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Office Chair Components

This Technical Bulletin attempts to explore some of the issues of **pre-qualification of components** for height adjustable swivel chairs as it may apply under a new office chair standard.

Background

The current Australian/New Zealand standard for height adjustable swivel chairs, AS/NZS 4438, was released in 1997 and to date has served the Australian commercial furniture industry well. However, it is due for review and it's very likely - under the standards harmonisation protocols followed by Standards Australia – to be replaced, at least in part, by an ISO standard that we have seen as a draft only.

Possibilities

AS/NZS 4438 is the only office chair standard worldwide which has a requirement for pre-qualification of components. One argument proffered against pre-qualification as a Standard requirement is the cost of component testing. This can be particularly onerous when a component is dedicated to one or a small range of chair models such that there may be limited opportunity to spread the cost over large sales volumes. There is also logic in the argument that if any chair under test meets the performance requirements defined by that Standard, the components used in the chair must be adequate.

On the other hand there are also strong arguments to maintain the requirement for component pre-qualification viz.,

- It provides chair makers, who operate by the purchase and assembly of components, with an assurance that the components being purchased are fit for purpose i.e. should not fail when assembled into a chair and submitted for test.
- Customer assurance of quality. A chair that has had both its components tested - and is itself tested as an assembly - has achieved a higher standard of proof of quality.
- Ongoing compliance. If components are independently tested and audited, manufacturers can be confident of the continuing compliance of their products. Further, we would have a greater level of confidence in endorsing products; with less need for conducting regular full-chair-assembly repeat testing.

A '3rd way' currently operates under the application of British Standard 5459.2:2000 (the 150 kg 24/7 chair standard). BS 5459.2:2000 makes provision for what is referred to as 'type approval' testing of chair components. While this standard does not require pre-qualification of chair components for compliance of chairs, it does add value to pre-qualification or 'type approval' by significantly reducing the testing required for chairs assembled from pre-qualified components. This has not been available under AS/NZS 4438 but is a concept we believe has merit.

The savings in chair testing allowed under BS 5459.2:2000 are significant. However, this saving is only available if the chair incorporates a "base, column, seat action, back stem and locking device", all of which have 'type approval'. Chairs presented for testing which do not have all the listed components type approved, must either be fully retested, or those tests defined for type approval of any unapproved components, must be carried out. Our view is that this seems a reasonable compromise between what we feel is the justified need to test both components and assemblies (i.e. chairs) and the issue of the expense involved in doing so. As a consequence Furntech-AFRDI will strongly be recommending both the retention of component standards, and that consideration be given to concessions on assembled chair testing (on the basis of pre-qualified components) in any review of the Australian office chair standard. We will advocate for a position in which chairs with proven components will be subject to a less extensive testing regime, although chairs without pre-qualified parts would still require full testing. However, the details of any concessions in chair testing based on pre-qualification of components remain to be defined.

Components

Continuing with components, but at a more detailed level, we feel there is an argument for the inclusion of component types not covered by the existing suite of component standards (AFRDI 109), viz. seat pans, backrest frames and component jointing systems. In some cases pre-qualification may have to be conditional or limited to particular combinations of components, such as detachable arms that might only be competent if fitted to particular seat pans, or seat pans with particular seat mechanisms etc.

On the other hand there is an argument that the strength and durability testing of gas springs, defined in AFRDI 109, not be included in a component pre-qualification standard, except by reference to another standard such as DIN 4550. The testing defined in AFRDI 109.6 is actually equivalent to the German DIN Standard 4550, and the testing is normally organised by the manufacturer and carried out by one or two laboratories in Germany, and the results are recognised world wide. A DIN 4550 Type 4 classified gas strut is probably adequate for the heaviest super chair application likely – provided it is designed appropriately, i.e. has the axis of rotation located reasonably close to the centroid of the seat. Any test for the swivel action of a chair is probably more appropriately a test of the swivel bearing of the gas strut, and if this test was moved into a pre-qualification test for gas struts a successful result would be the basis for a concession on the swivel test of chairs fitted with a strut so pre-qualified.

Test Levels

Another question, which arises in the context of pre-qualification of components, is in relation to 'test levels'. Because of the uncertainty regarding the ultimate use of any component so tested, AFRDI 109 does not define any test levels. AFRDI 109 is effectively scaled at a level, which, in most cases, can be regarded as about 'level six and a half'. Level 6 is the highest level defined in AS/NZS 4438, so pre-qualified components should be sufficiently strong and durable to perform adequately on a chair when tested at Level 6. This has proved to be both convenient and fairly cost effective, as components need to be tested only once. However, under the ISO draft standard for office chairs as it currently stands there is a 'dial up table' whereby testing loads and cycles can be determined based on the anticipated end use of the chair i.e. from 110 kg 8 hr per day 5 days a week to whatever upper limit is desired. There will be a need for component test levels/categories to be defined - each equating to particular values of safe working loads for the final chair assembly eg components for …110 kg 8/5 or 150 kg 24/7 etc types of chair. This should not be too difficult as long as there are not too many categories. The potential concern is that component suppliers will test to higher and higher levels as the market for chairs chases itself to higher levels on the basis of 'mine is better than yours because it has been tested to a higher level'. While this has happened in the past, the trend should be resisted as much as possible - super chairs are not required by the majority of the user population or applications.

Summary

Our position is that both chair assemblies and chair components require testing. We will also be recommending that it is appropriate that testing concessions be made for chairs assembled from pre-qualified components, although the extent of any such concessions are still to be defined. On top of that we feel the need for the suite of component tests to be rationalised and perhaps categorised into levels in line with the chair assemblies for which they will be specified.

None of the issues have been finalised and some people may see them as contentious – please feel free to communicate to us your views on any of the issues we have raised.

PDF Certificates on the Web

Furntech has recently adopted a practice of placing PDF format copies of our Blue and Orange Tick Certificates of Compliance for all certified products on our Web site (www.furntech.org.au). These may be viewed and downloaded by any interested party, but the original form of the certificates cannot be modified. We feel that this is a secure and convenient way to make the certificates available to anyone who might require copies at any time. This will only occur as new certificates are issued or existing certificates are renewed. We do not intend any catch up of older existing certificates.

If, for any reason owners of products for which Blue or Orange Tick Certificates will be issued, do not wish their certificates to be available from our website in this way, should mark the box on our Request for Test form indicating non PDF Listing of Certificates when submitting products for testing or assessment.

New Standards

The following new or revised standards have recently been released:

AS/NZS 2172: 2003	Cots for household use – Safety requirements
AS/NZS 4220: 2003	Bunk Beds
AS/NZS 4266.10: 2003	Reconstituted wood based panels – Methods for test – wet bending strength
AS/NZS 4266.12: 2003	Reconstituted wood based panels – Methods for test – surface water absorption
AS 5079.1: 2003	Filing cabinets – lateral
AS 5079.2: 2003	Filing cabinets – vertical
AS 5079.3: 2003	Filing cabinets – mobile pedestals

Copies of these standards may be purchased from the Institute.

What is AFRDI Blue Tick?

Blue Tick is an undertaking where manufacturers or suppliers of furniture or components submit their products for testing and quality certification to recognised Standards. Companies whose products meet these requirements are listed on the Furntech-AFRDI website (www.furntech.org.au) that is used by many specifiers, manufacturers, buyers and sellers of furniture. Further details on Blue Tick may be found on our website or by contacting the Institute.

AFRDI

Blue Tick Product Certification

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