

BEAVER-TAIL CHASSIS REINFORCEMENT

The following document has been prepared by TCS to provide guidance to vehicle modifiers when reinforcing a chassis that has been cut and welded to suit the installation of a beaver-tail tray.

These guidelines are supplied without prejudice and TCS will not be held liable for any problems that arise from misinterpretation of these guidelines or from the introduction of new rules after the issue date of these guidelines. The following documents should be read in conjunction with these guidelines:

1. VSB-6 Section J: National Code of Practice for Body Installations on heavy vehicles
(takes precedence over TCS guidelines)
2. VSB-6 Section H: National Code of Practice for Chassis Modifications on heavy vehicles
(takes precedence over TCS guidelines)
3. OEM Modification & Body Building Guidelines
(takes precedence over VSB-6 and TCS guidelines)

All modifications must be carried out by a suitably qualified tradesperson in accordance with the relevant Australian Design Rules, Australian Standards and National Codes of Practice. Any uncertainties should be discussed with TCS prior to commencing the modification.

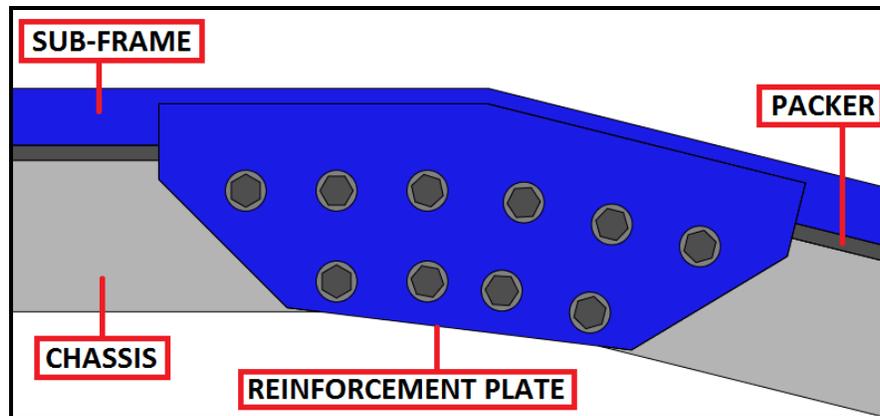


Figure 1: Beaver-Tail Chassis Reinforcement Technique

Instructions

1. The desired chassis angle is usually achieved by cutting a wedge out of the original chassis, bending the chassis downwards and re-welding. The departure angle of the vehicle cannot be less than 11° (**see Figure 3 for visual explanation**). All steel used for the tray and reinforcement should have a yield strength of at least 350MPa.
2. The beaver-tail tray must have a continuous sub-frame along its entire length and if packers are placed between the chassis and the sub-frame they must also be continuous along the entire length of the body.
3. The thickness of the reinforcement plate should not be less than 8mm but must not exceed the thickness of the chassis rail.

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4. The reinforcement plate can be welded to the subframe but must be bolted to the chassis. The reinforcement plate cannot be welded to the chassis under any circumstances.
5. All bolts must be at least Grade 8 and must be used with hardened washers and self-locking nuts. Minimum allowable diameter of bolts is 16mm (5/8").
6. All bolts holes must be drilled or reamed, not flame cut.
7. The centre of any new bolt holes must be at least 3D (or 50mm, whichever is **greater**) away from any existing holes in the chassis, where D is the diameter of the larger hole. Holes must not overlap.
8. Reinforcement plate must extend at least 2H either side of the chassis join (where H is the height of the chassis rail).
9. Reinforcement plate should terminate at least 2H away from any suspension mounts (refer to OEM guidelines for exact distance if this is not achievable).
10. Ends of reinforcement plate must be tapered to provide a gradual transition in chassis stiffness.
11. At least 3 bolts should be used either side of the chassis join and should be positioned in a triangular configuration. More bolts should be used if there is sufficient packaging space.
12. TCS should be engaged to provide an engineering certificate for the modification.

