



Hednesford Indoor Raceway

Basic Setup Mardave Mini Setup

The idea of this sheet is to assist people with the basic setup on the Mardave Mini. This is not intended to be the be all and end all, it is just intended to lend a helping hand. Remember if you are unsure about your setup or anything else then **PLEASE ASK**

Let's look at the basics:

- Tyres & Additive
- Springs
- Electrics
- Gearing
- Ride Height
- Toe in and to out
- Tweak
- Caster
- Problem Solver

TYRES:

Tyres are the main factor in the setup of your car. They are the only part of your car touching the track, so if your tyre choice is wrong then the rest of the setup is irrelevant!

Let's go for a good starting point. You want softer tyres on the rear and harder on the front. The Foam Tyres are graded by a hardness measurement called SHORE of SH, the higher the number the harder the tyre. Most people run 35 or 37 shore on the rear and 45 to 50 shore on the fronts. The part numbers would be JM35RN or JM37RN for the rears and JM45FB, JM47FB or JM50FB on the front.

In basic terms:

The lower the shore number the softer the tyre and the higher the grip but less tyre life

The higher the shore number the harder the tyre and the lower the grip but more tyre life.

The Mini tends to have a lot of what is called "Front End" meaning that if you put the same tyre grade front and back you would have far too much grip on the front and far too little on the back, therefore the back of the car would not have enough grip and the car would spin out. We consequently use the grade of tyre that gives the car a balance between understeer and oversteer. Understeer is when your car's front end tends to snowplough rather than turn into a corner. Oversteer is the opposite and the front end turns in too sharply and the back of the car spins out.

TYRE ADDITIVE:

We then come to Tyre Additive. As the name suggests this is something that you can add to the tyre surface before each race. On carpet racing a foam tyre, regardless of shore, will not have sufficient grip to allow you to race competitively, so to increase the grip of the tyres we can add a solution that gives the tyre more grip. We have a list of approved additives at the club and on our website. You can add more or less additive on the front and back tyres to give the car balance. Always have a chat with other Mini drivers to see how much additive they add, when and where they add it.



SPRINGS:

Springs on the front and back of your car can give similar actions as tyres but tend to be used more for fine tuning, always get your tyres choice sorted before you start changing springs. One common mistake that people make is thinking that the more you compress a spring the harder it will be. The standard springs on the Mini are “Linear” meaning that the force needed to compress the spring remains constant, on the Mini the rear spring adjustment screws are to adjust the chassis ride height not the spring strength, to change the spring strength you will need to get a stronger spring. There are springs that are called “Progressive” these do change their compression rate, but they are mainly used on cars with independent suspension and shock absorbers. Mardave stock a range of different strength springs to allow you more setup options. If you can buy a full set, then you have all options open to you. A good starting point is Yellow on the Front and Stiffer on the rear.

ELECTRICS:

The Mardave Mini class at Hednesford Indoor Raceway has a defined list of speed controller (ESC) Servos, batteries and motor that can be used (see our information sheet for this list). Correct installation and care of your electrics including your R/C equipment is especially important. Put bluntly if a part of your electric equipment fails, then you can't race! Read the instructions that came with your equipment and understand how to install it, again if you are unsure, please ask, incorrect installation or lack of care can stop you running and can be expensive. Keep your installation neat and tidy. As the Mini only uses 4.8v batteries using some servos can cause the equipment to lock as they can drain too much power especially when the drive motor is running as well, this drops the voltage low enough to lock the radio gear or the ESC, unplugging the battery and plugging it back in clears this locking, luckily this locking doesn't damage anything. You can solve this problem buying a “Power Cap” that smooths out any voltage drop or ask another driver what servos may cause this and what ones that don't, although many drivers use a power cap as a bit of security as they only cost a few pounds.

GEARING:

At Hednesford Indoor Raceway you have to use a 48 tooth 32dp spur gear and a 15, 16, 17, 18, 19 & 20 tooth 32dp pinions, dp = Diametral Pitch, but don't worry about this, just look for 32dp if ordering any gears for your mini. Please note if you are using the Battcave JOK3R with a Mardave G2 motor then your pinion needs a 14mm in depth). In basic terms a 15-tooth gear will give better acceleration but lower top speed, whilst 16 tooth will give less acceleration but a little better top speed. There are other things that can affect gear choice, but as this is only intended as a basic guide it will give you an idea. On a layout like Hednesford I think everyone uses 16-tooth due to the long straight.



