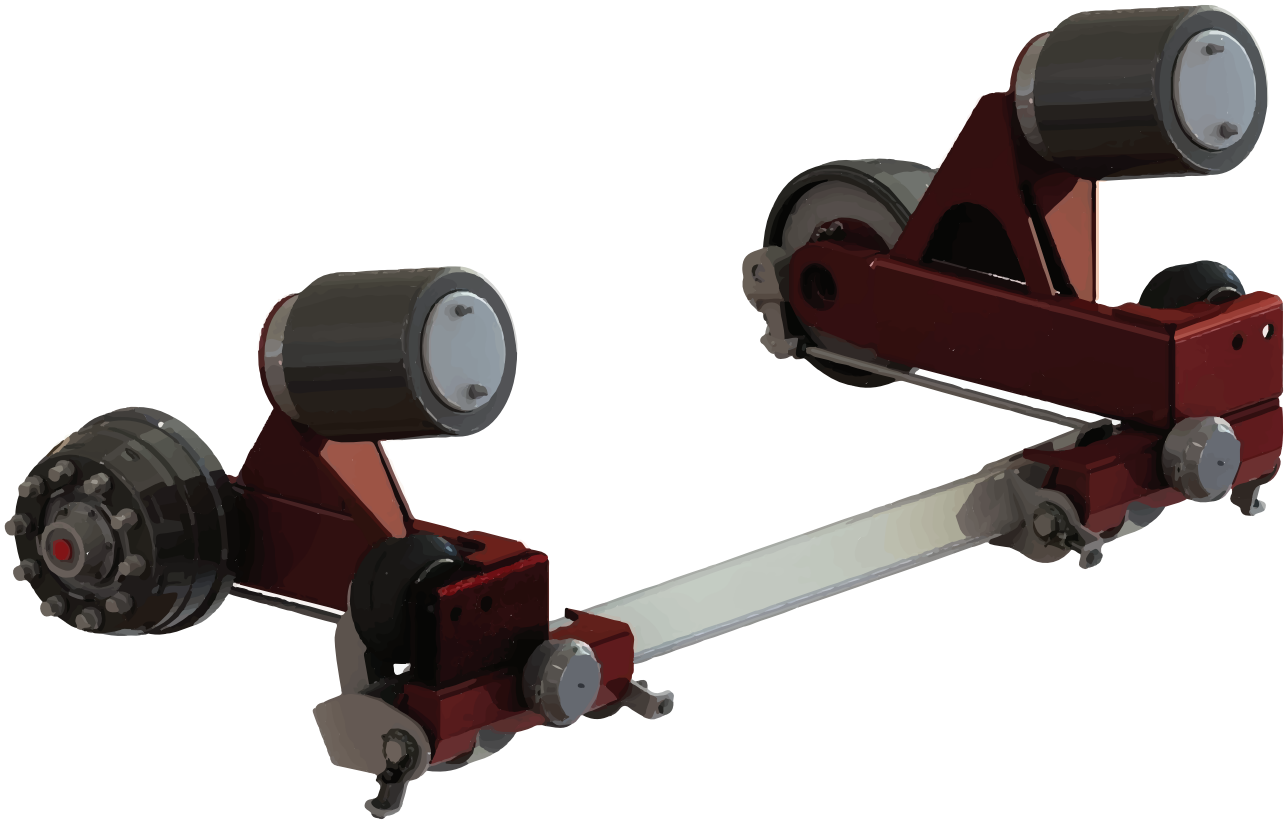
Reyco Granning SUSPENSIONS

Powered Vehicle Suspensions Owner's Manual

GP120-RAD

Auxiliary Suspension



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Revision History

REV	ECR #	DATE	CHANGE DESCRIPTION	BY	CHK	APV
OR	22885	2/15/2024	RELEASE TO PRODUCTION	KMH	STM	JAH

INTRODUCTION

Company Profile

Reyco Granning Suspensions was formed by the merger and acquisition of two well-known names in the heavy-duty vehicle suspension industry—Reyco and Granning.

Reyco grew out of the Reynolds Mfg. Co and was first known as a major supplier of brake drums for heavy duty vehicles and later developed a full line of air and steel-spring suspensions for trucks, buses, trailers, and motorhomes.

Granning Air Suspensions was founded in 1949 in Detroit, Michigan as a manufacturer of auxiliary lift axle suspensions. Granning later became an innovator of independent front air suspensions for the motorhome industry.

Reyco Granning LLC was formed in early 2011 through a partnering of senior managers and MAT Capital, a private investment group headquartered in Long Grove, Illinois.

Congratulations on your purchase of a Reyco Granning® tag axle suspension. Founded by one of the pioneers of air suspensions, Reyco Granning® supplies drive and tag axle air suspension systems to a variety of original equipment manufacturers as well as to the aftermarket industry.

Suspension Description

The GP120-RAD tag axle suspension supplied on your vehicle is manufactured by Reyco Granning® under license with McNeilus Truck and Manufacturing Company.

The GP120-RAD refuse packer tag axle suspension. The GP120-RAD tag axle suspension is installed to maximize your payload as well as increase vehicle stability. With Reyco Granning®'s manufacturing experience, you can be assured that the GP120-RAD suspension was manufactured using the highest quality materials and processes available.

Reyco Granning® supplies the tag axle suspension and McNeilus Truck and Manufacturing Company supplies the air and brake control systems for the suspension. Refer to your McNeilus Truck and Manufacturing Company service manuals for detailed information regarding the operation and service of these systems.

