. This may be verified using the bubble gauge fitted to the manikin or alternatively by verifying with CMM that the H-point positions on both sides of the machine are within ± 2.5mm of each other.	椅呈水平狀態。可使用安裝於人體模型之氣泡式水位計(Bubble gauge)進行確認，或者利用 CMM 確認 HPM 兩側 H 點位置皆於±2.5mm 範圍內。 3.5.4.1.22 將百分之五0成人男性之椅背角度設定為車輛業者設計位置(±1°)。若無提供設計位置，則將座椅之軀幹角度設定為 25°±1°。檢查軀幹實際角度與車輛業者之軀幹設計規格一致（±1°）。 3.5.4.1.23 若軀幹實際角度超出容許範圍，則將人體模型移除，並對座椅靠背之下部角度進行最小幅度調整。 3.5.4.1.24 由 3.5.4.1.3 起重新安裝人體模型，並檢查其與車輛業者之軀幹設計規範一致（±1°）。例如，若軀幹設計角度為 23.0°，而量測得之軀幹角度為 24.1°，則調整角度直到量測結果為 24.0°。此可藉由座椅骨架上可識別之硬點	椅呈水平狀態。可使用安裝於人體模型之氣泡式水位計(Bubble gauge)進行確認，或者利用 CMM 確認 HPM 兩側 H 點位置皆於±2.5mm 範圍內。

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achieved. This may be done with the use of identifiable hard points on the seat frame.		來完成。	
5.1.25 Where no design position is provided, set the lower seatback angle to read an actual torso angle of 25º±1º. Record the final torso angle value.		3.5.4.1.25 若無提供設計位置，則將椅背下部角度設定為軀幹實際角度 25°±1°。記錄最終之軀幹角度值。	
5.1.26 For torso design angles below 20°, testing shall be carried out at 20°. For torso design angles above 30°, testing shall be carried out at 30°.		3.5.4.1.26 若軀幹設計角度低於 20°，則試驗應以 20°進行；若軀幹設計角度大於 30°，則應以 30°執行測試。	
5.1.27 For seats with indexed recliner adjustments, use the closest locking position to the target torso design angle between 20°-30°. This may require measurements in two different inclinations.		3.5.4.1.27 對於具有分段角度鎖定調整之座椅，應選擇最接近 20°至 30°目標軀幹設計角度之鎖定位置。此可能需要針對兩個不同傾斜角度分別進行量測。	
	5.4 HRMD Installation of the HRMD 5.4.1 The backset and height probes shall be installed and pushed flush against the HRMD. 5.4.2 The HRMD levelling knob shall be confirmed as finger tight and the plungers which engage at the HPM to HRMD interface shall be fully loosened.		3.5.4.4 HRMD 安裝 3.5.4.4.1 安裝頭枕間隙與高度探測器並推入 HRMD。 3.5.4.4.2 HRMD 之水平旋鈕應以手鎖緊，HPM 與 HRMD 連接處之柱塞(Plunger)應完全鬆開。

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	5.4.3 The HRMD shall then be lowered into position on the HPM torso weight hangers and on the top edge of the channel between the hangers. During the fitment, ensure that the HRMD fits easily into place without inducing forces which might disturb the manikin position. Make note of any longitudinal movement of the manikin, and ensure that this results in consistent H-point position in the subsequent repeat drops conducted in section 0.		3.5.4.4.3 將 HRMD 由上往下裝進 HPM 軀幹配重支架上及支架間通道頂端邊緣處。安裝時，確保 HRMD 易於安裝到位，不可引發任何外力干擾人體模型位置。記錄人體模型任何縱向移動，確保安裝結果與後續 3.5.5.5 重複安裝量測得之 H 點位置相等。
	5.4.4 The HRMD shall be levelled by loosening the levelling knob at the rear of the device and repositioning the head using the HRMD bubble level; the levelling knob shall then be retightened by hand.		3.5.4.4.4 調鬆 HRMD 後方水平旋扭，將其調整至水平狀態，並使用 HRMD 氣泡式水位計重新調整頭部，然後再以手鎖緊水平旋鈕。
	5.4.5 Measure the torso angle on the calibrated block attached to the weight hanger bar.		3.5.4.4.5 測量配重支架校正墊塊上之軀幹角度。
	5.4.6 If the measured angle is not 25°±1°, the HRMD and chest and buttocks weights shall be removed, the seat back readjusted, and the steps to position the		3.5.4.4.6 若測得角度非 25±1 度，則移除 HRMD 及胸部與臀部配重，重新調整椅背，重覆 HPM 設置步驟，從 3.5.4.3.10 開始，將背

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	HPM shall be repeated, beginning with tilting the back pan forward and pushing the HPM rearward as in 5.3.10.		板向前傾斜，HPM 向後推等。
	5.4.7 If more than 3 installations of the HPM and HRMD are required to ascertain a seatback angle that supports a torso angle of 25°±1°, then the seat should be allowed to recover for 15 minutes with nothing in it between each third and fourth installation. It is recommended to aim to set the SAE manikin as close as possible to the nominal target value for torso angle.		3.5.4.4.7 若 HPM 與 HRMD 之安裝須超過三次，才能確立支撐 25±1 度軀幹角度之椅背角度，則於第三與第四次安裝之間，座椅應空載靜置 15 分鐘。建議設置 SAE 人體模型時，應盡可能接近軀幹角度之目標值。
	5.4.8 Some indexed seatback adjustments may have more than 2° between adjustments with none giving a torso angle between 25°±1°. In such cases, adjust the seatback to the most reclined position that supports a torso angle less than 24°.		3.5.4.4.8 部分刻度式椅背調節器之分段調整幅度可能大於 2 度，因而無法提供 25±1 度範圍內之軀幹角度。在此情況下，應將椅背調整至支撐軀幹角度小於 24 度之最傾斜位置(Most reclined position)。
	5.4.9 The torso angle shall be recorded when it falls within the allowed range.		3.5.4.4.9 軀幹角度落於允許範圍內時應予以記錄。
5.2 **Record the location of the HPM H-Point Markers** 5.2.1 Record the H-point positions on both	5.5 **Record the location of the HPM H-Point Markers.** 5.5.1 Record the H-point positions on both	3.5.4.2 記錄 HPM 之 H 點標記位置 3.5.4.2.1 使用 CMM 記錄 HPM 兩側 H 點位置；或以座椅或台車為	3.5.4.5 記錄 HPM 之 H 點標記位置 3.5.4.5.1 使用 CMM 記錄 HPM 兩側 H 點位置；或以座椅或台車為

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sides of the HPM using a CMM or other means to record the location of both H-points relative to the seat or sled.	sides of the HPM using a CMM or other means to record the location of both H-points relative to the seat or sled.	相對基準，使用其他工具記錄兩側 H 點位置。	相對基準，使用其他工具記錄兩側 H 點位置。
5.2.2 The H-point position on both sides of the machine shall be within ± 2.5mm of each other in X and Z. If this is not the case, the installation procedure from 5.1.6 shall be repeated.	5.5.2 The H-point position on both sides of the machine shall be within ± 2.5mm of each other in X and Z. If this is not the case, the installation procedure from 5.3.6 shall be repeated.	3.5.4.2.2 人體模型兩側 H 點位置之 X 及 Z 軸座標應介於±2.5mm 範圍內。若非如此，則應從 3.5.4.1.6 開始重新安裝。	3.5.4.5.2 人體模型兩側 H 點位置之 X 及 Z 軸座標應介於±2.5mm 範圍內。若非如此，則應從 3.5.4.3.6 開始重新安裝。
5.2.3 Check that the measured H-point corresponds to the R50-point specified by the Vehicle manufacturer (±10mm). Where no R50-point specification has been provided, record the position.		3.5.4.2.3 確認量測得之 H 點與車輛業者指定之 R50 點一致(容許誤差±10mm)。若無提供 R50 點之規範，則記錄該量測位置。	
5.3 Repeat measurements		3.5.4.3 重複測量	
5.3.1 Section 5.3 is only applicable if no design position for the seat back or R50-point has been provided by the manufacturer, or if the checks described in sections 5.1.22 or 5.2.3 result in values outside of the specified tolerances.		3.5.4.3.1 僅當車輛業者未提供座椅靠背或 R50 點之設計位置，或 3.5.4.1.22 或 3.5.4.2.3 之檢查結果超出規定之容許誤差，才適用 3.5.4.3 規定。	
5.3.2 Remove the H-Point Machine and repeat Sections 5.1 to 5.2.3 two further times and record ALL measurements taken for each installation. For the repeat		3.5.4.3.2 移除 H 點人體模型，並重新執行 3.5.4.1 至 3.5.4.2.3 之程序兩次，並記錄每次安裝之所有測量值。重複安裝過程中，不應調	

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installations, the seat back angle should not be adjusted. However, where a change in seat back angle is required to obtain the required torso angle, the installation procedure shall be repeated until three consecutive installations have been performed which require no seat back angle adjustment.		整椅背角度。然而，若為獲得規定之軀幹角度而必須改變座椅靠背角度，則應重複安裝程序，直到連續三次安裝皆無須再調整座椅靠背角度為止。	
5.3.3 For each individual seat, ensure that the H-point X and H-point Z are within a box of 5mm between the three sets of measurements. Outlying measurements should be investigated and repeated to achieve consistent static measurement results as necessary.		3.5.4.3.3 對於每一張座椅，須確保三次量測結果中 HPM X 及 HPM Z 皆落在 5mm 方框之範圍內。若出現偏離量測值，應調查並必要時重複操作，以獲得一致之靜態量測結果。	
5.3.4 Once each individual seat has been measured three times, calculate the average H-Point position and average actual torso angle. These should be within the tolerances specified in sections 5.1.22 for the actual torso angle and 5.2.3 for the H-Point. If the H-point is still not within tolerance, then the average measured H-point position shall be used.		3.5.4.3.4 每個座椅完成三次量測後，計算其平均 H 點位置及平均軀幹實際角度。相關值應符合 3.5.4.1.22 軀幹實際角度及 3.5.4.2.3 H 點規定之容許範圍內。若 H 點仍然不在容許範圍內，則應採用量測得之平均 H 點位置。	

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6 HEAD RESTRAINT POSITIONS	**6 HEAD RESTRAINT POSITIONS** **6.1 Head Restraint Measurement Position Definitions** 6.1.1 Down is defined as the lowest achievable position of an adjustable head restraint regardless of other adjustments (e.g. tilt) and without using tools. The lowest position should be assessed from the point of view of a seated occupant, and without using a third hand. 6.1.2 Up is defined as the highest adjusted détente position of an adjustable head restraint (taking into account locking détente positions, as defined in Section 2.1.6, only). 6.1.3 Back is defined as the most rearward adjusted position of an adjustable head restraint, or if this is difficult to ascertain, “back” should be taken as the position which results in the greatest “HRMD backset” when set at the test height. 6.1.4 Forward is defined as the most forward locking adjusted position of an adjustable head restraint, or if this is	3.5.5 頭枕位置	3.5.5 頭枕位置 3.5.5.1 頭枕量測位置定義 3.5.5.1.1 向下(Down)：定義為無論其他調整（例如傾斜度）且在不使用工具之情況下，可調整式頭枕可達到之最低位置。最低位置應從該座位乘員之角度評估，且無需他人協助。 3.5.5.1.2 向上(Up)：定義為可調整式頭枕可調升之最高靜止位置(Détente position)（如 3.5.1.1.6 定義之鎖定靜止位置）。 3.5.5.1.3 向後(Back)：定義為可調整式頭枕最後端之調整位置；若難以確定，則「向後」應視為頭枕設定於試驗高度時，可產生最大 HRMD 頭枕間隙之位置。 3.5.5.1.4 向前(Forward)：定義為可調整式頭枕最前端之調整位置；若難以確定，則「向前」應視為

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	difficult to ascertain, "forward" should be taken as the position which results in the least "HRMD backset" when set at the test height.		頭枕設定於試驗高度時，可產生最小 HRMD 頭枕間隙之位置。
6.1 Head Restraint Test Position The same head restraint position should be used for both tests. If any variability exists in the locking mechanism, such as different levels of friction that affect that head restraint position then the Euro NCAP Secretariat should be informed immediately. The decision of the position to be used in the tests shall be made by the Secretariat. Where there is damage to a seat which affects the test position, details should be noted by the test laboratory and provided in the test report, that seat should not be used for test.	**6.2 Head Restraint Test Positions** The same head restraint position should be used for all three tests. If any variability exists in the locking mechanism, such as different levels of friction that affect that head restraint position then the Euro NCAP Secretariat should be informed immediately. The decision of the position to be used in the tests shall be made by the Secretariat. Where there is damage to a seat which affects the test position, details should be noted by the test laboratory and provided in the test report, that seat should not be used for test.	3.5.5.1 頭枕試驗位置 兩項試驗皆應使用相同之頭枕位置。若鎖定機構存在任何變異，例如不同程度的摩擦力影響頭枕位置，則應立即通知 TNCAP 執行機構，由執行機構決定試驗是否使用該位置。若因該座椅損壞影響試驗位置，則檢測機構應記錄詳細資料，並於試驗報告中說明座椅不適用於試驗之詳細原因。	3.5.5.2 頭枕試驗位置 三項試驗皆應使用相同之頭枕位置。若鎖定機構存在任何變異，例如不同程度的摩擦力影響頭枕位置，則應立即通知 TNCAP 執行機構，由執行機構決定試驗是否使用該位置。若因該座椅損壞影響試驗位置，則檢測機構應記錄詳細資料，並於試驗報告中說明座椅不適用於試驗之詳細原因。
6.1.1 Head Restraint Test Position. The test position for the head restraint depends on whether it is fixed or adjustable and, if adjustable, whether the adjustments lock. Automatically adjusting head restraints are tested as if they are fixed restraints and the seat adjustments are set according	6.2.1 Head Restraint Test Position. The test position for the head restraint depends on whether it is fixed or adjustable and, if adjustable, whether the adjustments lock. Automatically adjusting head restraints are tested as if they are fixed restraints and the seat adjustments are set according	3.5.5.1.1 頭枕試驗位置 頭枕試驗位置取決於其為固定式或可調整式，若為可調整式，其位置是否能鎖定。自動調整式頭枕則視同以固定式頭枕方式進行試驗，並依照 3.5.3.6.1 調整座椅設置。	3.5.5.2.1 頭枕試驗位置 頭枕試驗位置取決於其為固定式或可調整式，若為可調整式，其位置是否能鎖定。自動調整式頭枕則視同以固定式頭枕方式進行試驗，並依照 3.5.3.6.1 調整座椅設置。

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to Section 4.6.1. 6.1.2 Non-Locking Adjustable Head Restraint. The head restraint is first adjusted to its lowest vertical adjustment position as defined in Section 2.4.1. If a non-locking tilt adjustment is available, this should then be set to the most rearward horizontal adjustment position possible once the head restraint has been set to its lowest position. 6.1.3 Locking Adjustable Head Restraints, Midrange Positions. The head restraint is adjusted to midrange of its vertical and/or horizontal adjustment positions. Only locking adjustments are set to the midrange positions. For example, a restraint with locking height adjustment and non-locking horizontal adjustment would be set to its midrange vertical position and most rearward horizontal position. The head restraint should first be set for the midrange vertical position. Midrange tilt position should then be set where this adjustment has locking notches.	to Section 4.6.1. 6.2.2 Non-Locking Adjustable Head Restraint. The head restraint is first adjusted to its lowest vertical adjustment position as defined in Section 6.1.1. If a non-locking tilt adjustment is available, this should then be set to the most rearward horizontal adjustment position possible once the head restraint has been set to its lowest position. 6.2.3 Locking Adjustable Head Restraints, Midrange Positions. The head restraint is adjusted to midrange of its vertical and/or horizontal adjustment positions. Only locking adjustments are set to the midrange positions. For example, a restraint with locking height adjustment and non-locking horizontal adjustment would be set to its midrange vertical position and most rearward horizontal position. The head restraint should first be set for the midrange vertical position. Midrange tilt position should then be set where this adjustment has locking notches.	3.5.5.1.2 非鎖定調整式頭枕(Non-Locking Adjustable Head Restraint) 頭枕首先調整至 3.5.1.4.1 定義之最低垂直調整位置。若傾斜度調整無法鎖定，則當頭枕被設置於其最低位置時，應盡可能將傾斜度設置於最後端之水平調整位置。 3.5.5.1.3 鎖定調整式頭枕之中間位置 將頭枕調整至垂直及/或水平調整之中間位置。只有具鎖定機構之調節器須調整至中間位置，例如頭枕高度可鎖定調整，但水平調整為非鎖定式(Non-locking)，則頭枕於其設置中間垂直位置及最後端水平位置。應先設置頭枕垂直之中間位置，再設置傾斜之中間位置（若有鎖定段位(Locking notche)）。	3.5.5.2.2 非鎖定調整式頭枕(Non-Locking Adjustable Head Restraint) 頭枕首先調整至 3.5.5.1.1 定義之最低垂直調整位置。若傾斜度調整無法鎖定，則當頭枕被設置於其最低位置時，應盡可能將傾斜度設置於最後端之水平調整位置。 3.5.5.2.3 鎖定調整式頭枕之中間位置 將頭枕調整至垂直及/或水平調整之中間位置。只有具鎖定機構之調節器須調整至中間位置，例如頭枕高度可鎖定調整，但水平調整為非鎖定式(Non-locking)，則頭枕於其設置中間垂直位置及最後端水平位置。應先設置頭枕垂直之中間位置，再設置傾斜之中間位置（若有鎖定段位(Locking notche)）。

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6.1.3.1 Setting of Mid Range Height	6.2.3.1 Setting of Mid Range Height	3.5.5.1.3.1 中間高度設定	3.5.5.2.3.1 中間高度設定
6.1.3.1.1 Lowest Position. Some head restraints can be lowered below the lowest locking position and in these cases the bottom of the restraint may contact the top of the seatback. The lowest vertical adjustment position is defined in Section 2.4.1.	6.2.3.1.1 Lowest Position. Some head restraints can be lowered below the lowest locking position and in these cases the bottom of the restraint may contact the top of the seatback. The lowest vertical adjustment position is defined in Section 6.1.1.	3.5.5.1.3.1.1 最低位置 部分頭枕可調整至比最低鎖定位置更低之位置，在此情況下，頭枕底部可接觸椅背頂端。最低垂直調整位置參見 3.5.1.4.1 定義。	3.5.5.2.3.1.1 最低位置 部分頭枕可調整至比最低鎖定位置更低之位置，在此情況下，頭枕底部可接觸椅背頂端。最低垂直調整位置參見 3.5.5.1.1 定義。
6.1.3.1.2 Highest Position. The highest position is considered to be the highest locking position. If a restraint has a non-locking position above the highest locking position, then the highest locking position is still considered as the highest position, see Figure 7.	6.2.3.1.2 Highest Position. The highest position is considered to be the highest locking position. If a restraint has a non-locking position above the highest locking position, then the highest locking position is still considered as the highest position, see Figure 7.	3.5.5.1.3.1.2 最高位置 最高鎖定位置視為最高位置。若頭枕具有高於最高鎖定位置之非鎖定位置，則最高鎖定位置仍視為最高位置，如圖 7 所示。	3.5.5.2.3.1.2 最高位置 最高鎖定位置視為最高位置。若頭枕具有高於最高鎖定位置之非鎖定位置，則最高鎖定位置仍視為最高位置，如圖 7 所示。
6.1.3.1.3 When measuring the head restraint travel for the midrange positions, the seat must be adjusted according to Section 4.6, the seatback must be adjusted according to Section 5and the HPM should be installed in the seat according to Section 5.	6.2.3.1.3 When measuring the head restraint travel for the midrange positions, the seat must be adjusted according to Section 4.6, the seatback must be adjusted according to Section 5and the HPM manikin should be installed in the seat according to Section 5.	3.5.5.1.3.1.3 量測頭枕移動至中間位置時，座椅須依照 3.5.3.6 進行調整，椅背須依照 3.5.4 進行調整，且 HPM 應依照 3.5.4 規定安裝於座椅。	3.5.5.2.3.1.3 量測頭枕移動至中間位置時，座椅須依照 3.5.3.6 進行調整，椅背須依照 3.5.4 進行調整，且 HPM 人體模型應依照 3.5.4 規定安裝於座椅。
6.1.3.1.4 Mark a repeatable reference point on the top of the head restraint. This point	6.2.3.1.4 Mark a repeatable reference point on the top of the head restraint. This point	3.5.5.1.3.1.4 於頭枕頂端標記一個可重複使用之參考點，此點通常	3.5.5.2.3.1.4 於頭枕頂端標記一個可重複使用之參考點，此點通常

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is typically the highest point on the centreline of the head restraint. Using a coordinate measurement device, this point should first be measured in the lowest position as defined by in Section 2.4.1, and then in the highest locking position without altering tilt or any other seat settings.	is typically the highest point on the centreline of the head restraint. Using a coordinate measurement device, this point should first be measured in the lowest position as defined by in Section 6.1.1, and then in the highest locking position without altering tilt or any other seat settings.	為頭枕中心線上之最高點。使用座標量測裝置，首先參考 3.5.1.4.1 所定義之最低位置測量此點，接著不改變傾斜度或其他座椅設定，再於最高鎖定位置進行量測。	為頭枕中心線上之最高點。使用座標量測裝置，首先參考 3.5.5.1.1 所定義之最低位置測量此點，接著不改變傾斜度或其他座椅設定，再於最高鎖定位置進行量測。
6.1.3.1.5 Midrange height position is determined by calculating the geometric mid point between the lowest position, and highest locking vertical adjustments, considering only the vertical component of measurement, see Figure 8. The test position will then be selected based on the following conditions:	6.2.3.1.5 Midrange height position is determined by calculating the geometric mid point between the lowest position, and highest locking vertical adjustments, considering only the vertical component of measurement, see Figure 8. The test position will then be selected based on the following conditions:	3.5.5.1.3.1.5 僅考慮量測值之垂直分量，計算最低位置及最高鎖定垂直調整位置之間的幾何中點(Geometric mid point)，藉此判定中間高度位置，如圖 8 所示。試驗位置將依下列條件選擇：	3.5.5.2.3.1.5 僅考慮量測值之垂直分量，計算最低位置及最高鎖定垂直調整位置之間的幾何中點(Geometric mid point)，藉此判定中間高度位置，如圖 8 所示。試驗位置將依下列條件選擇：
6.1.3.1.5.1 Place the head restraint at the geometric mid point if a locking position exists there, see Figure 8, Example A.	6.2.3.1.5.1 Place the head restraint at the geometric mid point if a locking position exists there, see Figure 8a., Example A.	3.5.5.1.3.1.5.1 若幾何中點正好位於鎖定位置上，則將頭枕固定於此處，如圖 8 範例 A 所示。	3.5.5.2.3.1.5.1 若幾何中點正好位於鎖定位置上，則將頭枕固定於此處，如圖 8 範例 A 所示。
6.1.3.1.5.2 If there is no locking position at the geometric mid point, raise the head restraint by up to 10mm. If a locking position exists within this 10mm of travel, that position will be the test position, see Figure 8, Example B.	6.2.3.1.5.2 If there is no locking position at the geometric mid point, raise the head restraint by up to 10mm. If a locking position exists within this 10mm of travel, that position will be the test position, see Figure 8, Example B.	3.5.5.1.3.1.5.2 若幾何中點未位於鎖定位置上，則將頭枕上調 10mm；若上調 10mm 之範圍內有鎖定位置，則該鎖定位置將為試驗位置，如圖 8 範例 B 所示。	3.5.5.2.3.1.5.2 若幾何中點未位於鎖定位置上，則將頭枕上調 10mm；若上調 10mm 之範圍內有鎖定位置，則該鎖定位置將為試驗位置，如圖 8 範例 B 所示。

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6.1.3.1.5.3 If there is no locking position within 10mm above the geometric mid point, lower the head restraint to the next lowest locking position, see Figure 8, Example C.	6.2.3.1.5.3 If there is no locking position within 10mm above the geometric mid point, lower the head restraint to the next lowest locking position, see Figure 8, Example C.	3.5.5.1.3.1.5.3 若幾何中點上方 10mm 內無任何鎖定位置，則將頭枕調整至下一個較低鎖定位置，如圖 8 範例 C 所示。	3.5.5.2.3.1.5.3 若幾何中點上方 10mm 內無任何鎖定位置，則將頭枕調整至下一個較低鎖定位置，如圖 8 範例 C 所示。
6.1.3.1.5.4 If there is no locking position before the lowest or stowed position is reached, then the head restraint should be positioned fully down.	6.2.3.1.5.4 If there is no locking position before the lowest or stowed position is reached, then the head restraint should be positioned fully down.	3.5.5.1.3.1.5.4 若到達最低或收合位置前無鎖定位置，則頭枕應完全放下(Fully down)。	3.5.5.2.3.1.5.4 若到達最低或收合位置前無鎖定位置，則頭枕應完全放下(Fully down)。
6.1.3.1.5.5 Once the vertical test position has been determined, ensure the head restraint is returned to rearmost tilt position.	6.2.3.1.5.5 Once the vertical test position has been determined, ensure the head restraint is returned to rearmost tilt position.	3.5.5.1.3.1.5.5 垂直試驗位置確認後，應將頭枕放回最後端之傾斜位置。	3.5.5.2.3.1.5.5 垂直試驗位置確認後，應將頭枕放回最後端之傾斜位置。
6.1.3.2 Setting of Mid Range Tilt (Locking Tilt Settings Only)	6.2.3.2 Setting of Mid Range Tilt (Locking Tilt Settings Only)	3.5.5.1.3.2 中間傾斜度設定(僅限鎖定傾斜(Locking tilt)設定)	3.5.5.2.3.2 中間傾斜度設定(僅限鎖定傾斜(Locking tilt)設定)
6.1.3.2.1 Following the setting of midrange height, the procedure should be repeated for locking horizontal adjustments. For non-locking tilt adjustments, the head restraint should be tilted fully rearward.	6.2.3.2.1 Following the setting of midrange height, the procedure should be repeated for locking horizontal adjustments. For non-locking tilt adjustments, the head restraint should be tilted fully rearward.	3.5.5.1.3.2.1 設置中間高度位置後，應重複相同程序設置鎖定式水平調節器。若頭枕之傾斜度調整為非鎖定式，則應完全後傾(Fully rearward)。	3.5.5.2.3.2.1 設置中間高度位置後，應重複相同程序設置鎖定式水平調節器。若頭枕之傾斜度調整為非鎖定式，則應完全後傾(Fully rearward)。
	6.2.3.2.2 Mid tilt position may be influenced by the presence of the HRMD head, consequently the setting of mid range tilt should be undertaken following successful installation of the H-point		3.5.5.2.3.2.2 中間傾斜位置可能會受 HRMD 頭部影響，因此，應於 H 點人體模型及 HRMD 成功安裝後，執行中間傾斜度設置，且應於設備仍裝設於座椅時，完成

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	machine and HRMD and should be completed while the equipment is still installed in the seat.		此設置。
	6.2.3.2.3 For HRMDs equipped with probes having 5mm increments only, a more accurate measurement technique is required to establish the mid position to within 1mm. Using a steel rule, measure the probe extension from the front of the headform at forward and rearward tilt settings. From this data a midpoint target may be derived.		3.5.5.2.3.2.3 若 HRMD 配備增量單位(Increments)僅 5mm 之探測器，則須使用更準確之量測技術將中間位置之精度設置於 1mm 以內。使用鋼尺測量頭部探測器延伸至頭枕前傾及後傾時之距離。由此量測數據可計算中點目標值。
6.1.3.2.2 Most Rearward Tilt shall be that which results in greatest backset measurement. In the situation where the head restraint cannot be placed at most rearward tilt. For example due to a return spring, the most "most rearward tilt" shall be the most rearward position in which the tilt can be locked.	6.2.3.2.4 Most Rearward Tilt shall be made using HRMD probe backset. The most rearward tilt position shall be that which results in greatest backset measurement. In the situation where the head restraint cannot be placed at most rearward tilt. For example due to a return spring, the most "most rearward tilt" shall be the most rearward position in which the tilt can be locked.	3.5.5.1.3.2.2 最大後傾斜度應為可得到最大頭枕間隙量測值之位置。若頭枕無法固定於最大後傾斜度，例如由於回動彈簧(Return spring)之緣故，最大後傾斜度應為可鎖定傾斜度之最後端位置。	3.5.5.2.3.2.4 最大後傾斜度應使用 HRMD 頭枕間隙探測器進行設置。最大後傾位置為可得到最大頭枕間隙量測值之位置。若頭枕無法固定於最大後傾斜度，例如由於回動彈簧(Return spring)之緣故，最大後傾斜度應為可鎖定傾斜度之最後端位置。
6.1.3.2.3 Most Forward Tilt shall be determined by finding the most forward locking tilt position. Non-locking	6.2.3.2.5 Most Forward Tilt shall be determined by finding the most forward locking tilt position. Non-locking	3.5.5.1.3.2.3 最大前傾斜度應以最前端可鎖定之傾斜位置進行判定。應忽略最前端鎖定位置之前	3.5.5.2.3.2.5 最大前傾斜度應以最前端可鎖定之傾斜位置進行判定。應忽略最前端鎖定位置之前

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positions located further forward than the most forward lock are disregarded. If no locking position exists, the head restraint should be tilted rearwards until a locking position is reached. This position shall then be considered "most forward tilt".	positions located further forward than the most forward lock are disregarded. During determination of "most forward tilt" position, the head restraint may come into contact with the HRMD. If contact is achieved, the head restraint should not be tilted further forward, and should not be moved such that the HRMD position is affected. If a lock exists at the tilt position where the head restraint contacts the HRMD, this shall be considered the "most forward tilt" position. If no locking position exists in this location, the head restraint should be tilted rearwards until a locking position is reached. This position shall then be considered "most forward tilt".	的非鎖定位置。若無鎖定位置，則應往後傾斜頭枕直到達到鎖定段位，此即為「最大前傾斜度」。	的非鎖定位置。判定「最大前傾斜度」位置過程中，頭枕可能會接觸 HRMD；若兩者發生接觸，則頭枕不應再向前傾、移動，以免影響 HRMD 位置。若頭枕接觸 HRMD 之傾斜位置具有鎖定段位，則此處應視為「最大前傾斜度」位置；若無鎖定位置，則應往後傾斜頭枕直到達到鎖定段位，此即為「最大前傾斜度」。
6.1.3.2.4 Midrange Tilt Position is determined by calculating the geometric mid point between the most rearward tilt and most forward locking horizontal adjustments.	6.2.3.2.6 Midrange Tilt Position is determined by calculating the geometric mid point between the most rearward tilt and most forward locking horizontal adjustments, considering only the HRMD probe backsets measured. Midrange tilt setting shall be undertaken using the same rationale as used in 6.2.3.1. A	3.5.5.1.3.2.4 中間傾斜位置僅以計算最大後傾斜度與最大前傾斜度之鎖定水平調整位置的幾何中點來判定。	3.5.5.2.3.2.6 中間傾斜位置僅考量 HRMD 探測器測量之頭枕間隙，以計算最大後傾斜度與最大前傾斜度之鎖定水平調整位置的幾何中點來判定。使用與 3.5.5.2.3.1 相同之原理設置中間傾斜度。從幾何中點前方 10mm 之範圍內尋找鎖定位置。若於範圍內找到鎖定

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A locking position shall be sought within a window 10mm forwards from the geometric mid point. If a lock is found within this window, that position shall be considered the test position. In the absence of a lock within this range the head restraint should be moved rearwards until the next locking position is reached. If no locking positions are reached before the fully rearward tilt position, then fully rearward tilt shall be the test position.	locking position shall be sought within a window 10mm forwards from the geometric mid point. If a lock is found within this window, that position shall be considered the test position. In the absence of a lock within this range the head restraint should be moved rearwards until the next locking position is reached. If no locking positions are reached before the fully rearward tilt position, then fully rearward tilt shall be the test position.	從幾何中點前方 10mm 之範圍內尋找鎖定位置。若於範圍內找到鎖定段位，則此位置應視為試驗位置；若無，則將頭枕往後移直到下個鎖定位置。若在到達完全後傾位置前，無任何鎖定位置，則完全後傾即為試驗位置。	段位，則此位置應視為試驗位置；若無，則將頭枕往後移直到下個鎖定位置。若在到達完全後傾位置前，無任何鎖定位置，則完全後傾即為試驗位置。
6.2 Measure and Record the Head Restraint Geometry 6.2.1 Before measuring the head restraint geometry ensure that: • The seat is set according to Section 4.6. • The H-point machine is correctly installed in the seat according to Section 5. • The head restraint is set in the correct test position according to Section 6.1.	6.3 Measure and Record the Head Restraint Geometry 6.3.1 Before measuring the head restraint geometry ensure that: • The seat is set according to Section 4.6. • The H-point machine and HRMD are correctly installed in the seat according to Section 5. • The head restraint is set in the correct test position according to Section 6.2.	3.5.5.2 測量及記錄頭枕幾何位置 3.5.5.2.1 測量頭枕幾何前，請確保： (1) 座椅依照 3.5.3.6 進行設置。 (2) H 點人體模型依照 3.5.4 規定正確安裝於座椅。 (3) 頭枕依照 3.5.5.1 正確設置於試驗位置。	3.5.5.3 測量及記錄頭枕幾何位置 3.5.5.3.1 測量頭枕幾何前，請確保： (1) 座椅依照 3.5.3.6 進行設置。 (2) H 點人體模型及 HRMD 依照 3.5.4 規定正確安裝於座椅。 (3) 頭枕依照 3.5.5.2 正確設置於試驗位置。
6.2.2 When measuring backset and height, a light force (e.g. 1N) should be applied, if needed, to ensure that any trim covering	6.3.2 When measuring backset and height, a light force (e.g. 1N) should be applied, if needed, to ensure that any trim covering	3.5.5.2.2 測量頭枕間隙及高度時，若有需要，可輕微施力(例如 1N)以確保任何裝飾用之包覆材料與	3.5.5.3.2 測量頭枕間隙及高度時，若有需要，可輕微施力(例如 1N)以確保任何裝飾用之包覆材料與

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material is in contact with the underlying foams, or that the separation of trim material has not provided artificially favourable measurements.	material is in contact with the underlying foams, or that the separation of trim material has not provided artificially favourable measurements.	下方泡棉材料接觸，或分離之內飾材料不會導致人為有利之量測數值。	下方泡棉材料接觸，或分離之內飾材料不會導致人為有利之量測數值。
6.2.3 All measurements shall be taken in the median longitudinal plane of the designated seating position.	6.3.3 Measure the HRMD backset to the nearest millimetre, with the backset probe in first contact with the head restraint. For the geometric assessment, the backset must be measured according to the HRMD backset probe scale, taking note of the method described in section 6.2.3.2.3 for probes with 5mm increments only. See Figure 9.	3.5.5.2.3 所有量測應於指定座椅位置之中間縱向平面內進行。	3.5.5.3.3 頭枕間隙探測器向後移動直到與頭枕首次發生接觸，以此測量 HRMD 頭枕間隙，取至最接近的數值（mm）。進行幾何位置評等時，須使用 HRMD 頭枕間隙探測器之刻度測量頭枕間隙，請注意 3.5.5.2.3.2.3 中提及增量單位僅有 5mm 的探測器所適用之方法。如圖 9 所示。
6.2.4 Determination of contact point (CP) 6.2.4.1 Adjust the head restraint to the position determined in Section 6.1. 6.2.4.2 The CP is defined as the intersection of a horizontal line, on the height of the Z-coordinate of the back-of-head of the mid-sized male (detailed in Appendix IV), with the front surface of the head restraint as indicated in Figure 9.	6.3.4 The height from the top of the head restraint to the height probe should also be measured. 6.3.5 If the head restraint is too low to be contacted by the backset probe, record as 'no contact'. 6.3.6 All measurements noted during 6.3.3 and 6.3.4 shall be used for the Euro NCAP geometry points calculation, as defined in the Euro NCAP assessment protocol.	3.5.5.2.4 判定接觸點（CP） 3.5.5.2.4.1 將頭枕調整至 3.5.5.1 所決定之位置。 3.5.5.2.4.2 CP 定義爲一條水平線與頭枕前方表面之交點，該水平線高度為中型成年男性之頭部後方 Z 軸座標（詳見 3.5.14）高度，如圖 9 所示。	3.5.5.3.4 頭枕頂端到高度探測器之距離亦須測量。 3.5.5.3.5 若頭枕太低，無法與頭枕間隙探測器接觸，則記錄為「無接觸」。 3.5.5.3.6 如 TNCAP 評等規章說明，3.5.5.3.3 及 3.5.5.3.4 記錄之所有量測數據皆可用於計算 TNCAP 之幾何位置點(Geometry point)。
	6.4 Measure and Record Reference		3.5.5.4 測量及記錄 BioRID 人偶之

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	Geometry for BioRID Setup. The HRMD probe measurements used for the geometric assessment will be different than the geometry recorded for use during the BioRID setup. This is due to the curvature of the HRMD probes and is illustrated in Figure 10.Since the BioRID is set up based on reference geometry recorded using the HRMD, there is a need to measure an equivalent feature on both devices. The rear most point on the HRMD skull (i.e. the screw on the backset probe) is equivalent to the rearmost point on the centreline of the dummy's skullcap. This point can be found using a measuring tape that contours to the shape of the skullcap: the point is 95mm from the top of the skullcap along the mid sagittal plane of the skull.		幾何參考位置設置 用於幾何評等(Geometric assessment)的 HRMD 探測器量測值與用於 BioRID 人偶設置所記錄的幾何數據不同，其主因為 HRMD 探測器曲率差異之緣故，如圖 10 所示。由於 BioRID 人偶係根據 HRMD 記錄之幾何參考位置進行設置，因此得先測量兩個設備上相同之特徵點。HRMD 頭骨上最後端的點（即頭枕間隙探測器上的螺釘）相當於人偶頭蓋骨中心線上最後端的點。可利用與頭蓋骨輪廓找出相對應之位置點，該點位於從頭蓋骨頂端沿著頭骨正中矢狀切面之 95mm 處。
	6.4.1 Mark an identifiable point on the head restraint along its vertical centreline. A suggested point is defined by first contact point between backset probe and head restraint.		3.5.5.4.1 沿著頭枕垂直中心線於頭枕上標記出一個易辨認點(Identifiable point)。該建議點為頭枕間隙探測器與頭枕之首次接觸點。

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	6.4.2 Ensure that the backset probe is installed and pushed flush against the HRMD, i.e. stowed/retracted. 6.4.3 Locate the screw on the centre of the rear surface of the HRMD backset probe. 6.4.4 Measure and record the BioRID reference backset using CMM (as defined in Section 2.3.3). This is the horizontal distance between the rearmost point on the HRMD skull (i.e. the screw on the retracted backset probe) and the identifiable point on the head restraint +15mm, see Figure 10. 6.4.5 Ensure that the head restraint has been marked such that it can reliably be returned to the test position. Move the head restraint to the lowest position as defined in Section 6.1.1. Whilst maintaining that lowest position, move the head restraint to the most rearward tilt possible as defined by Section 6.1.3 and 6.2.3.2.4. Measure the HRMD backset and height to the nearest millimetre using the probes. 6.4.6 All measurements noted during 6.4.5		3.5.5.4.2 確保頭枕間隙探測器正確安裝且可齊平推入 HRMD（即收起/縮回）。 3.5.5.4.3 找出 HRMD 頭枕間隙探測器後方表面中央之螺釘。 3.5.5.4.4 使用 CMM 測量並記錄 BioRID 人偶之頭枕間隙參考值（如 3.5.1.3.3），此數值為 HRMD 頭骨上最後端的點（即收合頭枕間隙探測器上之螺釘）至頭枕的易辨認點之間的水平距離 +15mm，如圖 10 所示。 3.5.5.4.5 在頭枕做標記，以確保可確實地將其回復至試驗位置。將頭枕移至 3.5.5.1.1 定義之最低位置。維持頭枕位於最低位置，同時如 3.5.5.1.3 及 3.5.5.2.3.2.4 定義，盡可能將頭枕移至最大後傾斜度，使用探測器測量 HRMD 之頭枕間隙及高度，取至最接近數值（mm）。 3.5.5.4.6 如 TNCAP 評等規章說

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	shall be used for the Euro NCAP ease of adjustment assessment, as defined in the Euro NCAP Assessment protocol. 6.4.7 Using the marks made in Section 6.4.5, return the head restraint to the test position. 6.5 Repeat Measurements 6.5.1 Remove the manikin and HRMD and repeat Sections 5.3 to 6.4.6 two further times and record ALL measurements taken for each installation in both the test position (Section 7.3.3) and the down and back position (Section 7.4.5). For the repeat installations, the seat back angle should not be adjusted. However, where a change in seat back angle is required to obtain a torso angle of 25°±1°, the installation procedure shall be repeated until three consecutive installations have been performed which require no seat back angle adjustment. 6.5.2 For each individual seat, ensure that the H-point X, H-point Z and reference backset measurements are within ± 5mm between the three sets of measurements.		明，3.5.5.4.5 記錄之所有量測數據皆可用於 TNCAP 最嚴苛幾何評等。 3.5.5.4.7 利用 3.5.5.4.5 所做之標記，將頭枕回復至試驗位置。 3.5.5.5 重複量測 3.5.5.5.1 移除人體模型及 HRMD，重複 3.5.4.3 至 3.5.5.4.6 兩次，記錄每次安裝之試驗位置（3.5.5.3.3）及向下/向後位置（3.5.5.4.5）所有的量測數據。重複安裝時，椅背角度不應調整，然而，若須改變椅背角度以達到 25±1 度之軀幹角度，則應重新安裝程序，直到可完成連續安裝三次且無須調整椅背角度為止。 3.5.5.5.2 對於每個獨立座椅，其連續三次測量之 H 點 X 向、H 點 Z 向及頭枕間隙測量值應介於±5mm 範圍內。若測得數據有偏差

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	Outlying measurements should be investigated and repeated to achieve consistent static measurement results as necessary.		則應進行調查，應視需要重複測量，以取得一致之靜態量測結果。
	6.5.3 Once each individual seat has been measured three times, calculate the average H-point position recorded in Section 5.5 and average reference backset recorded in Section 0. These shall be the BioRID setup targets from the three measurements taken on each individual seat.		3.5.5.5.3 每個獨立座椅皆連續測量三次後，計算 3.5.4.5 記錄之 H 點平均位置與 3.5.5.4 記錄之頭枕間隙參考平均值。每個獨立座椅三次測量之平均數值即為 BioRID 人偶的設置目標。 (請參考末頁圖示)
6.2.4.3 Once established, the point CP is a seat reference point (x and z coordinates), see Figure 11.	(請參考末頁圖示)	3.5.5.2.4.3 一旦確定，CP 點即為座椅參考點（X 及 Z 坐標），如圖 11。	
6.2.4.4 Where CP cannot be determined because the horizontal line through the back-of-head of the mid-sized male is located above the head restraint, the head restraint must be raised to the next locking position to enable the determination of point CP.		3.5.5.2.4.4 若由於通過中型成年男性頭後部之水平線位於頭枕上方而無法確定 CP 點，則必須將頭枕升高至下一個鎖定位置，以判定 CP 點。	
6.2.4.5 In the instance where this will not produce a point of intersection, the CP will be designated at the horizontal top of		3.5.5.2.4.5 若仍無法產生交點，則 CP 點將設定於頭枕之水平頂端。頭枕水平頂端定義爲於指定座椅	

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the head restraint. The horizontal top of the head restraint being defined as the uppermost point on the head restraint, which is determined by lowering a horizontal line in the median longitudinal plane of the designated seating position until it touches the head restraint (see Figure 11). Where more points are located at the same height, the longitudinally forward most point of the horizontal top of the head restraint is designated as CP.		位置之中央縱向平面上，將一條水平線向下平移直至接觸頭枕之最頂端點(如圖 11)。若有多個點位於相同高度，則以頭枕水平頂端之縱向最前端點指定為 CP 點。	
6.2.4.6 Where CP cannot be determined because the horizontal line through the back-of-head of the mid-sized male is on the level of a gap within the head restraint, CP will be determined using a 165 mm diameter sphere with its centre at the same height level as the horizontal line through the back-of-head of a mid-sized male.		3.5.5.2.4.6 若由於通過中型成年男性頭後部之水平線位於頭枕空隙處而無法確定 CP 點，則將使用一個直徑 165mm 的球體確定 CP。該球體中心應與通過中等體型成年男性頭部後方之水平線高度一致。	
6.2.4.7 When the sphere is making first contact with the head restraint, CP is designated as the rearmost point of the sphere in the gap area, see Figure 12.		3.5.5.2.4.7 當球體與頭枕發生首次接觸時，CP 點定義為球體於空隙區域中最後端點，如圖 12。	

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6.2.4.8 If the measured backset to point CP is negative and the head restraint has an adjustable backset, set the backset to the lowest positive backset value which can be obtained with a locking position of the head restraint. This new head restraint position will be the new test position and will be used for both dynamic tests with the BioRID.		3.5.5.2.4.8 若量測得 CP 點之間隙爲負值，且該頭枕具有可調式間隙功能，則將間隙設定爲頭枕鎖定位置可獲得之最小正值。此新的頭枕位置將成爲新的試驗位置，並用於後續兩個 BioRID 動態試驗。	
6.2.4.9 CPx shall be measured in the head restraint test position and in the worst case position.		3.5.5.2.4.9 應分別於頭枕試驗位置及最嚴苛位置量測 CPx。	
6.2.5 Determination of intersection point IP		3.5.5.2.5 判定交點 IP	
6.2.5.1 Adjust the head restraint to the uppermost position. If the head restraint is adjustable for tilt or fore-and-aft, the tilt and fore-and-aft adjustment used for the determination of CP will be kept.		3.5.5.2.5.1 將頭枕調至最高位置。若頭枕具有可調整傾斜或前後功能，則應保持與判定 CP 點相同之傾斜及前後調節設定。	
6.2.5.2 IP is determined on the front surface of the head restraint as the intersection with a vertical line rearwards of CP at the "distance x" (detailed in Appendix IV), see Figure 13.		3.5.5.2.5.2 IP 定義為頭枕前表面與垂直線之交點，該垂直線位於 CP 點後方一段「距離 x」（詳見 3.5.14），如圖 13。	
6.2.5.3 Where IP would be located		3.5.5.2.5.3 若 IP 點位於頭枕水平頂	

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rearwards of the horizontal top of the head restraint, IP will be designated at the horizontal top of the head restraint, see Figure 11.		端之後方，則 IP 點將被指定於頭枕之水平頂端，如圖 11。	
6.2.5.4 Where the CP is designated at the horizontal top of the head restraint in Section 6.2.4.5, and there is no existing point of IP on the head restraint surface, IP is also designated on the horizontal top of the head restraint as determined in accordance with Section 6.2.4.5. See Figure 14		3.5.5.2.5.4 若 3.5.5.2.4.5 中 CP 點已被指定於頭枕水平頂端，且頭枕表面不存在現有之 IP 點，則 IP 點同樣指定於 3.5.5.2.4.5 所判定之頭枕水平頂端，如圖 14。	
6.2.5.5 The determined point "IP" will be kept in any adjustment position.		3.5.5.2.5.5 一旦確定 IP 點，於任何調整位置下皆應保持不變。	
6.2.5.6 For head restraints not adjustable for height, IP is to be determined in the fixed position.		3.5.5.2.5.6 對於不可調節高度之頭枕，應在其固定位置確定 IP 點。	
6.2.5.7 For two-way adjustable head restraints (e.g. up and down only) IP shall be measured in the test and lowest positions.		3.5.5.2.5.7 對於雙向可調節式頭枕（例如僅可上下調整），應分別於「試驗位置」及「最低位置」量測 IP 點。	
6.2.5.8 For four-way adjustable head restraints (e.g. up and down plus fore and aft) IP shall be measured in the following positions:		3.5.5.2.5.8 對於四向可調節式頭枕（例如上下及前後調整），應在下列位置量測 IP 點： (1)垂直中間位置及前後中間位置。	

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Mid vertical position & mid fore/aft Lowest vertical position (including where there is no lock) & fully rearward		(2)最低垂直位置（包含無鎖定之位置）及完全向後位置。	
6.2.6 Determination of the highest head restraint height		3.5.5.2.6 判定最高頭枕高度	
6.2.6.1 The head restraint height is the distance from the R50-point, parallel to the torso reference line and limited by a line perpendicular to the torso reference line intersecting IP, see Figure 16.		3.5.5.2.6.1 頭枕高度係指與軀幹參考線平行之 R50 點量測，並以通過 IP 點且垂直於軀幹參考線之直線為界限之距離，如圖 16。	
6.2.6.2 After the coordinates of IP are determined, the head restraint height for each position to be assessed can be calculated by its longitudinal (ΔX) and vertical (ΔZ) distance from the R50-point (see Figure 16), as follows: Head restraint height = ΔX・SIN (design torso angle) + ΔZ・COS (design torso angle)		3.5.5.2.6.2 於確定 IP 點座標後，每個待評估位置之頭枕高度可藉由其與 R50 點之縱向距離(ΔX)及垂直距離(ΔZ)計算得出(見圖 16)，公式如下： 頭枕高度 =ΔX・SIN（軀幹設計角度）+ΔZ・COS（軀幹設計角度）	
6.2.7 Return the HR to the test position and measure IP X test position for effective height calculation and in the worst case position (lowest/most rearward).		3.5.5.2.7 將頭枕回復至試驗位置，量測 IP X 試驗位置以計算有效高度，並量測最嚴苛位置（最低且最後位置）。	
6.3 Measure and Record Reference		3.5.5.3 量測及記錄 BioRID 設定之	

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Geometry for BioRID Setup. 6.3.1 Back of the head reference position 6.3.1.1 The theoretical back of the head reference position for the BioRID UN, used to determine the reference backset, is the value determined for the 50th percentile in Appendix IV with reference to the specified torso angle minus 15 mm (increasing the backset as shown in Figure 17). (請參考末頁圖示)		參考幾何 3.5.5.3.1 頭部後方參考位置 3.5.5.3.1.1 用於判定 BioRID UN 之頭部後方參考位置，係依 3.5.14 中第 50 百分位之頭部後方數值（對應指定之軀幹角度）減去 15mm(增加頭枕間隙，如圖 17)。 (請參考末頁圖示)	
6.4 Install BioRID 6.4.1 The seat should have already been set to the required angle measured on the H-point machine as described in Section 5. Allow the seat to recover for 15 minutes with nothing in it before installing the BioRID. Note, BioRID handling should only be undertaken using dedicated lifting tools and associated locations on the dummy following the BioRID manufacturer recommendations. Typically, during the installation of BioRID the H-point will initially be installed further rearward in the seat than	6.6 Install BioRID 6.6.1 The seat should have already been set to give a torso angle of 25º ±1º measured on the H-point machine fitted with HRMD as described in Section 5. Allow the seat to recover for 15 minutes with nothing in it before installing the BioRID. Note, BioRID handling should only be undertaken using dedicated lifting tools and associated locations on the dummy following the BioRID manufacturer recommendations. Typically, during the installation of BioRID the H-point will initially be installed further rearward in	3.5.5.4 安裝 BioRID 人偶 3.5.5.4.1 座椅位置應依 3.5.4 規定設置，使 H 點人體模型測得要求之角度。安裝 BioRID 人偶前，座椅應空載靜置 15 分鐘。須注意：依照 BioRID 製造商建議，使用專屬舉升工具及相關位置操作人偶。一般而言，安裝 BioRID 人偶時，初始 H 點會座落於比規定位置更後方處。可將人偶骨盆往前移，以達到目標設置位置。	3.5.5.6 安裝 BioRID 人偶 3.5.5.6.1 座椅位置應依 3.5.4 規定設置，使裝有 HRMD 之 H 點人體模型之軀幹角度符合 25±1 度之要求。安裝 BioRID 人偶前，座椅應空載靜置 15 分鐘。須注意：依照 BioRID 製造商建議，使用專屬舉升工具及相關位置操作人偶。一般而言，安裝 BioRID 人偶時，初始 H 點會座落於比規定位置更後方處，因此，可將人偶骨盆往前移，以達到目標設置位置。

