TEAM LOSI®
RACING

8IGHT

TUNING GUIDE

800-0317v1.1

The first thing you need to understand about chassis tuning is that there is no "magic" set-up that will make you a world class driver. Also that one driver's best chassis set-up may very well be the worst set-up for another driver. Chassis set-up is not dictated by ability or experience but rather comfort level and what is commonly referred to as "balance". This simply means that there is no one handling characteristic that is either exaggerated or minimized to the point where you are forced to overdrive to compensate for it. A prime example is making a change to gain low speed steering but finding that the high-speed steering is so sensitive that the car is extremely unstable and hard to drive. Our goal with this tuning guide is to give you the information on how to use the parts we have made available for you to tune the chassis so you are comfortable driving it ….. FAST!

What To Adjust

When making chassis changes, you should first decide where you feel the car needs to be different. This is commonly referred to as changing the balance." The Race Roller comes out of the box with a "neutral" set-up that favors neither the front nor the rear of the model. This has been found to be easy to drive with great confidence that the chassis will not do anything odd or unexpected. To fine tune this or any set-up you must first decide if the front of the car needs to be adjusted or the back. You will want to work with the rear of the chassis if the car enters the turn with the front end sticking, and tracking well, while the rear end either does not want to follow, or simply doesn't know what it wants to do. The opposite is true if the rear end seems to want to push the front end through the corners preventing it from steering or if the front drives into the corner uncontrollably with so much steering and extreme reaction that it is hard to control comfortably. As you will see there are several different adjustments have similar effects on the handling. You will find the best adjustment will become a personal decision based on the "feel" that each of these adjustments yield. This also reflects on the "balance" we referred to earlier. So the key is to try these different adjustments and learn what makes the car drive and feel the best to you. Also don't be surprised that after you become comfortable with a set-up you find that in time you are capable and comfortable with a more aggressive set-up. No matter what you decide to adjust never make more than one change at a time. If the change you made works adversely, or doesn't address your need, return to the previous position and try something else.

If You Get Lost

Team Losi's development team has put hundreds of hours on the 8IGHT to arrive at the setup we put on the Race Roller and the more aggressive set-up in the instruction manual. Think of these as your base set-up or "home". If you get baffled with your tuning and find that you have lost the "handle" go back to home and your base setup, as this will give you a comfortable handling chassis that you know to be reliable, consistent, and easy to drive. All of us at Team Losi are sure that you will find the 8IGHT Off Road Racing buggy to be the most versatile and easiest car to drive fast, with great consistency. The specific information in this guide will help you to enjoy your 8IGHT, and racing it with the ability to make the changes needed to suit both track conditions and your driving capabilities. Also don't forget to check for the latest in setup and accessory parts information by visiting the Team Losi web site at: www.teamlosi.com regularly. For any technical questions go to the "Meet the Team" section of the site. We will try to answer your questions in the order received, to the best of our knowledge, by our own Team Losi R&D race team. Please check the Team Losi web site periodically to find out new setup information as we are always testing on all types of tracks and surfaces. Also note that there are many ways to setup a car. The rules we follow can work inversely sometimes with different driving styles or different setup styles, so test for yourself and you will find a setup that works right for you and always remember that if you get lost you can always go "home" to your base set-up.

The Easiest Tuning Aids

Tires are the quickest and easiest items that you can use to tune your buggy or truggy. Sometimes a simple change of compound or tire type will give you just the small handling or balance improvement you are looking for. In reality, tires and how they are set-up have a tremendous impact on overall performance. So before you start making changes on the chassis setup, take a movement to observe a few of the fastest cars on the track and what type of tire and inner liner they are running. It's a safe bet that whatever the fast guys are running will be a good start.

The Easiest Tuning Aids - continued

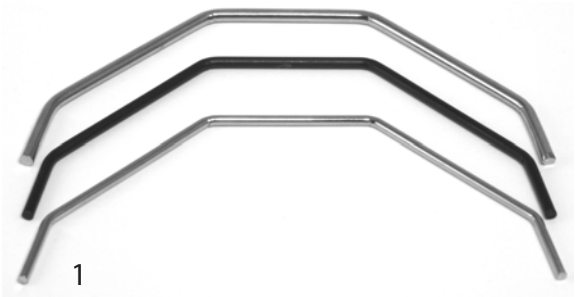
Similarly, when you get a good balance and driving feel go thru your box of spare tires trying each set and note how each type affects the handling. This is handy information to have when you have to make a decision for a change. In addition to tires, sway bars, toe-in/out, anti-squat, and springs are quick and easy changes that should make a noticeable change in how the model drives and feels.

