

Transmitted by the Chairman of the GTR7 Phase II
Informal Group

Informal document GRSP-50-27
(50th GRSP, 6–9 December 2011,
agenda item 3)

THIS DOCUMENT IS PROVIDED FOR INFORMATION AND COMMENT.

This document represents initial drafting for a proposal for a template and for a subsequent series of addenda to the Consolidated Resolution on the Construction of Vehicles (ECE/TRANS/WP.29/78). The purpose and meaning of this document should be considered as complimentary to (and read in conjunction with) the proposed amendment to the Consolidated Resolution on the Construction of Vehicles proposed in informal document GRSP-50-26.

PROPOSAL:

**Proposal to introduce a series of Addenda to ECE/TRANS/WP.29/78
(Consolidated Resolution on the Construction of Vehicles (RE3))**

**Specifications for the Construction, Maintenance and Preparation of
the 50th percentile male BioRID anthropometric test device for use in
specified UN ECE regulations.**

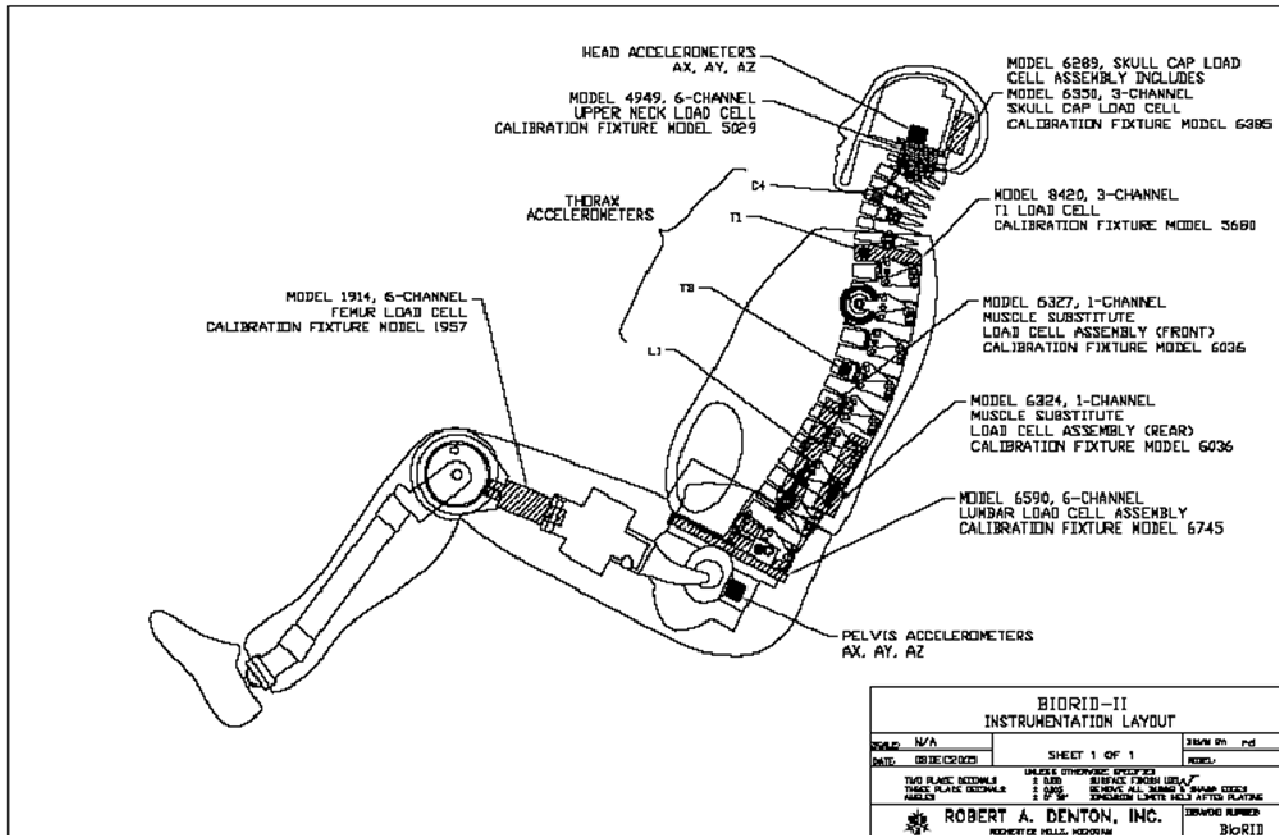
Contents

Annex 1.	Engineering Drawings	<i>(Note: <u>Approximately 160 drawings</u>)</i>
	Appendix 1 – Head Assembly	
	Appendix 2 – Arm Assemblies	
	Appendix 3 – Spinal Column	
	Appendix 4 – Torso Flesh	
	Appendix 5 – Lower Torso	
	Appendix 6 – Leg Assemblies	
Annex 2.	User Manual	<i>(Note: <u>Approximately 111 pages</u>)</i>
Annex 3.	Calibration Procedures	<i>(Note: <u>Approximately 25 pages</u>)</i>

Engineering Drawings

The engineering drawings contained in the following Appendices provide detailed information concerning the essential elements of the BioRID anthropometric test device (atd).

While variants of the BioRID atd, now or in the future, may exhibit differences from these specifications, only those devices that comply with these specifications are considered suitable for use in those UN ECE Regulations associated with the BioRID atd as listed in paragraph XX to the Consolidated Resolution on the Construction of Vehicles (ECE/TRANS/WP.29/78).



Note: This drawing is inserted for illustrative purposes only.

**Procedures for Assembly,
Disassembly, and Inspection
(PADI)
of the BioRID II Rear Impact
Crash Test Dummy**



November 2010

Table of Contents

1.0	INTRODUCTION	Error! Bookmark not defined.
1.1	Forward	Error! Bookmark not defined.
1.2	Part Numbers	Error! Bookmark not defined.
1.3	General Design.....	Error! Bookmark not defined.
1.4	Abbreviations	Error! Bookmark not defined.
1.5	Required Tools.....	Error! Bookmark not defined.
2.0	CLOTHING	Error! Bookmark not defined.
2.1	Shirt and Shorts.....	Error! Bookmark not defined.
2.2	Shoes	Error! Bookmark not defined.
3.0	STORAGE AND HANDLING	Error! Bookmark not defined.
