



*Innovation in Mobility*

**FR2000 SERIES  
FOLD OVER RAMP  
Low-Floor Vehicle  
Access Ramp  
for  
NEOPLAN**

**PRINT MANUAL**

**OPERATOR MANUAL**

12/03/01

32DFR101.B

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**THIS RICON PRODUCT MUST BE SERVICED BY  
AUTHORIZED RICON SERVICE TECHNICIANS.**

**PRODUCT USERS MUST REFER TO THIS  
MANUAL FOR OPERATING AND GENERAL  
MAINTENANCE INSTRUCTIONS.**

**RETAIN THIS MANUAL IN THE VEHICLE FOR  
FUTURE REFERENCE.**

Customer Name: \_\_\_\_\_

Installing Dealer: \_\_\_\_\_

Date Installed: \_\_\_\_\_

Serial Number: \_\_\_\_\_

**REVISION RECORD**

REVISION	PAGES	DESCRIPTION OF CHANGE	ECR/ECO
32DFR101. A	All	New release.	3860/4839
32DFR101. B	All		

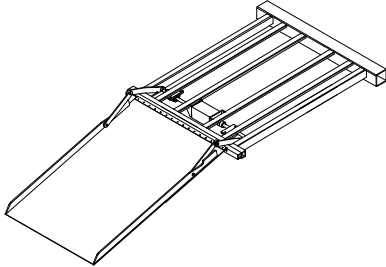
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**I. INTRODUCTION**

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This chapter provides operating instructions for the Ricon FoldOver Ramp as installed in Neoplan transit vehicles.



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

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

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Littlemoss Road  
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United Kingdom, M43 7EF  
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World Wide Website: [www.riconcorp.com](http://www.riconcorp.com)

**RICON CORPORATION**  
**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 year starting from the date of purchase. A complete list of parts covered by this warranty can be obtained from Ricon Product Support.
- Labor costs for specified parts replaced under this warranty for a period of one year from date put into service. A Ricon rate schedule determines parts covered and labor allowed.

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

***This Warranty Does Not Cover:***

- Labor or service charges.
- 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 an authorized Ricon service technician at least once every six months, or sooner if necessary. Any 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 DANGEROUS.

***This Warranty is Void If:***

- Product has been installed or maintained by someone other than an authorized Ricon service technician.
- Product has been modified 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 of a Ricon product that has been modified from the original Ricon design. No person or company is authorized to change the design of this Ricon product without written authorization by Ricon.

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

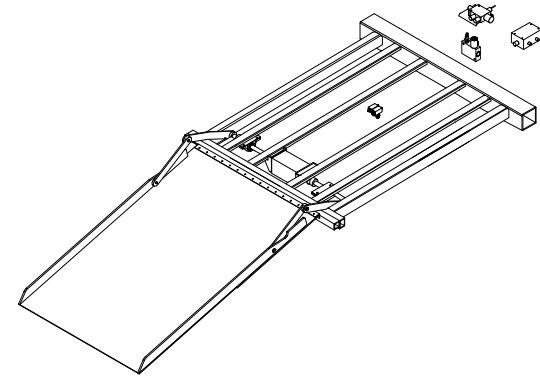
Ricon assumes no responsibility for expenses or damages, including incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply.

Important: The warranty registration card must be completed and returned to Ricon within twenty 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.

## II. DESCRIPTION

The hydraulically powered RICON Fold-Out Ramp accommodates passengers using mobility-aided equipment or passengers that cannot climb steps to board and exit the vehicle. The ramp folds away into the vehicle vestibule flooring.



### A. RAMP FEATURES

#### ■ INTERLOCK SUPPORT

The ramp electrical circuitry interfaces with the vehicle interlock circuitry to prevent accidental vehicle departure when the 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. The vehicle interlock circuit normally requires that all of the following conditions be met before power is made available for ramp operation:

- Vehicle must be parked with the parking brake set
- Transmission must be in park/neutral
- Vehicle door must be open

#### ■ AUDIBLE ALERT

The ramp is designed with an audible alert that activates while the ramp is in motion. (This is a feature that may not have been connected during ramp installation.)