INTRODUCTION

Air Control System

The Reyco Granning® GP120-RAD tag axle suspension is controlled by regulating air pressure to the ride air springs. Air pressure adjustment is required to balance the load subjected to the other axles on the vehicle. The ride air pressure can be varied manually from controls provided by McNeilus Truck and Manufacturing Company. The air pressure used to lift the tires from the ground is not regulated.

The suspension maximum rated capacity is 12,000 pounds. Table 1 lists the approximate ride spring pressure versus axle load. It is to be used as a guide only; to obtain accurate air pressure to load readings; the vehicle must be weighed on a certified level scale.

Table 1
Air Spring Pressure vs. Axle Load

Ride Air Spring Pressure (PSI)	Axle Load (LBS)
10	2000
25	4000
40	6000
55	8000
70	10000
85	12000

The maximum capacity of the GP120-RAD tag axle suspension is 12,000 LBS.

INTRODUCTION

About This Manual

This publication is intended to acquaint and assist maintenance personnel in the maintenance, service, repair and rebuild of the **Reyco Granning**® GP120-RAD Rear Suspension. It is important to read and understand the entire Technical Procedure publication prior to performing any maintenance, service, repair, or rebuild of this product.

Reyco Granning® reserves the right to modify the suspension and/or procedures and to change specifications at any time without notice and without incurring obligation. Contact customer service at **800-753-0050** for information on the latest version of this manual.

You must follow your company safety procedures when you service or repair the suspension. Be sure you read and understand all the procedures and instructions before you begin work on the suspension.

Reyco Granning® uses the following types of notes to give warning of possible safety problems and to give information that will prevent damage to equipment.

WARNING

A warning indicates procedures that must be followed exactly. Serious personal injury can occur if the procedure is not followed.

CAUTION

A caution indicates procedures that must be followed exactly. Damage to equipment or suspension components and personal injury can occur if the procedure is not followed.

NOTE

A note indicates an operation, procedure or instruction that is important for correct service.

Some procedures require the use of special tools for safe and correct service. Failure to use these special tools when required can cause personal injury or damage to suspension components.

The latest revision of this publication is available online at http://www.Reyco Granning.com/ **Reyco Granning**® has developed this owner's manual to aid in the maintenance of **Reyco Granning**®'s rear suspensions.

GENERAL INFORMATION

Capacity

The following table lists the model and capacities.

Model	Suspension Capacity	Axle Capacity
GP120-RAD	12,000 lbs.	12,000 lbs.

Identification

The suspension model and serial number are stamped on an aluminum tag that is riveted to the driver side upper Upper Air Spring Mount (location visible in the Main Exploded View). The serial number is used by **Reyco Granning**® for control purposes and should be referred to when servicing the suspension (See Figure 1).