3.1	BioRID II Dummy Transportation Chair.....	Error! Bookmark not defined.
3.2	Dummy Lifting Procedure	Error! Bookmark not defined.
4.0	INSTRUMENTATION	Error! Bookmark not defined.
4.1	Available Instrumentation.....	Error! Bookmark not defined.
4.2	Instrumentation Location	Error! Bookmark not defined.
5.0	PROCEDURES FOR ASSEMBLY, DISASSEMBLY AND INSPECTION.....	Error! Bookmark not defined.
5.1	Head Assembly Components	Error! Bookmark not defined.
5.1.1	Head Removal.....	Error! Bookmark not defined.
5.1.2	Head Disassembly.....	Error! Bookmark not defined.
5.2	Spinal Column Assembly Components	Error! Bookmark not defined.
5.2.1	Torso Flesh Assembly Components (Upper Torso)	Error! Bookmark not defined.
5.2.1.1	Torso Flesh Removal	Error! Bookmark not defined.
5.2.2	Muscle Substitute System Assembly	Error! Bookmark not defined.
5.2.2.1	Muscle Substitute Removal	Error! Bookmark not defined.
5.2.3	Spinal Column (Cervical Portion)	Error! Bookmark not defined.
5.2.3.1	Spinal Column (Cervical Portion) Removal	Error! Bookmark not defined.
5.2.4	Spinal Column (Thoracic Portion).....	Error! Bookmark not defined.
5.2.4.1	Spinal Column (Thoracic Portion) Assembly Removal	Error! Bookmark not defined.
5.3	Pelvic Assembly.....	Error! Bookmark not defined.
5.3.1	Pelvis Assembly Components.....	Error! Bookmark not defined.
5.3.1.1	Pelvis Assembly Removal	Error! Bookmark not defined.
5.4	Arm Assembly	Error! Bookmark not defined.
5.4.1	Arm Assembly Components	Error! Bookmark not defined.
5.4.1.1	Arm Assembly Removal.....	Error! Bookmark not defined.
5.5	Leg Assembly	Error! Bookmark not defined.
5.5.1	Leg Assembly Components	Error! Bookmark not defined.
5.5.1.1	Leg Assembly Removal.....	Error! Bookmark not defined.
6.0	INSTRUMENTATION INSTALLATION	Error! Bookmark not defined.
6.1	Head Assembly	Error! Bookmark not defined.
6.1.1	Installation of Head Accelerometers.....	Error! Bookmark not defined.
6.1.2	Installation of Skull Cap Contact Switch.....	Error! Bookmark not defined.
6.1.3	Installation of Skull Cap Load Cell Head and Skull Cap Assembly	Error! Bookmark not defined.
6.2	Spinal Column (Cervical Portion) Assembly	Error! Bookmark not defined.
6.2.1	Mounting of Cervical Spine Accelerometers.....	Error! Bookmark not defined.
6.3	Spinal Column (Thoracic Portion) Assembly.....	Error! Bookmark not defined.
6.3.1	Thoracic Spine Accelerometer Installation.....	Error! Bookmark not defined.
6.4	Pelvis Assembly.....	Error! Bookmark not defined.
6.5	Pelvis Accelerometer Installation	Error! Bookmark not defined.
7.0	INSTRUMENTATION CABLE ROUTING	Error! Bookmark not defined.
7.1	Grounding	Error! Bookmark not defined.

