ISO 15830-2:2005-12 (E)

Road vehicles - Design and performance specifications for the WorldSID 50th percentile male side-impact dummy - Part 2: Mechanical subsystems

Contents

Page

Foreword vi

Introduction vii

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 Mechanical requirements for WorldSID 2
4.1 Head 2
4.1.1 General description 2
4.1.2 Drawings and specifications 2
4.1.3 Certification 2
4.2 Neck 3
4.2.1 General description 3
4.2.2 Drawings and specifications 3
4.2.3 Certification 3
4.3 Thorax/abdomen/shoulder 4
4.3.1 General description 4
4.3.2 Drawings and specifications 4
4.3.3 Certification 4
4.4 Full arms 6
4.4.1 General description 6
4.4.2 Drawings and specifications 6
4.5 Half arms 6
4.5.1 General description 6
4.5.2 Drawings and specifications 6
4.6 Lumbar spine and pelvis 7
4.6.1 General description 7
4.6.2 Drawings and specifications 7
4.6.3 Certification 7
4.7 Upper legs 7
4.7.1 General description 7
4.7.2 Drawings and specifications 7
4.8 Lower leg, ankle, and foot 8
4.8.1 General description 8
4.8.2 Drawings and specifications 8
4.9 Clothing 8
4.9.1 General description 8
4.9.2 Drawings and specifications 8
4.10 Whole dummy 8

5 Certification test procedures 8
5.1 Head 8
5.1.1 Principle 8
5.1.2 Apparatus 9
5.1.3 Sensors 9
5.1.4 Preparation 9
5.1.5 Procedure 12

5.1.6 Test report 12
5.2 Neck 12
5.2.1 Principle 12
5.2.2 Materials 12
5.2.3 Apparatus 12
5.2.4 Sensors 12
5.2.5 Preparation 13
5.2.6 Procedure 13
5.2.7 Calculation procedures 14
5.2.8 Test reports 15
5.3 Thorax/abdomen/shoulder full body tests 15
5.3.1 Full body test setup 15
5.3.2 Shoulder test 17
5.3.3 Thorax with half arm 19
5.3.4 Thorax without arm 20
5.3.5 Abdomen test 22
5.3.6 Pelvis test 24
5.4 Data zero values 25

Annex A (normative) Support equipment 26

A.1 Specialized WorldSID support equipment 26
A.2 Other support equipment typically available in test laboratories 26

Annex B (normative) Drawings and specifications, PDF and STP files 28

Annex C (informative) Drawing list 29

Figures Figure 1 -- Head centre of gravity location 2

Figure 2 -- Lateral head drop angle 10

Figure 3 -- Head bracket installation for lateral drops 10

Figure 4 -- Frontal head drop angle 11

Figure 5 -- Head bracket installation for frontal drops 11

Figure 6 -- Front view of setup for full dummy certification tests 16

Figure 7 -- Side view of setup for full dummy certification tests 17

Figure 8 -- Using an inclinometer with the H-point tool to check pelvis angle 17

Figure 9 -- Shoulder test, dummy and arm position 18

Figure 10 -- Thorax test without arm, dummy and arm position 21

Tables Table 1 -- WorldSID head certification specifications 3

Table 2 -- WorldSID neck certification specifications 4

Table 3 -- WorldSID shoulder certification specifications 5

Table 4 -- WorldSID thorax with half-arm certification specifications 5

Table 5 -- WorldSID thorax without arm certification specifications 5

Table 6 -- WorldSID abdomen certification specifications 6

Table 7 -- WorldSID pelvis certification specifications 7

Table 8 -- Sensors for neck assembly 12

Table 9 -- Neck test preconditions 13

Table 10 -- Pendulum arm deceleration pulse 14

Table 11 -- Filter specification for neck test 14

Table 12 -- Dummy full body test preconditions 15

Table 13 -- Relationship between mechanical measurement indicators and the tilt sensors 16

Table 14 -- Dummy set up criteria 16

Table 15 -- Sensors for shoulder test 18

Table 16 -- Filter specifications for shoulder test 19

Table 17 -- Sensor specifications for thorax with half arm test 19

Table 18 -- Filter specifications for thorax with half arm test 20

Table 19 -- Sensor specifications for thorax without arm test 21

Table 20 -- Filter specifications for thorax without half arm test 22

Table 21 -- Simulated armrest specifications 22

Table 22 -- Sensor specifications for abdomen test 23

Table 23 -- Filter specifications for abdomen test 23

Table 24 -- Sensor specifications for pelvis test 24

Table 25 -- Filter specifications for pelvis test 24

Table A.1 -- Specialized WorldSID support equipment 26

Table A.2 -- Other standard support equipment 27

Table C.1 -- WorldSID drawing list 29

Table C.2 -- WorldSID fasteners 39