



Innovation in Mobility

ä
FoldOver
Low-Floor Vehicle
Access Ramp
for
Transit Buses

[PRINT](#)

OPERATOR MANUAL

**SERVICING BY AN AUTHORIZED RICON SERVICE TECHNICIAN
IS REQUIRED DURING THE WARRANTY PERIOD.
RICON SERVICE TECHNICIANS MUST REFER TO THIS MANUAL
FOR OPERATING AND GENERAL MAINTENANCE
INSTRUCTIONS.**

REVISION RECORD

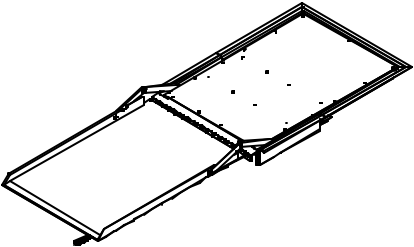
REVISION	PAGE(S)	DESCRIPTION OF CHANGE	ECR/ECO
32DFR105.A	ALL	Initial Release	N/A

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I. FOLDOVER RAMP INTRODUCTION

The chapters in this operator manual contain an introduction, product description, operating instructions, and a maintenance schedule for transit vehicle applications of the Ricon FoldOver Ramp.



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 world wide website at: www.riconcorp.com

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

Ricon U.K. Ltd.
Littlemoss Business Park,
Littlemoss Road
Droylsden, Manchester
United Kingdom, M43 7EF
Telephone: (+44) 161 301 6000

B. RICON LIMITED WARRANTY

The following warranty provides one-year of limited coverage for the Ricon FoldOver ramp.

RICON FOLDOVER RAMP

ONE-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 one (1) year starting from the in-service date. Obtain a complete list of parts covered by this warranty from an authorized Ricon service technician.
- Labor costs for specified parts replaced under this warranty for a period of one (1) year 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, etc.).

NOTE: Ricon recommends that this product be inspected by an authorized Ricon 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 an authorized Ricon 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 twenty (20) days after installation of this Ricon product for the warranty to be valid. 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.

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.
- Be cautious when using metallic (conductive) tools near battery.
- Check under vehicle before drilling or cutting to avoid damage to subframe members, wiring, fuel lines, hydraulic lines, etc.
- Thoroughly understand operating instructions before using ramp.
- Inspect ramp before loading passengers. Do not use ramp if it exhibits any unusual noise or movement.
- 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.



II. DESCRIPTION

The Ricon FoldOver Ramp is installed in transit vehicles to accommodate handicapped passengers that cannot easily climb steps or are using mobility-aid equipment. The hydraulically powered ramp folds into the vehicle vestibule flooring.

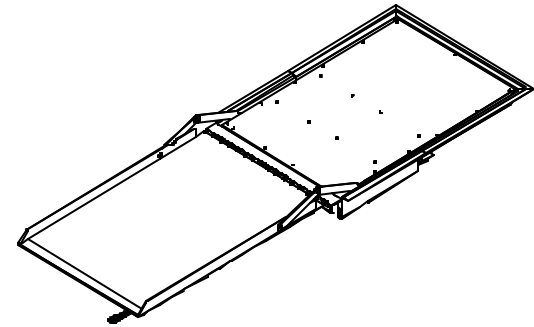


FIGURE 2-1: RICON FOLDOVER RAMP

A. RAMP FEATURES

1. INTERLOCK SUPPORT

The ramp has electronics which interface with the vehicle interlock circuitry to prevent unintentional departure while ramp is deployed. The ramp interlock circuitry senses the position of the ramp, stowed or deployed, and makes this information available at the J1 bus harness connector. A vehicle interlock circuit typically requires that the following conditions be met before operating power can be supplied to ramp:

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

2. AUDIBLE ALERT

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

3. RAMP CONTROL PANEL

Refer to **Figure 2-2**. Ricon does not provide a ramp control panel. The ramp can be operated with one similar to that shown, however, 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 three-position ramp control switch (center-off). The ramp receives power from the vehicle when the power on/off switch is ON and the interlock conditions are met. The control panel can then be used to transmit deploy or stow signals to the ramp hydraulic system.

