Instructions for Building a 1/32 Scale *Penelope Pitlane* Honda RA273 Slot Car

Prepared for: Pendle Slot Racing
Version: V1.0 August 2022

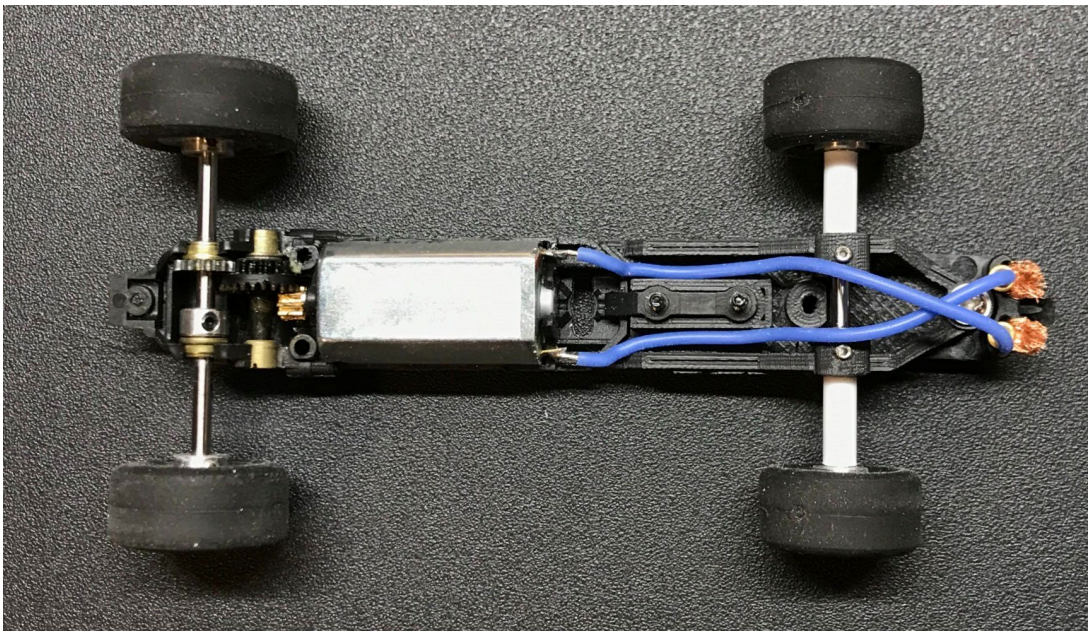
1.0 Chassis Assembly

It is recommended to assemble the chassis, axles, guide blade, and fit the unpainted body onto the chassis prior to final detailing and painting in order to test the operation of the slot car. This section provides instructions and tips on how to set up the chassis, install the front axles, wheels and tires, solder the motor wires, and assemble the guide and brushes. Note – this slot car kit comes with a **Policar "assembled chassis"** containing a high quality motor, gearbox and rear axle. So very little mechanical assembly is required on the chassis.

Step 1.1: Tire mounting and Installation - mount the rubber tires onto the aluminium wheels taking care to install the larger rear tires onto the rear wheels and smaller tires on the front wheels. Slide the wheels onto the axles such that the end of the axle is flush with the wheel inner surface and tighten in place with the appropriate allen wrench. Do NOT glue in the wheel inserts at this time. The supplied plastic tube spacers are pushed onto the front axles to maintain the axle spacing on the chassis, as shown in **Photo 1**.

Step 1.2: Guide Blade and Motor Wiring – Install the supplied guide blade into the front of the chassis with the supplied screw. Cut the supplied motor wire into two equal lengths and strip a few millimetres of insulation off each end and solder each wire to the motor terminals using a low wattage soldering iron and resin core solder meant for electrical connections. Be sure to use soldering paste on the terminals and wires to aid on the flow of the solder. Test fit the wire to the guide determine the length required to reach the guide and be sure to allow extra wire length for the blade to turn and to allow for extra wire to accommodate the metal brush fittings. Strip enough insulation off the guide end of the wire to allow the wire to be inserted through the brush fitting and fold the excess wire up over the fitting to allow for a good electrical connection when the fitting is pushed into the guide, with the brushes in place. The wiring configuration in **Photo 1** provides the standard direction of travel for the car. If it is desired to reverse the direction of travel, simply reverse the wires at the guide blade. With the guide and brushes installed, place the slot car on a spare piece of track (or set up block) and adjust the front axle height set screws to ensure the front tires are just touching the track surface when the guide and brushes are correctly seated in the track slot.