Chassis Adjustments

Sway Bars are a flexible connection between the right and left side of the suspension. They are used to keep the chassis flat and minimize excessive weight transfer and chassis roll. Losi provides way bars in sets of three different thicknesses (LOSA1750) for both the front and rear of the 8IGHT.

Front Sway Bars: The three front sway bars provided (Photo1), are a silver .080″/2mm (light), a black .091″/2.3mm (medium), and a silver .105″/2.66 (heavy).
A lighter front sway bar increases front traction off-power, but has less on-power steering.
A heavier front sway bar decreases off-power front traction making for smoother and more predictable steering when entering the turn, but offers more on-power steering on exit.

Rear Sway Bars: The three front sway bars provided (Photo 2) are a silver .092″/2.3mm (light), a black.1055″/2.6mm (medium), and a silver .1205″/3mm (heavy).
A lighter rear sway bar tends to increase rear traction but decreases on-power steering.
A heavier rear sway bar increases stability in the middle of the turn and increases on-power steering. Heavier sway bars are also more stable on high speed, high traction tracks.s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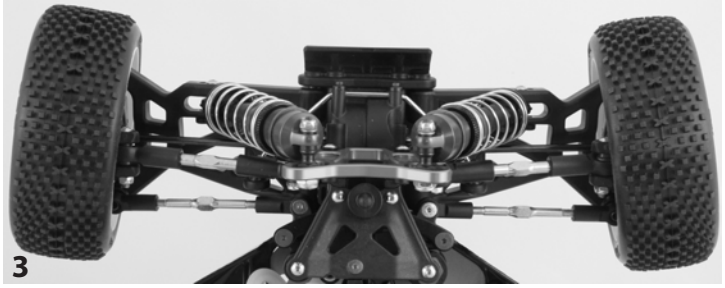
2

Toe-in/out is the relationship of the tires to one another. Toe-In is when the tires point inward (Photo 3), as they face forward and toe-out is when the tires point outward (Photo 4).
Front Toe-In: (longer steering rods) decreases steering response entering and in the middle of the turn. This also increases on-power steering at exit and may cause loss of rear traction.
Front Toe-Out: (shorter steering rods) increases steering response when entering the turn and increases straight line stability. Toe out will also decrease on-power steering giving the car more foward traction.
Rear Toe-In: More rear toe-in increases forward traction and stability on-power and produces more off-power steering and less side bite. Less rear toe-in: will increase the wheel base of the model and increase the top speed, on-power steering and side bite in the middle of a turn. It will also decrease forward traction and stability under acceleration. You will **never** want to run rear toe-out.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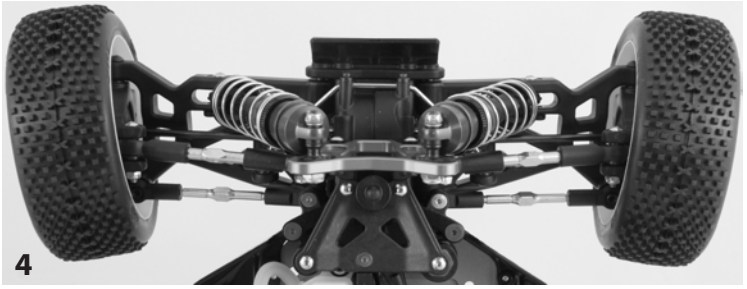
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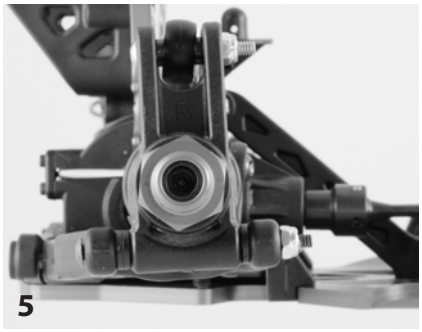
Rear Squat/Anti-Squat (photo 5), is the result of suspension geometry that mechanically allows the rear of the chassis to dip under acceleration (squat) or fight the tendency to do so (anti-squat) and actually rise on acceleration. This can be changed using the pivot pin supports. The 8IGHT Race Roller comes with two degrees of anti-squat.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Less anti-squat: will produce less off-power steering and allow the chassis to roll (side to side) more across the rear. Less anti-squat will help the chassis accelerate better in small bumps.

More anti-squat: will produce more roll resistance (side to side), increase steering in the middle of the turn and be better on rough tracks with big jumps.

