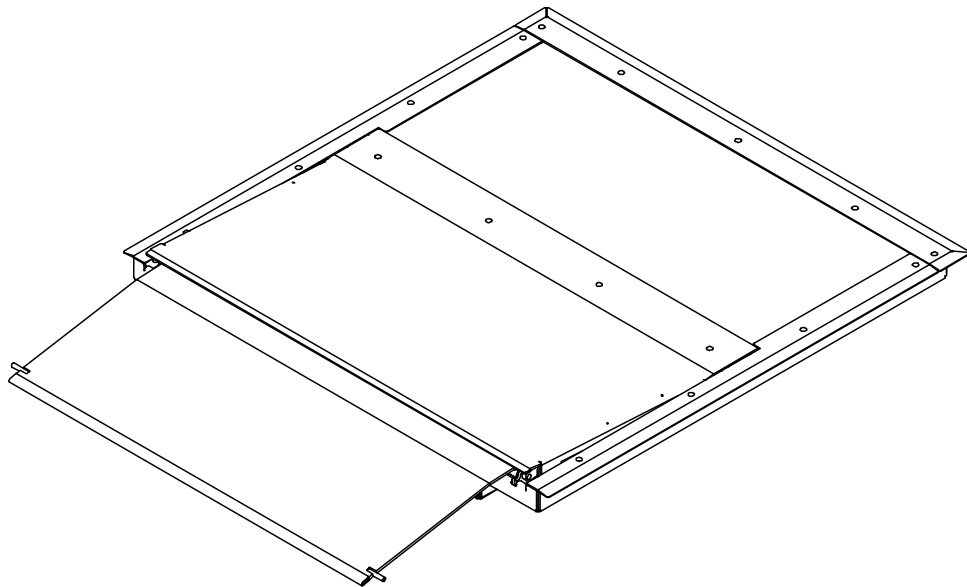




Ricon

A Wabtec company

***PF7000 Series™
Low-Floor Vehicle
Access Ramp***



Service Manual

This Ricon service manual is for use by qualified service technicians, and is not intended for use by non-professionals (do-it-yourselfers). The manual provides essential instructions and reference information, which supports qualified technicians in the correct installation and maintenance of Ricon products.

Qualified service technicians have the training and knowledge to perform maintenance work properly and safely. For the location of a Ricon service technician in your area, call Ricon Product Support at 1-800-322-2884 or visit our website at www.riconcorp.com.

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

REVISION RECORD

REV	PAGES	DESCRIPTION OF CHANGE	ECR / ECO
32DPF704. A.1	Cvr	Update to cover.	6663
	1-1	Update to address.	
	5-2	Update to Figure 5-1.	
	5-3	Update to Parts List.	
	5-4	Update to Figure 5-2.	
	5-5	Update to Parts List.	
	5-6	Update to Figure 5-3.	
	5-7	Update to Parts List.	
	5-8	Update to Figure 5-4.	
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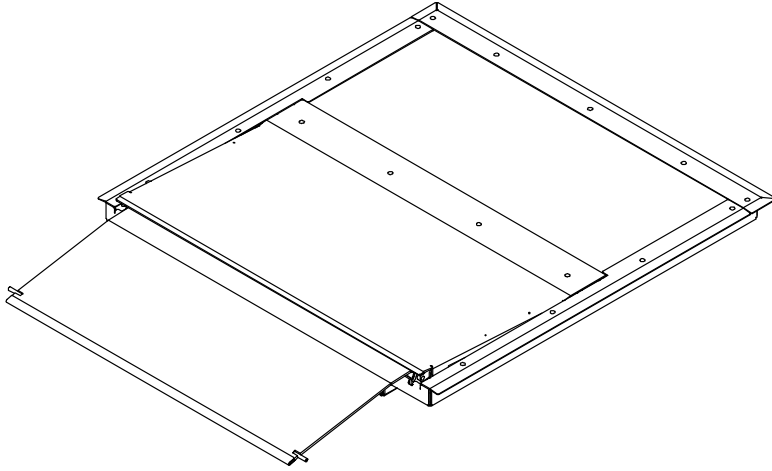
TABLE OF CONTENTS

<i>Chapter:</i>	<i>Page</i>
I. INTRODUCTION	1-1
A. RICON TWO-YEAR LIMITED WARRANTY	1-2
B. SHIPMENT INFORMATION	1-3
C. GENERAL SAFETY PRECAUTIONS	1-3
D. PRODUCT TERMINOLOGY	1-4
II. INSTALLATION.....	2-1
A. MECHANICAL INSTALLATION	2-1
1. RAMP LOCATION	2-1
2. RAMP MOUNTING	2-1
3. FLUTTER DRAIN VALVE INSTALLATION	2-2
B. ELECTRICAL INSTALLATION	2-2
1. RECOMMENDED PARKING BRAKE HOLD CIRCUIT	2-2
2. MAIN WIRING	2-3
3. WIRING DIAGRAMS.....	2-6
C. RAMP CONTROLLER ADJUSTMENT	2-7
1. ADJUSTMENT OF CONTOLLER WITH WHITE ADJUSTMENT SCREWS.....	2-7
2. ADJUSTMENT OF CONTOLLER WITH BRASS ADJUSTMENT SCREWS	2-8
D. INSTALLATION VERIFICATION.....	2-9
E. DECALS	2-10
III. MAINTENANCE	3-1
A. MAINTENANCE SCHEDULE	3-1
B. TROUBLESHOOTING GUIDES.....	3-4
1. RAMP OPERATIONAL TROUBLESHOOTING.....	3-4
2. ELECTRICAL TROUBLESHOOTING.....	3-5
3. RAMP CONTROLLER INDICATORS.....	3-6
C. RAMP CONTROL ADJUSTMENTS	3-6
D. RAMP CONTROLLER ELECTRICAL WIRING	3-6
1. DIAGRAM COLOR CODES.....	3-6
2. ELECTRICAL SIGNAL DESCRIPTIONS.....	3-7
3. MANUAL OPERATIONAL FUNCTIONAL DESCRIPTION.....	3-8
4. WIRING DIAGRAMS.....	3-9
E. FAILURE CONDITION INDICATIONS	3-13
F. RAMP CONTOLLER ADJUSTMENTS	3-13
G. REPAIRS.....	3-15
1. DIAGRAM COLOR CODES.....	3-15
IV. REPAIR	4-1
A. GENERAL SAFETY PRECAUTIONS AND WARNINGS.....	4-1
B. RAMP SERVICE ACCESS.....	4-1
C. COMPONENT DESCRIPTIONS	4-2
D. ENCLOSURE COMPONENTS	4-3
1. BUMPER STOP REMOVAL	4-3
2. BUMPER STOP INSTALLATION	4-3
3. FLUTTER VALVE (DRAIN) REMOVAL	4-3
4. FLUTTER VALVE (DRAIN) INSTALLATION.....	4-4
5. GAS SPRING REMOVAL	4-4

6. GAS SPRING INSTALLATION.....	4-5
7. LIFTING MECHANISM REMOVAL	4-5
8. LIFTING MECHANISM INSTALLATION	4-6
9. LIFTING MECHANISM ROLLER REMOVAL.....	4-6
10. LIFTING MECHANISM ROLLER INSTALLATION.....	4-7
11. PROXIMITY SENSOR REMOVAL.....	4-7
12. PROXIMITY SENSOR INSTALLATION.....	4-8
E. DRIVE SYSTEM	4-8
1. MOTOR DRIVE ASSEMBLY REMOVAL	4-8
2. MOTOR DRIVE ASSEMBLY INSTALLATION	4-9
3. MOTOR DRIVE BELT REMOVAL.....	4-10
4. MOTOR DRIVE BELT INSTALLATION	4-11
5. BALLSCREW REMOVAL.....	4-11
6. BALLSCREW INSTALLATION.....	4-12
F. TRAVELING FRAME ASSEMBLY.....	4-13
7. RAMP AND CARRIAGE DISASSEMBLY	4-13
8. ALIGNMENT PLATE REMOVAL.....	4-14
9. CARRIAGE BLOCK RAIL REMOVAL.....	4-14
10. CARRIAGE BLOCK RAIL INSTALLATION.....	4-15
11. ALIGNMENT PLATE ROLLER REMOVAL.....	4-15
12. ALIGNMENT PLATE ROLLER INSTALLATION.....	4-15
13. CAM FOLLOWER REMOVAL.....	4-15
14. CAM FOLLOWER INSTALLATION.....	4-15
15. ALIGNMENT PLATE INSTALLATION	4-15
16. RAMP AND CARRIAGE ASSEMBLY	4-15
V. PARTS DIAGRAMS AND LISTS	5-1
1. RAMP ENCLOSURE ASSEMBLY	5-2
2. RAMP TRAVELING FRAME ASSEMBLY.....	5-4
3. TOP COVER ASSEMBLY	5-6
4. RAMP DRIVE SYSTEM ASSEMBLY.....	5-8
5. CONTROLLER INTERFACE HARNESSSES	5-10
APPENDIX I RAMP SPECIFICATIONS	5-12

I. INTRODUCTION

The RICON PF7000 Series Low-Floor Vehicle Access Ramp is an electrically operated ramp that provides convenient access to vehicles for people using mobility equipment (wheelchairs, scooters, etc). The ramp has been designed for custom installations and is operated by the vehicle driver using a dashboard mounted control switch or the optional controller interface kit.



When the vehicle is safely parked with the doors open and the driver holds the control switch in the DEPLOY position, the ramp extends from the vehicle and stops when it contacts the ground. As a safety function, if the ramp encounters an obstruction, movement will automatically stop. When the passenger has boarded the driver holds the control switch in the STOW position and the ramp retracts back into the vehicle. The rated load capacity is 750 pounds (341 kilograms).

This manual contains installation and maintenance instructions for the ramp. For operating instructions, please refer to the Operators Manual. It is important to user safety that the vehicle operators be completely familiar with

the operating instructions. Once the ramp is installed, it is very important that it be properly maintained by following the Ricon recommended cleaning, lubrication, and inspection instructions.

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

Ricon Corporation
7900 Nelson Road
Panorama City, CA 91402.....(818) 267-3000
Outside (818) Area Code(800) 322-2884
Website..... www.riconcorp.com

Vapor Ricon Europe Ltd.
Meadow Lane
Loughborough Leicestershire 0044 (9) 1509 635 920
LE 1HS United Kingdom
Website..... www.riconuk.com

A. RICON TWO-YEAR LIMITED WARRANTY (refer to following page)

**RICON CORPORATION
TWO-YEAR LIMITED WARRANTY**

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

- Repair or replace parts for a period of two years from 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 two years from date of purchase. A Ricon rate schedule determines the parts covered and labor allowed.

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

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 qualified 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.
MODIFICATION OF THIS PRODUCT IN ANY RESPECT CAN BE DANGEROUS.**

This Warranty is Void if:

- The product has been installed or maintained by someone other than a 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 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 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, and there may be other rights that vary from state to state.

B. SHIPMENT INFORMATION

Ricon does not sell directly to the user, because of the specialized nature of the product. Instead, the product is distributed through the worldwide network of qualified service technicians, who perform the actual sale and installation.

- When the product is received, unpack the product and check for freight damage. Claims for any damage should be made to the carrier immediately.
- Be sure the installation kit contains all items listed on the kit packing list. Please report any missing items immediately to Ricon Product Support. The warranty and owner's registration cards must be completed and returned to Ricon within 20 days for the warranty to be valid.

C. GENERAL SAFETY PRECAUTIONS

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

- Under no circumstances should installation, maintenance, repair, or adjustments be attempted without the immediate presence of a person capable of rendering aid.
- An injury, no matter how slight, should always be attended. Always administer first aid or seek medical attention immediately.
- Protective eye shields and appropriate clothing should be worn at all times.
- To avoid injury, always exercise caution when operating and be certain that hands, feet, legs, and clothing are not in the path of product movement.
- Batteries contain acid that can burn. If acid comes in contact with skin, flush affected area with water and wash with soap immediately.
- Always work in a properly ventilated area. Do not smoke or use an open flame near a battery.
- Do not lay anything metallic on top of battery.
- Check under vehicle before drilling to avoid drilling into frame, subframe members, wiring, hydraulic lines, fuel lines, fuel tank, etc.
- Read and thoroughly understand the operating instructions before attempting to operate.
- Inspect the product before each use. If an unsafe condition, unusual noises, or unusual movements exists, do not use lift until the problem is corrected.
- Keep others clear during operation.
- The product requires regular periodic maintenance. A thorough inspection is recommended at least once every six months. The product must always be maintained at the highest level of performance.

D. PRODUCT TERMINOLOGY

The references used throughout this manual are illustrated in **Figure 1-1** and defined in **Table 1-1**. Refer to Chapter V for more details.

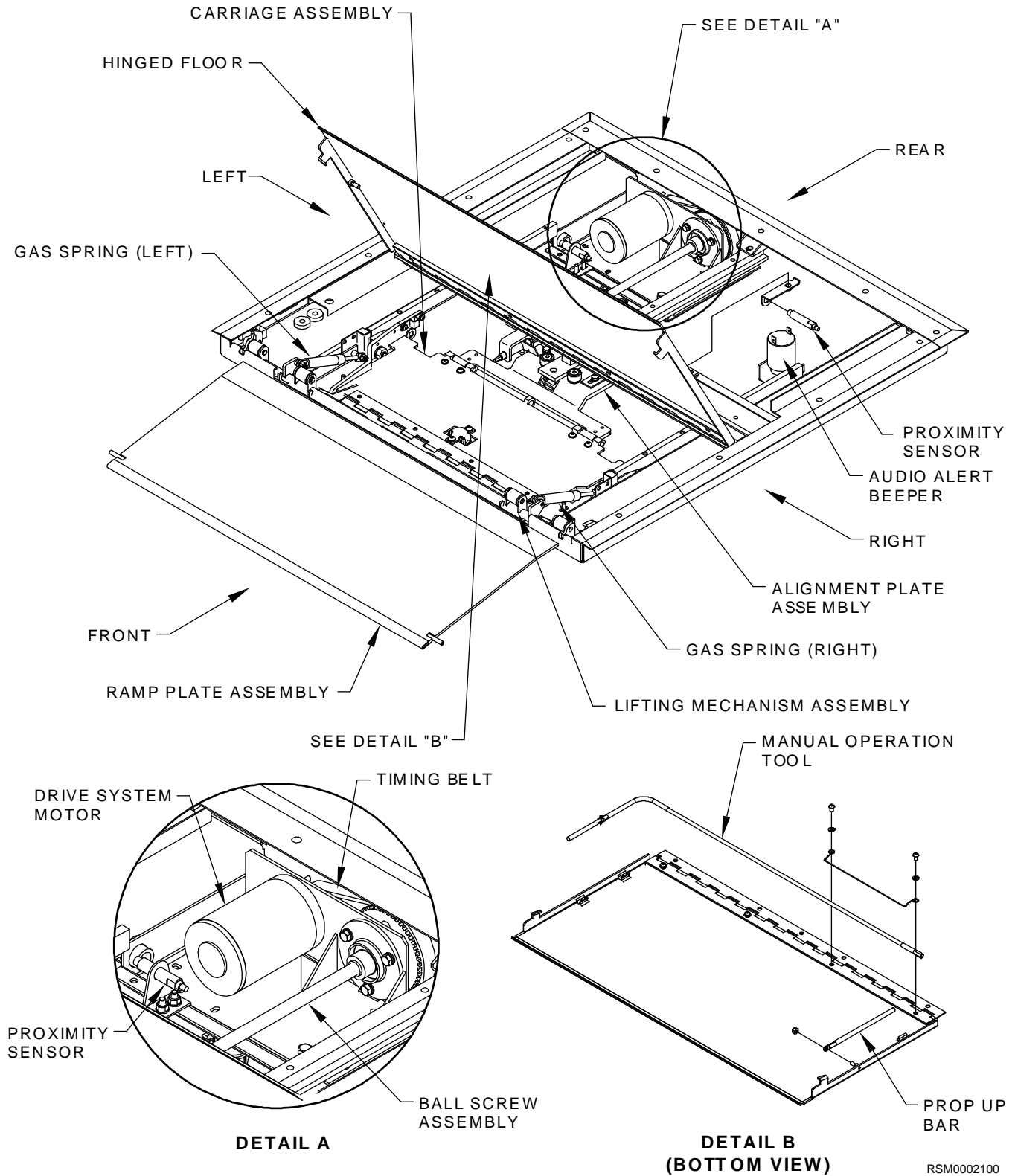


FIGURE 1-1: MAJOR RAMP COMPONENTS

TABLE 1-1: PF7000 RAMP TERMINOLOGY

NAME	DESCRIPTION
Front, Rear, Right, Left	Reference point from outside the train looking inward.
Alignment Plate Assembly	Assembly that keeps ramp aligned with frame during operation.
Ballscrew Assembly	Mechanical component of the drive system used to DEPLOY and STOW the ramp.
Carriage Assembly	Mechanical assembly that operates the ramp assembly.
Bumper Stop	(left and right) Soft rubber piece that stops advancement of carriage assembly during DEPLOY operation.
Drive System	Components used to DEPLOY and STOW the ramp.
Drive System Motor	Electric motor used to operate the ramp.
Hinged Floor	Floor panel that opens to allow ramp to DEPLOY.
Lifting Mechanism Assembly	(left and right) Mechanism that lifts hinged floor and ramp out of enclosure during DEPLOY operation, and lowers ramp and hinged floor during STOW operation.
Manual Deployment Hole	Insertion point for the manual operation tool. Hole is located under ramp assembly.
Manual Operation Tool	Used to manually STOW and DEPLOY the ramp. Stored under hinged floor.
Proximity Sensor	Magnetic device used to signal the ramp controller when the ramp is fully stowed or deployed.
Ramp Assembly	Assembly that DEPLOYS from under the hinged floor during ramp operation.
Ramp Control Panel	Contains controls to automatically or manually STOW and DEPLOY the ramp and shows the status of the ramp with indicator lights.
Ramp Controller	(Not shown) Electronically controls all of the ramp functions and safety features.
Ramp Enclosure	Cassette type enclosure, rigidly attached to the vehicle, which contains the ramp.
Gas Spring	(left and right) Assists in the deployment of ramp and locks the ramp in place when stowed.
Timing Belt	Rubber belt connected to ramp motor that turns ball screw assembly.
END OF TABLE	

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II. INSTALLATION

The RICON PF7000 Series Low-Floor Vehicle Access Ramp has been engineered and designed for custom installations. Installation consists of the mounting of the ramp, installation of the electrical supply and control wiring, controller adjustment, and installation verification. This chapter provides installation guidelines and instructions. If a question arises that is not covered in this chapter, contact the Ricon Product Support Department for assistance.

A. MECHANICAL

1. RAMP LOCATION

The location of ramp depends on its path of motion. The ramp must be positioned so it can move unobstructed through its required range of travel.

2. RAMP MOUNTING

- Since ramp mounting varies from one model to another, vehicle mounting brackets for attachment of ramp are not supplied. When fabricated, mounting brackets must meet criteria listed in **Table 2-1**.

TABLE 2-1: RAMP MOUNTING BRACKET LOAD CAPACITIES		
Loading Direction	Front Supports (total capacity for both left and right support points)	Rear Supports (total capacity for both left and right support points)
Vertical	850 lbs (386 kg)	850 lbs (386 kg)
Longitudinal (perpendicular to vehicle drive axles)	750 lbs (341 kg)	750 lbs (341 kg)
Lateral (parallel to vehicle drive axles)	375 lbs (170 kg)	375 lbs (170 kg)
END OF TABLE		

- Hardware for mounting ramp must be a minimum of 5/16" diameter, with a grade of 5 or higher.
- Refer to Figure 2-1. Mechanical support of ramp must be provided at six (three on each side) attachment points. Each attachment point uses two screws.

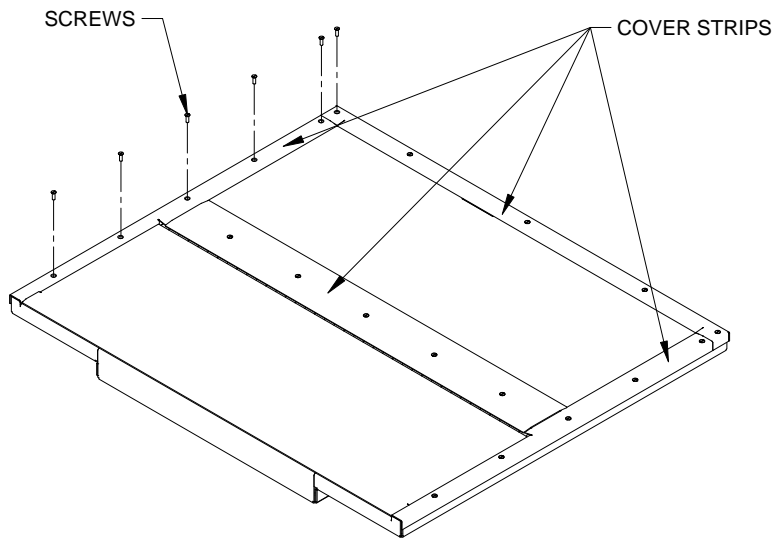


FIGURE 2-1: REMOVAL OF COVER STRIPS

3. FLUTTER (DRAIN) VALVE INSTALLATION

The purpose of the flutter valve is to allow fluid to drain out of enclosure, while keeping debris from entering. Flutter valve and hose clamp are provided with ramp in kit #39023.

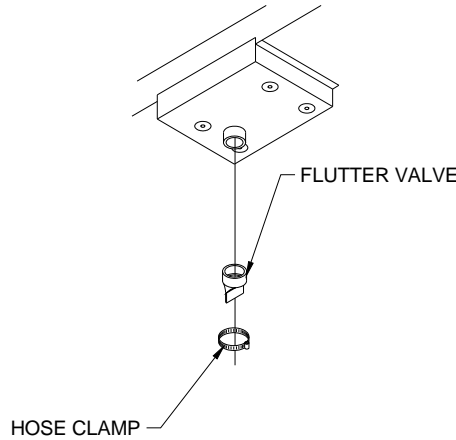


FIGURE 2-2: FLUTTER VALVE INSTALLATION

- a. Install flutter valve holder over flange on underside of ramp enclosure.
- b. Refer to **Figure 2-2**. Slide flutter valve onto holder.
- c. Refer to **Figure 2-2**. Place hose clamp over flutter valve and tighten to secure valve in place.