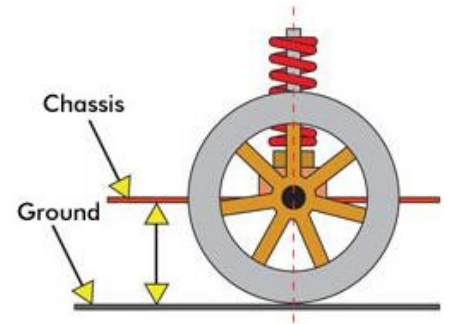
32dp Style Spur



32dp Pinions

RIDE HEIGHT:

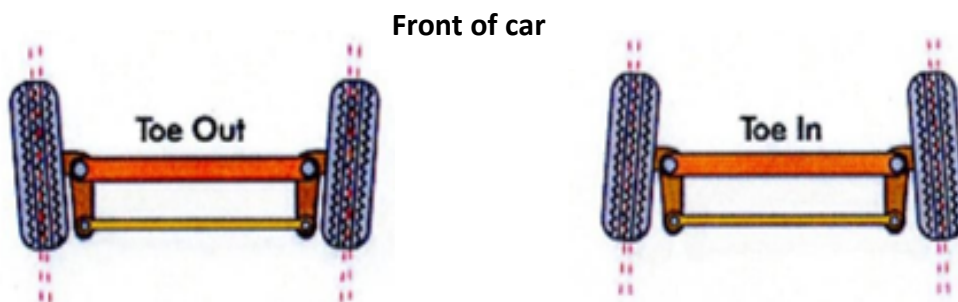
Ride height as it suggests is the height the lowest part of the car rides above the track. At Hednesford Indoor Raceway we have a minimum ride height on **3mm** to protect the track. However, realistically on the Mini try starting with a ride height of about 4.5mm on the front and 5mm on the rear, try to keep the front a bit lower than the rear. For high grip tracks, use a lower Ride Height. For low traction surfaces, raise the car up slightly. Raising the Ride Height will cause the car to roll more, allowing for more traction. This adjustment should always be made with the car in race ready condition, meaning all electronics installed, including the motor and battery. Basically, Ride Height changes the speed of how the car reacts while changing directions. On the mini the rear ride height is adjusted by screwing the rear spring screws up or down, the front is set using spacers under the front wishbones.



TOE IN AND OUT:

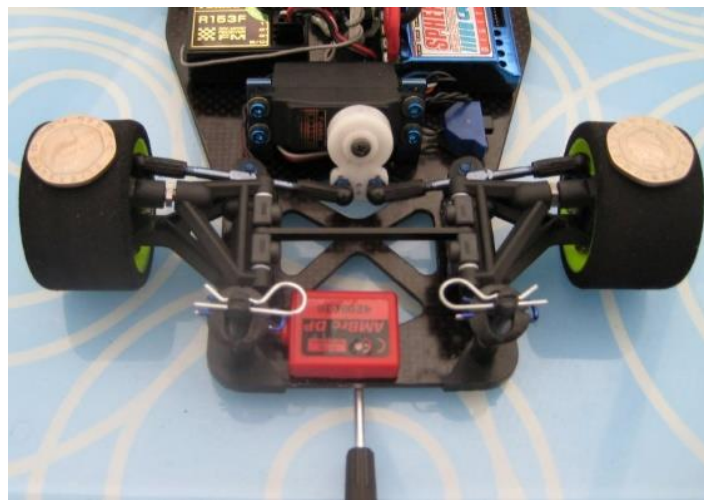
This is the setting to ensure the front wheels will point the car in a straight line, this can be adjusted on the front wheels by the steering links from the servo to the steering blocks or via the trim on your transmitter. Try to set this as near as you can on the linkages as the trim on your transmitter is best for fine adjustments. Most drivers set their trim up with a little bit of toe out, this is where viewed from above the front of the wheel points out a small amount more than the rear of the wheel. Toe-Out will mainly improve the steering response. Toe-In will mainly increase the straight-line stability.