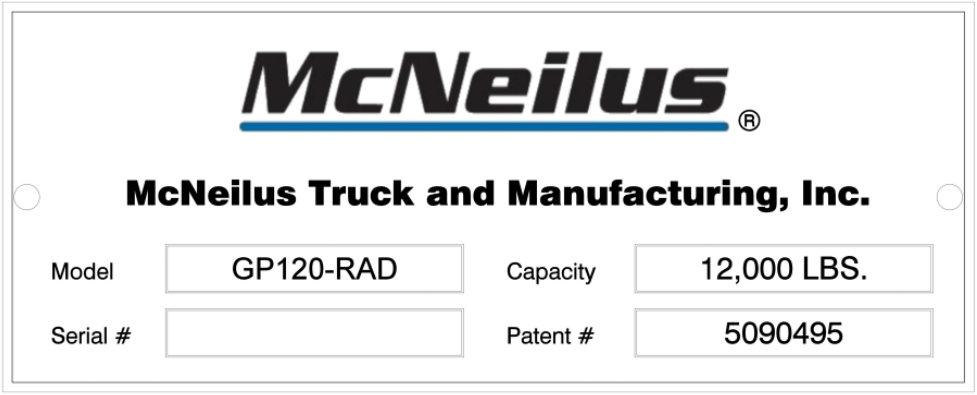


Figure 1: Suspension Identification

PARTS LIST

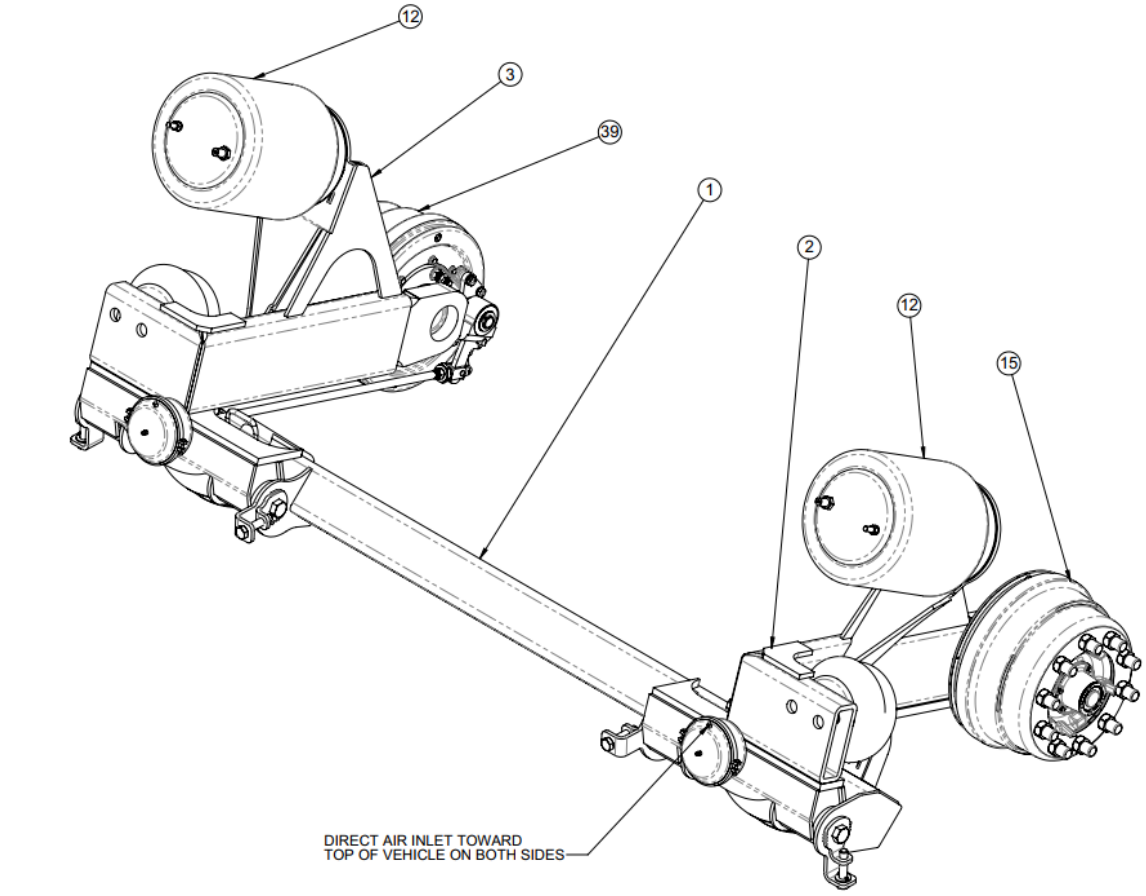
Bill Of Material

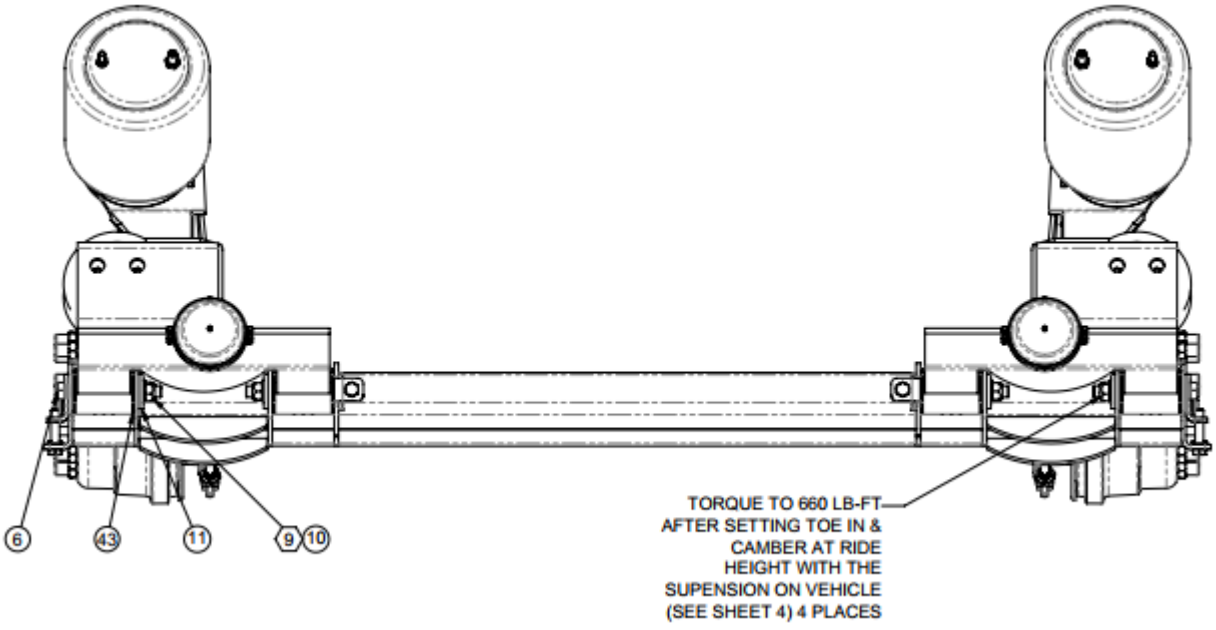
Item	Qty	Part Number	Description
1	1	714820-01	AXLE TUBE-REY ALIGN
2	1	716558-01	AXLE ASSEMBLY WELDMENT LH
3	1	716558-02	AXLE ASSEMBLY WELDMENT RH
4	4	24398-01	BOLT, HEX 3/4-10 UNC 3.5
5	4	714866-01	REY-ALIGN ADJUSTER WASHER
6	4	3628	1-14 X 8.5 BOLT
7	4	24453-01	ROLL PIN
8	4	20852-01	WASHER (3/4 ID)
9	4	89422312	LN 1-14 GR C PHOS & OIL
10	4	2571	HFW 1 .09#
11	4	23656-06	REY-ALIGN FLANGE WASHER
12	2	7640	AIR SPRING - 1R12
13	2	7639	AIR SPRING - 2B9
14	1	716575-01	ASSY, BRAKE 15X4D, LH
15	1	716583-01	ASSY, HUB/DRUM 15X4 BSN, LH
16	2	7977	OIL SEAL GUARD HP
17	2	1784	BEARING CONE
18	2	6972	BEARING CUP - INNER
19	2	6967	INNER NUT (IFS)
20	2	6968	SPINDLE LOCK WASHER
21	2	6969	WASHER, SPINDLE (IFS)
22	2	6970	SPINDLE OUTER NUT (IFS)
23	2	7647	OPERATING ROD, BRAKE
24	2	103161	N 5/8-18 5 ZN