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is required. Therefore, the pelvis should be moved forward to achieve the target set-up positioning.	the seat than is required. Therefore the pelvis should be moved forward to achieve the target set-up positioning.		
6.4.2 Carefully place the seat belt across the dummy and lock as normal, ensure there is sufficient slack in the belt to allow positioning of BioRID.	6.6.2 Carefully place the seat belt across the dummy and lock as normal, ensure there is sufficient slack in the belt to allow positioning of BioRID.	3.5.5.4.2 將安全帶小心圍繞試驗人偶，並正常扣上，確保織帶有足夠之鬆弛空間可調整 BioRID。	3.5.5.6.2 將安全帶小心圍繞試驗人偶，並正常扣上，確保織帶有足夠之鬆弛空間可調整 BioRID。
6.4.3 Align BioRID's midsagittal plane with the centreline of the seat.	6.6.3 Align BioRID's midsagittal plane with the centreline of the seat.	3.5.5.4.3 將 BioRID 人偶之正中矢狀切面對準座椅中心線。	3.5.5.6.3 將 BioRID 人偶之正中矢狀切面對準座椅中心線。
6.4.4 Adjust BioRID's midsagittal plane to be vertical; the instrumentation platform in the head should be laterally level.	6.6.4 Adjust BioRID's midsagittal plane to be vertical; the instrumentation platform in the head should be laterally level.	3.5.5.4.4 將 BioRID 之正中矢狀切面調整至垂直位置；頭部儀器量測平台(Instrumentation platform)應為橫向水平狀態。	3.5.5.6.4 將 BioRID 之正中矢狀切面調整至垂直位置；頭部儀器量測平台(Instrumentation platform)應為橫向水平狀態。
6.4.5 Adjust the pelvis angle to the design torso angle plus +1.5° ± 2.5°.	6.6.5 Adjust the pelvis angle to 26.5° from horizontal (± 2.5°).	3.5.5.4.5 將骨盆角度調整為軀幹設計角度+1.5 度±2.5 度。	3.5.5.6.5 將骨盆角度調整為與水平面之夾角 26.5 度（±2.5 度）。
6.4.6 Position the H-Point 20mm forward (± 10mm) and at the same Z-height (± 10mm) as the location recorded in Section 5.2, while keeping the pelvis angle within the range specified in 6.4.5. It is recommended to aim to set the ATD as close as possible to the nominal target values, and that the tolerance window should only be used if there is an issue achieving the required H-Point target or	6.6.6 Position the H-Point 20mm forward (± 10mm) and at the same Z-height (± 10mm) as the location recorded in Section 6.5.3, while keeping the pelvis angle at 26.5° (± 2.5°). It is recommended to aim to set the ATD as close as possible to the nominal target values, and that the tolerance window should only be used if there is an issue achieving the required H-Point target or backset value. The BioRID	3.5.5.4.6 將 H 點往前 20mm 放置（±10mm），並與 3.5.4.2 記錄之位置位於相同之 Z 高度（±10mm），同時維持骨盆角度在 3.5.5.4.5 規定範圍內。建議設置 ATD 人體測試裝置時，盡可能接近目標值；惟 H 點目標或頭枕間隙值達成有困難時，才可使用公差(Tolerance window)。BioRID 公差值之設置如表 1。	3.5.5.6.6 將 H 點往前 20mm 放置(±10mm)，並與 3.5.5.5.3 記錄之位置位於相同之 Z 高度(± 10mm)，同時維持骨盆角度 26.5 度(± 2.5 度)。建議設置 ATD 人體測試裝置時，盡可能接近目標值；惟 H 點目標或頭枕間隙值達成有困難時，才可使用公差(Tolerance window)。BioRID 公差值之設置如表 1。

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backset value. The BioRID setup tolerances are summarised in Table 1.	setup tolerances are summarised in Table 1.		
6.4.7 Adjust the spacing of the legs so that the centreline of the knees and ankles is 200mm (±10mm) apart and ensure that the knees are level using an inclinometer or bubble gauge.	6.6.7 Adjust the spacing of the legs so that the centreline of the knees and ankles is 200mm (±10mm) apart and ensure that the knees are level using an inclinometer or bubble gauge.	3.5.5.4.7 調整人偶兩腿部間距，使膝蓋至腳踝之中心線間隔 200mm（±10mm），並使用傾斜儀或氣泡式水位計確認膝蓋為水平狀態。	3.5.5.6.7 調整人偶兩腿部間距，使膝蓋至腳踝之中心線間隔 200mm（±10mm），並使用傾斜儀或氣泡式水位計確認膝蓋為水平狀態。
6.4.8 Adjust the dummy's feet so that the heel of BioRID's shoe is resting on the heel surface. The tip of the shoe shall rest on the toe pan between 230mm and 270mm from the intersection of the heel surface and toe board, as measured along the surface of the toe board. Figure 2 shows proper positioning of the feet. Note, the heel point from a vehicle is not replicated, only heel plane height is set according to vehicle geometry.	6.6.8 Adjust the dummy's feet so that the heel of BioRID's shoe is resting on the heel surface. The tip of the shoe shall rest on the toe pan between 230mm and 270mm from the intersection of the heel surface and toe board, as measured along the surface of the toe board. Figure 2 shows proper positioning of the feet. Note, the heel point from a vehicle is not replicated, only heel plane height is set according to vehicle geometry.	3.5.5.4.8 調整人偶雙腳，使 BioRID 鞋跟放置於鞋跟表面上。沿著踏腳板表面量測時，鞋尖應放在距離鞋跟表面與踏腳板表面交會處 230mm 至 270mm 之腳踏底板上。圖 2 為人偶雙腳的正確位置。須注意：鞋跟無須依照實車加速踏板定義之鞋跟點(Heel point)設置，僅根據實車之鞋跟點相對高度來設置踏腳板高度。	3.5.5.6.8 調整人偶雙腳，使 BioRID 鞋跟放置於鞋跟表面上。沿著踏腳板表面量測時，鞋尖應放在距離鞋跟表面與踏腳板表面交會處 230mm 至 270mm 之腳踏底板上。圖 2 為人偶雙腳的正確位置。須注意：鞋跟無須依照實車加速踏板定義之鞋跟點(Heel point)設置，僅根據實車之鞋跟點相對高度來設置踏腳板高度。
6.4.9 Position the BioRID's arms so that the upper arms are as close to the torso sides as possible. The rear of the upper arms should contact the seatback, and the elbows should be bent so that the small fingers of both hands are in contact with the top of the vehicle seat cushion with	6.6.9 Position the BioRID's arms so that the upper arms are as close to the torso sides as possible. The rear of the upper arms should contact the seatback, and the elbows should be bent so that the small fingers of both hands are in contact with the top of the vehicle seat cushion with	3.5.5.4.9 擺放 BioRID 雙臂時，人偶上臂盡可能緊鄰軀幹兩側，上臂後方應貼靠椅背，雙肘彎曲，雙手小指置放於車輛座墊上方，手掌面向人偶大腿。於軀幹向後推移至達到所需間隙後，依實際狀況，例如在座椅靠背角度較陡	3.5.5.6.9 擺放 BioRID 雙臂時，人偶上臂盡可能緊鄰軀幹兩側，上臂後方應貼靠椅背，雙肘彎曲，雙手小指置放於車輛座墊上方，手掌面向人偶大腿。

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the palms facing the dummy's thighs. The arms may be used to stabilise the dummy posture if needed, for example with steep seat back angles, once the torso has been pushed rearwards to achieve the required backset.	the palms facing the dummy's thighs.	的情況下，可使用手臂來穩定人偶姿勢。	
6.4.10 Level the instrumentation plane of the head (front/rear and left/right directions) to within ± 1°. Electronic tilt sensors shall be used to perform this check.	6.6.10 Level the instrumentation plane of the head (front/rear and left/right directions) to within ± 1°. Electronic tilt sensors shall be used to perform this check	3.5.5.4.10 頭部儀器量測平台（前/後及左/右方向）應於水平狀態±1 度範圍內。並使用電子傾斜感測器進行確認。	3.5.5.6.10 頭部儀器量測平台（前/後及左/右方向）應於水平狀態±1 度範圍內。並使用電子傾斜感測器進行確認。
	6.6.11 The BioRID backset (as defined in Section 2.3.4) is the horizontal distance between the rearmost point on the head, and the same identifiable location on the head restraint that was found when measuring the HRMD in Section 6.4.1.		3.5.5.6.11 BioRID 頭枕間隙（如 3.5.1.3.4 定義）為頭部最後端的點與頭枕易辨認點之間的水平距離。頭枕之易辨認點為 3.5.5.4.1 測量 HRMD 所找出之位置。
	6.6.11.1 Mark the farthest rearward point on the centreline of the dummy's skullcap. Note, as defined in 0, this point is 95mm from the top of the skullcap along the midsagittal plane of the skull measured using a tape that contours to the shape of the skullcap.		3.5.5.6.11.1 標記人偶頭蓋骨中心線上後端最遠的點。須注意：如 3.5.5.4 說明，可使用與頭蓋骨輪廓相對應之位置點，該點位於從頭蓋骨頂端沿著頭骨正中矢狀切面之 95mm 處。
	6.6.11.2 Measure the BioRID backset,		3.5.5.6.11.2 使用 3.5.5.6.11.1 於人

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	using the point identified on the skullcap in 6.6.11.1 and the same identifiable location on the head restraint that was found when measuring the HRMD in Section 6.4.1. See Figure 11.		偶頭蓋骨所找出的點及 3.5.5.4.1 測量 HRMD 所找出的頭枕易辨認點，測量 BioRID 之頭枕間隙距離。如圖 11 所示。
6.4.11 If the BioRID measured backset is different from the BioRID reference backset obtained in Section 6.3.1 (± 5mm), then do the following:	6.6.12 If the BioRID backset is different from the BioRID reference backset obtained in Section 6.4.4 (± 5mm), then do the following:	3.5.5.4.11 若 BioRID 頭枕間隙與 3.5.5.3.1 獲得之參考間隙距離不同（± 5mm），則執行下列步驟：	3.5.5.6.12 若 BioRID 頭枕間隙與 3.5.5.4.4 獲得之參考間隙距離不同（± 5mm），則執行下列步驟：
6.4.11.1 Tip the head for/aft no more than +3.5° / -0.5° from level in order to meet the backset requirement.	6.6.12.1 Tip the head for/aft no more than ± 1° from level in order to meet the backset requirement.	3.5.5.4.11.1 頭部向前/向後水平不超過+3.5 度/-0.5 度，以符合頭枕間隙之規定。	3.5.5.6.12.1 頭部向前/向後水平不超過±1 度，以符合頭枕間隙之規定。
6.4.11.2 If the BioRID backset cannot be brought closer to the BioRID reference backset ± 5mm by step 6.4.11.1, adjust the pelvis angle and H-point position within their respective tolerance bands. In this case begin at Section 6.4.5 and adjust the BioRID position accordingly.	6.6.12.2 If the BioRID backset cannot be brought closer to the BioRID reference backset ± 5mm by step 6.6.12.1, adjust the pelvis angle and H-point position within their respective tolerance bands. In this case begin at Section 6.6.5 and adjust the BioRID position accordingly.	3.5.5.4.11.2 若執行 3.5.5.4.11.1 後，BioRID 頭枕間隙仍無法於參考間隙±5mm 範圍內，則於個別公差範圍內調整骨盆角度及 H 點位置。據此情況，從 3.5.5.4.5 開始，依序調整 BioRID 位置。	3.5.5.6.12.2 若執行 3.5.5.6.12.1 後，BioRID 頭枕間隙仍無法於參考間隙±5mm 範圍內，則於個別公差範圍內調整骨盆角度及 H 點位置。據此情況，從 3.5.5.6.5 開始，依序調整 BioRID 位置。
6.4.11.3 If the BioRID backset cannot be brought closer to the BioRID reference position after adjustment of the head angle as specified above and if it is still not possible to set the test dummy backset measurement to within 15 ± 5mm of the		3.5.5.4.11.3 若依照上述規定調整頭部角度後，BioRID 間隙仍無法接近 BioRID 參考位置，且試驗人偶間隙量測值仍無法設定於 3.5.5.3.1 規定之頭部後方參考位置 15±5mm 範圍內，則應於各自	

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Back of the Head reference position specified in Section 6.3.1, then the dummy's pelvis angle and the H-point position shall be adjusted within their respective tolerance bands while prioritising the adjustment of the pelvis angle tolerance to achieve correct backset. It is not permitted to achieve the required position by pushing the dummy rearward, resulting in pre-loading of the BioRID,but the arms may be used to stabilise the torso.		的公差範圍內調整人偶骨盆角度及 H 點位置，優先調整骨盆角度公差以達成正確之間隙。不允許向後推移人偶達成所需間隙，這會導致 BioRID 產生預負載，但可使用手臂來穩定軀幹。	
6.4.12 Remove the slack from the lap section of the webbing until it is resting gently around the pelvis of the dummy. Only minimal force should be applied to the webbing when removing the slack. The route of the lap belt should be as natural as possible and must be above the pelvic angle gauge.	6.6.13 Remove the slack from the lap section of the webbing until it is resting gently around the pelvis of the dummy. Only minimal force should be applied to the webbing when removing the slack. The route of the lap belt should be as natural as possible and must be above the pelvic angle gauge.	3.5.5.4.12 移除腰部織帶鬆弛部分，直到織帶輕輕地繞過貼合人偶骨盆周圍。移除織帶鬆弛部分時，應盡可能使用最小的力道。腰部安全帶(Lap belt)路徑應盡可能平順自然，且必須位於骨盆角度量測儀器上方。	3.5.5.6.13 移除腰部織帶鬆弛部分，直到織帶輕輕地繞過貼合人偶骨盆周圍。移除織帶鬆弛部分時，應盡可能使用最小的力道。腰部安全帶(Lap belt)路徑應盡可能平順自然，且必須位於骨盆角度量測儀器上方。
6.4.13 Place one finger behind the diagonal section of the webbing at the height of the dummy sternum. Pull the webbing away from the chest horizontally forward and allow it to retract in the direction of the	6.6.14 Place one finger behind the diagonal section of the webbing at the height of the dummy sternum. Pull the webbing away from the chest horizontally forward and allow it to retract in the direction of the	3.5.5.4.13 將一隻手指放置於織帶對角線之後方（人偶胸骨高度處）。將織帶水平往前拉，遠離胸部，織帶依捲收器提供之力道向導帶環(D-loop)方向捲收。重複此	3.5.5.6.14 將一隻手指放置於織帶對角線之後方（人偶胸骨高度處）。將織帶水平往前拉，遠離胸部，織帶依捲收器提供之力道向導帶環(D-loop)方向捲收。重複此

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D-loop using only the force provided by the retractor mechanism. Repeat this step three times, only. 6.4.14 Once the belt is positioned the location of the belt should be marked across the dummy chest to ensure that no further adjustments are made. Mark also the belt at the level of the D-loop to be sure that the initial tension is maintained during test preparation. (請參考末頁圖示)	D-loop using only the force provided by the retractor mechanism. Repeat this step three times, only. 6.6.15 Once the belt is positioned the location of the belt should be marked across the dummy chest to ensure that no further adjustments are made. Mark also the belt at the level of the D-loop to be sure that the initial tension is maintained during test preparation. (請參考末頁圖示)	步驟三次。 3.5.5.4.14 安全帶位置調整好後，應於試驗人偶胸部標記安全帶位置，以確保不再有調整。同時，在安全帶導帶環高度處標記，以於試驗準備期間維持初始張力。 (請參考末頁圖示)	步驟三次。 3.5.5.6.15 安全帶位置調整好後，應於試驗人偶胸部標記安全帶位置，以確保不再有調整。同時，在安全帶導帶環高度處標記，以於試驗準備期間維持初始張力。 (請參考末頁圖示)
7 BIORID ATD REQUIREMENTS 7.1 BioRID Certification 7.1.1 The tests shall be conducted with a BioRID UN fitted with electronic tilt sensors capable of measuring X and Y tilt for head and pelvis. The instrumentation umbilical should exit at the front/side of the pelvis such that it is ensured there will be no seatbelt interaction. The dummy shall comply with both spine stature and all dynamic response specifications detailed in the BioRID UN user manual.	**7 BIORID ATD REQUIREMENTS** The tests should be conducted with a BioRID IIg dummy built with 'mould 2' jacket and fitted with electronic tilt sensors capable of measuring X and Y tilt for head and pelvis. The instrumentation umbilical should exit at the front/side of the pelvis such that it is ensured there will be no seatbelt interaction. The dummy should comply with both spine stature and dynamic response specifications	3.5.6 BioRID 擬人化試驗裝置規範(ATD requirement) 3.5.6.1 BioRID 查驗(Certification) 3.5.6.1.1 試驗應使用 BioRID UN 人偶，且安裝電子傾斜感測器，以測量頭部及骨盆 X、Y 座標傾斜度。儀器纜線(Instrumentation umbilical)應從骨盆前方/側邊拉出，才能確保與安全帶不會相互干擾。人偶應符合 BioRID UN 使用手冊中脊柱身形(Spine stature)及所有動態響應規範。	3.5.6 BioRID 擬人化試驗裝置規範(ATD requirement) 試驗應使用 BioRID IIg 人偶，人偶應穿著「模型 2」(Mould 2)上衣，且安裝電子傾斜感測器，以測量頭部及骨盆 X、Y 座標傾斜度。儀器纜線(Instrumentation umbilical)應從骨盆前方/側邊拉出，才能確保與安全帶不會相互干擾。試驗前，人偶應符合脊柱身形(Spine stature)及動態響應規範。

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	before the test. 7.1 Spine Curvature Check With the pelvis adapter plate placed on a level surface with the Occipital Condyle (OC) angle at 29.5° (± 0.5°), the T2 angle at 37° (± 0.5°), and the neck plate laterally level (± 0.5°), the distance in(X) between the H-Point and the OC pin should be 156mm (± 5mm) and the distance in (Z) between the H-Point and the OC pin should be 609mm (± 5mm). See Figure 12. The curvature check shall be performed after every 15 tests and all measurements should be recorded and fully documented. (請參考末頁圖示) 7.2 Certification. The dynamic response of BioRID is checked by attaching the spine, torso and head to a mini-sled that is impacted through foam by a 33.4kg probe and a velocity of 4.76m/s± 0.1m/s. The specified response of the dummy and detailed test specifications are described in Test Procedure: Calibration of BioRID		3.5.6.1 脊柱曲率檢查(Spine Curvature Check) 將骨盆接裝板(Adapter plate)放於水平面上，枕骨髁(Occipital Condyle，OC)角度為 29.5 度 (±0.5 度)，T2 角度為 37 度 (±0.5 度)，頸板(Neck plate)呈橫向水平狀態(±0.5 度)，此時 H 點與 OC 插銷之間的 X 座標量測距離應為 156mm（±5mm），Z 座標距離應為 609mm（±5mm）。如圖 12 所示。每完成 15 次試驗，應檢查脊柱曲率，所有量測數據皆應詳細記錄並提供書面文件。 (請參考末頁圖示) 3.5.6.2 查驗(Certification) 檢查 BioRID 之動態響應時，應先將人偶脊柱、軀幹及頭部靠放在迷你台車(Mini-sled)上，再以 33.4kg 的撞擊器(Probe)隔著發泡材料碰撞台車，其速度為 4.76m/s ± 0.1m/s。人偶規定之響應與試驗規範詳載於 Denton ATD Inc.之

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7.1.2 It is recommended that the BioRID be re-certified after every 15 tests. 7.1.3 All certification documents are to be provided in the laboratory test report.	available from Denton ATD, Inc. Generally, if the dummy's spine curvature changes so that it does not meet the dimensional specifications described in Section 7.1, then likely it will no longer meet the dynamic response specifications. It is recommended that the BioRID be re-certified after every 15 tests and all certification documents provided in the laboratory test report.	3.5.6.1.2 建議每進行 15 次試驗便重新查驗 BioRID。 3.5.6.1.3 檢測機構之試驗報告中須提供所有查驗文件。	試驗程序：BioRID 人偶校正(Calibration of BioRID)。若人偶的脊柱曲率改變，不符合 3.5.6.1 之尺寸規格，則很可能也無法符合動態響應規範。建議每進行 15 次試驗便重新查驗 BioRID，檢測機構之試驗報告中須提供所有查驗文件。
7.2 Adjustment of Dummy Extremities	7.3 Adjustment of Dummy Extremities	3.5.6.2 人偶四肢調整	3.5.6.3 人偶四肢調整
7.2.1 The stiffness of both arms and legs shall be checked and adjusted, where necessary, prior to every sled test. The adjustment procedure is as follows:	7.3.1 The stiffness of both arms and legs shall be checked and adjusted, where necessary, prior to every sled test. The adjustment procedure is as follows:	3.5.6.2.1 每次台車試驗前，應視情況檢查及調整人偶雙臂及雙腿之關節鬆緊度(Stiffness)，其調整程序如下：	3.5.6.3.1 每次台車試驗前，應視情況檢查及調整人偶雙臂及雙腿之關節鬆緊度(Stiffness)，其調整程序如下：
7.2.2 Arms	7.3.2 Arms	3.5.6.2.2 雙臂	3.5.6.3.2 雙臂
7.2.2.1 Extend the complete arm laterally outward to a horizontal position. Twist the arm so the elbow cannot rotate downward. Tighten the shoulder yoke clevis bolt so the arm is suspended at 1g, see Figure 18.	7.3.2.1 Extend the complete arm laterally outward to a horizontal position. Twist the arm so the elbow cannot rotate downward. Tighten the shoulder yoke clevis bolt so the arm is suspended at 1g, see Figure 13.	3.5.6.2.2.1 向外水平伸展人偶整隻手臂，轉動手臂使手肘不往下掉，鎖緊肩軛(Shoulder yoke)U 型螺栓，以保持手臂於 1g 時懸空，如圖 18 所示。	3.5.6.3.2.1 向外水平伸展人偶整隻手臂，轉動手臂使手肘不往下掉，鎖緊肩軛(Shoulder yoke)U 型螺栓，以保持手臂於 1g 時懸空，如圖 13 所示。
7.2.2.2 Rotate the complete arm assembly so it points forward and is horizontal. Twist the arm so the elbow cannot rotate	7.3.2.2 Rotate the complete arm assembly so it points forward and is horizontal. Twist the arm so the elbow cannot rotate	3.5.6.2.2.2 旋轉整隻手臂總成，使其水平指向前方。轉動手臂，使手肘不往下掉。旋轉六角螺帽以	3.5.6.3.2.2 旋轉整隻手臂總成，使其水平指向前方。轉動手臂，使手肘不往下掉。旋轉六角螺帽以

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downward. Adjust the shoulder yoke rotation hexagonal nut so the arm is suspended at 1g.	downward. Adjust the shoulder yoke rotation hexagonal nut so the arm is suspended at 1g.	調整肩軛，保持手臂於 1g 時懸空。	調整肩軛，保持手臂於 1g 時懸空。
7.2.2.3 Bend the elbow by 90° so the hand moves toward the chest. Adjust the elbow rotation bolt through access in the upper arm to hold the lower arm horizontally suspended at 1g.	7.3.2.3 Bend the elbow by 90° so the hand moves toward the chest. Adjust the elbow rotation bolt through access in the upper arm to hold the lower arm horizontally suspended at 1g.	3.5.6.2.2.3 將人偶肘部彎曲 90 度，使其手部往胸部移動。透過上臂調整肘部旋轉螺栓，使人偶下臂於 1g 時保持水平懸空。	3.5.6.3.2.3 將人偶肘部彎曲 90 度，使其手部往胸部移動。透過上臂調整肘部旋轉螺栓，使人偶下臂於 1g 時保持水平懸空。
7.2.2.4 Reposition the arm so it points forward and is horizontal. Twist the lower arm at the elbow, so the lower arm can pivot downward to vertical.Adjust the elbow pivot bolt through access holes in the lower arm flesh at the elbow to hold the lower arm suspended at 1g, see Figure 18.	7.3.2.4 Reposition the arm so it points forward and is horizontal.Twist the lower arm at the elbow, so the lower arm can pivot downward to vertical. Adjust the elbow pivot bolt through access holes in the lower arm flesh at the elbow to hold the lower arm suspended at 1g, see Figure 13.	3.5.6.2.2.4 重新調整手臂，使其水平指向前方。從肘部轉動下臂，使其向下旋轉成垂直狀。透過肘部下臂肌肉之出入孔調整肘部樞軸螺栓，使人偶下臂於 1g 時保持水平懸空。如圖 18 所示。	3.5.6.3.2.4 重新調整手臂，使其水平指向前方。從肘部轉動下臂，使其向下旋轉成垂直狀。透過肘部下臂肌肉之出入孔調整肘部樞軸螺栓，使人偶下臂於 1g 時保持水平懸空。如圖 13 所示。
7.2.2.5 Extend the arm and twist the palm so it faces down. Adjust the wrist pivot bolt at the base of the hand so it is suspended at 1g.	7.3.2.5 Extend the arm and twist the palm so it faces down. Adjust the wrist pivot bolt at the base of the hand so it is suspended at 1g.	3.5.6.2.2.5 伸展人偶手臂，將其手掌轉動向下。調整手部根部之腕部樞軸螺栓，使其於 1g 時保持懸空。	3.5.6.3.2.5 伸展人偶手臂，將其手掌轉動向下。調整手部根部之腕部樞軸螺栓，使其於 1g 時保持懸空。
7.2.2.6 Adjust the wrist rotation bolt through access in the wrist flesh to hold it suspended at 1g.	7.3.2.6 Adjust the wrist rotation bolt through access in the wrist flesh to hold it suspended at 1g.	3.5.6.2.2.6 透過腕部肌肉通道調整腕部旋轉螺栓，使其於 1g 時保持懸空。	3.5.6.3.2.6 透過腕部肌肉通道調整腕部旋轉螺栓，使其於 1g 時保持懸空。
7.2.2.7 Repeat procedure for other hand and arm.	7.3.2.7 Repeat procedure for other hand and arm.	3.5.6.2.2.7 另一隻手及手臂亦重複同樣步驟。	3.5.6.3.2.7 另一隻手及手臂亦重複同樣步驟。

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(請參考末頁圖示)	(請參考末頁圖示)	(請參考末頁圖示)	(請參考末頁圖示)
7.2.3 Legs	7.3.3 Legs	3.5.6.2.3 雙腿	3.5.6.3.3 雙腿
7.2.3.1 Remove the jacket from the dummy.	7.3.3.1 Remove the jacket from the dummy.	3.5.6.2.3.1 移除人偶上衣。	3.5.6.3.3.1 移除人偶上衣。
7.2.3.2 With the lower leg at 90° to the upper leg, and the dummy in seated position, lift the upper leg assembly above horizontal. Adjust the femur back set screw so the upper leg is held suspended at 1g.	7.3.3.2 With the lower leg at 90° to the upper leg, and the dummy in seated position, lift the upper leg assembly above horizontal. Adjust the femur back set screw so the upper leg is held suspended at 1g.	3.5.6.2.3.2 人偶成坐姿，上腿部與下腿部呈 90 度，將人偶上腿部抬高至水平以上位置，調整股骨後方固定螺釘，使上腿部於 1g 時保持懸空。	3.5.6.3.3.2 人偶成坐姿，上腿部與下腿部呈 90 度，將人偶上腿部抬高至水平以上位置，調整股骨後方固定螺釘，使上腿部於 1g 時保持懸空。
7.2.3.3 Rotate the lower leg assembly so it is horizontal. Adjust the knee clevis bolt so the lower leg is held suspended at 1g.	7.3.3.3 Rotate the lower leg assembly so it is horizontal. Adjust the knee clevis bolt so the lower leg is held suspended at 1g.	3.5.6.2.3.3 轉動下腿部總成，使其成水平狀態。調整膝關節 U 型螺栓，使下腿部於 1g 時保持懸空。	3.5.6.3.3.3 轉動下腿部總成，使其成水平狀態。調整膝關節 U 型螺栓，使下腿部於 1g 時保持懸空。
7.2.3.4 Adjust the ankle ball joint screw so the foot is held suspended at 1g. The ankle adjustment is not critical and is determined by individual feet.	7.3.3.4 Adjust the ankle ball joint screw so the foot is held suspended at 1g. The ankle adjustment is not critical and is determined by individual feet.	3.5.6.2.3.4 調整踝部球狀關節螺釘，使人偶腳部於 1g 保持懸空。應依個別人偶足部調整踝部。	3.5.6.3.3.4 調整踝部球狀關節螺釘，使人偶腳部於 1g 保持懸空。應依個別人偶足部調整踝部。
7.2.3.5 Repeat the procedure on the other leg and foot.	7.3.3.5 Repeat the procedure on the other leg and foot.	3.5.6.2.3.5 另一隻腳及足部亦重複同樣步驟。	3.5.6.3.3.5 另一隻腳及足部亦重複同樣步驟。
7.3 Clothing	7.4 Clothing	3.5.6.3 衣著	3.5.6.4 衣著
7.3.1 The dummy should be dressed in two pairs of close-fitting, knee-length, spandex/lycra pants and two close-fitting, short-sleeved spandex shirts. The under layer of clothes should be worn with the	7.4.1 The dummy should be dressed with two pairs of close-fitting, knee-length, spandex/lycra pants and two close-fitting, short-sleeved spandex shirts. The under layer of clothes should be worn with the	3.5.6.3.1 人偶應穿著兩件貼身及膝的彈性纖維/萊卡短褲，上身穿著兩件貼身短袖彈性纖維上衣。底層衣服亮滑布面朝外，上層衣服亮滑布面朝向內層衣物（即暗	3.5.6.4.1 人偶應穿著兩件貼身及膝的彈性纖維/萊卡短褲，上身穿著兩件貼身短袖彈性纖維上衣。底層衣服亮滑布面朝外，上層衣服亮滑布面朝向內層衣物（即暗

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shiny/smooth side of the fabric facing out and the over-clothes with the shiny/smooth side against the underclothes (i.e. dull side facing out). The dummies feet should be shod with size 11 (45 European) 320mm-325mm.	shiny/smooth side of the fabric facing out and the over-clothes with the shiny/smooth side against the underclothes (i.e. dull side facing out). The dummies feet should be shod with size 11 (45 European or 279mm) Oxford-style, hard-soled, work shoes (e.g. MIL-S-13192P).	色布面朝外)。人偶雙腳應穿著 11 號(歐規 45)320mm-325mm。	色布面朝外)。人偶雙腳應穿著 11 號(歐規 45 或 279mm)之牛津風格硬底工作鞋(例如 MIL-S-13192P)。
7.4 Instrumentation	7.5 Instrumentation	3.5.6.4 感測器及資料擷取系統設置 (Instrumentation)	3.5.6.5 感測器及資料擷取系統設置 (Instrumentation)
7.4.1 The instrumentation required to perform the Euro NCAP evaluation is listed in Table 2. The T1 acceleration should be the average of right and left side accelerometer measurements. All instrumentation shall be calibrated before the test programme.	7.5.1 The instrumentation required to perform the Euro NCAP evaluation is listed in Table 2. The T1 acceleration should be the average of right and left side accelerometer measurements. All instrumentation shall be calibrated before the test programme.	3.5.6.4.1 TNCAP 評等所需之感測器及資料擷取系統設置(Instrumentation)列於表 2。T1 速度應為左右側加速規之平均量測數據。所有感測器及資料擷取系統皆須於試驗前進行校正。	3.5.6.5.1 TNCAP 評等所需之感測器及資料擷取系統設置(Instrumentation)列於表 2。T1 速度應為左右側加速規之平均量測數據。所有感測器及資料擷取系統皆須於試驗前進行校正。
7.4.2 The channel amplitude class (CAC) for each transducer shall be chosen to according to Table 2. In order to retain sensitivity, CACs which are orders of magnitude greater than the minimum amplitude should not be used. A transducer shall be re-calibrated if it reaches its CAC during any test. All instrumentation shall be recalibrated after	7.5.2 The channel amplitude class (CAC) for each transducer shall be chosen to according to Table 2. In order to retain sensitivity, CACs which are orders of magnitude greater than the minimum amplitude should not be used. A transducer shall be re-calibrated if it reaches its CAC during any test. All instrumentation shall be recalibrated after	3.5.6.4.2 依表 2 選擇各轉換器(Transducer)之通道振幅等級(Channel amplitude class,CAC)。為維持靈敏度,不應使用數量級(Orders of magnitude)超過最低振幅之 CAC。若轉換器於任何試驗過程達到其 CAC,則應重新校正。不論進行多少次試驗,所有感測器及資料擷取系統每年皆應	3.5.6.5.2 依表 2 選擇各轉換器(Transducer)之通道振幅等級(Channel amplitude class,CAC)。為維持靈敏度,不應使用數量級(Orders of magnitude)超過最低振幅之 CAC。若轉換器於任何試驗過程達到其 CAC,則應重新校正。不論進行多少次試驗,所有感測器及資料擷取系統每年皆應

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one year regardless of the number of tests for which it has been used. A list of instrumentation along with calibration dates shall be supplied as part of the test report. (請參考末頁圖示)	one year regardless of the number of tests for which it has been used. A list of instrumentation along with calibration dates shall be supplied as part of the test report. (請參考末頁圖示)	重新校正。試驗報告中應提供感測器及資料擷取系統清單及相應的校正日期。 (請參考末頁圖示)	重新校正。試驗報告中應提供感測器及資料擷取系統清單及相應的校正日期。 (請參考末頁圖示)
7.5 Data Acquisition and Processing	7.6 Data Acquisition and Processing	3.5.6.5 資料收集與處理	3.5.6.6 資料收集與處理
7.5.1 The measurement data shall be recorded according to ISO 6487 or SAE J211/1 at a minimum sample frequency of 10kHz Table 2 specifies the channel frequency classes for each necessary measurement.	7.6.1 The measurement data shall be recorded according to ISO 6487 or SAE J211/1 at a minimum sample frequency of 10kHz Table 2 specifies the channel frequency classes for each necessary measurement.	3.5.6.5.1 依照 ISO 6487 或 SAE J211/1，以最小採樣頻率 10kHz 記錄量測數據。表 2 規範各項量測之通道頻率等級 (Channel frequency classes，CFC)。	3.5.6.6.1 依照 ISO 6487 或 SAE J211/1，以最小採樣頻率 10kHz 記錄量測數據。表 2 規範各項量測之通道頻率等級 (Channel frequency classes，CFC)。
7.5.2 Measurement data shall be considered for evaluation until the point in time at which the head rebounds from the head restraint or at 300ms after T-zero, whichever occurs first.	7.6.2 Measurement data shall be considered for evaluation until the point in time at which the head rebounds from the head restraint or at 300ms after T-zero, whichever occurs first.	3.5.6.5.2 量測數據應採集至頭部自頭枕反彈時間點或 T0 時刻往後 300ms（取兩者當中較先發生者）。	3.5.6.6.2 量測數據應採集至頭部自頭枕反彈時間點或 T0 時刻往後 300ms（取兩者當中較先發生者）。
7.5.3 Prior to test all data channels shall be offset to zero, where zero (acceleration/force/moments) is defined by the average quiescent channel value over 100 samples at 10kHz (or equivalent) before time offset. This should be recorded a significant duration	7.6.3 Prior to test all data channels shall be offset to zero, where zero (acceleration/force/moments)is defined by the average quiescent channel value over 100 samples at 10kHz (or equivalent) before time offset. This should be recorded a significant duration	3.5.6.5.3 試驗前，應將所有數據通道之偏移量(Offset)調整至零點(Zero)。零點（加速度/力/力矩）之定義為歸零前(Before time offset)以 10kHz(或等效)採樣 100 個樣本所計算之平均通道靜態值(Average quiescent channel	3.5.6.6.3 試驗前，應將所有數據通道之偏移量(Offset)調整至零點(Zero)。零點（加速度/力/力矩）之定義為歸零前(Before time offset)以 10kHz(或等效)採樣 100 個樣本所計算之平均通道靜態值(Average quiescent channel

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prior to T0 such that the sled acceleration/deceleration phase is avoided.	prior to T0 such that the sled acceleration/deceleration phase is avoided.	value)。應記錄 T0 時間點前之持續時間，以避免台車之加速/減速現象。	value)。應記錄 T0 時間點前之持續時間，以避免台車之加速/減速現象。
10 WHIPLASH ASSESSMENT CRITERIA 10.1 Criteria The purpose of the whiplash test is to test the seat and head restraint assembly in order to assess the extent to which they reflect best practice in preventing soft tissue neck injuries. This is based on the following performance criteria: - Head Restraint Contact Time (T-HRC(Start) T- HRC(End)) - T1 x-acceleration, T1 - Upper and Lower Neck Shear Force, Fx - Upper Neck Tension, Fz - Upper and Lower Neck Moment, My - Head Rebound Velocity - NIC - Nkm - Seatback Dynamic Opening. Details of how the criteria are calculated	**10 WHIPLASH ASSESSMENT CRITERIA** 10.1 The purpose of the whiplash test is to test the seat and head restraint assembly in order to assess the extent to which they reflect best practice in preventing soft tissue neck injuries. This is based on the following performance criteria: - Head Restraint Contact Time (T-HRC(Start) T- HRC(End)) - T1 x-acceleration ("T1") - Upper Neck Shear Force ("Fx") and Upper Neck Tension ("Fz") - Head Rebound Velocity - NIC - Nkm - Seatback Dynamic Opening. A summary of how the criteria are	3.5.9 鞭甩評等標準 3.5.9.1 標準 鞭甩試驗主要目的為測試座椅及頭枕總成，評估其是否符合防止頸部軟組織損傷之最佳作法。此試驗係基於下列性能標準： (1) 頭枕接觸時間(T- HRC(開始) T- HRC(結束))。 (2) T1 X-加速度，T1。 (3) 上頸部及下頸部剪力，Fx (4) 上頸部張力，Fz。 (5) 上頸部及下頸部力矩，My。 (6) 頭部反彈速度。 (7) NIC。 (8) Nkm。 (9) 椅背動態角度變化(Seatback dynamic opening)。 下列為最重要之評等標準之詳細	3.5.9 鞭甩評等標準 3.5.9.1 鞭甩試驗主要目的為測試座椅及頭枕總成，評估其是否符合防止頸部軟組織損傷之最佳作法。此試驗係基於下列性能標準： (1) 頭枕接觸時間(T- HRC(開始) T- HRC(結束))。 (2) T1 X-加速度(T1)。 (3) 上頸部剪力(Fx)及上頸部張力(Fz)。 (4) 頭部反彈速度。 (5) NIC。 (6) Nkm。 (7) 椅背動態角度變化(Seatback dynamic opening)。 下列為最重要之評等標準之詳細

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are provided in TB 021 “Data Format and Injury Criteria Calculation”. Further details on the calculation of certain criteria are given below.	calculated is provided in TB021 “Data Format and Injury Criteria Calculation”. Below a more extensive description is given for the most important assessment criteria.	說明：	說明：
10.2 Head Restraint Contact Time T-HRC(Start) T-HRC(End) Head restraint contact time should be ascertained using a contact switch method, comprised of a proprietary lightweight, self adhesive conductive foil placed over the surface of the head restraint, and the rear of the ATD skull cap.	10.2 Head Restraint Contact Time T-HRC(Start) T-HRC(End). Head restraint contact time should be ascertained using a contact switch method, comprised of a proprietary lightweight, self adhesive conductive foil placed over the surface of the head restraint, and the rear of the ATD skull cap. Head Restraint Contact Time T-HRC(Start) is defined as the time (calculated from T=0) of first contact between the rear of the ATD head and the head restraint, where the subsequent continuous contact duration exceeds 40ms. For the purposes of assessment, T-HRC(Start) shall be rounded to the nearest millisecond.	3.5.9.2 頭枕接觸時間(Head Restraint Contact Time) T-HRC(開始）T-HRC（結束） 使用接觸開關方法確定頭枕接觸時間，該方法以放在頭枕表面及ATD頭蓋骨後方之輕薄自黏式導電箔(Lightweight, self adhesive conductive foil)組成。	3.5.9.2 頭枕接觸時間(Head Restraint Contact Time) T-HRC(開始）T-HRC（結束） 使用接觸開關方法確定頭枕接觸時間，該方法以放在頭枕表面及ATD頭蓋骨後方之輕薄自黏式導電箔(Lightweight, self adhesive conductive foil)組成。 頭枕接觸時間 T-HRC（開始）之定義為 ATD 頭部後方與頭枕首次接觸的時間（從 T=0 開始計算），且之後須持續接觸超過 40ms。為了評等，T-HRC（開始）時間應四捨五入取至最接近之毫秒。
Minor breaks in the contact time (up to 1ms) are permissible if it can be proven that these are due to poor electrical	Minor breaks in the contact time (up to 1ms) are permissible if it can be proven that these are due to poor electrical	若可證明因電氣接觸不良出現問題，則可允許接觸時間輕微中斷（最多 1ms）；然而，必須參考影	若可證明因電氣接觸不良出現問題，則可允許接觸時間輕微中斷（最多 1ms）；然而，必須參考影

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contacts, however these must be investigated with reference to the film to ascertain whether the breaks in contact are not due to biomechanical phenomena such as ATD ramping, head restraint or seatback collapse, or 'bounce' of the head during non-structural contact with the head restraint.	contacts, however these must be investigated with reference to the film to ascertain whether the breaks in contact are not due to biomechanical phenomena such as ATD ramping, head restraint or seatback collapse, or 'bounce' of the head during non-structural contact with the head restraint. For the subsequent criteria, the end of head restraint contact must also be found; T-HRC(end). This is defined as the time at which the head first loses contact with the head restraint, where the subsequent continuous loss of contact duration exceeds 40ms.	片進行調查，確定接觸中斷並非因為生物力學現象(Biomechanical phenomena)(例如 ATD 斜升(Ramping)、頭枕或椅背塌陷、或頭部與頭枕非結構性接觸時的「反彈」等）所造成。	片進行調查，確定接觸中斷並非因為生物力學現象(Biomechanical phenomena)(例如 ATD 斜升(Ramping)、頭枕或椅背塌陷、或頭部與頭枕非結構性接觸時的「反彈」等）所造成。頭枕接觸之結束時間：T-HRC（結束)，其定義為人偶頭部首度與頭枕分離(Loses contact)之時間，且之後須持續分離超過 40ms。
10.3 T1 X-Acceleration BioRID is fitted with twin accelerometers on the first thoracic vertebra (T1), one on either side of the lower neck loadcell assembly. The data channels acquired from these accelerometers should both be filtered to channel frequency class detailed in TB 021.	10.3 T1 X-Acceleration. BioRID is fitted with twin accelerometers on the first thoracic vertebra (T1), one on either side of the lower neck loadcell assembly. The data channels acquired from these accelerometers should both be filtered to channel frequency class (CFC) 60 as defined by SAE J211. An average channel, T1(t), should then be produced from the two filtered signals, as follows:	3.5.9.3 T1 X-加速度 BioRID 人偶第一節胸椎（T1）上裝有兩組加速規，分別位於下頸部荷重計總成兩側。以 SAE J211 定義之通道頻率等級(CFC)60，針對兩側加速規所取得之通道數據，應依照 Euro NCAP 技術通報 TB021 進行濾波。	3.5.9.3 T1 X-加速度 BioRID 人偶第一節胸椎（T1）上裝有兩組加速規，分別位於下頸部荷重計總成兩側。以 SAE J211 定義之通道頻率等級(CFC)60，針對兩側加速規所取得之通道數據進行濾波。然後，此兩個濾波的訊號可產生一個平均通道 T1(t)(Average channel)，如下：

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	$$\mathrm{T1}(t) = \frac{T1_{left}(t) + T1_{right}(t)}{2}$$ where: $T1left(t)$ = Acceleration channel measured by the left hand T1 accelerometer. $T1right(t)$ = Acceleration channel measured by the right hand T1 accelerometer. The maximum, $T1max$, should be generated from this average T1 channel, considering only the portion of data from T-zero until T-HRC(end) as follows: $$T1_{max} = \underset{T-HRC_{(end)}}{\mathrm{Max}}[T1(t)]$$ 10.4 Upper Neck Shear Force (Fx) and Upper Neck Tension (Fz). The upper neck loadcell of the BioRID records both shear and tensile forces. If the instrumentation is configured in accordance with SAE J211, positive shear should be indicative of a head-rearwards motion and positive		$$\mathrm{T1}(t) = \frac{T1_{左}(t) + T1_{右}(t)}{2}$$ 其中： $T1_{左}(t)$= 左側 T1 加速規測得之加速度 $T1_{右}(t)$= 右側 T1 加速規測得之加速度 最大值 $T1_{max}$ 應從此 T1 平均通道產生，且僅考慮從 T_0 到 T-HRC(結束)之數據，如下所示： $$T1_{max} = \underset{\mathrm{T-HRC(結束)}}{\mathrm{Max}}[T1(t)]$$ 3.5.9.4 上頸部剪力（Fx）及上頸部張力（Fz） BioRID 人偶之上頸部荷重計可同時記錄剪力及張力。若感測器及資料擷取系統(Instrumentation)依 SAE J211 配置，則正向剪力

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	tension should be associated with pulling the head upwards, generating a tensile force in the neck. Firstly, both the Fx and Fz channels should be filtered at CFC 1000. Peak values, *Fx max*, and *Fzmax*, should then be determined for each of the forces, considering only the portion of data from T-zero until T-HRC(end), as follows: $$Fx_{max} = \underset{T-HRC_{(end)}}{\text{Max}} [Fx(t)]$$ $$Fz_{max} = \underset{T-HRC_{(end)}}{\text{Max}} [Fz(t)]$$		(Positive shear)應指明頭部朝後運動，而正向張力(Positive tension)應與頭部向上拉動相關，進而在頸部產生拉力。首先，Fx 及 Fz 兩個通道皆應以 CFC 1000 進行濾波，然後判定剪力及張力之峰值 Fxmax 及 Fzmax，且僅考慮從 T0 到 T-HRC（結束）之數據，如下： $$Fx_{max} = \underset{\text{T−HRC(結束)}}{\text{Max}} [Fx(t)]$$ $$Fz_{max} = \underset{\text{T−HRC(結束)}}{\text{Max}} [Fz(t)]$$
10.4 Head Rebound Velocity – Acceleration Sled Technique The head rebound velocity (in the horizontal/X direction) should be determined using target tracking. Refer to the Euro NCAP Film and Photo protocol for additional considerations regarding the use of high speed cameras.	10.5 Head Rebound Velocity – Acceleration Sled Technique. The head rebound velocity (in the horizontal/X direction) should be determined using target tracking. Ideally this should be performed using footage acquired from on-board camera systems, however off-board systems can provide suitable views providing the camera positioning is correct and compensation is made for the movement of the sled. Various	3.5.9.4 頭部反彈速度－加速台車技術 使用目標追蹤(Target tracking)判定頭部反彈速度(水平/X 方向)。請參考 TNCAP 錄影及拍照規章，以了解有關使用高速攝影機之其他注意事項。	3.5.9.5 頭部反彈速度－加速台車技術 使用目標追蹤(Target tracking)判定頭部反彈速度(水平/X 方向)。理想上，應使用車載影像系統取得之畫面進行，然而，若攝影機安裝位置正確且已進行台車移動補償調整，非車載(Off-board)系統亦可提供合適的畫面。各種專利影像分析軟體皆可達成此類分析之功能，因此，本文件將不再詳

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	proprietary film analysis packages include functions to achieve this analysis consequently this method will not be covered in detail in this document. Refer to the Euro NCAP Film and Photo protocol for additional considerations regarding the use of high speed cameras.		細介紹此方法。請參考 TNCAP 錄影及拍照規章，以了解有關使用高速攝影機之其他注意事項。
10.4.1 Time for Occurrence of Peak Rebound Velocity. Theoretically, the peak rebound velocity should occur due to the elastic energy release from the seat assembly, after the peak sled acceleration has occurred. In the case of an acceleration sled this should also be prior to the sled braking, which at the earliest should occur from 300ms. It should be verified that there is sufficient time before the onset of sled braking for the particular sled being used, and that any peak rebound velocity analysis is not undertaken during the sled braking phase. The rebound velocity of the ATD is usually generated due to the release of stored elastic energy within the seat structure, suspension and foam. The time	10.5.1 Time for Occurrence of Peak Rebound Velocity. Theoretically, the peak rebound velocity should occur due to the elastic energy release from the seat assembly, after the peak sled acceleration has occurred. In the case of an acceleration sled this should also be prior to the sled braking, which at the earliest should occur from 300ms. It should be verified that there is sufficient time before the onset of sled braking for the particular sled being used, and that any peak rebound velocity analysis is not undertaken during the sled braking phase. The rebound velocity of the ATD is usually generated due to the release of stored elastic energy within the seat structure, suspension and foam. The time	3.5.9.4.1 峰值反彈速度發生時間 (Time for Occurrence of Peak Rebound Velocity) 理論上，台車加速度峰值出現後，由於彈性能(Elastic energy)從座椅總成釋放，因而產生峰值反彈速度。以加速型台車而言，此情況應發生於台車執行煞車（最早應從 300ms 開始）前，因此，必須確認使用之特定台車於執行煞車前有充足之反應時間，以及在台車煞車期間不進行任何峰值反彈速度分析。ATD 之反彈速度通常源於座椅結構、懸吊及發泡材料內儲存之彈性能釋放。峰值反彈速度發生時間應計算 T=0 至 300ms 間頭部反彈速度之最大水平分量。	3.5.9.5.1 峰值反彈速度發生時間 (Time for Occurrence of Peak Rebound Velocity) 理論上，台車加速度峰值出現後，由於彈性能(Elastic energy)從座椅總成釋放，因而產生峰值反彈速度。以加速型台車而言，此情況應發生於台車執行煞車（最早應從 300ms 開始）前，因此，必須確認使用之特定台車於執行煞車前有充足之反應時間，以及在台車煞車期間不進行任何峰值反彈速度分析。ATD 之反彈速度通常源於座椅結構、懸吊及發泡材料內儲存之彈性能釋放。峰值反彈速度發生時間應計算 T=0 至 300ms 間頭部反彈速度之最大水平分量。

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of occurrence of peak rebound velocity should be the maximum horizontal component of head rebound velocity calculated between T=0 and 300ms.	of occurrence of peak rebound velocity should be the maximum horizontal component of head rebound velocity calculated between T=0 and 300ms.		
10.4.2 The ATD shall be equipped with a suitable target placed on the side of the head flesh, coincident with the head centre of gravity. Additionally, three sled targets will be required. Two fixed targets of known separation should be placed on the sled in the same XZ plane, such that a fixed reference can be obtained that will not be obscured during the test (B1 and B2 targets). In the case of an onboard view, a small compensation may be required for camera movement or shake. This can be made using the two fixed targets of known spacing on the sled, and a third target from which a sled coordinate system may be created. All target points used for analysis should be depth scaled to compensate for any differences in the Y-coordinates.	10.5.2 Target Placement. The ATD should be equipped with a suitable target placed on the side of the head flesh, coincident with the head centre of gravity. Additionally, three sled targets will be required. Two fixed targets of known separation should be placed on the sled in the same XZ plane, such that a fixed reference can be obtained that will not be obscured during the test (B1 and B2 targets). In the case of an onboard view, a small compensation may be required for camera movement or shake. This can be made using the two fixed targets of known spacing on the sled, and a third target from which a sled coordinate system may be created. All target points used for analysis should be depth scaled to compensate for any differences in the Y-coordinates.	3.5.9.4.2 ATD 頭部肌肉側邊與頭部重心交疊處應有一個合適之目標。此外，另須於台車設置三個目標。台車 XZ 平面上應有兩個明顯分離(Separation)的固定參考點，且於試驗期間不受遮蔽影響（B1 及 B2 參考點）。對於車載攝影畫面而言，可能需要對攝影機移動或搖動進行些微補償。可使用台車上已知間距之兩個固定參考點，以及於台車座標系統建立第三個參考點進行補償。所有用於分析之目標點應有深度比例(Depth scaled)，以補償 Y 座標之任何差異。	3.5.9.5.2 目標設置 ATD 頭部肌肉側邊與頭部重心交疊處應有一個合適之目標。此外，另須於台車設置三個目標。台車 XZ 平面上應有兩個明顯分離(Separation)的固定參考點，且於試驗期間不受遮蔽影響（B1 及 B2 參考點）。對於車載攝影畫面而言，可能需要對攝影機移動或搖動進行些微補償。可使用台車上已知間距之兩個固定參考點，以及於台車座標系統建立第三個參考點進行補償。所有用於分析之目標點應有深度比例(Depth scaled)，以補償 Y 座標之任何差異。
10.4.3 Determination of Rebound Velocity	10.5.3 Determination of Rebound	3.5.9.4.3 判定反彈速度	3.5.9.5.3 判定反彈速度

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	Velocity.Using a suitable "target tracking" film analysis technique, generate traces as follows: • Head centre of Gravity target velocity (absolute laboratory reference) . • Sled velocity (absolute laboratory reference). Both traces should be offset adjusted then filtered at CFC30. Head rebound velocity is then defined as the difference between the sled velocity and the head velocity. Rebound velocity can be calculated as: VRebound = VHead C-of-G (abs) – VSled (abs) Where: $V_{Rebound}$ = Instantaneous rebound X-velocity of the head c-of-g, relative to the sled $V_{Head\ C\text{-}of\text{-}G\ (abs)}$ = Instantaneous X-velocity of head centre of gravity, absolute. $V_{Sled\ (abs)}$ = Instantaneous X-velocity of sled, absolute. Generate a third trace of head centre of gravity rebound velocity, relative to the sled. The maximum value and the time at		使用合適之「目標追蹤」影像分析技術，產生下列的軌跡(Trace)： (1)頭部重心目標速度（檢測機構絕對參考值）。 (2)台車速度（檢測機構絕對參考值）。 兩個軌跡應做偏差調整(Offset adjusted)，然後以 CFC30 進行濾波。頭部反彈速度之定義為台車速度與頭部速度間之差異。因此，反彈速度的算式如下： $V_{反彈} = V_{頭部重心} - V_{台車(abs)}$ 其中： V 反彈＝頭部重心相對於台車之瞬時反彈 X 速度。 V 頭部重心（abs）＝頭部重心之瞬時 X 速度絕對值。 V 台車（abs）＝台車瞬時 X 速度絕對值。 以台車為相對基準，建立頭部重心反彈速度之第三條軌跡，記錄最大值及其發生時間。

