



# LAKEWOOD

## "TRACTION...ACTION" LIFT BARS

### Part Number #21312 / 21313

1964-1972 (All GM A-Bodies) & 1978-1987 (All GM G-Bodies)

### INSTALLATION INSTRUCTIONS

#### WORK SAFELY!

For maximum safety, perform this installation on a clean, level surface and with the engine turned off. Place blocks or wedges in front of, and behind both rear wheels to prevent movement in either direction.

**CAUTION:** To avoid any possibility of bodily injury or damage to vehicle, do not attempt installation until you are confident that the vehicle is safely secured and will not move.

#### PREPARATION TIPS FOR INSTALLATION

1. Place vehicle on a solid level surface to ensure safe installation.
2. Place wheel blocks in front of and behind both front wheels to prevent movement in either direction.
3. Raise rear of vehicle and support axle housing using approved automotive support stands having adequate load capacity (6" inside from each control arm).
4. With a paint scraper, scrape all the undercoating and rust off the inside of the frame and rear end lift bar mounting areas.

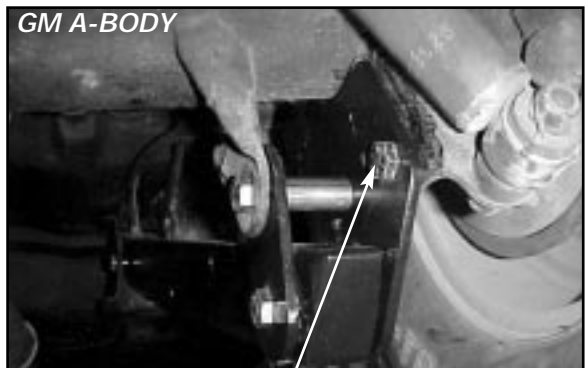
#### GM LIFT BAR INSTALLATION

1. On a work bench, drive the grease fittings into the 1/4" holes in the front and rear of bars as follows: Use a 1/4" deep well socket and a small hammer. Place a small amount of bearing grease on the ball end of each grease fitting so that the fitting will temporarily stick to the end of the 1/4" socket. Place the fitting into the hole, then one at a time, drive them in.
2. Grease the ends of the front bar bushings and align the nylon washers over the steel inner bushing. The grease will hold the washers in place temporarily. Also grease the inside of the front frame lift bar mounting brackets.
3. Place each lift bar into front frame brackets, align bolt holes and insert the correct bolt supplied, from the inside of the frame. Place self locking nut into socket with extension then attach through the outer frame holes.
4. Attach rear lift bar mounting plates as shown. use the hardware supplied at the stock GM

lower control arm bolt holes. Place proper bolts through these bolt holes and secure lock washers and hex nuts. If preferred, thread locking liquid can be used. Do not tighten fasteners yet.



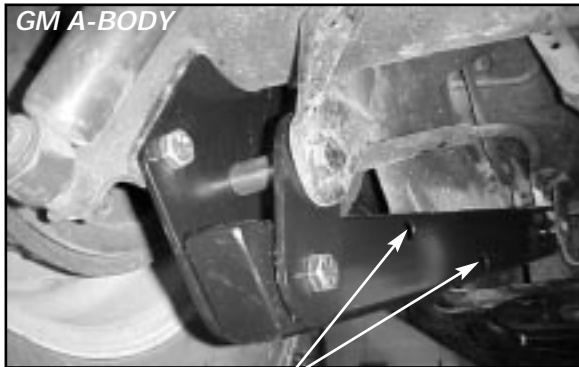
Small bushing used on the 21312 only  
GM A-BODY. 64-72



Bolt here if not welding.

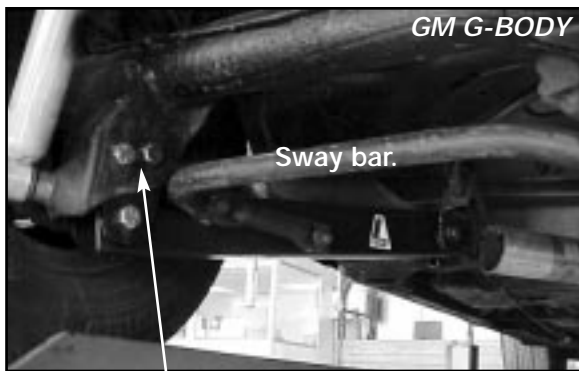
5. Grease the ends of the rear bar bushings and place nylon washers over the steel bushings just like in step 2. Swing lift bars up between rear mounting plates. Align the bolt holes and insert proper bolts supplied. Attach lock washers and hex nuts and tighten all bolts and nuts.
6. The pinion angle must now be checked and adjusted if necessary. The angle between the drive shaft and the rear end yoke must be between 4 and 6 degrees down. See pinion angle explanation sheet. (SEE NUMBERS 1, 2, 3, 4 ON THE NEXT PAGE.)
7. With pinion angle set, tighten all fasteners securely.
8. A hole must be drilled through one of the rear lift bar brackets (if not already drilled in) and through (SEE NUMBER 4 ON THE NEXT PAGE.)

the housing brackets on each side. Using a hand drill with a 1/2" chuck, drill 1/2" holes through the rear mounting plates then through the factory lower control arm housing brackets. Spot drill using a 1/4" drill, then change to a 1/4" drill size. Drill through with the 1/4" drill bit then drill through with a 3/8" drill bit and last with a 1/2" drill bit. **CAUTION:** Be very careful when drilling through that the drill bit does not grab and whip the drill around out of your hands.



