

### Custom Suspension Arm Inspection & Approval

#### Introduction:

This Information Sheet is intended to explain to LVV Certifiers how the approval process for aftermarket suspension arms has been relaxed, and provides inspection guidance when LVV Certifiers are presented with custom suspension arms for LVV certification.

#### Background:

The popularity of adjustable, lightweight, and aesthetically-pleasing aftermarket suspension arms has increased in recent times, with a large range now available for Australian, Japanese, European, and American vehicles.

The NZ Car Construction Manual (NZCCM) requires that custom suspension arms are individually approved in writing by the Technical Advisory Committee (TAC), before they can be certified by an LVV Certifier.

However, due to the rapid increase in popularity and availability of custom suspension arms, especially from Asian countries, LVVTA has found that the mandated approval process is impractical, and it is unreasonable to expect vehicle owners to wait in some cases up to two months in order to gain approval for commercially-manufactured arms, particularly when the LVV Certifier is usually able to determine whether or not the suspension arm is suitable.

This situation has necessitated a re-think of the required approval process, resulting in some relaxations to enable LVV Certifiers to approve custom suspension arms without the need for a TAC referral. This relaxation places more responsibility on the LVV Certifier to ensure that the arms comply with all of the NZCCM requirements. LVV Certifiers should read this LVVTA Information Sheet carefully in order to gain an understanding of their obligations.

The TAC has agreed that this change will be made within the NZ Car Construction Manual at the next amendment opportunity, however in the interim, LVV Certifiers may apply this new agreed requirement, effective immediately.

It is also recommended, and expected, that where an LVV Certifier is at all concerned or unsure about any aspect of a custom suspension arm, or where he is not confident in approving a suspension arm for any reason, he should contact the LVVTA Tech Team, who may elect to refer the component to the TAC for approval.

#### Scope of this infosheet:

This Information Sheet details the requirements for LVV Certifiers when inspecting custom suspension arms. Firstly however, it is important to clarify the distinction between a custom suspension arm, and a complete independent front suspension (IFS) assembly.

This info sheet deals only with custom suspension arms, and not with complete custom independent front suspension assemblies, which must continue to be individually approved in writing by the Technical Advisory Committee (TAC). The distinction between the two is as follows:

- A custom suspension arm is a bolt-on style replacement arm that is mounted to OE suspension mounting points on the vehicle's cross-member, sub-frame, chassis or structure. It generally mirrors the OE suspension arm's shape, and does not alter the OE suspension geometry, other than in some cases to allow additional adjustability.
- A custom independent front suspension assembly will have new or changed mounting and attachment points for the suspension arms, and often steering components, and will usually also be fitted with custom suspension arms. This includes, but is not limited to, a 'Mustang II' style IFS (commonly seen in hot rods), and AC Cobra, or Lotus 7 style IFS replicas. Approval of a custom IFS assembly is not covered by this document. If you are unsure whether or not the suspension system being dealt with is a custom suspension arm or a custom IFS assembly, please contact the LVVTA Tech Team first.

### Inspection process:

Within the table below, documentation and inspection requirements are detailed, which vary depending on the suspension arm function, and also depending on the manufacturer. By following this table, an LVV Certifier will be able to clearly establish which requirements must be applied.

The first and most important part is to establish which line (items 1 – 4) applies to the suspension arm in question, based on the function and origin of the suspension arm, and then apply the requirements within

Item #	Suspension arm function	Added Documentation Required	Inspection Requirements	Category
1	<u>Location/alignment arm:</u> <ul style="list-style-type: none"> <li>• Does not support the weight of the vehicle (non-loaded arm)</li> </ul>	None	<ul style="list-style-type: none"> <li>• Sound design</li> <li>• Good condition</li> </ul>	1A
2	<u>Load-bearing arm:</u> <ul style="list-style-type: none"> <li>• Supports the weight of the vehicle (loaded arm)</li> <li>• Volume aftermarket manufacturer, identifiable brand</li> </ul>	Documentation brand verification: Note: This means some form of documented verification that the arm is in fact a known and recognised brand of volume aftermarket manufacturer. IF none is available, arm must be treated as per item # 3	<ul style="list-style-type: none"> <li>• Sound design</li> <li>• Good condition</li> </ul>	1D
3	<u>Load-bearing arm:</u> <ul style="list-style-type: none"> <li>• Supports the weight of the vehicle (loaded arm)</li> <li>• Volume aftermarket manufacturer, unidentifiable brand</li> </ul>	NDT required	<ul style="list-style-type: none"> <li>• Sound design</li> <li>• Good condition</li> <li>• Must meet all NZCCM A-arm material specifications as per Table 6.1 of NZCCM</li> </ul>	1D
4	<u>Loaded-bearing arm:</u> <ul style="list-style-type: none"> <li>• Supports weight of the vehicle (loaded arm)</li> <li>• One-off home-built or scratch-built</li> </ul>	NDT required	<ul style="list-style-type: none"> <li>• Sound design</li> <li>• Good condition</li> <li>• Must meet all NZCCM requirements specified in Sections 6.5 and 6.6 of NZCCM</li> </ul>	1D

### Inspection Requirements:

The following technical points must also be considered and assessed:

- If the arms are an identifiable brand, specify the volume aftermarket manufacturer in the applicable 'comments and notes' section of the Chapter 6 Suspension form-set, and attach documented verification, as required in item #3 in the table above.

- If fitted, spherical rod-ends must meet the applicable NZCCM requirements, with the relevant sections of the Chapter 6 Suspension form-set completed.
- If fitted, bushed rod-ends must meet the applicable NZCCM requirements, with the relevant sections of the Chapter 6 Suspension form-set completed.
- For arms that fall into rows 3 and 4 of the table above, the relevant sections of the Chapter 6 Suspension form-set must be completed.
- Ball-joint retention/attachment to the suspension arm must be assessed as being equal to or greater than that provided by the OE suspension arm.
- Ball-joints must be established as being either OE for the vehicle, or are suitable for the weight of the vehicle, and are designed to operate in the new configuration (i.e. tension or compression type).
- Arms must be thoroughly visually inspected to ensure that:
  - the design and strength of the suspension arm is consistent with the common time-proven makes; and
  - there is no evident deterioration or cracking, particularly around welded attachment points; and
  - the suspension arm is of an appropriate size for use with the weight and performance characteristics of the vehicle to which it is fitted.

**Finally:**

Where any doubt exists in relation to any aspect of a custom aftermarket suspension arm during the LVV certification assessment process, an LVV Certifier should use the Suspension Chapter of the NZ Car Construction Manual as a source document for guidance, and should feel free to contact an LVVTA Technical Team Member for any advice or guidance required.

For any further information or clarification on this Information Sheet please contact the Technical Team at the LVVTA office on (04) 238-4343.