Camber: (photo 6), is the attitude of the wheel & tire in relation to the ground or flat surface. As seen in the photo this can be measured using a fuel can or similar item that stands upright next to the tire. If the tire leans in at the top it has negative camber, and if it leans out at the top it has positive camber. The camber link controls the position of the wheel and tire as it move up and down through its suspension travel. Camber has a tremendous affect on how the tires react and provide grip on the surface you are running on.

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Front Camber Links: More negative camber in the front produces more steering and is more responsive. Less negative camber in the front will have less steering but will be smoother. The lower camber link location on the shock tower, (photo 7), (#4 as seen on the set-up sheet) has more camber gain (total camber change through the suspension travel). Running the camber link in the lower hole will increase off-power steering and make the vehicle more aggressive; however you may lose some consistency. More camber gain is good on small tight tracks. We have found that running less camber gain in the front suits the car the best for consistency and steering balance. A longer front camber link (hole #2), (photo 8), will make the vehicle feel stiffer. This will keep the buggy flatter with less roll and increase high speed steering. A short front camber link (hole # 3) (photo 9), will allow more roll and make the vehicle more aggressive. If the front link is made too short it may make the vehicle feel twitchy.


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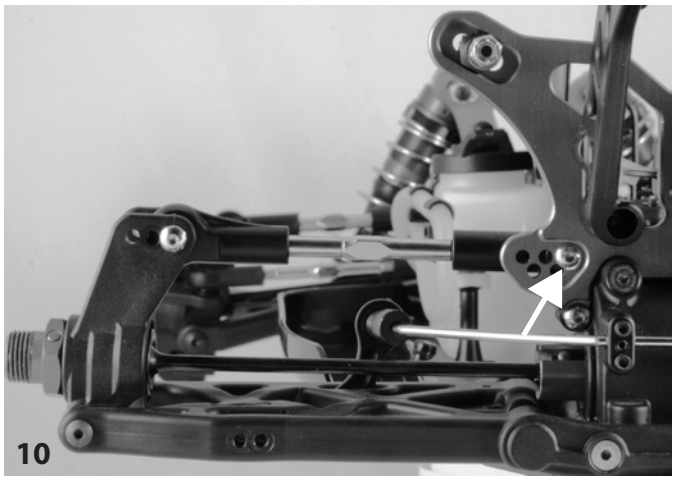
Rear Camber Links: More negative camber in the rear will have less rear traction, but will increase on-power steering and will be less grabby in bumps. Less negative camber in the rear will also have more rear traction and make the rear of the model stay flatter, but if traction is lost it will be more violent. The lower camber link locations on the shock tower (#4 & #5 as seen on the set-up sheet), have more camber gain (total camber change through the suspension travel). Running the camber link in the lower holes on the shock tower will increase corner speed and allow the buggy to sit on the rear more when on throttle. The lower camber positions will not traction roll as easy on high grip surfaces. The upper camber link locations on the work better on high traction surfaces and improve stability. Using a longer rear camber link (example: position #1, photo 10), will have less roll and improve stability and traction.

Rear Camber Links - continued

A shorter rear camber link (example: position #3 (shown) or #5, photo 11), will allow more roll and increase steering as well as be better handling in the bumps. Running in the "A" position (as seen in the set-up sheet) in the rear hub will generate more corner rotation entering the turn allowing the car to turn into the turn easier, but will also increase steering on exit. Running in the "B" position in the hub will be more stable entering the turn and increase the steering on exit.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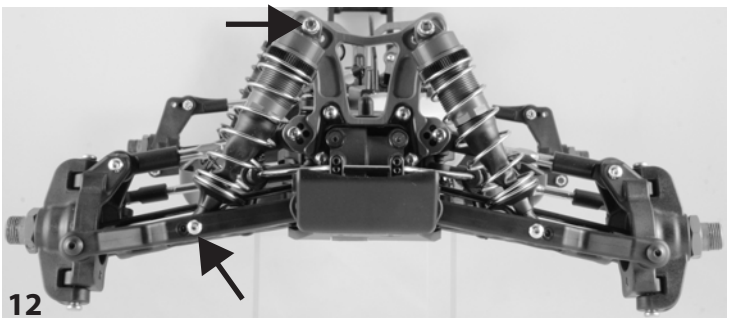
11