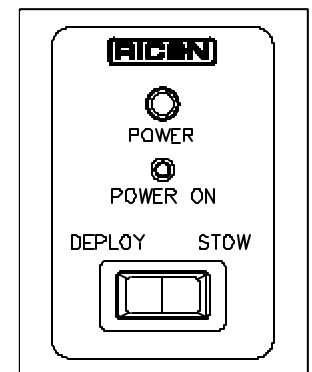


FIGURE 2-2: TYPICAL CONTROL PANEL

B. RAMP CLEARANCE AND CAPACITY

Refer to **Table 2-1**. Passengers are required to use ramp one at a time; **do not overload ramp**. Be certain that passenger mobility-aid equipment fits easily between the left and right side ramp barriers before allowing use of ramp.

TABLE 2-1: RAMP CAPACITY	
Load Limit:.....	600 lb (272 kg)
Load Clearance:	
Width:.....	30.2 inches (76.7 cm)
Length:.....	48.9 inches (124.2 cm)

C. MAJOR COMPONENT DESCRIPTIONS

Figure 2-3 shows major components of the FoldOver Ramp. A description of each component is provided in Table 2-2.

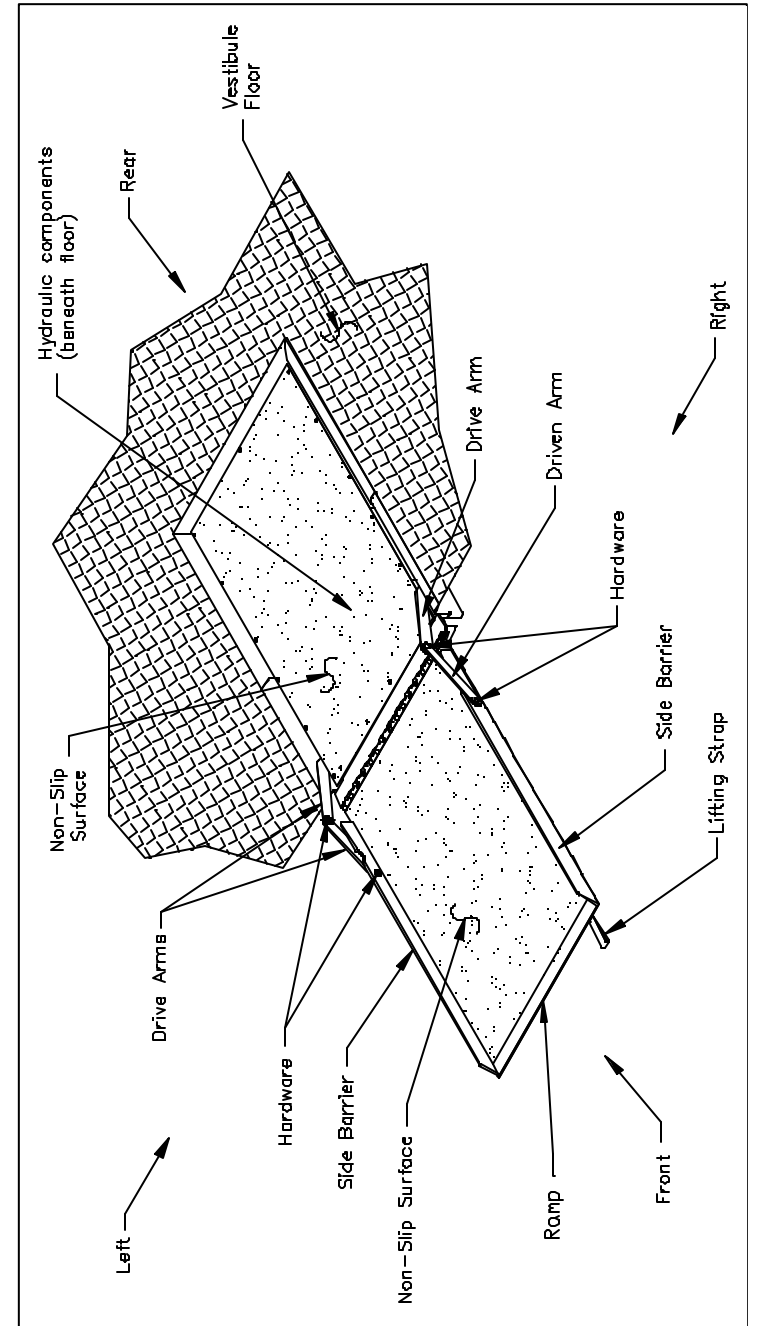


FIGURE 2-3: MAJOR RAMP COMPONENTS

TABLE 2-2: MAJOR RAMP COMPONENTS

Name	Description
Drive Arms (Left & Right)	Ramp arms linking rotary hydraulic actuator to ramp.
Hardware (Shoulder screws, bushings, thrust washers)	Pivoting, load bearing parts at both ends of driven arms. Bushings and washers are oilite material. Blue Loctite® is on threads of shoulder screws, making disassembly difficult, but possible.
Hydraulic Components (not shown)	Control valves, hydraulic actuator, etc, which deploy and stow ramp.
Lifting Strap	Use to manually deploy or stow ramp.
Non-Slip Surface	Bonded to ramp flooring to reduce user slippage.
Ramp	Unfolds (deploys) to provide a slight incline for handicapped passenger use. Folds into vestibule floor (stows) when not used.
Side Barrier (Left & Right)	Vertical ramp barriers help confine users to ramp area.
Vestibule Floor	Vehicle area where ramp is installed; adjacent to entrance/exit.
END TABLE	

III. FOLDOVER RAMP OPERATING INSTRUCTIONS

Read the operating instructions carefully before operating the Ricon FoldOver 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**. Avoid using ramp on sloped or steeply crowned roadways because it may compromise the safety of ramp users.
- The ramp operator must supervise ramp while it is in use. Make sure 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 the ramp before loading passengers. Do not use ramp if it exhibits unusual noise or movement.