B. ELECTRICAL INSTALLATION

CAUTION!
<ul style="list-style-type: none"> Check vehicle before drilling. Do not drill into factory wiring, hydraulic lines, fuel lines, fuel tank, etc. If wire or harness is routed through sheet metal holes or around sharp edges, protect points of contact with a suitable grommet or plastic conduit. Make sure wires or harnesses are protected and secured with cable ties every 18" (45 cm).

1. RECOMMENDED PARKING BRAKE HOLD CIRCUIT

WARNING!
DO NOT DIRECTLY CONNECT THE PARKING BRAKE HOLD CIRCUIT TO THE VEHICLE BRAKE SYSTEM VENT VALVE. DOING SO WILL CAUSE THE BRAKES TO LOCK WHEN THE RAMP INTERLOCK CIRCUIT IS TRIGGERED.

a. Ramp Signal State Description:

ST_OUT (pin 1) Off when ramp is stowed; 24 volts when ramp is more than 3/4" from stowed.
 ST_OUT (pin 2) 24 volts when ramp is stowed; off when ramp is more than 3/4" from stowed.

b. Acceptable Brake Hold Logic:

ST_OUT	ST_OUT	BRAKE	RAMP POSITION
24 V	24 V	HOLD	Ramp stowed; operation switched to manual at panel.
24 V	OFF	HOLD	Ramp not stowed.
OFF	24 V	DO NOT HOLD	Ramp stowed; operation switched to power at panel.
OFF	OFF	HOLD	Error; possible damage to controller.

c. Installation Instructions for Relay Logic Circuit

- 1) Refer to **Figure 2-3**. Obtain a suitable enclosure and locate brake hold circuit inside.

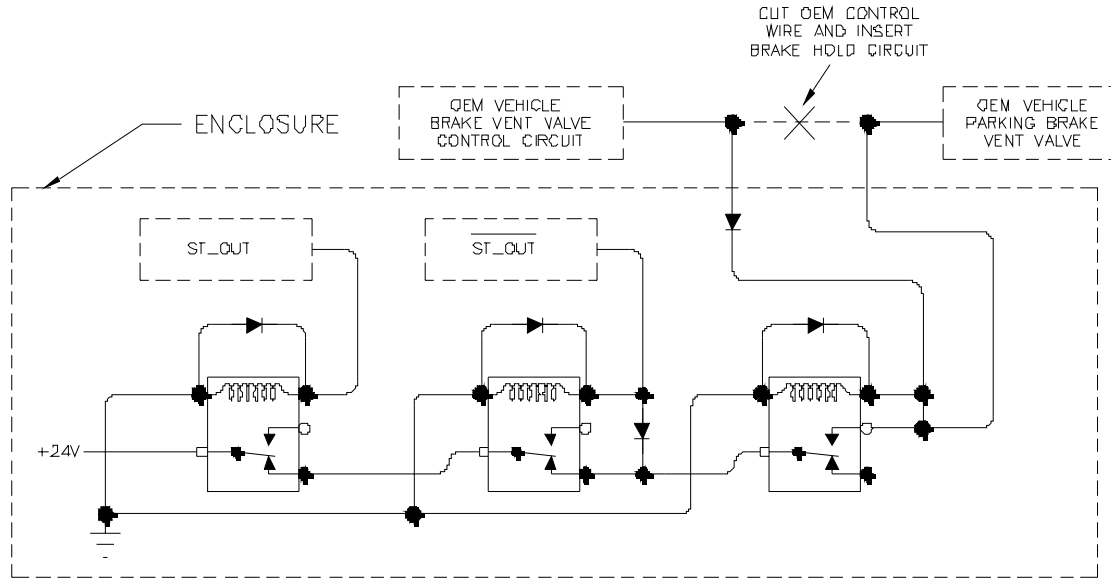


FIGURE 2-3: BRAKE HOLD CIRCUIT DIAGRAM

- 2) Locate OEM vehicle parking brake vent valve control wire and a 24-Volt current source.
- 3) Mount brake hold circuit enclosure as near as possible to OEM vent valve control wire.
- 4) Cut OEM control wire and insert brake hold circuit as shown.
- 5) Connect brake hold circuit ground wire to suitable ground.

2. MAIN WIRING

Follow this procedure to install the ramp main wiring (including optional controller interface kit):

- a. Refer to **Figure 2-4**. Mount manual operation panel, ramp controller, and ramp control panel within maximum distances. Ramp control panel must be visible and reachable from drivers' position.

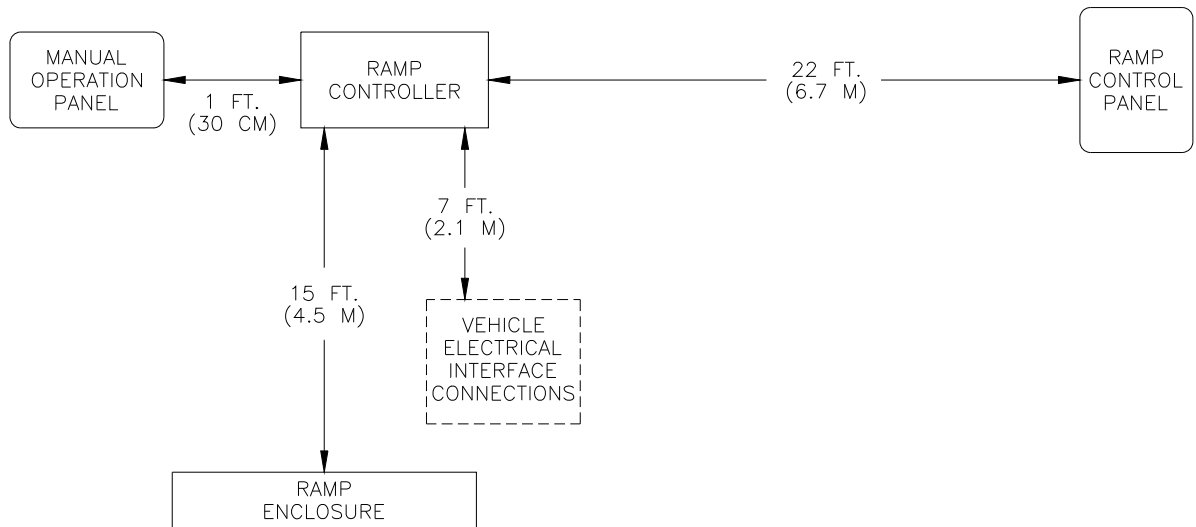


FIGURE 2-4: COMPONENT MAXIMUM DISTANCES

b. Refer to Figures 2-5 & 2-6. At controller, connect controller interface harness.

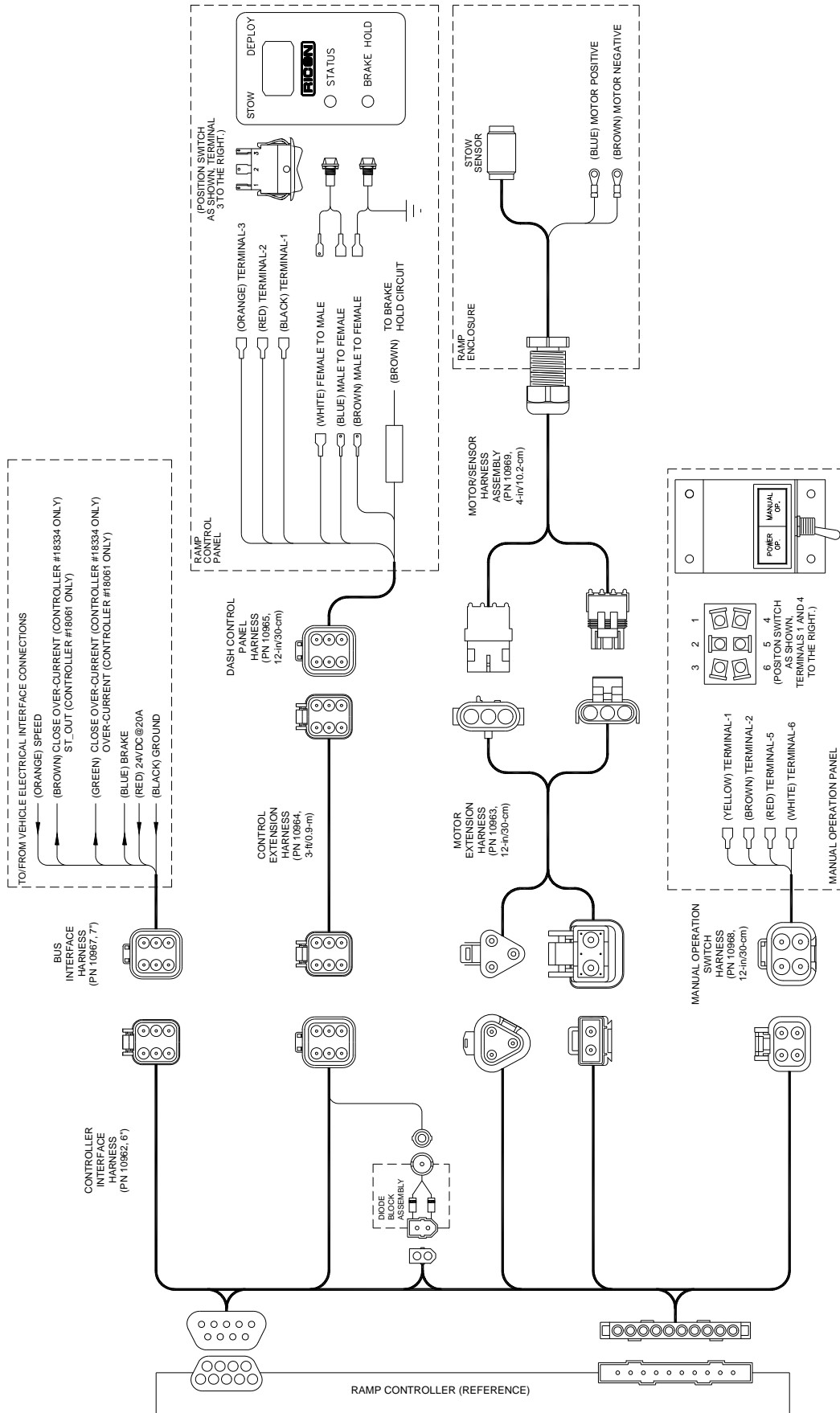


FIGURE 2-5: ELECTRICAL INTERCONNECT DIAGRAM

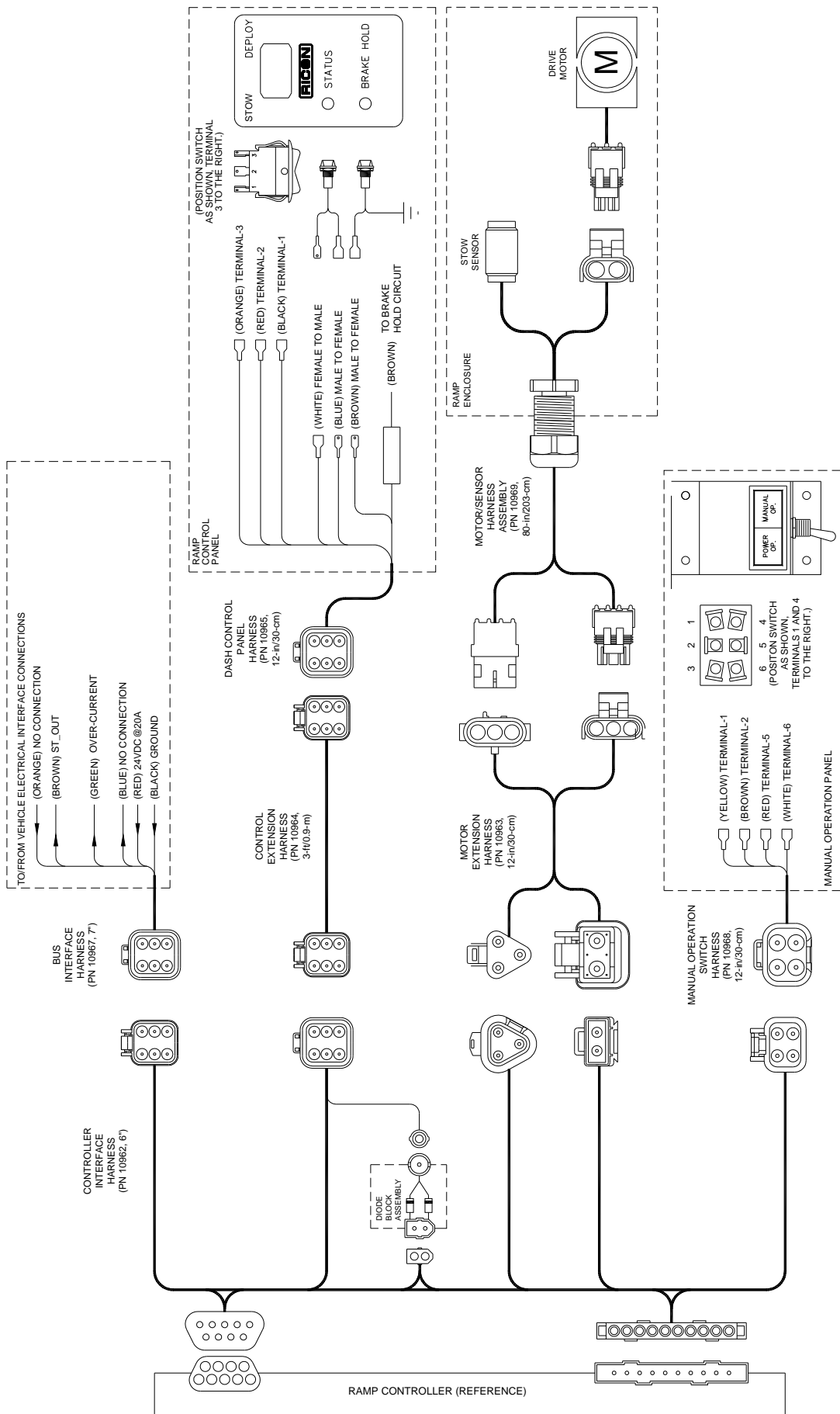


FIGURE 2-6: ELECTRICAL INTERCONNECT DIAGRAM
32DPF704.A.1

- c. Connect manual operation switch harness to controller interface harness. Make sure switch is positioned as shown and terminals are properly connected.
- d. Route motor extension harness to controller interface harness and connect.
- e. Route motor/sensor harness assembly to motor extension harness and connect.
- f. Route and secure motor/sensor harness assembly through ramp enclosure. Mount stow sensor and connect motor terminals as marked.
- g. Route control extension harness to controller interface harness and connect.
- h. Connect dash control panel harness to control extension harness.
- i. At ramp control panel, make sure switch is positioned as shown and terminals are properly connected. Make sure terminals are connected to LEDs and BRAKE HOLD LED is connected to ground. Route BROWN wire to brake hold circuit and connect.
- j. At controller interface harness, connect bus interface harness.
- k. **For controllers 18061 and 18334 only:** At bus interface harness, connect speed, over-current, and brake signals as specified by vehicle manufacturer.
For controller 27625: At bus interface, connect over-current signal (if used). Connect ST_OUT signal to bus interlock system as specified by vehicle manufacturer.
- l. At vehicle engine/battery compartment, mount supplied Main Circuit Breaker within 10 - 12" (25 - 30 cm) of battery.
- m. From beneath vehicle, route RED electrical wire (not supplied) along vehicle frame from bus interface harness to circuit breaker.
(For controller 27625) Use AWG 14 for runs up to 14 FT, AWG 12 up to 22 FT, AWG 10 up to 35 FT.
- n. At engine/battery compartment, cut and retain 12" (30 cm) section from end of RED wire.
- o. Measure RED wire to reach circuit breaker and cut and remove any excess wire from harness.
- p. Using wire crimpers, crimp supplied terminal to end of RED wire and connect to circuit breaker AUX terminal.
- q. Crimp supplied terminals to both ends of previously cut 12" (30 cm) section of RED wire.
- r. Connect end of 12" (30 cm) section of RED wire to circuit breaker BAT terminal.

 **WARNING!**

- WEAR PROTECTIVE CLOTHING AND EYE PROTECTION AT ALL TIMES. BATTERIES CONTAIN ACID THAT CAN BURN. IF ACID COMES INTO CONTACT WITH SKIN, IMMEDIATELY FLUSH AFFECTED AREA WITH WATER AND WASH WITH SOAP.
- DO NOT SMOKE OR USE OPEN FLAME IN THE VICINITY OF BATTERY. ALWAYS WORK IN PROPERLY VENTILATED AREA.
- DO NOT LAY ANYTHING ON TOP OF A BATTERY.

- s. Connect other end of 12" (30 cm) section of RED wire to POSITIVE terminal of vehicle battery.
- t. Connect BLACK wire of bus interface harness to appropriate chassis ground as specified by vehicle manufacturer.

C. RAMP CONTROLLER ADJUSTMENT

The purpose of the ramp controller adjustment is to ensure ramp mechanism reliability in all operating conditions while maintaining a margin of safety in the event of blockage of the ramp. Therefore, the ramp should be set to the highest possible current setting that will not cause personal injury in the event of a blockage. For the ramp controller adjustment procedures, refer to the following sections:

1. ADJUSTMENT OF CONTROLLER WITH WHITE ADJUSTMENT SCREWS

For adjustment of the ramp controller with WHITE adjustment screws, refer to **Figure 2-7** and the following sections:

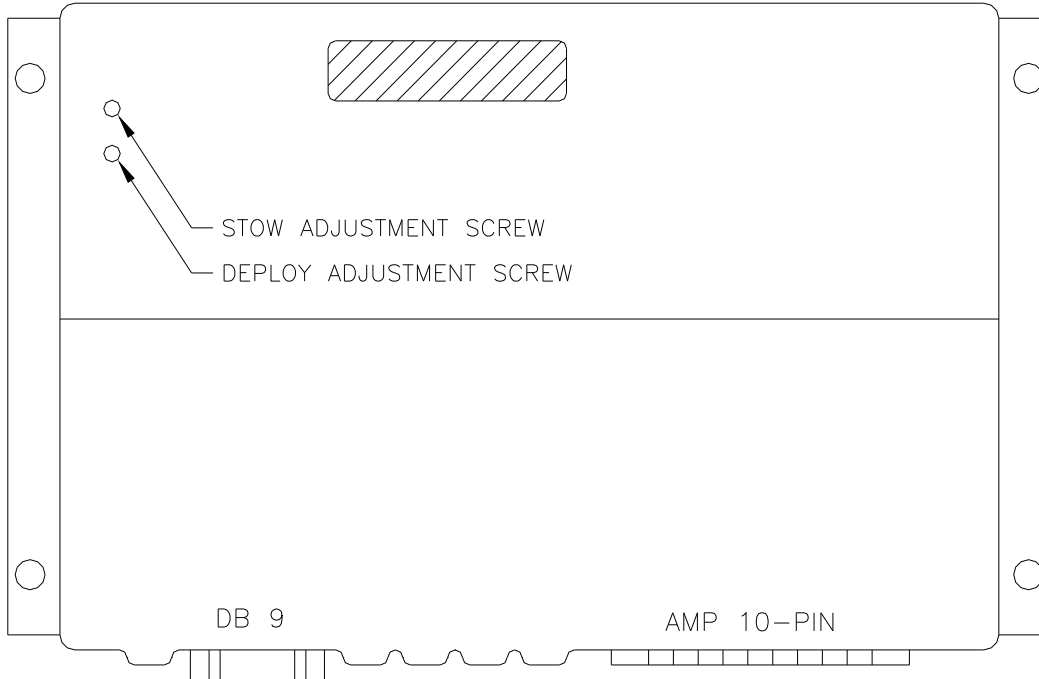


FIGURE 2-7: CONTROLLER WITH WHITE ADJUSTMENT SCREWS

a. DEPLOY ADJUSTMENT

For the deploy direction, the maximum force attained by the ramp against a force-gage before the current limit shuts the system down, is higher than 80 lb. (33 kg) for reliability and not to exceed 100 lb. (45 kg) for safety. Any force measuring instrument can be used as long as it contains a follower needle to record the maximum force attained. The set-up must also contain a spring in series with the force measuring instrument to absorb the ramp momentum (elongation: 2-inches/5 cm = 80 lb./33 kg). To perform the controller deploy force adjustment, follow this procedure:

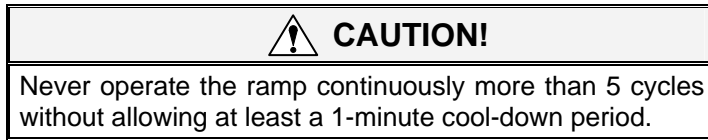
CAUTION!

- Never turn the adjustment screw more than 1/8 turn between tests.
- Never operate the ramp continuously more than 5-cycles without allowing at least a 1-minute cool-down period.

- 1) Using force-gauge, test ramp deploy force. If it falls within 80-100 lb. (33-45 kg), do not adjust. If adjustment is necessary, locate DEPLOY ADJUSTMENT SCREW.
- 2) With a small Phillips screwdriver, turn adjustment screw **1/8 turn counter-clockwise (CCW)** to INCREASE force or **1/8 turn clockwise (CW)** to DECREASE force.
- 3) Repeat the above two steps. If reliable operation cannot be attained within the 80-100 lb. (33-45 kg) range, discontinue this procedure and immediately check ramp for mechanical binding.

b. STOW ADJUSTMENT

The adjustment procedure for the stow direction is not adjusted with a force-gauge. The current limiting system in the stow direction is only that it is triggered when the ramp has reached end-of-travel. The setting should be as high as possible and still accomplish current limit at the end of travel.