Droop

Droop is the amount of suspension downward travel from ride height. Always measure the droop of the 8IGHT with the shocks on the model. Measure from the center of the top shock mount to the center of the bottom shock screw, (photo 12). More droop (travel) in the front will have more on-power steering and allow the truck to roll more on the rear when on throttle. More rear droop: will increase off-power steering and allow the truck to roll over on the front while off-power. **More front and rear droop:** will accelerate better in bumps when going straight, but can cause the truck to traction roll in rough turns. **Less front and rear droop:** will make the chassis slide over bumps better in turns but limit acceleration in the bumps.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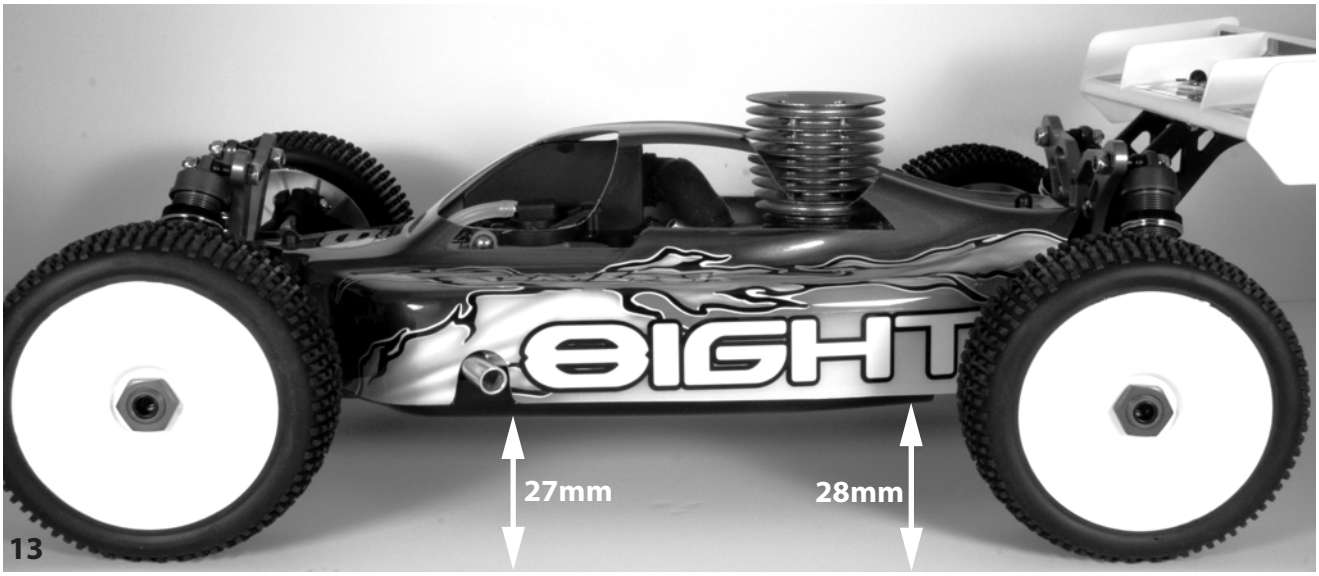
Ride Height: is the level of the chassis above the track surface as it sits on its suspension. As the chassis sits on a flat surface measure up to the bottom face of the chassis. You will want to adjust the front of the chassis with 27mm of ride height and 28mm in the rear. We have found the 8IGHT handles best when the front ride height is 1mm to 2mm lower and no more than level with the rear of the chassis.



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Shocks

Pistons: Shock pistons are available and marked with different size holes that control the flow of the shock fluid as it moves up and down with the suspension movement. If you look closely you will see the hole size (54, 55, 56) molded into the pistons. Note that the larger the number the smaller the hole size. Using pistons with smaller holes (#56) provides stiffer damping, slower weight transfer, slower response, but will land large jumps better. Pistons with larger holes (#55 & #54) provide softer damping, increased traction, quicker weight transfer and response, but bottom out easier off large jumps.

Shock Fluid: Shock fluid is graded by its viscosity or thickness. Lighter fluids are lower numbers like 20 & 25 weights while heavier fluids are larger numbers like 35 & 40 weights. Lighter shock fluid has more overall traction and allows quicker response to suspension movement. Heavier fluids have less overall traction and react slower. On high bite and smooth tracks, heavier fluid tends to be easier to drive. Heat makes shock fluids lighter and cold makes them heavier. Make sure you adjust shock fluid when there is a drastic temperature change (20-25 degrees) to maintain the same dampening. If it gets cold you will need to go to a lighter weight shock fluid. If it gets hotter you will need to go to heavier weight shock fluid.

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Springs: In general, running softer springs will produce more traction until you get so soft that the chassis rolls over to the point where there is no suspension left and it starts to slide the tires. A softer front spring will usually produce more steering while a firmer spring will tend to decrease steering response. Softer rear springs can be helpful on rough tracks but will hamper jumping ability and allow the chassis to bottom out easier especially on larger jumps.

