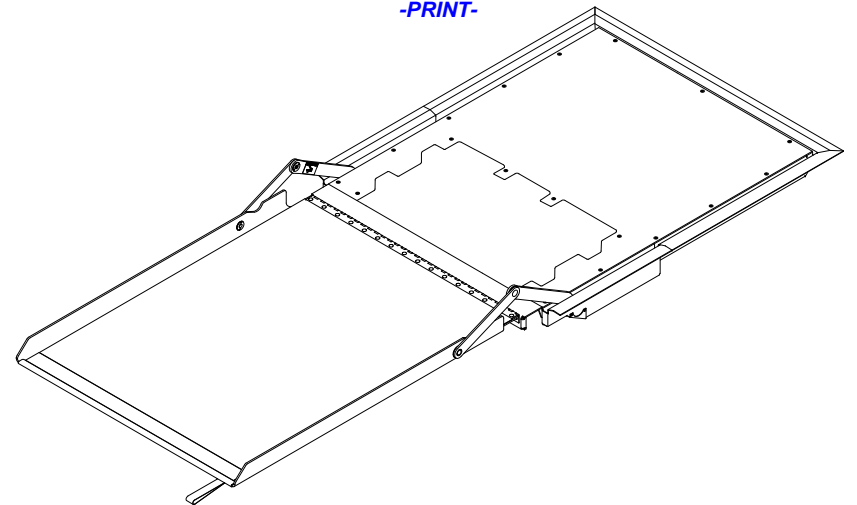




FoldOver[™]
FR2SS Series
Low-Floor Vehicle Access Ramp
for
Transit Buses

-PRINT-



OPERATOR MANUAL

11/21/13

32DFR107.C.1

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RICON dealers or qualified service technicians must install and service this RICON product.

Operator must refer to this manual for operating instructions, and retain it for future reference by qualified service technicians.

Customer Name: _____

Installing Dealer: _____

Date Installed: _____

Serial Number: _____

REVISION RECORD

REVISION	PAGES	DESCRIPTION	ECR/ECO
32DFR107. C.1	i	Revised disclosure	6663
	1-1	Update to address	
	1-2	Update to Warranty text	
	3-2	Update to Warning text	
	4-1	Update to Caution text	

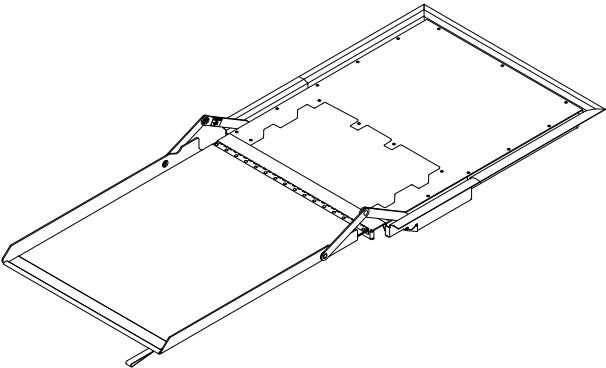
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I. FOLDOVER RAMP INTRODUCTION

This operator manual contains an introduction, a product description, operating instructions, and a maintenance schedule for the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access ramp when installed in transit vehicles.



A. RICON PRODUCT SUPPORT

If you have questions about this manual, or you need additional copies, please contact Ricon Product Support at one of the listed locations. Also, refer to the Ricon worldwide website at: www.riconcorp.com

Ricon Corporation
7900 Nelson Road
Panorama City, CA 91402
Telephone: (818) 267-3000
(outside 818 area code and in US)..... (800) 322-2884

Vapor Ricon Europe Ltd.
Meadow Lane
Loughborough, Leicestershire
United Kingdom, M43 7EF
Telephone: 0044 (0) 1509 635 920

B. RICON TWO-YEAR LIMITED WARRANTY

The following warranty provides two years of limited coverage for the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access ramp.

RICON FOLDOVER RAMP TWO-YEAR LIMITED WARRANTY

Ricon Corporation (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.

This Warranty Does Not Cover:

- Malfunction or damage of product parts caused by accident, misuse, lack of proper maintenance, neglect, improper adjustment, modification, alteration, mechanical condition of 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. Any required maintenance or repair should be performed at that time.



WARNING!

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

This Warranty is Void If:

- The product is not installed and maintained by a Ricon dealer or qualified service technician.
- The product is modified, 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 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. SHIPPING INFORMATION

Check the received product for freight damage. Make damage claims immediately to the freight carrier.

Be sure the ramp assembly contains all items listed on the included bill-of-material. Please report any missing items immediately to Ricon Product Support. Return the completed warranty and owner registration cards to Ricon within 20 days to validate the warranty.

D. GENERAL SAFETY PRECAUTIONS

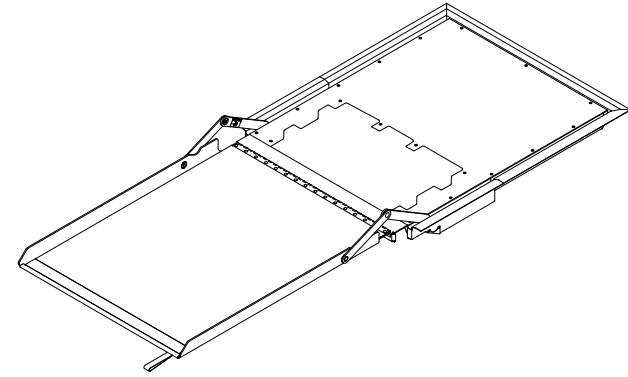
Adhere to the following safety precautions during installation, operation, service, and maintenance:

- Do not attempt installation, maintenance, repairs, or adjustments without the presence of a person capable of rendering aid.
- Administer first aid or seek medical attention immediately for any injury, no matter how slight.
- Wear protective eye shields and appropriate clothing at all times.
- Exercise caution when operating ramp. Be certain hands, feet, legs, and clothing are out of the ramp path as it unfolds.
- Thoroughly understand operating instructions before using ramp.
- Inspect ramp before loading passengers. Do not use ramp if it exhibits any unusual noise or movement.
- Do not exceed ramp weight capacity of 660 lbs (300kg).
- Keep others clear during ramp operation.
- The ramp requires regular maintenance. Ricon recommends a thorough inspection every six months. Maintain the product at its highest level of performance.

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II. FOLDOVER RAMP DESCRIPTION

The Ricon FoldOver Stainless Steel Low-Floor Vehicle Access ramp is installed in the entrance area of a transit vehicle and folds into the floor when not in use. The ramp is provided to assist passengers that use mobility-aid equipment or passengers who have difficulty climbing steps. All FR2SS-series ramps have a 660-lb (300kg) load limit.



A. RAMP FEATURES

1. INTERLOCK SUPPORT

The ramp electronic circuits can be connected to the vehicle interlock circuitry to keep the vehicle at a stop whenever the ramp is deployed. The ramp circuitry senses the position of the ramp (stowed or deployed) and makes this information available to the vehicle. Vehicle interlock circuits typically require that the following conditions be met before ramp operating power is made available to the ramp:

- Vehicle is safely parked and parking brake is ON.
- Transmission is in neutral.
- Vehicle doors adjacent to the ramp are open.

2. AUDIBLE ALERT

NOTE: This feature is optional and may not have been connected during ramp installation. The ramp supports an audible alert device that sounds while the ramp is in motion.

3. RAMP CONTROL PANEL

Refer to **Figure 2-1**. Ricon typically does not provide a control panel for the ramp. However, the ramp can be operated with one similar to that shown (the actual panel appearance will vary between transit authorities and vehicles). The control panel is normally installed in the driver area. It should have a power ON/OFF switch, a power on indicator light, and a spring-loaded, three-position ramp control switch (center position is off). The ramp receives power from the vehicle when the interlock conditions are met and the control panel power switch is ON. The control panel is used to transmit deploy or stow signals to the ramp.

