CHAIN SLINGS STANDARDS UPDATE

A guide to understanding the key changes and updates to the Australian Standards for Chain Slings
In December 2014 Standards Australia released new standards for chain slings:

**AS3775.1.2014**
Chain Slings for Lifting Purposes - Grade T (80) and Grade V (100). Part 1: Product Specification

**AS3775.2.2014**
Chain Slings for Lifting Purposes - Grade T (80) and Grade V (100). Part 2: Care and Use

**AS2321.2014**
Short-link chain for lifting purposes

**AS3776.2015 (currently in draft)**
Lifting components for Grade T (80) and Grade V (100)

---

This guide has been designed to highlight and summarise the 12 key points of the new standards for those using chain slings in the lifting and rigging industry.

NOTE: This brochure has been produced as a ‘guide’ only to the key points within the new Standard AS3775.1:2014 & AS3775.2.2014 and does not replace that document. It is imperative that you refer to the complete Standard for detailed information.
This guide has been designed to highlight and summarise the 12 key points of the new standards for those using chain slings in the lifting and rigging industry.

**KEY POINTS**

1. ‘Competent Person’ definitions clearly defined and the difference between a user and an inspector has been determined

2. Periodic Inspection Guide now included

3. Grade V (100) working load limits now included (up to 32mm)

4. Proof Testing - each sling shall be proof tested after manufacturing, when load bearing components are replaced and when tags are missing

5. Guidelines for the use of In-Line Shortening Assemblies have been included

6. Maximum Leg Length tolerances in chain slings have now been included.

7. Requirements and recommendations on the use of safety, with and without latches have been included

8. Self Locking Hook Inspections - Maximum clearances between hook and latch and also the maximum tolerances of the plane of the hook have been determined

9. New Deration Guide for corner loading

10. Reieving Angle - maximum angle is now 60 degrees

11. Ramshorn Hooks - 2 x 2 leg chain sling assemblies to be rated as 1 x 4 leg sling (ramshorn hooks cannot be deemed as an equalising hook)

12. Engineered Lifts - detailed guidance for design and application included
WHAT IS A COMPETENT PERSON?

3.3 The new Standards define a competent person as:

"A person who has, through a combination of training, education and experience, acquired knowledge and skills enabling that person to correctly perform a specific task."

COMPETENT PERSON REQUIREMENTS

4.1 The new Standards state the following:

"Competent persons, shall be suitably trained, qualified by knowledge and practical experience, and with the necessary instruction to correctly assemble and test Grade T(80) and V(100) chain slings. They shall be able to detect and evaluate defects and weaknesses that may affect the intended performance of the equipment and carry out work as specified in this Standard."

The standards clearly define that a person using or inspecting chain slings shall:

1. Follow the procedures included in the Standards
2. Complete an established competency-based training course
3. Maintain documentation of competency standards and procedures
COMPETENCY GUIDELINES FOR USERS

4.2 Use of chain slings:

A competent person shall be able to demonstrate the ability to choose the correct lifting chain sling(s) and inspect them based on the following:

a. Assess the mass of the load to be lifted as accurately as possible

b. Ensure the load, inclusive of any lifting points and any applicable derations, will withstand the lifting operation

c. Check that the lifting machine or lifting appliance is rated to lift the load

d. Select a suitable sling, taking into account the following:
   (i) the condition of the sling as per Clause 9.1
   (ii) the geometry of the sling, including the number of sling legs, the angles of each leg to the vertical and the disposition of the legs in plan view
   (iii) that each joining device has no more than one load bearing component in use at any time
   (iv) the manner in which the load is attached (i.e. straight, reeved or basked configuration). This includes the angle in the reeving and the de-reating effect due to the higher stressed caused by reeving on the links of the chain.
   (v) The shape of the load, the centre of gravity and load distribution on the sling legs. Uneven loading may cause a reduction of the lifting capacity of the sling. It may also cause instability and tilting of the load
   (vi) The determination of WLL.
   (vii) Protection of the chain sling from sharp corners of the load using packing material as appropriate to prevent bending or damage to the chain links and/or load shall be used wherever practical.
   (viii) that the site where the load is to be landed, is prepared in advance of the lifting operation.
   (ix) taking into account environment conditions such as temperature and corrosive atmospheres etc.

e. Ability to identify the hazards associated with the task and apply controls that will mitigate the risk.
COMPETENCY GUIDELINES FOR INSPECTORS

4.3 Inspection of chain slings:

A competent person shall be suitably trained, qualified by knowledge and practical experience to be competent to interpret and implement the requirements of Clause 9 covering the following:
(a) periodic inspections
(b) defects requiring withdrawal from service
(c) discard criteria

For repairs, the person shall be competent to interpret and implement the requirements of Clause 10.

