HO track building – An introduction. A.Whorton – Jan 2021.

This is intended as a guide and may include personal opinions of the author. No responsibly will be held by the author from harm or damage following this guide.

HO (or 1/64) is a popular sector of the slot racing sector. In the UK, there are several active clubs and organisations dedicated to racing these small scale cars.

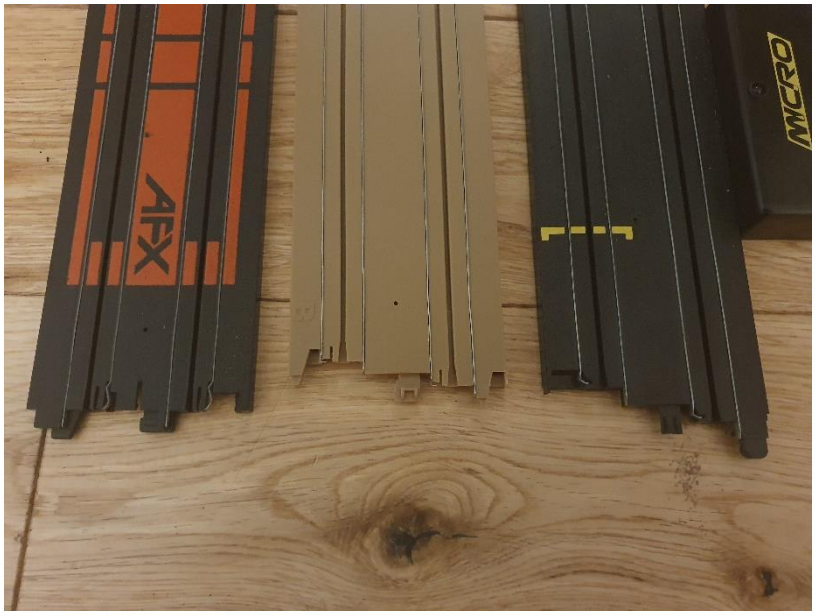
This guide will explain some of the basics in HO track building. Specifics on cars and clubs, suppliers etc can be found via the links at the end of this guide.

Since the early 1990s, and therefore the focus of this, have been 3 main track systems available in the UK, these being offerings from Tomy AFX (later Racemasters and AFX Racing), Tyco (later Mattel and Hot Wheels) and Micro Scalextric. Other tracks from TCR, Matchbox, Aurora, Minic etc are also available, but the principles are the same for all. Routed track can also be sourced.

All three track systems share similar attributes, being 2 lanes, with a guide slot and 2 vertical steel rails to conduct the electrical power. HO cars, with a few exceptions will run on most systems.

Some track systems (AFX, Micro, AutoWorld etc) can be bought new, but much can be found on the used market such as eBay, swapmeets etc. It can also be sourced from overseas inc the US, but be aware import duties and shipping can be expensive.

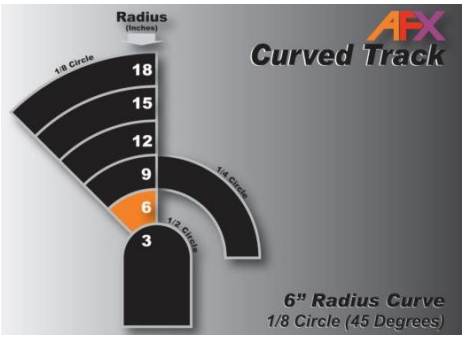
L-R AFX, Tyco, Micro.