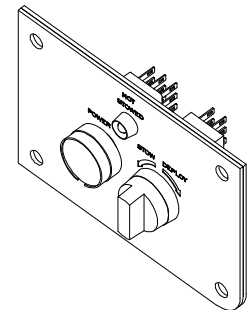


FIGURE 2-1: TYPICAL CONTROL PANEL

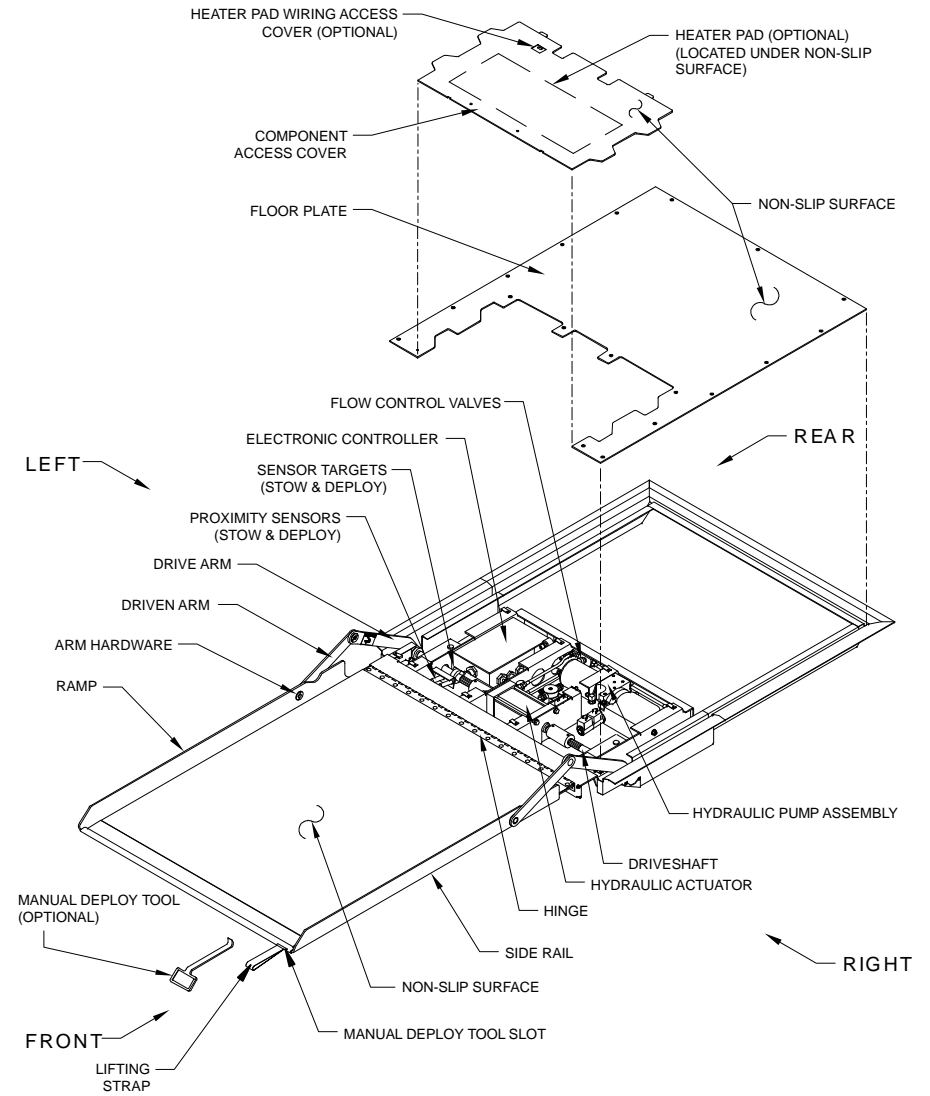
B. EXPLANATION OF RAMP PART NUMBER

Refer to **Table 2-1** for an explanation of the FR2SS ramp part number. Among other things, use of the table can determine whether your ramp is equipped with a pull strap for use when deploying the ramp manually or whether the ramp has a heater pad installed. The table also provides ramp dimensions that can help to determine which mobility equipment fits safely on the ramp.

