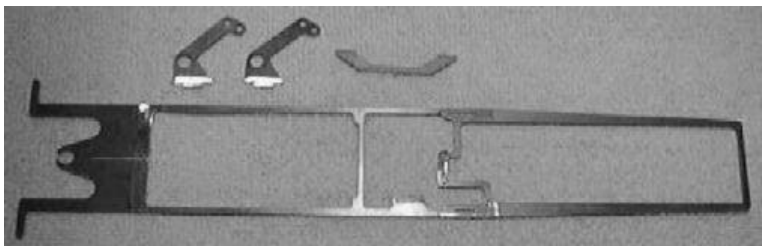
How to build the all new DRS-SW01 Chassis.

Tools needed for this part of the project include:

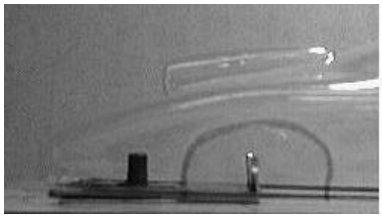
- **Dremel tool w/ cut-off wheel**. I use the thin ones as they cut quicker. Why? Being thinner they do not have to remove as wide of a path through the steel. If you have trouble breaking these thinner wheels, try adding a small amount of automatic transmission fluid into your tube of wheels. Not a lot, just enough to wet all the wheels. **Ungar Soldering Iron**. I use the 45 watt heater with integral tip Part number 4033S. There are NO SUBSTITUTES for this iron.
- The heaters that have the screw on tip ****. The reason that the 4033S is better? Heat recovery. When you are soldering the heat recovery is very important so when you start to solder the iron does not get "cold" and make for less than optimum joints. Always remember that soldering is closer to gluing than welding.!! I use **Harris "Stay-Clean" Soldering Flux**. The Part Number for a nice 4 ounce bottle is 40002. Again there is no substitute for this brand. It is widely available at Air Conditioning/ Plumbing stores. The flux sold on the "Slot Market" is not the way to go under any circumstance!
- I use **Kester Brand Lead Free Solder (98% tin 2% silver)** Kesters Part Number is 14-7016-0125. I get mine from W.W. Grainger. Grainger's Part Number is 6Z773. The solder sold in the majority of slot shops is acid core. This stuff is not welcome on my work bench. As soon as you put some of this acid core solder on your iron at the temperature needed to do your chassis the flux in the solder starts to burn. This makes for a lousy solder joint, not to mention what it does to your soldering tip!
- I get about a year out of my soldering tips. Do you? Never try to build a chassis using rosin core electrical solder. Save it and use it where it belongs. On electrical connections! You don't use acid flux or acid core solder on your electrical connections do you? If so, shame on you. I will also guess that the hardware on your motors show the signs of this practice. CORROSION!
- **Soldering Iron Holder and Sponge**. I like and use the ones made by Ungar. The sponge that come with these are low sulfur. Do not use regular household type sponges as they have a high sulfur content which is hard on the tip. I also wash my sponge daily with hot soapy water. This REALLY helps the life of your iron!
- Soldering block. I have a old **JK Soldering Block** that I use and like. I am not sure if they are still available.
- I also use a **One Inch Spring Clip** to hold various pieces to the soldering block while soldering. A **Dial Caliper** is handy for making and checking measurements that are made. Hot water, soap, and an old toothbrush to THROUGHLY CLEAN the chassis and soldering block as soon as you finish each stage of soldering. If you clean the chassis after each stage of soldering, it will not rust, if you don't, it will.
- **Bench Grinder** with a very fine wire wheel. I also go over the soldering joints AFTER CLEANING using the bench grinder. If your good at using the wire wheel, it will show in the finished car. Check any of my cars at the next race and you will see! I have some of the first Spring Steel Chassis that were ever made. They are not rusted at all.

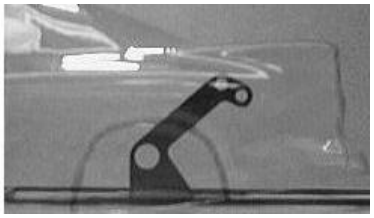
Drag Racing Specialties Products used for this project.