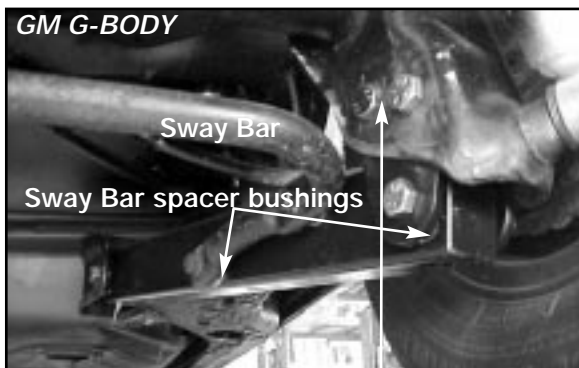
Sway bar holes.

9. Insert short 1/2" bolts, lock washers and nuts then tighten securely.



2 bolts here if not welding.

10. Grease the four fittings in the bars through the holes in bottom of bars.
11. If the anti-roll bar is going to be used, it can be attached to the holes provided in the lift bars. Place the spacers between the anti-roll bar and lift



2 bolts here if not welding

bars (if necessary) on each side and use factory GM bolts and nuts. tighten securely. **NOTE:** for drag racing use, we recommend not using the anti-roll bar.

12. Place car back on the ground and you are ready to test.

**CAUTION: TO USE YOUR LIFT BARS ARMS TO ADJUST YOUR REAR END PINION ANGLE, FOLLOW DIRECTIONS BELOW.**

1. Remove car from jack stands. now place car upon blocks or car ramps so that the car weight is on all (4) wheels, keeping the car level, but making sure you still have room to work under the car to make your adjustments.
2. With the car up in the air you will need to check the pinion angle of the rear end and drive shaft. Read the attached sheet on setting pinion angle. You will need to acquire a magnetic protractor (angle finder) to do this operation.
3. Read this before performing the next operation !! Using a magnetic protractor (angle finder) check the pinion angle. If you can't obtain the desired 4-6 degree pinion angle, then loosen the 4 lower bolts and pry between the shock stud and control arm to adjust angle. Tighten all bolts securely while checking pinion angle.
4. Do not attempt to drive the car with out securing the lift bar plate to the axle housing plate welded or bolted. Center punch and drill starting with 3/16" as a pilot hole then step up the sizes using 1/4", 5/16", 3/8" and finishing with 1/2" for final size. Then install the 1/2" bolts, lockwashers and nuts and tighten. (torque to 65 ft lbs.)
5. Remove car from the support stands or car ramps and place it on the ground. You are now ready to Rock & Roll!!!

**PLEASE NOTE**

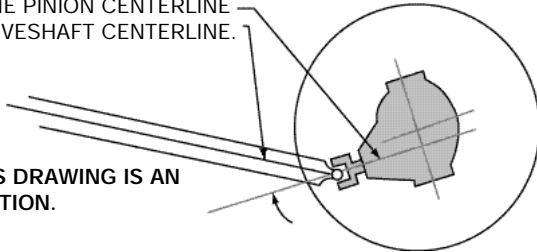
1. Be sure to check the bolts frequently. make sure they are tight and always stay tight. you can use thread lock if you wish.
2. Welding is recommendedf (but not required) to secure the lower plates to the lower axle brackets.
3. These lift bars are legal for use in NHRA stock eliminator classes as a bolt on application only! (no welding is allowed).

## PINION ANGLE

Pinion angle affects the efficiency of power

THE PINION ANGLE IS THE RELATION BETWEEN THE PINION CENTERLINE AND THE DRIVESHAFT CENTERLINE.

\*\*NOTE: THIS DRAWING IS AN EXAGGERATION.



transmission from the driveshaft to the rearend. The pinion angle is the difference between the pinion centerline and the driveshaft centerline. For maximum performance, the ideal is to have a slight pinion down angle (min. 2 degrees) under full power. Obviously, the pinion angle changes as power is applied, so the axle housing begins to twist as the pinion tries to drive the ring gear. Rear axle wind-up can take some of the initial energy or "hit" away from the launch. As a general rule, a leaf spring rear suspension should have between 5-7 degrees of static pinion angle (pinion down); and a factory four-link should be set between 4-6 degrees.

Keep in mind that these pinion angles are for competition. If you primarily drive your car on the street, you shouldn't have more than a 5 degree angle, max. The u-joints are designed to run at this angle, which allows the cups to rotate, avoiding premature wear and failure. This doesn't affect leaf spring suspension, since it runs well within this tolerance.

You will need to have the car level, up on (4) car ramps or blocks of equal heights, so you have room to work under the car when checking the pinion angle. Also, both the front and rear suspensions need to be loaded to get accurate readings. The height of the rearend (relative to the rest of the driveline) will affect the pinion angle. Using an angle finder, which is a tool that combines a bubble level and protractor, to determine the correct pinion angle for your car. Position the angle finder on the driveshaft and record the measurement, and then place the angle finder on the pinion (the u-joint yoke rotated to vertical position will give an accurate reading) and record the measurement. The pinion angle is a combination of the two measurements.

### EXAMPLES:

- (pinion 0 degrees & driveshaft 6 degrees = 6 degrees total)
- (pinion 2 degrees & driveshaft 4 degrees = 6 degrees total)
- (pinion 3 degrees & driveshaft 3 degrees = 6 degrees total)
- (pinion 4 degrees & driveshaft 2 degrees = 6 degrees total)
- (pinion 6 degrees & driveshaft 0 degrees = 6 degrees total)

## OTHER SUSPENSION TIPS!

### THE FOLLOWING ARE FINE TUNING TIPS FOR YOUR SUSPENSION

You can purchase shocks that are 3 position adjustable for both front and rear applications. These shocks are available from your local speed shop, or other suppliers. If you can't find shocks designed for your specific application, you'll have to check in a shock catalog for O.E. applications. You may have to use shocks from another make or model that has the same mounts at each end, and the same length, or an inch or two longer, which won't hurt, because it allows for more suspension travel, so you don't hit the end of your shock travel and pull the rear wheels off the ground.

### LEAF SPRING REAR SUSPENSION

With Lakewood lift bars, there are shims supplied with the bars that are used to put more preload in the bars. When installing the bars always put one more shim on the right side (pass. side) than the left side (drivers side). This extra shim helps to counteract engine torque wanting to lift the left front corner. Use 90/10 front shocks on small blocks, 80/20 or 70/30 with big blocks and high horsepower small blocks. Use 50/50 shocks on the rear.

### COIL SPRING REAR SUSPENSION

Use 90/10 front shocks on small block cars, 80/20 or 70/30 on big blocks cars, and high horsepower small blocks. Except on short wheel base cars like Mustangs and Capri's, use the 80/20 or 70/30 settings. Use 50/50 rear shocks along with an air bag in the right rear coil spring only (4-8 lbs. air), this you will have to play with to find the best setting for your car. The air bag is used to counteract the engine torque wanting to lift the left front corner.

### CHASSIS WORK

To help the effects of the lift bars, a minimum of six point cage to stiffen the chassis up would help. That way the chassis is not absorbing the energy hit or the bars, and all the energy will be directed to the tires, to help lay out a bigger footprint.

### **Recommended chassis modifications:**

For serious drag racing, we recommend reinforcing the upper and lower control arm chassis mounts. They are only spot welded in place from the factory but should be fully welded to the floor pan for added strength.

### **Tuning Tips:**

These traction bars can be attached to the axle housing brackets in 1 of 2 positions. The lower holes will cause the rear tires to "plant" harder than the upper holes. If you have too much traction, move the rear attachment to the upper holes of the axle housing brackets.

*Illustration #2* shows what happens to the instant center (imaginary intersection point between the upper and lower control arms) when the lower control arms are attached to each of the two optional mounting holes in the axle housing brackets.

When the differential pinion gear is turned by the drive shaft, which is driven by the engine, the pinion gear turns the ring gear causing the axle housing to rotate, pulling back on the upper control arms and pushing forward on the lower control arms. These forces theoretically meet at the instant center point (as shown on the illustration). The shorter the instant center point is, the more the tires will separate from the body upon launch.

#### **IMPORTANT!**

*Periodically check to make sure that all mounting hardware is securely tightened. Use a good quality chassis grease to keep bushings and sleeves properly lubricated.*

### **Recommended Optional Lakewood Products:**

- For drag racing, the factory rear shocks should be replaced with a 50/50 ratio shock absorber available for 1982-92 model years (#40301).
- Replacement Bushing Set for Traction Bars (#20538).
- Front Drag Struts are also available for 1982-92 model years in ratios of 70/30 (#40500) or 90/10 (#40510).
- Bolt-in Safety Drive Shaft Loop available for 1982-92 model years (#18020), 1993-2002 model years (#18022).

**ILLUSTRATION #2**

