



Innovation in Mobility

***PF5000 Series™
Low-Floor Vehicle
Access Ramp
for
Custom Installation***

[PRINT MANUAL](#)

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 authorized service technician in your area, call Ricon Product Support at 1-800-322-2884.

Customer Name: _____

Installing Dealer: _____

Date Installed: _____

Serial Number: _____

REVISION RECORD

REV	PAGES	DESCRIPTION OF CHANGE	ECR / ECO
32DPF502. B	Inside Cover	Updated disclaimer on inside cover.	3990/4918
	3-7, 3-8	Changed Figs 3-2 & 3-3 to show new motor with pigtail and connector.	4929
	5-4 & 5-5	Deleted 28640 & 17729. Changed PF50146 to PF50111 and 40-20-007 to 23335. Added WS-0013, 16912, PF50078, PF50079, 11787, 11785, 22517, 10566.	
32DPF502. C	Ch 2	Added new controller configuration for 27625, including a new electrical interconnect diagram and corresponding text.	4162/5025
	3-5 & 3-6	Added new controller configuration information for 27625.	
	3-9	Added Fig 3-4 Electrical Wiring Diagram for Controller part number 27625	
	5-6 & 5-7	Added reference number 5C (27625) to drawing and parts list.	
END OF LIST			

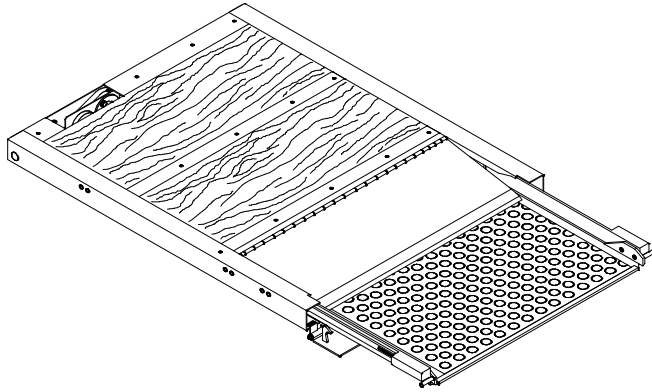
TABLE OF CONTENTS

<i>Chapter:</i>	<i>Page</i>
I. INTRODUCTION	1-1
A. RICON ONE-YEAR LIMITED WARRANTY	1-1
B. SHIPMENT INFORMATION	1-3
C. GENERAL SAFETY PRECAUTIONS	1-3
D. PRODUCT TERMINOLOGY	1-4
II. INSTALLATION	2-1
A. MECHANICAL	2-1
1. RAMP LOCATION	2-1
2. RAMP MOUNTING	2-1
3. FLUTTER VALVE INSTALLATION	2-2
B. ELECTRICAL INSTALLATION	2-2
1. RECOMMENDED PARKING BRAKE HOLD CIRCUIT	2-2
2. MAIN WIRING	2-3
C. RAMP CONTROLLER ADJUSTMENT	2-6
1. ADJUSTMENT OF CONTROLLER WITH WHITE ADJUSTMENT SCREWS	2-6
2. ADJUSTMENT OF CONTROLLER WITH BRASS ADJUSTMENT SCREWS	2-7
D. INSTALLATION VERIFICATION	2-8
E. DECALS	2-9
III. MAINTENANCE	3-1
A. MAINTENANCE SCHEDULE	3-1
B. TROUBLESHOOTING GUIDES	3-2
1. RAMP OPERATIONAL TROUBLESHOOTING	3-2
2. ELECTRICAL TROUBLESHOOTING	3-3
3. RAMP CONTROLLER INDICATORS	3-4
C. RAMP CONTROLLER ADJUSTMENTS	3-4
D. RAMP CONTROLLER ELECTRICAL WIRING	3-4
1. DIAGRAM COLOR CODES	3-4
2. ELECTRICAL SIGNAL DESCRIPTIONS	3-5
3. MANUAL OPERATIONAL FUNCTION DESCRIPTION	3-6
4. WIRING DIAGRAM	3-6
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. ENCLOSURE DOOR REMOVAL	4-3
2. ENCLOSURE DOOR INSTALLATION	4-4
3. ENCLOSURE ROLLER ASSEMBLY REMOVAL	4-4
4. ENCLOSURE ROLLER INSTALLATION	4-4
5. FLUTTER VALVE REMOVAL	4-5
6. FLUTTER VALVE INSTALLATION	4-5
E. DRIVE SYSTEM	4-5
1. DRIVE BELT REMOVAL	4-5
2. DRIVE BELT INSTALLATION	4-5

F. TRAVELING FRAME ASSEMBLY	4-6
1. TRAVELING FRAME REMOVAL	4-6
2. TRAVELING FRAME INSTALLATION	4-6
3. RAMP AND CARRIAGE DISASSEMBLY	4-7
4. RAMP AND CARRIAGE ASSEMBLY	4-7
V. PARTS DIAGRAMS AND LISTS	5-1
APPENDIX I LIFT SPECIFICATIONS.....	5-10

I. INTRODUCTION

The RICON PF5000 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
World Wide Website www.riconcorp.com

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

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 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.
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 an authorized Ricon 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 authorized Ricon 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.

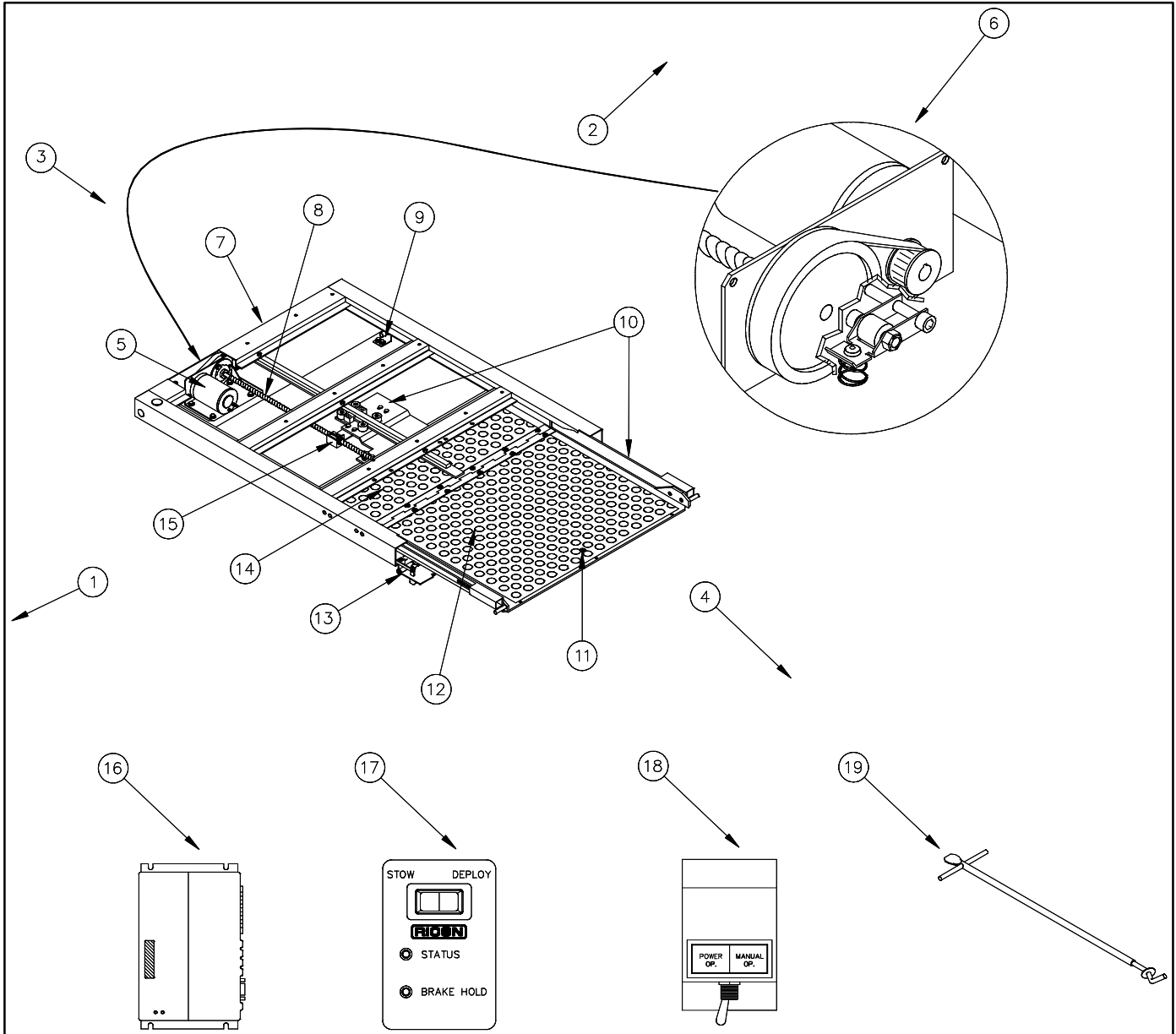


FIGURE 1-1: RAMP REFERENCES

TABLE 1-1: PF5000 RAMP TERMINOLOGY

REF	NAME	DESCRIPTION
1	Left	Reference point from outside the vehicle looking inward.
2	Right	
3	Back	
4	Front	
5	Drive System Motor	Electric motor used to operate the ramp.
6	Belt Failure Ratchet	A mechanism to keep the ramp from deploying if the drive system belt breaks.
7	Ramp Enclosure	Cassette type enclosure, rigidly attached to the vehicle, which contains the ramp.
8	Drive System	Components used to extend/DEPLOY and retract/ STOW the ramp.
9	Sensor Assembly	Magnetic device used to signal the ramp controller when the ramp is in the fully stowed position.
10	Traveling Frame	Mechanical assemblies that operate the ramp and maintain ramp-assembly alignment.
11	Manual Deploy Hole	Insertion point for the manual operation lever.
12	Ramp Assembly	Assembly that extends from the vehicle during ramp operation.
13	Enclosure Door	Mechanical door that protects the ramp internal components from road debris, etc.
14	Carriage Assembly	Mechanical assembly that operates the ramp assembly.
15	Ball Nut/Screw Assembly	Mechanical component of the drive system used to extend and retract the ramp.
16	Ramp Controller	Electronically controls all of the ramp functions and safety features.
17	Optional Ramp Control Panel	Electrically STOW and DEPLOY the ramp and shows the status of the ramp with indicator lights.
18	Optional Manual Operation Panel	Enables the operator to use the ramp either electrically or manually.
19	Manual Operation Lever	Used to manually stow and deploy the ramp.

END OF TABLE

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II. INSTALLATION

The RICON PF5000 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 four (two on each side) attachment points. Each attachment point uses two screws.

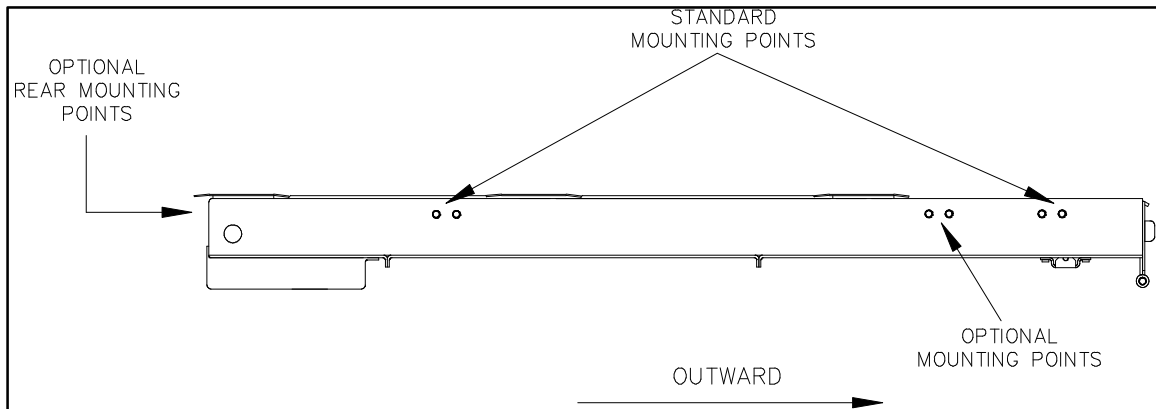


FIGURE 2-1: MOUNTING HOLES

3. FLUTTER (DRAIN) VALVE INSTALLATION

The purpose of flutter valve is to allow fluid to drain out of enclosure, while keeping debris from entering. For installation of the flutter valve, refer to **Figure 2-2** and the following steps:

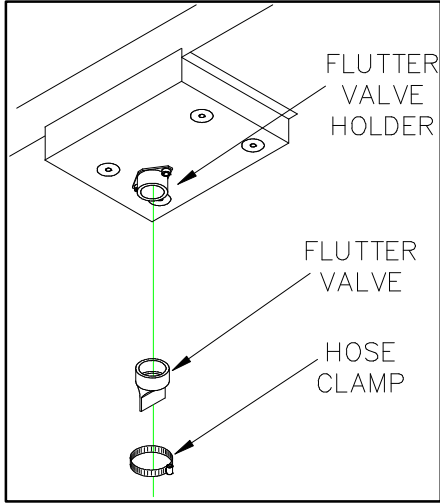


FIGURE 2-2: FLUTTER (DRAIN) VALVE

- 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.

