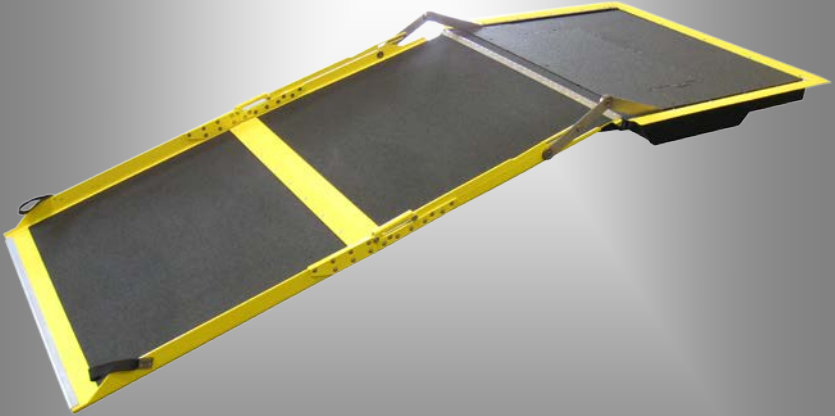




Ricon[®]

A Wabtec subsidiary

BiFOLD[®]
ELECTRIC BR2E-SERIES
LOW-FLOOR VEHICLE ACCESS RAMP
FOR TRANSIT BUSES



Operator Manual

Ricondealer.Wabtec.com

This RICON product must be installed and serviced by a Ricon dealer or qualified service technician.

The operator must refer to this manual for operating instructions, then retain it for future reference.

Customer Information	
Customer name	
Installing dealer	
Date installed	
Serial number	

REVISION RECORD

REV	PAGES	DESCRIPTION OF CHANGE	ECR/ECO
32DBR201. A		New Release.	

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I. INTRODUCTION BIFOLD® ELECTRIC BR2E RAMP

This operator manual contains a product description, operating instructions, and a maintenance schedule for the Ricon Electric BiFold® BR2E-Series ramp for low-floor vehicle access when installed in transit vehicles.

This manual contains warranty information, safety precautions, operating and maintenance instructions that apply to the Ricon Electric Bifold® BR2E-Series ramp for low-floor vehicle access when installed in transit vehicles. It is important to user safety that the lift operator be completely familiar with the operating instructions. Once the ramp is installed, it is very important that the ramp be properly maintained by following the Ricon recommended maintenance and inspection instructions provided in Chapter III.

A. PRODUCT SUPPORT

If there are questions about this manual, or you need copies, please contact Ricon Product Support at the following location:

Ricon Corporation
 1135 Aviation Place
 San Fernando, CA 91340.....(818) 267-3000
 Outside (818) Area Code.....(800) 322-2884
 Websitericondealer.wabtec.com

Vapor Ricon Europe Ltd.
 Meadow Lane
 Loughborough, Leicestershire.....0044 (0) 1509 635 920
 LE 1HS United Kingdom

B. PRODUCT WARRANTY

RICON A WABTEC SUBSIDIARY

ELECTRIC BIFOLD® RAMP TWO-YEAR LIMITED WARRANTY

Ricon A Wabtec Subsidiary (Ricon) warrants to the original purchaser of this product that Ricon will repair or replace, at its option, any parts that fail because of defective material or workmanship as follows:

- Repair or replace parts for a period of two years starting from the in-service date. Obtain a complete list of parts covered by this warranty from Ricon Product Support.
- Labor costs for specified parts replaced under this warranty for a period of two years from date put into service. A Ricon rate schedule determines parts covered and labor allowed.

(Note: See specified labor costs for explanation of when labor is covered under this warranty.)

If You Need to Return a Product: Return this product to Ricon, following the Ricon RMA procedure. Please give as much advance notice as possible, and allow a reasonable amount of time for repair.

This Warranty Does Not Cover:

- Malfunction or damage to product parts caused by accident, misuse, lack of proper maintenance, neglect, improper adjustment, modification, alteration, the mechanical condition of the vehicle, road hazards, overloading, failure to follow operating instructions, or acts of nature (i.e., weather, lightning, flood).

