

Q3 SCAPULA'S AND HIP CUPS

GRSP IG Child Restraint Systems
April 19, 2016



Introduction

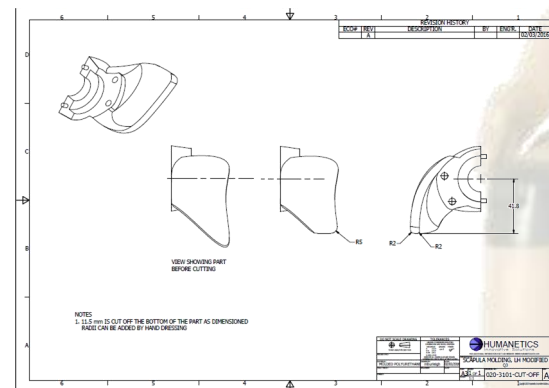
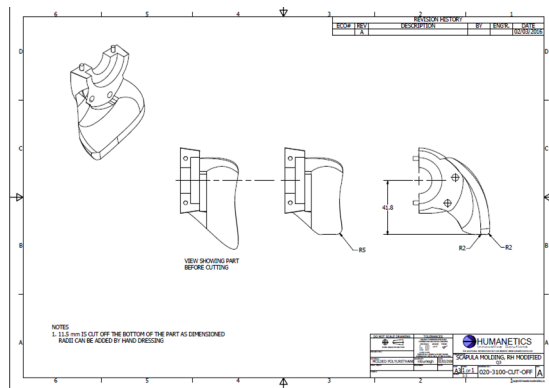
- Reports on Q3 contact interaction between scapula's and thorax
 - See presentation Daimler
- Reports on Q3 hip joint failures



