GETTING STARTED in 1/10th R/C

shrcccc

A light guide on almost everything you need to know to get racing your own 1/10th scale electric off road buggy!

EDITOR'S NOTES

Welcome to SHRCCC - Surrey and Hants Radio Control Car Club!

We are a friendly R/C buggy club based in the Surrey and Hants region. We race 1/10th scale 2WD and 4WD off road R/C buggies (Modern and Vintage) and 1/10th scale truggies and trucks on a purpose built AstroTurf racetrack, with lots of jumps for off road fun!

R/C car racing can be a daunting arena to get to grips with, whether you're an enthusiastic youngster, an adult getting back into the hobby, or starting out for the first time. There is an overwhelming amount of products on offer; chassis, motors, batteries, tools, tyres, the list goes on and on!

With this handy quick start guide, we aim to get you set up with a competitive buggy and all the extra equipment necessary to get you racing without becoming overwhelmed at your first race meeting.

This handy guide has been split into separate articles, each one covering a particular aspect of the hobby.

We really hope you enjoy racing with us. Now let's get started!

David Laycock
Editor & SHRCCC Member

David Laycock at the SHRCCC Apex GP in 2015 with his 2WD Schumacher KF

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1 SHRCCC

Surrey and Hants Radio Control Car Club is the premier destination in the Surrey and Hampshire region for 1/10th off road electric buggy and short course truck racing.

The club has been in existence for a number of years and has moved venues to its current residence at Samuel Cody Specialist Sports College, in Farnborough, Hampshire.

We rely on our club members to get involved with the running of the club. As the old proverb says, "Many hands make light work." and that is no exception at SHRCCC.

We welcome all new members with open arms and lots of knowledge is readily available to be given.

The club races every week and with practice every other Tuesday, racing every Thursday evening, and racing every other Sunday, you can be sure that some weeks your racing bug will be well fed if you enjoy racing as much as we do!

The club hosts a number of extra events throughout the calendar year in addition to our regularly scheduled programming, including both 2WD and 4WD regional races as part of the Mid-South region.

We are extremely proud of these events and with each year that passes, we try to outdo ourselves with the planning, preparation and production of these special events.

We welcome new members to get stuck in with the additional tasks that need to be carried out to keep the club running smoothly. Each spring, we give the track some well needed TLC.

This includes literally sweeping and vacuum cleaning the entire track surface, as well as all the jumps, re-glueing the joins in the track surface, patching damaged Astro-Turf, fixing and maintenance on the track features.

It's a great chance to meet and catch up with many of your fellow club members and after a hard day's track maintenance, friendships are solidified and lots of fun and laughs have been shared. As they say, you get out what you put in and being an active member of SHRCCC is extremely rewarding!

Get involved!

2 Memberships

Being a member of SHRCCC is a great way to feel part of our community, as well as helping to save you a few pennies over the course of the season.

Memberships for SHRCCC last yearly from January 1st through to December 31st.

You can join SHRCCC through the form on our website at the following web address:
https://shrccc.co.uk/membership

BRCA
You will also require membership to the BRCA. This is for insurance purposes and is mandatory.
You can join the BRCA through the following website:
https://www.brca.org/join

BRCA Handbooks
https://www.brca.org/racer-hub/handbooks

SHRCCC banner with two modern 2WD racing buggies

Podium winners at SHRCCC

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The Track - Surface, Rostrum, Features

Surface
There are a few different surfaces in 1/10th buggy racing. We predominately race on AstroTurf at SHRCCC, but other clubs do have different surfaces, such as high grip EOS carpet, and low grip dirt. AstroTurf sits in the middle of these grip levels.

Rostrum
The rostrum is where racers stand on during their Qualifying Heats and Finals. It is placed to the side of the track and gives racers a commanding view of the track to see their buggies at all times.

A rostrum of racers at SHRCCC

Features
With off road buggy racing, features play a big part in the track and its layout. They are used in various degrees to enhance a track's layout so we don't end up racing a flat touring car style track. Our features include jumps, ramps, and table tops.

Timing Systems and Personal Transponders

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We currently use the MyLaps timing system. The type of Personal Transponder is important. RC3 (Harry) personal transponders are compatible with our timing system and have two wires, not three. These fit in your car and are logged by our race computer to track your lap times, positions, and number of laps completed.

It is down to the individual racer to supply their own Personal Transponder and can be purchased online in some model shops or you may pick one up second hand.

The first time you race, you will be directed to drive your buggy over the Timing Loop, which at SHRCCC is underneath the AstroTurf surface near race control. Once your Personal Transponder has been logged, it will be assigned to your name and you will be ready to go.