Photo 1: The assembled and wired chassis with guide installed

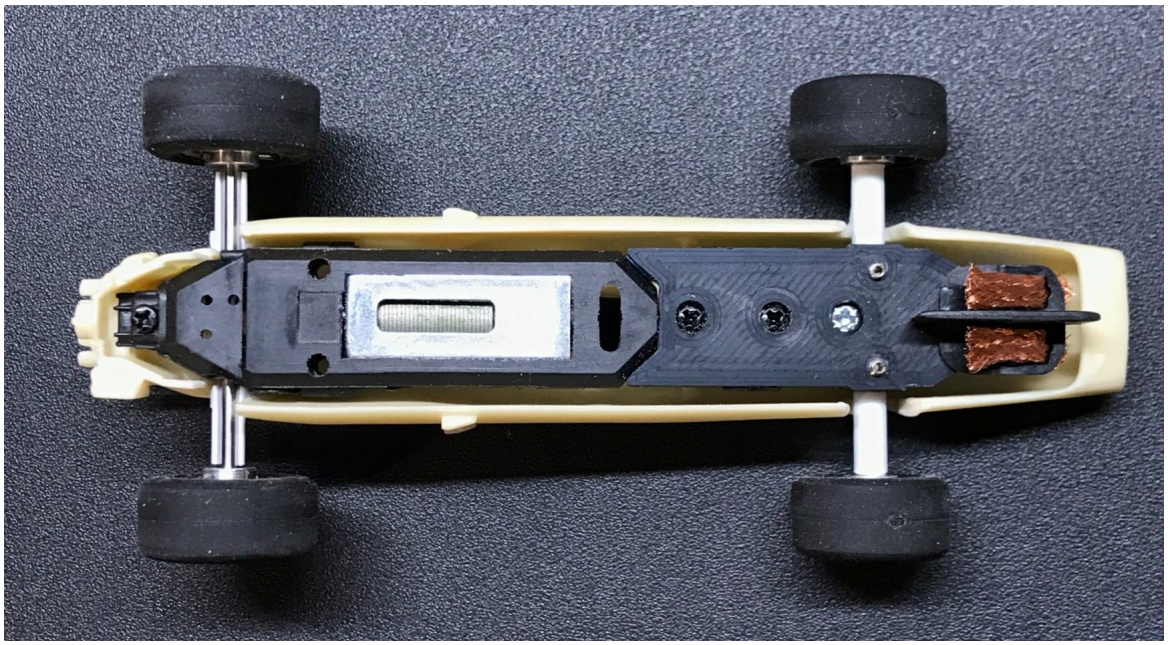


Step 1.3: Test Fitting the Body – Prior to installing the body over the chassis, place the motor wires in the chassis channels and over the front axle (see **Photo 1**) to ensure the wires are not binding under the body when the guide blade is rotated from side to side.

Screw the body onto the chassis and ensure the body is sitting correctly on the chassis with no twists, and that all four tires are correctly contacting the surface when the car is placed in the set up block or track piece. Adjust the front axle, using the front axle height set screws, to ensure the car sits square and level. Generally, the body should not be fully tightened onto the chassis and a bit of "body float" helps improve the performance of the slot car. **Photo 2** shows the assembled chassis and body and wheels. It is now possible to run some test laps on your home track to ensure the car is running as expecting and that the body and chassis are not rubbing against any moving parts and that all moving parts are turning freely.

Step 1.4: Wheel Inserts - At this point, prep, sand and test fit the plastic wheel inserts and then glue them into the aluminium wheels. The wheels can then be carefully re-installed onto the axles such that the wheel inserts are just touching the ends of the axles.

Photo 2: Test fitting the prepared body on the chassis



2.0 Rear Suspension Details (Optional):

If desired, it is possible to enhance the scale accuracy of the slot car kit by adding "quasi scale" rear suspension details, similar to the actual Honda RA273 Formula One race car shown on the front cover. This section provides instructions and tips on how to scratch build these optional suspension details. ***Note: these optional scale details are not part of the kit, and do require some additional model building materials that are not supplied in the kit.***

