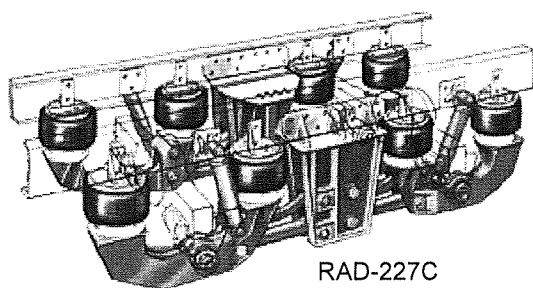


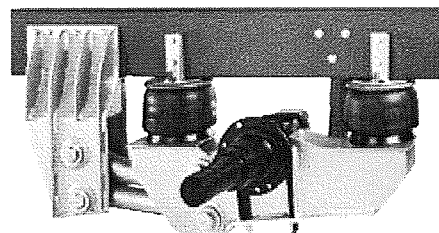


Service Manual *for* Air-Ride 227 Series

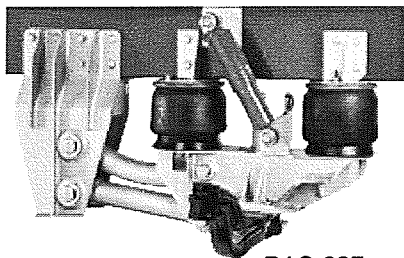
MODELS: RAD-227, RAD-227C,
RAD-227WB AND RAS-227



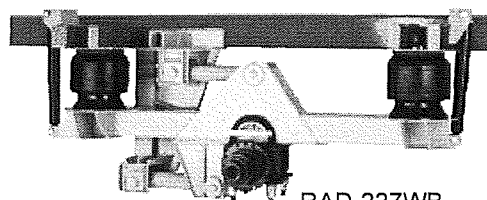
RAD-227C
100% Air-Ride
Cap. 34,000 - 48,000 lbs.



RAD-227
Cap. 10,000 - 25,000 lbs.



RAS-227
Cap. 7,000 - 15,000 lbs.



RAD-227WB
"Wide Base" 100% Air-Ride
Cap. 10,000 - 25,000 lbs.

Revised 11/2006

Ridewell Corporation ♦ P.O. Box 4586 ♦ Springfield, MO 65808
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SUSPENSION IDENTIFICATION: Ridewell Suspensions are identified by a metal tag welded to the left-hand hanger that indicates part number, model number, capacity and date of manufacture. Consult your vehicle manufacturer for your correct mounting height.

PARTS: For optimum suspension performance, order only Ridewell parts. Replacement parts for Model RAS-227, RAD-227, RAD-227C and RAD-227WB are shown in Section 9 of this manual.

SALES, SERVICE & WARRANTY: If you need assistance regarding this product, please contact us and we will be glad to help you.

Mailing Address

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BASIC OPERATION

When properly maintained and operated within design limits, Ridewell's **RAD-227** (Drive Axle), **RAS-227** (Steer Axle) and **RAD-227WB** (Drive Axle Wide Base) will provide many years of trouble-free service. The **RAD-227** series suspensions have several unique features which keep maintenance to a minimum and performance at a maximum.

- 1.) 100% ride on air.
- 2.) Parallelogram design promotes road stability allowing axle movement with no change in steering or drive line angle.
- 3.) A patented eccentric bolt and/or screw rod feature allows for simple, positive axle alignment.
- 4.) Rubber bushed pivot points require no lubrication.
- 5.) A self-contained shock absorber that allows precise installation and insures proper shock and air spring tolerance.

Air Springs & Height Control Valve

Your air ride suspension is designed to dampen the shocks transmitted from road surface to vehicle frame through the **air springs**. The **height control valve** is used to maintain the volume of air in the air springs. You may use a **single valve system** to maintain **ride height** only or use a **double valve system** to maintain **ride height** and **level** the vehicle. Please check with your vehicle manufacturer for your suspension's ride height.

IMPORTANT NOTE:

The air springs used on all Model 227 suspensions have internal rubber bumpers designed to carry the vehicle load should air spring failure or sudden loss of air supply occur. Should an air spring fail on a **single height control valve system**, all of the air springs will deflate allowing the suspension to operate on internal bumpers until repairs can be made. Should an air spring fail on a **double height control or leveling valve system**, the springs would deflate on one side only. Simply deflate the other side by removing the vertical linkage rod from the valve and rotate the horizontal lever arms **down** to fully exhaust the springs.

Air Pressure & Brake Protection Valve

This air-ride suspension is dependent on air pressure from the vehicle supply system. Air pressure must be maintained above 65 p.s.i. before operation. **A brake protection valve must be installed in the air system to prevent air loss below 65 p.s.i. and to insure safe air brake pressure in the event of air loss in the suspension system.**

Shock Absorbers

The suspension is equipped with **shock absorbers** to dampen dynamic frequencies. The shock absorber is very important and must be maintained to insure smooth operation.

OPERATIONAL INSPECTION

1. Inspect all fasteners at hanger to frame connections.
2. Build and maintain vehicle air pressure to 65 p.s.i. minimum.
3. Inspect air springs. Make sure all springs inflate and do not leak. Soap test if leaking is suspected.
4. Check all air connections for leaks and tighten if needed.
5. Inspect air lines. They should be free of sharp edge contact to prevent premature failure.
6. Check for proper ride height. If incorrect, adjust per **Section 7** of this manual.
7. Cross members must be installed between hangers.

PREVENTATIVE MAINTENANCE

DAILY

Check for loose or broken parts on or around suspension to prevent any serious problems from occurring.

EVERY 30 DAYS

Check clearances around all moving suspension parts, air springs, tires and shock absorbers. Any signs of interference should be immediately corrected.

Visually inspect axle beam bolted connection to make sure bolts are tight and there are no signs of wear.

EVERY 90 DAYS & WITH ANNUAL INSPECTION

Inspect items required in daily and 30-day inspections.

Inspect all welded connections.

Inspect all pivot and clamping connections such as the suspension pivots and shock mounts.

DO NOT PAINT THIS STICKER

RIDEWELL SUSPENSION TORQUE CHART		
BOLT SIZE	LUBRICATED THREADS	
1 1/2"		1,100 FT. LB. (1,490 N·m)
1 1/4"		1,000 FT. LB. (1,020 N·m)
1 1/8"		500 FT. LB. (680 N·m)
1"	GRADE 5	360 FT. LB. (490 N·m)
1"	GRADE 8	460 FT. LB. (625 N·m)
7/8"		350 FT. LB. (475 N·m)
3/4"	GRADE 5	160 FT. LB. (220 N·m)
3/4"	GRADE 8	190 FT. LB. (260 N·m)
5/8"		100 FT. LB. (135 N·m)
*3/4"		50 FT. LB. (70 N·m)
*1/2"		25 FT. LB. (35 N·m)
* AIR SPRING CONNECTION ONLY		
After suspension has been in operation for approximately 6,000 miles (10,000 KLMS), all fasteners must be re-tightened to specified torque. Repeat every 50,000 miles (80,000 KLMS).		
DO NOT OVER TORQUE!		
990301		

BASIC TROUBLESHOOTING

NOTE: Do not check system until minimum 65 p.s.i. air pressure is built and maintained.

1. **All Air Springs Flat or Slow to Fill - Check the following:**
 - a. Air pressure
 - b. Air brake protection valve
 - c. Height control valve

2. **Air Springs Flat on One Side of Suspension - Check the following:**
 - a. Air springs
 - b. Height control valve
 - c. Height control valve setting

3. **When Vehicle is Parked Suspension Deflates Rapidly - Check the following:**
 - a. Air lines
 - b. Air springs

4. **Vehicle Pulls to Left or Right - Check the following:**
 - a. Tire pressure
 - b. Axle alignment
 - c. Suspension bushings

5. **Vehicle has Excessive Sway - Check the following:**
 - a. Air springs firmness
 - b. Sway bar bushings
 - c. Torque beam bushings

AXLE ALIGNMENT PROCEDURES

Procedure 1

For suspensions with eccentric bolts only:

1. Loosen all 1 ¼" eccentric bolt nuts.
2. Remove anti-turn washers from head of eccentric bolts.
3. Align axle by turning eccentric arrow (on bolt head) on the lower most torque beam to the direction the axle needs to move.
4. Turn the upper eccentric arrow to the same position of the lower arrow. Check alignment and repeat as necessary.
5. After alignment is achieved, install anti-turn washers to eccentric bolt heads.
6. Tighten 1 ¼" nuts to **1,000 ft. lbs. torque.**

Procedure 2

For suspensions with threaded rod type adjustable torque arms only:

1. Loosen cast clamp bolts on threaded torque arms.
2. Turn lower most torque arm threaded rod either clockwise or counter-clockwise to lengthen or shorten torque rod as required.
3. Measure new length of lower torque arm using center of mounting bolts as reference.
4. Adjust upper torque arm to match lower arm length.
5. Check alignment and repeat as necessary.
6. Tighten cast clamps on adjustable torque arm to **100 ft. lbs. torque.**

Procedure 3

For suspensions with eccentric bolt adjustment on lower torque beam and an upper threaded rod type type adjustable torque arm:

1. Loosen all 1 ¼" eccentric bolt nut.
2. Remove anti-turn washer from eccentric bolt head.
3. Align axle by turning eccentric bolt arrow (on bolt head) to the direction the axle needs to move.
4. Loosen cast clamps on torque arm and adjust the upper threaded rod type torque arm approximately the same distance the axle has moved. Check alignment and repeat as necessary.
5. After alignment is achieved, install anti-turn washer to eccentric bolt head.
6. Tighten 1 ¼" nut to **1,000 ft. lbs. torque.**
7. Tighten cast clamps on adjustable torque arm to **100 ft. lbs. torque.**

BUSHING REPLACEMENT PROCEDURES

Procedure 1

Replacement of Torque Beam Bushings:

1. Lift frame of vehicle with proper jacks or stands and exhaust air from suspension system.
2. Remove tires from axle.
3. Block axle with proper jacks or stands.
4. Remove anti-turn washers from heads of eccentric bolts. Remove weld from clamp block.
5. Remove 1 ¼" nuts on eccentric bolts. Turn eccentric bolt arrow to 12 o'clock position and tap out **(Caution: Do Not Damage Threads)**.
6. Remove 1 ½" cap screws from lower beam assembly.
7. Remove torque beams from suspension and press bushings out in hydraulic press.
8. Using an approved rubber lubricant, press in new bushings. Make sure bushings are centered in torque beam sleeve.
9. Install torque beams into suspension.
10. Move axle up or down to proper ride height and torque 1 ½" cap screws to **1,100 ft.lbs.**
11. Re-install eccentric bolts and the 1 ¼" nuts.
12. Align axle (see Section 5).
13. Install anti-turn washers after alignment.
14. Torque 1 ¼" nuts to **1,000 ft. lbs.**

Procedure 2

Replacement of Adjustable Torque Arms or Sway Bar Bushings:

1. Remove 1" bolts from torque arms or sway bar.
2. Remove torque arms or sway bar, and using an approved rubber lubricant, re-bush making sure bushings are centered in sleeves.
3. Install torque arms or sway bar. Tighten 1" cap screws to **360 ft. lbs. torque.**
4. Align axle if required (see Section 5).

RIDE HEIGHT/HEIGHT CONTROL VALVE ADJUSTMENT

Operation

As load is applied, the horizontal actuating lever arm moves from **neutral** position to **up** (intake) position. As load is removed, the horizontal actuating lever arm moves from neutral position to down (exhaust) position. The valve opens and air is allowed to exhaust from air springs bringing the horizontal actuating lever back to a neutral position. Optimum performance is achieved when valve is adjusted accurately to the suspension by increasing or decreasing horizontal lever arm length to a point where valve and lever arm approach 45 degrees maximum, up or down from neutral position.

Adjustment

1. With vehicle on level ground, build and maintain supply air pressure in excess of 65 p.s.i.
2. Loosen vertical link hose clamp to allow **P** shaped rubber connector to slide freely up and down vertical link.
3. Rotate horizontal lever arm down to exhaust air springs or rotate up to inflate springs until proper ride height is achieved.
4. Tighten hose clamp on vertical link connector while holding horizontal lever arms in neutral position.
5. **TEST:** Disconnect vertical link rod grommet from pin bracket at axle. Rotate horizontal lever arm **down** to exhaust air springs about halfway. Rotate horizontal lever arm **up** until grommet is back to pin bracket level. Air springs should re-inflate to ride level height.
6. Re-connect grommet to pin. Check to see if air springs are of equal firmness. Make sure vertical link rod **extends completely through** the rubber **P** connector at all times.

SHOCK ADJUSTMENT PROCEDURES

If your suspension is equipped with Koni Adjustable Shock Absorbers and require adjustment, proceed as follows:

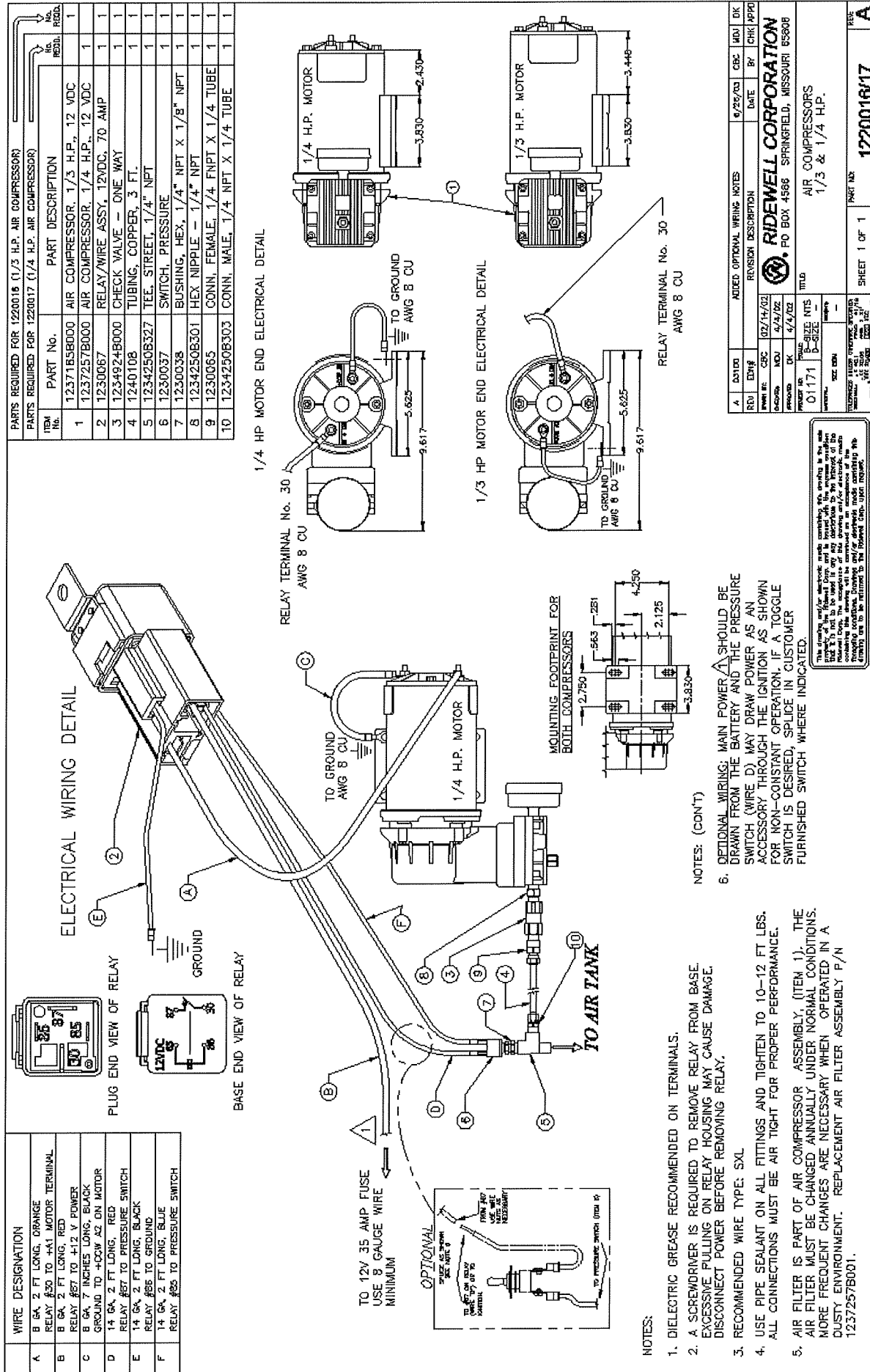
NOTE: Read this entire procedure before starting.

1. Remove the shock absorber from the vehicle and hold it vertically with the lower eye in a vice.
2. Press top of shock down while turning **gently** counter-clockwise until you feel the cams of the adjusting nut engage in the recesses of the front valve assembly. When engagement is made, turn top of shock 2 **half** turns clockwise and stop. Adjustment is complete.
3. Pull top of shock up about ½" and remove from vice.
4. Re-install on vehicle.

IMPORTANT NOTE:

Shock absorbers must be adjusted in pairs. There is a maximum of 5 half turns clockwise adjustment on your shock absorber. Do not use excessive force when making adjustments. If you are having difficulty, please contact your nearest Ridewell representative.

PARTS ILLUSTRATIONS

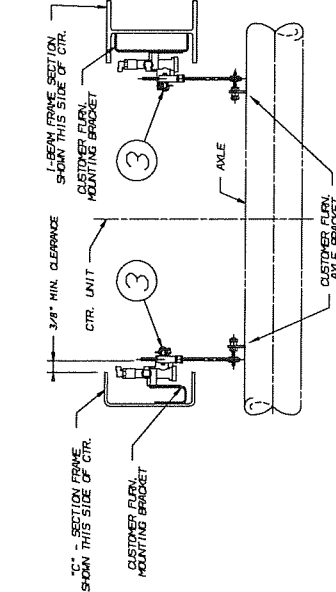
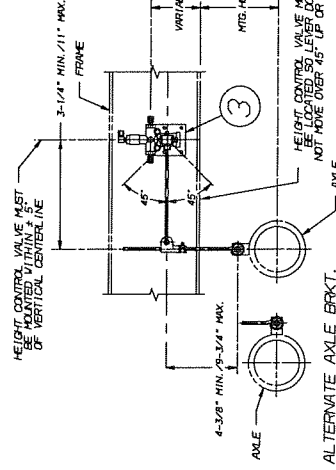
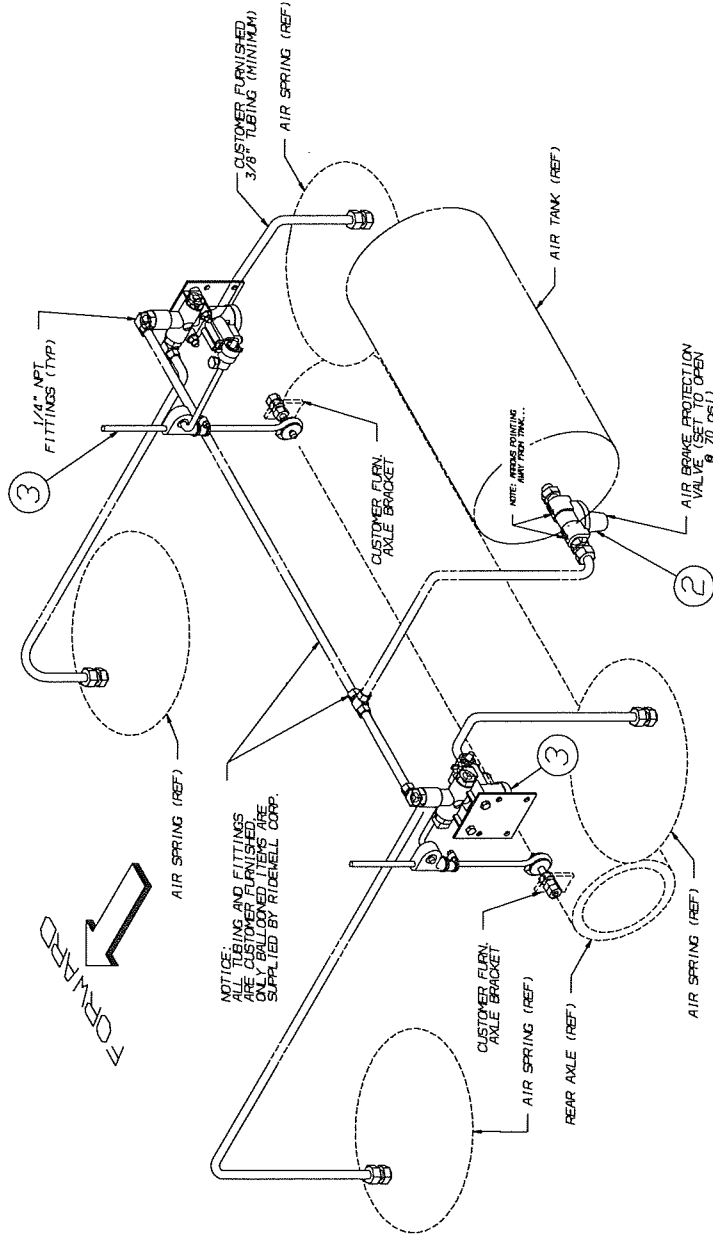


ITEM LET	PART NO.	DESCRIPTION	NO. REV'D
1	OMITTED	OMITTED (PER REV. B)	
2	1244761B000	RES. R. PRCT'N VLV. W/SCREEN	1
3	6240605	RM. HCV W/LINK & MTG. SET	2

NOTE 1: FOR ADDITIONAL PARTS BREAK-DOWN ON ITEM NO. "3", SEE PART NO. 6240605...