Other clubs have either the same timing system as ourselves, slightly different versions of the same timing system, or alternate timing systems.

The timing system software at SHRCCC (BBK) is no longer available for purchase, but we have an unlimited licence and will be using this system for the foreseeable future.

There are no longer print outs, so to view the results, you will need to go to https://shrccc.co.uk/results and click on Live Results.

The RC3 Harry personal transponder (Note the two wires)

An example of a MyLaps timing system

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2WD Buggies, 4WD Buggies, Short Course Trucks, and Vintages

2WD Buggies

These are the most popular class at SHRCCC and are predominantly rear wheel drive, although there is one manufacturer of note (Orb Racing) who produce a front wheel drive off road buggy, which requires a donor buggy to build the full kit.

Serpent Spyder SRX2 Gen3 Team 2WD Off-Road Buggy

2WD buggies are predominantly gear driven, but there are exceptions. Most notably from the manufacturer Schumacher Racing, based in the UK. Although their recent release has gone down the gear route.

4WD Buggies

In the winter time, 4WD buggies come into their own. But as well as 2WD buggies, can be used all year round, come sun, wind, rain, and occasionally snow! Modern 4WD buggies have two differentials and are either shaft or belt drive.

Short Course Trucks

Short Course Trucks, or SCT's, are another popular class at SHRCCC, although can be hard to get hold of. These have wider track and are longer than their buggy counterparts. They are great fun to watch and drive and are generally more forgiving than a typical 2WD or 4WD buggy if you run into a track hose or feature at an unfortunate angle.

Vintages

This class has increased significantly in popularity over the past decade, with racers from days gone by returning to the scene and are great to see driving around the track, bringing back fond memories for our racers who are old enough to remember them.

Yokomo YZ-870C Super Dog Fighter Retro 4WD Off-Road Buggy

SPARE PARTS

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Spare parts are a personal preference in terms of the amount and type of spares a racer will carry with them, but to be getting on with, shock towers, wishbones, and spur gears are a useful addition to a racer's kit.

A pair of Schumacher Front Wishbones Med Flex - LD3

7 Steering Servos

We strongly suggest going with a full size steering servo to begin with. There are short servos available, but for the beginner racer looking for maximum reliability, it is best to go for the full size variant.

Savox Full Size High Torque Coreless Digital Servo

8 Batteries

Batteries are a fairly easy choice these days but must conform to the BRCA standards. A full list of batteries confirmed by the BRCA is updated each season on their website. The Shorty battery fits most buggies and short course trucks. Although there are a few vintage buggies where you will require the Low Centre of Gravity (LGC) batteries. These are slightly lower in height than the standard Shorty battery, so can fit between the 4WD belts in some vintage models or if you are chasing milliseconds, give the experienced racer's buggy a slightly lower centre of gravity as the name suggests.

LiPo shorty and LCG batteries are the standard at the current time. These must ALWAYS be charged in a LiPo sack to mitigate against fire. Anyone not charging using a LiPo sack will be asked to charge in a LiPo sack or leave the premises. Never charge your batteries without a LiPo sack, or in your buggies or short course trucks.

A Corally 7.4V 5000 capacity LiPo battery

9 Motors

We suggest you start racing with a sensored motor. This has three wires (A,B,C) that connect to the Electronic Speed Controller (ESC) along with a fourth cable called the Sensor Cable.

Generally speaking, the lower the wind of the motor, the more aggressive the motor will be to drive. For new racers, we suggest a 10T motor. You will see experienced racers using motors ranging from 4.5T in 4WD and 5.5T in 2WD up to around 17.5T in both of these classes.

Average motor winds at SHRCCC vary from 6.5T in the dry, to 13.5T in the wet depending on the racer's preference and buggy setup.

A Hobbywing 8.5T Brushless Sensored electric motor

10 Differentials

The Differential is an integral part of the buggy setup equation. With a badly setup differential, the buggy will not perform at its best.

There are two types of differential. Gear and Ball. Gear differentials use gears in a case of oil which can be changed to be either thicker or thinner, much akin to a shock absorber. So generally speaking, in hot and dry conditions, thicker oil is used. In cooler, wetter conditions, thinner oil is used.

With the ball differential, a circle of balls are used to spread the load from the drive train to the driven wheels. If you hear a chirp or bark from your ball diff under load, then it's time to tighten the differential.

A Schumacher ball differential

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Suspension

It is best to set up the buggy exactly to the kit setup to start your buggy racing journey. You will then have a great baseline to refer back to should you go astray with modifying your car setup.

With that in mind, shock oil is an essential to get your buggy or truck running well on the different track layouts or clubs you may visit.