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	which this occurs should be noted.		
The peak rebound velocity should be verified using the end of head restraint contact time, T-HRC(end), that this maximum is during the rebound from the head restraint and is not generated within the sled braking phase. Should higher peaks be generated in the sled braking phase, these should be disregarded and the initial peak of rebound velocity which occurs at or very near to initial rebound from the head restraint should be taken as the peak value.	It should be verified using the end of head restraint contact time, T-HRC(end), that this maximum is during the rebound from the head restraint and is not generated within the sled braking phase. Should higher peaks be generated in the sled braking phase, these should be disregarded and the initial peak of rebound velocity which occurs at or very near to initial rebound from the head restraint should be taken as the peak value.	峰值反彈速度應使用頭枕接觸結束時間 T-HRC（結束）確認此最大值是在頭枕反彈期間產生，而非於台車煞車階段內發生。若台車煞車期間有更高的峰值產生，應忽視這些數值，以頭枕首次反彈或最接近首次反彈之初始峰值為最高峰值	此外，應使用頭枕接觸結束時間 T-HRC（結束）確認此最大值是在頭枕反彈期間產生，而非於台車煞車階段內發生。若台車煞車期間有更高的峰值產生，應忽視這些數值，以頭枕首次反彈或最接近首次反彈之初始峰值為最高峰值。
10.5 NIC Calculation The NIC is based on the relative horizontal acceleration and velocity of the occipital joint relative to T1. To calculate NIC, two data channels are needed, which are the head x-acceleration and average T1 x-acceleration. Each channel should first be converted from ‘g’ to metres per second squared (m/s²), and the head x-acceleration should be filtered as defined in TB 021. The average T1 channel (previously	10.6 NIC Calculation. The NIC is based on the relative horizontal acceleration and velocity of the occipital joint relative to T1. To calculate NIC, two data channels are needed, which are the head x-acceleration and average T1 x-acceleration. Each channel should first be converted from ‘g’ to metres per second squared (m/s²), and the head x-acceleration should be filtered at CFC 60. The average T1 channel (previously calculated) is the	3.5.9.5 NIC 計算 NIC 主要考量枕骨關節(Occipital joint)與 T1 間的相對水平加速度及速度。計算 NIC 須要頭部 X 向加速度及 T1 平均 X 向加速度兩個數據通道。 每個通道(Channel)應先從「g」轉換為公尺/秒平方(m/s^2)，頭部 X 向加速度應依照 Euro NCAP 技術通報 TB021 進行濾波。T1 平均通道（先前計算）為胸椎兩側加速度以 Euro NCAP 技術通報	3.5.9.6 NIC 計算 NIC 主要考量枕骨關節(Occipital joint)與 T1 間的相對水平加速度及速度。計算 NIC 須要頭部 X 向加速度及 T1 平均 X 向加速度兩個數據通道。 每個通道(Channel)應先從「g」轉換為公尺/秒平方(m/s^2)，頭部 X 向加速度應以 CFC60 進行濾波。T1 平均通道（先前計算）為胸椎兩側加速度以 CFC60 濾波之通道組合結果。平均通道之產生方法

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calculated) is the result of combining two channels, both of which were filtered as defined in TB 021.	result of combining two channels, both of which were filtered at CFC 60. Reference should be made to Section 10.3 for details of how this average channel is produced. The “relative x-acceleration” (γ_x^{rel}) between head and T1 should be generated by subtracting the head x-acceleration (γ_x^{Head}) from the T1 x acceleration (γ_x^{T1}). This channel is calculated as follows: $\gamma_x^{rel} = \gamma_x^{T1} - \gamma_x^{Head}$ The relative x-velocity (Vxrel) between head and T1 should be calculated, by integrating the relative acceleration channel with respect to time, as follows: $V_x^{rel}(t) = \int_0^t \gamma_x^{rel}(\tau)d\tau$ The NIC channel is then calculated as a combination of relative acceleration	TB021 濾波之通道組合結果。	如 3.5.9.3。 頭部與 T1 之間的「相對X向加速度」(γxrel)為 T1 X 向加速度(γxT1)減去頭部X向加速度(γx 頭部),算式如下: $\gamma_x{}^{rel} = \gamma_x{}^{T1} - \gamma_x{}^{頭部}$ 計算頭部與 T1 之間的「相對X向速度」(Vxrel)是與時間相關之相對加速度通道(Relative acceleration channel)積分,算式如下: $V_x^{rel}(t) = \int_0^t \gamma_x^{rel}(\tau)d\tau$ NIC 通道(NIC channel)計算為相對加速度乘以 0.2,再加上相對速度平方。演算方程式如下:

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	multiplied by 0.2, and added to the square of the relative velocity. The calculation is according to the following equation: $$NIC(t)=0.2*\gamma_x^{rel}(t)+[V_x^{rel}(t)]^2$$ The maximum overall NIC value (NIC max) should be obtained from the trace considering only the portion of data from T-zero until T-HRC(end) as follows: $$NIC_{max}=\underset{T-HRC(end)}{Max}[NIC(t)]$$ This maximum value should be noted, along with the time at which it occurs.		$$NIC(t)=0.2*\gamma_x^{rel}(t)+[V_x^{rel}(t)]^2$$ 僅考慮從 T0 到 T-HRC（結束）之數據，從軌跡計算出 NIC 最大值（NICmax）（Maximum overall NIC），如下： $$NIC_{max}=\underset{\text{T-HRC(結束)}}{\text{Max}}[NIC(t)]$$ 記錄此最大值及其產生時間。
10.6 Nkm Calculation The following definition is provided following the commonly accepted convention that derives the “Anterior/ Posterior” directions from the torso motion relative to the head. Consequently, torso forward motion relative to the head would be referred to as ‘anterior’, and providing SAE J211 compliant instrumentation is used, would produce an associated positive upper neck shear force, Fx upper .(“Head	10.7 Nkm Calculation. The following definition is provided following the commonly accepted convention that derives the “Anterior/ Posterior” directions from the torso motion relative to the head. Consequently, torso forward motion relative to the head would be referred to as ‘anterior’, and providing SAE J211 compliant instrumentation is used, would produce an associated positive upper neck shear force, Fx upper .(“Head rearward relative to the torso”)	3.5.9.6 Nkm 計算 依照一般通用慣例進行以下之定義，即透過軀幹相對於頭部的「前方/後方」(Anterior/Posterior)運動來定義。因此，以頭部為相對基準，軀幹向前運動即為「前方」;且使用符合 SAE J211 規範的儀器，將產生相應之上頸部正剪力（Fx 上）（以軀幹為相對基準，頭部往後）。 反之，以頭部為相對基準，軀幹往後運動即為「後方」，並產生與剪	3.5.9.7 Nkm 計算 依照一般通用慣例進行以下之定義，即透過軀幹相對於頭部的「前方/後方」(Anterior/Posterior)運動來定義。因此，以頭部為相對基準，軀幹向前運動即為「前方」;且使用符合 SAE J211 規範的儀器，將產生相應之上頸部正剪力（Fx 上）（以軀幹為相對基準，頭部往後）。 反之，以頭部為相對基準，軀幹往後運動即為「後方」，並產生與剪

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rearward relative to the torso”) Conversely, the movement of the torso rearward relative to the head is referred to as ‘posterior’ and produces the opposite sign of shear force.	Conversely, the movement of the torso rearward relative to the head is referred to as ‘posterior’ and produces the opposite sign of shear force.	力相反的符號。	力相反的符號。
The Nkm criterion is based on a combination of moment and shear forces, using critical intercept values for the load and moment. The shear force intercept value is identical for anterior or posterior values, being 845N in both directions of loading. However, the critical intercept value for the bending moment depends on the direction of loading, having a value of 47.5Nm in extension (head rotation rearwards), but a value of 88.1Nm in flexion (head rotation forwards).	The Nkm criterion is based on a combination of moment and shear forces, using critical intercept values for the load and moment. The shear force intercept value is identical for anterior or posterior values, being 845N in both directions of loading. However, the critical intercept value for the bending moment depends on the direction of loading, having a value of 47.5Nm in extension (head rotation rearwards), but a value of 88.1Nm in flexion (head rotation forwards).	Nkm 標準主要基於力矩與剪力之組合，使用截距臨界值(Critical intercept values)判定負載及力矩。前方或後方數值之剪力截距值相同，兩個方向的負載皆為 845N；然而，彎曲力矩之截距臨界值則取決於負載方向，拉伸方向(Extension，頭部往後轉動)為 47.5Nm，但彎曲方向(Flexion，頭部往前轉動)為 88.1Nm。	Nkm 標準主要基於力矩與剪力之組合，使用截距臨界值(Critical intercept values)判定負載及力矩。前方或後方數值之剪力截距值相同，兩個方向的負載皆為 845N；然而，彎曲力矩之截距臨界值則取決於負載方向，拉伸方向(Extension，頭部往後轉動)為 47.5Nm，但彎曲方向(Flexion，頭部往前轉動)為 88.1Nm。
Two channels will be required to perform the Nkm calculation, upper neck shear force Fx upper ,in Newtons (N) and moment, My upper in Newton-metres (Nm).	Two channels will be required to perform the Nkm calculation, upper neck shear force F_x ^{upper}, in Newtons (N) and moment, M_y ^{upper} in Newton-metres (Nm).	上頸部正剪力(Fx 上)單位為牛頓(N)，力矩(My 上)單位為牛頓-公尺(Nm)，此兩個通道用於計算 Nkm 指數。	上頸部正剪力(Fx 上)單位為牛頓(N)，力矩(My 上)單位為牛頓-公尺(Nm)，此兩個通道用於計算 Nkm 指數。
Typically the shear force will be acquired in kilo-Newtons (kN), and so in those cases, a conversion from kilo-Newtons	Typically the shear force will be acquired in kilo-Newtons (kN), and so in those cases, a conversion from kilo-Newtons (kN) to Newtons (N) will be required.	剪力單位為千牛頓(kN)，在必要情況下，須要將千牛頓(kN)轉換成	剪力單位為千牛頓(kN)，在必要情況下，須要將千牛頓(kN)轉換成

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(kN) to Newtons (N) will be required. Once it has been confirmed that both shear force and moment are in the correct units, filter M_y upper as defined in TB 021. To allow combination of the My upper and Fx upper channels, another Fx upper channe should be produced, filtered as defined in TB 021. Due to the construction of the BioRID, a correction must then be made to convert the actual moment measured by the upper neck loadcell into the moment about the Occipital Condyle (OC). The corrected moment, M_y OC is equal to the upper neck shear force Fx upper multiplied by a constant, D, then subtracted from the measured moment, M_y upper . Calculate the Moment about the OC according to TB 021.	Once it has been confirmed that both shear force and moment are in the correct units, filter M_y upper at CFC 600, according to SAE J211. To allow combination of the M_y upper and F_x upper channels, another F_x upper channel should be produced, filtered at CFC 600. Due to the construction of the BioRID, a correction must then be made to convert the actual moment measured by the upper neck loadcell into the moment about the Occipital Condyle (OC). The corrected moment, M_y OC is equal to the upper neck shear force Fx upper multiplied by a constant, D, then subtracted from the measured moment, M_y upper. Calculate the Moment about the OC according to the following equation: $$M_y^{OC}(t) = M_y^{upper}(t) - DF_x^{upper}(t)$$ Where D=0.01778m	牛頓(N)。 一旦確認剪力與力矩兩者單位正確後，依照 Euro NCAP 技術通報 TB021 進行 M_y 上濾波。為組合(Combination)M_y 上及 F_x 上通道，須建立另一個 F_x 上通道，並以 Euro NCAP 技術通報 TB021 進行濾波。由於 BioRID 之構造關係，因此必須修正上頸部荷重計測得知實際力矩，將其轉換成枕骨髁(Occipital Condyle，OC)力矩。修正後之力矩（MyOC）等於已測得之力矩 My 上減掉上頸部剪力 Fx 上乘以常數(D)，依 Euro NCAP 技術通報 TB021 計算 OC 力矩。	牛頓(N)。 一旦確認剪力與力矩兩者單位正確後，依照 SAE J211 以 CFC600 進行 M_y 上濾波。為組合(Combination)M_y 上及 F_x 上通道，須建立另一個 Fx 上通道，並以 CFC600 進行濾波。由於 BioRID 之構造關係，因此必須修正上頸部荷重計測得知實際力矩，將其轉換成枕骨髁(Occipital Condyle，OC)力矩。修正後之力矩（MyOC）等於已測得之力矩 My 上減掉上頸部剪力 Fx 上乘以常數(D)，依下列公式計算 OC 力矩： $$M_y^{OC}(t) = M_y^{上}(t) - D \times F_x^{上}(t)$$ 其中：D = 0.01778m
The four components of Nkm are then calculated using the upper neck shear force F_x upper and the corrected moment	The four components of Nkm are then calculated using the upper neck shear force F_x upper and the corrected moment about the OC, M_y OC.	然後，用上頸部剪力 F_x 上及修正後之 OC 力矩 M_y^{OC} 計算 Nkm 之四個分量。	然後，用上頸部剪力 F_x 上及修正後之 OC 力矩 M_y^{OC} 計算 Nkm 之四個分量。

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about the OC, M_y^{OC}. Each channel first needs to be separated into it's positive- or negative-going components by generating four new channels as follows: Generate two new channels, F_{xa} and F_{xp} , based on Fupper force channel. Generate two new channels, M_{yf} and M_{ye} based on the M_y^{OC} moment channel. Each of the new channels should contain only selected positive or negative-going portions of the respective F_x or M_y channels, with all unwanted data points being replaced by null or zero value, as defined by: F_{xa} channel contains only the positive portion of the Fx upper force channel as follows: If F_x upper (t) > 0, then $F_{xa}(t)$ = Fx upper (t), else $F_{xa}(t) = 0$ F_{xp} channel contains only the negative portion of the Fx upper force channel as follows: If Fx upper(t) <0, then $F_{xp}(t)$ = Fx upper(t), else $F_{xp}(t)= 0$	Each channel first needs to be separated into it's positive- or negative-going components by generating four new channels as follows: Generate two new channels, F_{xa} and F_{xp} , based on F upper force channel. Generate two new channels, M_{yf} and M_{ye} based on the M_y^{OC} moment channel. Each of the new channels should contain only selected positive or negative-going portions of the respective F_x or M_y channels, with all unwanted data points being replaced by null or zero value, as defined by: F_{xa} channel contains only the positive portion of the Fx upper force channel as follows: If F_x upper (t) > 0, then $F_{xa}(t)$ = Fx upper (t), else $F_{xa}(t) = 0$ F_{xp} channel contains only the negative portion of the Fx upper force channel as follows: If Fx upper(t) <0, then $F_{xp}(t)$ = Fx upper(t), else $F_{xp}(t)= 0$ M_{yf} channel contains only the positive	將每個通道先分成正向或負向分量 (Positive- or Negative-going components)，並產生四個新通道，如下： (1)將剪力通道 Fx 上分成兩個新通道 F_{xa} 及 F_{xp}。 (2)將力矩通道 M_y^{OC} 分成兩個新通道 M_{yf} 及 M_{ye}。 各個新通道應只包含從 F_x 與 M_y 通道各自選出之正向或負向部份，所有不需要的數據點皆以零或零值取代，定義如下： (1)F_{xa} 通道只含 F_x 上剪力通道之正向部分，如下： 假設 Fx 上 (t) > 0，F_{xa} (t) = F_x 上 (t)，否則 Fxa (t) = 0； (2)F_{xp} 通道只含 F_x 上剪力通道之負向部分，如下： 假設 F_x 上 (t) < 0，F_{xp} (t) = F_x 上 (t)，否則 F_{xp} (t) = 0；	將每個通道先分成正向或負向分量 (Positive- or Negative-going components)，並產生四個新通道，如下： (1)將剪力通道 Fx 上分成兩個新通道 F_{xa} 及 F_{xp}。 (2)將力矩通道 M_y^{OC} 分成兩個新通道 M_{yf} 及 M_{ye}。 各個新通道應只包含從 F_x 與 M_y 通道各自選出之正向或負向部份，所有不需要的數據點皆以零或零值取代，定義如下： (1)F_{xa} 通道只含 F_x 上剪力通道之正向部分，如下： 假設 Fx 上 (t) > 0，F_{xa} (t) = F_x 上 (t)，否則 Fxa (t) = 0； (2)F_{xp} 通道只含 F_x 上剪力通道之負向部分，如下： 假設 F_x 上 (t) < 0，F_{xp} (t) = F_x 上 (t)，否則 F_{xp} (t) = 0；

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M_{yf} channel contains only the positive portion of the M_yOC moment channel as follows: If $M_y^{OC}(t) >0$, then Myf (t)= $M_y^{OC}(t)$, else Myf (t)= 0 M_{ye} channel contains only the negative portion of the M_y^{OC}moment channel as follows: If $M_y^{OC}(t)<0$, then Mye(t) = $M_y^{OC}(t)$, else $M_{ye}(t) = 0$ The four components of Nkm are then defined as: 1) "Neck Extension Posterior" (Nep) or the combined negative-going portion of the shear force channel (Fxp) and negative-going portions of the moment channel (Mye), as defined by TB 021. 2) "Neck Extension Anterior" (N_{ea}) or the combined positive-going portion of the	portion of the M_yOC moment channel as follows: If $M_y^{OC}(t) >0$, then Myf (t)= $M_y^{OC}(t)$, else Myf (t)= 0 M_{ye} channel contains only the negative portion of the M_y^{OC}moment channel as follows: If $M_y^{OC}(t)<0$, then Mye(t) = $M_y^{OC}(t)$, else $M_{ye}(t) = 0$ The four components of Nkm are then defined as: 1) "Neck Extension Posterior" (N_{ep}) or the combined negative-going portion of the shear force channel (F_{xp}) and negative-going portions of the moment channel (M_{ye}), as defined by: $$N_{ep}(t) = \frac{F_{xp}(t)}{F_{x-int}} + \frac{M_{ye}(t)}{M_{ye-int}}$$ Where: F_{x-int} = -845N, M_{ye-int} = -47.5Nm 2) "Neck Extension Anterior" (N_{ea}) or the combined positive-going portion of the shear force channel (F_{xa}) and negative-	(3)M_{yf} 通道只含 M_y^{OC} 力矩通道之正向部分，如下： 假設 $M_y^{OC}(t) > 0$，$M_{yf}(t) = M_y^{OC}(t)$，否則 Myf (t) = 0； (4)M_{ye} 通道只含 M_y^{OC} 力矩通道之負向部分，如下： 假設 $M_y^{OC}(t) < 0$，$M_{ye}(t) = M_y^{OC}(t)$，否則 $M_{ye}(t) = 0$； 據此，Nkm 四個分量的定義為： (1) 後頸部拉伸力(N_{ep}，Neck Extension Posterior)：剪力通道(F_{xp})負向部分與力矩通道(M_{ye})負向部分的組合，詳如 Euro NCAP 技術通報 TB021。 (2) 前頸部拉伸力(Nea，Neck Extension Anterior)：剪力通道	(3)M_{yf} 通道只含 M_y^{OC} 力矩通道之正向部分，如下： 假設 $M_y^{OC}(t) > 0$，$M_{yf}(t) = M_y^{OC}(t)$，否則 $M_{yf}(t) = 0$； (4)M_{ye} 通道只含 M_y^{OC} 力矩通道之負向部分，如下： 假設 $M_y^{OC}(t) < 0$，$M_{ye}(t) = M_y^{OC}(t)$，否則 $M_{ye}(t) = 0$； 據此，Nkm 四個分量的定義為： (1) 後頸部拉伸力(N_{ep}，Neck Extension Posterior)：剪力通道(F_{xp})負向部分與力矩通道(M_{ye})負向部分的組合，表示如下： $$N_{ep}(t) = \frac{F_{xp}(t)}{F_{x-int}} + \frac{M_{ye}(t)}{M_{ye-int}}$$ 其中：F_{x-int} = -845N，M_{ye-int} = -47.5Nm。 (2) 前頸部拉伸力(Nea，Neck Extension Anterior)：剪力通道

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shear force channel (F_{xa}) and negative-going portions of the moment channel (M_{ye}), as defined by TB 021:	going portions of the moment channel (M_{ye}), as defined by: $$N_{ea}(t) = \frac{F_{xa}(t)}{F_{x-int}} + \frac{M_{ye}(t)}{M_{ye-int}}$$ Where: F_{x-int} = 845N, M_{ye-int} = -47.5Nm	(Fxa)正向部分與力矩通道(Mye)負向部分之組合，詳如 Euro NCAP 技術通報 TB021。	(Fxa)正向部分與力矩通道(Mye)負向部分之組合，表示如下： $$N_{ea}(t) = \frac{F_{xa}(t)}{F_{x-int}} + \frac{M_{ye}(t)}{M_{ye-int}}$$ 其中：$F_{(x-int)}$=845N，$M_{(ye-int)}$=-47.5Nm。
3) "Neck Flexion Posterior" (N_{fp}) or the combined negative-going portions of the shear force channel (F_{xp}) and positive-going portions of the moment channel (M_{yf}), as defined by TB 021	3) "Neck Flexion Posterior" (N $_{fp}$) or the combined negative-going portions of the shear force channel (F_{xp}) and positive-going portions of the moment channel (M_{yf}), as defined by: $$N_{fp}(t) = \frac{F_{xp}(t)}{F_{x-int}} + \frac{M_{yf}(t)}{M_{yf-int}}$$ Where: F_{x-int} = -845N, M_{yf-int} = 88.1Nm	(3) 前頸部收縮力(Nfp，Neck Flexion Posterior)：剪力通道(Fxp)負向部分加上力矩通道(Myf)正向部分之組合，詳如 Euro NCAP 技術通報 TB021。	(3) 前頸部收縮力(Nfp，Neck Flexion Posterior)：剪力通道(Fxp)負向部分加上力矩通道(Myf)正向部分之組合，表示如下： $$N_{fp}(t) = \frac{F_{xp}(t)}{F_{x-int}} + \frac{M_{yf}(t)}{M_{yf-int}}$$ 其中：F_{x-int}= -845N，M_{yf-int}=88.1Nm。
4) "Neck Flexion Anterior" (N_{fa}) or the combined positive-going portions of the shear force channel (F_{xa}) an positive-going portions of the moment channel (M_{yf}), as defined by TB 021:	4) "Neck Flexion Anterior" (N $_{fa}$) or the combined positive-going portions of the shear force channel (F_{xa}) and positive-going portions of the moment channel (M_{yf}), as defined by: $$N_{fa}(t) = \frac{F_{xa}(t)}{F_{x-int}} + \frac{M_{yf}(t)}{M_{yf-int}}$$	(4) 後頸部收縮力（Nfa，Neck Flexion Anterior）：剪力通道（Fxa）正向部分加上力矩通道（Mye）正向部分之組合，詳如 Euro NCAP 技術通報 TB021。	(4) 後頸部收縮力（Nfa，Neck Flexion Anterior）：剪力通道（Fxa）正向部分加上力矩通道（Mye）正向部分之組合，表示如下：

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Each of the four components should be calculated as a new data channel, using only the positive- or negative-going portions of the F_x and M_y channels as appropriate, and the relevant critical intercept values. Maxima for each of the four components should be calculated.	Where: $F_{x\text{-int}}$ = 845N, $M_{yf\text{-int}}$ = 88.1Nm Each of the four components should be calculated as a new data channel, using only the positive- or negative-going portions of the F_x and M_y channels as appropriate, and the relevant critical intercept values. Maxima for each of the four components should be calculated, considering only the portion of data from T-zero until T-HRC(end), as follows: $$N_{ep(\max)} = \underset{T-HRC(end)}{Max}\left[N_{ep}(t)\right]$$ $$N_{ea(\max)} = \underset{T-HRC(end)}{Max}\left[N_{ea}(t)\right]$$ $$N_{fp(\max)} = \underset{T-HRC(end)}{Max}\left[N_{fp}(t)\right]$$ $$N_{fa(\max)} = \underset{T-HRC(end)}{Max}\left[N_{fa}(t)\right]$$ The Nkm value is taken as the maximum value reached by any one of the four components It should be noted which component of the four reached the maximum value and the time at which	每個分量皆應當成新數據通道計算，僅使用 Fx 及 My 通道正向或負向部分（適當情況下）及相關截距臨界值。應計算各分量最大值，且僅考慮從 T0 到 T-HRC（結束）之數據。	$$N_{fa}(t) = \frac{F_{xa}(t)}{F_{x-int}} + \frac{M_{yf}(t)}{M_{yf-int}}$$ 其中：$F_{x\text{-int}}$ = 845N，$M_{yf\text{-int}}$ = 88.1Nm。 每個分量皆應當成新數據通道計算，僅使用 Fx 及 My 通道正向或負向部分（適當情況下）及相關截距臨界值。應計算各分量最大值，且僅考慮從 T0 到 T-HRC（結束）之數據，如下： $$N_{ep(max)} = \underset{\text{T-HRC(結束)}}{\text{Max}}\left[N_{ep}(t)\right]$$ $$N_{ea(max)} = \underset{\text{T-HRC(結束)}}{\text{Max}}\left[N_{ea}(t)\right]$$ $$N_{fp(max)} = \underset{\text{T-HRC(結束)}}{\text{Max}}\left[N_{fp}(t)\right]$$ $$N_{fa(max)} = \underset{\text{T-HRC(結束)}}{\text{Max}}\left[N_{fa}(t)\right]$$ Nkm 指數為四個分量（Nea、Nep、Nfa、Nfp）任一所達到之最大值，記錄達到最大值之分量為何及發生時間。

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10.7 Seatback Dynamic Deflection	this occurred. 10.8 Seatback Dynamic Deflection. Using a suitable target tracking film analysis technique, measure the seatback dynamic opening from the targets defined in the Euro NCAP Film and Photo protocol as follows: ● Define a line between the upper and lower seatback targets, ST2 and ST3. ● Define a second line between the forward and rearward sled base targets, B1 and B2. ● Calculate the angle between these two lines at the T-zero position. The instantaneous seatback deflection is defined as the instantaneous difference in angle between the T-zero position and the deflected position. Track the change in instantaneous angle between these two lines, throughout the dynamic test. The Seatback Dynamic Opening is defined	3.5.9.7 背動態變形 (Seatback dynamic deflection)	3.5.9.8 背動態變形 (Seatback dynamic deflection) 使用合適之目標追蹤影像分析技術，從 TNCAP 錄影及拍照規章定義之目標測量椅背動態角度變化(Seatback dynamic opening)，如下： (1)於椅背上下半部目標 ST2 及 ST3 之間確立第一條線。 (2)於台車底座前後方目標 B1 及 B2 之間確立第二條線。 (3)從 T0 位置計算兩條線之間的角度。瞬時椅背變形量(Instantaneous seatback deflection)為 T0 與變形位置之間角度的瞬

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The Seatback Dynamic Opening is defined as the maximum change in angle achieved at anytime during the test between the T zero position and T-HRC(end). Note this maximum angle, and the time at which it occurred. For seats with two-point adjusting back, the same seatback deflection criterion will apply using targets ST2 and ST3, however it is recommended to use the two optional targets ST2' and ST3' (defined in the Euro NCAP Film and Photo protocol) such that any contribution from deflection in the two point mechanism can be understood.	as the maximum change in angle achieved at any time during the test between the T zero position and T-HRC(end). Note this maximum angle, and the time at which it occurred. For seats with two-point adjusting back, the same seatback deflection criterion will apply using targets ST2 and ST3, however it is recommended to use the two optional targets ST2' and ST3' (defined in the Euro NCAP Film and Photo protocol) such that any contribution from deflection in the two point mechanism can be understood.	椅背動態角度變化為試驗期間 T_0 位置及 T-HRC(結束)之間任何時候所達到之最大角度變化。記錄此最大角度及其發生時間。 就兩點式調整椅背而言，可同樣使用 ST2 及 ST3 兩個目標及相同之椅背變形標準。然而，建議使用兩個非強制性目標(Optional target)ST2’及 ST3’(如 TNCAP 錄影及拍照規章定義)，以清楚了解兩點式機械裝置之變形情況。	時差異。整個動態試驗期間，追蹤這兩條線瞬時角度之變化。 椅背動態角度變化為試驗期間 T_0 位置及 T-HRC(結束)之間任何時候所達到之最大角度變化。記錄此最大角度及其發生時間。 就兩點式調整椅背而言，可同樣使用 ST2 及 ST3 兩個目標及相同之椅背變形標準。然而，建議使用兩個非強制性目標(Optional target)ST2’及 ST3’(如 TNCAP 錄影及拍照規章定義)，以清楚了解兩點式機械裝置之變形情況。
Appendix I **MANUFACTURERS SPECIFIED SETTINGS** Prior to preparation of the sled and seats, the following information should be provided by the manufacturer to allow for the test preparation. (請參考末頁表格)	**Appendix I** **MANUFACTURERS SPECIFIED SETTINGS** Prior to preparation of the sled and seats, the following information should be provided by the manufacturer to allow for the test preparation. (請參考末頁表格)	3.5.10 車輛業者須定義之設置 於台車及座椅整備前，車輛業者應提供下列資訊，以供試驗整備用。 (請參考末頁表格)	3.5.10 車輛業者須定義之設置 於台車及座椅整備前，車輛業者應提供下列資訊，以供試驗整備用。 (請參考末頁表格)

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Appendix II **RCAR GLORIA JIG & CALIBRATION PROCEDURE*** 1 Introduction For the purposes of standardised seating positions for anthropomorphic test devices the SAE (Society of Automotive Engineers) designed the H-Point Machine (H-PM) that allowed a uniform definition of the human H-Point. Much of this work was completed in the late 1950's with the machine still in constant use today. The SAE J826 procedure [1] was also defined to allow consistent and authoritative H-points and seating reference points to be defined.	**Appendix II** **RCAR GLORIA JIG & CALIBRATION PROCEDURE (H-PM/HRMD CALIBRATION)*** 1 Introduction For the purposes of standardized seating positions for anthropomorphic test devices the SAE (Society of Automotive Engineers) designed the H-Point Machine (H-PM) that allowed a uniform definition of the human H-Point. Much of this work was completed in the late 1950's with the machine still in constant use today. The SAE J826 procedure [1] was also defined to allow consistent and authoritative H-points and seating reference points to be defined. Since the height probe was insufficient to measure both height and backset a head form was designed to fit the H-Point machine, known as the Head Restraint Measuring Device (HRMD) [2]. The HRMD probes allow the measurement of both head restraint height and backset and are used to rate whiplash protection in the	3.5.11 RCAR GLORIA 治具&校正程序 3.5.11.1 簡介 為統一擬人化試驗裝置之座椅位置標準，美國汽車工程學會(Society of Automotive Engineers，SAE)設計了 H 點人體模型（H-Point Machine，HPM），以統一定義 H 點位置。此項工作多半於 1950 年晚期完成，目前人體模型仍廣為使用。SAE J826 程序亦針對 H 點及座椅參考點之一致性進行定義。	3.5.11 RCAR GLORIA 治具&校正程序（HPM/HRMD 校正） 3.5.11.1 簡介 為統一擬人化試驗裝置之座椅位置標準，美國汽車工程學會(Society of Automotive Engineers，SAE)設計了 H 點人體模型（H-Point Machine，HPM），以統一定義 H 點位置。此項工作多半於 1950 年晚期完成，目前人體模型仍廣為使用。SAE J826 程序亦針對 H 點及座椅參考點之一致性進行定義。 由於高度探測器無法確實測量頭枕高度及頭枕間隙，因此，SAE 設計了頭形裝置安裝於 H 點人體模型上，此裝置稱為頭枕量測裝置(HRMD)。HRMD 探測器可測量頭枕高度及頭枕間隙，且汽車維修研究協會(Research Council for Automobile，RCAR)頭枕量測程序亦使用 HRMD 評等鞭甩保護。

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	RCAR (Research Council for Automobile) Head Restraint Measurement procedure [3].		
Research studies from Thatcham [4] and Partnership for Dummy Technology and Biomechanics (PDB) [5] have both shown the location of the H-point on different H-PMs shows little variability. However the location of the weight hangers shows some variability, and this location is not controlled by any calibration procedure.	Research studies from Thatcham [4] and Partnership for Dummy Technology and Biomechanics (PDB) [5] have both shown the location of the H-point on different H-PMs shows little variability. However the location of the weight hangers shows some variability, and this location is not controlled by any calibration procedure. The weight hanger location variability can by transferred to the HRMD, and could affect backset measurements. This could consequently affect head restraint static geometry ratings, so a calibration procedure was developed with the aim of controlling H-PM & HRMD units.	據英國驗證機構 Thatcham 及人偶科技暨生物力學合作計畫(Partnership for Dummy Technology and Biomechanics，PDB)之研究顯示，各個不同 HPM 之 H 點幾乎毫無差異，惟配重支架(Weight hangers)位置卻有些許出入，且此位置未受任何校正程序規範。	據英國驗證機構 Thatcham 及人偶科技暨生物力學合作計畫(Partnership for Dummy Technology and Biomechanics，PDB)之研究顯示，各個不同 HPM 之 H 點幾乎毫無差異，惟配重支架(Weight hangers)位置卻有些許出入，且此位置未受任何校正程序規範。因此，配重支架之變異性可能會轉嫁給 HRMD，進而影響頭枕間隙量測，頭枕靜態幾何位置評等可能會因此受到影響。有鑑於此，業界制定了校正程序，以控制 HPM 與 HRMD 裝置。
2 Scope This procedure is designed to allow the calibration of H-PM to restrict build tolerance variations of items currently poorly controlled and allow more repeatable and reproducible results.	2 Scope This procedure is designed to allow the calibration of H-PM and HRMD units in isolation or together to restrict build tolerance variations of items currently poorly controlled and allow more	3.5.11.2 範圍 此程序可校正 HPM，以改善目前控管不佳之項目並建立公差範圍，且可複製及重複執行。	3.5.11.2 範圍 此程序可單獨或一起校正 HPM 及 HRMD 裝置，以改善目前控管不佳之項目並建立公差範圍，且可複製及重複執行。

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4 Equipment Requirements 4.1 H-PM Calibration Jig The H-PM unit is held in a jig, known as GLORIA, which will facilitate calibration. The jig is equipped with feet at each corner to facilitate levelling. The jig holds the seat pan by three horizontal bars of 20mm thickness that support the seat pan allowing the thigh bar to be horizontal. The back pan is supported by 900mm vertical bar with its origin at the base of the seat pan in the area of the buttock. This vertical support has a horizontal bar at the level of the weight hanger bar and is level. A cord is attached to the back pan to prevent the H-PM falling forward. * Source: RCAR Procedure, Version 1.3 Version: July 2007 (請參考末頁圖示)	repeatable and reproducible results. 4 Equipment Requirements 4.1 H-PM/HRMD Calibration Jig The H-PM/HRMD unit is to be calibrated together as one single unit. The H-PM/HRMD unit is held in a jig, known as GLORIA, which will facilitate calibration. The jig is equipped with feet at each corner to facilitate levelling. The jig holds the seat pan by three horizontal bars of 20mm thickness that support the seat pan allowing the thigh bar to be horizontal. The back pan is supported by 900mm vertical bar with its origin at the base of the seat pan in the area of the buttock. This vertical support has a horizontal bar at the level of the weight hanger bar and is level. A cord is attached to the back pan to prevent the H-PM falling forward. Near the top of the vertical support are scribed markings to indicate the target position of the HRMD height probe. This vertical support allows the calibration of the backset probe when extended.	3.5.11.4 設備要求 3.5.11.4.1HPM 校正治具 HPM 以 GLORIA 治具(Jig)支撐此裝置以執行校正。治具四邊皆有腳座用以調整水平用；並使用三支 20mm 之橫桿支撐座板(Seat pan)，使大腿骨桿成水平狀態。背板(Back pan)則以 900mm 之垂直桿支撐，該起始點位於臀部區域之座板底部。垂直支撐桿上放置水平橫桿且放置於配重支架桿之水平面上。背板以支撐帶固定避免 HPM 往前倒。 (請參考末頁圖示)	3.5.11.4 設備要求 3.5.11.4.1HPM/<u>HRMD</u> 校正治具 HPM/<u>HRMD 設備為總成裝置應一起校正，並</u>以 GLORIA 治具(Jig)支撐此裝置以執行校正。治具四邊皆有腳座用以調整水平用；並使用三支 20mm 之橫桿支撐座板(Seat pan)，使大腿骨桿成水平狀態。背板(Back pan)則以 900mm 之垂直桿支撐，該起始點位於臀部區域之座板底部。垂直支撐桿上放置水平橫桿且放置於配重支架桿之水平面上。背板以支撐帶固定避免 HPM 往前倒。<u>垂直支撐桿頂端刻有標記，用以顯示 HRMD 高度探測器之目標位置；垂直支撐桿可用於校正頭枕間隙探測器。</u> (請參考末頁圖示)

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	(請參考末頁圖示)		
6 Preparation of H-PM prior to Calibration	6 Preparation of H-PM prior to Calibration 6.1 Ensure that the H-PM Headroom Probe has been removed and replacement spacers installed prior to this calibration in accordance with the HRMD set up procedure (see HRMD User Guide ICBC 1999)[6]. Ensure that the H-PM to be calibrated has had the top edge of the weight hanger assembly modified to accept the HRMD unit (Figure 15). (請參考末頁圖示)	3.5.11.6 HPM 校正前整備	3.5.11.6 HPM 校正前整備 3.5.11.6.1校正前，依照 HRMD 設置程序（參見 HRMD User Guide ICBC 1999），確實移除 HPM 頭部空間探測器，並安裝替代墊片。受校正之 HPM 配重支架總成頂端應確實修改，以連接 HRMD 裝置（如圖 15 所示）。 (請參考末頁圖示)
6.1 Remove the H-Point locator plugs from the seat pan left and right.	6.2 Remove the H-Point locator plugs from the seat pan left and right.	3.5.11.6.1從座板左右兩側移除 H 點定位插銷(Locator plugs)。	3.5.11.6.2從座板左右兩側移除 H 點定位插銷(Locator plugs)。
6.2 When re-assembling the H-PM manikin without the Head Room Probe care should be taken to ensure that the H-Point pivot nuts are tightened to a torque of X-Y Nm. When set at this torque the manikin back pan can fall forward hence the use of the support strap.	6.3 When re-assembling the H-PM manikin without the Head Room Probe care should be taken to ensure that the H-Point pivot nuts are tightened to a torque of X-Y Nm. When set at this torque the manikin back pan can fall forward hence the use of the support strap.	3.5.11.6.2重新組裝無頭部空間探測器之 HPM 人體模型時，應確保 H 點樞軸螺帽確實鎖附至 X-Y 規範之扭矩(Nm)。此扭矩條件下，人體模型背板可前傾，故可使用支撐帶(Support strap)。	3.5.11.6.3重新組裝無頭部空間探測器之 HPM 人體模型時，應確保 H 點樞軸螺帽確實鎖附至 X-Y 規範之扭矩(Nm)。此扭矩條件下，人體模型背板可前傾，故可使用支撐帶(Support strap)。

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7 Installation and Calibration of H-PM 7.6 Install the H-Point locator rods through the vertical support guides and then into the H-point guides of the jig base and then through to the H-point holes on the H-PM (Figure 20). (請參考末頁圖示) 7.15 Raise the weight hanger guide bars either side of the jig and insert the weight hanger locator pins through the guide bars, arms and into the black cylindrical weight hanger bar guides(Figure 22). (請參考末頁圖示) 8 Calibration of the H-PM Unit 8.1 Once installed in the jig check to ensure that the flat portion of the H-PM back pan is parallel to the vertical jig support and that the gap is no more than 4mm. It is allowed to touch (Figure 23). (請參考末頁圖示)	7 Installation and Calibration of H-PM 7.6 Install the H-Point locator rods through the vertical support guides and then into the H-point guides of the jig base and then through to the H-point holes on the H-PM (Figure 16). (請參考末頁圖示) 7.15 Raise the weight hanger guide bars either side of the jig and insert the weight hanger locator pins through the guide bars, arms and into the black cylindrical weight hanger bar guides (Figure 18). (請參考末頁圖示) 8 Calibration of the H-PM Unit 8.1 Once installed in the jig check to ensure that the flat portion of the H-PM back pan is parallel to the vertical jig support and that the gap is no more than 4mm. It is allowed to touch (Figure 19). (請參考末頁圖示) 9 Installation of HRMD 9.1 Install the HRMD unit with the backset and height probes pre-installed onto the H-PM assembly as per HRMD User	3.5.11.7 HPM 安裝與校正 3.5.11.7.6將 H 點定位桿穿過垂直支撐導件，穿入治具底部之 H 點導件，然後再穿過 HPM 上之 H 點孔（如圖 20 所示）。 (請參考末頁圖示) 3.5.11.7.15 調升治具任一側之配重支架導桿，將配重支架定位插銷插入導桿、支臂及黑色圓柱配重支架導件（如圖 22 所示）。 (請參考末頁圖示) 3.5.11.8 HPM 裝置校正 3.5.11.8.1HPM 安裝於治具後，確認背板平坦部分與治具之垂直支撐桿平行，且間距未逾 4mm。可允許接觸（如圖 23 所示）。 (請參考末頁圖示)	3.5.11.7 HPM 安裝與校正 3.5.11.7.6將 H 點定位桿穿過垂直支撐導件，穿入治具底部之 H 點導件，然後再穿過 HPM 上之 H 點孔（如圖 16 所示）。 (請參考末頁圖示) 3.5.11.7.15 調升治具任一側之配重支架導桿，將配重支架定位插銷插入導桿、支臂及黑色圓柱配重支架導件（如圖 18 所示）。 (請參考末頁圖示) 3.5.11.8 HPM 裝置校正 3.5.11.8.1HPM 安裝於治具後，確認背板平坦部分與治具之垂直支撐桿平行，且間距未逾 4mm。可允許接觸（如圖 19 所示）。 (請參考末頁圖示) 3.5.11.9 HRMD 安裝 3.5.11.9.1根據 HRMD 使用手冊 ICBC 1999，將已安裝頭枕間隙及高度探測器之 HRMD 裝置安裝

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	Manual ICBC 1999 9.2 Ensure that the plungers fitted to the centre locator fork on the HRMD are in good condition and that they are tight enough to allow the fork to contact the rear surface of the H-PM weight hanger support. 9.3 Level the HRMD head using the adjuster knob and the integral spirit level. Confirm that the spirit level is accurate by checking that the rear surface of the head is vertical (± 0.3) with a calibrated digital inclinometer. If not than adjust the head using the adjuster knob and digital inclinometer until vertical. The integral spirit level should then be adjusted or replaced as appropriate. 9.4 Check the trueness of the head bubble level. Place a digital inclinometer on the rear surface of the head and adjust the bubble to level using the screw. The bubble must not then be altered during the remaining calibration procedure or during use.		於 HPM 總成上。 3.5.11.9.2確保安裝於 HRMD 中心定位前叉(Centre locator fork)之柱塞狀態良好且牢固，使前叉可接觸 HPM 配重支架支撐後方表面 。 3.5.11.9.3使用調節器旋鈕(Adjuster knob)及整合式水平儀(Integral spirit level)將 HRMD 頭部調整至水平位置。使用經校正之數位傾斜儀驗證頭部後方表面為垂直狀態(±0.3 度)，藉此確認水平儀之正確性。若非如此，使用調節器旋鈕及數位傾斜儀調整頭部至垂直位置。視情況調整或更換整合式水平儀。 3.5.11.9.4 檢查頭部氣泡水平儀(Bubble level)之準確度。於頭部後方表面放置數位傾斜儀，使用螺絲將氣泡調整至水平位置。接下來的校正程序或使用期間，不可再調整氣泡水平儀。 (請參考末頁圖示)

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	10 Calibration of the H-PM/HRMD Unit Once the H-PM/HRMD assembly is installed into the jig the following measures (with tolerances) should be taken:		3.5.11.10 HPM/HRMD 裝置校正 HPM/HRMD 總成安裝至治具後，應進行下列步驟（於容許誤差範圍內）：
	10.1 Adjust the HRMD height probe until it is in contact with the forward surface of the jig vertical support. If the lower surface of the height probe contacts the scale at 0mm (±1mm) it is deemed to be within calibration. If this is not possible then the entire HRMD unit should be checked by the manufacturer (ICBC). (請參考末頁圖示)		3.5.11.10.1 調整 HRMD 高度探測器，直到接觸治具垂直支撐之前方表面。若高度探測器下方表面接觸刻度為 0mm（±1mm），則應視為位於校準範圍內。若無法達成，HRMD 整組裝置應交由製造商（ICBC）進行檢查。 (請參考末頁圖示)
	10.2 Adjust the HRMD backset probe to contact the forward surface of the jig vertical support. The indicated backset should read 8cm (±1mm). If this is not possible then the entire HRMD unit should be returned to the manufacturer.		3.5.11.10.2 調整 HRMD 頭枕間隙探測器，以接觸治具垂直支撐之前方表面。頭枕間隙之讀數應為 8cm（±1mm）。若無法達成，HRMD 整組裝置應交由製造商（ICBC）進行檢查。
9 Attachment of Torso Angle Measuring Surface	11 Attachment of Torso Angle Measuring Surface	3.5.11.9 軀幹角度量測面連接 (Attachment of Torso Angle Measuring Surface)	3.5.11.11 軀幹角度量測面連接 (Attachment of Torso Angle Measuring Surface)
9.1 Measure the trunk of the left hand	11.1 Measure the trunk of the left hand	3.5.11.9.1 使用數位傾斜儀(Digital	3.5.11.11.1 使用數位傾斜儀(Digital

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weight hanger with a digital inclinometer (Figure 24). (請參考末頁圖示) 9.2 A calibrated Angle Measuring surface block should then be attached to ensure the left hand weight hanger trunk to ensure that an angle of 90° (± 0.3° is indicated), Figure 25. 9.3 If the angle of the left hand weight hanger is not at 90° (± 0.3°) then a calibrated and adjusted surface block should be installed in place of the standard item. 9.4 Check the angle of the installed calibrated surface block with a digital inclinometer to ensure that it shows a reading of 90° (± 0.3°). (請參考末頁圖示)	weight hanger with a digital inclinometer (Figure 22). (請參考末頁圖示) 11.2 A calibrated Angle Measuring surface block should then be attached to ensure the left hand weight hanger trunk to ensure that an angle of 90 (±0.3°is indicated), Figure 23. 11.3 If the angle of the left hand weight hanger is not at 90°(±0.3°) then a calibrated and adjusted surface block should be installed in place of the standard item. 11.4 Check the angle of the installed calibrated surface block with a digital inclinometer to ensure that it shows a reading of 90°(± 0.3°). (請參考末頁圖示) 12 Marking of H-PM/HRMD Units 12.1 An indelible metallic self adhesive label should be attached to the H-PM on LH back pan spine to back pan bracket. 12.2 An identical label should be attached to the HRMD above the build plate.	inclinometer)量測軀幹之左側配重支架（如圖 24 所示）。 (請參考末頁圖示) 3.5.11.9.2 連接一個校正用的角度量測墊塊(Calibrated angle measuring surface block)，確保軀幹之左側配重支架角度為 90 度（±0.3 度），如圖 25 所示。 3.5.11.9.3 若左側配重支架角度未呈 90 度（±0.3 度），則應安裝經過校正及調整之墊塊，以取代標準物件(Standard item)。 3.5.11.9.4 使用數位傾斜儀檢查安裝校正墊塊後之角度，並確定讀數為 90 度（±0.3 度）。 (請參考末頁圖示)	inclinometer)量測軀幹之左側配重支架（如圖 22 所示）。 (請參考末頁圖示) 3.5.11.11.2 連接一個校正用的角度量測墊塊(Calibrated angle measuring surface block)，確保軀幹之左側配重支架角度為 90 度（±0.3 度），如圖 23 所示。 3.5.11.11.3 若左側配重支架角度未呈 90 度（±0.3 度），則應安裝經過校正及調整之墊塊，以取代標準物件(Standard item)。 3.5.11.11.4 使用數位傾斜儀檢查安裝校正墊塊後之角度，並確定讀數為 90 度（±0.3 度）。 (請參考末頁圖示) 3.5.11.12 標記 HPM/HRMD 裝置 3.5.11.12.1 於 HPM 左側脊柱背板(Back pan spine)至頭枕間隙背板貼上無法抹除表面文字之金屬自黏標籤。 3.5.11.12.2 於 HRMD 拼板(Build plate)上方貼上相同標籤。

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	12.3 These labels should have the following information: ● Calibration Date ● Calibration Centre ● Serial numbers of the two units The label should also contain the following text: "Calibrated to H-PM/HRMD standard" (請參考末頁圖示)		3.5.11.12.3 上述標籤應包含下列資訊： (1) 校正日期。 (2) 校正中心。 (3) 兩組裝置之序號。 標籤應包含此訊息：「已依 HPM/HRMD 標準校正」。 (請參考末頁圖示)
	13 Checking the H-Point Torque 13.1 After the two machines are calibrated together, set the torque on the H-point weight hanger pivot to 3.4 Nm (30 in-lbs). This can be done with a torque wrench.		3.5.11.13 檢查 H 點扭矩 3.5.11.13.1 兩個裝置一起校正完畢後，將 H 點配重支架樞軸上之扭矩設為 3.4Nm（30in-lbs）。可使用扭力扳手完成此步驟。
	Appendix III PRELIMINARY ADJUSTMENTS TO THE HRMD AND H-POINT MACHINE† 3.1 Remove the head room probe from the H-point machine and install the two washers (supplied with the HRMD) in the spaces remaining on the H-point pivot. 3.2 To accommodate the manufacturing		3.5.12 HRMD 及 H 點人體模型初步調整 3.5.12.1 移除 H 點人體模型之頭部空間探測器(Head room probe)，於 H 點樞軸之剩餘空間安裝兩個墊圈（HRMD 提供）。 3.5.12.2 為使適應 SAE H 點人體模

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	variances in the SAE H-point machines, the fit of the HRMD on the individual H-point machine should be confirmed as follows. 3.2.1 Place the H-point machine seat-back and pan in a "sitting position". Lower the HRMD in position onto the torso weight hangers and onto the top edge of the channel between the torso weight hangers. Before handling the HRMD confirm the knob below the back of the headform is finger tight. 3.2.2 To ensure the HRMD fits easily over the channel between the torso weight hangers and to prevent damage to the spring plungers, the channel must be chamfered in accordance with RONA Kinetics and Associates Ltd. Drawing No. 10045, see below. 3.2.3 If there is fore-aft movement of the headform assembly (with the rear knob on the HRMD finger tight), adjust the spring plungers in the HRMD retainer plate until there is no further movement. (請參考末頁圖示)		型之製造差異，HRMD 應依下述步驟安裝至 H 點人體模型： 3.5.12.2.1 將 H 點人體模型之背板及座板放置呈「坐姿(Sitting position)」。將 HRMD 放至軀幹配重支架上及配重支架間之通道頂端邊緣。操作 HRMD 前，應確認已手動鎖緊頭部模型後下方之旋鈕。 3.5.12.2.2 軀幹配重支架間之通道應依據 RONA Kinetics and Associates Ltd. 圖號 10045 進行倒角(Chamfer)，以便於 HRMD 安裝並防止彈簧柱塞損壞，如下圖。 3.5.12.2.3 若頭部模型總成有前後移動之狀況（HRMD 後方旋鈕已用手鎖緊），則調整 HRMD 托板之彈簧柱塞，直到未再產生任何移動。 (請參考末頁圖示)

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Appendix III SLED PULSE SPECIFICATIONS … 1.3 Definition of T0 T0 is defined as the time before the CFC60 filtered sled acceleration reaches 1.0g. The times for the medium and high pulses are 5.8ms and 3.7ms respectively. … 1.7 Definition of dV dV is defined as the difference between the maximum and minimum sled velocity between T0 and TEND, filtered at CFC180. (請參考末頁圖表)	Appendix IV SLED PULSE SPECIFICATIONS … 1.3 Definition of T0 T0 is defined as the time before the CFC60 filtered sled acceleration reaches 1.0g. The relevant times for the low, medium and high pulses are 4.6ms, 5.8ms and 3.7ms respectively. … 1.7 Definition of dV dV is defined as the difference between the maximum and minimum sled velocity between T0 and TEND. 2 Low Severity Sled Pulse Requirements The sled acceleration must be within the corridors for the complete time interval from 0ms to 150ms as illustrated in Figure 27. The corridor data points are detailed in Table 3 along with additional requirements for the low severity sled pulse. (請參考末頁圖表)	3.5.13 台車脈衝規範(Sled pulse specification) … 3.5.13.1.3 T_0之定義 T_0 定義為以 CFC60 濾波後之台車加速度達到 1.0g 前之時間。中、高脈衝之時間分別為 5.8ms 及 3.7ms。 … 3.5.13.1.7 dV 之定義 dV 定義為 T_0與 TEND 之間最大與最小的台車速度差異，並以 CFC180 進行濾波。	3.5.13 台車脈衝規範(Sled pulse specification) … 3.5.13.1.3 T_0之定義 T_0 定義為以 CFC60 濾波後之台車加速度達到 1.0g 前之時間。低、中、高脈衝之相關時間分別為 4.6ms、5.8ms 及 3.7ms。 … 3.5.13.1.7 dV 之定義 dV 定義為 T_0與 TEND 之間最大與最小的台車速度差異。 3.5.13.2 低強度台車脈衝規範 從 0ms 至 150ms 時間間隔內(Time interval)，台車加速度應位於規定之通道(Corridor)內，如圖 27 所示。詳細之通道數據點及低強度台車脈衝規定列於表 3。 (請參考末頁圖表)