#### ■ RAMP CONTROLLER INTERFACE

The ramp is designed to operate with a controller similar to that shown in **Figure 2-1**. It is normally installed in the driver area of the vehicle. The ramp controller will typically have a power on/off switch, a power on indicator light and a three-position ramp control switch. The ramp receives power from the vehicle when the power on/off switch is activated and the interlock conditions are met. The controller can then transmit deploy or stow signals to the ramp hydraulic system.

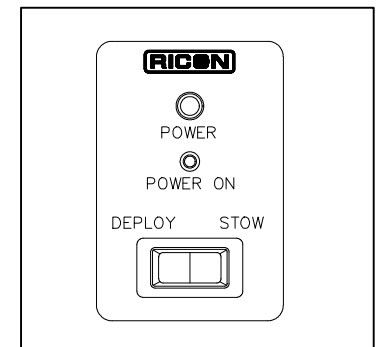


FIGURE 2-1: TYPICAL CONTROL PANEL

## B. RAMP LOAD CLEARANCE AND CAPACITY

The ramp is to be used by one passenger at a time; **do not overload the ramp**. Before allowing passengers to use the ramp, make sure that the passenger's mobility aid equipment fits safely between the left and right side barriers of the ramp.

Load Limit ..... 600 lb (272 kg)

Load Clearance:

Width ..... 30.2 inches (76.7 cm)

Length ..... 48.9 inches (124.2 cm)

## C. MAJOR COMPONENTS

The major components of the fold out ramp are shown in **Figure 2-2**. A description of each component is provided in **Table 2-1**.

