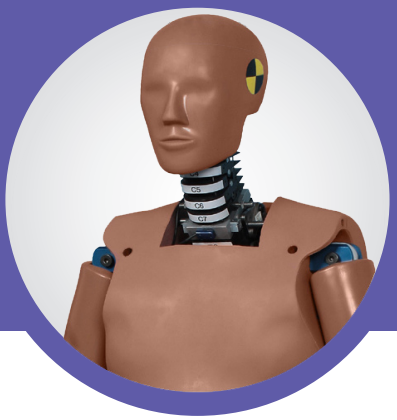
BIORID II TEST CORRIDORS

Service Bulletin



January 2020

A refinement to the BioRID II test corridors has been approved by the BioRID TEG with respect to GTR 7.

INTRODUCTION

BACKGROUND

Beginning in 2008, Humanetics in collaboration with the BioRID GBUM and then TEG began developing the TRA-100/101 certification sled and rail system (fig. 1) to replace the original TF-480-0300 track and TRA-001 test sled (fig. 2). The main purpose of the upgrade was to control the unrestricted upward (Z) motion of the sled as it was traveling down the track (X direction) during and after impact, by using a system of linear bearings and "V" rails that couple the sled to the track. The removal of the unwanted Z sled motion has eliminated that motion as a contributor to test variability.

DEVELOPMENT

TEST CORRIDORS

New test corridors were developed and adopted for use beginning Jan. 2011 by the BioRID TEG with respect to GTR 7 for head restraints. The corridors were derived from a population of tests conducted at labs around the world using a small group of new tracks with dummies on hand locally.

The new corridors have functioned with relatively consistent accuracy, with the exception of the first portion of POT A (fig. 3) rotation, which is a forward rotation of the head about the occipital condyle pin, seen in the test data between 20-90 milliseconds after the beginning of the certification test. The control box for passing the peak portion of the test lies at 25-70 milliseconds and had an initial range of 11.5 to 16.5 degrees of rotation.

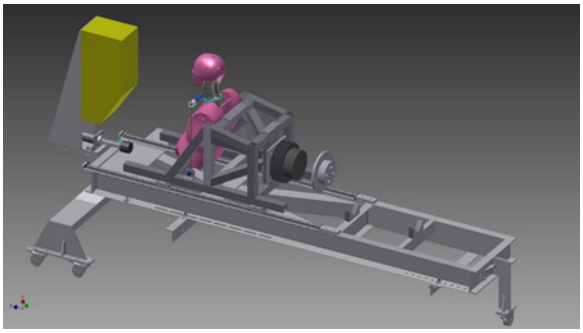


Figure 1- Current Test System

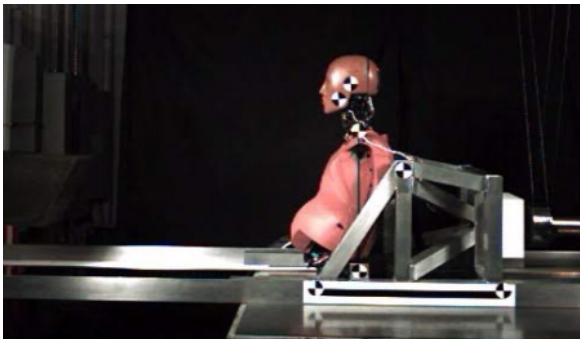


Figure 2- Obsolete Test System

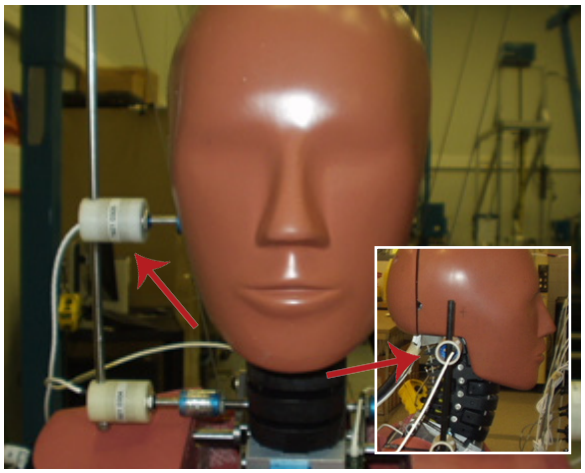


Figure 3

CURRENT STATE

POT A ROTATION

Anecdotal reports have concluded that this test parameter has been problematic to pass for years. A re-examination of the Pot A test corridor based on a much larger population of dummies was undertaken as a part of the GTR7 TEG re-evaluating all Biorid corridors to assess how well a large, current population of dummies fits to the corridors.