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	The target rise of the low severity pulse has been calculated using the following formula: $$\frac{A_{max}}{2}\left\{1-\cos\left(\frac{(t)\pi}{15.4}\right)\right\}$$ To establish the rise corridor C, D E & F, the portion of the target pulse from 4.6ms to 11.1ms is time shifted by -2.0ms for points C & D and +2.0ms for points E & F. This corridor should be calculated between time (t) = 4.6ms to 11.1ms.		使用下列公式計算低強度脈衝上升目標： $$\frac{A_{max}}{2}\left\{1-\cos\left(\frac{(t)\pi}{15.4}\right)\right\}$$ 為了建立 C、D、E 及 F 上升通道，目標脈衝（4.6ms 至 11.1ms）將針對 C 及 D 點之時間軸平移-2.0ms，E 及 F 點平移+2.0ms。計算此通道時間 (t)=4.6ms 至 11.1ms。
3 Medium Severity Sled Pulse Requirements The sled acceleration must be within the corridors for the complete time interval from 0ms to 150ms as illustrated in Figure 26. The corridor data points are detailed in Table 3. The data points for the rise corridor, C, D E & F, are described in Table 4. (請參考末頁圖表)	3Medium Severity Sled Pulse Requirements The sled acceleration must be within the corridors for the complete time interval from 0ms to 150ms as illustrated in Figure 28. The corridor data points are detailed in Table 4. The data points for the rise corridor, C, D E & F, are described in Table 5. (請參考末頁圖表)	3.5.13.2 中強度台車脈衝規範 從 0ms 至 150ms 時間間隔內，台車加速度應位於規定之通道內，如圖 26 所示。詳細之通道數據點資料列於表 3。上升通道 C、D、E 及 F 之數據點說明如表 4。 (請參考末頁圖表)	3.5.13.3 中強度台車脈衝規範 從 0ms 至 150ms 時間間隔內，台車加速度應位於規定之通道內，如圖 28 所示。詳細之通道數據點資料列於表 4。上升通道 C、D、E 及 F 之數據點說明如表 5。 (請參考末頁圖表)
4 High Severity Sled Pulse Requirements The sled acceleration must be within the corridors for the complete time interval	4 High Severity Sled Pulse Requirements The sled acceleration must be within the corridors for the complete time interval	3.5.13.3 高強度台車脈衝規範 從 0ms 至 150ms 時間間隔內，台車加速度應位於規定之通道內，如	3.5.13.4 高強度台車脈衝規範 從 0ms 至 150ms 時間間隔內，台車加速度應位於規定之通道內，如

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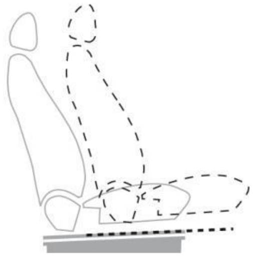
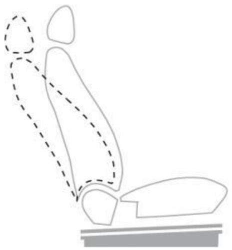
from 0ms to 150ms as illustrated in Figure 27. The corridor data points are detailed in Table 5 along with additional requirements for the high severity sled pulse. (請參考末頁圖表) The target rise of the low severity pulse has been calculated using the following formula: $\frac{A_{max}}{2}\left\{1-\cos\left(\frac{(t)\pi}{15.4}\right)\right\}$ To establish the rise corridor C, D E & F, the portion of the target pulse from 3.8ms to 11.0ms is time shifted by -2.0ms for points C & D and +2.0ms for points E & F. This corridor should be calculated between time (t) = 3.7ms to 11.0ms.	from 0ms to 150ms as illustrated in Figure 29. The corridor data points are detailed in Table 6 along with additional requirements for the high severity sled pulse. (請參考末頁圖表) The target rise of the low severity pulse has been calculated using the following formula: $\frac{A_{max}}{2}\left\{1-\cos\left(\frac{(t)\pi}{15.4}\right)\right\}$ To establish the rise corridor C, D E & F, the portion of the target pulse from 3.8ms to 11.0ms is time shifted by -2.0ms for points C & D and +2.0ms for points E & F. This corridor should be calculated between time (t) = 3.7ms to 11.0ms.	圖 27 所示。詳細通道數據點及其他高強度台車脈衝規定列於表 5。 (請參考末頁圖表) 使用下列公式計算高強度脈衝上升目標： $\frac{A_{max}}{2}\left\{1-\cos\left(\frac{(t)\pi}{15.4}\right)\right\}$ 為了建立 C、D、E 及 F 上升通道，目標脈衝（3.8ms 至 11.0ms）將針對 C 及 D 點之時間軸平移-2.0ms，對 E 及 F 點平移+2.0ms。此計算通道時間(t)=3.7ms 至 11.0ms。	圖 29 所示。詳細通道數據點及其他高強度台車脈衝規定列於表 6。 (請參考末頁圖表) 使用下列公式計算高強度脈衝上升目標： $\frac{A_{max}}{2}\left\{1-\cos\left(\frac{(t)\pi}{15.4}\right)\right\}$ 為了建立 C、D、E 及 F 上升通道，目標脈衝（3.8ms 至 11.0ms）將針對 C 及 D 點之時間軸平移-2.0ms，對 E 及 F 點平移+2.0ms。此計算通道時間(t)=3.7ms 至 11.0ms。
	(請參考末頁圖表)	刪除 3.5.14 座椅移動定義	(請參考末頁圖表)
Appendix IV (請參考末頁圖表)		3.5.14 頭部位置對照表 (請參考末頁圖表)	

(TNCAP 規章草案修正前)

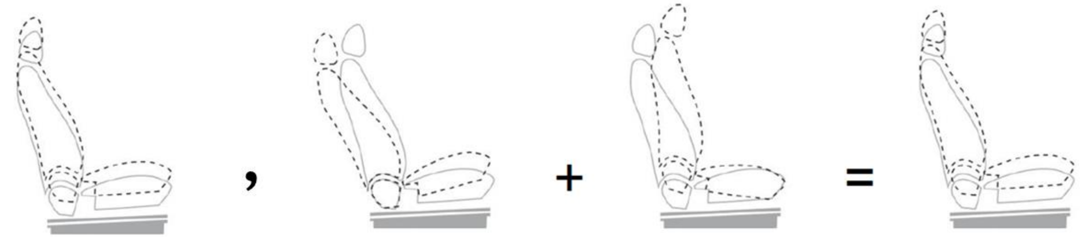
3.5.14 座椅移動定義



座椅滑軌(Seat Track)－前、後方向移動調整整張座椅（座墊及椅背）



椅背(Seatback)－在座墊不動之情況下，以椅背及座墊接合處為樞軸，轉動調整整個椅背，藉以改變椅背相對於座墊之角度。

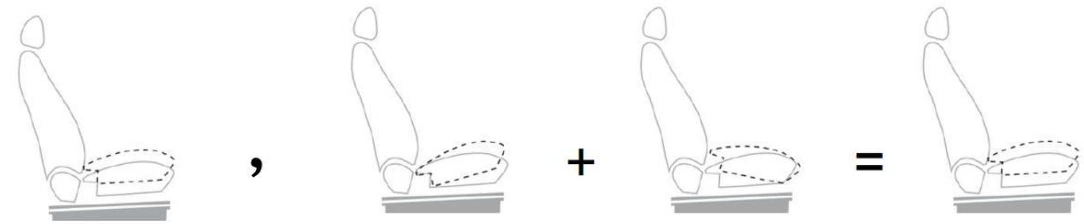


雙向(單一控制器)　　　　四向(電動開關(Toggle)或多旋鈕)

座椅高度(Seat Height)－垂直移動調整整張座椅（座墊及椅背同時）。調整時，座墊與地面須維持於相似(Similar)角度。其可為單一控制器（雙向），同時移動整個座椅，或為綜合控制器(Combination of controls)（四向，由一個電動開關或多個旋鈕控制），同時使用時，座墊與地面應維持於相似角度。

注意：不可能有四向式座椅高度及座椅傾斜度調整。

座椅傾斜度(Seat Tilt)－ 轉動調整整張座椅（座墊及椅背同時）。此座椅轉動調整方式將顯著地改變座墊相對於地面之角度(完全向下位置)。此調整可透過向前或向後轉動座椅以改變角度。



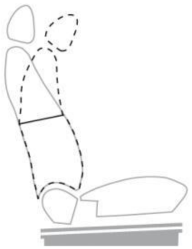
雙向(單一控制器)　　四向(電動開關(Toggle)或多旋鈕)

座墊高度(Seat Cushion Height)－在椅背不動之情況下，垂直移動調整座墊，同時座墊與地面須維持於相似角度。其可為單一控制器（雙向）同時移動整個座墊，或為綜合控制器（四向，由一個電動開關或多個旋鈕控制），同時使用時，座墊與地面應維持於相似角度。

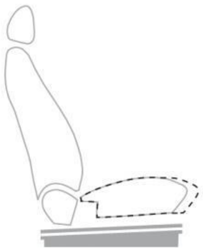
注意：不可能有四向式座墊高度及座墊傾斜度調整。

座墊傾斜度(Seat Cushion Tilt)－在椅背不動之情況下，移動調整座墊將顯著地改變座墊相對於地面之角度（完全向下位置）。此調整可透過移動座墊前方或座墊後方以改變角度。

腰部支撐(Lumbar Support)－調整椅背下方中心突出部分，以提供乘員腰脊支撐性。



椅背上方(Upper Seat Back)－以椅背樞軸點為中心，轉動調整椅背上半部。此調整將改變椅背上方相對於椅背下半部之角度。



座墊延伸(Cushion Extension)－向前移動或延伸部分座墊，增加座墊總長度。

側邊支撐(Side Bolsters)－移動調整椅背或座墊側邊，改變座椅外形(Contour)。

頭枕高度(Head Restraint Height)－垂直移動調整頭枕。

頭枕傾斜度(Head Restraint Tilt)－水平移動調整頭枕。

(2025 年 Euro NCAP 規章)

6.2.4.3

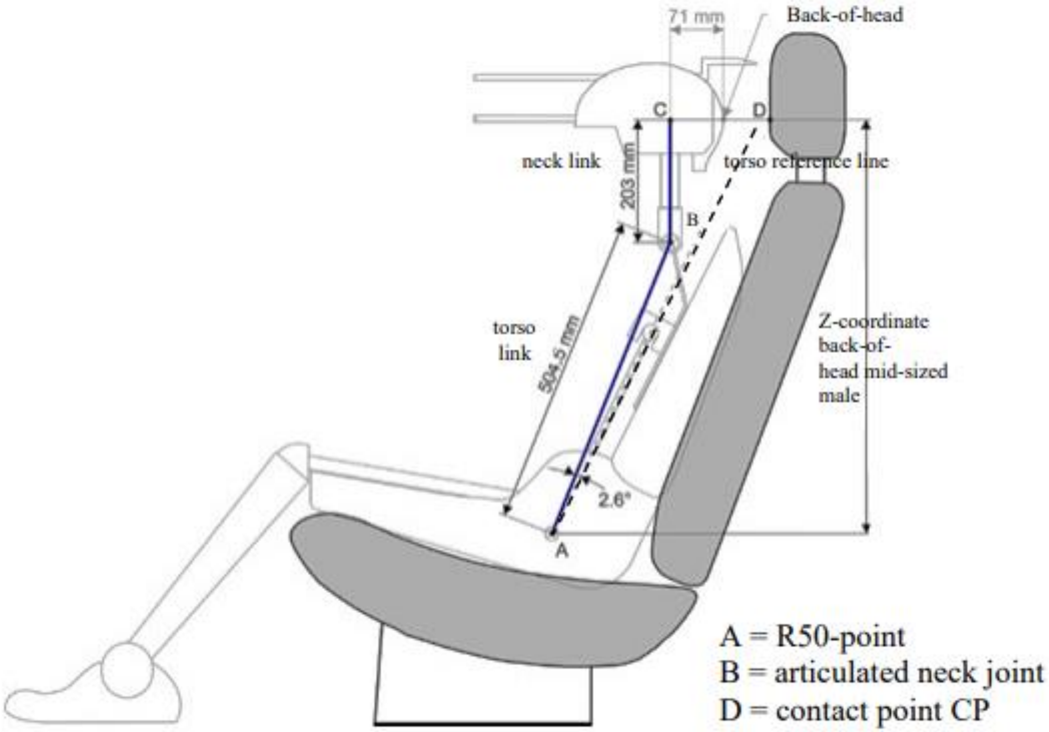


Figure 9: Head restraint measurement

6.2.4.3

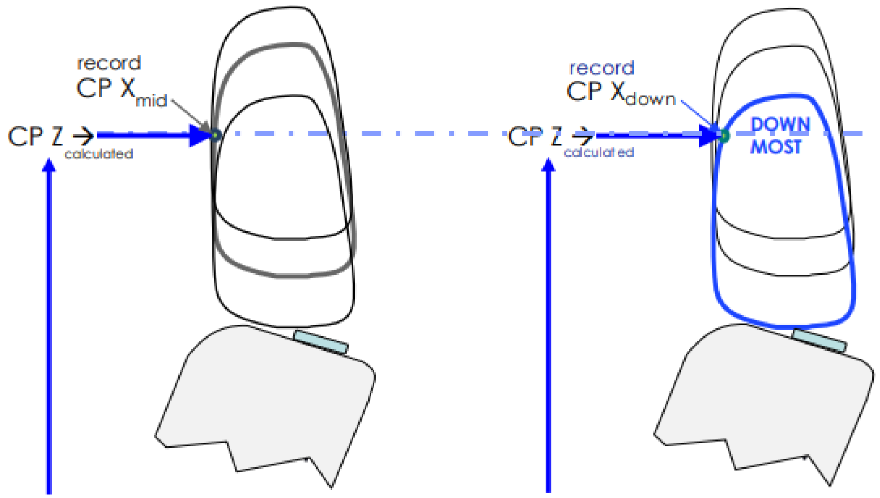


Figure 10: CP X and CP Z

(2022 年 Euro NCAP 規章)

6.3.6

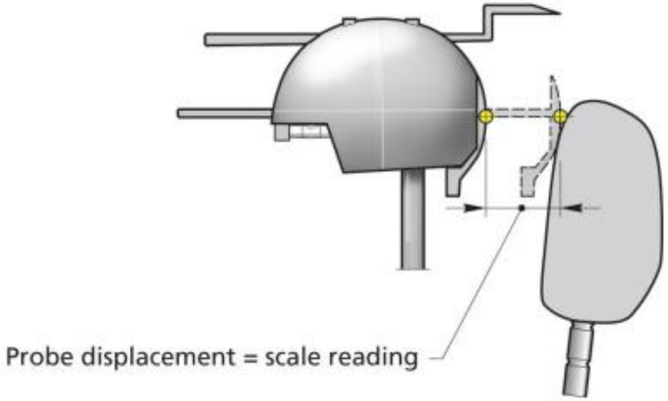


Figure 9: Head restraint probe backset for static geometry

6.4.7

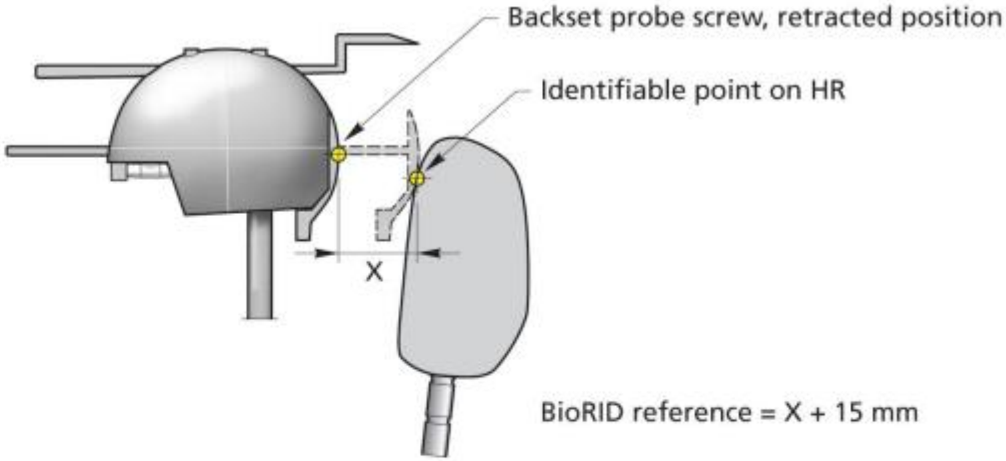


Figure 10: Measuring BioRID reference backset

(修正後 TNCAP 規章草案)

3.5.5.2.4.2

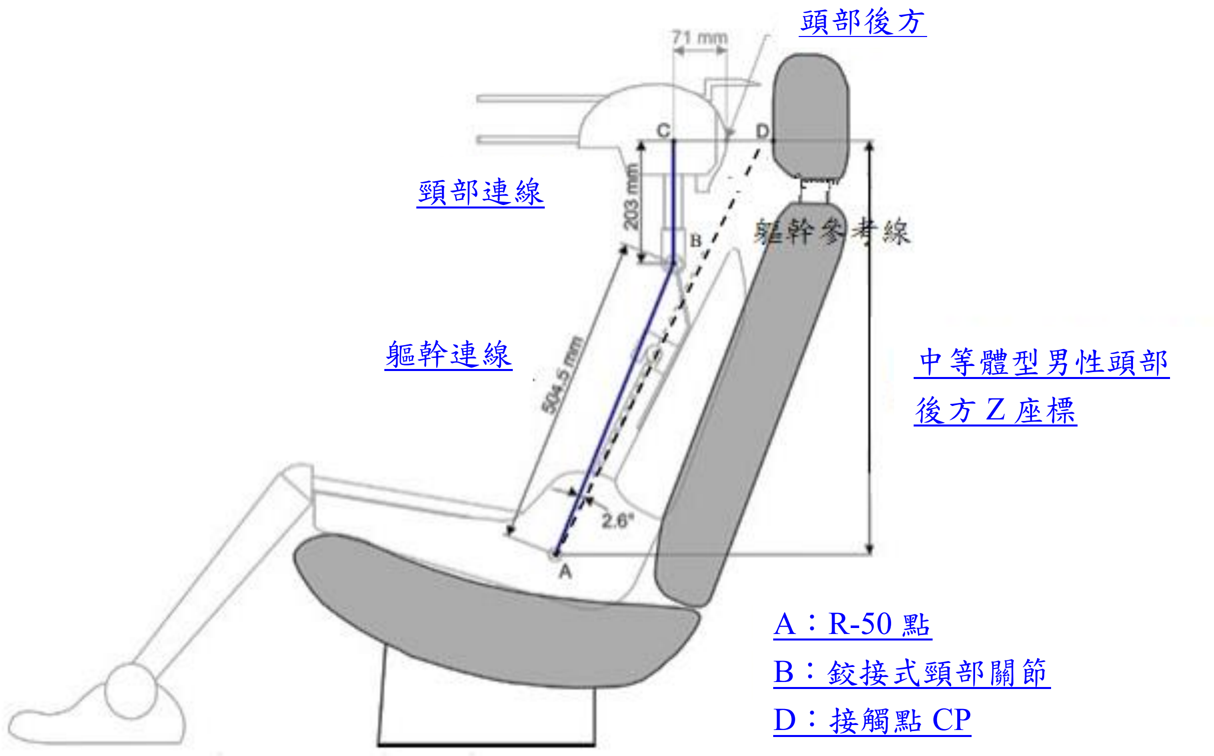


圖 9：頭枕量測

3.5.5.2.4.3

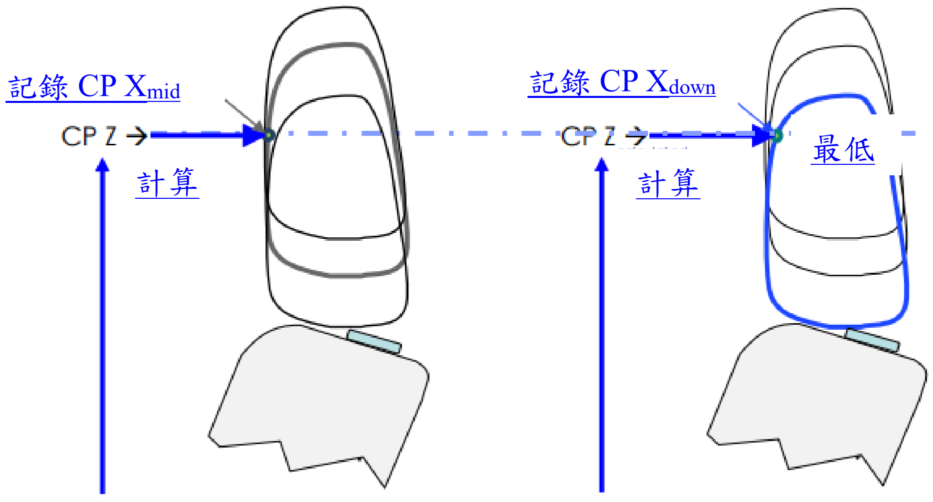


圖 10：CP X 及 CP Z

(修正前 TNCAP 規章)

3.5.5.3.6

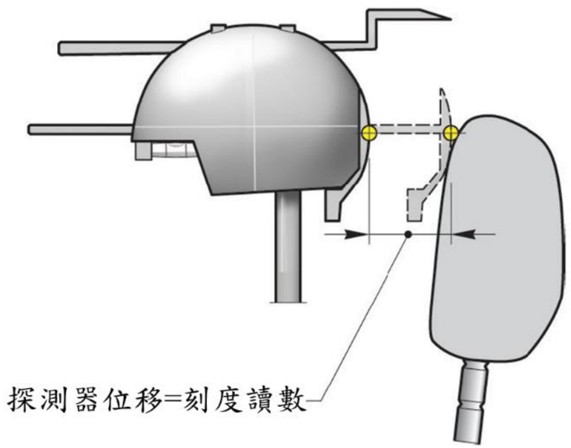


圖 9：頭枕間隙探測器用於靜態幾何量測

3.5.5.4.7

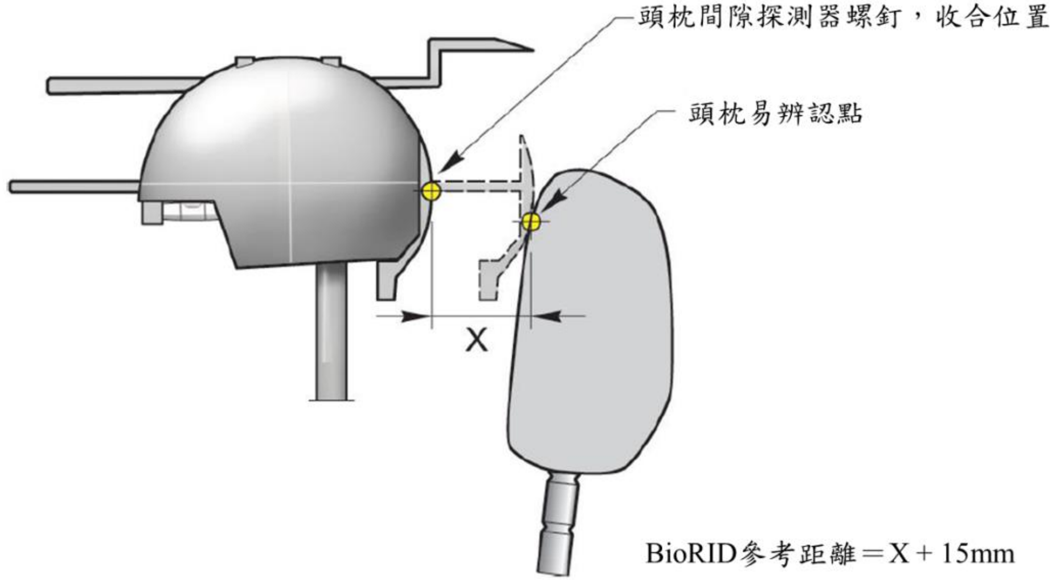


圖 10：量測 BioRID 人偶之頭枕間隙參考距離

6.2.4.5

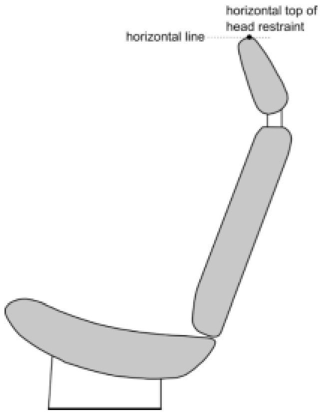


Figure 11: Determining CP

6.2.4.7

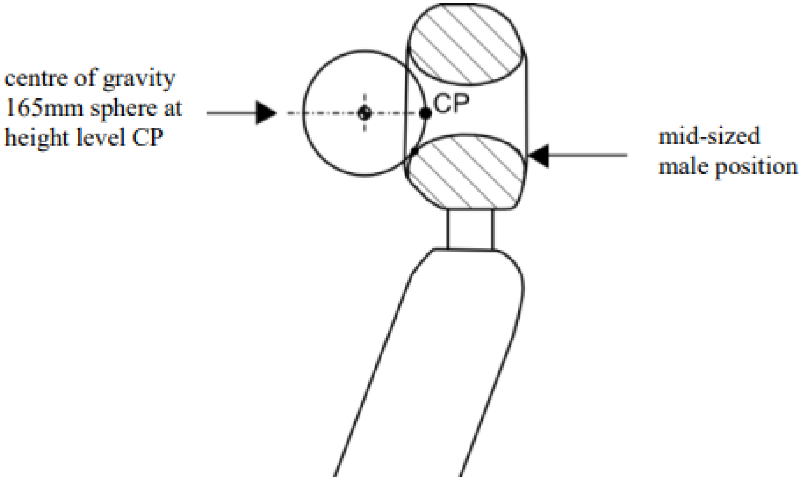


Figure 12: Determining CP

6.2.5.2

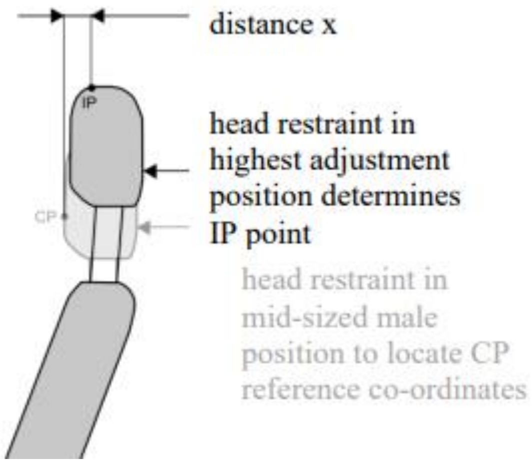


Figure 13: Determining IP

6.2.5.6

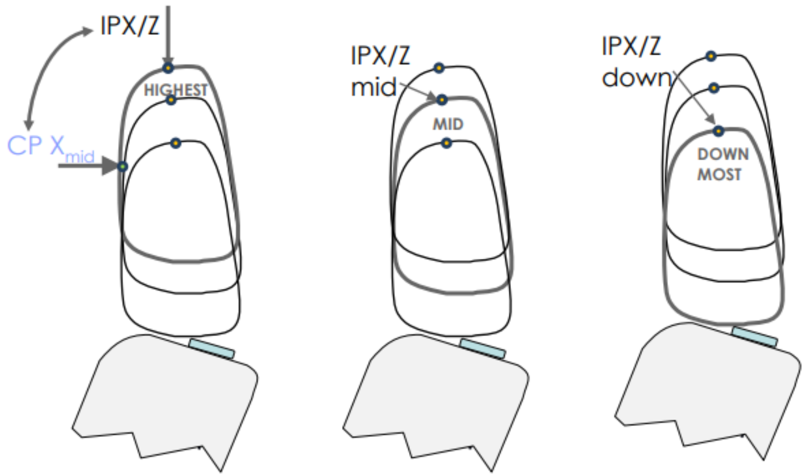


Figure 14: IP X and IP Z

6.2.5.8

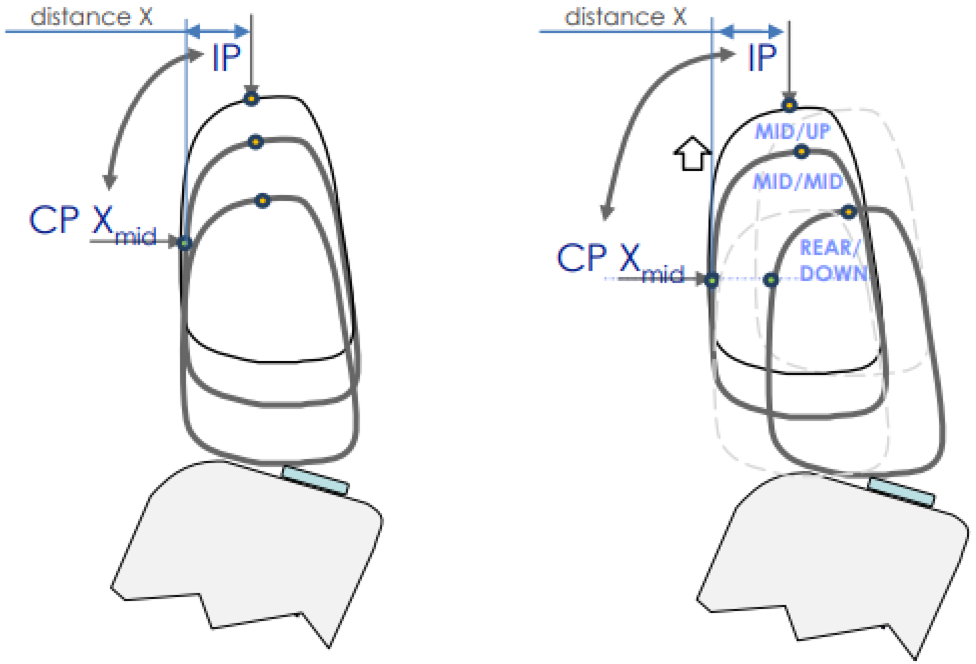


Figure 15: 2 way and 4 way head restraints

6.2.6.2

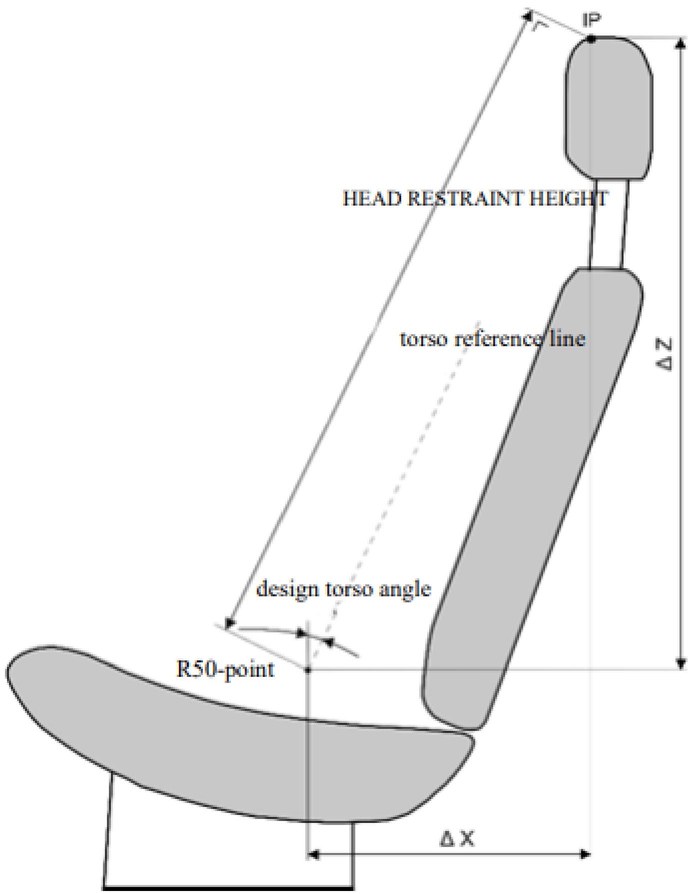


Figure 16: Head restraint height

6.3.1.1

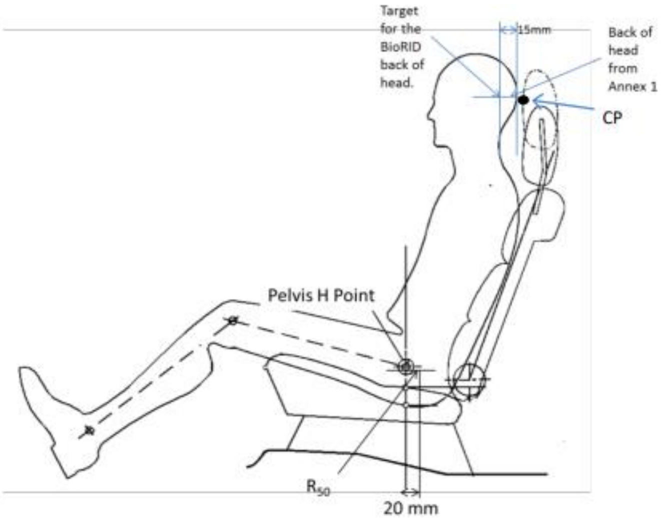


Figure 17: Measuring BioRID reference backset.

(2022 年 Euro NCAP 規章)

6.6.12.2

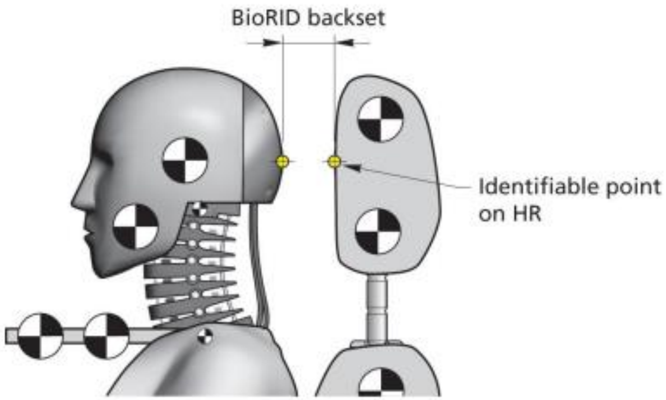


Figure 11: Measuring BioRID backset.

(修正後 TNCAP 規章草案)

3.5.5.2.4.5

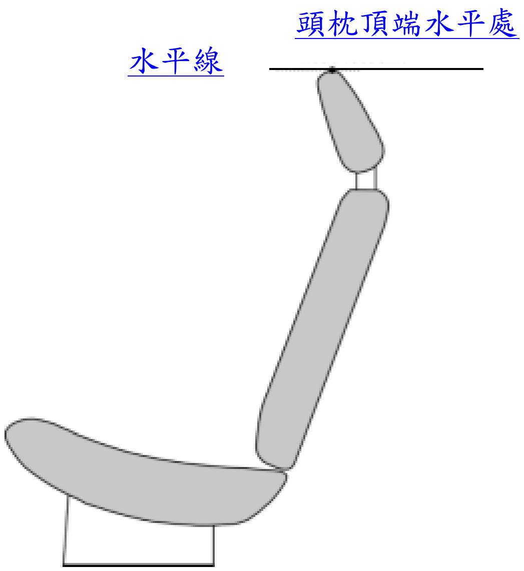


圖 11：判定 CP

3.5.5.2.4.7

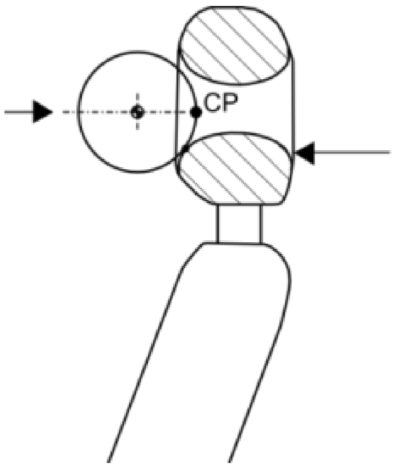


圖 12：判定 CP

3.5.5.2.5.2

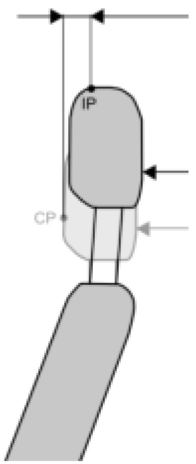


圖 13：判定 IP

3.5.5.2.5.6

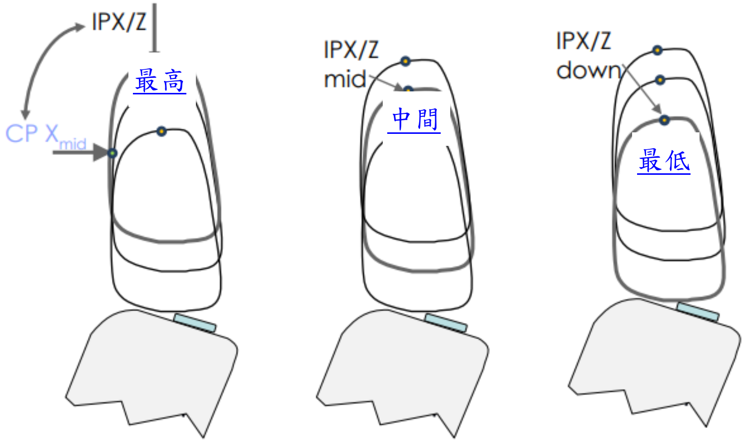


圖 14：IP X 及 IP Z

3.5.5.2.5.8

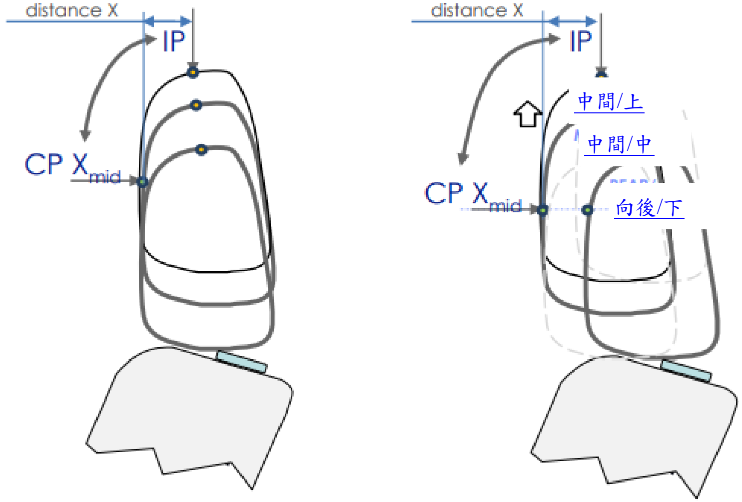


圖 15：雙向及四向調整式頭枕

3.5.5.2.6.2

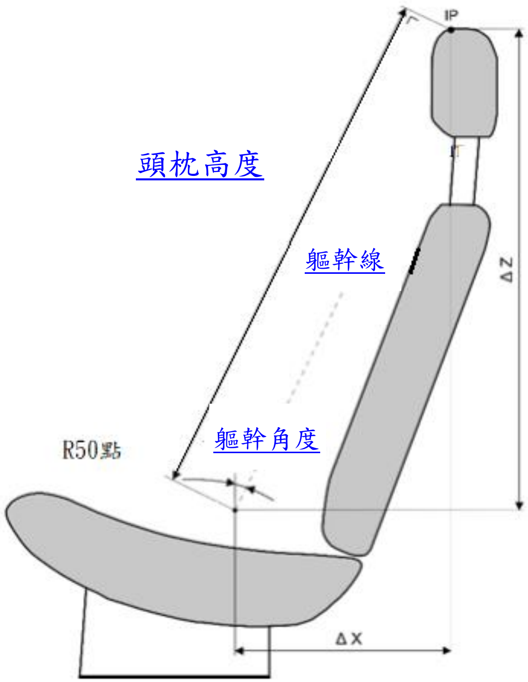


圖 16：頭枕高度

3.5.5.3.1.1

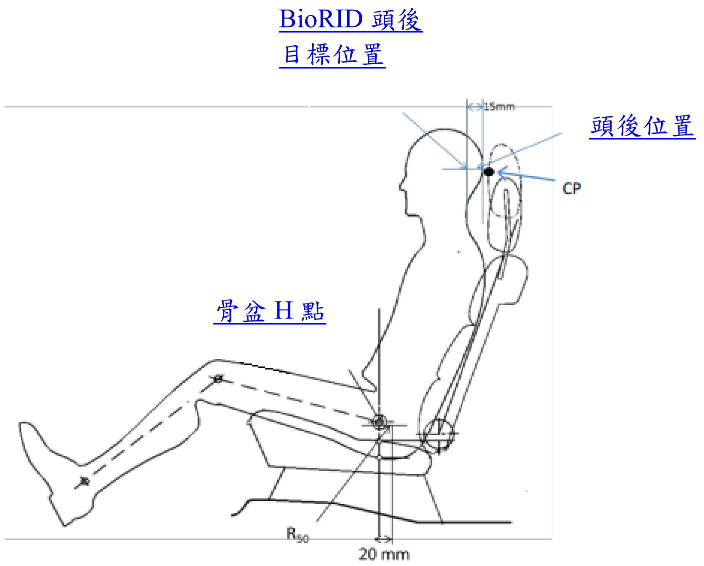


圖 17：量測 BioRID 參考間隙

(修正前 TNCAP 規章)

3.5.5.6.12.2

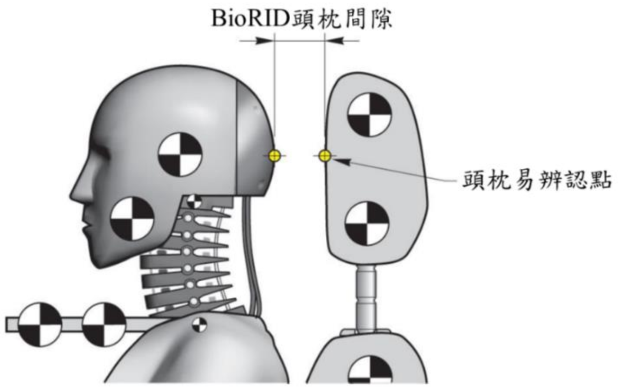


圖 11：BioRID 頭枕間隙量測

(2025 年 Euro NCAP 規章)

Table 1: BioRID setup summary.

Location	Target Measure	Tolerance
Backset	15mm forward*	±5mm
H-point (X-axis)	+ 20mm forward**	±10mm
H-point (Z-axis)	0mm**	±10mm
Pelvis angle	Torso design angle +1.5°	±2.5°
Head plane angle	0°(level)	±1°(6.4.10) +3.5°/-0.5°(6.4.11.1)

* Reference measurements taken in accordance with Section 6.3.1.1

**Reference taken in accordance with Section 5.2

(2022 年 Euro NCAP 規章)

6.6.15

Table 1: BioRID setup summary

Location	Target Measure	Tolerance
H-point (X-axis)	+ 20mm forward*	±10mm
H-point (Z-axis)	0mm*	±10mm
Pelvis angle	26.5°	±2.5°
Head plane angle	0°(level)	±1°
Backset	15mm forward*	±5mm

*Reference measurements taken using H-Point machine fitted with HRMD.

(修正後 TNCAP 規章草案)

表 1：BioRID 設置概要

位置	目標量測值	容許誤差
頭枕間隙	向前 15mm*	±5mm
H 點(X 軸)	向前+20mm**	±10mm
H 點(Z 軸)	0mm**	±10mm
骨盆角度	軀幹設計角度+1.5°	±2.5°
頭部平面角度	0°(水平狀態)	±1°(3.5.5.4.10) +3.5°/-0.5°(3.5.5.4.11.1)

備註：*根據 3.5.5.3.1.1 取得參考量測數據。

備註：**根據 3.5.4.2 引用。

(修正前 TNCAP 規章)

表 1：BioRID 設置概要

位置	目標量測值	容許誤差
H 點(X 軸)	向前+20mm*	±10mm
H 點(Z 軸)	0mm*	±10mm
骨盆角度	26.5°	±2.5°
頭部平面角度	0°(水平狀態)	±1°
頭枕間隙	向前 15mm*	±5mm

備註：*使用裝有 HRMD 之 H 點人體模型取得之參考量測數據。

(2025 年 Euro NCAP 規章)
刪除 Figure 12

(2022 年 Euro NCAP 規章)

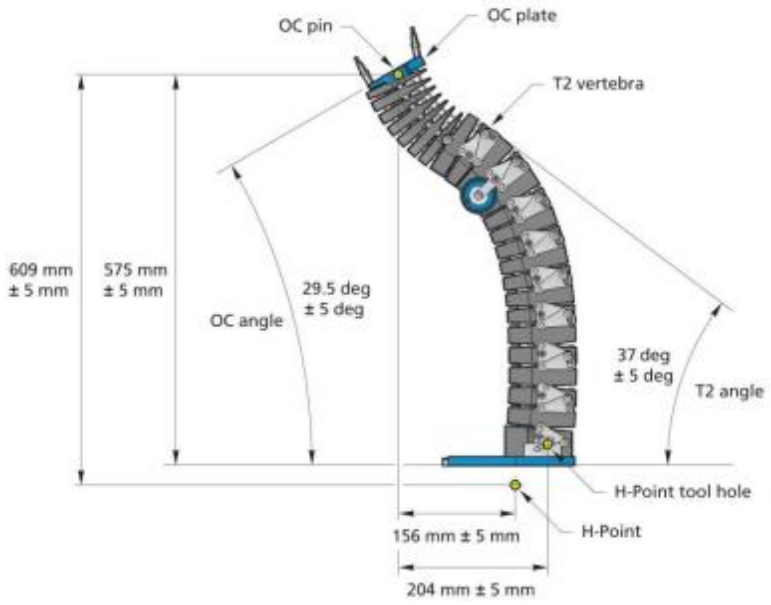


Figure 12: Spine curvature check.

(修正後 TNCAP 規章草案)
刪除圖 12

(修正前 TNCAP 規章)

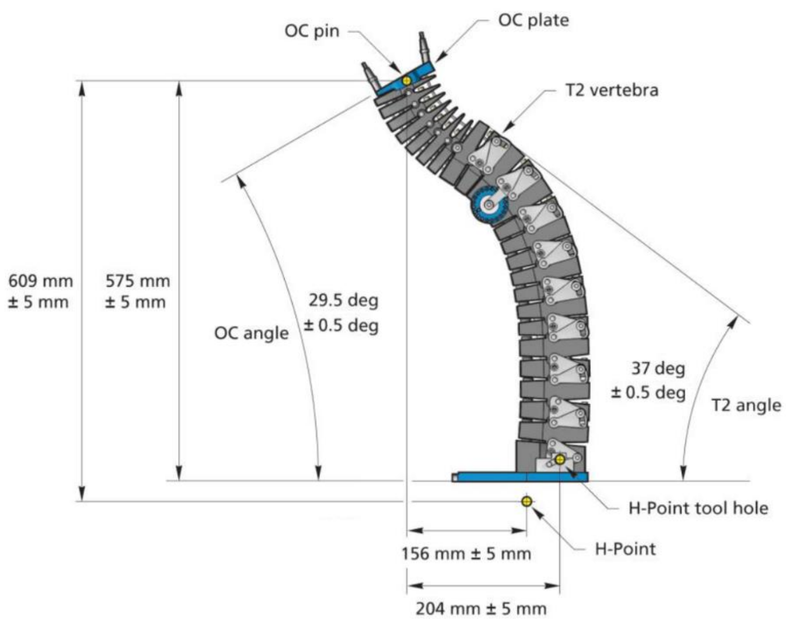


圖 12：脊柱曲率檢查

(2025 年 Euro NCAP 規章)

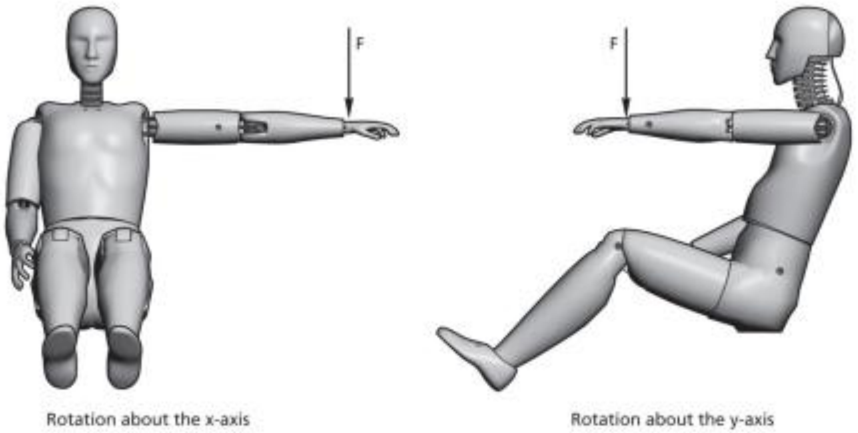


Figure 18: Dummy extremity settings.

(2022 年 Euro NCAP 規章)

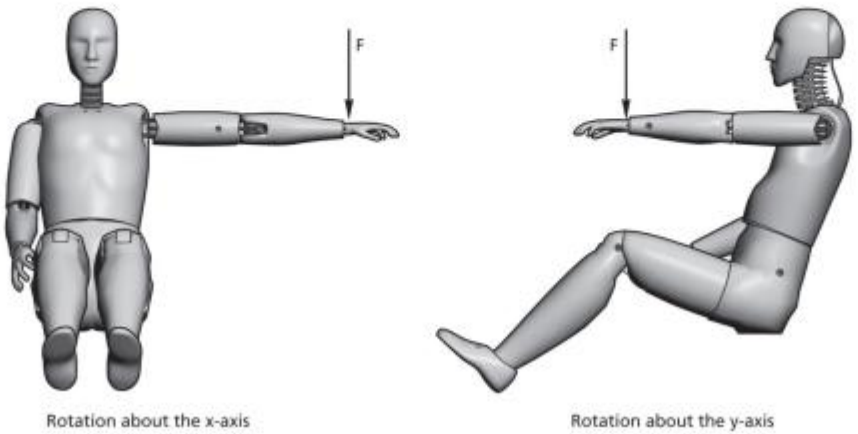


Figure 13: Dummy extremity settings.

(修正後 TNCAP 規章草案)

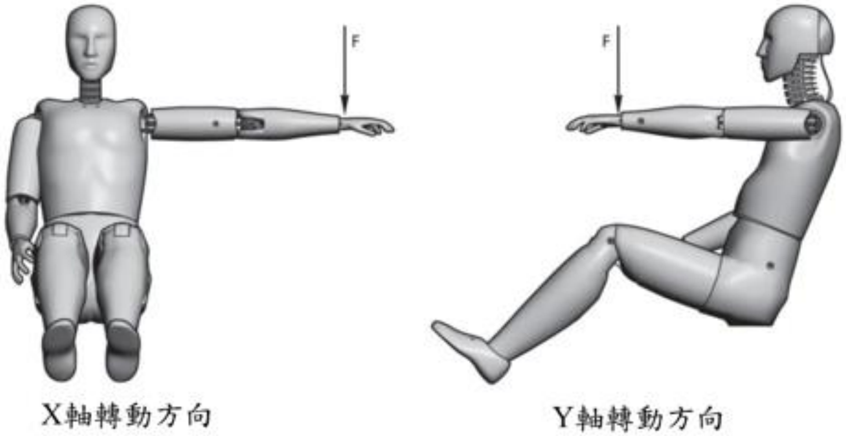


圖 18：人偶四肢設置

(修正前 TNCAP 規章)

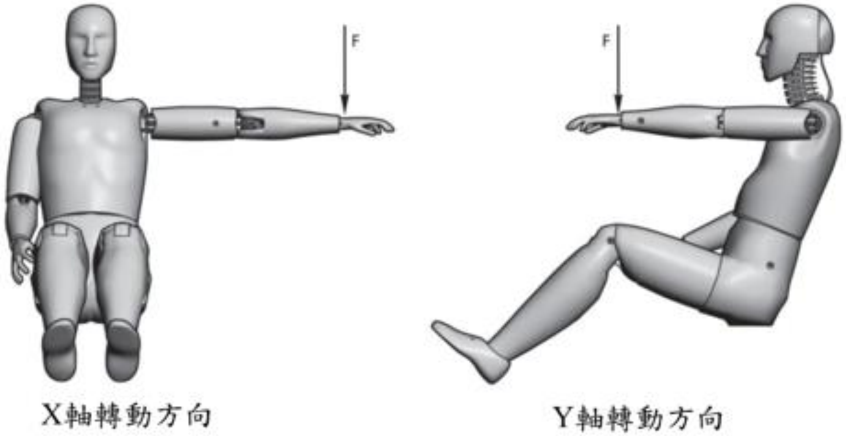


圖 13：人偶四肢設置

(2025 年 Euro NCAP 規章)

Table 2: Required instrumentation (see also TB021 Data Format and Injury Criteria Calculation).

Position	**Function**	**Measurement**	**CFC**	**CAC**
Sled X	Pulse acceptance	Acceleration (g)	60	100
	Pulse acceptance	Velocity (m/s)	180	NA
	Rebound velocity	Displacement (m)	NA	NA
Head X	NIC	Acceleration (g)	60	100
		Acceleration (g)	1000	100
Head CoG X	Rebound velocity	Velocity (m/s)	30	NA
Neck T1 X (LH and RH)	NIC	Acceleration (g)	60	100
Neck Force X Upper and lower		Force (N)	1000	1400
Neck Force X	My OC 及 Nkm	Force (N)	600	1400
Neck Force Z Upper		Force (N)	1000	4500
Neck Moment Y Upper and lower	My OC	My OC	600	115

Position	**Function**	**Measurement**	**CFC**	**CAC**
Head Restraint Contact Time (T-HRC)	T-HRC_{start} & T-HRC_{end}	Time (ms)	NA	NA
Neck T1 X		Force (N)	1000	5000
Neck T1 Z		Force (N)	1000	5000

Position	Function	Measurement	CFC	CAC
Neck T1 Moment Y		Moment (Nm)	600	200
Neck T1 X		Acceleration (g)	60	200
Neck T1 X		Acceleration (g)	60	100
Neck T8 X		Acceleration (g)	60	200
Neck T8 X		Acceleration (g)	60	100
1st Lumbar X		Acceleration (g)	60	200
1st Lumbar Z		Acceleration (g)	60	100
Pelvis X		Acceleration (g)	60	200
Pelvis Z		Acceleration (g)	60	100

(2022 年 Euro NCAP 規章)

Table 2: Required instrumentation (see also TB021 Data Format and Injury Criteria Calculation).