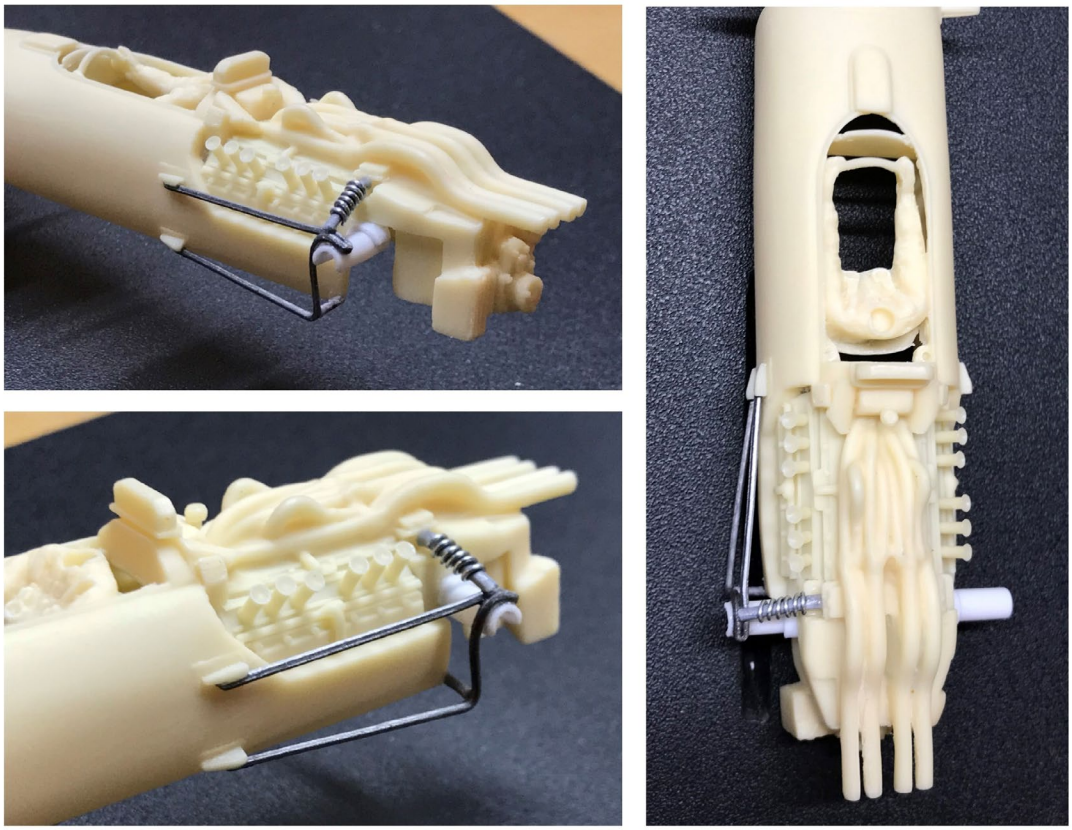
Step 2.1: Body Mounted Rear Axle Covers – In order to secure the suspension details to the body, it is necessary to add an axle cover to the body. As shown in **Photos 2 and 3**, the axle cover is simply a 5/32" plastic tube, such as Evergreen Item #225, that is cut in half lengthwise, and the "half tube" is inserted into the rear axle opening in the body. To better fit the 5/32" tube in the large rear axle opening, a very small length of 7/32" plastic tube, such as Evergreen Item #227, is placed over the 5/32" tube and this combined assembly glued in place into the rear axle opening in the body. Care must be taken to ensure the axle cover is not rubbing on the axle and careful test fitting is required before final gluing. Some final sanding of the underside of the axle cover may be required to ensure the cover is not rubbing on the axle.

Step 2.2: Rear Suspension Struts – the rear suspension strut is made from folding a single piece of thin, stiff, wire and bending it to form two parallel struts that come together at the axle cover. This wire strut is glued to the body under the two molded flanges on the side of the body, and also glued to the rear axle cover. Lastly, a small piece of wire is glued to the bottom of the strut to secure the lower strut to the body. **Photos 3 and 4** show the details of this installation.

Step 2.3: Rear Suspension Springs – the rear suspension "spring" is a # 22 gauge wire wrapped tightly around a spare piece of stretched plastic sprue. The plastic sprue is then bent to shape to fit between the upper body and top of the axle cover. **Photos 3 and 4** show the details of this installation. Note – this is a "quasi scale" placement of the rear springs, and is intended to add suspension detail that is readily visible.