Shock mounting positions:

Leaning the shocks inward on the shock tower produces softer initial damping and is more forgiving.

Moving the shocks out on the shock tower makes the car more responsive and is better for technical tracks where you need quicker steering reaction.

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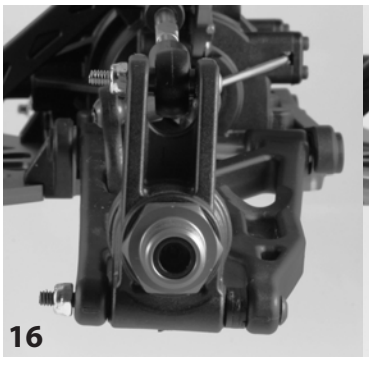
Wheel Base: A shorter wheelbase (spacers behind the rear hubs, photo 16), increases on-power traction, rear weight transfer, and has more off-power steering. The shorter wheelbase is better on tight or slick tracks. A longer wheelbase (spacers in front of the rear hubs, photo 17), decreases off-power steering. The longer wheelbase tends to be more stable, better in the bumps, and has more on-power steering.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17

Differentials:

Differential fluids are just like shock fluids in that the larger the number the thicker/heavier the fluid.

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Differentials - continued

Front: Thinner/lighter fluid in the front differential increases off-power steering. You must be careful not to go too light as the steering will become grabby and inconsistent. If you experience this go one step heavier. In general, thicker/heavier front differential fluid increases off-power stability and increases on-power steering.

Center: Using thinner/lighter fluid in the center differential tends to make the model easier to drive on rough and slick tracks but allows it to unload easier under acceleration and provides less forward drive. Thicker/heavier center differential fluids offer better acceleration, increased on-power steering and less off-power steering. In general, using thicker center differential fluid is better on high bite and smooth tracks.

Rear: Using thinner/lighter fluid in the rear differential provides more corning traction and increases steering response in the middle of the turn. Thicker/heavier fluids in the rear differential provide less steering in the middle of the turn but greater forward traction.

Ackerman: This is the name given to the type of geometry needed to maintain the difference in the angles of the inside and outside wheels necessary for each front tire to maintain the proper turning radius. Since the inside tire must run a smaller radius than the outside tire this is critical.

The Long Ackerman plate will have smoother steering and is generally more forgiving.

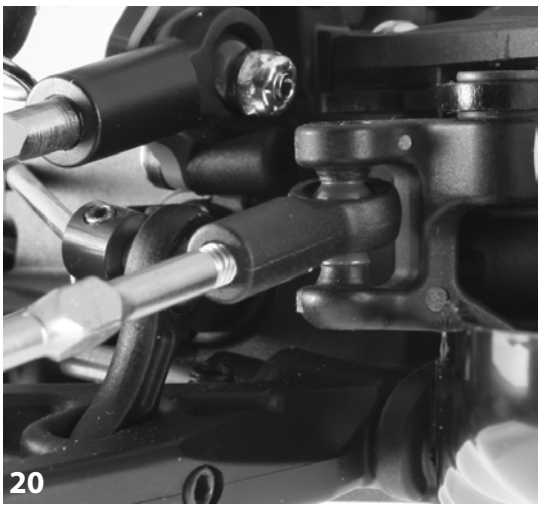
The Short Ackerman plate produces a quicker reaction and steering response and has more steering in the middle of the turn. The short Ackerman plate would be better suited for tight technical tracks.

Bump steer: is the side-to-side movement of the front wheels that can be caused by the suspension moving up and down.

Down: Running the bump steer ball in the "down" position (photo 19), will produce smoother steering in the middle of the turn.

Up: Running the bump steer ball in the "up" position (photo 20), will increase the steering in the middle of the turn.


19


20

Clutch:

The 4 shoe clutch system is far advanced over the norm allowing much greater tuning with easily made changes. This includes both the clutch shoes and the clutch springs. (Photo 21)

Springs: You have four different color coded clutch springs to choose from. As seen in the table the softest are the .036""Black" and slightly harder "Green" springs that have more preload (angle). The harder springs are the .040""Gold" and hardest "Silver" (more angle).

Clutch spring table

LOSA9112 .036" Black - Softest
LOSA9113 .036" Green - More preload
LOSA9114 .040" Gold - Harder
LOSA9114 .040" Silver - Hardest with more preload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Clutch - continued

Softer springs: engage the clutch at a lower RPM and provide a smoother power band but often less vigorous acceleration. If the engine doesn't have enough low-end power try running more preload (the same size spring with more angle) or a stiffer (thicker wire size) spring.

