HOW TO GO RC RACING

The Tamiya Junior-E Guide

Never been RC Racing before? Tamiya Junior-E has got you covered!

Tamiya Junior-E has put together a guide on ‘How to go racing’. This covers a lot of the things you need to know before embarking on your first race. We look at the basic questions, how you join the BRCA and enter a race, what you need and what to expect on a race day.

The checklist

- ❑ **Tamiya TT-02 kit**
- ❑ **Tuning Hop Ups**
- ❑ **Radio Gear**
- ❑ **Electronics**
- ❑ **Batteries**
- ❑ **Battery charger**
- ❑ **Tyres**
- ❑ **Timing transponder**
- ❑ **Tools**
- ❑ **Tyres**
- ❑ **BRCA membership**
- ❑ **Race entry**
- ❑ **Hi Viz**
- ❑ **Heavy duty gloves**
- ❑ **Read the rules**
- ❑ **Read driver’s briefing and heat lists**

The contents

The basic questions

RC racing. What's that all about then?

The excitement of remotely controlling electric racing cars has captivated enthusiasts for many years. And interest is only growing now, as young and old alike look to get outdoors in an interactive, safe, fun way. Running RC cars around the local park may be great fun, but the challenge provided by organised racing adds a new dimension and offers the chance to meet lots of people who share your interest. Radio Control car racing is a hobby that develops life and STEM (Science, Technology, Engineering, Mathematics) skills in an engaging manner

Multiple F1 Champion Lewis Hamilton began his journey racing RC cars as a child as did many other top racing drivers. Why not let it begin your journey now?

Tamiya Junior E is open to Under 12 year olds who have little or no previous race experience. For full eligibility details please check the current regulations documents.

Is RC racing expensive? And what do I need?

RC racing can be expensive! With racers spending hundreds of pounds on chassis kits, before you even count the controllers, batteries, motors, body shells, tools and everything else!

However, this is the point of the Tamiya Junior E series; to offer a **low cost entry** to bring new youngsters into the sport.

The reality of being a parent is that almost all activities cost money. Take kids football. By the time you've bought kit and boots that the kids constantly outgrow, paid coaching fees and tournament entries you're realistically looking at £400 a year.

Realistically, to set yourself up with everything you need for the Tamiya Junior E series you will be looking at a similar cost.

- ❏ **Tamiya TT-02 Kit - £125**
- ❏ **Paint - £5**
- ❏ **Radio control gear - £35**
- ❏ **Electronics Speed Controller (ESC)- £20**
- ❏ **Steering servo- £20**
- ❏ **Tune up parts* - £45**
- ❏ **Lithium Polymer 2S Battery (LiPo) - £30**
- ❏ **Battery charger - £35**
- ❏ **Battery safety bag - £5**
- ❏ **Tools - £15**
- ❏ **Tyres (1 set will last a season) - £25**
- ❏ **Timing transponder - £50**
- ❏ **BRCA Membership (2021 price) - £20 p.a.**
- ❏ **Club membership* (varies) - around £20 p.a.**

*recommended, but not essential

So all in you are looking at **around £400 all in to get started**. Then you need to budget for race fees, some spares and travel.

Arrive and Drive loan cars are available if you want to give the series a try before committing yourself to buying all the kit. Just contact Tamiya Junior E to enquire about using one of these cars.

Tamiya TT-02 kit

Tamiya Incorporated is a Japanese manufacturer of plastic model kits, radio controlled cars, battery and solar powered educational models, sailboat models, acrylic and enamel model paints and various modeling tools and supplies. The company was founded by Yoshio Tamiya in Shizuoka, Japan, in 1946.

Their first radio-controlled car was released in 1976. Their models are based around the concept of being, "easy to understand and build, even for beginners".

The company has gained a reputation among hobbyists of producing models of outstanding quality and accurate scale detail. Its philosophy is reflected directly in the company's motto, "First in Quality Around the World".

The TT-02 has become a very popular entry-level chassis, especially for drifting, racing and rallying applications. It's versatile design, with a lightweight plastic bathtub chassis, along with the central driveshaft give it the strength and adaptability to mean it is a great car for the beginner RC enthusiast, whilst still providing the experienced enthusiast with a thrill.

