2009-2012 Chevelle Chassis Set Up Sheet

Springs

Left Front 600lb.	Right Front 650lb.
Left Rear 200lb.	Right Rear 225lb. Spring on top
	Right Rear 200lb. Spring on front of birdcage

Shocks

Basic Shock Package

Clamped Up

Left Front	Bilstein S7L 4-2
Right Front	Bilstein LCRF1 or 5555 for rough tracks
Left Rear	Bilstein S9L 1.5-5M use 3-5 when rough and hooked up
Right Rear	Bilstein S9l 3.5-1LP or 5050 if rough

Spring Behind

Left Front	Bilstein S7L 4-2
Right Front	Bilstein LCRF1 or 5555 for rough tracks
Left Rear	Bilstein S9L 3-5M or S9L 3-8M
Right Rear	Bilstein S9l 3.5-1LP or 5050 if rough

There are many different shocks that can be used but these are basic starting points. All shocks must be suited to the race track speed and surface, and the drivers driving styles.
The left rear shock is the most critical shock on spring behind cars and must have enough compression to keep the car from slamming down on corner entry. A driver that is not a trail braker will sometimes need a 8 or 9 on compression.

Front Ride Height

Left Front 4" Right Front 4 1/2" stock lowers UBM Lowers Left Front 4 ½" Right Front 4 7/8
Ride height is measured from tabs welded on frame down to lower a-arm.

Caster

Left Front 2 to 3 degrees + Right Front 4 to 5 degrees +
1 ½ to 2 degrees split between Left and Right

Camber

Left Side 3 degrees + Right Side 3 1/2 to 4 degrees -

Toe

1/8" out Set Left Front tie rod at 19" center to center. Adjust toe out with Right Front tie rod. More toe out will help car turn on slow tight corner tracks.

Bump Steer

0 Left Front	Right Front 1/8" out total in 3" travel.
Left Front 1 5/8" Spacer	Right Front 1 ¾" spacer between tie rod and spindle.

Rear Ride Height
Level lower bars in 3rd hole from bottom on both sides.

Starting 4 link Bar Settings for Clamped Left Rear
LR Upper 3rd hole from bottom
LR Lower 3rd hole from bottom
RR Upper Z link 3rd hole down (tacky) 2nd hole down (slick) top hole on slick big tracks
RR Lower 3rd hole from bottom

Starting 4 link Bar Settings for spring behind LR Floated on Birdcage
(Do not try to run spring behind LR 4 link if you do not understand how it works and you are not willing to make changes at the race track all night to adjust for changing track conditions)
LR Upper 4th hole from bottom
LR Lower 6th hole from bottom
RR Upper 2nd hole from bottom
RR Lower 3rd hole from bottom (slick) 5th hole from bottom (tacky muddy tracks when corner entry is too tight)

Panhard Bar
Top hole on pinion (3" above quick change pinion center 1 ½ above ford 9" pinion center) 2 ½" higher on frame. (Too much panhard angle will top the Left Rear out and cause car to loose side bite and forward bite.)
Adjust panhard bar length until center of pinion is 23" from the outside of the left 4 link plate.

J-Bar (Used on Spring Behind 4 Link)
Even with pinion on 9"ford rear end and 1" to 1 ½" above pinion on quick change rear end with 4" to 7" rake. Adjust the J-Bar length until the center of pinion is 23" from the outside of the left side 4 link plate. (You must keep this measurement at all times and readjust any time the J-Bar height is adjusted.)
Too much panhard or J-Bar angle will make the car too tight in the middle and cause inconsistent handling.

Pinion Angle
6 Degrees down on quick change rear end
7 Degrees down on ford rear end
If you feel a vibration when you let off the throttle you have too much pinion angle and you will have to take some out.
A quick change strokes the driveshaft into the transmission more than a ford rear because the pinion is lower than the ford rear. Make sure your driveshaft yoke is long enough and will slide all the way into the transmission without bottoming out on the splines inside the transmission.