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BIORID II TEST CORRIDORS (CON'T)

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GOAL & ACTION

POT A FIRST PEAK ROTATION & PELVIS & JACKET COMPRESSIONS

The data in figure 4 shows a population of averages from 258 test sequences collected from 6 labs on both new and used dummies. Based on this data, the GTR7 TEG decided to shift the corridor mean to match the current population mean of 12.6 degrees with the same corridor width. The population of tests fits well to this new corridor of 10.1- 15.1 degrees.

Based on the GTR7 TEG recommendation, Humantics is revising the Biorid certification corridors accordingly.

In addition, the TEG recommended removing the compression pass/fail corridors from the pelvis and jacket impact tests due to difficulties in getting lab to lab consistency in the calculation, but to keep them as a "monitor" parameter so labs collect and report the data. Accordingly, we are removing the compression corridors from these tests but continuing to report the result.

MAINTENANCE

Before running tests to evaluate BioRID II performance, it is important to first follow all dummy maintenance actions per the recommended frequencies, including bumper replacement, as shown in Table 1 of the Certification Manual. The importance of all of these maintenance tasks at the proper intervals has been found to be a critical component of reducing BioRID II reproducibility variation.

Maintenance kits are offered by Humanetics to keep dummies operating properly.

- Kit # ARA-955 includes cervical bumpers and cable hardware needed for recertification.
- Kit # ARA-SPAREKIT includes all cervical, thoracic, and lumbar bumpers, pins, and other common replacement parts for recertification.
- Kit # ARA-TOOL-KIT includes the 3 tools (TRA-086, TRA-087, TRA-088) required for accurately placing the new bumpers into the vertebra, or they can be purchased separately.

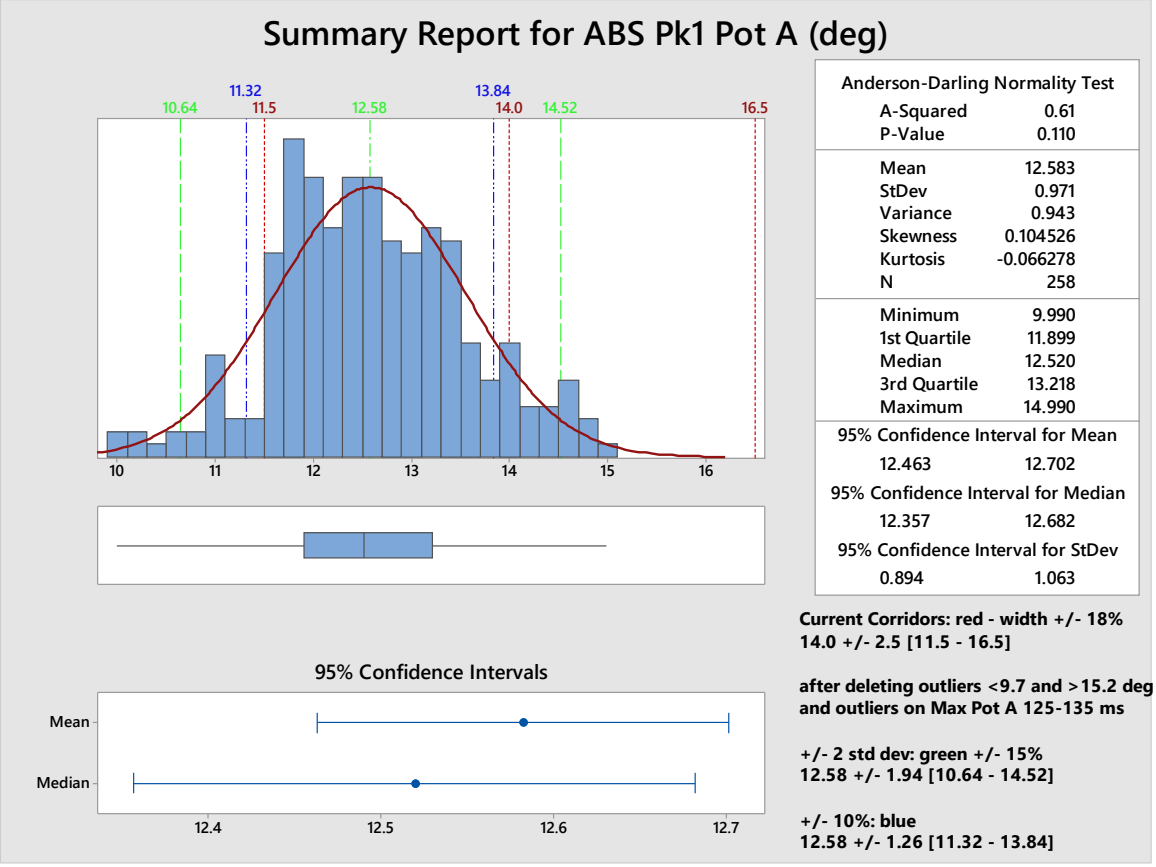

Figure 4

For questions please contact your account manager or customer service representative.