In the summer time at SHRCCC and when running on EOS carpet at indoor clubs, thicker shock oil is used. In cooler conditions at SHRCCC and on dirt tracks, thinner shock oil is used.

If you follow the kit setup, it will give you a good baseline to start from. You can then tweak the car setup from there.

It also is buggy dependent. A buggy with a more forward weight distribution will require a different suspension setup to a buggy with a more rearward bias.

A Schumacher 4WD Off-Road Buggy

Slipper Clutch

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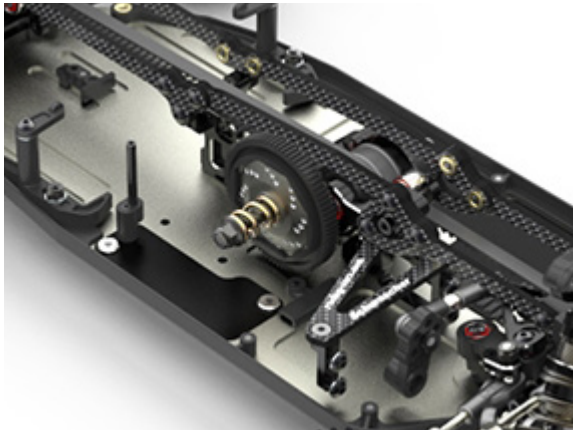
Setting the slipper clutch is a bit of a dark art. You should start off with a loose slipper which you then tighten down until you can launch the buggy from a standing start without the buggy pulling a wheelie. You should also be able to hear the slipper working as the buggy accelerates.



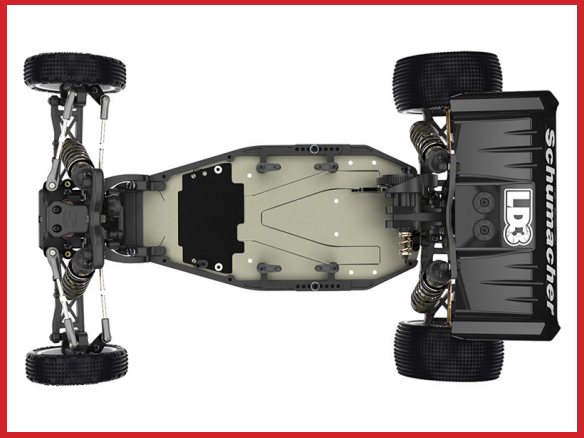
An example of a slipper clutch (Centre of photograph) Lefty loosy, righty tighty.

13 Chassis

The chassis of the buggy varies in size and shape depending on the manufacturer, but as a general rule of thumb, a shorter chassis is used on tighter tracks and longer chassis used on bigger tracks.

You may shorten or lengthen the distance between the wheels with the spacers included with your kit. Otherwise it is an expensive visit to your local model shop for an upgrade.

For the majority of racers, the chassis that comes with the kit will be absolutely fine for most tracks.



A Schumacher 2WD Off-Road Buggy

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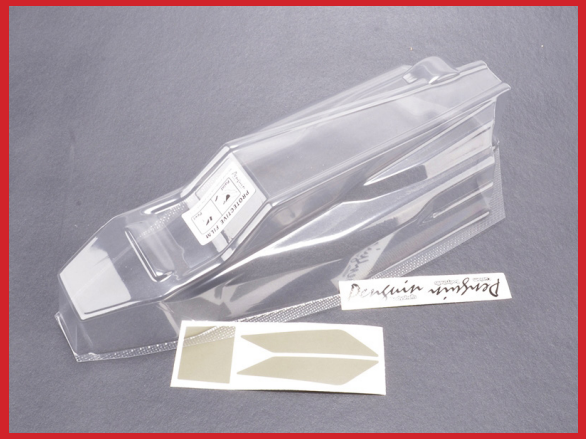
Bodyshells and Wings

The bodyshell is another art form where personal preference plays a part. You may go for a lightweight bodyshell or a thicker, more robust option, but whichever you choose, we recommend going for a colour that will stand out against our green AstroTurf.

Wings are a tuning option that has a dramatic effect on the balance of your buggy. They are designed to be trimmed to your personal preference with the Gurney (the top rearmost section of the rear wing) able to be cut down as much or as little as you prefer.

As a general rule of thumb, the drier and hotter it is, the least amount of downforce or Gurney you run. In the wet, you may prefer more downforce or Gurney on the rear wing.



A Penguin bodyshell ready for painting

A Penguin rear wing

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Transmitters (TX) and Receivers (RX)

You use the transmitter to control the buggy. There are two types of Transmitter. The most popular is the wheel transmitter. This uses a small wheel on one side of the transmitter to control the left and right steering. A trigger is then used for forward and brake. The other type of transmitter is the stick transmitter. This uses two sticks on the top to control the forward and brake and the left and right steering.