DRS-SW01 Pro Doorslammer Chassis, DRS-132 Drag Braid, DRS-134 Drag Guide, DRS-138 Wheelie Bar Axle, DRS-142 Retainers, DRS-148 Drilled Front Wheels, DRS-146 Pin Tubing (three pieces), DRS-151 Oilites, (or DRS-103 Bearings) DRS-153 Axle, (or DRS-155 Hollow Axle) DRS-158 Body Pins, DRS-172 .275" x 1.0" Fish Tires, DRS-513 Firebird Body, 54t Sonic Gear, TQ Drag Wire. And last but not least. DRS-367 Group 20 Motor!



As the picture shows, these are the pieces that come in the DRS-SW01 Chassis Kit. They have been trimmed with a Dremel tool, using a cut-off wheel and ready to be pre-tinned. As you may notice in the photo the areas to be soldered have had the chassis bluing removed, again using a Dremel tool.

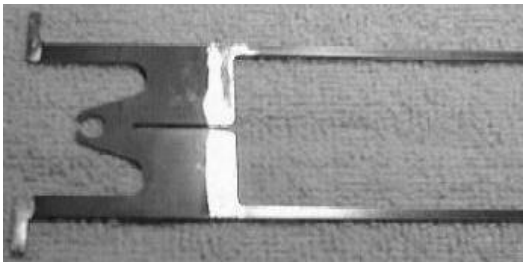


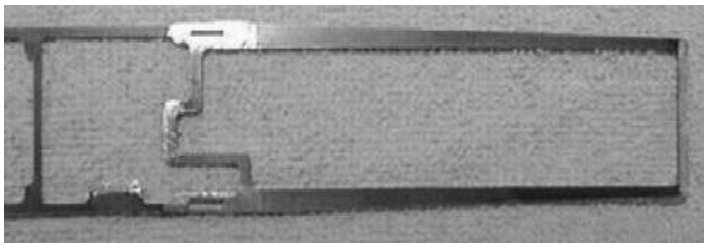


To set the wheelbase length, first put a guide flag, rear axle upright, and front axle holder into the holes/slots in the chassis. Then set a trimmed body down over the chassis, sliding the body fore and aft to line up the rear axle holder with the rear wheel opening. Now look through the front wheel opening, noting where to place the front axle holder.

Now remove the guide and front axle and set the chassis back on the block with the rear axle upright look at the chassis from the top and determine if the front body mounting "horns" need to be trimmed so the body will fit correctly. For this combination of

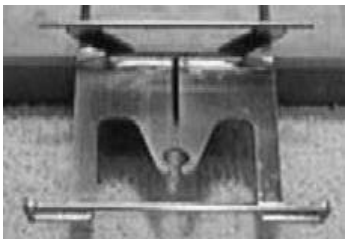
body and chassis it will need to be trimmed back .060". The body should always be installed so that it is flush with the bottom of the chassis.





The photo on the left shows the areas of the front of the chassis that are to be pre-tinned. These areas include the front body mounting "horns", and the front axle holder mounting area. This chassis is being set-up for a Firebird/Camaro body. This choice of body determines the location of the front axle holder. I have already narrowed the front body mounting horns .060" on each side to allow the use of this body style. The front axle holder will be mounted almost on the edge to the right. I will leave about .050" exposed on the right side.

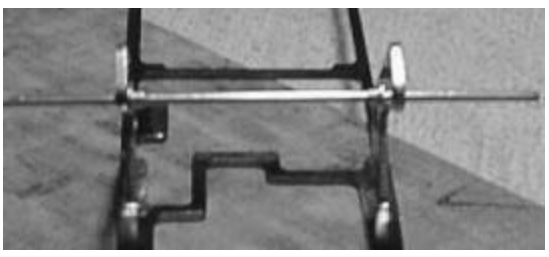
The photo on the right shows the areas of the rear of the chassis that are to be pre-tinned. These areas include the motor mounting area, the axle holder, and the wheelie bar axle mounting location. These areas need to be done regardless of the body used. Only the front axle holder is moved fore and aft to determine wheelbase.



