



Innovation in Mobility

Activan® **TX**

Accessibility With Style™

for

Caltrans

Service/Operator Manual

This RICON product must be serviced only by authorized RICON service agents.

The owner must refer to this manual for operating instructions, then retain it for future reference by authorized RICON service agents who perform service and repairs.

This manual contains information about the RICON *ACTIVAN TX* features. It is not intended to replace, but rather to supplement the vehicle manufacturers' Owner's Manual. For information or instructions regarding non-RICON features, refer to manufacturers' Owner's Manual.

Customer Name:	_____
Installing Dealer:	_____
Date Installed:	_____
Serial Number:	_____

REVISION RECORD

REV.	PAGE(S)	DESCRIPTION OF CHANGE	ECR/ECO
32DACTCT .E 08/01/99 tentative	All	Change "dealer" to "service agent"	002109/35 57
	1-1	Delete Canadian product support address.	
	1-4 to 1-5	Renewed figures of front seats and ramp.	
	1-6	Revised figures to show new middle seat.	
	2-4 to 2-8	Revised figures and text that apply to new middle seat.	
	3-1	Revised first aid kit figure.	
	5-10	Revised air exhausting method.	
	6-6 to 6-12	Revised figures and updated parts lists.	
END OF LIST			

TABLE OF CONTENTS

PAGE

I. INTRODUCTION	1-1
RICON [®] ACTIVAN [®] TX LIMITED WARRANTY	1-2
GENERAL SAFETY PRECAUTIONS	1-3
ACTIVAN [®] TX FEATURES	1-4
• REMOVABLE FRONT PASSENGER SEAT	1-4
• FOLDING RAMP	1-4
• REMOVABLE REAR SEAT	1-5
• REAR STORAGE BIN AND SPARE TIRE MOUNT	1-5
• Q'STRAIN [®] WHEELCHAIR & OCCUPANT RESTRAINT SYSTEM, TRIANGLE FLARE KIT, FIRE EXTINGUISHER AND FIRST AID KIT	1-5
• REAR DOOR EMERGENCY RELEASE	1-5
• BACKUP ALARM	1-5
• OPTIONAL FOLDAWAY MIDDLE SEAT	1-6
II. OPERATING INSTRUCTIONS	2-1
A. SAFETY PRECAUTIONS	2-1
B. DAILY SAFETY CHECK	2-2
C. CONTROLS AND INDICATORS	2-2
1. DASHBOARD INDICATORS	2-2
2. REAR DOOR EMERGENCY RELEASE	2-2
3. BACK-UP ALARM	2-2
4. ELECTRICAL CIRCUIT BREAKERS	2-2
D. ACTIVAN TX OPERATION	2-3
1. FOLDING RAMP	2-3
2. REMOVABLE FRONT PASSENGER SEAT	2-5
3. REMOVABLE REAR SEAT	2-6
4. OPTIONAL FOLDAWAY MIDDLE SEAT	2-7
III. EMERGENCY INFORMATION	3-1
A. AIR SUSPENSION MANUAL FILL VALVE	3-1
B. REAR DOOR EMERGENCY RELEASE	3-1
C. SPARE TIRE, FIRST AID KIT, FIRE EXTINGUISHER AND TRIANGLE FLARE KIT	3-1

1. SPARE TIRE	3-2
2. FIRE EXTINGUISHER	3-3
3. TRIANGLE FLARE KIT	3-3
4. FIRST AID KIT	3-3
D. TOWING PRECAUTIONS	3-3
E. JACKING/HOISTING VEHICLE	3-3
IV. MAINTENANCE	4-1
FLOOR PANEL PRECAUTION	4-1
B. MAINTENANCE SCHEDULE	4-1
C. ELECTRICAL WIRING DIAGRAM	4-3
1. ELECTRICAL WIRING DIAGRAM LEGEND	4-3
2. WIRING DIAGRAMS	4-3
D. AIR SUSPENSION CONTROL DIAGRAMS	4-6
E. TROUBLESHOOTING GUIDE	4-8
V. MAJOR SYSTEMS REPAIR	5-1
A. GENERAL SAFETY PRECAUTIONS AND WARNINGS	5-1
B. LOAD LEVELING AIR SUSPENSION	5-1
1. LEVELING CONTROLLER	5-2
2. COMPRESSOR ASSEMBLY FOR VEHICLE PRODUCTION DATES FROM 08/25/97 AND ONWARD	5-3
3. PNEUMATIC CONTROL ASSEMBLY FOR VEHICLE PRODUCTION DATES FROM 08/25/97 AND ONWARD	5-6
4. HEIGHT SENSOR	5-10
5. AIR BAGS	5-12
VI. PARTS DIAGRAMS AND LISTS	6-1

LIST OF FIGURES	PAGE
FIGURE [1-1]: REMOVABLE FRONT SEAT	1-4
FIGURE [1-2]: SEAT LOCKED	1-4
FIGURE [1-3]: RAMP STOWED	1-4
FIGURE [1-4]: RAMP DEPLOYED	1-4
FIGURE [1-5]: RAMP PIVOTED OUT	1-5
FIGURE [1-6]: REAR SEAT LATCHES	1-5

FIGURE [1-7]:	VEHICLE CARGO AREA	1-5
FIGURE [1-8]:	MIDDLE SEAT DOWN	1-6
FIGURE [1-9]:	MIDDLE SEAT UP	1-6
FIGURE [2-1]:	SLIDING DOOR AJAR INDICATOR	2-2
FIGURE [2-2]:	AIR SUSPENSION LOW-PRESSURE INDICATOR	2-2
FIGURE [2-3]:	REAR DOOR EMERGENCY RELEASE CABLE	2-2
FIGURE [2-4]:	RAMP RELEASE HANDLE	2-4
FIGURE [2-5]:	RAMP PIVOTED OUT	2-4
FIGURE [2-6]:	SEAT LOCKED	2-5
FIGURE [2-7]:	SEAT UNLOCKED	2-5
FIGURE [2-8]:	REAR SEAT LATCHES	2-6
FIGURE [2-9]:	REAR SEAT REMOVAL	2-6
FIGURE [2-10]:	FOLDAWAY MIDDLE SEAT	2-7
FIGURE [2-11]:	SEATBACK TILTED DOWN	2-7
FIGURE [2-12]:	SEAT "UP" RELEASE LEVER	2-7
FIGURE [2-13]:	SEAT LOCK AND SEAT RELEASE "DOWN" LEVER	2-8
FIGURE [3-1]:	MANUAL FILL VALVE	3-1
FIGURE [3-2]:	RELEASE CABLE	3-1
FIGURE [3-3]:	VEHICLE CARGO AREA	3-1
FIGURE [3-4]:	SPARE TIRE	3-2
FIGURE [3-5]:	SUPPORT POINTS	3-3
FIGURE [4-1]:	FLOOR PRECAUTION	4-1
FIGURE [4-2]:	DIAGRAM SYMBOLS	4-3
FIGURE [4-3]:	POWER DISTRIBUTION (FUSE) BLOCK	4-4
FIGURE [4-4]:	DOOR AJAR SCHEMATIC AND WIRING DIAGRAM	4-4
FIGURE [4-5]:	DOME AND FLOOR LIGHT WIRING DIAGRAM	4-5
FIGURE [4-6]:	LEVELING SYSTEM WIRING DIAGRAM	4-6
FIGURE [4-7]:	LEVELING SYSTEM PNEUMATIC DIAGRAM	4-7
FIGURE [5-1]:	LEVELING CONTROLLER LOCATION	5-2

FIGURE [5-2]:	COMPRESSOR ASSEMBLY FOR VEHICLE PRODUCTION DATES FROM 08/25/97 AND ONWARD	5-3
FIGURE [5-3]:	PNEUMATIC CONTROL ASSEMBLY	5-6
FIGURE [5-4]:	AIRBAG AIRLINE FITTINGS	5-10
FIGURE [5-5]:	RIDE HEIGHT VERIFICATION	5-11
FIGURE [6-1A]:	DECAL LOCATIONS AND PART NUMBERS (SHEET 1 OF 3)	6-2
FIGURE [6-1B]:	DECAL LOCATIONS AND PART NUMBERS (SHEET 2 OF 3)	6-3
FIGURE [6-1C]:	DECAL LOCATIONS AND PART NUMBERS (SHEET 3 OF 3)	6-3
FIGURE [6-2]:	AIR SUSPENSION POWER DISTRIBUTION COMPONENTS LOCATION DIAGRAM	6-4
FIGURE [6-3]:	AIR SUSPENSION PNEUMATIC COMPONENTS	6-4
FIGURE [6-4]:	FIXED FRONT SEATBASE	6-6
FIGURE [6-5]:	REMOVABLE FRONT SEATBASE	6-6
FIGURE [6-6]:	MANUAL FOLDING RAMP ASSEMBLY	6-7
FIGURE [6-7]:	MECHANICAL SLIDING DOOR MOUNT KIT (RAMP TENSIONER)	6-8
FIGURE [6-8]:	RAMP VERTICAL MOUNT BRACKET ASSEMBLY	6-8
FIGURE [6-9]:	REMOVABLE REAR SEAT BASE	6-10
FIGURE [6-10]:	UPRIGHT SPARE TIRE MOUNT AND STORAGE BIN	6-11
FIGURE [6-11]:	REMOVABLE FOOTRESTS	6-12
FIGURE [6-12]:	CARGO AREA COMPONENTS	6-12

LIST OF TABLES

PAGE

TABLE [4-1]:	MAINTENANCE SCHEDULE	4-2
TABLE [4-2]:	WIRE COLOR CODES	4-3
TABLE [4-3]:	TROUBLESHOOTING GUIDE	4-8

I. INTRODUCTION

The RICON *Activan*® *TX* for *Caltrans* is a customized, lowered-floor minivan designed especially for transporting mobility-challenged individuals. With features such as a folding/swing-away ramp, removable passenger seats, folding middle seat, and drivers' side sliding door, *ACTIVAN TX* brings accessibility and style together into one package.



The *ACTIVAN TX* is built to the highest standards of quality. It has been successfully crash tested and complies with all currently applicable federal motor vehicle safety standards. Ricon provides a comprehensive warranty that assures years of dependable service. For maximum safety, Ricon recommends that the vehicle conversion components be inspected and serviced at least every six months, or sooner, depending upon usage.

This manual contains operation and maintenance instructions and emergency operation information for the *ACTIVAN TX*. It is intended to supplement but not replace the vehicle manufacturers' Owner's Manual. It is important to user safety that operator(s) be completely familiar with Warranty and Operating Instructions chapter of this manual. This manual should be stored in vehicle for reference by all operators. For information or instructions regarding non-RICON features, refer to manufacturers' Owner's Manual.

If there are questions about this manual or additional copies are needed, please contact Ricon Product Support Department at one of the following locations:

Ricon Corporation

7900 Nelson Road

Panorama City, CA 91402

Outside (818) Area Code

World Wide Website

..... **(818) 267-3000**

..... **(800) 322-2884**

..... **riconcorp.com**

Ricon U.K. Ltd.

Littlemoss Business Park, Littlemoss Road

Droylsden, Manchester

United Kingdom, M43 7EF

..... **(+44) 161 301 6000**

Ricon Scandinavia A/S

Stanseveien 27

N-0976 Oslo

Norway

..... **(+47) 22 16 70 90**

RICON® ACTIVAN® TX LIMITED WARRANTY

Ricon Corporation (Ricon) warrants to original purchaser of this product that Ricon will repair or replace, at its option, parts that fail by reason of defective material or workmanship as follows:

- Repair or replace for a period of 7-years or 70,000 miles (112,000 km.), whichever occurs first, the structural metal component of the Ricon installed floor and ramp. These components are warranted for "rust-through" damage. Surface rust is not covered.
- Repair or replace for a period of 1-years from in-service date or 36,000 miles (58,000 km.), whichever occurs first, all other *ACTIVAN* components. Maintenance items and normal wear and tear excluded.
- Labor costs for specified parts replaced under this warranty for a period of one (1) year from date of purchase. A Ricon rate schedule determines parts covered and labor allowed. Under normal circumstances, all warranty repair work must be performed by an authorized Ricon *ACTIVAN* service agent ("Activan service agent"). In an emergency, and if service from an *ACTIVAN* service agent is not readily available, it is owner's responsibility to contact Ricon for authorization prior to commencement of any repair and Ricon reserves the right to limit extent of those repairs. Unauthorized repair or parts replacement by someone other than an authorized *ACTIVAN* service agent is not covered by this warranty. Ricon also reserves the right to require that defective parts be returned for inspection prior to paying warranty claims. Diagnostic work or troubleshooting is not covered by this warranty.

This warranty is transferable upon sale of vehicle within warranty period only if Ricon is notified in writing within 30 days of sale, and acknowledges such notification. Notification to Ricon shall include: date of original purchase, name and address of seller, name and address of buyer, date of sale, copy of "title transfer" and "odometer statement".

Ricon reserves the right to discontinue models or options, change specifications, materials, equipment or design at any time without notice and without incurring obligation.

This warranty is in lieu of any other warranty expressed or implied. This warranty covers only those parts installed by Ricon and is intended to supplement vehicle manufacturer's warranty. Refer to vehicle manufacturer's warranty for coverage on original vehicle equipment.

This Warranty does not Cover:

- Damage caused by accident, road hazard, misuse, lack of proper maintenance, failure to follow towing, hoisting, and other operating instructions.

NOTE: Ricon recommends that this product be inspected by an authorized *ACTIVAN* service agent at least once every six months or sooner if necessary. Any required maintenance or repairs should be performed at this time.

WARNING

THIS PRODUCT HAS BEEN DESIGNED AND MANUFACTURED TO EXACT SPECIFICATIONS. **MODIFICATION OF THIS PRODUCT IN ANY RESPECT CAN BE DANGEROUS.**

This Warranty is Void if:

- The conversion has been maintained or repaired by someone other than an authorized *ACTIVAN* service agent or by a person not authorized by Ricon to perform such

maintenance or repair.

- The conversion has been modified or altered in any respect from its original design without written authorization from Ricon.

Ricon disclaims liability for any personal injury or property damage that results from operation of a Ricon product that has been modified from original Ricon design. No person or company is authorized to change design of this Ricon product without written authorization by Ricon.

Ricon's obligation under this warranty is exclusively limited to repair or exchange of parts that fail within applicable warranty period.

Ricon assumes no responsibility for expenses or damages, including incidental or consequential damages however caused. Some states do not allow exclusion or limitation of incidental or consequential damages, so above limitation or exclusion may not apply.

Important: The warranty registration card must be completed and returned to Ricon within twenty (20) days after installation of this Ricon product for warranty to be valid.

The warranty gives specific legal rights, and there may be other rights that vary from state to state.

GENERAL SAFETY PRECAUTIONS

The following general safety precautions should always be followed during operation and maintenance of the *ACTIVAN TX*:

1. Under no circumstances should maintenance, repair, or adjustment of the *ACTIVAN TX* ramp or other components be attempted without immediate presence of an individual capable of rendering aid.
2. An injury, no matter how slight, should always be attended. Always administer first aid or seek medical attention immediately.
3. Protective eye shields and appropriate clothing should be worn during maintenance, repair, and adjustment of the *ACTIVAN TX*.
4. To avoid injury, user must always exercise caution when operating ramp and be certain that hands, feet, legs, and clothing are not in path of its movement.
5. Batteries contain acid that can burn. Wear protective clothing and eye protection at all times when working around batteries. If acid comes in contact with skin, flush affected area with water and wash with soap immediately.
6. Always work in properly ventilated area. Do not smoke or use an open flame near a battery.
7. Do not lay anything on top of a battery.
8. Read and understand all instructions before attempting to operate the *ACTIVAN TX* ramp or other components.
9. Inspect ramp prior to each use. If an unsafe condition exists, do not use it. Return vehicle to an authorized Ricon service agent for repair.
10. Unusual noises or movements should be immediately inspected by a Ricon service agent.
11. Keep others clear of ramp when it is being operated.
12. Always operate ramp with the *ACTIVAN TX* parked on **level** ground. A dangerous situation exists and Ricon does not recommend use of ramp if vehicle is parked on a slope.
13. The *ACTIVAN TX* ramp and other system components require regular periodic maintenance. Ricon recommends a thorough vehicle inspection by an authorized

Ricon service agent at least once every six months. Like any product, the ramp and other components should always be maintained at highest level of performance.

ACTIVAN[®] TX FEATURES

This section provides an overview of standard and optional vehicle features. Refer to Chapter II of this manual for operating instructions of each of the features.

- REMOVABLE FRONT PASSENGER SEAT

⚠ WARNING	
BE CERTAIN THAT SEAT IS PROPERLY SECURED INTO ITS LOCKED POSITION BEFORE ATTEMPTING TO OPERATE VEHICLE. UNDER NO CIRCUMSTANCES SHOULD VEHICLE BE PUT IN MOTION WITHOUT SEAT LOCKED. MAKE SURE THAT SEAT LOCKING HANDLE IS IN INWARD POSITION BEFORE OPERATING VEHICLE.	

Figure [1-1] shows removable front passenger seat. The seat can be unlocked and removed from vehicle as needed to create an area to secure a wheelchair. It is unlocked by a release handle that is located in rear-center of seat base. During vehicle operation, seat release handle **MUST** be in the **INWARD** position as shown in **Figure [1-2]**.

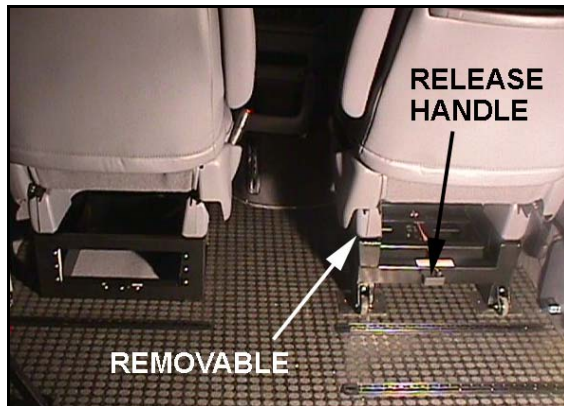


FIGURE [1-1]: REMOVABLE FRONT SEAT

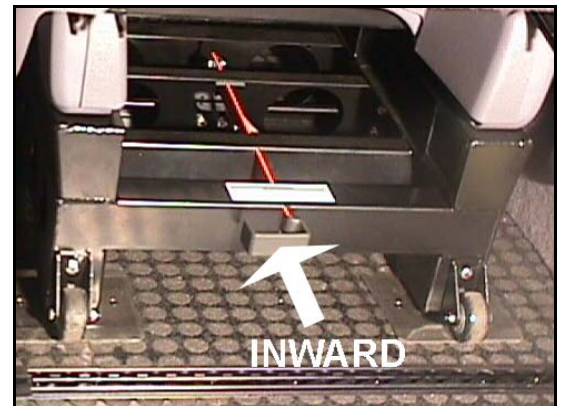


FIGURE [1-2]: SEAT LOCKED

- FOLDING RAMP

The folding ramp provides wheelchair access to vehicle. During driving and when it is not being used, it is stored in a folded position inside vehicle. This is referred to as **stowed** position as shown in **Figure [1-3]**. To use ramp, it is unfolded or **deployed** as in **Figure [1-4]**. The ramp can be swung outward, as shown in **Figure [1-5]** to enter vehicle without deploying ramp.



FIGURE [1-3]: RAMP STOWED



FIGURE [1-4]: RAMP DEPLOYED



FIGURE [1-5]: RAMP PIVOTED OUT

- **REMOVABLE REAR SEAT**

By unlocking right and left latches, the rear seat of vehicle can be removed temporarily. The right latch is seen in **Figure [1-6]** and left latch is behind spare tire.



FIGURE [1-6]: REAR SEAT LATCHES

- **REAR STORAGE BIN AND SPARE TIRE MOUNT**

The rear storage bin, shown in **Figure [1-7]**, uses a thumb turn latch to secure its cover. The bin also serves as spare tire mount. The supplied First Aid is normally stored here when not in use.

- **Q'STRAIN™ WHEELCHAIR & OCCUPANT RESTRAINT SYSTEM, TRIANGLE FLARE KIT, FIRE EXTINGUISHER, AND FIRST AID KIT**

The Q'Strain™ Wheelchair & Occupant Restraint System, triangle flare kit, fire extinguisher, and first aid kit are supplement items provided for the *ACTIVAN TX*. The Q'Strain™ System is used to secure or tie-down wheelchairs during vehicle operation. The triangle flare kit is used to notify traffic if vehicle is not driveable while on a road. The fire extinguisher is mounted to right side of storage bin and first aid kit is located inside bin. All items are reached through rear hatch.



FIGURE [1-7]: VEHICLE CARGO AREA

- **REAR DOOR EMERGENCY RELEASE**

The rear door emergency release may be used to open rear door from inside vehicle during an emergency situation. When release cable is pulled upward, rear door can be pushed open.

- **BACKUP ALARM**

The vehicle is equipped with an audible alarm that alerts nearby pedestrians to vehicle movement. The alarm sounds when vehicle ignition is on and transmission is in reverse.

- **OPTIONAL FOLDAWAY MIDDLE SEAT**

The optional foldaway middle seat can be raised to accommodate a secured wheelchair in vehicle. **Figure [1-8]** shows seat in its normal down position and **Figure [1-9]** shows entire seat in up or stored position.



FIGURE [1-8]: MIDDLE SEAT DOWN



FIGURE [1-9]: MIDDLE SEAT UP

II. OPERATING INSTRUCTIONS

This chapter contains safety precautions, daily safety check instructions, control and indicator descriptions, and operating instructions for the RICON *Activan*® *TX* for *Caltrans*. This chapter must be read and understood by all operators before attempting to use the vehicle. This chapter is not intended to replace, but rather to supplement the appropriate section of the vehicle manufacturer Owner's Manual. For information or instructions regarding non-RICON features, refer to the manufacturer Owner's Manual.

WARNING

THE *ACTIVAN TX* WHEELCHAIR RAMP IS DESIGNED TO BE OPERATED BY THE VEHICLE OPERATOR. IT IS THEIR RESPONSIBILITY TO CAREFULLY FOLLOW THE SAFETY PRECAUTIONS WHEN OPERATING THE RAMP OR OTHER COMPONENTS.

A. SAFETY PRECAUTIONS

The following safety precautions must be observed at all times:

- Vehicle must be safely parked with the engine turned off and the parking brake set before using the wheelchair ramp.
- Ramp users must always face outward when exiting vehicle and look to be certain that ramp is completely lowered.
- Persons using mobility equipment (e.g., wheelchairs, scooters, etc.) should always enter or exit the vehicle slowly and carefully.
- Unusual noises or movements should be inspected immediately by an authorized Ricon service agent.
- Inspect the ramp prior to each use. Check for loose nuts and bolts. If any unsafe condition exists or unusual noises or movements are noticed, **DO NOT** use the ramp. Return the vehicle to an authorized *ACTIVAN TX* service agent for repair.
- Wheelchair and scooter brakes are less effective if the ramp and/or mobility equipment wheels are wet. Use extreme care in wet conditions.
- Keep others clear while operating ramp.
- The ramp is designed for one user at a time. Do not overload the ramp. Be certain mobility aid equipment fits safely on the ramp before entering or exiting the vehicle.
- Never leave ramp outside of vehicle. Always return ramp to its stowed position after use.
- Do not allow children or others to play with the ramp or other *ACTIVAN TX* components, as this may be dangerous. Close supervision is necessary if the ramp is used by or near children.
- Do not place your arms or legs in or near any folding parts of the ramp or other components.
- Avoid operating ramp while vehicle is parked on a slope, since the ramp will also slope creating an unsafe condition.
- Secure the wheelchair and passenger with the Q'Straint® Wheelchair & Occupant Restraint System by following the provided instructions.

Be sure you have read and understand each of these safety precautions. Review

them periodically and ask any attendants or other users operating your ramp to read them as well. If you have any questions, contact the Ricon Product Support Department.

B. DAILY SAFETY CHECK

Inspect the *ACTIVAN TX* prior to each use and check that the following conditions are met before operating:

- All functions operate properly. If unusual noises or movements exist, DO NOT use and contact an authorized Ricon service agent for repair.
- General appearance and lubrication are proper.
- All fasteners are tight.

C. CONTROLS AND INDICATORS

For descriptions of the *ACTIVAN TX* controls and indicators, refer to the following sections:

1. DASHBOARD INDICATORS

Refer to **Figures [2-1]** and **[2-2]**. The vehicle is equipped with two dashboard indicators. The indicator at the left of the steering wheel flashes when the vehicle ignition is ON and either the passenger or drivers-side sliding door is NOT properly closed. The vehicle should not be driven if either sliding door is ajar. The indicator at the right of the steering wheel illuminates when the pressure of the air suspension HAS NOT reached operating pressure. The vehicle **MUST NOT** be driven if this indicator is lit.



FIGURE [2-1]: SLIDING DOOR AJAR INDICATOR



FIGURE [2-2]: AIR SUSPENSION LOW-PRESSURE INDICATOR

2. REAR DOOR EMERGENCY RELEASE

Refer to **Figure [2-3]**. The rear door emergency release cable is located at the right side (viewed from interior) of the rear door. When pulled UPWARD, the rear door may be opened from the inside of the vehicle.

3. BACK-UP ALARM

The vehicle is equipped with an audible alarm that sounds whenever the vehicle ignition is on and the transmission lever is in the REVERSE position. There are no operator controls for the alarm.



FIGURE [2-3]: REAR DOOR EMERGENCY RELEASE CABLE

4. ELECTRICAL CIRCUIT BREAKERS

The Ricon installed wiring is electrically protected against short circuits by a fuse panel located directly under the steering column. To gain access, remove the plastic cover marked FUSE PANEL. For the specifications of the fuses, refer to Chapter IV of this manual.

D. *ACTIVAN TX* OPERATION

WARNING

- 1) IMPROPER USE OF THE ACTIVAN TX CAN RESULT IN PERSONAL INJURY. USERS MUST READ AND FOLLOW THE OPERATING INSTRUCTIONS IN THIS OPERATOR'S MANUAL. ADDITIONAL COPIES OF THIS MANUAL ARE AVAILABLE FROM:**

**RICON CORPORATION
7900 NELSON ROAD
PANORAMA CITY, CA 91402
(800) 322-2884 OR (818) 267-3000**

- 2) PRIOR TO USE, INSPECT THE RAMP AND OTHER ACTIVAN TX COMPONENTS FOR PROPER FUNCTION, REQUIRED MAINTENANCE, OR DAMAGE. IF A PROBLEM EXISTS, DO NOT USE AND RETURN VEHICLE TO AN AUTHORIZED SERVICE AGENT FOR REPAIR.**
- 3) DO NOT EXCEED THE RAMP RATED LOAD CAPACITY OF 750 LBS (341 KG).**
- 4) THE RAMP IS DESIGNED FOR USE ONLY BY PERSONS ON MOBILITY AID EQUIPMENT (I.E., WHEELCHAIRS, SCOOTERS, WALKERS, ETC.)**

RICON CORPORATION DISCLAIMS LIABILITY FOR DAMAGE OR PERSONAL INJURY RESULTING FROM MODIFICATION TO THE RAMP OR OTHER ACTIVAN TX COMPONENTS, LACK OF MAINTENANCE OR REPAIR, NEGLIGENCE, ABUSE, OR FAILURE TO FOLLOW OPERATING INSTRUCTIONS.

- Before operating ramp, be certain the vehicle is safely parked and on level ground away from traffic. Allow enough space for ramp operation, passenger entering and exiting. Be certain there are no obstructions within three (3) feet of the ramp that may interfere with its operation.
- Be certain that the parking brake is properly set before operating the ramp.

WARNING

THE MANUAL RAMP IS DESIGNED TO BE OPERATED BY AN ATTENDANT. IT IS THIS PERSON'S RESPONSIBILITY TO CAREFULLY FOLLOW THE SAFETY PRECAUTIONS WHEN OPERATING THE RAMP.

1. FOLDING RAMP

- Be certain that the vehicle is parked on a level area away from traffic with the emergency brake ON. Allow enough space for ramp operation and passenger boarding.
- Fully open or close the vehicle door. Be certain that there are no obstacles in the path of the ramp.

⚠ WARNING

- **WHILE LOWERING OR RAISING THE RAMP, USE EXTREME CAUTION TO AVOID PINCHING HANDS AND EMPLOY PROPER LIFTING TECHNIQUE.**
- **DO NOT APPLY ANY WEIGHT TO THE RAMP UNTIL IT IS COMPLETELY DEPLOYED AT GROUND LEVEL.**

a. Deploy Folding Ramp

- 1) From outside of vehicle, stand facing ramp.
- 2) Gently pull top of ramp outward until ramp begins to deploy by itself.
- 3) Stand clear and allow ramp to fully deploy.
- 4) Operator or attendant must assist passenger as required to make sure passenger slowly and carefully enters or exits vehicle.

b. Stow Folding Ramp

- 1) Operator or attendant must assist passenger as required to make sure passenger slowly and carefully enters or exits vehicle.
- 2) From right-side of ramp, bend knees slightly and position right hand on platform (non-folding) section of ramp.
- 3) Carefully lift ramp UP while folding flap DOWN.
- 4) Push ramp to its completely stowed position.

⚠ CAUTION

TO PREVENT DAMAGE TO RAMP AND/OR VEHICLE DOOR, BE CERTAIN THE RAMP IS STOWED COMPLETELY BEFORE ATTEMPTING TO CLOSE THE DOOR.

c. Swing Folding Ramp

The folding ramp can be swung outside the vehicle so that passengers not using wheelchairs can enter and exit without having to deploy ramp. To swing the ramp out, follow this procedure:

- 1) Refer to **Figure [2-4]**. Push and hold ramp release handle DOWN.
- 2) Refer to **Figure [2-5]**. Swing ramp outward.



FIGURE [2-4]: RAMP RELEASE HANDLE

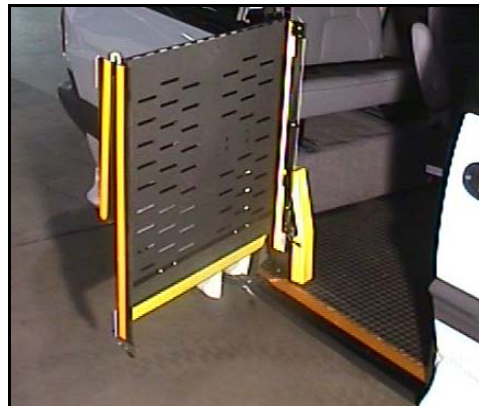


FIGURE [2-5]: RAMP PIVOTED OUT

- 3) To swing ramp to its stowed position, push ramp inward until bottom latch engages.

2. REMOVABLE FRONT PASSENGER SEAT

The front passenger seat can be unlocked and removed from the vehicle as needed. Located on the rear of the seat base is the release handle used to lock or unlock the seat. **Figure [2-6]** shows the release handle in the **locked** position, (INWARD). **Figure [2-7]** shows the handle in the **unlocked** position, (OUTWARD) and the handle notch is engaged with the seat base frame. For removal and installation of the passenger seat, refer to the following sections:

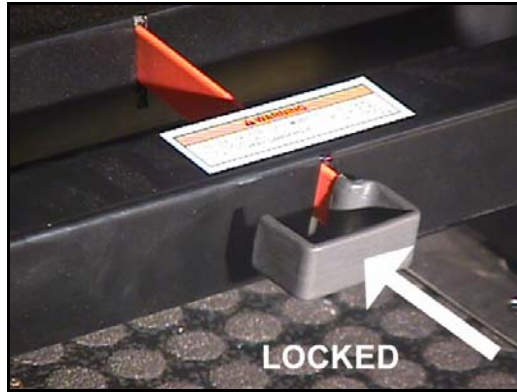


FIGURE [2-6]: SEAT LOCKED

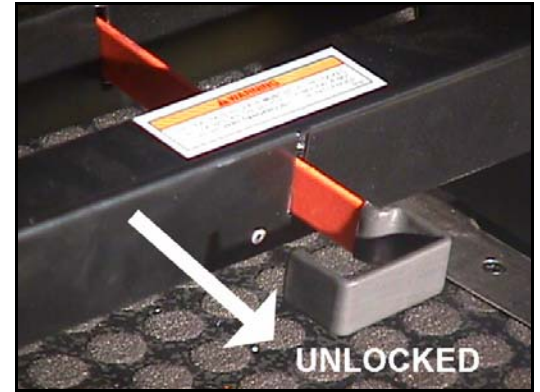


FIGURE [2-7]: SEAT UNLOCKED

a. Passenger Seat Removal

- 1) At front of seat, remove footrest.
- 2) Pull seat release handle back. Be certain notch on bottom edge of handle is engaged with seat base frame.
- 3) Slide seat rearward to free seat base anchor bolts from floor locking plates.

WARNING

SEATS ARE LARGE AND HEAVY. WHEN REMOVING AND INSTALLING SEAT, DO NOT USE YOUR BACK TO BEAR THE WEIGHT. BEND YOUR KNEES AND KEEP YOUR BACK STRAIGHT.

- 4) Tilt seat rearward onto its support wheels and remove seat from vehicle.

b. Passenger Seat Installation

WARNING

BE CERTAIN THAT THE SEAT IS PROPERLY SECURED INTO ITS LOCKED POSITION BEFORE ATTEMPTING TO OPERATE THE VEHICLE. UNDER NO CIRCUMSTANCES SHOULD THE VEHICLE BE PUT IN MOTION WITHOUT THE SEAT LOCKED. MAKE SURE THAT THE SEAT LOCKING HANDLE IS IN THE INWARD POSITION BEFORE OPERATING THE VEHICLE.

- 1) Place seat into vehicle.
- 2) At rear of seat, make sure seat release handle is in unlocked (OUTWARD) position.

- 3) Tilt seat rearward onto its support wheels and roll seat into position. Be certain seat base anchor bolts are aligned with holes in floor locking plates.
- 4) At rear of seat, push seat base as far forward as possible into floor locking plates.
- 5) Raise release handle and allow return spring to position handle INWARD.
- 6) At front of seat, install footrest.

3. REMOVABLE REAR SEAT

For removal and installation of rear seat, refer to **Figure [2-8]** and the following two sections:

a. Rear Seat Removal:

- 1) Refer to **Figure [2-9]**. Release seat back by pulling up on lever located at right side of seat. Tilt seat back forward and press it down to latch.
- 2) Rotate latch retainer knobs **COUNTER-CLOCKWISE** to loosen latch hooks (left latch is behind spare tire). When hooks are freed from floor locking plates pivot retainer knobs **DOWN** to release.
- 3) Slide seat rearward to free forward seat base anchors from floor locking plates.



FIGURE [2-8]: REAR SEAT LATCHES

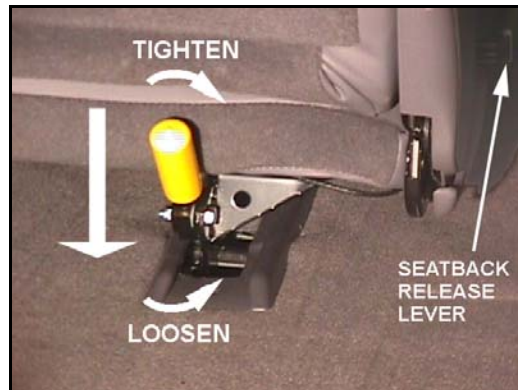


FIGURE [2-9]: REAR SEAT REMOVAL

⚠ WARNING
<ul style="list-style-type: none"> TWO PEOPLE ARE NEEDED TO REMOVE OR INSTALL THE LARGE AND HEAVY REAR SEAT. WHEN MOVING SEAT, DO NOT USE YOUR BACK TO LIFT THE WEIGHT. BEND YOUR KNEES AND KEEP BACK UPRIGHT.

- 4) Remove rear seat from vehicle through sliding door.

b. Rear Seat Installation:

- 1) Replace rear seat through sliding door. Pivot latch retainer knobs down and then position forward seat base anchors into floor locking plates. Push seat forward to fully engage locking plates.

⚠ WARNING

DO NOT DRIVE VEHICLE BEFORE ENSURING SECURITY OF REAR SEAT.

- 2) Pivot latch retainer knobs up to engage hooks with floor locking plates. Rotate knobs clockwise until hand tight. Shake seat to determine if it is secure; tighten as necessary.
- 3) Tilt SEATBACK up and latch in place.

4. OPTIONAL FOLDAWAY MIDDLE SEAT

The optional foldaway middle seat can be tilted up to provide space for a secured wheelchair in the vehicle. For operation of the folding middle seat, refer to **Figure [2-10]**, and the following two sections.

a. Fold and Secure Middle Seat:

- 1) Refer to **Figure [2-11]**. Pivot armrest up, hold seat release latch to front and tilt seat back forward.



FIGURE [2-10]: FOLDAWAY MIDDLE SEAT

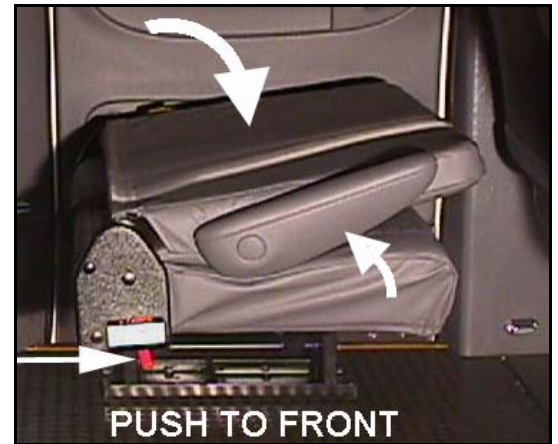


FIGURE [2-11]: SEATBACK TILTED DOWN

- 2) Refer to **Figure [2-12]**. Push "UP" release lever (shown) upward to allow seat to be tilted up.



FIGURE [2-12]: SEAT "UP" RELEASE LEVER

- 3) Tilt seat up to vertical position. Seat will latch in this position.
- 4) Refer to **Figure [2-13]**. After seat latches in upright position pivot lock

lever clockwise to lock seat in place.

5) Be certain seat is secure by shaking it.

b. Unfold Middle Seat:

- 1) Refer to **Figure [2-13]**. Pivot lock lever counter-clockwise to unlock seat. Push seat "DOWN" release lever towards seat to release seat from upright position; seat may need to be pushed towards interior wall before lever can be released.
- 2) Tilt seat down to floor. Seat will latch in this position.
- 3) Be certain seat is secure by attempting to lift it up.
- 4) Tilt seat back up and latch it in upright position. Pivot armrest down.

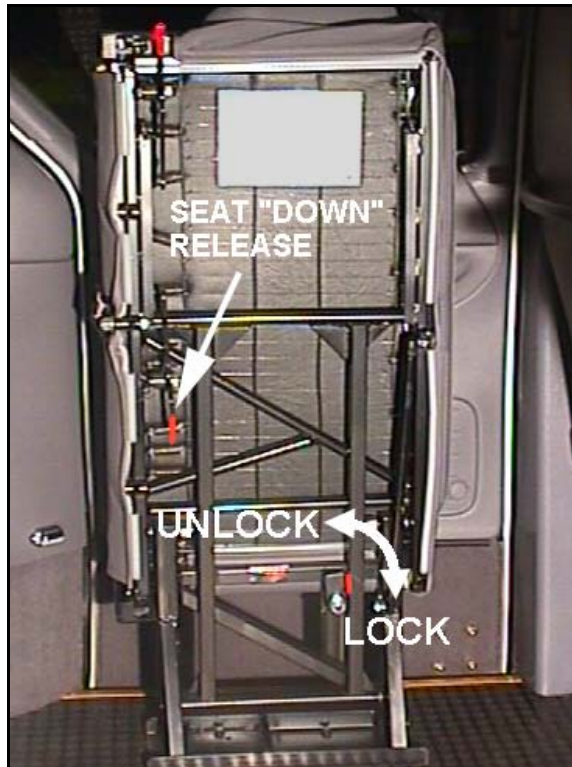


FIGURE [2-13]: SEAT LOCK AND SEAT RELEASE "DOWN" LEVERS

III. EMERGENCY INFORMATION

This chapter describes emergency operation for the RICON *Activan*® *TX* for Caltrans. All operators of vehicle should read and thoroughly understand the following information before operating vehicle. This chapter is not intended to replace, but rather to supplement the appropriate section of vehicle manufacturers' Owner's Manual. For information or instructions regarding non-RICON features, refer to manufacturers' Owner's Manual.

A. AIR SUSPENSION MANUAL FILL VALVE



Refer to **Figure [3-1]**. In the event of an air suspension or air compressor malfunction, the air suspension can be externally pressurized to allow temporary use of vehicle.



The manual fill valve is used to pressurize air suspension system. The valve is a part of pneumatic control system, which is located in vehicle engine compartment near battery.



FIGURE [3-1]: MANUAL FILL VALVE

B. REAR DOOR EMERGENCY RELEASE

Refer to **Figure [3-2]**. The rear door emergency release may be used to open rear door from inside vehicle during an emergency. The release cable is located at the left side (viewed from interior) of the rear door. To open rear door, pull cable UP and push door

OPEN.



FIGURE [3-2]: RELEASE CABLE

C. SPARE TIRE, FIRST AID KIT, FIRE EXTINGUISHER AND TRIANGLE FLARE KIT

Refer to **Figure [3-3]**. The spare tire, fire extinguisher, triangle flare kit and first aid kit are located in cargo area of vehicle, behind rear seat. Access is through rear door. When using these items, make sure that all instructions are followed. Refer to following sections for further information.



FIGURE [3-3]: VEHICLE CARGO AREA

⚠ CAUTION

- RICON CORPORATION DISCLAIMS LIABILITY FOR ANY PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY USE OF A TIRE SIZE WHICH VARIES FROM ONE SPECIFIED BY VEHICLE MANUFACTURER.
- UNDER NO CIRCUMSTANCES SHOULD VEHICLE BE PUT IN MOTION WITHOUT PROPERLY SECURING SPARE TIRE.

1. SPARE TIRE

The spare tire has been relocated by the *ACTIVAN TX* conversion and is located at rear of vehicle, behind rear seat. For spare tire removal and installation procedures, refer to following paragraphs:

⚠ WARNING

THE REAR STORAGE BIN COVER IS NOT PERMANENTLY HINGED. SUPPORT COVER WITH TWO HANDS WHEN REMOVING OR INSTALLING TO PREVENT IT FROM FALLING.

a. Spare Tire Removal

- 1) Refer to **Figure [3-4]**. Remove storage bin cover.
- 2) Remove spare tire cover.
- 3) Remove spare tire retaining screw by turning counter-clockwise.
- 4) Remove spare tire from vehicle.
- 5) Store spare tire hold-down plate and retaining screw.



FIGURE [3-4]: SPARE TIRE

b. Spare Tire Installation

- 1) Position spare tire on front of storage bin.
- 2) Position hold-down plate on front of spare tire, with two screws locating in wheel lug holes.
- 3) Insert spare tire retaining screw through hole in bin, spare tire and into hold-down plate. Turn clock-wise until tight.
- 4) Replace spare tire cover.
- 5) Install storage bin cover.

2. FIRE EXTINGUISHER

The fire extinguisher is a type B:C, size 1 dry chemical device. The extinguisher is located at vehicle rear, attached to side of bin. Follow all labeled instructions for maintenance and usage.


3. TRIANGLE FLARE KIT

The triangle flare kit is located at vehicle rear, behind rear seat. Follow labeled instructions when using kit.

4. FIRST AID KIT


The first aid kit is located inside storage bin, behind rear seat. Follow labeled instructions when using an item.

D. TOWING PRECAUTIONS

 CAUTION	
<ul style="list-style-type: none">• THIS VEHICLE MUST BE TRANSPORTED ON A FLAT-BED TOW TRUCK OR TOWED WITH A REAR DOLLY. TOWING BY ANY OTHER MEANS WILL RESULT IN DAMAGE TO THE REAR SUSPENSION WHICH WILL VOID WARRANTY.• TOW WITH EXTREME CARE IF THE REAR SUSPENSION APPEARS DAMAGED.• GROUND CLEARANCE ON THE <i>Activan</i> IS LOW. USE CAUTION WHEN TOWING TO AVOID DAMAGE.• CONSULT OWNERS MANUAL FOR FURTHER INFORMATION.	

E. JACKING/HOISTING VEHICLE

The vehicle jack and jack-handle are stowed behind rear driver's side trim panel in rear cargo area. Refer to vehicle owner's guide/manual and labels located on inside cover of stowage trim panel and on jack for instructions concerning jack usage.

 CAUTION	
WHEN USING A LIFT TO HOIST A VEHICLE WITH AIR SUSPENSION, FIRST RAISE VEHICLE SLIGHTLY WITHOUT TIRES LEAVING GROUND TO EMPTY AIR BAGS.	

Refer to **Figure [3-5]**. The vehicle jack/hoist support points have been modified by the *ACTIVAN TX* conversion. The support points **MUST BE** along FRAME of vehicle as shown.

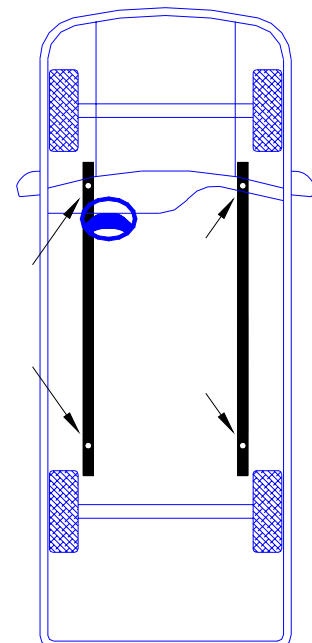


FIGURE [3-5]: SUPPORT POINTS



IV. MAINTENANCE

This chapter contains maintenance information for the RICON *Activan*® *TX* for *Caltrans*. The information consists of a floor panel precaution, maintenance schedule, troubleshooting guide, and maintenance diagrams. Maintenance must be performed only by an authorized Ricon service agent using only Ricon parts. This chapter is not intended to replace, but rather supplement the appropriate section of vehicle manufacturers' Owner's Manual. For information or instructions regarding non-RICON features, refer to manufacturers' Owner's Manual. When jacking or hoisting vehicle refer to **Section III.E**.

⚠ WARNING

THIS RICON PRODUCT IS HIGHLY SPECIALIZED. MAINTENANCE AND REPAIRS MUST BE PERFORMED ONLY BY AN AUTHORIZED RICON SERVICE AGENT USING ONLY RICON REPLACEMENT PARTS. MODIFYING OR FAILING TO PROPERLY MAINTAIN THIS PRODUCT MAY RESULT IN UNSAFE OPERATING CONDITIONS AND WILL VOID WARRANTY.

A. FLOOR PANEL PRECAUTION

Refer to **Figure [4-1]**. Beneath the central portion of interior floor is a cavity containing electrical harnesses, etc. **Do not cut or drill into this area.**

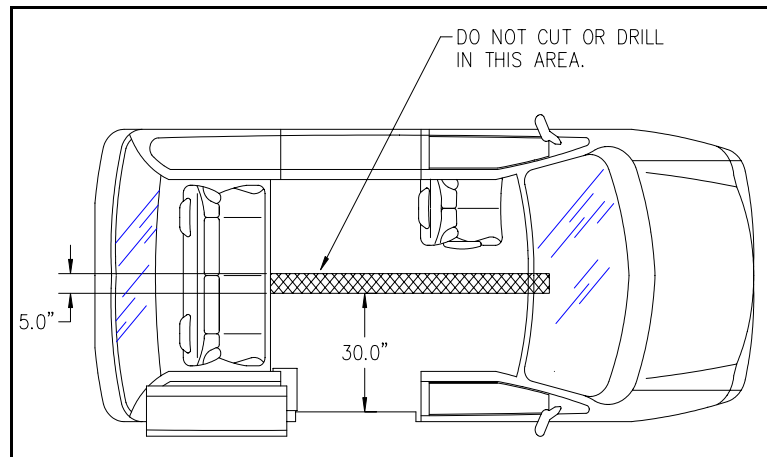


FIGURE [4-1]: ACTIVAN INTERIOR FLOOR

B. MAINTENANCE SCHEDULE

Routine maintenance of the *ACTIVAN TX* will optimize the performance and reduce the need for repairs. During the Ricon warranty period, maintenance inspections listed in **Table [4-1]** (following page) must be performed by an authorized Ricon service agent at least once every six (6) months or sooner, depending on usage. After warranty period, maintenance inspections are recommended for same time intervals. Under conditions of excessive use (more than 10 cycles per day), service should be increased.

TABLE [4-1]: MAINTENANCE SCHEDULE

SERVICE POINT	DESCRIPTION
DAILY SAFETY CHECK	
Removable Passenger Seat	<ul style="list-style-type: none"> • Be certain that removable passenger seat base is properly locked in position.
Foldaway Middle Seat	<ul style="list-style-type: none"> • Be certain that folding seat is locked firmly in position (folded or unfolded).
Air Suspension	<ul style="list-style-type: none"> • Be certain that low pressure indicator goes out and that compressor stops running when vehicle reaches normal ride height.
Door Ajar Indicator	<ul style="list-style-type: none"> • Be certain that red door ajar indicator flashes when ignition is on and either sliding door is ajar.
Reverse Alarm	<ul style="list-style-type: none"> • Be certain that reverse alarm sounds when ignition is on and vehicle is in reverse.
MONTHLY SAFETY CHECK	
Sliding Door	<ul style="list-style-type: none"> • Wash lower door track and lightly lubricate contact surfaces.
Folding Ramp	<ul style="list-style-type: none"> • Clean and lightly lubricate pivot points and hinges.
SIX-MONTH SAFETY CHECK	
Load Leveling Air Suspension	<ul style="list-style-type: none"> • Be certain that air lines do not leak; tighten fittings as required. • Inspect filter/dryer (see section V.B.3.j). • Check air bags for damage caused by rubbing or misalignment. • Verify that vehicle attains proper ride height (see section V.B.1.c). • Check compressor connections and be certain that compressor mounting bolts are snug.
Removable Passenger Seat	<ul style="list-style-type: none"> • Verify that locking mechanism on removable passenger seat operates properly by removing and reinstalling seat (see section II.D.2.b).
Electrical Connections (under hood)	<ul style="list-style-type: none"> • Be certain that circuit breaker connections are free of corrosion; clean and apply protective coating as required.
ANNUAL SAFETY CHECK	
Under carriage	<ul style="list-style-type: none"> • Be certain that undercoating is intact. Recoat areas as required. <p>Note: The rust inhibiting coating should provide years or trouble free service. However, severe conditions (frequent use of unimproved or heavily salted road surfaces, etc.) may cause premature corrosion.</p> <p>Any area where undercoating is bulging due to flaky rust, area should be cleaned using a wire brush, treated with a primer and recoated.</p>
Hoses and Fittings	<ul style="list-style-type: none"> • Be certain that fuel fill hoses are free of cracking or damage. • Be certain that all fuel lines are intact and not damaged.
END OF TABLE	

C. ELECTRICAL WIRING DIAGRAM

For *ACTIVANTX* electrical wiring diagram, refer to following sections:

1. ELECTRICAL WIRING DIAGRAM LEGEND

a. Wire Color Codes

TABLE [4-1]: WIRE COLOR CODES			
LETTER	COLOR	LETTER	COLOR
BK	Black	R	Red
BL	Blue	R/BK	Red w/ Black Stripe
BR	Brown	T	Tan
BR/O	Brown w/ Orange Stripe	VI	Violet
GN	Green	W	White
GY	Gray	Y	Yellow
O	Orange		
END OF TABLE			

b. Wiring Diagram Symbols

Figure [4-2] defines symbols used in electrical wiring diagrams.

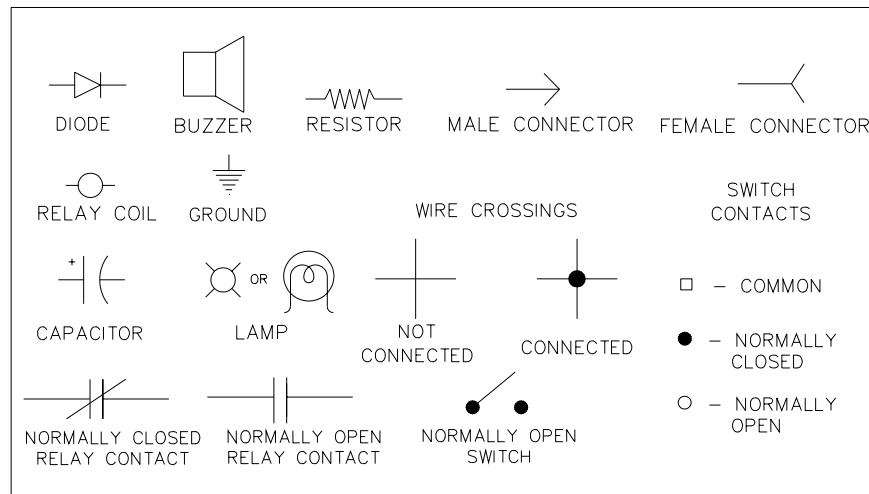


FIGURE [4-2]: DIAGRAM SYMBOLS

2. WIRING DIAGRAMS

For electrical system wiring diagrams, refer to **Figures [4-3]** thru **[4-5]**:

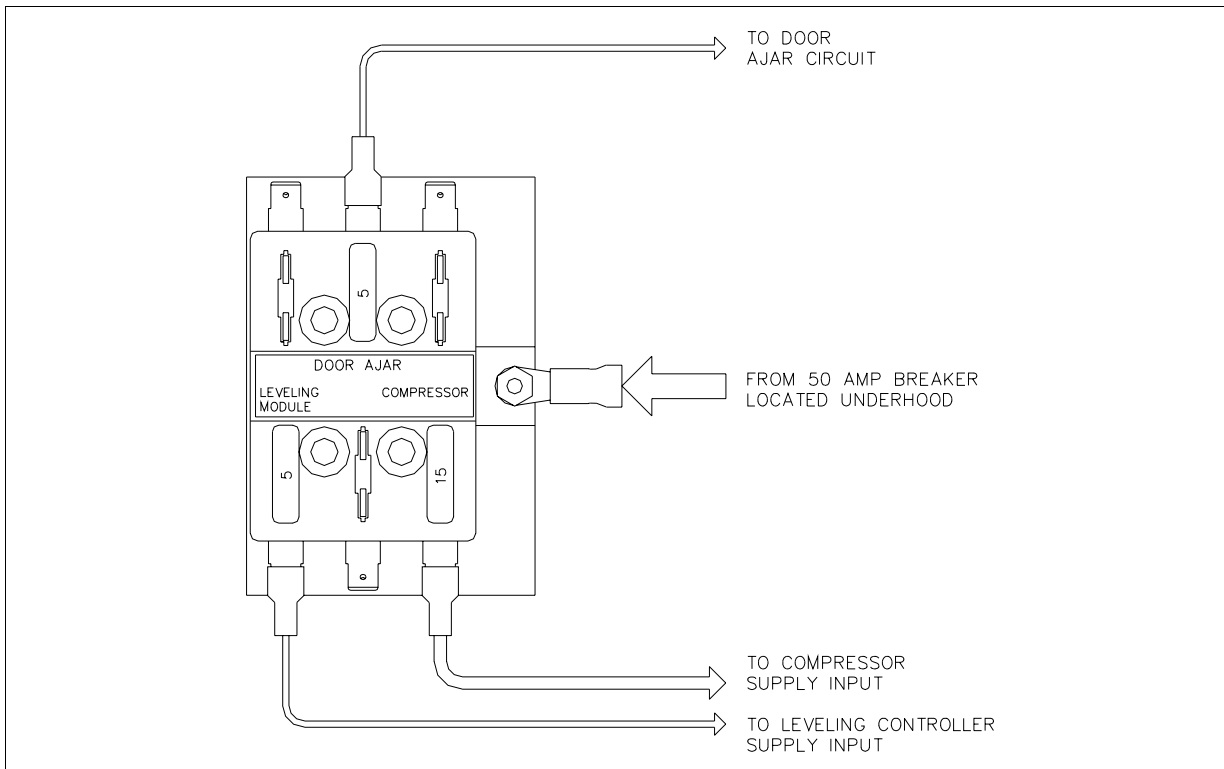


FIGURE [4-3]: POWER DISTRIBUTION (FUSE) BLOCK

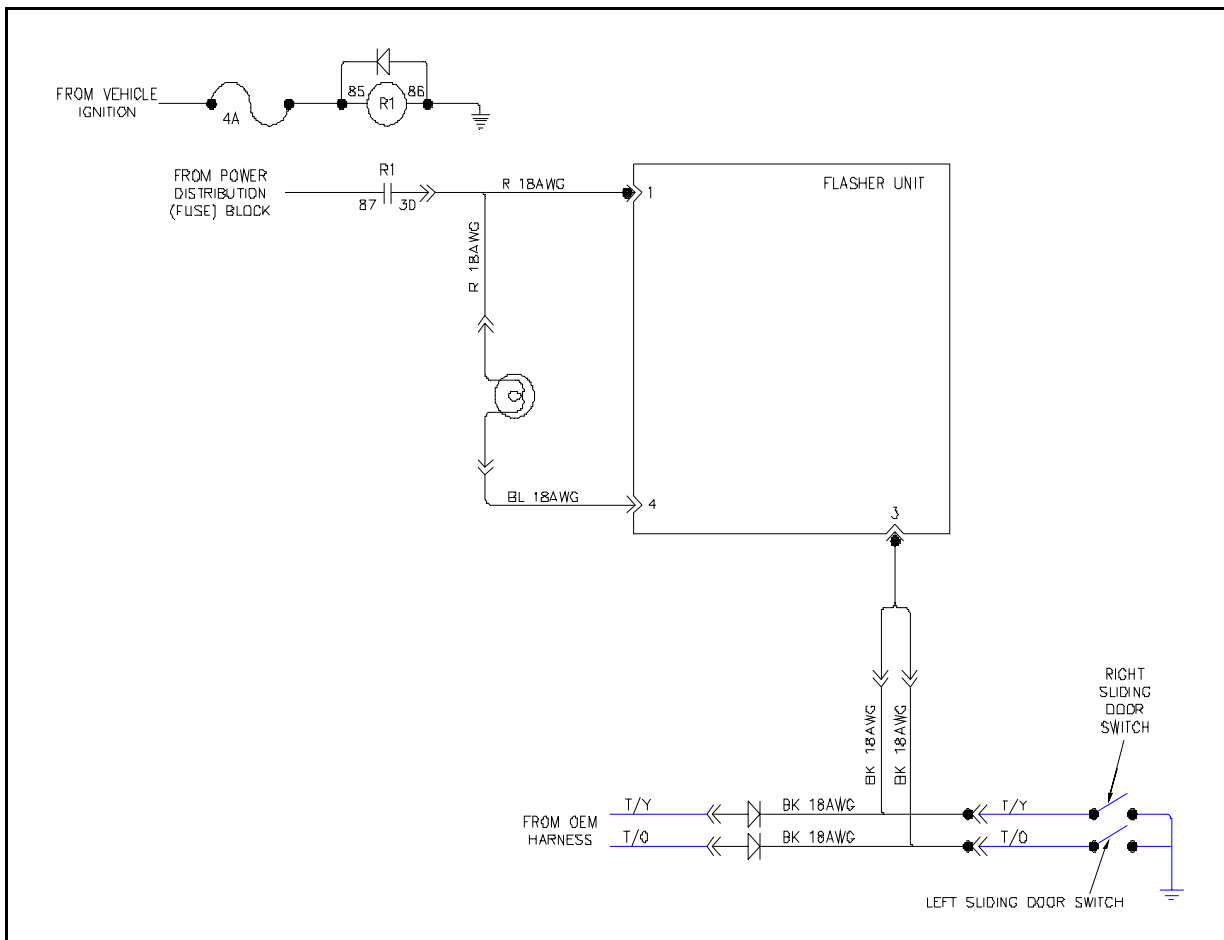


FIGURE [4-4]: DOOR AJAR SCHEMATIC AND WIRING DIAGRAM

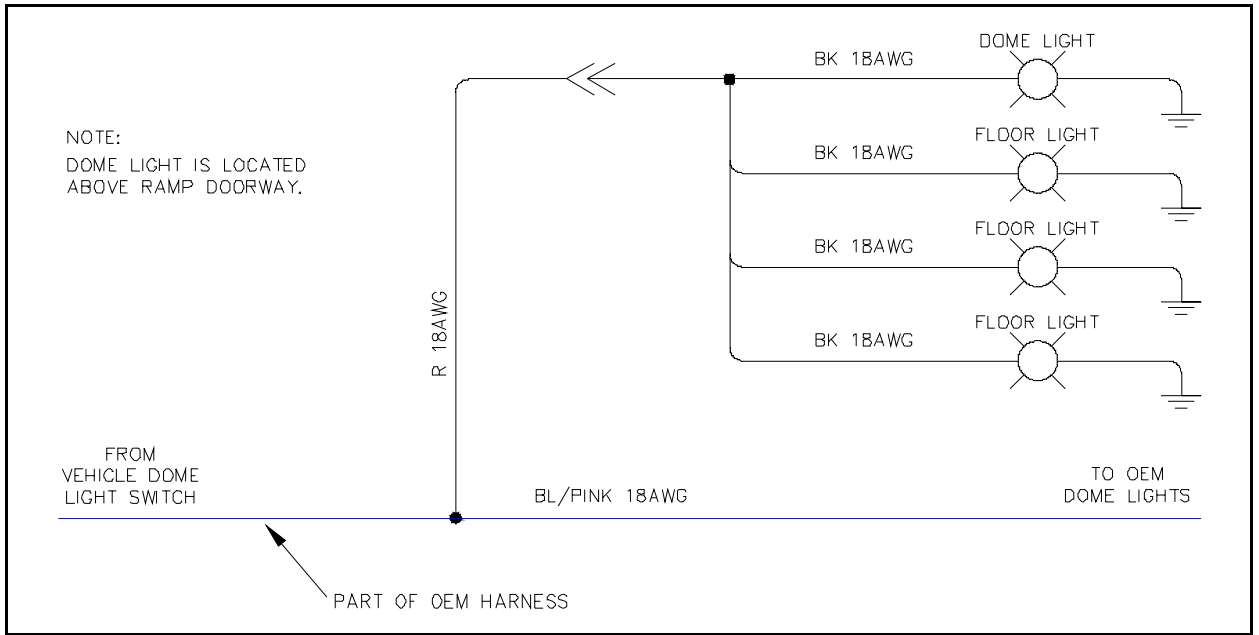


FIGURE [4-5]: DOME AND FLOOR LIGHT WIRING DIAGRAM

D. AIR SUSPENSION CONTROL DIAGRAMS

For air suspension control diagrams, refer to **Figures [4-6] and [4-7]:**

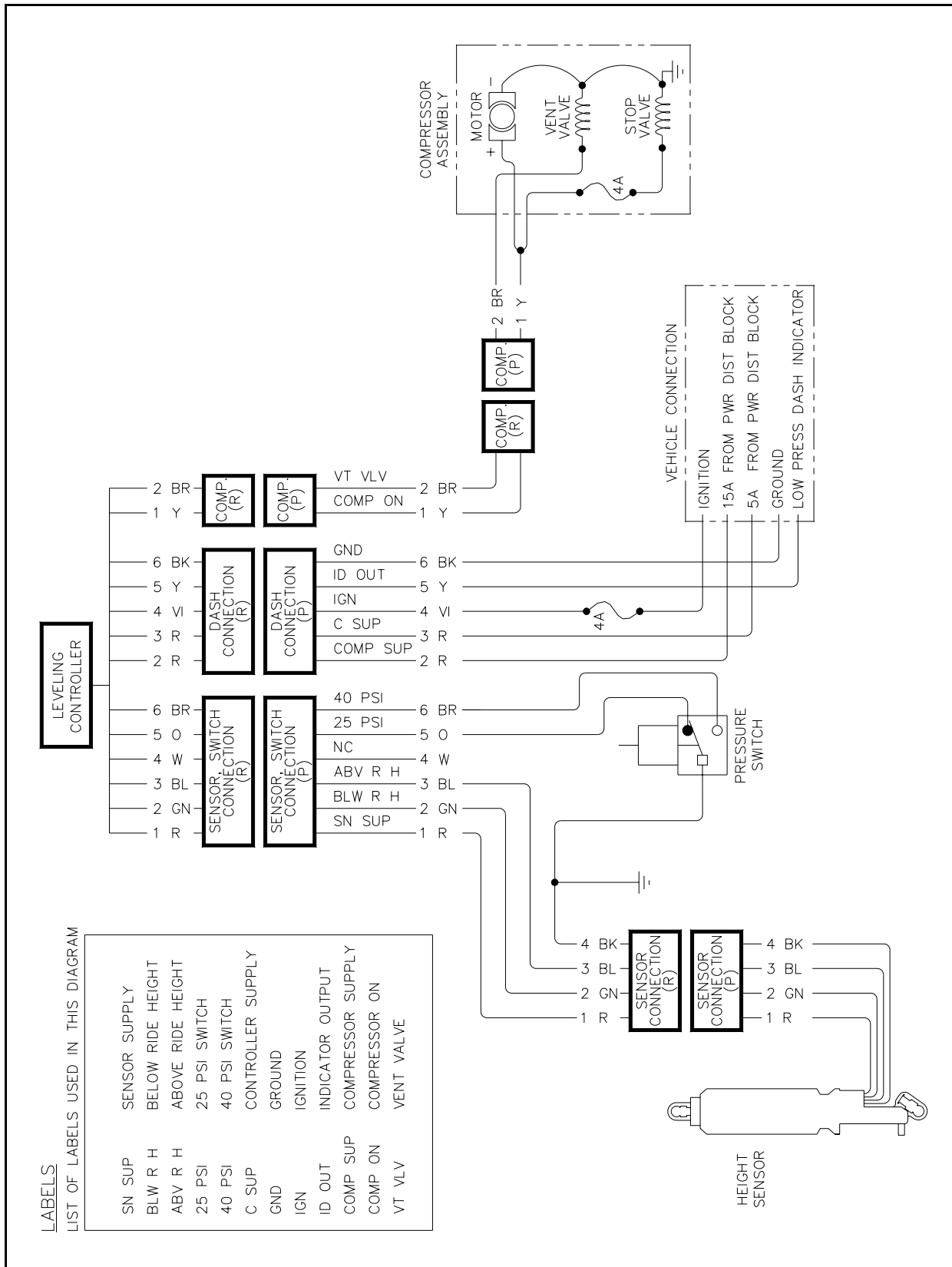


FIGURE [4-6]: LEVELING SYSTEM WIRING DIAGRAM

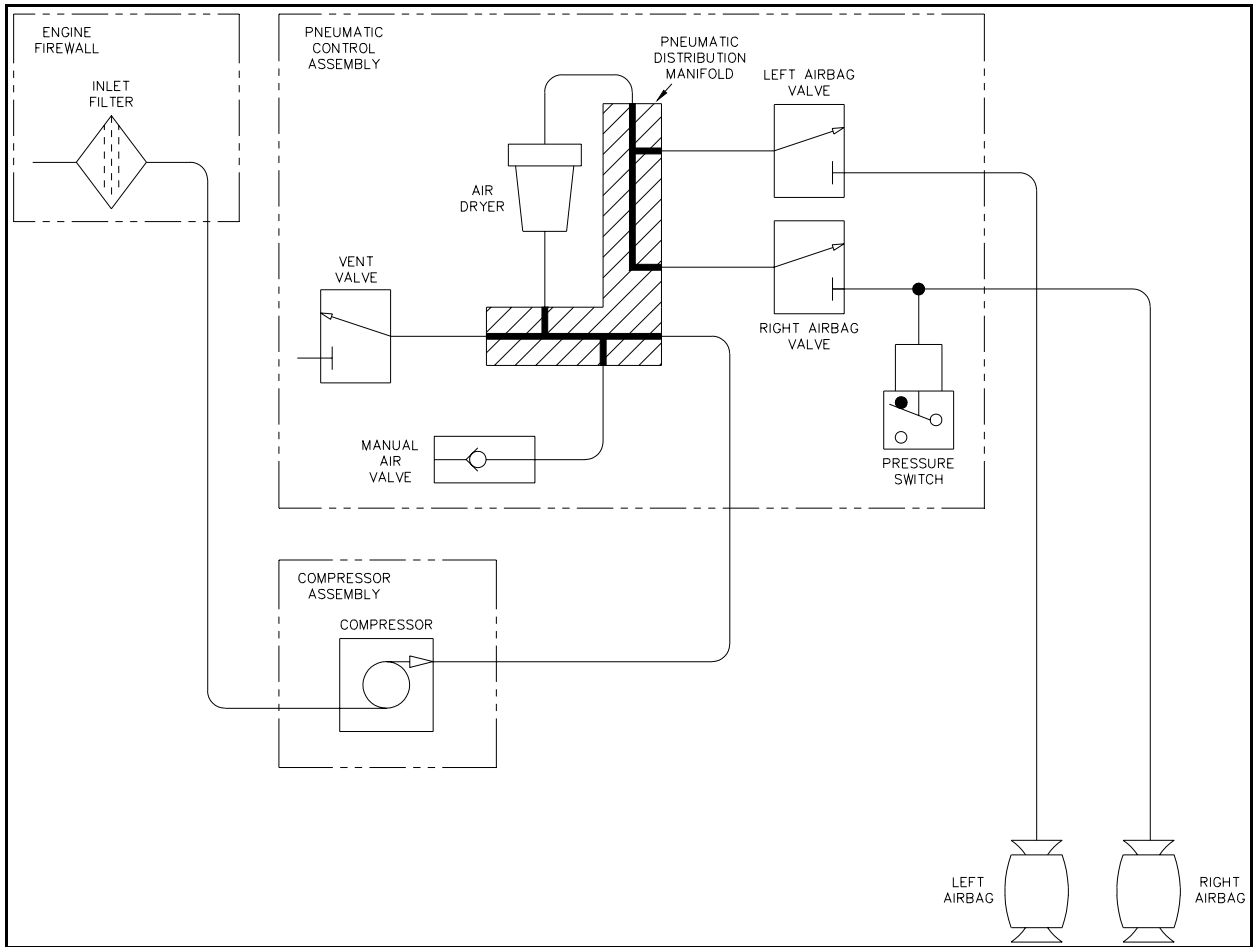


FIGURE [4-7]: LEVELING SYSTEM PNEUMATIC DIAGRAM

E. TROUBLESHOOTING GUIDE

The troubleshooting guide is designed to provide a logical starting point to locate general problems that could occur with special features of *ACTIVANTX*. However, not all possible problems or combinations of problems are listed. For troubleshooting *ACTIVANTX*, refer to **Table [4-2]**. The guide does not incorporate routine safety precautions or preliminary procedures and assumes that vehicle battery is fully charged and battery terminals/connectors are clean and tight.

WARNING

THE TROUBLESHOOTING GUIDE DOES NOT INCORPORATE ROUTINE SAFETY PRECAUTIONS OR PRELIMINARY PROCEDURES. DURING THE RICON WARRANTY PERIOD ONLY A TRAINED, AUTHORIZED RICON SERVICE AGENT MUST PERFORM TROUBLESHOOTING. AFTER WARRANTY PERIOD, IT IS RECOMMENDED THAT TROUBLESHOOTING BE PERFORMED BY AN AUTHORIZED RICON SERVICE AGENT.

TABLE [4-2]: TROUBLESHOOTING GUIDE

FUNCTION	SYMPTOM	POSSIBLE CAUSE	REMEDY
LOAD LEVELING SUSPENSION	Air bags will not inflate, but compressor operates normally.	Air leak in system.	Check air lines and replace if defective.
		Blockage in air lines.	Check air lines and purge if necessary.
		Defective air bags.	Replace air bags.
	Air bags will not inflate, but air compressor motor runs, with ignition key in ON position.	Air leak in system.	Check air lines and replace if defective.
		Defective vent valve.	Replace vent valve.
		Defective compressor.	Replace compressor assembly.
	Air bags will not inflate; compressor does not operate with ignition key in ON position.	Defective leveling controller or no power to compressor (COM SUP).	Refer to leveling system wiring diagram and make proper connections, or replace controller if defective.
		Defective height sensor.	Replace height sensor.
		Blockage in system.	Check air lines.
		Defective compressor.	Replace compressor assembly.
Compressor runs continuously with key OFF.	Compressor relay stuck in ON position.	Replace leveling controller.	

TABLE [4-2]: TROUBLESHOOTING GUIDE

FUNCTION	SYMPTOM	POSSIBLE CAUSE	REMEDY
	Compressor does not come on when vehicle ignition is on and is below ride height.	No power to compressor relay.	Check fuse labeled COMPRESSOR. Replace with an appropriate 15 amp fuse if necessary.
			Check connection between power distribution (fuse) block and leveling controller. Repair as necessary.
		No power to compressor from leveling controller (either faulty leveling controller or faulty height sensor assembly).	Replace leveling controller.
			Replace height sensor assembly.
		Faulty compressor.	Disconnect compressor and check motor with an independent 12VDC 15 amp source (car battery). Replace compressor assembly if necessary.
	Compressor comes on when vehicle is below ride height and ignition is on, but vehicle does not raise.	Vent valve is stuck in open position.	Check if air is escaping from vent valve when compressor is on. If so, check to see if valve is getting a 12VDC signal. If so, replace leveling controller. If not, replace compressor assembly.
		Stop valve is stuck in closed position.	Disconnect air hose from fitting at outlet of compressor assembly. See if there is an air flow when compressor is running. If not, replace compressor assembly.
		Broken air hose or air bag.	Find location of break and repair as necessary. Replace hose or air bag as necessary.
	Compressor runs continuously.	Faulty leveling controller.	Replace leveling controller.
		Faulty height sensor.	Replace height sensor assembly.

TABLE [4-2]: TROUBLESHOOTING GUIDE

FUNCTION	SYMPTOM	POSSIBLE CAUSE	REMEDY
	Compressor runs in short intervals with a short time interval between cycles/height adjustment is needed more often than normal.	Leak in air system.	Detect leak with a soap/water mixture in a spray bottle (window cleaner works well). Repair leak(s).
	System will not correct when vehicle is higher than ride height.	Vent valve missing 12VDC signal.	Correct loose connection or wiring.
		Plugged vent valve.	Repair or replace compressor assembly.
		Defective leveling controller or defective height sensor (no signal to vent valve).	Replace leveling controller.
		Bad connection between leveling controller and height sensor or between leveling controller and vent valve.	Replace height sensor assembly.
	Back-up alarm does not sound when ignition is on and vehicle is put into reverse.	12VDC signal not getting to alarm.	Repair as necessary.
		Defective back-up alarm.	Replace alarm.
DOME OR FLOOR LIGHT	Light does not illuminate when door is opened.	Lamp is burned out.	Replace as necessary
		Defective OEM electrical system (no OEM lights are illuminating).	Take to service agentship for service.
		Bad connection between OEM harness and light.	Check splice between dome light harness and OEM harness. Check connector between splice and light. Correct as necessary.
DOOR AJAR INDICATOR	Door ajar light does not flash when door is open while ignition is on.	Defective flasher assembly.	Replace flasher assembly.
	Door ajar light does not	Burned out bulb.	Replace bulb.

illuminate when door is open.

TABLE [4-2]: TROUBLESHOOTING GUIDE

FUNCTION	SYMPTOM	POSSIBLE CAUSE	REMEDY
		Bad connection between OEM harness and flashing assembly (sometimes characterized by only one sliding door triggering flashing light).	Repair as necessary. Check diode in Ricon harness and replace as necessary. Do not bypass diode built in to RICON harness.
END OF TABLE			

V. MAJOR SYSTEMS REPAIR

This chapter contains operational verification, adjustment, and repair/replacement procedures for major systems of the RICON *Activan*® *TX* for *Caltrans*. Each section also provides a brief functional description and overview of system or sub-system.

A. GENERAL SAFETY PRECAUTIONS AND WARNINGS

The following general safety precautions must be followed during service and maintenance:

1. Under no circumstances should installation, maintenance, repair, and adjustments be attempted without immediate presence of a person capable of rendering aid.
2. An injury, no matter how slight, should always be attended. Always administer first aid or seek medical attention immediately.
3. Protective eye shields and appropriate clothing should be worn at all times.
4. To avoid injury, always exercise caution when operating and be certain that hands, feet, legs, and clothing are not in path of product movement.
5. Batteries contain acid that can burn. If acid comes in contact with skin, flush affected area with water and wash with soap immediately.
6. Always work in a properly ventilated area. Do not smoke or use an open flame near a battery.
7. Do not lay anything on top of a battery.
8. Read and thoroughly understand operating instructions before attempting to operate.
9. Keep others clear during operation.
10. Vehicle must be safely parked with ignition turned OFF, on level ground, parking brake set, and tires safety blocked before jacking vehicle up.

B. LOAD LEVELING AIR SUSPENSION

CAUTION

- INFLATION AND DEFLATION OF AIR SUSPENSION SYSTEM IS AUTOMATIC. MAKE SURE THAT COMPRESSOR IS ALLOWED ENOUGH TIME (ABOUT ONE MINUTE) TO INFLATE SYSTEM TO NORMAL OPERATING PRESSURE AND VEHICLE RIDE HEIGHT. DRIVING VEHICLE WITHOUT WAITING FOR INDICATOR TO TURN OFF AND SYSTEM TO INFLATE MAY CAUSE SERIOUS DAMAGE TO AIR SUSPENSION SYSTEM OR VEHICLE BODY.
- IF INDICATOR DOES NOT TURN OFF, THERE IS POSSIBLY A PROBLEM WITH AIR SUSPENSION SYSTEM. REFER TO CHAPTER III OF THIS MANUAL TO INFLATE SYSTEM THROUGH MANUAL FILL VALVE. IF CORRECT SUSPENSION/RIDE HEIGHT CAN BE OBTAINED, DRIVE VEHICLE TO AN AUTHORIZED RICON SERVICE AGENT FOR REPAIR.

The Load Leveling Air Suspension system consists of an air compressor assembly, a manual fill valve, a pressure switch, a height sensor, an electronic leveling controller, and two suspension air bags. The system automatically adjusts to any change in vehicle load. Air is either added to or drained from suspension system as required to obtain normal ride height. The air compressor will operate or exhaust intermittently to accomplish this. For locations of these components, refer to Chapter VI of this manual. To inflate suspension, start vehicle and wait approximately one minute until system reaches operating pressure. **Do not drive vehicle during this time.** If vehicle has an unusually heavy load, wait an extra 10 seconds before driving.

1. LEVELING CONTROLLER

Refer to **Figure [5-1]**. The leveling controller is an electronic device that controls leveling system. It receives inputs from a height sensor, a pressure switch, and the ignition system. It outputs signals that control the compressor, vent valve, and dashboard mounted Air Suspension Low-Pressure Indicator. The controller is located behind the knee bolster below the steering wheel.



FIGURE [5-1]: LEVELING CONTROLLER LOCATION

a. Leveling Controller Check

Because of complexity of leveling controller, replacement with a known good controller is recommended over troubleshooting a suspected faulty controller. If this is not an option, the following are descriptions of conditions and resulting outputs:

- 1) Compressor ON (COMP, 2-pin connector/pin 1) signal *when* vehicle ignition ON *and* height sensor blue is **zero VDC** *and* height sensor green is **+5VDC** *and* five seconds has elapsed since height sensor moved into low region of ride height.
- 2) Vent valve ON (VT VLV, 2-pin connector/pin 2) signal *when* height sensor blue is **+5VDC** *and* height sensor green is **zero VDC** *and* five seconds has elapsed since height sensor moved into high region of ride height.
- 3) Dash Indicator ON *when* compressor ON *and* system pressure is **less than** 40psi.

b. Leveling Controller Replacement

- 1) At power distribution (fuse) block, remove cover.
- 2) At plastic shroud below steering column, remove retaining screws and pop retainers out of dash holes. Swing shroud to one side.
- 3) At controller, disconnect three electrical connectors from controller.

- 4) Remove two retaining screws and remove controller.
 - 5) Reverse procedure for replacement installation. Make sure leveling system is fully operational before reassembly of dash.
2. COMPRESSOR ASSEMBLY FOR VEHICLE PRODUCTION DATES FROM 08/25/97 AND ONWARD

The *Activan* vehicle production date is located on driver door B-pillar. This section applies to vehicles with production dates from 08/25/97 and onward. For vehicles with production dates prior to 08/25/97, refer to Appendix 1 of this manual.

Refer to **Figure [5-2]**. The compressor assembly is located under right front fender and consists of an air inlet filter, compressor, and compressor fuse. The inlet filter removes dust or particles from supply air. When vehicle ride height is too low and ignition is on, power is sent from leveling controller to compressor. The compressor operates until vehicle reaches correct ride height (the “too low” signal from height sensor is no longer present).

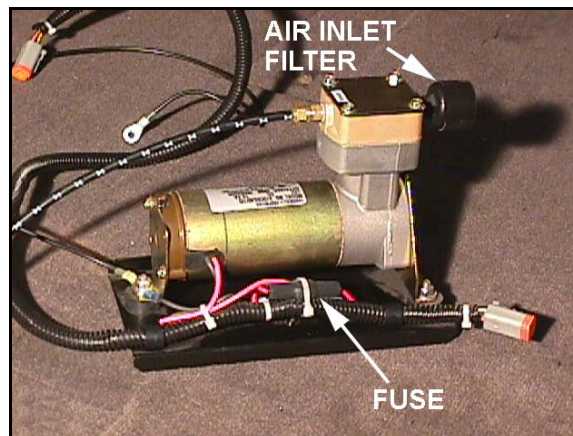


FIGURE [5-2]: COMPRESSOR ASSEMBLY FOR VEHICLE PRODUCTION DATES FROM 08/25/97 AND ONWARD

- a. Compressor Assembly Check
 - 1) Block right-rear tire and position floor jack at proper support point on DRIVERS' SIDE FRONT vehicle frame (NOT on axle).
 - 2) Using jack, raise vehicle until tire clears ground.
 - 3) Position jack stand beneath vehicle frame and lower vehicle onto stand.
 - 4) Remove wheel and fender FRONT inner-shroud to gain access to compressor assembly.
 - 5) At compressor assembly, disconnect compressor electrical connector from vehicle harness.

 CAUTION
AVOID OVER PRESSURIZING AIR SUSPENSION. WHEN MANUALLY ENERGIZING AIR COMPRESSOR, DO NOT OPERATE COMPRESSOR MORE THAN 1 OR 2 SECONDS.

- 6) With independent 12VDC source such as car battery, make sure source negative (-) terminal is grounded to chassis, and apply +12VDC to **pin 1** of compressor connector for 1 or 2 seconds. Compressor should start.

If so, continue this procedure. If not, perform Compressor Assembly Fuse Replacement procedure.

- 7) Disconnect 12VDC source from compressor connector and vehicle chassis.
 - 8) Connect compressor connector to vehicle wiring connector.
 - 9) Install fender inner-shroud and wheel.
 - 10) Using jack, raise vehicle until frame clears jack stand.
 - 11) Remove jack stand.
 - 12) Lower vehicle to ground.
 - 13) Remove tire block and floor jack.
- b. Compressor Assembly Removal
- 1) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).
 - 2) Using jack, raise vehicle until tires clear ground.
 - 3) Allow air suspension to automatically vent.
 - 4) Lower vehicle to ground.
 - 5) Block right-rear tire and position floor jack at proper support point on DRIVERS' SIDE FRONT vehicle frame (NOT on axle).
 - 6) Using jack, raise vehicle until tire clears ground.
 - 7) Position jack stand beneath vehicle frame and lower vehicle onto stand.
 - 8) Remove wheel and fender FRONT inner-shroud to gain access to compressor assembly.
 - 9) Remove screw securing ground wire terminal from vehicle chassis.
 - 10) At compressor assembly, disconnect compressor electrical connector from vehicle wiring connector.

 **WARNING**

THE AIR SUSPENSION SYSTEM MAY BE SLIGHTLY PRESSURIZED AFTER VEHICLE IS LOWERED TO GROUND. LOOSEN FITTING SLOWLY TO RELEASE RESIDUAL PRESSURE.

- 11) At compressor assembly, LOOSEN but do not remove air outlet hose compression fitting. Label pneumatic hose and remove from fitting.
 - 12) Note position of assembly. At underside of assembly, remove three (3) mounting bolts and remove assembly from vehicle.
- c. Compressor Assembly Installation
- 1) Position Compressor Assembly (or replacement assembly) into place and install three mounting bolts.

- 2) Insert labeled pneumatic hoses into fittings and tighten compression fittings.
 - 3) Connect compressor electrical connector to vehicle wiring connector.
 - 4) Secure ground wire terminal to chassis with screw.
 - 5) Pressurize system to **30 psi** at manual air valve.
 - 6) At compressor assembly, spray all fittings with a mild-soap and water solution to check fittings for leaks. Tighten or repair any fittings that leak. If repairs are needed, remove assembly and repair. If no repairs are needed, continue this procedure.
 - 7) Install fender inner-shroud and wheel.
 - 8) Using jack, raise vehicle until frame clears support.
 - 9) Remove jack stand.
 - 10) Lower vehicle to ground.
 - 11) Remove tire block and floor jack.
- d. Compressor Assembly Fuse Replacement
- 1) Perform Compressor Assembly Removal procedure and continue this procedure.
 - 2) Separate fuse holder from assembly by cutting appropriate wire ties.
 - 3) Cut protective shrink wrap from fuse holder.
 - 4) Replace fuse with fuse rated at **4 amp**.
 - 5) Wrap fuse holder with shrink wrap or several layers of vinyl electrical tape.
 - 6) Redress harness to compressor assembly with wire ties.
 - 7) Perform Compressor Assembly Installation procedure.
- e. Inlet Filter Cleaning or Replacement
- 1) Block right-rear tire and position floor jack at proper support point on DRIVERS' SIDE FRONT vehicle frame (NOT on axle).
 - 2) Using jack, raise vehicle until tire clears ground.
 - 3) Position jack stand beneath vehicle frame and lower vehicle onto stand.
 - 4) Remove wheel and fender FRONT inner-shroud to gain access to compressor assembly.
 - 5) At inlet filter, pry end-cap from housing and remove filter element.
 - 6) If not reusable (torn, hard/stiff, etc.), discard. If reusable, wash element with lukewarm water and mild soap. SQUEEZE (do not twist) and air dry.
 - 7) Position element (or replacement element) into housing and install end-cap.

- 8) Install fender inner-shroud and wheel.
 - 9) Using jack, raise vehicle until frame clears jack stand.
 - 10) Remove jack stand.
 - 11) Lower vehicle to ground.
 - 12) Remove tire block and floor jack.
3. PNEUMATIC CONTROL ASSEMBLY FOR VEHICLE PRODUCTION DATES FROM 08/25/97 AND ONWARD

The *Activan* vehicle production date is located on driver door B-pillar. This section applies to vehicles with production dates from 08/25/97 and onward. For vehicles with production dates prior to 08/25/97, refer to Appendix 1 of this manual.

Refer to **Figure [5-3]**. The pneumatic control assembly is located in topline of engine compartment and consists of a manual fill valve, pressure switch, vent valve, filter/dryer, and airbag valves. The pressure switch indicates to leveling controller when air suspension system has reached operating pressure of 40 psi. The switch outputs to dashboard mounted air suspension low-pressure indicator which is lit only when air suspension pressure has NOT reached normal operating pressure. As soon as operating pressure has been obtained, indicator goes out. When vehicle ride height is too high, power is sent from leveling controller to vent valve solenoid and valve opens to release air from system. The system vents until vehicle reaches correct ride height (the "too high" signal from height sensor is no longer present). The filter/dryer removes moisture from air before it enters system and air bags.

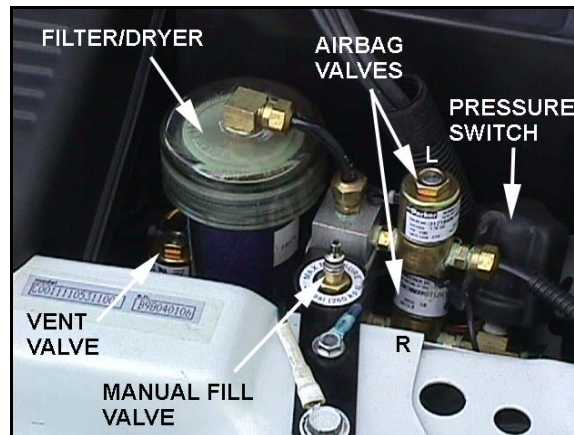


FIGURE [5-3]: PNEUMATIC CONTROL ASSEMBLY

a. Pressure Switch

Check Out:

- 1) Gain access to topline of engine compartment.
- 2) Place multimeter into CONTINUITY CHECK or RESISTANCE function.
- 3) Connect one lead of multimeter to chassis ground.
- 4) Connect other lead of multimeter to PIN-3 (orange wire) of harness connector.
- 5) At multimeter, verify multimeter indicates CONTINUITY or ZERO resistance. If so, continue this procedure. If not, perform Pressure Switch Replacement procedure.