B. ELECTRICAL INSTALLATION

CAUTION!

- 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 (FOR CONTROLLERS 18061 & 18334 ONLY)

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:

- $\overline{\text{ST_OUT}}$ (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:

$\overline{\text{ST_OUT}}$	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: (For controllers 18061 & 18334 only)

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

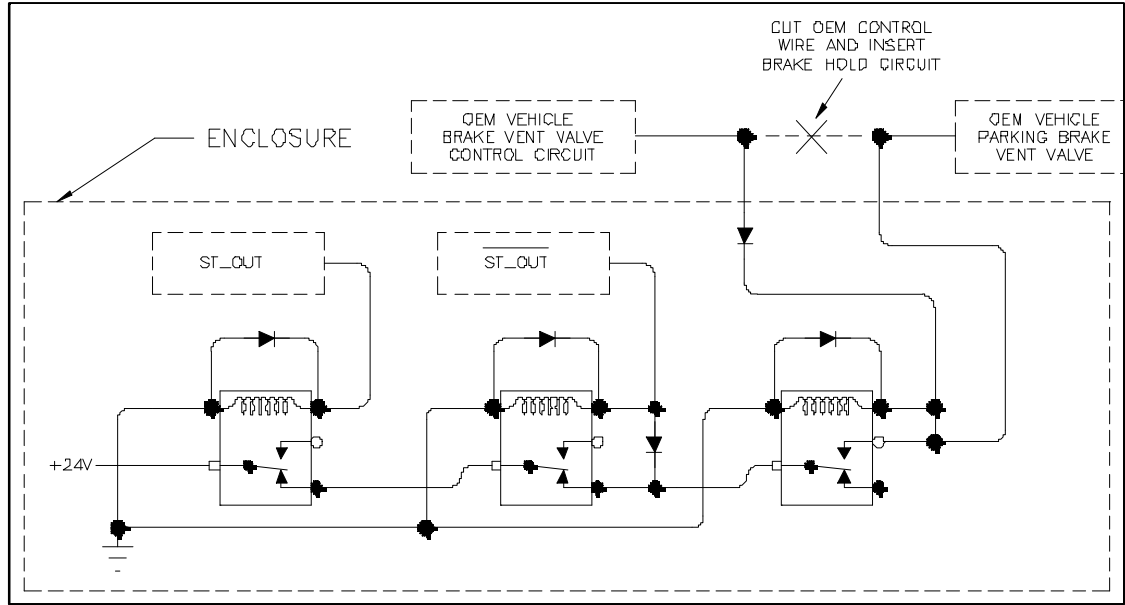


FIGURE 2-3: BRAKE HOLD CIRCUIT DIAGRAM

- 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.

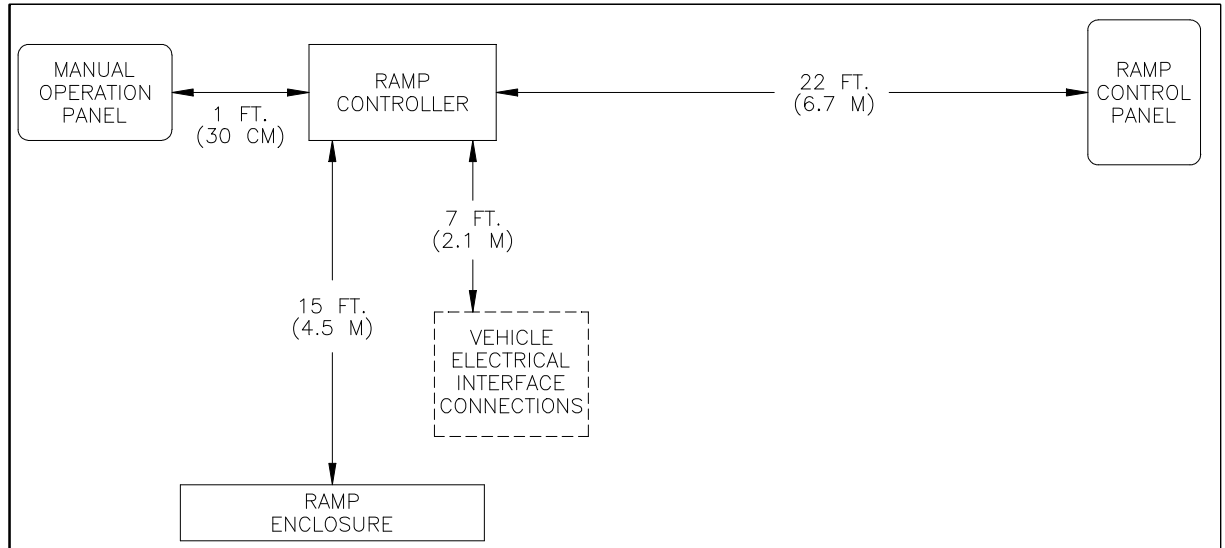


FIGURE 2-4: COMPONENT MAXIMUM DISTANCES

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

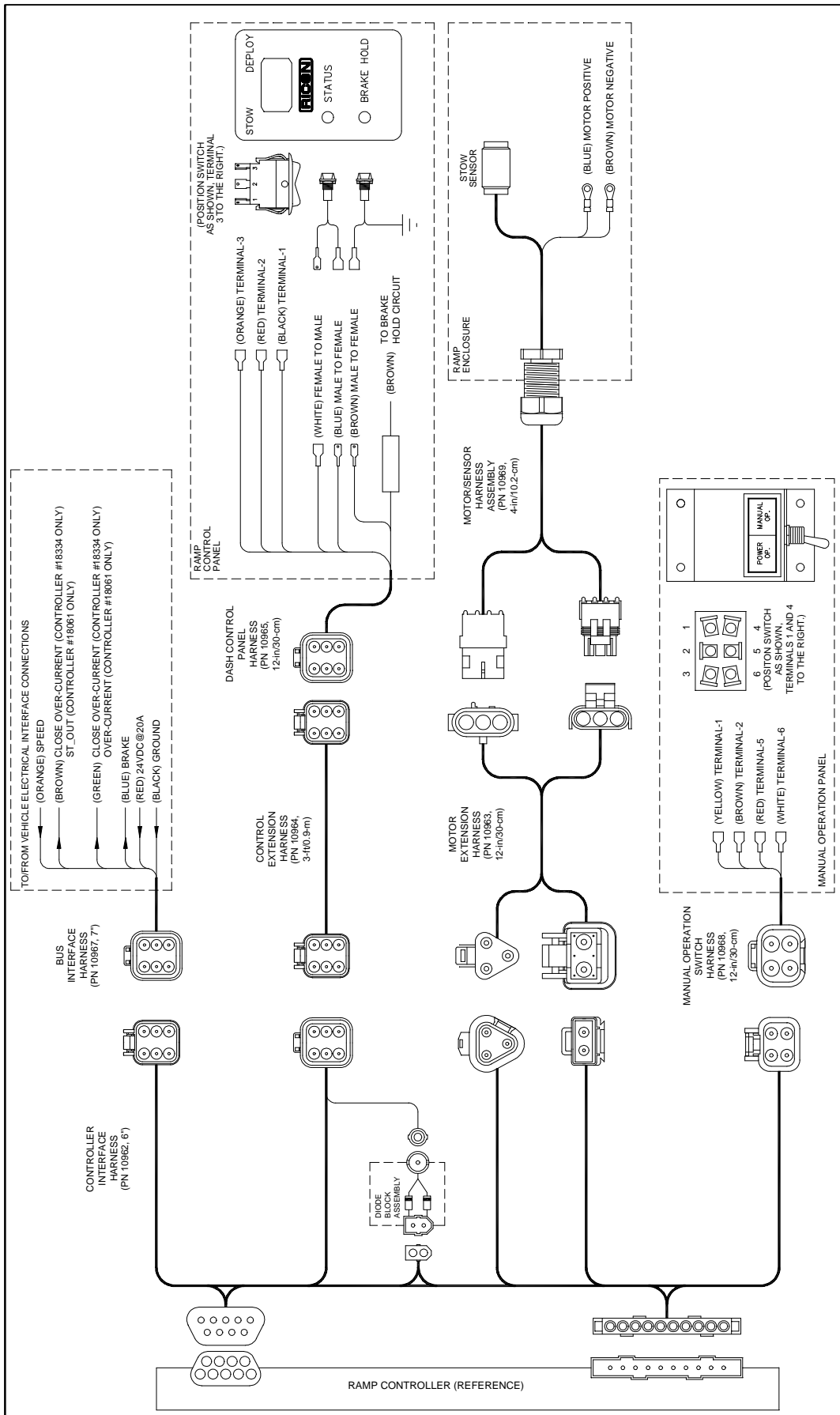


FIGURE 2-5: ELECTRICAL INTERCONNECT DIAGRAM (FOR CONTROLLERS #18334 & #18061 ONLY)

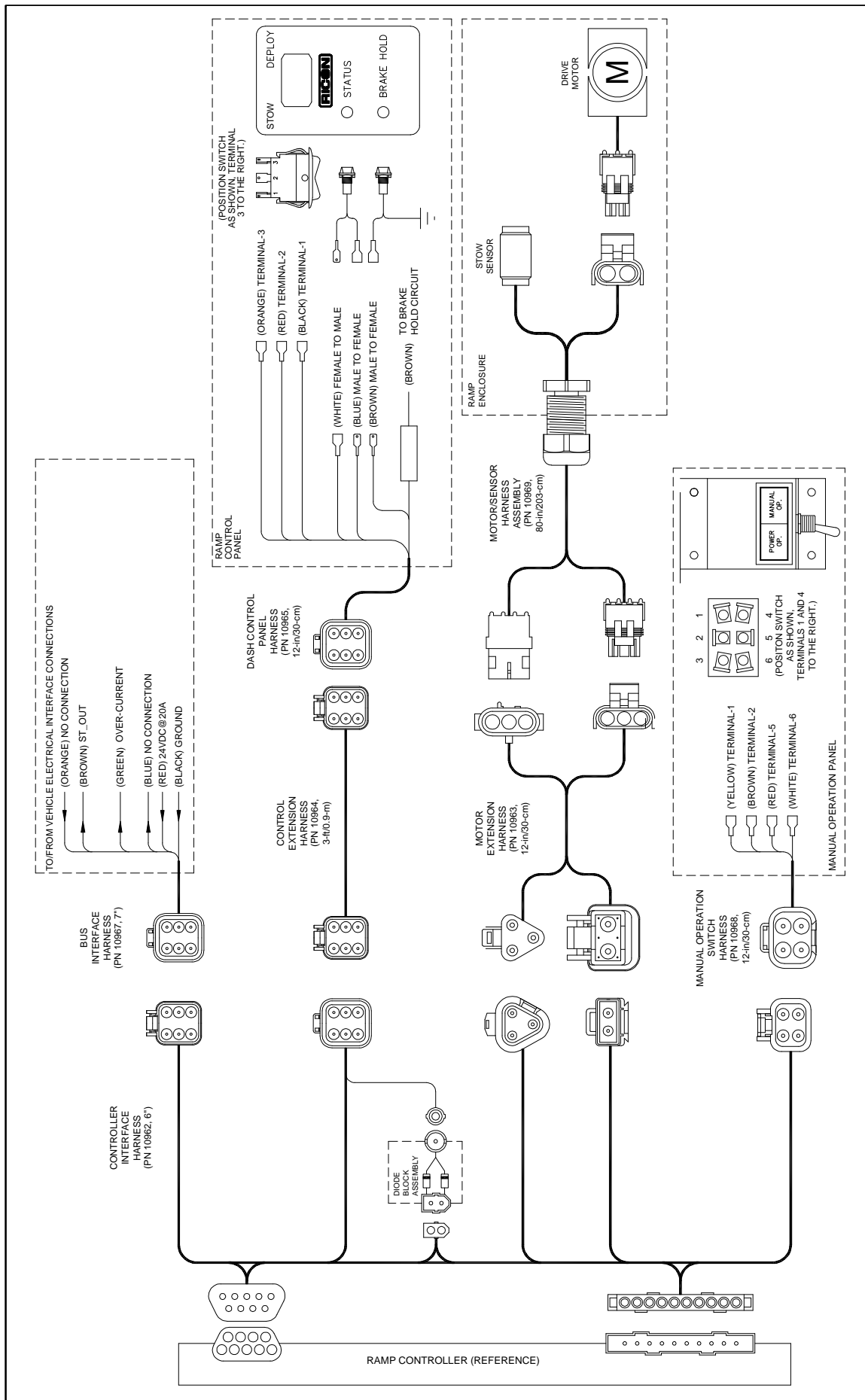


FIGURE 2-6: ELECTRICAL INTERCONNECT DIAGRAM (FOR CONTROLLERS #27625 ONLY)
32DPF502.C

- 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 LED's 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:

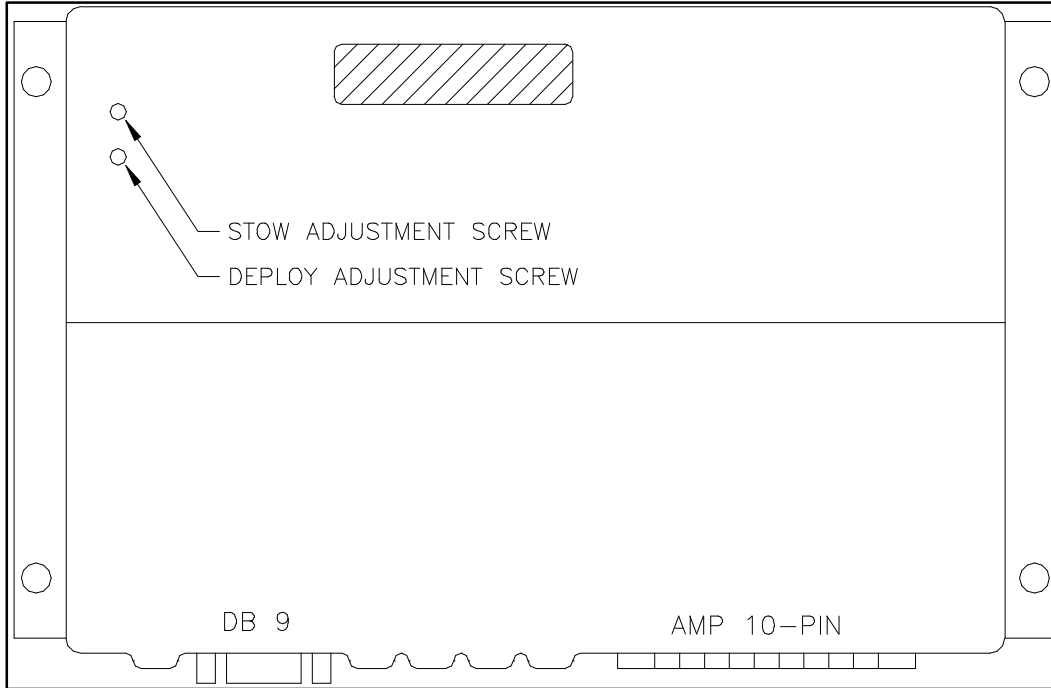


FIGURE 2-7: CONTROLLER WITH WHITE ADJUSTMENT SCREWS

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:

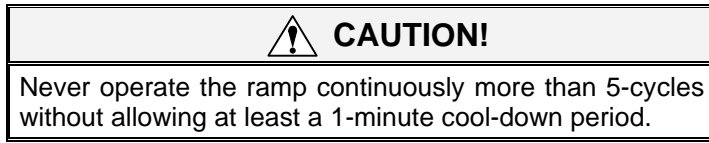
CAUTION!

- 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:

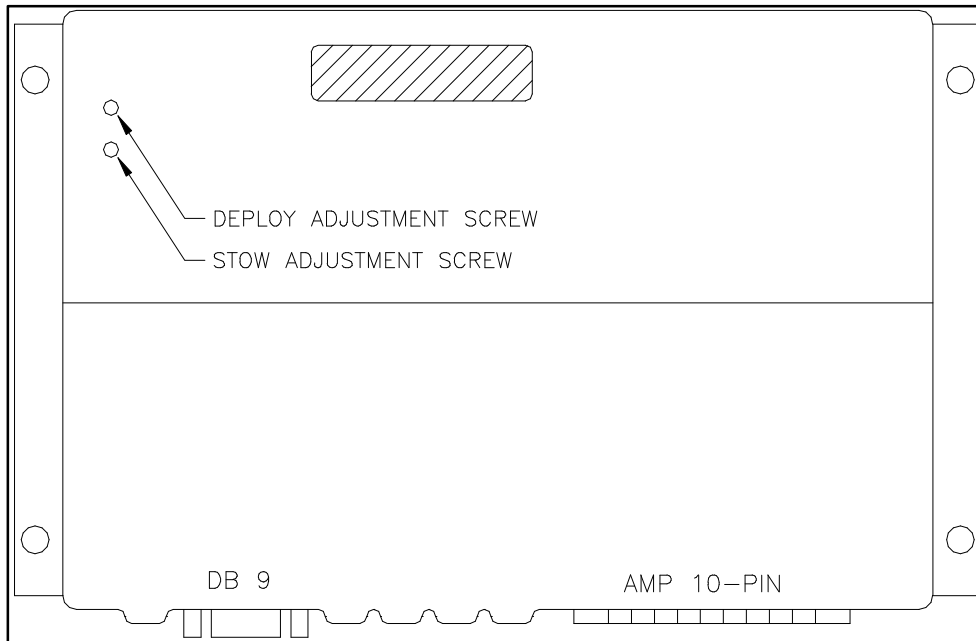


FIGURE 2-8: CONTROLLER WITH BRASS ADJUSTMENT SCREWS

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.

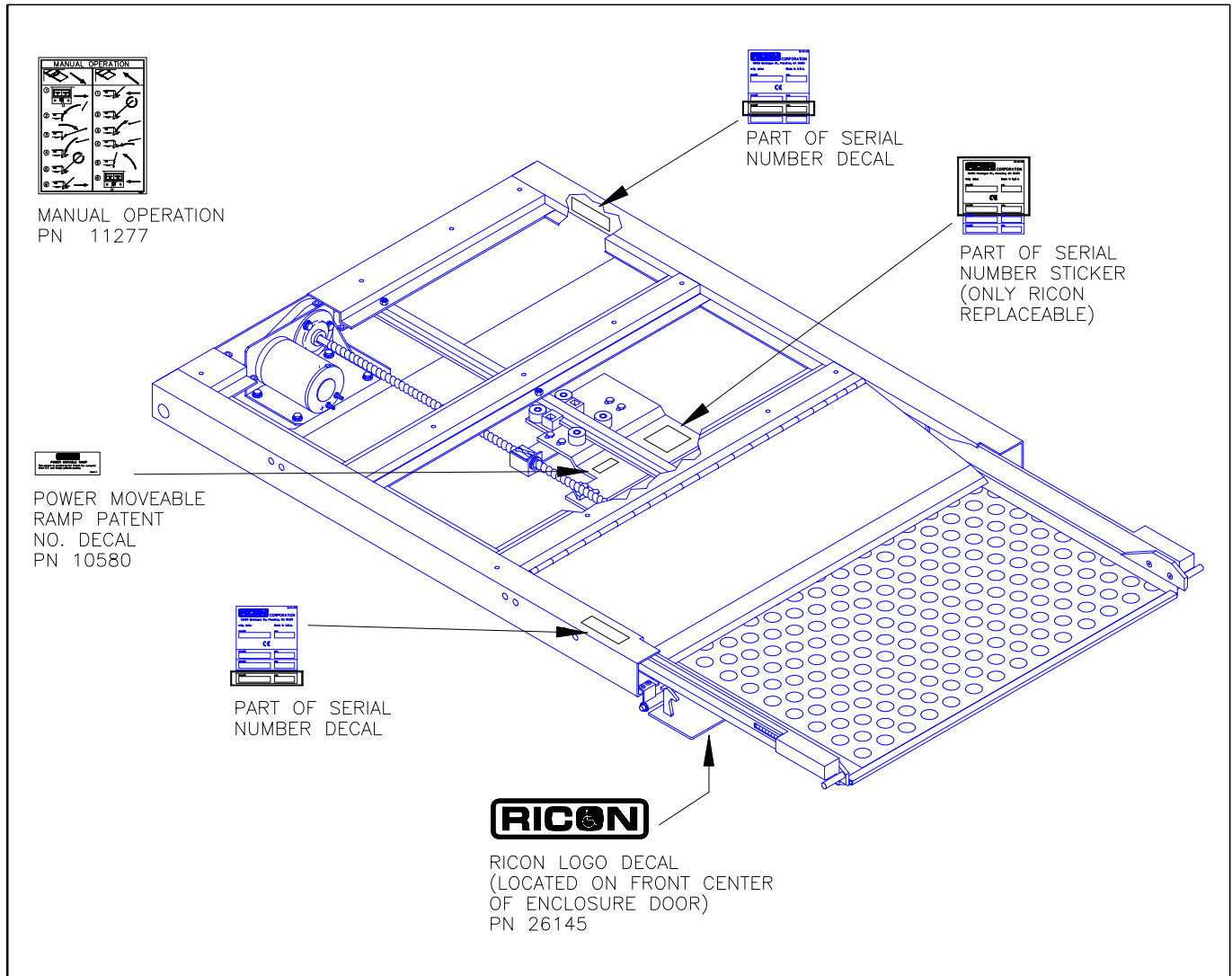


FIGURE 2-9: DECAL LOCATIONS AND PART NUMBERS

III. MAINTENANCE

Maintenance for the RICON PF5000 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 authorized Ricon 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	DESCRIPTION
DAILY SAFETY CHECK	
General Appearance	<ul style="list-style-type: none"> • If any abnormal noises exist, notify a Ricon service technician immediately. • Inspect underside of vehicle to verify that nothing is out of the ordinary. • Verify that the bottom surfaces of the side channels are free of debris.
Ramp Mountings and Support Points.	<ul style="list-style-type: none"> • Verify that all ramp mounting and support points are in proper order and free from damage. • Verify that all mounting bolts are sufficiently tight.
Main Pivot Points	Verify carriage/ramp pivot pins are installed properly, free from damage and locked in position with proper fasteners.
4-MONTH SAFETY CHECK	
Ramp Enclosure	Vacuum inside the ramp enclosure using an industrial vacuum cleaner.
ANNUAL SAFETY CHECK	
Cam Followers	Grease all eight Cam Followers using low temperature grease such as Aeroshell Grease #22 Starfak EP, or equivalent. Grease fittings should be wiped clean prior to grease injection to prevent contamination.
Ball Screw Assembly	Grease Ball Screw using low temperature grease such as Aeroshell Grease #22 Starfak EP, or equivalent.
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	

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.
Enclosure door does not fully close.	Obstruction in door.	Remove obstruction and check for any damage.
	Bent ramp cam pin.	Contact an authorized Ricon service technician for repair.
	Damaged door spring.	Inspect door springs and contact an authorized Ricon service technician for repair if necessary.
	Damaged and/or misaligned enclosure door.	Contact an authorized Ricon service technician for repair.
Excess noise during extend/deploy and/or retract/stow.	Faulty cam follower on traveling frame assembly and/or alignment plate assembly.	Contact an authorized Ricon service technician for repair.
	Debris in enclosure.	Remove debris.
	Improper alignment adjustment of traveling frame.	Contact an authorized Ricon service technician for repair.
	Improper alignment adjustment of drive system.	Contact an authorized Ricon service technician for repair.
Ramp motor operates, ramp does not deploy.	Broken drive belt.	Contact an authorized Ricon 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.	Correct/repair wiring to speed sensor.
No ramp functions work.	Signal indicates the brake is not set regardless of condition of brake.	Most probably the wire between the brake sensor and the controller is broken or nonexistent. Correct/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. Correct/repair wiring to speed sensor.
	Supply power not present.	Check vehicle circuit breaker. Correct/repair supply wire.
System does not hold vehicle parking brake when ramp is deployed.	Broken or missing signal to the brake hold circuit.	Correct/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 LED's that may be used during electrical troubleshooting.