NOTE: Ricon recommends that this product be inspected by a Ricon dealer or qualified service technician at least once every six months, or sooner if necessary. Required maintenance should be performed at that time.

 **WARNING**

THIS PRODUCT HAS BEEN DESIGNED AND MANUFACTURED TO EXACT SPECIFICATIONS. - ANY MODIFICATION OF THIS PRODUCT CAN BE HAZARDOUS -

This Warranty is Void If:

- The product has been installed or maintained by someone other than a Ricon dealer or qualified service technician.
- The product has been modified or altered in any respect from its original design without written authorization by Ricon.

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

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

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

Important: The warranty registration card must be completed and returned to Ricon within 20 days after installation of this Ricon product to validate the warranty. The warranty is not transferable. The warranty gives specific legal rights. There may be other rights that vary in each state.

C. SHIPMENT INFORMATION

- When the product is received, unpack the product and check for freight damage. Claims for damage should be made to the freight carrier immediately.
- Be sure the ramp assembly contains all items listed on the included bill of material. Retain bill of material for future reference. Please report any missing items immediately to Ricon Product Support.
- The warranty and owner registration cards must be completed and returned to Ricon within 20 days to validate the warranty.

The sales or service personnel must review the Warranty and Operator Manual with the user to be certain that they understand how to safely operate the product and instruct the user to follow the operating instructions without exception.

D. GENERAL SAFETY PRECAUTIONS

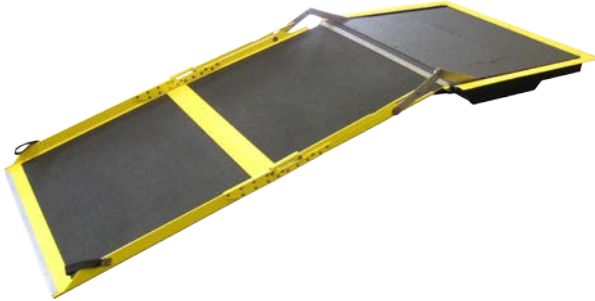
The following general safety precautions apply to the BiFold® Electric BR2E Series wheelchair ramps and must be followed during operation and maintenance:

- Read and thoroughly understand the operating instructions before attempting to operate the wheelchair ramp.
- Exercise caution when operating ramp. Keep hands, feet, legs, and clothing clear of the ramp path while it is unfolding or folding.
- Inspect ramp before loading passengers. If unsafe conditions, unusual noises or erratic movements occur, do not operate ramp until the problem is corrected.
- Stand clear of doors and platform and keep others clear during operation.
- Do not exceed ramp weight capacity of 800 lbs (363kg).
- The wheelchair ramp requires regular periodic maintenance. Ricon recommends a thorough inspection at least once every six months. The Ricon ramp product must be maintained at the highest level of performance.

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II. DESCRIPTION ELECTRIC BIFOLD® BR2E

This Ricon Electric BiFold® BR2E-Series ramp for low-floor vehicle access when installed in transit vehicles to accommodate people with disabilities that use mobility-aid equipment or who cannot easily climb steps. The fully electric powered ramp folds into the vehicle vestibule flooring.



A. RAMP FEATURES

1. INTERLOCK SUPPORT

The ramp electronics can be interfaced with the vehicle interlock circuitry to prevent unintentional vehicle departure with the ramp deployed. The ramp interlock circuitry senses the position of the ramp, stowed or deployed, and provides this information at the J6 harness connector. A typical vehicle interlock circuit might require that the following conditions be met before operating power is supplied to ramp:

- Park vehicle and set parking brake.
- Place transmission in neutral.
- Open vehicle door adjacent to ramp.

2. AUDIBLE ALERT

The ramp supports an audible alert device that will sound while the ramp is in motion. This optional alert device is not present in every ramp installation.

3. RAMP CONTROL PANEL

Refer to **Figure 2-1**. Ricon does not supply a ramp control panel because this device is typically installed by the vehicle builder.