- 6) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).
- 7) Using jack, raise vehicle until tires clear ground.
- 8) Allow air suspension to automatically vent.
- 9) Lower vehicle to ground.
- 10) At multimeter, verify reading indicates NO continuity or INFINITE resistance. If so, continue this procedure. If not, perform Pressure Switch Replacement procedure.
- 11) Reconnect connector to vehicle wiring harness.

Replacement:

- 1) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).
- 2) Using jack, raise vehicle until tires clear ground.
- 3) Allow air suspension to automatically vent.
- 4) Lower vehicle to ground.
- 5) Gain access to topside of engine compartment.
- 6) Disconnect electrical connector.
- 7) Remove two bolts fastening pneumatic control assembly to engine

 **WARNING**

THE AIR SUSPENSION SYSTEM MAY BE SLIGHTLY PRESSURIZED AFTER VEHICLE IS LOWERED TO GROUND. LOOSEN FITTING SLOWLY TO RELEASE RESIDUAL PRESSURE.

- 8) Remove vent valve and air bag hoses.
- 9) Locate pressure switch assembly
- 10) At switch, *carefully* remove rubber boot covering electrical connections.
- 11) Label switch wires and disconnect wires. Note what wires are connected to.
- 12) Remove left airbag fitting.
- 13) Unthread and remove switch from tee fitting.

 **CAUTION**

DO NOT USE TEFLON TAPE. IT MAY DETACH AND BECOME LODGED ELSEWHERE IN SYSTEM.

- 14) At switch, apply Teflon sealer to outside of threaded pneumatic fitting.
- 15) Install replacement pressure switch into tee fitting.

- 16) Connect labeled wires to switch.
- 17) Slide rubber boot over wires onto switch.
- 18) At manual fill valve, pressurize system to **30 psi**.
- 19) At tee fitting, spray all fittings with a mild-soap and water solution to check fittings for leaks. Tighten or repair any fittings that leak. If repairs are needed, remove assembly and repair. If no repairs are needed, continue this procedure.

b. Vent Valve

Check Out:

- 1) Gain access to topside of engine compartment.
- 2) At pneumatic control assembly, disconnect electrical connector.
- 3) With an independent 12VDC source such as car battery, make sure source negative (-) terminal is grounded to chassis, and apply +12VDC to **pin 2** of compressor connector. Vent valve should click and vehicle should lower. If so, continue this procedure. If not, perform Vent Valve Replacement procedure.
- 4) Re-connect electrical connector.

Replacement:

- 1) Gain access to topside of engine.
- 2) Disconnect electrical connector.
- 3) Remove two bolts connecting pneumatic control assembly to engine compartment.
- 4) Disconnect hoses from vent valve and air bag valves.
- 5) Leaving as much wire as possible to ensure installation of replacement, cut and remove butt connectors from two wires attached to vent valve.
- 6) Remove vent valve from male-male fitting.
- 7) Make sure fitting threads are clean.

 **CAUTION**

DO NOT USE TEFLON TAPE. IT MAY DETACH AND BECOME LODGED ELSEWHERE IN SYSTEM.

- 8) At vent valve, apply Teflon sealer to outside of threaded pneumatic fitting.
- 9) Install replacement vent valve with valve facing UP.
- 10) Butt connect harness wires to vent valve wires. It is not necessary to observe polarity.
- 11) Wrap butt connectors with vinyl electrical tape to protect connectors.
- 12) Reconnect hoses to vent valve and air bag valves
- 13) Reconnect pneumatic control assembly to engine compartment with two bolts.
- 14) Reconnect electrical connector.

c. Filter/Dryer

Check Out:

NOTE: The moisture content of filter/dryer is indicated by color of moisture absorbing crystals inside. If dry, crystals are BLUE. If moist but not saturated, crystals are translucent GRAY. If saturated, crystals are PINK.


- 1) Gain access to topside of engine and locate filter/dryer.
- 2) Inspect filter/dryer color. If more pink than gray, perform Filter/Dryer Replacement procedure. If blue or gray, filter/dryer does not need to be replaced.

Replacement:

- 1) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).
- 2) Using jack, raise vehicle until tires clear ground.
- 3) Allow air suspension to automatically vent.
- 4) Lower vehicle to ground.
- 5) Gain access to topside of engine compartment.
- 6) Disconnect electrical connector.
- 7) Remove two bolts fastening pneumatic control assembly to engine

 WARNING
THE AIR SUSPENSION SYSTEM MAY BE SLIGHTLY PRESSURIZED AFTER VEHICLE IS LOWERED TO GROUND. LOOSEN FITTING SLOWLY TO RELEASE RESIDUAL PRESSURE.

- 8) Disconnect hoses from vent valve and air bag valves.
- 9) At outlet elbow-fitting at end of filter/dryer, LOOSEN but do not remove hose compression fitting. Label pneumatic hose and remove from fitting.
- 10) Holding Tee-fitting at other end of filter/dryer, remove male-male adapter fitting, filter/ dryer, and outlet elbow as a unit.
- 11) Make sure fitting threads are clean.

 CAUTION
DO NOT USE TEFLON TAPE. IT MAY DETACH AND BECOME LODGED ELSEWHERE IN SYSTEM.

- 12) At filter/dryer, apply Teflon sealer to outside of threaded pneumatic fitting.
- 13) Make sure filter/dryer foam-protection strip is intact and install replacement filter/dryer.

14) Connect pneumatic hose to outlet elbow fitting.

4. HEIGHT SENSOR

The height sensor signals to the leveling controller when vehicle ride height is correct. The normal ride height range is approximately 1/2". The sensor is a Hall effect device in which, when at correct ride height, one magnet simultaneously activates two switches. As load changes, action of height sensor is such that magnet moves off one of switches causing a signal (either ride height is too low or too high) to be sent to leveling controller.

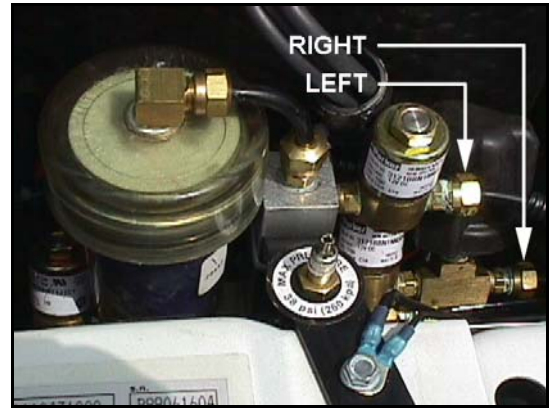


FIGURE [5-4]: AIRBAG AIRLINE FITTINGS

a. Height Sensor

Check Out:

- 1) At plastic shroud below steering column, remove retaining screws and pop retainers out of dash holes. Swing shroud to one side.
- 2) At leveling controller, disconnect 2-pin connector to prevent system from attempting to adjust vehicle ride height.

CAUTION

THE AIRBAG SYSTEM CONTAINS APPROXIMATELY 40 PSI OF PRESSURE AND MAY BLOW DUST AND DEBRIS INTO YOUR EYES WHEN DISCONNECTED.

- 3) Refer to **Figure [5-4]**. At pneumatic control assembly disconnect two indicated airline fittings. Allow air to escape until vehicle height is approximately two inches below normal ride height. Reconnect two fittings.
- 4) Place multimeter into DC VOLTS function.
- 5) Connect BLACK lead of multimeter to chassis ground.
- 6) Position vehicle ignition to ON.
- 7) At leveling controller, locate 6-pin connector containing BLUE and GREEN wires.
- 8) Insert pointed multimeter RED probe into insulation of BLUE wire until electrical contact with wire is made. Verify voltage is **zero VDC**. If not, proceed to step **14** and then perform Height Sensor Replacement procedure.
- 9) Insert pointed multimeter RED probe into insulation of GREEN wire until electrical contact with wire is made. Verify voltage is **5VDC**. If not, proceed to step **14** and then perform Height Sensor Replacement procedure.
- 10) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).

- 11) Using jack, raise vehicle slowly until voltage at GREEN wire is **zero VDC**. If not, proceed to step **14** and then perform Height Sensor Replacement procedure.
- 12) Insert pointed multimeter RED probe into insulation of BLUE wire until electrical contact with wire is made. Verify voltage is **zero VDC**. If not, proceed to step **14** and then perform Height Sensor Replacement procedure.

- 13) Using jack, raise vehicle until voltage at BLUE wire is **5VDC**. If correct voltage is not achieved, proceed to step **14** and then perform Height Sensor Replacement procedure. (This point should be about 1/2" above where GREEN wire dropped to 5VDC. There is a 1/4" range of proper ride height for sensor.)
- 14) Position vehicle ignition to OFF.
- 15) Remove BLACK lead of multimeter from chassis ground.
- 16) Place multimeter function selector to OFF.
- 17) At any insulation punctures caused by multimeter pointed probes, wrap with vinyl electrical tape.
- 18) At leveling controller, connect 2-pin connector to vehicle wiring harness.
- 19) At plastic shroud below steering column, swing shroud into place and install pop retainers into dash holes.
- 20) Lower vehicle to ground.
- 21) Remove floor jack.

Replacement:

- 1) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).
- 2) Using jack, raise vehicle until tires clear ground.
- 3) Position jack stands beneath vehicle frame and lower vehicle onto stands.
- 4) At height sensor, disconnect electrical connector.
- 5) Pull height sensor off ball attaching joints connected to chassis and sway bar.
- 6) Install replacement height sensor onto ball attaching joints.
- 7) Connect electrical connector to height sensor.
- 8) Using jack, raise vehicle until frame clears jack stand.
- 9) Remove jack stand.
- 10) Lower vehicle to ground.
- 11) Remove tire blocks and floor

jack.

c. Verification of Proper Ride

Height

Refer to **Figure [5-4]**. Ride height must be verified to assure optimum performance of air suspension. Measure dimension "A" with vehicle on ground to verify proper ride height. Dimension "A" should

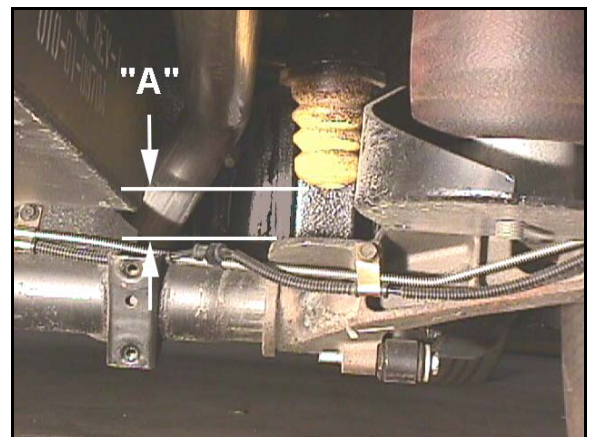


FIGURE [5-5]: RIDE HEIGHT VERIFICATION

be between 2" and 2-1/2". If not, contact an authorized *Activan* service agents for repair.

5. AIR BAGS

The air bags are sealed rubber bags which can be pressurized with air. As air suspension components, bags replace mechanical springs that vehicle rides on. The ride height of vehicle is also varied by adding or removing air from bags.

a. Air Bag

Check Out:

- 1) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).
- 2) Using jack, raise vehicle until tires clear ground.
- 3) Position jack stands beneath vehicle frame and lower vehicle onto stands.

NOTE: The air bags should be checked regularly to ensure optimum performance of air suspension. In normal conditions, inflated air bags have an outside diameter of 6-1/2" and a metal ring at bottom that is hidden by bag.

- 4) Inspect air bags. If either air bag appears to be soft, worn out and/or bottom metal ring is visible, perform Air Bag Replacement procedure. If either air bag appears normal, continue this procedure.
- 5) Using jack, raise vehicle until frame clears jack stand.
- 6) Remove jack stand.
- 7) Lower vehicle to ground.
- 8) Remove tire blocks and floor jack.

Replacement:

- 1) Block front tires and position floor jack at proper support point on REAR vehicle frame (NOT on axle).
- 2) Using jack, raise vehicle until tires clear ground.
- 3) Position jack stands beneath vehicle frame and lower vehicle onto stands.
- 4) At top of air bag, disconnect pneumatic hose.
- 5) Remove locking nut and air bag from upper bracket.
- 6) Using strap wrench, unscrew air bag from bottom bracket.
- 7) By hand, thread replacement air bag into bottom bracket. Tighten air bag with strap wrench.
- 8) Position air bag into upper bracket and install locking nut.



DO NOT USE TEFLON TAPE. IT MAY DETACH AND BECOME
LODGED ELSEWHERE IN SYSTEM.

- 9) At air bag, apply Teflon sealer to outside of threaded pneumatic fitting.
- 10) Connect hose to air bag fitting.
- 11) Using jack, raise vehicle until frame clears jack stand.
- 12) Remove jack stand.
- 13) Lower vehicle to ground.
- 14) Remove tire blocks and floor jack.