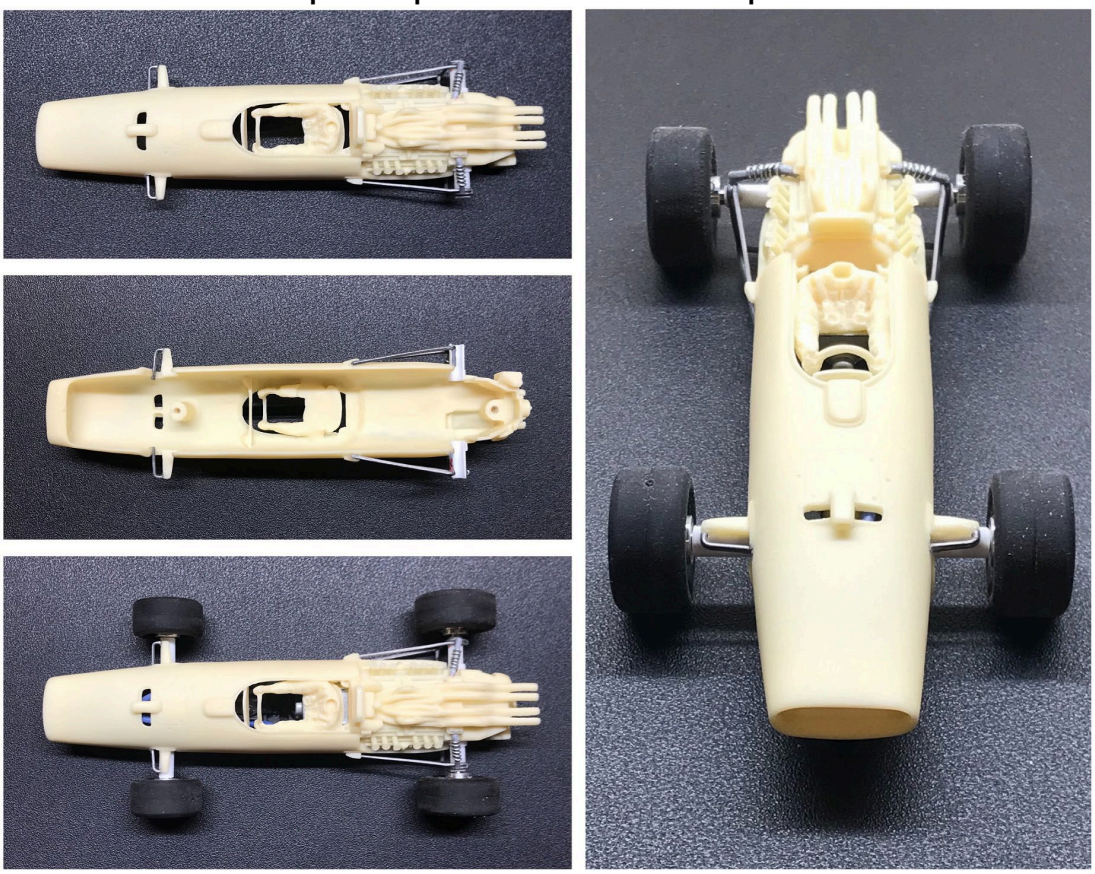
As shown in **Photo 4**, the completed suspension details are all fixed to the body, so it is possible to easily remove the body from the chassis to periodically clean and lubricate your slot car's moving parts.

Photo 3 – Optional Rear Suspension Details



Step 2.4: Front Suspension Detail – as shown in **Photo 4**, the front suspension detail is a thin, stiff, wire that is bent at 90 degrees, and glued between the body and the end of the molded plastic front axle cover.

Photo 4 – Completed Optional Front and Rear Suspension Details



3.0 Painting the Body:

To complete this slot car kit, it is necessary to paint the body and detail parts with their appropriate colours to replicate the real car. This section provides instructions and tips on how to prepare the body for paint, and how to spray the primer and colour coats, and lastly apply the clear coat - after the decals are applied.

Step 3.1: Paint Supplies – to successfully paint the resin body, it is imperative that the proper paints, made specifically for plastic and resin models, are used. In this instance, Tamiya model paints were used for the Primer paint and White (Tamiya TS-26) colour coat, and the Mr. Hobby Gloss Clear was used as the final coat. These paint supplies are shown in **Photo 5.** Other brands of similar paints will also work, so long as the paint is compatible with plastics.

Photo 5: Paint Supplies and Painted Body and Small Parts

Step 3.2: Surface Preparation - all parts to be painted need to be washed in warm, soapy, water to remove mold release agents and other manufacturing oils and coatings. After washing, all parts need to be sanded smooth and mold lines or flashing removed by sanding or trimming with a hobby knife. After sanding, all parts need to be wiped with a “tack cloth” to remove all the sanding dust and loose material on the parts. For large parts such as the body, additional sanding or filling with modelling putty may be required after priming, since small imperfections may be more visible once the primer paint is applied.