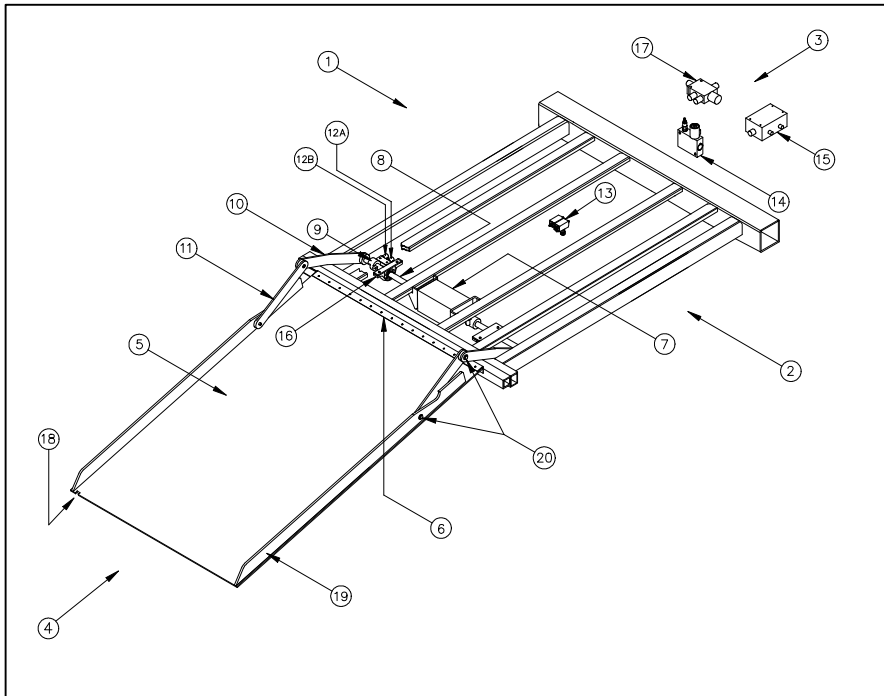


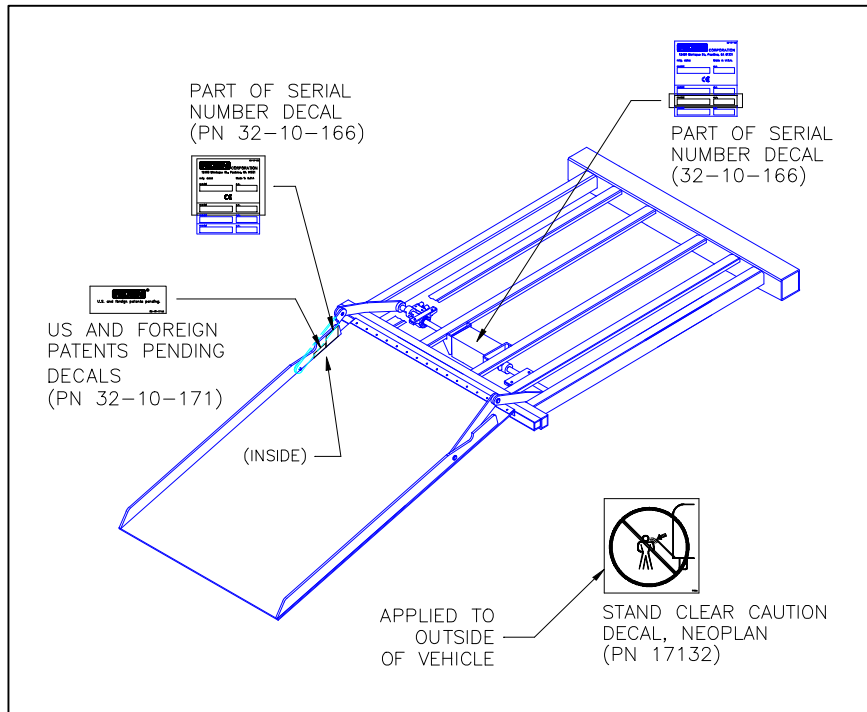
FIGURE 2-2: MAJOR RAMP COMPONENTS



TABLE 2-1: MAJOR RAMP COMPONENTS		
REF	NAME	DESCRIPTION
1	Left	Ramp references when installation is viewed from outside of vehicle.
2	Right	
3	Rear	
4	Front	
5	Ramp	Platform that deploys from vehicle, allowing mobility-aided passengers to enter or exit vehicle.
6	Hinge	Pivoted connection where ramp attaches to vehicle.
7	Hydraulic Actuator	Hydraulic powered component that provides the rotary motion needed to deploy ramp.
8	Drive Shafts	Connects actuator motion to ramp linkage (driving arms).
9	Sensor Target	Rotating target, on left side drive shaft, that provides ramp position.
10	Driving Arms	Ramp linkage arm attached to drive shafts; driven by actuator.
11	Driven Arms	Ramp linkage arm attached to ramp; driven by driving arm.
12A	Proximity Sensor - Stow	Electrical sensor located near sensor target that detects if ramp is in a stowed position; electrically connected to controller.
12B	Proximity Sensor - Deploy	Electrical sensor located near sensor target that translates ramp position during deployment; connected to controller.
13	Flow Control Valves	Manually adjusted needle valves that control rate of ramp movement.
14	Diverter Valve	Hydraulic component that diverts vehicle hydraulic system power to ramp hydraulic components.
15	Controller	Translates commands from bus operator into signals that control ramp hydraulic components.
16	Pillow Blocks	Provide support for outer ends of drive shafts.
17	Directional Valve	Hydraulic component that controls deploy and stow actions.
18	Manual Deploy Notch	Notch on front edge of ramp that can be used as a pry point to lift ramp from its stowed position.
19	Side Barriers	Vertical curbs that help confine user to platform.
20	Shoulder Bolts/ Bushings/ Thrust Washers	Pivoting, load carrying bearing hardware at ends of ramp arms. Bushings and washers are oilite material.
END OF TABLE		

#### D. RAMP DECALS

Refer to **Figure 2-3**. Check condition of all decals. Inspect for chipping, peeling, fading, and illegibility. Perform inspections at intervals recommended in **Table 4-1**. Replace decals as necessary, in locations shown. If it is necessary to replace damaged decals, order the part number shown in **Figure 2-3**.



**FIGURE 2-3: DECAL LOCATIONS**

### III. OPERATING INSTRUCTIONS

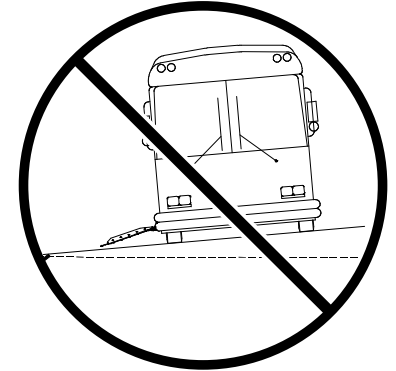
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Thoroughly read these instructions before operating the RICON Flip Ramp.