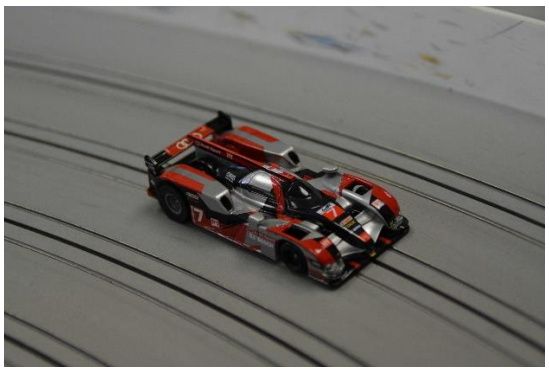
Micro Scalextric is the most abundant (but not the best), being offered by Hornby. Is only comes with 1 radius so nesting track to make 4 lanes is tricky (see 4 lane solution to this below). It has been lately superseded by a new Micro system using rails more akin to the 1/32 daddy. Micro track also has a high rail height (thought to help contact with the braids used on Micro Scalextric Cars), so other manufacturers cars require slightly larger tyres to run properly on it.

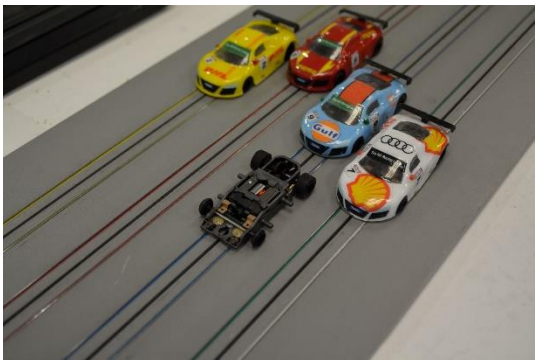
Tyco (Formula Tyco) track is no longer sold, but there is plenty about. It is of good quality, but options for bend radii are limited, but 4 lane tracks are a viable option. The lanes spacing on Tyco track is seen as the best of the 3.

AFX (Tomy/Racemasters) track is seen at the best track system and has been available from the 1980s, and remains unchanged, still on sale from AFX Racing. Its abundance in the UK remains from being sold as on the UK high street as TOMY AFX. It has the largest selection of track sections and bend radii from 3" hairpins to more recently introduced 18" Curves. Not to be confused with its predecessors from Aurora AFX which uses different track connections (although adaptors have been available). AutoWorld also sell AFX compatible track, but the quality has not been that of the AFX offering.



Routed track is manufactured from plasticised materials with guide slot and rail slot routed in. Rail is pushed and held in place. Routed track tends to use the guide slot and rail geometry of the AFX track, but the spacing of the Tyco.





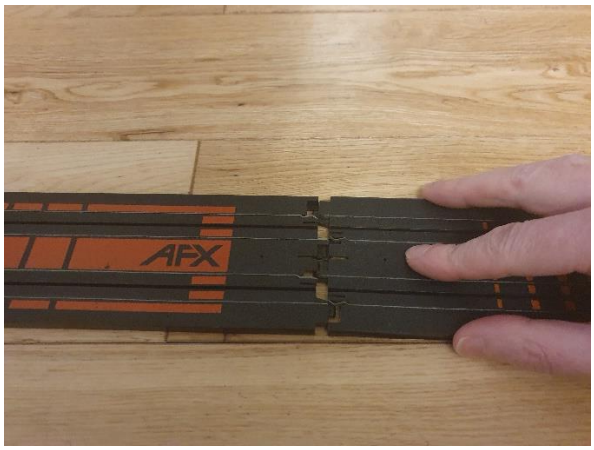
<u>Assembly.</u>

The same principles apply to all tracks systems.

Check track pieces for obvious damage, missing or broken rails, and damage to end tabs. Check for excessive corrosion, especially where the rails connect.

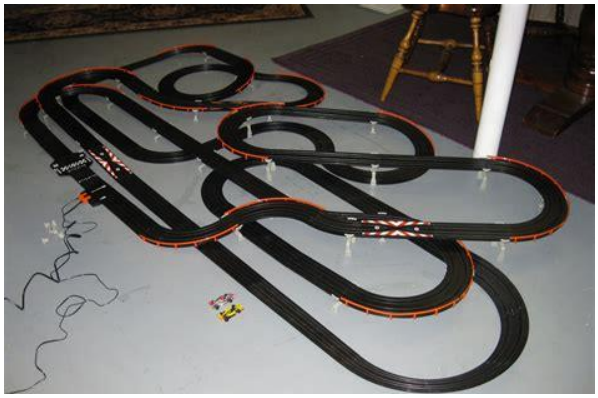
Try and assemble on a solid flat surface. Carpet attracts dust and hair into the cars, and around the axles.