Step 3.3: Spray Painting – The spray painting needs to be completed in a dust free and room temperature area with good ventilation. To avoid overspray, and damaging nearby surfaces, it is recommended to create a temporary "paint booth" from a large unused carton and to place drop sheets around the makeshift "paint booth" to protect against the inevitable overspray. It will be necessary to support the body while it is being painted and **Photo 5** show how this can done using surplus plastic containers and a coat hanger bent to shape. The body is taped in place atop the wire to allow the body to be easily rotated to apply spray paint to all surfaces. As shown in **Photo 5**, small detail parts to be primed or painted can be glued in place on toothpicks, and the toothpick inserted into cardboard blocks and these can then easily be sprayed in the "paint booth".

The primer paint is applied to all detail parts to be painted, and to the body. After the primer coat has dried, it can be lightly sanded with a 400 or 600 grit sandpaper and wiped with the tack cloth to obtain a smooth primer coat. The colour coat should be applied with one or two light "mist coats" to provide colour coverage but not result in any drips in the paint. The mist coat should appear to have a matte or dull finish since the paint is applied in thin light coats. Once the mist coats have dried, the mist coat can be sanded with 400 or 600 grit sandpaper and wiped with a tack cloth. The final colour coat is applied as a "wet coat" of paint that sprayed on evenly such that the paint appears smooth and wet. Care is required on the "wet coat" to not overdo it and have runs or drips in the paint. Tip – prior to applying each coat, it is recommended to place the spray paint can in a bowl of hot water to warm the paint within the can, so that it flows better from the nozzle of the spray can.

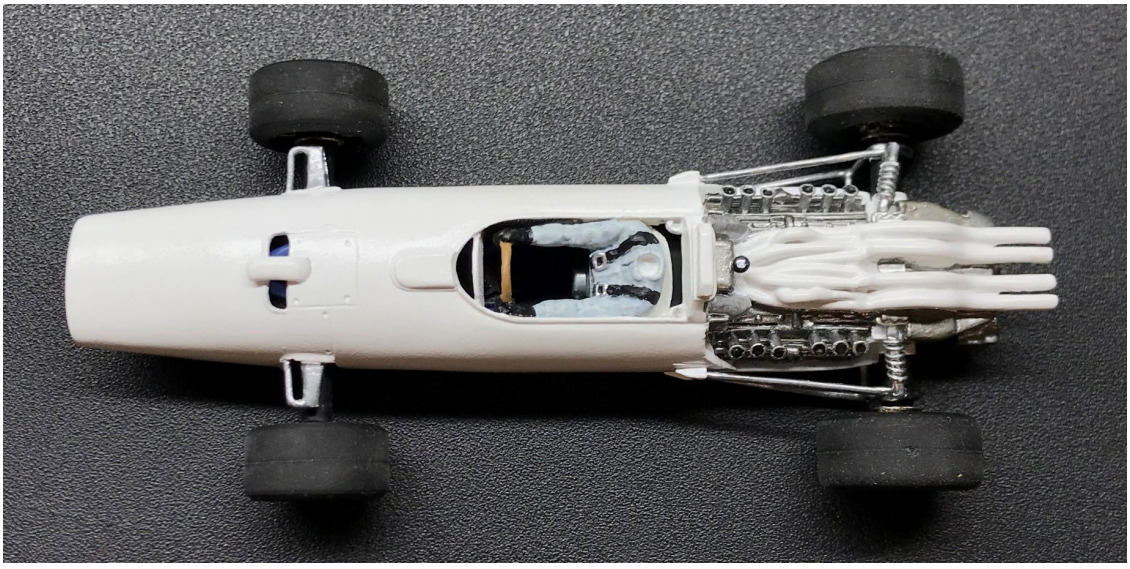
Step 3.4: Painting the Wheels - Lastly, the wheels were primed and then painted by hand with a medium brush to achieve the required dark bronze/brass colour on the real car. In this instance, colour was achieved my mixing Testors black (#1147) and gold (#1144) model paints to achieve the desired colour.

4.0 Detailing the Model:

Now that the chassis is built and the body painted, it's time to begin the careful hand painting of the detail parts to create a scale model of the Honda RA273 race car. This section provides instructions and tips on painting the driver figure, suspension, cockpit, and engine, including adding a realistic "dark wash" to the engine and exhausts.

Step 4.1: Painting the Suspension Struts – as shown in **Photo 6**, the front and rear suspension components, and the rear springs, are painted sliver using model paint such as Testors #1146 Silver paint.