TABLE 2-1: FR2SS-SERIES RAMP PART NUMBER EXPLANATION										
FR2SS	□	—	□	□	□	□	□	□	□	□
										Location of Electrical Connectors 0 – Rear 1 – Left
										Side Flooring Trim 0 – Welded 1 – Shipped loose
										Side barrier trim color 0 – Yellow 1 – None (1 1/2" flange) 2 – Black 3 – White
										Heater 0 – None 1 – Heater (24VDC only)
										Control Panel 0 – No control panel (internal counter) 1 – Dash panel (w/internal counter)
										Floor material 0 – Supplied by others 1 – RCA TR-852
										Manual Deployment Method 0 – Pull strap 1 – Hook 2 – 1/4-turn key 3 – Hatch handle
										Operating Voltage 0 – 12VDC 1 – 24VDC
										Ramp Size, W x L 00 – 30" x 48" 01 – 32" x 48" 02 – 32" x 44" 03 – 32" x 43" 04 – 32" x 41" 05 – 30" x 49" (discontinued) 06 – 32" x 50" 07 – 32" x 41" (w/notched rails) 08 – 32" x 32" 09 – 32" x 39" 11 – 32" x 44" 12 – 30" x 44" 13 – 32" x 41" 14 – 32" x 50" 15 – 30" x 45" 16 – 32" x 52" 17 – 30" x 48"

C. MAJOR COMPONENT DESCRIPTIONS

Figure 2-2 shows major components of the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access ramp. A description of each component is provided in Table 2-2.



RSM0008000

FIGURE 2- 2: MAJOR COMPONENTS OF THE STAINLESS STEEL FOLDOVER RAMP

TABLE 2-2: MAJOR RAMP COMPONENTS

Name	Description
Component access cover	Provides access to ramp hydraulic and electrical components.
Electronic controller	Translates electrical commands from bus control panel into signals that control ramp hydraulic components. Monitors ramp position and drives counter.
Driveshafts (left & right)	Transmits actuator torque to drive arms.
Drive arms (left & right)	Ramp linkage arms attach to outboard end of driveshafts.
Driven arms (left & right)	Ramp linkage arms attach to ramp.
Flow control valves	Manually adjusted valves control rate of ramp motion.
Arm hardware (screws, bushings, thrust washers)	Pivoting, load-bearing parts at both ends of driven arms. Bushings and washers are oilite material.
Heater mat (optional)	Helps keep ramp floor clear of ice and snow.
Heater mat wiring access cover (optional)	Provides access to wiring for optional heater mat.
Hinge	Pivoting connection between ramp and ramp frame.
Hydraulic actuator	Hydraulic powered component provides torque used to deploy and stow ramp.
Hydraulic pump assembly	Provides hydraulic pressure for use by ramp hydraulic components. The hydraulic pump contains a motor, directional valve, pump assembly, and reservoir.
Lifting strap	Use to manually deploy or stow ramp.

III. FOLDOVER RAMP OPERATING INSTRUCTIONS

Read the operating instructions carefully before operating the Ricon Stainless Steel FoldOver Low-Floor Vehicle Access ramp in a transit vehicle.

A. SAFETY PRECAUTIONS

Comply with these safety precautions:

- Perform the daily inspection described in **Table 3-1** (refer to **Section B** in this chapter).
- Refer to **Figure 3-1**. Do not deploy ramp when vehicle is parked on a sloping surface or a steeply crowned roadway. The increased ramp angle may pose a risk to ramp users.

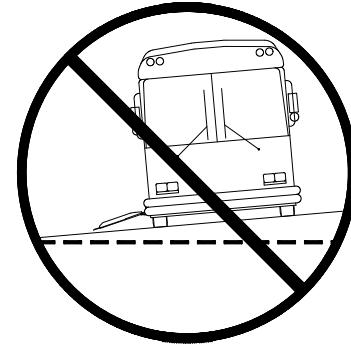


FIGURE 3- 1: DO NOT USE RAMP WHEN VEHICLE IS PARKED ON SLOPED GROUND


- The ramp operator must supervise ramp while it is in use. Be certain passengers using the ramp board and exit the vehicle slowly and carefully.
- Check area around ramp for objects that might interfere with ramp operation.
- Inspect ramp before loading passengers. Do not use ramp if it exhibits unusual noise or erratic movement.
- Keep others at a safe distance when the ramp is deploying or stowing.
- Do not allow anyone (including operator) near moving ramp parts.
- Be certain mobility equipment fits ramp (outside width of mobility equipment must be less than ramp width).
- Passengers using mobility equipment (e.g., wheelchairs and scooters) should travel facing **forward** on ramp when they enter and exit; **avoid travelling backwards**.
- Ramp users must enter and exit vehicle one at a time (with or without mobility equipment). Do not exceed the ramp load capacity of 660lbs (300kg).
- Caution ramp users to use care during wet conditions; shoes, wheels, brakes, etc. may slip on wet ramp surface.
- Do not allow anyone to play, sit, or rest on or near ramp.
- Supervise ramp while deployed. Retract ramp to its stowed position when not in use.
- Read and comply with warning labels affixed to ramp.

