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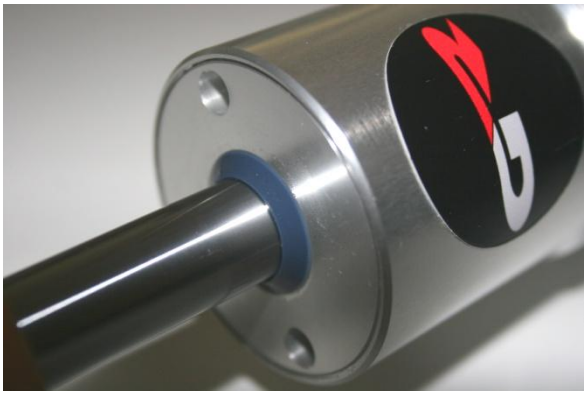
Griggs/Varishock Instructions for Use

Installation On GR40 T Series Vehicles

1) Remove from Box and be sure all parts are in place.

2) Locate the two damping rate adjustment knobs on the body of the shock. Notice that one has arrows next to it pointing toward each other. This is the compression, or bump adjuster. The other knob has arrows pointing away from each other. This is the extension, or rebound adjuster.

3) Turn both compression and rebound adjuster screws clockwise about one turn to get familiar with the feel of the detents of "clicks". Then turn them as far as they will turn counterclockwise when they stop turning DO NOT USE FORCE! They are now set at the '0' or full soft position. Leave them at full soft for the time being.



4) During assembly of the shocks a small amount of fluid gets trapped between the dirt scraper around the shaft and the internal shaft seal that is inside the closure. Before installing coil over parts onto shock, it is a good idea to collapse and extend its full stroke several times. Wipe off the shaft and closure of any fluid that may appear. This residual fluid is unavoidable to be sure the shock is full when assembled. Stroking the shock will help force this fluid out and may prevent it from leaking out later. It is still possible more may seep out after installation and first use and heat cycle; however you should only need to clean the shock once or twice after a few hundred miles of operation before it operates dry. However, as with any shock, a slight sweating of fluid may appear throughout its life. This will not affect performance.

5) Install adjustable spring seat, with spring surface toward the shaft end and screw to the initial recommended dimension in the Table below. Measure from the center of the shock body eyelet to the spring surface on the adjustable spring seat as shown.

***GR40 Initial Ride Height Setting Table**

	Front	Rear
GR40SS	N/A	6.375
GR40ST	6	6.375
GR40TT	5.25	5.875

**Values listed are for use with corresponding GR40 specified spring dimensions and rates*

6) Install front springs and upper seats on each shock.

7) Install shocks on car making sure that no part of the shock other than the spherical bearings are contacting any part of the car. **IMPORTANT! To help preclude foreign object damage, if mounting inverted (shaft down) be sure that adjusters are pointing forward. If mounting shaft up, adjusters should be rearward.**

Suggestions:

- If you are setting corner weights, set the car down on scales and perform that task while shocks are at full soft. This will yield more accurate scale readings.
- To calculate ride height changes, the thread pitch on the spring height adjuster is 8 threads per inch. Each click of the detent yields a half turn of spring height adjustment which due to motion ratio yields a ride height change of approximately 1/16" in rear, and a little less than approximately 3/32" or 1.5 16ths in the front. If you determine the ride height change required in sixteenths of an inch you can determine the number of clicks, or half turns you up or down needed.

Example:	**LF**	**RF**	**LR**	**RR**
Measured Ride Height	3 3/4	4 3/32	16 7/32	16 3/4
Desired Ride Height	4	4	16 1/2	16 1/2
Difference	1/4	- 3/32	9/32	- 1/4
Difference in 16ths (round up)	4/16	- 2/16	5/16	- 4/16
Clicks (Half Turns)	4	-2	5	-4

Initial Shock Adjustment

CAUTION! BE CAREFUL!! It is easy to get confused and mix up the compression and rebound adjusters once on the car! Notice which side of the car has the compression adjuster on the outboard side. The opposite side of the car will have the compression adjuster on the inboard side. If it is difficult to see the arrows on the shocks you may want to make an indelible mark on the car by each shock indicating which knob is which.