Receivers sit in the buggy and literally receive the signal from the transmitter to control the buggy.

It will take time for you to get used to either setup, but start off slow and in the middle of the track. Don't worry about the racing line if you are a novice. The more practice you get, the faster you will find you can navigate the track and closer to the racing line you are able to drive.

A Sanwa Transmitter and Receiver

Tools

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You will need a minimum of tools to be getting going with and these vary dramatically in price.

Below is a selection of tools to get you started.

Hi-Viz Vest - Essential for Marshalling.

LiPo Charger and LiPo charging bag

Drivers
1.5mm
2mm
2.5mm

Needle Nose Pliers

Ride Height Gauge

Magnetic Parts Tray

Soldering Iron and Solder

Pit Mat - Saves you from searching for lost screws and parts when you are wrenching track side.

A set of Fastrax hex drivers

17 Marshalling

This is where your Hi-Vis vest comes into use. When marshalling, you must wear your Hi-Viz vest. This makes sure you are visible at all times and gives you less of a chance of getting hit by an oncoming buggy. It is down to the individual to marshal their section of the track safely and responsibly.

Once you have completed your Heat or Final, you come down from the rostrum, collect your buggy and switch it off. You then go to your assigned point on the track to marshal. Only marshal a buggy when it is safe to do so. You may have to be patient and wait for a number of buggies to pass before attempting to marshal a buggy, as your safety is our utmost priority.

Stuart Woolgar Thursday Worlds Truck winner with Hi-Viz Vest

Weather

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As a 100% outdoor venue, the weather plays a crucial part in our hobby at SHRCCC.

We recommend bringing a gazebo at our larger meetings when the field opposite the track is available for pitting. And of course, during hot weather, wear sunscreen.

When the weather is raining, we still race unless the rain is so heavy that it floods the track. We then make a decision as to run the meeting or postpone to another date.

We do our utmost to run all our events, but forces outside our control do occasionally curtail our best laid plans. Fortunately, this is a rare occurrence and we aim to race as often as our calendar allows.

Wet but grippy conditions at SHRCCC

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Furniture

Bring a table and chair with you to our race meetings. If you do not have a table and chair, we have a few we set up. With the position of our rostrum, pitting can be at a premium at SHRCCC, so we recommend sharing half a table each whenever possible.

SHRCCC racers discussing car setup

Charging 20

As stated earlier, only charge your batteries in a LiPo sack. This is essential for your own safety and the safety of those around you. There are two sand buckets available in the event of a LiPo fire located at either end of the compound.

An Arrowmax LiPo Charging Sack

21 Wheels, Tyres, Inserts, Glue

Wheels
Different manufacturers use different offsets for their wheels. It is best to stick with the same manufacturer when purchasing wheels that you know fit your buggy. This will give you fewer headaches down the line if you accidentally purchase wheels that may not fit your buggy correctly.

Tyres
At SHRCCC, we recommend the following as a good starting point.

In The Dry
Rear:
Schumacher Mezzo - Yellow Compound
Schumacher Rear Medium Insert

Front:
Schumacher Cut Stagger - Yellow Compound
No Insert

In The Wet
Rear:
Ballistic Buggy - Green Compound
Schumacher Rear Soft Insert

Front:
Schumacher Cut Stagger - Silver Compound
Schumacher Rear Soft Insert - Cut in half

When gluing the tyre to the wheel, remember tyre glue (depending on manufacturer) can be very runny. So take your time when gluing the bead of the tyre to the rim of the wheel.

A Ballistic Buggy Rear Tyre

Core RC Tyre Glue

Recycling Wheels Using Acetone Or Steam

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There are a couple of methods for reusing your wheels once you have used up the tread on the tyres.

The first is to cut the majority of the tyre off the wheel, leaving just the bead around the rim of the wheel. You then remove any foam inserts and place the wheel in acetone within an acetone-proof container. Seal the lid and it should then be left for a few days until the bead can be removed from the wheel. The wheel can then be reused with a fresh set of foam inserts and tyres.

CAUTION: Always use safety protection when handling dangerous chemicals.

The second option is to place the wheels in a vegetable steamer (Not one used for food - you will need a separate steamer just for your wheels.) and set it going for an hour or so. You should then be able to remove the tyres from the wheels to reuse.

A stack of yellow rear wheels

A pair of Schumacher Medium Rear Foams

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Cleaning Your Buggy

This is mainly for when there is inclement weather and your buggy is at risk of turning into a rusty ornament. A light coating of GT85 on the metal parts and bearings should help to mitigate against this issue.