7.2	Head and Cervical Neck cable Routing	Error! Bookmark not defined.
7.3	Thoracic Spine Cable Routing	Error! Bookmark not defined.
7.4	Pelvis Instrumentation Cable Routing	Error! Bookmark not defined.
8.0	BIORID II ABDOMEN	Error! Bookmark not defined.
8.1	Abdomen Filling Procedure	Error! Bookmark not defined.
9.0	BIORID II JOINT ADJUSTMENT PROCEDURE	Error! Bookmark not defined.
9.1	BioRID II Joint Adjustment	Error! Bookmark not defined.
9.1.1	Shoulder	Error! Bookmark not defined.
9.1.2	Legs and Feet	Error! Bookmark not defined.
10.0	SETTING UP THE BIORID II DUMMY FOR IMPACT	Error! Bookmark not defined.
10.1	BioRID II Cable Installation Procedure	Error! Bookmark not defined.
10.1.1	BioRID II Cable Installation	Error! Bookmark not defined.
10.2	BioRID II Static Spine Setup Procedure	Error! Bookmark not defined.
10.2.1	BioRID II Thoracic and Lumber Spine Setup	Error! Bookmark not defined.
10.2.2	BioRID II Cervical Spine Setup (Pretension)	Error! Bookmark not defined.
10.2.3	BioRID II Cervical Spine Setup (Tension)	Error! Bookmark not defined.
10.2.4	BioRID II Damper Cable Adjustment	Error! Bookmark not defined.
10.2.5	BioRID II Static Spine Measurements	Error! Bookmark not defined.
11.0	MAINTENANCE	Error! Bookmark not defined.
11.1	BioRID II Cervical Bumper Inspection and Replacement	Error! Bookmark not defined.
11.1.1	Overview	Error! Bookmark not defined.
11.1.2	Recommended Replacement	Error! Bookmark not defined.
11.1.3	Bumper replacement procedure	Error! Bookmark not defined.
11.2	Physical Measurements	Error! Bookmark not defined.
11.3	BioRID II Mass Measurements	Error! Bookmark not defined.
11.4	BioRID II Damper Filling	Error! Bookmark not defined.
11.4.1	BioRID II Damper Filling Procedure	Error! Bookmark not defined.
11.5	Damper Removal and Installation	Error! Bookmark not defined.
	Appendix A – Accelerometer Handling	Error! Bookmark not defined.
	Appendix B – Repairing of Vinyl Flesh & Silicon Jacket	Error! Bookmark not defined.
	Appendix C – Joint Adjustments	Error! Bookmark not defined.
	Appendix D – Torque Table	Error! Bookmark not defined.
	Appendix E - BioRID II Design Checklist	Error! Bookmark not defined.
	Appendix F – BioRID II Maintenance Checklist	Error! Bookmark not defined.