4.4 Competency standards and procedures:

Competency standards and procedure relating to the respective role and duties of competent persons shall include the requirements of this standard. They shall incorporate an established competency-based training course. Documentation of competency standards and procedures shall be maintained.

NOTE: Dogging and Rigging tickets are not enough to deem you competent to inspect and recertify equipment.
Lifting Equipment Engineers Association (LEEA)

Ranger were the first lifting house in Australia to be awarded full membership of LEEA, a global trade association for the lifting equipment industry with over 900 member companies in 46 countries. LEEA provides world recognised, independently assessed qualifications written to Australian regulations and standards.

COMPETENT TECHNICIANS

Our Testing + Inspections are deemed competent in accordance with the standards.

LEEA TRAINED + ACCREDITED

Our Testing + Inspections team have strong industry reputations as professionals who get the job done. But they're also highly trained, competent technicians who have passed the LEEA Diploma courses and examinations.

NATA ACCREDITED

We are NATA accredited to Inspection ISO/IEC 17020:2012 which assures you that our teams are qualified, sufficiently trained and experienced. It also means that our equipment is properly calibrated and maintained and we have adequate testing and quality assurance procedures.

PROOF OF COMPETENCY

All Ranger Inspectors have been issued with a LEEA TEAM (Test, Examine, Assess, Manage) card that demonstrates proof of competency. Make sure you ask to see your Inspectors TEAM card.

RECORD MAINTENANCE

Training and Competency records are maintained for all Ranger Inspectors.
PERIODIC INSPECTIONS

The standards now include a guide on how often periodic inspections should take place on Grade T (80) and Grade V (100) chain slings.

The end user now has a responsibility to periodically inspect chain slings based on the duty cycle.

1 LIFT CYCLE = A CHAIN SLING IN USE
THAT IS LIFTING AND THEN LOWERING A LOAD ONCE

<table>
<thead>
<tr>
<th>NUMBER OF LIFT CYCLES (per week)</th>
<th>INSPECTION MONTHLY</th>
<th>3 MONTHLY INSPECTIONS</th>
<th>6 MONTHLY INSPECTIONS</th>
<th>12 MONTHLY INSPECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>6 to 25</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>26 to 200</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>201 plus</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Please be reminded that according to Work Health and Safety regulations, while at work, workers must take reasonable care for their own health and safety and that of others who may be affected by their actions or omissions. Don't risk your safety and the safety of others - the consequences may be severe.
PERIODIC INSPECTIONS

Ranger offer a range of inspection services and online tools to help you meet the requirements for periodic inspections:

- **MOBILE INSPECTIONS**
  Onsite inspections for all your lifting equipment.

- **EASY ACCESS REPORTS**
  Access reports from any device including condemned and missing items.

- **HELPFUL NOTIFICATIONS**
  We notify you when your inspections are due and schedule a time that suits you best.

- **COMPETENT INSPECTORS**
  1, 2, 3 or 12 monthly inspections conducted by our LEEA trained inspectors.

- **RFID**
  Radio Frequency Identification of assets for faster and more efficient inspections.

- **WORKSHOP**
  NATA certified workshops conveniently located for quick repairs + collections.
E-TESTINSPECT

E-Testinspect is total peace of mind for the management, operational efficiency and traceability of all your height safety and lifting equipment.

Commissioned by Ranger, and specifically designed for the Australian market, eTestinspect works to Australian standards and encompasses LEEA (Lifting Equipment Engineers Association) methodology for best practice.

- Web-based Data Management System
- Complete Asset Register for easy record keeping and full traceability of equipment, including ability to store photos of specialty or condemned items
- Simple to use, sort and export data with helpful inspection reminders.
- Reports can also show what items are missing and not cited
- Best in field and constantly upgraded with new features
- All certificates i.e. new into service, visual and proof load are all on-line for full traceability
- Search filters make assets easy to find and reports easy to produce
- In most cases, registers are updated on-line with in two hours of inspection being finished
- Customer has ability to change location when moving assets from site to site.

**PLAN**
- NOTIFICATION of assets requiring inspection
- SCHEDULE inspection times to suit you

**INSPECT**
- ONSITE or OFFSITE inspections
- RFID SCANNING for faster inspections

**REPORT**
- WEB ACCESS from multiple devices
- REGISTERS live register of all assets
- REPORTS incl. missing, condemned, repaired

**MANAGE**
- ASSETS full asset management
- TRACEABILITY track asset movement
- LOCATIONS manage all asset locations
ADVANTAGES OF USING GRADE V (100) OVER GRADE T (80)

- Superior resistance to wear
- 30% weight saving over Grade 80
- All Grade 100 chain and fittings meet and exceed Australian Standards
- Pre-made for convenience & complete with shorteners
- 25% higher load capacity over Grade 80
- All fittings and chain clearly tagged for easy identification
- All chain slings supplied by Ranger are NATA proof tested and tagged
The new Australian Standard AS3776.2:2014 clearly states that each Grade T (80) & Grade V (100) chain sling shall be proof tested and examined by a competent person.

