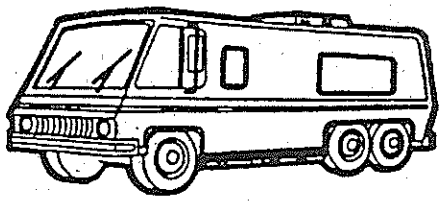
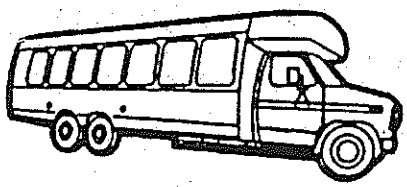
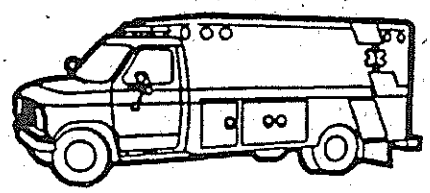
AIRGLIDE

RD Series Owner/Operator Manual







GRANNING

GRANNING AIR SUSPENSIONS
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REV. 5/94

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INTRODUCTION

AIR SUSPENSION...WHAT IS IT AND HOW DOES IT WORK?

The conventional steel leaf spring suspensions offer varying spring rates. That is, as the vehicle is loaded and the frame deflects, the stiffer the steel springs become. The outcome is a rough ride which will lead to premature suspension wear, not to mention the possible damage to vehicle contents.

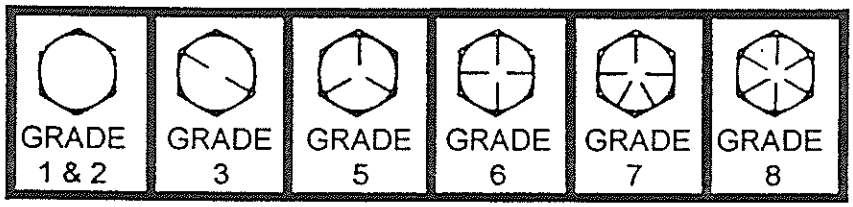
On the other hand, air suspensions employ air springs (bags) and with a height control valve a constant frame height is maintained. Air springs have a constant spring rate over a greater amount of travel (deflection). The air suspension is designed to ride at the most desirable spring rate and is maintained by the height control valve.

PERIODIC INSPECTION

After your Granning Air Ride Suspension has been in service for 1,000 miles, check all nuts and bolts for proper torque. See torque charge below. NOTE: Torque values should be checked with an approved calibrated torque wrench.

NUT & BOLT TORQUE CHART (Cleaned & Oiled)	
3/8-24 GR 8	35 ft. lbs.
*1/2-13 GR 5	35 ft. lbs.
1/2-20 GR 5	90 ft. lbs.
5/8-11 GR 5	170 ft. lbs.
5/8-18 GR 5	180 ft. lbs.
*3/4-16 GR 5	35 ft. lbs.
3/4-16 GR 8	320 ft. lbs.

*Air spring connection only



FIRST 3,000 MILE REQUIREMENTS

1. Check all nuts, bolts and air line fittings for proper torque. Retorque or replace as required.

2. Check between wear block and rub tower for any foreign material causing premature wear. (Remove objects causing obstruction.)

3. Check rebound straps for possible interference. (Remove or reposition item(s) causing interference.)

4. Check height control valve linkage for signs of bending, binding, or slippage of the axle bracket. Correct problem areas.

5. Check air springs for proper clearance, 1-1/2" all around. (Remove or reposition item(s) causing interference.)

6. Check controls, plumbing, and air springs for leads. (Use soap and water solution.)

12,000 MILE REQUIREMENTS

1. Check all items listed under 3,000 mile requirements.

2. Check air springs for any signs of chafing or wear. (Remove item(s) causing chafing or replace damaged air springs.)

3. Check rebound straps for chafing or wear. (Remove item(s) causing chafing or replace damaged rebound straps.)

4. Check axle and front pivot connections for signs of looseness due to worn parts. (Retorque or replace parts as required.)

