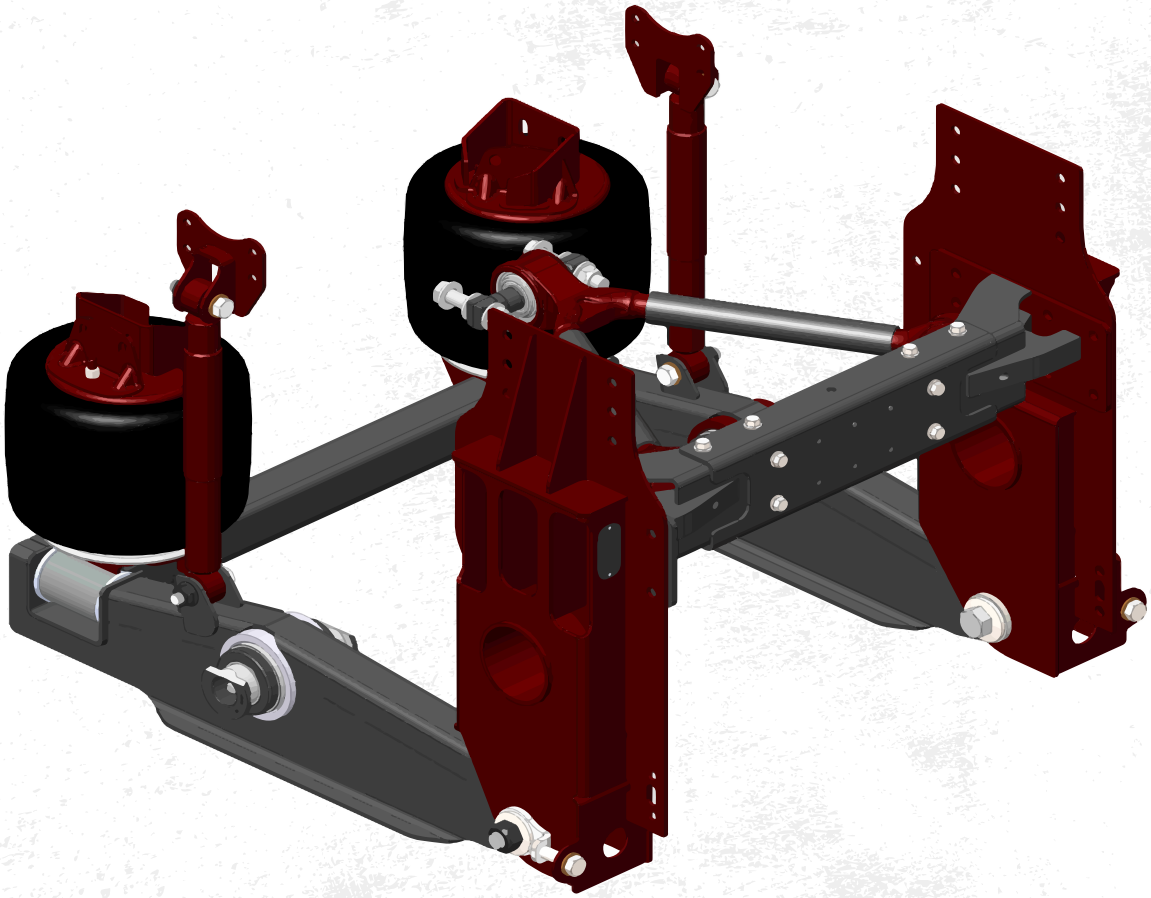
Reyco Granning SUSPENSIONS

Motorhome Suspensions Owner's Manual

RD2300 Series/RD2400 Series Parallelogram Rear Drive Suspension

Maintenance Instructions
Service Parts



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Rear Drive SUSPENSION SERVICE MANUAL

Service Notes

This Service Manual describes the correct service and repair procedures for the ReycoGranning® LLC RD2300NR series, RD2400NR series Rear Drive Suspensions.

The information contained in this manual was current at the time of printing and is subject to change without notice or liability.

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.

ReycoGranning® LLC 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.

ReycoGranning® Air Suspensions reserves the right to modify the suspension and/or procedures and to change specifications at any time without notice and without incurring obligation.

Section 1
Introduction

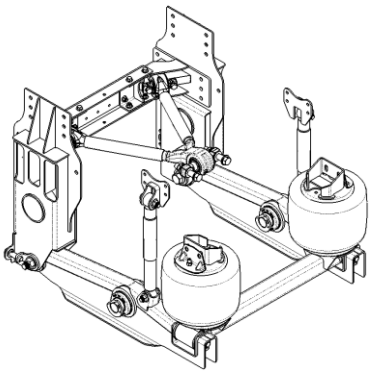
Introduction

ReycoGranning® Air Suspensions has developed this service manual to aid in the maintenance of ReycoGranning®'s rear suspensions.

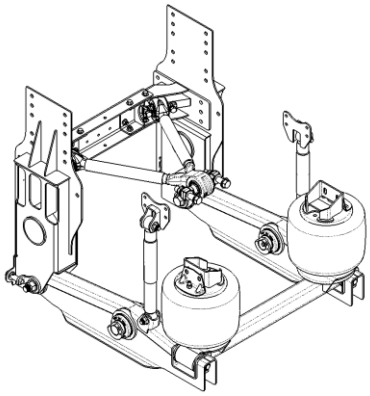
The following table lists the various models and their respective capacities.

Model	Capacity
RD2300NR-T	23,000 lbs
RD2300NR-WR	23,000 lbs
RD2400NR-WR	24,000 lbs
RD2300NR-EF	23,000 lbs
RD2400NR-EF	24,000 lbs
RD2401NR-EF	24,000 lbs
RD2400NR-600	23,000 lbs
RD2400TB-605EF	23,000 lbs

Overloading the suspension may result in adverse ride and handling characteristics.



RD2300NR-WR



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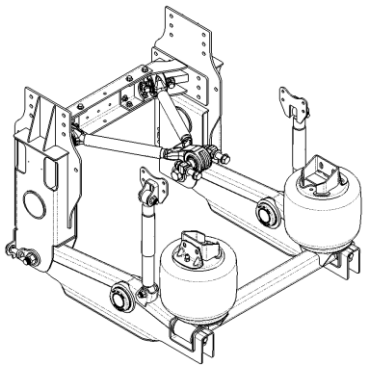
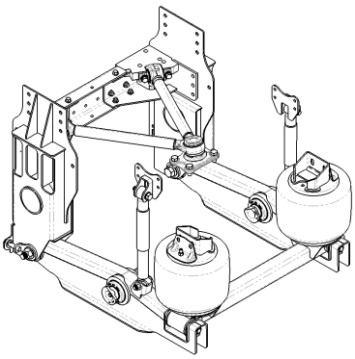
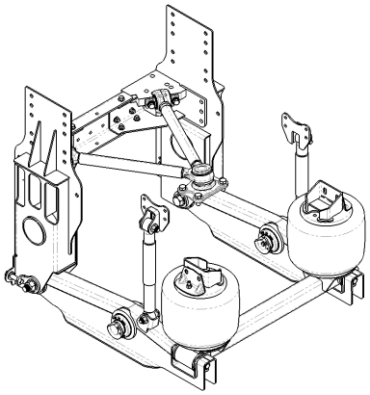


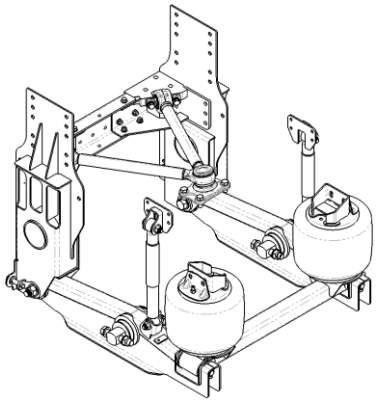
RD2300NR-T



RD2400NR-WR



RD240XNR-EF

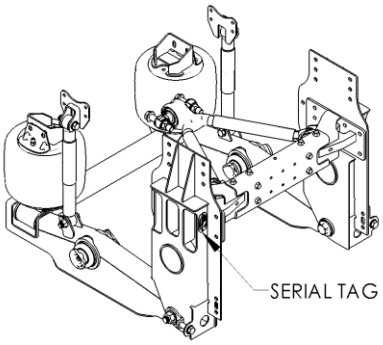


RD2400NR-600
RD2400TB-605EF

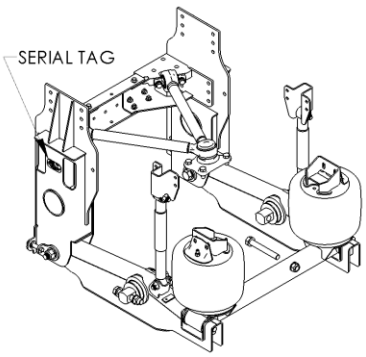
Section 1
Introduction

Identification

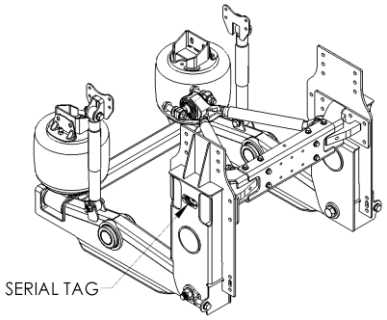
The serial number is used by ReycoGranning® LLC for control purposes and should be referred to when servicing the suspension. The suspension model and serial number are stamped on an aluminum tag that is riveted to the curb side upper hanger weldment **(See Figure 1)**.



RD2X00NR-WR, RD2X0XNR-EF, RD2400TB-605EF



RD2400NR-600



RD2300NR-T

Figure 1 –Suspension Identification Location

Section 1
Introduction

Hangers & Lower Control Arms
Application: RD2300NR-WR, RD2400NR-WR, RD2300NR-T

ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
1	166	Nut 1 1/8-12	2	11	707365-02	Lower Control Arm (RH)	1
2	702516-02	Bolt 1 1/8-12 x 7 3/4	2	12	705446-01	Assembly LASSA	1
3	103003	Washer 3/4	4	13	24453-01	Coiled Spring Pin	2
4	705450-01	Spacer, Plastic	4	14	705454-02	Washer	2
5	168	Washer 1.25X2.25X.136	4	15	2617	Plate, Serial Number	1
6	705456-01	Bolt 3/4-10 x 2.5	2	16	188	Pop Rivet 1/8" dia.	2
7	710513-01	Plate, Tension	2	17	710276-01	Weldment Hanger (LH) RD2300NR-WR, RD2400NR-WR	1
8	706260-01	Spacer, Plastic	4		707373-01	Weldment Hanger (LH) RD2300NR-T	1
9	K711160*	Kit Hardware LASSA	1	18	710276-02	Weldment Hanger (RH) RD2300NR-WR, RD2400NR-WR	1
10	707365-01	Lower Control Arm (LH)	1		707373-02	Weldment Hanger (RH) RD2300NR-T	1

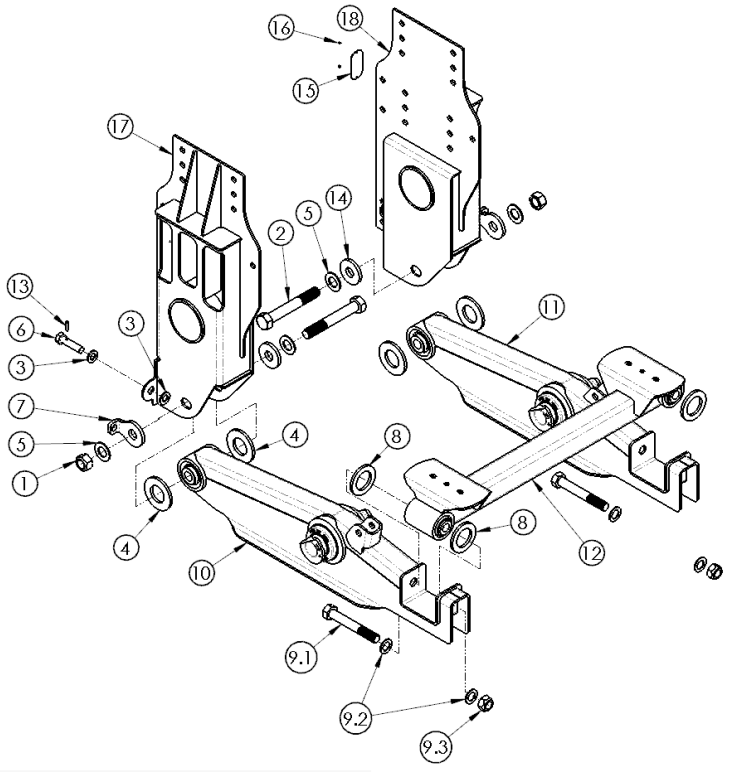
*K711160 - Hardware Kit LASSA

ITEM NO.	PART NO.	DESCRIPTION	QTY
9.1	700020-01	Bolt 1-14 X 7.00	2
9.2	89429523	Washer 1 1.062X1.750X.100	4
9.3	89422312	Nut 1-14	2

Lower Air Spring Support Assembly (LASSA)			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	707120-01	Bushing, Cross Tube	1
Qty (2) Included with (Item 12) 705446-01 (Installed)			

Kit, Bushing Axle Mount			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	705429-01	Bushing, Through Bolt	1
n/a	K713303	Kit, Bushing, Through Bolt	1
Included with (Item 10) 707365-01 & (Item 11) 707365-02 (Installed)			

Trailing Arm Bushing			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	705329-01	Bushing, Trailing Arm	1
Included with (Item 10) 707365-01 & (Item 11) 707365-02 (Installed)			



Section 1
Introduction

Kit, Hangers & Lower Control Arm K713471
Application: RD2300NR-EF, RD2400NR-EF, RD2401NR-EF

ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
1	166	Nut 1 1/8-12	2	11	707365-02	Lower Control Arm (RH)	1
2	702516-02	Bolt 1 1/8-12 x 7 3/4	2	12	705446-01	Assembly LASSA	1
3	103003	Washer 3/4	4	13	24453-01	Coiled Spring Pin	2
4	705450-01	Spacer, Plastic	4	14	705454-02	Washer	2
5	168	Washer 1.25X2.25X.136	4	15	2617	Plate, Serial Number	1
6	705456-01	Bolt 3/4-10 x 2.5	2	16	188	Pop Rivet 1/8" dia.	2
7	710513-01	Plate, Tension	2	17	713214-01	Weldment Hanger (LH)	1
8	706260-01	Spacer, Plastic	4	18	713214-02	Weldment Hanger (RH)	1
9	K711160*	Kit Hardware LASSA	1				
10	707365-01	Lower Control Arm (LH)	1				

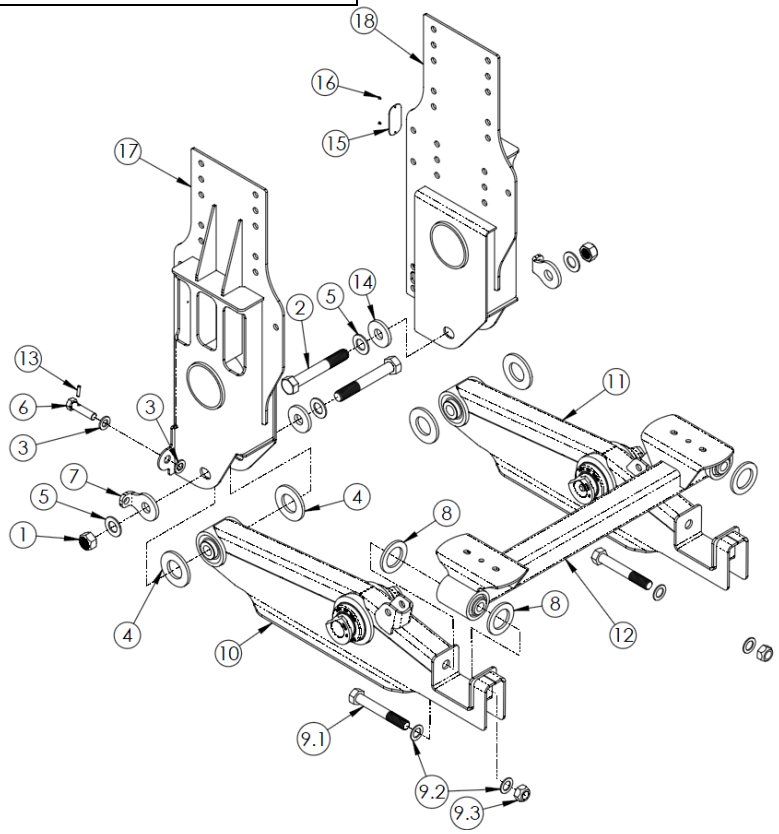
*K711160 - Hardware Kit LASSA

ITEM NO.	PART NO.	DESCRIPTION	QTY
9.1	700020-01	Bolt 1-14 X 7.00	2
9.2	89429523	Washer 1 1.062X1.750X.100	4
9.3	89422312	Nut 1-14	2

Lower Air Spring Support Assembly (LASSA)			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	707120-01	Bushing, Cross Tube	1
Qty (2) Included with (Item 12) 705446-01 (Installed)			

Bushing Axle Mount			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	705429-01	Bushing, Through Bolt	1
n/a	K713303	Kit, Bushing, Through Bolt	1
Included with (Item 10) 707365-01 & (Item 11) 707365-02 (Installed)			

Trailing Arm Bushing			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	705329-01	Bushing, Trailing Arm	1
Included with (Item 10) 707365-01 & (Item 11) 707365-02 (Installed)			



Section 1
Introduction

Kit, Hangers and Lower Control Arms - K713639
Application: RD2400NR-600, RD2400TB-605EF

ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
1	166	Nut 1 1/8-12	2	13	24453-01	Coiled Spring Pin	2
2	702516-02	Bolt 1 1/8-12 x 7 3/4	2	14	705454-02	Washer	2
3	103003	Washer 3/4	4	15	2617	Plate, Serial Number	1
4	705450-01	Spacer, Plastic	4	16	188	Pop Rivet 1/8" dia.	2
5	168	Washer 1.25X2.25X.136	4	17	713559-01	Weldment Hanger (LH) RD2400NR-600	1
6	705456-01	Bolt 3/4-10 x 2.5	2		713214-01	Weldment Hanger (LH) RD2400TB-605EF	
7	710513-01	Plate, Tension	2	18	713559-02	Weldment Hanger (RH) RD2400NR-600	1
8	706260-01	Spacer, Plastic	4		713214-02	Weldment Hanger (RH) RD2400TB-605EF	
9	K711160*	Kit Hardware LASSA	1				
10	705431-03	Lower Control Arm (LH)	1				
11	705431-04	Lower Control Arm (RH)	1	19	713349-01	Kit, Hardware	2
12	705446-01	Assembly LASSA	1				

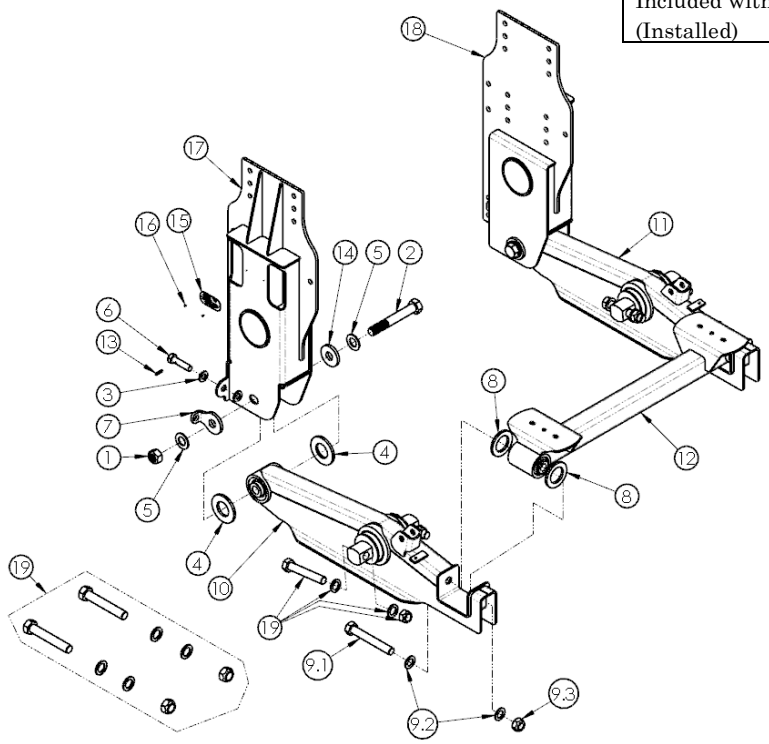
*K711160 - Hardware Kit LASSA

ITEM NO.	PART NO.	DESCRIPTION	QTY
9.1	700020-01	Bolt 1-14 X 7.00	2
9.2	89429523	Washer 1 1.062X1.750X.100	4
9.3	89422312	Nut 1-14	2

Lower Air Spring Support Assembly (LASSA)			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	707120-01	Bushing, Cross Tube	1
Qty (2) Included with (12) 705446-01 (Installed)			

Axle Mount Bushing			
n/a	705331-01	Bushing, Bar Pin	1
Included with (Item 10) 705431-03 & (Item 11) 705431-04 (Installed)			

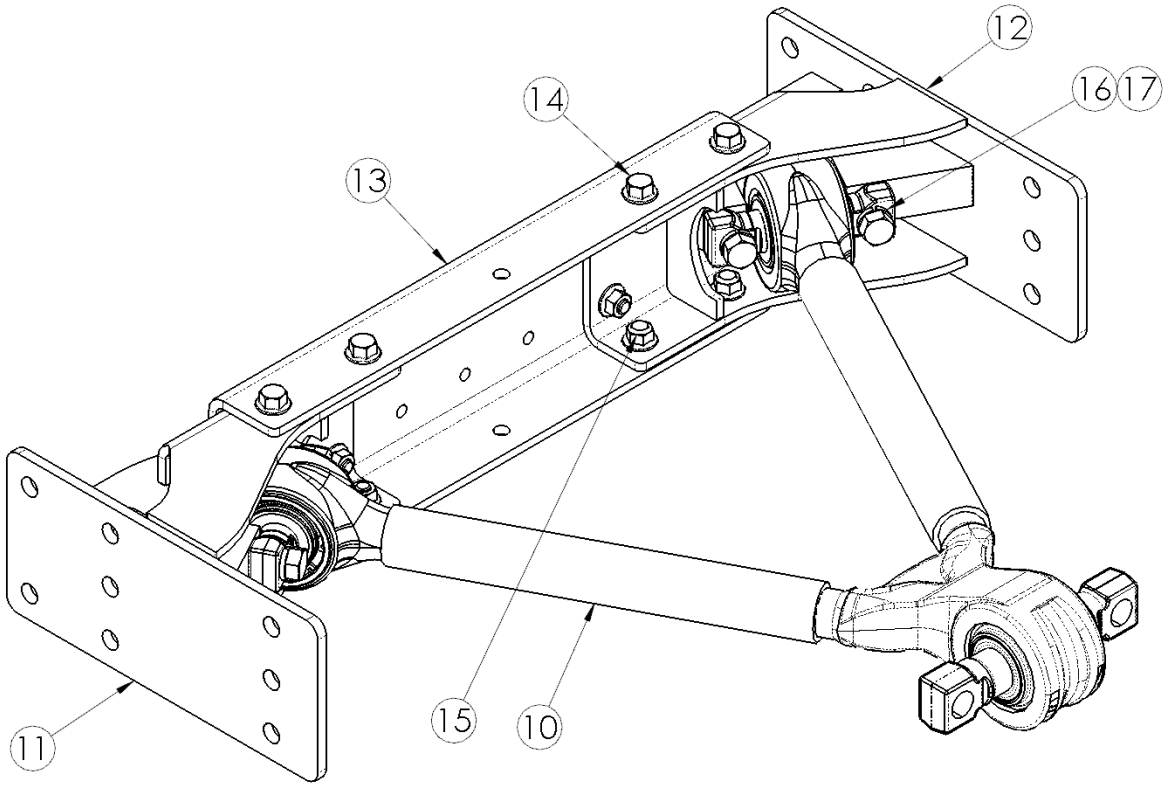
Trailing Arm Bushing			
ITEM NO.	PART NO.	DESCRIPTION	QTY
n/a	705329-01	Bushing, Trailing Arm	1
Included with (Item 10) 705431-03 & (Item 11) 705431-04 (Installed)			



Section 1
Introduction

Upper Control Arm (Barpin Joint Type)
Application:RD2300NR-WR, RD2300NR-EF, RD2300NR-T

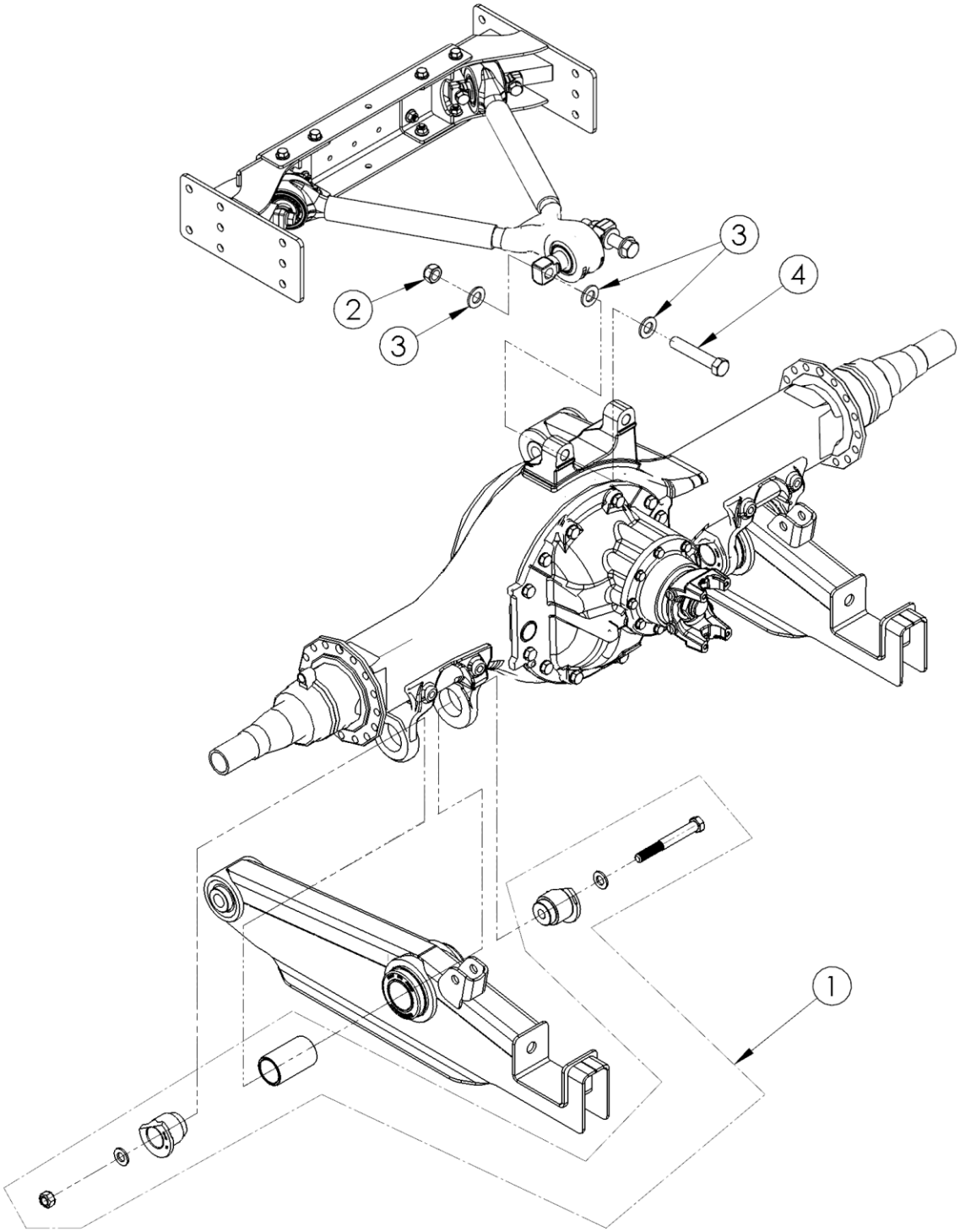
ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
10	705435-01	V-Link	1	14	309	Bolt 1/2-13 x 1.25	12
11	717378-01	Weldment V-Link Mount (LH)	1	15	308	Nut 1/2-13	12
12	717378-02	Weldment V-Link Mount (RH)	1	16	8455851	Washer Lock 5/8	4
13	707377-01	Cross Member Center Channel	1	17	2858	Bolt 5/8-11 X 2 1/4	4



Section 1
Introduction

Axle Connections
Application: RD2300NR-WR, RD2300NR-EF, RD2300NR-T

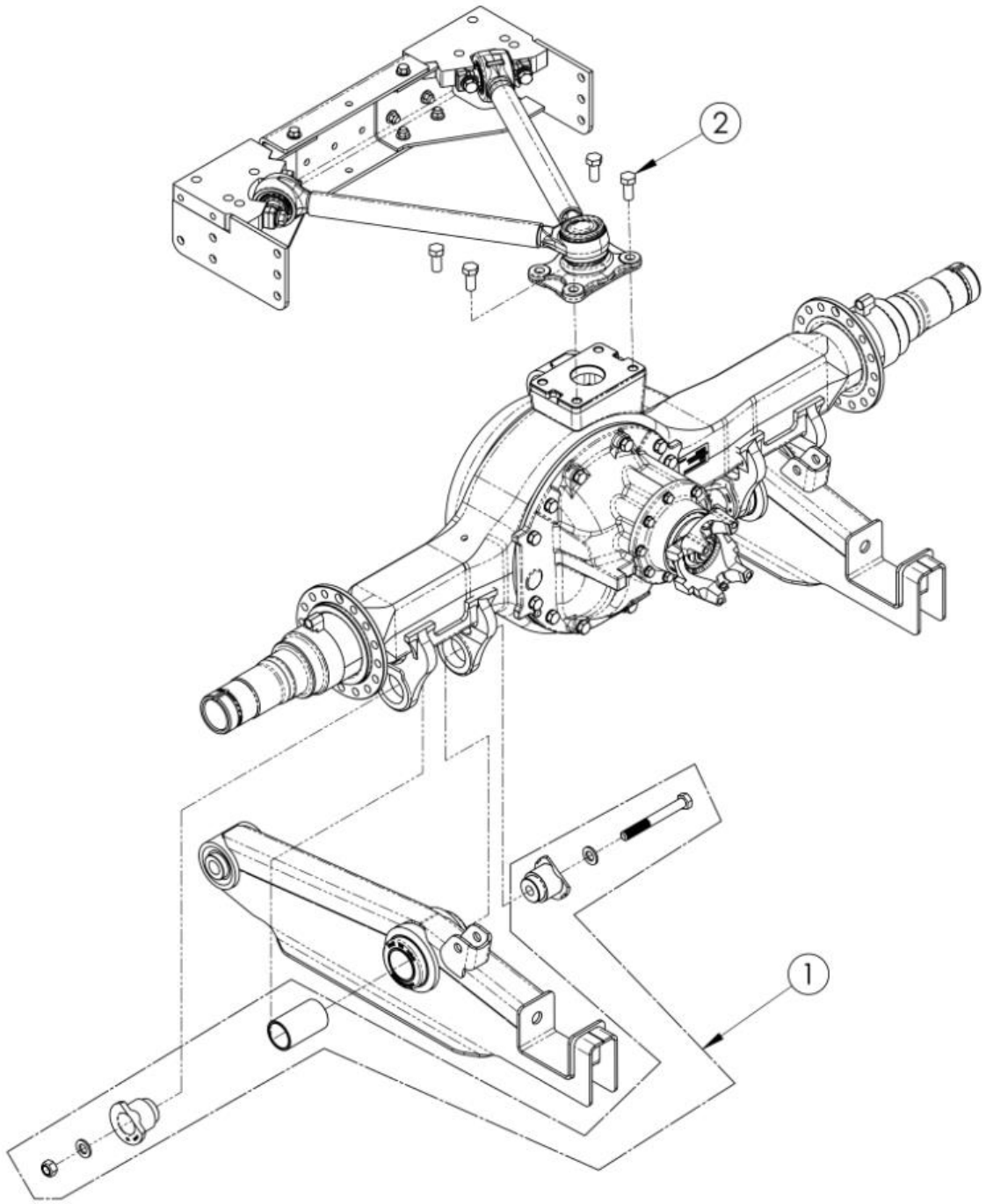
ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
1	K713303	Kit, Bushing, Through Bolt	2	3	104098	Washer 7/8	6
2	100122-P1	Nut, Strover 7/8-9	2	4	8223552	Bolt 7/8-9 X 5.0	2



Section 1
Introduction

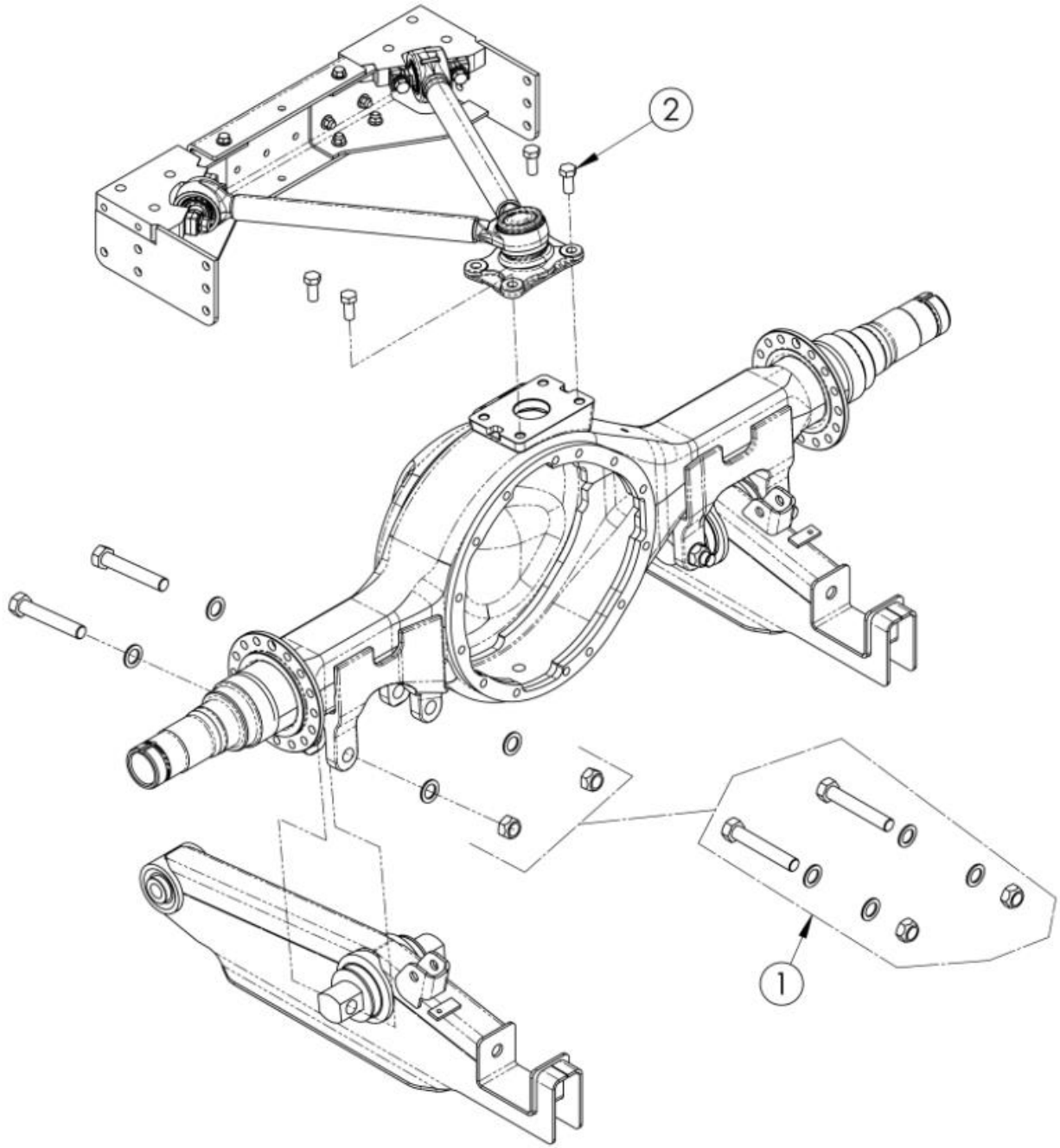
Axle Connections
Application: RD2400NR-WR, RD240XNR-EF

ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
1	K713303	Kit, Bushing, Through Bolt	2	2	712627-040	Bolt M18-1.5 x 40	4



Axle Connections
Application: RD2400NR-600, RD2400TB-605EF

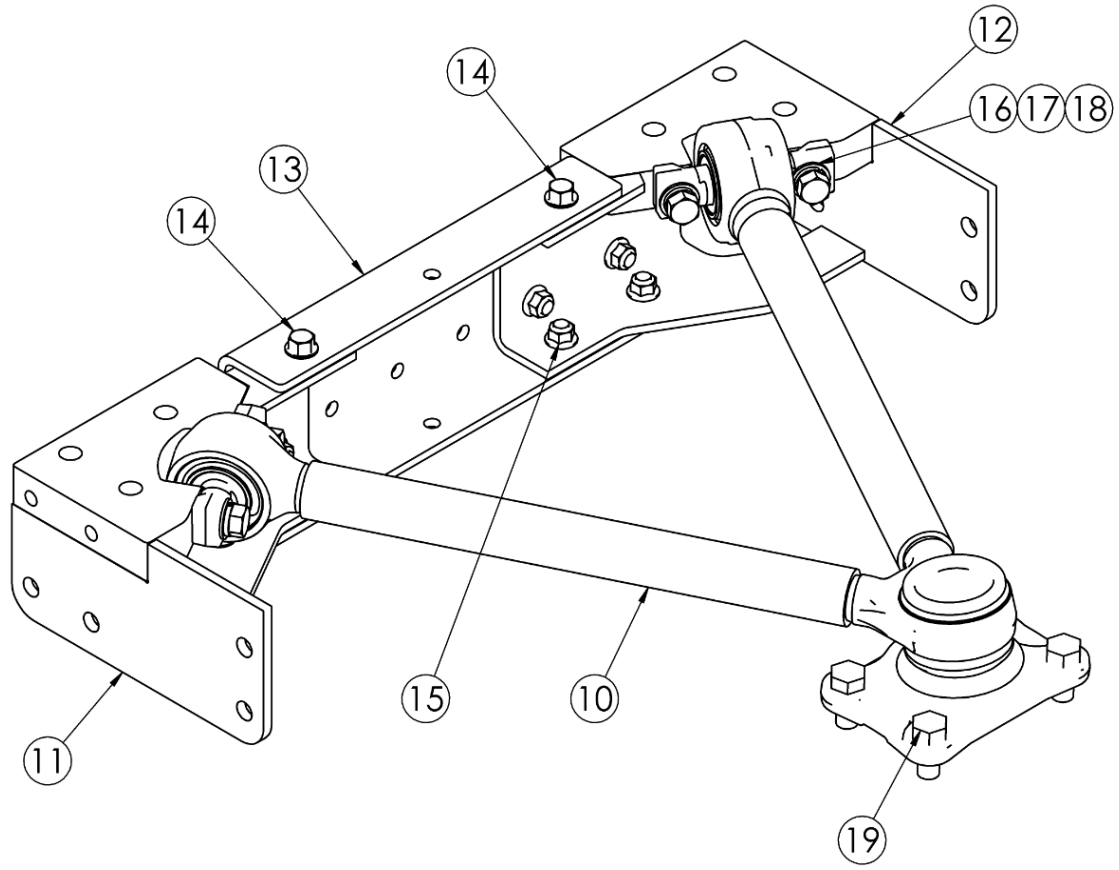
ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
1	713349-01	Kit Hardware	2	2	712627-040	Bolt M18-1.5 x 40	4



Section 1
Introduction

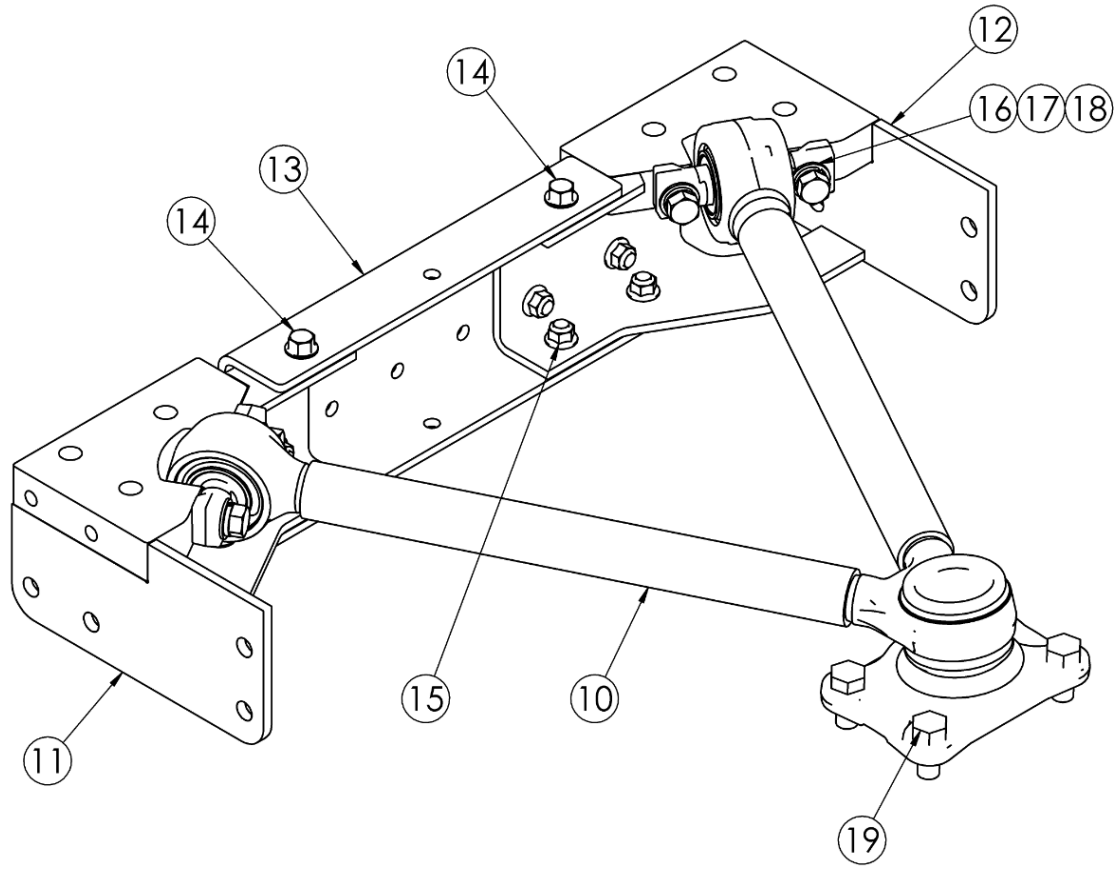
Upper Control Arm – K713658 (Ball Joint Type)
Application: RD2400NR-WR, RD2400NR-EF, RD2401NR-EF

ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
10	712520-01	V-Link with Ball Joint Apex	1	15	308	Nut 1/2-13	12
11	713636-01	V-Link Mounting Bracket (LH)	1	16	89422850	Washer 5/8 .656 x 1.31 x .095	4
12	713636-02	V-Link Mounting Bracket (RH)	1	17	8455851	Washer Lock 5/8 .651x1.250x .166	4
13	713570-01	Cross Member Center Channel	1	18	2858	Bolt 5/8-11 X 2 1/4	4
14	309	Bolt 1/2-13 x 1.25	12	19	712627-040	Bolt M18-1.5 x 40 Class 10.9	4



Upper Control Arm (Ball Joint Type)
Application: RD2400NR-600, RD2400TB-605EF

ITEM NO.	PART NO.	DESCRIPTION	QTY	ITEM NO.	PART NO.	DESCRIPTION	QTY
10	712520-01	V-Link with Ball Joint Apex	1	15	308	Nut 1/2-13	12
11	713658-01	V-Link Mounting Bracket (LH)	1	16	89422850	Washer 5/8 .656 x 1.31 x .095	4
12	713658-02	V-Link Mounting Bracket (RH)	1	17	8455851	Washer Lock 5/8 .651x1.250x	4
13	713570-01	Cross Member Center Channel	1	18	2858	Bolt 5/8-11 X 2 1/4	4
14	309	Bolt 1/2-13 x 1.25	12	19	712627-040	Bolt M18-1.5 x 40 Class 10.9	4

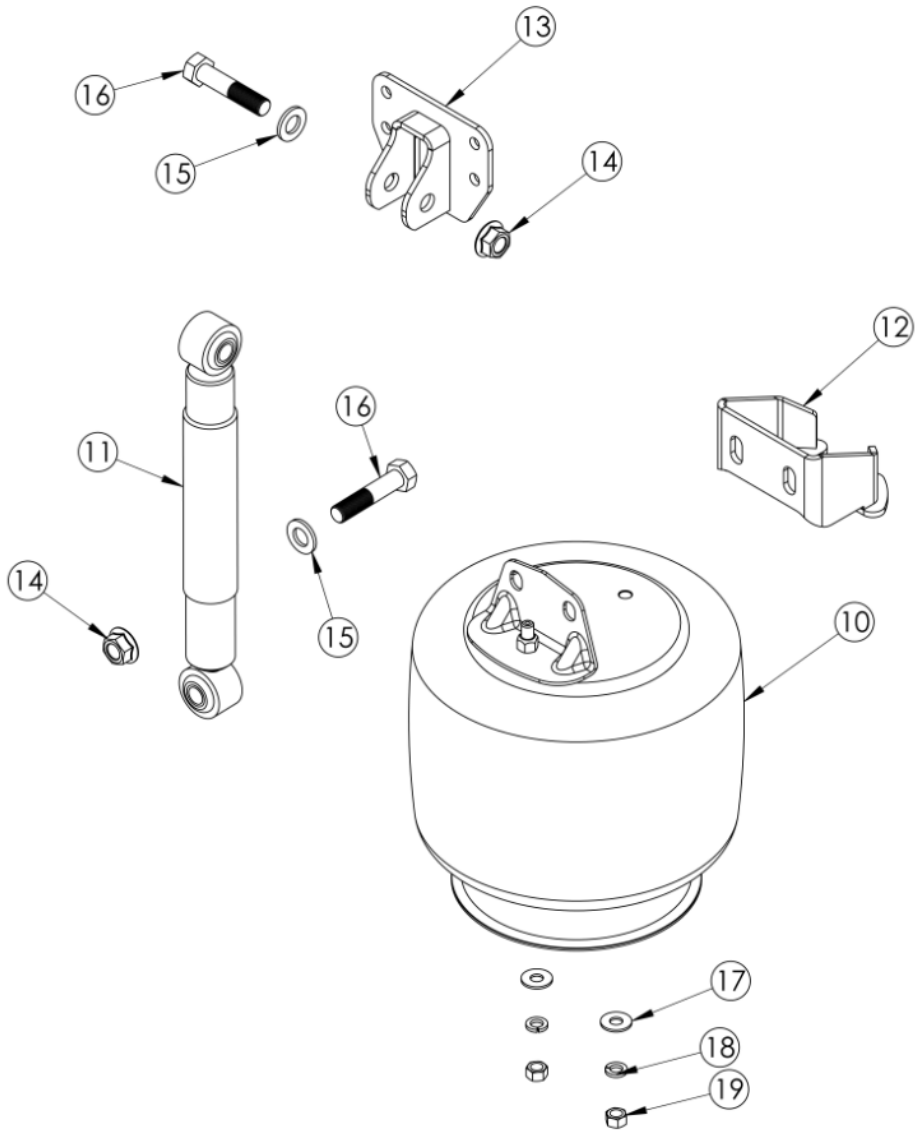


Section 1
Introduction

Ride Control (Shock & Air Spring)
Application: RD2X00NR-WR,RD2X00NR-EF, RD2400NR-600, RD2401NR-EF, RD2400TB-605EF, RD2300NR-T

ITEM NO.	PART NO.	DESCRIPTION	QTY
10	707402-01	Air Spring	2
11	706206-02	Shock Absorber	2
12	706924-01	Air Spring Support Bracket	2
13	707923-01	Shock Bracket RD2X00NR-WR, RD2X00NR-EF, RD2300NR-T	2
	713566-01	Shock Bracket RD2400NR-600	2
	714671-01	Shock Bracket RD2401NR-EF, RD2400TB-605EF, RD2300NR-T	2

ITEM NO.	PART NO.	DESCRIPTION	QTY
14	178	Nut 3/4-16	4
15	103003	Washer 3/4	4
16	8223831	Bolt 3/4-16 x 3 1/2	4
17	89415543	Washer 1/2 .531x1.25x.100	4
18	8103323	Washer Lock 1/2	4
19	8120378	Nut 1/2 -13	4



Section 2
Troubleshooting

Suspension System - General

SYMPTOMS	POSSIBLE CAUSES	REMEDIES
Tires wear out quickly or have uneven tread wear Note: Wear pattern will indicate possible cause(s). Consult tire manufacturer for guidance	1) Tires have incorrect pressure 2) Tires out of balance 3) Incorrect ride height 4) Incorrect rear axle alignment 5) Improper (mismatched) tires and wheels	1) Inflate tires to specified pressure 2) Balance or replace tires 3) Adjust ride height to specified setting 4) Align rear axle to specified thrust angle 5) Install correct tire and wheel combination
Vehicle rolls side to side excessively	1) Front and/or rear shock absorbers worn 2) Shock mounting loose 3) Shock eye bushings worn 4) Trailing Arm bushings worn 5) Check for air leak including the height control valve	1) Replace shock absorbers as needed 2) Check and tighten as required 3) Check and replace as needed 4) Inspect and replace as required 5) Check HCV and replace as needed
Vehicle ride is too harsh and/or suspension contacts stops excessively	1) Shock absorbers worn 2) Incorrect ride height 3) Vehicle overloaded 4) Air spring supply lines leaking or obstructed 5) Vehicle system air pressure below specification 6) Jounce bumper in air spring worn or broken	1) Replace shock absorbers as needed 2) Adjust ride height to specified setting 3) Check wheel loads and correct as needed 4) Check air line connections and remove obstructions 5) Check air pressure and correct as needed 6) Check and replace air spring as required
Vehicle ride is too soft	1) Shock absorbers worn 2) Incorrect ride height	1) Replace shock absorbers as needed 2) Adjust ride height to specified setting
Suspension does not maintain ride height	1) Air leak 2) Internal leak in height control valve 3) Height control valve linkage loose 4) Air spring chafed or worn	1) Check connections with soapy water solution and repair or replace as needed 2) Check height control valve and replace as required 3) Check and tighten linkage as needed 4) Check air spring and replace as needed

Section 3
Inspection

General Inspection

Perform a thorough visual inspection of the suspension to ensure proper assembly and to identify broken parts and loose fasteners each time the vehicle suspension is serviced. Do the following during an inspection.

Wheel Alignment - Follow the guidelines in Section 5 for wheel alignment inspection intervals. Check wheel alignment if excessive steering effort, vehicle wander, or abnormal tire wear is evident.

Fasteners - Check that all the fasteners are tightened to the proper tightening torque. Use a calibrated torque wrench to check torque.

Wear and Damage - Inspect components of the suspension for wear and damage. Look for bent or broken components. Replace all worn or damaged components.

Operation - Check that all components move freely through the complete suspension travel.

⚠ CAUTION:

Reconditioning or field repairs of major rear suspension components is not permitted. ReycoGranning® LLC recommends replacing any damaged or out of specification components.

NOTE: Refer to Section 1 for identification of components.

Checking the Trailing Arm Bushings for Wear

NOTE: ReycoGranning® recommends the use of a maintenance pit or full vehicle lift during the inspection of components.

Preparation

1. Chock the front wheels to prevent vehicle movement
2. Raise the rear of the vehicle until the wheels are off the ground
3. Support raised vehicle with safety stands

⚠ WARNING:

Do not place jacks or safety stands under the Trailing Arms to support the vehicle

4. Remove the tires

⚠ WARNING:

Never work under a vehicle supported by only a jack. Jacks can slip or fall over and cause serious personal injury. Always use safety stands.

Inspection

1. Inspect rubber bushings for large splits, tears, and major wear, replace bushings as needed
2. Check that the Axle to Bar Pin Bushing bolts are tight, recommended torque is **450-600 ft-lb** (See Torque Table)

Section 3
Inspection

Checking the Shock Absorber

NOTE: ReycoGranning® recommends the use of a maintenance pit or full vehicle lift during the inspection of components.

Preparation

1. Set the parking brake and block the drive wheels to prevent vehicle movement

Inspection

1. Check shock absorber for oil leakage, bent components, missing or broken components, excessive corrosion, or worn bushings (replace shock if any of the above items is present)

Checking the Air Spring and Height Control Valve

Preparation

1. Set the parking brake and block the drive wheels to prevent vehicle movement
2. Refer to Air Spring Manufacturer's Preventative Maintenance Checklist for additional air spring information

Air Spring Inspection

1. Check the outside diameter of the air spring for irregular wear or heat checking
2. Check air lines to make sure contact does not exist between the air lines and the outside diameter of the air spring, re-secure air lines to prevent contact as needed
3. Check for air line and fitting leaks with soapy water solution
4. Check to see that there is a minimum of 1 inch clearance around the circumference of the air spring while it is energized with air
5. Check the air spring piston for buildup of foreign material, remove any foreign material that is present

Height Control Valve Inspection

1. Check the height control valve and linkage for damage, replace components as needed
2. Measure the ride height of the suspension

NOTE: The ride height should be 8.25 inches. It is measured at the axle centerline and is the distance from the bottom of the chassis frame rail to the center of the wheel.

3. The actuation arm of the height control valve should be horizontal at ride height

NOTE: The height control system has been installed by the Chassis Builder. Refer to Chassis Builder's documentation for ride height adjustment. Section 5 contains general adjustment information for adjusting ride height.

Section 3
Inspection

Checking the V-Link Bolts and Bushings

Preparation

1. Chock the front wheels to prevent vehicle movement.
2. Raise the rear of the vehicle until the wheels are off the ground
3. Support raised vehicle with safety stands

⚠WARNING:

Do not place jacks or safety stands under the Trailing Arms to support the vehicle

⚠WARNING:

Never work under a vehicle supported by only a jack. Jacks can slip or fall over and cause serious personal injury. Always use safety stands.

Inspection

1) Inspect rubber bushings for large splits, tears, and major wear, replace bushings as needed
2) Check that the V-Link to V-Link Mount Weldment mounting bolts are tight, recommended torque is **150-180 ft-lb** (See Torque Table)
3) Check that the V-Link Axle Mounting bolts are tight, recommended torque is **300-330 ft-lb** (Ball Joint Type) or **400-495 ft-lb** (Barpin type) (See Torque Table)

Section 3
Inspection

Assembly procedure for ball joint V-link to axle

1) Ensure axle(5) is fixed and constrained from moving with regard to frame except for rotation about axes shown

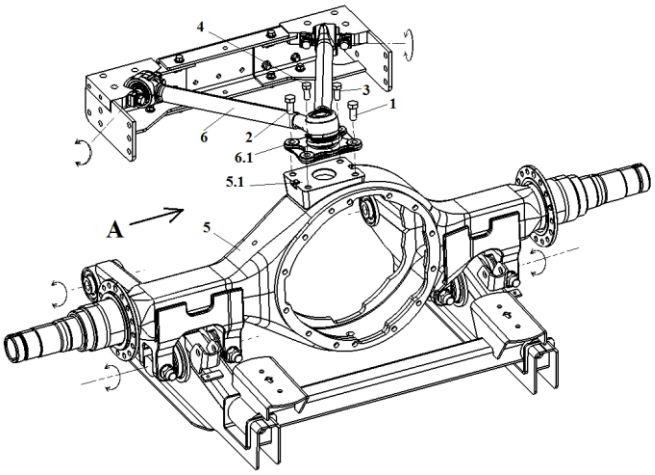
2) Place the Upper Control Arm Saddle(6.1) aligning the spigot with that of the axle by articulating axle and upper control arm(6) and the ball joint about their axes.

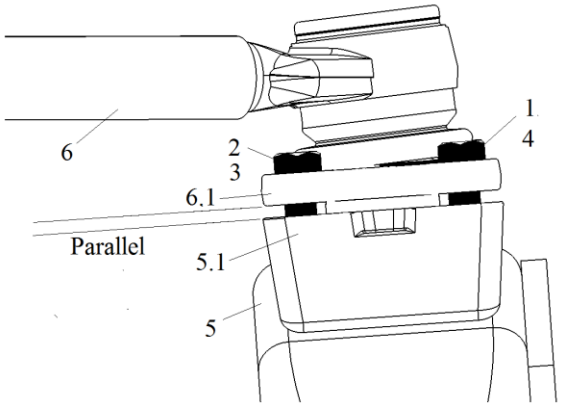
3) After applying Loc-Tite 242(Blue) to the bolts 1 and 2 at diagonally opposite holes to slightly engage the threads in the axle pad(5.1) using both hands while ensuring the bottom surface of saddle stays parallel to the top surface of axle pad. Tighten sufficient enough by hand to force the saddle against axle pad.

4) Apply Loc-Tite 242(Blue) to bolts 3 and 4 and engage with the threads in the axle pad again ensuring the surfaces are parallel.

5) Tighten the bolts in the order 1, 2, 3 and 4, half turn at a time until the specified torque is achieved for each bolt.

6) Visually inspect the assembly and ensure there is no gap between the saddle and axle pad.





Section 4
Maintenance

MAINTENANCE SCHEDULE

GENERAL MAINTENANCE	SERVICE TO BE PERFORMED	MILEAGE IN THOUSANDS							
		12	24	36	48	60	72	84	96
Trailing Arm Bushings	Check bolt torque		X		X		X		X[1]
	Inspect for contact between control arm and mount	X	X	X	X	X	X	X	X[1]
	Inspect for bushing wear	X	X	X	X	X	X	X	X[1]
Air Springs	Inspect for proper clearance (1" minimum all around)	X							
	Check upper mount nut and lower mount bolt torque	X							
	Inspect for signs of chafing or wear	X	X	X	X	X	X	X	X[1]
	Check for air line fitting torque	X							
	Inspect for air leaks using soapy water solution	X							
Height Control Valve Linkage	Inspect for signs of bending, binding, or slippage	X	X	X	X	X	X	X	X[1]
Shock Absorbers	Check lock nut torque	X							
	Inspect shocks for signs of fluid leak, broken eye ends, loose fasteners, or worn bushings	X	X	X	X	X	X	X	X[1]
Rear Alignment	Inspect (after first 1000-3000 miles)		X		X		X		X[1]
Air Fittings and Air Lines	Inspect for air leaks using soapy water solution	X							
	Inspect for signs of chafing, cracking, or wear	X	X	X	X	X	X	X	X[1]

1. Continue to perform specified maintenance every 12,000 miles or at previous interval

Section 4
Maintenance

MAINTENANCE RECORD

Name of Owner			Address of Owner
Date of Purchase		Name and Address of Dealer	
Model of Vehicle		Vehicle Identification Number	
Suspension Model Number: RD230_____-____ RD240_____-____		Suspension Serial Number:	
Inspection and Maintenance Item	Date	Mileage	Service Performed

Section 5
Adjustments and Alignments

Adjusting Suspension Ride Height

The height control system on the Rear Drive Suspensions has been provided by the chassis builder. Information provided in this manual is supplementary to the chassis builder's documentation. In the case of a conflict, the chassis builder's documentation supersedes the information presented in this manual regarding the height control system.

The height control valve and linkage should be checked regularly for proper clearance, operation and adjustment. The ride height of the rear suspension is the distance from the bottom of the chassis frame rail to the center of the axle. Properly adjusted ride height results in correct suspension travel and alignment. The ride height should not be adjusted to adjust chassis rake angle.

Preparation

1. Park the vehicle on a level surface
2. Set the parking brake and block the drive wheels to prevent vehicle movement
3. Check that the front suspension is adjusted to the correct ride height per the vehicle manufacturers specifications
4. Check height control valve plumbing to ensure there are not any air leaks
5. Make sure shock mounts are mounted securely and not bent

Adjustment

1. Measure the vertical distance from the bottom of the frame to the center of the axle
2. If the distance measured is not within 8.25±.25 inches, then adjust as follows:
3. Loosen the clamp on the vertical link of the height control linkage
4. Adjust the length of the vertical link to achieve specified ride height
5. If the ride height is less than 8.25", then increase the length of the vertical link, if the ride height is greater than 8.25", then decrease the length of the vertical link
6. Deflate the rear suspension
7. Inflate the rear suspension
8. Wait 30 seconds for the suspension to settle after adjusting to verify correct adjustment

NOTE: The horizontal link must remain horizontal during adjustment to ensure proper operation of the height control valve.

9. Tighten the clamp on the vertical link

Section 5
Adjustments and Alignments

Inspection Before Alignment

Check the following before conducting front wheel alignment measurements.

Inspection

See “General Inspection” in Section 3

Wheels and Tires

1. Check that the rear tires are inflated to the appropriate pressure based on the wheel loading
2. Check that the rear tires are the same size and type
3. Check that all the wheel nuts are tightened to the specified torque
4. Check that the wheels are balanced
5. Check that all fasteners are tightened to the specified torque
6. Check the suspension ride height and adjust as needed to specified height
7. Check that all connection joints between the suspension and axle are secure
8. Check for worn suspension bushings or damaged suspension components
9. Check that the frame is not bent
10. Loosen the Rey-align nut but do not remove
11. Rotate the adjusting fastener to move the rear axle fore and aft on each side, continue until you achieve the correct alignment
12. Re-torque the Pivot Bolt to **950-1050 ft-lb** (See Torque Table) in steps
    Step 1: **150 ft-lb**
    Step 2: **250 ft-lb**
    Step 3: **400 ft-lb**
    Step 4: **650 ft-lb**
    Step 5: **950-1050 ft-lb**

NOTE: Total vehicle alignment is recommended when aligning the rear suspension

Section 5
Adjustments and Alignments

Rear Axle Alignment

Measurement

1. Place the unloaded vehicle on a level floor area
2. Move it back and forth several times, slowly and without using the brakes, to free all suspension joints
3. Chock the front wheels with the brakes released
4. Clamp an 8 foot piece of straight bar stock or angle iron securely after positioning it squarely across the frame (The use of a carpenter's square is recommended to be certain the bar is square to the frame)
5. The cross bar should be positioned as far forward of the drive axle as room will permit
6. Beginning on the passenger side, measure from the bar stock to the center line of the rear drive axle on both sides
7. If the measurements, X1 and X2, vary more than 1/8", alignment adjustment should be made
8. Once the rear drive axle is properly aligned, the front axle should be aligned as per the recommended procedure

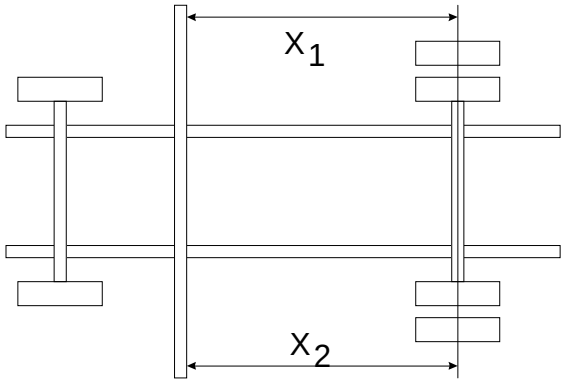


Diagram 1 - Alignment Measurements

9. Following the alignment of both axles, it is recommended that it be driven through a short series of turns and then returned to the shop to have the alignment rechecked, after again freeing all suspension joints by moving back and forth several times

Adjustment

1. Chock the front wheels
2. Securely support the rear frame of the vehicle

⚠ WARNING:

Never work under a vehicle supported by only a jack. Jacks can slip or fall over and cause serious personal injury. Always use safety stands.

3. Exhaust the air from the air springs to remove the load to the Trailing Arm
4. Loosen the Rey-align nut but do not remove
5. Rotate the adjusting fastener to move the rear axle fore and aft on each side (Continue until you achieve the correct alignment)

NOTE: +/- 3/8" Total adjustment is available (3/16" / Side x 2 adjustment points)

6. Re-torque the Pivot Bolt to **950-1050 ft-lb** (See Torque Table)
   Step 1: **150 ft-lb**
   Step 2: **250 ft-lb**
   Step 3: **400 ft-lb**
   Step 4: **650 ft-lb**
   Step 5: **950-1050 ft-lb**

Section 6
Repair

Repairing of Parts

⚠ WARNING:

The repair or reconditioning of rear suspension components is not allowed. ReycoGranning® recommends replacing damaged or worn components. Several major components are heat treated and tempered. The components cannot be bent, welded, heated or repaired in any way without reducing the strength or life of the component and voiding the warranty.

⚠ WARNING:

If you use cleaning solvents, hot solution tanks or alkaline solutions incorrectly, serious personal injury can occur. To prevent injury, follow the instructions supplied by the manufacturer. Do NOT use gasoline to clean parts. Gasoline can explode.

Cleaning the Parts

Ground or Polished Parts

Use a cleaning solvent to clean ground or polished parts and surfaces. Do NOT clean ground or polished parts with hot solution tank or with water, steam or alkaline solutions. These solutions will cause corrosion of the parts.

Rough Parts

Rough parts can be cleaned with the ground and polished parts. Rough parts also can be cleaned in hot solution tanks with a weak alkaline solution. Parts should remain in the hot solution tanks until they are completely cleaned.

Drying

Parts must be dried immediately after cleaning. Parts should be dried with clean paper, rags, or compressed air.

Preventing Corrosion

Apply light oil to cleaned and dried parts that are not damaged and are to be immediately assembled. If the parts are to be stored, apply a good corrosion preventative to all surfaces and place them inside special paper or containers that prevent corrosion.

Removing and Installing the Trailing Arm Assemblies

Preparation

1. Chock the front wheels
2. Firmly support the rear vehicle frame

⚠ WARNING:

Never work under a vehicle supported by only a jack. Jacks can slip or fall over and cause serious personal injury. Always use safety stands.

Removal

1. Exhaust the air from the air spring
2. Detach the air spring from the Cross Member
3. Remove the Lower Cross Member
4. Remove Axle Bolts
5. Remove Shocks and Height Control Valve Linkages
6. Remove the pivot bolt

Section 6
Repair

Installation

1. Slide the trailing arm assembly into the pivot hanger
2. Insert the pivot bolt with all Rey-Align components
3. Torque the Pivot Bolt Nut to **950-1050 ft-lb** (See Torque Table)
   Step 1: **150 ft-lb**
   Step 2: **250 ft-lb**
   Step 3: **400 ft-lb**
   Step 4: **650 ft-lb**
   Step 5: **950-1050 ft-lb**

Replacing the Trailing Arm Bushings

1. Remove the Trailing Arm assembly as described above
2. Push the bushing out using a properly sized bushing press
3. Push in new bushing
4. Reinstall as per the previous instructions

Replacing the Shock Absorber

Preparation

1. Set the parking brake and block the front wheels to prevent vehicle movement

Removal

1. Loosen and remove the upper shock absorber mount bolt from the Upper Shock Mount
2. Loosen and remove the lower shock absorber mount bolt from the Trailing Arm

Installation

1. Install the shock absorber rod end to the upper shock mount
2. Loosely install the upper shock mounting hardware
3. Install the shock absorber body end to the trailing arm shock mount
4. Loosely install the lower shock mounting hardware to the trailing arm assembly
5. Raise or lower the suspension to approximate ride height (8.25"+/-.25)
6. Torque both mount fasteners to **90-110 ft-lb** (See the Torque Table).

Replacing the Air Spring

When replacing the air spring be sure that the correct replacement air spring is installed. The use of a substitute air spring that is not recommended by ReycoGranning® may cause unequal load sharing between the air springs which may be detrimental to vehicle ride and handling.

Preparation

1. Set the parking brake and block the front wheels to prevent vehicle movement
2. Firmly support the rear of the vehicle frame

⚠ WARNING:

Never work under a vehicle supported by only a jack. Jacks can slip or fall over and cause serious personal injury. Always use safety stands.

3. Deflate the air springs

Section 6
Repair

Removal

1. Disconnect the air line at the air spring and remove the connection fitting
2. Remove the bolts that secure the air spring to the lower crossmember assembly
3. Remove the nuts and washers from the upper frame rail mount
4. Remove the air spring

Installation

1. Assemble the nuts and washers that connect the air spring to the frame rail then tighten the nuts to appropriate torque per chassis manufacturer requirement
2. Assemble the air spring to the crossmember assembly then tighten the nuts to **20-30 ft-lb** (See Torque Table)
3. Install the connection fitting into the air spring using Permatex or equivalent thread sealant (Never use Teflon Tape)
4. Connect the air line to the air spring
5. Lower the vehicle frame and inflate the air springs
6. Check the air fittings for leaks

Replacing the Height Control Valve

For information regarding the height control system please refer to the chassis builder's documentation. ReycoGranning® LLC has made provision for dual height control with linkage mounting tabs on each trailing arm. A single height control should be actuated from a central location on the suspension. If the height control linkage mount is to be welded to the Lower Air Spring Support Assembly (LASSA), it should be positioned such that the weld is within ¼" of the cross tube neutral axis. The neutral axis is at middle height of the cross tube.

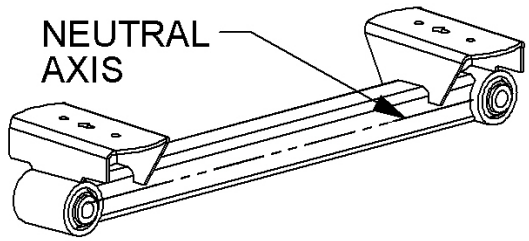


Figure 1 - LASSA Neutral Axis

Replacing the V-Link

Preparation

1. Set the parking brake and block the front wheels to prevent vehicle movement
2. Firmly support the rear vehicle frame

⚠ WARNING:

Never work under a vehicle supported by only a jack. Jacks can slip or fall over and cause serious personal injury. Always use safety stands.

3. Deflate the air springs
4. Support the rear axle to relieve any pressure being applied to the V-link

Removal

1. Disconnect the V-Link from the axle and remove the bolts
2. The V-Link has a slight press fit to the cast mount on the axle and may require prying to remove (position the axle to unload the V-Link)
3. Remove both inner bolts on the V-Link so that it is still supported by the two outer V-Link bolts

4. Make sure the V-Link assembly is fully supported before removing the final two bolts holding it place

⚠ WARNING:

V-link weighs in excess of 75 lbs

5. Remove the V-Link Assembly

Installation

1. Replace the V-Link in the same order in which it was removed. Torque the 4 bolts holding the V-link to the Cross member to **150-180 ft-lb** (See Torque Table).
2. After applying Loc-Tite 242 (Blue) to the Bolt, reconnect the Axle to the V-Link and then torque the bolts to **300-330 ft-lb** (See Torque Table)
3. Relieve any support holding the axle up allowing it to float
4. Re-inflate the air springs so that the vehicle can be lowered
5. Check and adjust ride height per Adjusting Suspension Ride Height Section

Section 6
Repair

TORQUE SPECIFICATIONS

Most 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 in initial selection of fasteners for a given application. To assure continued satisfactory vehicle performance, replacement fasteners used should be of the correct strength, as well as the correct nominal diameter, thread pitch, length, and finish.

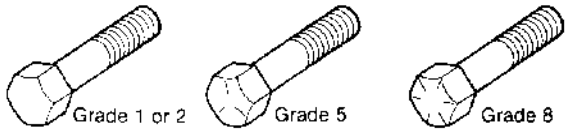


Figure 2 – Grade Markings on Bolts

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

Figure 6 – Grade Markings on Lock Nuts

Table 1 – Fastener Torque

APPLICATIONS	FASTENER SIZE	TORQUE SPECIFICATION (ft-lb) (CLEAN AND DRY)	THREAD LOCKER
Trailing Arm Pivot Nut	1-1/8”-12 GR C	950-1050	None
Shock Absorber Mounting Nut	3/4”-16 GR 8	90-110	None
Lower Air Spring Mounting Nut	1/2”-13 GR 5	20-30	None
Cross Member Assembly Nut	1/2”-13 GR 8	75-85	None
V-Link to Cross Member Bolt	5/8”-11 GR 8	150-180	Vibra-tite VC-3
V-Link to Axle Bolt(Ball joint type)	M18-1.5 10.9	300-330	Loc-tite 242 (Blue)
V-Link to Axle Bolt(Barpin type)	7/8”-9 GR 8	400-495	None
Air Spring Cross Member Mounting Nut	1”-14 GR 8	600-750	None
Trailing Arm Bushing to Axle Nut(Barpin type)	1”	450-600(if torqued at nut) 500-650(if torqued at bolt head)	None
Trailing Arm Bushing to Axle Nut(Through bolt type)	3/4”-16 GR 8	210-240	None

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SUSPENSIONS