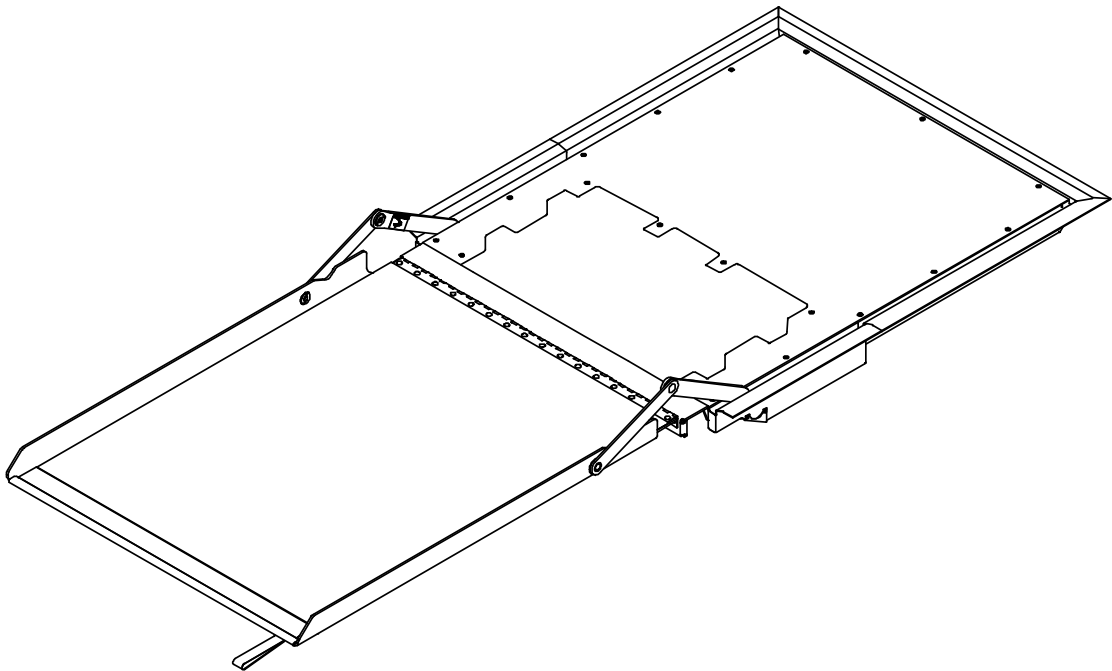




**Ricon**<sup>®</sup>

*A Wabtec subsidiary*

***FoldOver***<sup>®</sup>  
**FR2SS Series**  
**Low-Floor Vehicle Access Ramp**  
**for**  
**Transit Buses**



*PRINT*

**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 dealer or qualified service technician in your area, call Ricon Product Support at 1-800-322-2884 or visit our website at [www.riconcorp.com](http://www.riconcorp.com).

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

**REVISION RECORD**

REV	PAGES	DESCRIPTION OF CHANGE	ECO
<b>32DFR108. B.5</b>	Cvr	Update to company logo.	6663
	1-2	Update to company address.	
	1-3	Update to company logo.	
	5-10	Update to Figure 5-2.1.	

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## I. FOLDOVER RAMP INTRODUCTION

This manual applies to the Ricon FoldOver® Stainless Steel Low-Floor Vehicle Access Ramp when installed in transit vehicles. The chapters in this service manual contain a product description, maintenance instructions, and a spare parts list. The descriptions in this chapter apply to the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access Ramp when installed in transit vehicles. The FoldOver ramp is installed in transit vehicles to accommodate handicapped passengers who cannot easily climb steps or are using mobility-aid equipment. The hydraulically powered ramp folds into the vehicle vestibule flooring when not in use.

All FR2SS-series ramps have a 660-lb (300kg) load limit. Passengers must use the ramp one at a time; **do not overload ramp**. Be certain that passenger mobility-aid equipment fits between the left- and right-side ramp barriers without any interference before allowing use of ramp.

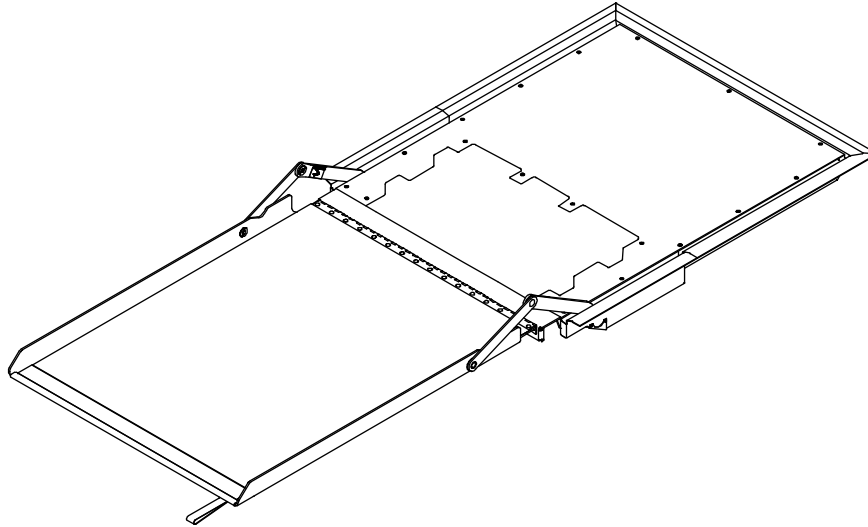


FIGURE 1-1: RICON FOLDOVER RAMP

### A. RAMP FEATURES

#### 1. INTERLOCK SUPPORT

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

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

#### 2. AUDIBLE ALERT

**NOTE:** This feature is optional and may not have been connected during ramp installation.

The ramp supports an audible alert device that sounds while the ramp is in motion.

#### 3. RAMP CONTROL PANEL

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

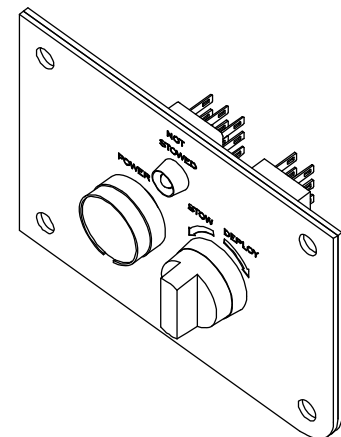


FIGURE 2-2: TYPICAL CONTROL PANEL

**B. RICON PRODUCT SUPPORT**

If you have questions about this manual, or you need additional copies, please contact Ricon Product Support at the locations listed. Also, refer to the Ricon website at: <http://ricondealer.wabtec.com>

**Ricon Corporation**

1135 Aviation Place

San Fernando, CA 91340 ..... (818) 267-3000

Outside (818) Area Code ..... (800) 322-2884

Website ..... <http://ricondealer.wabtec.com>

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**Vapor Ricon Europe Ltd.**

Meadow Lane

Loughborough, Leicestershire .....0044 (9) 1509 635 920

LE 1HS United Kingdom

Website ..... [www.wabtec.com](http://www.wabtec.com)

**C. RICON TWO-YEAR LIMITED WARRANTY**

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



## RICON FOLDOVER RAMP TWO-YEAR LIMITED WARRANTY

**Ricon Corporation (Ricon)** warrants to the original purchaser of this product that Ricon will repair or replace, at its option, any parts that fail because of defective material or workmanship as follows:

- Repair or replace parts for a period of two years starting from the date ramp is put into service. Obtain a complete list of parts covered by this warranty from Ricon Product Support.
- Labor costs for specified parts replaced under this warranty for a period of two years from the date put into service. A Ricon rate schedule determines parts covered and labor allowed.

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

- Malfunction or damage of product parts caused by accident, misuse, lack of proper maintenance, neglect, improper adjustment, modification, alteration, mechanical condition of vehicle, road hazards, overloading, failure to follow operating instructions, or acts of nature (i.e., weather, lightning, flood).

**NOTE:** Ricon recommends this product be inspected by a Ricon dealer or trained and qualified service technician at least once every six months, or sooner if necessary. Perform required maintenance at this time.

 **WARNING!**

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

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

- The product is not installed and maintained by a Ricon dealer or trained and qualified service technician.
- The product is modified, in any respect from its original design, without written authorization from Ricon.

Ricon disclaims liability for any personal injury or property damage that results from operation or use of a Ricon product that is modified from the original Ricon design. No person or company is authorized to change the design of this Ricon product without written authorization from Ricon.

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

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

*Important:* The warranty registration card must be completed and returned to Ricon within 20 days after product installation to validate this warranty. The warranty is not transferable.

The warranty gives specific legal rights. There may be other rights that vary in each state.



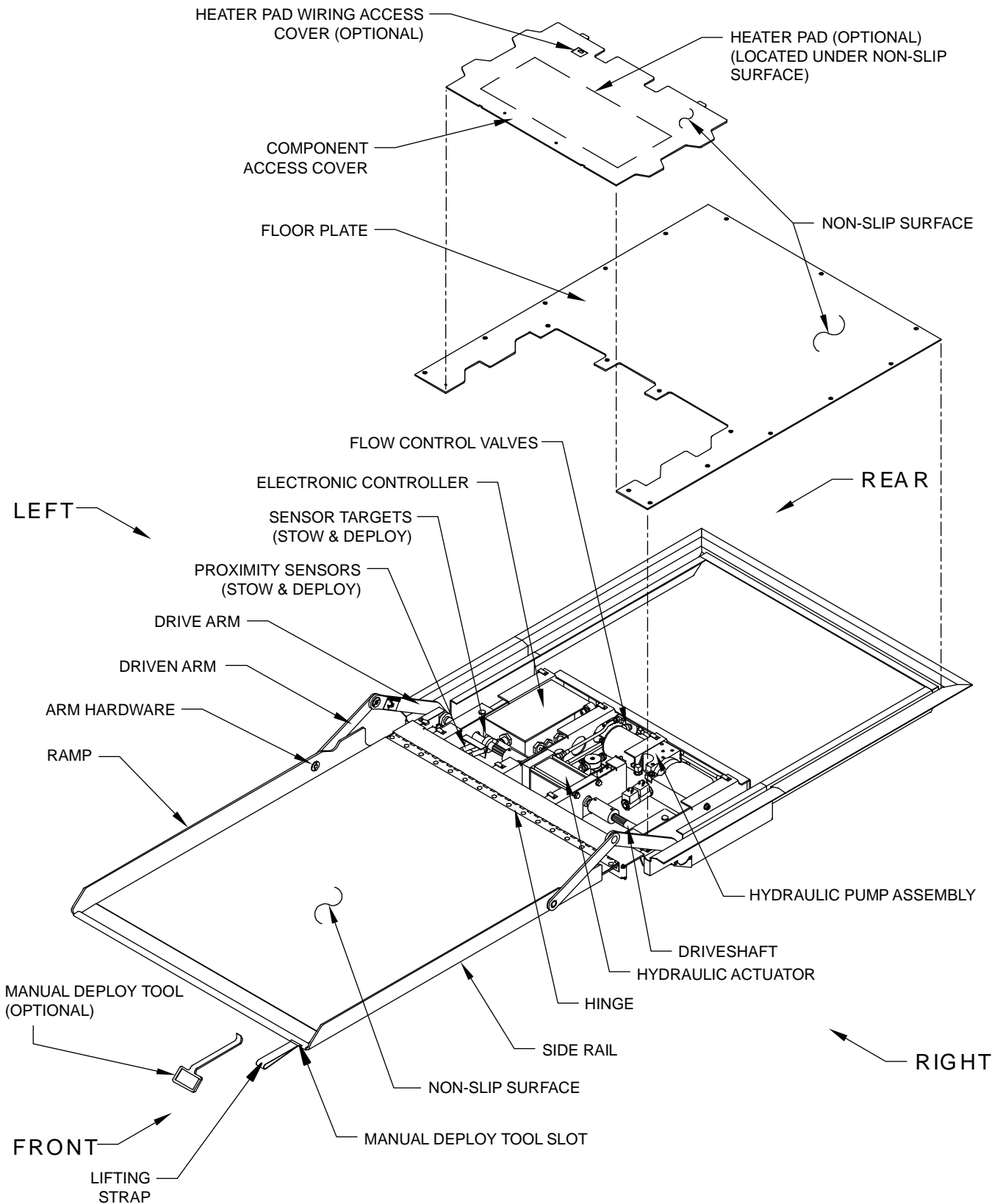
**D. SHIPPING INFORMATION**

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

**NOTE:** The Sales or Service personnel must review the Warranty and this Operator Manual with the user to be certain that they understand how to safely operate the product. Instruct the user to follow the operating instructions without exception.

E. CUSTOMER ORIENTATION

- 1. **Figure 2-3** shows major components of the foldover ramp. A description of each component is provided in **Table 2-3**. Refer to Chapter V "Parts Diagrams and Lists" for more details.



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FIGURE 2-3: FR2SS-SERIES MAJOR RAMP COMPONENTS

**TABLE 2-3: MAJOR FR2SS FOLDOVER RAMP COMPONENTS**

<b>NAME</b>	<b>DESCRIPTION</b>
Component access cover	Provides access to ramp hydraulic and electrical components.
Electronic controller	Translates electrical commands from bus control panel into signals that control ramp hydraulic components. Monitors ramp position and drives counter.
Driveshafts (left & right)	Transmits actuator torque to drive arms.
Drive arms (left & right)	Ramp linkage arms attach to outboard end of driveshafts.
Driven arms (left & right)	Ramp linkage arms attach to ramp.
Flow control valves	Manually adjusted valves control rate of ramp motion.
Arm hardware (screws, bushings, thrust washers)	Pivoting, load-bearing parts at both ends of driven arms. Bushings and washers are oilite material.
Heater mat (optional)	Helps keep ramp floor clear of ice and snow.
Heater mat wiring access cover (optional)	Provides access to wiring for optional heater mat.
Hinge	Pivoting connection between ramp and ramp frame.
Hydraulic actuator	Hydraulic powered component provides torque used to deploy and stow ramp.
Hydraulic pump assembly	Provides hydraulic pressure for use by ramp hydraulic components. The hydraulic pump contains a motor, directional valve, pump assembly, and reservoir.
Lifting strap	Use to manually deploy or stow ramp.
Non-slip surfaces	Bonded to ramp to reduce user slippage.
Pillow blocks (left & right)	Provide support for outer ends of driveshafts.
Proximity sensors	Located near left driveshaft. Detect position of ramp, either stowed or deployed.
Ramp	Unfolds (deploys) to provide access for handicapped passenger use. Folds into vestibule floor (stows) when not used.
Side rails (left & right)	Vertical curbs help restrict passenger to ramp area.
<b>END OF TABLE</b>	

**F. RAMP PART NUMBERS**

Refer to **Table 2-1** for an explanation of FR2SS series ramp part numbers.

TABLE 2-1: FR2SS-SERIES RAMP PART NUMBER EXPLANATION								
FR2SS	□	□	□	□	□	□	□	□
								Location of Electrical Connectors 0 – Rear 1 – Left
								Side Flooring Trim 0 – Welded 1 – Shipped loose
								Side barrier trim color 0 – Yellow 1 – None (1 1/2" flange) 2 – Black 3 – White
								Heater 0 – None 1 – Heater (24VDC only)
								Control Panel 0 – No control panel (internal counter) 1 – Dash panel (w/internal counter)
								Floor material 0 – Supplied by others 1 – RCA TR-852
								Manual Deployment Method 0 – Pull strap 1 – Hook 2 – 1/4-turn key 3 – Hatch handle
								Operating Voltage 0 – 12VDC 1 – 24VDC
								<u>Ramp Size, W x L</u> 00 – 30" x 48" 01 – 32" x 48" 02 – 32" x 44" 03 – 32" x 43" 04 – 32" x 41" 05 – 30" x 49" (discontinued) 06 – 32" x 50" 07 – 32" x 41" (w/notched rails) 08 – 32" x 32" 09 – 32" x 39" 11 – 32" x 44" 12 – 30" x 44" 13 – 32" x 41" 14 – 32" x 50" 15 – 30" x 45" 16 – 32" x 52" 17 – 30" x 48" 18 – 32" x 48"

Refer to **Table 2-2** for an explanation of FR2G series ramp part numbers.

TABLE 2-2: FR2G -SERIES RAMP PART NUMBER EXPLANATION								
FR2G	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<u>Location of Electrical Connectors</u> 0 – Rear 1 – Left
								<u>Side Flooring Trim</u> 0 – Welded 1 – Shipped loose
								<u>Side barrier trim color</u> 0 – Yellow 1 – None (1 ½" flange) 2 – Black 3 – White
								<u>Heater</u> 0 – None 1 – Heater (24VDC only)
								Control Panel 0 – No control panel (internal counter) 1 – Dash panel (w/internal counter)
								Floor material 0 – Supplied by others 1 – RCA TR-852
								Manual Deployment Method 0 – Pull strap 1 – Hook 2 – ¼-turn key 3 – Hatch handle
								Operating Voltage 0 – 12VDC 1 – 24VDC
								<u>Ramp Size, W x L</u> 00 – 30" X 48" 01 – 32" x 48" 02 – 32" x 44" 03 – 32" x 43" 04 – 32" x 41" 05 – 30" x 48" (GILLIG) 06 – 32" x 50" 07 – 32" x 41" (w/notched rails)

Refer to **Table 2-3** for an explanation of FR2N series ramp part numbers.

TABLE 2-2: FR2N -SERIES RAMP PART NUMBER EXPLANATION								
FR2N	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								Location of Electrical Connectors 0 – Open
								Fluid Level Sensor 0 – No 1 – Yes
								Side barrier trim color 0 – Black 1 – Yellow
								Heater 0 – None 1 – Heater (24VDC only)
								Control Panel 0 – No control panel 1 – Dash panel
								Floor material 0 – Supplied by others 1 – RCA, Ribbed, TR-452 2 – Altro Chroma 2731/SCR Yel Nose 3 – Altro Chroma CE27MTS/SCR Yel Nose 4 – Tarabus, w/Welcome Logo 5 – Altro, TFCR 2761/SCR Yel Nose 6 – Altro, TFCR 2772/SCR Yel Nose 7 – Tarabus, NT Helios 8805 8 – Altro, Meta, Midnite Yel Nose 9 – Altro Chroma 2702/SCR Yel Nose
								Manual Deployment Method 0 – Pull strap 1 – Hook 2 – Hatch handle
								Operating Voltage 0 – 12VDC 1 – 24VDC
								Ramp Size, W x L 01 – 30" X 48"

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## II. FOLDOVER RAMP INSTALLATION

### A. INSTALLATION GUIDELINES

Careful installation of the Ricon FoldOver ramp contributes to proper and safe operation. Use the electrical wiring diagrams in Figures 3-12, 3-13, 3-15 and the hydraulic diagrams in Figures 3-10 and 3-11 of Chapter III to supplement this section.

#### 1. LOCATING MOUNTING BRACKETS ON BUS FRAME

Use a rigid fixture that substitutes for the ramp assembly when positioning ramp mounting brackets on bus frame. If the ramp assembly is used to position mounting brackets, verify that it is correctly located relative to the vehicle floor, etc. Accurate positioning of brackets prevents twisting or warping of ramp frame when installing and tightening mounting hardware. A warped frame may cause the ramp motion to be erratic. Set height of ramp flooring surface flush to surrounding floor structure to prevent a tripping hazard.