- 1) Locate STOW ADJUSTMENT SCREW.
- 2) Using a screwdriver, turn adjustment screw **CCW** until it stops (do not force). Ramp is now set for highest current limit, causing motor to stall instead of unit shutting down.
- 3) Stow ramp. Keep function selected after ramp has reached end-of-travel.
- 4) While holding stow function, turn adjustment screw **CW** until an audible **CLICK** is heard. This indicates current limit has been triggered.
- 5) Adjust screw an additional **1/16 turn CW**.
- 6) Deploy ramp approximately 6 inches (15-16 cm).
- 7) Fully stow ramp and observe ramp pull against enclosure back-stop then visibly “relax” as current limit shuts off power to motor.

2. ADJUSTMENT OF CONTROLLER WITH BRASS ADJUSTMENT SCREWS

For adjustment of the ramp controller with BRASS adjustment screws, refer to **Figure 2-8** and the following sections:

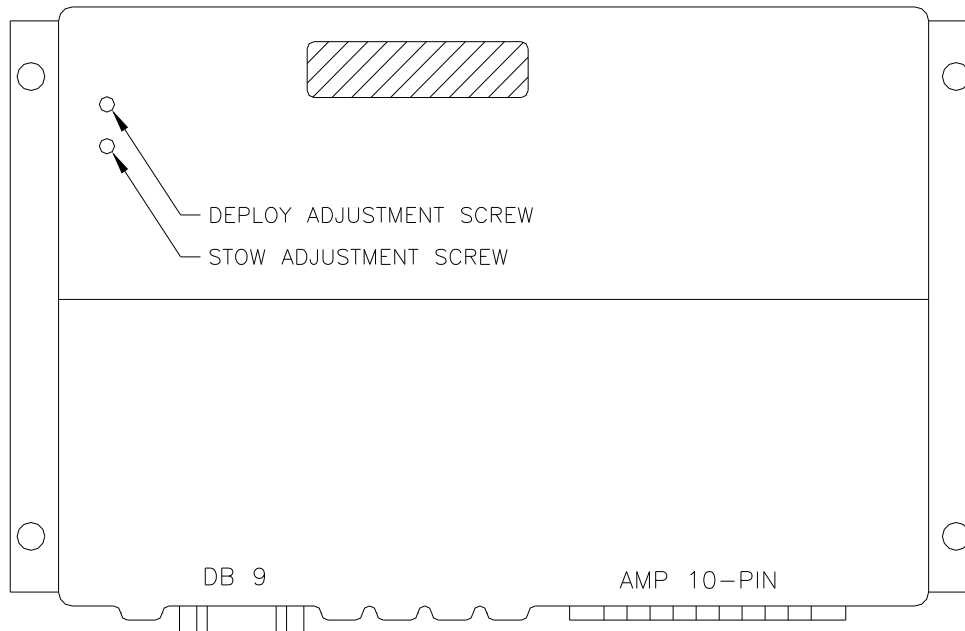


FIGURE 2-8: CONTROLLER WITH BRASS ADJUSTMENT SCREWS

a. DEPLOY FORCE ADJUSTMENT

For the deploy force adjustment, the maximum force attained by the ramp against a force-gage before the current limit shuts the system down, is higher than 80 lb. (33 kg) for reliability and not to exceed 100 lb. (45 kg) for safety. Any force measuring instrument can be used as long as it contains a follower needle to record the maximum force attained. The set-up must also contain a spring in series with the force measuring instrument to absorb the ramp momentum (elongation: 2"/5 cm = 80 lb./33 kg). To perform the controller deploy force adjustment, follow this procedure:



CAUTION!

- Never turn the adjustment screw more than 5 turns between tests.
- Never operate the ramp continuously more than 5 cycles without allowing at least a 1-minute cool-down period.

- 1) Using force-gauge, test ramp deploy force. If it is within 80-100 lb. (33-45 kg), do not adjust. If adjustment is necessary, locate DEPLOY ADJUSTMENT SCREW.
- 2) With a small Phillips screwdriver, turn adjustment screw no more than 5 turns **counter-clockwise (CCW)** to DECREASE force or no more than 5 turns **clockwise (CW)** to INCREASE force.
- 3) Repeat above two steps. If reliable operation cannot be attained within 80-100 lb. (33-45 kg) range, discontinue this procedure and immediately check ramp for mechanical binding.

b. STOW FORCE ADJUSTMENT

The current limiting system in stow direction is only that it is triggered when ramp has reached end-of-travel. The setting should be as high as possible and still accomplish current limit at end of travel. To perform the controller stow force adjustment, follow this procedure:



CAUTION!

- Never turn the adjustment screw more than 5 turns between tests.
- Never operate the ramp continuously more than 5 cycles without allowing at least a 1-minute cool-down period.

- 1) Locate STOW ADJUSTMENT SCREW.
- 2) With a small flathead screw driver, turn adjustment screw **CW 20 turns**. Ramp is now set for highest current limit, causing motor to stall instead of unit shutting down.

NOTE: Adjustment screw will not stop turning.

- 3) Stow ramp. Keep function selected after ramp has reached end-of-travel.
- 4) While holding stow function, turn adjustment screw **CCW** until an audible **CLICK** is heard. This indicates current limit has been triggered.
- 5) Adjust screw an additional **two turns CCW**.
- 6) Run another full cycle to make sure mechanical binding will not trigger current limit. If ramp cannot be fully stowed after adjustment, find reason for binding.
- 7) Fully stow ramp and observe ramp pull against enclosure back-stop then visibly “relax” as current limit shuts off power to motor.

D. INSTALLATION VERIFICATION

1. Be certain there is no interference with operation of the ramp by interior or exterior components.
2. The ramp is designed to carry the weight of a wheelchair and its passenger. The vehicle structure must be adequate to support all loads produced during ramp operation, as well as forces incurred by the motion of the vehicle during driving.



CAUTION!

Do not operate the ramp electrically or manually during the load test. The load test is designed to test the installation mounting of the ramp. Remove the test weight immediately after the test.

3. The ramp must be test loaded to 125% of its rated 750 lbs (341 kg) load capacity to verify the integrity of the installation. Deploy the ramp, place 938 lbs (426 kg) in the center of the platform, and inspect the ramp mounting points. **REMOVE THE TEST WEIGHT**.
4. Refer to Service Manual, Chapter II and run the ramp through several cycles of both functions (DEPLOY and STOW).
5. Verify operation of ramp control panel indicators.
6. Verify operation of manual operation panel switch.

E. DECALS

Refer to **Figure 2-9**. Verify that all decals are properly located and affixed as shown.

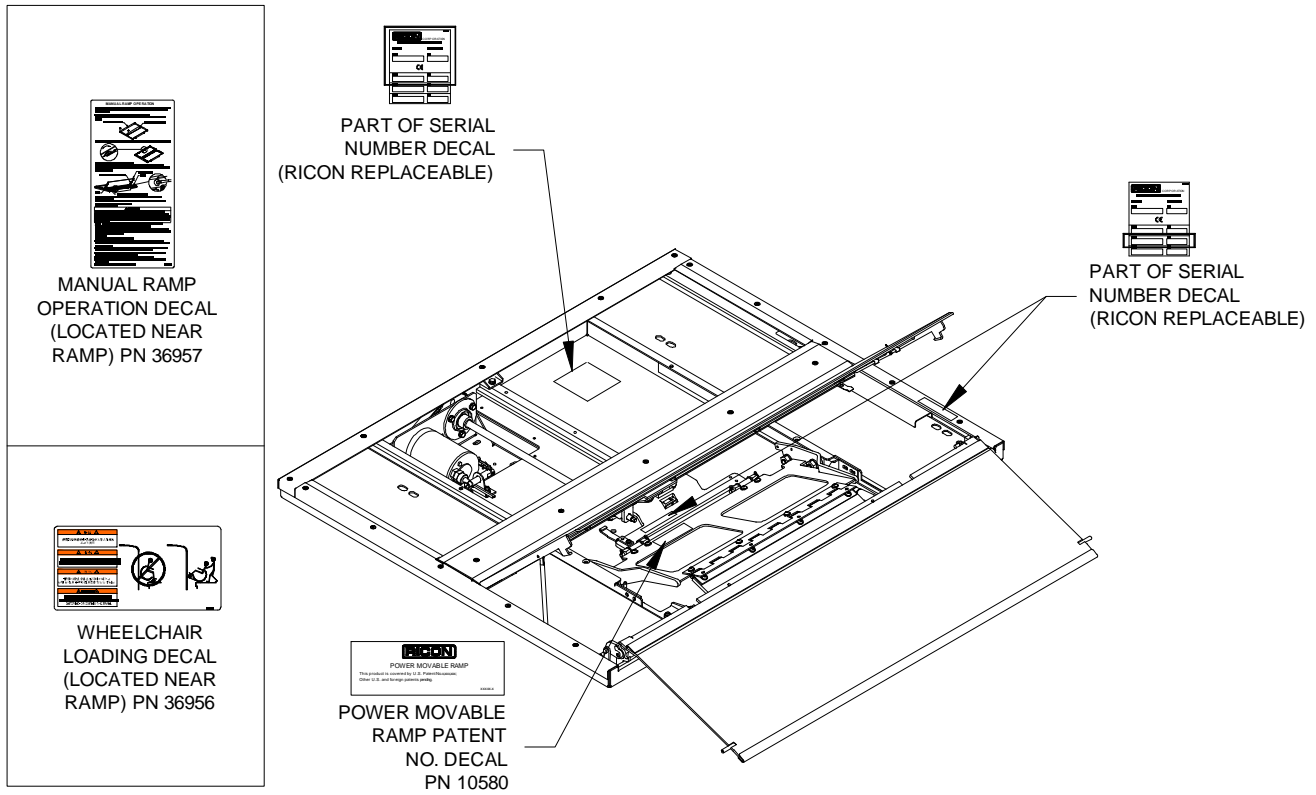


FIGURE 2-9: DECAL LOCATIONS AND PART NUMBERS

III. MAINTENANCE

Maintenance for the RICON PF7000 Series Low-Floor Vehicle Access Ramp consists of a maintenance schedule, troubleshooting guide, and electrical wiring diagram. Routine maintenance and repairs should be performed by qualified service technicians.

A. MAINTENANCE SCHEDULE

Refer to **Table 3-1**. Under conditions of heavy use (in excess of 20 cycles per day), maintenance should be performed more frequently. Modifying or failing to properly maintain the ramp will void the warranty and may result in unsafe operating conditions for the users. Safety inspections should be performed according to the following intervals:

TABLE 3-1: MAINTENANCE SCHEDULE	
SERVICE POINT	ACTION TO PERFORM
DAILY SAFETY CHECK	
General Appearance	<ul style="list-style-type: none"> • Inspect underside of train to verify that nothing is out of the ordinary. • Verify that the bottom surfaces of the side channels are free of debris.
General Operation	<ul style="list-style-type: none"> • Verify ramp operates properly during deploy and stow modes without obstruction. • Listen for any abnormal noises as the ramp deploys (i.e., grinding or scraping noises). If any abnormal noises exist, notify a qualified service technician immediately. • Bumper stops are in place and stop ramp squarely.
Main Pivot Points	Refer to Figure 3-1 . Verify carriage/ramp pivot pins are installed properly, free from damage and locked in position with proper fasteners.
Ramp Mounting and Support Points.	<ul style="list-style-type: none"> • Refer to Figure 3-1. Verify that all ramp mounting and support points are in proper order, free from damage and locked in position with proper fasteners. Verify that all mounting bolts are sufficiently tightened (27~33 Nm).
4-MONTH SAFETY CHECK	
Ramp Enclosure	Vacuum inside the ramp enclosure using an industrial vacuum cleaner.
Ramp Controller	Visually inspect the appearance of the parts. Replace them when the deformation, change in color, or damage are confirmed.
	Visually inspect the wires. Replace them if deterioration or damage are confirmed.
	Visually inspect the terminals. Correct them if deformation is confirmed. Replace them if corrosion, weld, changing colors, or cracks are confirmed.
	Verify that the terminal screws are sufficiently tightened.
	Inspect the terminal board. Replace it when deformation or cracks are confirmed.
ANNUAL SAFETY CHECK	
Ballscrew Assembly	Grease Ballscrew using low temperature grease such as Aeroshell Grease #22 Starfak EP, or equivalent.
CONTINUED ON PAGE 3-2	

TABLE 3-1: MAINTENANCE SCHEDULE	
SERVICE POINT	ACTION TO PERFORM
Cam Followers	<ul style="list-style-type: none"> • Refer to Figure 3-1. Verify that the cam followers rotate normally and ensure that the cam follower fasteners are sufficiently tightened. • Grease all six Cam Followers using low temperature grease such as Aero-shell Grease #22 Starfak EP, or equivalent. Grease fittings should be wiped clean prior to grease injection to prevent contamination.
EVERY 4-YEAR SAFETY CHECK	
Bolts, Fasteners, Hinges, Pins	Verify that the bolts, fasteners, hinges, and pins are sufficiently tightened and secured in their appropriate locations.
Bumper stops	Replace bumper stops.
Flutter valve	Replace the flutter valve rubber.
Proximity sensors	Inspect the gap between the sensor and the detector and verify that it is 3 ± 0.5 mm. Verify that the bracket mounting bolts are sufficiently tightened. Verify that the indicator light turns on when the ramp is fully stowed.
Ramp electrical components inside ramp enclosure	Verify that each connector and terminal is properly connected.
Gas springs	Replace gas springs.
Timing belt	Inspect the timing belt. Replace it if deformation, scars, or damage is confirmed.
EVERY 8-YEAR SAFETY CHECK	
Cam followers	Refer to Figure 3-1 . Verify that the cam followers rotate normally and ensure that the cam follower fasteners are sufficiently tightened.
Proximity sensors	Replace the proximity sensors when necessary.
Rail block	Replace the carriage guide rail block.
Rollers	Replace the alignment plate and carriage rollers.
RAMP IN STOWED POSITION:	
Ramp Mounting and Support Points	<ul style="list-style-type: none"> • Verify that all ramp support points under vehicle are in proper working order and free from damage. • Verify that all mounting bolts are properly fastened.
DEPLOY RAMP TO FULL EXTENSION:	
General Operation	<ul style="list-style-type: none"> • Listen for any abnormal noises as the ramp deploys (i.e., grinding or scraping noises). • Carriage stops are in place and stop ramp squarely.
Main Pivots	Verify carriage/platform pivot pins are installed properly, free from damage and locked in position with proper fasteners.
Ramp Points	Verify ramp operates properly during deploy and stow modes without obstruction.
END OF TABLE	

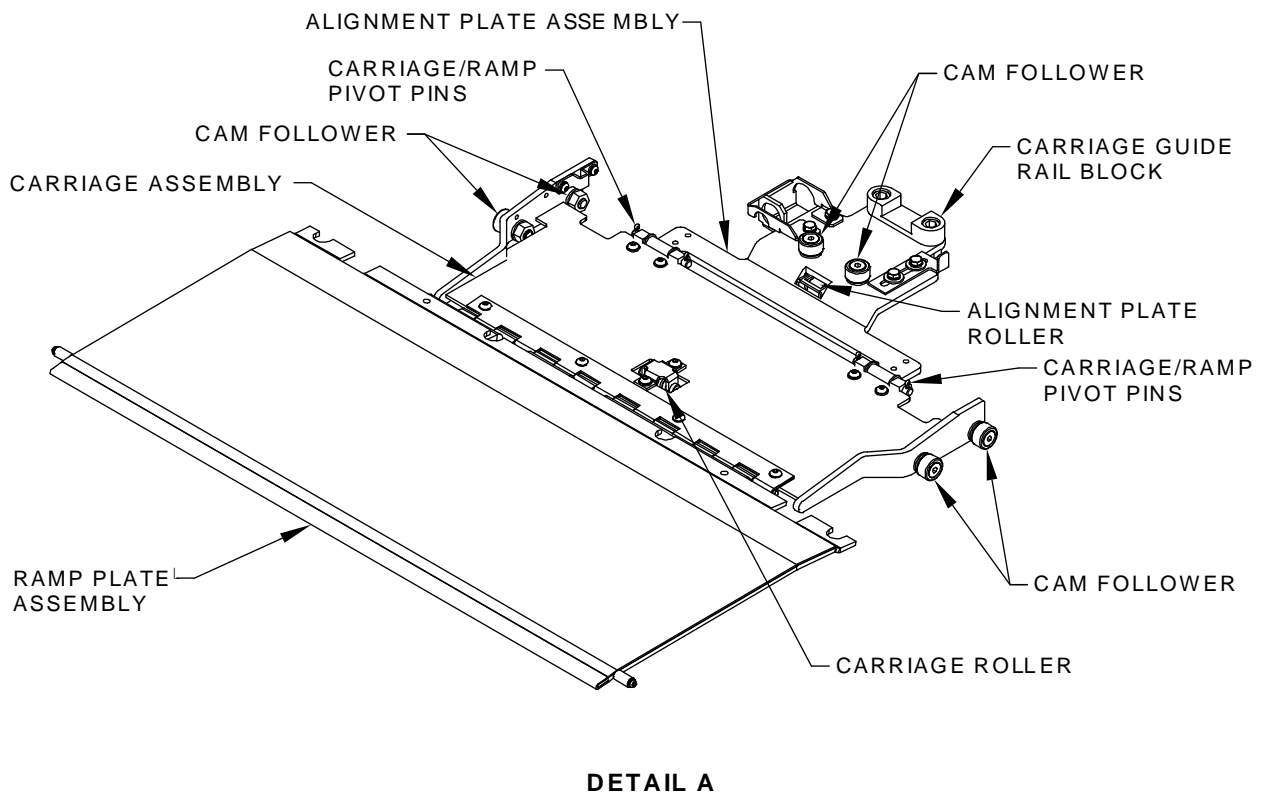
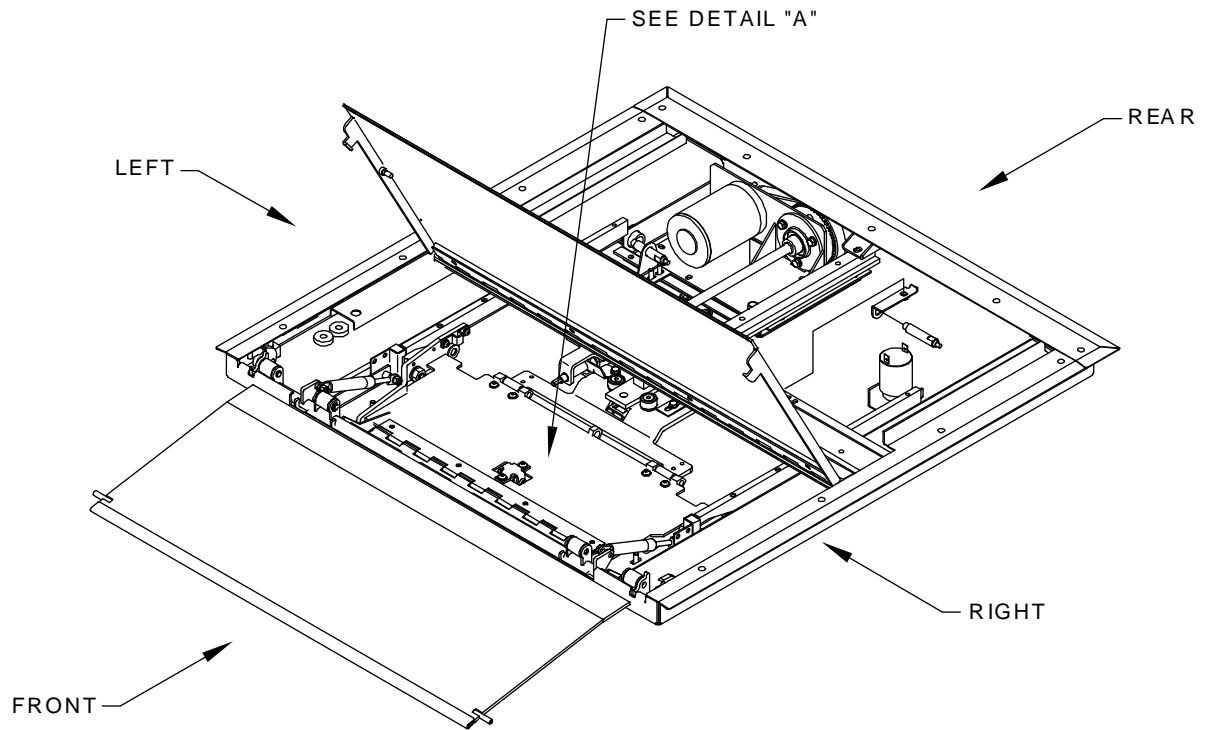


FIGURE 3-1: RAMP SERVICE POINTS

RSM0002200

B. TROUBLESHOOTING GUIDE

The troubleshooting guides are designed to provide logical starting points to locate general problems that could occur with the ramp. However, not all possible problems or combinations of problems are listed. The guides do not incorporate routine safety precautions or preliminary procedures and assume that the vehicle battery is fully charged and the battery terminals/connectors are clean and tight. For troubleshooting the ramp, refer to the following sections:

1. RAMP OPERATIONAL TROUBLESHOOTING

TABLE 3-2: OPERATIONAL TROUBLESHOOTING GUIDE		
SYMPTOM	POSSIBLE CAUSE	REMEDY
No ramp operation.	Main circuit breaker tripped.	Reset circuit breaker.
	Manufacturer's interlock circuitry.	Check manufacturers interlock circuitry.
	Electrical harness not connected properly.	Verify proper connection of electrical harness to ramp controller.
Hinged floor does not fully close.	Obstruction in door.	Remove obstruction and check for any damage.
	Bent ramp cam pin.	Contact a qualified service technician for repair.
	Damaged gas spring.	Inspect gas springs and contact a qualified service technician for repair if necessary.
	Damaged and/or misaligned hinged floor.	Contact a qualified service technician for repair.
Excess noise during deploy and/or stow.	Faulty cam follower on traveling frame assembly and/or alignment plate assembly.	Contact a qualified service technician for repair.
	Debris in enclosure.	Remove debris.
	Improper alignment adjustment of traveling frame.	Contact a qualified service technician for repair.
	Improper alignment adjustment of drive system.	Contact a qualified service technician for repair.
Ramp motor operates, ramp does not deploy.	Broken drive belt.	Contact a qualified service technician for repair.
END OF TABLE		

2. ELECTRICAL TROUBLESHOOTING

TABLE 3-3: ELECTRICAL TROUBLESHOOTING GUIDE		
SYMPTOM	FAILURE	REMEDY
Ramp will not operate in one direction only.	Contact weld in the motor direction relay.	Replace controller.
Current limit cannot be set high enough, controller goes into current limit when there is no obstruction.	Current sense resistor has been overloaded and burned.	
Catastrophic failure, no functions, lights show erroneous pattern, or no lights at all.	EPROM damage.	
	Supply voltage exceeded 30VDC.	
Ramp will function when bus is moving, light pattern indicates bus is not moving.	Signal from speed sensor indicates the bus is not moving regardless of movement of the bus.	Repair wiring to speed sensor.
No ramp functions work.	Signal indicates the brake is not set regardless of condition of brake.	Most likely the wire between the brake sensor and the controller is broken or nonexistent. Repair wiring to brake sensor.
	Signal indicates bus is moving regardless of condition of bus.	Most probably the wire between the speed sensor and the controller is broken or nonexistent. Repair wiring to speed sensor.
	Supply power not present.	Check vehicle circuit breaker. Repair supply wire.
System does not hold vehicle parking brake when ramp is deployed.	Broken or missing signal to the brake hold circuit.	Repair wiring.
	Stow sensor failure (continually provides signal that the ramp is stowed regardless of position of ramp).	Replace stow sensor.
END OF TABLE		

3. RAMP CONTROLLER INDICATORS

The electronic ramp controller contains front panel LEDs that may be used during electrical troubleshooting.