Whilst it is entirely possible to simply race the basic TT-02 kits straight out of the box, there are some choice modifications, which serve to increase durability further, improve driveability and increase the speed.

Building the kit

There are 3 key components to building a Tamiya Junior E car, just the same as building a full scale race car!

There's the mechanical assembly and tuning, the body shell, and the electronics.

The mechanical assembly and tuning (3 - 6 hours)
All Tamiya kits come with comprehensive build manuals, which guide the builder step by step through the entire process. The kits are no more complicated to assemble than a Lego kit. Everything needed is included in the kit, apart from some simple tools; a craft/sharp knife, scissors, pliers, a cross head screwdriver and some snips. Hop Ups are sold separately by Tamiya and the Tamiya Junior E rules allow a few simple upgrades. These are all listed with the rules document.

The body shell (1 - 2 hours)
Made of clear plastic and is supplied exactly as it comes out of the mould, so it's up to the builder to trim the bottom of the shell and cut the wheel arches out. The paint is applied to the inside of the shell, with adhesive decals fitted to the outside for detailing. The special paints are readily available and relatively easy to apply.

Electronics (1 hour)
There are 4 major components to the car's electronics. The Electronic Speed Controller (ESC), The controller/radio gear, the motor and the steering servo. Fitting these is mostly a case of plug and play. If you can wire a plug, then this is just as simple.

LiPo batteries and a charger

Batteries come in several flavours; Lithium Polymer (LiPo), Nickel Metal Hydride (NiMH) and Nickel Cadmium (NiCd).

Batteries also come in different cell capacities. Think of each cell as an individual battery itself, and then the pack is a number of these cells linked together in series to make one big battery pack.

For Tamiya Junior E, the batteries will need to be 2-cell (referred to a 2S) LiPo, or 6-cell NiMH or NiCD. These batteries all have a nominal voltage of 7.8 volts, but when fully charged they hold around 8.4V. **The maximum voltage that batteries can be charged to is 8.4V**

LiPo batteries are the best bet, although they are slightly more expensive. These are the latest technology, give maximum power for longer, are lighter and can be charged more quickly.

LiPo batteries have their disadvantages; they must also be stored and **MUST charged in a LiPo safe bag** as they can catch fire if faulty or mis-treated. They must also not be left discharged as they become damaged.

For a more in depth battery guides look here:
https://www.rcgeeks.co.uk/blogs/news/complete-remote-control-car-battery-guide-overview

Or here:
https://www.rccaraction.com/everything-need-know-rc-batteries/#visitor_pref_pop

You will find that most racers will have at least two batteries. This allows one battery to be used, whilst the other battery is being charged.

So, now you have batteries, now you need a charger. First and foremost, make certain that you get a NiMH charger if you have NiMH batteries, and a LiPo charger if you have LiPo batteries. Some chargers can do either. There are as many chargers out there, as there are batteries. A decent charger can be had for around £35-40.

The SkyRC iMAX B6AC V2 Charger is a good choice as a start (beware of cheap copies though).

You also need some way of supplying your charger with power. Tamiya Junior E events are hoping to provide power for competitors, but **please check in advance**. Some clubs offer 240V 3-pin power points in the pitting area, but if they do not, you will need a way to supply power. These are the options:

- 12v leisure battery or heavy duty car battery (these can be bought for around £40)
- petrol generator with inverter (more expensive and noisy!)
- charge from your 12v car battery (just don't run it flat!)

Another alternative is to take 5 batteries fully charged for the day – this will give you enough for the common race format of three qualifying rounds and one final, plus you'll have a spare for practice.

Tyres

Tamiya Junior E is all about keeping things fair, simple and low cost.

Tamiya Junior E will use a control tyre to ensure a level playing field.

This means, things like tyre additives and tyre warmers are strictly forbidden. Since it is very hard to police and prevent any tampering with tyres, all Tamiya Junior E competitors will need to present their tyres for first use in the original, sealed packaging. Alternatively they can be sourced through the series organisers. New tyres will then be given a unique code that assigns the tyres to one competitor. The tyres will be collected at the end of the meeting and will be returned to the same competitor at the next meeting.