Stiffer springs: engage at a higher RPM and allow the car to launch harder but this often accompanied by wheel spin and momentary loss of traction. You should also be careful not to go too stiff with the clutch springs as this can cause the clutch to slip and prematurely wear out the clutch shoes.

Clutch Shoes: You have both composite and aluminum clutch shoes available for use in the 8IGHT 4 shoe clutch. Ideally you want to use two of each of these for the best tuning and wear characteristics. We have found the two plastic and two aluminum clutch shoe set-up to work best on most tracks. If the track surface is very loose, rough and doesn't have jumps that are difficult to get over we have found that four plastic shoes will allow more slip and smoother acceleration. Running all four aluminum clutch shoes will have the quickest and hardest hitting clutch action with the most punch. This isn't as good on slick or rough tracks where you need a longer smoother clutch engagement with less wheel spin.

Gearing: The stock gearing for the 8IGHT is 13/48 which is a good all around ratio for acceleration and top speed. If you are running on a small technical track or need more low-end power/acceleration, a 12 tooth clutch bell is recommended but be aware that although the acceleration increases the top speed will be less. Similarly, if you are running on a long sweeping circuit you may want to try using a 14 tooth clutch bell for added speed without over-revving the engine. Be very careful not to over-gear the engine as it will cause poor acceleration, overheating and prematurely wear out the clutch shoes and bearings.

Brake setup:

The standard suggested brake bias for the 8IGHT is 60% rear - 40% front. If you need the model to rotate more under braking, adjust the linkage for less front brake and more rear brake. If the buggy is loose entering turns under braking, adjust the linkage for less rear brake or more front brake.

Outdrives and Traction:

When your 8IGHT is new it will have more chassis roll and be a little loose on throttle due to the lack of friction in the outdrives and crossbones. After about 45-60 minutes of running these parts wear into each other and the 8IGHT will gain traction and stability. Replacing worn out outdrives and crossbones with new parts will provide more corner speed.

Additional Tuning Tips and Hints From the Team

Fuel tank insert: Your 8IGHT fuel tank comes with an insert preinstalled to meet ROAR and RC Pro Series 125cc fuel tank rules. If you are not racing your 8IGHT where these rules apply, you can remove the insert to allow for more fuel.

Tuning the Engine: Should be done following the manufactures instructions. Keep in mind that all engines run best when you maintain a certain ratio of fuel and air. Adjusting the needle valves on the carburetor changes the amount of fuel it lets pass through it which affects this ratio. In general, turning the needle valve clockwise will make the fuel mixture leaner – which means that there is less fuel for the amount of incoming air. Turning the needle valve counter-clockwise will make the fuel mixture richer – which means that there is more fuel for the amount of incoming air. The high speed needle affects the fuel mixture only at mid to full throttle while the low speed needle only affects the fuel mixture at idle and the low end of the throttle band.

To shut off the engine: Simply use a rag, the rubber tip on the end of the LOSA99xxx Losi Tuning Screwdriver, or the plastic handle of a tool against the flywheel or over the exhaust exit. Use extreme caution not to touch the exhaust exit tip with you hand as this very hot and can burn you.

Clutch: Make sure to clean the inside of the clutch bell with Scotch Brite or really fine sand paper. The 8IGHT comes with 2 plastic and 2 aluminum clutch shoes. The base set-up with 2 gold and 2 silver springs is the most aggressive. If the clutch sounds like it is slipping, try running the optional black springs on the plastic shoes. This will allow the shoes to engage earlier and allow the power to be delivered smoother. This set up works best on slick tracks.

Additional Tuning Tips and Hints From the Team - continued

The Receiver Battery: The receiver battery is an important, frequently overlooked part of gas-powered vehicles. For proper feel and response as well as safety it is important that the batteries always have a fair amount of change remaining in them. A low receiver battery can cause the vehicle to have a mind of its own. The result can be a poor responding radio system or worse, a runaway vehicle. The useful time of a charged receiver battery pack depends greatly on the type of servos that are used. Some of the high performance servos draw more current than standard servos, and will drain the receiver pack faster. Just remember to check the receiver pack from time to time. When the servos start to operate a little slower, or radio response feels sluggish, the batteries probably need to be recharged. You should be using a rechargeable receiver pack with a minimum capacity of 1000mAh and minimum voltage of 5.4 volts. The battery should be charged before every day's outing with your 8IGHT, and after about every 45 minutes to 1 hour of operation to be safe. Always follow the manufactures instructions for charging and use. If you are planning on racing a long main event, be sure to charge the battery pack before the start of the main.