Item	Qty	Part Number	Description
25	2	7737	5/8 COLLAR LOCK
26	2	703985-01	AUTOSLACK-10SP 1.25 CAM GUNITE
27	2	7642	BRAKE CHAMBER
28	2	7646	STUD, SLACK ADJUSTER
29	14	4599	LFN 5/8-18 G PH
30	14	126	HHB 5/8-18 X 2, GR. 8, ZN
31	2	714147-02	GASKET HUB CAP
32	2	712867-01	HUB CAP, SENTINEL
33	12	266	HHB 5/16-18 GR5 ZC W/SLW
34	8	8180175	HHB 1/2-13X1.25 GR.5 ZN
35	16	8120384	SLW 1/2 .523X.873X.135 ZP
36	2	89415543	FW 1/2 .531X1.25X.100 ZN
37	8	8120378	N 1/2-13 5 ZN
38	4	8219758	JN 3/4 - 16 5 ZN
39	1	716583-02	ASSY, HUB/DRUM 15X4 BSN, RH
40	1	716575-02	ASSY, BRAKE 15X4D, RH
41	1	716669-01	NAMEPLATE - GP120-RAD
42	2	188	POP RIVET
43	8	702703-01	SHIM
44	1	710825-11	HUB OIL MINERAL 80W90
45	1	D716663	KIT, DRAWING GP120-RAD
45.1	1	D716662	ASSY, DRAWING, GP120-RAD
45.2	1	D716664	OWNERS MANUAL, GP120-RAD