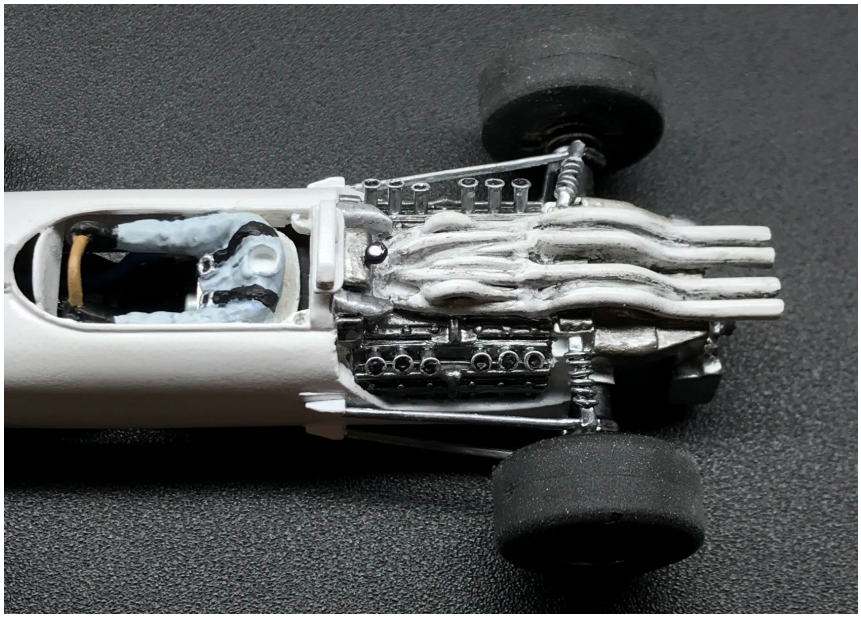
Photo 6: Painted and Assembled Body



Step 4.2: Painting the Driver's Racing Suit and Seatbelts – to provide some contrast to the white car body, the driver's racing suit was painted matte, light blue. This is a period correct colour racing suit for this era of formula one. The steering wheel was painted matte brown, and then the driver's gloves were painted black to add more detail. Lastly, the seat belts were carefully painted black, and the seat belt buckles were painted silver. See **Photos 6 and 7** that show this completed painting work.

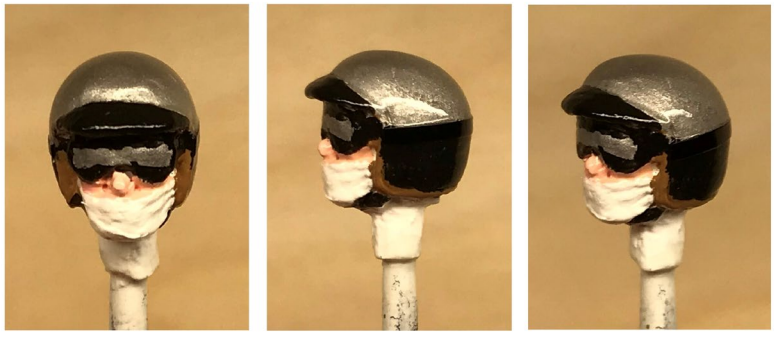
Step 4.3: Painting and Weathering the Engine and Exhaust pipes – As shown in **Photos 6, 7, and 11**, the engine and intake pipes were painted Testors #1146 Silver and the rear transmission is painted Testors #1180 Steel. A fine tip, black, "sharpie" permanent marker was used to blacken the ends of air intakes and rear exhausts. The white exhaust pipes were simply left the gloss white that was applied to the entire body in Step 3.3. Once the engine paint is dry, a "black wash" was painted onto the engine and white exhaust pipes to enhance the engine details and highlight the contours of the pipes. It is possible to purchase a matte black wash specifically made for this application, or it can be achieved by mixing 1 part of black acrylic paint with 4 parts water. The wash is painted on several times to enhance darker details and contours, and rubbed off in sections that are to remain "bright". **Photo 7** shows the completed black wash treatment on the engine and exhaust pipes. The black wash may also be applied to the driver suit in Step 4.2 to enhance the details and add shadows.

Photo 7: Painted Engine with Dark Wash Added



Step 4.4: Painting the Driver Helmet and Face – the driver's head was temporarily glued atop a toothpick to make is easier to hold and paint the helmet and face. The driver's helmet was painted silver and black to replicate Ritchie Ginter's actual helmet. As shown in **Photo 8**, the goggle rim and chin strap were painted black; the goggle lenses painted silver; the helmet edging painted brown; and the face mask was painted white.