5. Check shock absorbers for signs of fluid leak, broken eye ends, loose fasteners, and worn bushings. (Replace if damaged.)

SERVICE NOTES

Component parts service life will vary with application. Listed below are recommendations based on averages and should be used as a guide only. See page 9 for air suspension replacement instructions. NOTE: If service is required it is recommended, due to the nature of work to be performed, that the servicing be done by a qualified mechanic.

1. FRONT PIVOT CONNECTION
   Inspect the front pivot connection consisting of the bolt, nut and bushing every 12,000 miles.

   CAUTION: A LOOSE BOLT WILL WEAR THE BUSHING PREMATURELY CAUSING TIRE WEAR AND ERRATIC HANDLING OF VEHICLE.

2. AXLE CONNECTION
   Inspect the axle connection consisting of "U" bolts and "U" bolt nuts every 12,000 miles.

   CAUTION: LOOSE "U" BOLTS WILL ALLOW AXLE TO SHIFT "SIDE TO SIDE" CAUSING VEHICLE TO ROLL. DO NOT OPERATE VEHICLE IN THIS CONDITION.

3. REBOUND STRAPS
   Inspect rebound straps consisting of the bolts, washers, sleeves, nuts and rebound straps.

   CAUTION: A FAILED REBOUND STRAP WILL ALLOW AXLE TO TRAVEL IN EXCESS CAUSING POSSIBLE PREMATURE AIR SPRING FAILURE. SEE TROUBLE SHOOTING SECTION, PAGE 14, FOR CAUSE AND CORRECTION.

4. AIR SPRINGS
   Inspect the air springs every 12,000 miles.

   CAUTION: CHAFING OR WEAR CAUSED BY INTERFERENCE WILL RESULT IN AIR SPRING FAILURE. SEE TROUBLE SHOOTING SECTION, FOR CAUSE AND CORRECTION.

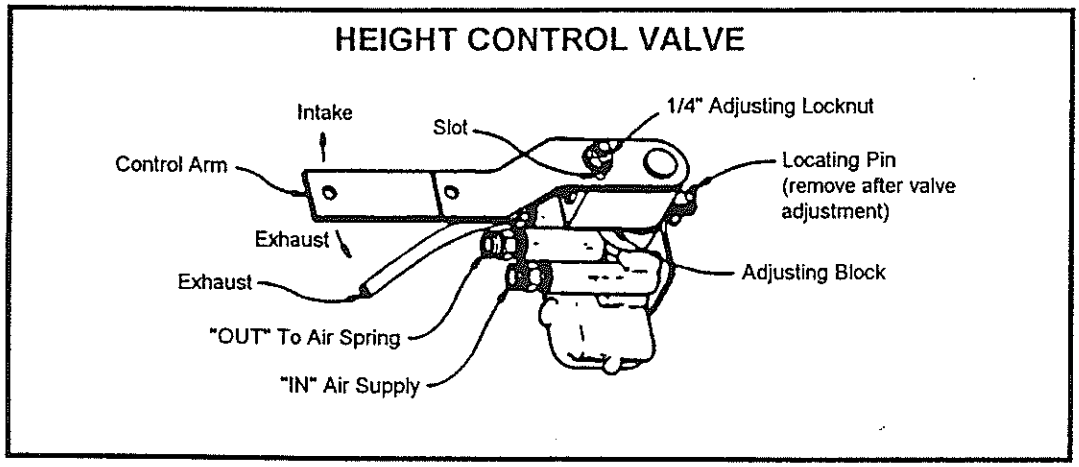
5. SHOCK ABSORBERS
   Inspect shock absorbers every 12,000 miles and/or replace at the first sign of fluid leak, tire hop or poor handling characteristics. NOTE: Shock absorbers are not a component of Granning's suspensions.

6. WHEEL NUTS AND BEARINGS
   Inspect wheel nut torque and grease wheel bearings every 12,000 miles. (SEE VEHICLE OWNER'S MANUAL.)

HEIGHT CONTROL VALVE...HOW IT WORKS

The height control valve is the "Brain" of an air suspension. It responds to the relative position between the vehicle frame and axle. Metering air to and from the air springs, a constant frame to axle or ride height relationship is maintained.