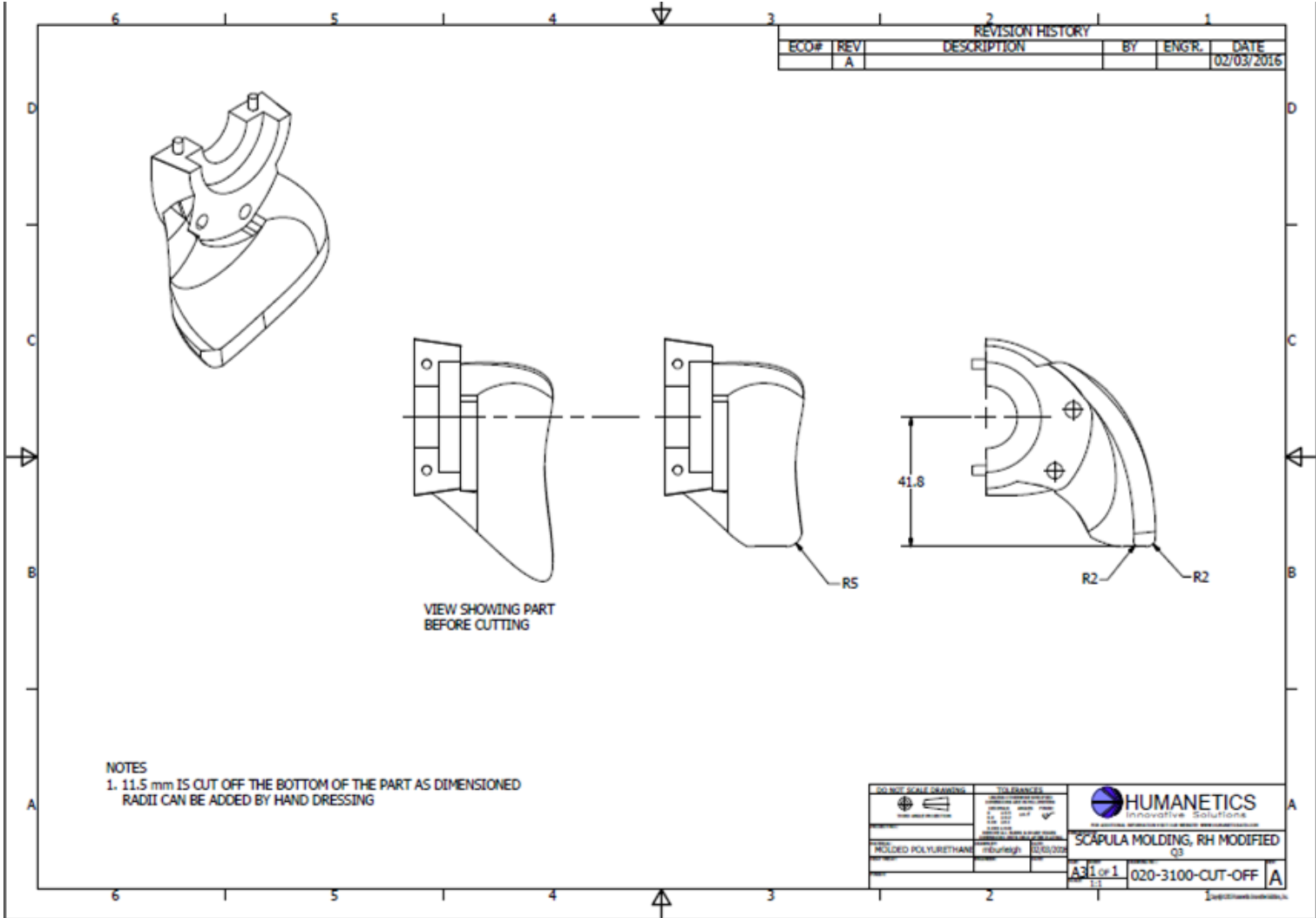
Q3 Scapula Recommendation

See presentation Daimler

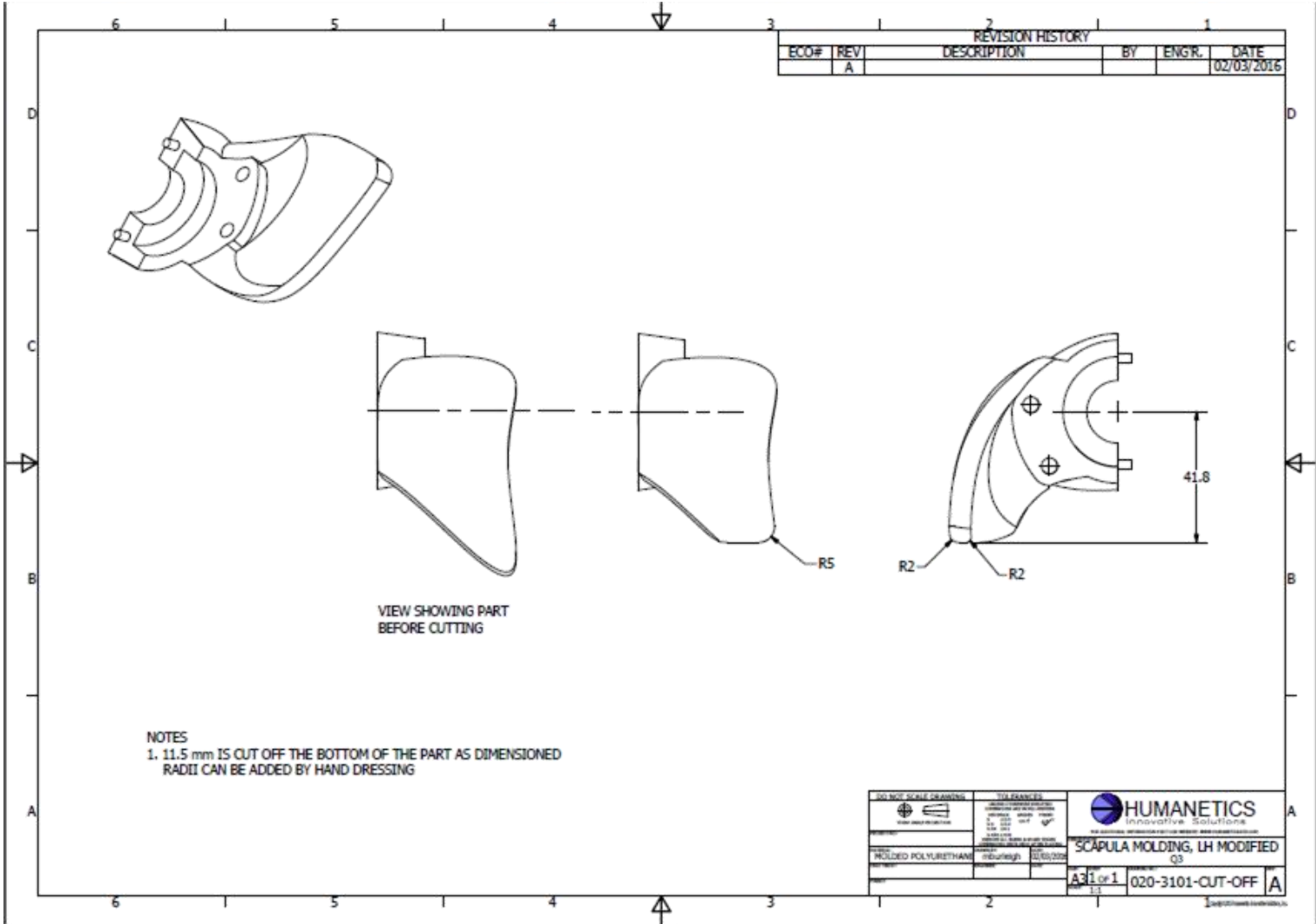
- Various OEMs and test houses report contact interactions between scapula and ribs in Q3 dummy
 - Different from chest chin contact
 - Occurs in full scale vehicle crash tests or equivalent conditions
- It is recommended to take off 11.5 mm from the lower end of the Q3 scapula
 - Existing scapula's can be updated easily by grinding or even with sandpaper