PARTS LIST

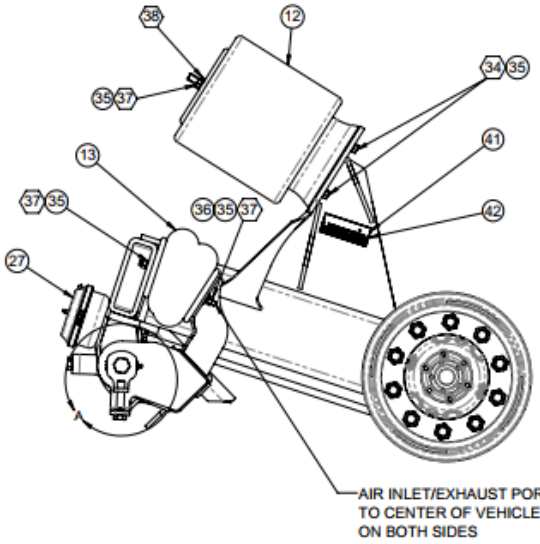
Main View

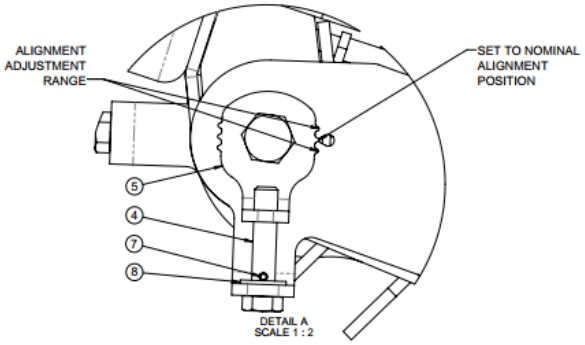


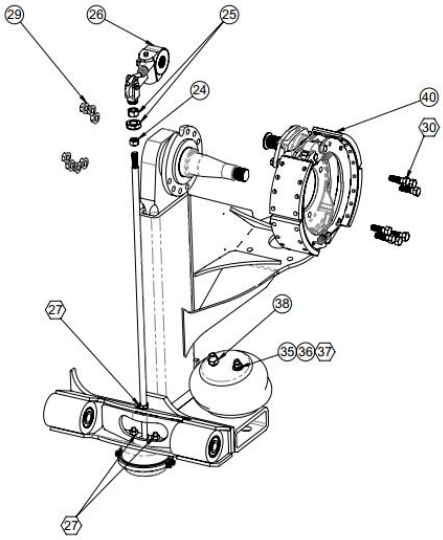


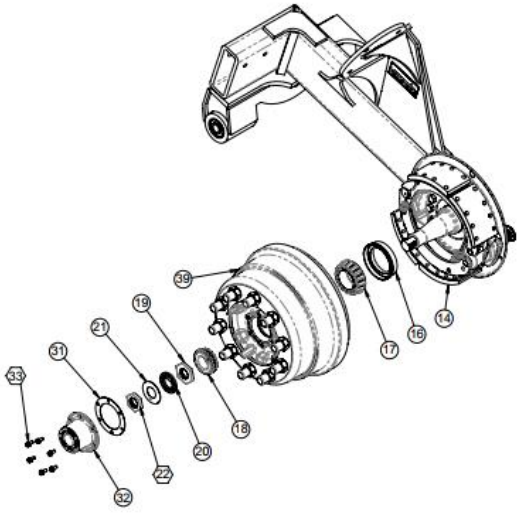
PARTS LIST

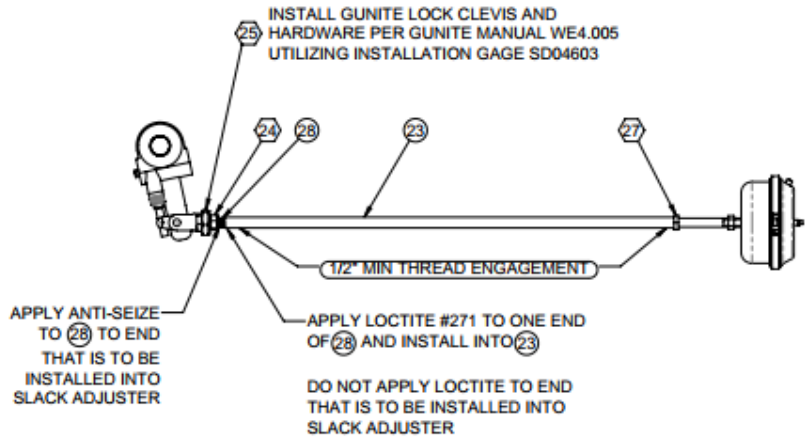
Detailed Views





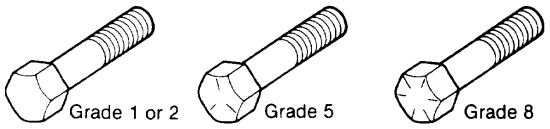






Torque Specifications

Threaded fasteners are covered by specifications that define required mechanical properties, such as tensile strength, yield strength, proof load, and hardness. These specifications are carefully considered when a fastener is selected for a particular application. To assure continued safe vehicle performance and suspension operation, replacement fasteners must of the same mechanical and physical properties as the fasteners originally provided.

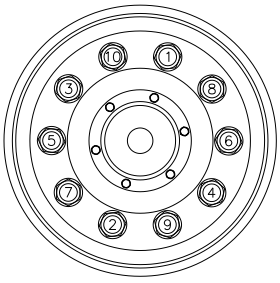


Grade Marking on Bolts

Grade	Lock Nut Grade B, F	Lock Nut: Grade C, G
Identification	 *3 Dots*	 *6 Dots*

Grade Markings on Lock Nuts

Most fasteners have identification markings as shown that indicate the fastener strength or grade. Care must be taken to ensure replacement fastener strength or grade is the same as the original fastener.

Application	Nut Size	Torque Specification (cleaned and lubricated)	Torque Sequence (if required)
Beam Pivot Connection	1-14 Grade C	660 LB-FT	n/a
Air Spring Mounting (upper)	3/4-16 Grade 5 1/2-13 Grade 5	40-50 LB-FT 20-30 LB-FT	n/a n/a
Air Spring Mounting (lower)	1/2-13 Grade 5	30-30 LB-FT	n/a
Brake Chamber Mounting	1/2-13 Grade 5	30-40 LB-FT	n/a
Brake Push Rod (Brake Chamber)	5/8-18 Grade 5	30-40 LB-FT	n/a
Brake Push Rod (Slack Adjuster)	5/8-18 Grade 5	40-50 LB-FT	n/a
Brake Assembly to Beam	5/8-18 Grade G	175-185 LB-FT	n/a
Hub Cap Bolts	5/16-18 Grade 5	12-16 LB-FT	n/a
Hub Spindle Nuts	See Hub and Drum assembly section	outer nut 200 to 300 LB-FT	see sheet 3 on dwg. 714867 for the inner nut torque and tightening procedure
Wheel Nuts	M22x1.5	Step torque to: 50 LB-FT/per sequence 450 to 500 LB-FT	

INSPECTION & MAINTENANCE

Pre-Service and Periodic Inspection

Before the truck is placed into service, the following items should be inspected.

Mounting Beam Bolts

Check the mounting beam bolts for proper installation, grade (Grade 8) and torque. These bolts are provided and installed by McNeilus Truck and Equipment Company. Refer to McNeilus service manual.

Front Pivot Bolts

Check front pivot bolts for proper installation. The bolts are 1", Grade 8 bolts and the Grade C locknuts are torqued to 660 LB-FT. See Figure 2 below.

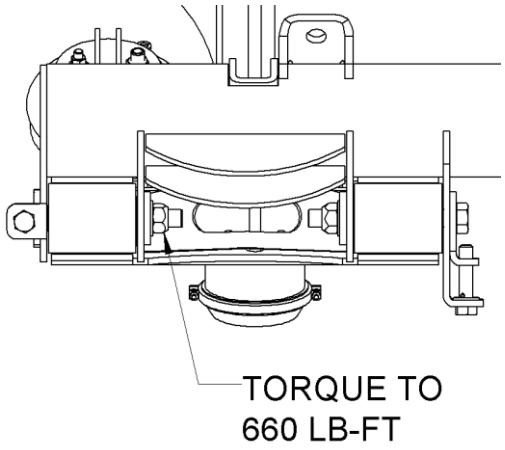


Figure 2: Front Pivot Bolt Inspection

Air Springs

Cycle the suspension to its fully lifted, suspension up, position and then the ride position, tires resting on the ground.