Pull Bar
We recommend our biscuit pull bar or a 1200lb spring bar with one rubber brake bushing. (Too soft of a pull bar will unhook your car and chew up your u-joints) pull bars should get 1¾" to 2" travel for best results. Set pinion angle by adjusting the pull bar length. Make sure you have plenty of thread inside the tube and rod ends after adjustment. (Do not use swedge tubes on pull bar they can break)

Rear End Alignment
All rear end alignment must be done with car at ride height. Adjust lower bars to 15" center to center. Adjust upper to 17" center to center. (This should square rear end but is best to string car if your brackets get bent.) Adjust Panhard length by setting pinion center line at 14 3/4" from bottom of left rear pan hard post. If car is tight all the way around the track you can trail the RR by lengthening the RR bars. (Up to 1/2" is normal) Make sure birdcage is at 12 & 6 o'clock.

Weight Percentages
Scale car with 20 gallons of fuel and driver in car, after setting the ride heights, air pressures, stagger, front and rear end alignment.
Left Side 54% to 55% Rear 57% to 60%.
Left Rear Bite 0 Start with rear wheels even on clamp.
Left Rear 50lbs. on spring behind

Lead Placement
Most cars need lead to be legal. Put 40 to 50lbs. Centered on bar in front of fuel cell. If any more lead is needed it should be around the drive shaft loop area. Do not put lead on left side if left side percentage is over 55%. Lighter drivers can use lead on left side where heavier drivers cannot.

Tires
Tire Stagger Hoosier Ump 1" front 2" to 3" rear average track 1" to 1 ½" rear slick tracks. IMCA G60 front 1" rear 2" to 3" tacky and rear 1" to 1 ½" slick. These are baseline stagger recommendations that should work on most ¼ to 3/8 tracks, but don't be afraid to try something else if the driver feels it is needed. Always wash tires as soon as possible with simple green to keep them from drying out. Do not use strong degreasers as they will dry the tire out.

Wheel Offsets
Start with 2" wheels on all four corners. Moving the right rear wheel in wheel tighten car in the middle of the corner. If you go too far in with the right rear it will cause you to be too tight and you will have to break the car loose to make it turn which will make the car feel loose. The car should turn with the steering wheel not the brake pedal. If running a J bar you can run a 3" on the RR to start.

Air Pressure
UMP Hoosier LF 10lb. RF 14lb. LR 9lb. RR 13lb
American Racer 82, 84 and 86 LS 12lb RS15
IMCA G60 LF 10lb RF 13lb LR 9lb RR 12lb
Add air for rubbered up or extremely rough tracks.

Left Rear Wheel Travel
VERY IMPORTANT
The LR should have a limit chain from the frame rail to the top of the axle tube to limit how far the LR wheel can hike up. The best way to measure this is with the car sitting at ride height, measure from the axle tube between the LR caliper bracket and the birdcage up to the deck. Then jack the car up under the seat until the measurement is what you want. We like to use 4" of LR drop on the clamp, and we use more on the spring behind (4 to 4 ½") This is very critical to keep a consistent handling car and keep the driveshaft from bottoming out in the transmission.

Spring and Shock Adjustments
The right front spring should be soft enough to nearly bottom out (with 4-Link LR) for best performance. Stiffening the RF shock compression can help control RF wheel travel on fast and rough race tracks. Using a bump rubber on RF shock on really rough tracks will help keep car from bottoming out without stiffening RF spring. Too stiff of a RF spring will not give the side bite needed and not let the LR bars start lifting the chassis quick enough. The slicker the race track and the slower the corner speed, the softer the RF has to be. Generally a stiffer RR spring will give more side bite than a soft spring. Remember side bite causes body roll, but body roll doesn't cause side bite. There has to be a stiff enough right rear spring to push the right rear into the track, but not so stiff that the car does not move enough. Springs should be between 175lb and 250lb for nearly all conditions. A softer compression RR shock can help speed up RR weight transfer and add side bite for slick tracks. Using a softer rebound LF shock will help tighten mid corner and stiffer rebound LF will help loosen car on tacky tracks. The LR spring should not need changed but the LR shock can significantly change the handling characteristics. An easy up stiff compression LR shock will help LR lift quicker and hold it up longer to smooth out corner entry.