(Please note the graphic below is greatly exaggerated for illustration purposes)



Tweak:

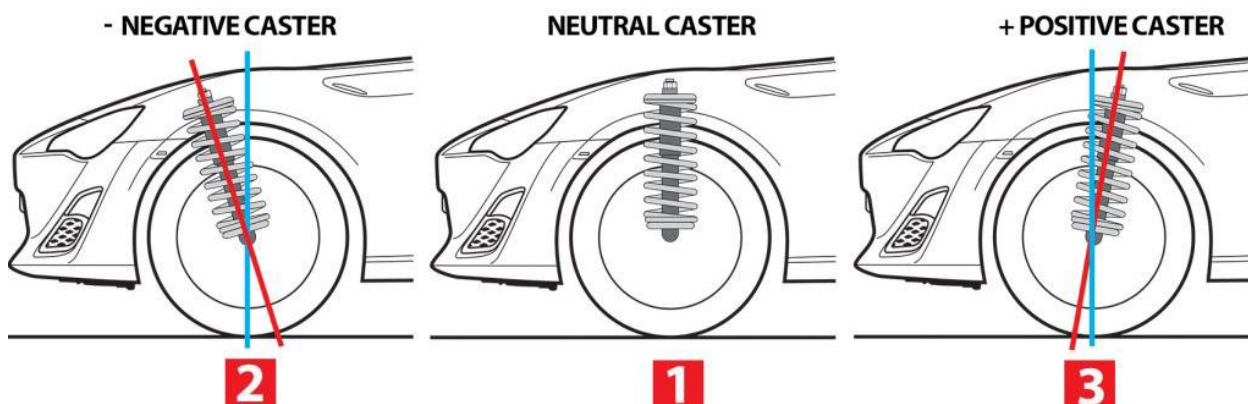
This usually shows up when you accelerate, and you notice that the car tends to one side or the other even though the trim is set to run straight. Tweak on the Mini is caused by different loads on the rear springs so under acceleration one side drops more than the other and therefore the car in effect rear wheel steers. The cure is simple but tricky to explain! This adjustment should always be made with the car in race ready condition, meaning all electronics installed, including the motor and battery but not the body. Place the car on a flat smooth surface then lift the front of the chassis by putting a screwdriver or similar under the very front of the chassis in the middle. Now lift the chassis in and look to see if one of the front wheels lifts before the other, Say the front right wheel lifts first then you need to put a bit more "pre-load" on the rear left spring (pre-load is the amount the spring is compressed) to save big adjustments only do a maximum of 1/4 of a turn at a time, a lot of drivers turn one side down say 1/8 of a turn and turn the other side up 1/8 of a turn so not to change anything else such as ride height too much. You can balance a small weight, say a 5p or 20p piece slightly to the front or back of the top of each wheel then whichever side falls off first you turn down the opposite side on the rear. See picture below.



CASTER:

Caster is the angle of the forward or backward slope of a line drawn through the upper and lower steering pivot points when viewed directly from the side of the vehicle.

Caster allow you to balance steering effort, high speed stability and front-end cornering effectiveness. Increasing the amount of positive caster will calm the steering and straight-line tracking, as well as improve high speed stability and cornering effectiveness. Only use Positive **never** use Negative caster.



VERY BASIC PROBLEM SOLVER:

When your car is not handling correctly is usually shows up as “Oversteer” or “Understeer”. Before you make any adjustments it’s always best to ask other drivers before changing anything. try to understand the problem before looking for the solution, explain this to others. For example, if your car’s rear is spinning out in a corner it could be a number of things, such as tyres, springs, amount of additive used or even the ride height too low and the chassis then touches the track in a corner, so as a beginner it’s always best to seek advice. if you make any adjustments, please do one thing at a time so you can see the effect it has. If you change lots of things at once you will have no idea what adjustment is doing what, also one thing may affect another and cancel or exaggerate the action, and only change things a little bit each time.

**The Golden Rule for all the above is:
If in Doubt ASK**

Your Notes: