

# **Reyco** **Granning** S U S P E N S I O N S

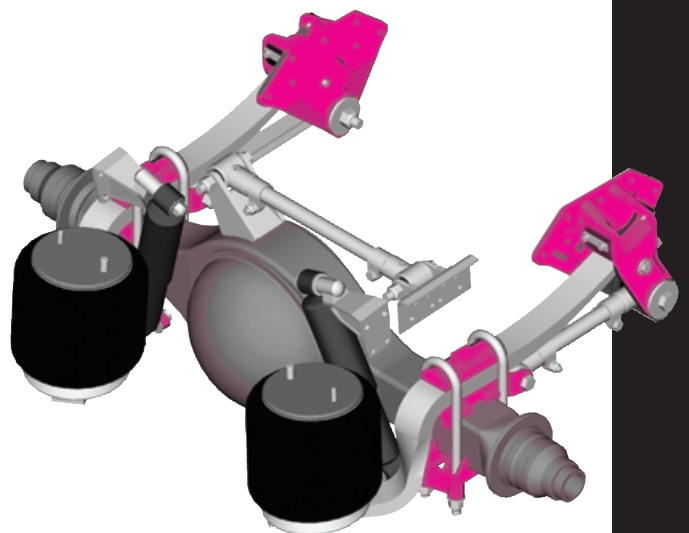
**Model 240AR**

**Air-Ride**

**Suspension System**

**Installation and**

**Maintenance Instructions**



## Installation Instructions Model 240AR

### COMPANY PROFILE

Tuthill Transport Technologies is the new Line of Business name arising from the acquisition and merger of two companies in the heavy-duty suspension and off-road axle industries. These companies were formerly known as Fluidrive, Inc. of Brookston, IN and Reyco® Industries, Inc. of Springfield and Mt. Vernon, MO and Reyco® Canada of Grimsby, Ontario. Tuthill Corporation purchased Fluidrive in December, 1998 and purchased Reyco® in February, 1999.

Granning® Air Suspensions was founded in 1949 in Detroit, Michigan. Granning's product line was consolidated under Fluidrive, Inc. in 1985.

Reyco® was founded in 1924 as Reynolds Mfg. Co. and assumed the Reyco® Industries, Inc. name in 1956 in Springfield. Reyco® Canada began at the current location in Grimsby, Ontario in 1963. The Mt. Vernon facility was established in 1973.

ReycoGranning® air and steel spring suspension systems are sold to truck, trailer, and specialty vehicle OEM's, and to truck equipment distributors. Tuthill Transport Technologies design, test, manufacture and market these products.

Tuthill Transport Technologies is certified to the internationally recognized ISO 9001 Standard. This certification includes ReycoGranning® operations.

ISO 9001 is the highest international quality standard and is recognized worldwide by all major countries and corporations. To obtain certification a company must undergo a series of rigorous audits to remain certified and ensure consistent quality standards are being maintained. This quality standard was developed by the International Organization of Standardization.

Tuthill Corporation is a privately held manufacturing company with over 3,000 employees and facilities on five continents. Tuthill's corporate offices are located in Burr Ridge (Chicago), Illinois.

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## Installation Instructions Model 240AR

### SAFETY FIRST

Be sure to read and follow all installation and maintenance procedures.

### LIFTING

Practice safe lifting procedures. Consider size, shape and weight of assemblies. Obtain help or the assistance of a crane when lifting heavy assemblies. Make sure the path of travel is clear.



### PARTS HANDLING

When handling parts, wear appropriate gloves, eyeglasses and other safety equipment to prevent serious injury.

### WELDING

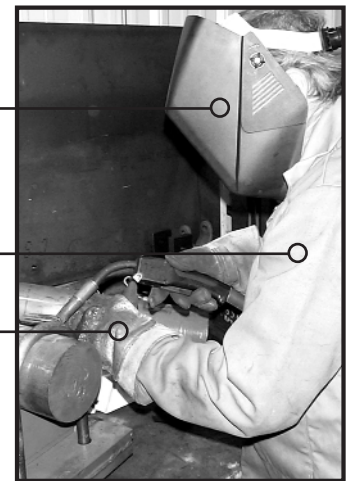
When welding, be sure to wear all personal protective equipment for face and eyes, and have adequate ventilation. When welding, protect spring beams and air springs from weld spatter and grinder sparks. Do not attach "ground" connection to springs.

Under normal use, steel presents few health hazards. Prolonged or repeated breathing of iron oxide fumes produced during welding may cause siderosis.

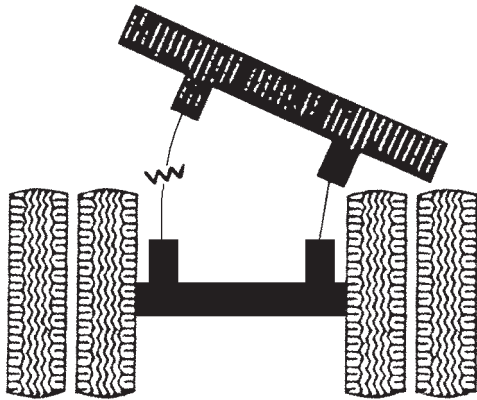
Welding Helmet

Welding Apron

Welding Gloves



 **WARNING**



**OVERLOADING**

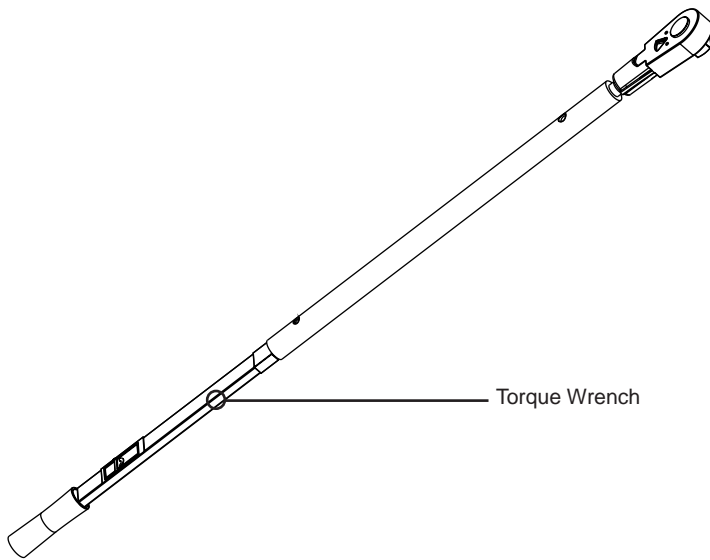
Overloading is the practice of transporting cargos that surpass the specified vehicle's ratings. Overloading can cause component failure, resulting in accidents and injuries.



This symbol indicates to the reader to use caution when seen and to follow specific requirements or warnings stated.



**CAUTION:** Specific torque requirements are needed.



**TORQUE**

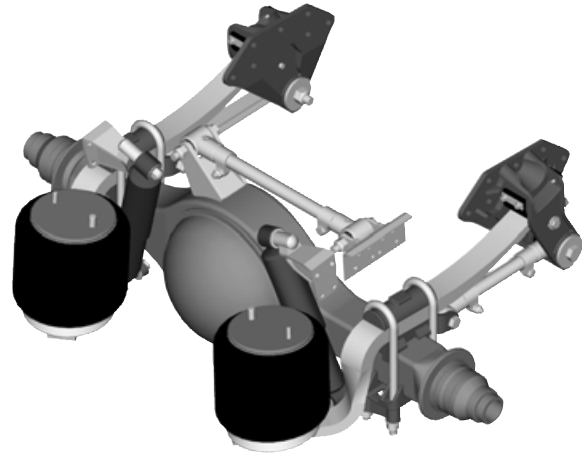
Proper tightening of the U-bolt nuts and alignment bolts are high priority items. A fastener system is considered "loose" any time the torque is found below required values. Failure to maintain the specified torque and to replace worn parts can cause component failure resulting in accident with consequent injury.

**NOTE:** It is extremely important after the first 1,000 to 3,000 loaded miles (1,600 - 4,800 kms) of operation, and with each annual inspection thereafter, that all of the bolt and nut tightening recommendations be followed. Any loose fasteners must be retorqued to comply with warranty requirements and to ensure long, trouble-free performance.

## Installation Instructions Model 240AR

### 240AR INFORMATION SECTION

The ReycoGranning Model 240AR is a four (4) point single axle / an eight (8) point tandem axle air spring tractor suspension which uses two (2) air springs coupled to two (2) trailing taper-leaf beams per axle, and incorporates torque arms to position and align the axles. Best performance can only be achieved by proper installation and maintenance. Track rods are required for all axles.

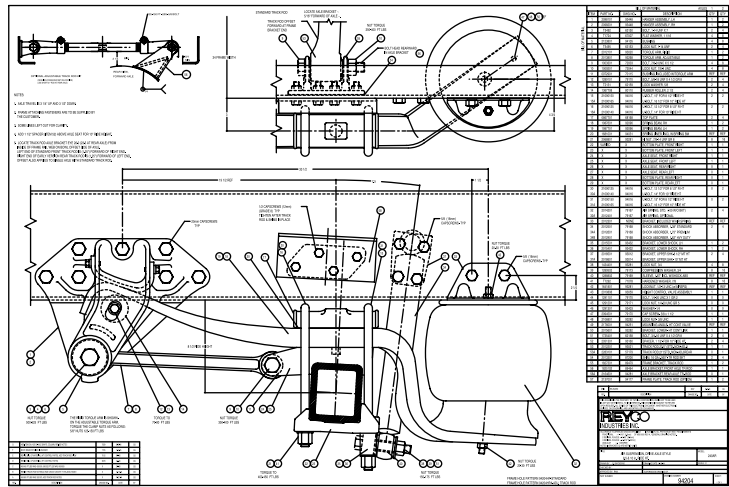


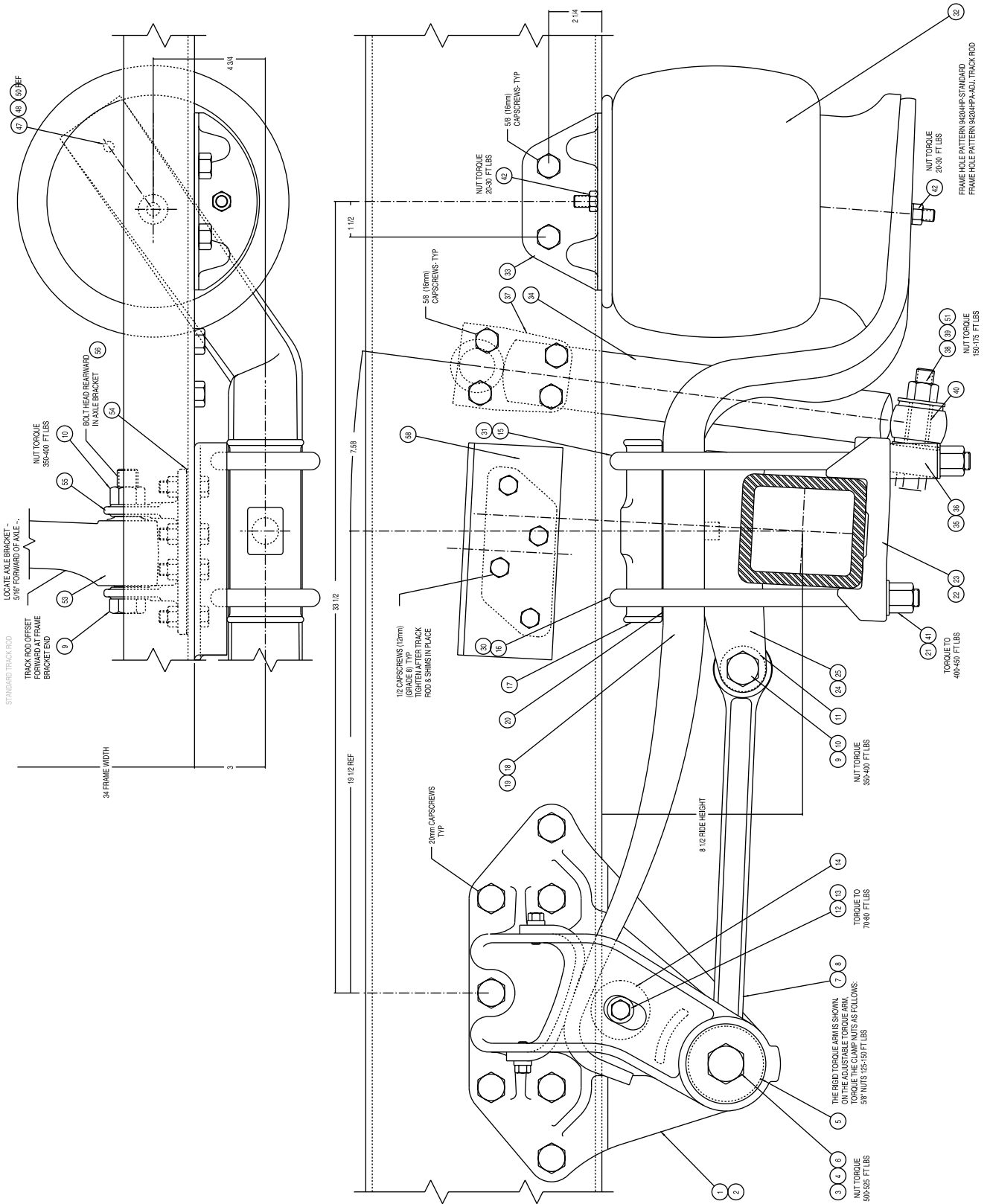
1. Normally, prior to any installations at an OEM engineering contacts between companies have been made, and all necessary information to make an installation has been exchanged. However, the following general steps are listed in the interest of all involved and should be included in an OEM plan to install the suspension.

2. Refer to REYCOGRANNING assembly drawing 94204 (pg. m.7) showing the 8 1/2" ride height for dimensions and component locations. This drawing shows the frame hole pattern. Consult Tuthill Transport Technologies (TTT) Engineering or Sales Department for additional requirements.

3. The following instructions are for "standard" single axle installation, 8 1/2" ride height, front engine configuration. Many other versions have been created, and are available upon request.

See page i.4 for a view of the "standard" configuration.





# Suspension Assembly Drawing #94204

## Installation Instructions Model 240AR

### HANGER INSTALLATION (refer to illustration on page i.4)

4. Mark frame rails at centerline locations of hanger brackets. Cross-members are required at all hanger locations. Crossmembers are customer supplied.

Single axle is shown on page i.4. 52" (1,321mm) tandem axle spacing is standard. A 54" (1,372 mm) tandem spacing is optional.

Locate hangers (items 1 & 2) on proper vertical position on frame rails as shown below, while referencing dimension to axle centerline of vehicle.

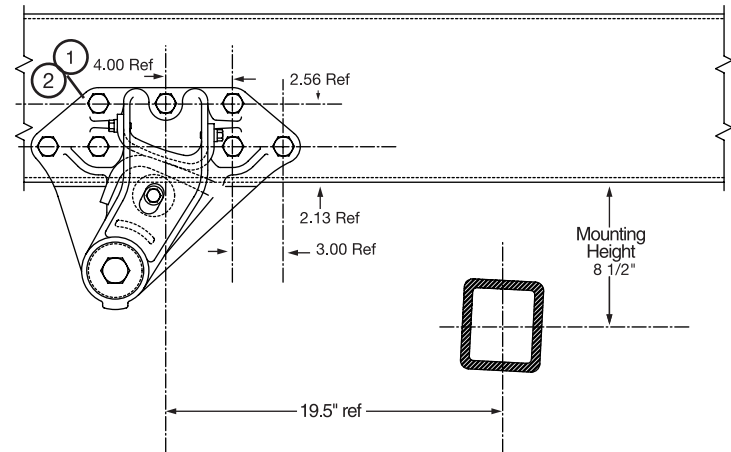
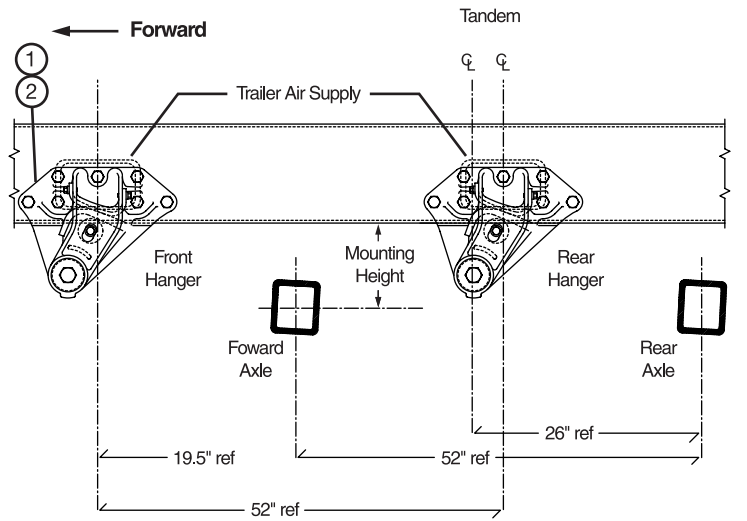
**NOTE: Vertical hanger location must be as shown or be compensated by adjusting air spring height accordingly (to maintain proper pinion angles).**

Hangers are furnished with standard drilled or special drilled holes.

5. Drill holes through frame rails (20 mm standard). Mount hangers (items 1 & 2) and crossmembers using Class 8 fasteners. Fasteners are customer supplied.



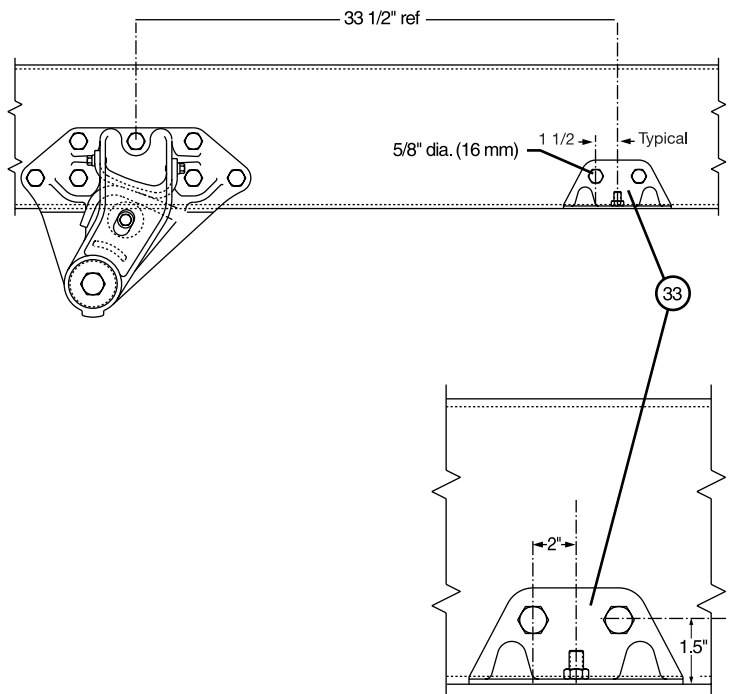
**CAUTION:** Specific torque requirements are needed.



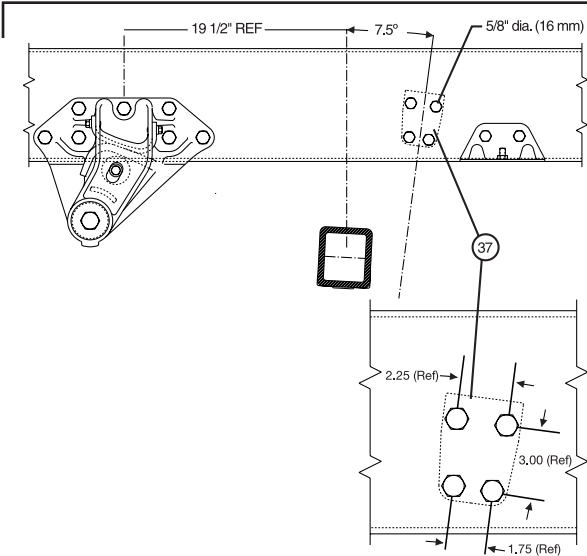
### UPPER FRAME PREPARATION

#### Air Springs

6. Locate and drill frame for air spring bracket assembly and mount brackets (item 33) on frame. See illustration on page i.4. Fasteners are customer supplied.





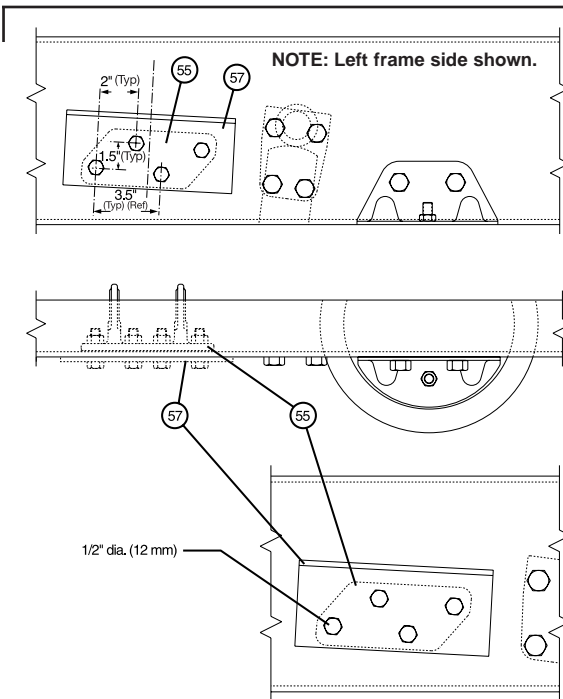


### SHOCK ABSORBERS

7. Locate and drill frame for upper shock absorber brackets (item 37) and mount brackets on frame. See frame hole pattern. Fasteners are customer supplied.



**CAUTION:** Specific torque requirements are needed.



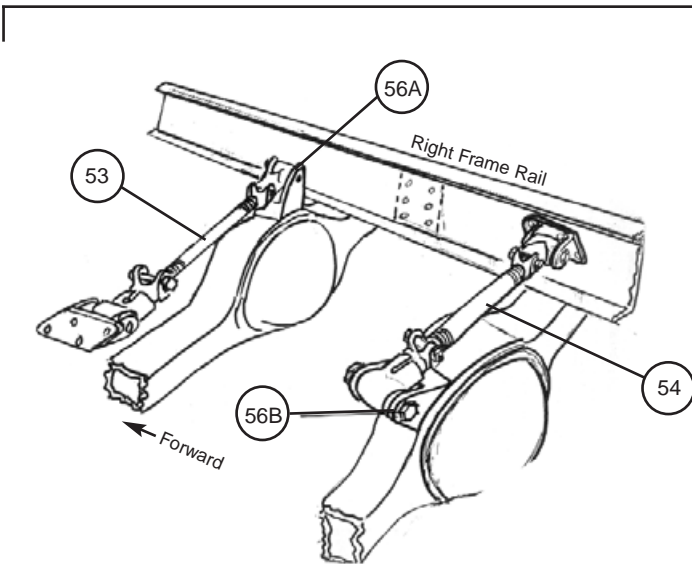
### TRACK ROD - SINGLE AXLE

8. One track rod (item 53) is to be installed at the top of each axle bowl housing, reference REYCOGRANNING drawing 94204. TTT recommends that a single drive axle be supported by a track rod mounted on the right hand frame rail.

Locate and drill frame for track bar brackets (item 55) and mount the brackets on frame sides, along with frame plate (item 57). Fasteners are customer supplied. Location varies with axle angle and second fixed or adjustable track rod.



**CAUTION:** Specific torque requirements are needed.



### TRACK ROD - TANDEM DRIVE AXLES (Adjustable Track Rods Shown)

9. One track rod (item 53) is to be installed near the top of each axle bowl housing. TTT recommends that the axle bracket (item 56) be installed on the "offset side" of the axle. This means that the front drive axle is supported from the left frame rail, and the rear drive axle is supported from the right frame rail. See drawing 94204 for more details.

Kit #TK 22426 is typical for a tandem axle.

**NOTE:** Rear axle hardware has shorter (21" long) track rod and forward tilting axle bracket (item 56B) to avoid shock absorber interference.

## Installation Instructions Model 240AR

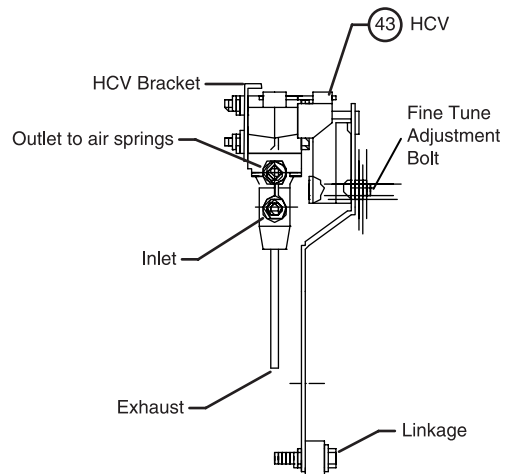
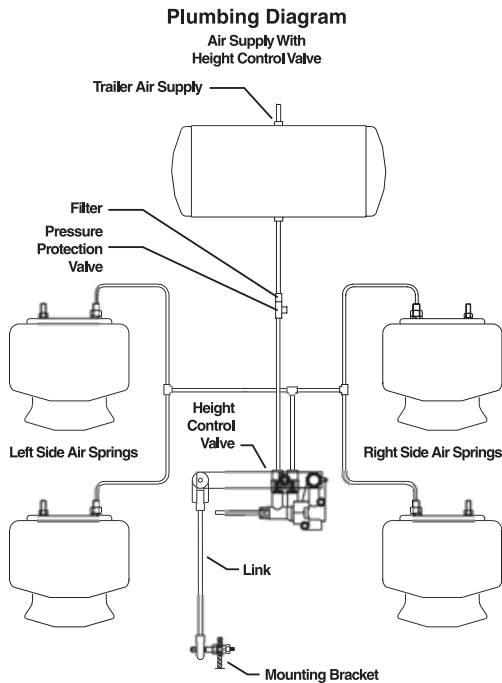
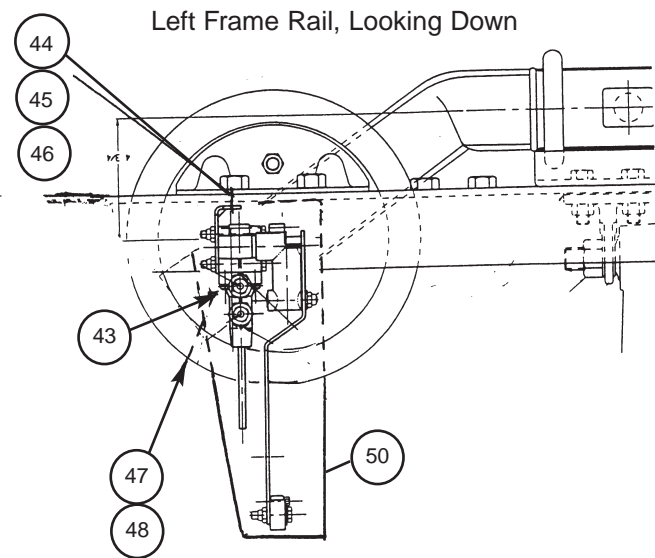
### HEIGHT CONTROL VALVE AND AIR SYSTEM

10. One height control valve (HCV) (item 43) is used, regardless of the number of axles. The air springs on each side of the tractor are connected by 3/8" (9.5 mm) minimum diameter tubing (customer furnished). Care must be taken to insure the HCV is positioned as shown.

11. Install the HCV (item 43) to the left hand frame rail using the mounting brackets and fasteners furnished (items 44, 45, 46, 47, 48, 49)

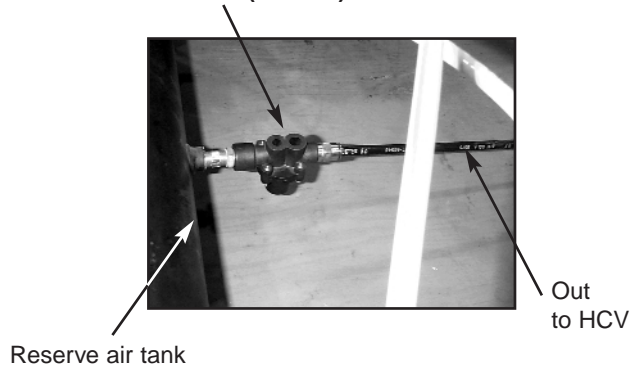
TTT requires that the HCV be located on the forward axle of the tandem (if required).

A bracket (item 50) is provided and located on the lower spring beam assembly to aid in the connection of the HCV linkage arm.



12. Using customer supplied materials, connect the HCV to all air springs using 3/8" (9.5 mm) diameter tubing. As with any pressure system, check for leaks and eliminate leakage, if present. The pressure protection valve (item 58) is positioned between the HCV and the air reservoir.

### Pressure Protection Valve and Air Filter (item 58)

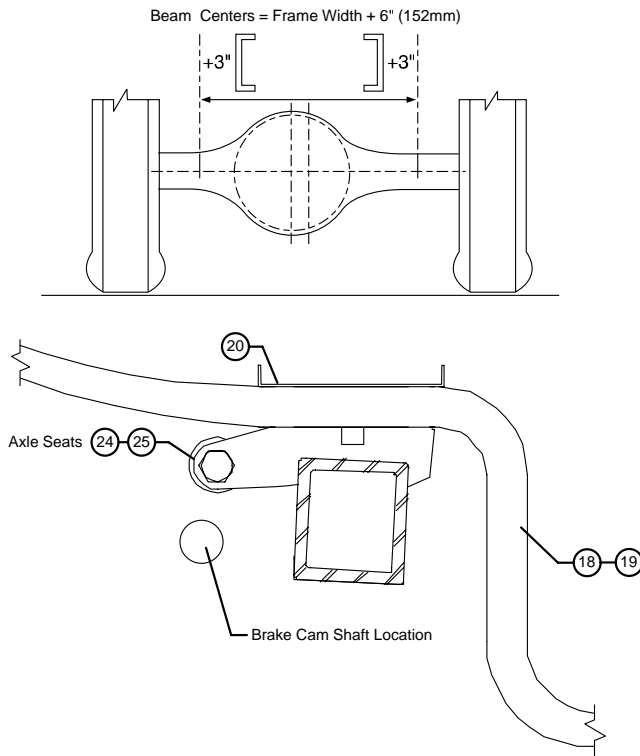


**AXLE ASSEMBLY**

13. Spring beam (item 18 & 19) centers are frame width plus 6" (152 mm). establish beam centers on axle housings. If dowel pins are used, place axle seats in position on dowel pins located on axle. If dowel pins are not used, place axle seats on established beam centers.

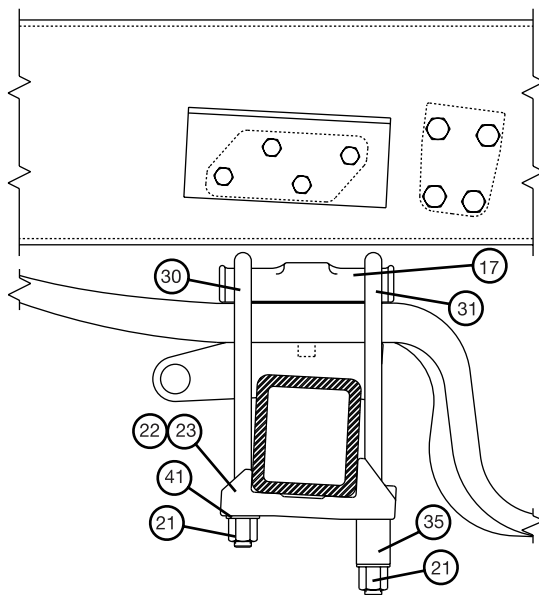
14. Position the spring beams (item 18 & 19) on the axle seats (items 24, 25). Install a galvanized spring liner (item 20) on the top (tension) side of the spring beam.

**NOTE: Brake cam shafts must be on forward side of axle for clearance. Be sure that the axle seats selected provide brake chamber and brake cam shaft assembly clearances.**



15. Assemble the u-bolts (items 30 & 31), top plates (item 17), bottom plates (item 22 & 23), lower shock absorber brackets (item 35), washers (item 41) and nuts (item 21) into each group. Be sure ure liners (item 20) remain in proper position while loosely installing u-bolts. Do not torque u-bolt nuts at this time.

**NOTE: Lower shock absorber bracket is assembled at the rear side of each group as illustrated.**



15. Square the spring beams to the axle assembly and torque u-bolt nuts (item 21) to 400-425 ft. lb. (545-580 NM). Make sure spring beams remain parallel to each other and to frame as torque is applied.



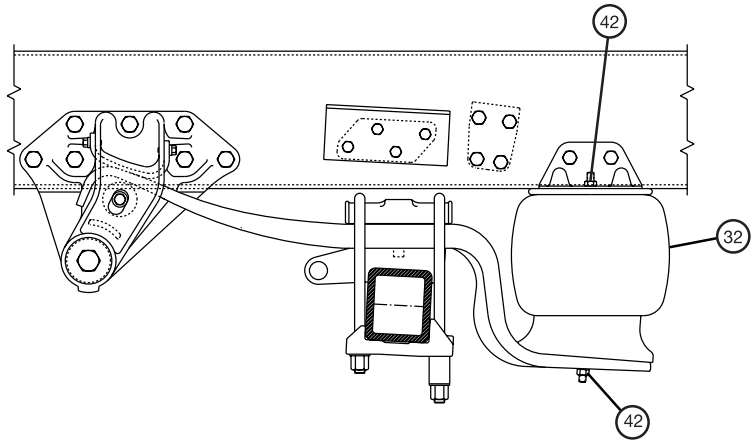
**CAUTION:** Specific torque requirements are needed.

## Installation Instructions Model 240AR

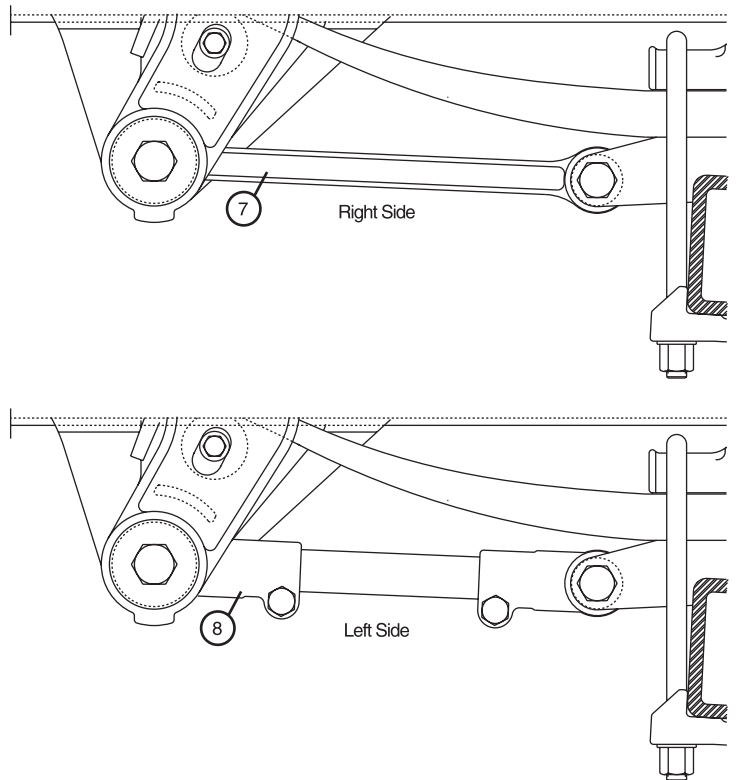
### BEAM/AXLE ASSEMBLY INSTALLATION

17. Position the axle/suspension assembly under the vehicle with the spring beams resting in the hangers. See Illustration.

18. Install air springs (item 32) in upper brackets and in trailing beams using fasteners provided (item 42).



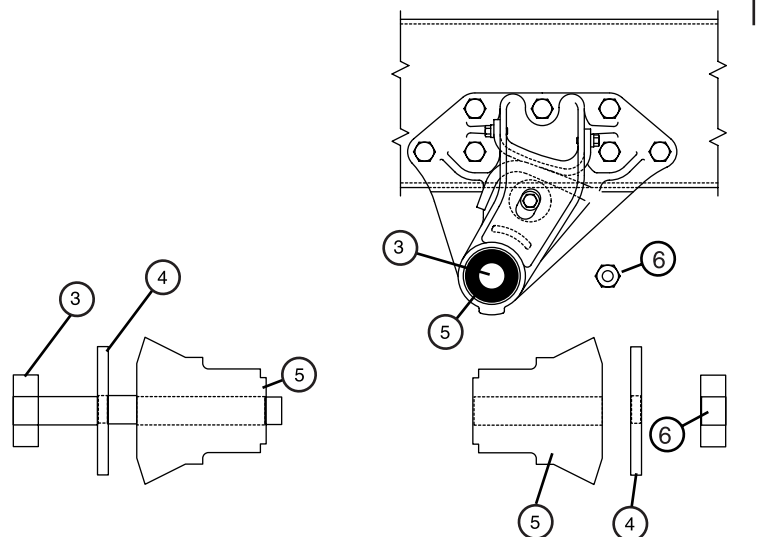
19. Set length of adjustable torque arm (item 8) equal to that of the rigid torque arm (item 7). Adjustable torque arms are for the left side of the vehicle, rigid for the right. Install torque arms using the following procedure.

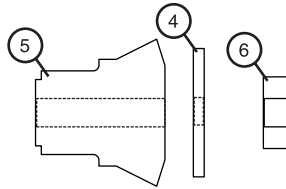
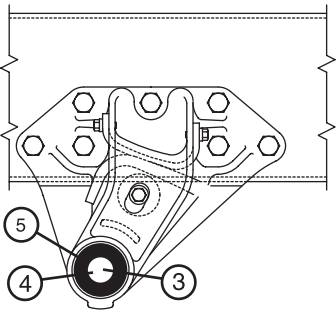


### HANGER END TORQUE ARM ASSEMBLY

20. Place compression washer (item 4) and rubber bushing (item 5) on torque arm bolt (item 3) and insert through the outside of the hanger and torque arm end. Use a lubricant that makes rubber slippery while wet but will dry.

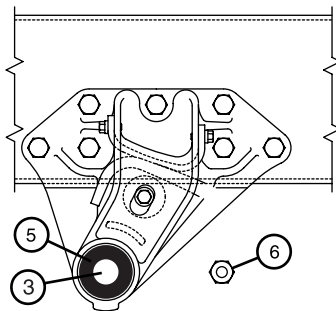
Example: P80 rubber lubricant and water or soap and water. DO NOT USE any petroleum-based lubricants or sprays.





21. Lubricate and place the second rubber bushing and compression washer on the bolt from the opposite side of the torque arm. Use rubber lubricant.

Note: **Both ends of torque arm should be loosely assembled before tightening lock nuts in steps 22 and 23.**



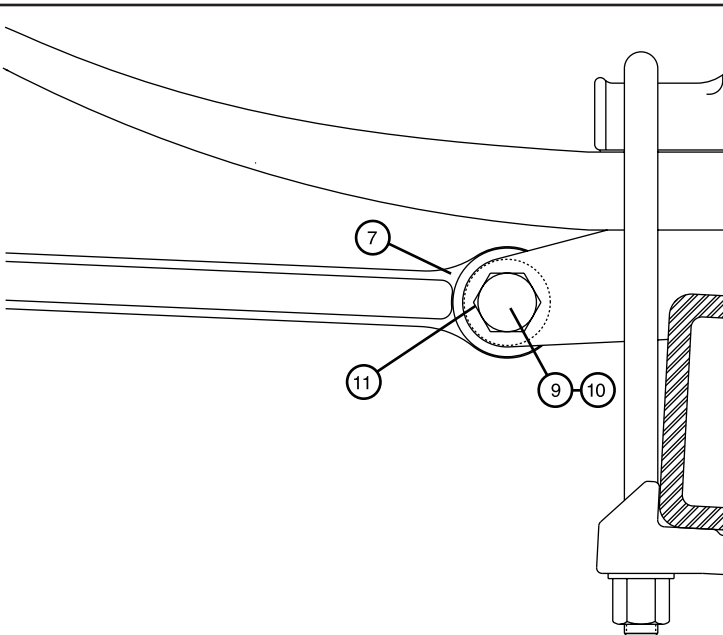
22. Tighten the nut (item 6) to 500-525 ft. lb. (680-715 NM). There should be an even build-up of rubber on each side of the torque arm between the torque arm and the hanger. Also, a small 1/16" & 1/8" of build-up rubber between the compression washers and the hanger. There should be between 1/16" to 1/8" bead of rubber between the compression washer and casting.

NOTE: **Do not tighten the adjustable torque arm clamping fasteners until after final alignment.**

NOTE: **It is desirable to have suspension at ride height when steps 22 and 23 tightening is done.**



CAUTION: Specific torque requirements are needed.



**AXLE SEAT END TORQUE ARM ASSEMBLY**

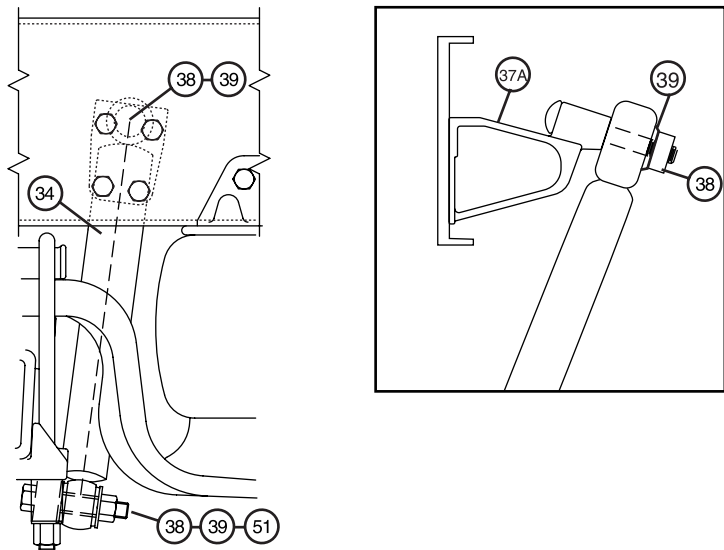
23. Install the axle seat end of the torque arm into the axle seat (bushing, item 11, is already installed in torque arm) with bolt (item 9) and nut (item 10). Torque to 350-400 ft. lb. (475-545 NM). Rigid side shown.



CAUTION: Specific torque requirements are needed.

## Installation Instructions Model 240AR

24. Install shock absorbers (item 34) into correct positions as illustrated. Install fasteners into positions securely, but do not torque until after all adjustments (item 38, 39 & 51).



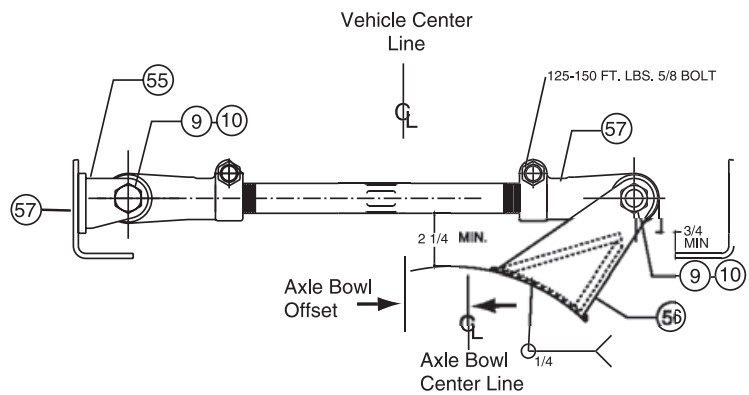
### TRACK ROD ASSEMBLY - SINGLE AXLE

25. Install the track rod (item 53) into the proper bracket (item 55) on the frame. Loosely install item 56 on track rod, using the fasteners provided (item 9 & 10).

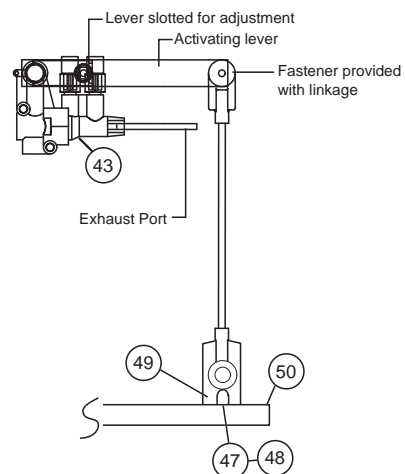
Check to see that no binding is occurring between the spring leaf beams and hangers. The single axle model 240AR is supported from the right frame rail. With track rod level and frame at proper ride height, locate item 56 on axle and weld in place.

Torque after adjustments are made and proper ride height is maintained.

**NOTE: If beams are in contact with sides of hangers, center them by adjusting length of lateral track rod(s).**

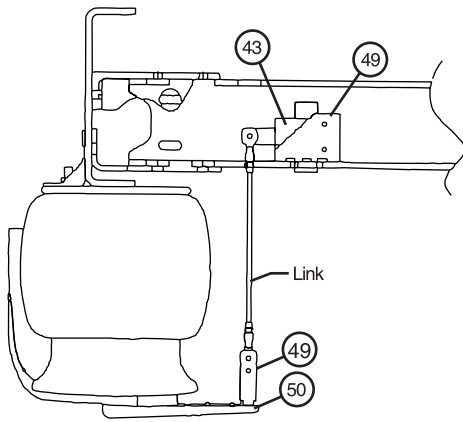


26. Install the linkage for the height control valve (item 43) between the valve and the bracket (item 50) below the "control" air spring, using the mounting angle (item 49) and the fasteners provided (item 47 & 48).



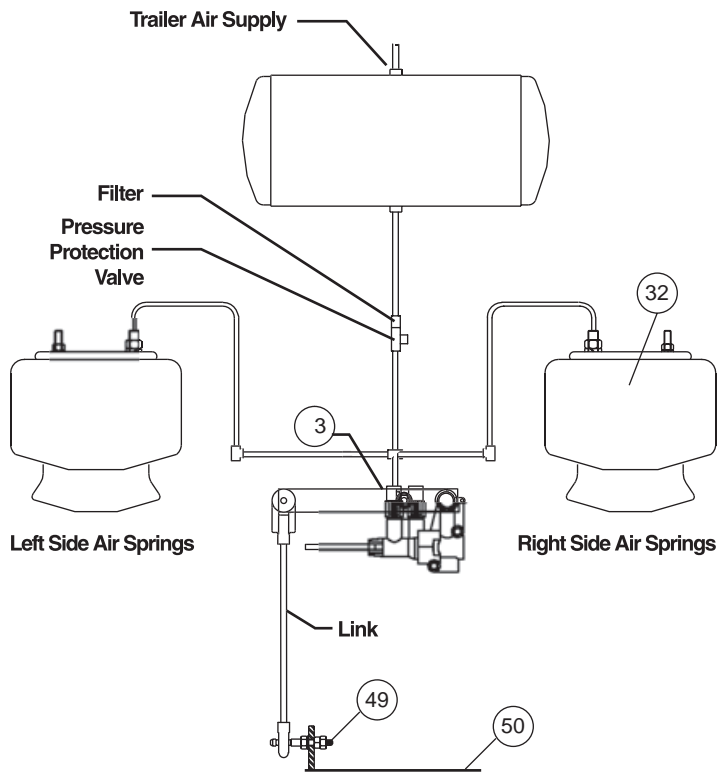
**HEIGHT CONTROL SYSTEM CHECKOUT**

27. Position unladen tractor on a level floor with tank air pressure maintained in excess of 70 psi. Disconnect the link and move the control valve (item 43) actuating lever to insure all the air is exhausted from the air springs.



**Plumbing Diagram**

Air Supply With Height Control Valve



28. Connect the link and let the air springs fill with air until it shuts off. Measure distance from axle center to frame and adjust to proper mounting height. (Determined by OE Engineering). See pg.5 Step 4 for location.

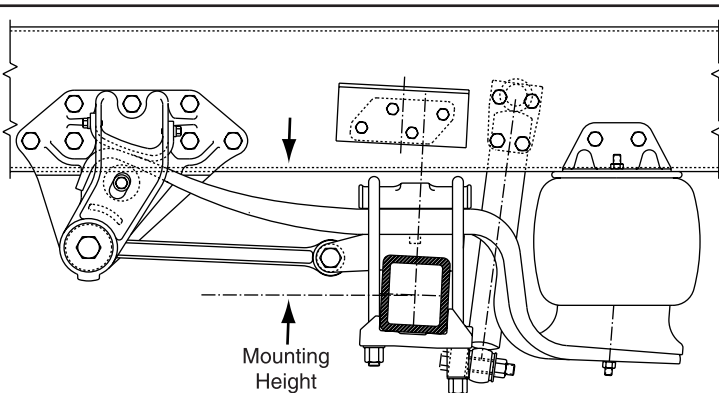
Loosen the hose clamp at the control valve and carefully move the link until the proper dimension is reached.

29. Recheck by disconnecting the link and deflating the air springs about half way. When the link is reconnected, the spring should reinflate to the proper mounting height.

Torque all linkage fasteners to 5 ft. lb. (7 NM).



**CAUTION:** Specific torque requirements are needed.

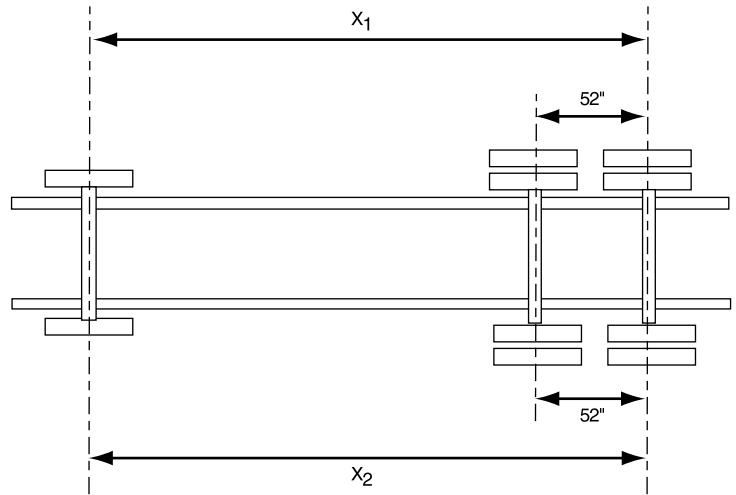




## Installation Instructions Model 240AR

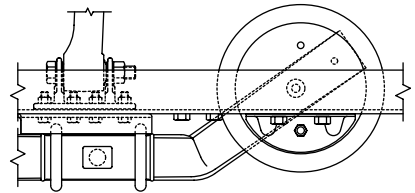
### PRELIMINARY ALIGNMENT

30. Position the frame at the desired mounting height and perform preliminary rough alignment by centering axle laterally, and aligning axles squarely with respect to frame to within 1/4" (right and left compared). Axle spacing should be optimized at 52".  $x_1 = X_2 \pm 1/4"$ .

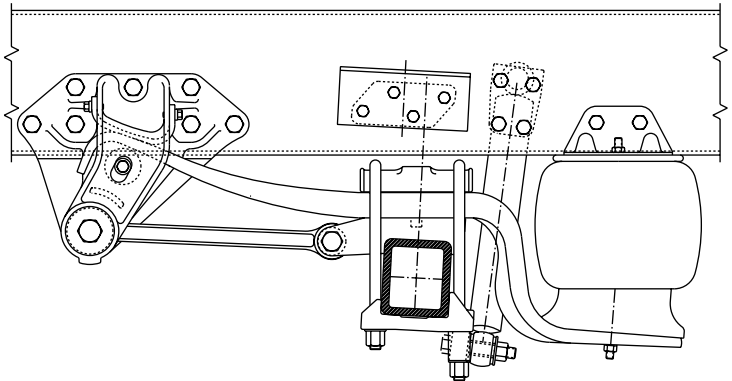


### FINAL ALIGNMENT AND INSTALLATION

31. At this point, retorque u-bolts, to 400-450 ft. lb. (545-610 NM) and torque all other loose fasteners to the values listed on the assembly drawing, and on pg. m.1. Gradually bring the torque up in steps to avoid disturbing any alignments.



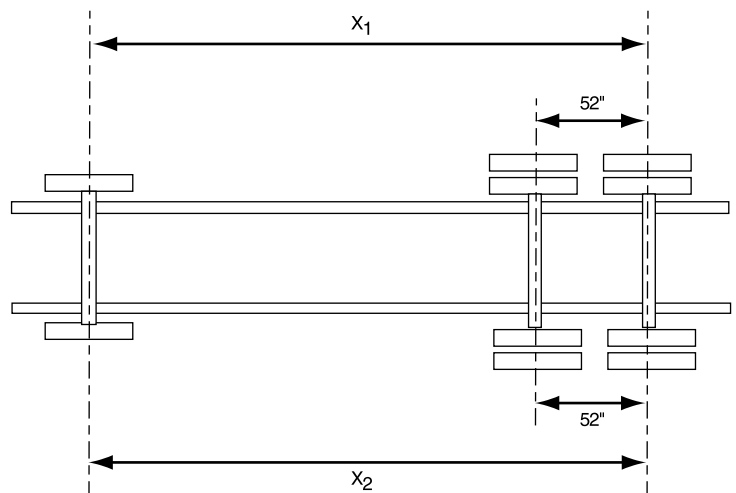
**CAUTION:** Specific torque requirements are needed.



32. With the air system operating, perform final alignment by adjusting torque arm lengths to align within 1/8" (right and left compared). Tighten the adjustable torque arm clamping fasteners. See page m.2 for more detailed alignment instructions.



**CAUTION:** Specific torque requirements are needed.









**MAINTENANCE SCHEDULE** \_\_\_\_\_ ○ m.1

**IN SERVICE SUSPENSION ALIGNMENT** \_\_\_\_\_ ○ m.2

**TROUBLE SHOOTING GUIDE** \_\_\_\_\_ ○ m.3

Air \_\_\_\_\_ ○ m.3

Height Control Valve \_\_\_\_\_ ○ m.3

Maintenance Kits \_\_\_\_\_ ○ m.3

Fasteners \_\_\_\_\_ ○ m.4

Bushings \_\_\_\_\_ ○ m.4

Rough Ride/Air Springs \_\_\_\_\_ ○ m.4

Shocks \_\_\_\_\_ ○ m.4

**DRAWING - 94204** \_\_\_\_\_ ○ m.5

**BILL OF MATERIAL** \_\_\_\_\_ ○ m.6

**TABLE OF OPTIONS** \_\_\_\_\_ ○ m.8

**TYPICAL OF OPTIONS, PARTS & KITS** \_\_\_\_\_ ○ m.9

**LIMITED WARRANTY** \_\_\_\_\_ ○ m.10

Product Installer Responsibilities \_\_\_\_\_ ○ m.10

Product Owner Responsibilities \_\_\_\_\_ ○ m.11

Warranty Claim Procedures \_\_\_\_\_ ○ m.11

## Maintenance Instructions Model 240AR

The ReycoGranning Model 240AR Air Ride Suspension by design, requires a minimum of maintenance. Suspension systems require periodic checks to assure continued, trouble-free performance.

### RECOMMENDED MAINTENANCE SCHEDULES

1. Pre-service inspection
2. First service inspection, after 1,000-3,000 miles, (1600-4,800 km).
3. PM inspections, concurrently with required annual inspection.
4. During replacement of any service parts.
5. Upon discovery of any loose components.

### TORQUE REQUIREMENTS (Verify with each inspection.)

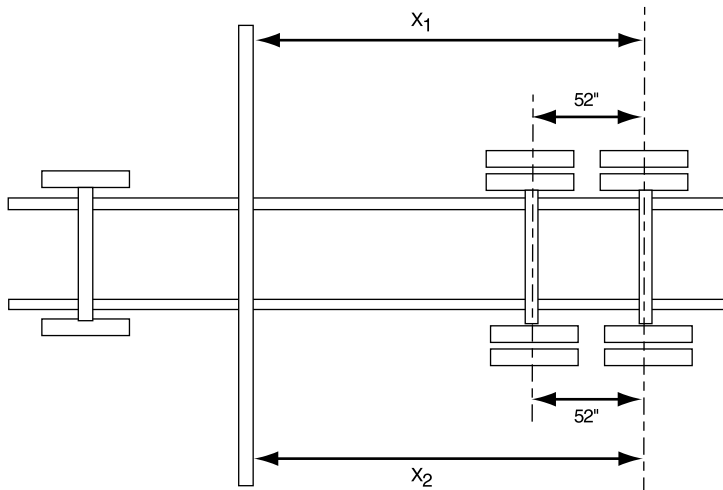
TORQUE REQUIREMENTS (Verify with each inspection.)		
Tighten 7/8" u-bolt nuts	400-425 ft lb	545-580 Nm
Tighten 3/4" shock absorber end nut	150-175 ft lb	205-240 Nm
Tighten 1" torque arm end nut, hanger end	500-525 ft lb	680-715 Nm
Tighten 7/8" torque arm end nut, seat end	400-425 ft lb	545-580 Nm
Tighten 5/8" torque arm / track rod clamp nut	125-150 ft lb	170-205 Nm
Tighten 1/2" air spring mount fasteners	25-30 ft lb	35-41 Nm
Tighten 5/8" beam retainer bolt	70-80 ft lb	95-110 Nm
Tighten 7/8" track rod end nut	400-425 ft lb	545-580 Nm
Tighten 1/4" air valve and linkage nut	5 ft lb	7 Nm

### VISUAL INSPECTION

1. Loose or missing fasteners, especially U-bolt nuts.
2. Damaged hangers or axle connection brackets.
3. Axle and spring alignment.

All torque values are with clean, dry, fasteners, and should only be verified with a quality calibrated wrench, of known accuracy. Failure to follow these recommendations could void the warranty. Failure to maintain the specified torque values and/or to replace worn parts, can cause component and/or system failure resulting in an accident with consequent injury.

ft lb = Foot - Pounds; Nm = Newton - Meters



## IN SERVICE SUSPENSION ALIGNMENT INSTRUCTIONS

Place unloaded tractor on a level floor area. Move it back and forth several times, slowly and without using brakes, to free all suspension joints.

Check front wheel with tractor brakes released. Before alignment, make certain that all beams are not binding; that u-bolts and torque arm bolts are torqued to the manufacturers specifications, and all bushings are in good condition.

**NOTE: If beams are in contact with sides of hangers, center them by adjusting length of lateral track rod(s).**

Clamp an 8' (2,438 mm) piece of straight bar stock or angle iron securely after positioning it squarely across the frame. (The use of a carpenters square is recommended to be certain the bar is square to the frame).

The cross bar should be positioned as far forward of the drive axle as room will permit. Beginning on the fixed torque arm side, measure from the bar stock to the centerline of the rear drive axle on both sides.

If the measurements,  $x_1$  and  $x_2$ , vary more than  $1/8"$  (3.2 mm), alignment adjustment should be made through the adjustable torque arm side. After aligning, tighten the  $5/8"$  (15.9 mm) adjustable torque arm clamp bolts to 125-150 ft. lb. (170-205 Nm).



**CAUTION: Specific torque requirements are needed.**

Once the rear drive axle is properly aligned, the front axle can then be aligned to the rear with the use of a standard trammel bar within  $\pm 1/16"$  (1.6 mm).

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 and the alignment rechecked, after again freeing all suspension joints by moving it back and forth several times.

Check the alignment after the first 1,000- 3,000 (1,600-4,800 kms) loaded miles of operation and during each annual inspection.

**Maintenance Instructions Model 240AR**

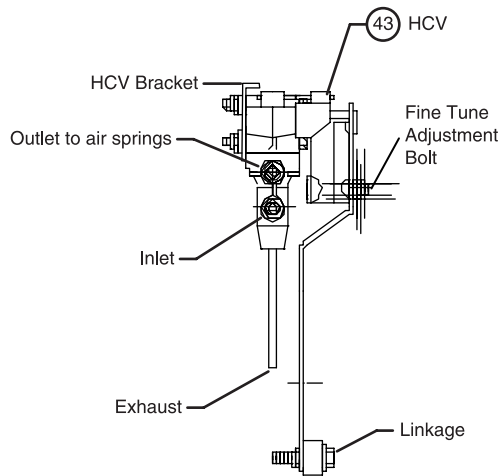
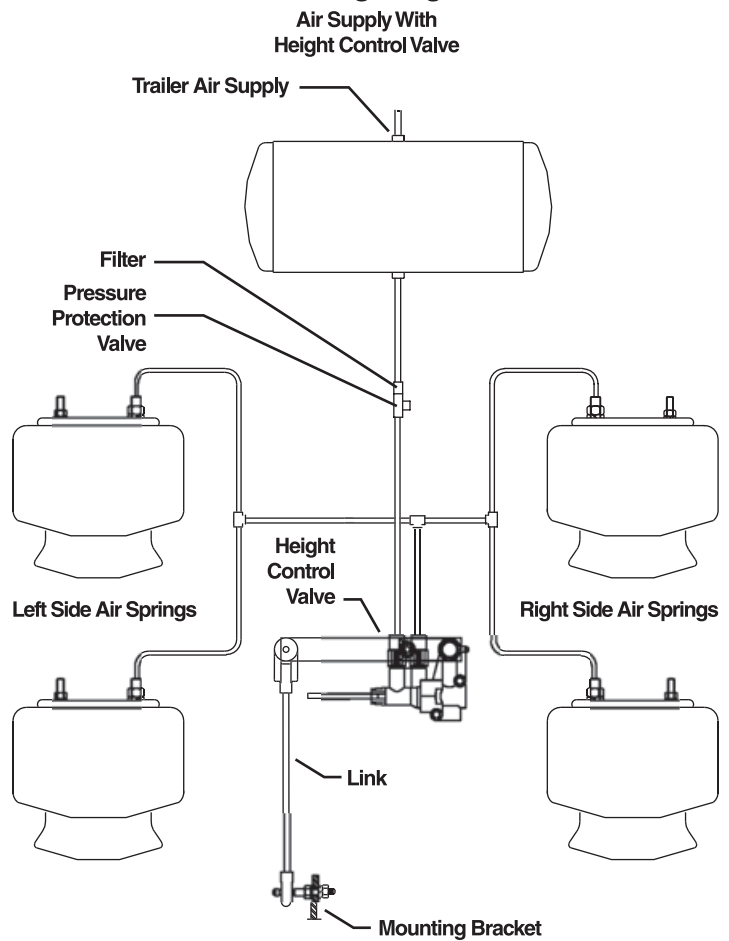
**TROUBLE SHOOTING GUIDE - AIR**

Bags won't inflate- (A) Check air supply at the height control valve. If supply is good, (B) check to see if air is going thru the valve when it is actuated. Majority of problems are found at this point. If air is going thru the valve, (C) check for blockage or a pinched airline to the air bags.

**HEIGHT CONTROL VALVE**

Always exhaust air out of the system and allow the unit to raise to the level the valve is set to maintain. This will help maintain a consistent method for the maintenance of ride height. Setting the ride height should be done with the vehicle on level ground. See pg. I.13 for adjustment procedure.

**Plumbing Diagram**



**MAINTENANCE KIT**

The following item numbers will help when maintaining parts for the model 240AR suspension.

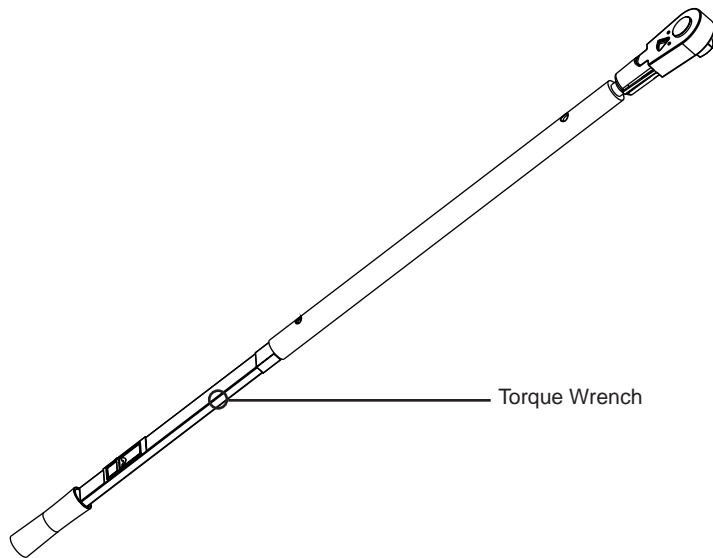
**TK15161** - Wear Pad Kit (2)

**TK21641** - Track Rod or Axle Seat Bushing Kit

**TK21640T** - Hanger Bushing Kit

**FASTENERS**

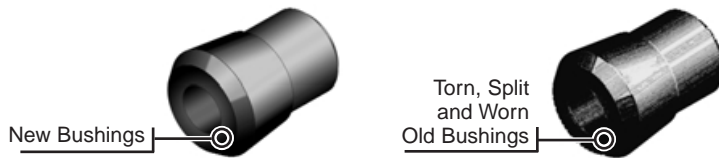
Loose fasteners need immediate attention. Check components for wear and be sure holes are not worn or egg shaped. When replacing be sure threads are clean, lubricated and not deformed; consult the maintenance section for the correct torque specification and replace any fastener which is damaged or won't stay torqued. If bolts need to be replaced be sure to use the same grade of fastener.



**CAUTION:** Specific Torque requirements are needed.

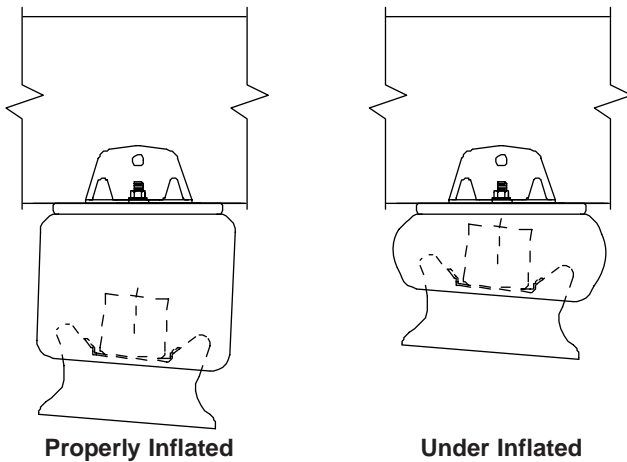
**BUSHINGS**

Inspect rubber bushings for large splits, tears and major wear. Rubber is attacked by sun, oils and greases. Replace any bushings which have the above damage.



**ROUGH RIDE**

Check the air supply to the air springs. Visually check the air springs for proper ride height. See picture at right.

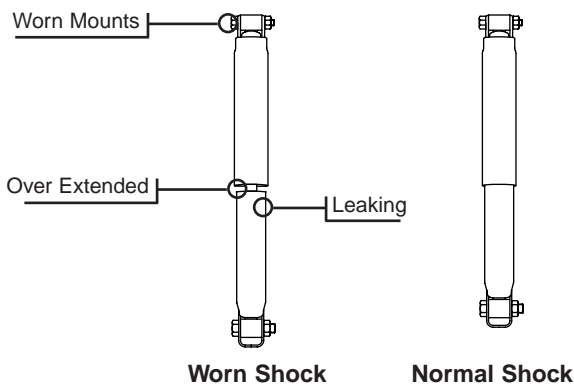


**AIR SPRINGS**

The air springs are equipped with internal bump stops for safety. However, do not operate the loaded unit on the bump stops for any extended period of time, except to move the unit to a repair facility.

**SHOCKS**

Shocks normally fail due to over extension. Check the mounting bolts to be sure no damage to the mounts has occurred. Shock replacement must be done with shocks recommended by the suspension or shock manufacturer. Shocks which are leaking badly need to be replaced immediately. A small amount of seepage, however, is not necessarily a sign of a defective shock absorber.







ITEM	PART NUMBER	DRAWING NO.	SIN.	TAN.	DESCRIPTION
1	2098101	93448	1	2	Hanger Assembly (LH)
2	2098201	93448	1	2	Hanger Assembly (RH)
3	2388201	62158	2	4	Bolt, 1"-14UNF x7
4	T1724	93403	4	8	Flat Washer, 1-1/16"
5	2123801	94105	4	8	Bushing
6	T5495	63153	2	4	Lock Nut, 1"-14 UNF
7	2012101	93020	1	2	Torque Arm, Rigid
8	2013801	92268	1	2	Torque Arm, Adjustable
9	1003301	72003	4	8	Bolt 7/8"-9 UNC x 5-1/2"
10	1009201	72044	4	8	Lock Nut, 7/8"
11	0972901	70115	Ref		Bushing, Inc. w/Torque Arm
12	1289101	79170	2	4	Bolt, 5/8"-18 UNF x 4-1/2" Gr. 8
13	T2131	62159	2	4	Lock Washer, 5/8"
14	1367708	80110	2	4	Rubber Roller, 2-1/2"
15	1563701	79027	2	2	U-Bolt, 15" for 8-1/2" Ride Height
16	1628901	79027	2	2	U-Bolt, 12-1/2" for 8-1/2" Ride Height
17	0867701	68158	2	4	Top Plate
18	19876K1	92096	1	2	Spring Beam, RH
19	19877K1	92096	1	2	Spring Beam, LH
20	1681009	94031	Ref		Spring Liner, Inc. w/Spring Beam
21	2068801	93281	8	16	Hi Nut, 7/8"-14 UNF Gr. 8
22	See Table	N/A	1	1	Bottom Plate, Front Left
23	"	"	1	1	Bottom Plate, Front Right
24	"	"	1	1	Axle Seat, Front Left
25	"	"	1	1	Axle Seat, Front Right
26	"	"	0	1	Axle Seat, Rear Left (Tandem)
27	"	"	0	1	Axle Seat, Rear Right (Tandem)
28	"	"	0	1	Bottom Plate, Rear Left (Tandem)
29	"	"	0	1	Bottom Plate, Rear Right (Tandem)
30	1628901	79027	0	2	U-Bolt, 12-1/2" for 8-1/2" Ride Ht. (Tandem)
31	1563701	79027	0	2	U-Bolt, 15" for 8-1/2" Ride Ht. (Tandem)
32	2014201	79167	2	4	Air Spring, Std.
32A	2012401	79167			Air Spring, Opt.
33	2012301	None	Ref.		Bracket, Inc. w/Air Spring
34A	2012601	79168			Shock Absorber, 1.75", Premium
34B	2012901	79168			Shock Absorber, 1.62", Heavy Duty
35	2015501	93432	1	2	Bracket, Lower Shock, LH

} TK21640T

Maintenance Instructions Model 240AR

ITEM	PART NUMBER	DRAWING NO.	SIN.	TAN.	DESCRIPTION
36	2015401	93432	1	2	Bracket, Lower Shock, RH
37A	2018501	93012	2	4	Bracket, Upper Shock, 8-1/2" Mounting Ht.
37B	2018601	93914	2	4	Bracket, Upper Shock, 10" Mounting Ht.
38	1434401	93281	4	8	Lock Nut, 3/4"
39	1289502	79173	8	16	Compression Washer, 3/4"
40	1288802	79169	Ref		Sleeve, 1.87" Inc. w/Shock Absorber
41	T7292	71078	8	16	Hardened Washer, 7/8"
42	1641801	93281	2	4	Nut, 1/2"-13 UNC
43	2334808	97154 #4	1	1	Height Control Valve Assembly
44	1291101	79170	2	2	Bolt, 1/4"-20 UNC x 1", Gr. 2
45	1291201	79171	2	2	Lock Nut, 1/4"-20 UNC, Gr. 5
46	1291301	93403	2	2	Washer, 1/4"
47	2094501	79170	1	1	Cap Screw 3/8" x 1-1/2"
48	2106801	93282	1	1	Lock Nut, 3/8" UNC
49	1475001	92928	1	1	Angle - Link
50	2015601	92282	1	1	Lower Height Control Valve Bracket
51	1735401	62158	2	4	Bolt, 3/4"-16 UNF x 4-1/2", Gr. 8
52	2051301	93160	2	4	Spacer, 1-1/2" for 10-1/2" Mounting Ht.
53	2194001	87109	1	1	Track Rod - 23-1/2"
54	2034601	87109	0	1	Track Rod - 21"
55	1827301	89479	1	2	Frame Bracket
56A	1825102	89464	1	1	Axle Bracket, Front Axle
56B	2164601	94281	0	1	Axle Bracket, Rear Axle (Tandem)
57	2137001	94177	1	2	Frame Plate, Track Rod
58	1291503	79189	1	1	Protection Valve and Filter

<b>Pinion Angle</b>	<b>Axle Seat Front Left</b>	<b>Axle Seat Front Right</b>	<b>Axle Seat Rear Left</b>	<b>Axle Seat Rear Right</b>
3°	1988101	1988101		
10.5°			1988401	1988401
3°	1988101	1988101		
12°			2081201	2081201
2°	2080801	2080801		
13°			2081301	2081301

\*Typical, most used axle seats, for Eaton 404, or RW40-145.

<b>Pinion Angle</b>	<b>Bottom Plate Front Left</b>	<b>Bottom Plate Front Right</b>	<b>Bottom Plate Rear Left</b>	<b>Bottom Plate Rear Right</b>
3°	1878105	1878105		
10.5°			1878405	1878405
3°	1878105	1878105		
12°			1878405	1878405
2°	1897705	1897705		
13°			1878405	1878405

\*These are typical, most used. There are many more options. Consult Tuthill Transport Technologies Customer Service at 1-800-753-0050

<b>Mounting Height</b>	<b>U-Bolt Front of Axle</b>	<b>U-Bolt Rear of Axle</b>	<b>Upper Shock Bracket</b>
8-1/2"	1628901	1563701	2018501
10	1624601	1576401	2018601

Maintenance Instructions Model 240AR

<b>8-1/2" Mounting Height Kits</b>			<b>10" Mounting Height Kits</b>		
Qty.	Description (for Tandem Axle)		Qty.	Description (for Tandem Axle)	
2	TK21757	Hardware	2	TK21757	Hardware
2	TK21755	Frame Mounting	2	TK21756	Frame Mounting
1	TK20429	Seat 3° and 10°	1	TK20428	Seat 3° and 10°
2	19876K1	Spring Beam Right	2	19876K1	Spring Beam Right
2	19877K1	Spring Beam Left	2	18977K1	Spring Beam Left
2	TK20336	Shock/Hardware	2	TK20336	Shock/Hardware
2	TK21637	Air Spring - Std.	2	TK21637	Air Spring - Std.
1	TK22426	Track Rod	1	TK22426	Track Rod
1	TK23842	Height Control Valve	1	TK23842	Height Control Valve
<b>Optional Packages 8-1/2" Mounting Height</b>			<b>Optional Packages 10" Mounting Height</b>		
2	TK20909	Heavy Duty Shock	2	TK20909	Heavy Duty Shock
2	TK21638	Premium Air spring	2	TK21638	Premium Air spring
1	TK21515	Seat 2° and 13°	1	TK21625	Seat Kit 5" Round Tag Axle
			1	TK21623	Seat Kit 4° Drive Axle
			1	TK21699	Seat 3° and 12°
<b>8-1/2" Mounting Height Kits</b>			<b>Reference Only</b>  2012901 Heavy Duty Shocks 1.62" Bore Gabriel 2012601 Premium Shocks 1.75" Bore Monroe 2014201 Standard Air Spring F.R.P. Base 2012401 Premium Air Spring Aluminum Base		
Qty.	Description (for Single Axle)				
1	TK21757	Hardware			
1	TK21755	Frame Mounting			
1	TK20332	Axle Seat, 3°, Typ.			
1	19876K1	Spring Beam, RH			
1	19877K1	Spring Beam, LH			
1	TK20336	Shock/Hardware			
1	TK21637	Air Spring			
1	TK22427	Track Rod			
1	TK23842	Height Control Valve			



## Maintenance Instructions Model 240AR

Tuthill Transport Technologies (TTT) (The Company) warrants ReycoGranning suspension products manufactured by it to be free from defect in material and workmanship which occur under normal use and service subject to the following conditions and limitations.

Powered Vehicle suspension models: 240AR.

1. Coverage is per below in months or in miles depending upon which occurs first. \*

<b>MONTHS</b>	<b>MILEAGE</b>	<b>COVERAGE PROVIDED</b>
0-12	0-100,000	Cost of Parts and Labor Allowance
13-60	100,001-500,000	100% Cost of Parts Only

\*Products designed and used for off-road have six months or 50,000-mile coverage only.

2. This warranty shall not apply and no warranty of any kind shall exist as to any product which has been subject to abuse, misuse, neglect, misapplication or accident of any type or cause or which has been repaired, replaced, substituted or used with parts other than genuine parts of The Company or has been altered by anyone.

3. The Company shall not be liable for the loss of use of any product, loss of time, inconvenience, commercial loss or any other indirect consequential, special or incidental damages due to breach of the above warranty of any other failure to comply with the terms of the contract between The Company and The Buyer, The Company makes no warranties of any kind, express or implied, other than as herein expressly provided, and specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

4. With respect to parts manufactured by others, The Company shall have no duty except to assign to the buyer any claim which The Company may have against the manufacturer thereof. (TTT warrants purchased components to the same extent as the Warranty extended by the original manufacturer to TTT). This warranty does not apply to the normal "wearing out" of rubber bushings, shock absorbers, etc., or sacrificial wear areas such as springs to hangers.

5. The determination of the reasonable cost of labor as required in paragraph one (1), shall be made in accordance with the TTT shop standard times. Maximum hourly allotment for labor cost is determined by TTT annually. Shop standard times and the maximum hourly allotment for labor cost may be revised periodically at the sole discretion of The Company.

6. The Company is not responsible for damages from improper installation or operations beyond design capability. The Company in its sole discretion shall determine whether or not any product is defective or otherwise covered by this warranty. No action for breach of this warranty may be commenced more than one year after the occurrence of alleged breach. This warranty is not transferable.

7. Retention of possession or use of the product for the warranty period shall constitute an unconditional acceptance thereof and fulfillment of all warranties and obligations of TTT and no assistance rendered by The Company in operating the product or remedying any defect either before or after that time shall operate to extend the warranty period.

### PRODUCT INSTALLER RESPONSIBILITIES

8. Installer is responsible for installing the product in accordance with The Company specifications and installation instructions.

Installer is responsible for providing proper vehicle components and attachments as well as required or necessary clearance for suspension components, axles, wheels, tires, and other vehicle components to ensure a safe and sound installation and operation.

Installer is responsible for advising the owner of proper use, service and maintenance required by the product and for supplying maintenance and other instruction as readily available from The Company.

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## **PRODUCT OWNER RESPONSIBILITIES**

9. Owner is solely responsible for pre-operation inspection, periodic inspections, maintenance, and use of the product as specified in the particular TTT instructions available by product model, except as provided in this warranty, and for maintenance of other vehicle components. Of particular importance is the re-torque of fasteners including axle u-bolts, torque rod bolts and track rod bolts. This re-torque must be performed within 90 days of the suspension being put in service. Owner is responsible for "down time" expenses, cargo damage, and all business costs and losses resulting from a warrantable failure.

## **WARRANTY CLAIM PROCEDURES**

10. For a claim to be considered it must contain adequate documentation which states vehicle mileage, starting date, product model, where and how used, and a TTT Return Material Authorization Number. This claim must be made within six months of failure of the component. Such part or parts must be returned to TTT, transportation charges paid. TTT reserves the right to inspect any returned components to determine cause of defects.

# The Road To Success Is Quality Customer Care...



**1-800-753-0050 (USA)**

**1-800-811-4011 (CAN)**

**1-417-466-1040 (Intn'l)**

**[www.reycogranning.com](http://www.reycogranning.com)**

***Certified to the ISO 9001 Standard***

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**Fax (219) 279-2390**

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