

Stainless Steel Braided Brake Hoses

Background:

Some time ago, Land Transport New Zealand (LTNZ) introduced a new requirement that all aftermarket brake hoses (aimed particularly at the stainless-steel braided type) must comply with an approved standard for brake hose, and be physically marked in order to demonstrate such compliance.

One of the main concerns of those in LTNZ responsible for making this new ruling was concerns about hoses that could be assembled from lengths of hose, and 'screw-together' end fittings, rather than the 'crimped' or swaged' types. The concern was primarily that someone without the necessary competence or experience could source some hose and some end-fittings, and incorrectly put together a hose assembly, and in doing so create an unsafe hose which might fail during brake application. These concerns were, and still are, well-founded.

To the right is an example of some typical 'screw-together' end-fittings.



'Screw-together' end-fittings

In the case of crimped or swaged hose end-fittings, the end fittings are permanently attached under high pressure by deformation of the fitting about the hose by the 'crimping' or 'swaging' process. Because this type of end-fitting cannot be removed, an end-user is not able to alter them or incorrectly re-assemble them.

To the right is an example of a typical 'crimped' or 'swaged' end-fitting.



'Crimped' or 'swaged' end-fitting

LVVTA's view is that when LTNZ developed this ruling and referred to 'approved hoses', what the people involved within LTNZ actually meant was 'approved hose assemblies'. There is a clear distinction between the two. 'Approved hose' is a hose section that has been tested and approved for use within an 'approved hose assembly' – which is the complete manufactured component, consisting of the hose material and the attached end fittings.

Since the ruling has been in force, it has been interpreted differently by different hose manufacturers, and in many cases Land Transport NZ's intent has been lost. Applied correctly, a hose manufacturer will buy in stocks of approved stainless-steel braided brake hose material (on a roll for example), and from that,

manufacture hose assemblies using proper 'crimped' or 'swaged' end fittings, permanently attached under high pressure. However, some hose manufacturers have used the same hose material (with standards markings printed on the hose), and then manufactured hose assemblies using 'screw-together' end fittings. These hoses have in many cases been approved by WoF issuers, on the basis that they saw an approved standards marking on the hose section, and passed the hoses believing that the hoses complied with Land Transport NZ's requirements.

Another problem with the original ruling is that the WoF issuers have had a lot of difficulties in applying this requirement due to the fact that a list of approved standards, and other markings that confirm that a hose meets an approved standard were never provided to the WoF issuers. Dirt covering the markings, or age, can also make it difficult to read the markings.

New change to the VIRM:

Because of the difficulties experienced over the past three or so years, LTNZ have made a change to the requirement for stainless-steel braided hoses in the new Land Transport VIRM, which takes effect on March 5 2007.

LTNZ have removed the requirement for compliance with an approved standard, and instead focused on a requirement for the WoF issuers to ensure that a hose is manufactured using a swaging or crimping process to attach the end fittings, instead of those that are assembled with screw-together end fittings.

The VIRM now states, under 'reasons for rejection' (Section 8-1 Service Brake and parking brake):

17 "A flexible hydraulic brake hose (including connections)...(g) has an end fitting that is not attached to the hose by means of swaging, crimping or a similar process (Note 3).

Note 3 states *"Hose ends that can be undone using hand tools are unacceptable"*.

It is now clear that LTNZs intent is focussed on ensuring that hose assemblies are correctly manufactured rather than focussing on compliance with an approved standard. There is however one small point that is already causing some confusion in the industry, and this is in relation to Note 3. Some WoF issuers are interpreting a normal banjo-type adaptor end fitting as being a 'hose end that can be undone using hand tools'.

Clarification:

Banjo-type, and other types of adaptor fittings that many aftermarket (correctly assembled) hoses use are common-place, and are necessary to attach the hose assembly to the brake calliper. They are attached to the 'crimped' or 'swaged' hose assembly end-fitting at one end, and to the brake calliper at the other end.

Hand-tools, obviously, can undo and re-attach the adaptors, in the same way that hand-tools are required to undo and re-attach a brake hose assembly directly to a brake calliper.



Banjo-type adaptor fitting

LVVTA can confirm that it is not LTNZ's intention to prohibit correctly manufactured hose assemblies that are attached by the use of an adaptor, and LVV Certifiers should in turn confirm this to any WoF issuers who are unsure of the situation.

Alternatively, WoF issuers may contact Colin Hainsworth at the Land Transport New Zealand Vehicle Certification Unit helpdesk on 0800 587-287.

In summary:

As from March 5 2007, a vehicle owner may have stainless steel braided brake hoses fitted to his vehicle, that do not have any standards markings on them, provided that they are clearly purpose-built automotive brake hoses, and that the end fittings are permanently attached to the hose by way of crimping or swaging.

LVVTA was unable to influence the decision that took place banning these (now approved) hoses, at the time, but we have discussed the issue with LTNZ since then in an effort to get the situation resolved. We believe that this new March 5 2007 position is a sensible outcome. We also recognise that this will be of frustration to many vehicle owners who have been required to replace hose assemblies over the past three or so years that are now permitted again.

If you have any queries or require any further clarification relating to this Information Sheet, please feel free to contact the technical team at the Wellington Office on 04 238-4343.