LIST OF FIGURES

Figure 1- BioRID II Clothing	Error! Bookmark not defined.
Figure 2- BioRID II Shoe	Error! Bookmark not defined.
Figure 3- BioRID II Dummy Storage	Error! Bookmark not defined.
Figure 4 - BioRID II Lifting Cable	Error! Bookmark not defined.
Figure 5 - BioRID II Instrumentation Layout.....	Error! Bookmark not defined.
Figure 6 - BioRID II Major Assemblies	Error! Bookmark not defined.
Figure 7 - Head Assembly Components	Error! Bookmark not defined.
Figure 8 - Torso Flesh Assembly Components.....	Error! Bookmark not defined.
Figure 9 - Muscle Substitute Assembly Components.....	Error! Bookmark not defined.
Figure 10 - Spinal Column (Cervical Portion).....	Error! Bookmark not defined.
Figure 11 - Spinal Column - Part 1	Error! Bookmark not defined.
Figure 12 - Spinal Column - Part 2.....	Error! Bookmark not defined.
Figure 13 - Pelvis Assembly Components.....	Error! Bookmark not defined.
Figure 14 - Arm Assembly Components (Left Shown).....	Error! Bookmark not defined.
Figure 15 - Leg Assembly Components (Left Shown).....	Error! Bookmark not defined.
Figure 16 - Head Accelerometer Orientation.....	Error! Bookmark not defined.
Figure 17 - Head accelerometers installed on triaxial mount block	Error! Bookmark not defined.
Figure 18 - Skull Cap Contact Switch	Error! Bookmark not defined.
Figure 19 - Cervical Spine Accelerometer Mount.....	Error! Bookmark not defined.
Figure 20 - Thoracic Spine Accelerometer Mount	Error! Bookmark not defined.
Figure 21 - Pelvis Accelerometer Mount.....	Error! Bookmark not defined.
Figure 22 - Instrumentation Grounding Concept.....	Error! Bookmark not defined.
Figure 23 - Tie Wrap Base Loop	Error! Bookmark not defined.
Figure 24 - Thoracic Spine Cable Routing	Error! Bookmark not defined.
Figure 25 - Cable Bundle Exit	Error! Bookmark not defined.
Figure 26 - BioRID II Jacket Assembly	Error! Bookmark not defined.
Figure 27 - Shoulder Joint Setting	Error! Bookmark not defined.
Figure 28 - Elbow Yoke Rotation Setting.....	Error! Bookmark not defined.
Figure 29 - Elbow Joint Setting	Error! Bookmark not defined.
Figure 30 - Wrist Joint Setting.....	Error! Bookmark not defined.
Figure 31 - Femur Joint Setting	Error! Bookmark not defined.
Figure 32 - Knee Joint Setting	Error! Bookmark not defined.
Figure 33 - Ankle Joint Setting.....	Error! Bookmark not defined.
Figure 34 - BioRID II Cable Detail	Error! Bookmark not defined.
Figure 35- Damper Cable Installation.....	Error! Bookmark not defined.
Figure 36 - Damper Cable Installation.....	Error! Bookmark not defined.
Figure 37 - Damper Adjustment Screw Setting.....	Error! Bookmark not defined.
Figure 38 - Damper Cable Overlap.....	Error! Bookmark not defined.
Figure 39 - Damper Cable Seating.....	Error! Bookmark not defined.
Figure 40 - Slide in Damper.....	Error! Bookmark not defined.
Figure 41 - Damper Clamp Bracket.....	Error! Bookmark not defined.
Figure 42 - Damper Clamp Bracket Mate.....	Error! Bookmark not defined.
Figure 43 - Damper Clamp Set screw.....	Error! Bookmark not defined.
Figure 44 - Damper Mount Bolt Torque.....	Error! Bookmark not defined.
Figure 45 - Damper Cable Ferrule Installation	Error! Bookmark not defined.
Figure 46 - Ferrule Crimping.....	Error! Bookmark not defined.
Figure 47 - Damper Cable Setting	Error! Bookmark not defined.
Figure 48 - Cable Tight Around Damper.....	Error! Bookmark not defined.
Figure 49 - Crimp Front Damper Ferrule	Error! Bookmark not defined.
Figure 50 - Anterior Spring Cable Insertion	Error! Bookmark not defined.
Figure 51- Anterior Spring Insertion	Error! Bookmark not defined.
Figure 52 - Cable Adjust Installation.....	Error! Bookmark not defined.