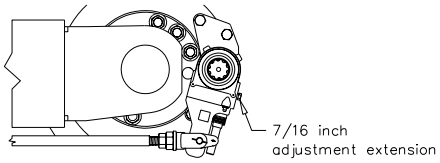
Raise the suspension again to its lift position, check both lift air springs for equal firmness. Verify clearance of one inch minimum around both lift and ride air springs. Any items interfering with the air springs must be relocated or adjustment of the air spring is required. Check air springs and connecting fittings for leaks.

Lower the suspension to the ride position, check both ride air springs for equal firmness. Verify clearance of one inch minimum around both lift and ride air springs. Any items interfering with the air springs must be relocated or adjustment of the air spring is required. Check air springs and connecting fittings for leaks.

INSPECTION & MAINTENANCE

Brake Adjustment

Brake adjustment verification is accomplished by rotating the 7/16 hex extension on the slack adjuster clockwise until the brake shoe contacts the brake drum. Once the shoe has contacted the drum, rotate the hex extension counterclockwise 1/2 turn.



Lubrication

Apply grease to the automatic slack adjuster and cam tube grease fittings.

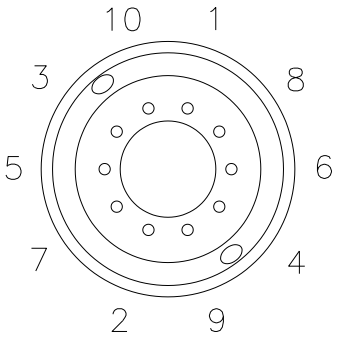
Verify that the hub bearing is filled with the proper amount of oil. Indicator marks have been provided on the hub cap. If filling is required, use 90W bearing lubricant.

Wheel Nut Torque

Rims must be correctly assembled using the correct capnuts (provided on the hub) and must be correctly aligned to assure maximum service life and maximum safety.

Verify that the wheel nuts are torqued to the proper specifications for hub piloted or stud piloted hubs.

1. Torque flange nuts to 50 LB-FT using torque sequence shown,
2. Tighten flange nuts to recommended (450 - 500) LB-FT.



Note: The torque listed is for dry threads with no lubricant. Insufficient torque can cause stud breakage and damages ball seats. Over torque can overstress the studs and strip the threads.

NOTE: RECHECK TORQUE AFTER THE FIRST 50 TO 100 MILES OF SERVICE.

INSPECTION & MAINTENANCE

Periodic Inspection Timetable

General Maintenance	Service to be Performed	Mileage Interval (thousands)				
		1	3	15	30	60[2]
Beam Pivot Connection	Check locknut torque	x	x	x	x	x
	Inspect for worn bushings		x	x	x	x
	Inspect for looseness from worn components		x	x	x	x
Air Springs	Inspect for proper clearance (1 inch minimum)		x	x	x	x
	Check mount nut torque		x			
	Inspect for chafing or wear		x	x	x	x
	Check air line fitting connections		x			
	Inspect for air leaks		x			
Air Fittings and Lines	Inspect for leaks	x	x	x	x	x
	Inspect for damage	x	x	x	x	x
Wheels and Hubs	Check wheel nut torque 1	x	x	x	x	x
	Check bearing oil level	x	x	x	x	x
	Check hub end play	x	x	x	x	x
Brakes	Check slack setting	x	x	x	x	x
	Check brake shoe wear	x	x	x	x	x
Automatic Slack Adjuster and Brake Cam Bushings	Grease 3	x	x	x	x	x

[1] Wheel Nut torque must be checked after the first 50 to 100 miles of service

[2] Continue to perform period inspections every 15,000 miles or at regular engine service intervals.

[3] Grease the brake automatic slack adjuster and the cam bushings at 5,000-mile intervals

Pivot Bushing Inspection and Replacement

Inspections

Excessive endplay in the pivot bushing can cause premature tire wear and erratic vehicle handling. Inspect the adjustment spacer and bushing for wear. If rubber appears to be extruded or projecting out of the bushing, damage to the bushing has occurred. The bushing must be replaced. If bushing replacement is required, both bushings in the trailing arm must be replaced.

Bushing Removal

The trailing arm must be removed from the main mounting beam for bushing replacement.

Block vehicle and release air from the air system.

Remove the tire and air springs.

Support the trailing arm assembly with jack and/or a hoist. The trailing arm assembly weighs about 500 lbs. and its weight is not well balanced.

Remove the pivot bolts and nuts, discard.

Remove the trailing arm from the vehicle.

While supporting the bushing tube of the bushing being removed (see Figure 3 below), press out the damaged bushing with a hydraulic press.

Bushing Installation

Clean any foreign material from the bushing tube. Install the new bushing by pressing it on the outer sleeve of the bushing only.

Note: Prior to pressing in the new bushing, coat the outer metal sleeve on the bushing and the interior of the bushing tube with a thin layer of grease. When pressing in the new bushing, the bushing must be centered and square with the bushing tube axis. If the bushing becomes unsquare, flaring of the outer metal sleeve may occur destroying the bushing.

Repeat process for the second bushing.