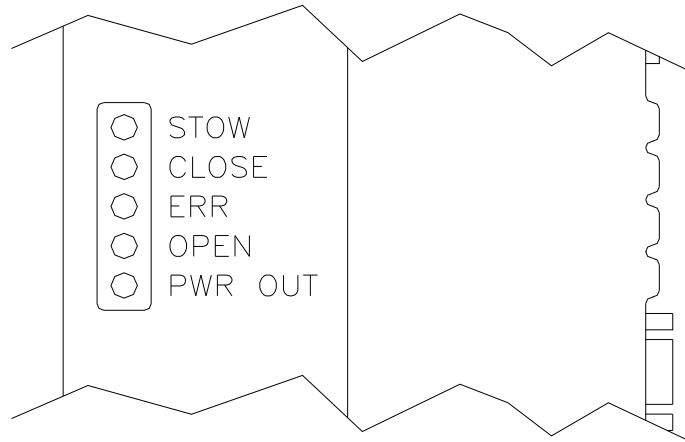


FIGURE 3-2: CONTROLLER INDICATORS

TABLE 3-4: CONTROLLER INDICATOR DESCRIPTIONS		
LED	COLOR	DESCRIPTION
STOW	Green	Ramp is not stowed.
CLOSE	Yellow	Ramp function switch is in STOW position.
ERR	Red	Fast Flash Rate (0.5-second OFF/ON cycles) = Controller internal error. Slow Flash Rate (1-second OFF/ON cycles) = Ramp is deployed and vehicle is stopped.
OPEN	Yellow	Ramp function switch is in DEPLOY position.
PWR OUT	Green	Sensor supply voltage (regulated +20VDC) is available.
END OF TABLE		

C. RAMP CONTROLLER ADJUSTMENTS

Refer to **Chapter II** of this manual for ramp controller adjustments.

D. RAMP CONTROLLER ELECTRICAL WIRING

1. DIAGRAM COLOR CODES

TABLE 3-5: COLOR CODE DEFINITIONS			
LETTER	COLOR	LETTER	COLOR
BK	Black	R	Red
BL	Blue	VI	Violet
BR	Brown	VI/BK	Violet w/ Black
GN	Green	W	White
GN/BK	Green w/ Black	W/O	White w/ Orange
O	Orange	Y	Yellow
O/BK	Orange w/ Black	Y/BK	Yellow w/ Black
END OF TABLE			

2. ELECTRICAL SIGNAL DESCRIPTIONS

a. Indication of NOT Stowed Output (ST OUT)

The Indication of Stowed Output is located at the DB 9 connector, pin-1. The pin goes to +24 volts direct current (VDC) when the ramp is off of the STOW sensor. The tolerance of the sensor is within approximately ½” of the fully stowed position. The signal is buffered and capable of driving a 250 milliamp (mA) inductive load, such as an automotive relay.

b. Indication of Stowed Output (ST_Out)

The Indication of Stowed Output is located at the DB 9 connector, pin-2. The pin goes to +24 volts direct current (VDC) when the ramp is completely stowed. The tolerance of the sensor is within approximately ½” of the fully stowed position. The signal is buffered and capable of driving a 250 milliamp (mA) inductive load, such as an automotive relay.

c. Control Inputs (IN and OUT)

Two control inputs at the DB 9 connector are used. “Close” input (pin-5) is used to stow the ramp and “Open” input (pin-6) is used to deploy the ramp. Both inputs accept signals ranging from +12VDC to +24VDC, referenced to the controller’s ground. The controller is provided with pull-down resistors, so the input signal is allowed to float when not being used.

d. Status Indicator Outputs (LED2 and LED1)

The status indicator outputs are from the controller and are used to light the ramp control panel status indicators. LED2 (pin-7) is used to light the indicator GREEN. LED1 (pin-8) lights the indicator RED.

e. Overcurrent Output (OVC)

The overcurrent output provided at DB 9 connector pin-9, is used to indicate an overcurrent condition in either the STOW or DEPLOY direction. The signal is 24 volts continuous as long as the function button is depressed. The signal will reappear if the function is depressed again without depressing the opposite function. Pressing the opposite function will reset both the current limit condition and the OVC signal.

f. Power Connections (24V-20A and GND)

Power is inputted through the AMP 10-Pin connector. Power must be 20-30VDC protected with a 20 amp circuit interrupt. Pin 3 is used for the negative controller supply. Pin 1 is used for the positive supply.

g. Motor Connections (MOT- and MOT+)

The motor is connected to the module through the AMP 10-Pin connector, pins-5 and 7. During the DEPLOY function, pin-5 receives negative voltage and pin-7 receives positive voltage. During the ramp STOW function, pin-5 receives positive voltage and pin-7 receives negative voltage.

h. Stow Sensor Input and Power (SEN_IN and +20VREG)

Pin-9 is the controller input from the stow sensor. Pin-10 is a +20VDC regulated output to the stow sensor, only, and should not be used for any other purpose.

3. MANUAL OPERATIONAL FUNCTIONAL DESCRIPTION

The manual operation switch is double-pole, double-throw switch (two switches in the same package, actuated simultaneously) that enables the user to operate the ramp manually. When switched to manual operation it physically breaks the continuity of the motor lead with one pole and sends a signal to hold the parking brake with the other pole. Physically breaking the motor lead enables manual operation even when the power is lost.

When in the manual position, no function will operate the ramp and the vehicle parking brake will not disengage. The ramp can be easily operated by hand. When the switch is in the power position, all functions are available for use. The motor will be shunted; the dynamic braking effect will make it more difficult to back drive the motor and therefore will effectively hold the ramp from moving against anything but very high forces. The parking brake can be released, if no conditions are holding the parking brake.

4. WIRING DIAGRAMS

Refer to **Figures 3-3**, and **3-4** on the following pages for ramp electrical wiring diagrams. **Figure 3-4** applies to ramps equipped with controller part number 27625 only.

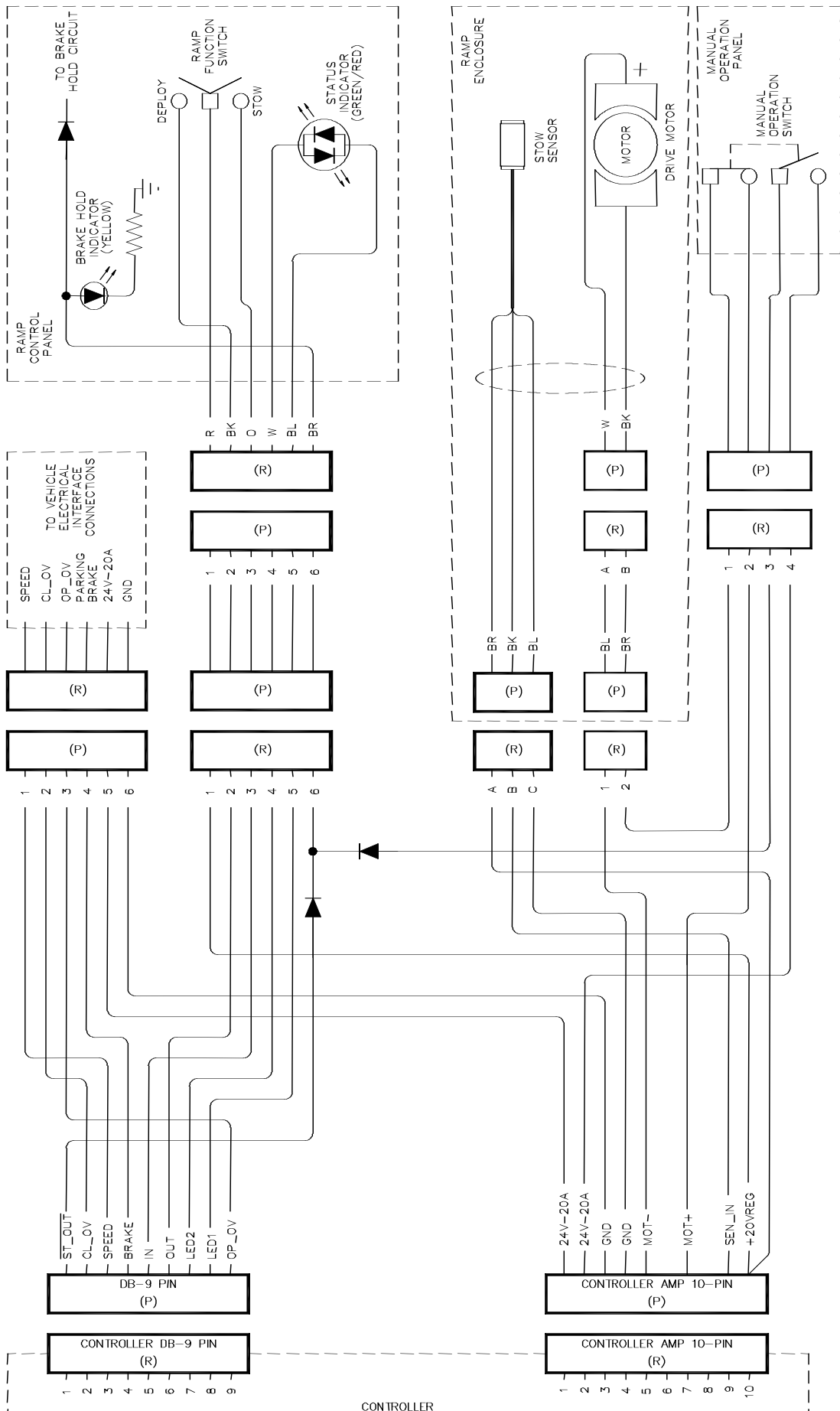


FIGURE 3-3: PF7000 RAMP ELECTRICAL WIRING DIAGRAM

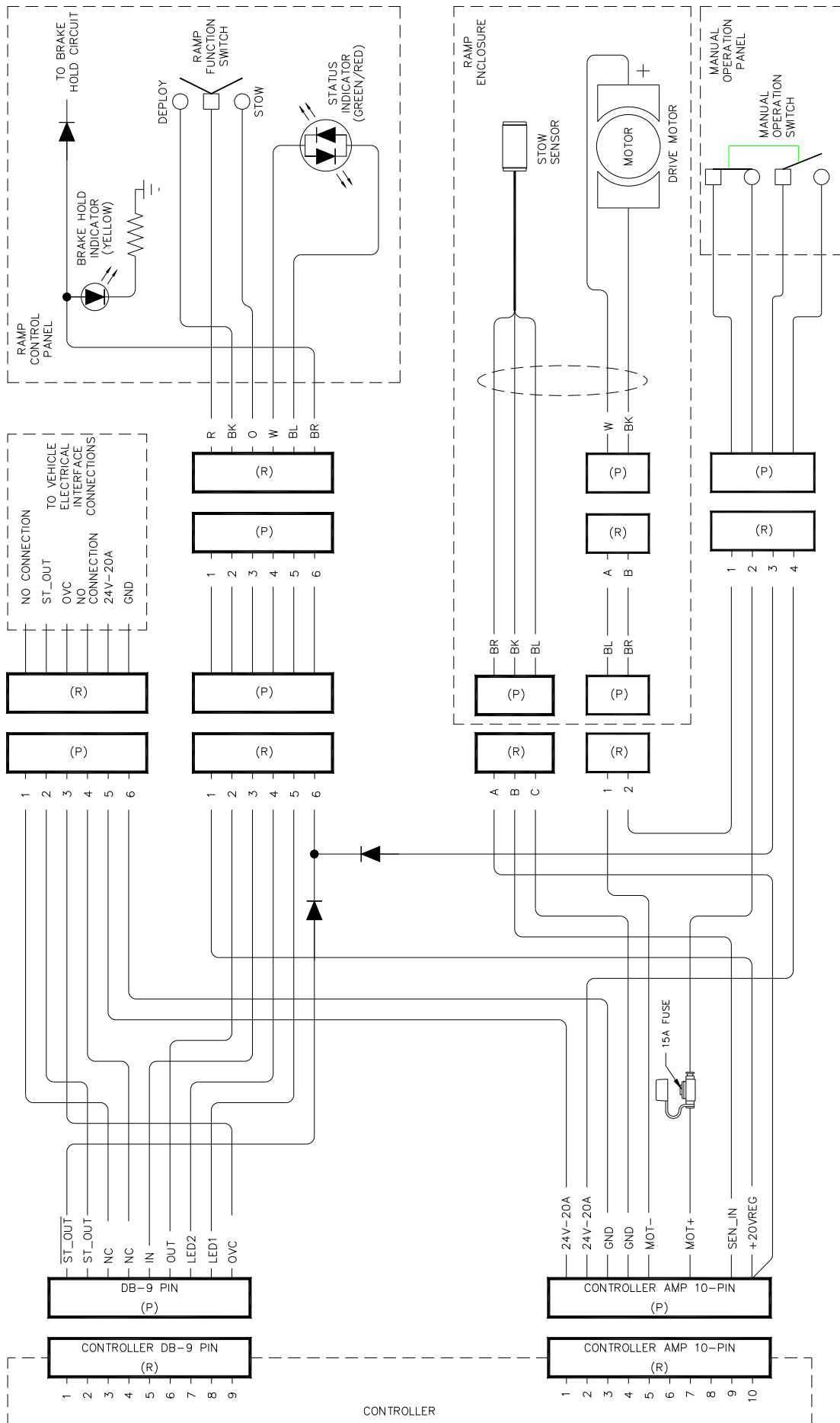


FIGURE 3-4: PF7000 RAMP ELECTRICAL WIRING DIAGRAM; CONTROLLER PART NUMBER 27625 ONLY

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E. FAILURE CONDITION INDICATIONS

The following failure codes 1 through 8 will be shown on the indicator DP inside the ramp controller.

The following table shows the conditions when the failure contact (FAL) closes.

Failure contact (FAL) resets itself when the power AC220V 50Hz shuts down.


When a problem exists, contact a qualified service technician for repair.

TABLE 3-5: FAILURE CONDITIONS		
FAILURE CODE	PROBLEM	CAUSE
1	Left door side ramp, Deployment Failure.	When DEPLOY switch is continuously pressed and the stow sensor does not sense the "not fully stowed" within two seconds.
2	Left door side ramp, Stow Failure.	When STOW switch is continuously pressed and the stow sensor does not sense the "fully stowed" within 10 seconds.
3	Right door side ramp, Deployment Failure.	When DEPLOY switch is continuously pressed and the stow sensor does not sense the "not fully stowed" within two seconds.
4	Right door side ramp, Stow Failure.	When STOW switch is continuously pressed and the stow sensor does not sense the "fully stowed" within 10 seconds.
5	Left door side ramp, Deployment Time Over.	When the ramp deployment time exceeds 10 seconds, the power to the motor shuts down.
6	Right door side ramp, Deployment Time Over.	When the ramp deployment time exceeds 10 seconds, the power to the ramp motor shuts down.
7	Magnetic switch failure.	A part failed.
8	DC12V power failure.	A part failed.
9	DCU inside the controller failure.	A part failed.
10	DC24V power failure.	A part failed.
END OF TABLE		

F. RAMP CONTROL ADJUSTMENTS

1. DEPLOYMENT/STOW SPEED

Refer to Figure 3-5. Two voltage sensors (cream colored boxes that have two control knobs) are located near the center of the ramp controller. The speed of the ramp deployment can be adjusted by turning the knobs that are located on the top surface of these voltage sensors.

 CAUTION!
<ul style="list-style-type: none"> • Do not touch the voltage sensors on the ramp controller when there is no problem with ramp movement. • After operating the ramp for five continuous cycles, allow it to rest for one or two minutes before using it again.

G. REPAIRS

1. MAINTENANCE PARTS LIST

TABLE 3-6: MAINTENANCE PARTS LIST		
NAME	QUANTITY	MAXIMUM USAGE
Grease	N/A	1 year
Gas Spring	2	4 years
Bumper Stop	2	4 years
Flutter Valve	1	4 years
Timing Belt	1	8 years
Rollers (inside diameter 8.5mm)	4	8 years
Cam Followers (inside diameter 26mm)	6	8 years
Rail Block	1	8 years
Proximity Sensors	2	8 years
Power Source P1	1	8 years
Power Source P2	1	8 years
Magnet Switch	1	8 years
Motor	1	12 years
Harness and Connectors	1	12 years
END OF TABLE		

IV. REPAIR

This chapter contains descriptions and repair procedures for major systems of the RICON PF7000 Series Low-Floor Vehicle Access Ramp. Perform the procedures carefully and in the order they are presented; do not eliminate any steps or modify the product.

A. GENERAL SAFETY PRECAUTIONS AND WARNING

WARNING!

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

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

- Under no circumstances should installation, maintenance, repair, or adjustments be attempted without the immediate presence of a person capable of rendering aid.
- An injury, no matter how slight, should be attended to. Administer first aid or seek medical attention immediately.
- Protective eyeshields and appropriate clothing should be worn at all times.
- Exercise caution when operating ramp, and be certain that hands, feet, legs, and clothing are not in the path of the moving ramp.
- Batteries contain acid that can burn. If acid comes in contact with skin, immediately flush affected area with water and wash with soap.
- Work in a properly ventilated area. Do not smoke or use an open flame near battery.
- Do not lay anything metallic on top of battery.
- Check under vehicle before drilling to avoid damage to frame, subframe members, wiring, hydraulic lines, fuel lines, fuel tank, etc.
- Read and thoroughly understand the operating instructions (refer to PF7000 Series Operator Manual) before attempting to operate ramp.
- Keep others clear during ramp operation.

B. RAMP SERVICE ACCESS

Access to internal components of ramp for service is from top side of unit. The motor access cover is located at rear of enclosure, underneath cover strips. Remove retaining screws (20) along right, left, middle, and rear cover strips then remove sub floor panel to gain access to internal components and motor.

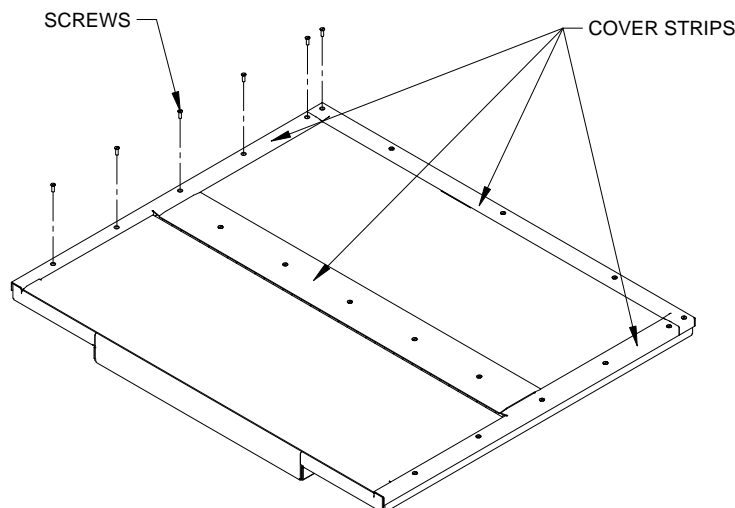


FIGURE 4-1: COVER STRIPS

C. COMPONENT DESCRIPTIONS

Refer to **Figure 4-2**. The ramp drive system is composed of several components. The drive system motor rotates the ball screw assembly, which in turn moves the ramp assembly.

The alignment plate connects the ramp to the drive system. Lateral location of the ramp is fixed by the alignment plate cam followers. Horizontal alignment of the ramp is fixed by the glide block and roller.

The carriage moves the ramp in and out of the enclosure. The carriage hinge aligns the carriage and the ramp to the alignment plate. The spacers in the carriage hinge provide alignment adjustment. The carriage cam followers control the angle of the ramp when it is deployed.

The ramp cams provide a surface for the hinged floor rollers to ride against, ensuring that the enclosure door is securely closed. The strap bolts located on both sides of the ramp allow ramp use when ramp is not fully deployed.

The belt failure ratchet engages the large drive pulley when the drive belt fails, thus preventing the ramp from deploying. The ramp can be stowed when the ratchet is engaged.