B. DAILY INSPECTION

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

TABLE 3-1: DAILY INSPECTION	
Inspection Points	Check
Ramp control panel (typical)	<ul style="list-style-type: none">▪ Power ON/OFF switch operates correctly.▪ Power On indicator illuminates when Power ON/OFF switch is ON.▪ DEPLOY and STOW switches operate correctly.
Ramp and surrounding area	<ul style="list-style-type: none">▪ No indication of unusual noise or erratic movement when ramp is deploying or stowing.▪ Vestibule area must be clear of loose objects, and actuator drive arms must be free of debris.
Ramp non-slip surface	<ul style="list-style-type: none">▪ Surface must be clean, and free of slippery or sticky substances that could compromise user safety.▪ Non-slip surface must be intact and secure, and loose edges, if present, must 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 style="text-align: center;">RICON CORPORATION 7900 NELSON ROAD PANORAMA CITY, CA 91402 (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 600 POUNDS (272 KILOGRAMS).▪ THE RAMP IS DESIGNED FOR PEOPLE USING MOBILITY-AID EQUIPMENT OR FOR PASSENGERS THAT CANNOT CLIMB STEPS. <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; 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; control is restored when ramp is fully stowed.

1. OPERATING RAMP WITH A CONTROL PANEL

a. Prepare Vehicle

- 1.) Park vehicle where deployment and use of ramp is safe.
- 2.) Apply parking brake.
- 3.) Put transmission in neutral and open door adjacent to ramp.
- 4.) You can deploy ramp **only** when the parking brake is set, the transmission is in neutral, and the vehicle door adjacent to the ramp is open.
- 5.) Caution people inside and outside to clear the area because the ramp is about to deploy.

b. Deploy Ramp



WARNING!

MAKE SURE PEOPLE ARE A SAFE DISTANCE FROM RAMP AREA 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**. Press and hold the DEPLOY button. Release button when ramp has passed through its midpoint of travel (approximately vertical). Hydraulic pump motor stops automatically when ramp passes midpoint; ramp will continue to deploy without assistance.

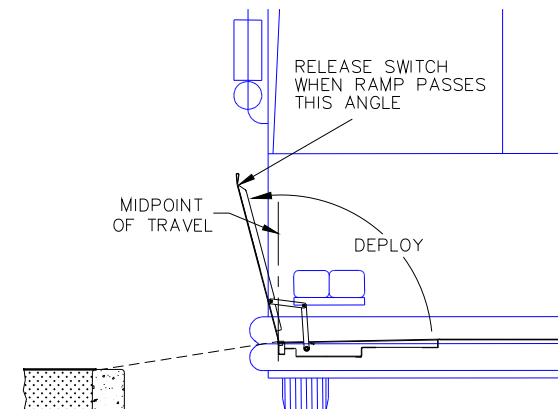


FIGURE 3- 2: RAMP MIDPOINT DURING DEPLOY

NOTE: Pressing the DEPLOY button will have no further affect after pump cutoff.

NOTE: The vehicle audible alert will sound (if connected) while ramp is in motion.

NOTE: You can reverse the direction of ramp movement at any time by pressing the STOW button.

NOTE: Ramp users are required to enter and exit vehicle **one at a time**. Passengers using mobility equipment (e.g., wheelchairs and scooters) should **travel facing forward** when on ramp.

c. **Stow Ramp**



WARNING!

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

- 1) Refer to **Figure 3-3**. Press and hold the STOW button. Hold button until ramp has passed through its midpoint of travel (approximately vertical), and then release. Hydraulic pump motor stops automatically when ramp passes midpoint; ramp will continue to stow without assistance.