Drawing updated Scapula

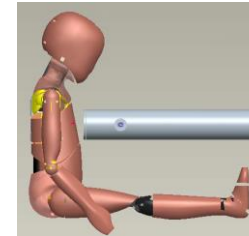
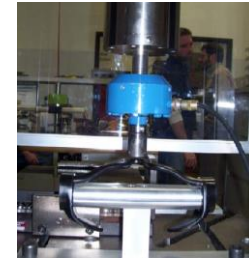


Drawing updated Scapula



Q3 Hip Cup Issue

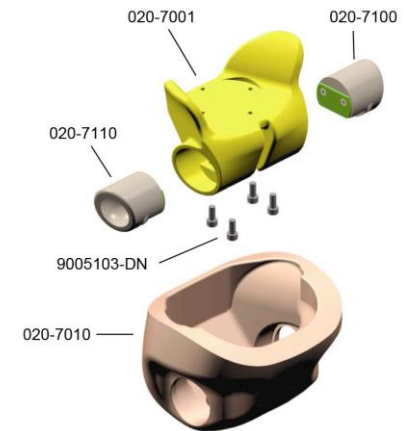
- Original Q dummies design used Ureol (brand name of Poly Urethane systems) plastic type
- This material was banned under REACH
- Alternative material identified and introduced in 2012
 - Thermoset material
 - Similar density and higher strength
 - Less failures on parts like thorax and clavicle reported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



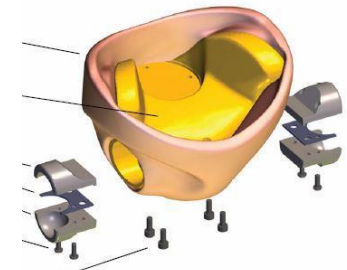
Q3 Hip Cup - Proposed Solution

- In the field aluminium hip cups from Q6 are being used on the Q3 dummy
- Identical fit but
 - Q3 drawing package specifies plastic material
 - Approximately 20 grams mass difference
- ADAC is currently running Q3 tests using the Aluminum hip cups
 - No issues reported after large number of tests

Q3
Plastic
hip cups



Q6
Aluminum
hip
cups



Recommendation

- Currently various changes in lower torso are being introduced to the Q3 dummy
 - Adding APTS sensors
 - Updating abdomen to install APTS
 - 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