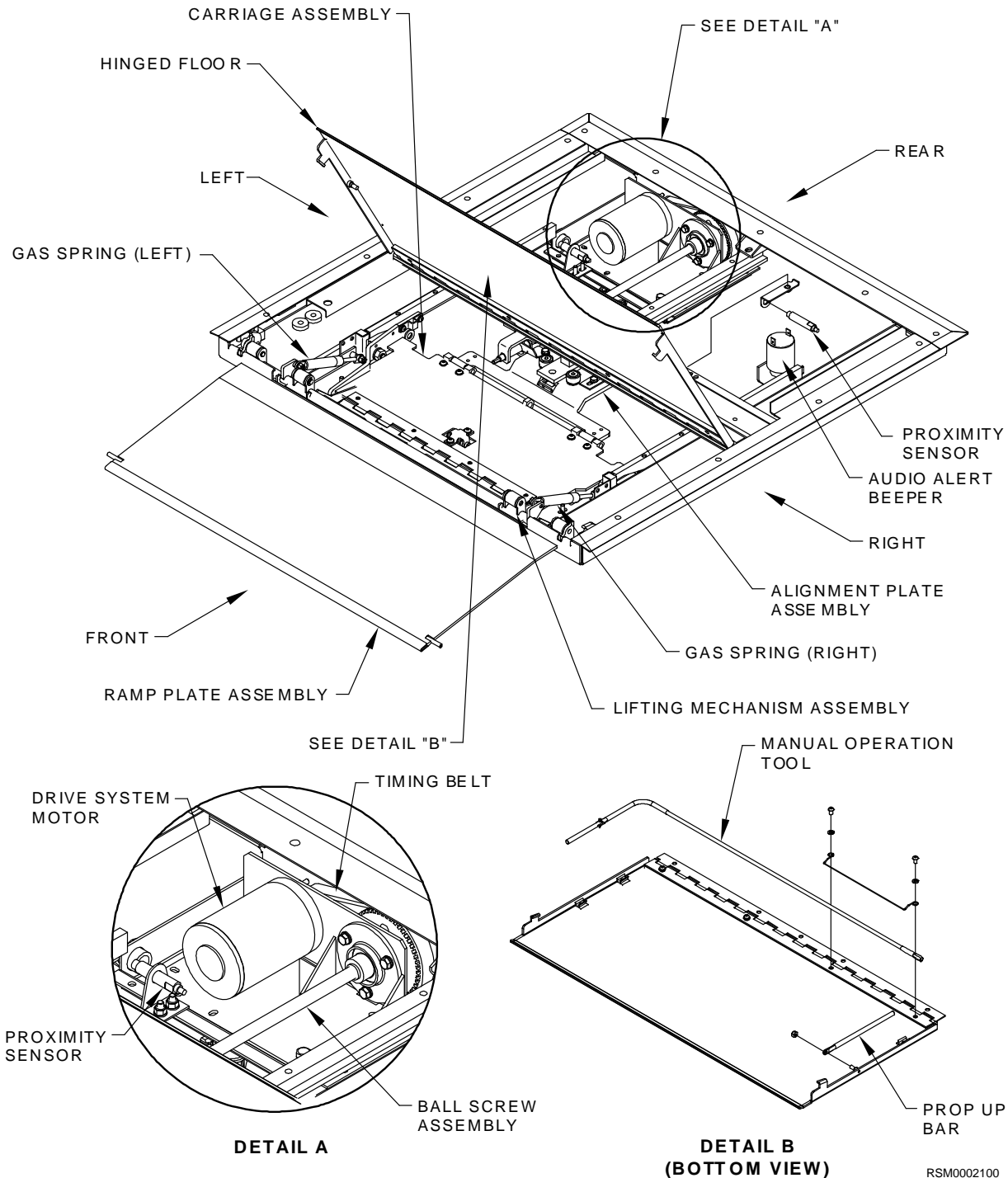


FIGURE 4-2: COMPONENT DESCRIPTIONS

D. ENCLOSURE COMPONENTS

1. BUMPER STOP REMOVAL

- a. Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage ramp floor from the locking mechanism.

NOTE: Ramp floor must disengage from locking mechanism before hinged floor can open.

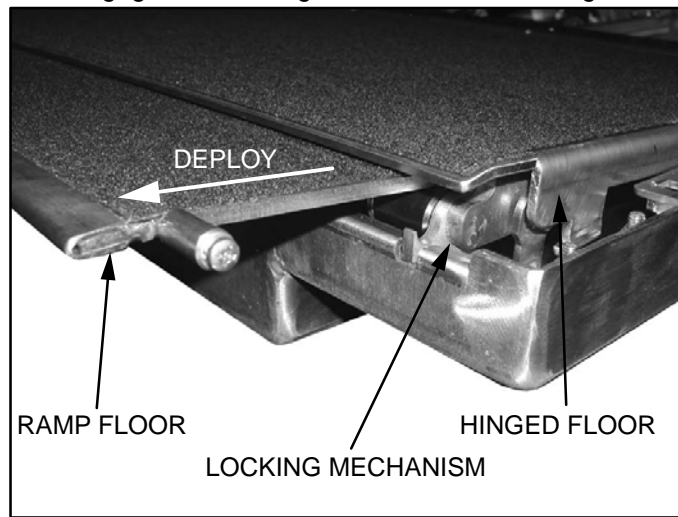


Figure 4-3: DISENGAGE RAMP FLOOR

- b. Disconnect electrical power from ramp.
- c. Lift hinged door to gain access to front enclosure.
- d. Refer to **Figure 4-4**. Remove and retain two bolts, two washers and two nuts from bumper stop bracket then detach bumper stop.

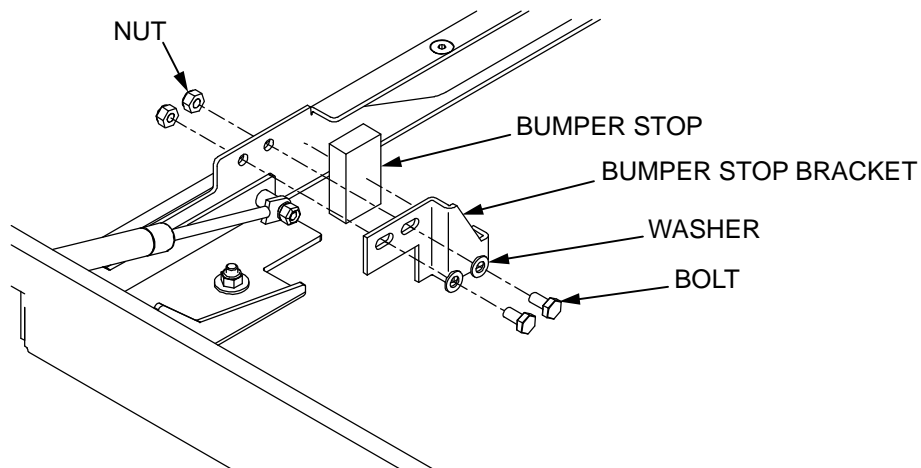


FIGURE 4-4: BUMPER STOP REMOVAL

- e. Repeat bumper stop removal for opposite side.

2. BUMPER STOP INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage hinged floor from the locking mechanism.
- b. Disconnect electrical power from ramp.
- c. Lift hinged door to gain access to front enclosure.
- d. Attach bumper stop to bumper stop bracket.
- e. Install two bolts, two washers and two nuts then tighten.
- f. Repeat bumper stop installation for opposite side.
- g. Reconnect electrical power to ramp

3. FLUTTER VALVE (DRAIN) REMOVAL

- a. Disconnect electrical power from ramp.
- b. Gain access to underside of ramp.
- c. Refer to **Figure 4-5**. Remove hose clamp.
- d. Remove flutter valve.

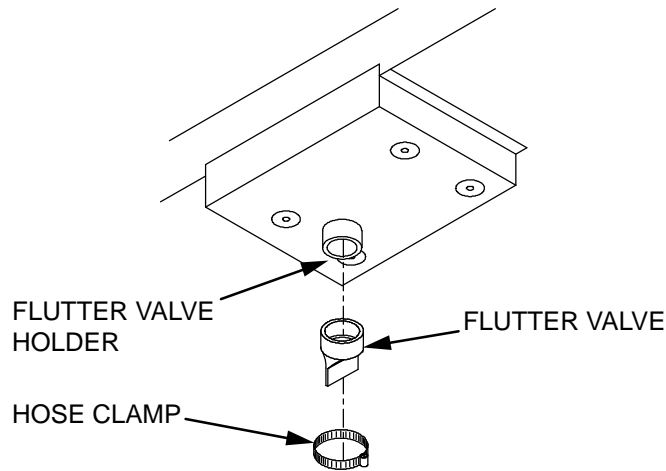


FIGURE 4-6: FLUTTER VALVE

4. FLUTTER VALVE (DRAIN) INSTALLATION

- a. Install flutter valve holder over flange on underside of ramp enclosure.
- b. Slide flutter valve onto holder.
- c. Place hose clamp over flutter valve and tighten to secure valve in place.
- d. Reconnect electrical power to ramp.

5. GAS SPRING REMOVAL

- a. Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage hinged floor from the locking mechanism.
- b. Disconnect electrical power from ramp.
- c. Refer to **Figure 4-6**. Lift ramp floor to gain access to front enclosure.

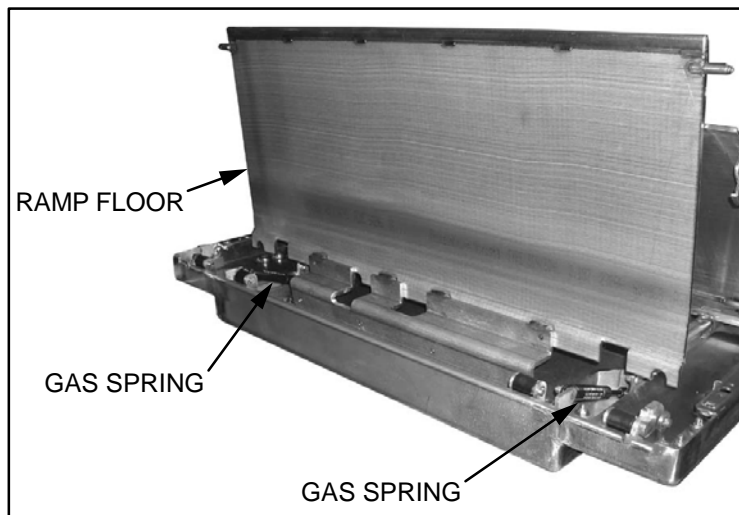


FIGURE 4-6: FRONT ENCLOSURE ACCESS

- d. Refer to **Figure 4-7**. Remove and retain nut and washer that attach the gas spring to lifting mechanism bracket.

CAUTION
<p>The gas spring is highly pressurized and may cause injury or damage to lift if removed improperly. Use extreme caution when detaching gas spring.</p>

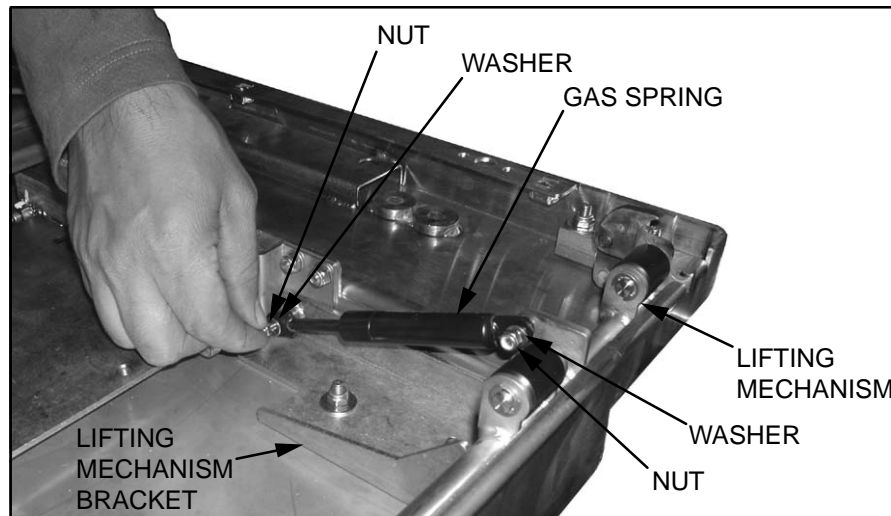


FIGURE 4-7: GAS SPRING REMOVAL

- e. Refer to **Figure 4-7**. Remove and retain nut and washer that attach the gas spring to lifting mechanism.

6. GAS SPRING INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage hinged floor from the locking mechanism.
- b. Disconnect electrical power from ramp.
- c. Refer to **Figure 4-6**. Lift ramp floor to gain access to front enclosure.
- d. Refer to **Figure 4-8**. Attach gas spring to lifting mechanism bracket then use a tool for leverage to attach the gas spring to the lifting mechanism.

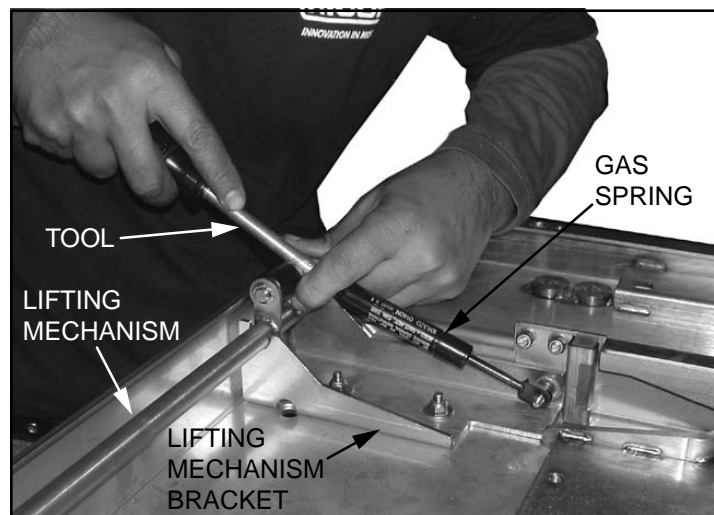


FIGURE 4-8: GAS SPRING INSTALLATION

- e. Install washer and nut to the lifting mechanism bracket and tighten.
- f. Install washer and nut to the lifting mechanism and tighten.
- g. Reconnect electrical power to ramp.

7. LIFTING MECHANISM REMOVAL

- a. Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage hinged floor from the locking mechanism.
- b. Disconnect electrical power from ramp.
- c. Refer to **Figure 4-6**. Lift ramp floor to gain access to front enclosure.
- d. Refer to **Figure 4-9**. Remove two nuts and two washers then remove lifting mechanism base block from welded stud.
- e. Repeat step d for opposite side.
- f. Lift and remove lifting mechanism from enclosure.

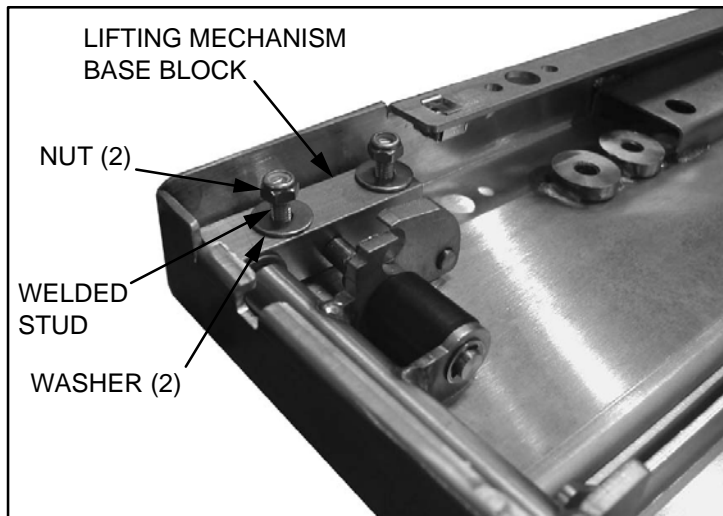


FIGURE 4-9: LIFTING MECHANISM REMOVAL

8. LIFTING MECHANISM INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage hinged floor from the locking mechanism.
- Disconnect electrical power from ramp.
- Refer to **Figure 4-6**. Lift ramp floor to gain access to front enclosure.
- Refer to **Figure 4-10**. Guide and align lifting mechanism base blocks onto two welded studs, located on right and left sides of front enclosure.

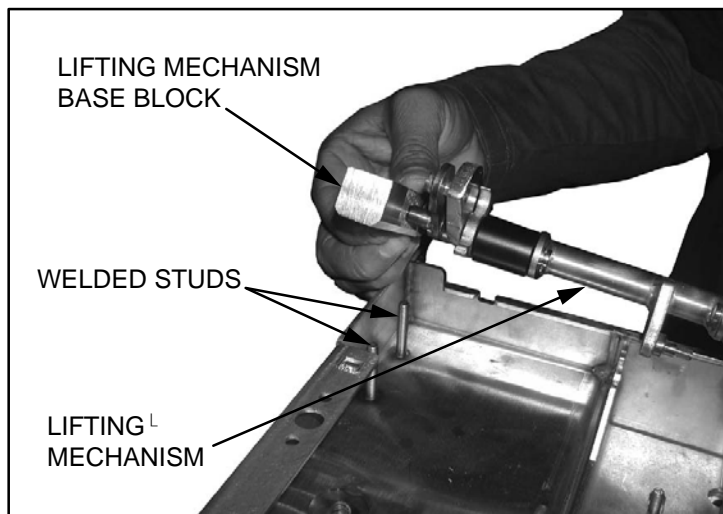


FIGURE 4-10: LIFTING MECHANISM INSTALLATION

- Align lifting mechanism and ensure that lifting mechanism is functional before installing hardware.

NOTE: If lifting mechanism is not aligned and working properly, ramp and lifting mechanism will not function correctly.

- Install two washers and two nuts onto welded studs and tighten.
- Repeat step f for opposite side of lifting mechanism.
- Ensure lifting mechanism assembly functions properly
- Reconnect electrical power to ramp.

9. LIFTING MECHANISM ROLLER REMOVAL

- Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage hinged floor from the locking mechanism.
- Disconnect electrical power from ramp.
- Refer to **Figure 4-6**. Lift ramp floor to gain access to front enclosure.
- Refer to **Section 9**, Lifting mechanism removal to remove lifting mechanism.
- Refer to **Figure 4-11**. Remove and retain E type retaining ring from floor support weldment.
- Remove and retain lifting mechanism base block, lifting mechanism link, floor support weldment and spacer to detach outer lifting mechanism roller.

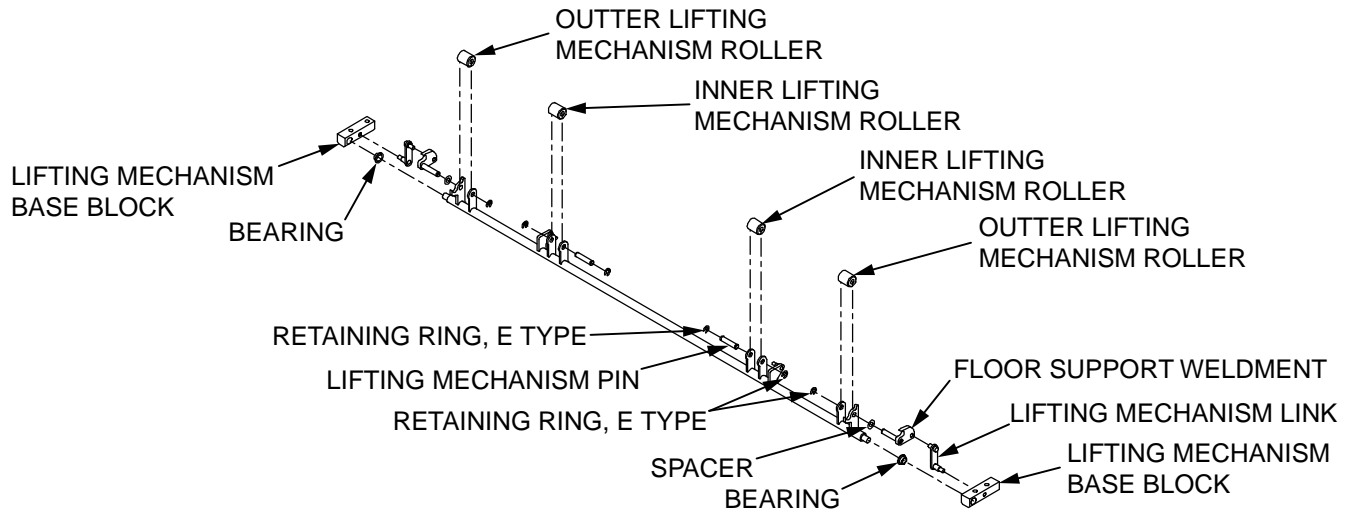


FIGURE 4-11: LIFTING MECHANISM ROLLER

- g. Remove and retain two E type retaining rings from lifting mechanism pin to detach inner lifting mechanism roller.

10. LIFTING MECHANISM ROLLER INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage hinged floor from the locking mechanism.
- b. Disconnect electrical power from ramp.
- c. Refer to **Figure 4-6**. Lift ramp floor to gain access to front enclosure.
- d. Assemble bearing, lifting mechanism link, floor support weldment and spacer to lifting mechanism block.
- e. Slide floor support weldment through lifting mechanism slot and outer lifting mechanism roller then attach E type retaining ring.
- f. Slide lifting mechanism pin through lifting mechanism slot and inner lifting mechanism roller then attach two E type retaining rings to each end of pin.
- g. Repeat steps e and f as required for each lifting mechanism roller.
- h. Refer to **Section 8**, Lifting mechanism installation to install lifting mechanism assembly to enclosure.

11. PROXIMITY SENSOR REMOVAL

- a. Disconnect electrical power from ramp.
- b. Remove cover strips to gain access to sub floor panel located on the rear side of the enclosure.
- c. Remove sub floor panel to gain access to enclosure components.
- d. Locate proximity sensor near the drive motor.
- e. Refer to **Figure 4-12**. Remove and retain two 11/16 inch hex nuts that attach the proximity sensor to the proximity sensor bracket.
- f. Remove proximity sensor.