Set Up Notes

SETUP SHEET — 8IGHT

Name: Adam Drake / Race Roller | Date: 5/15/2007 | Event: Race Roller testing

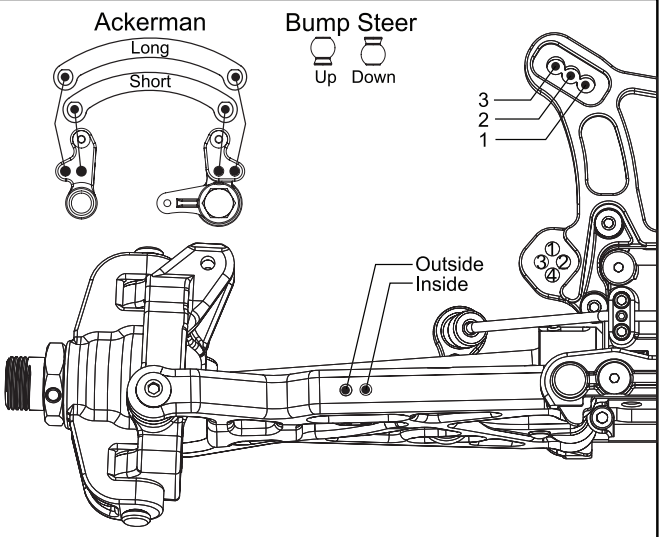
City: | State: | Track: Revelation Raceway

Track Conditions: ❑ Indoor ☒ Outdoor | ❑ Tight ☒ Open | ❑ Smooth ☒ Rough | ❑ Hard Packed ❑ Loose/Loamy | ❑ Blue Groove ❑ Dry | ❑ Wet ❑ Dusty | ❑ Low Bite ☒ Med Bite | ❑ High Bite ❑ Other

Front Suspension

Toe: 2 degrees out
Ride Height: 27mm
Camber: -1 degree
Caster: stock / 20 degrees
Sway Bar: 2.7mm
Piston/Oil: 54 / Team Losi 40wt
Spring: Silver
Limiter/Droop:
Overall Shock Length: 95mm from center to center
Steering Ackerman: Long
Bump Steer: Down
Camber Link: #3
Shock Location: #2 / inside
Front Diff Fluid: Team Losi 3000
Receiver Battery Type: 1400 mah

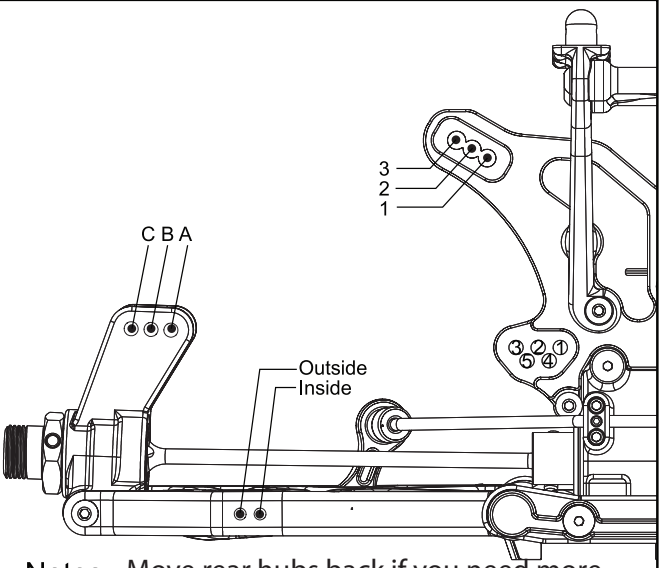
Center Diff Fluid: Team Losi 5000



Notes: 8ight T servo saver spring.
Use 2.3mm sway bar if you need more steering.

Rear Suspension

Toe: 3 degrees
Anti-Squat: 2 degrees
Ride Height: 28mm
Camber: -1.5 degrees
Rear Hub Spacing: Two spacers behind the hub.
Sway Bar: 2.3mm
Piston/Oil: 56 / Team Losi 25wt
Spring: Green
Limiter/Droop:
Overall Shock Length: 105.5mm from center to center.
Camber Link: #1 - A
Shock Location: #2 / inside
Rear Diff Fluid: Team Losi 2000

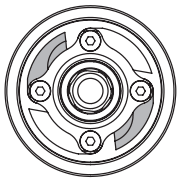


Engine

Engine: .21 | Fuel:
Glow Plug: | Head Clearance:
Pipe/Header: | Gearing: 13 / 38

Notes: Move rear hubs back if you need more on-power steering. Run gold springs with the alum. clutch shoes and green with the plastic shoes if you want less punch.