#### A. SAFETY PRECAUTIONS

The following safety precautions must be observed:

- Refer to **Figure 3-1**. Do not use the ramp on sloped or steeply crowned roadways. Use of the ramp on these inclined surfaces is hazardous and compromises passenger safety.
- Perform the daily safety check as specified in **Table 3-1** (refer to paragraph **B** in this section).
- Before you deploy or stow the ramp, check the area near the ramp for objects that could interfere with ramp operation. Do not operate the ramp until you check these areas and ensure it is safe to proceed.
- Inspect the ramp before loading passengers. Do not use the ramp if it is unsafe to do so, or if unusual noises or movements are present.
- The ramp is used by **one** passenger at a time (with or without mobility equipment). Do not allow passengers to exceed the ramp load capacity of 600lbs (272kgs).
- Before allowing passengers to board or exit the vehicle using the ramp, make sure that the passengers and their mobility equipment fit safely between the left and right side barriers of the ramp.
- Keep others at a safe distance while operating the ramp.
- Caution all passengers to use extreme care during wet conditions; shoes, wheels, brakes, etc. are susceptible to slippage on the ramp.
- Do not place your arms or legs in or near any moving parts of the ramp.
- As the ramp operator, always supervise the use of the ramp. Make sure the passengers using the ramp board and exit the vehicle slowly and carefully.
- For equipment and personal safety reasons, do not allow any persons to play, sit, or rest on or near the ramp.
- Passengers using mobility equipment (e.g., wheelchairs and scooters) should travel forward on ramp, and board and exit the vehicle slowly and carefully.
- Do not leave the ramp unattended after ramp deployment. Retract the ramp to its stowed position after use.



**FIGURE 3-1: PARKING HAZARD**

## B. DAILY INSPECTION

Check the ramp on a daily basis before operation, performing the points outlined in **Table 3-1**. Do not operate the ramp if any of the conditions are not met.

TABLE 3-1: DAILY INSPECTION	
Inspection Point	Check
Ramp Controller	<ul style="list-style-type: none"><li>• The Power ON/OFF switch operates correctly.</li><li>• The Power On Indicator illuminates when the power ON/OFF switch is ON.</li><li>• The DEPLOY and STOW switches operate correctly.</li><li>• Investigate irregular noises or movements that occur when the ramp deploys or stows.</li></ul>
Ramp and Surrounding Area	<ul style="list-style-type: none"><li>• Make sure there are no foreign objects in the step well area of the vehicle, or amidst the actuator arms.</li></ul>
Ramp Flooring	<ul style="list-style-type: none"><li>• Make sure the surfaces are clean and free of any slippery or sticky substances that may compromise the safety of the ramp users and/or their mobility equipment.</li><li>• Make sure the non-skid flooring is secure and its corners are not peeling from the ramp surface.</li></ul>

## C. RAMP OPERATION



### WARNING!

IMPROPER USE OF THE RAMP CAN RESULT IN PERSONAL INJURY. OPERATORS MUST READ AND FOLLOW THE OPERATING INSTRUCTIONS IN THIS 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**

- PRIOR TO USE, INSPECT RAMP AND OTHER RAMP COMPONENTS FOR PROPER FUNCTION, REQUIRED MAINTENANCE, AND DAMAGE. IF A PROBLEM EXISTS, DO NOT USE AND SEEK AN AUTHORIZED RICON SERVICE TECHNICIAN FOR REPAIR.
- DO NOT EXCEED RAMP LOAD CAPACITY OF 600 POUNDS (272 KILOGRAMS).
- THE RAMP IS USE BY THOSE WHO CANNOT CLIMB STEPS, AND FOR PEOPLE ON MOBILITY-AID EQUIPMENT (I.E., WHEELCHAIRS & WALKERS).

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.