1. It is now a requirement that all chain sling assemblies be proof loaded after assembly regardless of individual components being tested at manufacture.

2. They must also be proof tested and examined when load bearing components have been replaced and;

3. When it is missing its tag or not attached to the chain sling

REPAIR BEFORE REPLACE POLICY

When your gear doesn’t pass inspection, we will advise you whether it is cheaper to replace or repair. Where ever possible, and safe, our inspectors will repair your equipment and issue you with a Certificate of Repair - we’re the only lifting company in Australia to issue these certificates.
INLINE SHORTENING SLING ASSEMBLIES & LEG LENGTH TOLERANCES

Inline Shortening Assemblies can now be used under the following conditions:

1. As long as the assembly is tested and tagged
2. Up to 16mm - locking shorteners are to be used as an integral part of assembly - see figures a, b, c
3. Over 16mm - A Risk Assessment is required and additional measures taken to ensure the device does not become detached
4. Slings without locking mechanisms - must be accompanied by a warning

The new Standards state that the difference between shorter and longer legs should be no more than:

1. 10mm for lengths up to 2 metres
2. 5mm extra for every metre over 2 metres

NOTE:
1. The actual length of each sling should not be less than that ordered and should not exceed that ordered by more than two link pitches (refer AS 2321)
2. Each leg of a multi leg sling should consist of the same number of links as each of the other legs. Specific applications may require legs to contain a different number of links.
SAFETY HOOKS

In the design and manufacture of lifting hooks:

1. SLINGS HOOKS WITH LATCH (CATCH) - Each hook with a latch shall comply with AS 3776 or other established standard for a lifting device or lifting tackle

2. HOOKS WITHOUT LATCH (CATCH) - Hooks without a latch are generally used for specific application, i.e., non-general use. Where there is a risk of the hook becoming detached during use, a risk assessment shall be conducted. The chain sling shall be tagged to identify the specific application.

NOTE: A risk assessment shall be conducted and the chain sling shall be tagged to identify the specific 'non general use' application. The guidance on implementing a risk assessment is given AS/NZs ISO 31000.

SELF LOCKING HOOKS INSPECTION

1. the meeting of the catch to the body of the hook should be no more than shown within indicated table

2. the plan of the hook and safety latch should be within tolerances in indicated table

### MAX CLEARANCE BETWEEN HOOK AND LATCH FOR INSERVICE

<table>
<thead>
<tr>
<th>Size</th>
<th>Max. A (mm)</th>
<th>Max. B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>24</td>
<td>3.5</td>
</tr>
<tr>
<td>7/8</td>
<td>32</td>
<td>4.5</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td>5.2</td>
<td>7</td>
</tr>
<tr>
<td>16</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>18</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>19</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>20</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>22</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>26</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>32</td>
<td>10</td>
<td>19</td>
</tr>
</tbody>
</table>
CORNER LOADING DERATION GUIDE AND REEVING ANGLES

CORNER LOADING DERATION GUIDE

The following deration applies for using chain slings when lifting objects with sharp corners of metal or hard material.

<table>
<thead>
<tr>
<th>Edge load*</th>
<th>R = larger than 2 x d</th>
<th>R = larger than d</th>
<th>R = smaller than d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Factor</td>
<td>1</td>
<td>0.7</td>
<td>0.5</td>
</tr>
</tbody>
</table>

For example: Packing such as wooden blocks may be required where a chain comes into contact with a load, to protect the chain and the load from damage. Sharp corners of metal or other hard material can bend or damage chain links. The chain can damage the load by high contact pressure.
REEVING ANGLES

REEVING ANGLE

The maximum reeving angle for lifting shall be 60 degrees. 90 and 120 angles are no longer allowed when reeving a load and therefore not applicable on tags.

Never reposition chain slings by hammering, either to balance the load or, in the case of a reeved sling, to tighten the bight. When using a reeved sling, the bight should be allowed to assume its own position.
When two individual 2 leg assemblies are used on a ramshook:

1. It shall be classed as a 1 x 4 leg sling, and;
2. The WLL shall be rated as 1 x 4 leg sling.

The new Standard includes detailed guidance for the design of engineered lifts.

It also provides details on the use of equalisation beams/plates or ramshorn hooks.

(Appendix A 3775.2.2014)
'Service through knowledge'

We believe in delivering service through knowledge. That means we're always developing our knowledge and expertise in lifting, rigging and safety and sharing it with our clients.

We invest more time and money than any of our competitors to provide our clients with practical resources to help them improve their businesses, save time and money and most importantly, keep them safe at work.