NOTE 2: FOR TANDEM AXLE APPLICATIONS MOUNT HEIGHT CONTROL VALVES ON THE REAR AXLE UNLESS OTHERWISE SPECIFIED...

NOTE 3: HEIGHT CONTROL VALVES MAY BE MOUNTED "TO REAR" OR "TO FRONT" AS SPACE PERMITS. AIR TANK MAY BE LOCATED TO SUIT...



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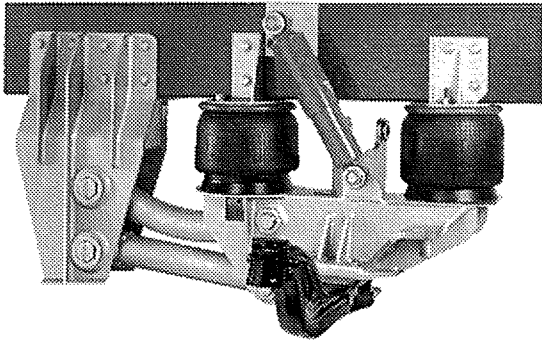
D	00169	CHGD. REV. TO SHOW 70 PSI	4/19/01	03/AF	MJ	DK
3	00123	ROTATED ES SHAFT BOLT COW 90 DEGS. ON ITEM 3	6/14/00	CBC		
B	ECN 1122	ITEM 3 WAS 1247423B005	11/3/98	JMK		
		GEN. REV. TO DWG. OMITTED "A", "B" WAS 1244761B000 & "C" TO REV. "C"	8/4/93	BM		
A		UPGRADED REVISION LEVEL OF "C" TO REV. "C"	10/25/91	BM		
REV	PROJECT	REVISION DESCRIPTION	DATE	BY	CHK	APPD
DRAWN BY	BM		7/13/89			
CHECKED						
APPROVED						
PRODUCT NO.						
MATERIAL						
SEE BOM						
REPORT						
SCALE						
B-SIZE: NTS						
D-SIZE: REPORT						
REVISIONS						
REVISION NO.						
DATE						
BY						
CHK						
APPD						

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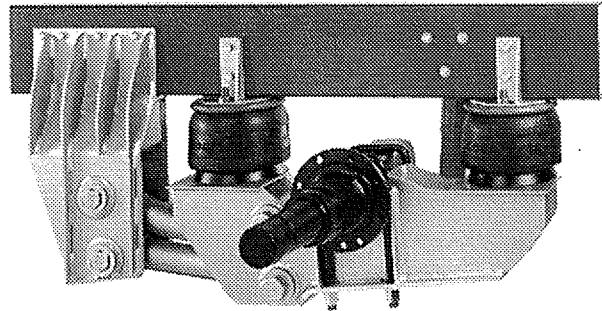
TITLE: AIR CONTROL KIT - W/ DUAL RIDEWELL AUTOMATIC HEIGHT CONTROL VALVES - FOR AIR RIDE SUSPENSIONS W/ AIR BRAKE AXLES

SHEET 1 OF 1 PART NO: 1207423C200 REV: D

RAS-227 for Steer Axle and RAD-227 for Drive Axle

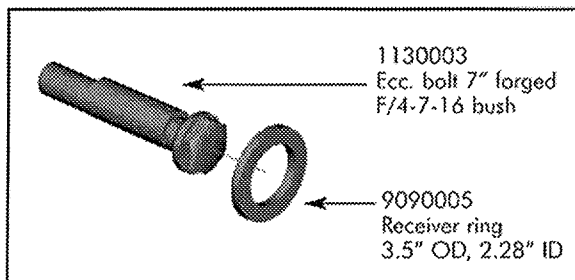


RAS-227 Parallelogram Designed Steer Axle Suspension; 7,000 - 15,000 lb. cap.



RAD-227 Parallelogram Designed Drive Axle Suspension; 10,000 - 25,000 lb. cap.

Common replacement parts are shown below. For air springs, hangers and torque beams, refer to your specific installation drawing.



NOTE: This new style eccentric bolt replaces previous style with square head