- Keep others at a safe distance when the ramp is deploying or stowing.
- Do not allow anyone (operator included) 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 to enter or 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 600lbs (272kgs).
- Caution ramp users to use great 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.




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

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. • DEPLOY and STOW switches for correct operation. • Indication of unusual noise or movement when ramp is deploying or stowing.
Ramp and Surrounding Area	<ul style="list-style-type: none"> • Make sure vestibule area is free of loose objects, and actuator drive arms are free of any debris.
Ramp Non-slip Flooring	<ul style="list-style-type: none"> • Make sure flooring is clean, and free of slippery or sticky substances that could compromise 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 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 AN AUTHORIZED SERVICE TECHNICIAN FOR INSPECTION. ▪ DO NOT EXCEED RAMP LOAD CAPACITY OF 600 POUNDS (272 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 an authorized 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

a. Prepare Vehicle

- 1) Park vehicle where deployment and use of ramp will be safe. Lower vehicle, if applicable.
- 2) Apply parking brake.
- 3) Put transmission in park/neutral and open door adjacent to ramp.

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

- 4) Caution people inside and outside to clear the area because you are about to deploy ramp.

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**. Move ramp control switch to DEPLOY position. Hold switch in DEPLOY until ramp has **passed** its travel midpoint (vertical), then release switch. After ramp passes the midpoint, it will continue to the ground without assistance.

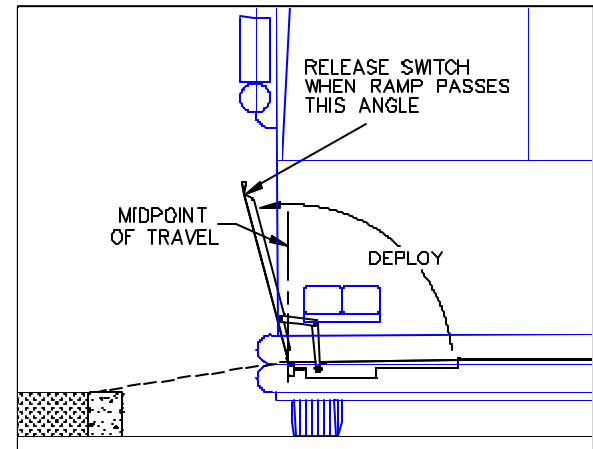


FIGURE 3-2: RAMP MIDPOINT DURING DEPLOY

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

NOTE: Reverse the direction of ramp movement by moving the control switch to the opposite setting (i.e., from DEPLOY to STOW, or from STOW to DEPLOY).