Photo 8: Driver Helmet and Facial Features



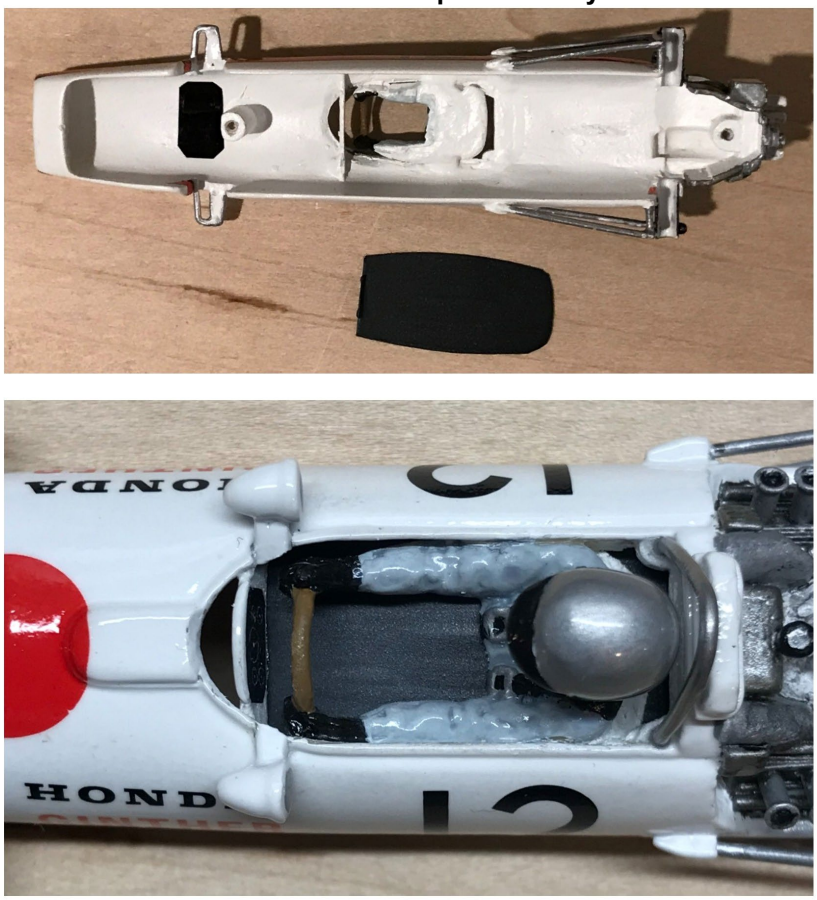
5.0 Adding the Cockpit Details:

This section provides instructions and tips on installing the base under the cockpit opening, and adding the roll bar, mirrors, driver head and the windshield to the cockpit.

Step 5.1: Adding the Cockpit details – at this stage the various cockpit details can be installed in the cockpit. Specifically, the driver roll bar was glued in place with the ends fitted into the small openings behind the driver's seat. Note – the actual roll bar is white, but in this case it was left silver to provide more scale detail. Next, the instrument panel decal was trimmed from the supplied decal sheet and applied to the instrument panel surface.

As shown in **Photo 9** and **Photo 10**, the ends of the painted mirrors were trimmed to match the interior contour of the cockpit, and the upper edge of the cockpit opening was “notched” to accommodate the mirror stems, and then the mirrors were glued in place. It will be necessary to test fit the mirror and trim the ends and adjust the notches carefully to get the correct fit. Lastly, the driver’s head was glued in place with the desired down tilt or sideways tilt to mimic a “real life pose”.

Photo 9: Cockpit Assembly



Step 5.2: Assembling the Cockpit Floor – as shown in **Photo 9,** the cockpit opening under the driver figure is enclosed by simply gluing a thin sheet of spare styrene plastic to the underside of the driver figure and the car body. Test fit the sheet styrene and trim it to shape so that it lays flat under the driver and can be glued to the underside of the instrument panel. Prior to gluing, the sheet styrene was painted a matte charcoal grey as shown in **Photo 9**. In this same manner, the small opening at the upper air intake air was enclosed with a small piece of painted sheet styrene that was trimmed to fit on the underside of the car body.