Position	Function	Measurement	CFC	CAC
Sled X	Pulse acceptance	Acceleration (g)	60	100
	Pulse acceptance	Velocity (m/s)	30	NA
	Rebound velocity	Displacement (m)	NA	NA
Head X	NIC	Acceleration (g)	60	100
		Acceleration (g)	1000	100
Head CoG X	Rebound velocity	Velocity (m/s)	30	NA
Neck T1 X (LH and RH)	NIC	Acceleration (g)	60	100
Neck Force X		Force (N)	1000	1400
Neck Force X	My OC and Nkm	Force (N)	600	1400
Neck Force Z		Force (N)	1000	4500

Position	**Function**	**Measurement**	**CFC**	**CAC**
Neck Moment Y	My OC	Moment (Nm)	600	115
Head Restraint Contact Time (T-HRC)	$T\text{-}HRC_{start}$& $T\text{-}HRC_{end}$	Time (ms)	NA	NA
Neck T1 X		Force (N)	1000	5000
Neck T1 Z		Force (N)	1000	5000
Neck T1 Moment Y		Moment (Nm)	600	200
1^{st} Lumbar X		Acceleration (g)	60	200
1^{st} LumbarZ		Acceleration (g)	60	100
Seat Belt Force (lap section)		Force (kN)	60	16

(修正後 TNCAP 規章草案)

表 2：規定之感測器及資料擷取系統

位置	功能	量測	CFC	CAC
台車 X	接受/驗收脈衝 (Pulse acceptance)	加速度(g)	60	100
	接受/驗收脈衝	速度(m/s)	180	NA
	反彈速度	位移(m)	NA	NA
頭部 X	NIC	加速度(g)	60	100
		加速度(g)	1000	100
頭部重心 X	反彈速度	速度(m/s)	30	NA
頸部 T1 X（左側與右側）	NIC	加速度(g)	60	100
頸部力 X 上部及下部		力(N)	1000	1400
頸部力 X	My OC 及 Nkm	力(N)	600	1400

位置	功能	量測	CFC	CAC
頸部力 Z 上部		力(N)	1000	4500
頸部力矩 Y 上部及下部	My OC	力矩(Nm)	600	115
頭枕接觸時間（T-HRC）	T-HRC $_{開始}$ 及 T-HRC $_{結束}$	時間(ms)	NA	NA
頸部 T1 X		力(N)	1000	5000
頸部 T1 Z		力(N)	1000	5000
頸部 T1 力矩 Y		力矩(Nm)	600	200
頸部 T1 X		加速度(g)	60	200
頸部 T1 Z		加速度(g)	60	100
頸部 T8 X		加速度(g)	60	200
頸部 T8 Z		加速度(g)	60	100
1st 腰部 X		加速度(g)	60	200
1st 標部 Z		加速度(g)	60	100
骨盆 X		加速度(g)	60	200
骨盆 Z		加速度(g)	60	100

(修正前 TNCAP 規章)

表 2：規定之感測器及資料擷取系統

位置	功能	量測	CFC	CAC
台車 X	接受/驗收脈衝 (Pulse acceptance)	加速度(g)	60	100
	接受/驗收脈衝	速度(m/s)	30	NA
	反彈速度	位移(m)	NA	NA
頭部 X	NIC	加速度(g)	60	100
		加速度(g)	1000	100
頭部重心 X	反彈速度	速度(m/s)	30	NA
頸部 T1 X（左側與右側）	NIC	加速度(g)	60	100
頸部力 X		力(N)	1000	1400
頸部力 X	My OC 及 Nkm	力(N)	600	1400
頸部力 Z		力(N)	1000	4500
頸部力矩 Y	My OC	力矩(Nm)	600	115
頭枕接觸時間（T-HRC）	T-HRC 開始 及 T-HRC 結束	時間(ms)	NA	NA
頸部 T1 X		力(N)	1000	5000
頸部 T1 Z		力(N)	1000	5000
頸部 T1 力矩 Y		力矩(Nm)	600	200
1st 腰部 X		加速度(g)	60	200
1st 標部 Z		加速度(g)	60	100
安全帶力量（腰部）		力(kN)	60	16

(2025 年 Euro NCAP 規章)

Appendix I

Adjustment	
Whiplash preparation	
Seat mounting information, drawings etc.	Required information: ● Floor mounting pattern ● Seat rail angles ● Seat rail travel (especially if different on both sides) ● Fixation/support information Alternatively, the manufacturer may supply suitable seat mountings to the laboratory.
Heel plane height	
Seat belt anchorage positions	Where required.
Anticipated seat settings Seat back angle (e.g. 3 notches from forward)	● Seat back angle reference point wrt. seat reference point or HR tube angle.
Triggering information for active systems (pre-tensioners, active HR, etc.)	● Triggering system details, ALL relevant information (magnetic, electronic, required current/voltage, pulse duration etc.)
R50-point location	● Relative to an identifiable location on the seat.

Adjustment	
Whiplash preparation	
Seat back design angle (torso angle must be the same as used in the full scale impact tests)	Required information: ● Fixed origin on seat runners ● Identifiable points on the seat frame relative to origin ● Identifiable points on HR relative to origin. ● Other identifiable locations where necessary.

(2022 年 Euro NCAP 規章)

Appendix I

Adjustment	
Whiplash preparation	
Seat mounting information, drawings etc.	Required information: ● Floor mounting pattern ● Seat rail angles ● Seat rail travel (especially if different on both sides) ● Fixation/support information Alternatively, the manufacturer may supply suitable seat mountings to the laboratory.
Heel plane height	
Seat belt anchorage positions	Where required.

Adjustment	
Whiplash preparation	
Anticipated seat settings Seat back angle (e.g. 3 notches from forward)	● Seat back angle reference point wrt. seat ● reference point or HR tube angle.
Triggering information for active systems (pre-tensioners, active HR, etc.)	● Triggering system details, ALL relevant information (magnetic, electronic, required current/voltage, pulse duration etc.)

(TNCAP 規章草案修正後)

3.5.10

調整	
鞭甩試驗準備	
座椅安裝資訊、圖面等	必備資訊： ● 地板安裝形式 ● 座椅滑軌角度 ● 座椅滑軌移動（特別是兩側有差異時） ● 固定/支撐資訊 車輛業者應提供檢測機構適合之座椅固定架(Seat mounting)
鞋跟平面高度(Heel plane height)	
安全帶固定裝置位置	依實際狀況
座椅預期設置椅背角度 （例如從前方數來三個段位）	● 座椅參考點相關之椅背角度參考點或頭枕支撐管角度

調整	
鞭甩試驗準備	
主動式系統之觸發資訊 （預負載裝置、主動式頭枕等）	● 系統觸發之詳細資料、所有相關資訊（磁性、電子、所需電流/電壓、脈衝持續時間等）
R50 點位置	● 相對於座椅可識別位置。
椅背設計角度 （軀幹角度必須與前方全寬撞擊試驗之角度相同）	必備資訊： ● 座椅滑軌上之固定原點 ● 相對於原點，座椅骨架上可識別點 ● 相對於原點，頭枕上可識別點 ● 必要時，其他必要可識別位置

(TNCAP 規章草案修正前)

3.5.10

調整	
鞭甩試驗準備	
座椅安裝資訊、圖面等	必備資訊： ● 地板安裝形式 ● 座椅滑軌角度 ● 座椅滑軌移動（特別是兩側有差異時） ● 固定/支撐資訊 車輛業者應提供檢測機構適合之座椅固定架 (Seat mounting)
鞋跟平面高度(Heel plane height)	
安全帶固定裝置位置	依實際狀況

調整	
鞭甩試驗準備	
座椅預期設置椅背角度 （例如從前方數來三個段位）	● 座椅參考點相關之椅背角度參考點或頭枕支撐管角度
主動式系統之觸發資訊 （預負載裝置、主動式頭枕等）	● 系統觸發之詳細資料、所有相關資訊（磁性、電子、所需電流/電壓、脈衝持續時間等）

(2025 年 Euro NCAP 規章)

Figure 19: H-PM Calibration Jig (GLORIA)

(2022 年 Euro NCAP 規章)

Figure 14: H-PM/HRMD Calibration Jig (GLORIA)

(TNCAP 規章草案修正後)

圖 19：HPM 校正治具（GLORIA）

(TNCAP 規章草案修正前)

圖 14：HPM/HRMD 校正治具（GLORIA）

(2025 年 Euro NCAP 規章)
無
(2022 年 Euro NCAP 規章)

Figure 15: The modified weight hanger assembly.

(TNCAP 規章草案修正後)
無

(TNCAP 規章草案修正前)

圖 15：修改後之配重支架總成

(2025 年 Euro NCAP 規章)

Figure 20: H-Point locator bars installed through vertical support rods, jig side and H-PM H-Point location.

(2022 年 Euro NCAP 規章)

Figure 16: H-Point locator bars installed through vertical support rods, jig side and H-PM H-Point location.

(TNCAP 規章草案修正後)

圖 20：穿過垂直支撐桿、治具側邊及 HPM H 點位置以安裝 H 點定位桿(H-Point locator)

(TNCAP 規章草案修正前)

圖 16：穿過垂直支撐桿、治具側邊及 HPM H 點位置以安裝 H 點定位桿(H-Point locator)

(2025 年 Euro NCAP 規章)

Figure 21: H-PM back pan held by retaining strap.

(2022 年 Euro NCAP 規章)

Figure 17: H-PM back pan held by retaining strap.

(TNCAP 規章草案修正後)

圖 21：以支撐帶固定 HPM 背板

(TNCAP 規章草案修正前)

圖 17：以支撐帶固定 HPM 背板

(2025 年 Euro NCAP 規章)

Figure 22: Weight hanger support pins inserted through weight hanger guide bars.

(2022 年 Euro NCAP 規章)

Figure 18: Weight hanger support pins inserted through weight hanger guide bars.

(TNCAP 規章草案修正後)

圖 22：配重支架支撐插銷插入配重支架導桿

(TNCAP 規章草案修正前)

圖 18：配重支架支撐插銷插入配重支架導桿

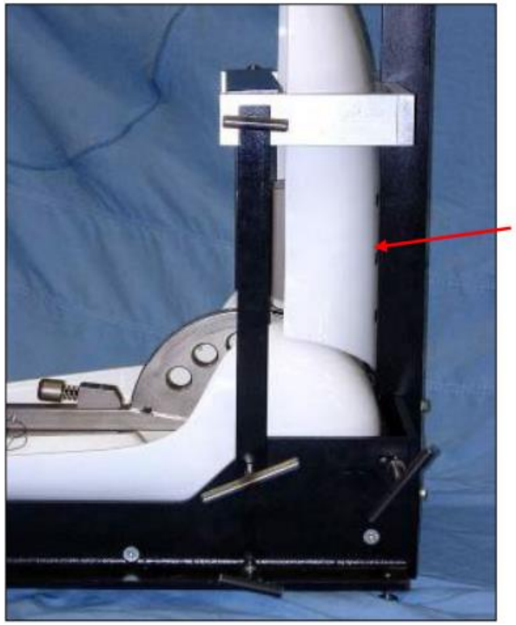


Figure 23: H-PM installed into the jig. A check should be made to ensure that the gap between the H-PM back pan and jig vertical support is no more than 4mm.

(2022 年 Euro NCAP 規章)

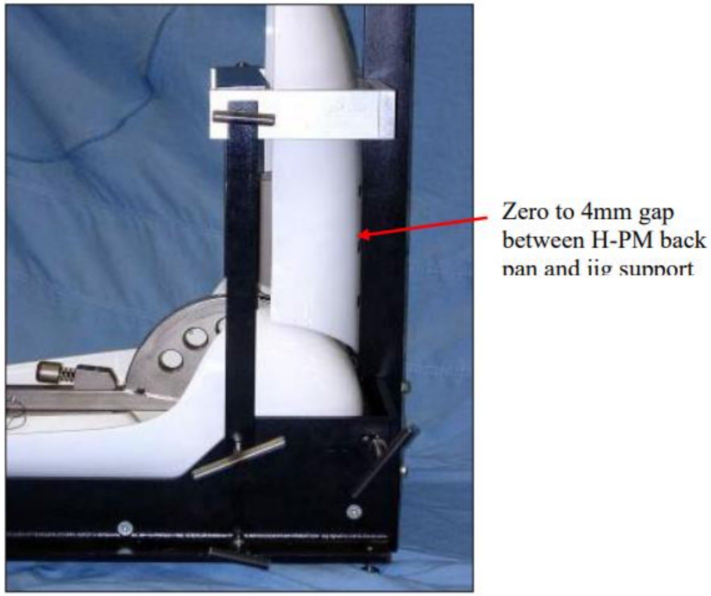


Figure 19: H-PM installed into the jig without HRMD assembly. A check should be made to ensure that the gap between the H-PM back pan and jig vertical support is no more than 4mm.

(TNCAP 規章草案修正後)

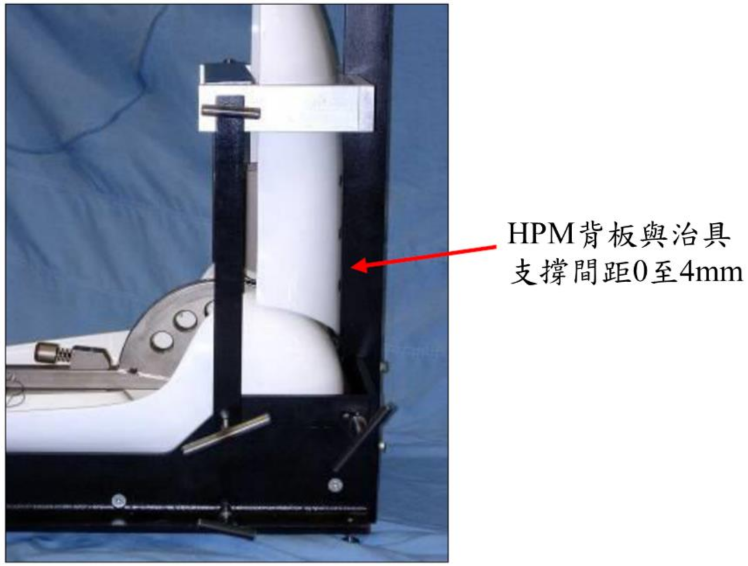


圖 23：HPM（未裝配 HRMD）安裝於治具。應檢查以確保 HPM 背板與治具垂直支撐桿間距未逾 4mm

(TNCAP 規章草案修正前)

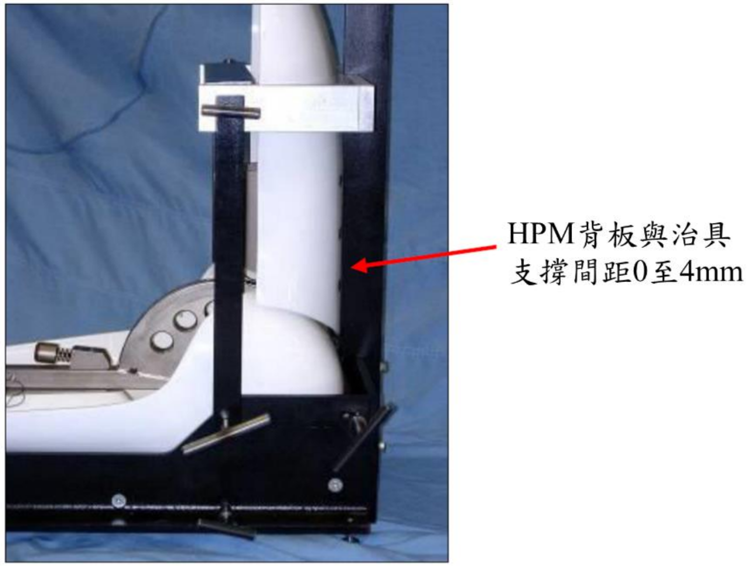


圖 19：HPM（未裝配 HRMD）安裝於治具。應檢查以確保 HPM 背板與治具垂直支撐桿間距未逾 4mm

(2025 年 Euro NCAP 規章)
無

(2022 年 Euro NCAP 規章)

Figure 20: H-PM in calibration jig with H-point to arm supports

(TNCAP 規章草案修正後)
無

(TNCAP 規章草案修正前)

圖 20：HPM 安裝於校正治具上並使用支臂支撐 H 點

(2025 年 Euro NCAP 規章)

無

(2022 年 Euro NCAP 規章)

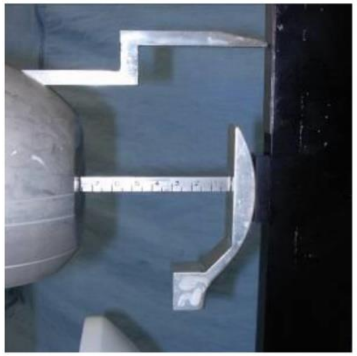


Figure 21: HRMD with backset and height calibration.

(TNCAP 規章草案修正後)

無

(TNCAP 規章草案修正前)

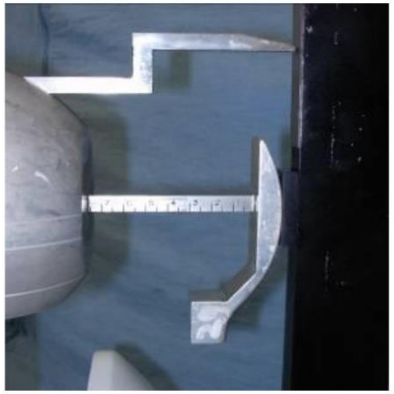


圖 21：HRMD 頭枕間隙及高度校正

(2025 年 Euro NCAP 規章)

Figure 24: Measurement being taken of the torso angle at the weight hanger trunk by a digital inclinometer.

(2022 年 Euro NCAP 規章)

Figure 22: Measurement being taken of the torso angle at the weight hanger trunk by a digital inclinometer

(TNCAP 規章草案修正後)

圖 24：使用數位傾斜儀量測軀幹配重支架之軀幹角度

(TNCAP 規章草案修正前)

圖 22：使用數位傾斜儀量測軀幹配重支架之軀幹角度

(2025 年 Euro NCAP 規章)

Figure 25: Calibrated Torso angle measurement surface block attached to trunk of weight hanger arm.

(2022 年 Euro NCAP 規章)

Figure 23: Calibrated Torso angle measurement surface block attached to trunk of weight hanger arm.

(TNCAP 規章草案修正後)

圖 25：校正用軀幹角度量測墊塊與軀幹配重支架連接

(TNCAP 規章草案修正前)

圖 23：校正用軀幹角度量測墊塊與軀幹配重支架連接

(2025 年 Euro NCAP 規章)

無

(2022 年 Euro NCAP 規章)

Figure 24. The label on the H-PM.

Figure 25. The label on the HRMD

(TNCAP 規章草案修正後)

無

(TNCAP 規章草案修正前)

圖 24：HPM 之標籤

圖 25：HRMD 之標籤

(2025 年 Euro NCAP 規章)

無

(2022 年 Euro NCAP 規章)

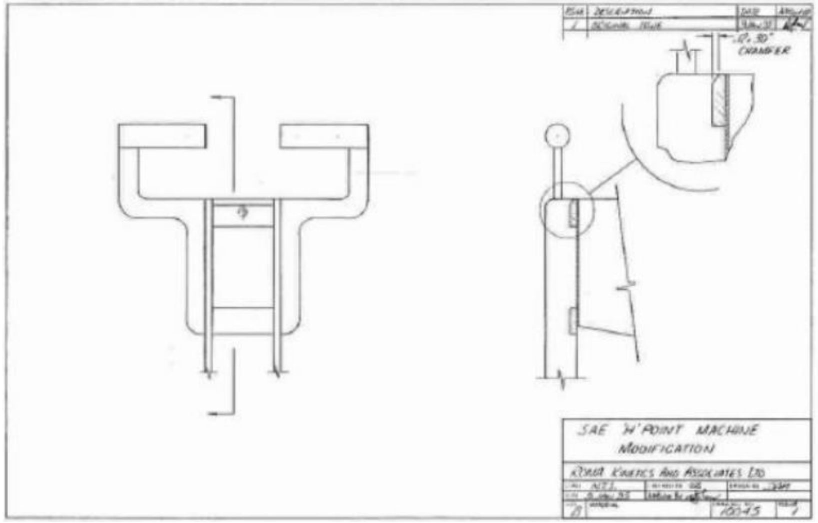


Figure 26: RONA Kinetics and Associates Ltd. Drawing No. 10045 detailing the required modifications to the H-point machine.

(TNCAP 規章草案修正後)
無

(TNCAP 規章草案修正前)

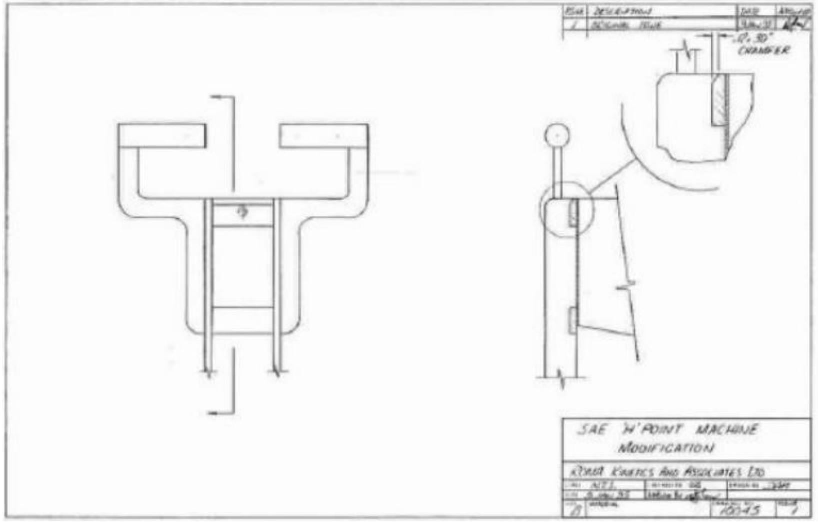


圖 26：RONA Kinetics and Associates Ltd. 圖號 10045 H 點人體模型修改規定

(2025 年 Euro NCAP 規章)
無

(2022 年 Euro NCAP 規章)

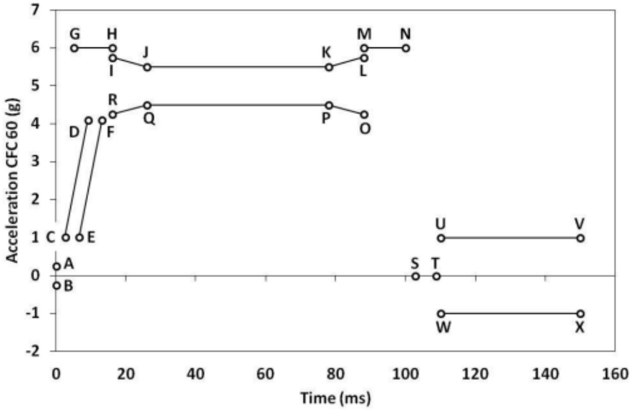


Figure 27: Low severity pulse corridors

Table 3: Low pulse requirements.

Parameter		Requirement		Limits +/-	Unit
Velocity change dV		16.10		0.80	km/h
Mean acceleration Amean		42.35		4.5	m/s^2
Maximum acceleration Amax		5.00		0.5	g
	Time (ms)	Acceleration (g)		Time (ms)	Acceleration (g)
A	0	0.25	M	88	6.00
B	0	-0.25	N	100	6.00
C	2.6	1.0222	O	88	4.25
D	9.1	4.0982	P	78	4.50
E	6.6	1.0222	Q	26	4.50
F	13.1	4.0982	R	16	4.25

G	5	6.00	S	102.8	0.00
H	16	6.00	T	108.8	0.00
I	16	5.75	U	110	1.00
J	26	5.50	V	150	1.00
K	78	5.50	W	110	-1.00
L	88	5.75	X	150	-1.00

(TNCAP 規章草案修正後)

無

(TNCAP 規章草案修正前)

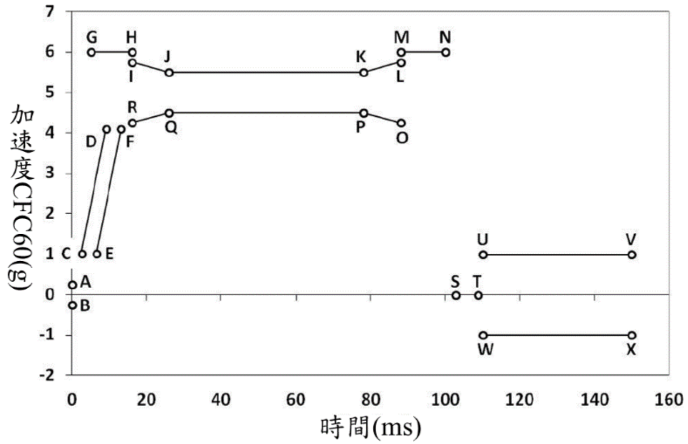


圖 27：低強度脈衝通道

表 3：低強度脈衝規定

參數	規定	限度+/-	單位
速度變化 dV	16.10	0.80	km/h
平均加速度Amean	42.35	4.5	m/s^2

最大加速度Amax		5.00		0.5	g
	時間(ms)	加速度(g)		時間(ms)	加速度(g)
A	0	0.25	M	88	6.00
B	0	-0.25	N	100	6.00
C	2.6	1.0222	O	88	4.25
D	9.1	4.0982	P	78	4.50
E	6.6	1.0222	Q	26	4.50
F	13.1	4.0982	R	16	4.25
G	5	6.00	S	102.8	0.00
H	16	6.00	T	108.8	0.00
I	16	5.75	U	110	1.00
J	26	5.50	V	150	1.00
K	78	5.50	W	110	-1.00
L	88	5.75	X	150	-1.00

(2025 年 Euro NCAP 規章)

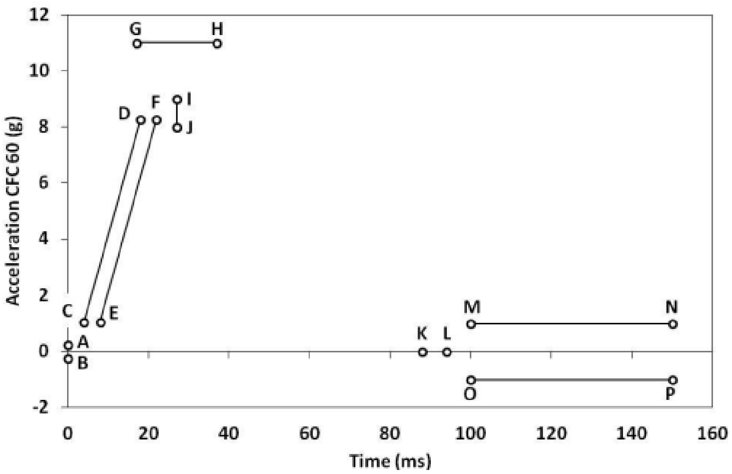


Figure 26: Medium severity pulse corridors

Table 3: Medium pulse requirements.

Parameter		Requirement	Limits +/-		Unit
Velocity change dV		15.65	0.80		km/h
Mean acceleration Amean		47.85	4.00		m/s^2
	Time (ms)	Acceleration (g)		Time (ms)	Acceleration (g)
A	0	0.25	I	27	8.00
B	0	-0.25	J	27	9.00
C	4	1.0531	K	88	0.00
D	18	8.2705	L	94	0.00
E	8	1.0531	M	100	1.00
F	22	8.2705	N	150	1.00
G	17	11.00	O	100	-1.00
H	37	11.00	P	150	-1.00

Table 4: Medium pulse rise corridor

Time (ms)	Acceleration (g)	Time (ms)	Acceleration (g)
(C) 4	1.0531	(E) 8	1.0531
5	1.3751	9	1.3751
6	1.7443	10	1.7443
7	2.1608	11	2.1608
8	2.6230	12	2.6230
9	3.1276	13	3.1276
10	3.6691	14	3.6691
11	4.2406	15	4.2406
12	4.8336	16	4.8336
13	5.4384	17	5.4384
14	6.0446	18	6.0446
15	6.6414	19	6.6414
16	7.2181	20	7.2181
17	7.7645	21	7.7645
(D) 18	8.2705	(F) 22	8.2705

(2022 年 Euro NCAP 規章)

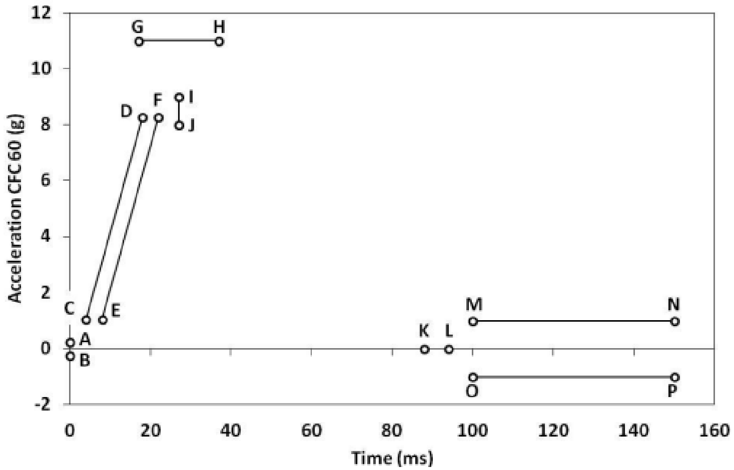


Figure 28: Medium severity pulse corridors

Table 4: Medium pulse requirements.

Parameter		Requirement	Limits +/-		Unit
Velocity change dV		15.65	0.80		km/h
Mean acceleration Amean		47.85	4.00		m/s^2
	Time (ms)	Acceleration (g)		Time (ms)	Acceleration (g)
A	0	0.25	I	27	8.00
B	0	-0.25	J	27	9.00
C	4	1.0531	K	88	0.00
D	18	8.2705	L	94	0.00
E	8	1.0531	M	100	1.00
F	22	8.2705	N	150	1.00
G	17	11.00	O	100	-1.00
H	37	11.00	P	150	-1.00

Table 5: Medium pulse rise corridor

Time (ms)	Acceleration (g)	Time (ms)	Acceleration (g)
(C) 4	1.0531	(E) 8	1.0531
5	1.3751	9	1.3751
6	1.7443	10	1.7443
7	2.1608	11	2.1608
8	2.6230	12	2.6230
9	3.1276	13	3.1276
10	3.6691	14	3.6691
11	4.2406	15	4.2406
12	4.8336	16	4.8336
13	5.4384	17	5.4384
14	6.0446	18	6.0446
15	6.6414	19	6.6414
16	7.2181	20	7.2181
17	7.7645	21	7.7645
(D) 18	8.2705	(F) 22	8.2705

(TNCAP 規章草案修正後)

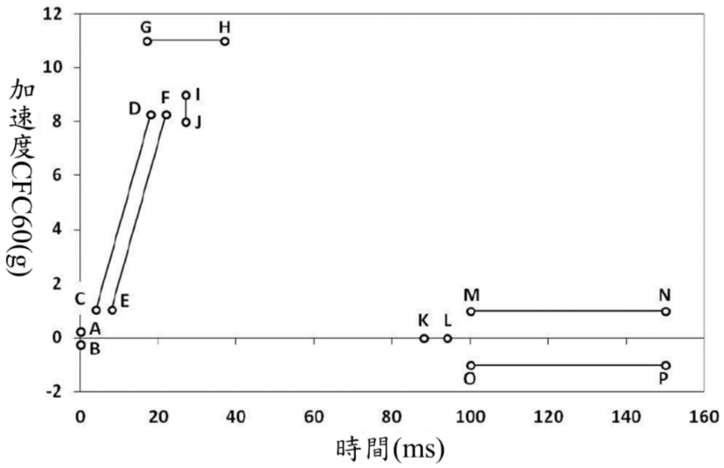


圖 26：中強度脈衝通道

表 3：中強度脈衝規定

參數		規定	限度+/-		單位
速度變化 dV		15.65	0.80		km/h
平均加速度Amean		47.85	4.00		m/s^2
	時間(ms)	加速度(g)		時間(ms)	加速度(g)
A	0	0.25	I	27	8.00
B	0	-0.25	J	27	9.00
C	4	1.0531	K	88	0.00
D	18	8.2705	L	94	0.00
E	8	1.0531	M	100	1.00
F	22	8.2705	N	150	1.00
G	17	11.00	O	100	-1.00
H	37	11.00	P	150	-1.00

表 4：中強度脈衝上升通道

時間(ms)	加速度(g)	時間(ms)	加速度(g)
(C) 4	1.0531	(E) 8	1.0531
5	1.3751	9	1.3751
6	1.7443	10	1.7443
7	2.1608	11	2.1608
8	2.6230	12	2.6230
9	3.1276	13	3.1276
10	3.6691	14	3.6691
11	4.2406	15	4.2406
12	4.8336	16	4.8336
13	5.4384	17	5.4384
14	6.0446	18	6.0446
15	6.6414	19	6.6414
16	7.2181	20	7.2181
17	7.7645	21	7.7645
(D) 18	8.2705	(F) 22	8.2705

(TNCAP 規章草案修正前)

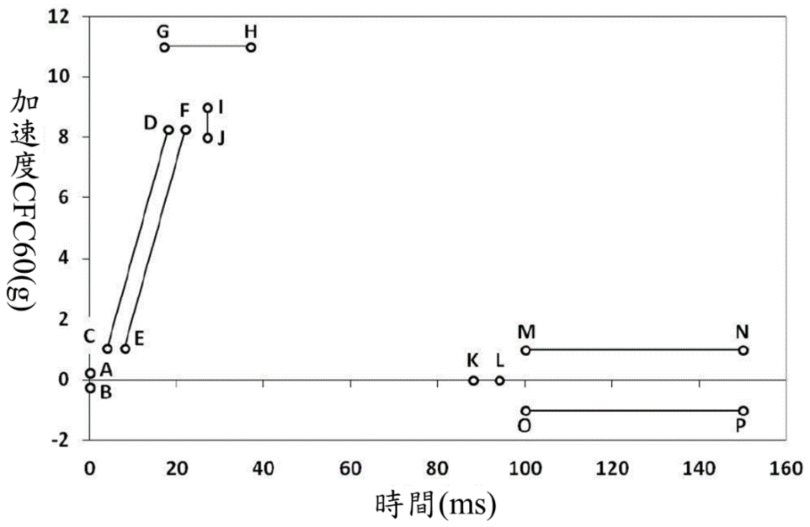


圖 28：中強度脈衝通道

表 4：中強度脈衝規定

參數		規定	限度+/-		單位
速度變化 dV		15.65	0.80		km/h
平均加速度Amean		47.85	4.00		m/s^2
	時間(ms)	加速度(g)		時間(ms)	加速度(g)
A	0	0.25	I	27	8.00
B	0	-0.25	J	27	9.00
C	4	1.0531	K	88	0.00
D	18	8.2705	L	94	0.00
E	8	1.0531	M	100	1.00
F	22	8.2705	N	150	1.00
G	17	11.00	O	100	-1.00
H	37	11.00	P	150	-1.00

表 5：中強度脈衝上升通道

時間(ms)	加速度(g)	時間(ms)	加速度(g)
(C) 4	1.0531	(E) 8	1.0531
5	1.3751	9	1.3751
6	1.7443	10	1.7443
7	2.1608	11	2.1608
8	2.6230	12	2.6230
9	3.1276	13	3.1276
10	3.6691	14	3.6691
11	4.2406	15	4.2406
12	4.8336	16	4.8336
13	5.4384	17	5.4384
14	6.0446	18	6.0446
15	6.6414	19	6.6414
16	7.2181	20	7.2181
17	7.7645	21	7.7645
(D) 18	8.2705	(F) 22	8.2705

(2025 年 Euro NCAP 規章)

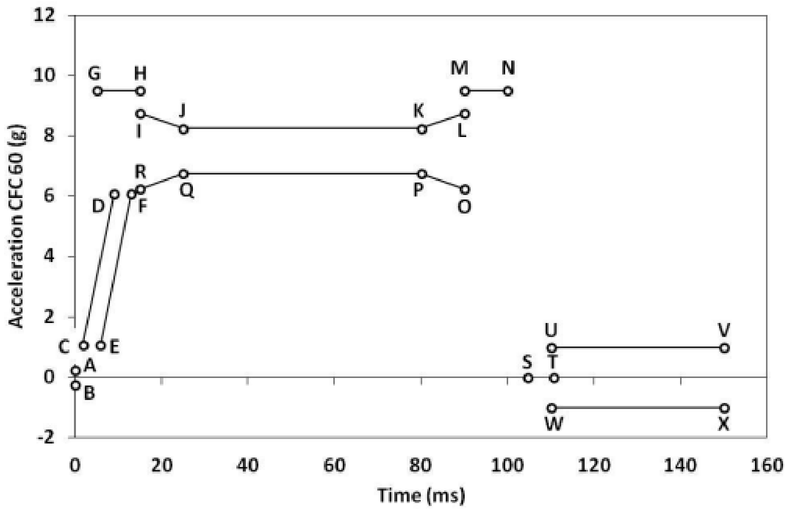


Figure 27: High severity pulse corridors.

Table 5: High pulse requirements

Parameter		Requirement		Limits +/-	Unit
Velocity change dV		24.45		1.2	km/h
Mean acceleration Amean		63.15		4.85	m/s^2
Maximum acceleration Amax		7.50		0.75	g
	Time (ms)	Acceleration (g)		Time (ms)	Acceleration (g)
A	0	0.25	M	90	9.50
B	0	-0.25	N	100	9.50
C	1.8	1.0714	O	90	6.25
D	9	6.0880	P	80	6.75
E	5.8	1.0714	Q	25	6.75
F	13	6.0880	R	15	6.25

G	5	9.50	S	104.7	0.00
H	15	9.50	T	110.7	0.00
I	15	8.75	U	110	1.00
J	25	8.25	V	150	1.00
K	80	8.25	W	110	-1.00
L	90	8.75	X	150	-1.00

(2022 年 Euro NCAP 規章)

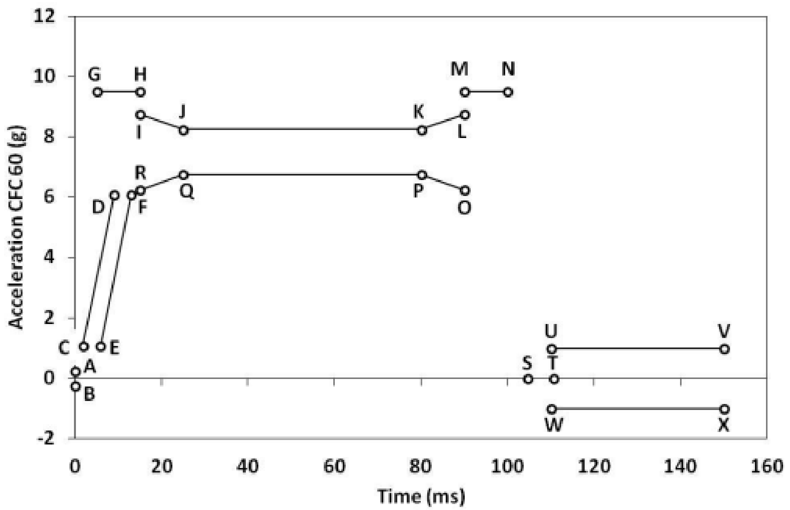


Figure 29: High severity pulse corridors.

Table 6: High pulse requirements

Parameter	Requirement	Limits +/-	Unit
Velocity change dV	24.45	1.2	km/h
Mean acceleration Amean	63.15	4.85	m/s^2
Maximum acceleration Amax	7.50	0.75	g

	Time (ms)	Acceleration (g)		Time (ms)	Acceleration (g)
A	0	0.25	M	90	9.50
B	0	-0.25	N	100	9.50
C	1.8	1.0714	O	90	6.25
D	9	6.0880	P	80	6.75
E	5.8	1.0714	Q	25	6.75
F	13	6.0880	R	15	6.25
G	5	9.50	S	104.7	0.00
H	15	9.50	T	110.7	0.00
I	15	8.75	U	110	1.00
J	25	8.25	V	150	1.00
K	80	8.25	W	110	-1.00
L	90	8.75	X	150	-1.00

(TNCAP 規章草案修正後)

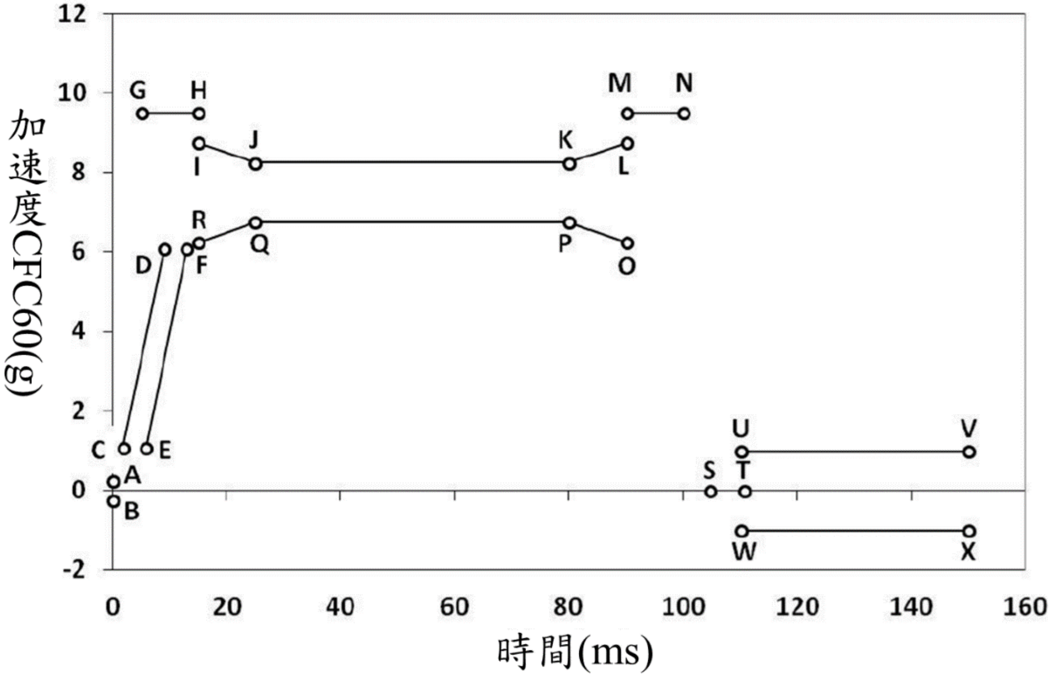


圖 27：高強度脈衝通道

表 5：高強度脈衝規定

參數			規定	限度+/-	單位
速度變化 dV			24.45	1.2	km/h
平均加速度Amean			63.15	4.85	m/s^2
最大加速度 Amax			7.50	0.75	g
	時間(ms)	加速度 (g)		時間(ms)	加速度(g)
A	0	0.25	M	90	9.50
B	0	-0.25	N	100	9.50
C	1.8	1.0714	O	90	6.25
D	9	6.0880	P	80	6.75
E	5.8	1.0714	Q	25	6.75
F	13	6.0880	R	15	6.25
G	5	9.50	S	104.7	0.00
H	15	9.50	T	110.7	0.00
I	15	8.75	U	110	1.00
J	25	8.25	V	150	1.00
K	80	8.25	W	110	-1.00
L	90	8.75	X	150	-1.00

(TNCAP 規章草案修正前)

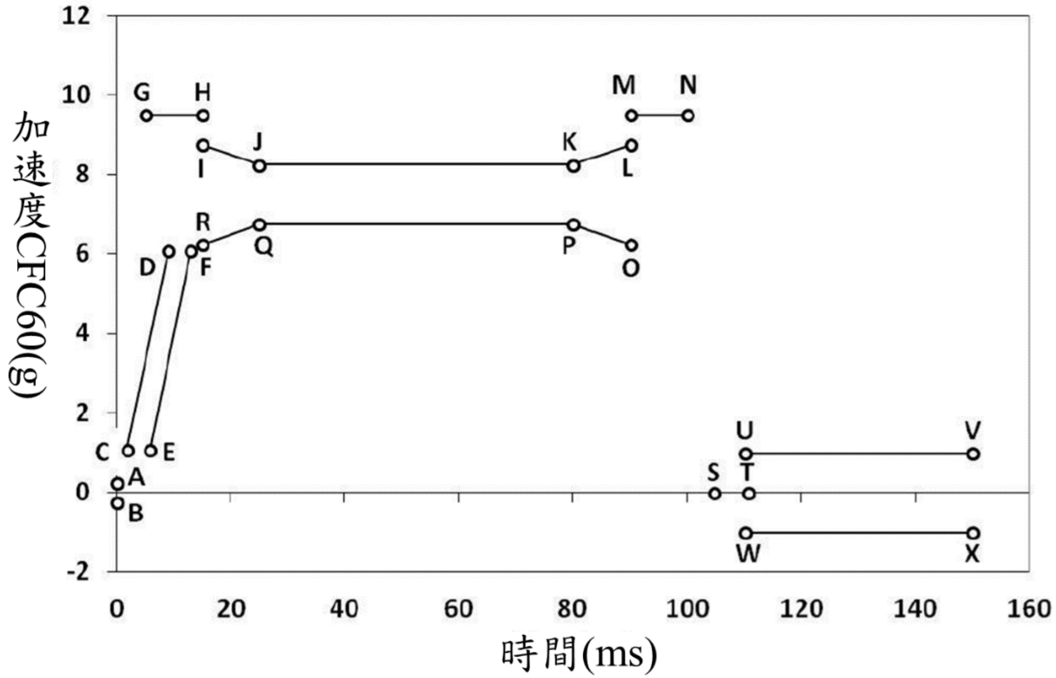


圖 29：高強度脈衝通道

表 6：高強度脈衝規定

參數		規定		限度+/-	單位
速度變化 dV		24.45		1.2	km/h
平均加速度Amean		63.15		4.85	m/s^2
最大加速度 Amax		7.50		0.75	g
	時間(ms)	加速度(g)		時間(ms)	加速度(g)
A	0	0.25	M	90	9.50
B	0	-0.25	N	100	9.50
C	1.8	1.0714	O	90	6.25
D	9	6.0880	P	80	6.75
E	5.8	1.0714	Q	25	6.75
F	13	6.0880	R	15	6.25
G	5	9.50	S	104.7	0.00
H	15	9.50	T	110.7	0.00
I	15	8.75	U	110	1.00
J	25	8.25	V	150	1.00
K	80	8.25	W	110	-1.00
L	90	8.75	X	150	-1.00

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Appendix IV

Head position table

Location of the back-of-head of two designated males in automotive posture with respect to the R50-point at several design torso angles, and their in-between "distance x"

Design torso angle	X-coordinate of back-of-head calculated for the mid-sized male	Z-coordinate of back-of-head calculated for the mid-sized male	X-coordinate of back-of-head calculated for large male[2]	"Distance x": distance between X-coordinates of back-of-head of both males
	504.5*sin(design torso angle - 2.6)+71	504.5*cos(design torso angle - 2.6)+203	593*sin(design torso angle - 2.6)+76	88.5* sin(design torso angle-2.6)+5
5	92	707	101	9
6	101	707	111	10
7	110	706	121	12
8	118	705	132	13
9	127	704	142	15
10	136	703	152	16
11	145	702	163	18
12	153	701	173	19
13	162	699	183	21
14	171	698	193	22
15	179	696	203	24
16	188	694	213	26
17	196	692	223	27
18	205	689	233	29
19	213	687	243	30

20	222	684	253	31
21	230	682	263	33
22	239	679	273	34
23	247	676	283	36
24	255	673	292	37
25	263	669	302	39
26	271	666	312	40
27	279	662	321	42
28	287	659	330	43
29	295	655	340	44
30	303	651	349	46

The large male is represented by a virtually up-scaled Torso and Neck Link; where the mid-sized male version of the Torso and Neck Link measures 504.5 mm and 203 mm with the head room probe 71 mm rearwards, the up-scaled version for the large male measures respectively 593 mm and 219 mm with the head room probe 76 mm rearwards

(TNCAP 規章草案修正後)

3.5.14 頭部位置對照表

本表詳列在不同軀幹設計角度，兩種指定男性人偶於汽車座椅姿勢中，其頭部後方相對於 R50 點之座標位置，以及兩者間之「距離 x」。

軀幹設計角度	中型成年男性計算的頭後部 X 座標	中型成年男性計算的頭後部 Z 座標	大型成年男性計算得頭後部 X 座標[1]	「距離 x」：兩體型成年男性之頭後部 X 座標間之距離
	504.5xsin(軀幹設計角度 - 2.6)+71	504.5xcos(軀幹設計角度-2.6)+203	593xsin(軀幹設計角度-2.6)+76	88.5x sin(軀幹設計角度-2.6)+5
5	92	707	101	9
6	101	707	111	10
7	110	706	121	12
8	118	705	132	13
9	127	704	142	15
10	136	703	152	16
11	145	702	163	18
12	153	701	173	19
13	162	699	183	21
14	171	698	193	22
15	179	696	203	24
16	188	694	213	26
17	196	692	223	27
18	205	689	233	29
19	213	687	243	30
20	222	684	253	31
21	230	682	263	33

22	239	679	273	34
23	247	676	283	36
24	255	673	292	37
25	263	669	302	39
26	271	666	312	40
27	279	662	321	42
28	287	659	330	43
29	295	655	340	44
30	303	651	349	46

備註：1.大型成年男性係由虛擬比例放大軀幹與頸部連線所構成；中型成年男性軀幹及頸部連線之長度分別為 504.5 mm 及 203 mm，頭部空間探測器位於後方 71mm 處；大型成年男性之放大版本，其對應數值分別為 593 mm 及 219 mm，且頭部空間探測器位於後方 76mm 處。

3.7膝部撞擊區域之台車試驗程序規章

SLED TEST PROCEDURE FOR ASSESSING KNEE IMPACT AREAS Version 4.1

2025 年 Euro NCAP 規章	2019 年 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
1 INTRODUCTION … 1.2 All sled testing is to be performed using a pulse that is representative of a 50km/h MPDB test. The pulse requirements to be met are detailed in Section 5.	**1 INTRODUCTION** … 1.2 A generic pulse, determined from a representative batch of LHD and RHD Euro NCAP ODB 64km/h tests, has been developed which can be used for any knee mapping tests, either on driver or front passenger seats. The corresponding acceleration and velocity change curves are attached in Appendix I. 1.3 Where a manufacturer requests, Euro NCAP would accept a full series of knee mapping tests to be performed using the pulse from a full scale 64km/h ODB impact test instead of the generic pulse. ALL knee mapping tests must be done using the same pulse whether it be the generic or vehicle pulse.	3.7.1 簡介 … 3.7.1.2 根據 TNCAP 執行前方偏置撞擊之脈衝執行所有台車試驗(Sled testing)。相關脈衝需求詳見 3.7.5。	3.7.1 簡介 … 3.7.1.2 根據 Euro NCAP 執行 64km/h 前方偏置撞擊可變形碰撞壁之試驗數據判定出一個可供駕駛座與第一排乘客座椅之膝部撞擊區域建構試驗所使用之一般碰撞脈衝(Generic pulse)，相應之加速度與速度變化曲線詳見 3.7.10。 3.7.1.3 若車輛業者提出要求，TNCAP 執行機構亦接受不採用一般碰撞脈衝，改使用完整 64km/h 前方偏置撞擊試驗之脈衝進行全系列膝部撞擊區域建構試驗(Knee mapping test)。無論選擇任一脈衝，所有膝部撞擊區域建構試驗皆須使用相同脈衝。
1.3 The manufacturer must demonstrate, for the areas in question, that femur loads are less than 3.8kN and knee slider values are less than 6mm in order to avoid knee modifiers. It should be noted that under	1.4 The manufacturer must demonstrate, for the areas in question, that femur loads are less than 3.8kN and knee slider values are less than 6mm in order to avoid knee modifiers. It should be noted that under	3.7.1.3 若欲避免膝部扣分(Knee modifiers)，車輛業者須證明評估區域之股骨負載小於 3.8kN、膝部滑動位移量小於 6mm。正常情況下，若無可變接觸扣分	3.7.1.4 若欲避免膝部扣分(Knee modifiers)，車輛業者須證明評估區域之股骨負載小於 3.8kN、膝部滑動位移量小於 6mm。正常情況下，若無可變接觸扣分