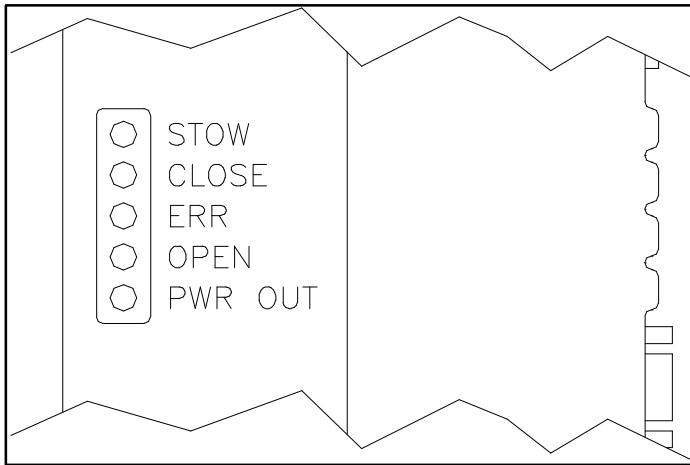


FIGURE 3-1: CONTROLLER INDICATORS

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. Close Overcurrent Output (CL_OV) (Controller part number 18334 only)

The close overcurrent output provided at pin-2 of the DB 9 connector is used to indicate when the system has reached an overcurrent condition in the STOW/retract direction. Overcurrent occurs either when the system encounters a resistance greater than the normal forces generated in travel or when the system comes to the end-of-travel within the enclosure. The signal is a 24-volt pulse approximately 500 milliseconds (ms) in duration. If the function is released, the signal is removed. The opposite function will reset the register that stores the last overcurrent event. The signal will reappear if the STOW function is pressed without pressing the DEPLOY function first.

c. Indication of Stowed Output (ST_Out) (Controller part number 18061 and 27625 only)

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.

d. Vehicle Speed (SPEED) (Controller part number 18061 and 18334 only)

Input to the controller (pin-3) is zero VDC when the bus is moving, and 24VDC when the bus is stopped. When the signal is nonexistent (wire broken), the controller assumes zero VDC (the bus is moving)

e. Vehicle Parking Brake (BRAKE) (Controller part number 18061 and 18334 only)

Input to the controller (pin-4) is zero VDC when the vehicle parking brake is set and 24 VDC when the parking brake is released. When the signal is nonexistent (wire broken), the controller assumes that the parking brake is released.

f. 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.

g. 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.

h. Open Overcurrent Output (OP_OV) (Controller Part Number 18334 only)

The open overcurrent output provided at DB 9 connector pin-9, is used to indicate when the system has reached an overcurrent condition in the DEPLOY/extend direction. Overcurrent occurs either when the system encounters a resistance greater than the normal forces generated in travel or when the system comes to the end of travel at the fully deployed position. The signal is 24-volts continuous as long as the button is held. If the function is released, the signal is removed. The opposite function will reset the register that stores the last overcurrent event. The signal will reappear if the DEPLOY function is pressed without pressing the STOW function first.

i. Overcurrent Output (OVC) (Controller Part Number 18061 and 27625 only)

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.

j. 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.

k. 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.

I. 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 3-2, 3-3 and 3-4** on the following pages for ramp electrical wiring diagrams. **Figure 3-3** applies to ramps equipped with controller part number 18061, only. **Figure 3-4** applies to ramps equipped with controller part number 27625 only.

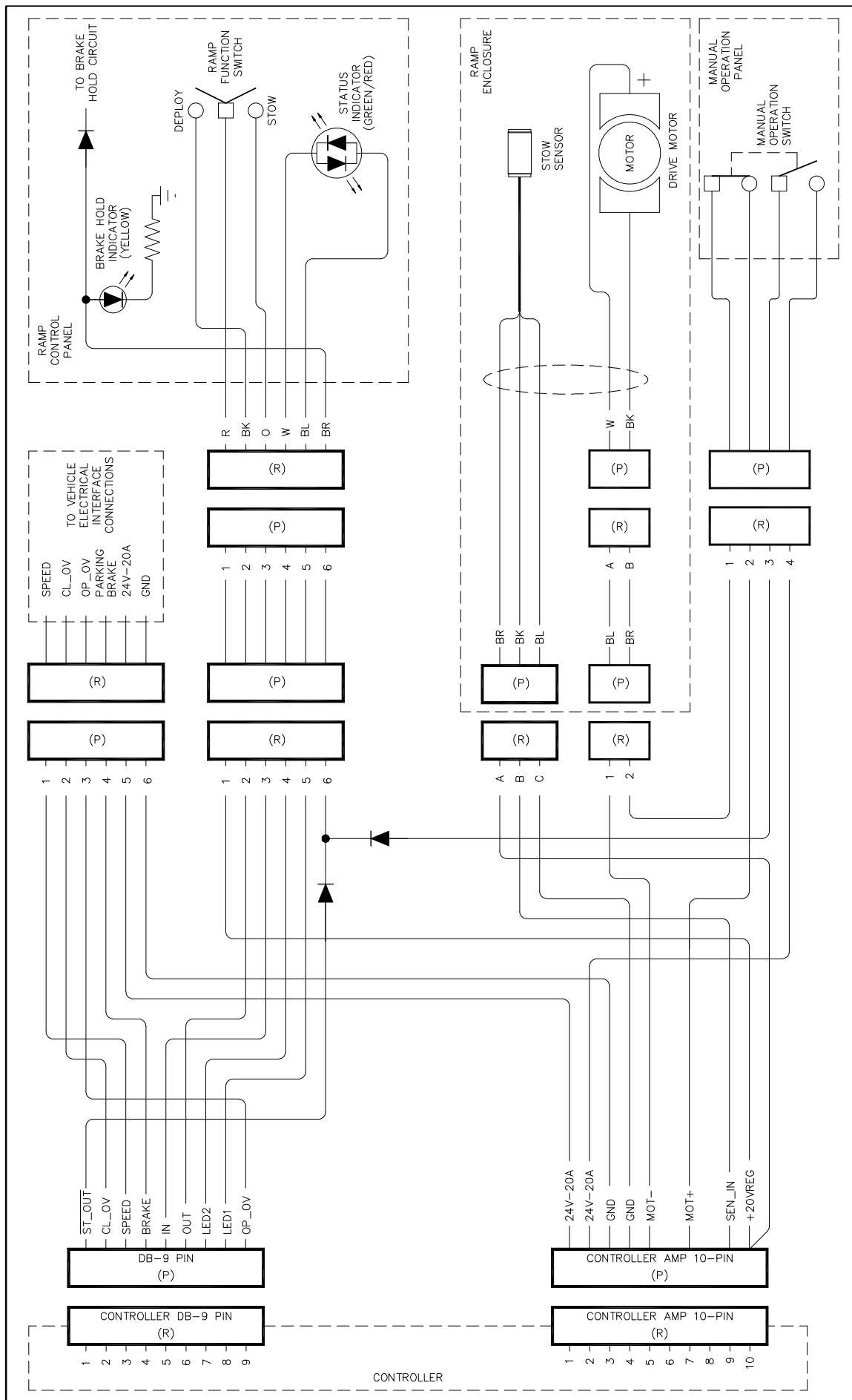


FIGURE 3-2: PF5000 RAMP ELECTRICAL WIRING DIAGRAM
32DPF502.B

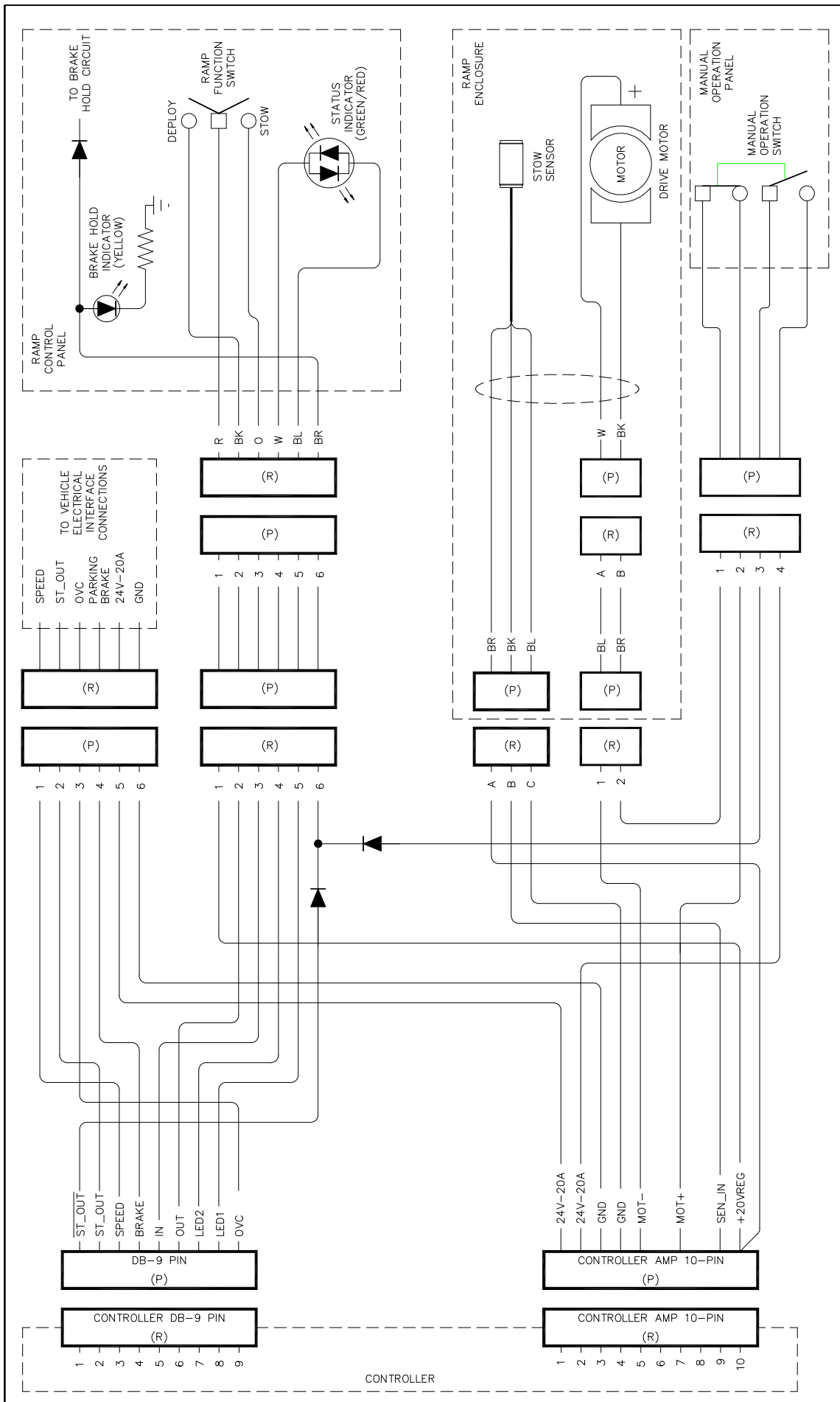


FIGURE 3-3: PF5000 RAMP ELECTRICAL WIRING DIAGRAM; CONTROLLER PART NUMBER 18061 ONLY
32DPF502.B

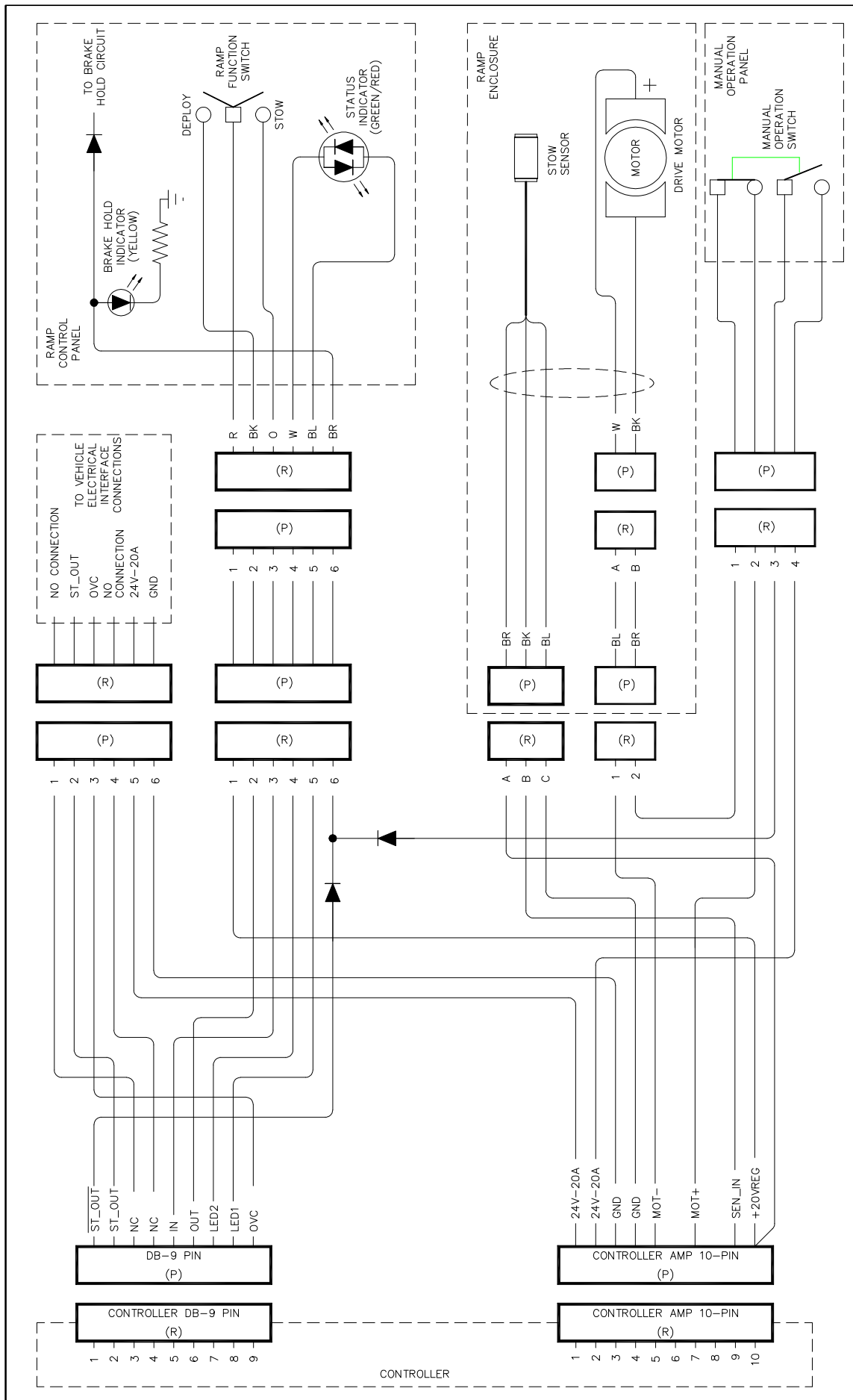


FIGURE 3-4: PF5000 RAMP ELECTRICAL WIRING DIAGRAM; CONTROLLER PART NUMBER 27625 ONLY

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IV. REPAIR

This chapter contains descriptions and repair procedures for major systems of the RICON PF5000 Series Low-Floor 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 AN AUTHORIZED RICON 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 PF5000 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 topside of unit. The motor access cover is located at rear of enclosure, underneath rear cover strip. Remove retaining screws (14) along front, middle and rear cover strips, and remove two drive system access panels to gain access to internal components and motor.

C. COMPONENT DESCRIPTIONS

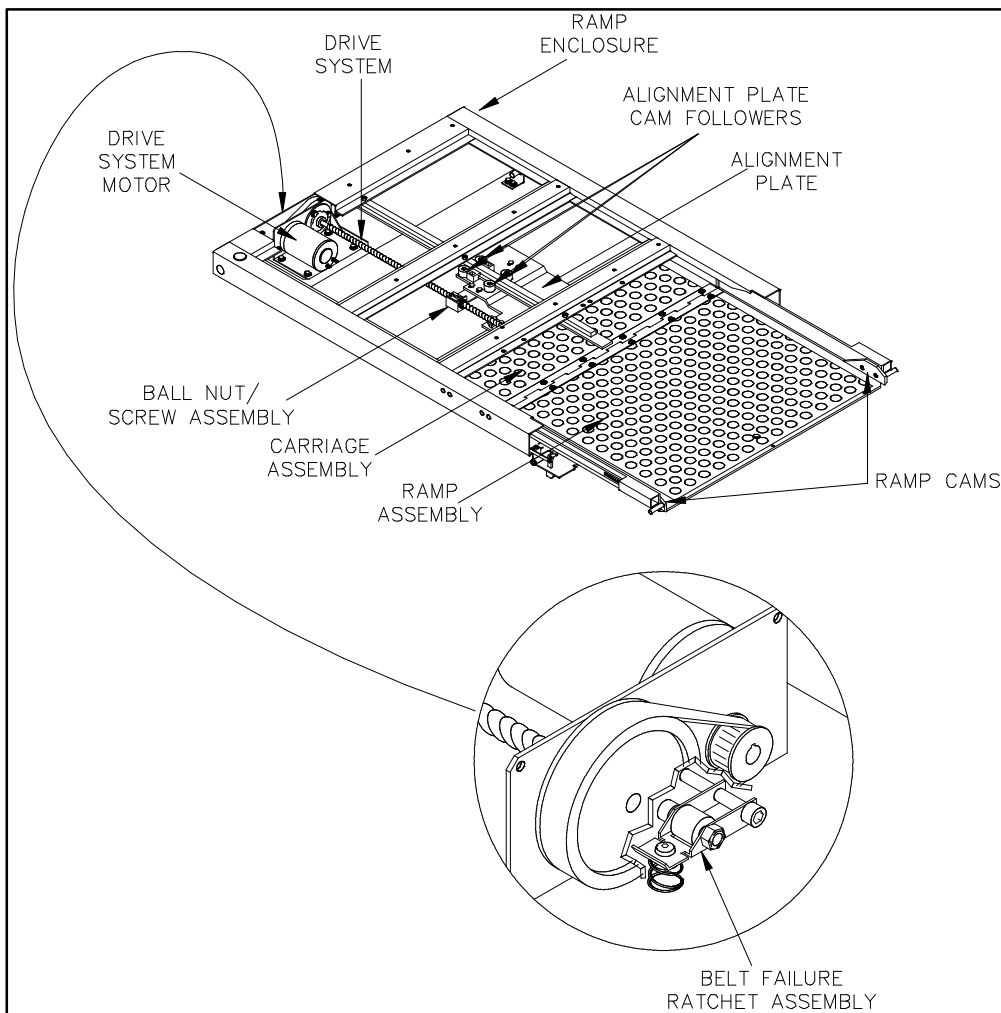


FIGURE 4-1: COMPONENT DESCRIPTIONS

Refer to **Figure 4-1**. The ramp drive system is composed of several components. The drive system motor rotates the ball nut/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.

D. ENCLOSURE COMPONENTS

1. ENCLOSURE DOOR REMOVAL

- a. Refer to **Figure 4-2**. Deploy ramp about three inches in order to disengage ramp pins from door hooks.
- b. Disconnect electrical power from ramp.

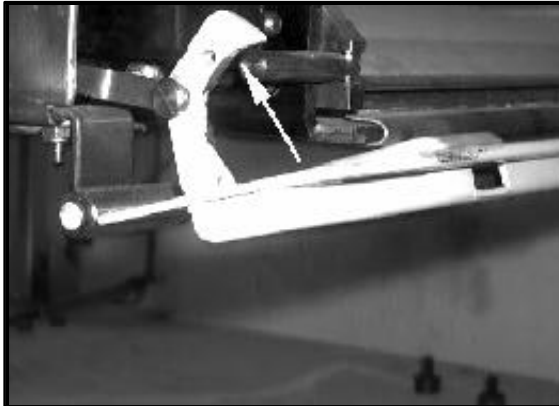


FIGURE 4-2: RAMP PINS

- c. Using spade-end of manual deploy lever, pull enclosure door down to gain access to door hooks and secure.



WARNING!

WEAR PROTECTIVE EYE WEAR DURING THE NEXT STEP TO PREVENT PERSONAL INJURY. THE SPRING EXTENSION RODS ARE UNDER TENSION. FIRMLY GRASP ROD BEFORE REMOVING FASTENERS.

- d. Refer to Figure 4-3. Remove two bolts (one on each side of enclosure door) fastening spring extension rods to door hooks.

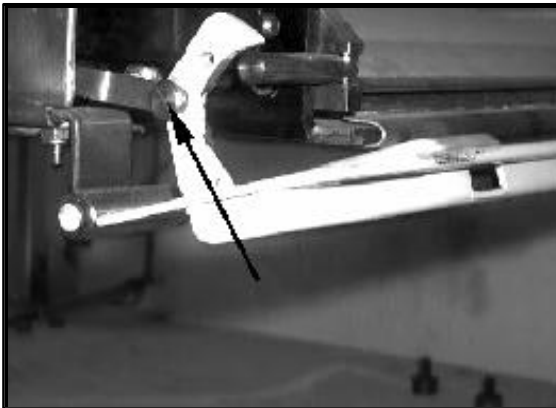


FIGURE 4-3: SPRING EXTENSION RODS

- e. Remove two bolts (on either side of enclosure door) fastening enclosure hinge to enclosure.
- f. Slide enclosure door off hinge pin.

2. ENCLOSURE DOOR INSTALLATION

CAUTION!

Verify that spring extension rods are connected to the bottom hole of enclosure door hooks. Improper location of the spring extension rods may cause unwanted noise during operation.

NOTE: All removed bolts should have Loc-tite applied before reinstallation.

- a. Install hinges on enclosure door pins.
- b. Align hinges with mounting holes on enclosure.
- c. Verify front face of hinge bracket is flush with enclosure sides. Install two bolts and fasten to secure hinge.
- d. Repeat step **c** for other side.

WARNING!

WEAR PROTECTIVE CLOTHING AND EYE WEAR DURING THE FOLLOWING STEPS TO PREVENT PERSONAL INJURY.

- e. Firmly grasp spring extension rod with vice grips to align hole with lower hole of floor deck.
- f. Install bolt and tighten to attach spring extension rod to enclosure door hook.
- g. Repeat steps **e** and **f** for other side.

3. ENCLOSURE ROLLER ASSEMBLY REMOVAL

- a. Fully deploy ramp.
- b. Disconnect electrical power from ramp.
- c. Secure hinged floor in upright position.
- d. Refer to **Figure 4-4**. Remove four bolts fastening roller assembly to enclosure.

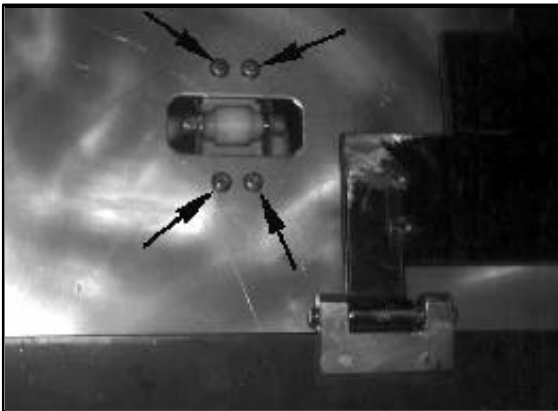


FIGURE 4-4: ROLLER ASSEMBLY

- e. Remove roller assembly.
- f. Repeat steps **d** and **e** for other side.

4. ENCLOSURE ROLLER INSTALLATION

NOTE: All removed bolts should have Loc-tite applied before installation.

- a. From top of ramp, align four holes of roller assembly with enclosure.
- b. Install four bolts and tighten.
- c. Repeat steps **a** and **b** for other side
- d. Release hinged floor and lower it until it has reached ramp.
- e. Reconnect electrical power to ramp.
- f. Fully stow ramp.

5. 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.

6. 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.

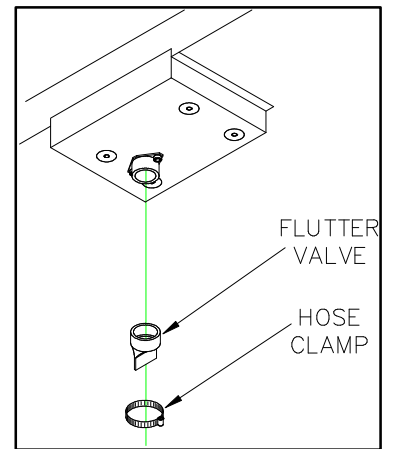


FIGURE 4-5: FLUTTER VALVE (DRAIN)

E. DRIVE SYSTEM

1. DRIVE BELT REMOVAL

- a. Remove nine bolts fastening rear and middle cover strips to enclosure.
- b. Lift out rear drive system access panel.
- c. Remove four (4) bolts fastening motor access cover to enclosure and remove cover.
- d. Fully deploy ramp.
- e. Disconnect electrical power from ramp.
- f. Refer to **Figure 4-6**. Loosen three bolts on ball screw bearing.
- g. Refer to **Figure 4-7**. Remove four bolts fastening motor bracket to enclosure.