Laying 2 sections together, slide the 2 together. DO NOT lift the ends to assemble. Gentle wiggling /waggling is acceptable.



Continue to lay your track. Ensure that the 2 ends meet up without stressing the track. It can be easy to be 1" out with and it tempting to pull it to join. This will cause the track joints to open up. Changing the corner(s) to another radii can often overcome this issue. Diagonal straights can also exacerbate this issue.

AFX tracks shown below. (Home Set and 4 lane setup from FLBT HO)



Dis-assembly is the opposite – DO NOT lift the ends of the track to disassemble. This will break or damage the track end tabs. Tyco tracks require you to depress a tab to unlock the track pieces, but do keep the track flat and level.

Some elect to permanently affix the track down. Especially useful if you are folding a track table to a wall for storage. The AFX and Tyco track his small holes which can be used as a pilot for countersinking small screws. Be aware, being plastic, the track will expand and contract with temperature changes, especially noticeable in UK garages and conservatories. My personal choice is not to screw the track down, but to surround the track with borders or edges in key areas. This allows track expansion due to temperature and is non-permanent, however cannot be used on a folding table.

Cleaning

Rails - Before running cars its essential that the track is clean and the rails are free of oxide. The rails are typically made from steel, and develop a layer of oxide preventing efficient running. To clean the rails either use a fine decorating abrasive pad, or fine emery paper wrapped around a solid block. Only use light pressure, its only a light layer you are removing. Excessive use of abrasives will sharpen the edge of the rail, leading the excessive pickup wear on the cars, or in extreme cases alter the rail height. Abrading the track surface should be avoided. You should see the rails become more shiny. Any remaining oxide will be removed when cars are run around the track.

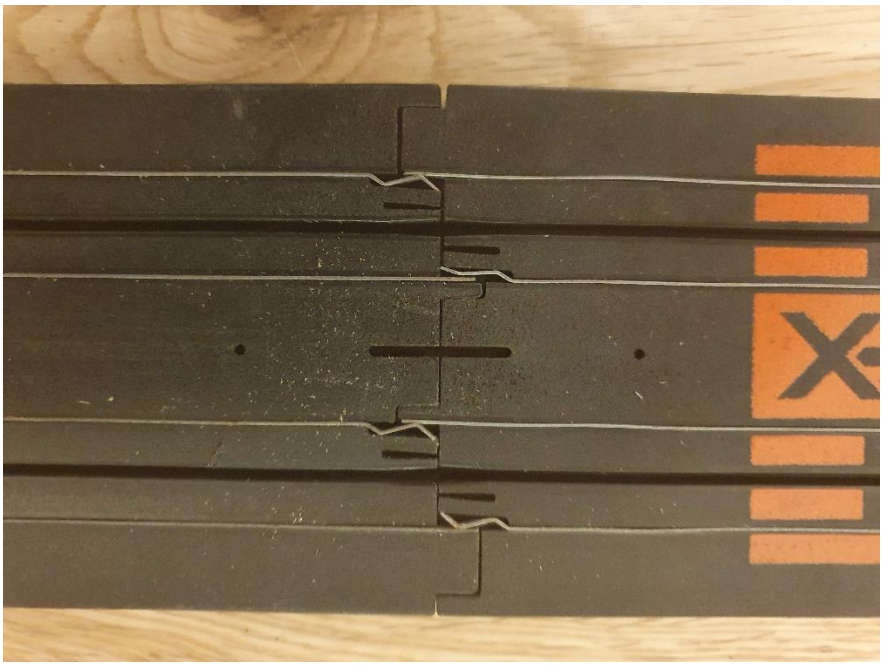
Surface – HO cars do not tend to use any surface prep on the track, and commonly use rubber or silicone tyres. As such all dust and dirt is to be removed. My personal method is to use a lightly moistened microfibre (with water) to remove most of the dust, followed by a dry microfibre. Others may use sprays such as WD40, but be aware these may have an adverse reaction with the plastic (inc long term) and may end up attracting more dirt! Avoid spraying directly on the track, spray onto a cloth and apply. Using solvents is best avoided, I have ruined track from reactions with! When running the cars, the tyres will pick up the remaining dust. This can be removed by running the tyres on masking tape or similar.