After chassis is set, turn the damping adjusters clockwise from the 'zero' position counting the "clicks" to the settings shown on the **Initial Recommended Shock Settings Table.**

GR40 Chassis Initial Recommended Shock Settings

	Front		**Rear**	
Application	**Compression**	**Rebound**	**Compression**	**Rebound**
Street	3	8	2	5
Moderate Speed Track	6	6	4	4
High Speed Track	6	8	5	5
Autocross	4	4	5	4
Drag	5	2	6	4

Street tuning tips:

1) Soft compression yields plush ride.
2) Too soft Rebound, vehicle bounces and may even porpoise.
3) Firm Rebound prevents floaty feeling.
4) Too firm jerks occupants around.
5) Rear axle hop is caused by too soft compression.

Track Tuning/Optimizing Tips

Warning regarding damping adjustments and track tuning:

If you have little experience tuning shocks you should adhere to the recommended shock settings until you can truly identify what characteristic needs to change in the transient response of the car. Shock adjustments control the rate of transient tire loading and therefore will change a vehicle's behavior considerably. With VariShocks on all four wheels there is a total of 16,384 combinations of damping curves available. Needless to say random adjusting can get you very far off the desired performance curve quickly. If you feel lost always go back to the Initial Recommended Shock Settings Table. Optimizing takes observation and patience. When in doubt go soft. Though it flops around, too soft a car can still be driven. Too stiff is dangerous and can abruptly lose traction. So keep in mind: If a little stiffening is good, more may be bad. With that said…

1) Each click is a significant change in damping. Two clicks equal a complete valving number on an equivalent 30 series Koni, Pro, Carrera, or AFCO brand shocks.
2) Be careful. KEEP RECORDS of your changes. When in doubt go back to the baseline recommendations.
3) The less traction the less rebound needed. Rain, poor tires, bad conditions, can all effect damping requirements, remember the less load in the chassis, the softer it should be. Heavy rain, full soft rebound may be best, soften the bump some as well.
4) The rougher the bumps the softer the compression.
5) High rebound settings and low compression settings can lead to jack down hitting bumps, which loses traction. Just because a car feels stiffer and more responsive does not make it faster.

6) High rear rebound can create initial turn in oversteer.
7) Too low rear rebound can cause rear hiking or delayed “set” on turn in.
8) The higher the speed of the vehicle, the higher the rebound in the front must be to control aero effects and higher energy inputs from bumps. But be careful not to trade off too much of the damping requirements in slower parts of the track where traction for acceleration is needed.
9) Significant downforce from sizable splitters and quality wings has a damping effect on body motion at higher speeds out of traffic. A downforce car may require higher or lower compression settings, and rebound stiffness may be able to be decreased in the rear. However it may have to increase in the front to control nose height or splitter angle of attack on undulating or rough high speed surfaces.
10) Rear axle hop under braking is caused by too soft compression, and is sometimes coupled with too stiff rebound.

Drag Strip and Road course/Autocross standing start tuning tips.

Rear:

1) More tire, more power or torque, the lower the gear= more load= more Compression needed at launch, especially on the right rear.
2) Rear axle hop is caused by too soft Compression.
3) Rear Rebound should be just enough to prevent oscillations and/or control issues. Usually quite soft.

Front:

1) Less rear forward traction=more rear weight transfer needed, therefore vehicle needs to rise quickly. This means less front Rebound needed.
2) Opposite is true, if front rises two quickly and control becomes an issue, more rebound is needed.
3) Drag Racing. Front Compression should be stiff enough to prevent dipping of noses during shifts in lower gears which can cause rear tire unloading.
4) Autocross. Rear Rebound should be high enough to prevent momentary hiking of rear during initial threshold braking.
5) Autocross. More rear Rebound will increase initial turn in oversteer. Too much can spin the car.