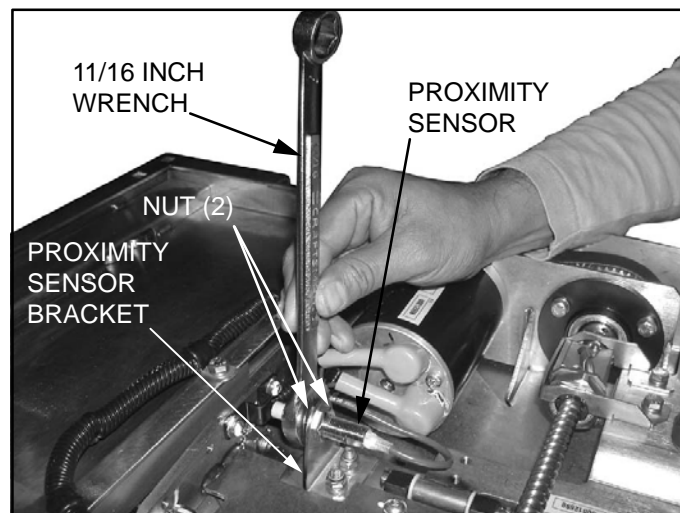


FIGURE 4-12: PROXIMITY SENSOR

12. PROXIMITY SENSOR INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Disconnect electrical power from ramp.
- b. Remove cover strips to gain access to sub floor panel located on the rear side of the enclosure.
- c. Remove sub floor panel to gain access to enclosure components.
- d. Refer to **Figure 4-12**. Slide the proximity sensor in through proximity sensor bracket.
- e. Refer to **Figure 4-13**. Adjust and allow a minimum gap of 0.06 inch to a maximum gap of 0.15 inch in between the proximity sensor and proximity sensor bracket.

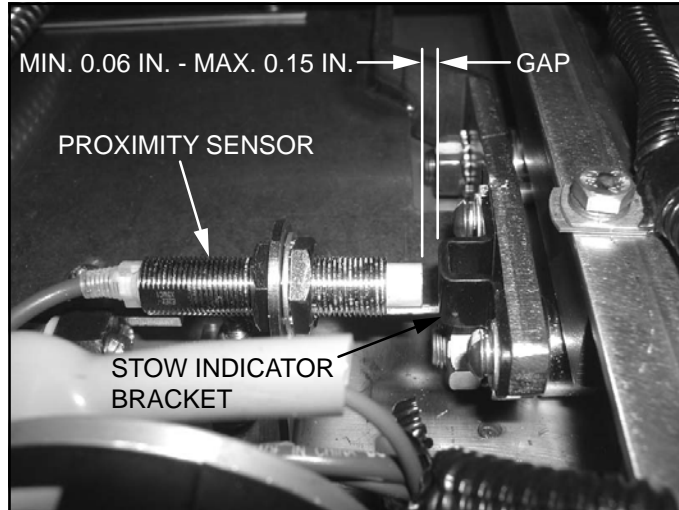


FIGURE 4-13: PROXIMITY SENSOR GAP

- f. Install two 11/16 inch hex nuts that attach the proximity sensor to the proximity sensor bracket.
- g. Reconnect electrical power to ramp.

E. DRIVE SYSTEM

1. MOTOR DRIVE ASSEMBLY REMOVAL

- a. Remove twenty screws fastening left, right, rear and middle cover strips to enclosure.
- b. Lift out rear subfloor panel.
- c. Fully deploy ramp.
- d. Disconnect electrical power from ramp.
- e. Refer to **Figure 4-14**. Remove and retain four bolts and four washers that attach motor drive bracket to enclosure.

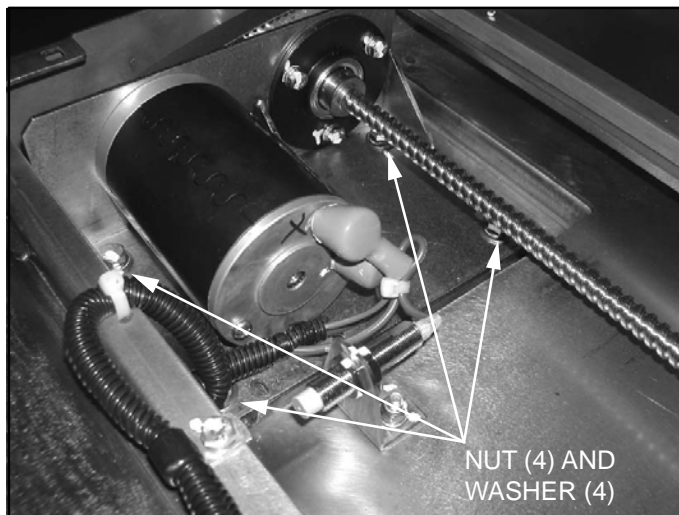


FIGURE 4-14: MOTOR DRIVE HARDWARE

- f. Refer to **Figure 4-15**. Remove and retain two screws that attach the ballscrew bracket to the enclosure support beam.

CAUTION!

The ball screw is a precision assembly. Avoid damaging the screw surface; this may cause vibration during ramp operation.

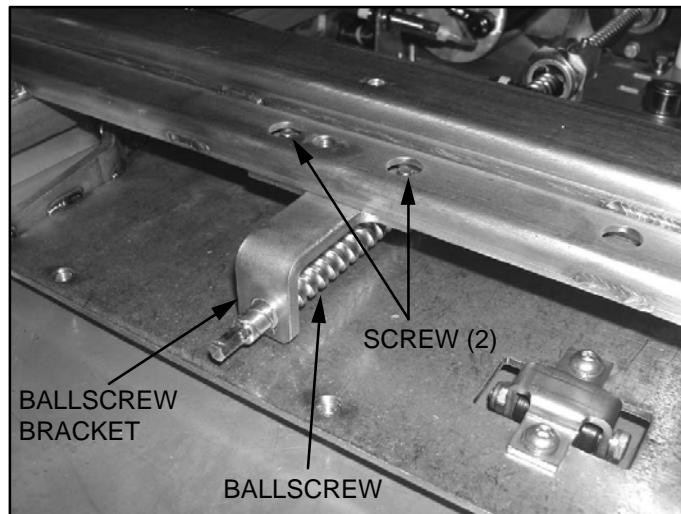


FIGURE 4-15: BALLSCREW BRACKET

- g. Refer to **Figure 4-16**. Remove and retain two bolts and two washers that attach the ballnut retainer to the traveling frame alignment plate.

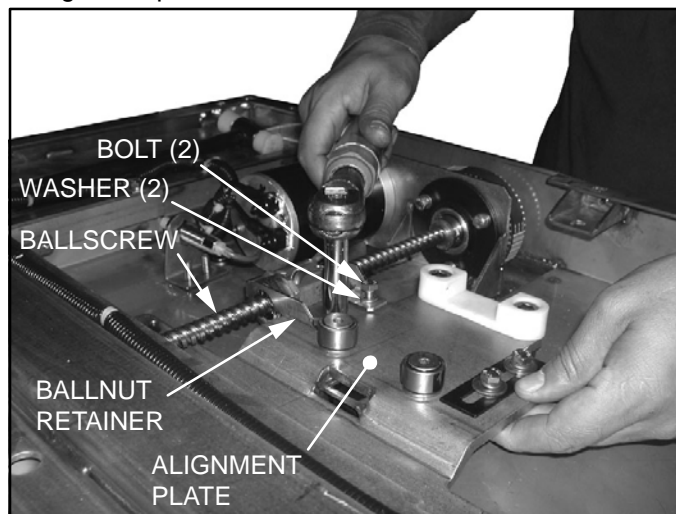


FIGURE 4-16: BALLNUT RETAINER

- h. Refer to **Section D-11**. Proximity sensor removal.
- i. Detach proximity sensor.
- j. Remove two nuts and two washers to detach harness from motor drive.
- k. Rotate and lift out motor drive assembly.

2. MOTOR DRIVE ASSEMBLY INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Disconnect electrical power from ramp.
- b. Rotate and lower drive motor assembly into enclosure.
- c. Insert four bolts into motor bracket. Do not completely tighten.
- d. Refer to **Figure 4-15**. Install two screws that attach the ballscrew bracket to the enclosure support beam.
- e. Refer to **Figure 4-16**. Install two bolts and two washers that attach the ballnut retainer to the traveling frame alignment plate. Do not completely tighten.
- f. Refer to **Figure 4-17**. Stow ramp manually by turning large pulley. This will re-align ball screw.
- g. Verify the ball screw is in alignment with the traveling frame alignment plate.

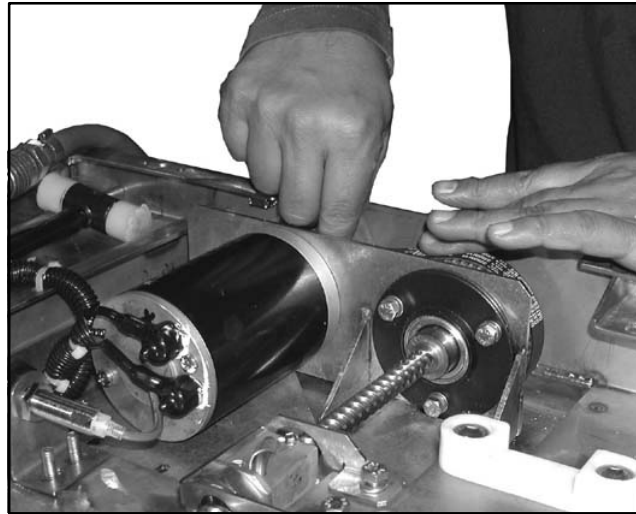


FIGURE 4-17: MOTOR DRIVE PULLEY

- h. Tighten four bolts on motor drive bracket.
- i. Tighten two bolts on ballnut retainer.
- j. Refer to **Section D-12**. Proximity sensor installation
- k. Install proximity sensor.
- l. Install two nuts and two washers to attach harness to motor drive.
- m. Install sub floor panel.
- n. Install and tighten the twenty screws that fasten the left, right, rear and middle cover strips to enclosure.
- o. Reconnect electrical power to ramp.

3. MOTOR DRIVE BELT REMOVAL

- a. Remove twenty screws fastening left, right, rear and middle cover strips to enclosure.
- b. Lift out rear subfloor panel.
- c. Fully deploy ramp.
- d. Disconnect electrical power from ramp.
- e. Refer to **Figure 4-14**. Remove and retain four bolts and four washers that attach motor drive bracket to enclosure.
- f. Refer to **Figure 4-15**. Remove and retain two screws that attach the ballscrew bracket to the enclosure support beam.
- g. Refer to **Figure 4-16**. Remove and retain two bolts and two washers that attach the ballnut retainer to the travelling frame alignment plate.
- h. Lift motor drive assembly to gain access to motor drive pulley.
- i. Refer to **Figure 4-18**. Remove and retain nut and washer that attach the motor drive pulley to the motor drive.

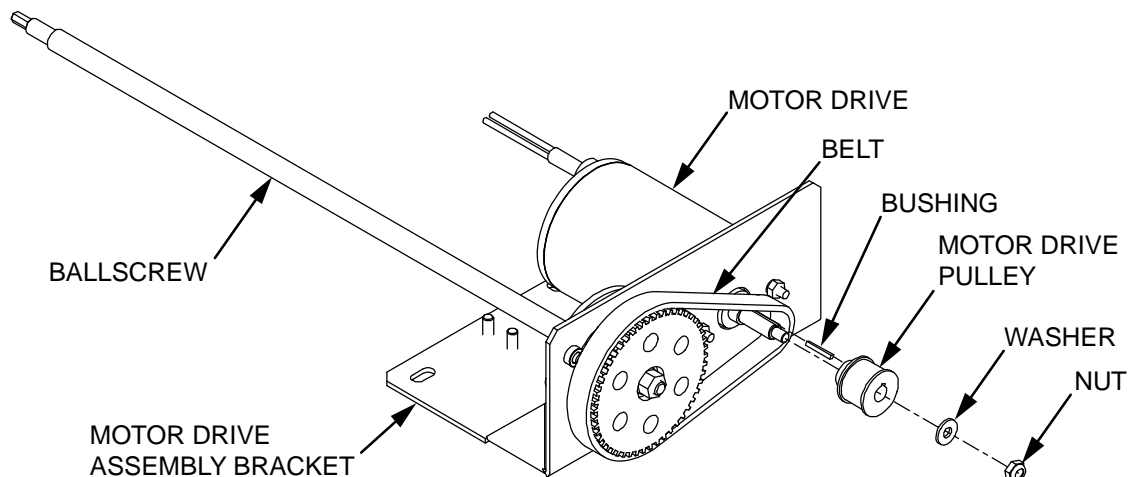


FIGURE 4-18: MOTOR DRIVE ASSEMBLY

- j. Refer to **Figure 4-17**. Slip belt off large and small pulleys while turning both manually.

- k. Slide motor drive pulley off of motor drive to remove belt.
- l. Slip belt between motor drive assembly and enclosure for removal.

4. MOTOR DRIVE BELT INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Disconnect electrical power from ramp.
- b. Slip drive belt between motor drive assembly and enclosure.
- c. Slide motor drive pulley completely through motor drive spindle.
- d. Install bushing to motor drive pulley.
- e. Install but do not tighten washer and nut to fasten motor drive pulley to motor drive
- f. Slip drive belt over small and large pulleys while turning both pulleys manually.
- g. Tighten nut and ensure that motor drive assembly turns without binding.
- h. Insert four bolts into motor bracket. Do not completely tighten.
- i. Refer to **Figure 4-15**. Install two screws that attach the ballscrew bracket to the enclosure support beam.
- j. Refer to **Figure 4-16**. Install two bolts and two washers that attach the ballnut retainer to the traveling frame alignment plate. Do not completely tighten.
- k. Refer to **Figure 4-17**. Stow ramp manually by turning large pulley. This will re-align ball screw.
- l. Verify the ball screw is in alignment with the traveling frame alignment plate.
- m. Tighten four bolts on motor bracket.
- n. Tighten two bolts on ballnut retainer.
- o. Install sub floor panel.
- p. Tighten the twenty screws fastening left, right, rear and middle cover strips to enclosure.
- q. Reconnect electrical power to ramp.

5. BALLSCREW REMOVAL

- a. Remove twenty screws fastening left, right, rear and middle cover strips to enclosure.
- b. Lift out rear subfloor panel.
- c. Fully deploy ramp.
- d. Disconnect electrical power from ramp.
- e. Refer to **Figure 4-14**. Remove and retain four bolts and four washers that attach motor drive bracket to enclosure.
- f. Refer to **Figure 4-15**. Remove and retain two screws that attach the ballscrew bracket to the enclosure support beam. Retain ballscrew bracket.
- g. Refer to **Figure 4-16**. Remove and retain two bolts and two washers that attach the ballnut retainer to the travelling frame alignment plate. Retain ballnut bracket.
- h. Lift motor drive assembly to gain access to large motor drive pulley hardware.

 CAUTION!

The ball screw is a precision assembly. Avoid damaging the screw surface; this may cause vibration during ramp operation.

- i. Remove and retain jam nut and washer from ballscrew end.
- j. Refer to **Figure 4-19**. Remove and retain three bolts, three split washers and three flat washers that attach the 3 hole ball bearing to the motor drive bracket.

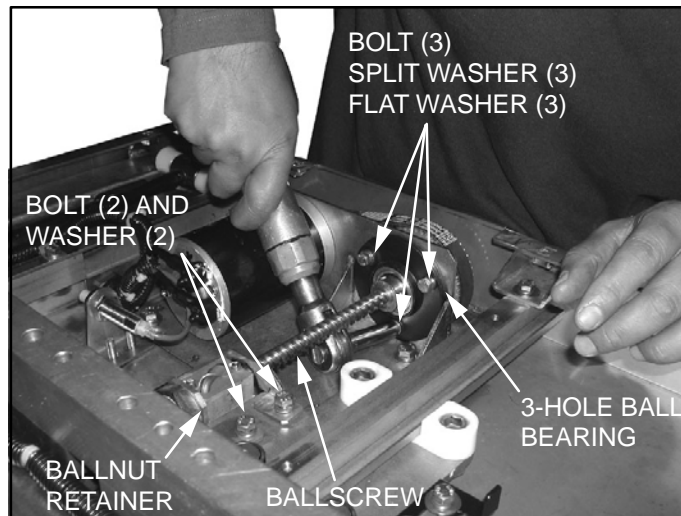


FIGURE 4-19: BALLSCREW REMOVAL

- k. Guide ballscrew out from large pulley and 3 hole ball bearing.
- l. Guide ballscrew out of enclosure and remove.

6. BALLSCREW INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Disconnect electrical power from ramp.
- b. Guide ballscrew into enclosure.
- c. Refer to **Figure 4-20**. Slide ballscrew through two bushings, 3 hole ball bearing, motor drive bracket and large spindle then install nut and washer to ballscrew end.
- d. Refer to **Figure 4-20**. Install 3 bolts, 3 split washers and 3 flat washers through 3 hole ball bearing and attach to motor drive bracket.

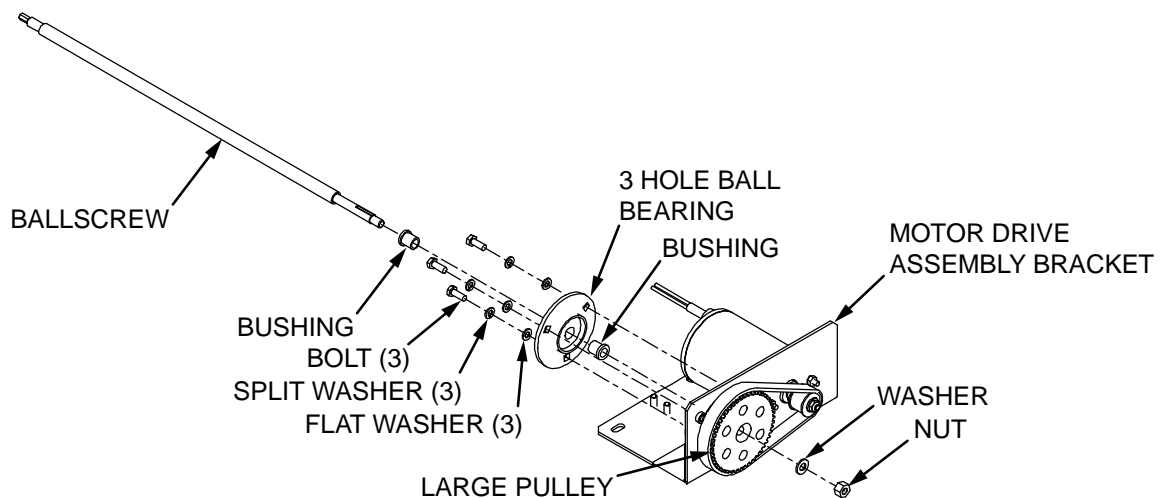


FIGURE 4-20: BALLSCREW ASSEMBLY

- e. Refer to **Figure 4-15**. Install two screws that attach the ballscrew bracket to the enclosure support beam.
- f. Refer to **Figure 4-16**. Install two bolts and two washers that attach the ballnut retainer to the traveling frame alignment plate. Do not completely tighten.
- g. Refer to **Figure 4-17**. Stow ramp manually by turning large pulley. This will re-align ball screw.
- h. Verify the ball screw is in alignment with the traveling frame alignment plate.
- i. Tighten four bolts on motor drive bracket.
- j. Tighten two bolts on ballnut retainer.
- k. Install sub floor panel.
- l. Tighten the twenty screws fastening left, right, rear and middle cover strips to enclosure.
- m. Reconnect electrical power to ramp.

F. TRAVELING FRAME ASSEMBLY



WARNING!

THE TRAVELING FRAME ASSEMBLY IS LARGE AND HEAVY AND REQUIRES DISASSEMBLY OF THREE SMALLER SUB ASSEMBLIES. DO NOT USE YOUR BACK MUSCLES TO LIFT THE WEIGHT; HOLD YOUR BACK UPRIGHT, BEND YOUR KNEES, AND USE YOUR LEG MUSCLES TO LIFT THE WEIGHT.

1. RAMP AND CARRIAGE DISASSEMBLY

- a. Remove twenty screws fastening left, right, rear and middle cover strips to enclosure.
- b. Refer to **Figure 4-3**. Deploy ramp about three inches in order to disengage ramp floor from the locking mechanism.

NOTE: Ramp floor must disengage from locking mechanism before hinged floor can open.

- c. Secure hinged floor in upright position to gain access to front enclosure components.
- d. Fully deploy ramp.
- e. Lift out rear subfloor panel to gain access to rear enclosure components.
- f. Disconnect electrical power from ramp.

NOTE: The traveling frame assembly has three smaller sub assemblies that can be removed in three sections (Ramp Assembly, Carriage Assembly and Alignment Plate Assembly).

- g. Refer to **Figure 4-21**. Remove and retain four screws and four washers that attach the hinge to the ramp assembly.

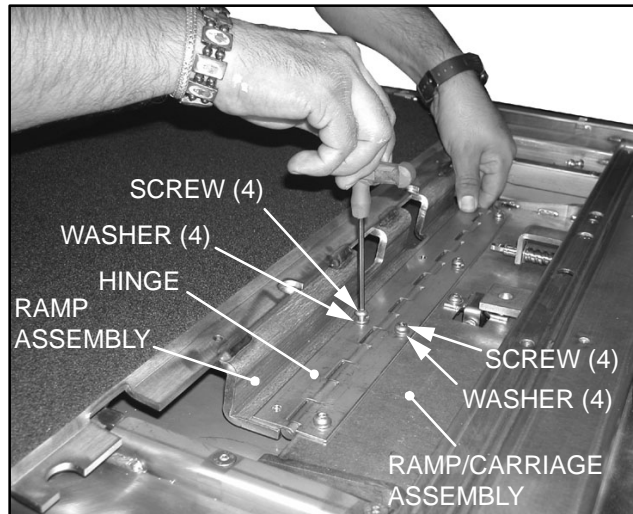


FIGURE 4-21: RAMP/CARRIAGE ASSEMBLY

- h. Carefully detach and lift ramp assembly out of enclosure.
- i. Refer to **Figure 4-21**. Remove and retain four screws and four washers that attach the hinge to the carriage assembly.
- j. Remove and retain hinge.
- k. Refer to **Figure 4-17**. Deploy ramp manually by turning large pulley to gain access to carriage assembly and alignment plate assembly.
- l. Refer to **Figure 4-22**. Remove two cotter pins from each end of carriage pin.
- m. Slide carriage pin out from alignment plate and two washers.
- n. Repeat step l-m for opposite side of carriage assembly.
- o. Carefully detach and lift out carriage assembly.