Testing the Track

To test the continuity of the track an easy method is to split the track on one side of the power input. Ensure that no jumpers are connected as this will mask an issues. Run a car round from the power input until it either makes it back to the split, or it stops at a defect.

This will likely be the track rail not making full contact. The rails can be bent / cleaned to ensure a good connection. Once all lanes have been tested, reconnect the track.

The picture below shows a bent rail not making contact. This can be bent back into shape and re-assembled.



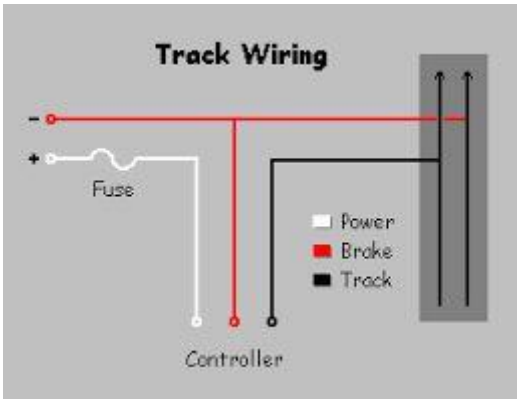
<u>Electrical</u>

HO tracks use the same principles as all other slotcar scales. However, HO tracks do use the Left rail as the positive in the direction of travel.

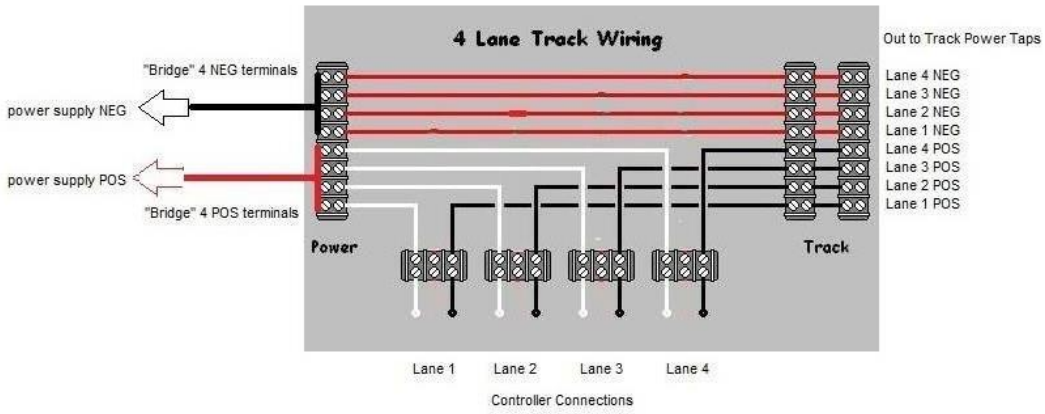
Using AFX homesets as an example, the power can be improved by using a powerpack per lane. 2 Power straights can be used to individually power each lane. Be aware that they share a common negatives and this could lead to issues with lap timing such as dead strips.

AFX did release a power straight that could be used with a power pack per lane, but this can be elusive.

Hardwiring each lane can overcome power issues, especially when using aftermarket and much improved controllers. Wiring for Brakes is also a common upgrade. WHO Racing have a very good section on installing brakes into a HO setup. See also BSCRA electrical guide and also HERE at Viper Scale racing.