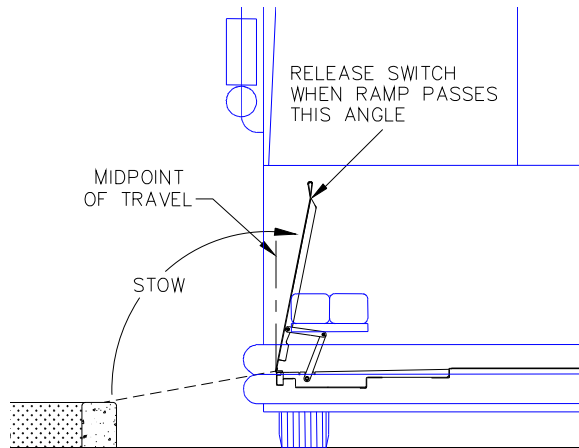


FIGURE 3-3: RAMP MIDPOINT DURING STOW

NOTE: Pressing STOW button will have no affect after pump cutoff.

NOTE: The audible alert sounds, if connected, while ramp is in motion.

NOTE: You can reverse the direction of ramp movement at any time by pressing the DEPLOY button.

NOTE: Ramp users are required to enter and exit vehicle **one at a time**. Passengers using mobility equipment (e.g., wheelchairs and scooters) should **travel facing forward** when on ramp.

- 2) Close vehicle door.

NOTE: Be certain ramp is fully stowed before you close door or operate vehicle.

2. MANUAL OPERATION

a. Prepare Vehicle

 WARNING!
COMPLY WITH SAFETY PRECAUTIONS AT BEGINNING OF THIS CHAPTER.

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

b. Deploy Ramp

- 1) Grasp lifting strap (located on front edge of ramp; refer to **Figure 2-3** in Chapter 2 for strap location).

NOTE: Certain FR2SS ramps use a manual stow/deploy tool instead of a lifting strap. Insert the tool into its slot on the ramp and proceed to step 2). Refer to **Figure 3-4**.

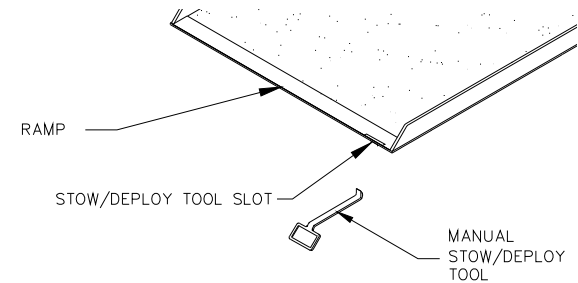



FIGURE 3-4: MANUAL STOW/DEPLOY TOOL INSERTION SLOT

 WARNING!
AVOID PINCHING YOUR FINGERS WHEN MANUALLY LIFTING RAMP.

- 2) Lift ramp sufficiently to obtain a handhold on front edge of ramp.

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

 CAUTION!
Do not use excessive force when lifting ramp because damage to the ramp drive arms and hydraulic components could result.

- 3) Grip front edge of ramp with both hands, and begin to slowly unfold from its stowed position.

- 4) Refer to **Figure 3-5**. Release ramp after it passes through its midpoint of travel (approximately vertical); it will continue unfolding without assistance.

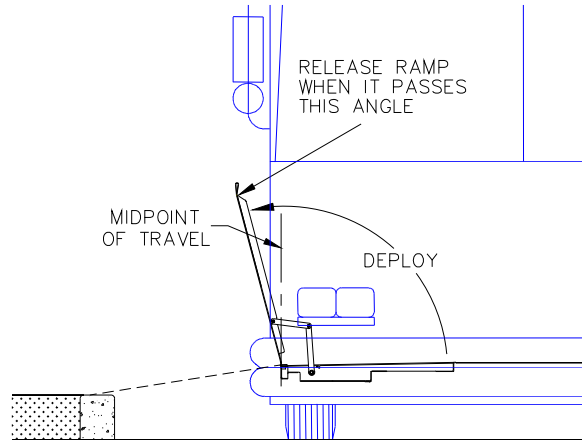


FIGURE 3-5: RAMP MIDPOINT DURING MANUAL DEPLOY

- 5) Unload passengers. Passengers using mobility equipment (e.g., wheelchairs and scooters) should **travel forward** when on ramp.\

c. Stow Ramp

 WARNING!
COMPLY WITH SAFETY PRECAUTIONS AT BEGINNING OF THIS CHAPTER.

- 1) Grasp lifting strap at front edge of ramp (refer to **Figure 2-3** in Chapter 2 for an illustration of strap location).