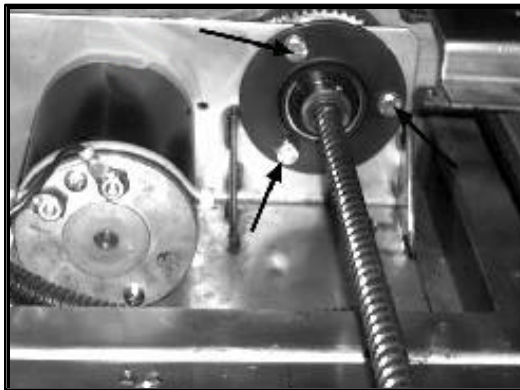


FIGURE 4-6: BALL SCREW BEARING

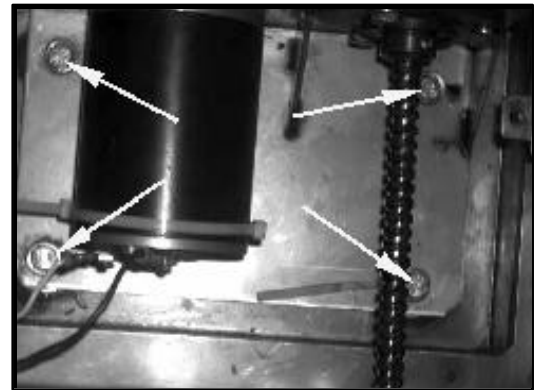


FIGURE 4-7: MOTOR BRACKET

- h. Rotate motor bracket UP and lift assembly out of enclosure.
- i. Remove and retain spring from belt failure ratchet assembly.
- j. Slip belt off large and small pulleys while turning both manually.
- k. Slip belt between ball screw and enclosure to remove.

2. DRIVE BELT INSTALLATION

NOTE: All removed bolts should have Loc-tite applied before reinstallation.

- a. Slip drive belt between ball screw pulley and enclosure.
- b. Slip drive belt over small and large pulleys while turning both pulleys manually. Verify belt failure ratchet is on smooth side of drive belt.
- c. Slip spring over post on belt failure ratchet assembly.



- d. Rotate motor bracket DOWN and push into enclosure.
- e. Insert four bolts into motor bracket, but do not tighten fully.
- f. Stow ramp manually by turning large pulley. This will re-align ball screw.
- g. Tighten four bolts on motor bracket.

- h. Tighten top bolt on ball screw bearing.
- i. Manually turn large pulley to deploy ramp partially to gain access to bottom two bolts on ball screw bearing.
- j. Tighten two bolts on ball screw bearing.
- k. Manually turn large pulley to fully stow ramp.
- l. Verify the ball screw is parallel to the center rail.
- m. Reconnect electrical power to ramp.
- n. Install motor access cover and tighten four bolts fastening motor access cover to enclosure.
- o. Install rear drive system access panel.
- p. Tighten the nine bolts fastening rear and middle cover strips to enclosure.

F. TRAVELING FRAME ASSEMBLY

 WARNING!
<p>THE TRAVELING FRAME ASSEMBLY IS LARGE AND HEAVY, AND REQUIRES AT LEAST TWO PEOPLE WHEN REMOVING. 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.</p>

1. TRAVELING FRAME REMOVAL

- a. Fully stow ramp.
- b. Disconnect electrical power from ramp.
- c. Gain access to topside of ramp.
- d. Secure hinged floor in upright position.

NOTE: Note the locations of white spacers on ramp pivot pins for future assembly. It is important they go back in their original locations to maintain proper alignment of traveling frame.

- e. Refer to **Figures 5-8** and **5-9**. Remove two set screws. Use a hammer and 1/4" wooden dowel rod to gently tap pivot pins out of carriage hinge.

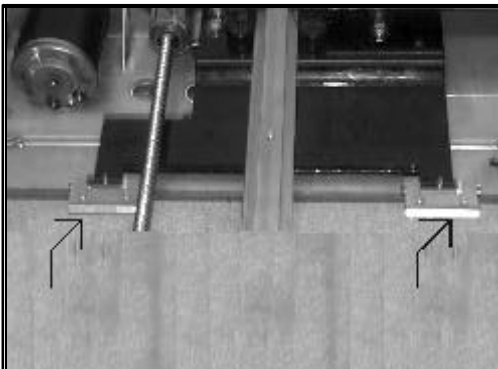


FIGURE 4-8: CARRIAGE HINGES

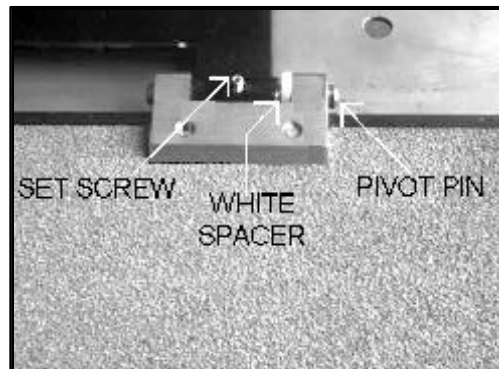


FIGURE 4-9: HINGE DETAILS

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

- f. Provide support to each side of traveling frame and carefully pull carriage and ramp assembly out.

2. TRAVELING FRAME INSTALLATION

- a. Carefully position carriage and ramp assembly into enclosure. Verify center rail engages white glide block.
- b. Push carriage and ramp assembly in until carriage hinges and bushings of alignment plate are in-line.
- c. Use a rubber hammer to gently tap ramp pivot pins in place. Verify proper location of white spacers.
- d. Apply Loc-tite to two set screws and reinstall.

3. RAMP AND CARRIAGE DISASSEMBLY

- a. Refer to **Figure 4-10**. Remove two cap plugs in front outboard corners of ramp.
- b. Refer to **Figure 4-11**. Loosen two bolts inside ramp spring covers, (only right side shown), to relieve spring tension.

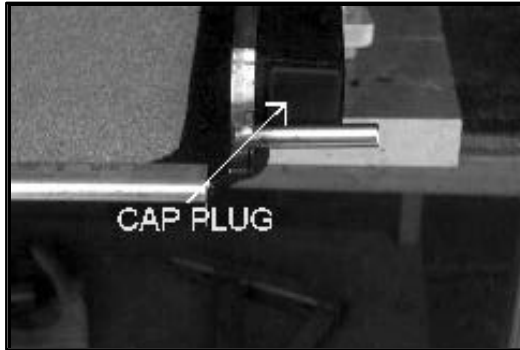


FIGURE 4-10: CAP PLUG LOCATION

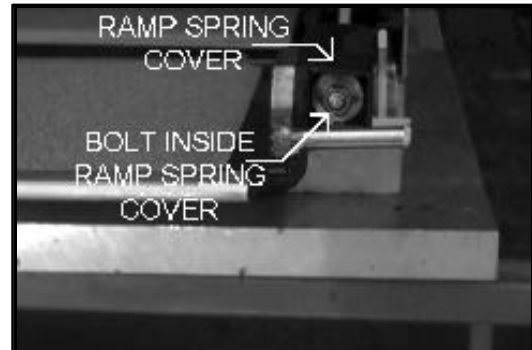


FIGURE 4-11: RAMP SPRING BOLT

- c. Refer to Figure 4-12. Remove two shoulder bolts from strap located on each side of ramp.

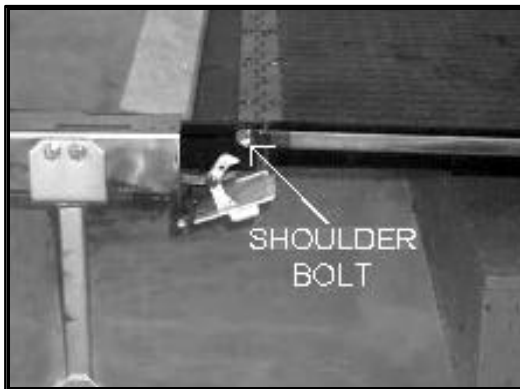


FIGURE 4-12: SHOULDER BOLT LOCATION

- d. Remove six bolts from carriage side of floor hinge.
- e. Separate carriage and ramp.

4. RAMP AND CARRIAGE ASSEMBLY

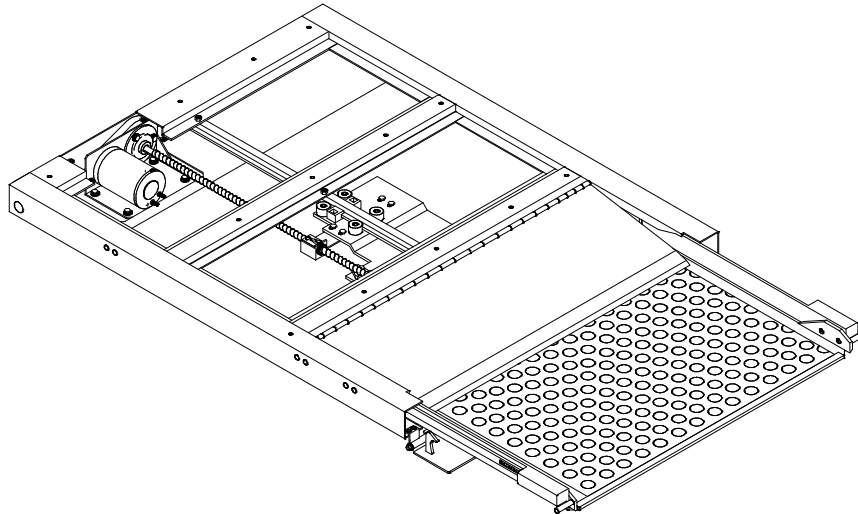
NOTE: All removed bolts should have Loc-tite applied before installation.

- a. Align holes in carriage with holes in hinge and install six bolts.
- b. Align strap bolt hole with hole on side of carriage and install shoulder bolt. Repeat this step for other side.
- c. Tighten two bolts inside ramp spring covers (one on each side of ramp) to apply enough spring tension to align ramp with carriage.
- d. Install two cap plugs (one on each side of ramp) in front outboard corners of ramp.

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V. PF5000 SERIES SPARE PARTS

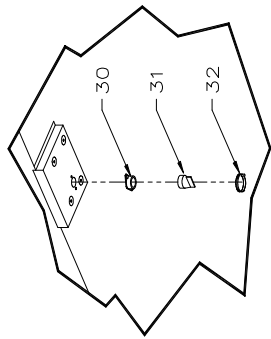
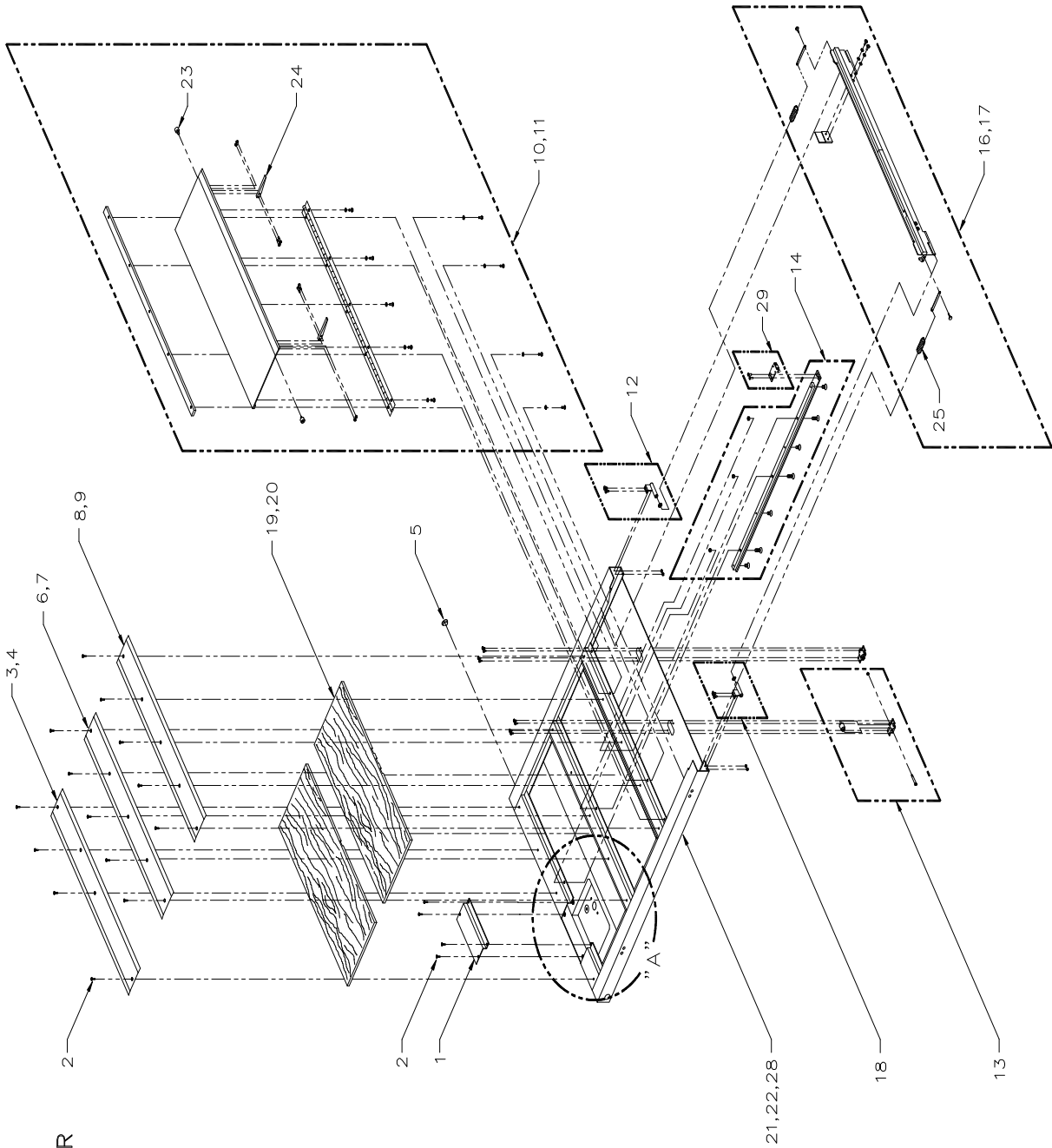
This chapter contains parts lists for major assemblies of the RICON PF5000 Series Low-Floor Vehicle Access Ramp. The part diagrams are exploded views of ramp assemblies, with individual parts and components referenced by numbers. Each accompanying parts list contains part reference numbers, part descriptions, quantities used, and the Ricon stock number. To order parts, locate part on an appropriate diagram and note the reference number. Find the reference number on the accompanying parts list and use the part number in the far right column. Refer to the DECAL LOCATIONS AND PART NUMBERS figure in **Chapter II** for decal part numbers.



LIFT MODEL AND KIT NUMBERS	
PRODUCT NUMBER	PF5-3245L and PF5-3245R, PF5-3645L and PF5-3645R, PF5-3640 and PF5-3641
DOCUMENTATION KIT NUMBER	01329
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: RAMP DRIVE SYSTEM ASSEMBLY	5-6
FIGURE 5-4: CONTROLLER INTERFACE HARNESSSES.....	5-8
APPENDIX 1: LIFT SPECIFICATIONS.....	5-10

RAMP ENCLOSURE ASSEMBLY
 PF5000 SERIES
 SERIAL NO's 006 AND HIGHER



DETAIL "A"
 VIEW FROM UNDERNEATH



FIGURE 5-1: PF5000 SERIES RAMP ENCLOSURE ASSEMBLY

**FIGURE 5-1: PF5000 SERIES RAMP ENCLOSURE ASSEMBLY
SERIAL NO's. 006 and HIGHER**

REF	DESCRIPTION	QTY	PART NO
1	DOOR, MOTOR ACCESS	1	PF50051
2	SCREW, FHP, 10-24 X .38, SST, BAG OF TEN	2	15982
3	COVER STRIP, REAR, 31.90 WIDE	1	PF50012
4	COVER STRIP, REAR, 35.90 WIDE	1	PF50015
5	HOLE PLUG, HEYCO	1	26285
6	COVER STRIP, MIDDLE, 31.90 WIDE	1	PF50018
7	COVER STRIP, MIDDLE, 35.90 WIDE	1	PF50023
8	COVER STRIP, FRONT, 31.90 WIDE	1	PF50026
9	COVER STRIP, FRONT, 35.90 WIDE	1	PF50029
10	HINGED FLOOR ASSY, 31.50 WIDE	1	PF50129
11	HINGED FLOOR ASSY, 35.50 WIDE	1	PF50130
12	ENCLOSURE HINGE ASSY, RIGHT SIDE	1	PF50139
13	ENCLOSURE ROLLER ASSY	2	PF50132
14	ALIGNMENT RAIL	1	PF50131
15	LEVER ASSY, MANUAL DEPLOY	1	PF4-0110
16	ENCLOSURE DOOR ASSY, 37.00 WIDE	1	PF50127
17	ENCLOSURE DOOR ASSY, 41.00 WIDE	1	PF50128
18	ENCLOSURE HINGE ASSY, LEFT SIDE	1	PF50140
19	PANEL, SUB FLOOR, 31.80 WIDE	1	PF50072
20	PANEL, SUB FLOOR, 35.80 WIDE	1	PF50076
21	ENCLOSURE ASSY, 37.00 WIDE	1	PF50091
22	ENCLOSURE ASSY, 41.00 WIDE	1	PF50092
23	CAM FOLLOWER, .625 ID SEALED	2	23985
24	BLOCK, GLIDE, HINGED FLOOR	2	PF50187
25	SPRING, EXTENSION	2	254531
27*	PANEL, SUB FLOOR, 35.80 WIDE	1	13758
28	ENCLOSURE-WASSY, 37.00 WIDE	1	13757
29	ROLLER BRACKET ASSY	1	19835
30	HOLDER ASSY, RUBBER VALVE	1	PF4-0197
31	VALVE, RUBBER	1	PF4-0196
32	CLAMP, HOSE	1	22-10-016

* Item not shown.

DATE	03/07/03
DWG.	PF5SPA3
REV.	F

RAMP TRAVELING FRAME ASSEMBLY
 PF5000 SERIES
 SERIAL NO's. 006 and HIGHER

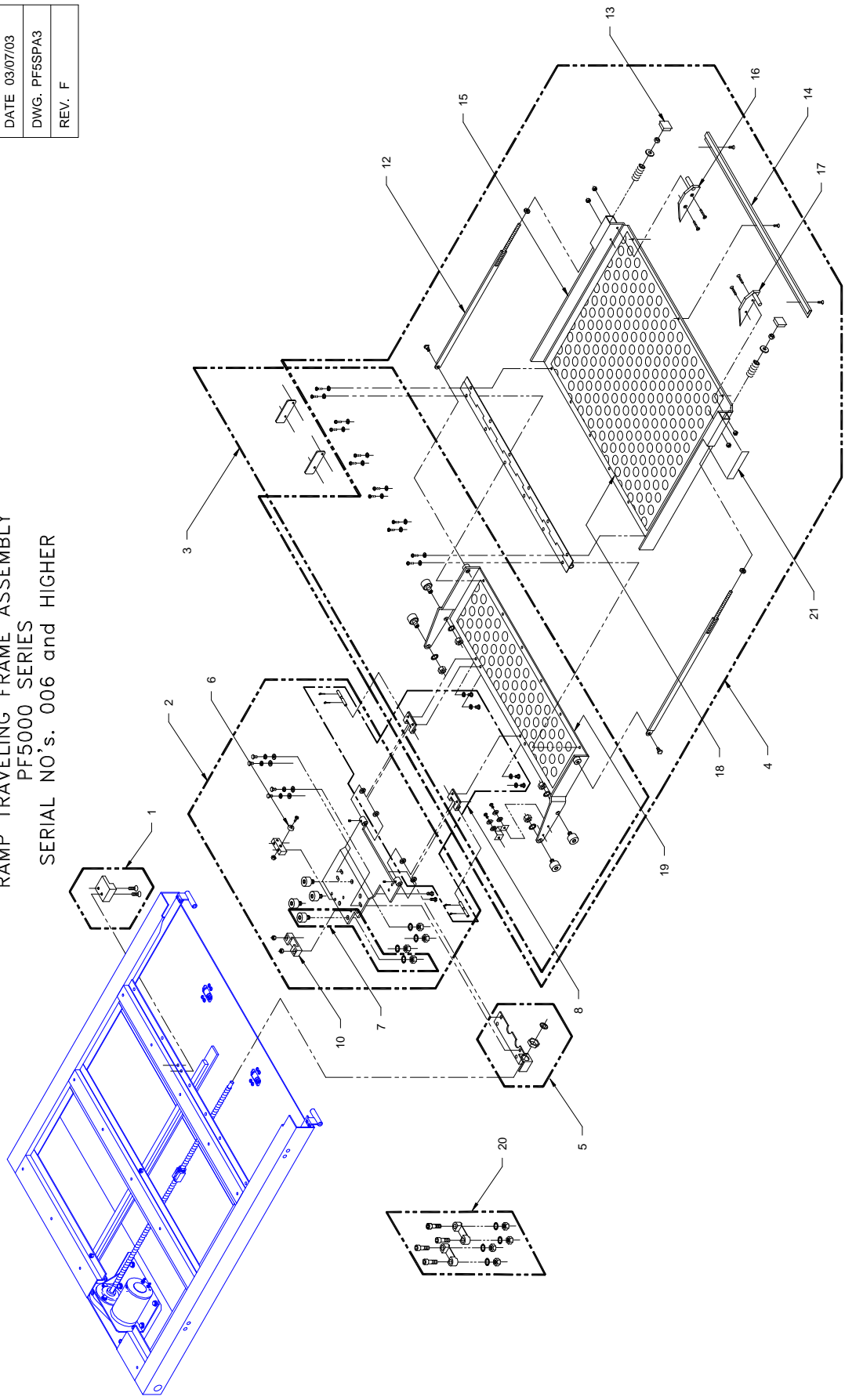


FIGURE 5-2: PF5000 SERIES RAMP TRAVELING FRAME ASSEMBLY
 32DPF502.C

**FIGURE 5-2: PF5000 SERIES RAMP TRAVELING FRAME ASSEMBLY
SERIAL NO's. 006 and HIGHER**

REF	DESCRIPTION	QTY	PART NO
1	BRACKET, ROLL LIMIT, W/HDWR	1	PF50147
2	ALIGNMENT PLATE ASSY	1	PF50124
3	RAMP ASSY, 33" WIDE	1	PF50122
4	RAMP ASSY, 37" WIDE	1	PF50123
5	KIT, BRACKET, BALL NUT, LOW-PROFILE, W/HDWR	1	PF50146
6	BUMPER, RUBBER (BAG OF 10)	2	19784
7	KIT, CAM FOLLOWER, W/HDWR	8	16090
8	KIT, HINGE, CARRIAGE, W/PINS & HDWR	1	28786
9	NUT, HEX, 7/16-20 SST	8	28928
10	BLOCK, GUIDE, RAIL	2	WS-0013
12	LINK, CARRIAGE TO RAMP	2	16912
13	PLUG, SQUARE, 1 1/8"	2	10258
14	PLATE, SKID, 31" WIDE	1	PF50074
	PLATE, SKID, 33" WIDE	1	PF50075
15	RAMP, 33" WIDE	1	PF50078
	RAMP, 37" WIDE	1	PF50079
16	CAM, RAMP, RH	1	10751
17	CAM, RAMP, LH	1	10750
18	FLOORING, RAMP	1	11787
19	FLOORING, CARRIAGE	1	11785
20	KIT, RAIL GUIDE BLOCK, W/HDWR	1	22517
21	TAPE, REFLECTIVE	1	10566