Note: Do not press against the opposite bushing tube. Damage to the trailing arm will occur rendering the trailing arm unusable. (See figure 3)

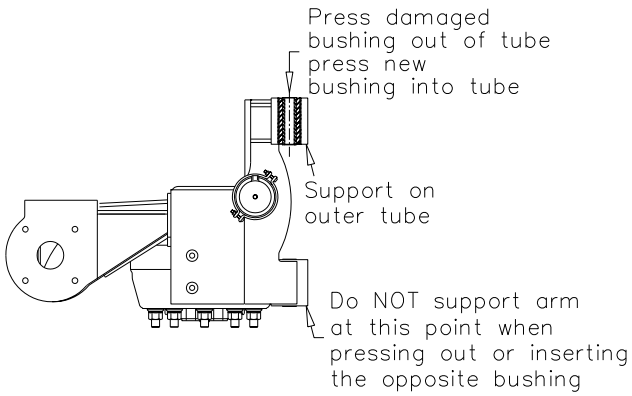


Figure 3: Bushing Removal & Installation

Trailing Arm Reinstallation

Reinstall the repaired trailing arm using new fasteners. Snug the pivot bolts only. Do not torque until camber and toe-in have been checked and adjusted if required. (Refer to page 4 of the Installation drawing number 714867.)

Reinstall the air springs and tire.

Verify toe in and camber are within specification. (See Camber and Toe-In section below)

Review the Pre-service Inspection list on page 11 through 13.

Camber Alignment Inspection and Adjustment

Camber and toe should be measured with tire on the ground and loaded. However, adjustments should be made with load released by exhausting the down/ride air springs.

Camber is to be set at 1° ± 1/2° (positive camber – top of tire out) from vertical or 89.0°±0.5° from horizontal as illustrated in Figure 4. Utilize vertical Rey-Align adjusters to move beam, if necessary, to get proper alignment.

Inspection

1. Place angle indicator on hub face in a vertical position as illustrated in Figure 4.
2. If the camber is within specification, tighten the outside pivot bolt and torque to 660 LB-FT and proceed to step 8; otherwise adjust.

Adjustment

3. Utilize vertical/outside Rey-Align adjusters to move beam, if necessary, to get proper alignment until a positive castor angle of 1° is achieved and held in place.
4. Torque pivot fasteners to 660 LB-FT
5. Remove the indicator and repeat 2 through 4 for the opposite side.
6. Reset the angle indicator to zero and check the camber angle on both sides.

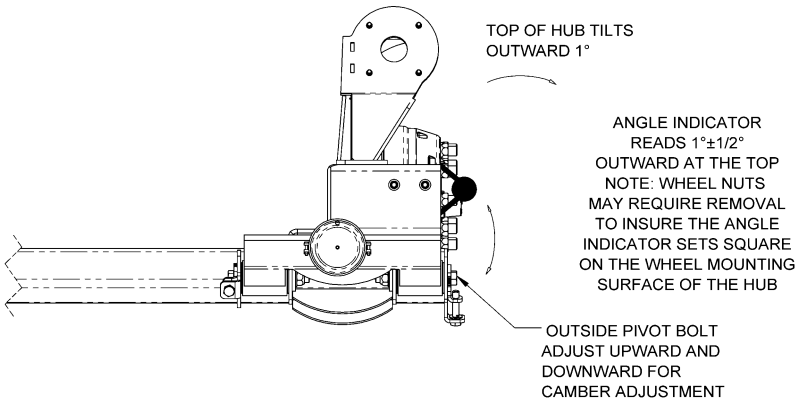


Figure 4: Camber Adjustment

INSPECTION & MAINTENANCE

Alignment, Inspection and Adjustment

Toe-In inspection and adjustment must be performed with the wheel and tire in place, loaded on the ground and the hub at the ride height position.

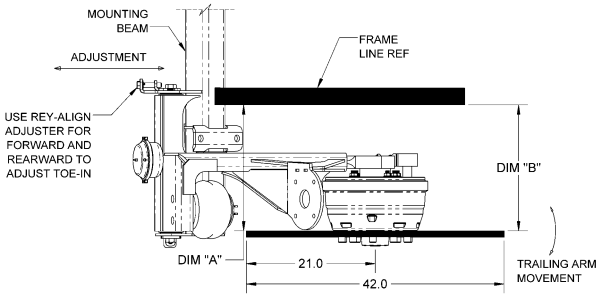
Toe-In is to be set at 0.21 to 0.63 inches (1° ± 1/2°) per side as illustrated in Figure 5

Inspection

1. Use the vehicle frame as your point of reference for measuring.
2. Attach a straight bar of 42 inches in length to the hub face, centered with the spindle and oriented horizontally. Use a level or bubble indicator to verify bar is at a horizontal position.
3. Measure toe-in (Dim. “A” - Dim. “B”). Measurement must be between 0.21 to 0.63 inches.
4. If toe-in is within specification, torque the pivot fasteners to 660 LB-FT and proceed to step 8; otherwise adjust.

Adjustment

5. Adjust the trailing arm assembly outward from the center until a difference of 7/16 (0.4375) inches is measured from the front of the alignment bar to the rear (Dim. “A” - Dim. “B” = 7/16 in.). The linear tolerance band for toe-in adjustment is 0.21 to 0.63 inches. Outward adjustment must be carefully watched so that the overall outside width does not exceed 102 inches. Utilize horizontal Rey-Align adjusters to adjust trailing beams, as necessary. Repeat process for opposite side. Trailing beams need to be symmetric with respect to the centerline of the chassis. Rey-Align maximum adjustment range shown in Figure 6.
6. Torque the pivot fasteners to 660 LB-FT
7. Repeat 1 through 4 for the opposite side.
8. Verify toe-in setting on both sides.



