Thunder Valley® F1
Formula Perfect® Kits

Installation instruction for the
Spindle & Wheel Nut Upgrade Set
Designed and engineered for Tamiya's 1/12 Scale
Ferrari 641/2 (F190), McLaren MP4/6 and Williams FW14B

Please Note: If you have any issues assembling your kits or need replacement parts, please contact us for assistance at paulraterink@thundervalleyf1.com. Replacement parts and shipping are free of charge. Regardless of what happened we are here to help. If there was an assembly issue caused by our documentation, please let us know by sending an email to feedback@thundervalleyf1.com detailing the problem. Feel free to suggest any ways our documentation could be improved (wording, assembly order, images).

Fellow Model Builder,

Thank you for selecting our products to enhance your F1 models. We appreciate your business very much. We at Thunder Valley F1 thoroughly research each product prior to its development, we use state-of-the-art computer-aided-design software along with CNC machinery to create and manufacture the most accurate and precise F1 model products available. Our workmanship and your satisfaction are unconditionally guaranteed. We want you to be completely satisfied with your decision to select and use our products. If not, we'll make it right.

1. The kit wheels need to be modified to allow the threaded spindle to pass through. The center mounting hole needs to be enlarged all the way through to .166 inches (4.21 mm) by using a No. 19 drill supplied with your kit. Next, the 3/16 drill is used on the front of the wheel to enlarge the hole to .186 inches (4.72 mm) by a depth of .075 inches (1.9 mm) This is the diameter of the portion of the spindle that centers the wheel to the spindle. After enlarging the hole, a 60° chamfer needs to be added for the wheel nut to seat properly. (countersink supplied with your kit) Take you time on all of these steps but especially when putting the chamfer on the wheel. It needs to be only deep and wide enough to match the chamfer on the nut. Please take your time and check often.
2. If you are using one of our Super Brake Kits, the wheel will need an additional drilling operation on the back to allow clearance for the boss on the brake hat. From the back, the center hole needs to be opened up to .199 (5.05 mm) using a No. 8 drill (supplied with your kit) by a depth of .100 inches (2.54 mm).
3. Next, thread a wheel nut onto a spindle until a portion of but no more than one full thread is revealed on the outside end of the spindle. *Please note that the front and rear spindles are different lengths and should be kept separate. It is recommended to work with the front or rear spindles at a time and treat them as separate installations. Or, mark the rear parts with a red Sharpie to indicate they are for the rears so you don't get them mixed up.

4. Your kit contains 12 CNC machined parts: 4 spindles, 4 spindle receivers and 4 wheel nuts. The spindle receivers are to be use to replace parts A16 & A23 on the 641/2 - A11 & A23 on the MP4/6 and A8 & A4 on the FW14B.

5. Parts R41, R42 R59 and R60 used on the 641/2, parts C3, C4, C19 and C20 used on the MP4/6, parts E4, E5, E30 and E32 used on the FW14B all need to be drilled using the 1/8 drill (supplied in your kit) to allow for the new spindles to pass through these parts and be seated in the spindle receiver.

6. Test fit all of the parts as an assembly prior to applying any adhesive. First, test fit each spindle into it's respective receiver. These parts are machined to very close tolerances and even a .0005 (.0125 mm) increase in diameter will not allow the spindle to fit into them. If so, sand the diameter of the spindle slightly until it fits. If you feel there is a significant difference between these parts, please contact us for FREE replacements. Next, while holding (or taping) the spindle receiver in the back of the upright, place the brake rotor / brake hat parts in place on the upright, then the wheel and then insert the spindle with the wheel nut in place through these parts and into the spindle receiver. The spindle should slid into the receiver but should not extend past it. Double check the placement of the wheel nut to make certain there is only one full thread or less showing and make certain the wheel nut is seating properly in the wheel itself.

7. Once you are satisfied with the fit of all of these parts then the spindle can be glued into the receiver using slow setting epoxy. Do not use super glue or any fast-setting adhesive. Time is needed to put everything together carefully, properly and accurately. Apply the epoxy sparingly to the inside of the spindle receiver making certain the adhesive does not come in contact with any other parts.

8. The spindle receiver needs to be supported and seated squarely and held securely in the back of each upright during assembly and during drying. Once you have determined how to do this, you can repeat the assembly of all of the parts as described above. This time the assembly is for good, so be certain you can set this assemble aside somewhere safe until the epoxy cures fully. Allow about 12 hours for curing process.

9. If you are going to build your model so the wheels are unable to rotate, you can then glue the spindle receiver into the upright. Again, make certain the spindle receiver is glued squarely in it's mounting location. If it isn't then the spindle we be on an angle and it will be difficult to mount the tire / wheel assemble and have it look correct. Please take your time and work slowly.

10. After the epoxy is fully cured, you can disassemble everything and detail all of the parts accordingly. The wheel nuts should be clear coated using Alclad's clear blue and red paint, which provides the most realistic treatment.

11. During final assembly of your model, do not over-tighten the wheel nuts. They only need to be snug enough to hold everything together.

12. After the final assembly and once the epoxy has cured, if you discover something moved way out of alignment to a point where it is unusable and or detracts from the appearance of your completed model, please cut the offending spindle in half using a pair of diagonal cutters or a fine toothed hobby saw carefully so you can remove them from the upright and discard this parts. Contact us and let us know which replacement parts you need, front or rear, and which F1 car you are building and we will send FREE replacements promptly.

We are fully committed to ensuring the use of our products is as easy as can possibly be engineered as well as an enjoyable one. So rest assured, we are here to be of help in any way we can.