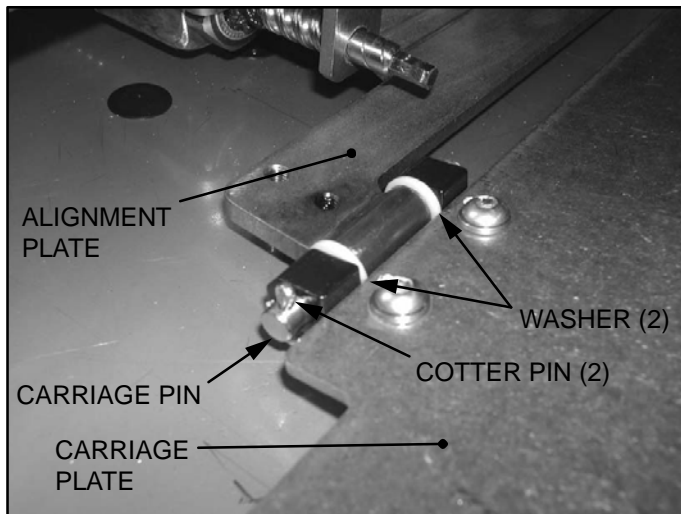


FIGURE 4-22: CARRIAGE PIN

2. ALIGNMENT PLATE REMOVAL

- a. Refer to **Figure 4-17**. Stow ramp manually by turning large pulley to gain access to carriage assembly and alignment plate assembly.

 CAUTION!
The ball screw is a precision assembly. Avoid damaging the screw surface; this may cause vibration during ramp operation.

- b. Refer to **Figure 4-15**. Remove and retain two screws that attach the ballscrew bracket to the enclosure support beam. Retain ballscrew bracket.
- c. Refer to **Figure 4-16**. Remove and retain two bolts and two washers that attach the ballnut retainer to the travelling frame alignment plate. Retain ballnut bracket.
- d. Guide and carefully lift out alignment plate assembly out of enclosure.

3. CARRIAGE BLOCK RAIL REMOVAL

- a. Follow alignment plate removal procedure.
- b. Refer to **Figure 4-23**. Remove two socket head screws.
- c. Refer to **Figure 4-23**. Remove and retain hex nut and washer.
- d. Detach carriage block rail.

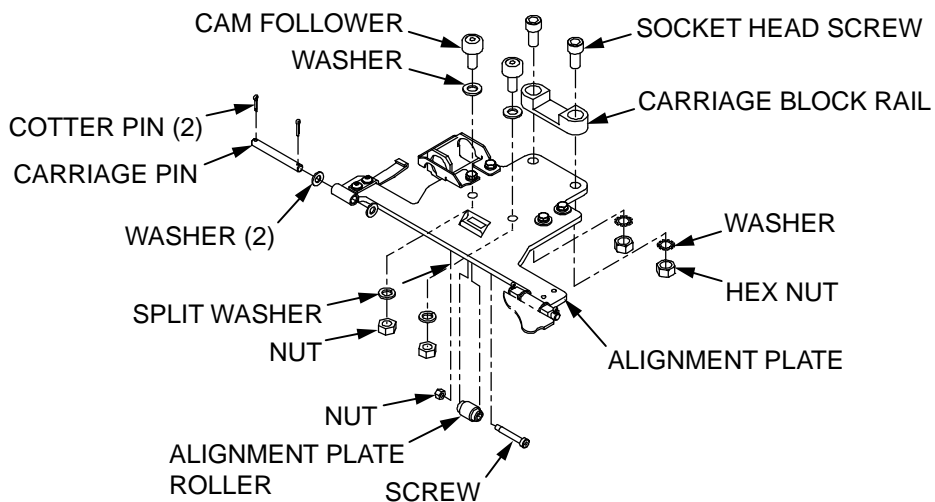


FIGURE 4-23: ALIGNMENT PLATE ASSEMBLY

4. CARRIAGE BLOCK RAIL INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

5. ALIGNMENT PLATE ROLLER REMOVAL

- a. Follow alignment plate removal procedure.
- b. Refer to **Figure 4-23**. Remove and retain screw and nut from under the alignment plate
- c. Refer to **Figure 4-23**. Detach alignment plate roller.

6. ALIGNMENT PLATE ROLLER INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Follow alignment plate removal procedure.
- b. Refer to **Figure 4-23**. Align and attach alignment plate roller to alignment plate.
- c. Refer to **Figure 4-23**. Slide screw in through alignment plate and alignment plate roller.
- d. Refer to **Figure 4-23**. Install nut and tighten screw.

7. CAM FOLLOWER REMOVAL

- a. Follow alignment plate removal procedure.
- b. Refer to **Figure 4-23**. Remove and retain nut and washer from cam follower.
- c. Refer to **Figure 4-23**. Detach cam follower.

8. CAM FOLLOWER INSTALLATION

NOTE: All removed bolts should have Loctite applied before reinstallation.

- a. Follow alignment plate removal procedure.
- b. Refer to **Figure 4-23**. Slide cam follower into position.
- c. Refer to **Figure 4-23**. Install washer and nut then tighten.

9. ALIGNMENT PLATE INSTALLATION

- a. Carefully guide alignment plate assembly into enclosure.
- b. Ensure that alignment plate is aligned to alignment rail.



The ball screw is a precision assembly. Avoid damaging the screw surface; this may cause vibration during ramp operation.

NOTE: All removed bolts should have Loctite applied before reinstallation.

- c. Refer to **Figure 4-15**. Install two screws that attach the ballscrew bracket to the enclosure support beam.
- d. Refer to **Figure 4-16**. Install two bolts and two washers that attach the ballnut retainer to the traveling frame alignment plate. Do not completely tighten.
- e. Refer to **Figure 4-17**. Stow ramp manually by turning large pulley. This will re-align ball screw.
- f. Verify the ball screw is in alignment with the traveling frame alignment plate.
- g. Tighten two bolts on ballnut retainer.
- h. Ensure that alignment plate assembly travels through ballscrew without binding.

10. RAMP AND CARRIAGE ASSEMBLY

- a. Carefully guide carriage assembly into enclosure.
- b. Refer to **Figure 4-17**. Deploy ramp manually by turning large pulley to gain access to alignment plate assembly
- c. Refer to **Figure 4-22**. Slide carriage pin through alignment plate and two washers.
- d. Refer to **Figure 4-22**. Slide two cotter pins through each end of carriage pin.
- e. Repeat step c-d for opposite side of carriage assembly.

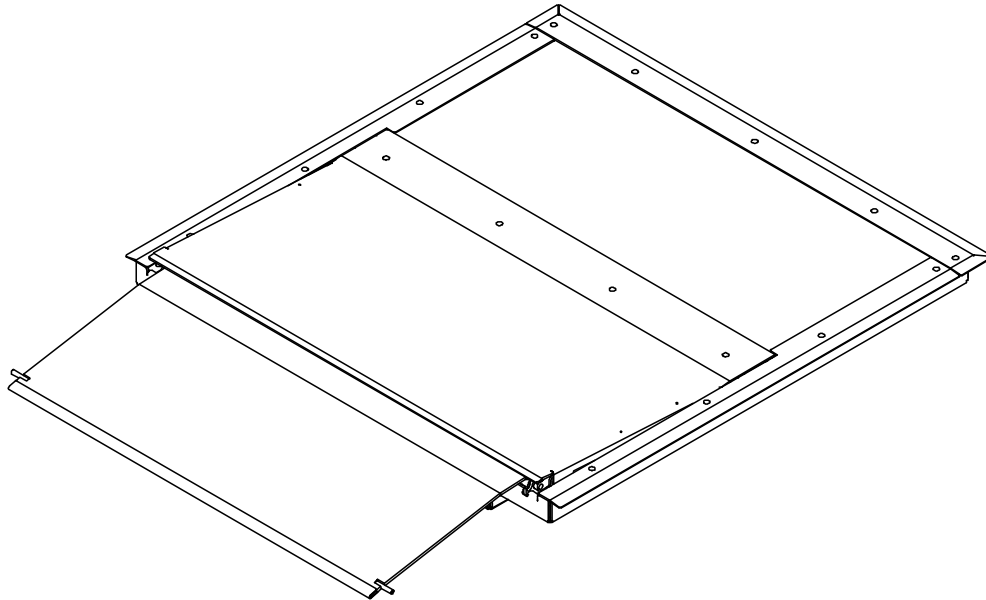
NOTE: All removed bolts should have Loctite applied before reinstallation.

- f. Refer to **Figure 4-21**. Align hinge to carriage assembly then install four screws and four washers to attach the hinge to carriage assembly.
- g. Refer to **Figure 4-21**. Remove and retain four screws and four washers that attach the hinge to the ramp assembly.

- h. Carefully guide ramp assembly into enclosure.
- i. Refer to **Figure 4-21**. Align ramp assembly to hinge then install four screws and four washers to attach the hinge to ramp assembly.
- j. Reconnect electrical power to ramp.
- k. Ensure that traveling frame assembly travels through ballscrew without binding.
- l. Install sub floor panel.
- m. Tighten the twenty screws fastening left, right, rear and middle cover strips to enclosure.

V. PF7000 SERIES SPARE PARTS

This chapter contains parts lists for major assemblies of the RICON PF7000 Series Low-Floor Vehicle Access Ramp. The part diagrams are exploded views of ramp assemblies, with individual parts and components referenced by numbers. Each accompanying parts list contains figure item numbers, part descriptions, quantities used, configurations and the Ricon part number. To order parts, locate part on an appropriate diagram and note the figure item number. Find the figure item number on the accompanying parts list and use the part number in the far right column. Note that parts identified with (REF) in the QTY column of the spare parts list are for reference purposes only and are not sold for spare parts. Refer to the DECAL LOCATIONS AND PART NUMBERS figure in **Chapter II** for decal part numbers.



LIFT MODEL AND KIT NUMBERS	
PRODUCT NUMBER	PF7-003, -004, -005, -006
DOCUMENTATION KIT NUMBER	38419
SPARE DECAL KIT NUMBER	26024

DIAGRAM	PAGE
FIGURE 5-1: RAMP ENCLOSURE ASSEMBLY	5-2
FIGURE 5-2: RAMP TRAVELING FRAME ASSEMBLY	5-4
FIGURE 5-3: TOP COVER ASSEMBLY	5-6
FIGURE 5-4: RAMP DRIVE SYSTEM ASSEMBLY	5-8
FIGURE 5-5: CONTROLLER INTERFACE HARNESSSES	5-10
APPENDIX 1: RAMP SPECIFICATIONS	5-12

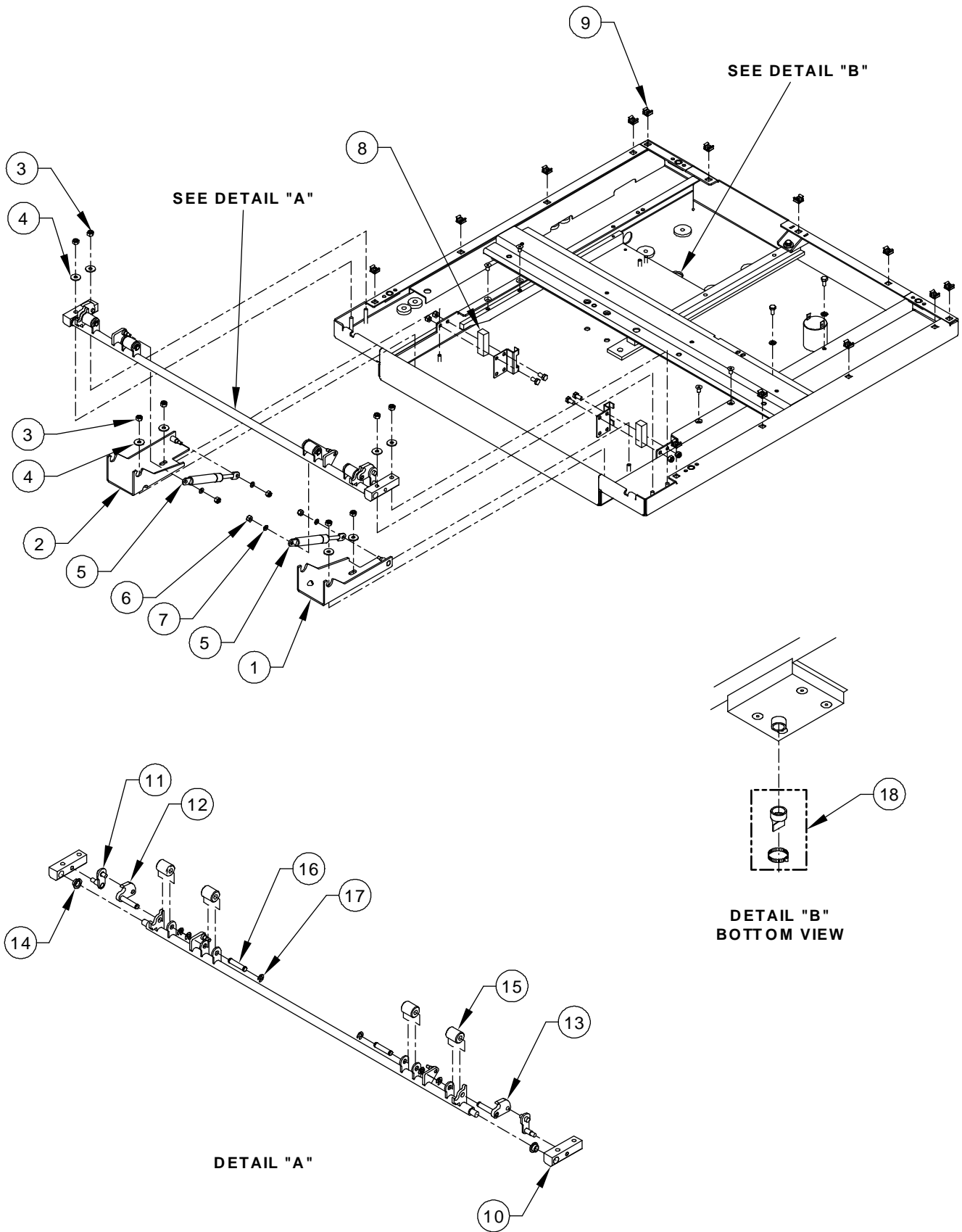


FIGURE 5-1: PF7000 SERIES RAMP ENCLOSURE ASSEMBLY

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**FIGURE 5-1: PF7000 SERIES RAMP ENCLOSURE ASSEMBLY
MODEL NOS. 003, 004, 005 & 006**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	BRACKET WLDT, SUPPORT, RH, LIFT MECHANISM	REF		39007
2	BRACKET WLDT, SUPPORT, LH, LIFT MECHANISM	REF		39008
3	NUT, ESN, M6-1.0, SST (BAG OF 10)	1		20568
4	WASHER, FLT, M6 X 18MM X 1.6MM THK, SST (BAG OF 10)	1		20915
5	SPRING, PNEUMATIC, 6.46" (PKG OF 2)	1		35463
6	NUT, ESN, M5 X .8MM, SST (BAG OF 10)	1		20567
7	WASHER, FLT, M5 X 10MM X 1MM THK, SST (BAG OF 10)	1		20913
8	BUMPER, STOP, DEPLOY	2	PF7-003	39238
	BUMPER, STOP, DEPLOY	2	PF7-004	39238
8A *	BUMPER, STOP, DEPLOY	2	PF7-005	21780
8B *	BUMPER, STOP, DEPLOY	2	PF7-006	38158
9	NUT, CAGE, M5 X .8MM (BAG OF 10)	2		21815
10	BLOCK, BASE, LIFTING MECHANISM	REF		21399
11	LINK WLDT, LIFTING MECHANISM	REF		37588
12	FLOOR SUPPORT WLDT, RH	REF		38199
13	FLOOR SUPPORT WLDT, LH	REF		38198
14	BEARING, DU FLG, 3/8" ID X 1/4L	2		253845
15	ROLLER, LIFTING MECHANISM (KIT OF 4)	1		21825
16	PIN, LIFTING MECHANISM	2		38192
17	RETAINING RING, E-TYPE, 5/16" SHAFT, SST	2		39079
18	KIT, ROLLER, LIFTING MECHANISM WITH HARDWARE	1		21822
19	KIT, FLUTTER VALVE	1		39023

NOTE: (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

NOTE: * Item or configuration not shown.

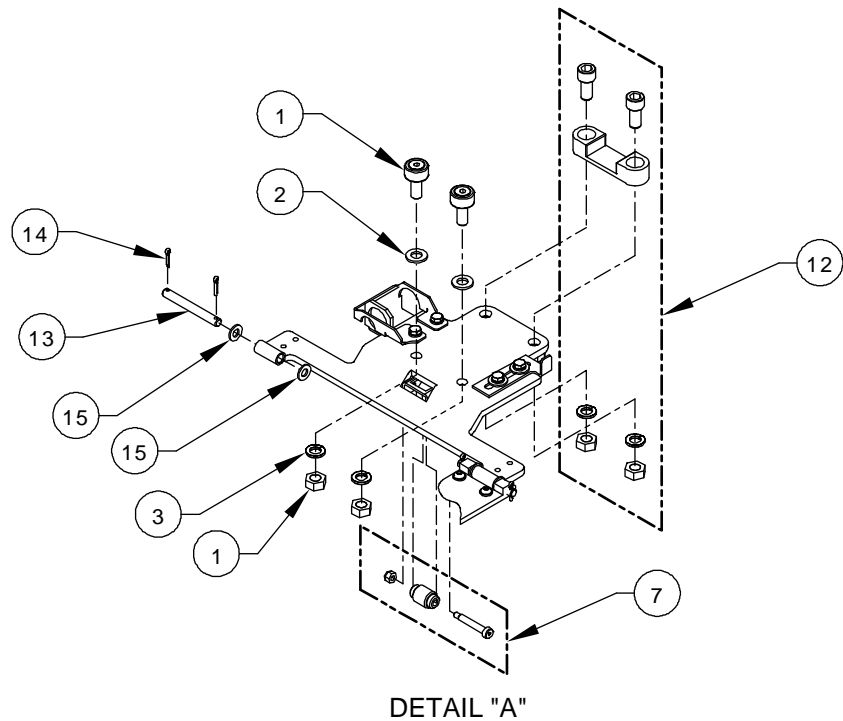
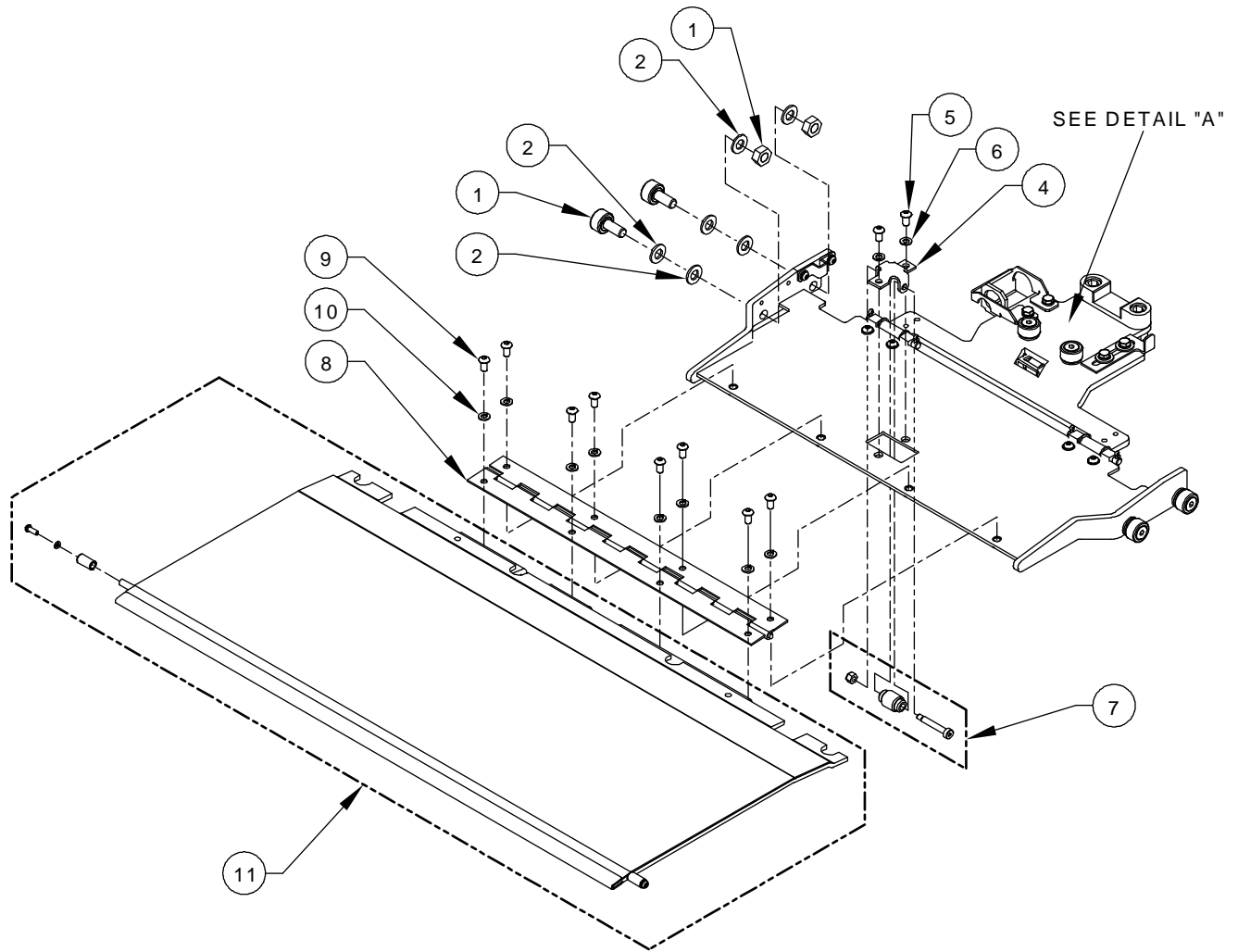