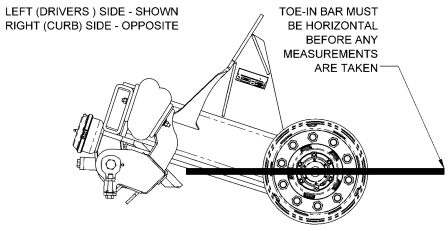


Figure 5: Toe-In Adjustment

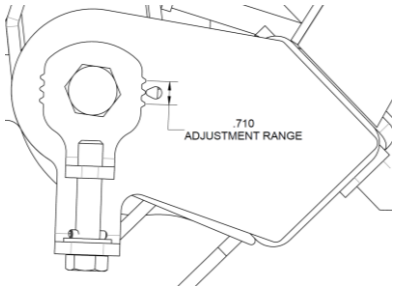


Figure 6: Adjustment Range

MAINTENANCE RECORDS

Maintenance Record*

Name of Owner			Address of Owner
Date of Purchase	Name and Address of Dealer		
Model of Vehicle	Vehicle Identification Number		
	Suspension Serial Number		
Inspection and Maintenance Item	Date	Mileage	Service Performed

*In order to take advantage of warranty, Maintenance Record should be filled out and attached to warranty claims when submitted

MAINTENANCE RECORDS

Notes

TROUBLESHOOTING

Symptoms	Possible Causes	Remedies
Abnormal tire wear	Toe-In out of adjustment.	Check Toe-In as describe on page 17 and adjust as required
	Camber out of adjustment	Check Camber as described on page 15 & 16 and adjust as required
	Worn bushings	Reference page 14 Bushing inspection and replacement.
	Worn or loose bearings	Adjust wheel end play. Refer to page 3 of drawing #714867.
	Wheel bent	Replace wheel [3]
Tire wobble	Worn bushings	Reference page 14 Bushing inspection and replacement.
	Worn or loose bearings	Adjust wheel end play. Refer to page 3 of drawing #714867.
	Wheel bent	Replace wheel [3]
Air Chamber leaking	Diaphragm punctured or torn	Replace diaphragm
	Broken spring	Replace spring and diaphragm
	Impact damage	Replace air Chamber [1]
Brake not working properly	Air chamber spring is broken	Replace spring and diaphragm in the air chamber
	Brake shoe return springs broken	Replace brake shoe return springs
	Bent push rod	Straighten or replace
	Autoslack broken	Replace
	Autoslack out of adjustment	Adjust autoslack
	Cam sticking	Lubricate the cam
	Cam bushings worn	Replace the cam bushings [2]
	Cam and rollers worn	Replace the cam and cam rollers[2]
	Worn brake shoes	Replace brake shoes
Suspension cycles slowly	Air control valve plugged	Replace or clean the air valve [3]
	Pinched air line	Inspect and replace damaged air line [3]

[1] The air chamber is constructed specially for the GP120 suspension, a replacement part can only be obtained from Reyco Granning® Air Suspensions.

[2] The brake assembly is constructed specially for the GP120 suspension, a replacement part can only be obtained from Reyco Granning® Air Suspensions. Other than the components listed as special, the brake set is based on Eaton's ES1504 single anchor pin brake set and Spicer's 15 x 4-inch Xtra-Life© Brake system.

Replacement parts can be obtained from any heavy truck parts dealer.

Special Components that can only be obtained from Reyco Granning® Air Suspensions:

Eaton: Cams
Brake Spider
Cam Bushings

Dana: Cams
Cam Tube Assembly with Bushings and Seals

[3] Component part is supplied and installed by McNeilus Truck and Manufacturing Co., refer to your service manual provided with your vehicle.

REPLACEMENT INSTRUCTIONS & WARRANTY

GP120-RAD

Replacement Instructions

NOTE: Due to the nature of service to be performed it is recommended that a qualified mechanic does the work

Limited Warranty

Reyco Granning® warrants its suspensions (other than R-Series suspensions) to be free from defects in material and workmanship under normal use and service in the U.S. and Canada as follows:

Main Structural Components -- 36 months or 300,000 miles, whichever occurs first. Labor allowance is provided for 12 months or 100,000 miles, whichever occurs first. Labor will be allowed on Reyco Granning® estimated time to make repairs at a maximum rate of $90.00 per hour. Main structural components are defined as: hangers, beams, torque arms, axle saddles, clip plates, bellows pads - excludes bushings and fasteners.

Other Air Suspension Components – Parts 12 months or 100,000 miles, whichever occurs first, labor 6 months 50,000 miles whichever occurs first. Valves, fasteners, bushings, and other components not stated specifically (when provided by Reyco Granning®), and other fabricated metal components. Reyco Granning® provides no warranties on components such as axles, air springs, controls, brakes, shock absorbers, and hub and drum assemblies, except to the extent of any warranty provided to Reyco Granning® by the manufacturer of such components. Labor will be allowed on Reyco Granning® estimated time to make repairs at a maximum rate of $90.00 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 Reyco Granning® 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 a date is the responsibility of the first end user. If the purchase date is not established to Reyco Granning® 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 Reyco Granning®.

***NOTE* Reyco Granning® must be notified in writing using warranty claim form promptly upon claimed defect.**

INSTALLER AND END USER RESPONSIBILITIES

The Distributor/Installer is responsible for installing the product according to Reyco Granning® approved procedures, the installer is also responsible (either directly or through its agent/dealer) for providing a copy of Reyco Granning® 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 Reyco Granning® 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 Reyco Granning® or which do not meet Reyco Granning® 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 REYCO GRANNING® INVOICE TERMS AND CONDITIONS.

This policy supersedes any previous warranty statements. 08/2020

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Reyco® Granning®

SUSPENSIONS

Celebrating 100 Years

Est. 1924

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