Q3 scapula to rib cage contact

- Daimler is using the Q3 dummy in full scale crash tests
- In tests with the Q3 dummy contact interactions between the scapula and the rib cage are observed
- This results in noise on the rib accelerations
- Issue was reported to German AK5 group in April 2015 and discussed with Humanetics over the past period
Q3 versus Q6 scapula

- As recommended by Daimler Humanetics compared the Q3 design against the Q6 design.
- The Q6 has 13 mm more clearance between scapula and rib cage.
- The Q3 seems to have a more natural shape of the scapula while in the Q6 it is reduced in size.
- No documentation was found on the reasoning for this but when checking with the design engineers this was related to risk for contact in the Q6.
Comparison for Affect on Seating

- Below on the left shows a CAD picture looking directly from the side with the current scapular behind. Spine, shoulder rubbers and cable cover hidden. On the right these parts are shown.
Recommendation

- It is recommended to take off 11.5 mm from the lower end of the Q3 scapula
- This will maintain the same seating position of the dummy while generating a clearance with the rib cage of 16.5 mm which is more in line with Q6
- Minor mass change of about 1 gram on each side
- Changes to be included in Q3 dummy drawing package to be updated by Mid 2016 related to items like APTS sensor and hip-liner