#### 2. INSTALLING RAMP IN FLOOR

Trim away floor material to allow ramp assembly to drop into floor opening. The ramp perimeter trim overlaps the floor surface, and is sealed to it with a bead of sealer or a gasket. The typical gap between the side mounting faces and the bus structure is 1/8 inch; use shims to fill gap. Mount ramp with six grade-5 screws (included in supplied hardware installation kit). Use flat washers and locking-type nuts.

#### 3. INSTALLING VEHICLE WIRING HARNESS

Route wiring harness from vehicle ramp controls to rear of ramp. Use the supplied electrical installation kit (Ricon p/n 22985) to connect vehicle control wiring to the ramp interface connector. See **Table 2-1** for pin layout and signal descriptions.

Table 2-1: J6 PIN LAYOUT AND DESCRIPTION			
Pin	Wire color	Description	Volts/amps
A	White	Interlock common	Ground for interlock circuits
B	Red	STOW request from ramp control switch	12/24 volts, 5mA max draw
C	Orange	Output signal to interlock, ramp not stowed	12/24 volts, 5A max
D	Black	DEPLOY request from ramp control switch	12/24 volts, 5mA max draw
E	Brown	Power for optional heater mat	24 volts, 9A max draw

#### 4. FLUID LEVEL SENSOR INSTALLATION

Follow this procedure when installing only a level sensor (Ricon P/N 35039) on hydraulic fluid reservoir or when the present sensor needs replacement. See Fluid Level Sensor with Harness (Ricon P/N 35049).

- a. Refer to **Figure 2-1**. Hold sensor in place on bottom of tank (where shown) and mark perimeter. Remove sensor and mark another box .20" inside of perimeter line.

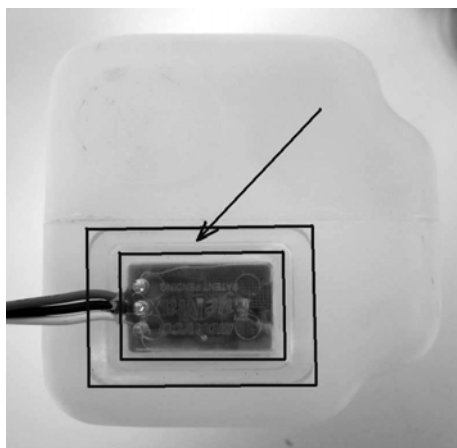

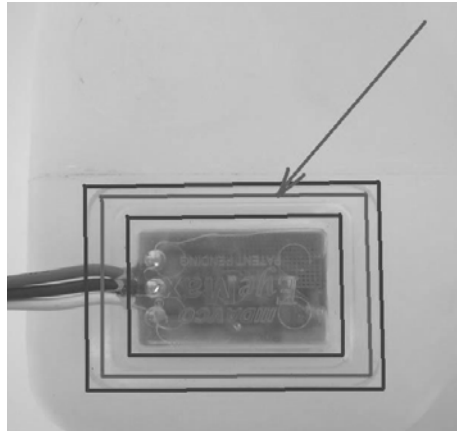


FIGURE 2-1: MARK RESERVOIR



- b. Use 100 grit sandpaper to scuff area between two boxes as shown by arrow in figure. Clean scuffed area with alcohol.
- c. Refer to **Figure 2-2**. Apply a bead of epoxy (Ricon p/n 35046) where shown by arrow in figure.

 <b>CAUTION</b>
Do not allow epoxy to contact PCB (area inside inner box) because it might affect sensor function.



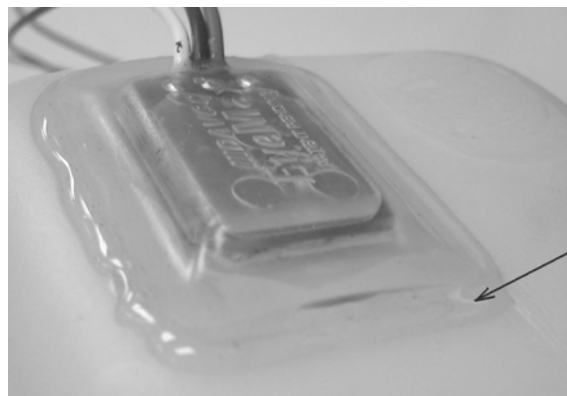
**FIGURE 2-2: APPLY EPOXY**

- d. Refer to **Figure 2-3**. Hold sensor in place for 20 minutes with tape (arrow).



**FIGURE 2-3: SECURE SENSOR WITH TAPE WHILE CURING**

- e. Refer to **Figure 2-4**. Apply additional epoxy around perimeter of sensor (arrow) to seal it to reservoir. Let epoxy cure for 20 minutes.



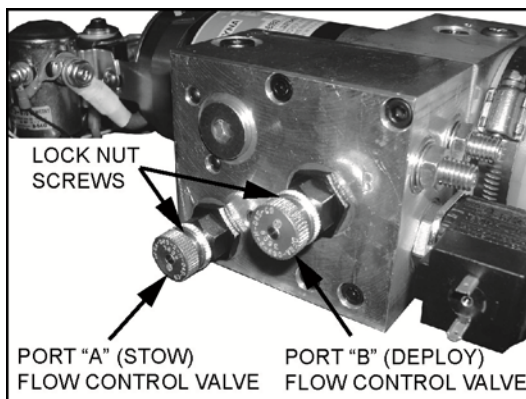
**FIGURE 2-4: APPLY EPOXY AROUND PERIMETER OF SENSOR**

## B. FOLDOVER RAMP ADJUSTMENTS

### 1. FLOW CONTROL VALVE PRESSURE SETTING ADJUSTMENT

**NOTE:** It is important to adjust both flow control valves **identically** during this procedure.

- a. Refer to **Figure 2-5**. Loosen lock nut screws that secure the flow control valve knobs.



**FIGURE 2-5: FLOW CONTROL PRESSURE SETTING VALVES**

- b. Turn both valves fully **clockwise** (CW). This completely closes the valves, stopping ramp operation.
- c. Open both valves 1/2 turn **counterclockwise** (CCW) from fully closed. Verify that each valve is adjusted identically. Rotating valves **counterclockwise** (CCW) increases flow to the ramp actuator and increases speed/torque; rotating the valves **clockwise** (CW) decreases flow to the actuator and decreases speed/torque. The flow controls can be adjusted to meet customer speed requirements.

**NOTE:** The flow controls should not be adjusted so that proper operation is hampered.

- d. Tighten lock nut screws.

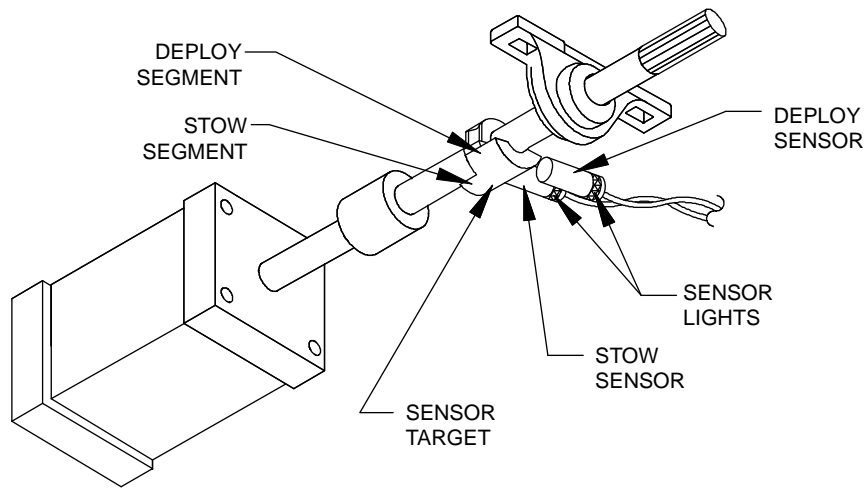
### 2. SENSOR TARGET ADJUSTMENT FOR POSITION AND GAP

- a. Refer to **Figure 2-6**. Verify that the ramp is completely stowed. This establishes a reference position for ramp during target adjustment.



**FIGURE 2-6: REFERENCE POSITION FOR RAMP**

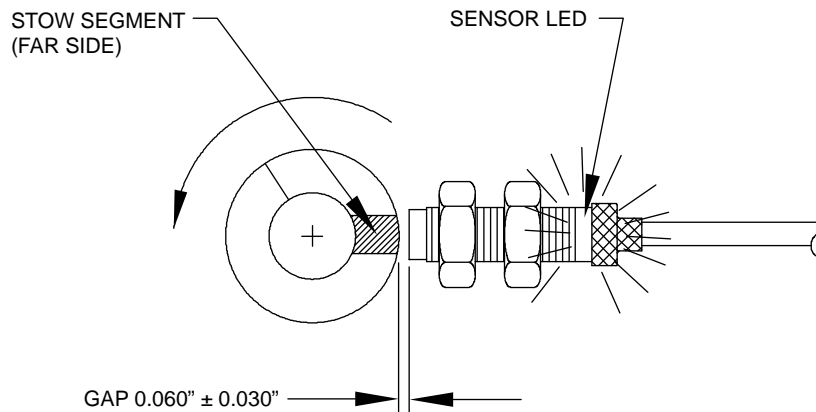
- b. Refer to **Figure 2-7** to verify that target is correctly installed on actuator driveshaft; the small stow segment points at the actuator and the larger deploy segment is adjacent to the pillow block. The target must be laterally positioned on driveshaft so that its STOW and DEPLOY segments are aligned with sensors; each target segment must be directly in front of a sensor. Adjust as necessary.



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**FIGURE 2-7: ORIENTATION OF SENSOR TARGET**

- c. Refer to **Figure 2-8**. Loosen jam nuts on sensor body. Adjust position of both nuts to achieve a gap between nose of sensor and outside diameter of target that is  $.060'' \pm .030''$  (gap can be set anywhere on outside diameter of target). Do not allow sensor to contact target. Tighten jam nuts and recheck gap. Repeat for other sensor.
- d. When front edge of ramp is approximately 3-6 inches above vehicle floor, the STOW sensor will be aligned with the stow segment on the target and the LED on the sensor body will illuminate. **Figure 2-8** shows the position of the STOW segment when the ramp has been fully stowed.



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**FIGURE 2-8: SENSOR GAP ADJUSTMENT  
(LEFT SIDE VIEW)**

**3. FINAL INSPECTION**

- a. Visually inspect ramp for loose or missing hardware and fittings, and confirm that pockets are free of debris.
- b. Verify that bottom cover is installed on ramp.
- c. Verify that non-skid flooring is clean, functional, and securely fastened.
- d. Verify that manual operation strap is undamaged.

### III. FOLDOVER RAMP MAINTENANCE

The maintenance information in this chapter applies to the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access ramp when installed in transit vehicles. The information consists of safety precautions, a maintenance schedule, component information, and diagrams for the hydraulic and electrical systems. This chapter is intended to supplement related sections of the vehicle manufacturer Owner and Service Manuals.

#### A. GENERAL SAFETY PRECAUTIONS



#### WARNING!

THIS RAMP IS DRIVEN WITH HYDRAULIC PRESSURE GENERATED BY A HYDRAULIC PUMP SYSTEM. THE FLUID IS HIGHLY PRESSURIZED AND POSSIBLY VERY HOT. USE EXTREME CAUTION WHEN DOING MAINTENANCE AND REPAIRS. DO NOT DISCONNECT HOSES OR FITTINGS WHEN RAMP IS IN MOTION.

Follow these safety precautions during service of the Ricon FoldOver ramp:

- Under no circumstances is maintenance, repair, or adjustment of the FoldOver ramp to be performed without the presence of an individual capable of giving aid.
- Give immediate attention to all injuries, and administer first-aid or seek medical attention as necessary.
- Protective eye shields and clothing should be worn during maintenance, repair, and adjustment of the FoldOver ramp.
- The user must be cautious when operating the ramp. Be certain that hands, feet, legs, and clothing are not in the path of ramp movement.
- Batteries contain acid that can burn. Wear protective clothing and eye protection at all times. If acid comes in contact with skin, immediately flush affected area with water and wash with soap. Do not place anything electrically conductive on top of battery. Do not smoke or use an open flame near battery.
- Work in a properly ventilated area.
- Read and understand all instructions before attempting to operate the FoldOver ramp.
- Inspect the ramp before use for unsafe conditions, unusual noises, or erratic movements. Do not use ramp if any of these are present, and arrange to have a Ricon dealer or trained and qualified service technician inspect ramp.
- Keep others clear of the ramp while it is operating.
- Ricon strongly recommends that the vehicle be parked on level ground when using ramp. Using the ramp when vehicle is sloped may result in a ramp angle that is too steep for safe use. In addition, the sloped vehicle may not allow the ramp to make complete contact with the ground.
- The FoldOver ramp and other system components require periodic maintenance. Ricon recommends a thorough vehicle inspection by a Ricon dealer or trained and qualified service technician at least once every six months. To maximize safety, the ramp and related components should be maintained at their highest level of performance.
- Read and comply with warning labels attached to ramp.

**B. DAILY INSPECTION**

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

TABLE 3-1: DAILY INSPECTION	
INSPECTION POINT	CHECK
Ramp controller	<ul style="list-style-type: none"> <li>• Power ON/OFF switch operates correctly.</li> <li>• Power On indicator illuminates when Power ON/OFF switch is ON.</li> <li>• DEPLOY and STOW switches operate correctly.</li> <li>• No unusual noises or erratic movements when ramp is deploying or stowing.</li> </ul>
Ramp and surrounding area	Vestibule area is free of loose objects, actuator drive arms and trim pockets are free of debris.
Ramp non-slip surfaces	<ul style="list-style-type: none"> <li>• Surface is clean and free of slippery or sticky substances that could compromise user safety.</li> <li>• Surface is intact and secure, and loose edges, if present, cannot create a stumbling hazard.</li> </ul>
<b>END OF TABLE</b>	

**C. MAINTENANCE SCHEDULE**

Regular maintenance and inspection of the Ricon FoldOver ramp provides optimum performance and reduces the need for repairs. Maintain the ramp as directed in **Table 3-2**. Perform ramp maintenance more frequently during heavy use (more than 20 cycles per day).

<b>⚠ CAUTION!</b>
~ This Ricon Product Is Complex ~
Required warranty period maintenance and repairs must be done at a Ricon dealer or trained and qualified service technician. Improper maintenance, use of non-Ricon replacement parts, or product modification will void warranty and can result in unsafe operating conditions. We recommend that a Ricon dealer or trained and qualified service technician continue maintenance inspections when warranty ends.

TABLE 3-2: MAINTENANCE SCHEDULE	
INSPECTION POINT	ACTION
<b>– 6,000 MILE INSPECTION –</b>	
Hydraulic fluid leaks	Check all hoses and fittings; check fluid level. Tighten, fill, or replace as necessary with Texaco 01554 Aircraft Hydraulic Oil or equivalent U.S. mil spec H5606G fluid.
Setscrews	Check for loose or missing setscrews at these locations: <ul style="list-style-type: none"> <li>• Driveshaft couplers (2 x 4 ea)</li> <li>• Sensor target (1 ea)</li> <li>• Pillow blocks (2 x 2 ea)</li> </ul> Tighten, or replace, as necessary.
Drive arm T-nuts	Check for looseness; tighten as necessary; apply thread locker (Loc-tite blue), as necessary. Refer to <b>Figure 3-4</b> for drive arm hardware configuration.
Ramp interior (for debris)	Check area below floor plate, and remove any accumulated dirt or debris.

**TABLE 3-2: MAINTENANCE SCHEDULE**

INSPECTION POINT	ACTION
Non-slip surface	Visually check for damage to surface, and for loose or missing non-slip material.
Decals	Visually check for illegibility or damage, replace as necessary.
<b>– 12,000 MILE INSPECTION –</b>	
Wiring harnesses	Check wiring insulation for heavy abrasions, and connectors for looseness. Replace as necessary.
Fasteners	Check all threaded fasteners for tightness and retighten as necessary.
Non-slip surfaces	Check non-slip surface for excessive wear or damage (rips, tears, peeling, etc.), and replace as necessary.
<b>– 24,000 MILE INSPECTION –</b>	
Pillow blocks	Lightly grease pillow blocks. Pillow blocks are sealed; lubricate through grease fitting.
Bushing & thrust washer	Refer to <b>Figure 3-4</b> . Check these hardware parts for excessive play, and replace if necessary.
<b>END OF TABLE</b>	

**D. RAMP COMPONENT INFORMATION**

The Ricon FoldOver Ramp uses electrical power from the host vehicle to deploy and stow the ramp. Vehicle electrical power is converted to hydraulic force, which is used to move the ramp. Electrical and hydraulic components are described below. Please refer to **Figures 3-7, 3-8, and 3-9** for hydraulic schematics and flow diagrams.

**1. HYDRAULIC PUMP**

The ramp employs an electro-hydraulic pump (contained within the ramp enclosure) to pressurize hydraulic fluid. Pressure is regulated in the pump body and is preset at Ricon.

The hydraulic pump provides pressure to the rotary hydraulic actuator when either the DEPLOY or STOW switch is activated. Ricon recommends operating the ramp while the vehicle engine is running in order to minimize current drain on the vehicle battery.

**2. FLOW CONTROL VALVES**

Two manually adjusted flow control valves (needle valves) control the volume of hydraulic fluid passing through the rotary actuator. Their adjustment determines the rate of ramp movement. There is one valve for ramp deployment and one for stowing. Turning the valves **counterclockwise** increases the rate of ramp movement, and **clockwise** decreases the rate of ramp movement. The typical adjustment range for each valve is between ½ to 1 turn open (CCW) from fully closed (fully CW).

Refer to Installation Notes in Chapter II for a flow control valve adjustment procedure.

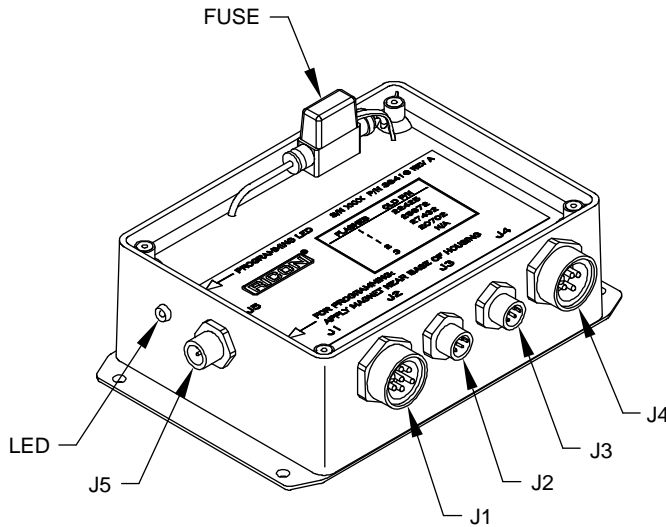
**3. ELECTRONIC CONTROLLER**

The electronic controller interprets DEPLOY and STOW requests and controls ramp functions. It contains a programmable integrated circuit (IC), relays, two fuses, and associated parts. The programmable IC cannot be accessed externally. The ramp harness, which is connected to controller connector J1, supplies system power in addition to STOW and DEPLOY requests. Connector J1 also provides positive and negative interlock signals. Connectors J2 and J3 receive signal inputs from the RAMP STOWED and RAMP DEPLOYED sensors, respectively. Connector J4 provides directional control signals to the hydraulic pump. Connector J5 provides a timing signal to the auxiliary counter.

Refer to **Figure 3-1** for locations of J1, J2, J3, J4, and J5 connectors. The controller cover is sealed with silicone rubber and is not easily removed. Note the four mounting holes at the corners of enclosure. Note fuse location at top, right corner. Refer to **Table 3-3** for functions and ratings of fuses located inside controller. Access to the controller is gained by removing bottom cover from ramp. Reseal the cover with silicone rubber before reinstalling.

Refer to **Figure 3-3** for connector pin numbering and wire colors. Refer to **Table 3-4** for a signal description of each connector pin.

Refer to **Section 4** for a description of sensor light activity during ramp movement.



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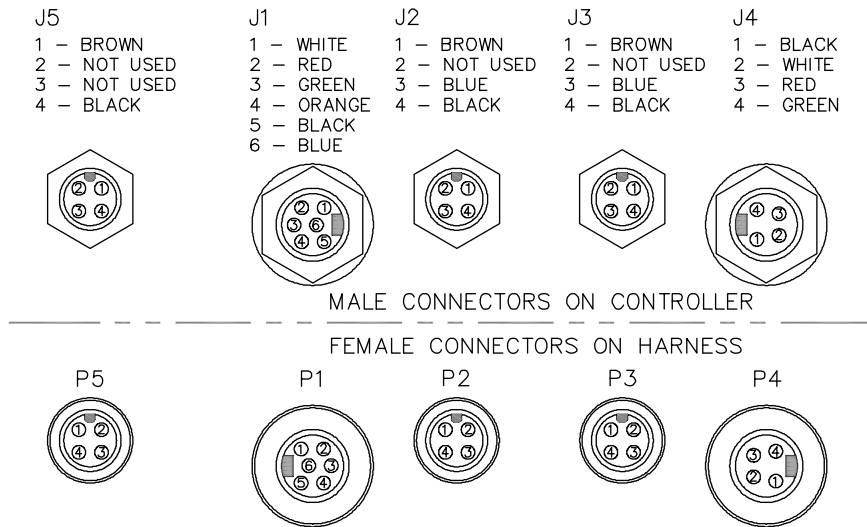
**FIGURE 3-1: CONTROLLER**

TABLE 3-3: CONTROLLER FUSES		
FUSE	RATING	CIRCUIT
F2	7.5 AMP	Main Power (Programmable Controller, Solenoid Valves, Sensors)
END OF TABLE		

**TABLE 3-4: CONNECTOR-PIN DESCRIPTIONS FOR CONTROLLER**

PIN	COLOR	FUNCTION	AT REST	IN ACTION	
<b>J1</b>	1	White	Output signal to vehicle interlock	Ground; stowed	No signal; ramp not stowed
	2	Red	STOW request from control switch	0 volts	24 volts; STOW switch activated
	3	Green	Ground	Ground	Ground
	4	Orange	Output signal to vehicle interlock	Off; stowed	24 volts; ramp not stowed (deployed)
	5	Black	DEPLOY request from control switch	0 volts	24 volts; DEPLOY switch activated
	6	Blue	24 volts to controller (constant)	24 volts	24 volts
<b>J2</b>	1	Brown	Power to stowed sensor	24 volts	24 volts
	2	Not used			
	3	Blue	Ground	Ground	Ground
	4	Black	Stowed sensor controller input	0 volts; sensor off	24 volts when sensor is activated
<b>J3</b>	1	Brown	Power to deploy sensor	24 volts	24 volts
	2	Not used			
	3	Blue	Ground	Ground	Ground
	4	Black	Deployed sensor controller input	0 volts	24 volts when sensor is activated
<b>J4</b>	1	Black	DEPLOY output to hydraulic pump	0 volts	24 volts; DEPLOY function engaged
	2	White	STOW output to hydraulic pump	0 volts	24 volts; STOW function engaged
	3	Red	Ground	Ground	Ground
	4	Green	Output to hydraulic pump relay	0 volts	24 volts; STOW/DEPLOY function engaged
<b>J5</b>	1	Brown	Output signal to auxiliary counter	Off	24V pulse each stow cycle
	2	Not used			
	3	Not used			
	4	Black	Ground for auxiliary counter	Ground	Ground
<b>END OF TABLE</b>					





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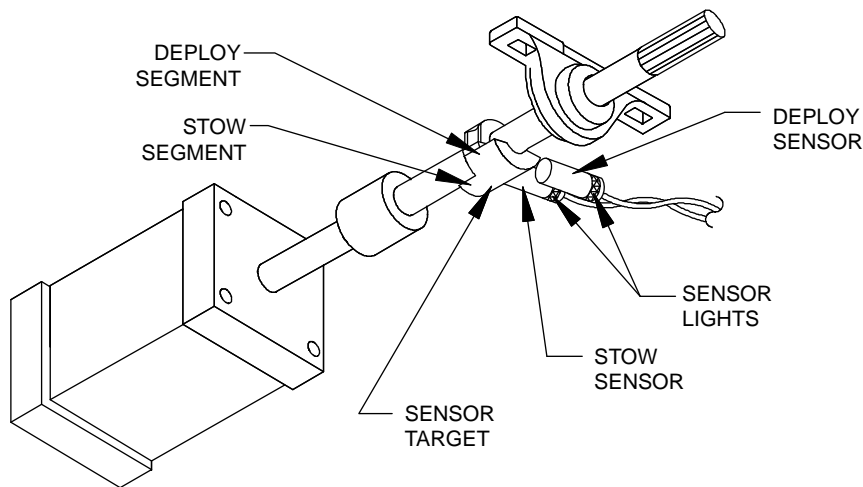
**FIGURE 3-3: CONTROLLER CONNECTOR-PIN NUMBERING**

**NOTE:** Some applications require 12 VDC system power. Voltage levels are 12 volts in these applications.

**4. SENSOR LIGHT ACTIVITY DURING RAMP MOVEMENT**

The latest FoldOver ramps have a third ramp position that is monitored by the controller. This position is very near the to the fully stowed position. The ramp must be within this area before the electrical interlock output signal will turn on (12VDC). This is done to reduce the possibility of a passenger tripping on the front edge of the ramp when it is not stowed completely. Failure to stow completely could be caused by accumulated debris beneath the ramp (within the frame). The following information will provide an aide to troubleshoot ramp problems using the indicator lights on each sensor.

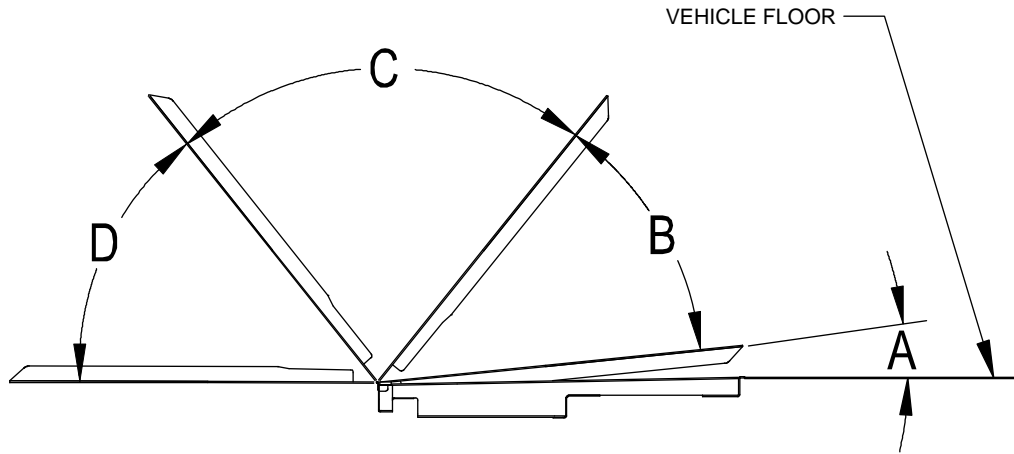
Refer to **Figure 3-4**. This illustration shows the location of the target (installed on a driveshaft), the stow and deploy sensors, and the sensor lights.



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**FIGURE 3-4: TARGET AND SENSOR LOCATIONS**

Refer to **Figure 3-5**. This illustration shows the four ramp positions detected by the controller. The controller determines the ramp angles shown by using the signals from the two sensors. The "A" ramp angle shown in the figure is greater than actual for clarity; the actual height of the front edge of the ramp above the floor is about one inch. This angle can be adjusted by turning the sensor target very slightly.



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FIGURE 3-5: RAMP POSITIONS

Refer to **Table 3-5**. The status of the sensor lights (on or off) and the interlock output (0VDC or 12VDC) occur over the entire range of each angle shown. Note that the interlock output has both a normal and an inverted output. This table applies to the normal output.

TABLE 3-5: SENSOR LIGHT AND INTERLOCK OUTPUT STATUS			
ANGLE	DEPLOY LIGHT	STOW LIGHT	INTERLOCK OUTPUT
A	OFF	OFF	24VDC
B	ON	OFF	0VDC
C	ON	ON	0VDC
D	OFF	ON	0VDC
End of Table			

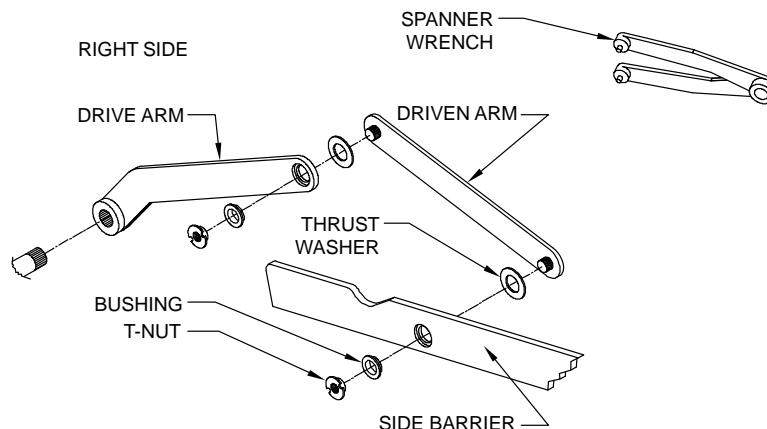
**5. CIRCUIT BREAKERS AND FUSES**

The bus builder installs a 50-amp circuit breaker for 24V applications or a 90-amp circuit breaker for 12V applications to protect ramp control circuits.

Two fuses protect the controller, and are located inside its sealed enclosure. Please refer to **Figure 3-2** for their locations. The fuses must be replaced by a Ricon dealer or trained and qualified service technician. The hydraulic pump assembly contains an 8-amp circuit breaker to protect components within the hydraulic pump assembly.

**6. RAMP ARM ASSEMBLY**

Please refer to **Figure 3-6** for the correct configuration of the arms and their hardware. Use a spanner wrench (Ricon p/n 36250) to tighten the T-nuts that bolt the ramp arms and hardware together. Apply a small amount of threadlocker (Loctite blue) to T-nuts before assembling hardware.



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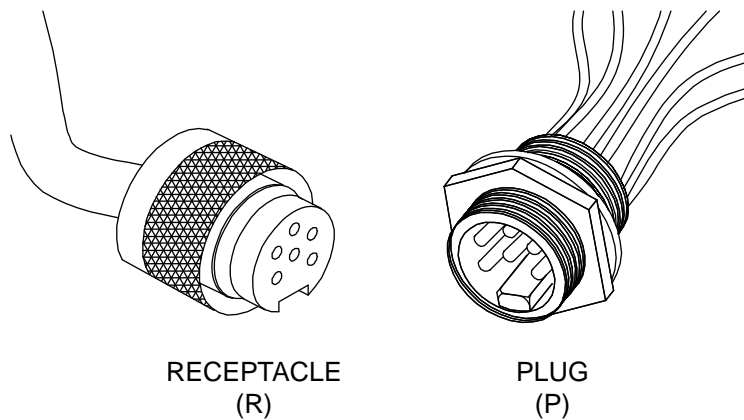
FIGURE 3-6: HARDWARE CONFIGURATION FOR RIGHT SIDE RAMP ARM

### E. ELECTRICAL AND HYDRAULIC DIAGRAMS

Refer to **Table 3-6** for wire color codes used on schematic. Refer to **Figure 3-7** for a description of plug and receptacle designations used on schematic. Refer to **Figure 3-8** for a list of symbols used on schematic. Refer to **Table 3-7** for an explanation of labels used on schematic. Refer to **Figures 3-9, 3-10, and 3-11** for diagrams of the ramp hydraulic system in its inactive, deploy, and stow modes. The diagrams show the direction and path of fluid flow, and valve positions. The diagrams are located on the following pages.

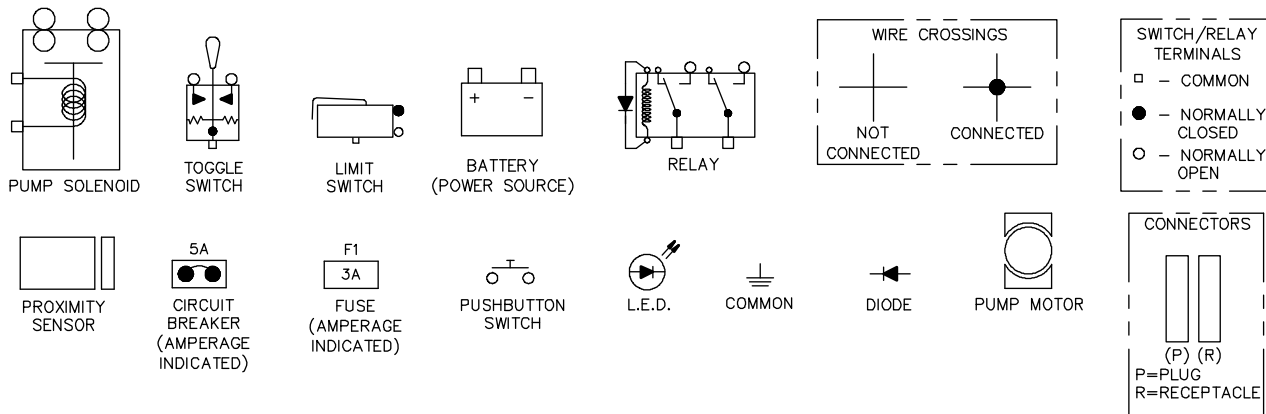
Refer to **Figure 3-12** for an overall electrical schematic of the ramp system, including that portion supplied by the bus builder. The electrical schematic is located at the end of this chapter.

TABLE 3-6: WIRE COLOR CODES			
CODE	COLOR	CODE	COLOR
BLK	BLACK	RED	RED
BLU	BLUE	TAN	TAN
BRN	BROWN	VIO	VIOLET
GRN	GREEN	WHT	WHITE
GRY	GRAY	YEL	YELLOW
ORG	ORANGE		
END OF TABLE			



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FIGURE 3-7: CONNECTOR CONFIGURATION



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FIGURE 3-8: SCHEMATIC SYMBOLS

**TABLE 3-7: WIRING DIAGRAM LABELS**

LABEL	DESCRIPTION
+24 VDC	System power for interlocks, hydraulic valves, controller, and sensors. <b>NOTE:</b> Some applications require +12 VDC system power.
COUNTER	Signal; pulse to auxiliary counter; generated by STOW function.
DEPLOY	Signal; to controller to request DEPLOY function.
DEPLOY VALVE INPUT	Signal; opens deploy valve.
COM, COMMON	System electrical common.
HEATER MAT	Power to ramp heater mat. <b>NOTE:</b> This feature is optional and may not be connected.
INTERLOCK	Signal; to vehicle interlock circuit when ramp is fully stowed; 24V when ramp is stowed; signal is generated by the electronic controller.
INTERLOCK NEG	Electrical ground (common) for vehicle interlock systems when ramp stowed; open when ramp is deployed.
PUMP SOLENOID INPUT	Signal; actuates pump solenoid.
SENSOR GROUND	Constant ground from controller.
STOW	Signal; to controller to request STOW function.
SENSOR OUTPUT	Signal; generated when either the STOWED or DEPLOYED sensor is triggered.
STOW VALVE INPUT	Signal; opens stow valve.
VEHICLE AUDIO ALERT	Signal to audible alarm. <b>NOTE:</b> This feature is optional and may not be connected.
<b>END OF TABLE</b>	

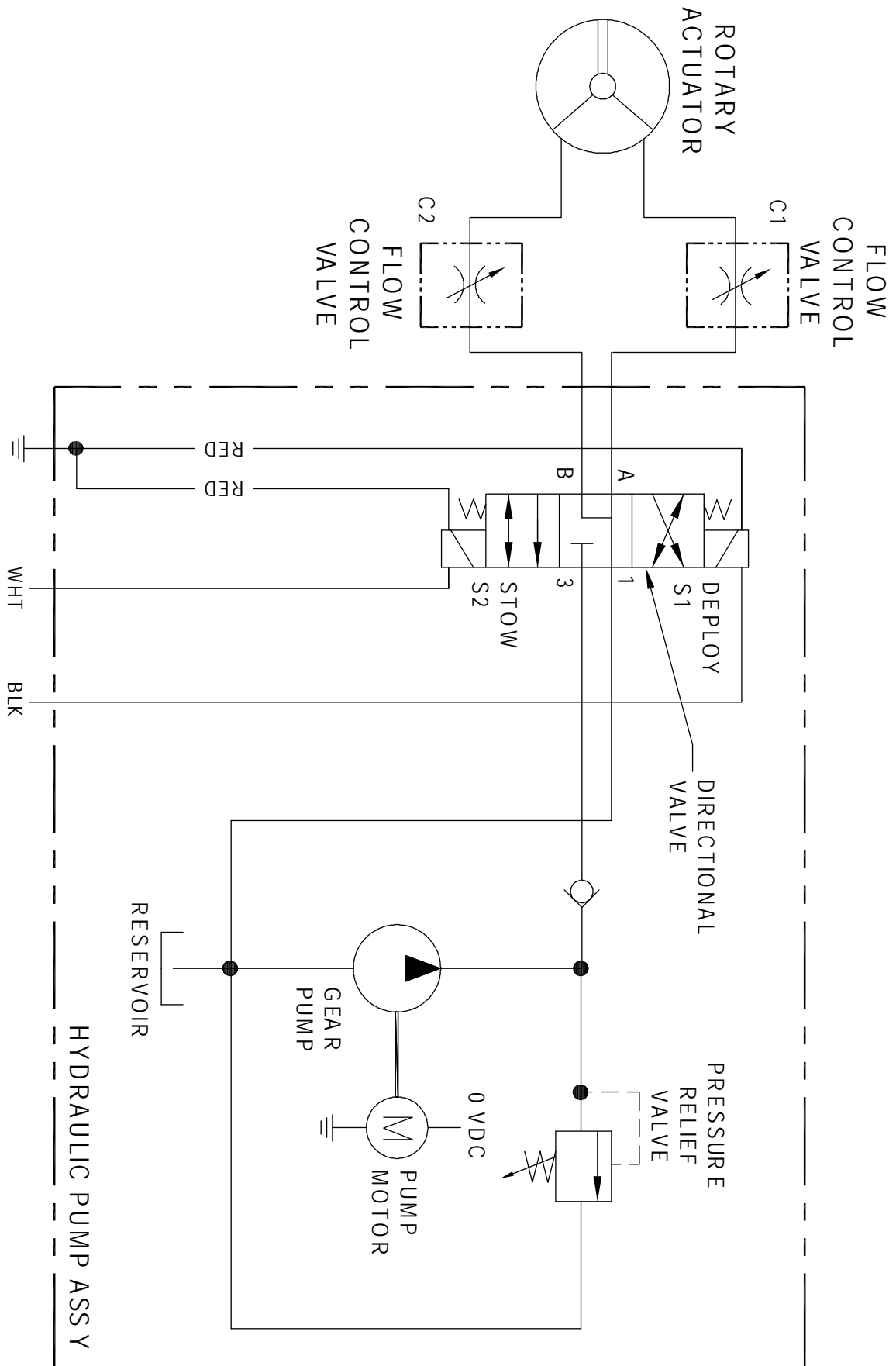


FIGURE 3-9: NO HYDRAULIC FLOW AT REST

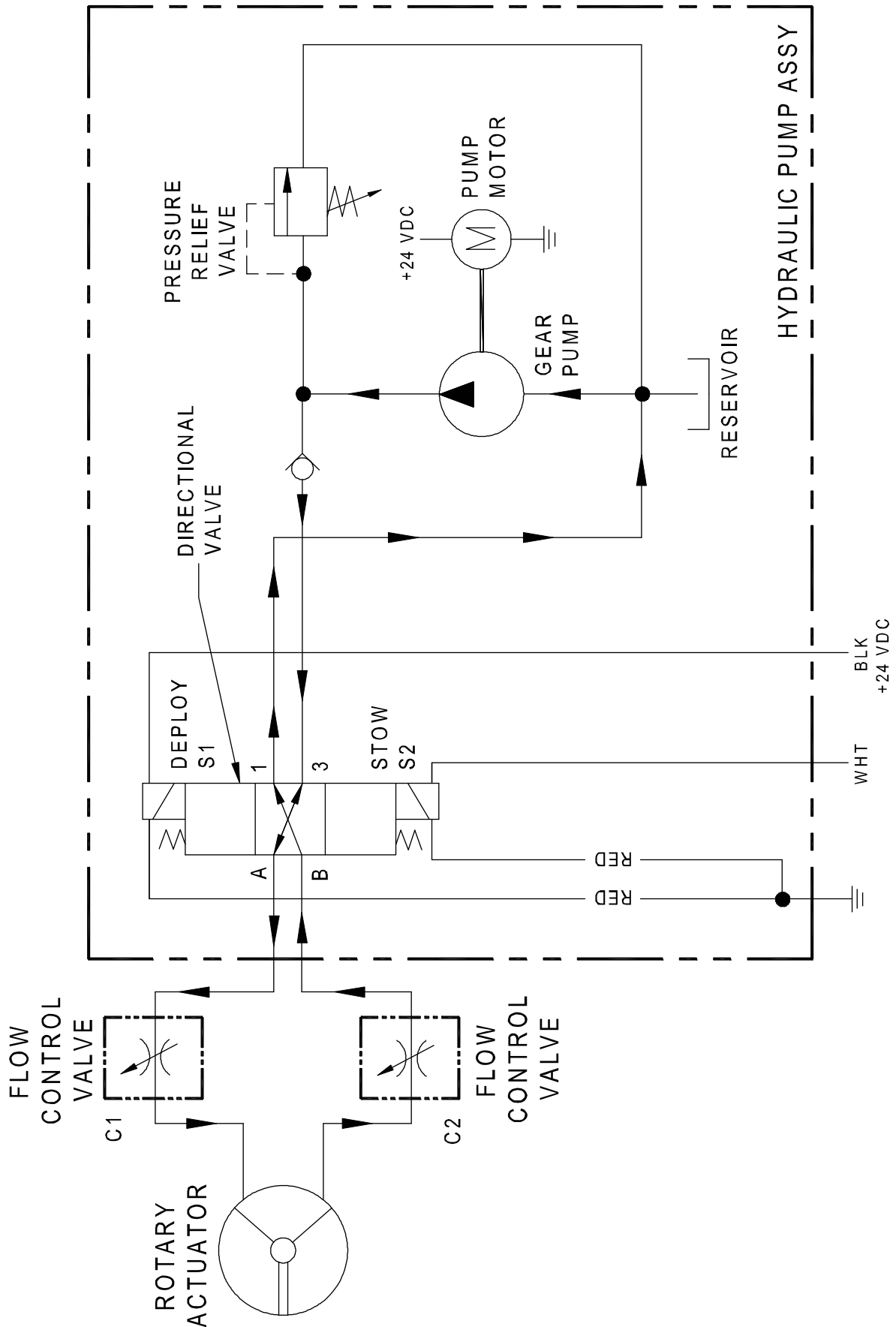


FIGURE 3-10: HYDRAULIC FLUID FLOW DURING DEPLOY MOTION

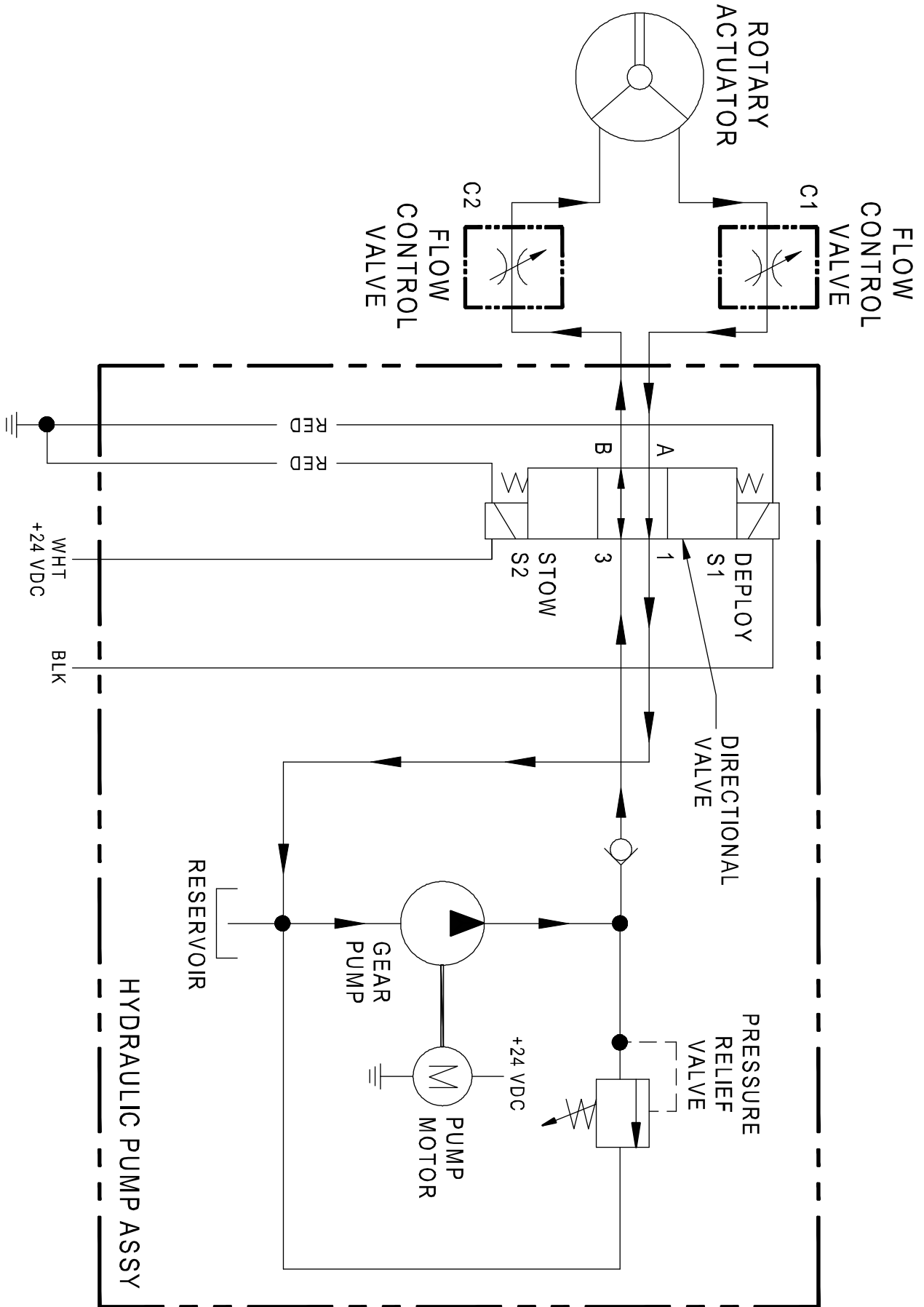


FIGURE 3-11: HYDRAULIC FLUID FLOW DURING STOW MOTION

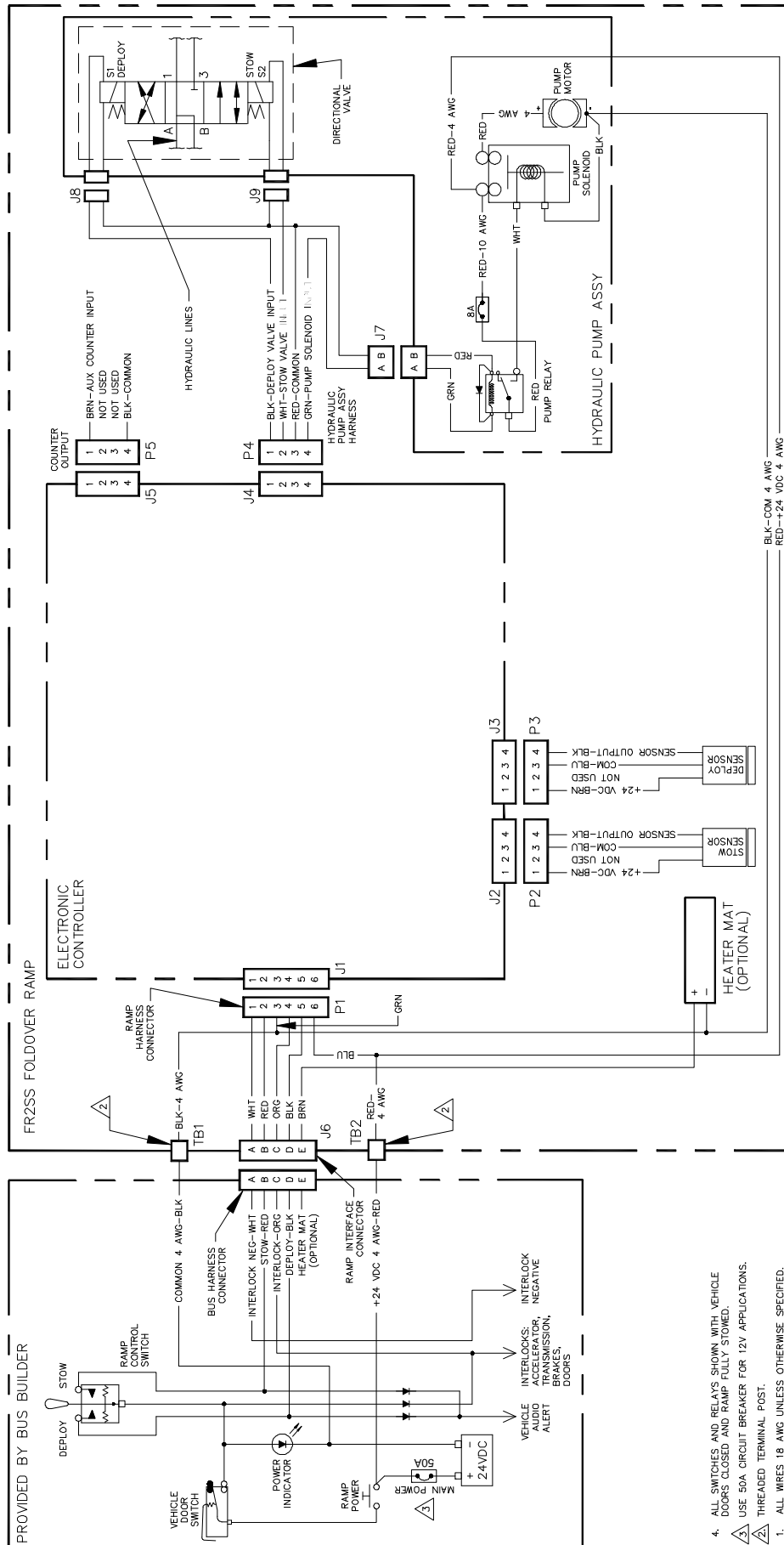


FIGURE 3-12: FR2SS-SERIES RAMP ELECTRICAL DIAGRAM

- 4. ALL SWITCHES AND RELAYS SHOWN WITH VEHICLE DOORS CLOSED AND RAMP FULLY STOWED.
- 5. USE 50A CIRCUIT BREAKER FOR 12V APPLICATIONS.
- 6. THREADED TERMINAL POST.
- 1. ALL WIRES 18 AWG UNLESS OTHERWISE SPECIFIED.



- (P) PLUG, DEUTSCH CONNECTOR PIN D100088
- (R) RECEPTACLE, DEUTSCH CONNECTOR PIN D100088P
- 1. AMP DRAW @ 24V; 25 DEPLOY OR STOW

NOTES: UNLESS OTHERWISE SPECIFIED

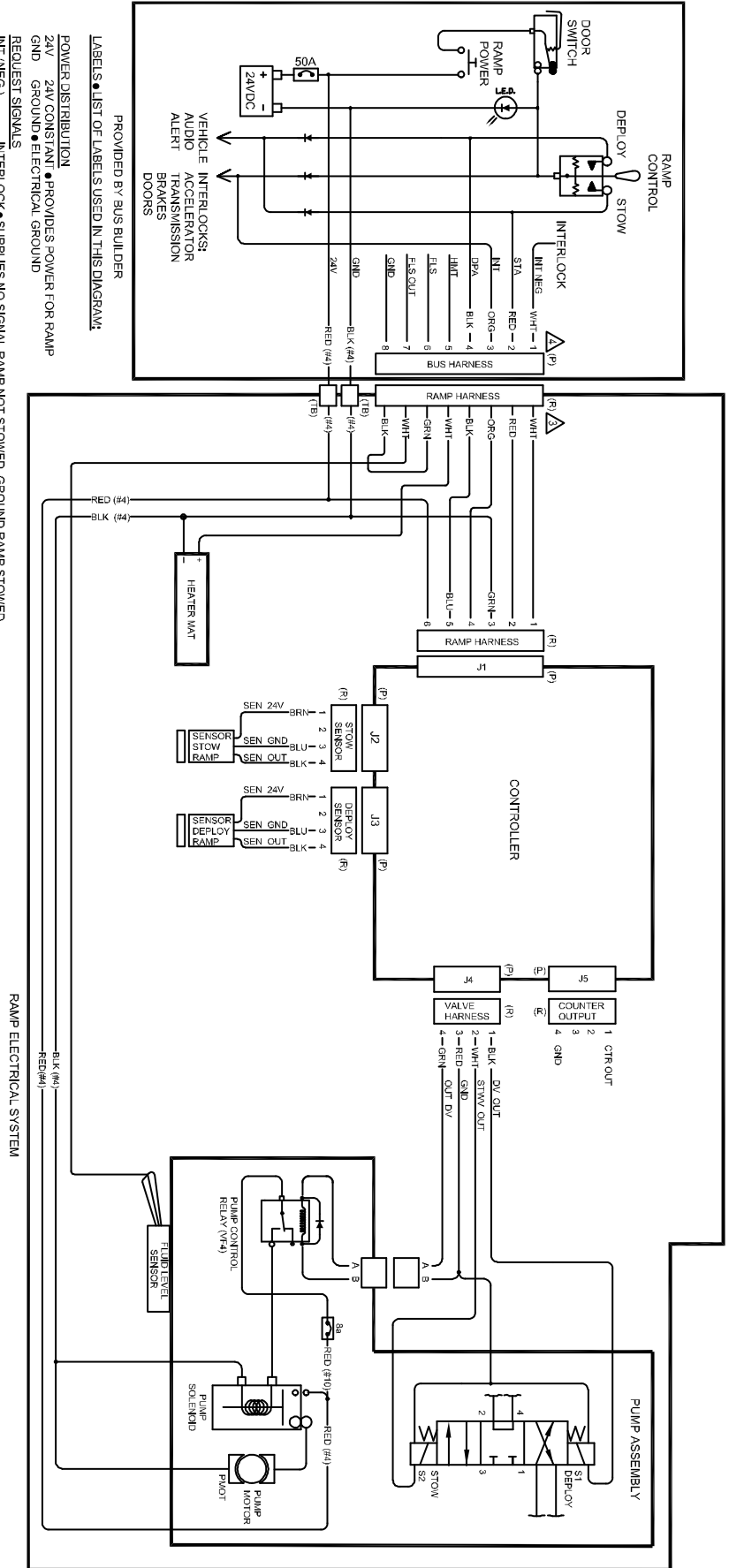


FIGURE 3-13: FR2N-SERIES RAMP ELECTRICAL DIAGRAM

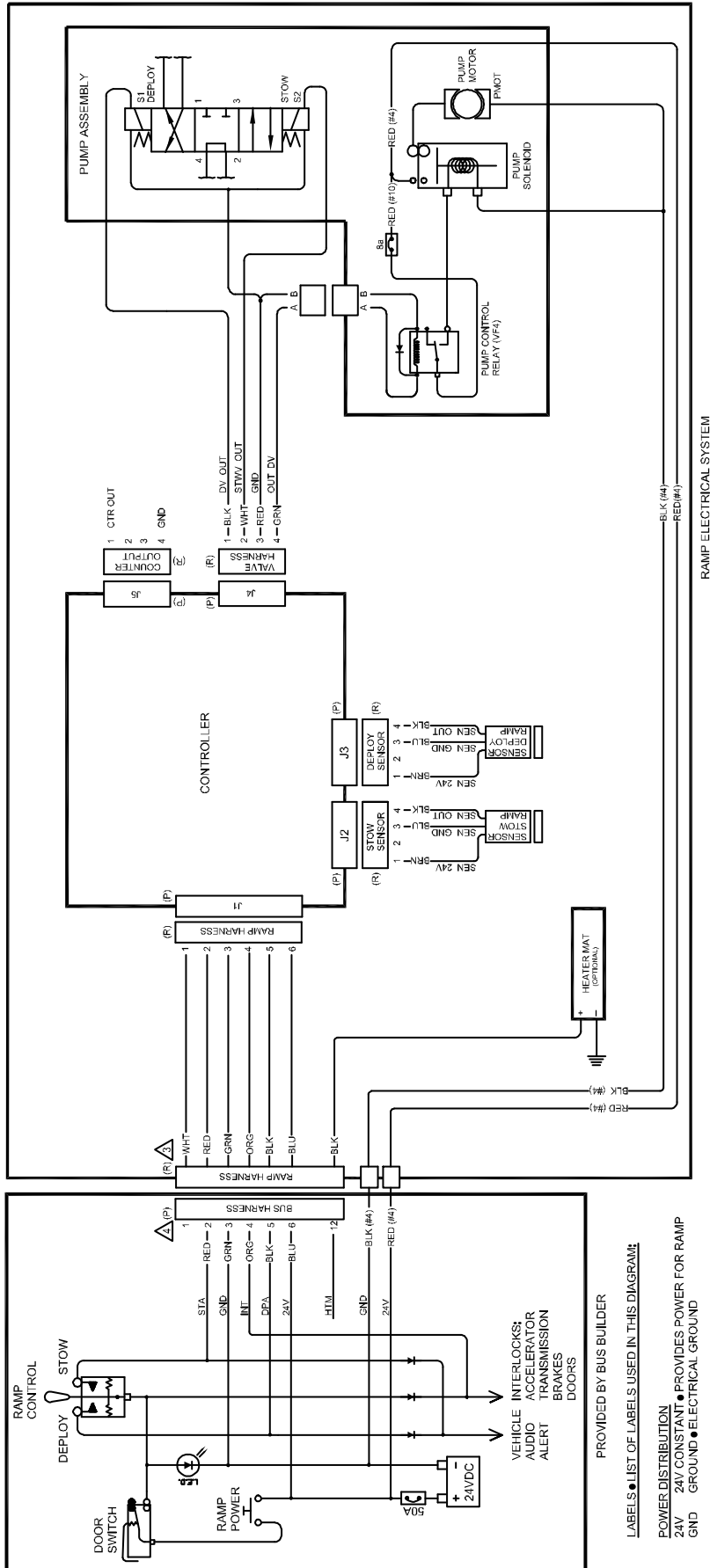


FIGURE 3-14: FR2G-SERIES RAMP ELECTRICAL DIAGRAM

**▲ (P)** PLUG, DEUTSCH CONNECTOR PIN DT06#12S  
**▲ (R)** RECEPTACLE, DEUTSCH CONNECTOR P/N DT06#12P  
 2. ALL WIRES ARE 18 AWG, ALTERNATE AWG IN ( ) (e.g., #10)  
 1. AMP DRAW @ 24V, 25 DEPLOY OR STOW  
 NOTES: UNLESS OTHERWISE SPECIFIED

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### IV. FOLDOVER RAMP TROUBLESHOOTING

The troubleshooting information in this chapter applies to the Ricon FoldOver Stainless Steel Low-Floor Vehicle Access ramp when installed in transit vehicles. It provides two troubleshooting guides, one in table format, the other in flowchart format. The table guide covers several possible failure modes, including complete lack of response, erratic behavior, and inability to stow. The flowchart commences with the general symptom of no ramp response, and then follows a step-by-step procedure to check all possible causes of this symptom. Use the electrical wiring diagrams in Figures 3-12, 3-13 and 3-14 along with the hydraulic diagrams in Figures 3-9, 3-10 and 3-11 of Chapter III to supplement this chapter.

**NOTE:** Some applications require 12 VDC system power. Where this applies, voltage levels are 12 VDC.

#### A. TROUBLESHOOTING TABLE

TABLE 4-1: TROUBLESHOOTING GUIDE			
Function	Symptom	Possible Cause	Remedy
<b>DEPLOY function in-operative or erratic</b>	Hydraulic pump does not operate; pump solenoid does not operate	Main circuit breaker tripped	Reset circuit breaker.
		Hydraulic pump circuit breaker tripped	Reset circuit breaker.
		Vehicle battery charge too low	Check vehicle battery. If necessary, operate ramp with vehicle engine running.
		No power to ramp harness connector pin P1-6 (blue lead)	Check for input power at ramp harness connector pin P1-6. Repair wiring, as required.
		No signal from switch to ramp harness connector pin P1-5 (black lead)	Check for deploy signal at ramp harness connector pin P1-5. Repair wiring, as required.
		STOW/DEPLOY switch defective	Replace or repair STOW/DEPLOY switch.
		Door switch interlock circuit defective	Replace or repair door switch.
		Main ramp power switch defective	Replace or repair main ramp power switch.
		Pump solenoid defective	Replace pump solenoid.
		Pump relay defective	Replace pump relay.
		Electronic controller defective	Replace controller.
		Deploy sensor is defective or out of adjustment	Adjust ramp sensor target; set proper sensor-to-target distance; refer to Chap.2 section B.2. Replace sensor, if necessary.
		Hydraulic pump assy wiring harness defective	Check wiring harness to hydraulic pump assembly. Repair wiring, as required.
		Pump solenoid operates, but no ramp movement occurs	Flow control valves are closed
	Flow control valves are clogged		Clean the valves. Adjust valves as shown in Chap.2 section B.1.
Air in hydraulic system	Cycle ramp to bleed system. Refill hydraulic fluid reservoir as required.		

TABLE 4-1: TROUBLESHOOTING GUIDE

Function	Symptom	Possible Cause	Remedy
DEPLOY function in-operative or erratic (cont.)	Pump solenoid operates, but no ramp movement occurs (cont.)	Loose or faulty wiring at hydraulic pump	Check wiring harness on hydraulic pump; repair harness, as required.
		Pump motor defective	Replace pump Assy.
		Hydraulic rotary actuator defective	Replace hydraulic actuator.
	Ramp deploys very slowly or stalls when DEPLOY switch is pressed	Sensor target requires adjustment	Adjust sensor target; refer to Chap.2 section B.2.
		Needle valve setting is too restrictive	Close both needle valves by turning them fully clockwise. Readjust valves as shown in Chap.2 section B.1.
		Hydraulic fluid level low	Check hydraulic fluid level; refill as required.
		Pump directional valve defective	Replace hydraulic pump Assy.
		Low hydraulic pressure	<ul style="list-style-type: none"> <li>▪ Check that hydraulic pump pressure output is 1400 PSI. Adjust pump relief valve as necessary.</li> <li>▪ Check pump and hydraulic lines for leaks or obstructions; repair, as required.</li> <li>▪ Replace hydraulic pump Assy.</li> </ul>
		Hydraulic rotary actuator defective (binding or jammed)	Repair or replace hydraulic rotary actuator.
		Ramp hinge or ramp drive arms defective (binding or jammed)	Repair or replace defective parts.
		Wiring harness leading to pump is defective	Check wiring harness leading to pump. Repair wiring, as required.
	Ramp deploys normally but stalls at halfway point	Deploy sensor or sensor target is out of adjustment.	Adjust target as shown in Chap.2 section B.2.
	Hydraulic pump does not shut off when ramp is fully deployed	Hydraulic pump solenoid defective	Replace solenoid.
		Hydraulic pump relay defective	Replace relay.
		Electronic controller defective	Replace controller.

**TABLE 4-1: TROUBLESHOOTING GUIDE**

Function	Symptom	Possible Cause	Remedy
<b>STOW function inoperative or erratic</b>	Hydraulic pump does not operate; pump solenoid does not operate	Main circuit breaker tripped	Reset main circuit breaker.
		Hydraulic pump circuit breaker tripped	Reset circuit breaker.
		Vehicle battery charge too low	Check vehicle battery. If necessary, operate ramp with vehicle engine running..
		No input power to ramp harness connector pin P1-6 (blue lead)	Check for input power at ramp harness connector pin P1-6. Repair wiring, as required.
		No signal from STOW/DEPLOY switch to ramp harness connector pin P1-2 (red lead)	Check for stow signal at ramp harness connector pin P1-2. Repair wiring, as required.
		STOW/DEPLOY switch defective	Replace or repair STOW/DEPLOY switch.
		Main ramp power switch defective.	Replace or repair main ramp power switch.
		Pump solenoid defective	Replace pump solenoid.
		Pump relay defective	Replace pump relay.
		Electronic controller defective	Replace controller.
		Pump wiring harness defective	Check pump wiring harness. Repair wiring, as required.
	Pump solenoid operates, but no ramp movement occurs	Needle valves closed	Adjust valves as shown in Chap.2 section B.1.
		Needle valves clogged	Clean needle valves. Adjust valves as shown in Chap.2 section B.1.
		Hydraulic pump wiring harness defective	Check pump harness wiring. Repair wiring, as required.
		Pump directional valve defective	Replace hydraulic pump.
		Electronic controller defective	Replace controller.
		Hydraulic rotary actuator defective	Replace hydraulic rotary actuator.
		Hydraulic pump defective	Replace hydraulic pump.

TABLE 4-1: TROUBLESHOOTING GUIDE

Function	Symptom	Possible Cause	Remedy
STOW function inoperative or erratic (cont.)	Ramp stows very slowly or stalls when STOW/DEPLOY switch is set to STOW	Sensor target requires adjustment	Adjust sensor target; refer to section C.6 in this chapter.
		Hydraulic fluid level low	Check hydraulic fluid level; refill as required.
		Needle valve setting is too restrictive	Close both needle valves by turning them fully clockwise. Readjust valves as shown in s Chap.2 section B.1.
		Low hydraulic pressure	<ul style="list-style-type: none"> <li>▪ Check that hydraulic pump pressure output is 1400 PSI. Adjust pump relief valve as necessary.</li> <li>▪ Check hydraulic lines for leaks or obstructions; Repair, as required.</li> <li>▪ Replace hydraulic pump.</li> </ul>
		Hydraulic pump wiring harness defective	Repair or replace harness from electronic controller to hydraulic pump.
		Pump directional valve defective	Replace hydraulic pump.
		Hydraulic rotary actuator defective (binding or jammed)	Replace hydraulic rotary actuator.
		Ramp hinge or ramp drive arms defective (binding or jammed)	Repair or replace binding parts.
		Hydraulic pump pressure regulator defective	Replace hydraulic pump.
	Hydraulic pump does not shut off when ramp is stowed	Hydraulic pump solenoid defective	Replace solenoid.
		Hydraulic pump relay defective	Replace relay.
		Electronic controller defective	Replace controller.

**TABLE 4-1: TROUBLESHOOTING GUIDE**

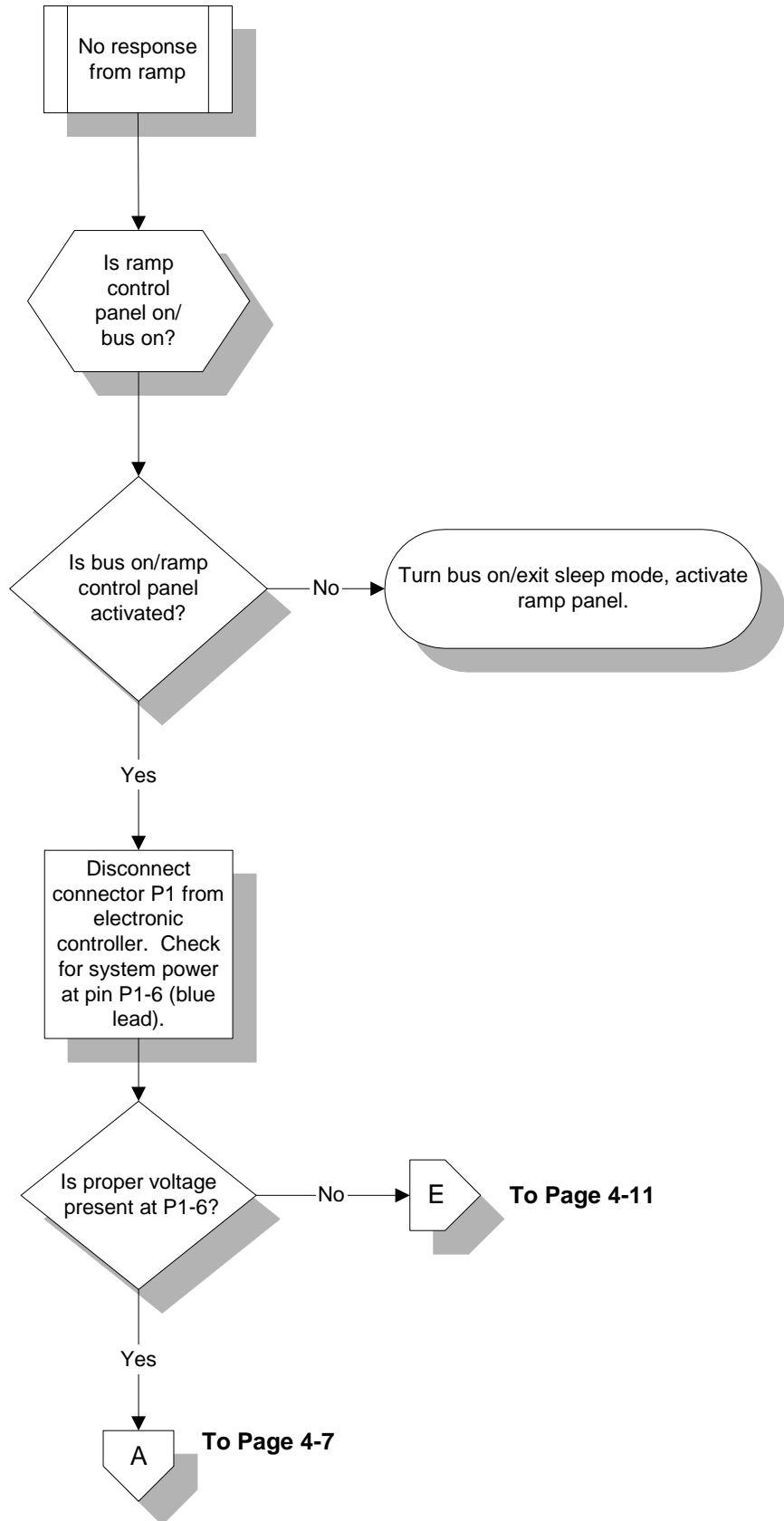
Function	Symptom	Possible Cause	Remedy
<b>Reversed operation</b>	Ramp stows when STOW/DEPLOY switch is set to DEPLOY; ramp deploys when STOW/DEPLOY switch is set to STOW; unit will only deploy about 10 inches and will only stow when past the vertical mark	Hydraulic lines are not connected correctly	Verify that hydraulic lines to hydraulic pump, flow control valves and hydraulic actuator are connected correctly. Refer to Figure 3-7 in Chapter 3.
		Leads not connected properly on directional valve solenoids	Verify that connector J8 (the connector with the black and red wires) is connected to solenoid S1, and that connector J9 (the connector with the white and red wires) is connected to solenoid S2. Refer to Figure 3-10 in Chapter 3.
	Ramp will stow when DEPLOY switch is depressed/or deploy when STOW switch is depressed; ramp will operate normally otherwise	Bus harness to ramp interface connector is not wired correctly	Verify the red STOW lead on STOW/DEPLOY switch is connected to bus harness connector pin B, and the black DEPLOY lead is connected to pin D. Refer to Figure 3-10 in Chapter 3.
<b>Ramp will function in one direction, but not the other</b>	Ramp will stow, but not deploy	Deploy valve not operating properly	Check for DEPLOY signal at hydraulic pump solenoid S1.
		Deploy sensor defective or out of adjustment	Verify that proximity sensor is energized (LED on sensor indicates operation) and adjusted for correct gap. Refer to Chap.2 section B.2.
		Hydraulic pump solenoid defective	Replace hydraulic pump.
<b>Interlocks will not disengage</b>	Constant interlock signal on pin P1-4 (orange wire)	Ramp not fully stowed	Remove possible obstructions and verify that ramp is fully stowed.
		Misadjusted sensor target or stow sensor	Adjust sensor target and/or stow sensor; refer to Chap.2 section B.2.
		Stow sensor defective	Replace stow sensor.
		Electronic controller defective	Replace controller.

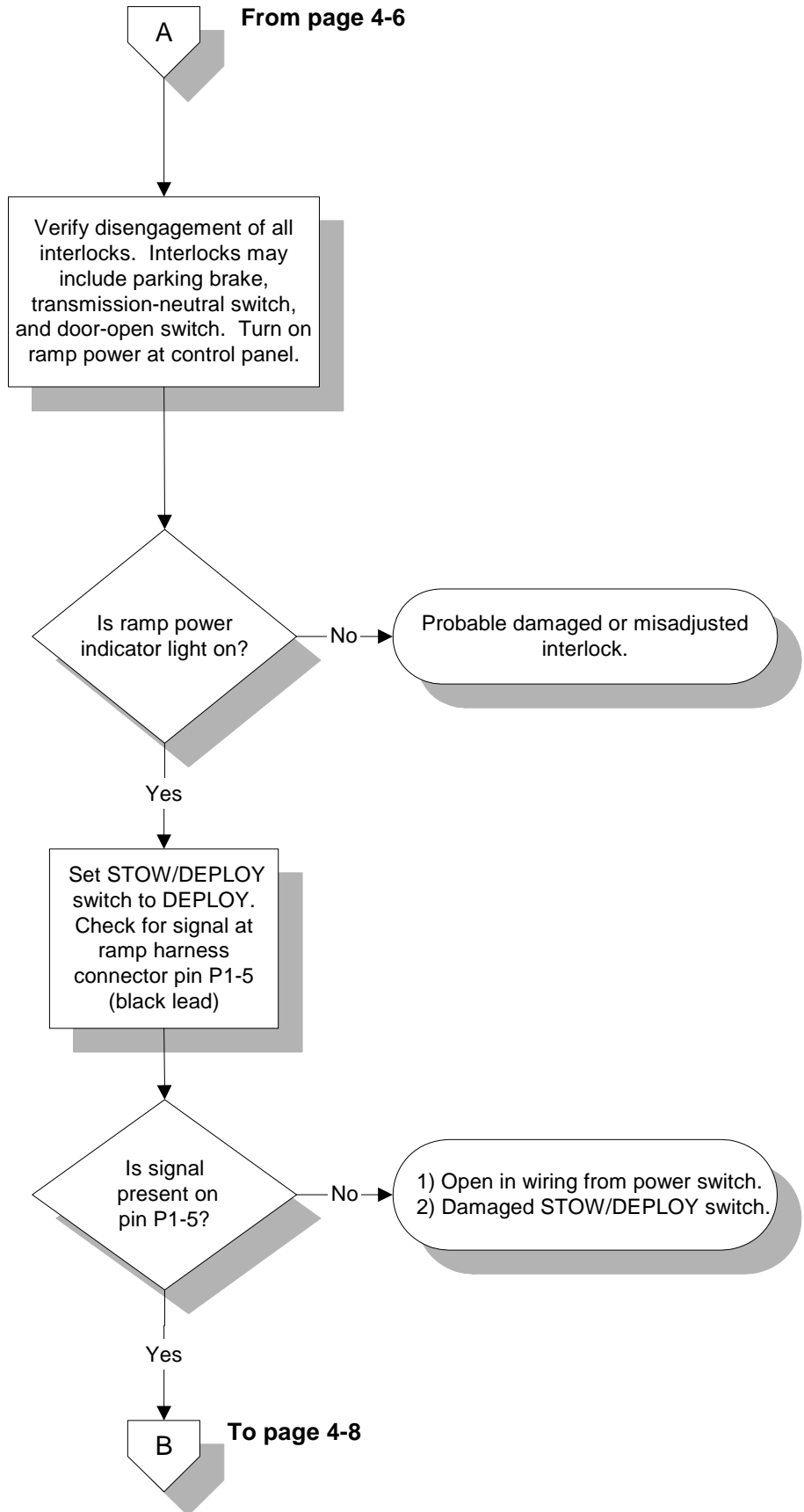


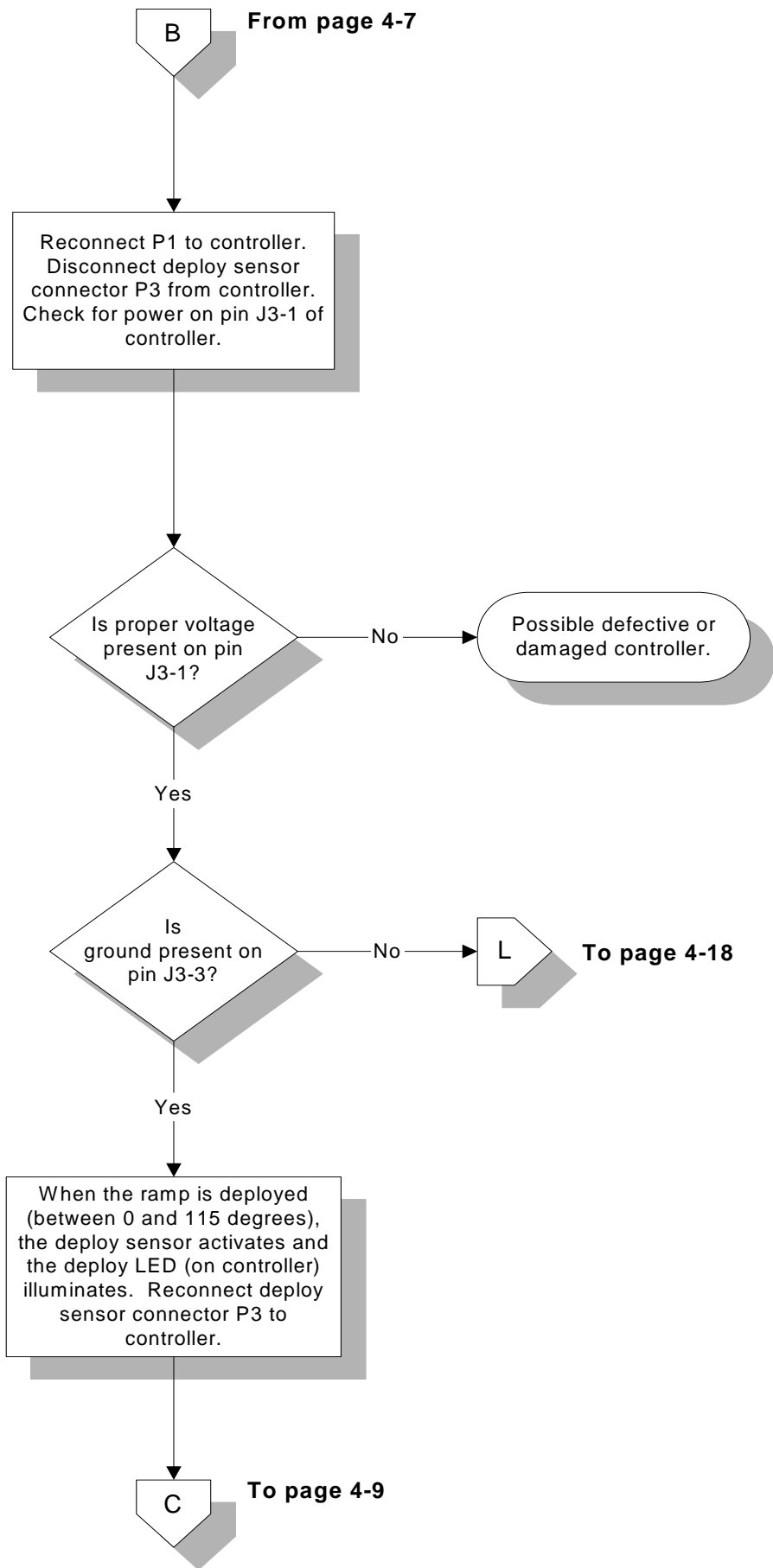
B. TROUBLESHOOTING FLOW CHART

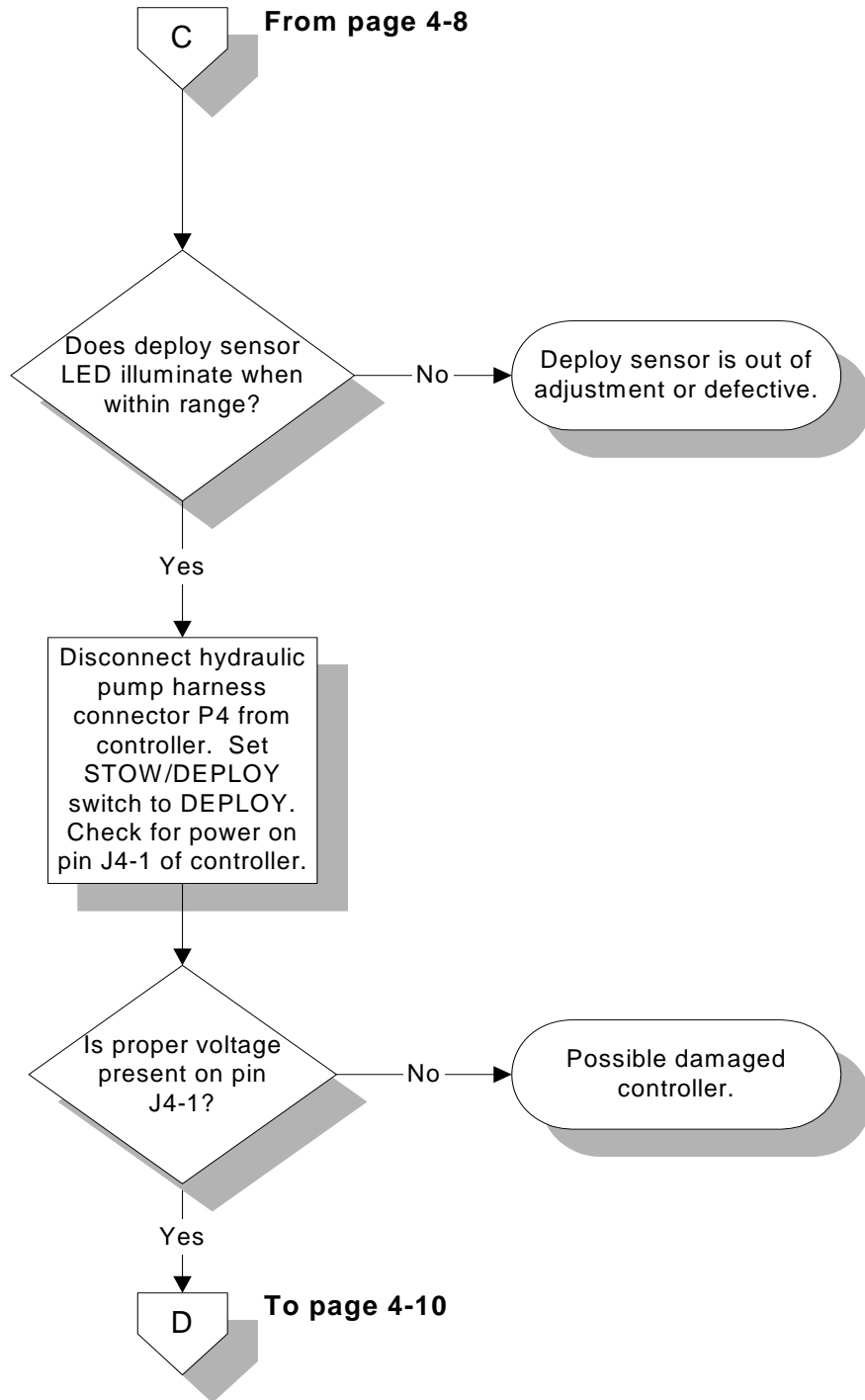
**CHART 4-1: TROUBLESHOOTING GUIDE**

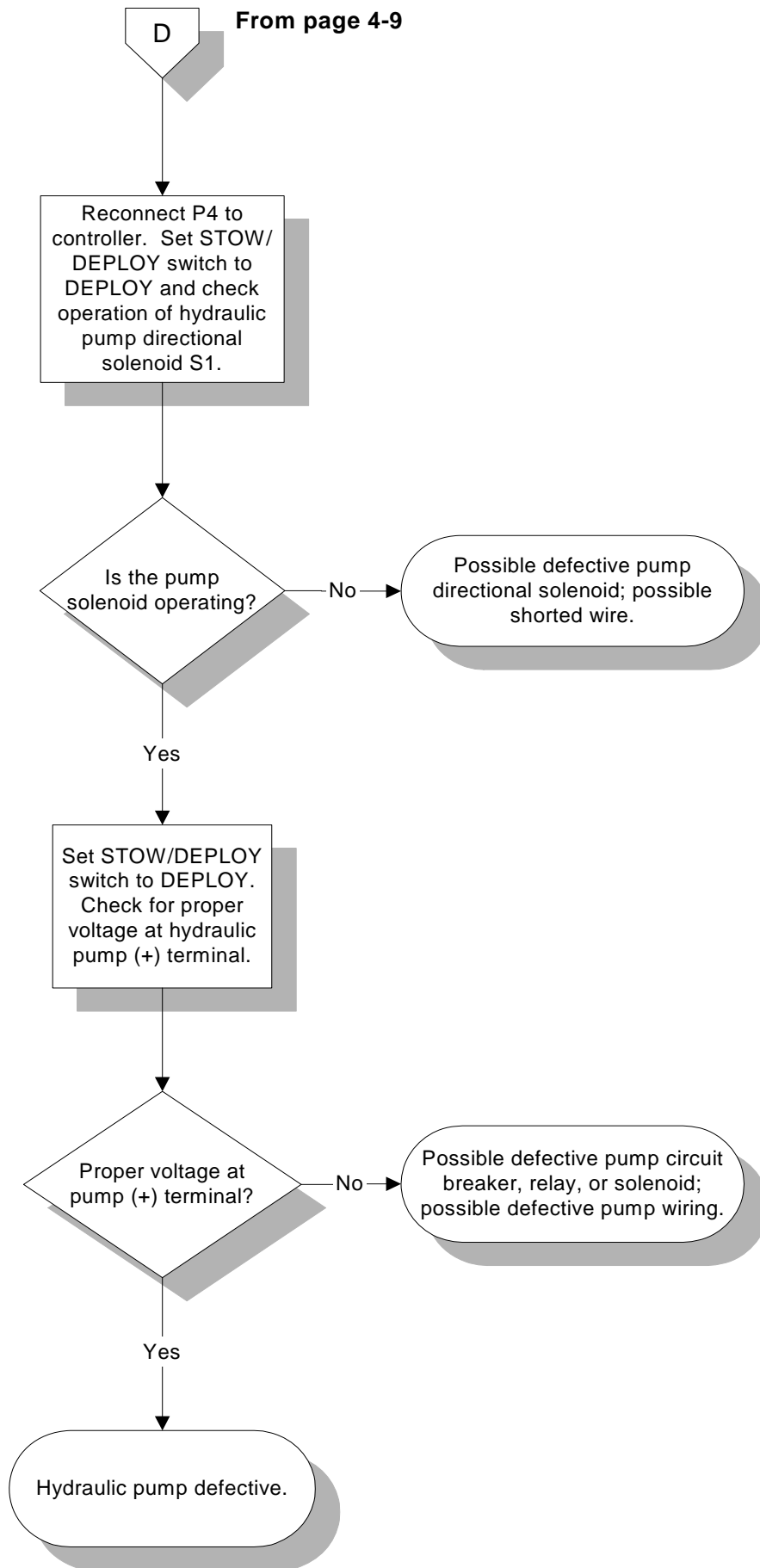
1. NO RESPONSE FROM RAMP:

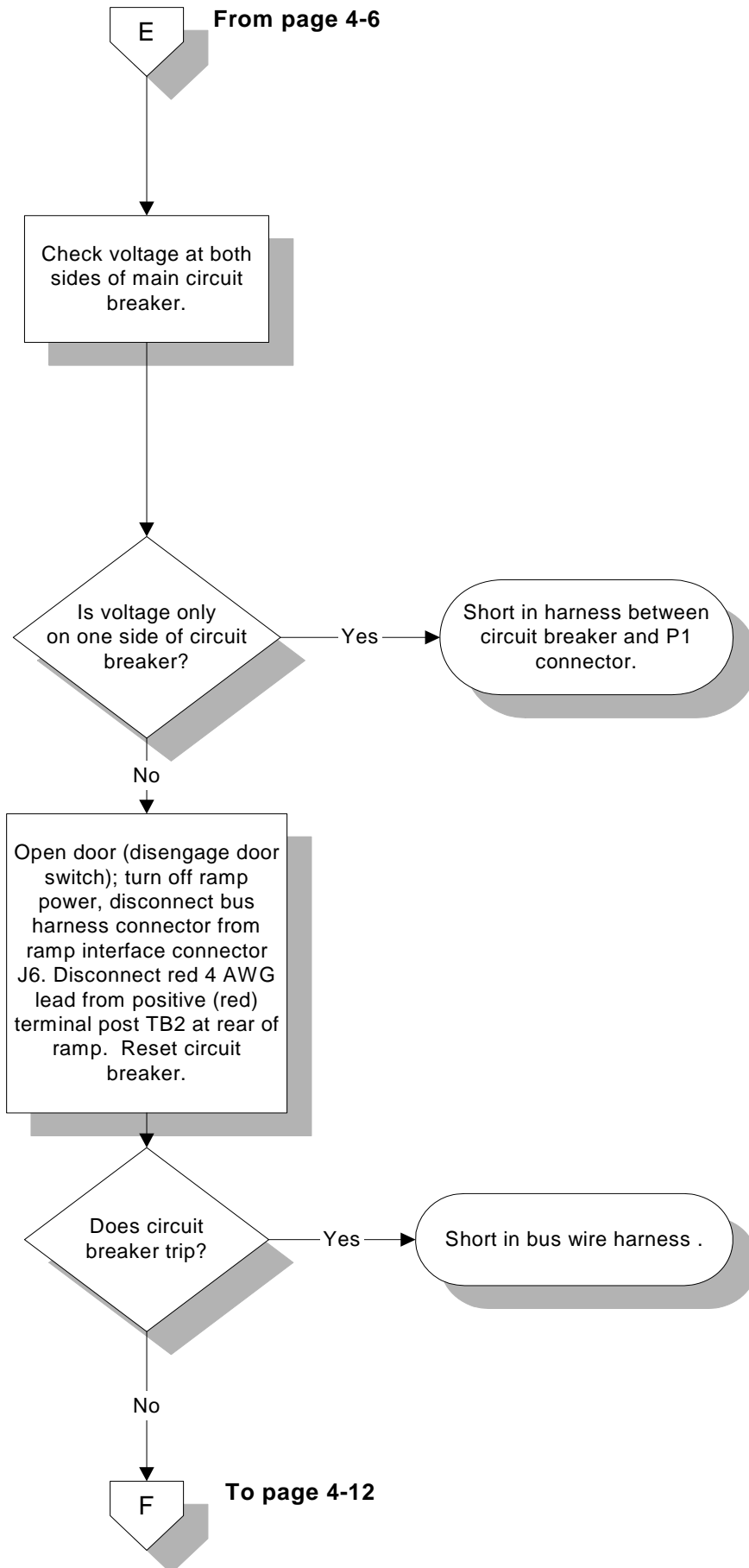


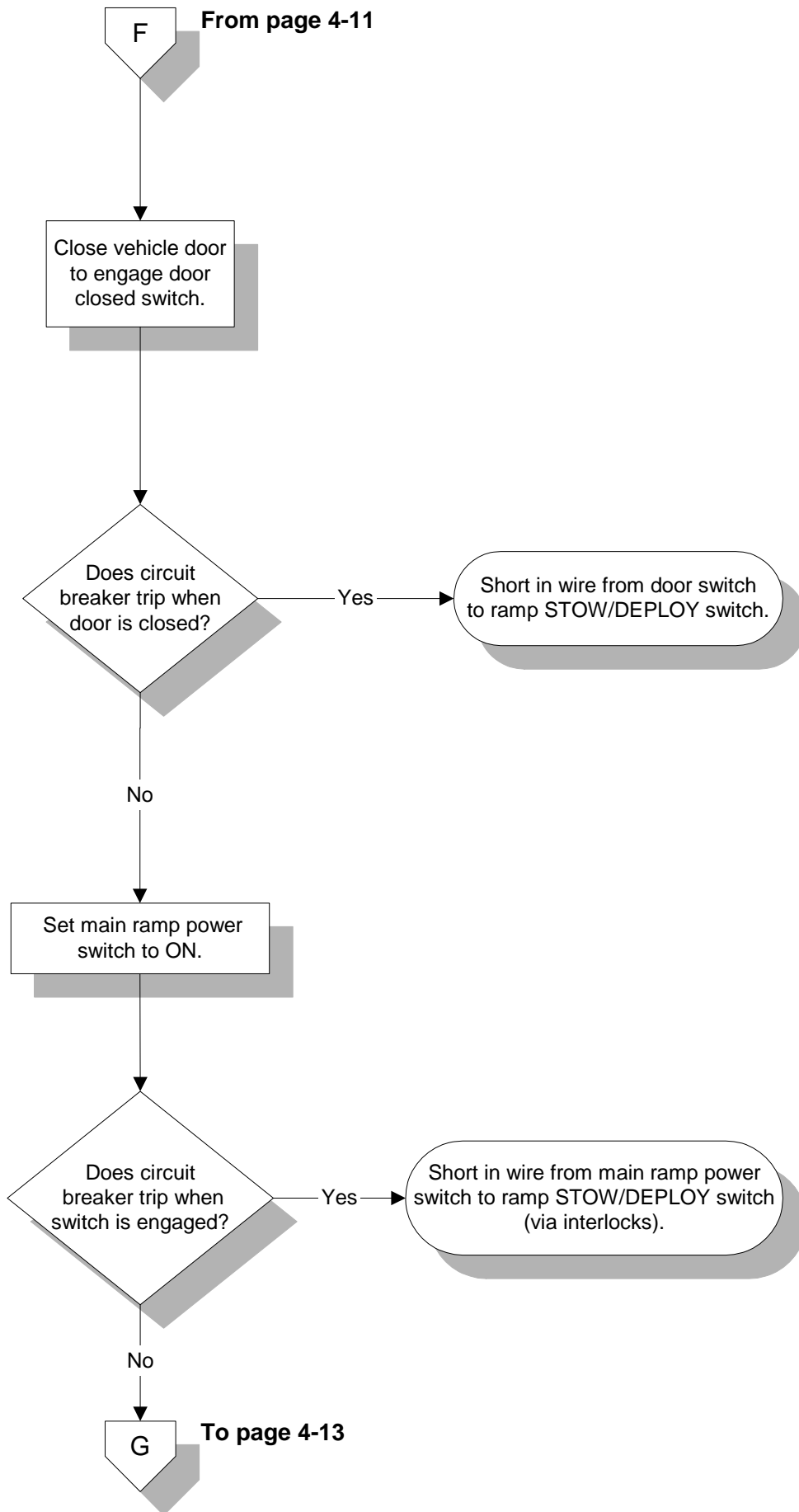


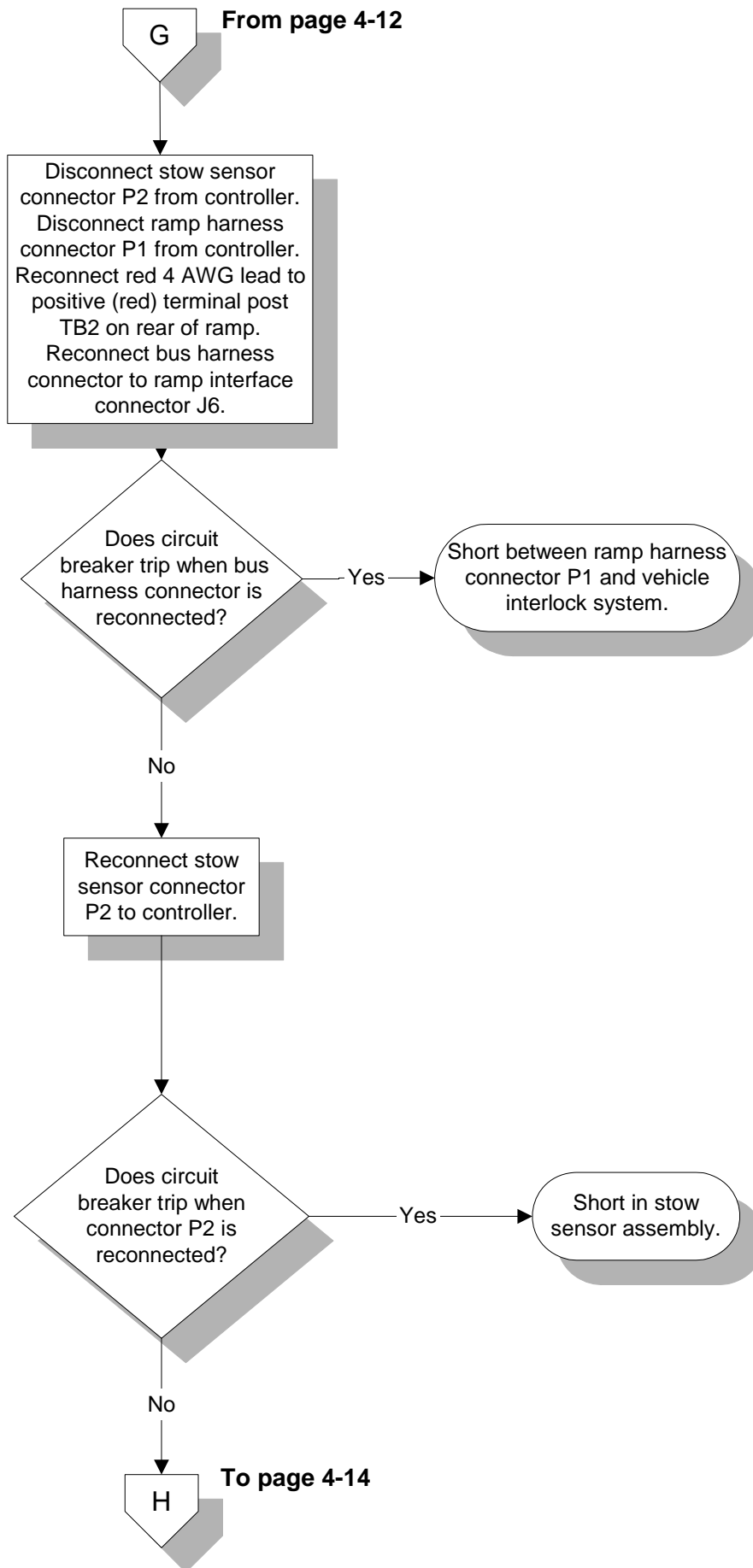




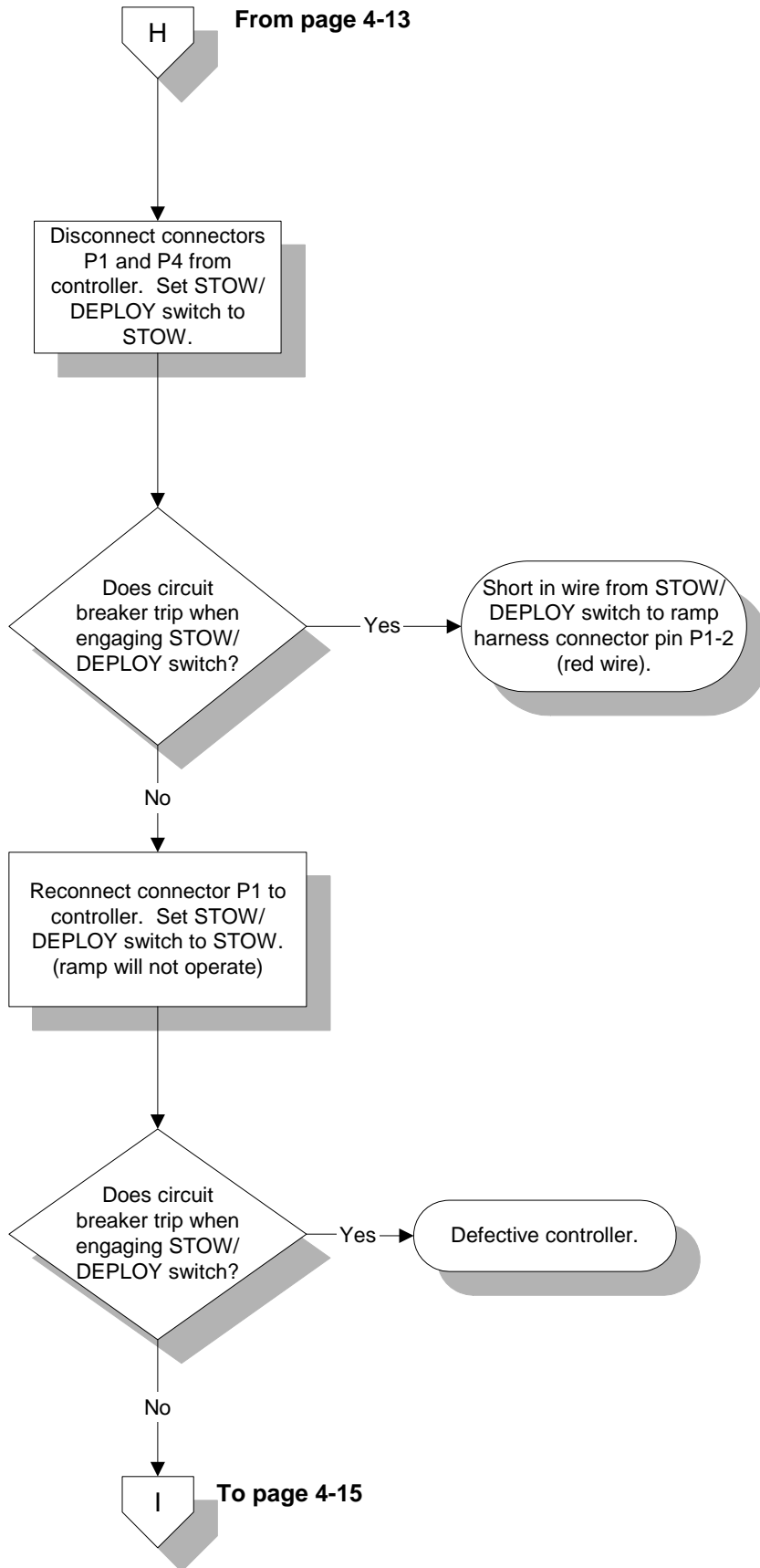


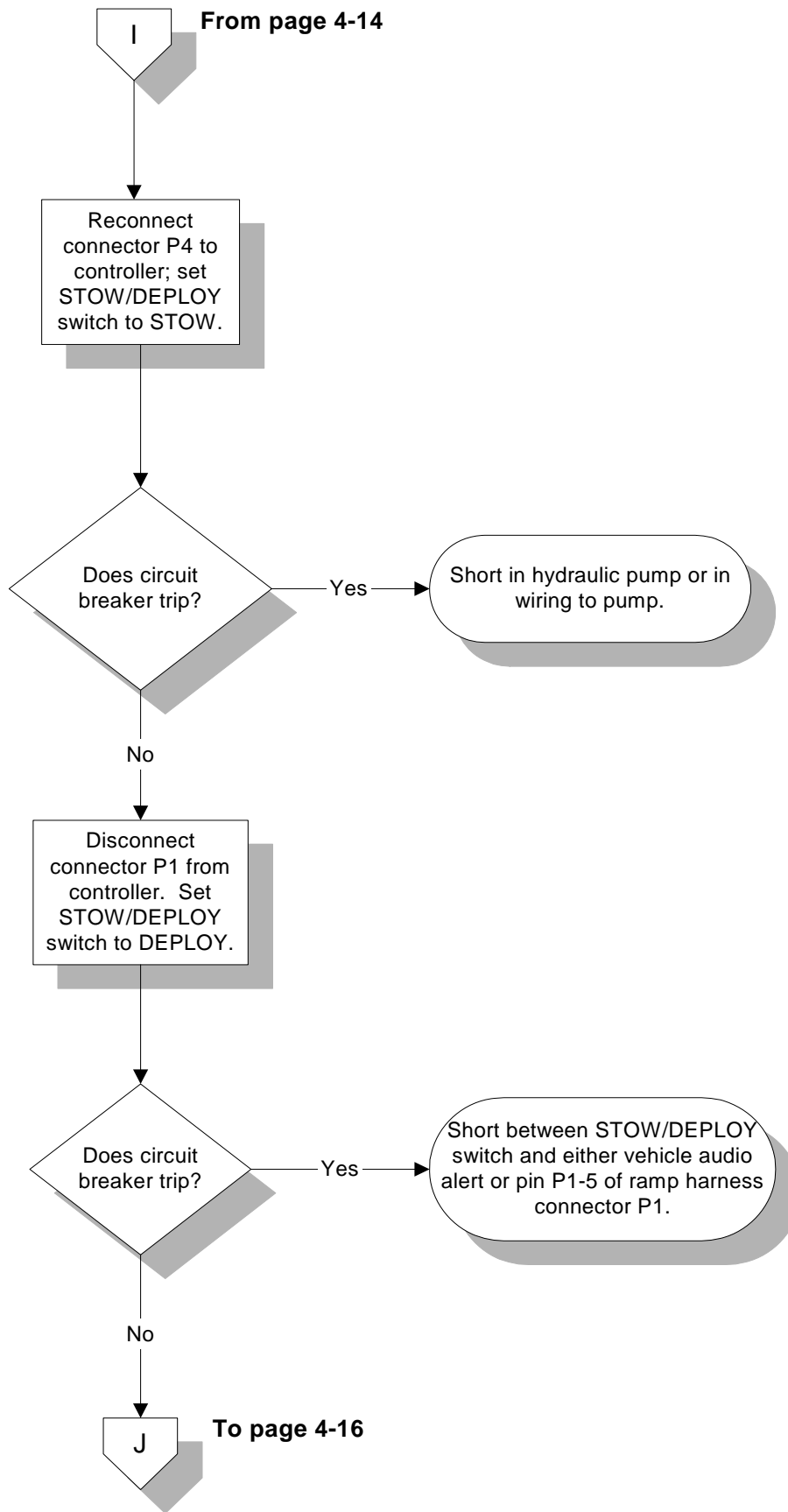


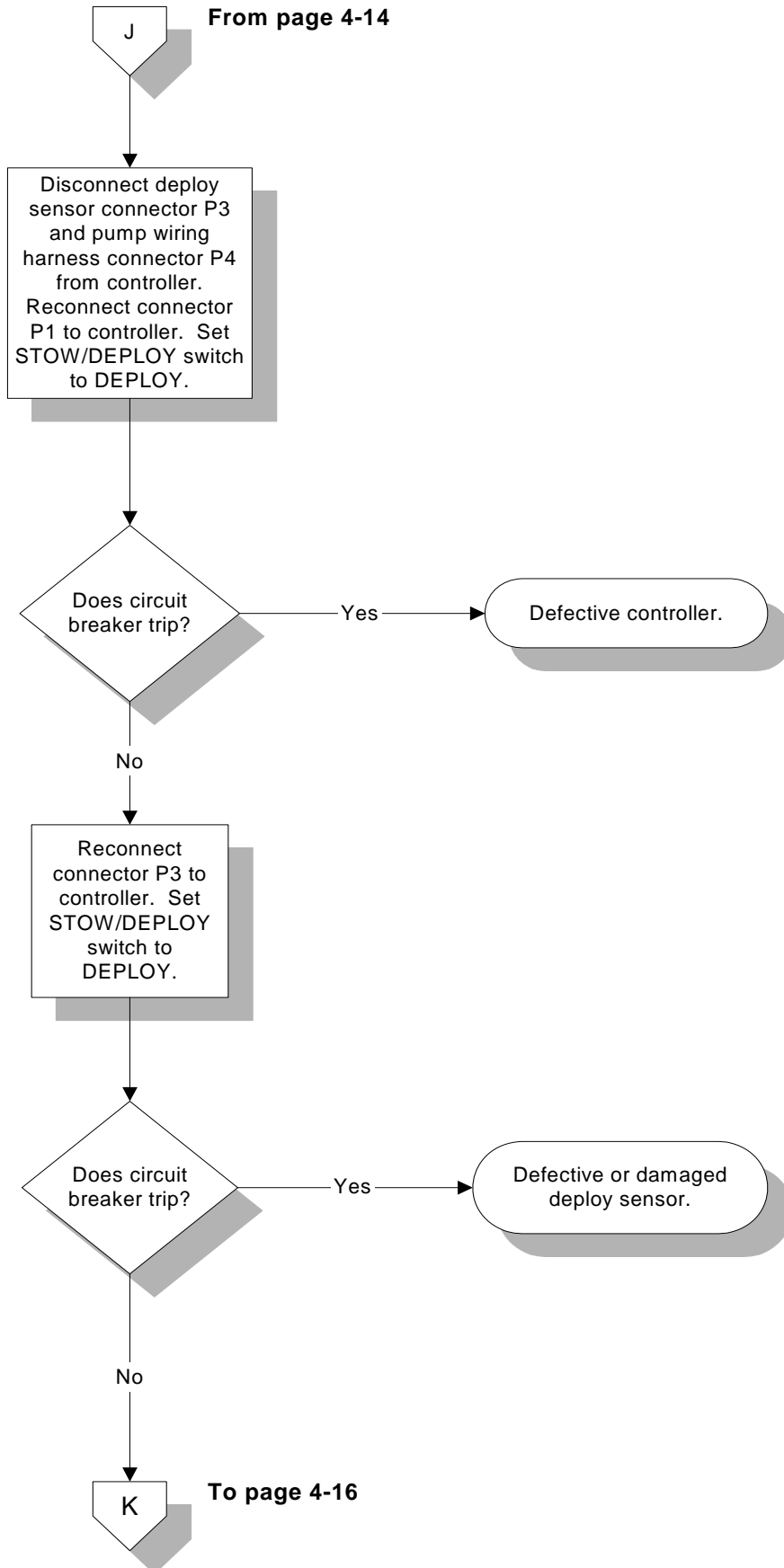


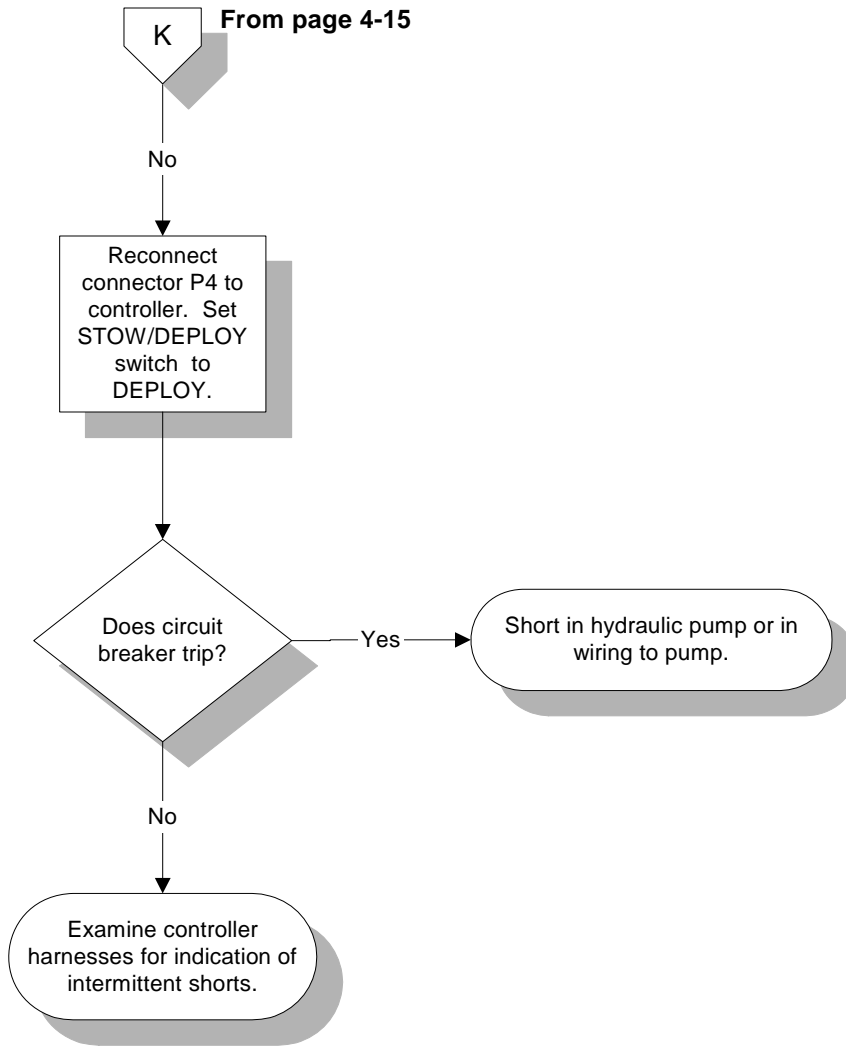


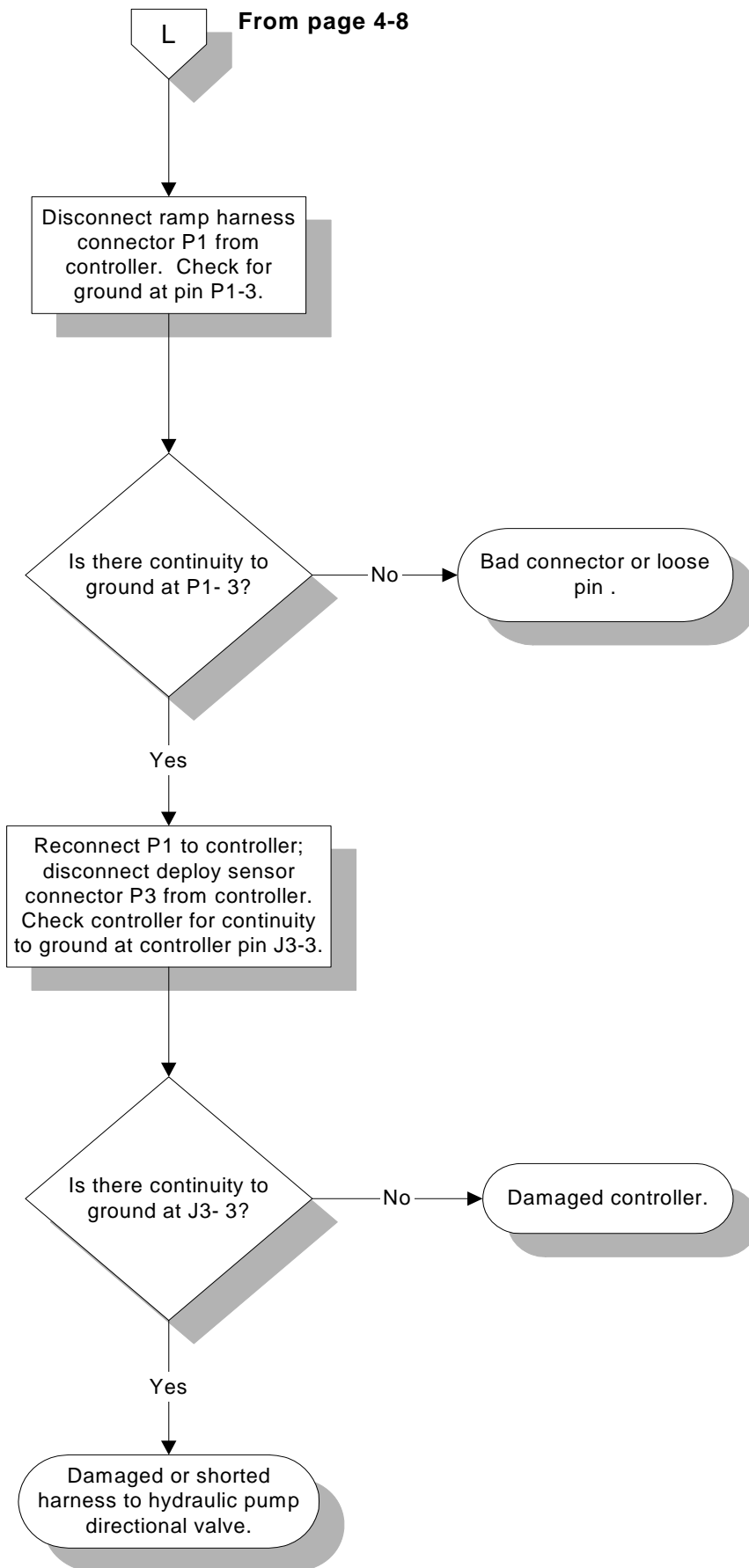




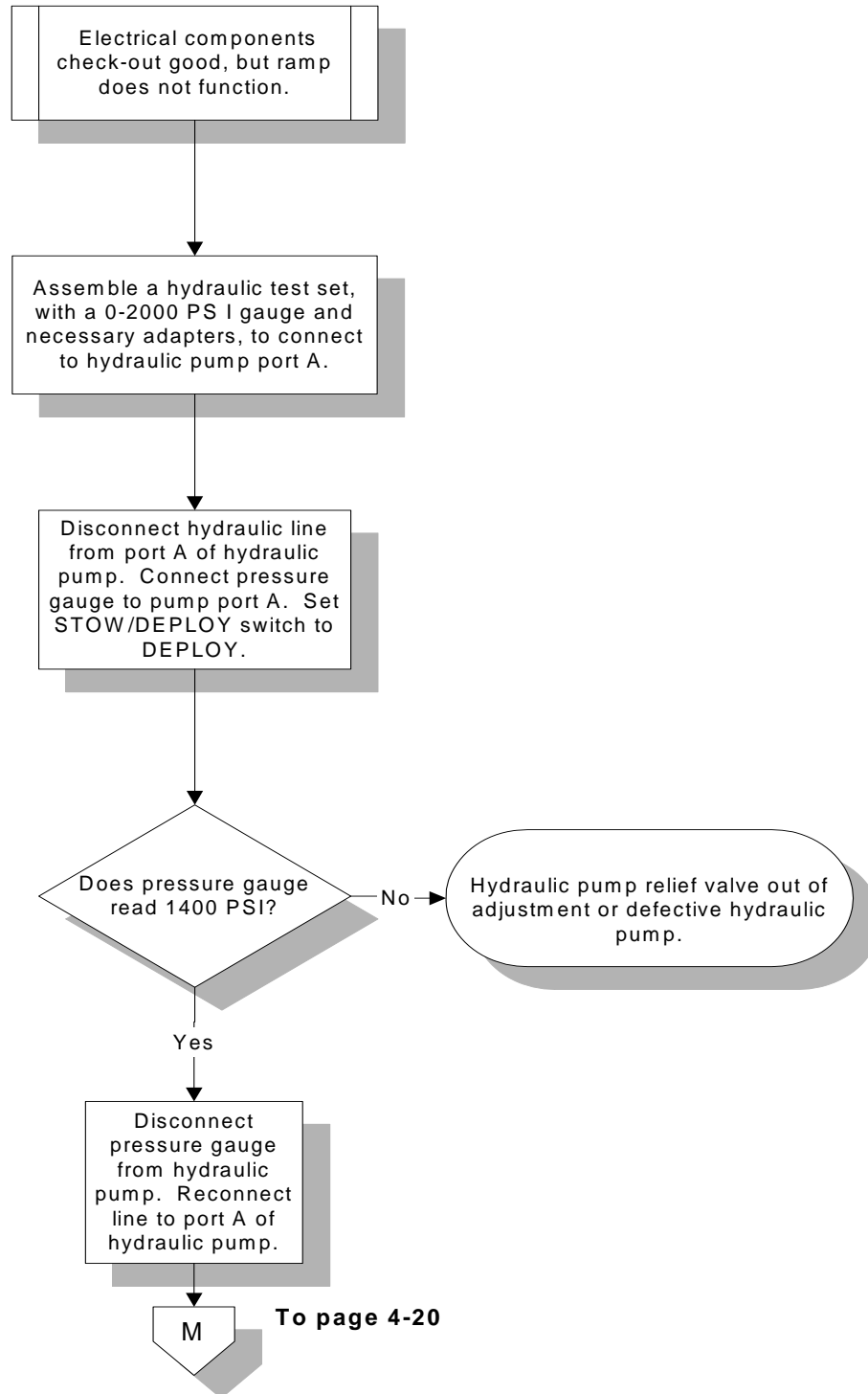




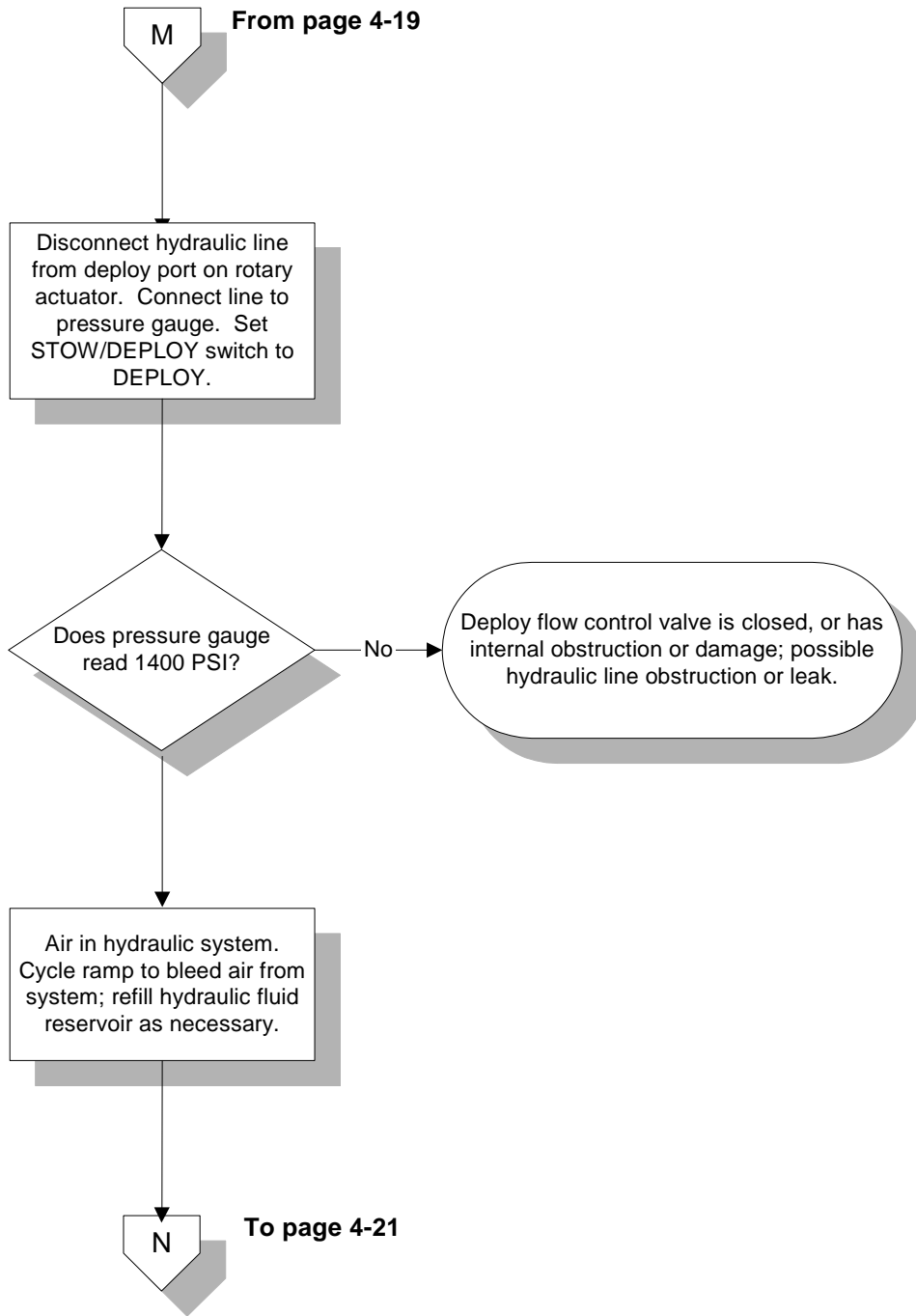


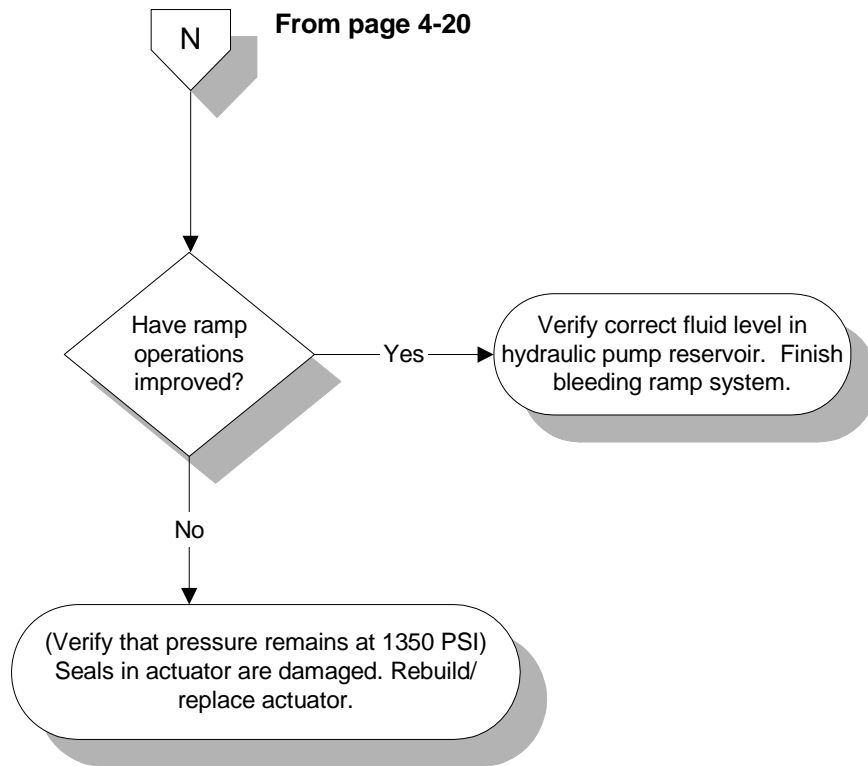


2. ELECTRICAL COMPONENTS ARE GOOD, HYDRAULIC SYSTEM DOES NOT FUNCTION.



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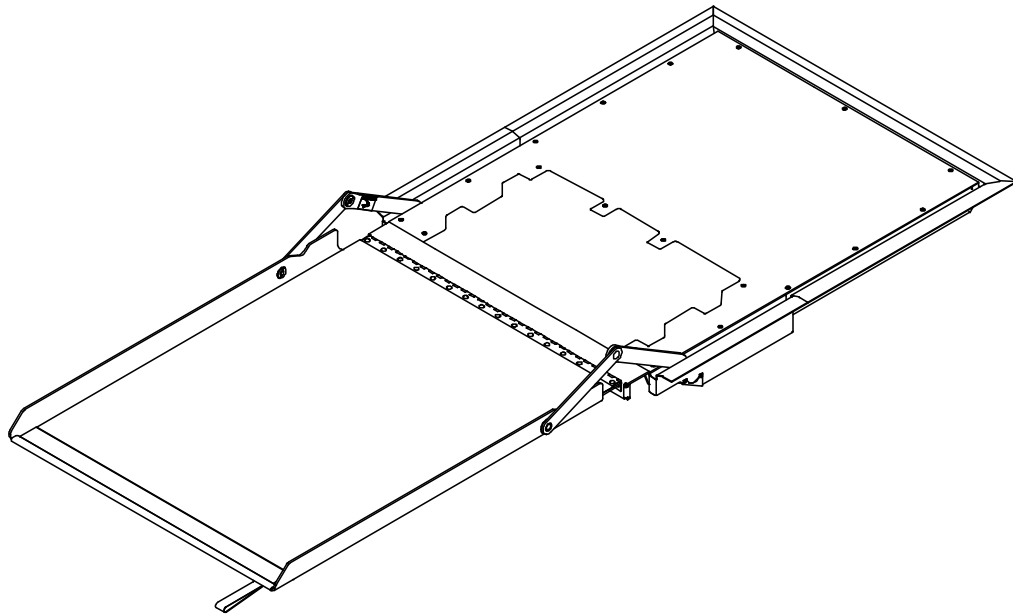
## V. FOLDOVER RAMP SPARE PARTS

The parts layouts and lists in this chapter apply to the Ricon FR2SS, FR2G and FR2N Series FoldOver Low-Floor Vehicle Access ramps when installed in a transit vehicle. Replaceable ramp parts are illustrated in exploded views of major lift assemblies, which show smaller assemblies and components with reference numbers. Each associated parts list contains reference numbers, parts descriptions, and Ricon part 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.

