

Changes to LVVTA Non-destructive Test Request Form – F008

Introduction:

Since the release of the Form F008 LVVTA Non-destructive test (NDT) request form in April 2010, there have been several vehicle modifiers, NDT Inspectors and LVV Certifiers who have found it difficult to understand and apply correctly.

Expert assistance sought

To address this problem, LVVTA Technical Officer Justin Hansen sought the assistance of Rob Penney, the Technical Manager of Southern QA in Christchurch, to help simplify the LVVTA NDT Request Form for both LVV Certifiers and NDT Inspectors. This also provided an ideal opportunity to review the current LVVTA non-destructive testing requirements and to ensure that they are still practical and achievable for all users of the LVV system.

Southern QA is the largest New Zealand owned NDT company, and Rob Penney has been a certified NDT Inspector for over 30 years, has written many NDT related technical documents, and is qualified to level 3 in most areas of non-destructive testing; level 3 being the highest possible qualification. Based on the outcome of this review, the F008 NDT Request Form has been amended to make it simpler for LVV Certifiers and NDT Inspectors to understand, which should result in better consistency between NDT Inspectors, and will help to reduce the instances of LVV Certifiers accepting an NDT report that does not meet the specified LVVTA requirements.

Key points for non-destructive testing:

To follow are three key points that all LVV Certifiers and vehicle modifiers must understand when dealing with any non-destructive testing for critical function welds. Once these points are understood, the NDT process becomes much simpler to understand.

1. The NDT Inspector must be certified to level 2 for the type of NDT that is being undertaken.
2. LVVTA's NDT requirement is different for welded and non-welded parts
3. The requirement for non-welded parts is that they are free of cracks and that there is no evidence of stress (eg tearing or distortion) or fatigue
4. The requirement for welded parts is that they comply with the finished weld quality requirements of AS/NZS 1554.1 or equivalent standard, which will include profile and surface condition, and that they are free from cracks.

Changes:

A summary of the issues that have been encountered are detailed below, along with the changes that have been made to address them. The actual changes to the NZ Car Construction Manual non-destructive testing requirements are minimal, and this review has shown that the requirements are still practical and achievable.

The minor changes to the critical function welding requirements contained in 19, section 18.9 of the NZ Car Construction Manual will be made at the next amendment opportunity, and are as follows:

- Remove the year from AS/NZS 1554:1 and require that the most recent version of that standard be applied.
- Remove the option for 'Table 6.1' to be used
- Add the requirement for a photograph of the tested components to be included on the NDT report.

The 'Issue' column of the table below refers to the previous version of the Form # F008 LVVTA Non-destructive test request form. The 'Solution' column explains what changes were made to the revised version to resolve the issue, and provides additional clarifications and explanations.

