Hints, Tips and Instructions on Using Alan Gibson Wheels

For some time now we've been mindful of the fact that most of our products don't contain any instructions. It worries us that there may be people who have bought our products and not got on with them, pushing them aside and giving in with them for the want of some basic understanding. Now I know there are people out there who will think 'what's the problem', are perfectly happy with their methods and don't want to be told how to do things. On the other hand we've seen some of the nonsense that's been written in all forms of media and think that the record should be put straight. We don't intend to put instructions in every packet of wheels as there will obviously be a cost implication; also, if you buy a Pacific and tenders' worth of wheels and crankpins you would end up with 10 sets of instructions. With that in mind we have published these notes instead.

Preparing the wheels for use

Individual components are manufactured in large batches then stored until assembly and packing. They are treated in light oil before storage. This coating is usually thin enough to be barely perceptible, but occasionally when wheels sit in the container a sticky residue can be formed. We should clean this residue off before assembly, but sometimes it is missed, or sometimes it forms after packing. If you have brown staining on the tyres it is unlikely to be rust, merely this residue build up and it can be easily cleaned off with a rag with some WD40 on it or a drop of methylated spirits (no strong solvents please as they melt the plastic centres). If it is rust, they weren't made by Noah and you haven't kept them in the bottom of your fish tank, then please get in touch.

The other thing to look out for is the plastic centre. Our centres should be free from moulding defects i.e. be properly formed and on the whole free from flash. However, because of the age and type of tooling it may be profitable to invest a little time on the crankpin boss. Without going in to talking about all the tooling there can be seams or witness marks where two mould components come together. If you've looked closely at our wheels you may have seen this on some (but not all) of our wheels on the crank boss. There are numerous ways these can be dealt with including cutting/scraping with a sharp blade, filing or polishing with fine paper.

Wheels - general assembly

The axles for our driving wheels are precision ground to 0.125" diameter, and like the 2mm axles are parted to length and then packed. At no point do we de-burr the axle end, as this is a process which was assumed would be carried out by the modeller (if the modeller knew they had to do it). It is essential that the end of the axle is checked and if necessary de-burred. It is also a great advantage to put a fine lead/taper on each end of the axle with a couple of light strokes of a file or the touch of a tool in a lathe; this only needs to be around 0.1-0.2mm long. The implication of not doing this is that any burr will remove a sliver of material from the bore of the wheel, causing a possible reduction in the grip of the wheel on the axle and causing an oval hole, which will result in wheel wobble.

The other vital part of assembly is putting the axle in square, and modellers have many ways of doing this. I can do it with a very high rate of success on the bench with a penny on the axle end using my thumb, but we're not suggesting you do that as if I mess it up I can help myself to a new centre. You could use anything that can provide a perpendicular push to a steady surface. A lathe is a classic case of this - the chuck can be used as a surface and the tailstock as perpendicular thrust. By far the best way though is to buy a wheel press. GW models produces a combined wheel press and quartering jig which is a quality tool and will provide many years of use.

Tyres – there have been numerous stories about tyres being/becoming loose. We can't speak for previous assembly regimes, but we can say that during the assembly process any tyre that seems to be at the ends of the tolerance band will be discarded. A word of warning though - the centre is a push/interference fit in the tyre and since steel and ABS plastic expand at differing rates, keeping the wheels in hot conditions can cause problems.

Concentricity – the wheel components are manufactured in such a way that concentricity problems would be very unlikely, but notice I'm not saying impossible, as the impossible often seems happen.

Many of the concentricity/wobble issues can be traced back to the initial assembly on to the axle. At one time the plastic centres were twisted from the sprue leaving a bump on the edge. It is possible that on larger, finer (S4) wheels that when the centre was pushed in that lump deformed the tyre causing some eccentricity. Quite early on we introduced a stage in production where the sprues were clipped off at the centre.

Quartering driving wheels

It would be easy to just recommend the purchase of a quartering jig and leave it at that. However, it is worth discussing some of the other methods available and some of the theory behind quartering. First of all the point has to be made that we are not actually dealing with the timing of valve gear and hence the critical opening and closing times of ports within cylinders. Therefore it could be argued that the lead needn't be 90° as long as it is the same on all axles. So, if you mount your first driving wheel set on axles and they are set at 82.5° apart this need not necessarily be a problem. You can't see both sides of the engine at once so it is unlikely anyone will ever know and if you do want it to be spot on then of course you can take the time to get it exactly right at 90°. Now before we're flooded with letters and emails baying for blood and claiming heresy can we just say that we're trying to make loco building more accessible for new or lower ability modellers, and to widen the appeal of our wheels.

Another method for setting the wheels at 90°, and admittedly this only really works when assembling wheels outside the chassis and including horn bearings, is to use spoke alignment. By looking through the spokes (with the wheels on the axle) you can align the spokes on opposite sides. You can get the wheels roughly quartered and then by looking through set the angle more precisely; an even number of spokes will align perfectly, and an odd number would be to half a spoke. At this point it is worth pointing out that since the wheel centres are plastic and designed to have an interference fit adjustments should be made as soon as possible after fitting as the plastic will relax and form a very strong grip on the ground axle. If you need to move the wheels, the hold on the axle should be broken by twisting, never pulling.

So you have now chamfered your first axle, put the wheels on squarely and adjusted the quartering. Quartering the rest of the wheels can be done by the method long described in our catalogue. Fit your second axle in the same way and couple it to the first axle then adjust the second axle only, until the chassis runs smoothly. Continue adding driving axles until complete but only ever adjust the last axle added. Never go back to the previous axles as they are (should be) smooth running and shouldn't be the problem.

We are developing a range of self-quartering wheels and it's no secret that this is taking a lot longer than we thought. This is mainly due to having to modify/produce new tooling parts, the financial commitment to produce the new axles (in three gauges) and general pressure on development time. Anyway, it is worth pointing out that any self-quartering system can only be as accurate as the tolerances of the components. With a round axle, the wheel position can be adjusted to exactly the correct position with adjustments being able to be made to fractions of seconds of arc.

Crank holes and crankpins

The use of crankpins is detailed in the instructions contained in the packets. It is worth mentioning the two different ways of dealing with the crankpin hole in the wheels. Most wheels now have the crankpin hole already moulded in, so no problem. However, we have some older tooling which instead of having a pin in the tool to produce the hole merely creates a dimple. Therefore the modeller is required to drill out the crankpin hole and full instructions for doing this are provided in our crankpin sets. The only reason for doing this that we can think of is that it allows the modeller to change the crank throw if required. It is certainly more involved to produce the tooling like this than produce a pin to make the hole.