- Do the daily safety check described in **Table 3-1** before putting the vehicle into service. If a problem exists, do not use the ramp and seek an authorized dealer for repair.
- Observe the Safety Precautions at the beginning of this chapter.
- The transmission and brakes are temporarily disabled while the ramp is deployed. Operation is restored after the ramp is fully stowed.

### 1. OPERATING RAMP WITH CONTROL PANEL


#### a. Vehicle Preparation

- ✘ Stop the vehicle, and if applicable, lower the vehicle.
- ✘ Set the vehicle parking brake.
- ✘ Put the transmission in neutral and open the vehicle door.

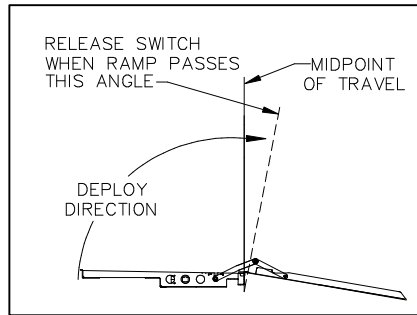
**NOTE:** The ramp will deploy only after the parking brake is set, the transmission is in neutral and the vehicle door is open.

- ✘ Caution people inside and outside of vehicle to “clear the area; the ramp is about to deploy”.

b. Ramp Deployment

 <b>WARNING!</b>
Before operating, make sure people are a safe distance from the ramp area.

- 1) On the ramp control panel, actuate the power switch to apply power to the ramp; the power on indicator should illuminate.



**FIGURE 3-2: RAMP MIDPOINT  
(DURING DEPLOY)**

- 2) Toggle the ramp control switch to the DEPLOY setting. Hold the switch in DEPLOY until the ramp passes its midpoint (vertical position; refer to **Figure 3-2**), then release the switch. After the ramp reaches midpoint it will lower to the ground without assistance.

**NOTE:** If connected, the audible alert will sound while the ramp is in motion.

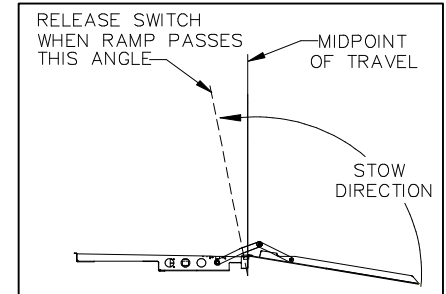
**NOTE:** Ramp movement can be reversed at any time during its travel. To reverse the direction of the ramp while it is moving, toggle the control switch to the opposite setting (from DEPLOY to STOW, or from STOW to DEPLOY).

- 3) Passengers must carefully enter or exit vehicle one at a time. Passengers using mobility equipment (e.g., wheelchairs and scooters) should travel **forward** on ramp.

c. Ramp Stowage

 <b>WARNING!</b>
Before operating, make sure people are a safe distance from the ramp area.

- 1) Toggle the control switch to the STOW setting. Hold the switch in the STOW position until the ramp passes its midpoint (see **Figure 3-3**), then release the switch. After the ramp passes the midpoint, the ramp folds down to the stowed position in the step well without assistance.



**FIGURE 3-3: RAMP MIDPOINT (DURING STOW)**

**NOTE:** If connected, the audible alert will sound while ramp is in motion.

- 2) Be certain the ramp is fully stowed before you try to move the vehicle.
- 3) Close the vehicle door.
- 4) If applicable, raise the vehicle.


2. **MANUAL RAMP OPERATION**

a. **Manual Ramp Deployment**

- 1) Stop the vehicle in a safe area. Lower vehicle, if possible.
- 2) Set the vehicle parking brake.
- 3) Put the transmission in neutral and open the vehicle door.

 <b>WARNING!</b>
COMPLY WITH SAFETY PRECAUTIONS AT BEGINNING OF THIS CHAPTER.

- 4) Refer to **Figure 2-3**. Locate the lifting strap on the edge of the ramp.