Between Heats and Finals, we have an air compressor available for use to blow off the worst of the AstroTurf fluff from your buggy. You can then use a rag to wipe off any remaining residue.

A Heat of 2WD off-road buggies lined up ready to qualify at SHRCCC

Racing In The Wet - Prepping The Buggy and TX

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As stated in the cleaning your buggy section, GT85 is used on the metal and bearings of your buggy to keep the rust away.

For the transmitter, in the rain, and cold of winter, a transmitter muff is a great investment to protect your expensive transmitter.

To set your buggy up for the wet, in general, more toe in at the rear is used. We use lighter shock oil, and use softer tyres along with raising the ride height to induce more roll in the setup.

A stick style transmitter muff

A wheel style transmitter muff

25 Practice, Heats, and Finals

Practice
On Tuesday Practice evenings and before each meeting, there is time to practice the track. Tuesday Practice evenings there is plenty time to work on setup changes to your buggy as well as learning the layout of the track.

Heats
At SHRCCC on our club nights, we generally run three heats of 5 minute timed qualifying rounds. This means you are racing the clock, not each other. So be respectful - if a faster car approaches you, let them pass. There will be time to race in your finals.

Once you have done a sighting lap, you line up your buggy shortly before the timing loop. You then wait for the race director for further instructions. If your personal transponder has not been assigned to your name, you will be asked to go over the loop a couple of times. Once all personal transponders have been checked, you then line up your buggy again ready to start the Heat.

Important - Check before the Heat which number you are starting from.

When the Heat starts, the computer takes over and will announce the numbers one by one. You then set off across the timing loop and your 5 minute qualifying Heat begins. Once you have completed your 5 minutes, when you cross the timing loop, your number will be called. You then park your buggy to the side of the track and wait for all buggies to finish their 5 minutes. You then come down from the rostrum and collect your buggy. Turn your buggy off along with your transmitter, set them on your table, and go out to your marshalling point for the next Heat, remembering to wear your Hi-Viz vest.

Your qualifying position is then determined on the best results out of X number of qualifying Heats. So for Thursday night racing, this is best 2 of 3 Heats.

Finals
There are 2 leg finals on Thursday nights and depending upon time, either 1, 2, or 3 leg finals on Sundays.
For your Final, please do a sighting lap, crossing the timing loop at least once. This makes sure your personal transponder is counting.

All buggies then line up in grid order on the main straight with a staggered grid. Once the Race Director is ready, the race will start. There will be a countdown of 10 beeps, a random pause, then a warble. On the warble, the race has started and you set off from the grid for 5 minutes of fun, respectful racing.

If you have a collision with another racer that was your fault, please wait for their buggy to be marshalled, then carry on your race. It is open wheel racing, so contact

can happen but generally there are few occasions where you will have to cede a position.

Once the 5 minutes of racing have counted down, you then continue racing until you cross the timing loop line. You will then hear your buggy number so you know you have completed your race. Same procedure of waiting on the rostrum for all cars to finish applies as the Heats. Once all buggies have crossed the timing loop line, a tone will sound and you will then descend the rostrum to collect your buggy, turn off the buggy and your transmitter, return them to your pit table, ensure you are then wearing your Hi-Viz vest and go out to marshal the next Final.

Your overall result will depend on the position(s) you finish in your final.

SHRCCC bathed in sunshine

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ESC - Electronic Speed Controller

The Electronic Speed Controller or ESC for short, is designed to send power to the motor as well as the receiver (RX). These units generally come pre-soldered with motor and battery wires, but you may still need to solder on battery connectors along with soldering the three motor wires to your chosen motor with the A,B, and C wires connecting to the corresponding motor terminals. The ESC should also come pre-soldered with a capacitor. The capacitor not only helps with delivering smooth power to the motor, but also helps to stop the possibility of a short if you accidentally connect the + and - terminals of the battery the wrong way. Be very careful when connecting the battery, as it will at the very least blow the capacitor and at the most could trigger a battery fire, which none of us want to see.

Each manufacturer has different ESC setup instructions, so read their manuals carefully and you should be up and running in no time.

You can also purchase an ESC program box which connects to the ESC via a cable. You can then change such settings as Boost - for more or less acceleration, and Turbo - for more or less top end speed. If you are feeling particularly fancy, there are also Over The Air ESC's and plug in modules that allow you to adjust the settings of the ESC via an APP on your smart phone or tablet.

A Hobbywing XERUN XR10 Pro V4 G2S ESC

A Hobbywing Multifunction LCD Program Box V2