NOTE: Certain FR2SS ramps use a manual stow/deploy tool instead of a lifting strap. Insert the tool into its slot on the ramp and proceed to step 2). Refer to **Figure 3-4**.

 WARNING!
AVOID PINCHING YOUR FINGERS WHEN MANUALLY LIFTING RAMP. KEEP YOUR BACK VERTICAL AND LEGS TOGETHER WHEN LIFTING RAMP.

- 2) Lift ramp slightly to obtain a handhold on front edge of ramp.

 CAUTION!
Do not use excessive force to lift ramp; damage to ramp drive arm and hydraulic components can result.

- 3) Refer to **Figure 3-6**. Lift ramp and begin to push it toward the stowed position. Release the ramp after it passes through its midpoint of travel (approximately vertical), and it will continue moving toward the stow position without assistance.

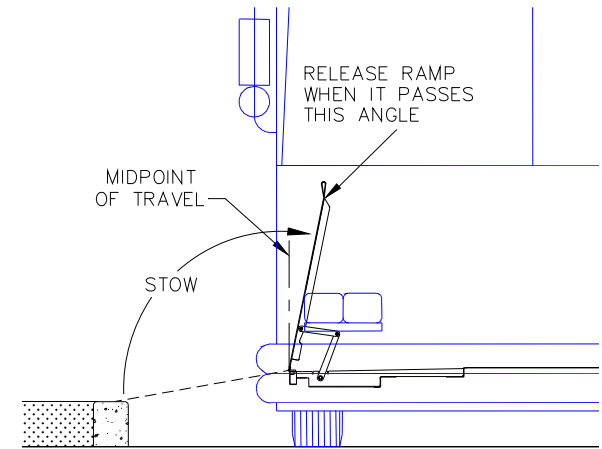


FIGURE 3-6: RAMP MIDPOINT DURING MANUAL STOW

NOTE: Be certain ramp is fully stowed before closing door or operating vehicle..

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IV. FOLDOVER RAMP MAINTENANCE

A. MAINTENANCE SCHEDULE

Regular maintenance and inspection of the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access ramp provides optimum performance and reduces the need for repairs. Maintain the ramp as directed in **Table 4-1**, adhering to the cautions noted below. Perform ramp maintenance more frequently during heavy use (more than 20 cycles per day). Refer to the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access Ramp Service Manual 32DFR108 for complete maintenance and troubleshooting information.

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

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

Inspection Point	Action
– 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.
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 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. Surface must be clean and free of debris before applying decal.

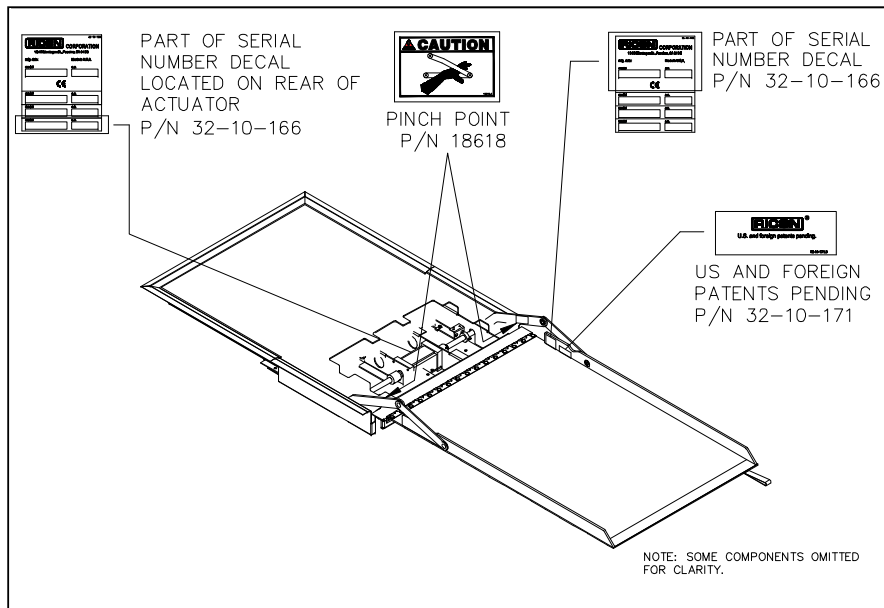


FIGURE 4-1: DECAL PART NUMBERS AND LOCATIONS