The ramp can be operated with one similar to that shown; however, the actual panel will vary between transit authorities and vehicles. The control panel is normally installed in the driver area. As a minimum, it should have a power ON/OFF switch, a power on indicator light, and a three-position ramp control switch (center position is off). The ramp receives power from the vehicle when the interlock conditions are met and the power ON/OFF switch is on. The three-position ramp control switch can then be used to transmit a deploy or stow signal to the ramp electrical system.

4. HEATER MAT (OPTIONAL)

Some Electric BR2E installations include an electrically heated mat that is incorporated into

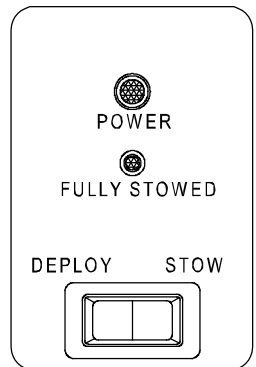


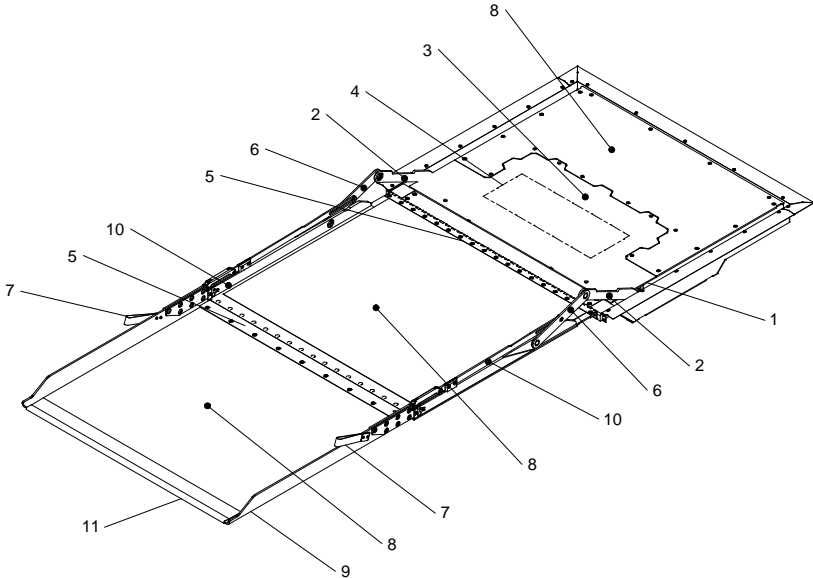
FIGURE 2-1: TYPICAL CONTROL PANEL

the ramp component access cover located on the upper surface of the ramp housing. The heater mat helps keep the ramp and vehicle vestibule area clear of snow and ice. A two-position HEATER POWER ON-OFF switch must be installed to operate the heater mat.

5. RAMP CAPACITY AND SIZE

The load bearing capacity for the ramp is 800 pounds (363kg). For that reason, passengers must use the ramp one at a time; do not overload ramp.

Be certain that passenger mobility-aid equipment fits easily between the ramp left and right side barriers before allowing use of ramp.



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FIGURE 2-2: MAJOR ELECTRIC BR2E RAMP COMPONENTS

B. BR2E MAJOR COMPONENT DESCRIPTIONS

Figure 2-2 shows major components of the BiFold® Electric BR2E-Series ramp. A description of each component is provided in Table 2-2.