- 3) Ramp users are required to enter and exit vehicle **one at a time**. Passengers using mobility equipment (e.g., wheelchairs and scooters) should face **forward** when travelling on ramp.

c. Stow Ramp



WARNING

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

- 1) Refer to **Figure 3-3**. Move control switch to STOW position. Hold switch in STOW until ramp has passed its travel midpoint (vertical), then release switch. After ramp passes midpoint, it will continue folding to the stowed position without assistance.

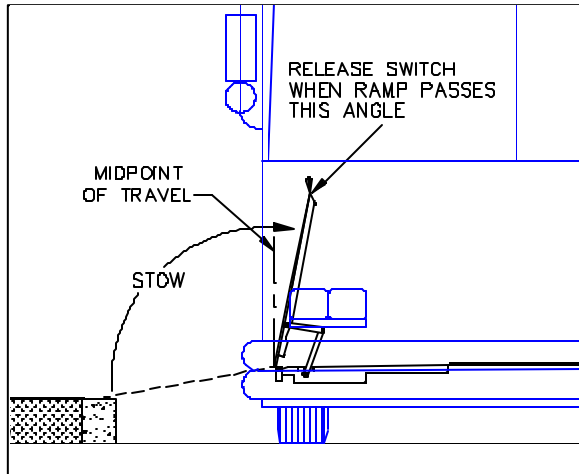


FIGURE 3-3: RAMP MIDPOINT DURING STOW

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

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

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

2. **OPERATING RAMP MANUALLY**

a. **Prepare Vehicle**



WARNING

COMPLY WITH SAFETY PRECAUTIONS AT BEGINNING OF THIS CHAPTER.

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

b. **Deploy Ramp**

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



WARNING

AVOID PINCHING YOUR FINGERS WHEN MANUALLY LIFTING RAMP.

- 2) Lift ramp slightly 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 to lift ramp; damage to ramp drive arms and hydraulic components can result.

- 3) Grip front edge of ramp with both hands. Unfold ramp from its stowed position.
- 4) Refer to **Figure 3-4**. Release ramp after it passes its travel midpoint; it will continue unfolding without assistance.

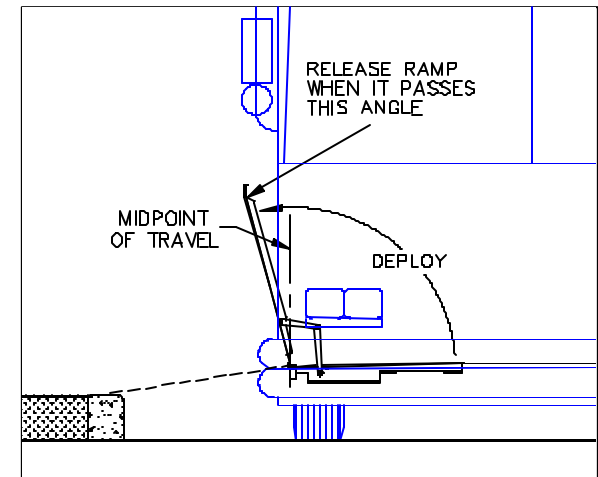


FIGURE 3-4: RAMP MIDPOINT DURING MANUAL DEPLOY

- 5) Load or unload passengers. Passengers using mobility equipment should face **forward** when travelling on ramp.

c. Stow Ramp



WARNING

COMPLY WITH SAFETY PRECAUTIONS AT BEGINNING OF THIS CHAPTER.



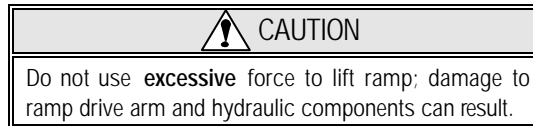
CAUTION

Make sure people are a safe distance from ramp area before stowing ramp.

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



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



- 3) Refer to **Figure 3-5**. Lift ramp and push it towards the stowed position. Release the ramp after it passes its travel midpoint and it will continue folding to the stowed position without assistance.