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normal circumstances, where the variable load modifier is not applied, the concentrated load modifier is also not applied.	normal circumstances, where the variable load modifier is not applied, the concentrated load modifier is also not applied.	(Variable load modifier)，則亦無集中負載扣分(Concentrated load modifier)。	(Variable load modifier)，則亦無集中負載扣分(Concentrated load modifier)。
1.4 The Euro NCAP assessment for knee modifiers considers occupants of larger/smaller stature and weight than the 50th percentile occupant used in the full scale test. The use of the 95th percentile dummy for knee mapping ensures that a penetration deeper than that of the 50th percentile is achieved. Therefore, the full depth of the assessment zone (50th percentile penetration + 《) is covered by the test. Additionally, a 5th percentile female dummy may be required to asses those areas where the 95th dummy leg is unable to contact the hazards in the facia due to space restrictions.	1.5 The Euro NCAP assessment for knee modifiers considers occupants of larger/smaller stature and weight than the 50th percentile Hybrid III used in the Euro NCAP full vehicle test. The use of the 95th percentile dummy for knee mapping ensures that a penetration deeper than that of the 50th percentile is achieved. Therefore, the full depth of the assessment zone (50th percentile penetration + 20mm) is covered by the test. Additionally, a 5th percentile female dummy may be required to asses those areas where the 95th dummy leg is unable to contact the hazards in the facia due to space restrictions.	3.7.1.4 TNCAP 執行機構用以評估膝部扣分之乘員類型中，將以較 TNCAP 完整車輛試驗所使用之百分之五０乘員人偶身高更高/更矮且體重更重/更輕之乘員。使用百分之九五成年男性人偶建構膝部撞擊區域，確保試驗到比百分之五０成年男性人偶更深的穿透。故得將評估區域之完整深度（百分之五０成年男性人偶穿透+20mm）涵蓋於試驗內。此外，由於百分之九五成年男性人偶之腿部可能因空間限制而無法接觸儀表板之危害區域，因此評估該區域時，可能須使用百分之五成年女性人偶。	3.7.1.5 TNCAP 執行機構用以評估膝部扣分之乘員類型中，將以較 TNCAP 完整車輛試驗所使用之 Hybrid III 百分之五０成年男性人偶身高更高/更矮且體重更重/更輕之乘員。使用百分之九五成年男性人偶建構膝部撞擊區域，確保試驗到比百分之五０成年男性人偶更深的穿透。故得將評估區域之完整深度（百分之五０成年男性人偶穿透+20mm）涵蓋於試驗內。此外，由於百分之九五成年男性人偶之腿部可能因空間限制而無法接觸儀表板之危害區域，因此評估該區域時，可能須使用百分之五成年女性人偶。
1.5 In normal circumstances, the tests can be conducted prior to the full vehicle test based on a Manufacturer's assessment of the knee inspection zone. However, there	1.6 In normal circumstances, the tests can be conducted prior to the full vehicle test based on a Manufacturer's assessment of the knee inspection zone.	3.7.1.5 正常情況下，可於完整車輛試驗前，先依車輛業者評估之膝部撞擊查驗區域進行膝部撞擊區域試驗。惟事前可能無法辨識	3.7.1.6 正常情況下，可於完整車輛試驗前，先依車輛業者評估之膝部撞擊查驗區域進行膝部撞擊區域試驗。惟事前可能無法辨識

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is the possibility that not all hazards are identified beforehand and additional hazards may be highlighted for assessment in the inspection report.	However, there is the possibility that not all hazards are identified beforehand and additional hazards may be highlighted for assessment in the inspection report.	所有危害，查驗報告得以提出需評估之新危害。	所有危害，查驗報告得以提出需評估之新危害。
	1.7 A validation test will be required by Euro NCAP if certain preconditions are not met (see Section 4.2) to ensure that the test configuration is fully representative of the full scale Euro NCAP test. Test houses should also be familiar with the Euro NCAP testing protocols, which are frequently referenced in this procedure. Details of the validation test requirements are in Section 4. The components used in the testing must be of the same design, specification, feature content and quality as those used in the official Euro NCAP test.		3.7.1.7 若未符合特定前提條件（如 3.7.4.1），TNCAP 執行機構將要求進行驗證試驗，以確保試驗型態充分代表完整的 TNCAP 試驗。檢測機構應依 3.7.4 相關要求進行驗證試驗，試驗使用的零件須與正式 TNCAP 試驗之設計、規格、主要內容及品質相同。
3 HARDWARE SETUP … 3.2 Body preparation 3.2.1 The bodyshell must be mounted on the sled such that there will be no permanent deformation of the body or its	**3 HARDWARE SETUP** … 3.2 Body preparation 3.2.1 The bodyshell should be mounted on the sled such that there will be no permanent deformation of the body or its	3.7.3 硬體設定 … 3.7.3.2 車體整備 3.7.3.2.1 車殼(Bodyshell)須以試驗時不會對車身或其底座造成永久變形之方式安裝於台車上，以確	3.7.3 硬體設定 … 3.7.3.2 車體整備 3.7.3.2.1 車殼(Bodyshell)應以試驗時不會對車身或其底座造成永久變形之方式安裝於台車上，以確

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mounts, during the test programme. This is necessary to help ensure good repeatability. The pitch angle of the bodyshell shall be set to 0 degrees, according to the manufacturer's specification.	mounts, during the test programme. This is necessary to help ensure good repeatability. The pitch angle of the bodyshell should be set to 0 degrees, according to the manufacturer's specification.	保試驗結果具有良好重複性。車殼之俯仰角(Pitch angle)應依照車輛業者所提供之規格設定為 0 度。	保試驗結果具有良好重複性。車殼之俯仰角(Pitch angle)應依照車輛業者所提供之規格設定為 0 度。
…	…	…	…
3.2.3 Parts can be removed from the body in white, provided that there is no question that their removal could influence the performance of the knee impact area. Any structural or inertial support of the knee impact area must be fully simulated. This would include the support given by the steering column or loads transmitted through it.	3.2.3 Parts can be removed from the body in white, provided that there is no question that their removal could influence the performance of the knee impact area. Any structural or inertial support of the knee impact area should be fully simulated. This would include the support given by the steering column or loads transmitted through it.	3.7.3.2.3 若確認零件不會影響膝部撞擊區域表現，則可自車體移除。膝部撞擊區域之所有結構性或慣性支撐皆須充分模擬，包括轉向機柱之支撐或經其傳遞之負載。	3.7.3.2.3 若確認零件不會影響膝部撞擊區域表現，則可自車體移除。膝部撞擊區域之所有結構性或慣性支撐皆應充分模擬，包括轉向機柱之支撐或經其傳遞之負載。
3.2.4 The doors may be removed and the door aperture reinforced, to provide a clear view for the cameras. All components added to the bodyshell shall be to the same specification as those used in the Euro NCAP frontal impact test. The restraint system and any active devices must be replaced for each individual test.	3.2.4 The doors may be removed and the door aperture reinforced, to provide a clear view for the cameras. All components added to the bodyshell should be to the same specification as those used in the Euro NCAP frontal impact test. The restraint system and any active devices should be replaced for each individual test.	(修訂不影響 TNCAP 規章)	3.7.3.2.4 若有助拍攝清楚影像，則可移除車門，並加強門框(Door aperture)。車殼上增添之所有組件規格應與 TNCAP 前方偏置撞擊試驗所使用之組件相同。每次試驗皆須更換束縛系統以及任何主動式防護裝置。

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3.2.5 Intrusion may occur which does not directly affect the knee impact area but which might provide additional support to structures supporting the knee impact area. These will be identified in the Euro NCAP inspection. For the sled tests, it may be acceptable for this type of intrusion to be simulated statically e.g. wooden spacers.	3.2.5 Intrusion may occur which does not directly affect the knee impact area but which might provide additional support to structures supporting the knee impact area. These should be identified in the Euro NCAP inspection. For the sled tests, it may be acceptable for this type of intrusion to be simulated statically e.g. wooden spacers.	3.7.3.2.5 若發生之潰縮非直接影響膝部撞擊區域，但可能增加支撐膝部撞擊區域結構之受力，則將於 TNCAP 查驗中加以識別。台車試驗時，可用靜態模擬此類潰縮，例如使用木製墊片。	3.7.3.2.5 若發生之潰縮非直接影響膝部撞擊區域，但可能增加支撐膝部撞擊區域結構之受力，則應於 TNCAP 查驗中加以識別。台車試驗時，可用靜態模擬此類潰縮，例如使用木製墊片。
3.3 Active restraints Any active components of restraint systems must be identical to those used in the Euro NCAP frontal impact test. However, it is acceptable for them to be triggered remotely to match the Euro NCAP frontal impact test firing times within ± 3ms. Where remote triggering is used, full details of the firing time, proportion of charge used and any other relevant details should be supplied, along with a comparison with relevant data from the Euro NCAP frontal impact test.	3.3 Active restraints 3.3.1 Any active components of restraint systems should be identical to those used in the Euro NCAP frontal impact test. However, it is acceptable for them to be triggered remotely to match the Euro NCAP frontal impact test firing times within ± 3ms. Where remote triggering is used, full details of the firing time, proportion of charge used and any other relevant details should be supplied, along with a comparison with relevant data from the Euro NCAP frontal impact test.	3.7.3.3 主動式束縛 束縛系統之主動式組件皆須與 TNCAP 前方偏置撞擊試驗所使用之組件相同，惟可透過遙控觸發達成與 TNCAP 前方偏置撞擊試驗誤差±3ms 內之觸發時間。若使用遙控觸發，則應提供完整觸發時間資訊、使用次數佔可使用總次數比例、任何其他相關資訊，以及與 TNCAP 前方偏置撞擊試驗相關數據之比較。	3.7.3.3 主動式束縛 3.7.3.3.1 束縛系統之主動式組件皆須與 TNCAP 前方偏置撞擊試驗所使用之組件相同，惟可透過遙控觸發達成與 TNCAP 前方偏置撞擊試驗誤差±3ms 內之觸發時間。若使用遙控觸發，則應提供完整觸發時間資訊、使用次數佔可使用總次數比例、任何其他相關資訊，以及與 TNCAP 前方偏置撞擊試驗相關數據之比較。
(新版規章無相關內容)	**4 VALIDATION TEST** 4.1 Exemption from the validation test		3.7.4 驗證試驗 3.7.4.1 驗證試驗豁免

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	4.1.1 Where all of the following test conditions are met by the driver (only) in the nominated full scale test, a validation test is not required: ● A-Pillar displacement below 35mm (using the standard Euro NCAP measurement) ● No significant seat, seat mounting or floor deformation that cannot be replicated in the main test program. ● Driver compressive femur loads below 1.0kN and passenger femur loads below 2.0kN. 4.2 Sled Acceleration 4.2.1 It needs to be demonstrated that the sled test sufficiently replicates a 64km/h ODB frontal impact of the subject vehicle. Therefore, the test can either be conducted with the pulse of the official EuroNCAP crash test or a representative development test. The vehicle used in the representative full scale test should be similar to that intended for assessment in the official Euro NCAP test in terms of engine, transmission and safety		3.7.4.1.1 若於指定完整試驗中駕駛座（駕駛達成即可）滿足下列試驗條件，則無須執行驗證試驗： (1) A 柱位移量小於 35mm（使用 TNCAP 標準量測值）。 (2)座椅、座椅固定裝置及地板之重大變形皆可於主試驗計畫中複製。 (3)駕駛座人偶股骨壓縮負載低於 1.0kN，且乘客座人偶股骨負載小於 2.0kN。 3.7.4.2 台車加速度 3.7.4.2.1 台車試驗須能充分複製受驗車輛之 64km/h 前方偏置撞擊可變形碰撞壁試驗，故可選擇以正式 TNCAP 碰撞試驗之脈衝或代表性之整車脈衝。使用於代表性完整試驗之車輛，其引擎、變速箱及安全設備應與正式 TNCAP 試驗相同。若無法得知正式試驗所使用之車輛規格，或正式試驗車輛之駕駛座方向不同，則車輛業者應先提供至少三種不

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	equipment. If the specification of vehicle for the official test is not known, or a different hand of drive is used, the manufacturer should provide data from a range of at least three different vehicle specifications. The manufacturer may then choose the representative test from the various examples provided and use it for the validation.		同車型規格的數據，再從可選的範例中選擇代表性試驗，並用於驗證試驗。
	4.2.2 The sled acceleration should be measured and compared with that measured, at the base of the impact side B-pillar, in the representative full scale test selected by the manufacturer.		3.7.4.2.2 應測量台車加速度，並與車輛業者選擇的代表性完整試驗中所測得之撞擊側 B 柱底部加速度進行比較。
	4.2.3 The suitability of the correlation between the vehicle and sled pulses will be checked according to the method detailed in Appendix I.		3.7.4.2.3 車輛與台車碰撞脈衝關聯性之適用檢查方法詳載於 3.7.10。
	4.3 Steering column adjustment		3.7.4.3 轉向機柱調整
	4.3.1 The steering column shall be positioned the same as was the case in the Euro NCAP frontal impact		3.7.4.3.1 轉向機柱的擺放位置應與 TNCAP 前方偏置撞擊試驗相同。
	4.4 Dummy and instrumentation		3.7.4.4 人偶與感測及資料擷取系統設置

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	4.4.1 The validation test should be performed using the driver dummy onlyregardless of whether driver or passenger knee mapping is to be performed. AHybrid III 50th percentile dummy shall be placed in the driver's seat. 4.4.2 The dummy shall be instrumented to the same level or greater to that specified for the Euro NCAP frontal impact test. Although the principal comparisons will be made using knee and femur responses, this additional data can aid understanding and explain any anomalies. 4.5 Seat position 4.5.1 The seat shall be positioned as in the Euro NCAP frontal impact test. 4.6 Dummy positions 4.6.1 The dummy shall be positioned as in the Euro NCAP frontal impact test, with extra care taken to ensure that the knee impact areas will be comparable. 4.7 Performance criteria 4.7.1 The knee impact locations and loads		3.7.4.4.1 無論建構駕駛或乘客之膝部撞擊區域，驗證試驗應僅使用駕駛人偶。駕駛座應擺放 Hybrid III 百分之五0成年男性人偶。 3.7.4.4.2 人偶之感測及資料擷取系統設置應與 TNCAP 前方偏置撞擊試驗相同或更多。雖然主要比較項目為膝部與股骨的反應，額外資訊有助瞭解與解釋任何異常情形。 3.7.4.5 座椅位置 3.7.4.5.1 座椅位置應與 TNCAP 前方偏置撞擊試驗相同。 3.7.4.6 人偶位置 3.7.4.6.1 人偶位置應與 TNCAP 前方偏置撞擊試驗相同，並特別留意兩試驗之膝部撞擊區域相似。 3.7.4.7 性能標準 3.7.4.7.1 膝部撞擊位置及負載應與完整試驗中之撞擊位置及負載

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	should be comparable to those occurring in the full scale test. To determine that this is so, the femur loads, the knee slider displacements and the damage to the facia will all need to be compared. Overall, the severity should be at least as severe as that in the representative test. 4.7.2 In order to achieve the above, it might be necessary for the structural deformation to be simulated statically or, where sled test technology allows, dynamically. Furthermore, it might be necessary to introduce an alternative yaw angle of the body shell, see Section 3.2.		相似。應比較兩試驗之股骨負載、膝部滑動位移以及儀表板受損程度進行判定。嚴重程度應至少與代表性試驗相同。 3.7.4.7.2 為達上述條件，結構變形可能需以靜態模擬，若台車試驗技術允許，則可進行動態試驗。此外，車殼可能需設定新的橫擺角，參見 3.7.3.2。
4 MAIN TEST PROGRAMME 4.1 Sled Acceleration 4.1.1 The pulse performed on the sled facility shall be at least as severe as the representative MPDB test pulse, measured at the struck side B-pillar, and will be assessed according to the method detailed in Section 5. 4.2 Steering column adjustment 4.2.1 The angular adjustment shall be	**5 MAIN TEST PROGRAMME** 5.1 Sled Acceleration 5.1.1 The pulse performed on the sled facility should be at least as severe as the generic or the representative 64km/h ODB test pulse, whichever is used, and will be assessed according to the method detailed in Appendix I. 5.2 Steering column adjustment 5.2.1 The angular adjustment shall be	3.7.4 主試驗計畫 3.7.4.1 台車加速度 3.7.4.1.1 施加於台車設備之脈衝應至少與一般碰撞脈衝或代表性之 TNCAP 前方偏置撞擊試驗脈衝相同，該脈衝係於撞擊側 B 柱處所測得，並依 3.7.5 詳載之方式進行評估。 3.7.4.2 轉向機柱調整 3.7.4.2.1 轉向機柱角度應完全朝	3.7.5 主試驗計畫 3.7.5.1 台車加速度 3.7.5.1.1 施加於台車設備之脈衝應至少與一般碰撞脈衝或代表性之 64km/h 前方偏置撞擊試驗脈衝相同，並依 3.7.10 詳載之方式進行評估。 3.7.5.2 轉向機柱調整 3.7.5.2.1 轉向機柱角度應完全朝

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positioned fully upwards with the axial adjustment in the mid position.	positioned fully upwards with the axial adjustment in the mid position.	上，軸向調整至中間位置。	上，軸向調整至中間位置。
4.3 Dummy and instrumentation	5.3 Dummy and instrumentation	3.7.4.3 人偶與感測及資料擷取系統設置	3.7.5.3 人偶與感測及資料擷取系統設置
4.3.1 A 95th percentile male Hybrid III dummy shall normally be used. However, where it is not possible for the 95th percentile knee to contact the hazard due to its size, the 5th percentile female shall be used. The specific dummy to be used will be confirmed during the Euro NCAP inspection.	5.3.1 A 95th percentile male Hybrid III dummy shall normally be used. However, where it is not possible for the 95th percentile knee to contact the hazard due to its size, the 5th percentile female shall be used. The specific dummy to be used will be confirmed during the Euro NCAP inspection.	3.7.4.3.1 此試驗通常使用 Hybrid III 百分之九五成年男性人偶。若因人偶體型大小，導致百分之九五成年男性人偶膝部無法接觸危害區，則應使用百分之五成年女性人偶。TNCAP 查驗時將確認所使用之人偶種類。	3.7.5.3.1 此試驗通常使用 Hybrid III 百分之九五成年男性人偶。若因人偶體型大小，導致百分之九五成年男性人偶膝部無法接觸危害區，則應使用百分之五成年女性人偶。TNCAP 查驗時將確認所使用之人偶種類。
4.3.2 Whichever stature of dummy is to be used, it shall be equipped with at least instrumentation to record femur axial force and knee slider displacement for both legs. Shoulder belt loads shall also be recorded to demonstrate that the pre-tensioning and load limiting characteristics of the restraint system are similar to those in the Euro NCAP frontal impact test.	5.3.2 Whichever stature of dummy is to be used, it shall be equipped with at least instrumentation to record femur axial force and knee slider displacement for both legs. Shoulder belt loads shall also be recorded to demonstrate that the pre-tensioning and load limiting characteristics of the restraint system are similar to those in the Euro NCAP frontal impact test.	3.7.4.3.2 無論使用何種體型之人偶，人偶皆應配備記錄股骨軸向力及雙腿膝部滑動位移之量測儀器。亦須記錄肩部安全帶負載，以確認束縛系統之預負載裝置及負載限制特性與 TNCAP 前方偏置撞擊試驗相同。	3.7.5.3.2 無論使用何種體型之人偶，人偶皆應配備記錄股骨軸向力及雙腿膝部滑動位移之量測儀器。亦須記錄肩部安全帶負載，以確認束縛系統之預負載裝置及負載限制特性與 TNCAP 前方偏置撞擊試驗相同。
4.3.3 Additional instrumentation may be necessary in order to establish knee	5.3.3 Additional instrumentation may be necessary in order to establish knee	3.7.4.3.3 可使用額外儀器判斷膝部穿透。	3.7.5.3.3 可使用額外儀器判斷膝部穿透。

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penetration.	penetration.		
4.4 Driver seat position	5.4 Driver seat position	3.7.4.4 駕駛座椅位置	3.7.5.4 駕駛座椅位置
4.4.1 For 95th percentile dummies, adjust the vehicle seat according to the procedure described in Section 5 of the Euro NCAP MPDB test protocol.	5.4.1 For 95th percentile dummies, adjust the vehicle seat according to the procedure described in Section 6 of the Euro NCAP frontal crash test protocol.	3.7.4.4.1 使用百分之九五成年男性人偶時，依照 TNCAP 前方偏置撞擊規章 3.1.5 所述之程序調整車輛座椅。	3.7.5.4.1 使用百分之九五成年男性人偶時，依照 TNCAP 前方偏置撞擊試驗規章 3.1.5 所述之程序調整車輛座椅。
4.4.2 Use the procedure described under Section 6.1 of the MPDB test protocol to determine the H-point.	5.4.2 Use the procedure described under chapter 7.1 or 7.2 respectively of the frontal crash test protocol to determine the H-point.	3.7.4.4.2 分別依照前方偏置撞擊試驗規章 3.1.6.1 所述之程序決定 H 點位置。	3.7.5.4.2 分別依照前方偏置撞擊試驗規章 3.1.6.1 或 3.1.6.2 所述之程序決定 H 點位置。
4.4.3 Then move the seat rearward by 30mm. If the seat has no locking position 30mm rearward choose the next notch forward.	5.4.3 Then move the seat rearward by 30mm. If the seat has no locking position 30mm reward choose the next notch forward.	3.7.4.4.3 接著將座椅向後移動 30mm 並固定。若座椅無法固定於此位置，則將座椅移動至 30mm 向前一個段位之鎖定位置。	3.7.5.4.3 接著將座椅向後移動 30mm 並固定。若座椅無法固定於此位置，則將座椅移動至 30mm 向前一個段位之鎖定位置。
4.4.4 In the event that the dummy is installed in the vehicle and there is insufficient space between the knee and facia to position the knee in the desired area, then the H-point should be moved rearward to allow correct position. Should this be insufficient, the seat should be moved rearward until there is sufficient space up to the 95th percentile seating position.	5.4.4 In the event that the dummy is installed in the vehicle and there is insufficient space between the knee and facia to position the knee in the desired area, then the H-point should be moved rearward to allow correct position. Should this be insufficient, the seat should be moved rearward until there is sufficient space up to the 95th percentile seating position.	3.7.4.4.4 若將人偶安裝於車內時，膝部與儀表板間之空間過小，無法將人偶膝部放置於目標區域，則 H 點應向後移動，使膝部可放置於正確位置。若空間仍不足，將座椅後移至第 95 百分位座椅位置。	3.7.5.4.4 若將人偶安裝於車內時，膝部與儀表板間之空間過小，無法將人偶膝部放置於目標區域，則 H 點應向後移動，使膝部可放置於正確位置。若空間仍不足，將座椅後移至第 95 百分位座椅位置。

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4.4.5 For 5th percentile dummies, the seat shall be positioned to the manufacturers th percentile seating position in the fore/aft direction. All other seat adjustments are to be set to enable a stable knee contact with the target point.	5.4.5 For 5th percentile dummies, the seat shall be positioned to the manufacturers 5th percentile seating position in the fore/aft direction. All other seat adjustments should be set to enable a stable knee contact with the target point.	3.7.4.4.5 若使用百分之五成年女性人偶，則座椅之前後位置應調整至車輛業者建議之第 5 百分位座椅位置。任何其他座椅調整皆應使膝部能穩定與目標區域接觸。	3.7.5.4.5 若使用百分之五成年女性人偶，則座椅之前後位置應調整至車輛業者建議之第 5 百分位座椅位置。任何其他座椅調整皆應使膝部能穩定與目標區域接觸。
4.5 Driver dummy positioning	5.5 Driver dummy positioning	3.7.4.5 駕駛人偶位置	3.7.5.5 駕駛人偶位置
4.5.1 The tolerances below detail the standard dummy position in the test programme. If the point cannot be contacted by the knee after following the steps detailed below, it may be necessary to deviate from one or all of these values. In particular, the foot position must be such that the correct knee impact area will be reached. Care should be taken that deviation from the original position is as small as possible.	5.5.1 The tolerances below detail the standard dummy position in the test programme. If the point cannot be contacted by the knee after following the steps detailed below, it may be necessary to deviate from one or all of these values. In particular, the foot position must be such that the correct knee impact area will be reached. Care should be taken that deviation from the original position is as small as possible.	3.7.4.5.1 以下詳述試驗計畫中人偶標準擺放位置之容許誤差。若依下述步驟執行後，膝部仍未接觸目標區域，則可能需放棄達成下列一項或多項數據要求。足部位置須特別注意，確保能設置正確的膝部撞擊區域。請注意，儘可能不要與原始位置相差太多。	3.7.5.5.1 以下詳述試驗計畫中人偶標準擺放位置之容許誤差。若依下述步驟執行後，膝部仍未接觸目標區域，則可能需放棄達成下列一項或多項數據要求。足部位置須特別注意，確保能設置正確的膝部撞擊區域。請注意，儘可能不要與原始位置相差太多。
4.5.2 Initial H-point of the HIII 95th: ● The HIII 95th dummy H-point shall be within 13mm horizontally of a point 30mm rearward of the H-point measured with the SAE J826 device during seat adjustment	5.5.2 Initial H-point of the HIII 95th: ● The HIII 95th dummy H-point shall be within 13mm horizontally of a point 30mm rearward of the H-point measured with the SAE J826 device during seat adjustment	3.7.4.5.2 Hybrid III 百分之九五成年男性人偶之初始 H 點： (1)調整座椅時，Hybrid III 百分之九五成年男性人偶之 H 點應位於 SAE J826 設備所測得之 H 點後方 30mm 處，且水平距離不超過 13mm。	3.7.5.5.2 Hybrid III 百分之九五成年男性人偶之初始 H 點： (1)調整座椅時，Hybrid III 百分之九五成年男性人偶之 H 點應位於 SAE J826 設備所測得之 H 點後方 30mm 處，且水平距離不超過 13mm。

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● If the target H-point in the horizontal direction can not be achieved with the given seat position move the seat one notch in the appropriate direction and try to position the dummy again.	● If the target H-point in the horizontal direction can not be achieved with the given seat position move the seat one notch in the appropriate direction and try to position the dummy again.	(2)若水平方向之目標 H 點無法以原始座椅位置達成，則將座椅向適合的方向移動一個段位，並重新定位人偶。	(2)若水平方向之目標 H 點無法以原始座椅位置達成，則將座椅向適合的方向移動一個段位，並重新定位人偶。
4.5.3 Pelvic angle:	5.5.3 Pelvic angle:	3.7.4.5.3 骨盆角度	3.7.5.5.3 骨盆角度
● The pelvic angle measurement gauge should read 22.5° ± 2.5° from the horizontal.	● The pelvic angle measurement gauge should read 22.5° ± 2.5° from the horizontal.	量測儀器所測得之骨盆角度應為 22.5 ± 2.5 度（與水平面之夾角）。	量測儀器所測得之骨盆角度應為 22.5 ± 2.5 度（與水平面之夾角）。
4.5.4 Head:	5.5.4 Head:	3.7.4.5.4 頭部	3.7.5.5.4 頭部
● The transverse instrumentation platform of the head shall be within 2.5° of horizontal.	● The transverse instrumentation platform of the head shall be within 2.5° of horizontal.	頭部橫向儀器平台應於水平狀態（2.5 度以內）。	頭部橫向儀器平台應於水平狀態（2.5 度以內）。
4.5.5 Arms + Hands:	5.5.5 Arms + Hands:	3.7.4.5.5 手臂與手	3.7.5.5.5 手臂與手
● For driver testing, place hands on the steering wheel in a similar fashion to that of the Euro NCAP test. However, minor adjustments on the arm and hand positions are allowed if this allows for better camera views of the knee impact area.	● For driver testing, place hands on the steering wheel in a similar fashion to that of the Euro NCAP test. However, minor adjustments on the arm and hand positions are allowed if this allows for better camera views of the knee impact area.	(1) 駕駛試驗時，將雙手以與 TNCAP 試驗中相似的方式擺放於方向盤上。若微調手臂及手部姿勢可使相機更清楚拍攝到膝部撞擊區域，則允許微調。	(1) 駕駛試驗時，將雙手以與 TNCAP 試驗中相似的方式擺放於方向盤上。若微調手臂及手部姿勢可使相機更清楚拍攝到膝部撞擊區域，則允許微調。
● For passenger testing, place the arms as in the Euro NCAP test setup.	● For passenger testing, place the arms as in the Euro NCAP test setup.	(2) 乘客試驗時，將手臂依照 TNCAP 試驗設定擺放。	(2) 乘客試驗時，將手臂依照 TNCAP 試驗設定擺放。
4.5.6 Torso:	5.5.6 Torso:	3.7.4.5.6 軀幹	3.7.5.5.6 軀幹
● The torso should line up with the	● The torso should line up with the	軀幹應與座椅中心對齊，惟可將人	軀幹應與座椅中心對齊，惟可將人

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centre of the seat. However, the torso might have to be twisted to one side to allow for the knees to strike the points indicated in the Euro NCAP inspection. During twisting it is acceptable for the H-point location to change.	centre of the seat. However, the torso might have to be twisted to one side to allow for the knees to strike the points indicated in the Euro NCAP inspection. During twisting it is acceptable for the H-point location to change.	偶軀幹傾向一側，以允許人偶膝部觸碰 TNCAP 查驗指定須觸碰點。傾斜人偶時，H 點位置可以改變。	偶軀幹傾向一側，以允許人偶膝部觸碰 TNCAP 查驗指定須觸碰點。傾斜人偶時，H 點位置可以改變。
4.5.7 Legs: ● The legs should initially be positioned according to the Euro NCAP frontal test protocol, but then their position shall be modified laterally so that the main load bearing knee will come into contact with the potential hard-point as indicated in the inspection report. The other knee shall be aimed at an area where it would be expected to receive experience little or no loading. Frequently, this would be achieved by positioning it laterally where it has the greatest spacing from the facia. The lateral position of the knees can be achieved with a variation of the knee spread and/or a	5.5.7 Legs: ● The legs should initially be positioned according to the Euro NCAP frontal test protocol, but then their position shall be modified laterally so that the main load bearing knee will come into contact with the potential hard-point as indicated in the inspection report. The other knee shall be aimed at an area where it would be expected to receive experience little or no loading. Frequently, this would be achieved by positioning it laterally where it has the greatest spacing from the facia. The lateral position of the knees can be achieved with a variation of the knee spread and/or a	3.7.4.5.7 雙腿 雙腿之初始位置應依 TNCAP 前方偏置撞擊試驗程序進行擺放，惟雙腿之水平距離應調整至主要承重之膝部接觸查驗報告中指定之潛在硬點。另一膝部對準承重極小或不會承重的區域，一般擺放於膝部與儀表板水平距離最大處。雙膝之水平位置可透過調整雙膝間距離及/或傾斜軀幹達成。	3.7.5.5.7 雙腿 雙腿之初始位置應依 TNCAP 前方偏置撞擊試驗程序進行擺放，惟雙腿之水平距離應調整至主要承重之膝部接觸查驗報告中指定之潛在硬點。另一膝部對準承重極小或不會承重的區域，一般擺放於膝部與儀表板水平距離最大處。雙膝之水平位置可透過調整雙膝間距離及/或傾斜軀幹達成。

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twist of the torso. 4.5.8 Feet: ● The feet should be placed as flat as possible on the toe board parallel to the centreline of the vehicle. If either of the feet comes into contact with a footrest or a wheel arch, place the foot fully onto that rest. It is permissible to adjust the foot position to ensure that the correct knee impact location can be obtained. In order to ensure a stable knee contact, it may also be necessary to prevent the relevant foot from moving forwards in the footwell.	twist of the torso. 5.5.8 Feet: ● The feet should be placed as flat as possible on the toe board parallel to the centreline of the vehicle. If either of the feet comes into contact with a footrest or a wheel arch, place the foot fully onto that rest. It is permissible to adjust the foot position to ensure that the correct knee impact location can be obtained. In order to ensure a stable knee contact, it may also be necessary to prevent the relevant foot from moving forwards in the footwell.	3.7.4.5.8 足部 足部應盡可能平放於踏腳板，且平行於車輛中心線。若任一腳與置腳板或輪拱接觸，則將該腳完全放於置腳板或輪拱。為確保得到正確之膝部撞擊位置，允許調整足部位置。為確保膝部穩定接觸，須避免足部向前移動。	3.7.5.5.8 足部 足部應盡可能平放於踏腳板，且平行於車輛中心線。若任一腳與置腳板或輪拱接觸，則將該腳完全放於置腳板或輪拱。為確保得到正確之膝部撞擊位置，允許調整足部位置。為確保膝部穩定接觸，須避免足部向前移動。
4.6 Passenger dummy positioning 4.6.1 The minimum knee penetration required for all of the passenger femur load tests within main test programme is based on the limit of the inspection zone. This will be detailed in the inspection report and be based upon the penetration of the passenger knee obtained in the official Euro NCAP test including an additional 20mm.	5.6 Passenger dummy positioning 5.6.1 The minimum knee penetration required for all of the passenger femur load tests within main test programme is based on the limit of the inspection zone. This will be detailed in the inspection report and be based upon the penetration of the passenger knee obtained in the official Euro NCAP test including an additional 20mm.	3.7.4.6 乘客人偶位置 3.7.4.6.1 乘客股骨負載試驗要求之最小膝部穿透依查驗區域之限制而定。相關資訊將詳載於查驗報告，且依照正式 TNCAP 試驗所測得之乘客膝部穿透再加上 20mm。	3.7.5.6 乘客人偶位置 3.7.5.6.1 乘客股骨負載試驗要求之最小膝部穿透依查驗區域之限制而定。相關資訊將詳載於查驗報告，且依照正式 TNCAP 試驗所測得之乘客膝部穿透再加上 20mm。

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4.6.2 The passenger dummy positioning procedure will follow the procedure described in Sections 4.4 & 4.5 However, if this seating/dummy position does not achieve a minimum knee penetration equal to that of the limit of the inspection zone, the seat and dummy should be adjusted so that this limit is reached by the knee throughout the main test programme.	5.6.2 The passenger dummy positioning procedure will follow the procedure described in Sections 5.4 & 5.5. However, if this seating/dummy position does not achieve a minimum knee penetration equal to that of the limit of the inspection zone, the seat and dummy should be adjusted so that this limit is reached by the knee throughout the main test programme.	3.7.4.6.2 乘客人偶之擺放程序於 3.7.4.4 及 3.7.4.5 中描述。惟若前述座椅/人偶位置無法使膝部穿透達到查驗區域限制，則應調整座椅及人偶，以確保主試驗計畫全程皆可達到該限制。	3.7.5.6.2 乘客人偶之擺放程序於 3.7.5.4 及 3.7.5.5 中描述。惟若前述座椅/人偶位置無法使膝部穿透達到查驗區域限制，則應調整座椅及人偶，以確保主試驗計畫全程皆可達到該限制。
4.6.3 The penetration of the passenger knee will be established using high speed video footage and/or pelvic displacement calculations. Alternative measurement methods for establishing pelvic displacement will also be accepted which can be shown to be of equal accuracy as using pelvis acceleration to establish knee penetration. If the position of the dummy is limited by the knees contacting the hazard and/or the amount of available seat travel, that most forward position should be used.	5.6.3 The penetration of the passenger knee will be established using high speed video footage and/or pelvic displacement calculations. Alternative measurement methods for establishing pelvic displacement will also be accepted which can be shown to be of equal accuracy as using pelvis acceleration to establish knee penetration. If the position of the dummy is limited by the knees contacting the hazard and/or the amount of available seat travel, that most forward position should be used.	3.7.4.6.3 乘客膝部穿透之判定將以高速攝影機錄影片段及/或骨盆位移量計算。若有其他與骨盆加速度同樣準確之方式證明骨盆位移，則亦可用以判斷膝部穿透。若人偶位置受膝部與危害區域接觸及/或座椅移動範圍限制，則應使用最前方之位置。	3.7.5.6.3 乘客膝部穿透之判定將以高速攝影機錄影片段及/或骨盆位移量計算。若有其他與骨盆加速度同樣準確之方式證明骨盆位移，則亦可用以判斷膝部穿透。若人偶位置受膝部與危害區域接觸及/或座椅移動範圍限制，則應使用最前方之位置。
4.6.4 Situations were potential hazards for knee slider are highlighted are treated	5.6.4 Situations were potential hazards for knee slider are highlighted are treated	3.7.4.6.4 被指出有膝部滑動位移潛在危害情形者，將視為須執行膝	3.7.5.6.4 被指出有膝部滑動位移潛在危害情形者，將視為須執行膝

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equivalent to test for potential knee hazards. The dummy positioning procedure will follow the procedure described in Sections 4.4 & 4.5. However, if this seating/dummy position does not achieve a minimum knee displacement equal to that of the limit of the inspection zone (20mm), the seat and dummy shall be adjusted so that this limit is reached. If knee slider is a concern it needs to be ensured that there is stable contact between the tibia and potential hazard. It may be necessary to make small adjustments to the angel of the Tibia to ensure contact with the correct location.	equivalent to test for potential knee hazards. The dummy positioning procedure will follow the procedure described in Sections 5.4 & 5.5. However, if this seating/dummy position does not achieve a minimum knee displacementequal to that of the limit of the inspection zone (20mm), the seat and dummy should be adjusted so that this limit is reached. If knee slider is a concern it needs to be ensured that there is stable contact between the tibia and potential hazard. It may be necessary to make small adjustments to the angel of the Tibia to ensure contact with the correct location.	部撞擊區域建構試驗。人偶擺放程序與 3.7.5.4 及 3.7.5.5 之程序相同。惟若前述座椅/人偶位置無法達成與查驗區域限制（20mm）相同之最小膝部位移，則應調整座椅及人偶。若膝部可能滑動位移，則應確保脛骨及潛在危害區能維持穩定接觸。可能須微調脛骨角度，以確保脛骨接觸正確位置。	部撞擊區域建構試驗。人偶擺放程序與 3.7.5.4 及 3.7.5.5 之程序相同。惟若前述座椅/人偶位置無法達成與查驗區域限制（20mm）相同之最小膝部位移，則應調整座椅及人偶。若膝部可能滑動位移，則應確保脛骨及潛在危害區能維持穩定接觸。可能須微調脛骨角度，以確保脛骨接觸正確位置。
4.7 Ensuring a stable knee contact to the potential hard point	5.7 Ensuring a stable knee contact to the potential hard point	3.7.4.7 確保膝部穩定接觸潛在硬點。	3.7.5.7 確保膝部穩定接觸潛在硬點。
4.7.1 In order for a knee mapping sled test to be valid, it needs to be ensured that the main load bearing knee remains in stable contact with the potential hard point during the impact sequence. If the knee is deflected, the test will not be accepted as a valid measure of the potential hazard. It is important that the other knee is loaded	5.7.1 In order for a knee mapping sled test to be valid, it needs to be ensured that the main load bearing knee remains in stable contact with the potential hard point during the impact sequence. If the knee is deflected, the test will not be accepted as a valid measure of the potential hazard. It is important that the other knee is loaded	3.7.4.7.1 為使膝部撞擊區域建構之台車試驗有效，須確保主要承重膝部與潛在硬點於持續撞擊中維持穩定接觸。若膝部偏離潛在硬點，則此次試驗將不視為潛在危害之有效量測。另一膝部亦應藉由其未接觸儀表板或所撞擊儀表板區域為受力最小區域，以確	3.7.5.7.1 為使膝部撞擊區域建構之台車試驗有效，須確保主要承重膝部與潛在硬點於持續撞擊中維持穩定接觸。若膝部偏離潛在硬點，則此次試驗將不視為潛在危害之有效量測。另一膝部亦應藉由其未接觸儀表板或所撞擊儀表板區域為受力最小區域，以確

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as little as possible by either not contacting the facia or impacting the least supported area of the facia.	as little as possible by either not contacting the facia or impacting the least supported area of the facia.	認承重極小或不會承重。	認承重極小或不會承重。
4.7.2 In order to ensure this it is allowable for the knee spread to be artificially fixed (i.e. by the application of structural foam or similar, between the legs). Furthermore, it might be necessary to prevent the feet from moving forward during crash in order to prevent a dynamic drop of the knee during the impact sequence.	5.7.2 In order to ensure this it is allowable for the knee spread to be artificially fixed (i.e. by the application of structural foam or similar, between the legs). Furthermore, it might be necessary to prevent the feet from moving forward during crash in order to prevent a dynamic drop of the knee during the impact sequence.	3.7.4.7.2 為確保維持上述膝部位置，可以人工方式固定雙膝距離（即雙腿間使用泡棉結構物或類似物質）。此外，須避免足部於碰撞時向前移動，以避免持續撞擊時膝部從接觸點滑落。	3.7.5.7.2 為確保維持上述膝部位置，可以人工方式固定雙膝距離（即雙腿間使用泡棉結構物或類似物質）。此外，須避免足部於碰撞時向前移動，以避免持續撞擊時膝部從接觸點滑落。
4.7.3 If a stable contact can not be achieved with artificial knee spreading alone it is allowable to use an appropriate yaw angle of the sled other than 0 degrees to assess an individual hard point.	5.7.3 If a stable contact can not be achieved with artificial knee spreading alone it is allowable to use an appropriate yaw angle of the sled other than 0 degrees to assess an individual hard point.	3.7.4.7.3 若透過人工方式固定雙膝距離仍無法確保膝部與接觸點之穩定接觸，則可使用 0 度以外的台車橫擺角評估各別硬點。	3.7.5.7.3 若透過人工方式固定雙膝距離仍無法確保膝部與接觸點之穩定接觸，則可使用 0 度以外的台車橫擺角評估各別硬點。
4.7.4 In any case, it is essential to confirm the stable knee contact with the use of appropriate high speed camera footage.	5.7.4 In any case, it is essential to confirm the stable knee contact with the use of appropriate high speed camera footage.	3.7.4.7.4 任何情況下，皆須使用適合的高速攝影機攝影片段確認膝部穩定接觸。	3.7.5.7.4 任何情況下，皆須使用適合的高速攝影機攝影片段確認膝部穩定接觸。
4.8 Dummy painting	5.8 Dummy painting	3.7.4.8 人偶塗色	3.7.5.8 人偶塗色
4.8.1 In the absence of acceptable camera evidence, paint or other suitable alternatives may be used in order to identify that the correct point has been	5.8.1 In the absence of acceptable camera evidence, paint or other suitable alternatives may be used in order to identify that the correct point has been	3.7.4.8.1 若無可接受之影像證據，則可使用塗色或其他替代方案以判斷膝部是否接觸正確接觸點。	3.7.5.8.1 若無可接受之影像證據，則可使用塗色或其他替代方案以判斷膝部是否接觸正確接觸點。

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contacted. 4.9 Performance criteria 4.9.1 In the Euro NCAP inspection, the potential hazards will be identified and it will be necessary for all of them to be fully explored in the test programme. 4.9.2 The performance criteria used for the assessment will be femur forces below 3.8kN and the knee slider responses shall be less than 6mm. No adjustment to the performance criteria is made for any change in dummy size.	contacted. 5.9 Performance criteria 5.9.1 In the Euro NCAP inspection, the potential hazards will be identified and it will be necessary for all of them to be fully explored in the test programme. 5.9.2 The performance criteria used for the assessment will be femur forces below 3.8kN and the knee slider responses shall be less than 6mm. No adjustment to the performance criteria is made for any change in dummy size.	3.7.4.9 性能標準 3.7.4.9.1 TNCAP 查驗將辨識潛在危害，且所有辨識出的危害皆須於試驗計畫中充分試驗。 3.7.4.9.2 性能標準為人偶股骨受力小於 3.8kN，且膝部滑動量小於 6mm。人偶體型大小不影響性能標準。	3.7.5.9 性能標準 3.7.5.9.1 TNCAP 查驗將辨識潛在危害，且所有辨識出的危害皆須於試驗計畫中充分試驗。 3.7.5.9.2 性能標準為人偶股骨受力小於 3.8kN，且膝部滑動量小於 6mm。人偶體型大小不影響性能標準。
5 SLED PULSE REQUIREMENTS 5.1 The pulse used for the knee mapping tests may be based on either the actual struck side vehicle pulse from the official MPDB test or one of four predefined generic pulses. 5.2 Where a generic pulse is used, the maximum permissible different in OLC between the B-pillar pulse of the official test and chosen generic pulse is +/-5g. Where this tolerance is exceeded, the official test pulse is to be used for all sled tests.	**Appendix I** The pulse performed on the sled facility should be close to or more severe as the generic test pulse. To validate this point, the following process should be used: (請參考末頁表格)	3.7.5 台車脈衝 3.7.5.1 膝部撞擊區域建構試驗所使用之脈衝可採用前方偏置撞擊正式試驗中車輛撞擊側之實際脈衝，或四個預先定義之一般碰撞脈衝之一。 3.7.5.2 使用一般碰撞脈衝時，TNCAP 正式試驗之 B 柱脈衝與所選一般脈衝之 OLC 最大容許差異為 +/-5g。若超過容許範圍，則所有台車試驗均應使用正式試驗脈衝。	3.7.10 台車脈衝 3.7.10.1 對台車設備施加之脈衝應接近或超過一般碰撞試驗脈衝。使用以下方式計算施加之脈衝是否有效： (請參考末頁表格)

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5.3 The generic pulses are divided into four OLC ranges, see below: (請參考末頁表格) 5.4 The pulse performed on the sled facility should be close to or more severe as either the vehicle test pulse or generic pulse. To validate this point, the following process should be used:		3.7.5.3 一般碰撞脈衝分為四個 OLC 範圍，參見下表： (請參考末頁表格) 3.7.5.4 台車設備所執行之脈衝應與車輛試驗脈衝或一般碰撞脈衝相近或更嚴苛。為驗證滿足此要求，應依下列程序進行確認：	
5.4.1 Change the orientation to have sled pulse and vehicle pulse in globally positive values	● Change the orientation to have sled pulse and generic pulse in globally positive values	3.7.5.4.1 調整方向，使台車脈衝及車輛脈衝皆為正值。	(1) 調整方向，使台車脈衝及一般碰撞脈衝皆為正值。
5.4.2 Calculate by integration the Delta V from vehicle pulse DV1(t), setting the initial velocity to 0	● Calculate by integration the Delta V from generic pulse DV1(t), setting the initial velocity to 0	3.7.5.4.2 設定初始速度為 0，從車輛脈衝 DV1(t)，由積分計算 Delta V。	(2) 設定初始速度為 0，從一般碰撞脈衝 DV1(t)，由積分計算 Delta V。
5.4.3 Calculate by integration the Delta V from sled test DV2(t), setting the initial velocity to 0	● Calculate by integration the Delta V from sled test DV2(t), setting the initial velocity to 0	3.7.5.4.3 設定初始速度為 0，從台車試驗 DV2(t)，由積分計算 Delta V。	(3) 設定初始速度為 0，從台車試驗 DV2(t)，由積分計算 Delta V。
5.4.4 Calculate the difference DV = DV1 – DV2	● Calculate the difference DV = DV1–DV2	3.7.5.4.4 計算 DV1 與 DV2 的差，DV = DV1-DV2。	(4)計算 DV1 與 DV2 的差，DV = DV1-DV2。
5.4.5 Calculate by integration of DV1 the X displacement from vehicle pulse DX1(t), setting the initial value to 0	● Calculate by integration of DV1 the X displacement from generic pulse DX1(t), setting the initial value to 0	3.7.5.4.5 對 DV1 進行積分，計算車輛脈衝 DX1(t)起的位移量 X，並將初始值設定為 0。	(5)對 DV1 進行積分，計算一般碰撞脈衝 DX1(t)起的位移量 X，並將初始值設定為 0。
5.4.6 Calculate by integration of DV2 the X displacement from sled test DX2(t), setting the initial value to 0	● Calculate by integration of DV2 the X displacement from sled test DX2(t), setting the initial value to 0	3.7.5.4.6 對 DV2 進行積分，計算台車試驗 DX2(t)起的位移量 X，並將初始值設定為 0。	(6)對 DV2 進行積分，計算台車試驗 DX2(t)起的位移量 X，並將初始值設定為 0。

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5.4.7 Calculate the difference DX(t) = DX1(t) – DX2(t) 5.4.8 Calculate DX at 100ms 5.5 Requirement #1: ○ If all the DV values up to 100ms are in the zone as shown below, requirement #1 is OK – check requirement #2 ○ If some DV values up to 100ms are outside the zone, requirement #1 is not OK, →sled test is less severe than the vehicle test pulse and cannot be accepted (請參考末頁圖示)	● Calculate the difference DX(t) = DX1(t) – DX2(t) ● Calculate DX at 120 ms Requirement #1: ○ If all the DV values up to 120 ms are in the zone as shown below, requirement #1 is OK – check requirement #2 ○ If some DV values up to 120 ms are outside the zone, requirement #1 is not OK, →sled test is less severe than the generic or ODB test pulse and cannot be accepted (請參考末頁圖示)	3.7.5.4.5 計算 DX1(t)與 DX2(t)的差，DX(t)= DX1(t) - DX2(t)。 3.7.5.4.8 計算 100 ms 時的 DX。 3.7.5.5 條件 1： (1) 檢查試驗從開始至 100ms 之區間，DV 值是否皆落在下圖合格區內，若是，則符合條件 1，請接著檢查條件 2。 (2) 若在此區間內，有部分 DV 值落在合格區外，則不符合條件 1。 代表台車試驗使用之脈衝較車輛脈衝輕，故此台車試驗不適合用於建構膝部撞擊區域。 (請參考末頁圖示)	(7)計算 DX1(t)與 DX2(t)的差，DX(t)= DX1(t) - DX2(t)。 (8)計算 120 ms 時的 DX。 3.7.10.2 條件 1： (1) 檢查試驗從開始至 120ms 之區間，DV 值是否皆落在下圖合格區內，若是，則符合條件 1，請接著檢查條件 2。 (2) 若在此區間內，有部分 DV 值落在合格區外，則不符合條件 1。 代表台車試驗使用之脈衝較一般碰撞脈衝或偏置撞擊可變形碰撞壁試驗脈衝輕，故此台車試驗不適合用於建構膝部撞擊區域。 (請參考末頁圖示)
5.6 Requirement #2: ○ If DX value at 100ms is negative, requirement #2 is OK → sled test is accepted for knee mapping ○ If DX value at 100ms is positive, requirement #2 is not OK → sled test cannot be accepted (請參考末頁圖示)	Requirement #2: ○ If DX value at 120 ms is negative, requirement #2 is OK →sled test is accepted for knee mapping ○ o If DX value at 120 ms is positive, requirement #2 is not OK → sled test cannot be accepted (請參考末頁圖示)	3.7.5.6 條件 2： (1)若 100 ms 時的 DX 值為負值，則符合條件 2。 代表此台車試驗適合用於建構膝部撞擊區域。 (2)若 100ms 時的 DX 值為正值，則不符合條件 2。 代表此台車試驗不適合用於建構膝部撞擊區域。	3.7.10.3 條件 2： (1)若 120ms 時的 DX 值為負值，則符合條件 2。 代表此台車試驗適合用於建構膝部撞擊區域。 (2)若 120ms 時的 DX 值為正值，則不符合條件 2。 代表此台車試驗不適合用於建構膝部撞擊區域。

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		(請參考末頁圖示)	(請參考末頁圖示)
6 STATIC DEPLOYMENT TESTS In order to ensure that the airbag creates no hazard from deployment against a knee or leg positioned close to the facia, it may be necessary to carry out static deployment tests. The concern is that a deploying airbag may load the leg just below the knee causing excessive forces to be transmitted through the knee joint. 6.1 Where the knee slider displacement in the full width test is below 3mm due to deployment of the airbag, no further testing is required. 6.2 Where the knee slider displacement in the full width test is above 3mm, due to deployment of the airbag, and the gap between the tibia and facia of the driver dummy is less than 50mm, no further testing is required. 6.3 Where the knee slider displacement in the full width test is above 3mm, due to deployment of the airbag, and the gap between the tibia and facia of the driver dummy is 50mm or greater, a static		3.7.6 靜態開展試驗 為確保空氣囊於開展時不致因膝部或腿部靠近儀表板而造成危害，必要時應執行靜態開展試驗。本試驗主要用以評估空氣囊開展時，是否作用於膝部下方的腿部，導致過大的力量通過膝部傳遞。 3.7.6.1 若前方全寬撞擊試驗中，空氣囊開展所造成之膝部滑動量小於或等於 3 mm，則無須進一步執行試驗。 3.7.6.2 若前方全寬撞擊試驗中，空氣囊開展所造成之膝部滑動量大於 3 mm，且駕駛人偶脛骨與儀表板間距小於 50mm，則無須進一步執行試驗。 3.7.6.3 若前方全寬撞擊試驗中，空氣囊開展所造成之膝部滑動量大於 3mm，且駕駛人偶脛骨與儀表板區間距大於或等於 50mm，則須執行靜態開展試驗。	

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deployment test is required. 6.3.1 A 5th female dummy shall be positioned in the driver's seating position and moved forward until the gap between the tibia and facia is no more than 50mm. This distance may be established by moving either the seat or the dummy on the seat cushion. 6.3.2 The gap between the tibia, knee and facia is to be measured after positioning the 5th female dummy for the full width test using a sphere of 50mm in diameter. 6.3.3 The dummy shall be instrumented with roller bearing knee sliders in both legs. 6.3.4 The knee airbag should then be deployed and the knee slider data recorded. 6.3.5 Where no static deployment data is provided or the knee slider displacement from the static deployment test is 6mm or above, the variable contact modifier will be applied.		3.7.6.3.1 將百分之五成年女性人偶放置於駕駛座，並向前移動，使脛骨與儀表板間距不超過50mm。此距離可藉由調整座椅位置，或調整座墊上人偶來建立。 3.7.6.3.2 完成前方全寬試驗之百分之五成年女性人偶定位後，應使用直徑 50mm 之球體測量脛骨、膝部與儀表板間之間距。 3.7.6.3.3 人偶雙腿均應安裝滾動軸承式膝部滑動量測裝置。 3.7.6.3.4 接著，應開展膝部空氣囊，並記錄膝部滑動量測數據。 3.7.6.3.5 未提交靜態開展數據，或靜態開展試驗測得之膝部滑動量大於或等於 6mm，則適用可變接觸扣分。	
7 PHOTOGRAPHIC RECORD 7.1 High speed film	**6 PHOTOGRAPHIC RECORD** 6.1 High speed film	3.7.7 影像紀錄 3.7.7.1 高速攝影	3.7.6 影像紀錄 3.7.6.1 高速攝影