TABLE 2-2: MAJOR RAMP COMPONENTS	
Item	Description
1	Component Access Cover - Provides access to ramp electrical components.
2	Drive Arms - Ramp linkage arms connected to driveshafts.
3	Electric Motor – Provides Torque for moving ramp plate.
4	Heater Mat (<i>Optional</i>) - Electrically heated pad helps keep ramp clear of snow and ice.
5	Hinges - Pivoting connection between ramp and ramp frame.
6	Lifting arms (left & right side) - Ramp linkage arms connect drive arms to rear section of ramp; provide primary lifting force for entire ramp.
7	Lifting Straps (<i>Optional</i>) - Use to manually deploy or stow ramp.
8	Non-Slip Flooring - Bonded to upper ramp surface to reduce passenger slippage.
9	Ramp - Unfolds from vehicle floor (deploys) to provide access for handicapped passengers; divided into front and rear sections.
10	Side Barriers (left & right side) - Vertical curbs help confine passenger to ramp area.
11	Sensitive Edge (<i>Optional</i>) - Pressure sensitive edge signals controller when ramp strikes an object.
END OF TABLE	

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III. OPERATING INSTRUCTIONS ELECTRIC BIFOLD RAMP

This chapter contains safety precautions, daily safety check instructions, control and indicator descriptions, and operating instructions for the Ricon Electric BiFold® BR2E-Series ramp for low-floor vehicle access. This chapter must be thoroughly understood by operator before using ramp.

A. SAFETY PRECAUTIONS

The following safety precautions must be complied with at all times when operating ramp:

- Refer to **Figure 3-1**. Deploying ramp on sloped or steeply crowned roadways is hazardous. Slope may not exceed the requirements presented by ADA (Americans with Disabilities Act – Reference Section 810, Paragraph 2.4). Operate ramp with vehicle parked on level ground.
- Vehicle must be safely parked with parking brake set before using ramp.
- Verify that the vehicle area is clear of obstacles.
- Read and comply with all warning labels and symbols attached to the wheelchair ramp.
- Perform the Daily Inspection described in **Table 3-1** (refer to Section B in this chapter).
- The operator must inspect ramp before use. If unusual noises, movements, or other unsafe conditions are noticed, do not use ramp and contact a Ricon dealer or qualified service technician for repair.
- Read the operating instructions carefully before operating the BiFold Ramp.
- Do not attempt a deploy or stow movement of ramp when a passenger is present on ramp.
- Do not exceed load capacity of 800 lbs (363kg); the platform is intended for ONE wheelchair and its occupant. Do not overload ramp.
- It is never safe for a wheelchair occupant to exit a vehicle backwards. Wheelchair occupants must face forward (in direction of travel) when entering or exiting vehicle; do not move wheelchair backwards on ramp.
- Do not place equipment or furniture inside vehicle that may prevent pivoting of your wheelchair. Being able to pivot assures that you can safely exit facing outward.
- Use great care in wet conditions, because the wheelchair brakes are less effective if wheels or platform are wet.
- Verify that the wheelchair fits safely on the ramp. The wheelchair cannot extend beyond the side barriers.
- Keep arms, legs, and clothing away from moving ramp parts.
- Keep others clear from ramp while operating it.
- Never leave ramp outside of vehicle. Return ramp to stowed position when not in use.
- Do not allow an untrained person to operate ramp.
- Careful supervision is necessary if used by or near children.

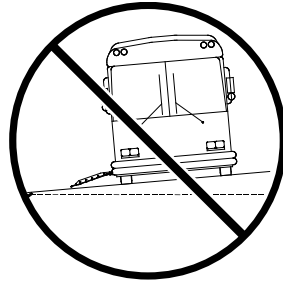


FIGURE 3-1: DO NOT USE RAMP WHEN VEHICLE IS PARKED ON SLOPED GROUND.


Read and understand these safety precautions. Review them periodically and ask other operators to read them as well. Contact a Ricon dealer or Ricon Product Support if there are questions.

B. DAILY INSPECTION

Check ramp daily, following the Daily Inspection outlined in Table 3-1. Meet all inspection criteria before allowing passengers on ramp.

TABLE 3-1: DAILY INSPECTION	
Inspection Points	Check:
Ramp controller	<ul style="list-style-type: none"> Power ON/OFF switch for correct operation: Power On indicator lights when Power ON/OFF switch is ON and all interlock conditions are met. DEPLOY and STOW switches for correct operation.
Ramp and surrounding area	<ul style="list-style-type: none"> Indication of unusual noise or erratic movement when ramp is deploying or stowing. Verify that vestibule area, ramp drive arms and drive arm recesses are free of any debris or loose objects.
Ramp non-slip flooring	<ul style="list-style-type: none"> Verify that flooring is clean and free of slippery or sticky substances that could jeopardize user safety. Make sure non-slip flooring is intact and secure, and loose edges, if present, do not create a stumbling hazard.

