



AERON-B CHAIR WITH POSTUREFIT

FIRA Ergonomics Unit was asked to look at the new Aeron chair (Size B) with "PostureFit" in order to determine how the new chair would comply with the European Ergonomics chair standards (ie BS EN 1335 Part 1¹ and BS EN ISO 9241 Part 5²) and the 1992 Display Screen Equipment Health & Safety regulations.

As can be seen from the picture on the right the movable lumbar support is replaced with a new mechanism called "PostureFit" which is fixed in height in relation to the seat pad but it is adjustable to and fro in the median plane.



The PostureFit is not a replacement lumbar support, but it is an alternative method of providing support for the back whilst seated (forward, upright or relaxed leaning back postures) in the Aeron chair.

One of the key ergonomics criteria for good sitting, as stated in the ergonomics standard BS EN ISO 9241 Part 5, is that the lordosis (concavity of spine at lumbar) at the lower back should be maintained with minimal muscular activity. When we sit on a chair, pelvis rotates backwards and causes our spine to straighten, losing the lordosis (ie the spine is no longer in its natural S-shape). All ergonomists, physiotherapists and other related experts agree that to prevent back injury, the backwards rotation of the pelvis should be minimised. The traditional solution was to have a clearly defined lumbar support in the backrest of the chair. This lumbar support would provide pressure at lumbar region and push the spine forward to maintain the natural S-shape. The alternative method, which is the one employed in the PostureFit on the Aeron chair, is to provide pressure directly on the pelvis and prevent the pelvis rotating backwards. The height of the support for the pelvis is not very critical and does not need to be adjustable, provided that it is just below the lumbar region (below L4 and L5 vertebrae).

The PostureFit was briefly evaluated at FIRA, which included user trials whereby ten people tried the Aeron chair with the PostureFit for 3 days. At the end of this period their views were discussed in short interviews. The key finding was that everyone found the posture fit comfortable and supportive and that they would not need the lumbar support. Even though the evaluation was not very extensive, discussions with the users and my experience of using the PostureFit indicate that PostureFit is a very good alternative to the traditional lumbar support. It provided good support at the lower centre of the pelvis and ensured that people were not slouching in the Aeron chair and they were able to adopt comfortable postures. Therefore, it is considered that Aeron chair with PostureFit would comply with the requirements of BS EN ISO 9241 Part 5.

As discussed above, a chair would not need both lumbar and pelvic support, but without the lumbar support point measurement the chair would not comply with the dimensional standard BS EN 1335 Part 1. Aeron chair with PostureFit was examined to see if there was a noticeable lumbar point. It was found that a lumbar point, due to the shaping of the backrest still existed and the height of the lumbar point was found to be at 200mm which would satisfy the lumbar support height requirements of the BS EN 1335 Part 1.

In conclusion, I consider that PostureFit is a very good alternative to lumbar support. I also consider that the Aeron chair with PostureFit would comply with the requirements of the BS EN 1335 Part 1 and BS EN ISO 9241 Part 5 and consequently with the requirements of the 1992 Display Screen Equipment Regulations.

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¹ BS EN 1335; 2000, Office work chair, Part 1: Dimensions, determination of dimensions

² BS EN ISO 9241; 1999, Ergonomic requirements for office work with visual display terminals
Part 5: Workstation layout and postural requirements