Timing Transponder

A transponder is a tiny transmitter that plugs into a servo port on your receiver. So, you'll need to ensure your receiver has the extra channel slot; a three or four channel receiver is ideal.

With a transponder fitted, your car will register each lap as it passes over the ‘loop’ at the race track. The loop is a section on the track with a small wire running under or over it that receives the car’s transponder signal as it passes. Race timing software on a computer in the timing hut will log those laps to your transponder.

The ‘Paperwork’

BRCA membership

To race, you will need to become a member of the BRCA eventually. RC car racing is regulated, organised and promoted at a national level by the British Radio Car Association (BRCA). The BRCA is also affiliated with the Motorsport Association UK, a non-profit organisation who oversee all forms of motorsport form RC cars, Kart racing, all the way up to Formula One and were founding members of the FIA.

One of the main benefits is that **BRCA membership includes insurance** that covers you if someone gets hurt whilst you are driving. This insurance not only covers you at the race track, but also at any other time, like bashing cars around in the local park for instance.

Sign up is easily done online, takes a few minutes and can be done at https://www.brca.org/join

The rules

The rules are there for a reason. Tamiya Junior E wants to encourage, safe, fair, competitive and cost effective racing. We want pure driving ability to develop and be rewarded. The rules are designed to ensure no one gains a technical advantage over any other driver, regardless of technical experience.

We also want competitors to feel like it is a fair competition and that everyone is being treated in the same way.

We do not want success based on the size of your wallet, who or what you already know!

Make sure you are familiar with the rules and if you're ever unsure of anything, ask one of the Tamiya Junior E officials for guidance.

There are penalties for non compliance with the rules!

Race entries

Race entries are simple to do and are completed online through the BRCA website.

Local racing club membership

Joining your local RC Race club is not a requirement for racing in the Tamiya Junior E series, but it can certainly help in many ways.

To join you will usually need to pay an annual fee, which differs from club to club. However, doing so would bring a lot of benefits.

The club may have a loan car for you to try out driving before you commit to buy your own stuff. Other members will be able to help with advice on kit and tips on building and driving the cars. Being a member also gives you the opportunity to enter club races at a discount to get a good amount of practice in at the local track. And long the way it offers the opportunity to make some friends who will be only happy to help you along.

There are plenty of RC race clubs all across the country. Either contact Tamiya Junior E or go to the BRCA website club search page to find your local club https://www.brca.org/clubs

What else do I need to know?

Tools and spares

The TT-02 is a pretty tough kit, and unlike off road racers, the enclosed tough body shells protect the components in a lot of the impacts. However, when you are starting out you will probably break a few things in crashes on the track. Even the more experienced make mistakes and need to make trackside repairs from time to time!

The items most likely to get damaged or losts are front wishbones/arms, front hubs, and in a big impact front shock towers. You will also typically lose the little driveshafts in the event any of these parts get broken.
Tools needed to begin with don't extend much beyond what was needed to build the kit in the first place. The best advice here is to get the best quality you can afford. Good tools are easier to use, less likely to cause damage to the car components, put less strain on your hands and last longer.

Later on, you may want to invest in more specialised tools, such as ride height gauges and measuring tools to aid in set up. But these are not totally necessary for a beginner.

A tool box is also a good idea. A simple £15-20 plastic tool box from a DIY shop will do to begin. As your tool and equipment list grows, you may find you want to invest in a bigger 'pit box' or 'hauler' to store your racing gear such as tools and spares. Ideally, you will want one with wheels, especially if you are racing at tracks where the car park is some distance from the pitting area.

Safety equipment

Even though the cars are small, they can still cause some harm with the wheels spinning, flying along at 25 - 30 mph! High viz jackets are a must when marshalling. It is also sensible to wear strong footwear that will protect the feet in the event a car hits you and strong gloves (eg gardening gloves) when performing marshall duties.

Food & facilities

Races for the Tamiya Junior E series are all held on outdoor, purpose built, asphalt race tracks. So, ensure that you dress for the weather expected that day. Tracks have sheltered pit areas, but many don't. Tamiya Junior E will attempt to provide a sheltered pitting area and a limited amount of seats.

A lot of the tracks have some form of Cafe or food van on site. But it is best to check in advance and if in doubt bring a pack lunch, snacks and drinks along.

