Installing and Squaring the Rear Axle

1. Level the GF1 frame; both front to back and left to right.
2. Install the Jacob's Ladder in the frame.
3. Insert your Torsion Bars and tighten the torsion arms, leaving them lying down.
4. Place the Rearend in the frame on 6" blocks (adjusting the left side block to the amount the rail is raised) and attach the torque tube to the Rearend.
5. Place your Birdcages and Spacers on the axle and secure using spacers and axle nuts.
6. Roughly center the Rearend in the car by lining up the center bolt of the Rearend cover to the center torsion tube gusset.*
7. Choose a side and measure from the leading edge of the Rear Axle to the leading edge of the Rear Motor Plate, adjusting the axle until both sides are 38 5/8". (This may take several attempts to accomplish.)
8. Place your squaring tool on leading edge of the Rear Axle and line up the indexing pin with your pre-marked position on the Motor Plate; adjusting until the axle lines up with indexing pin on both sides of the car.
9. Attach the rear Radius Rods and Birdcages to the frame. Make sure that radius rod heims are evenly engaged and jam nuts are loose;
10. Adjust the Radius Rods until the levels in both Birdcages are zeroed.
11. Bring the Rear Arms up to the Birdcage's pickup bolts, adjusting the arm Heim ends until pickup bolts can be freely threaded in.
12. Re-check your measurements and the Birdcage levels.
13. Bring the Jacobs Ladder up to the Rod End (use the center positions on both the adjustable ladder and birdcage if applicable). Adjust the Rod End until the through bolt can be installed at its freest point.
14. Check for any bind by making sure that the Torque Ball and Jacob's Ladder move freely.
15. Finally, perform a nut and bolt check and recheck all measurements and levels.

*measurement of the rear end and/or torque tube side to side in the car may differ as much as +/- 1/8". The most important measurement is the leading edge of the rear axle to the face of the motor plate.

Installing and Squaring the Front Axle

1. Level the GF1 frame; both front to back and left to right.
2. Install the (4) front Radius Rods in the frame. Make sure the Radius Rod Heims are evenly engaged and the Jam Nuts are loose.
3. Install your assembled Front Axle in the frame. Attach all Radius Rods and tighten.
4. Place the axle on 4” blocks.
5. Choose a side and measure from the center of the king pin to a straight edge aligned vertically from the bottom frame rail to the top frame rail.
6. Adjust you Pan Hard Radius Rod and re-measure until the left side is 1” greater than the right.
7. Start on the right side and measure from the back edge of the Front Axle to the leading edge of the Motor Plate, adjusting both right side Radius Rods evenly until you achieve 45 13/16”.
8. Next, adjust the left side Radius Rod to achieve 45 9/16”. 1/4” lead is a good starting point but may need adjusted according to varying conditions. (This may take several attempts to accomplish.)
9. To set the caster, mark both right side Radius Rods top dead center of Rod Ends.
10. Place an angle finder on the right front Steering Arm and adjust the right radius exactly opposite amounts to achieve 11 degrees. 11 degrees camber is a good starting point but may need adjusted according to varying conditions.
11. Recheck all measurements and if correct tighten all jam nuts.
12. Put wheels on hubs and tighten.
13. Place a tape measure through the frame and measure from the rear edge at inside bead between right and left wheels and repeat on the front leading edge of wheels. Adjust the Tie Rod until the front leading edge is 1/8” greater than rear edge measurement. 1/8” toe is a good starting point but may need adjusted according to varying conditions.
14. Tighten Tie Rod Jam Nuts.

GF1 Chassis Measurements

DRIVE LINE

	Measurement	*Notes*
Drive Shaft (Internal Coupler w/ Spring)	29”	
Drive Shaft (Internal Coupler w/ Spring DMI U-Joint)	28 3/4”	
Drive Shaft (External Coupler w/ Spring)	25 3/4”	
Drive Shaft (External Coupler w/ Spring DMI U-Joint)	25 1/2”	
Torque Tube	26 1/4”	

STEERING RODS – 87/40 Chassis

	Measurement	*Notes*
Tie Rod	46”	
Drag Link	48”	
Pan Hard Bar	18.5”	

RADIUS RODS (2 3/8” Axle) – 87-40 Chassis

	Measurement	*Notes*
Left Front	22.5”	
Right Front (2)	22.5”	
Left Rear	23.5”	
Right Rear	24”	

FRONT END – 87/40 Chassis

	Measurement	*Notes*
2 3/8” Axle – Back of Axle to leading edge of Motor Plate	45 13/16”	
2 1/2” Axle – Back of Axle to leading edge of Motor Plate	46 7/16”	
Center of RS Torsion Tube to center of Axle	13 1/2”	
Center of LS Torsion Tube to center of Axle (no lead)	15 1/4”	

REAR END

	Measurement	*Notes*
Leading edge of Motor Plate to leading edge of Rear Axle	38 5/8”	
Leading edge of Motor Plate to center of Rear Axle	40”	
Jacob’s Ladder measured down middle	13 1/4”	
Center of Left Rear Torsion Arm to center of Birdcage Bolt	16 7/16”	
Center of Right Rear Torsion Arm to center of Birdcage Bolt	14 11/16”	

TORSION TUBES

	Measurement	*Notes*
Torsion Bushing Wall Thickness	0.095”	

GF1 Basic Track Setup

HEAVY TRACK SETUP

	Left Front	Right Front
Torsion Bar	1000	1025
Shock Absorber	4 COMP/ 6 REBOUND (4 / 6 VALVE)	5 COMP / 5 REBOUND (5 VALVE)

	Left Rear	Right Rear
Torsion Bar	1025	1025
Shock Absorber	4 COMP/ 8 REBOUND (4 / 8 VALVE)	5 COMP / 5 REBOUND (5 VALVE)

AVERAGE TRACK SETUP

	Left Front	Right Front
Torsion Bar	1000	1025
Shock Absorber	4 COMP/ 4 REBOUND (4 / 4 VALVE)	5 COMP / 5 REBOUND (5 VALVE)

	Left Rear	Right Rear
Torsion Bar	1025	1025
Shock Absorber	4 COMP/ 8 REBOUND (4 / 8 VALVE)	5 COMP / 5 REBOUND (5 VALVE)

SLICK TRACK SETUP

	Left Front	Right Front
Torsion Bar	975	1000
Shock Absorber	4 COMP/ 3 REBOUND (4 / 3 VALVE)	5 COMP / 2 REBOUND (5/2 VALVE)

	Left Rear	Right Rear
Torsion Bar	1000	1000
Shock Absorber	3 COMP/ 9 REBOUND (3 / 9 VALVE)	4 COMP / 4 REBOUND (4 VALVE)

Adjusting the Chassis with Tilt

Affects of Taking Tilt Out of Chassis:

1. Moves center of weight mass to the right. So more weight transfers to right side of car. Affects the car through first half of cornering.
2. Raising left side of car up creates positive arm angle at left front. This makes the car tighter at corner entry by holding weight at the left front and right rear corners.
3. Raising the left side of the car up raises the height of the left side radius rod mounting point on the chassis at the left rear. Under acceleration this creates more thrust loading on the left rear tire.
4. Increases the positive arm angle on the left rear and adds bar preload, so at corner exit the bar unloads harder on the left rear.

Affects of Adding Tilt to the Chassis:

1. Moves weight mass to the left, which loosens up chassis at corner entry.
2. Increases torsion arm angle at left front so car turns in easier.
3. Lowers the height of the radius rod mounting point on the chassis at the left rear.
4. Takes out positive arm angle at the left rear so car won’t drive as hard at corner exit.