C. RAMP OPERATION

 WARNING
<p>IMPROPER USE OF RAMP CAN RESULT IN PERSONAL INJURY. OPERATOR MUST READ AND FOLLOW THE OPERATING INSTRUCTIONS IN THIS MANUAL. ADDITIONAL COPIES OF THIS MANUAL ARE AVAILABLE FROM:</p> <p align="center"> RICON CORPORATION 1135 AVIATION PLACE SAN FERNANDO, CA 91340 (818) 267-3000 or (800) 322-2884 (in US) </p> <ul style="list-style-type: none"> CHECK RAMP AND RELATED COMPONENTS BEFORE USE FOR PROPER FUNCTION, REQUIRED MAINTENANCE, OR DAMAGE. DO NOT USE RAMP IF A PROBLEM EXISTS, AND SEEK A RICON DEALER OR QUALIFIED SERVICE TECHNICIAN FOR INSPECTION. DO NOT EXCEED RAMP LOAD CAPACITY OF 800 POUNDS (363 KILOGRAMS). THE RAMP IS DESIGNED FOR USE BY THOSE WHO CANNOT CLIMB STEPS AND FOR PEOPLE WITH MOBILITY-AID EQUIPMENT (I.E., WHEELCHAIRS & WALKERS). <p>RICON CORPORATION DISCLAIMS LIABILITY FOR DAMAGE OR PERSONAL INJURY RESULTING FROM IMPROPER INSTALLATION, MODIFICATION TO THE RAMP OR OTHER COMPONENTS, LACK OF MAINTENANCE OR REPAIR, NEGLIGENCE, ABUSE OR FAILURE TO FOLLOW THE OPERATING INSTRUCTIONS.</p>

- Perform the daily safety check described in Table 3-1 before putting vehicle into service. If a problem exists, do not use ramp and seek a Ricon dealer or qualified service technician for repair.
- Comply with the Safety Precautions at the beginning of this chapter.
- Control of the vehicle transmission and brakes is removed while ramp is deployed; operation is restored when ramp is fully stowed.

1. OPERATING RAMP WITH CONTROL PANEL

Prepare Vehicle

- 1) Park vehicle where deployment and use of ramp will be safe. Kneel vehicle, if applicable.
- 2) Apply parking brake.
- 3) Put transmission in neutral and open door adjacent to ramp. Verify that door is fully open before operating ramp.

NOTE: You can deploy the ramp **only** when the parking brake is set, the transmission is in neutral and the vehicle door adjacent to the ramp is open.

- 4) Caution people in the vicinity to clear area because you are about to deploy ramp.

Deploy Ramp



WARNING

MAKE SURE PEOPLE ARE A SAFE DISTANCE FROM RAMP BEFORE OPERATING.

- 1) Apply power to ramp by activating power switch on ramp control panel; power on indicator should illuminate.
- 2) Refer to **Figure 3-2**. Move ramp control switch to DEPLOY position. Hold switch in DEPLOY until ramp has **passed** 3/4 of its travel, then release switch.

NOTE: After the ramp has reached more than 3/4 travel distance, the electric motor shuts off automatically and the ramp continues to the ground without assistance.

NOTE: The audible alert sounds, if connected, while ramp is in motion (stow or deploy function switch is pressed).

NOTE: Reverse the direction of ramp movement, if necessary, by moving the control switch to the opposite setting (from DEPLOY to STOW or from STOW to

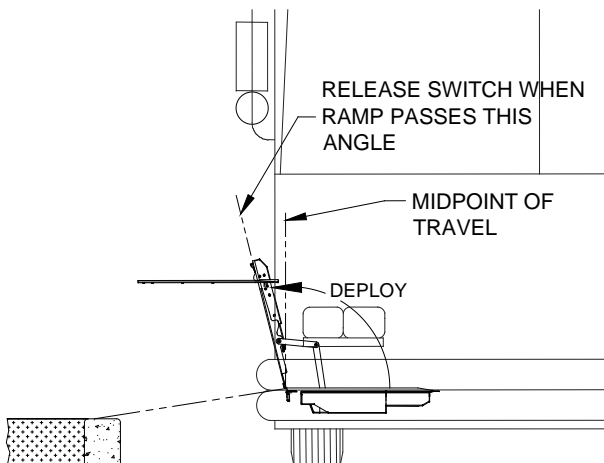


FIGURE 3-2: RAMP MIDPOINT DURING DEPLOY

DEPLOY).

**CAUTION**

Ramp users are required to enter and exit vehicle **one at a time**. Passengers using mobility equipment (e.g., wheelchairs and scooters) must face **forward** when travelling on ramp. Do not move wheelchair backwards on ramp.

Stow Ramp**WARNING**

MAKE SURE PEOPLE ARE A SAFE DISTANCE FROM RAMP BEFORE OPERATING.

- 1) Refer to **Figure 3-3**. Move control switch to STOW position. Hold switch in STOW until ramp has **passed** 3/4 of its travel, then release switch.

NOTE: After the ramp has reached more than 3/4 travel distance, the electric motor shuts off automatically and the ramp continues to the ground without assistance.

NOTE: The audible alert sounds, if connected, while ramp is in motion (stow or deploy function switch is pressed).

NOTE: Verify that ramp is fully stowed (flush with vehicle floor) before you close door or operate vehicle.

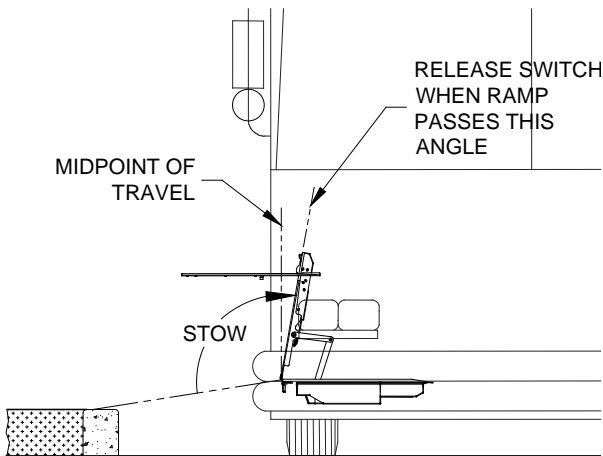


FIGURE 3-3: RAMP MIDPOINT DURING STOW

- 2) Close vehicle door.
- 3) Raise vehicle, if applicable.

2. OPERATING RAMP MANUALLY

NOTE: Manual operation should only be used to unload passengers from vehicle. Once passengers have been unloaded, manually stow ramp and contact an authorized Ricon dealer or qualified service technician for assistance.

 WARNING
COMPLY WITH SAFETY PRECAUTIONS AT BEGINNING OF THIS CHAPTER. AVOID SCRAPING OR PINCHING FINGERS WHEN MANUALLY LIFTING RAMP.

Prepare Vehicle

- 1) Park vehicle in a safe, level area. Lower vehicle, if possible.
- 2) Apply parking brake.
- 3) Put transmission in neutral and open door adjacent to ramp.

Deploy Ramp

 WARNING
KEEP YOUR BACK VERTICAL AND LEGS TOGETHER WHEN LIFTING RAMP.

 CAUTION
Do not use excessive force to lift ramp; damage to ramp drive arms and electrical components can result.

- 1) Refer to **Figure 3-4**. Grasp manual lifting strap on front edge of ramp.

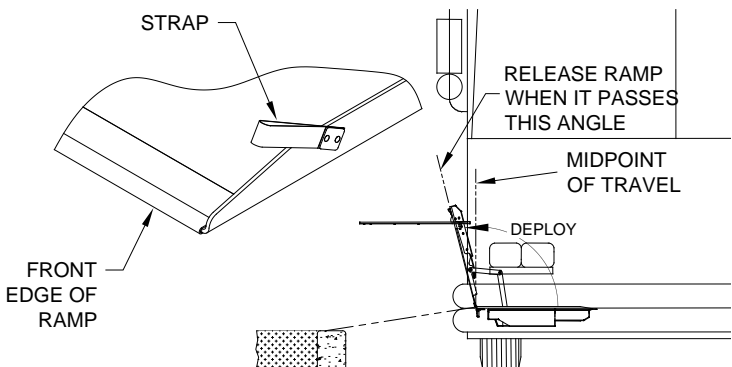


FIGURE 3-4: RAMP MIDPOINT DURING MANUAL DEPLOY

- 2) Unfold ramp from its stowed position by lifting front edge of ramp up and outward from vehicle.

- 3) Release ramp after it passes its midpoint of travel; it will continue unfolding without assistance.
- 4) Unload passengers. Passengers using mobility equipment should face **forward** when travelling on ramp; do not move wheelchair backwards on ramp.

Stow Ramp

- 1) Grasp manual handle or lifting strap on front edge of ramp. If ramp uses a manual stow/deploy tool, insert tool into slot on front edge of ramp.



WARNING

AVOID SCRAPING OR PINCHING YOUR FINGERS WHEN MANUALLY LIFTING RAMP.



WARNING

KEEP YOUR BACK VERTICAL AND LEGS TOGETHER WHEN LIFTING RAMP.



CAUTION

Do not use **excessive** force to lift ramp; damage to ramp drive arm and electrical components can result.

- 2) Refer to **Figure 3-5**. Lift ramp and push it towards the stowed position.

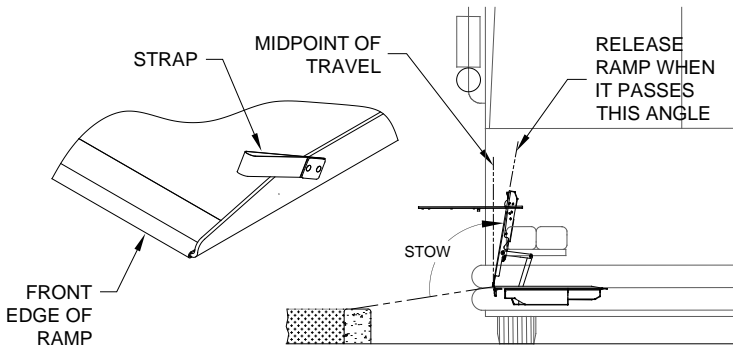


FIGURE 3-5: RAMP MIDPOINT DURING MANUAL STOW

- 3) Release ramp after it passes its midpoint of travel; it will continue folding to the stowed position without assistance.

NOTE: Be certain ramp is fully stowed (flush with vehicle floor) before closing door and operating vehicle.

IV. MAINTENANCE ELECTRIC BIFOLD RAMP

A. MAINTENANCE SCHEDULE

Regular maintenance and inspection of the the Ricon Electric BiFold® BR2E-Series ramp for low-floor vehicle access provides optimum performance and reduces the need for repairs. Maintain the ramp as directed in **Table 4-1**, adhering to the caution noted below. Perform ramp maintenance more frequently during heavy use (more than 20 cycles per day). Refer to the Ricon Electric BiFold® BR2E Ramp Service Manual (32dbr202) for complete maintenance and troubleshooting information.