Figure 53 - Setting the Posterior Spring Cable	Error! Bookmark not defined.
Figure 54 - Secure Posterior Cable	Error! Bookmark not defined.
Figure 55 - Ferrule Installation Front and Rear Spring Cable	Error! Bookmark not defined.
Figure 56 - Remove Slack from Spring Cable.....	Error! Bookmark not defined.
Figure 57 - Crimp Ferrule.....	Error! Bookmark not defined.
Figure 58 - Repeat for Front Spring Cable	Error! Bookmark not defined.
Figure 59 - Verify Crimps with Appropriate Crimpers	Error! Bookmark not defined.
Figure 60 - Cut Cables above Ferrules	Error! Bookmark not defined.
Figure 61 - Cable Cap Installation	Error! Bookmark not defined.
Figure 62 - Crimp Cable Cap.....	Error! Bookmark not defined.
Figure 63 - Add Glue	Error! Bookmark not defined.
Figure 64 - Insert Cable Cap.....	Error! Bookmark not defined.
Figure 65 - Thoracic and Lumbar Vertebra Spacer Tool.....	Error! Bookmark not defined.
Figure 66 - Spacer Tool with Optional Handles	Error! Bookmark not defined.
Figure 67 - Tighten Locking Screws	Error! Bookmark not defined.
Figure 68 - T1 Plate Screw Torque.....	Error! Bookmark not defined.
Figure 69 - Remove Setup Plate	Error! Bookmark not defined.
Figure 70 - Cervical Spine Setup	Error! Bookmark not defined.
Figure 71 - Adjust Cable Adjusters Down.....	Error! Bookmark not defined.
Figure 72 - Front Spring Cable Adjuster	Error! Bookmark not defined.
Figure 73 - Check for Slack - Pulling up	Error! Bookmark not defined.
Figure 74 - Check for Slack - Dropping	Error! Bookmark not defined.
Figure 75 - Locking the Cable Adjusters.....	Error! Bookmark not defined.
Figure 76 - Rear Lower Spring Cable Adjustment	Error! Bookmark not defined.
Figure 77 - Front Lower Spring Cable Adjustment.....	Error! Bookmark not defined.
Figure 78 - Lock the Spring Cable Adjusters	Error! Bookmark not defined.
Figure 79 - Push Up to Release Cable Twist	Error! Bookmark not defined.
Figure 80 - Result of Cable Adjustment	Error! Bookmark not defined.
Figure 81 - Zero Digital Inclinometer.....	Error! Bookmark not defined.
Figure 82 - Tilt OC Plate Down in Front.....	Error! Bookmark not defined.
Figure 83 - Front and Rear Spring Adjustment if Front Angle cannot be Held ...	Error! Bookmark not defined.
Figure 84 - Tilt OC Plate Down in Back	Error! Bookmark not defined.
Figure 85 - Front and Rear Spring Adjustment if Back Angle cannot be Held....	Error! Bookmark not defined.
Figure 86 - Damper Cable Adjusters	Error! Bookmark not defined.
Figure 87 - Damper Adjustments.....	Error! Bookmark not defined.
Figure 88 - OC Plate Lateral Angle Setting.....	Error! Bookmark not defined.
Figure 89 - BioRID II Spine Setup Measurements.....	Error! Bookmark not defined.
Figure 90 - OC Plate Angle Setting	Error! Bookmark not defined.
Figure 91 - X and Z Measurement Tool	Error! Bookmark not defined.
Figure 92 - H-Point Measurement Tool.....	Error! Bookmark not defined.
Figure 93- T2 Angle Setting	Error! Bookmark not defined.
Figure 94 - Cervical Region.....	Error! Bookmark not defined.
Figure 95 - Bumper Replacement Tools.....	Error! Bookmark not defined.
Figure 96 - Remove Muscle Substitute Springs	Error! Bookmark not defined.
Figure 97 - Push OC Pin Out of Spine.....	Error! Bookmark not defined.
Figure 98 - Pull Up Spring Cables.....	Error! Bookmark not defined.
Figure 99 - Remove Pins.....	Error! Bookmark not defined.
Figure 100 - Swing OC Plate Up	Error! Bookmark not defined.
Figure 101 - Remove Pin and Separate Vertebra.....	Error! Bookmark not defined.
Figure 102- Remove Bumper.....	Error! Bookmark not defined.
Figure 103 - Clean Surface	Error! Bookmark not defined.
Figure 104 - Add One Drop of Adhesive.....	Error! Bookmark not defined.
Figure 105 - Place in Bumper and Hold	Error! Bookmark not defined.
Figure 106 - Remove T1 Retaining Screws.....	Error! Bookmark not defined.

