## Wooden Wheels Preservation or Restoration?

The choice between preservation and restoration obviously depends very much on the state and condition of the wheel and its operational environment. The first rule has to be safety and this will depend on the wheels inherent integrity. A complete rebuild is not only expensive but the availability of such skills are slowly ebbing away as the old craftsmen cease to craft.

Badly corroded or rotten parts need replacing but general looseness of a limited nature can in many cases be corrected. This article concentrates especially on preservation as its aim is to protect rather than replace what is there without dismantling...*unintrusive whilst preserving history!* 

Very often the only traditional remedy for a loose wheel is to submerge it in a tank of water. Many years ago, my father told me that he used to stop at the side of the road, when the wheels were really creaking and dunk them one by one in a horse trough which is all very well when time allowed one to contemplate such a course of action. Nowadays, many of us have the opportunity to keep our cars in a dehumified environment to stop metal from tarnishing and corroding. The downside is of course is shrinkage of the wooden wheels and making them almost inoperative and possibly in danger of collapse.

Over the years, epoxies and various other varnishes have been used to impregnate and seal voids caused by general wear and tear. The down side of this is two fold. First solvents are often needed to reduce the impregnant's viscosity in order to achieve an acceptable level of penetration, which in turn leaves the cavities less than full when the solvent has evaporated off. Secondly, such impregnants can make it difficult for the wood to rehydrate as such varnishes are generally hydrophobic, causing a barrier between the wood and the moisture in the atmosphere. The acrylic sealant noted in the advert below is distinct in two ways from the traditional impregnants in as much that it - Acrylic C120 is specially designed as an impregnant. It is also hydrophilic as opposed to hydrophobic and contains no solvents and is naturally low viscosity so as to have excellent penetrating power by capillary attraction. It is also fast curing, meaning that the wheel can be back in service in a matter of an hour or so rather than having to wait for days. *The treatment could be expressed as a form of inverted encapsulation!* 

### Application of Acrylic C120.

First one must assess the condition of the wheel and whether it meets the safety criteria mentioned above, It is also important to bear in mind that the wheel must be clean and dry with the emphasis on dryness. Wet wood will not impregnate. Rear wheels will often be contaminated with axle oil and as such will need to be thoroughly flushed through with degreasant such as brake and clutch solvent before impregnation can be considered.

### Preparation

Where convenient to do so, remove the wheel from the vehicle or jack the vehicle up so that the wheel is relaxed. Ensure that the wheel is running true as realignment will be difficult if not impossible after acrylic impregnation. Either the wheel can be impregnated simply by administering the impregnant directly around the loose spoke by drip feeding - see fig 1, or by injection through the side of the felloe - see fig 2. The latter is best achieved through the back face of the wheel where the drilled hole will not be visible. Drill a 1.5mm a hole as close to the root of the hole in the felloe. Position the wheel with the spoke being upright at the base of the wheel (6 O'clock). Drive in the hypodermic needle to a depth less than the drilled hole. Place an empty hypodermic syringe onto the needle and pump to ensure that an air passage to the base of the spoke has

been established. If there is some concern as to whether oil may be present within the cavity, now is the time to fill the syringe with degreasing solvent, attach to embedded hypodermic needle and purge the spoke cavity. Note fluid surfacing around the spoke and remove with tissue. Repeat this as necessary with fresh solvent until the cavity appears clean. The wheel can be left in a warm ventilated environment to dry out over a period of 24 hrs. Alternatively it may be gently heated with a hot air gun. Care should be taken if using a flammable solvent. One further possibility is to purge with <u>dry</u> low pressure air through the embedded needle.

#### Impregnation

Mix approximately 5ml of Acrylic C120, draw up into hypodermic syringe, attach to embedded needle and inject immediately until sealant is witnessed exuding out around the spoke. Maintain the feed until full saturation has been achieved. If the impregnant appears contaminated, continue to purge until the impregnant becomes clear.

Occasionally there may be a large cavity at the base of the spoke, or a cavity between the felloe and the rim that may need to be plugged with cotton wool or similar in order to contain the impregnant.

If the spokes are found to be fairly loose, drip feed application may well be sufficient otherwise injection may be the best advice.

It is important to ensure complete saturation of the void with the impregnant - empty voids can

become a source of weakness. In theory a fully acrylic impregnated wheel should be as strong, if not stronger than the original as it fully bonds the two surfaces together - made possible only with the advent of acrylic impregnation.

Do not paint within a month of application as the impregnant needs time to absorb moisture from the atmosphere in order for it to finally swe tightll anden within the void.



Acrylic C120 drip fed onto spoke/felloe



Acrylic C120 injected through the felloe

# Local pressure impregnation with C-120 has the benefit of purging out suspect contamination.