Issue	Solution
<p>Uncertainty by vehicle modifiers, LVV certifiers and NDT Inspectors relating to NDT Inspector qualifications, with some NDT Inspectors signing the F008 form despite not holding the necessary NDT certifications.</p>	<p>LVVTA requires that the NDT Inspector be currently qualified to NDT Level 2 by CBIP, ASNT, AINDT, or other entirely equivalent certification. Clarification was provided as follows:</p> <ul style="list-style-type: none"> • The word qualification is incorrect and should be referred to as a 'certification'. In NDT, a qualification doesn't expire, but a certification does – NDT Inspectors must keep their certifications current, as these do expire. • Changed the wording in section 1. From 'qualified to' to 'certified to', removed the words 'as a minimum'. <ul style="list-style-type: none"> ○ Clarification: Level 1 is the lowest certification; level 3 is the highest certification. • Added 'Inspector certification' field at bottom of the form, to be completed by the NDT Inspector.
<p>Vehicle modifiers, NDT Inspectors and LVV Certifiers were confused by the 'or' option at the end of section 2(a), some users of the form were striking out complete sections of the text, leaving just the 'crack test' portion, meaning that no weld assessment had taken place. This meant that if an LVV Certifier decided to request option (a), significant weld defects (for example undercut, lack of penetration etc) could go undetected. This 'or' option also conflicted with the critical function welding requirements contained in the NZ Car Construction Manual, section 18.9, which <i>only</i> allows for, as a minimum, tables 6.2.1 or 6.2.2 of AS/NZS1554.1:2004, or an entirely equivalent standard.</p>	<ul style="list-style-type: none"> • Removed the 'or' option from 2(a). • Removed the option for an LVV Certifier to select option 2(a) for a weld inspection. • Re-titled section 2(a) to provide a section for 'Non-welded parts', such as for spindles, steering arms with bends incorporated within their design, or other components that may require testing, and provided a tick-box for the LVV Certifier to select. • Re-titled section 2(b) to provide a section for 'Welded parts' and provided a tick-box for the LVV Certifier to select.
<p>In section 2(b), two options were available for the tables contained within AS/NZS 1554:1.</p>	<ul style="list-style-type: none"> • Removed the option for 'Table 6.2.1' – this table was not required because it applies to testing for internal defects by radiographic or ultrasonic methods
<p>In section 2(b), the AS/NZS standard specified AS/NZS 1554:1:2004. This is an older version of that standard (2004) that has since been superseded.</p>	<ul style="list-style-type: none"> • Removed the version number, and changed the wording to specify 'the current version'.

In section 2(b), two options were present for the inspection category - 'GP' or 'SP'.	<ul style="list-style-type: none"> Removed 'GP' option. GP is a lower level of inspection, and can allow, for example, a crater crack, or other defects. SP must now always be used for critical function welds.
NDT Inspectors had claimed that they couldn't certify the welds to AS/NZS 1554.1 because to do so would require verification that welding had been completed in accordance with design drawings and approved welding procedures by a certified welder.	<ul style="list-style-type: none"> LVVTA does not require the weld to be "certified" to this extent – LVVTA requires a report that verifies that the completed weld contains no imperfections exceeding the limits specified in table 6.2.2 of AS/NZS 1554.1.
An LVV Certifier cannot be sure that the components which are fitted to the vehicle are the same components that have been tested.	<ul style="list-style-type: none"> Added the requirement for the NDT Inspector to include a photograph of the tested components in their report, to allow identification of the tested component.
In section 2(b), there was no additional information to help clarify a situation where AS/NZS 1554:1 was not applicable to the method of weld examination being undertaken.	<ul style="list-style-type: none"> Added clarification for situation where a part is made from other than steel (aluminium, stainless steel).
Removed unnecessary sections to simplify form.	<ul style="list-style-type: none"> Removed the following; 'NDT method', and 'Acceptance criteria'. These are covered by the signed statement by the inspector. Removed the 'NDT Inspector stamp to be affixed here' box. This is not required, as this will be provided on the NDT report.
Added the ability for an LVV Certifier of LVVTA to request a peer review of any NDT report.	<ul style="list-style-type: none"> This allows a dubious NDT report to be verified.
General wording and layout changes to make the form simpler to use:	<ul style="list-style-type: none"> Each heading provides clear instructions on who is required to complete that section Changed 'NDT Request #' to 'Customer Reference #', and swapped it's position with the 'date' section. Changed 'Name of specified NDT Inspector (if applicable)' to 'Name of NDT company (if known)'. Changed 'Client name' to 'Customer name'. Changed the wording of the statement to be signed and stamped by the NDT Inspector from 'I have read and understood this F008 LVVTA Non-destructive Test Request Form' to 'This is to certify that the NDT inspection has been performed as requested as above, and reported as follows (attach report, including photograph of item/s tested)'. Changed 'NDT Inspector name' to 'Inspector' and switched the position of these two headings. Some shifting of the sections also took place to provide a simpler layout with more space for information.

Finally:

For any assistance in the use of this Information Sheet please contact an LVVTA technical team member at the LVVTA office on (04) 238-4343.