When the control arm moves to the intake position, up, the intake valve opens and supply air passes through to the air springs. When the control arm moves to the exhaust position, down, the exhaust valve opens to allow excess air to pass from the air springs to atmosphere. The valve has a 2-6 second time delay to prevent unnecessary actuation.



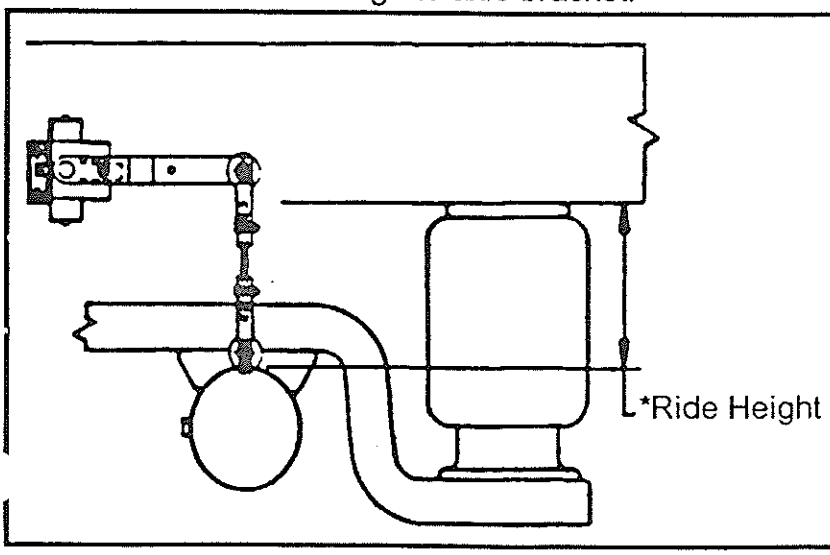
HEIGHT CONTROL VALVE ADJUSTMENT

1. Secure vehicle by blocking all wheels.

2. Determine ride height of suspension. See chart below. *Note: Ride height is taken at top of axle to bottom of frame directly above axle, as shown below.

3. Disconnect linkage at axle bracket and raise to increase, or lower valve control arm to decrease ride height accordingly.

4. Fasten lower linkage to axle bracket.



RIDE HEIGHT CHART	
SUSPENSION	**RIDE HEIGHT**
RD740F	5-5/8"
RD1000F	5-1/2"
RD1100F53	4-9/16"
RD1000C	3-7/32"
RD1500C	4-19/32"
RD1200(O)	4-37/64"

TROUBLE SHOOTING

SUSPENSION

CONDITION	CAUSE	CORRECTION
Excessive vehicle roll:	Loose or worn front pivot connection(s)	Tighten (see torque chart page 4) or replace as required.
	Axle "U" bolts loose	Tighten per torque chart page 4.
Excessive axle lateral:	See causes for excessive vehicle roll condition above	See corrections for excessive vehicle roll condition above.
	Worn or failed wear blocks	Replace (see parts list attached).
Hard ride or axle bottoming out:	Incorrect ride height	Correct to ride height chart page 7.
Tire hop or poor handling:	Loose or worn shocks	Tighten or replace. NOTE: Shocks are not component parts of the air suspension.

AIR

Air compressor runs excessively:	Air leak	Inspect all air lines, fittings and air springs with soap; and water solution. Repair, retighten or replace as required.
	Hi-Low limits of pressure switch set too low	Reset to instructions on inside cover of pressure switch located on air tank.
	Automatic moisture emission valve open	Screw in"T" handle of valve then, all the way out again to "seat" valve located on bottom of air tank.
	Automatic height control valve stuck in the exhaust position	Locate obstruction and remove or relocate interference.
Air compressor won't start:	In-line fuse burnt	Replace.
	Suspension toggle switch in the off position or burnt	Inspect and correct or replace as required.
	Pressure switch contacts burnt	NOTE: Pressure switch has two sets of contacts. If one side of contacts are burnt, wire to the next set of contacts.
	Air compressor burnt out	Inspect and replace as required.