The photo on the left shows I mount my front axle to the front axle holder before I mount the assembly to the chassis. It is much easier to do this before than after. I use my 1" spring clip to hold the front axle holder on the soldering block. Then I center the front axle using a dial caliper and solder in place. For this body style (Firebird/Camaro) I use a piece of DRS-146 Pin Tubing cut to 2.0" long as I am not going to mount the body using the front axle. This will leave enough tube to slide a pair of DRS-148 Front Wheels on the axle and then use DRS-158 Body Pins to hold the wheels on the axle.

The photo on the right shows how I solder the front axle holder in place. I clip the front of the chassis to the soldering block then put a little solder on the chassis and axle holder intersection to one side of the alignment slot. This will allow you to twist the axle holder slightly to align the axle holder. Once the axle assembly is straight solder the opposite side of the alignment slot so you do not loosen the side that you soldered first. Now go back and re-solder the first side.

After that is complete it is now time to solder the front body mount. First I slide on two DRS-147 Retainers on to the body mount with the large end of the retainer facing out toward the body. The small end of the retainer should set up on top of the chassis as shown. This will do two things. First it gives a firm support for the body, so the pin tubing does not push itself through the body. Second it raises the pin tubing so it is not so close to the bottom of the body. I know this sounds like much about nothing. This is a very important step however. Those that run on tracks that do not have much shut down area can understand this without much problem. I do not want my pin holes to get loose, or worse, ripped free. I want my body to continue to float correctly in the final round of the big race. This is one reason that when you race us, you will find that our cars stay consistent throughout the rounds of racing. You will win more with consistency that you will with ET/Speed.

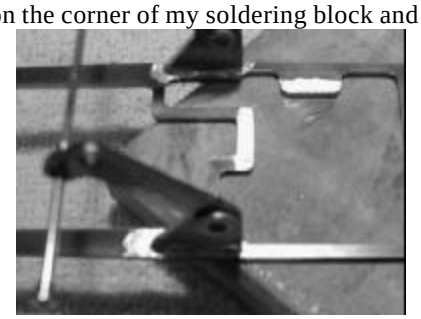


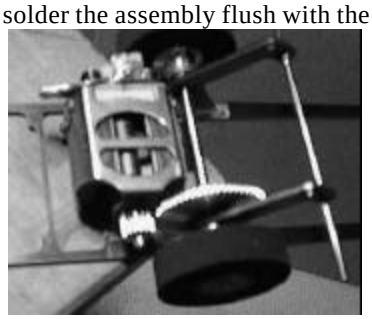
The photo on the left shows the rear axle holders in place. I clip the chassis to the soldering block then solder in place. I align them vertically by eye. They should be as close to 90 degrees to the chassis as possible. It may help to stand something vertically on the soldering block to reference the rear axle holders from. You can also see the rear body mount with the correct amount of side to side clearance. For the Firebird/Camaro body the piece of DRS-146 Pin Tubing used for the rear body mount should be 2.70" long.

After you cut the tubing to the correct length for your application thread two DRS-142 Retainers onto the body mount with the large ends facing out. Now feed the tubing into the body mount from the inside of the rear axle upright. Slide it far enough to one side so you can feed the other end of the tube into the hole on the opposing rear axle holder.

Then using your dial calipers, get the tubing so it protrudes from the sides of the rear axle uprights. You should be able to measure the same distance on both sides. Now add .030" to the reading of your dial caliper. When you have done this, slide your pin tubing to one side to the new setting on your dial caliper. Now you can Super Glue/Solder the retainer on the side that now protrudes more than the other side. After that step, slide the tubing back to the other side using the dial caliper to get it at the same dimension as you have on the other side. Done correctly you will now have about .060" side to side clearance as shown in the photo.

The photo on the right shows how to solder the DRS-138 Wheelie Bar Axle Assembly. Yes, I solder it on at this stage. As you can see I just put the chassis on the corner of my soldering block and solder the assembly flush with the bottom on the chassis.