On longer layouts, Wires, known as jumpers, can be added to link longer tracks to ensure power is sent equally round the track.



Above Diagram for wiring with No Brakes. For Brakes the Negative is fed into the 3rd controller terminal.

When hardwiring, wires can be soldered to the rails on the underside of the track. The rail will need to be abrasively cleaned and may require flux for a secure joint. Placing the track on a damp towel will prevent the plastic deforming from the heat of soldering. You will need a very hot soldering iron. Tin the wire and the rail. You have to be very quick tinning the rail as the plastic will melt and contaminate the joint. Then solder the wire into the rail, again being as quick as possible. Practice on scrap track first.

HO cars running magnets for traction will run at 18 volts. Some cars running weights instead of magnets run at 12-15 volts. Consider this especially when looking at replacement electrical controllers.

A stock car slot car such as AFX Mega G will pull around 0.5 to 0.75 amps. Upgraded box stock cars (Viper Scale Racing and Wizzard) will take this up to 1-1.5 amps. Cars with Neo magnets start taking this upwards.

Be aware of this when wiring you track and that the wiring can take all the current. Use fuses on each lane. As an example, THORL uses a single 10amp power supply for all lanes, running Wizzard Storms and Viper Scale racing VSR1 with no issues or power surges.

Controllers

A very personal choice, the controller can be an exhaustive subject on its own. Typically set cars and offerings from Wizzard HO and Viper Scale Racing could use controllers on the 45-60 ohm range. The new AFX Mega G Plus uses set controllers at 120 ohm. An electrically and adjustable controller is a practicable upgrade, and not limited to HO. Be aware that not all electronic controllers like running at 18v. Aftermarket controllers from Truspeed and Professor Motor have proved popular as have transistorised controllers as seen at BSCRA racing. The ubiquitous Parma controller has been used, but several ohm ratings may be required depending on the car types you are running. Best advice is try before you buy, and seek advice from others depending of the cars that you are running. Controller offerings from www.onestopslotshop.com are excellent, but also show the range of options from just one supplier! OS3 Controller Range. They also have a great set of guides on their page.

Several options can be employed to connect the controller to the track, but in the UK a popular choice is a 2 Amp 3pin plug arrangement.

Timing

HO uses the same principles as the larger scales.

For many years, TOMY AFX provided a popular timing system which electronically timed 2 lanes. These could be linked together for counting multiple lane, with 1 being the master and controlling the others. This has been updated by AFX into a smaller package. These use reed switches which could prove problematic with some non AFX HO cars without traction magnets, not picking up the signal as they passed.

Timing using a PC is available for either building or as a turn key system. These tend to use an interface board linking the track to the PC. Either IR detectors or dead strips have proved effective.

An excellent resource was HOSLOTCARRACING.COM run by Greg Braun. Unfortunately, Greg is no longer with us, but his work has been archived and at the time of writing can be found here: Wayback Machine (archive.org).
https://web.archive.org/web/20200512081726/http://www.hoslotcarracing.com/

Links: Suggest using your favoured provider to search.

Racing in the UK

THORL (THORL.co.uk)
HO:UK www.ho-uk.org.uk/home
WHO Racing (Worthing) Worthing HO Racing (whoracing.org.uk) **WHO has an extensive Tech section on all aspects of HO**. There are also some great chassis guides within their rules.
DHORC (Derby HO) Website and on Facebook
FLBT HO (Via FLBT.co.uk)
HONK (Facebook page)

Distributors
Slot Cars Direct (UK)

Wizzard HO
Viper Scale Racing
JAG Hobbies
Lucky Bobs HO
Bad L Hobby
Harden Creek (HC Slots)
onestopslotshop.com

Tracks
AFX Racing
Viper Scale Racing
Brad Bowman – Brads Tracks
Max Trax

Timing
Trackmate Racing
Race Co-Ordinator
ViaSue https://www.viasue.com/
SlotTrak

Others
Truspeed Controllers
BSCRA