AIR SUSPENSION REPLACEMENT INSTRUCTIONS

NOTE: Due to the nature of service to be performed, it is recommended that the work be done by a qualified mechanic.

For service parts, contact an authorized Granning dealer.

FRONT PIVOT BUSHINGS:

1. Deactivate the suspension electric toggle switch to the "off" position.
2. Drain air tank at the automatic moisture emission valve by screwing in the "T" handle. When the air tank has been completely drained, rotate the "T" handle back out all the way. Do not over tighten.
3. Properly secure vehicle by blocking the steering axle wheels fore and aft of each tire. Then raise vehicle frame until drive axle tires are free from contact with ground. At this time support both vehicle frame and axle with proper jack stands. Remove wheels.
4. Disconnect bottom height control valve linkage. Lower control valve arm to exhaust all remaining air in air springs.
5. Disconnect air inlet hoses to air springs by pushing in on the collar of the fitting and pulling the hose at the same time. Remove air spring fasteners and air springs.
6. Remove "U" bolts with wear towers. CAUTION: On some models a tapered or rectangular spring spacer exists. These spacers must be installed exactly as removed.
7. With spring beams supported, remove front pivot bolts and lower spring beams from vehicle and rebush.
8. Reinstall spring beams using the reverse procedure for removal. CAUTION: All fasteners must be properly torqued. See torque charge page 4.

WEAR BLOCKS:

1. Follow steps 1 thru 6 listed under front pivot bushing above.
2. Remove wear block(s) and replace with new blocks. Torque fasteners to torque charge page 4.
3. With new blocks installed, complete the installation by using the reverse procedure for removal. CAUTION: All fasteners must be properly torqued. See torque chart page 4.

AIR SPRINGS:

1. With vehicle properly secured, disconnect the height control valve linkage at axle bracket. Rotate the valve's lever arm down to exhaust air from air springs. Install a locating pin the lock valve in position.
2. Remove air lines by pushing air fitting collar in while pulling on air hose at the same time.
3. Remove air fittings, air spring fasteners and air spring(s).
4. Install new air springs and properly torque all fasteners. See torque chart page 4. Install air fitting(s) and push in air line(s) into fitting(s). Pull on air line(s) to check secured.
5. Rotate height control valve lever arm up to bring vehicle frame up to proper ride height. See ride height charge page 6. Connect valve linkage to axle bracket with fasteners and torque to chart on page 4.

INSTALLATION INSTRUCTIONS:

SUSPENSION: RD1900 - REAR DRIVE AIR SUSPENSION
VEHICLE: G.A.W.R. UP TO 19,000 LBS.

GENERAL: Proper installation of the RD1900 air suspension can be easily accomplished by following the step by step procedure as out lined below. The necessary operations have been listed in the order in which they must be performed. NOTE: Read the instructions thoroughly before starting the installation. illustrations have been provided as required.

CAUTION: Tailpipe alteration and/or relocation.

If alteration or relocation of the tailpipe is necessary, all such work should be in accordance with vehicles manufacturer's recommendations. SEE BODY BUILDERS LAYOUT BOOK.

STEP 1: Vehicle Preparation:

1. Secure vehicle, block steering axle wheels and support frame aft of drive axle.

2. Raise drive axle to clear tires of ground and support axle. Remove tires.

3. Mark the centerline of the axle on the frame with the axle at ride height.

4. Remove leaf springs with rear shackles (if any). Also remove existing hangers.

5. Clear all electrical, fuel and hydraulic lines in area of frame or air suspension mounting. NOTE: Do not break or disconnect any electrical, fuel or hydraulic lines.

STEP 2: Air Suspension Installation:

A. Frame Drilling:

1. Drill the frame for the hangers, wear blocks, rebound strap, and upper air spring pads according to sheet 2 of the installation drawing view 1.

STEP 3: Air Suspension Mounting:

A. Hanger - Locate and mount hangers using hardware provided with hanger mount kit. Torque to 190 ft-lbs (122 Nm). See sheet 2 view 3 of the installation drawing for location.