Gears
Most racers run too high of a gear ratio. Just because your motor turns 7500 with a 5:14 gear doesn't mean that is the right gear. A motor that is spinning the tires will turn what it wants to turn. It might also turn 7500 with a 6:00 gear, but would most likely be faster. Gear car so that the gear will slow you down entering so you don't have to use much brake. A car that is geared too high will be darty and jerky will spin the wheels farther and faster than a car with a lower gear. You will have to use too much brake to slow down and cause the car to slide entering the corner then you will have to use too much throttle to keep from bogging and pushing. Don't try to kill wheel spin by putting in a higher gear for a slick track. Why would you put in a faster gear for a slower slick track? A tachometer tells you what the highest RPM you turn at one time during the race. You might have been air born or ran thru water. The tach will usually show 400 or 500 RPM more than what you are actually racing at. Talk to the faster drivers that you trust about their gear. A lower gear is usually faster and smoother. You should gear your motor to turn 1000 RPM more than peak power to keep it in its power band. Use a chip to control maximum RPM and use gear to get into the corner. Sandy, loose dirt generally needs higher gears than a hooked up or rubbered down race track the same size, because there is more wheel spin on loose dirt. Rubbered up racetracks that are like asphalt needs lower gears because they have virtually no wheel spin. A replay tach (not a recall tach) the only truly accurate way to see your RPM's.

Front End and Steering Parts
Pinto Spindles reamed to fit 73-81 Chevy pickup lower ball joint
Lower Ball Joint 73-81 Chevy ½ ton pickup Moog # K6117
Upper Ball Joint Chrysler screw in Moog # K772
Upper A-Arms are Lightning Chevelle Uppers Left #101C Right #102C
Steering Box standard metric box with Chevelle pitman arm
Idler Arm and Drag Link 68-72 Chevelle
Inner Tie Rods 78-88 Monte Carlo
Tie Rod Tubes are 10" X 5/8" Swedge Tubes
Front Rotors US Brake Hybrid Rotors or 75 Granada Rotors
Brake bracket must match the type of rotor being used. Make sure brake bracket is square with rotor after tightening bolts.

Lightning Brake Parts
Use small metric calipers on all four wheels. Use new calipers and master cylinders each year, because they will stick and go bad sitting over the winter. Use 7/8 master cylinders front and rear. Use crank type balance bar adjuster. The knob type adjusters are pretty but they don't allow you to adjust the brakes quickly enough. Use good racing pads with a high temperature rating but will stop cold, such as the WILWOOD polymatrix D or E compound pads. Street style pads will usually glaze over during heavy braking situations. Use racing fluid and change fluid often to keep moisture out. Use 30" steel braided lines with a 90 on the caliper end on rear, and 18" with 90 on the caliper end on front. Use straight fitting in the calipers. We recommend steel lines with no shut off valve.

Rear Suspension Parts List
Use 60" centered GN style rear end assembly with upper link brackets installed in our fixture to assure that the pull bar and damper shock are in the correct location.
Lower 4 Link bars are 12" 5/8" tubes adjusted to 15" center to center.
Upper bars are 14" 5/8" tubes adjusted to 17" center to center.
Pinion mount is a ALLSTAR bracket. Make sure to use a pinion bracket that will get the panhard bar 12" off ground on pinion end.
Pan hard bar is 11" ¾" tube.
J Bar needs to be the adjustable type 21" to 22" long depending on angle.
Birdcages are LIGHTNING birdcages.
Brake brackets are the narrow type and must be bolted thru the tube to keep from spinning under hard braking.
Driveshaft length depends on type of transmission used.
A standard Bert transmission uses a 32" driveshaft with a 8" yoke.
A BRINN, FALCON, or GM Transmission uses a 29" driveshaft with an 8" yoke.
The yoke should be 2" minimum inside the transmission seal at ride height and be able to move into the transmission at least 3" more when car hikes up. Make sure that the yoke will slide far enough into transmission before bottoming out on the splines inside the transmission.
(A problem on older BERT and Stock GM transmissions) This will cause bad handling and tear up parts.