In the photo on the left you need to note the width of the rear motor mount tab. This tab will need to be trimmed from the front of the rear motor mount tab to get the correct gear mesh, with the motor installed in the full sidewinder position.

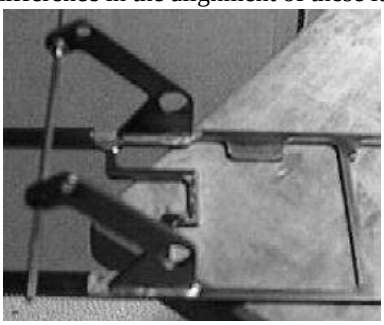
In the photo on the right I have installed the DRS oilites, DRS axle, spur gear (this application will use a 54 tooth Sonic), and DRS Fish Tires. To install the motor in the full sidewinder position, you must have the armature shaft on the endbell end of the motor trimmed flush with the endbell. This has to be done to clear the inside of the tire. Now set the chassis on the corner of your soldering block, with the tires/spur gear hanging off the soldering block.

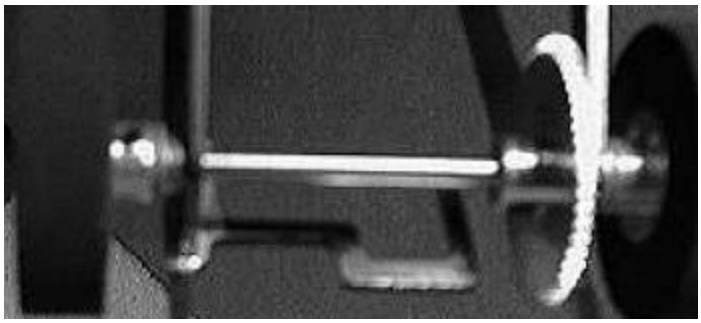
Now you can set the motor in place (this application will use a 13 tooth Sonic Pinion), which is flush with the bottom of the chassis. Keeping the motor parallel with axle, note the gap between the two gears. With this combination of gears you will need to trim the rear motor tab about .040". Take the tires, axle, gear, and oilites back out and trim the rear motor tab.
The result should look like the photo on the left below showing the trimmed rear motor mounting tab.

Now re-assemble the rear axle assembly and re-check the fit of the motor. If you end up at a later date using a larger pinion or spur gear, you may end up with a little bit of a gap between your motor and the rear motor mounting tab. This is no problem, just solder it and everything will be fine.

I tend to have a little more clearance on my chassis (between the motor and the rear motor mounting tab) to allow the use of different gear ratios. Now remove the rear axle assembly to prepare to install the oilites.

I know most of you are thinking what could be so hard about installing oilites/bearings. It is not hard, but there is a trick that can make a big difference in the alignment of these items.

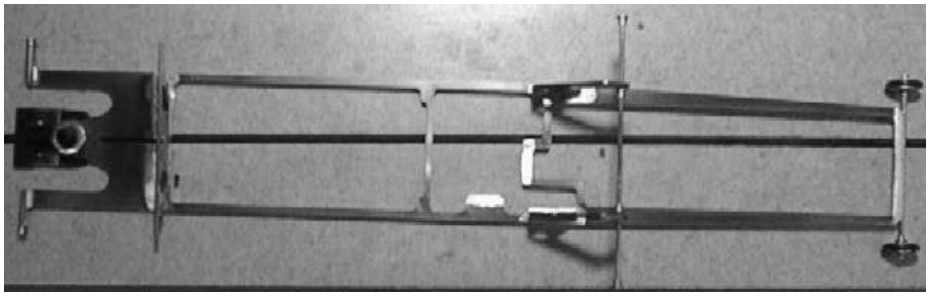




As shown in the photo (above right) you will see that I have installed the rear axle assembly. I have left enough side to side play that the oilite/bearing on one side is able to be pulled out. First put some super glue on a tip of a toothpick and apply to the oilite/bearing that is protruding from the hole. Next push the oilite/bearing back into the hole using the tire. Then on the other side pull the oilite/bearing out and repeat the process of gluing the oilite/bearing. Then on the side that you are working on, loosen the setscrew and slide the tire on the axle to take out ALMOST all the side to side clearance. Leave about .010 clearance.