All tracks have basic WC facilities.

What happens on a race day

Drivers briefing

Prior to the event, a driver's briefing document will be distributed to all registered entrants. This will contain all the important information you need to know about the meeting. **Please read this carefully! Many times people have tripped themselves up by not reading the briefing properly.**

Heat listings

Prior to the event, heat listings will be published, usually on the facebook page or on the website. These will show the order of the races, as well as the qualifying heat your car is in and the order that the cars will set off in.

Arriving at the race meeting

A Typical daytime race meeting will begin with the gates to the track opening at 7:30am. It's best to arrive for then, so you can get unpacked, set up and ready to race. Qualifying races usually start at around 8:30am.

So once you arrive at the track, unload your racing gear into the pit area, get your charger set up and batteries on charge (unless of course you have charged them the night before) and get the final fettling done to the car, so you're all ready to race.

Marshalling

Races to be marshalled. Racing wouldn't be much fun if you all had to keep leaving the rostrum (racing stand) to go and flip your car back over after a crash; that's why we have marshalls.

Most clubs don't have the budget for employing a bunch of marshalls to turn flipped cars the right way up. So **all racers are usually expected to marshall the next (or previous) race after their own**.

Safe marshall points will be marked in various places around the track, and marshalls are usually the only people permitted on track while racing takes place.

Marshall points are often, but not always, marked with numbers. When they are present, your race number determines where you need to stand.

- ❏ You MUST marshal the heat after your race. (you can nominate a suitable substitute, but you must inform race control).

  Penalties will apply if you fail to marshal or provide a suitable substitute marshall.

- ❏ Marshall's should wear strong footwear and must wear a Hi Viz jacket or vest and tough gloves.
- ❏ Pay attention to the race in your zone or area when marshalling.
- ❏ Don't be tempted to watch the leader all the way, as you will lose sight of your zone and miss any crashes that are close by
- ❏ Don't play with your phone! When you are marshalling REMEMBER that that is your JOB. Marshall the driver's cars as YOU would like to be marshalled.
- ❏ Get to the cars quickly, but safely. Keep an eye out for other drivers coming along your section and wait, if you have to, for them to pass.
- ❏ Always place the car back on the track in a safe position near to where it came off. Place it to the outside edge of the track, away from the racing line.
- ❏ Marshall how you would like to be marshalled!

Race format: heats and finals

A typical race meeting might consist of 4 qualifying rounds and two finals, but this all depends on the event and can be any number. This will all be included in the pre-race briefing document that is sent to entrants before the event.

All heats and finals last for 5 minutes plus one lap of the leader.

Heats or qualifiers

Heats, otherwise known as Qualifiers, are the way of sorting drivers starting positions for the Finals. Your qualifying position at the end will determine your starting position on the grid in the Finals.

You are racing against the clock, not other drivers, in qualifiers. The idea is to complete as many laps as you can in the best time. If you end up being Top Qualifier (TQ) – not likely for a beginner – you will start the finals in pole position, which is a great advantage.

All competitors will place their car on the track and line up across the start line. Then the competitors car numbers, as numbered on the heat listings, are called one-by-one, with a gap of one second between each, so you are all going around the track spaced apart (although not for long – slower drivers will inevitably drop back and the experienced drivers will catch up and overtake).

It is courteous to let any faster, lapping cars pass, and, hopefully, drivers you are lapping will do the same.

If there was only one qualifying round, then racers would be sorted by whoever completed the highest number of laps in the least time.
With multiple qualifying rounds, things get a little more complicated. Results can be calculated based on the FTQ or Round by Round Methods.

Finals

The finals are pretty straight forward. This is a race! First across the line wins!

Line your car up on the grid on the correct grid number position. Your position will be shown on the results sheets produced after the qualifying heats have all finished.

When there are too many drivers to fit into one Final for the class, they are broken up into groups (typically consisting of 6-10 drivers in each). So you'll have an A Final for the fastest 10 qualifiers, a B Final, a C Final etc
.
You can also have multiple Finals – Leg 1, Leg 2 etc. The results of each one are added together, just like Round by Round Qualifying. Times are used when there is a draw.