Q3 SCAPULA’S AND HIP CUPS

GRSP IG Child Restraint Systems
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Introduction

• Reports on Q3 contact interaction between scapula’s and thorax
  o See presentation Daimler

• Reports on Q3 hip joint failures
Q3 Scapula Recommendation
See presentation Daimler

• Various OEMs and test houses report contact interactions between scapula and ribs in Q3 dummy
  o Different from chest chin contact
  o Occurs in full scale vehicle crash tests or equivalent conditions

• It is recommended to take off 11.5 mm from the lower end of the Q3 scapula
  o Existing scapula’s can be updated easily by grinding or even with sandpaper
Drawing updated Scapula
Drawing updated Scapula

NOTES:
1. 11.5 mm is cut off the bottom of the part as dimensioned.
   Radii can be added by hand dressing.
Q3 Hip Cup Issue

• Original Q dummies design used Ureol (brand name of Poly Urethane systems) plastic type
• This material was banned under REACH
• Alternative material identified and introduced in 2012
  o Thermoset material
  o Similar density and higher strength
  o Less failures on parts like thorax and clavicle reported but
• Issues with hip cups
  o Reports on femur ball releasing from cups (leg separates from dummy)
  o With old Ureol hip cups failures observed after 50+ tests
  o With replacement material failures more frequently observed
Q3 Hip Cup - Proposed Solution

• In the field aluminium hip cups from Q6 are being used on the Q3 dummy

• Identical fit but
  o Q3 drawing package specifies plastic material
  o Approximately 20 grams mass difference

• ADAC is currently running Q3 tests using the Aluminum hip cups
  o No issues reported after large number of tests
Recommendation

• Currently various changes in lower torso are being introduced to the Q3 dummy
  o Adding APTS sensors
  o Updating abdomen to install APTS
  o Adding hip liners
• Q3 Drawing package related to these changes to be updated by Mid 2016

• Humanetics proposes to include the aluminum hip cups in this update
• Humanetics also proposes to update the Q3 scapula’s