Step 5.3: Installing the Windshield – the windshield is <u>not</u> glued in place until AFTER the decals and final clear coat is applied in **Step 6.2**, but the installation is described here. The windshield can be glued in place around the outside or the inside of the cockpit. In this case, it is glued inside the cockpit. Carefully trim the top portion of the windshield to the desired height using sharp scissors. Trim the ends of the windshield to fit within the cockpit. Carefully test fit the windshield to ensure it is level and properly seated. Carefully glue the windshield to the body using “white glue” or other clear adhesives. Do NOT use CA glue since it will “fog” the clear plastic.

Photo 10: The Completed Cockpit and Driver Figure

6.0 Applying the Decals:

At this stage, the entire slot car kit is assembled and painted, and all that remains is to apply the decals and spray on a final clear coat to protect the decals. This section provides instructions, tips, and photos on how to correctly apply the waterslide decals supplied in the kit.

Step 6.1: Applying Decals – Carefully trim each decal from the sheet and test fit the decal in the desired location on the car body. Photo 11 shows the correct locations for the various decals. Dip the decal in warm water for 10 - 15 seconds and only remove the decal from the backing when it slides freely. Apply the decal to the body and carefully dab it and allow to dry in place. When the decal is dry, apply decal setting solution such as Walthers Solvaset to the decal to firmly secure it in place, and ensure the decal conforms to the body contours. The large red roundel on the top of the car will require several applications of setting solution for this decal to fully conform to the complex body shape. Note – the Goodyear tire marking decals are not supplied in this kit.

Photo 11: Various Views of the Completed Slot Car

Step 6.2: Spraying the Final Clear Coat – to protect the decals and achieve a high gloss finish, it is necessary to spray a final clear coat over the body. This should be done by spraying 2 to 3 VERY light mist coats and allowing these to fully dry to avoid wrinkling the decals. Then lightly sand the body, wipe with a tack cloth, and spray the final “wet coat” to achieve the smooth glossy finish.

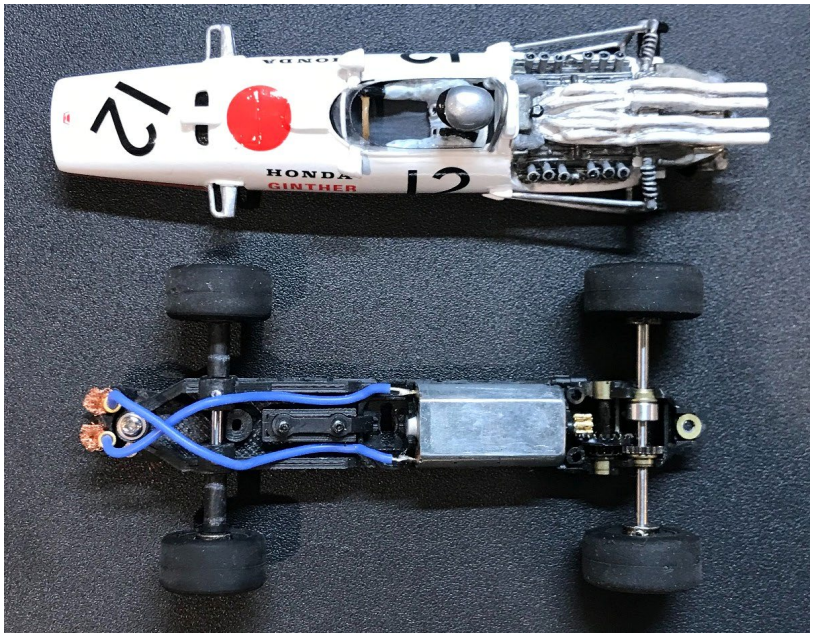
7.0 Testing, Operating and Maintaining Your Slot Car:

This section provides tips on setting up, running, and maintaining the slot car.

As shown in **Photo 12**, to service the slot car, simply remove the “all-in-one” body to access the motor, gears, axles and brushes. Periodically clean dust and dirt accumulation from the front and rear axles and gears with a small brush and then lubricate the axle bushings with light household oil, and lubricate the gears with light grease. After long term use, it may be required to replace the worn front guide brushes with new aftermarket parts.

Magnets - If desired, it is possible to add a thin, aftermarket magnet to the underside of the chassis, just behind the rear axle. It is recommended to use double sided tape to affix the magnet to the chassis bottom since this can easily be removed if desired. Adding the magnet will greatly aid traction on plastic slot car track with metal rails, but some enthusiasts prefer to run their cars on a wood track with no magnets.

Photo 12: Completed Chassis and Body



This slot car is compatible with all brands of 1/32 slot car track, and this model is designed to operate at a track voltage of 12.5 volts. Enjoy running and racing your new 1/32 scale **Honda RA273 Formula One** slot car.