Clutch



Clutch Shoes and Springs Info

2 alum. with silver springs.
2 plastic with glod springs.

Tires

	Type	Compound	Insert
Front:			
Rear:			

Notes:

TEAM LOSI SETUP SHEET 8IGHT

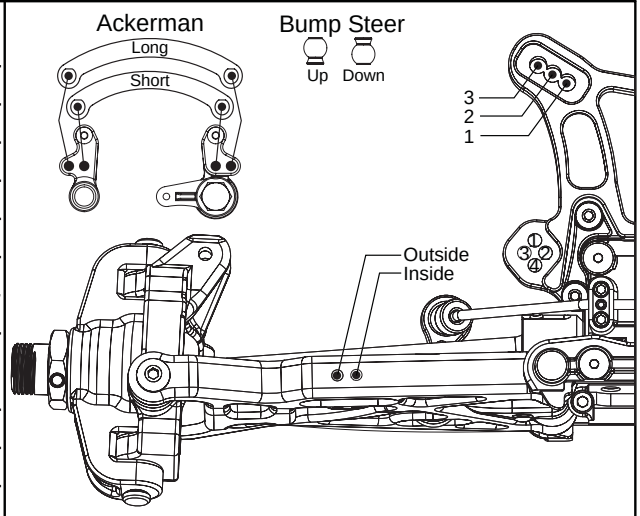
Name:	Date: Event:
City: State:	Track:

Track Conditions ❑ Indoor ❑ Outdoor ❑ Tight ❑ Open ❑ Smooth ❑ Rough ❑ Hard Packed ❑ Loose/Loamy ❑ Blue Groove ❑ Dry ❑ Wet ❑ Dusty ❑ Low Bite ❑ Med Bite ❑ High Bite ❑ Other _____

Front Suspension

Toe: _____
Ride Height: _____
Camber: _____
Caster: _____
Sway Bar: _____
Piston/Oil: _____
Spring: _____
Limiter/Droop: _____
Overall Shock Length: _____
Steering Ackerman: _____
Bump Steer: _____
Camber Link: _____
Shock Location: _____
Front Diff Fluid: _____
Receiver Battery Type: _____

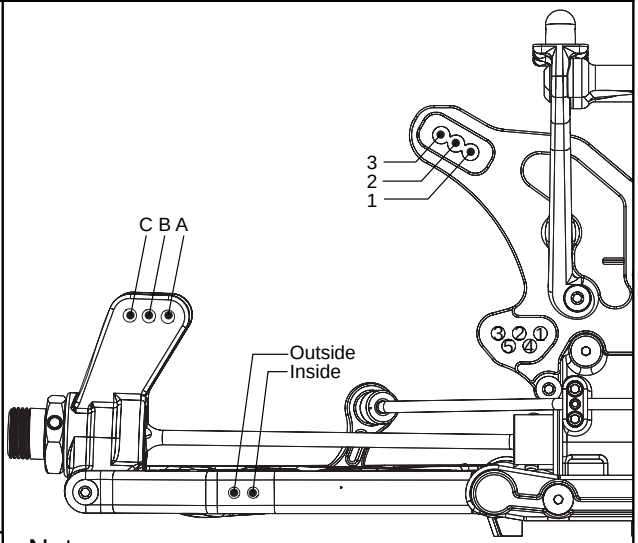
Center Diff Fluid: _____



Notes: _____

Rear Suspension

Toe: _____
Anti-Squat: _____
Ride Height: _____
Camber: _____
Rear Hub Spacing: _____
Sway Bar: _____
Piston/Oil: _____
Spring: _____
Limiter/Droop: _____
Overall Shock Length: _____
Camber Link: _____
Shock Location: _____
Rear Diff Fluid: _____

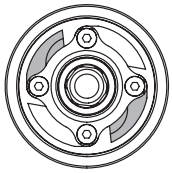


Notes: _____

Engine

Engine: _____ Fuel: _____
Glow Plug: _____ Head Clearence: _____
Pipe/Header: _____ Gearing: _____

Clutch



Clutch Shoes and Springs Info

_____
_____
_____

Tires

	Type	Compound	Insert
Front:	_____	_____	_____
Rear:	_____	_____	_____

Notes: _____