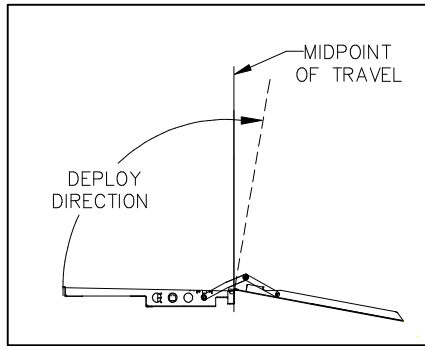
 <b>WARNING!</b>
AVOID PINCHING YOUR FINGERS WHEN MANUALLY LIFTING THE RAMP.

- 5) Use the strap to lift the ramp to obtain a handhold on the front edge.

 <b>CAUTION!</b>
Do not use excessive force to lift the ramp.

- 6) Grasp the front edge of the ramp with both hands. Unfold the ramp from its stowed position while keeping your back vertical and keep legs together.

- 7) Refer to **Figure 3-4**. Release the ramp after it passes its midpoint and it will continue to unfold without assistance.
- 8) Load/unload passengers. Passengers using mobility equipment should travel **forward** on ramp.



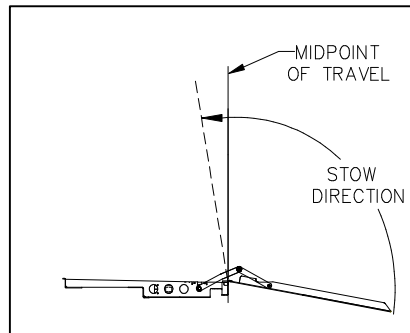
**FIGURE 3-4: RAMP MIDPOINT (DURING DEPLOY)**

**b. Manual Ramp Stowage**

- 1) Make sure people are a safe distance from the ramp area before stowing the ramp.



- 2) Refer to **Figure 3-5**. Use the lifting strap on the front edge of the ramp (refer to **Figure 2-3** in previous chapter) to lift it up until you can gain a convenient grip with two hands. Release the ramp after it passes its midpoint and it will continue to fold without assistance.



**FIGURE 3-5: RAMP MIDPOINT (DURING STOW)**


**NOTE:** Be certain ramp is fully stowed before attempting to move vehicle.



#### IV. MAINTENANCE SCHEDULE

Regular maintenance and safety inspections of the RICON FoldOver Ramp will provide optimum performance and reduce the need for repairs.

Maintain the ramp as described in **Table 4-1**. Under conditions of heavy use (in excess of 20 cycles per day), maintenance of the ramp should be performed more frequently.

 <b>CAUTION!</b>
This Ricon product is highly specialized. Maintenance and repairs must be performed by a Ricon authorized facility using Ricon replacement parts. Modification or improper maintenance of this product will void warranty and may result in unsafe ramp operating conditions.

<b>TABLE 4-1: MAINTENANCE SCHEDULE</b>	
Inspection Point	Action
<i>– 6,000 MILE SAFETY CHECK –</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"> <li>• Driveshaft couplers (2 x 2 ea)</li> <li>• Sensor target (2 ea)</li> <li>• Ramp actuator arms (2 x 3 per side)</li> <li>• Pillow blocks (2 x 2 ea)</li> </ul> Tighten and/or apply thread locker (Loc-tite), as necessary.
Actuator Arm Screws	Check for loose shoulder screws; retighten the screws as necessary.
Ramp Interior (for Debris)	Check the ramp interior area for accumulated dirt and debris. Remove if found.
Non-Slip Flooring	Visually check for damaged surfaces, and loose or missing hardware.
Decals	Visually check for damage or poor attachment.
(continued)	

Inspection Point	Action
<i>- 12,000 MILE SAFETY CHECK -</i>	
Wiring Harnesses	Check wiring for abrasions and connectors for looseness; replace as necessary.
Fasteners	Check all threaded fasteners for tightness and retighten as necessary.
Non-skid Surfaces	Check non-skid flooring for excessive wear or damage (rips, tears, peeling, etc.) and replace as necessary.
<i>- 24,000 MILE SAFETY CHECK -</i>	
Pillow Block (Lubrication)	Lightly grease pillow blocks (note that they are sealed).
Bushing & Thrust Washer Wear	Refer to <b>Figure 2-3</b> and <b>Table 2-1</b> . Check these parts for excessive play and replace if necessary.
END TABLE	