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7.1.1 High speed film is required for ALL knee mapping testing.	6.1.1 High speed film is required for ALL knee mapping testing including the validation test.	3.7.7.1.1 所有膝部撞擊試驗皆須以高速攝影紀錄。	3.7.6.1.1 所有膝部撞擊試驗（包括驗證試驗）皆須以高速攝影紀錄。
7.1.2 Sled mounted high speed cameras must be used to record the whole of the relevant scene. This would include the seat, seat belt system, facia, steering column, door aperture and dummy trajectory from both left and right sides. It should record the knee impact location and provide verification that the knee was not deflected from the chosen location and that the feet remained stable on the toe board. This should include a camera view showing the knees and a camera view that shows the feet for the complete impact sequence. The high speed camera frame rate must be of the order of 1000 frames per second.	6.1.2 Sled mounted high speed cameras should be used to record the whole of the relevant scene. This would include the seat, seat belt system, facia, steering column, door aperture and dummy trajectory from both left and right sides. It should record the knee impact location and provide verification that the knee was not deflected from the chosen location and that the feet remained stable on the toe board. This should include a camera view showing the knees and a camera view that shows the feet for the complete impact sequence. The high speed camera frame rate should be of the order of 1000 frames per second.	3.7.7.1.2 應於台車上加裝高速攝影機，記錄所有相關畫面，包含座椅、安全帶系統、儀表板、轉向機柱、門框以及分別於左側及右側記錄人偶移動軌跡。高速攝影須記錄膝部撞擊位置，並提供證據證明膝部未偏離選定接觸位置、足部未離開踏腳板，因此應包含持續撞擊過程中膝部及足部之拍攝畫面。高速攝影機須為1000FPS。	3.7.6.1.2 應於台車上加裝高速攝影機，記錄所有相關畫面，包含座椅、安全帶系統、儀表板、轉向機柱、門框以及分別於左側及右側記錄人偶移動軌跡。高速攝影須記錄膝部撞擊位置，並提供證據證明膝部未偏離選定接觸位置、足部未離開踏腳板，因此應包含持續撞擊過程中膝部及足部之拍攝畫面。高速攝影機應為1000FPS。
7.2 Still photography 7.2.1 In order for any knee mapping results to be accepted by Euro NCAP, it is essential that adequate photographic evidence of the test is provided by the manufacturer.	6.2 Still photography 6.2.1 In order for any knee mapping results to be accepted by Euro NCAP, it is essential that adequate photographic evidence of the test is provided by the manufacturer.	3.7.7.2 靜態影像 3.7.7.2.1 車輛業者須提供充分之試驗影像證據，TNCAP 執行機構得以接受膝部撞擊區域建構試驗結果。	3.7.6.2 靜態影像 3.7.6.2.1 車輛業者須提供充分之試驗影像證據，TNCAP 執行機構得以接受膝部撞擊區域建構試驗結果。

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7.2.2 Pre and post test still photography is required to clearly show the sled set-up and BIW construction. Still photographs must show the fixings of the body in white to the sled, in particular the steering column and facia mounting and the appropriate body reinforcements before and after the series of tests. Additionally, any structures added to simulate intrusion which could support the knee impact area should also be recorded.	6.2.2 Pre and post test still photography is required to clearly show the sled set-up and BIW construction. Still photographs should show the fixings of the body in white to the sled, in particular the steering column and facia mounting and the appropriate body reinforcements before and after the series of tests. Additionally, any structures added to simulate intrusion which could support the knee impact area should also be recorded.	3.7.7.2.2 試驗前與試驗後之靜態影像須能清楚顯示台車架設與車體結構。靜態影像應顯示一系列試驗前與試驗後車體與台車間之固定點，特別是轉向機柱、儀表板支架以及適當之車身強化。此外，若增加了任何用以模擬潰縮、但能支撐膝部撞擊區域的結構，則亦須以影像紀錄。	3.7.6.2.2 試驗前與試驗後之靜態影像須能清楚顯示台車架設與車體結構。靜態影像應顯示一系列試驗前與試驗後車體與台車間之固定點，特別是轉向機柱、儀表板支架以及適當之車身強化。此外，若增加了任何用以模擬潰縮、但能支撐膝部撞擊區域的結構，則亦應以影像紀錄。
7.2.3 The structures present in the facia must be clearly visible to provide evidence that the sled set-up is representative of a production vehicle and that all required components have been included.	6.2.3 The structures present in the facia should be clearly visible to provide evidence that the sled set-up is representative of a production vehicle and that all required components have been included.	3.7.7.2.3 須清楚拍攝儀表板結構，以證明台車架設足以代表實際製造之車輛，且證明所有要求之組件皆有使用。	3.7.6.2.3 應清楚拍攝儀表板結構，以證明台車架設足以代表實際製造之車輛，且證明所有要求之組件皆有使用。
7.2.4 It is essential that the position of the dummy and particularly its knees are clearly shown, along with a photographic record of the paint applied to the knees. After each test, a record must be made of the knee contact area, any paint transfer marks, and any damage to any of the knee	6.2.4 It is essential that the position of the dummy and particularly its knees should be clearly shown, along with a photographic record of the paint applied to theknees. After each test, a record should be made of the knee contact area, any paint transfer marks, and any damage	3.7.7.2.4 特別注意須以影像清楚記錄人偶姿勢以及人偶膝部，亦須記錄膝部上之塗漆。每次試驗後，應記錄膝部接觸區域、任何漆印以及任何膝部撞擊區域組件之損壞。	3.7.6.2.4 特別注意須以影像清楚記錄人偶姿勢以及人偶膝部，亦須記錄膝部上之塗漆。每次試驗後，應記錄膝部接觸區域、任何漆印以及任何膝部撞擊區域組件之損壞。

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impact area components.	to any of the knee impact area components.		
7.2.5 Any broken, damaged or fatigued components shall also be fully recorded using photographs. In some cases it will be necessary to remove these from the facia after the tests in order to provide the best view.	6.2.5 Any broken, damaged or fatigued components should also be fully recorded using photographs. In some cases it will be necessary to remove these from the facia after the tests in order to provide the best view.	3.7.7.2.5 破損、損壞或疲勞組件皆應以影像完整紀錄。試驗後若有必要可將此組件從儀表板上卸除，以利用最佳角度拍攝。	3.7.6.2.5 破損、損壞或疲勞組件皆應以影像完整紀錄。試驗後若有必要可將此組件從儀表板上卸除，以利用最佳角度拍攝。
7.3 Insufficient high speed or still photography could result in the knee mapping not being accepted by the Euro NCAP Secretariat.	6.3 Insufficient high speed or still photography could result in the knee mapping not being accepted by the Euro NCAP Secretariat.	3.7.7.3 若高速攝影或靜態影像並不完整，則 TNCAP 執行機構可不接受此膝部撞擊區域建構試驗。	3.7.6.3 若高速攝影或靜態影像並不完整，則 TNCAP 執行機構可不接受此膝部撞擊區域建構試驗。
8 DATA PROCESSING AND REPORTING 8.1 Data processing 8.1.1 The test data must be sampled and filtered as specified in the Euro NCAP frontal impact test protocol. 8.2 Reporting 8.2.1 Full information about the test set up shall be supplied to Euro NCAP. This must include details of any work that has been done to compensate for supportive intrusion, how the steering column lower mass and attachments have been	**7 DATA PROCESSING AND REPORTING** 7.1 Data processing 7.1.1 The test data should be sampled and filtered as specified in the Euro NCAP frontal impact test protocol. 7.2 Reporting 7.2.1 Full information about the test set up should be supplied to Euro NCAP. This should include details of any work that has been done to compensate for supportive intrusion, how the steering column lower mass and attachments have	3.7.8 數據處理及提報 3.7.8.1 數據處理 3.7.8.1.1 試驗數據須依 TNCAP 前方偏置撞擊試驗程序進行採樣及濾波。 3.7.8.2 提報 3.7.8.2.1 須提供完整試驗設定資訊予 TNCAP 執行機構，包含任何為支撐性潰縮所做的補償、如何模擬轉向機柱下部重量及固定器(Attachment)，以及人偶位置相關的特別安排。可能影響評估的	3.7.7 數據處理及提報 3.7.7.1 數據處理 3.7.7.1.1 試驗數據應依 TNCAP 前方偏置撞擊試驗程序進行採樣及濾波。 3.7.7.2 提報 3.7.7.2.1 須提供完整試驗設定資訊予 TNCAP 執行機構，包含任何為支撐性潰縮所做的補償、如何模擬轉向機柱下部重量及固定器(Attachment)，以及人偶位置相關的特別安排。可能影響評估的

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simulated and any special arrangements related to dummy positioning. Anything which could influence the assessment should be fully reported.	been simulated and any special arrangements related to dummy positioning. Anything which could influence the assessment should be fully reported. 7.2.2 For the validation test, a comparison should be provided to satisfy Euro NCAP that the test set up and pulse is suitable for the assessment work.	事項皆應完整提報。	事項皆應完整提報。 3.7.7.2.2 須提交驗證試驗之比較結果，向 TNCAP 執行機構證明採用之試驗設定及脈衝符合試驗要求。
8.2.2 For the main test programme, the locations being investigated shall be detailed and the outcome from each test must be given. In both cases, full data shall be supplied, including graphical plots. A full explanation and comparative analysis must be supplied.	7.2.3 For the main test programme, the locations being investigated should be detailed and the outcome from each test should be given. In both cases, full data should be supplied, including graphical plots. A full explanation and comparative analysis should be supplied.	3.7.8.2.2 主試驗計畫中，應詳實記錄調查之接觸位置及每次試驗結果，且接觸位置以及各次試驗結果皆須提交包含製圖(Graphical plot)在內之完整數據。應提交完整資料解釋及比較分析結果。	3.7.7.2.3 主試驗計畫中，應詳實記錄調查之接觸位置及每次試驗結果，且接觸位置以及各次試驗結果皆須提交包含製圖(Graphical plot)在內之完整數據。應提交完整資料解釋及比較分析結果。
9 KNEE AIRBAGS 9.1 The test set-up and the assessment criteria described above are also applicable for vehicles with knee airbags. Knee mapping test data must be provided in order to avoid the variable load modifier. However, it is assumed that a properly deploying knee airbag	**8 KNEE AIRBAGS** 8.1 The test set-up and the assessment criteria described above are also applicable for vehicles with knee airbags. Knee mapping test data must be provided in order to avoid the variable load modifier. However, it is assumed that a properly deploying knee airbag	3.7.9 膝部空氣囊 3.7.9.1 上述試驗設定及性能標準亦適用於配備膝部空氣囊之車型。須提供膝部撞擊區域建構試驗資料，以避免可變接觸扣分。惟此假定為正確開展之膝部空氣囊可替代吸能結構(Foam and load spreader)之功能，以避免集中負	3.7.8 膝部空氣囊 3.7.8.1 上述試驗設定及性能標準亦適用於配備膝部空氣囊之車型。須提供膝部撞擊區域建構試驗資料，以避免可變接觸扣分。惟此假定為正確開展之膝部空氣囊可替代吸能結構(Foam and load spreader)之功能，以避免集中負

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substitutes the function of foam and load spreader in order to avoid the concentrated load modifier. The presence of a knee airbag will not automatically lead to the removal of the concentrated load modifier; knee mapping data will be required to prove the effectiveness of the system. The presence of a knee airbag will not automatically lead to the removal of the concentrated load modifier; knee mapping data will be required to prove the effectiveness of the system.	substitutes the function of foam and load spreader in order to avoid the concentrated load modifier. The presence of a knee airbag will not automatically lead to the removal of the concentrated load modifier; knee mapping data will be required to prove the effectiveness of the system. The presence of a knee airbag will not automatically lead to the removal of the concentrated load modifier; knee mapping data will be required to prove the effectiveness of the system.	載扣分。配備膝部空氣囊並不會直接免除集中負載扣分；膝部撞擊區域建構試驗資料須能證明此系統有效，才能免除扣分。	載扣分。配備膝部空氣囊並不會直接免除集中負載扣分；膝部撞擊區域建構試驗資料須能證明此系統有效，才能免除扣分。
9.2 Where the measured femur force is less than 3.8kN and the knee slider displacement is below 6mm, the variable contact and concentrated load modifiers will not be applied provided that, there is no bottoming out of the knee airbag.	8.2 Where the measured femur force is less than 3.8kN and the knee slider displacement is below 6mm, the variable contact and concentrated load modifiers will not be applied provided that, there is no bottoming out of the knee airbag.	3.7.9.2 若測得人偶之股骨受力小於 3.8kN，膝部滑動位移小於 6mm，且膝部空氣囊未觸底，則免除可變接觸及集中負載扣分。	3.7.8.2 若測得人偶之股骨受力小於 3.8kN，膝部滑動位移小於 6mm，且膝部空氣囊未觸底，則免除可變接觸及集中負載扣分。
9.3 It must be clear that there is no risk associated with the presence of the airbag module or its support structures.	8.3 It must be clear that there is no risk associated with the presence of the airbag module or its support structures.	3.7.9.3 須清楚證明膝部空氣囊模組或其支撐結構不會帶來任何風險。	3.7.8.3 須清楚證明膝部空氣囊模組或其支撐結構不會帶來任何風險。
9.4 Where a knee airbag does bottom out in the official MPDB test, an additional sled test with the HIII 50% percentile dummy in the MPDB test seating position	8.4 Where a knee airbag does bottom out in the official ODB test, an additional sled test with the 50% percentile dummy in the ODB test seating position (setup as of	3.7.9.4 若於正式前方偏置撞擊試驗中膝部空氣囊觸底，則須額外進行台車試驗，以 Hybrid III 百分之五0成年男性人偶擺放為前方偏	3.7.8.4 若於正式前方偏置撞擊試驗中膝部空氣囊觸底，則須額外進行台車試驗，以百分之五0成年男性人偶擺放為前方偏置撞擊試

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is required with an airbag deployment time 10ms later than that observed in the official test. Where the femur loads or/and knee slider displacement exceed the acceptance criteria in Section 9.2, the variable load modifier will be applied.	validation test) is required with an airbag deployment time 10mslater than that used in the official ODB test. Where the femur loads or/and knee slider displacement exceed the acceptance criteria in Section 8.2, the variable load modifier will be applied.	置撞擊試驗中的座椅姿勢（設定與驗證試驗相同）、空氣囊彈出時間較正式前方偏置撞擊試驗所觀察開展時間晚 10ms 進行試驗。若股骨負載及/或膝部滑動位移超過 3.7.9.2 之標準，則須進行可變接觸扣分。	驗中的座椅姿勢（設定與驗證試驗相同）、空氣囊彈出時間較正式前方偏置撞擊試驗晚 10ms 進行試驗。若股骨負載及/或膝部滑動位移超過 3.7.8.2 之標準，則須進行可變接觸扣分。
9.4.1 Bottoming out of the knee airbag will be identified from the femur tracesusing sharp increases in femur load of at least 1kN in 5ms, and an accompanying increase in pelvis acceleration. There may also be physical damage to any underlying structures and evidence from high speed film.	8.4.1 Bottoming out of the knee airbag will be identified from the femur tracesusing sharp increases in femur load of at least 1kN in 5ms, and an accompanying increase in pelvis acceleration. There may also be physical damage to any underlying structures and evidence from high speed film.	3.7.9.4.1 膝部空氣囊觸底將以股骨負載於 5ms 內遽增超過至少 1kN 及同時增加之骨盆加速度所留下之紀錄進行判斷。另外，也可採用吸能結構遭受的實體損壞及高速攝影片段作為證據。	3.7.8.4.1 膝部空氣囊觸底將以股骨負載於 5ms 內遽增超過至少 1kN 及同時增加之骨盆加速度所留下之紀錄進行判斷。另外，也可採用吸能結構遭受的實體損壞及高速攝影片段作為證據。
9.4.2 If a knee airbag is deemed to have bottomed out in any of the tests and the femur loads and/or knee slider results exceed the acceptance criteria in Section 9.2, the variable load modifier will be applied.	8.4.2 If a knee airbag is deemed to have bottomed out in any of the tests and the femur loads and/or knee slider results exceed the acceptance criteria in Section 8.2, the variable load modifier will be applied.	3.7.9.4.2 若任何試驗中判定膝部空氣囊觸底，且股骨負載及/或膝部滑動位移量皆超過 3.7.9.2 之標準，則須接受可變接觸扣分。	3.7.8.4.2 若任何試驗中判定膝部空氣囊觸底，且股骨負載及/或膝部滑動位移量皆超過 3.7.8.2 之標準，則須接受可變接觸扣分。
10 INTERACTION WITH EURO NCAP	**9 INTERACTION WITH EURO NCAP**	3.7.10 聯繫 TNCAP	3.7.9 聯繫 TNCAP
10.1 Any manufacturer who intends to present knee mapping test results to Euro	9.1 Any manufacturer who intends to present knee mapping test results to Euro	3.7.10.1 車輛業者如欲將膝部撞擊區域建構試驗結果提報予	3.7.9.1 車輛業者如欲將膝部撞擊區域建構試驗結果提報予 TNCAP

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NCAP is required to advise the Secretariat when completing the vehicle matrix.	NCAP is required to advise the Secretariat when completing the vehicle matrix.	TNCAP 執行機構，須先於配備矩陣表填妥後通知該執行機構，並於執行前方偏置撞擊試驗前提交膝部撞擊區域建構試驗資料予TNCAP 執行機構；惟若無法於前述期限內完成，則最晚應於前方偏置撞擊試驗後 6 週內繳交。	執行機構，須先於配備矩陣表填妥後通知該執行機構，並於執行前方偏置撞擊試驗前提交膝部撞擊區域建構試驗資料予 TNCAP 執行機構；惟若無法於前述期限內完成，則最晚應於前方偏置撞擊試驗後 6 週內繳交。
10.2 Where additional Euro NCAP inspector or Secretariat time or resources are required to consider knee mapping data or to hold additional meetings, the costs will have to be funded by the manufacturer.	9.2 Where additional Euro NCAP inspector or Secretariat time or resources are required to consider knee mapping data or to hold additional meetings, the costs will have to be funded by the manufacturer.	3.7.10.2 若須更多 TNCAP 查驗官、或執行機構須花費額外時間或資源評估膝部撞擊區域建構試驗資料，或須舉行額外會議，則費用將由車輛業者負擔。	3.7.9.2 若須更多 TNCAP 查驗官、或執行機構須花費額外時間或資源評估膝部撞擊區域建構試驗資料，或須舉行額外會議，則費用將由車輛業者負擔。

(2025 年 Euro NCAP 規章)

5.3

Class	OLC range	OLC generic
A	<22.0g	18.8g
B	22.0g<29.0g	25.5g
C	29.0g<36.0g	32.0g
D	>36.0g	39.0g

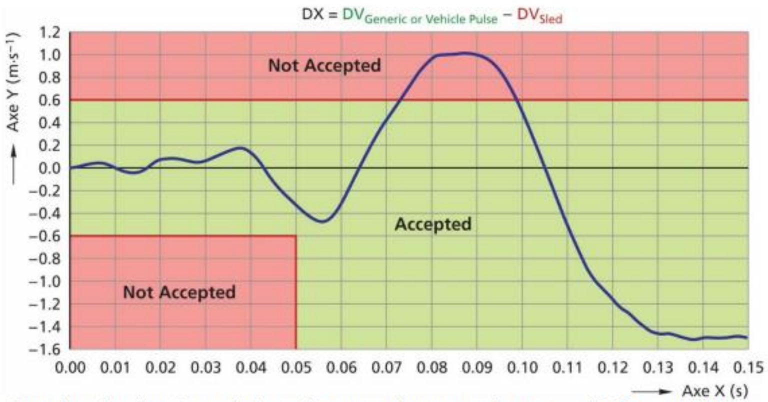
(修正後 TNCAP 規章草案)

3.7.5.3

等級	OLC 範圍	通用 OLC
A	<22.0g	18.8g
B	22.0g<29.0g	25.5g
C	29.0g<36.0g	32.0g
D	>36.0g	39.0g

(2025 年 Euro NCAP 規章)

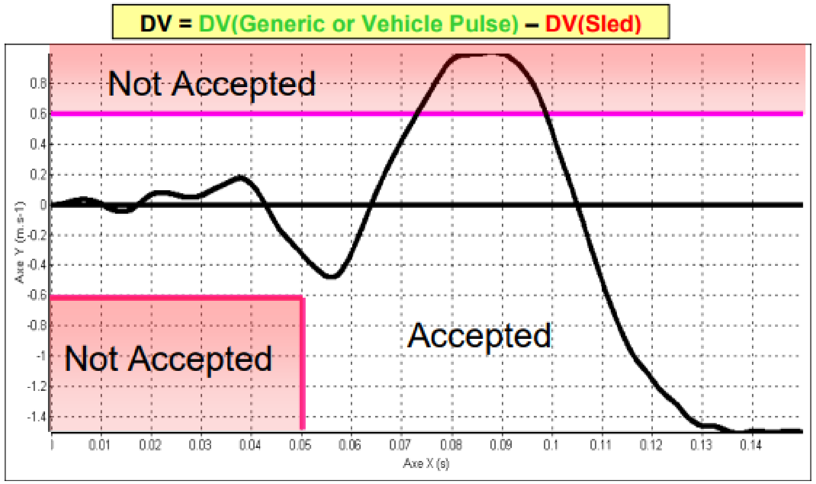
5.5



Sample pulse showing a sled test that cannot be accepted as parts of DV are outside the acceptable zone

(2019 年 Euro NCAP 規章)

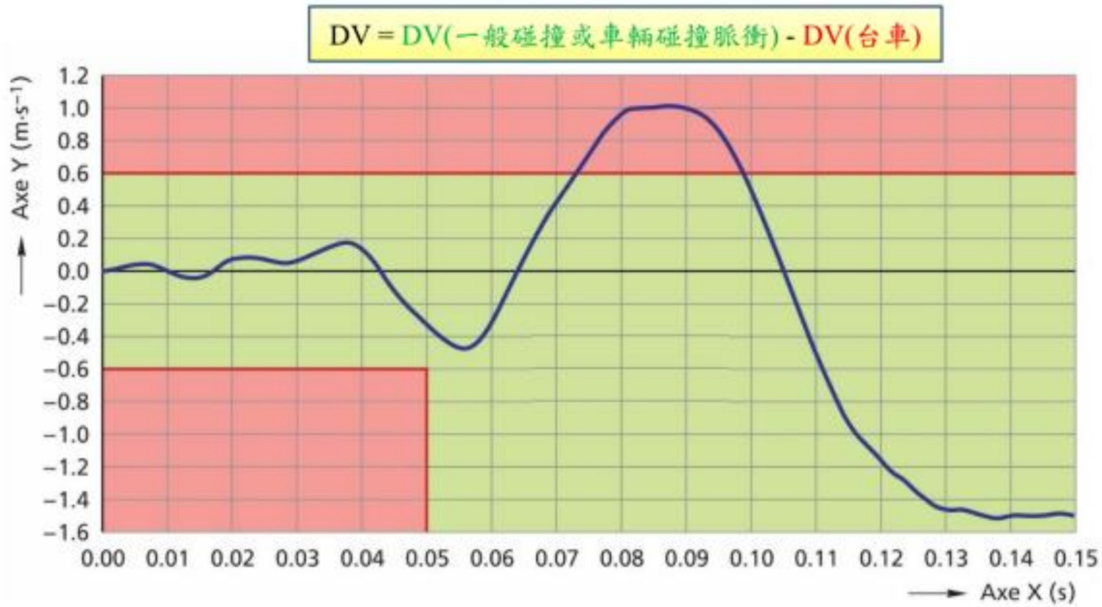
Appendix I



Sample pulse showing a sled test that cannot be accepted as parts of DV are outside the acceptable zone

(修正後 TNCAP 規章草案)

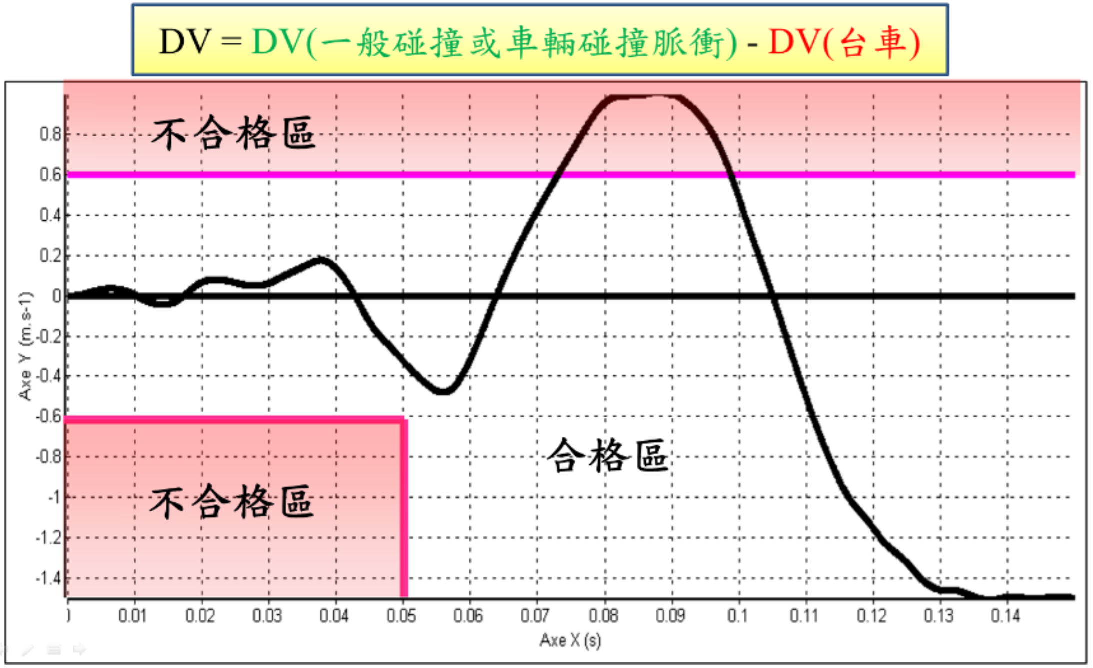
3.7.5.5



範例：此脈衝有部分 DV 值落在合格區外，代表此台車試驗不適合用於建構膝部撞擊區域。

(修正前 TNCAP 規章)

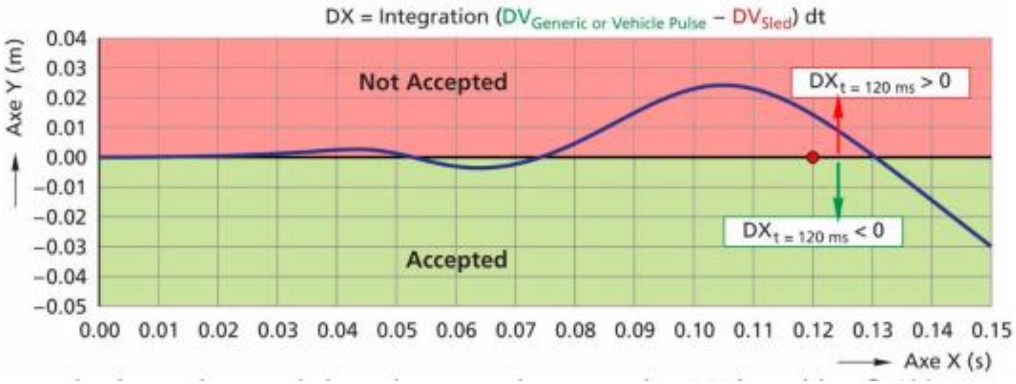
3.7.10.2



範例：此脈衝有部分 DV 值落在合格區外，代表此台車試驗不適合用於建構膝部撞擊區域。

(2025 年 Euro NCAP 規章)

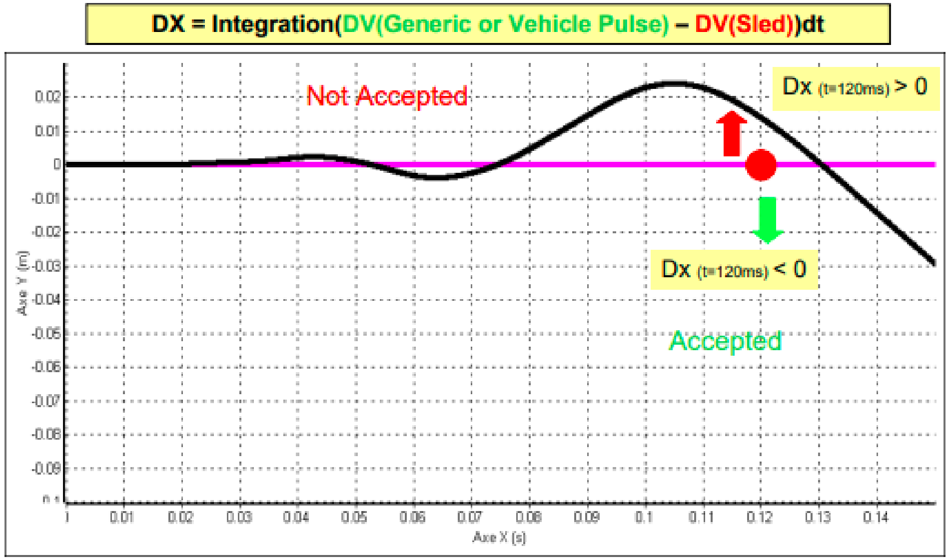
5.6



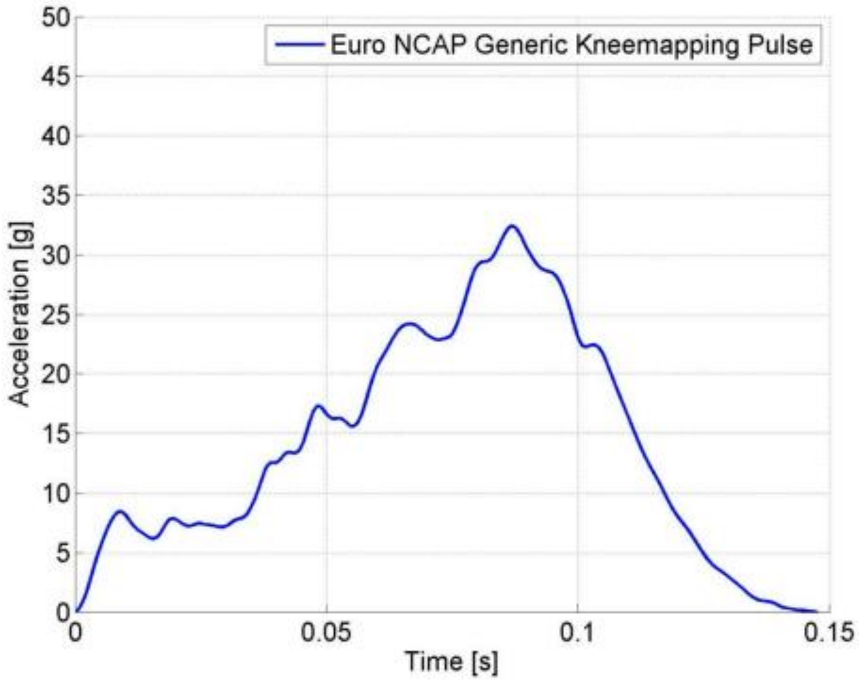
Sample picture shows a sled test that cannot be accepted as DX is positive @ 120 ms

(2019 年 Euro NCAP 規章)

Appendix I

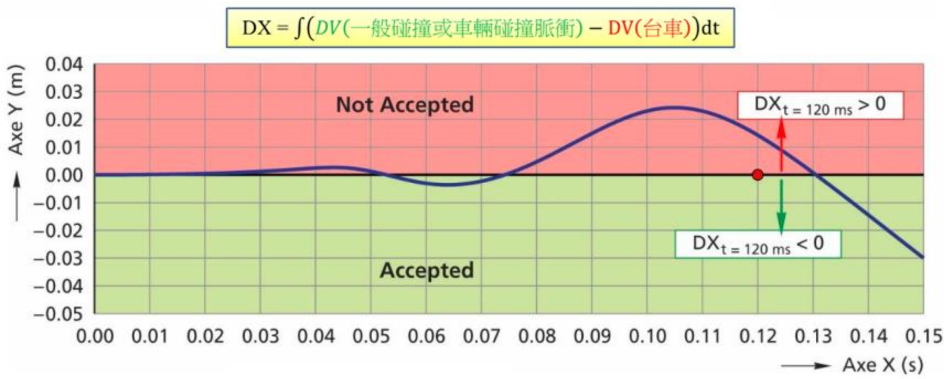


Sample picture shows a sled test that cannot be accepted as DX is positive @120ms



(修正後 TNCAP 規章草案)

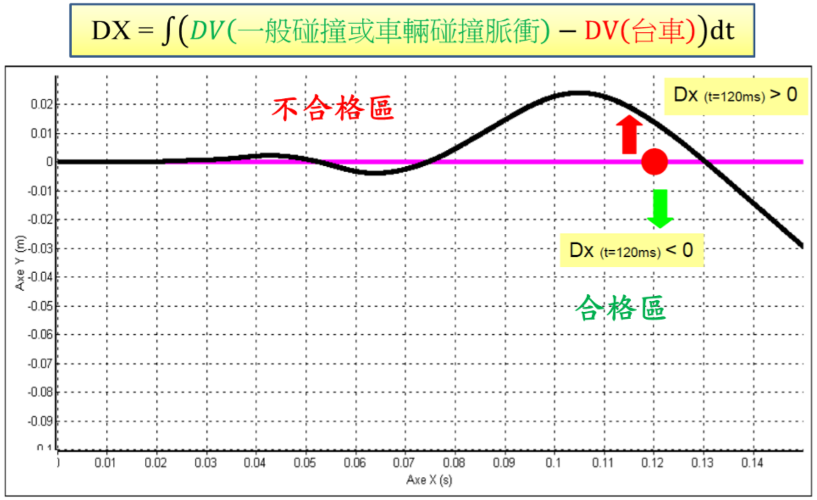
3.7.5.6



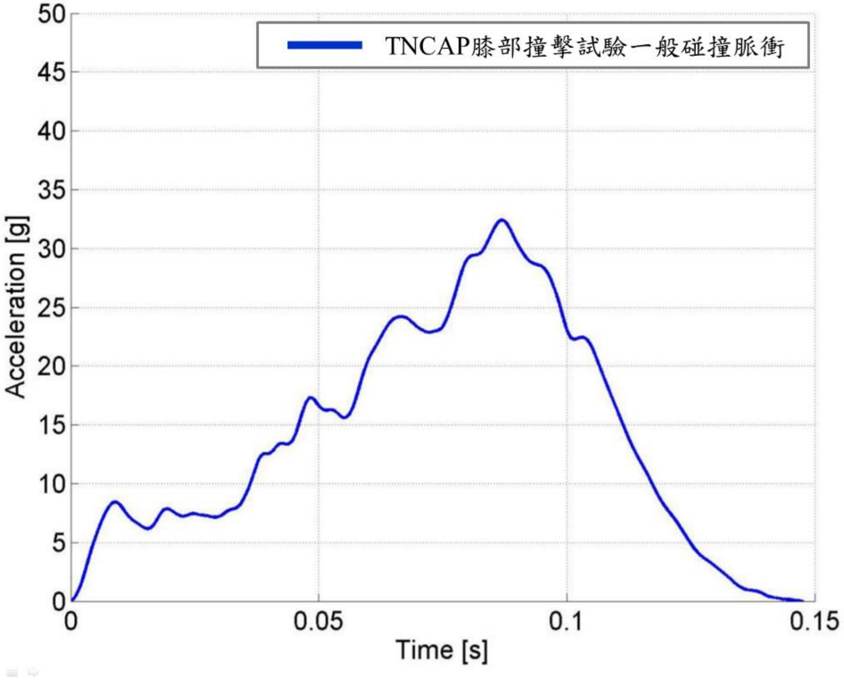
範例：此台車試驗中，在 120ms 時的 DX 為正值，代表此台車試驗不適合用於建構膝部撞擊區域。

(修正前 TNCAP 規章)

3.7.10.3



範例：此台車試驗中，在 120ms 時的 DX 為正值，代表此台車試驗不適合用於建構膝部撞擊區域。


TNCAP膝部撞擊試驗一般碰撞脈衝
Acceleration [g]
50
45
40
35
30
25
20
15
10
5
0
0
0.05
0.1
0.15
Time [s]

3.16緊急救援、事故脫困及安全技術試驗規章

RESCUE, EXTRICATION & SAFETY TEST & ASSESSMENT PROTOCOL Version 2.3

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		3.16 緊急救援、事故脫困及安全技術試驗規章	3.16 緊急救援及事故脫困試驗規章
1 INTRODUCTION	**1 INTRODUCTION**	3.16.1 簡介	3.16.1 簡介
Rescue services require detailed but easily understood information regarding the construction of individual vehicles to extract trapped occupants as quickly and safely as possible. This is becoming more pressing as vehicles become stronger (e.g. use of high strength steels or composite materials), use different sources of power (e.g. electric/hybrid, hydrogen) and are equipped with an increasing number of safety devices (e.g. airbags, pre-tensioners, active pedestrian protection bonnets).	Rescue services require detailed but readily-understood information regarding the construction of individual vehicles to extract trapped occupants as quickly and safely as possible. This is becoming more pressing as vehicles become stronger (e.g. use of high strength steels or composite materials), use different sources of power (e.g. electric/hybrid, hydrogen) and are equipped with an increasing number of safety devices (e.g. airbags, pre-tensioners, active pedestrian protection bonnets).	隨著車輛變得愈堅固（例如使用高強度鋼或複合材料）、使用不同動力來源（例如純電動/混合動力、氫燃料），且配備愈多安全裝置（例如空氣囊、預負載裝置、行人保護之主動式前方車蓋），因此救援服務需要個別車輛之詳細構造但容易理解資訊，以盡可能快速且安全救出受困人員。	隨著車輛變得愈堅固（例如使用高強度鋼或複合材料）、使用不同動力來源（例如純電動/混合動力、氫燃料），且配備愈多安全裝置（例如空氣囊、預負載裝置、行人保護之主動式前方車蓋），因此救援服務需要個別車輛之詳細構造但容易理解資訊，以盡可能快速且安全救出受困人員。
Through the application of this protocol and the “Euro Rescue” app, Euro NCAP in collaboration with the International Association Service of Fire & Rescue Services (CTIF) promotes the appropriate availability of ISO 17840	Car makers have invested in “Rescue sheets” but their timely and free-of-charge availability and dissemination across Europe is not always guaranteed. Through the application of this protocol, Euro NCAP in collaboration	透過本規章及緊急救援資訊平臺之應用，提倡新車型提供符合 ISO 17840 之救援表單及應變指南，確保妥適可用。為進一步協助第一線救難人員解救工作，將檢查自動門鎖功能是否正常，亦	車輛業者已製作「救援表單」，惟無法保證其即時、免費可用，且散布各地。透過本規章之應用，提倡新車型提供符合 ISO 17840 之救援表單及應變指南，確保妥適可用。為進一步協助第一線救難

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compliant rescue sheets and response guides for new car models. To further assist the extrication efforts of first responders, the correct functioning of automatic door locks, i.e. unlocking after a crash, is checked. Also, incentives are given for availability of technology that supports rescue activities and helps to prevent any further collisions with oncoming traffic or roadside structures, after the initial impact. Finally, vehicle submergence countermeasures are assessed to check if occupants can promptly exit a vehicle that has entered water and are not hindered by non-functioning door latches or side windows.	with the International Service of Fire & Rescue Services (CTIF) promotes the appropriate availability of ISO 17840 compliant rescue sheets and response guides for new car models. To further assist the extrication efforts of first responders, the correct functioning of automatic door locks, i.e. unlocking after a crash, is checked. Finally, incentives are given for availability of technology that supports rescue activities and helps to prevent any further collisions with oncoming traffic or roadside structures, after the initial impact. Thanks to these new requirements, Euro NCAP includes for the first time Tertiary Safety into its assessment.	即檢查碰撞後車門解鎖。另外，針對支持救援活動、於首次撞擊後協助避免與迎面而來之車流或路邊結構進一步碰撞之技術給予獎勵。最後，對車輛浸沒應對措施進行評估，以檢查乘員能否迅速離開已浸沒之車輛，並且不會因車門門閂或側窗功能失效而受到阻礙。	人員解救工作，將檢查自動門鎖功能是否正常，亦即檢查碰撞後車門解鎖。
The assessments to be performed in the areas of Rescue, Extrication and Safety contribute to the adult occupant protection rating. The requirements detailed in this protocol are divided into three areas:	The assessments to be performed in the areas of Rescue, Extrication and Safety contribute to the adult occupant protection rating. The requirements detailed in this protocol are divided into three areas:	緊急救援、事故脫困及安全技術方面進行之評等有助於成人保護評等。本規章中詳列之要求分為三個區域：	本規章中詳列之要求分為二個區域：

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1. Rescue: Information for First Responders – Rescue Sheet & Emergency Response Guide (ERG) 2. Extrication: Unlocking of automatic door locking, door opening forces, seat belt unbuckling forces, compliance with ECE regulations post-crash for EV vehicles and accuracy of eCall data. Markings on vehicles to help with disabling direct hazards by rescuers attending the vehicle. 3. Safety: Advanced eCall , Multi Collision Brake technology and Vehicle Submergence.	1. Rescue: Information for First Responders – Rescue Sheet 2. Extrication: Unlocking of automatic door locking, door opening forces & seat belt unbuckling forces 3. Safety: Advanced eCall and Multi Collision Brake technology	(1)緊急救援：提供第一線救難人員之資訊－「救援表單」及「緊急應變指南（ERG）」 (2)事故脫困：自動門鎖解鎖、車門開啟力、安全帶帶扣開脫力、符合聯合國 UN/ECE 法規電動車碰撞後規定及 eCall 數據之準確性。車輛上標記用於協助救援人員排除車輛直接性危害。 (3)安全技術：先進 eCall、二次碰撞預煞車技術及車輛浸沒。	(1) 緊急救援：提供第一線救難人員之資訊－「救援表單」 (2)事故脫困：自動門鎖解鎖、車門開啟力及安全帶帶扣開脫力
2 DEFINITIONS … 2.5 eCall: System fitted to a vehicle that sends an automatic message to an emergency call centre in case of a crash of the vehicle. eCall technology capable of sending advanced content, beyond what is legally specified (ECE 144), is referred to as eCall+ or Advanced eCall. 2.6 TPS eCall 2.6.1 Third party services supported	2 DEFINITIONS … 2.5 eCall: System fitted to a vehicle that sends an automatic message to an emergency call centre in case of a crash of the vehicle. eCall technology capable of sending advanced content, beyond what is legally specified (ECE 144), is referred to as eCall+ or Advanced eCall.	3.16.2.名詞釋義 … 3.16.2.5 eCall：係指車輛碰撞時自動向緊急救援中心傳送訊息之系統。能夠傳送超出法規規定（UN R144）之先進內容 eCall 技術，稱為 eCall+或先進 eCall。 3.16.2.6 TPS eCall 3.16.2.6.1 第三方服務支援之 eCall	3.16.2 名詞釋義 …

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eCall' or 'TPS eCall' means an in-vehicle emergency call to a third party service provider, made either automatically by means of the activation of in-vehicle sensors or manually, which carries, by means of public mobile wireless communications networks, the MSD and establishes an audio channel between the vehicle and the third party service provider.		（或簡稱 TPS eCall）：係指透過車載感知器觸發自動或手動方式，向第三方服務供應商所發出之車載緊急呼叫，其透過公共行動無線通訊網路傳輸最小數據組，並建立車輛與第三方服務供應商之間的語音通道。	
2.6.2 Third party service provider means an organisation recognised by national authorities as being allowed to receive a TPS eCall and to forward the MSD to the eCall PSAP.		3.16.2.6.2 第三方服務供應商(Third party service provider)：係指經國家主管機關認可，具備接收 TPS eCall 並將 MSD 轉送至 eCall 公共/私人安全回應點之組織。	
2.7 Minimum Set of Data (MSD) contains information on the accident vehicle and is transmitted at the beginning of the call in the voice channel opened between in-vehicle system and public safety answering point. Transmitting MSD to TPS may be done by voice channel and/or SMS and/or other data coding.		3.16.2.7 最小數據組(Minimum Set of Data, MSD)：包含事故車輛之相關資訊，並於車載系統與公共安全應答點建立語音通話初期進行傳輸。可透過語音通話及/或簡訊及/或其他資料編碼方式將 MSD 傳輸至 TPS。	
2.8 Multi Collision Brake (MCB): System	2.6 Multi Collision Brake (MCB): System	3.16.2.8 二次碰撞預煞車(Multi	

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fitted to a vehicle that applies the brakes to prevent or mitigate a subsequent impact when a vehicle has been involved in a collision. In response to a primary collision (usually if the airbag is fired), information is sent to the electronic stability control system to brake the vehicle. It must not be possible to deactivate the MCB by the driver.	fitted to a vehicle that applies the brakes to prevent or mitigate a subsequent impact when a vehicle has been involved in a collision of sufficient severity. In response to a primary collision with or without airbag deployment, information is sent to the braking system to decelerate the vehicle with the intention to bring the vehicle to a standstill. It must not be possible to deactivate the MCB by the driver. After a crash and the vehicle coming to a standstill it is allowed for the MCB to release the brakes in order to help first responders move the vehicle.	Collision Brake, MCB)：係指安裝於車輛上系統，當車輛發生碰撞時，該系統會施加煞車以避免或減輕後續碰撞之發生。為回應初次碰撞（通常是空氣囊被觸發），訊息會傳送至電子穩定控制系統以對車輛進行煞車。該系統應確保駕駛無法停用 MCB。 3.16.2.9 MCB 觸發訊號：於首次碰撞期間，由碰撞偵測功能傳送至煞車系統之訊號。	
2.9 Event Data Recorder (EDR): An Event Data Recorder or EDR is a function or device installed in a vehicle that records technical vehicle and occupant information for a brief period of time before, during and after a collision, for the purpose of monitoring and assessing vehicle safety system performance.		3.16.2.10 事件資料紀錄器(Event Data Recorder, EDR)：係指安裝於車輛之功能或裝置，用於記錄碰撞發生前、碰撞期間及碰撞後短時間內之車輛技術及乘員資訊，以監控及評估車輛安全系統性能。	
3 SCORING SCHEME 3.1 The score achieved from the Rescue,	3 SCORING SCHEME 3.1 The score achieved from the Rescue,	3.16.3.評等方式 3.16.3.1「緊急救援、事故脫困及安	3.16.3 評等方式 依執行本規章之符合性判定結果

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Extrication & Safety assessment is directly applied to Adult Occupant Protection (Box1) without scaling. The score ranges from -2 points to +4 points.	Extrication & Safety assessment is directly applied to Adult Occupant Protection (Box1) without scaling. The score ranges from -2 points to +2 points.	全技術評等」中所獲得之分數可直接應用於成人保護領域（欄位 1），無需調整比例。分數範圍從-2 分至+4 分。	揭露於 TNCAP 網站。
3.2 A penalty (-2 points) will be applied if an ISO compliant Rescue Sheet is not available for all cars currently in production (2020 onwards released cars and 2023 onwards facelifts of cars originally published before 2020) or if an ISO compliant Rescue Sheet is not available for the tested vehicle according to Chapter 4. Compliance with 3.2 is a pre-requisite for scoring rescue points. *(Rescue sheets are only required for full type approved passenger vehicles and not low volume, non full type approved vehicles).*	3.2 A penalty will be applied, where the Rescue sheet is not available (-2 points) or non-compliant (-1 point) in accordance with the requirements in Chapter 4 of this protocol. No penalty in section 3.2 is a pre requisite to score points (see 3.5).	3.16.3.2 若車輛業者未針對當下生產之所有車輛提供符合 ISO 標準之救援表單，或受驗車輛未依 3.16.4 提供符合 ISO 標準之救援表單，則應扣 2 分。符合 3.16.3.2 規定為獲得緊急救援相關分數之前提條件（救援表單僅適用於通過完整型式認證之客車，不適用少量型式安全審驗之車輛）。	
3.3 A penalty (-1 point) will be applied, where the ISO compliant ERG is not available for the tested vehicle according to Chapter 4. Compliance with 3.3 is a pre-requisite for scoring points.		3.16.3.3 若受驗車輛未依 3.16.4 提供符合 ISO 標準之緊急應變指南，則應扣 1 分。符合 3.16.3.3 規定為得分之前提條件。	
3.4 A maximum -1 point penalty can be applied in accordance with the	3.3 A -1 point penalty can be applied in accordance with the Extrication	3.16.3.4 依照 3.16.5 事故脫困要求，最高可扣 1 分。	

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Extrication requirements in Chapter 5 of this protocol.	requirements in Chapter 5 of this protocol.		
3.5 If for the tested vehicle, ISO compliant Rescue Sheet and ERG are available and meeting the requirements of Chapter 4, a maximum of 4 points can be scored:	3.4 The sum of the penalties in sections 3.2 and 3.3 cannot exceed -2 points. 3.5 If no penalty in section 3.2 has been applied, 2 points can be scored:	3.16.3.5 若受驗車輛具有符合 ISO 標準之救援表單及緊急應變指南，且符合 3.16.4 之規定，則最高可獲得 4 分：	
• 1 point if the vehicle is equipped with Advanced eCall (based on 112 eCall) in accordance with the requirements in Chapter 6: 2023: Potential number of occupants 0.50 points Recent locations N1 & N2 0.50 points Direction of impact & Delta V 0.00 points 2024: Potential number of occupants 0.33 points Recent locations N1 & N2 0.33 points Direction of impact & Delta V 0.33 points	• 1pt can be scored when the vehicle is equipped with eCall+ in accordance with the requirements in Chapter 6.	3.16.3.5.1 若車輛配備符合 3.16.6 規定之先進 eCall（基於 112 eCall），則可獲得 1 分： (1)可能之乘員人數：0.33 分。 (2)最後位置 N1 及 N2：0.33 分。 (3)撞擊方向及速度變化：0.33 分。	
• 1point maximum for Third Party Service		3.16.3.5.2 若符合 3.16.6 規定之第	

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eCall (TPS eCall) in accordance with the requirements in Chapter 6: Multi-language communication 0.5 points Hazard detection 0.5 points Transfer of paired mobile number 0.5 points Transfer of vehicle type 0.5 points Additional functions (subject to acceptance by Euro NCAP and CTIF) 0.5 points		三方服務 eCall (TPS eCall)，則可獲得 1 分： (1)多語言通訊：0.5 分。 (2)危害偵測：0.5 分。 (3)傳送已配對之手機號碼：0.5 分。 (4)傳送車輛型式：0.5 分。 (5)額外功能（須經 TNCAP 認可）：0.5 分。	
• 1point Vehicle Submergence countermeasures in accordance with the requirements in Chapter 8: Door opening with vehicle 12V disabled 0.5 points Window opening functionality 0.5 points		3.16.3.5.3 若符合 3.16.8 規定之車輛浸沒對策，則可獲得 1 分： (1)車輛 12V 電源失效仍可開啟車門：0.5 分。 (2)車窗開啟功能：0.5 分。	
• 1 point can be scored when the vehicle is equipped with Multi-Collision Brake technology in accordance with the requirements in Chapter 7. If these technologies are optional equipment they must meet the Vehicle Selection,	• 1pt can be scored when the vehicle is equipped with Multi-Collision Brake technology in accordance with the requirements in Chapter 7. Both technologies must meet the Vehicle Selection, Specification, Testing And Retesting (VSSTR) protocol fitment	3.16.3.5.4 若車輛配備符合 3.16.7 規定之二次碰撞預煞車技術，則可獲得 1 分。若該技術為選配，則須符合「車型挑選提名、自費申請評等、車輛規格及試驗管理規章」之適用性規定才可獲得分數。	

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Specification, Testing and Retesting (VSSTR) protocol fitment requirements to be awarded. 3.6 Worked examples showing possible scoring scenarios (2024): (請參考末頁表格)	requirements to be awarded.	3.16.3.6 評分情境示範案例： (請參考末頁表格)	
4 RESCUE SHEET & EMERGENCY RESPONSE GUIDE 4.1 The Rescue Sheet(s) (the model variant rated by Euro NCAP as well as other variants covered by the rating) must be submitted before inspection with additional information for database in accordance with TB 030 (rescue sheet in different languages and pictures of the vehicle, if available: QR Code). 4.2 These Rescue Sheets (final version after inspection) must be available to the general public for the model variant rated by Euro NCAP as well as all the other variants covered by the rating that are available at the time of publication. 4.3 Each Rescue Sheet must be provided in PDF format, with the correct filename according to TB 030, as a unique	4 RESCUE SHEET 4.1 The Rescue Sheet(s) (the model variant rated by Euro NCAP as well as other variants covered by the rating) must be submitted before inspection with additional information for database (i.e. links to OEM website, photo, etc.). 4.2 These Rescue Sheets (final version after inspection) must be available to the general public for the model variant rated by Euro NCAP as well as all the other variants covered by the rating that are available at the time of publication. 4.3 Each Rescue Sheet should be provided in PDF format as a unique document i.e.	3.16.4 救援表單及緊急應變指南 3.16.4.1 查驗前須先提交救援表單（TNCAP 評等之車款以及評等所涵蓋之其他車款），並依 Euro NCAP 技術通報 TB 030 檢附資料庫額外資訊（不同語言之救援表單、車輛圖片及二維條碼(QR Code)(依實際狀況)）。 3.16.4.2 針對 TNCAP 評等之車款以及發布時可用評等所涵蓋之其他所有車款，其救援表單（查驗後最終版本）須對外公開。 3.16.4.3 各救援表單須以 PDF 格式個別提供，且依 Euro NCAP 技術通報 TB 030 使用正確檔名，即每	3.16.4 救援表單 3.16.4.1 查驗前須先提交救援表單（TNCAP 評等之車款以及評等所涵蓋之其他車款)，並檢附資料庫額外資訊（即車輛業者網站連結、照片等）。 3.16.4.2 針對 TNCAP 評等之車款以及發布時可用評等所涵蓋之其他所有車款，其救援表單（查驗後最終版本）須對外公開。 3.16.4.3 各救援表單應以 PDF 格式個別提供，即每個車款各一個檔案。印出時，救援表單不得超過