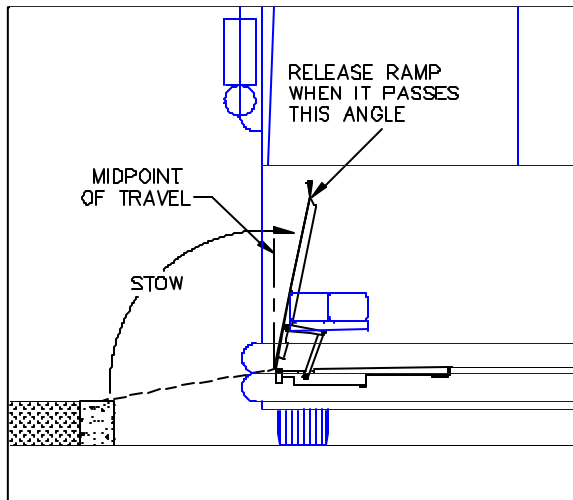


FIGURE 3-5: RAMP MIDPOINT DURING MANUAL STOW

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

IV. FOLDOVER RAMP MAINTENANCE

A. MAINTENANCE SCHEDULE

Regular maintenance and inspection of the Ricon FoldOver 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 Ramp Service Manual for complete maintenance and troubleshooting information.



CAUTION

~ This Ricon product is very complex ~

Do the maintenance and repairs required during the warranty period at a Ricon authorized 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 an authorized Ricon facility continue maintenance inspections when warranty expires.

TABLE 4-1: MAINTENANCE SCHEDULE

Inspection Point	Action
<i>– 6,000 MILE INSPECTION –</i>	
Hydraulic Fluid Leaks	Check all hoses and fittings; tighten or replace as necessary.
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.
Drive Arm Shoulder Screws	Check for looseness; retighten as necessary. Tighten and/or apply thread locker (Loc-tite® blue), as necessary.
Ramp Interior (for debris)	Check ramp interior area, and remove accumulated dirt and debris.
Side Barriers	Check for tight attachment to ramp. Tighten screws (on ramp bottom) and/or apply thread locker (Loc-tite® red), as necessary.
Non-Slip Flooring	Visually check for damage to surface, and loose or missing hardware.
Decals	Visually check for damage or poor attachment.
(continued)	

Inspection Point	Action
- 12,000 MILE INSPECTION -	
Wiring Harnesses	Check wiring for heavy abrasions, and connectors for looseness; replace as necessary.
Fasteners	Check all threaded fasteners for tightness and retighten as necessary.
Non-slip Surfaces	Check non-slip flooring for excessive wear or damage (rips, tears, peeling, etc.) and replace as necessary.
- 24,000 MILE INSPECTION -	
Pillow Blocks (lubrication)	Lightly grease pillow blocks (they are sealed).
Bushing & Thrust Washer (wear)	Refer to Figure 2-3 and Table 2-2 . Check these parts for excessive play, and replace if necessary.
END TABLE	

B. RAMP DECALS

Refer to **Figure 4-1**. Inspect decals at interval in **Table 4-1**. Inspect for chipping, peeling, fading, and illegibility. Replace a decal by ordering the part number shown in **Figure 4-1**, and applying it where shown.

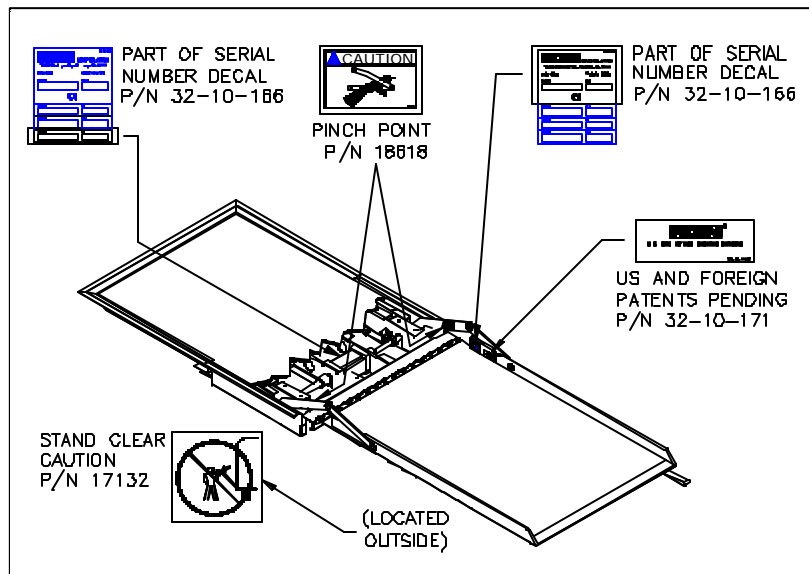


FIGURE 4-1: DECAL PART NUMBERS AND LOCATIONS