Figure 107 - Remove T1 Pin.....	Error! Bookmark not defined.
Figure 108 - Remove Bumper.....	Error! Bookmark not defined.
Figure 109 - Clean Surface	Error! Bookmark not defined.
Figure 110 - Add Drop of Adhesive	Error! Bookmark not defined.
Figure 111 - Press and Hold Bumper.....	Error! Bookmark not defined.
Figure 112 - Hold for 10 Seconds.....	Error! Bookmark not defined.
Figure 113 - Insert T1 Pin.....	Error! Bookmark not defined.
Figure 114 - T1 Pin Alignment.....	Error! Bookmark not defined.
Figure 115 - Install T1 Locking Screws	Error! Bookmark not defined.
Figure 116 - Install Remaining Pins	Error! Bookmark not defined.
Figure 117 - BioRID II Physical Measurements.....	Error! Bookmark not defined.
Figure 118 - Measurement Starting Position	Error! Bookmark not defined.
Figure 119 - Zero Angle Reference	Error! Bookmark not defined.
Figure 120 - H-Point Height	Error! Bookmark not defined.
Figure 121 - H-Point Angle	Error! Bookmark not defined.
Figure 122 - Head Angle.....	Error! Bookmark not defined.
Figure 123 - Thigh Height	Error! Bookmark not defined.
Figure 124 - Width Measurement	Error! Bookmark not defined.
Figure 125 - Head Height	Error! Bookmark not defined.
Figure 126 - Bottom of Feet to Knee Pivot.....	Error! Bookmark not defined.
Figure 127 - Foot Length and Width	Error! Bookmark not defined.
Figure 128 - Remove Oil Fill Screw.....	Error! Bookmark not defined.
Figure 129 - Inject Oil.....	Error! Bookmark not defined.
Figure 130 - Work out Air	Error! Bookmark not defined.
Figure 131 - Add Sealant to Cover Screw	Error! Bookmark not defined.
Figure 132 - Tighten Cover Screw.....	Error! Bookmark not defined.
Figure 133 - Wipe off Excess Sealant.....	Error! Bookmark not defined.
Figure 134 - View of Damper Assembly	Error! Bookmark not defined.
Figure 135 - Exploded View of Damper Assembly.....	Error! Bookmark not defined.
Figure 136 - Loosen Adjusters.....	Error! Bookmark not defined.
Figure 137 - Loosen M3 Clamping Screws	Error! Bookmark not defined.
Figure 138 - Back Off Set Screw	Error! Bookmark not defined.
Figure 139 - Slide Out Damper.....	Error! Bookmark not defined.
Figure 140 - Turn Damper and Disengage Cable	Error! Bookmark not defined.
Figure 141 - View of Twist in Cable	Error! Bookmark not defined.
Figure 142 - Install Damper.....	Error! Bookmark not defined.
Figure 143 - Slide Damper into Mating Slot	Error! Bookmark not defined.
Figure 144 - Slide on Clamp Bracket	Error! Bookmark not defined.
Figure 145 - Properly Aligned Bracket.....	Error! Bookmark not defined.
Figure 146 - Install Mounting Bolt Finger Tight.....	Error! Bookmark not defined.
Figure 147 - Tighten Set Screw	Error! Bookmark not defined.