Now hold the car and using a flick of the finger spin the rear axle assembly. Do this holding the axle horizontal. You will notice how well the axle spins. Now hang the chassis up keeping the axle horizontal while the glue dries. This method will install the oilites/bearings square with the axle and will insure that the assembly is free rolling. I have had a lot of comments over the years on how well the rear tires on my cars seem to roll better than theirs. This IS the secret. Heck my cars using oilites spin just as well as most of my competitors cars do with bearings. When you get this process down, you will find out why I have always said that properly installed oilites really do not have a disadvantage compared to bearings!

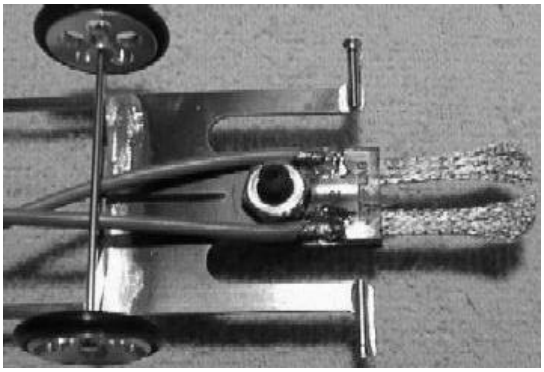
Now to start building out the chassis into a winning combination.



First up is to install the guide. I install the guide using super glue to lock in place and tighten the guide nut. Before the glue sets, put the car on a tech block and move the chassis side to side in the back. When the guide is centered the swing, side to side, will be equal relative to the slot in the tech block. Once you get the guide centered it should never need to be moved.

I started doing this when Robby was very young. He would stage the car not really being able to tell if the car was in the center of the track. With out glue holding the guide in place, he would sometimes get the guide off center and when the car would go down the track you could hear a clicking sound. This sound was caused by the guide (being off center) being wedged in the slot. As the car was going down the track the very front of the guide and the very rear of the guide (look at the photo) would hit the sides of the slot.

Yes it sure did slow the car down too! No this would not be good on a road race car. <grin> Some would say just leave the guide loose. Try leaving the guide loose on a fast light car sometime. Just make sure that you can afford the damage that will most likely occur. To put it another way, glue the guide square and NEVER worry about it. Winning calls for removing variables. Gluing the guide removes a very large potential variable. Next up preparing the braid.



The photo on the left shows a pair of DRS Braid that has been combed out to the proper length. The braid brush that I use is from DJ's Raceway in Wichita, KS. It is easily the best brush for this purpose that I have seen or used! I comb one side then flip it over and comb the other side.

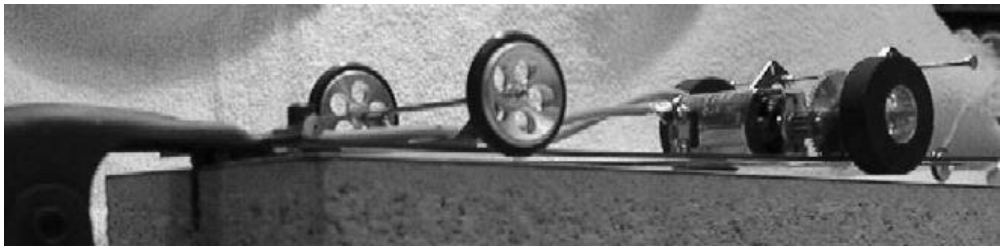
The photo on the right shows what the braid looks like when installed. Notice that the outside edges are trimmed at an angle. This is done to prevent the braid from riding up on to the track surface when the car is on the track, causing a less than optimum contact with the track braid. The length of the braid should be trimmed off enough so when you fold the braid in place, it does not extend any longer than the guide.