RAMP DRIVE SYSTEM ASSEMBLY
PF5000 SERIES
SERIAL NO's. 006 AND HIGHER
06-04-02

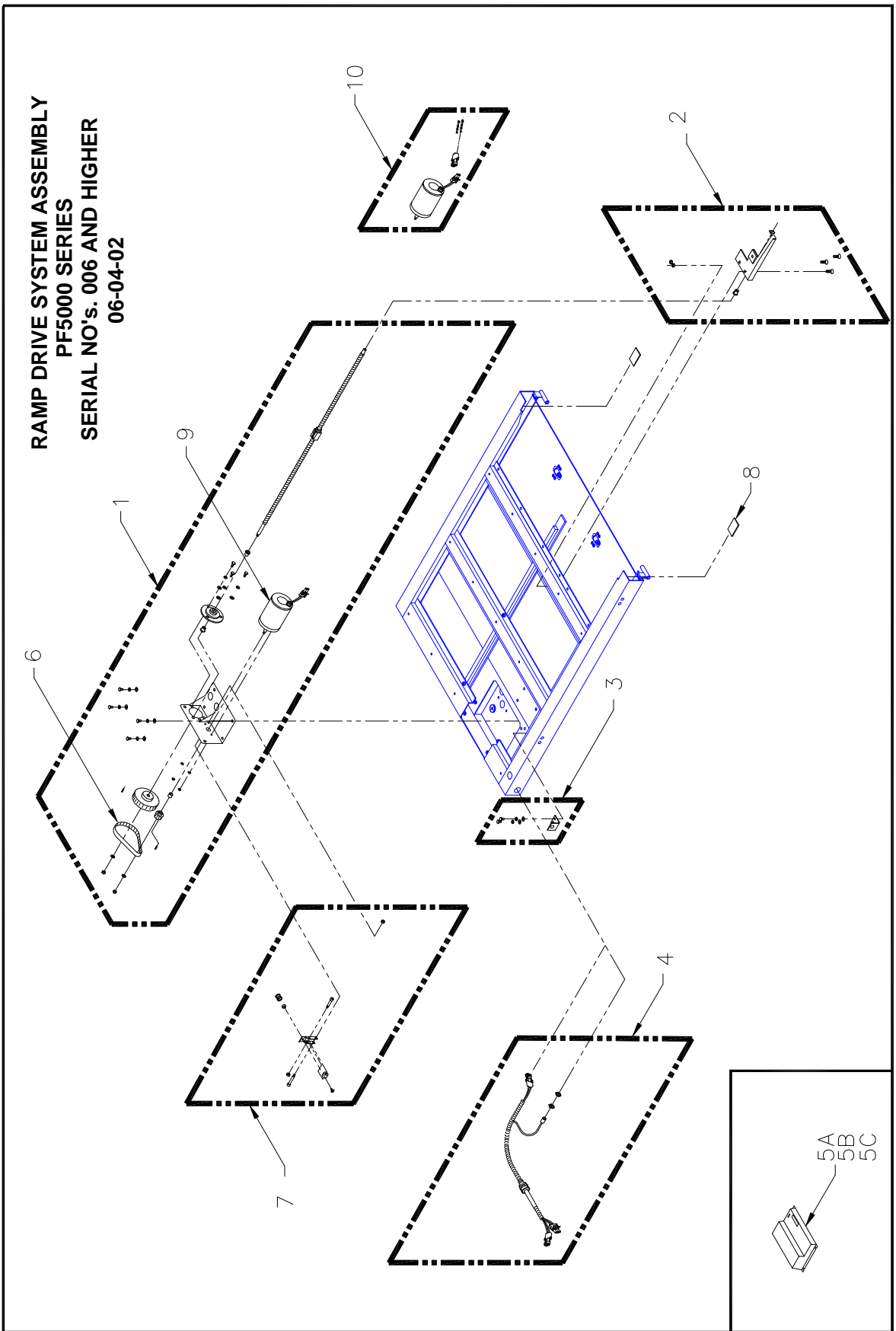


FIGURE 5-3: PF5000 SERIES RAMP DRIVE SYSTEM ASSEMBLY

**FIGURE 5-3: PF5000 SERIES RAMP DRIVE SYSTEM ASSEMBLY
SERIAL NO's. 006 and HIGHER**

REF	DESCRIPTION	QTY	PART NO
1	DRIVE SYSTEM ASSY, 24V	1	PF50135
2	BRACKET ASSY, BALL SCREW	1	PF50143
3	BRACKET ASSY, SENSOR	1	PF50144
4	HARNESS ASSY	1	19840
5A	CONTROLLER, MOTOR BRAKE	1	18334
5B	CONTROLLER, HI STOW LOGIC	1	18061
5-C	CONTROLLER, HI STOW LOGIC, NO SLEEP	1	27625
6	BELT, DRIVE, .59 WIDE	1	25128
7	RATCHET ASSY, BELT FAILURE	1	11270
8	GLIDE BLOCK ASSY, 2.00 x 2.50	2	12095
9	MOTOR ASSY, DRIVE	1	19841
10	KIT, RETROFIT, MOTOR ASSY	1	23369

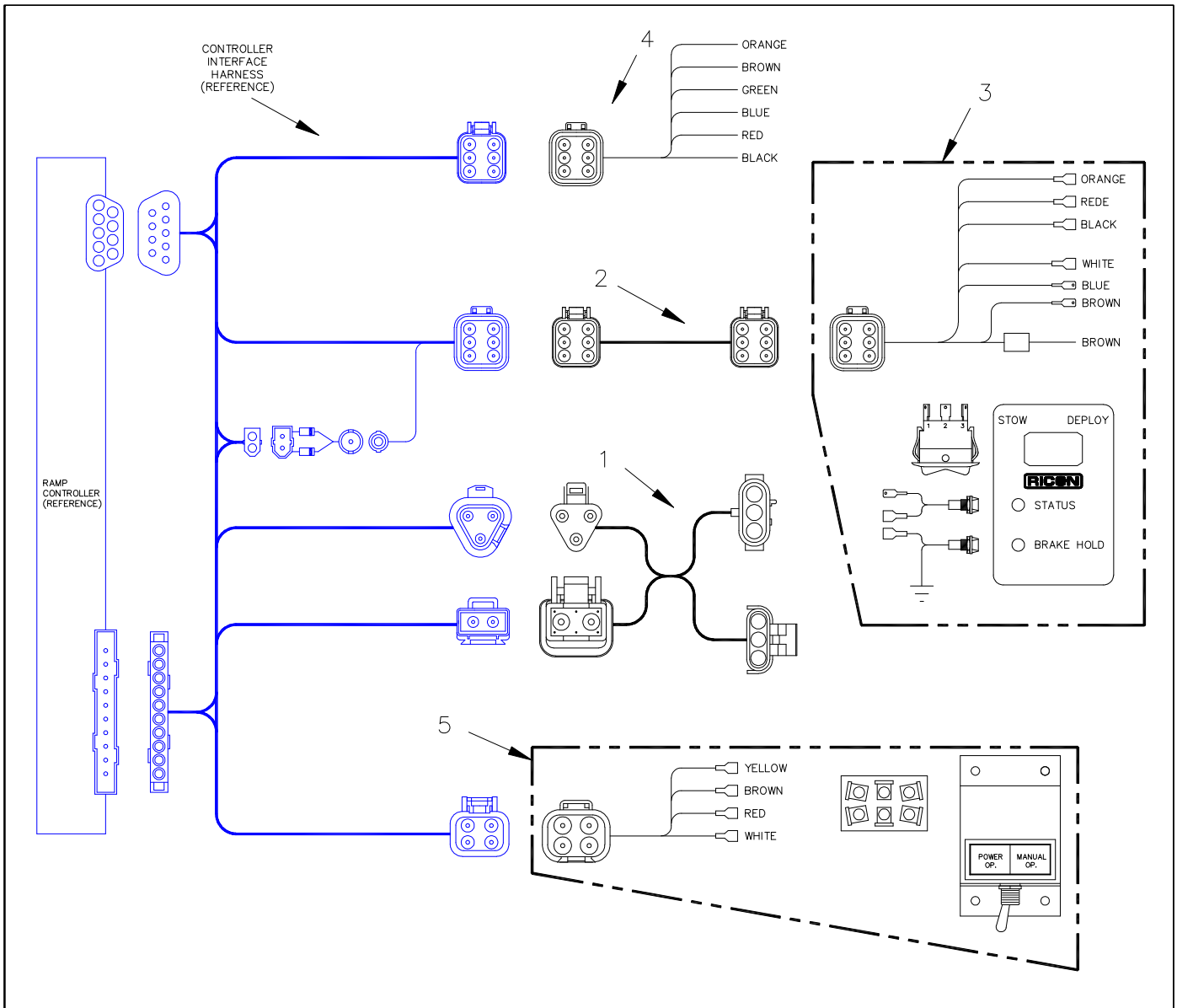


FIGURE 5-4: PF5000 SERIES CONTROLLER INTERFACE HARNESSES

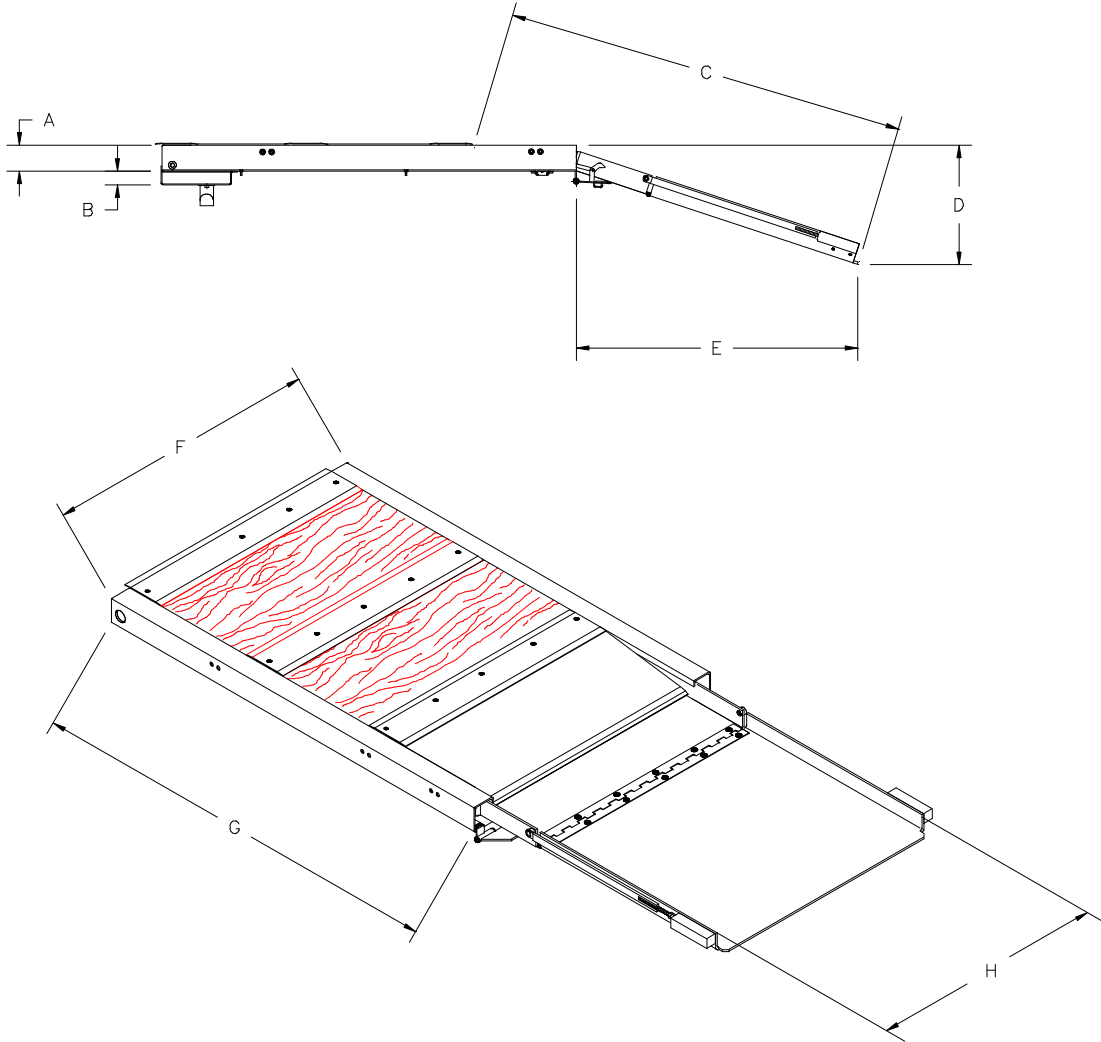
FIGURE 5-4: PF5000 SERIES CONTROLLER INTERFACE HARNESES

REF	DESCRIPTION	QTY	PART NO
1	HARNESS, MOTOR	1	10963
2	HARNESS, CONTROLS	1	10964
3	SWITCH PANEL ASSY	1	10965
4	HARNESS, BUS INTERFACE	1	10967
5	SWITCH ASSY, MANUAL	1	10968

APPENDIX 1 LIFT SPECIFICATIONS

PF5000 SERIES LOW-FLOOR VEHICLE ACCESS RAMP

Power electric-motor Power requirements23V to 30V; 24V nominal Average motor current Deploy: 5A/Stow: 7A	Rated load capacity750 lbs. Ramp weightapprox. 200 lbs. Peak motor current Deploy: 6.6A/Stow: 14A
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DIMENSIONS (inches)

	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
PF5-3245	2.90	1.55	45	11.50	32	36	46.35	32
PF5-3645	2.90	1.55	45	11.50	32	41	46.35	36
PF5-3640	2.90	1.55	38.34	11.50	25	41	39.37	36
PF5-3641	2.90	1.55	41	11.50	28	41	39.86	36