LIST OF TABLES

Table 1 - Screw Abbreviations	Error! Bookmark not defined.
Table 2 - BioRID II Instrumentation	Error! Bookmark not defined.
Table 3 - Dummy Assembly Groups	Error! Bookmark not defined.
Table 4 - ARA 103 Head Assembly Components	Error! Bookmark not defined.
Table 5 - Jacket Flesh and Lifting Components	Error! Bookmark not defined.
Table 6 - Muscle Substitute Assembly Components	Error! Bookmark not defined.
Table 7 - Spinal Column (Cervical Portion).....	Error! Bookmark not defined.
Table 8 - Spinal Column Components - Part 1	Error! Bookmark not defined.
Table 9 - Spinal Column Components - Part 2	Error! Bookmark not defined.
Table 10 - Pelvis Assembly Components	Error! Bookmark not defined.
Table 11 - Arm Assembly Components.....	Error! Bookmark not defined.

Table 12 - Leg Assembly Components.....	Error! Bookmark not defined.
Table 13 - Head Instrumentation Parts	Error! Bookmark not defined.
Table 14 - BioRID II Skull Cap Head Assembly	Error! Bookmark not defined.
Table 15 - Cable Components.....	Error! Bookmark not defined.
Table 16 - Physical Measurements	Error! Bookmark not defined.
Table 17 - Assembly Mass.....	Error! Bookmark not defined.

Note: Total Annex contains 111 pages

Certification Procedures
for the
BioRID II
Crash Test Dummy

November 2010

Table of Contents

Introduction.....	Error! Bookmark not defined.
BioRID Jacket Certification Procedures.....	Error! Bookmark not defined.
Required Instrumentation.....	Error! Bookmark not defined.
Pretest Preparation	Error! Bookmark not defined.
BioRID Jacket Certification Test Procedure.....	Error! Bookmark not defined.
BioRID Jacket Performance Specifications.....	Error! Bookmark not defined.
BioRID Head Impact Pad Certification	Error! Bookmark not defined.
Required Instrumentation.....	Error! Bookmark not defined.
Pretest Preparation	Error! Bookmark not defined.
BioRID Head Impact Pad Certification Test Procedure	Error! Bookmark not defined.
BioRID Head Impact Pad Performance Specifications	Error! Bookmark not defined.
BioRID Sled and Track Certification without Headrest	Error! Bookmark not defined.
Required Instrumentation.....	Error! Bookmark not defined.
Pretest Preparation	Error! Bookmark not defined.
BioRID Sled and Track Certification without Headrest Test Procedure	Error! Bookmark not defined.
BioRID Sled and Track Certification without Headrest Performance Specifications	Error! Bookmark not defined.
	defined.
BioRID Dummy Certification without Headrest	Error! Bookmark not defined.
Required Instrumentation.....	Error! Bookmark not defined.
Pretest Preparation	Error! Bookmark not defined.
BioRID Dummy Certification without Headrest Test Procedures	Error! Bookmark not defined.
BioRID Dummy Certification without Headrest Performance Specifications	Error! Bookmark not defined.
	defined.
BioRID Sled and Track Certification with Headrest	Error! Bookmark not defined.
Required Instrumentation.....	Error! Bookmark not defined.
Pretest Preparation	Error! Bookmark not defined.
BioRID Sled and Track Certification with Headrest Test Procedure	Error! Bookmark not defined.
BioRID Sled and Track Certification with Headrest Performance Specifications	Error! Bookmark not defined.
	defined.
BioRID Dummy Certification with Headrest	Error! Bookmark not defined.
Required Instrumentation.....	Error! Bookmark not defined.
Pretest Preparation	Error! Bookmark not defined.
BioRID Dummy Certification with Headrest Test Procedure ...	Error! Bookmark not defined.
BioRID Dummy Certification with Headrest Performance Specifications	Error! Bookmark not defined.

List of Figures

Figure 1 - Impact Probe Alignment	Error! Bookmark not defined.
Figure 2 - Jacket Core Assembly	Error! Bookmark not defined.
Figure 3 - BioRID Jacket Test Setup	Error! Bookmark not defined.
Figure 4 - Head Impact Pad Mounted on Sled.....	Error! Bookmark not defined.
Figure 5 - BioRID Sled and Track Certification.....	Error! Bookmark not defined.
Figure 6 - X Accelerometer at T1	Error! Bookmark not defined.
Figure 7 - Head Setup Angle	Error! Bookmark not defined.
Figure 8 - BioRID Sled and Track Certificaion with Headrest Test Setup	Error! Bookmark not defined.

List of Tables

No table of figures entries found.

Note: Total Annex contains 24 pages