Now to set the curl of the chassis! This is probably the most misunderstood part of slot drag cars. I do not want to argue the point of laser verses edm machining, but. Most of the " think-they-know-it-all" (you know the type, all talk…) say that laser machining is an inferior way to cut spring steel, it gets too hot, it gets too brittle, or whatever fantasy they are pushing at the time. I have a fact that they can not argue. DRS has over 100 different chassis part numbers. They all work, and work well!

Besides that, I have always had an unconditional guarantee. I also have had very few chassis returned under warrantee! EDM machining is too limited to use for cutting slotcar chassis. They do not deal with a lot of center cuts on a chassis that has a limited price range. If this were not true somebody would have already cut a True-Scale Dragster like our DRS-33 with an edm, and put it on the market for less money! If you look at an edm chassis you will find that they have to perform as few "penetrations" as possible to keep the price competitive.

The real interesting thing about the chassis that I have seen cut on a edm, is the practice of stacking about 50 sheets of 4X5 spring steel on top of one another, then welding them all together on all four sides before cutting them. That's right they have to cut a STACK of chassis to keep the costs reasonable. You have to see this done to appreciate it. The spring steel gets so hot I guarantee you can not pick up the stack after welding. When I cut a chassis with the laser (one at a time I might add) I can reach over and pick the chassis from the sheet without gloves just as soon as it is done. So tell me which process has a higher likelihood of causing heat damage.

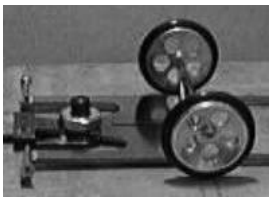
I will also tell you to check rail thickness' on our chassis compared to edm. You will most likely find the laser cut chassis to be more accurate. This is most likely caused by a slight tilt in the welded stack of chassis, (just a .001" will do it). The chassis on top will most likely be different than the one on the bottom. This is probably the reason that some chassis, of the same design, will work differently. I know stop the diatribe and get back to the article.

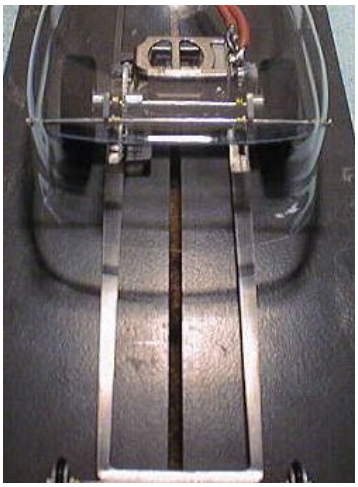


When the chassis is properly built with the right amount of curl, holding the front of the car down as shown, the rear wheels will come off the tech block about .060” as shown in the photo. This curl performs two VERY IMPORTANT functions. First it will leave a slight angle on the guide so the car can ride on the last three quarters of the braid which will give much better contact with the braid on the track. Second, it will absorb the shock of the launch.

How is this done? It you look at a car (sidewinder motor) with this thought and think about this. If the motor is installed with the pinion higher than the motor, when you apply power, the motor will climb the gear, causing the front of the car to come up with the motor. When it is installed lower (the motor) than the axle, when you apply power the motor tries to go under the gear, pulling the front of the car down which will give you much better braid contact.

When you have a flat chassis, it must move from the flat plane before it can absorb any shock. When the chassis is curled front to rear as recommended, it does not have to move from a flat plane, thus can absorb the shock of the launch instantly. I think of it as a leaf spring, which as you now are curled, not flat. I realize that I just told a REAL BIG secret of how a slot drag car works. Now my fellow manufactures will know. I am confident that they will use this article to improve their products. Nah, they will not believe it, remember, they already know it all! <grin>





The photo on the left shows a completed Top Sportsman chassis. The photo in the center shows the front wheels installed using DRS Body Pins. The photo on the right shows that the rear body mount tubing is centered between the pillowblocks. This will allow the body to float a little bit side to side.

Side shot to show that the body should be installed flush with the bottom of the chassis. This is what you get when you order a “Gunslinger” Ready-To-Run Car. This one is Part # DRS-237! This car was shipped to REH Distributing.