FIGURE 5-2: PF7000 SERIES RAMP TRAVELING FRAME ASSEMBLY

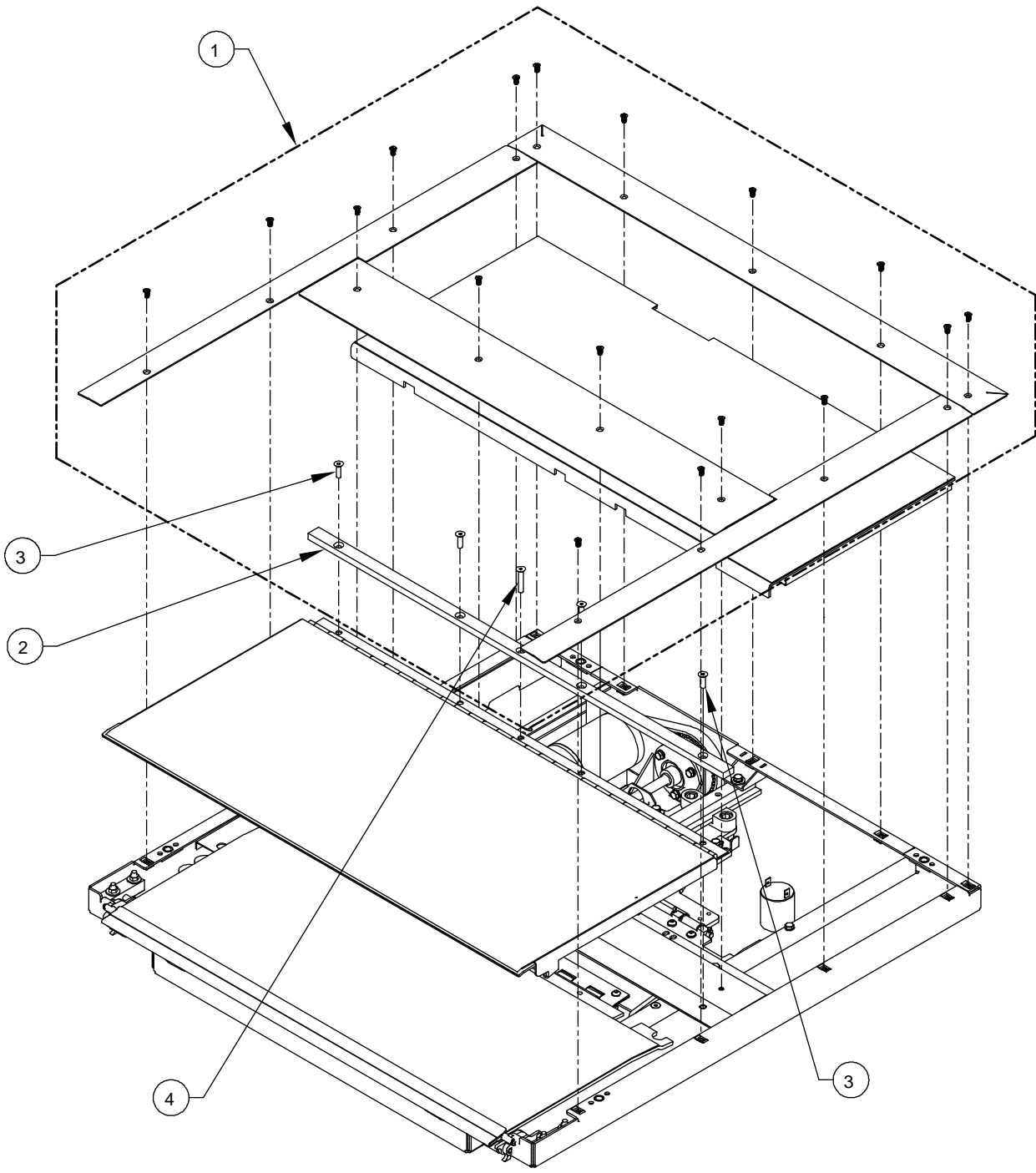
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**FIGURE 5-2: PF7000 SERIES RAMP TRAVELING FRAME ASSEMBLY
MODEL NOS. 003, 004, 005 & 006**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	CAM FOLLOWER, M10- X 1.25X13MM, SEALED, SST	6		21370
2	WASHER, FLT, M10 (BAG OF 10)	1		36975
3	WASHER, SPL, M10 X 18.1MM OD X 2.2MM THK, SST (BAG OF 10)	1		20923
4	BRACKET, ROLLER, CARRIAGE	1		39281
5	SCREW, BHS, M6-1.0 X 12MM, SST (BAG OF 10)	1		20579
6	WASHER, SPL, M6 X 11.8MM OD X 1.6MM THK, SST (BAG OF 10)	1		20921
7	KIT, ROLLER, ALIGNMENT PLATE	1		36968
8	HINGE, CARRIAGE/RAMP PLATE	1		38165
9	SCREW, BHS, M6-1.0 X 10MM, SST	4		24444
10	WASHER, SPL, M6 X 11.8MM OD X 1.6MM THK, SST (BAG OF 10)	1		20921
11	RAMP PLATE ASSEMBLY	REF	PF7-003	46584
11A *	RAMP PLATE ASSEMBLY	REF	PF7-004	46585
11B *	RAMP PLATE ASSEMBLY	REF	PF7-005	46586
*	RAMP PLATE ASSEMBLY	REF	PF7-006	46586
12	KIT, BLOCK, RAIL, CARRIAGE	1		36969
13	PIN, CARRIAGE, .310 x 2.75 (KIT OF 2)	1		25782
14	PIN, COTTER, 3/32 x 0.50 (BAG OF 10)	1		15930
15	SPACER, .312 x .62 x .062	2		PF4-0098

NOTE: (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

NOTE: * Item or configuration not shown.



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FIGURE 5-3: PF7000 SERIES TOP COVER ASSEMBLY

**FIGURE 5-3: PF7000 SERIES TOP COVER ASSEMBLY
MODEL NOS. 003, 004, 005 & 006**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	COVER STRIPS	REF	PF7-003	46580
1A *	COVER STRIPS	REF	PF7-004	46581
1B *	COVER STRIPS	REF	PF7-005	46582
*	COVER STRIPS	REF	PF7-006	46582
2	BAR, FLOOR SUPPORT	1	PF7-003	39080
2A *	BAR, FLOOR SUPPORT	1	PF7-004	39081
2B *	BAR, FLOOR SUPPORT	1	PF7-005	38161
*	BAR, FLOOR SUPPORT	1	PF7-006	38161
3	SCREW, FHH, M6-1.0 X 20MM, SST(BAG OF 10)	1		20589
4	SCREW, FHH, M6-1.0 X 35MM, SST	1		39006

NOTE: (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

NOTE: * Item or configuration not shown.

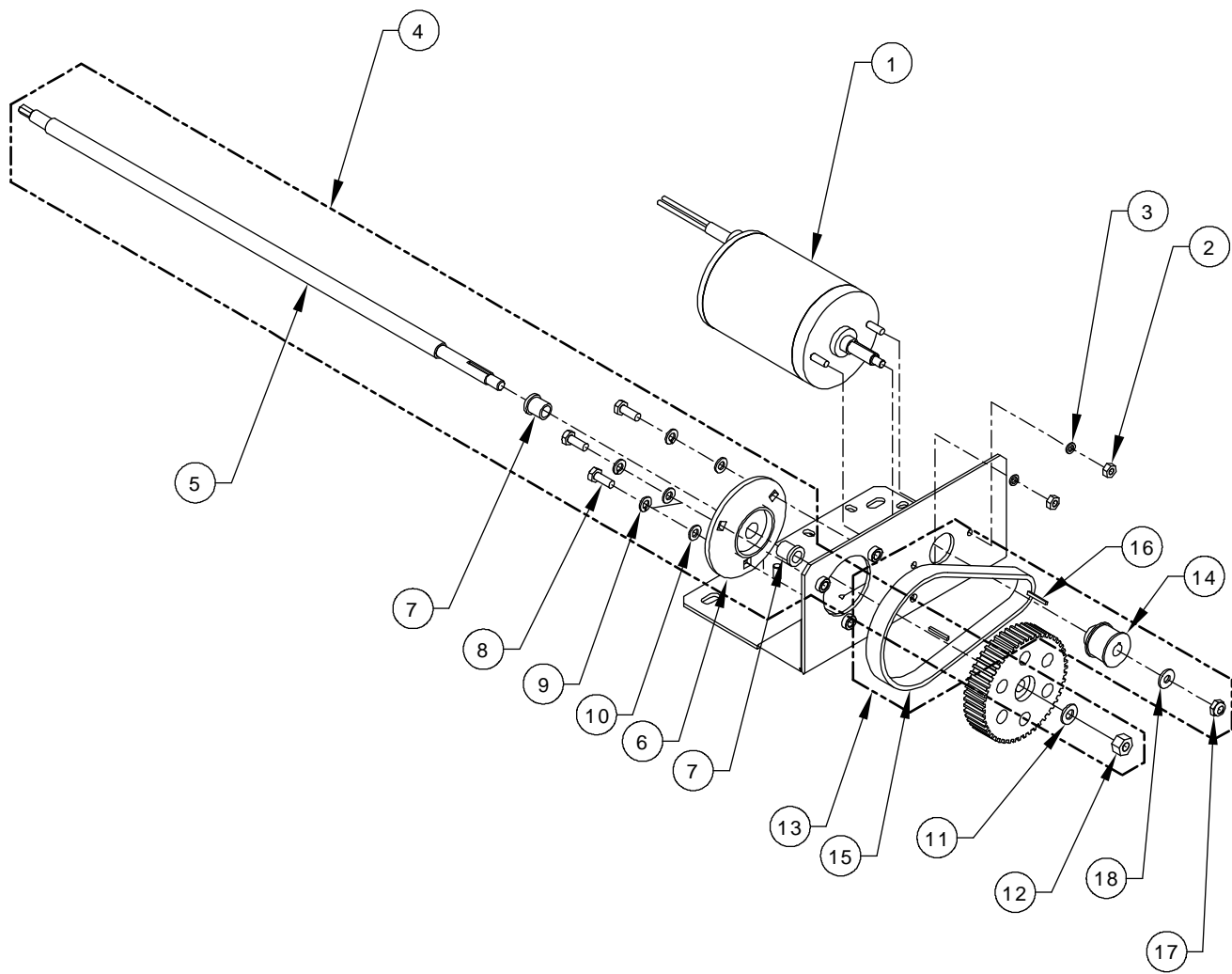


FIGURE 5-4: PF7000 SERIES DRIVE SYSTEM ASSEMBLY

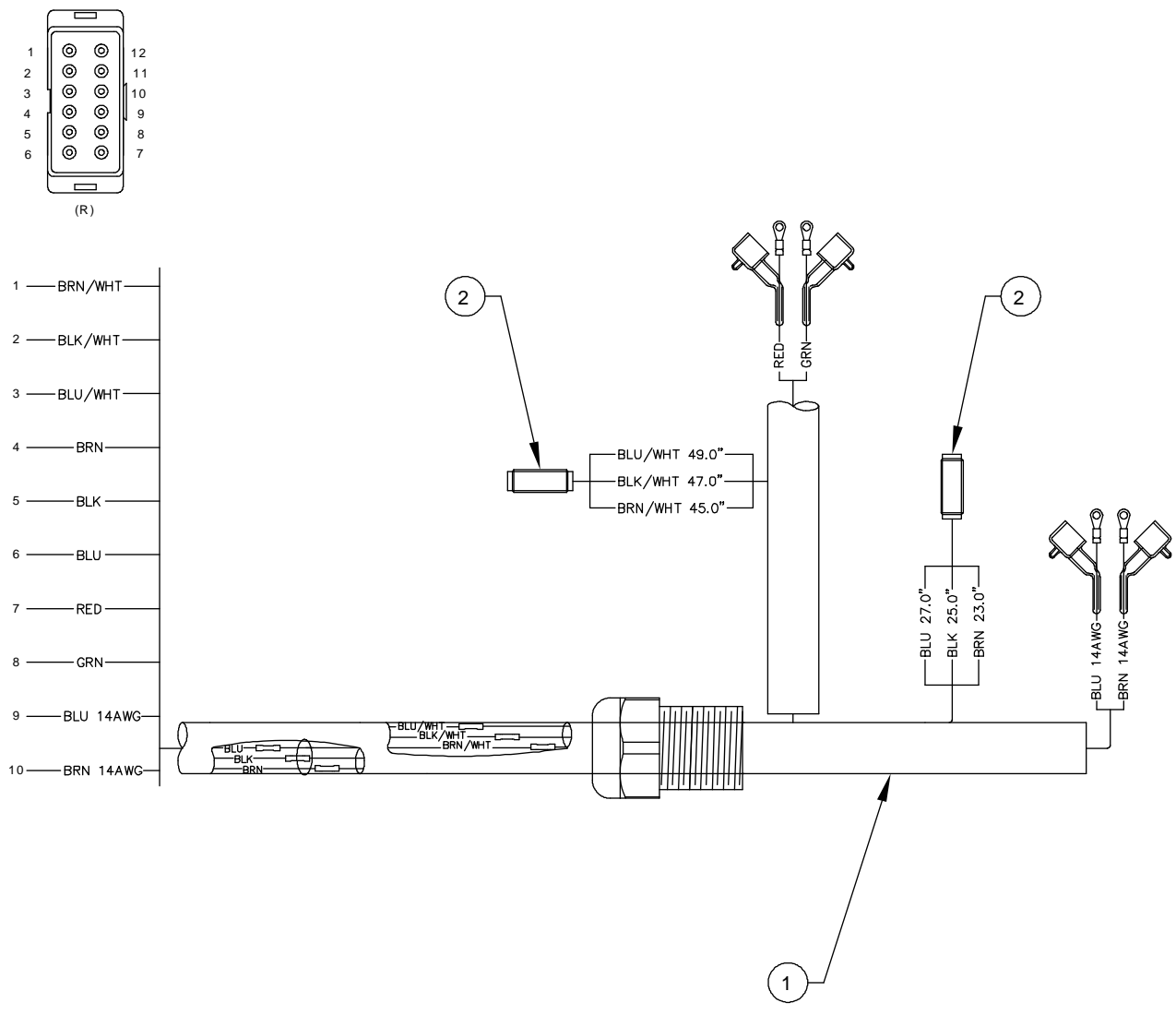
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**FIGURE 5-4: PF7000 SERIES RAMP DRIVE SYSTEM ASSEMBLY
MODEL NOS. 003, 004, 005 & 006**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	MOTOR, DRIVE SYSTEM	1		PF4-0105
2	NUT, HEX, 10-32 SST (BAG OF 10)	1		34878
3	WASHER, SPL, #10 SST (BAG OF 10)	1		14432
4	KIT, BALL SCREW/NUT ASSY W/HARDWARE	1	PF7-003	36982
	KIT, BALL SCREW/NUT ASSY W/HARDWARE	1	PF7-004	36982
5	BALL SCREW/NUT ASSY	1	PF7-003	37538
	BALL SCREW/NUT ASSY	1	PF7-004	37538
5A *	BALL SCREW/NUT ASSY	REF	PF7-005	37564
*	BALL SCREW/NUT ASSY	REF	PF7-006	37564
6	BEARING, BALL-3 HOLE MOUNT, MODIFIED	1		PF4-0121
7	BUSHING, FLNGD, .38 X .9 X .5	1		25297
8	SCREW, HEX, M6-1.0 X 16MM, SST	REF		37542
9	WASHER, SPL, M6 X 11.8MM X 1.6MM THK SST (BAG OF 10)	1		20921
10	WASHER, FLT, M6 X 12MM X 1.6MM THK, SST (BAG OF 10)	1		20914
11	WASHER, FLT, M8 X 16MM X 1.6MM THK, SST (BAG OF 10)	1		20916
12	NUT, JAM, 5/16-24, SST	REF		11782
13	KIT, PULLEY, MOTORDRIVE	1		36971
14	PULLEY, MOTORDRIVE, MODIFIED	1		PF4-0137
15	BELT, HTD-0.591W X 14.764P.LG, 75 TEETH	1		25128
16	KEY, 3/32 X .75	1		PF4-0017
17	NUT, ESN, ¼-20 THIN, SST (BAG OF 10)	1		13339
18	WASHER, FLT, .281 X .625 X .065, SST (BAG OF 10)	1		13398

NOTE: (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

NOTE: * Item or configuration not shown.



HARNESS CONFIGURATION FOR PF7-003 & -004 ONLY

FIGURE 5-5: PF7000 SERIES CONTROLLER INTERFACE HARNESS

RSM0001900

**FIGURE 5-5: PF7000 SERIES CONTROLLER INTERFACES AND HARNESES
MODEL NOS. 003, 004, 005 & 006**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	HARNESS, ENCLOSURE	1	PF7-003	39243
	HARNESS, ENCLOSURE	1	PF7-004	39243
1A *	HARNESS, ENCLOSURE	REF	PF7-005	10969
*	HARNESS, ENCLOSURE	REF	PF7-006	10969
2	SENSOR, INDUCTIVE, NPN, LONG	REF		14747

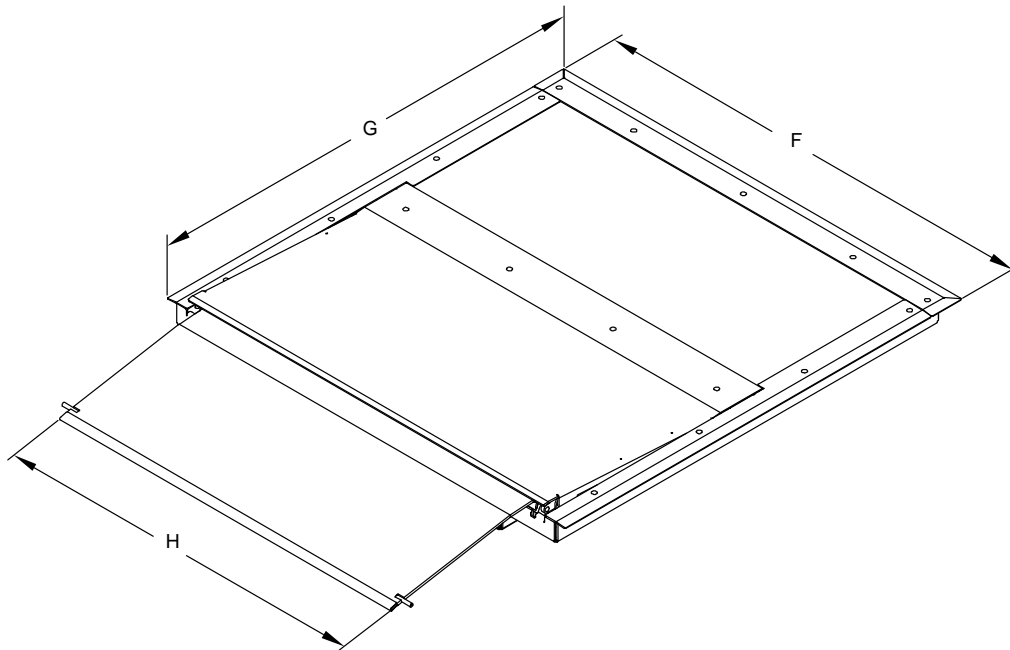
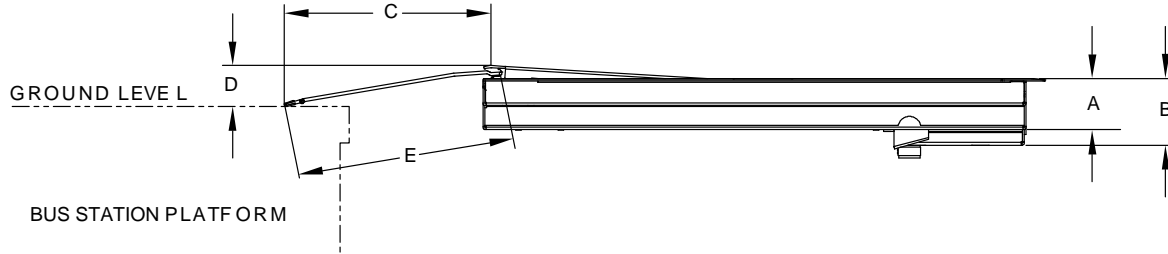
NOTE: (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

NOTE: * Item or configuration not shown.

APPENDIX 1 RAMP SPECIFICATIONS

PF7000 SERIES LOW-FLOOR VEHICLE ACCESS RAMP

Power electric-motor	Rated load capacity 660lbs. (299kgs)
Power requirements AC220V 50/60 Hz	Ramp weight..... approx. 227lbs. (103kgs)



RSM0002000

DIMENSIONS

	A	B	C	D	E	F	G	H
MODEL	Stowed Height	Motor Depth	Usable Ramp Length	Floor-to-Ground Travel	Max Deploy Length	Stowed Width	Stowed Length	Usable Ramp Width
PF7-003	3.01 (76.5)	4.00 (95.5)	12.13 (308.1)	2.42 (61.5)	12.65 (321.3)	33.13 (841.5)	33.03 (838.9)	27.50 (698.5)
PF7-004	3.01 (76.5)	4.00 (95.5)	12.13 (308.1)	2.42 (61.5)	12.65 (321.3)	39.13 (993.9)	33.03 (838.9)	35.25 (895.4)
PF7-005	3.03 (77.0)	4.55 (115.5)	8.94 (227.1)	2.81 (71.4)	9.86 (250.4)	41.64 (1057.6)	28.36 (720.3)	38.11 (968.0)
PF7-006	2.95 (74.93)	5.33 (135.4)	8.94 (227.1)	2.81 (71.4)	9.86 (250.4)	41.64 (1057.6)	28.36 (720.3)	38.11 (968.0)

NOTE: Dimensions in inches, millimeters in parentheses.

