

Information Kit on Testing Office Swivel Chairs

1. Test Levels

Most furniture standards in Australia and overseas are performance standards - they take an "accelerated lifetime" approach. Naturally, the lifetime will depend on the application in which a product is used - some situations will be far harder on furniture than others. This is often addressed in Standards by designing test levels which reflect the relative severity of various uses.

The Australian/New Zealand Standard for height adjustable swivel chairs (known as AS/NZS 4438) has four test levels listed below.

Level 3	Domestic	Chairs for domestic use.
Level 4	General Commercial	Chairs for office, general keyboard and executive use.
Level 5	Heavy Commercial	Chairs for heavy duty office, industrial and similar applications.
Level 6	Severe Commercial	Chairs for extremely severe conditions of use such as police stations, military installations, control rooms and heavy industrial.

Three of these - levels 4, 5 and 6 - are considered suitable for commercial application. Blue Tick certification is available at these levels only.

Please note that it is not possible to test chairs to a range of levels or to test to find out what level each chair may be. You will need to nominate the test level required in the light of the chair's construction and intended use.

A chair standard suitable for particularly heavy people for 24/7 use is also available. This is a very severe test. A testing price is available on request.

2. What's involved?

A typical test process includes:

- initial inspection

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- examination of labelling and components check
- measurement
- static load tests
- fatigue tests
- impact tests
- swivel test
- stability tests
- final inspection.

2.1. Initial Inspection

The chair is inspected for functionality, adjustability and safety.

2.2. Labelling and Components Check

The marking and instructions of a chair need to meet the requirements of the Standard. **See Section 10 Notes on Instructions and Marking.**

The Standard also requires that the major components of the chair (castors, gas springs, mechanisms, bases, fabrics and filling materials) have themselves been tested to relevant standards. **See Section 3.1 Components.**

2.3. Measurements

The Standard sets out a complicated series of measurements each chair must comply with. These include ranges and adjustability required for ergonomic reasons, as well as dimensions that relate to stability.

2.4. Static Load Tests

The principle here is that relatively high forces are applied to a chair to test its strength in relation to loads of a magnitude that are considered likely to be only infrequently applied. The amount of force varies between test levels. It also varies according to the part of the chair being tested e.g. the seat, back or arms.

2.5. Fatigue Tests

The concept of fatigue testing involves the repeated application of loads selected to simulate a 'lifetime' of use. Forces are applied to the seat and back 50,000, 100,000 or 200,000 times for chairs tested at levels 3, 4 and 5 respectively. Level 6 chairs are also subject to 200,000 fatigue cycles - but at higher loads.

2.6. Impact Tests

An assessment of the durability of a chair is gained by subjecting it to applications of the following impact events:

- seat impact
- back impact
- arm impact
- the drop test (the whole chair is dropped onto one leg).

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2.7. Swivel Test

The chair is weighted down and swiveled back and forth 100,000 times.

2.8. Stability Tests

The "rearwards overturning" test assesses the tendency of a chair to tip over backwards when subject to specified vertical and horizontal forces.

The "rearwards overturning of tilting or reclining chairs" test assesses the tendency of a chair to tip over backwards when reclined and subject to a load of 110 kg in the form of disks which conform to the contour of the backrest of the chair.

The "accidental rearwards overturning" test assesses the propensity of a chair to fall over backwards.

The "rolling stability" test assesses the chair to ensure that it will not move too freely across the floor.

2.9. Final Inspection

At the conclusion of the test program, the chair is again inspected to see if the testing has caused breakages or deformity and to check that the chair is still functional and safe.