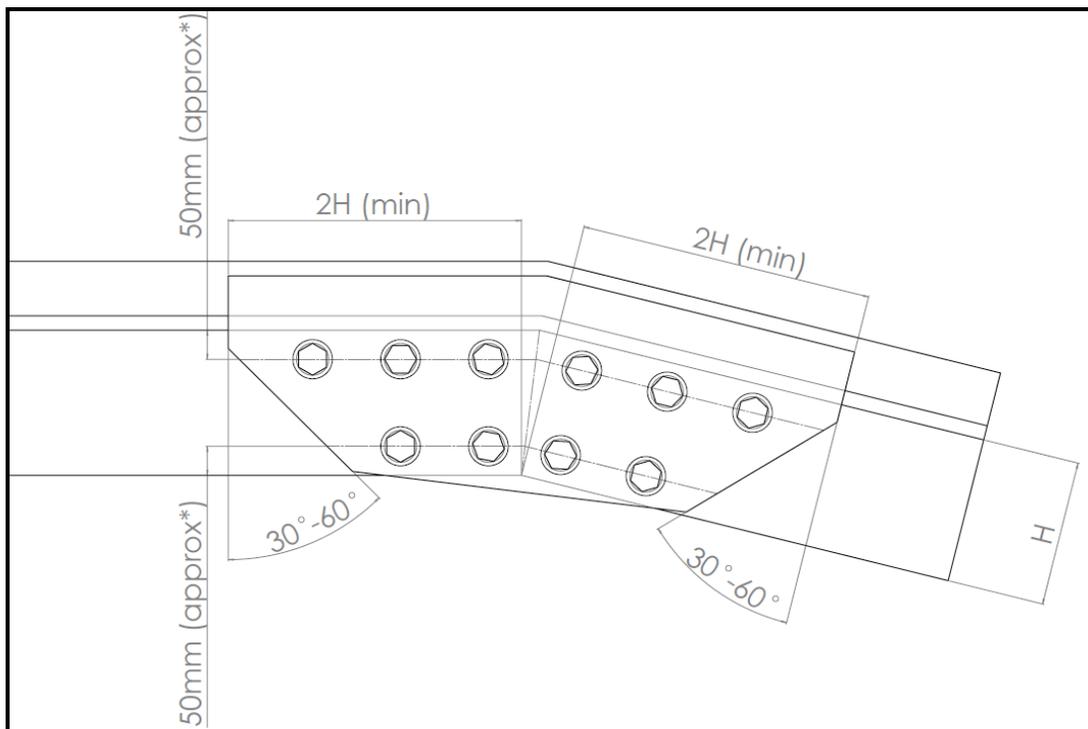


Figure 2: Dimensions (*refer to OEM guidelines)

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The following diagram has been included in this revision to explain the meaning of 'departure angle'. No vehicle component (including hydraulic equipment, mounting brackets or ramps) may be located within the region between the ground and the diagonal plane shown in red below.

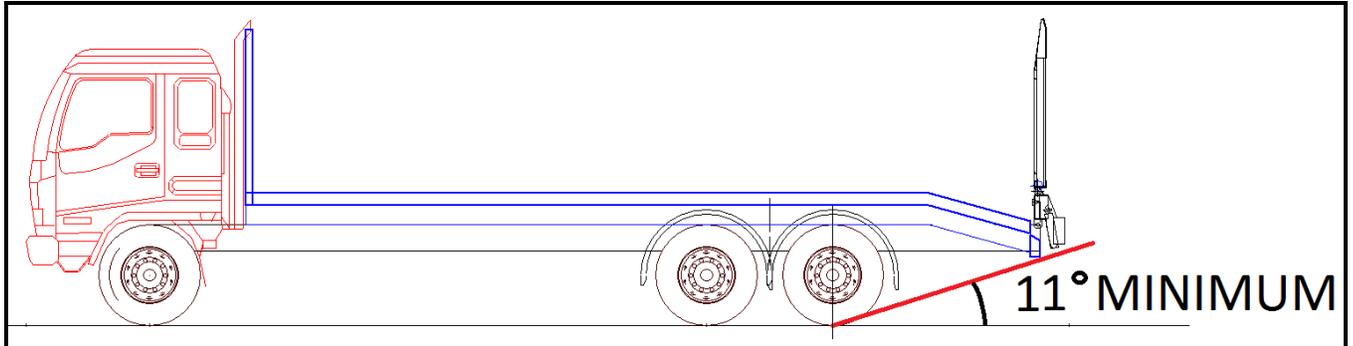


Figure 3: Departure Angle