 CAUTION
<p>~ This Ricon product is complex ~</p> <p>Do the maintenance and repairs required during the warranty period at a Ricon dealer or qualified service technician. Improper maintenance, use of non-Ricon replacement parts, or product modification will void warranty and can result in unsafe operating conditions. We recommend that an authorized Ricon dealer or qualified service technician continue maintenance inspections when warranty expires.</p>

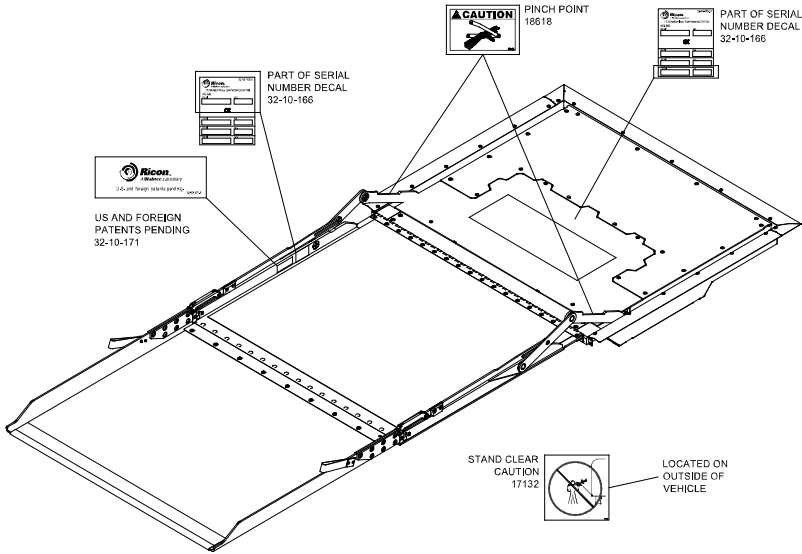
TABLE 4-1: MAINTENANCE SCHEDULE	
Inspection Point	Action
– 6,000 MILE INSPECTION –	
Electric system	<ul style="list-style-type: none"> • Check all connections; tighten or replace as necessary. • Check electric motor as necessary. <p>NOTE: Refer to Service Manual for details.</p>
Setscrews	<p>Check for loose or missing setscrews at these locations:</p> <ul style="list-style-type: none"> • Driveshaft couplers (4 per coupler) • Sensor target (2 ea) • Pillow blocks (2 per block) <p>Tighten or replace as necessary.</p> <p>NOTE: Gain access to the above components by removing access cover on ramp floor.</p>
Drive arm hardware	Check for looseness. Tighten arm hardware as necessary; apply thread locker (such as Loc-tite blue) to threaded areas.
Ramp interior (for debris)	Check ramp interior area and remove accumulated dirt and debris.
Non-slip surfaces	Check for excessive wear; replace as necessary.
Decals	Check for illegibility or looseness; replace as necessary.
(continued)	

TABLE 4-1: MAINTENANCE SCHEDULE

Inspection Point	Action
Wiring harnesses	<ul style="list-style-type: none"> ▪ Check wiring insulation for heavy abrasion or cuts; replace as necessary. ▪ Check connectors for looseness. Secure as necessary. <p>NOTE: Harnesses are routed below ramp floor and between ramp assembly and vehicle.</p>
- 12,000 MILE INSPECTION -	
Wiring harnesses	<ul style="list-style-type: none"> ▪ Check wiring insulation for heavy abrasion or cuts; replace as necessary. ▪ Check connectors for looseness. Secure as necessary. <p>NOTE: Harnesses are routed below ramp floor and between ramp assembly and vehicle.</p>
Fasteners	Check all threaded fasteners for looseness, and retighten as necessary.
- 24,000 MILE INSPECTION -	
Pillow blocks	Lightly lubricate pillow blocks through grease fitting with a lithium complex grease, such as Mobilith AW2..
Drive arm bushings & thrust washers	Refer to Figure 2-3 and Table 2-2 . Carefully check these parts for excessive play, and replace if necessary.
END OF TABLE	

B. RAMP DECALS

Refer to Figure 4-1. Inspect decals at the intervals in Table 4-1. Inspect for chipping, peeling, fading, and illegibility. Replace a decal by ordering the part number shown in figure and applying it where shown. The serial number decal is only replaceable by Ricon. Surface must be clean and free of debris before applying decal.



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FIGURE 4-1: DECAL PART NUMBERS AND LOCATIONS

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