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document i.e. one file per model variant and per language. Each Rescue Sheet should be no more than four A4 sized pages when printed. Where commercial licences and/or exclusive publishing rights exist, these should not infringe on the rights of Euro NCAP and its members to make Rescue Sheets available at no cost to the general public.	one file per model variant. Each Rescue Sheet should be no more than four A4 sized pages when printed. Where commercial licences and/or exclusive publishing rights exist, these should not infringe on the rights of Euro NCAP and its members to make Rescue Sheets available at no cost to the general public.	個車款及每種語言各一個檔案。印出時，救援表單不得超過四張 A4 大小頁面。若有商業授權及/或專有出版權，不得影響 TNCAP 向社會大眾免費提供救援表單之權利。	四張 A4 大小頁面。若有商業授權及/或專有出版權，不得影響 TNCAP 向社會大眾免費提供救援表單之權利。
4.4 Rescue Sheets must be supplied in all languages covering the Euro NCAP Application Area/EAA (see TB 002) from the start of 2023. The Rescue Sheet(s) must meet ISO 17840 Part 1 format (layout, order of information and pictograms).	4.4 Rescue Sheets must be supplied in at least the following languages: English, German, French and Spanish (and all languages covering the Euro NCAP Application Area/EAA from the start of 2023).	3.16.4.4 救援表單必須至少提供繁體中文及英文。救援表單必須符合 ISO 17840 第一部分之格式（排版、資訊順序及圖示）。	3.16.4.4 救援表單必須至少提供繁體中文，或繁體中文及英文。
4.5 The ERGs must be supplied in English, German, French and Spanish from the start of 2023 following ISO 17840 Part 3.	4.5 The Rescue sheet(s) must meet ISO 17840 Part 1 format (layout, order of information and pictograms) and should include a summary following ISO 17840 Part 3. The Rescue Sheet shall be tailored to each vehicle, that is, for a conventional ICE vehicle not all parts of the ISO standard need to be addressed. However for a pure EV for example then more information according to the ISO	3.16.4.5 緊急應變指南必須遵循 ISO 17840 第三部分，且至少提供繁體中文及英文。	3.16.4.5 救援表單必須符合 ISO 17840 第一部分之格式（排版、資訊順序及圖示），且應含括遵循 ISO 17840 第三部分之摘要。救援表單應針對各車輛量身制定，即對於傳統內燃機引擎之車輛，不需處理 ISO 標準所有部分，惟對於如純電動車輛，則須根據 ISO 標準提供更多資訊。

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4.6 One unique ERG that covers all the cars from the same brand is accepted. It is possible for the OEM to produce just one ERG covering all models for a brand or one ERG for each model range, that is at the discretion of the OEM. In chapter 0 of the ERG the scope of the document should be mentioned – it should be clear which car models/energy types the ERG applies to.	standard is required.	3.16.4.6 可接受單獨一份涵蓋同一廠牌所有車型之緊急應變指南。車輛業者可自行決定採用涵蓋同一廠牌所有車型之單一緊急應變指南，或依每個車型分別編製緊急應變指南。於緊急應變指南第0 章中，應清楚載明該文件之適用範圍，以識別其所適用之車型/能源種類。	
4.7 Content must be correct - Rescue Sheet will be checked during normal post-crash inspection on tested vehicles. The vehicle manufacturer will be permitted to make corrections before publication, as long as all material issued by the company is updated as well. (Copy of Rescue Sheet checklist is available as a separate document for download from the Euro NCAP website along with a Technical Bulletin offering guidance on how to create an ISO complaint Rescue Sheet - TB030 - Technical Bulletin Rescue Sheet Guidelines).	4.5.1 Content must be correct - Rescue Sheet will be checked during normal post-crash inspection on tested vehicles. The vehicle manufacturer will be permitted to make corrections before publication, as long as all material issued by the company is updated as well. (Copy of Rescue Sheet checklist is available as a separate document for download from the Euro NCAP website along with a Technical Bulletin offering guidance on how to create an ISO complaint Rescue Sheet - TB030 - Technical Bulletin Rescue Sheet	3.16.4.7 內容必須正確—救援表單應於受驗車輛執行一般碰撞後查驗時進行檢查。發布前允許車輛業者進行修正，惟該公司發布之所有資訊亦須更新。(參閱TNCAP 救援表單檢核表，以及參見 Euro NCAP 技術通報 TB030 救援表單指引製作符合 ISO 規範之救援表單。)	3.16.4.6 內容必須正確—救援表單應於受驗車輛執行一般碰撞後查驗時進行檢查。發布前允許車輛業者進行修正，惟該公司發布之所有資訊亦須更新。(參閱TNCAP 救援表單檢核表，以及參見 Euro NCAP 技術通報 TB030 救援表單指引製作符合 ISO 規範之救援表單。)

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4.8 A Rescue Sheet compliant with this current section must be available for all other models. 4.9 This includes models rated and not rated by Euro NCAP currently in production: • Car models with a start of sale 2020 onwards • 2023 onwards facelifts of car models first sold before 2020 A list must be provided by the OEM that clearly shows the current available models in production and available in EAA at the time of inspection.	Guidelines).	3.16.4.8 其他所有車型皆應提供符合本規定之救援表單。 3.16.4.9 此適用於當下仍在生產之所有車型，包括已辦理 TNCAP 評等及尚未評等之車型。 車輛業者必須提供一份清單，清楚顯示車輛查驗時仍在生產且於國內市場販售之車型。	
5 EXTRICATION **5.1.1 Automatic Door Locking** … 5.1.4 If ADL is not fitted as standard, or not by default always ON, but fitted to the test variant then doors will be locked in the frontal MPDB test and the side oblique Pole test. The doors will be left	5 EXTRICATION 5.1.0 **Automatic Door Locking** … 5.1.3 If ADL is not fitted as standard but fitted to the test variant then doors will be locked in the frontal MPDB test and the side oblique Pole test. The doors will be left unlocked in the frontal Full Width	3.16.5.事故脫困 3.16.5.1 自動門鎖 … 3.16.5.1.3 若自動門鎖非標準配備，或不預設始終維持開啟狀態，而安裝於受驗車款，則車門應於前方偏置撞擊試驗及側方立柱撞擊試驗時上鎖。前方全寬撞擊試驗	3.16.5 事故脫困 3.16.5.1 自動門鎖 … 3.16.5.1.3 若自動門鎖非標準配備，而安裝於受驗車款，則車門應於前方偏置撞擊試驗及側方立柱撞擊試驗時上鎖。前方全寬撞擊試驗及側方撞擊試驗時，車門

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unlocked in the frontal Full Width test and Side Barrier test. If the ADL activates by itself in the Full width frontal test that is not an issue.	test and Side Barrier test. If the ADL activates by itself in the Full width frontal test that is not an issue.	及側方撞擊試驗時，車門則保持未上鎖狀態。若自動門鎖於前方全寬撞擊試驗中自行致動，則不視為問題。	則保持未上鎖狀態。若自動門鎖於前方全寬撞擊試驗中自行致動，則不視為問題。
5.1.5 Post-test the lab personnel will immediately check if any of the side doors in the front crash tests and any of the non-struck side doors in the side crash tests has remained locked/has not automatically unlocked. A maximum -1 point penalty will be applied if this issue is identified in at least one of the two tests where the doors were locked pre impact. This will follow the procedure for door opening in 5.2.	5.1.4 Post-test the lab personnel will immediately check if any of the side doors in the front crash tests and any of the non-struck side doors in the side crash tests has remained locked/has not automatically unlocked. A maximum -1 point penalty will be applied if this issue is identified in at least one of the two tests where the doors were locked pre impact. This will follow the procedure for door opening in 5.2.	3.16.5.1.4 試驗後，檢測機構人員應立刻檢查前方偏置撞擊與前方全寬撞擊試驗時任何側門，以及側方撞擊與側方立柱撞擊試驗時任何非受撞擊側之側門，是否保持上鎖狀態/未自動解鎖。撞擊前已上鎖之車門若於試驗中至少一次發現此問題，則最高扣 1 分。應依照 3.16.5.2 之車門開啟程序。	3.16.5.1.4 試驗後，檢測機構人員應立刻檢查前方偏置撞擊與前方全寬撞擊試驗時任何側門，以及側方撞擊與側方立柱撞擊試驗時任何非受撞擊側之側門，是否保持上鎖狀態/未自動解鎖。撞擊前已上鎖之車門若於試驗中至少一次發現此問題，則不符合本項要求。應依照 3.16.5.2 之車門開啟程序進行。
5.2.1 Door opening forces	5.1.5 **Door opening forces**	3.16.5.2 車門開啟力	3.16.5.2 車門開啟力
…	…	…	…
5.2.5 When dealing with a sliding door the opening force of [750N]* shall be applied in a direction following the vehicle centreline – door should be pulled in this direction once the door unlatching forces have been carried out (as mentioned previously the unlatching/unlocking check of the side	5.1.9 When dealing with a sliding door the opening force of [750N] shall be applied in a direction following the vehicle centreline – door should be pulled in this direction once the door unlatching forces have been carried out (as mentioned previously the unlatching/unlocking check of the side doors will already have	3.16.5.2.4 滑門 750N 之開啟力應順著車輛中線方向施加—施加車門解閂力後，應沿此方向拉門（如上所述，側門解閂/解鎖於自動門鎖部分進行檢查）。	3.16.5.2.4 滑門 750N 之開啟力應順著車輛中線方向施加—施加車門解閂力後，應沿此方向拉門（如上所述，側門解閂/解鎖於自動門鎖部分進行檢查）。

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doors will already have been checked as part of the automatic locking doors section.) *Force shown is monitored for sliding doors at present, value may be adjusted depending on test experience. …	been checked as part of the automatic locking doors section.) …	…	…
5.2.8 Penalty only applied if load exceeds 750N and tools are required to open a door.	5.1.13 Penalty only applied if load exceeds 750N and tools are required to open a door.	3.16.5.2.8 僅在負載超過 750N 且需要使用工具才能開啟車門予以扣分。	3.16.5.2.8 僅在負載超過 750N 且需要使用工具才能開啟車門判定為不符合要求。
5.2.9 A maximum -1 point penalty will be applied if this issue is identified for at least one of the side doors in at least one of the two frontal tests.	5.1.14 A maximum -1 point penalty will be applied if this issue is identified for at least one of the side doors in at least one of the two frontal tests.	3.16.5.2.9 若於前方偏置撞擊與前方全寬撞擊試驗中至少一次、至少一個側門有此問題，則最高扣 1 分。	3.16.5.2.9 若於前方偏置撞擊與前方全寬撞擊試驗中至少一次、至少一個側門有此問題，則不符合本項要求。
5.3.1 Additional requirements for Electric door handles or handles retracting into door panel and having no possibility for physical grip …	**5.2 Additional requirements for Electric door handles or handles retracting into door panel and having no possibility for physical grip** …	3.16.5.3 電動車門把手或縮回門板且無法實體抓握把手之額外要求 …	3.16.5.3 電動車門把手或縮回門板且無法實體抓握把手之額外要求 …
5.3.6 A maximum penalty of -1 point will be applied where any of the side door handles listed in 5.3.4 cannot be used as normal or accessed without tools after the test. …	5.2.5 A maximum penalty of -1 point will be applied where any of the side door handles listed in 5.2.4 cannot be used as normal or accessed without tools after the test. …	3.16.5.3.5 試驗後，若 3.16.5.3.4 所列之任何側門把手無法正常使用或須使用工具碰觸，則最高扣 1 分。 …	3.16.5.3.5 試驗後，若 3.16.5.3.4 所列之任何側門把手無法正常使用或須使用工具碰觸，則不符合本項要求。 …

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5.4.1 Seat belt buckle unlatching (defined force to open a seat belt buckle) … 5.4.3 Frontal and Side impacts - The seat belt buckle shall completely open under a load of no more than 60N for frontal impact tests and 100N for side impacts applied directly to the centre point and in the direction of the opening movement of the buckle release button. The operator shall hold the buckle with one hand ensuring the application of the force measurement in the correct orientation with the other hand to measure in the axis of the buckle opening movement. The metal probe of the measurement device should only make contact with the button of the belt buckle and not the surrounding material of the buckle body. The application of force shall be conducted slowly and constantly. The measurement device shall provide load versus time information, with a frequency of at least	5.3 **Seat belt buckle unlatching** (defined force to open a seat belt buckle) … 5.3.2 **Frontal impacts** - The seat belt buckle shall completely open under a load of no more than 60N applied directly to the centre point and in the direction of the opening movement of the buckle release button. The operator shall hold the buckle with one hand ensuring the application of the force measurement in the correct orientation with the other hand to measure in the axis of the buckle opening movement. The measurement shall provide a load versus time / displacement information of the opening behaviour to identify potential measurement artefacts, which could be derived from a second contact of the buckle release button after release with the buckle housing. In such a case the first peak of force should be interpreted as the opening force. The point of contact of the test equipment	3.16.5.4 安全帶帶扣解開(安全帶帶扣開脫力) … 3.16.5.4.2 前方偏置撞擊/前方全寬撞擊/側方撞擊/側方立柱撞擊—前方偏置撞擊/前方全寬撞擊之安全帶帶扣應在不超過60N負載下完全開啟，側方撞擊/側方立柱撞擊之安全帶帶扣應在不超過100N負載下完全開啟，施加力直接作用於中心點並沿帶扣釋放按鈕之開啟方向。操作員應一手握住帶扣，確保施力量測正確，另一手測量帶扣開啟移動軸。量測設備之金屬探針僅能接觸安全帶帶扣之釋放按鈕，不得與帶扣本體之周圍材料接觸。應以緩慢且持續之速度施加力量。量測設備應提供負載相對於時間資訊，頻率至少 200Hz，以辨識開啟行為之潛在量測人為瑕疵，此可能是因帶扣釋放按鈕釋放後與帶扣外殼之二次接觸所產生。在此種情況下，應以首次快速下降前之最	3.16.5.4 安全帶帶扣解開(安全帶帶扣開脫力) … 3.16.5.4.2 前方偏置撞擊/前方全寬撞擊—安全帶帶扣應在不超過60N負載下完全開啟，施加力直接作用於中心點並沿帶扣釋放按鈕之開啟方向。操作員應一手握住帶扣，確保施力量測正確，另一手測量帶扣開啟移動軸。量測應提供開啟行為之負載相對於時間/位移資訊，以辨識潛在量測人為瑕疵，此可能是因帶扣釋放按鈕釋放後與帶扣外殼之二次接觸所產生。在此情況下，力量之首次峰值應作為開啟力。測試設備之接觸點應符合 UN R16 7.8.2 之定義。可移動成人人偶、兒童人偶或兒童保護裝置以碰觸帶扣。

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200Hz. This will identify potential measurement artefacts of the opening behaviour, which could be derived from a second contact of the buckle release button after release with the buckle housing. In such a case the maximum value of force before the first quick drop shall be interpreted as the opening force. It is permitted to move the adult dummy, child dummy or CRS in order to access the buckle.	shall comply with the definition in UNECE R.16 7.8.2. It is permitted to move the adult dummy, child dummy or CRS in order to access the buckle. 5.3.3 **Side impacts** – The seat belt buckle shall completely open under a load of no more than the limit value applied directly to the buckle release button. As a first step in 2020, 2021 and 2022 the unlatching force value shall be monitored for all side impact vehicles. It is anticipated that for these side tests the unbuckling load limit should be defined as a value between 60N and 100N.	大施力值作為帶扣開脫力。可移動成人人偶、兒童人偶或兒童保護裝置以碰觸帶扣。	3.16.5.4.3 側方撞擊/側方立柱撞擊—安全帶帶扣應在不超過直接施加於帶扣釋放按鈕之限制負載下完全開啟。應監控所有側方撞擊車輛之帶扣開脫力，且帶扣解開負載限制值應介於 60N 至 100N 之間。
5.4.4 No further steps will be taken to open the buckle or tools allowed to cut the belt, unbolt the buckle from the car etc.	5.3.4 No further steps will be taken to open the buckle or tools allowed to cut the belt, unbolt the buckle from the car etc.	3.16.5.4.3 不得採取進一步措施解開帶扣，或使用工具剪斷安全帶、從車上移除帶扣等。	3.16.5.4.4 不得採取進一步措施解開帶扣，或使用工具剪斷安全帶、從車上移除帶扣等。
5.4.5 The test laboratory should note the load at which each buckle releases.	5.3.5 The test laboratory should note the load at which each buckle releases.	3.16.5.4.4 檢測機構應記錄每個帶扣開啟之負載。	3.16.5.4.5 檢測機構應記錄每個帶扣開啟之負載。
5.4.6 A maximum penalty of -1 will be applied where any of the buckles used in the frontal or side tests open beyond the limits defined in 5.4.3.	5.3.6 A maximum penalty of -1 will be applied where any of used buckles in the frontal tests do not open when a load of up to 60N is applied.	3.16.5.4.5 若前方偏置撞擊、前方全寬撞擊、側方撞擊或側方立柱撞擊試驗中，任何使用之帶扣開脫力超過 3.16.5.4.2 所定義之限制值，則最高扣 1 分。	3.16.5.4.6 當施加負載至最大 60N，前方撞擊試驗中任何使用之帶扣仍未解開，則不符合本項要求。
5.5.1 EV and hybrid vehicle compliance		3.16.5.5 純電動車及混合動力車應	

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with ECE regulations regarding electrical vehicle safety 5.5.2 After the official Euro NCAP crash tests a compliance check will be made to assess if the **post-crash requirements** from ECE R94, ECE R95, ECE R135 and ECE R137 for EVs and Hybrids have been met. 5.5.3 A maximum -1 point penalty will be applied if it is not compliant. **5.6.1 Identification of Direct Hazard Disabling Equipment** The making safe/disabling of on-board energy in vehicles (high-voltage electricity, pressurised or liquified gas etc) is a major challenge for the safe execution of emergency operations. As part of good practice, many vehicle manufacturers have taken the initiative to position stickers on vehicles, specifying for some, the type of energy on board, and for others the location and/or action to be carried out (e-plug handling, service plug handling, valve handling, isolation loop section etc). In		符合「電動車碰撞後之觸電保護試驗規章」要求 3.16.5.5.1 TNCAP 正式碰撞試驗後，應進行符合性檢查，以評估純電動車及混合動力車是否符合「電動車碰撞後之觸電保護試驗規章」之要求。 3.16.5.5.2 若不符合要求，則最高扣 1 分。 3.16.5.6 解除直接性危害裝置之識別 車輛之車載能源（例如高壓電、加壓或液化氣體等）之安全隔離或解除，為執行緊急救援行動之一項重大挑戰。作為良好實務作法之一部分，許多車輛業者已主動於車輛上設置標示貼紙，用以說明車載搭載之能源種類，以及標示須操作之位置及/或程序（例如電子插頭操作、維修插頭操作、閥門操作、隔離迴路區段等）。由於各車輛業者對於能源中和(Energy neutralisation)之操作指示有所不同，且缺乏統一化程序，	

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response to the increasing number of manufacturers' differing instructions on energy neutralisation and the absence of harmonisation of procedures, there is a need for OEMs to produce common markings and in turn aid rescuers attending the vehicle.		因此車輛業者有必要製作通用之標記，以協助救難人員識別並進行救援。	
5.6.2 A maximum -1 point penalty will be applied if hazards are not correctly marked on the vehicle.		3.16.5.6.1 若車輛未正確標示危害資訊，則最高扣 1 分。	
5.6.3 In order to aid first responders stickers/markings should be present on the vehicle in order to identify the disabling equipment (shown on the Rescue Sheet under heading 3 for disabling equipment of high-voltage electricity and / or pressurised or liquified gas), with symbols and colours from ISO 17840:		3.16.5.6.2 為協助第一線救難人員識別解除裝置，車輛上應設置貼紙/標示，用以識別解除裝置（參閱救援表單標題 3 所列之高壓電及/或加壓或液化氣體之解除裝置），其符號及顏色應符合 ISO 17840 規範：	
• Background - ISO energy colour • First pictogram - Firefighter helmet (specific pictogram used up to OEM) • Second pictogram – ISO pictogram used to identify equipment • Third pictogram – Explanatory symbol		(1)背景：ISO 規定之能源顏色。 (2)第一個圖示：消防員頭盔（具體圖示可由車輛業者決定）。 (3)第二個圖示：用於識別裝置之 ISO 圖示。 (4)第三個圖示：說明性符號–非強	

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– not mandatory The stickers/markings are recommended for low voltage batteries (from 24V to 60V), if specific instructions to disable the hazard are shown under heading 3 in the rescue sheet. **5.7.1 Gaseous fuel vehicles:** The fire helmet may be replaced with another fire helmet appropriate to cultural requirements. (請參考頁末圖示) **5.8.1 Battery electric and hybrid vehicles:** The fire helmet may be replaced with another fire helmet appropriate to cultural requirements. (請參考頁末圖示)		制要求。 針對低電壓電池(24V 至 60V),若其救援表單標題 3 中列有特定解除危害之指示,則建議設置貼紙/標示。 3.16.5.6.3 氣體燃料車輛: 消防頭盔圖示可依適當文化需求,以其他消防頭盔替代。 (請參考頁末圖示) 3.16.5.6.4 純電動及混合動力車輛: 消防頭盔圖示可依適當文化需求,以其他消防頭盔替代。 (請參考頁末圖示)	
6 POST-CRASH TECHNOLOGY - ADVANCED eCall	6 POST-CRASH TECHNOLOGY - ADVANCED eCall 6.1 The advanced eCall system must provide the number of occupants and/or recent vehicle locations N1 and N2. The rewards shall be 0.5 points for number of occupants and 0.5 points for recent	3.16.6 碰撞後技術—先進 eCall	(無)

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6.1 Functions that qualify are listed in the table below: (請參考頁末表格) TB 040 "eCall Additional Data Concept Triggering Incident" v1.0.0 June 2022 defines the format to code the 'optional additional data' (listed in the table above) of the eCall MSD. TB 040 must be followed for mandatory and optional information. Pre-requisite for scoring of points for the functions Direction of Impact & Delta V: 6.2 Vehicle Post Crash Data Accuracy 6.2.1 The data sent through the eCall system (Delta Vx in the frontal impacts, monitoring only for Vy in lateral impacts) must be within a tolerance of +/- 10km/h from the reference data. 6.2.2 The reference data will be the results of the official Euro NCAP crash tests and they will be compared to the data sent by the eCall system. If the MSD sent by the eCall system cannot be read	vehicle locations N1 and N2. 6.2 Functions that qualify are listed in the table below: (請參考頁末表格)	3.16.6.1 符合資格之功能詳列於下表： (請參考頁末表格) Euro NCAP 技術通報 TB 040「eCall 附加資料概念觸發事件」定義 eCall 最小數據組中「選擇性附加資料」之編碼格式（如上表列）。對於強制性及非強制性資訊，必須遵循 Euro NCAP 技術通報 TB 040。 碰撞方向及 Delta V 功能得分之前提條件： 3.16.6.2 車輛碰撞後資料準確性 3.16.6.2.1 透過 eCall 系統所傳送之資料（前方碰撞之 Delta Vx，以及側方碰撞之 Vy(僅供監測)），必須於參考數據之+/- 10km/h 容許範圍內。 3.16.6.2.2 參考數據係 TNCAP 碰撞試驗結果，並將與 eCall 系統所傳送之數據進行比對。若實驗室無法讀取 eCall 系統所傳送之最小數據組(MSD)，則應使用事件	

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by the lab the EDR output should be used, possibly with the help of the OEM.		資料紀錄器輸出資料，必要時可由車輛業者提供協助。	
6.3 Third Party Service eCall (TPS eCall)		3.16.6.3 第三方服務 eCall (TPS eCall)	
6.3.1 In order to score points for TPS, it is needed to have the number of occupants and the 2 recent locations N1 and N2.		3.16.6.3.1 為獲得 TPS 評分，須具備乘員數量及最後二個位置資訊 N1 及 N2。	
6.3.2 The TPS eCall shall be free of charge and available at least for the first six years, depending on network technology. Functions that qualify in 2023 are listed in the table below (this list is non exclusive): (請參考頁末表格)		3.16.6.3.2 TPS eCall 應為免費提供，且依其網路技術至少須可使用六年。符合資格之功能詳列於下表（此列表並非詳盡無遺）： (請參考頁末圖示)	
6.4 Advanced eCall and eCall TPS dossier		3.16.6.4 先進 eCall 和 eCall TPS 資料	
6.4.1 Euro NCAP will require the following data regarding Advanced eCall from the OEM:	6.3 Euro NCAP will require the following data from the OEM:	3.16.6.4.1 TNCAP 要求車輛業者應提供下列先進 eCall 相關之資料：	
• Extract of ECE 144 approval document or (EU)2015/758 approval document	1. Extract of ECE 144 approval document or (EU)2015/758 approval document	(1) UN R144、(EU) 2015/758 核准文件摘要或符合性證明文件。	
• Copy of the MSD content (the text message/SMS as sent by the car to the PSAP)	2. Copy of the MSD content (the text message/SMS as sent by the car to the PSAP)	(2) MSD 內容副本（車輛傳送至公共/私人安全回應點(PSAP)之訊息/SMS	
6.4.2 Euro NCAP will require a dossier		3.16.6.4.2 TNCAP 要求車輛業者應	

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from the OEM describing each function within their TPS. • In order to score points TPS should be fitted as standard in all countries where the Euro NCAP star rating is applicable. If it is not allowed due to governmental laws / regulations to use the TPS eCall in a specific country, then only the legislative eCall needs to be applied.		提交一份資料，詳述其第三方服務所具備之各項功能。 (1)為獲得 TPS 評分，其應列為標準配備。	
7. POST-CRASH TECHNOLOGY – MULTI COLLISION BRAKE 7.1 In the past, in order to qualify for a Euro NCAP "Advanced" reward OEM's needed to provide a dossier containing data on how their Multi Collision Braking (MCB) system worked and also how it was tested in-house to prove that it functioned correctly. This was done with both simulations and full scale testing. It is now the intention for the OEM to provide a similar set of data for the MCB system to be awarded points. This in-house data must be provided before the car goes through the full Euro	7. POST-CRASH TECHNOLOGY – MULTI COLLISION BRAKE 7.1 In the past, in order to qualify for a Euro NCAP "Advanced" reward OEM's needed to provide a dossier containing data on how their Multi Collision Braking (MCB) system worked and also how it was tested by OEM to prove that it functioned correctly. This was done with both simulations and full scale testing. It is now the intention for the OEM to provide a similar set of data from 2020 onwards for the MCB system to be awarded points. This data must be provided before the car goes through	3.16.7 碰撞後技術—二次碰撞預煞車 3.16.7.1 車輛業者須提供二次碰撞預煞車（MCB）系統運作說明，以及透過內部試驗證明其正常運作之資料，該驗證包含模擬分析及實車完整試驗，MCB 系統才能獲得分數。此份內部資料必須於車輛進行 TNCAP 試驗及評等前提交。	(無)

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NCAP tests and assessment.	the full Euro NCAP tests and assessment. This data can be generated in-house or by a Euro NCAP accredited laboratory, according to the preference of the OEM.		
7.2 The OEM must mention in the vehicle handbook that the vehicle is equipped with an MCB system and it should explain how it works.	7.2 The OEM must mention in the vehicle handbook that the vehicle is equipped with an MCB system and it should explain how it works.	3.16.7.2 車輛業者必須於車主手冊中提及該車輛配備 MCB 系統，並應說明其運作原理。	
Definitions	Definitions		
7.3 Multi Collision Brake (MCB): System fitted to a vehicle that applies the brakes to prevent or mitigate a subsequent impact when a vehicle has been involved in a collision of sufficient severity. In response to a primary collision with or without airbag deployment, information is sent to the braking system to decelerate the vehicle with the intention to bring the vehicle to a standstill. It must not be possible to deactivate the MCB by the driver. After a crash and the vehicle coming to a standstill it is allowed for the MCB to release in order to help first responders	7.3 Multi Collision Brake (MCB): System fitted to a vehicle that applies the brakes to prevent or mitigate a subsequent impact when a vehicle has been involved in a collision of sufficient severity. In response to a primary collision with or without airbag deployment, information is sent to the braking system to decelerate the vehicle with the intention to bring the vehicle to a standstill. It must not be possible to deactivate the MCB by the driver. After a crash and the vehicle coming to a standstill it is allowed for the MCB to release the brakes in order to help first	(移至 3.16.2.8)	

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move the vehicle.	responders move the vehicle.		
7.4 MCB trigger signal: Signal sent from the crash detection function to the braking system during a primary collision.	7.4 MCB trigger signal: Signal sent from the crash detection function to the braking system during a primary collision.	(移至 3.16.2.9)	
Overview	Overview	3.16.7.4 **概覽**	
7.5 The test procedure for the Multi Collision Brake technology consists of two parts:	7.5 The test procedure for the Multi Collision Brake technology consists of two parts:	二次碰撞預煞車技術之試驗程序包含下列兩個部分：	
Part A) a destruction-free demonstration of braking caused by the MCB trigger signal,	Part A) a destruction-free demonstration of braking caused by the MCB trigger signal,	(1)A 部分：MCB 觸發訊號所引發之非破壞性煞車展示。	
Part B) documentation showing that the MCB trigger signal is sent during a Frontal crash test as performed under Part A)	Part B) documentation showing that the MCB trigger signal is sent during a Frontal crash test.	(2)B 部分：文件證明前方碰撞試驗期間，有傳送 MCB 觸發訊號，其與 A 部分展示一致。	
Part A) Destruction-free MCB test	Part A) Destruction-free MCB test	3.16.7.4.1 **A 部分－非破壞性 MCB 試驗**	
7.6 The vehicle under test drives in a straight line on a dry surface at a velocity of 15km/h ±1km/h.	7.6 The vehicle under test drives in a straight line on a dry surface at a velocity of 15km/h ±1km/h.	3.16.7.4.1.1 受驗車輛於乾燥表面上以 15km/h ±1km/h 速度直線行駛。	
7.6.1 The MCB trigger signal is simulated on the vehicle network using test and development equipment of the OEM.	7.7 The MCB trigger signal is simulated on the vehicle network using test and development equipment of the OEM.	3.16.7.4.1.2 使用車輛業者試驗及開發設備，於車輛網路模擬 MCB 觸發訊號。	
7.6.2 If declared necessary by the OEM, the acceleration pedal shall be	7.8 If declared necessary by the OEM, the acceleration pedal shall be disengaged	3.16.7.4.1.3 若車輛業者宣告有必	

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disengaged immediately prior to simulation of the MCB trigger signal.	immediately prior to simulation of the MCB trigger signal.	要，模擬 MCB 觸發訊號前得鬆開加速踏板。	
7.6.3 The brake pedal must not be engaged by the driver or other means during the entirety of the test.	7.9 The brake pedal must not be engaged by the driver or other means during the entirety of the test.	3.16.7.4.1.4 整個試驗過程中，駕駛或其他方式皆不得踩煞車踏板。	
7.6.4 The MCB test is passed if the vehicle exceeds a minimum deceleration of 3m/s² with brakes lights on.	7.10 The MCB test is passed if the vehicle exceeds a minimum deceleration of 3m/s² with brakes lights on.	3.16.7.4.1.5 若煞車燈點亮且車輛減速度超過 3m/s²，則通過 MCB 試驗。	
Part B) Documentation to be provided by the OEM before official Euro NCAP testing	Part B) Documentation to be provided by the OEM before official Euro NCAP testing	3.16.7.4.2 **B 部分－車輛業者於 TNCAP 正式試驗前提供之文件**	
7.7 The OEM can choose any full scale Frontal crash test where the MCB will be activated.	7.11 The OEM can choose any full scale Frontal crash test where the MCB will be activated.	3.16.7.4.2.1 車輛業者得選擇任何可致動 MCB 之實車前方偏置撞擊或前方全寬撞擊試驗。	
7.8 Video recording of the test at a ¾ angle from the rear on driver side to show the brakes lights are ON.	7.12 Video recording of the test at a ¾ angle from the rear on driver side to show the brakes lights are ON.	3.16.7.4.2.2 從駕駛側後方以 3/4 之角度錄製試驗影片，顯示煞車燈確實點亮。	
7.9 Data from this test that shows that the MCB trigger signal is sent on the vehicle network during the crash.	7.13 Data from this test that shows that the MCB trigger signal is sent on the vehicle network during the crash.	3.16.7.4.2.3 試驗資料顯示碰撞期間，MCB 觸發訊號傳送至車輛網路。	
	Transition Period 7.14 During a transition period of three years after the MCB Protocol is active (2020, 2021 and 2022), OEMs can also		

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Additional Requirements and Provisions 7.9.1 The Multi Collision Brake must be described in the user manual of the tested vehicle. 7.9.2 An OEM-specific name for the MCB technology can be used in the manual. 7.9.3 The test procedure is organized and performed by the OEM. 7.9.4 The test procedure can be performed using a pre-series vehicle.	score the MCB point using Part B only, witnessed by either Euro NCAP or Euro NCAP accredited laboratory personnel. Additional Requirements and Provisions 7.15 The Multi Collision Brake must be described in the user manual of the tested vehicle. 7.16 An OEM-specific name for the MCB technology can be used in the manual. 7.17 The test procedure is organized and performed by the OEM. 7.18 The test procedure can be performed using a pre-series vehicle.	3.16.7.5 **額外要求及規定** 3.16.7.5.1 受驗車輛之車主手冊中必須描述二次碰撞預煞車。 3.16.7.5.2 手冊中 MCB 技術可使用車輛業者專用名稱。 3.16.7.5.3 試驗程序由車輛業者組織及執行。 3.16.7.5.4 試驗程序可使用量產前之車輛執行。	
8 POST-CRASH TECHNOLOGY – VEHICLE SUBMERGENCE 8.1 In the event of a vehicle entering water during or after an impact, certain vehicle systems can aid the occupants in exiting the vehicle. The functionality of the following will be examined: • Door opening possible with 12V vehicle battery disconnected - Euro NCAP test laboratory • Electric window opening		3.16.8 碰撞後技術-車輛浸沒 3.16.8.1 若車輛於撞擊過程中或撞擊後進入水中，部分車輛系統可協助乘員逃離車輛。下列功能將進行檢查： (1)將 12V 車輛電池斷開，車門仍可開啟 – 由 TNCAP 檢測機構確認 (2)電動車窗開啟功能檢查 – 由車	

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functionality check – OEM dossier 8.2 Door opening from inside of vehicle with 12V disabled: Performance requirement: door opening from inside still possible Functionality of manual override shall be checked with following procedure with vehicle in static condition: 1.Vehicle occupant shall activate central lock to lock all the doors, with child safety lock system in disengaged mode. 2.Disconnect electrical supply either at system level (For example central locking, controller, etc.) or disconnect main battery supply. Opening of the doors from inside shall be possible using internal controls within 2 minutes. 8.3 Electric window opening check (Front row only and only one window, left or right side) 8.4 The OEM should provide proof in the form of a dossier to show that electric side windows still function for at least 2 minutes (which would allow an occupant to operate the window to exit		輛業者提交技術資料證明 3.16.8.2 12V 電源失效時，由車內開啟車門： 3.16.8.2.1 性能要求：仍可由車內開啟車門 3.16.8.2.2 車輛處於靜止狀態下，依照下列程序檢查手動操控之功能： (1)車內人員應啟動中控鎖，使所有車門上鎖，且兒童安全鎖系統處於解除狀態。 (2)斷開電氣供應，可於系統層級（如中控鎖、控制器等）切斷供電或切斷主電池供電。車門應能於二分鐘內透過車內控制裝置進行開啟。 3.16.8.3 電動車窗開啟檢查（僅限第一排座位，且僅檢查左側或右側之單一車窗） 3.16.8.4 車輛業者應以技術文件方式提供證明，說明電動側邊車窗於至少二分鐘內仍可正常運作，使乘客得以操作車窗逃離車輛，其條件與車輛進入水中之情境相	

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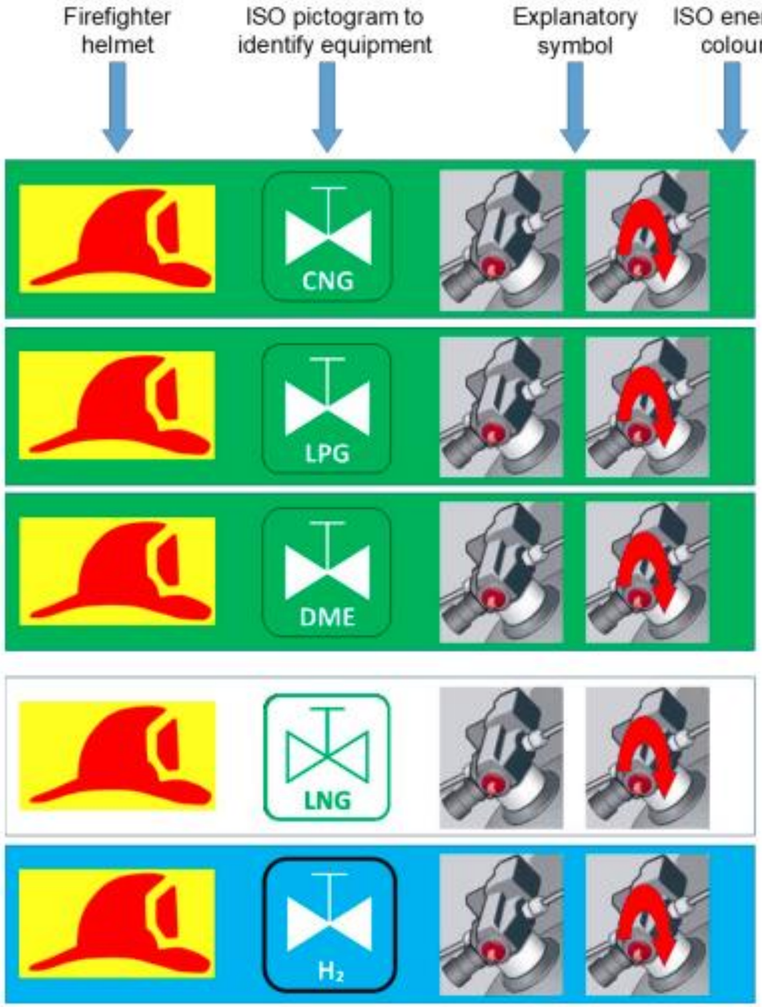
the vehicle) in the same condition as if the vehicle has entered the water. Dossier must be submitted prior to the Euro NCAP tests as part of the usual "Pre 121 meeting" OEM data. The data presented should represent a realistic case and include either submergence of the full vehicle or the window opening functionality under water including the power source and other elements such as body control module, motor, switches etc.		同。該文件必須於 TNCAP 試驗前提交。所提交之資料應反映實際情境，包含整車浸沒或車窗於水中仍可開啟之功能，並應涵蓋動力來源及其他元件，例如車身控制模組、馬達、開關等。	
8.5 In the absence of proof that side windows are still functional the OEM must provide a method by which the occupant can open or break the side window to exit the vehicle together with instructions within the owner's manual (e.g. window breaking tool delivered with vehicle, pyrotechnic device, mechanical system, etc)		3.16.8.5 在無法證明側邊車窗仍能正常運作之情況下，車輛業者必須提供乘員開啟或擊破側邊車窗以逃離車輛之方法，並於車主手冊中載明相關說明（例如隨車提供之破窗工具、火工裝置、機械系統等）。	

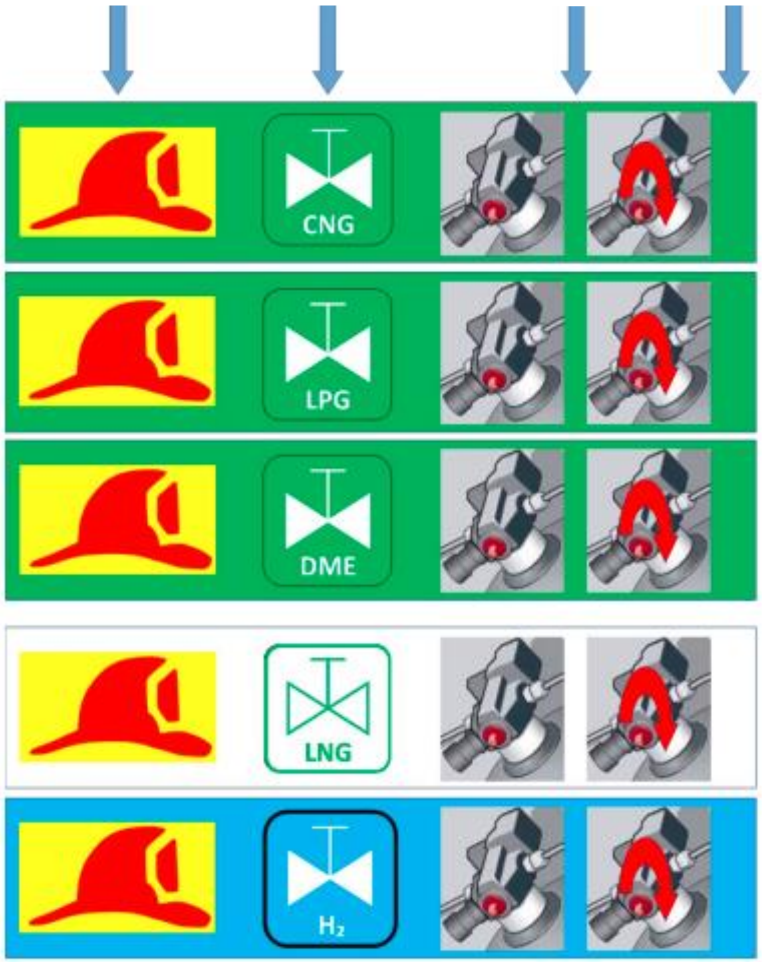
2025年Euro NCAP規章	2022年Euro NCAP規章
3.6 Worked examples showing possible scoring scenarios (2024):	(無)

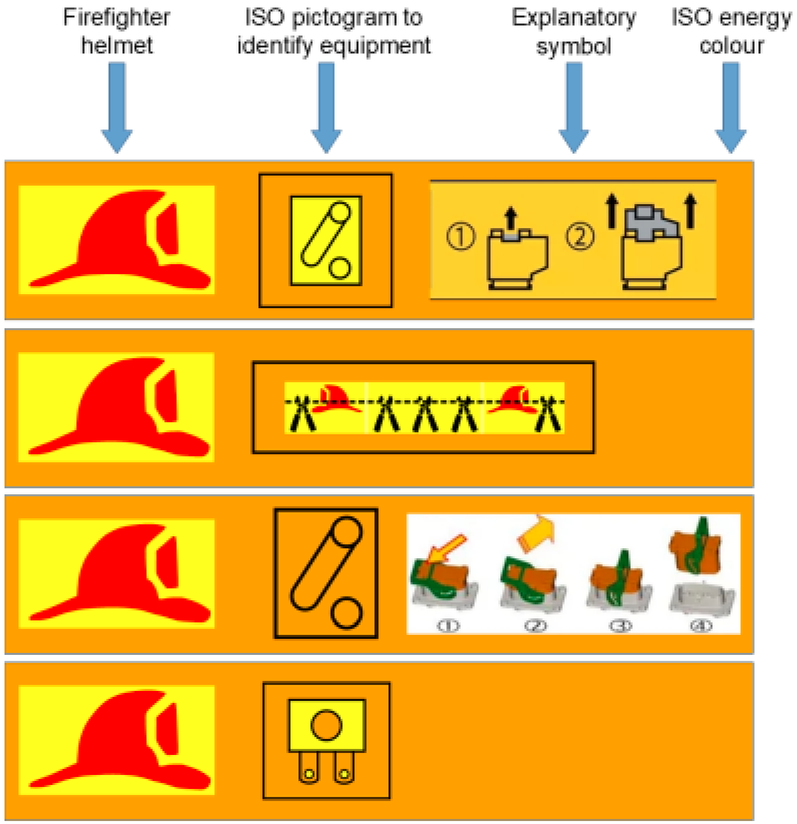
	Type of point	Car A		Car A1		Car B		Car C		Car D	
ISO Rescue sheet *available for tested model?*	*Pre-requisite*	No	-2	Yes		Yes		Yes		Yes	
ISO Rescue sheet *available for all other models?*	*Pre-requisite*	Yes		No	-2	Yes		Yes		Yes	
ISO ERG *available for tested model?*	*Pre-requisite*	Yes		Yes		No	-1	Yes		Yes	
Extrication *issue? (Chapter 5)*	*Penalty -1*	No		No		No		No		No	
Advanced eCall : *Potential number of occupants* *Recent locations N1 & N2* *Direction of impact & Delta V*	 *+0.33* *+0.33* *+0.33*	 Yes Yes Yes		 Yes Yes Yes		 Yes Yes Yes		 No Yes Yes	 0 0.33 0.33		1
Third Party Service eCall *Multi-language communication* *Hazard detection* *Transfer of paired mobile number* *Transfer of vehicle type* *Any new function*	 *+0.50* *+0.50* *+0.50* *+0.50* *+0.50*	 Yes Yes Yes Yes Yes		 Yes Yes Yes Yes Yes		 Yes Yes Yes Yes Yes		 Yes No No No No	N/A	 Yes Yes Yes Yes Yes	1
Vehicle Submergence*:* *Door opening check* *Window opening check*	 *+0.50* *+0.50*	 Yes Yes		 Yes Yes		 Yes Yes		 Yes Yes	1		1
MCB	*+1.00*	Yes		Yes		Yes		Yes	1		1
Total Rescue points		**-2**		**-2**		**-1**		**2.66**		**4**	

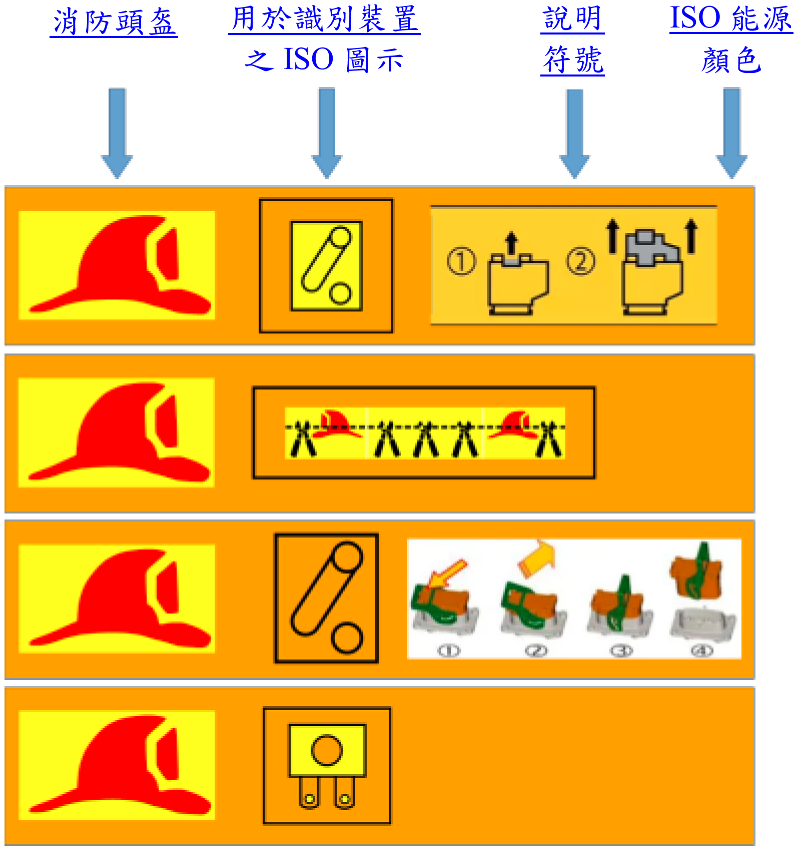
修訂TNCAP條文草案	對應TNCAP條文
3.16.3.6 評分情境示範案例：	(無)

	分數類型	車輛A		車輛A1		車輛B		車輛C		車輛D	
提交受驗車型之ISO救援表單？	前提條件	No	-2	Yes		Yes		Yes		Yes	
提交其他所有車型之ISO救援表單？	前提條件	Yes		No	-2	Yes		Yes		Yes	
提交受驗車型之ISO 緊急應變指南？	前提條件	Yes		Yes		No	-1	Yes		Yes	
事故脫困議題？ (詳參3.16.5)	扣分-1	No		No		No		No		No	
先進eCall：											1
可能之乘員人數	+0.33	Yes		Yes		Yes		No	0		
最後位置N1及N2	+0.33	Yes		Yes		Yes		Yes	0.33		
撞擊方向及速度變化量	+0.33	Yes		Yes		Yes		Yes	0.33		
第三方服務eCall：									N/A		1
多語言通訊	+0.50	Yes		Yes		Yes		No		Yes	
危害偵測	+0.50	Yes		Yes		Yes		No		Yes	
傳送已配對之手機號碼	+0.50	Yes		Yes		Yes		No		Yes	
傳送車輛識別資訊	+0.50	Yes		Yes		Yes		No		Yes	
任何新功能	+0.50	Yes		Yes		Yes		No		Yes	
車輛浸沒：									1		1
開門檢查	+0.50	Yes		Yes		Yes		Yes			
車窗開啟檢查	+0.50	Yes		Yes		Yes		Yes			
二次碰撞預煞車	+1.00	Yes		Yes		Yes		Yes	1		1
總分		**-2**		**-2**		**-1**		**2.66**		**4**	

2025 年 Euro NCAP 規章	2022 年 Euro NCAP 規章
5.7.1 Gaseous fuel vehicles:  	(無)

修訂TNCAP條文草案	對應TNCAP條文
3.16.5.6.3 氣體燃料汽車： 消防頭盔　用於識別裝置之 ISO 圖示　說明符號　ISO 能源顏色  	(無)

2025 年 Euro NCAP 規章	2022 年 Euro NCAP 規章
5.8.1 Battery electric and hybrid vehicles:  	(無)

修訂TNCAP條文草案	對應TNCAP條文
3.16.5.6.4 純電動及混合動力車輛：  	(無)

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6.1 Functions that qualify are listed in the table below:

Function	Description	Points (2023)	Points (2024)
Potential Number of occupants	Send information about likely number of occupants involved in impact (e.g. using belt use)	**0.50**	**0.33**
Recent vehicle locations N1 & N2	N1, Known location of the vehicle some time before the generation of the data for the MSD message and N2, known location of the vehicle some time before recent vehicle location N1	**0.50**	**0.33**
Direction of Impact & Delta V	Indicate the type of impact (frontal, lateral driver side, lateral passenger side, rear*, rollover*) and Delta Vx and Delta Vy (single values coded as signed integer sent by eCall). Delta V means the cumulative change in velocity of the vehicle in these two directions, starting from crash time zero and ending at 0.25 seconds, captured every 0.01 seconds. *(* Optional)*	**0.00**	**0.33**

</td><td>

6.2 Functions that qualify are listed in the table below:

Function	Description	Points awarded (2020)
Potential number of occupants	Send information about likely number of occupants involved in impact (at least using belt use as an indicator)	**0.5**
Recent vehicle locations N1& N2	N1, Known location of the vehicle some time before the generation of the data for the MSD message and N2, known location of the vehicle some time before recent vehicle location N1	**0.5**

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3.16.6.1符合資格之功能詳列於下表：

功能	**描述**	**獲得分數**
可能之乘員人數	傳送撞擊包含之乘員人數資訊（至少根據安全帶使用作為指標）	**0.33**
最後車輛位置N1及N2	N1：最小數據組(MSD)訊息資料產生前車輛已知位置 N2：N1位置前最後的車輛已知位置	**0.33**
撞擊方向及速度變化	指出撞擊類型(前方、側方駕駛側、側方乘客側、後方*、翻滾*），以及Delta Vx及Delta Vy(由eCall傳送之單一帶有符號編碼整數值）。Delta V係指車輛於上述兩方向之累積速度變化量，其量測從碰撞時間點開始，至0.25秒結束，並以每0.01秒間隔擷取。 備註：*非強制	**0.33**

</td><td>(無)</td></tr>
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<tr><th>2025 年 Euro NCAP 規章</th><th>2022 年 Euro NCAP 規章</th></tr>
<tr><td>6.3.2

Function	Description	Points awarded (2023)
Multi-language communication	Bilateral communication with agent in at least 4 languages depending on the vehicle settings (EN, DE, FR, ES)	0.5
Hazard detection	Fire, leakage of fuel or gas, smoke, battery thermal runaway etc	0.5
Transfer of paired mobile number (or other contact information)	Phone call possible even when the customer has left the car	0.5
Transfer of vehicle identification information	For better identification the make, model, colour, model year of the car will be delivered	0.5
Any new function	The benefit of any new function to be validated by Euro NCAP and CTIF	0.5

The total points available for this section is a maximum of 1 point.</td><td>(無)</td></tr>
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<tr><th>修訂TNCAP條文草案</th><th>對應TNCAP條文</th></tr>
<tr><td>
3.16.6.3.2
<table>
<tr><th>功能</th><th>描述</th><th>獲得分數</th></tr>
<tr><td>多語言通訊</td><td>根據車輛設定，可與操作員進行至少二種語言之雙向通訊（中文及英文）</td><td>0.5</td></tr>
<tr><td>危害偵測</td><td>火災、燃料或氣體洩漏、煙霧、電池熱失控等狀況</td><td>0.5</td></tr>
<tr><td>傳送已配對之手機號碼（或其他聯絡資訊）</td><td>即使使用者離開車輛仍可進行電話聯繫</td><td>0.5</td></tr>
<tr><td>傳送車輛識別資訊</td><td>傳送車輛廠牌、車型、顏色、車型年份以利車輛識別</td><td>0.5</td></tr>
<tr><td>任何新功能</td><td>任何新增功能之效益，須經過TNCAP驗證</td><td>0.5</td></tr>
</table>
本節最高可獲得 1 分。
</td><td>(無)</td></tr>
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