B. Wear Block - Locate and mount the wear blocks with the appropriate hardware. Torque to 10 ft-lbs (14 Nm). See sheet 2 view 3 of the installation drawing for location. ATTN. The wear block may need some modification for clearance around other fasteners.

C. Top Rebound Strap Mounting Bracket - Locate and mount the rebound strap bracket and the rebound strap with rebound strap sleeve using the appropriate hardware. Torque to 90 ft-lbs (122 Nm) See sheet 2 view 3 of the installation drawing for location.

D. Upper Air Spring Pad and Height Control Brackets - Locate and mount the upper air spring pad and the height control bracket with the appropriate hardware. Torque to 90 ft-lbs (122 Nm). See sheet 2 view 3 of the installation drawing for location. NOTE: The upper spring pads and height control brackets are left hand and right hand oriented, be sure to place the holes in the upper spring pads towards the front of the vehicle. See sheet 1 of the installation drawing.

E. Spring Beam - Attach the spring beams to the front hangers using the pivot bolts, nuts and washers provided in the hanger kit. Do not tighten at this time. Set the axle spacer and alignment pin assembly into the spring seat locating hole (larger pin diameter into the seat). Set the spring beam on the spacer, locating the pin in the hole in the spring beam. Install the clip plate using U-bolts, washers, lock nuts, lower clamp and lower shock mount. NOTE: Lower clamp and shock mount were removed from original suspension. For reinstallation see sheet 2 view 3 of installation drawing. Do not tighten U-bolts at this time.

F. Lower Height Control Brackets And Air Springs - Install the air spring assembly into the upper air spring pad using the appropriate hardware.

Do not tighten at this time. Locate the lower height control bracket onto the spring beam. Align the mounting hole with the mounting hole in the spring beam. Insert the lower mounting stud on the air spring through the hole in the bracket and the spring beam. Attach with the appropriate hardware. Torque all air spring fasteners to 35 ft-lbs (48 Nm). See sheet 1 of the installation drawing.

G. Axle Alignment - With the axle centerline supported at 6.81 (173mm) tighten the front pivot bolts to 305 ft-lbs (415 Nm). With the clip plates and wear towers equally spaced from the wear blocks, spacing is to be .09 to .12 inches, tighten the U-bolts to 400-450 ft-lbs (540-610 Nm) using the sequence out lined below. Check the axle alignment . Improper axle alignment will cause pre mature tire and wear block wear. see sheet 2 view 4 of installation drawing.

U-bolt tightening sequence:
In a criss-cross pattern, tighten the U-bolts up to final torque in three steps as outlined.

For 19,000 lb. to 23,000 lb. axles.

STEP 1: Tighten nuts to 111 ft-lbs. (150 Nm)

STEP 2: Tighten nuts to 220 ft-lbs. (300 Nm)

STEP 3: Tighten nuts to 424 ft-lbs. (575 Nm)

For a 15,000 lb. axle.

STEP 1: Tighten nuts to 74 ft-lbs. (100 Nm)

STEP 2: Tighten nuts to 184 ft-lbs. (250 Nm)

STEP 3: Tighten nuts to 332 ft-lbs. (450 Nm)

H. Rebound Strap To Clip Plates - Install a rebound strap sleeve into the eye on the end of the rebound strap that is unassembled. Align the sleeve and strap end into the clip plate rebound strap mounting brackets. Attach the strap with the appropriate hardware. Torque to 90 ft-lbs (122 Nm). See sheet 2 view 2 of installation drawing.

STEP 4: Air Kit Installation:

A. See the installation drawing enclosed with the air kit. The drawing illustrates suggested electrical wiring and pneumatic plumbing hookups. For height control valve installation see the installation drawing enclosed with the height control kit.

NOTE: Electrical connections for the air compressor on emergency vehicles (when required) should be made "direct" to the power supply. This allows the compressor to keep the air system fully charged while the ignition switch is off.

NOTE: Air compressor (when required) should be mounted in it's normal vertical, up-right position to avoid possible bracket failure due to excessive vibration.

NOTE: Air compressor (when required) should be mounted in a protective enclosure with sufficient air circulation for cooling the unit.

REVISIONS	ECN#	WAS	CHANGED TO
A	G0984	WEAR BLOCK TORQUE 35 FT-LBS (48 Nm)	10 FT-LBS (14 Nm)
B	G1150	ADDED TORQUE SPEC. FOR 15,000 LB. AXLE.	
C	G2075	90 - 110 FT.LBS.	305 FT.LBS.

Notice, D5602

All Granning R-Series Suspensions

CAUTION

To avoid damaging the compression fittings and causing leaks in the air system, tighten the compression nuts finger tight, then 1-1/4 turns with a wrench.

Overtightening will damage the fittings and allow air to leak from the system.

Revision History

Item	ECN #	Date	Was	Now	By	App'd
A	G2222	5/31/97	---	Retyped and Reformated	DLN	DLN

Reyco Granning SUSPENSIONS

R-SERIES
Limited Warranty

ReycoGranning® warrants its R-Series suspensions to be free from defects in material and workmanship under normal use and service in the U.S. and Canada.

Main Structural Components -- 24 months or 50,000 miles, whichever occurs first. Defined as: hangers, beams, clip plates and axle saddles.
Other Air Suspension Components -- 12 months or 24,000 miles, whichever occurs first - valves, fasteners, bushings, and other components not stated specifically (when provided by ReycoGranning®), and other fabricated metal components. ReycoGranning® provides no warranties on components such as axles, air springs, controls, air, compressors, brakes, shock absorbers, and hub and drum assemblies, except to the extent of any warranty provided to ReycoGranning® Suspensions by the manufacturer of such components.
Labor -- 6 months or 12,000 miles whichever comes first. Labor will be allowed on ReycoGranning® Suspensions estimated time to make repairs at a maximum rate of $50.00 per hour.

As used herein, the term "normal use and service" means that the suspension will be installed, operated, inspected and maintained in accordance with the applicable ReycoGranning® Suspensions owner's manual, and any applicable vehicle owner's manual or instructions.

ADJUSTMENTS

The starting date for the above warranty period is the date of purchase of the suspension by the first end user. Proof of such date is the responsibility of the first end user. If the purchase date is not established to ReycoGranning® Suspensions satisfaction, the date of manufacture determined from the suspension system's serial number shall be used as the effective starting date. When adjustment is sought under this warranty, a claim should be made by contacting the distributor or manufacturer who installed the suspension, who will coordinate the fix, documentation, parts shipment, etc. directly with ReycoGranning® Suspensions.
***NOTE* ReycoGranning® Suspensions must be notified in writing using a warranty claim form promptly upon claimed defect.**

INSTALLER AND END USER RESPONSIBILITIES

The Distributor/Installer is responsible for installing the product according to ReycoGranning® Suspensions approved procedures, the installer is also responsible (either directly or through its agent/dealer) for providing a copy of ReycoGranning® Suspensions warranty and owner's manual to the end user, and for advising the end user of proper use, service and maintenance required for the product. The end user is responsible for operating, inspecting and maintaining the suspension according to the instructions in the ReycoGranning® Suspensions owner's manual and any applicable vehicle owner's manual, and for properly instructing all operators and maintenance personnel.
***NOTE* Warranty may be denied for improper installation.**

LIMITATIONS AND EXCLUSIONS

No warranty applies in the event of: use of components, parts and/or accessories not obtained from or approved by ReycoGranning® Suspensions or which do not meet ReycoGranning® Suspensions quality and performance specifications; improper installation, maintenance or repair; misuse or abuse including but not limited to overloading; or unauthorized alterations or modifications.

THE ABOVE WARRANTIES ARE SUBJECT TO THE "WARRANTY LIMITATIONS" AND "REMEDIES" SECTIONS OR REYCOGRANNING® SUSPENSIONS INVOICE TERMS AND CONDITIONS.

This policy supersedes any previous warranty statements. 2/2001

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