**NOTE:**

- Most items that are described as “kits” contain a single part (plus hardware). Therefore, you may need to order more than one kit if the part is used more than once on the assembly shown.
- Small, inexpensive hardware items are supplied in a minimum quantity of ten, and are packaged in a bag. A single bag may provide more parts than you need, or you may need multiple bags when working on a large assembly. The QTY column indicates how many individual parts are used on the assembly shown; you will need to determine the number of bags required for your task.
- The reference numbers for some parts have more than one part number listed. This occurs when variations of a part are used on different ramp models. These parts are followed by a model designation (FR2SS01-10000000, FR2SS02-10000010, etc).



**PARTS DIAGRAMS**

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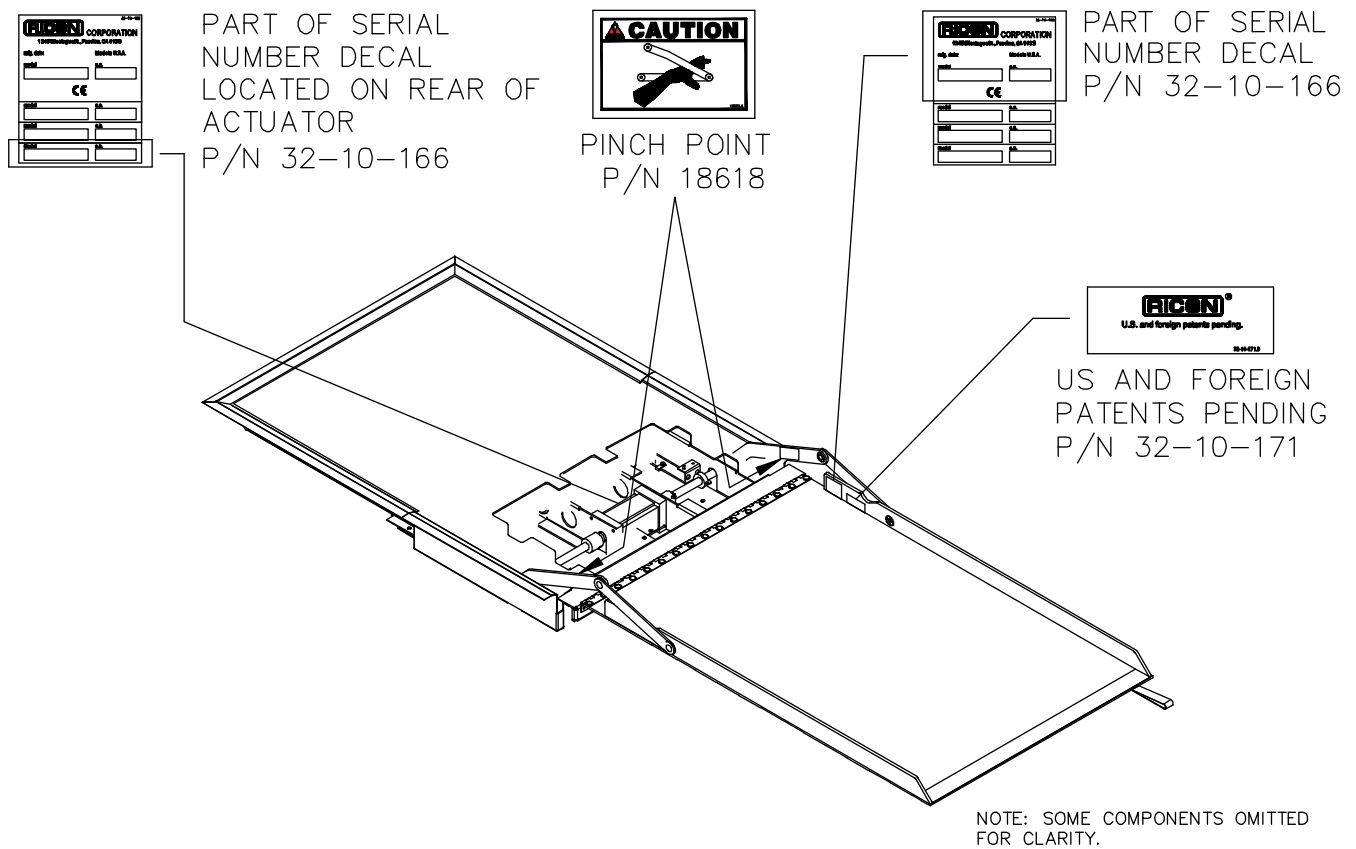
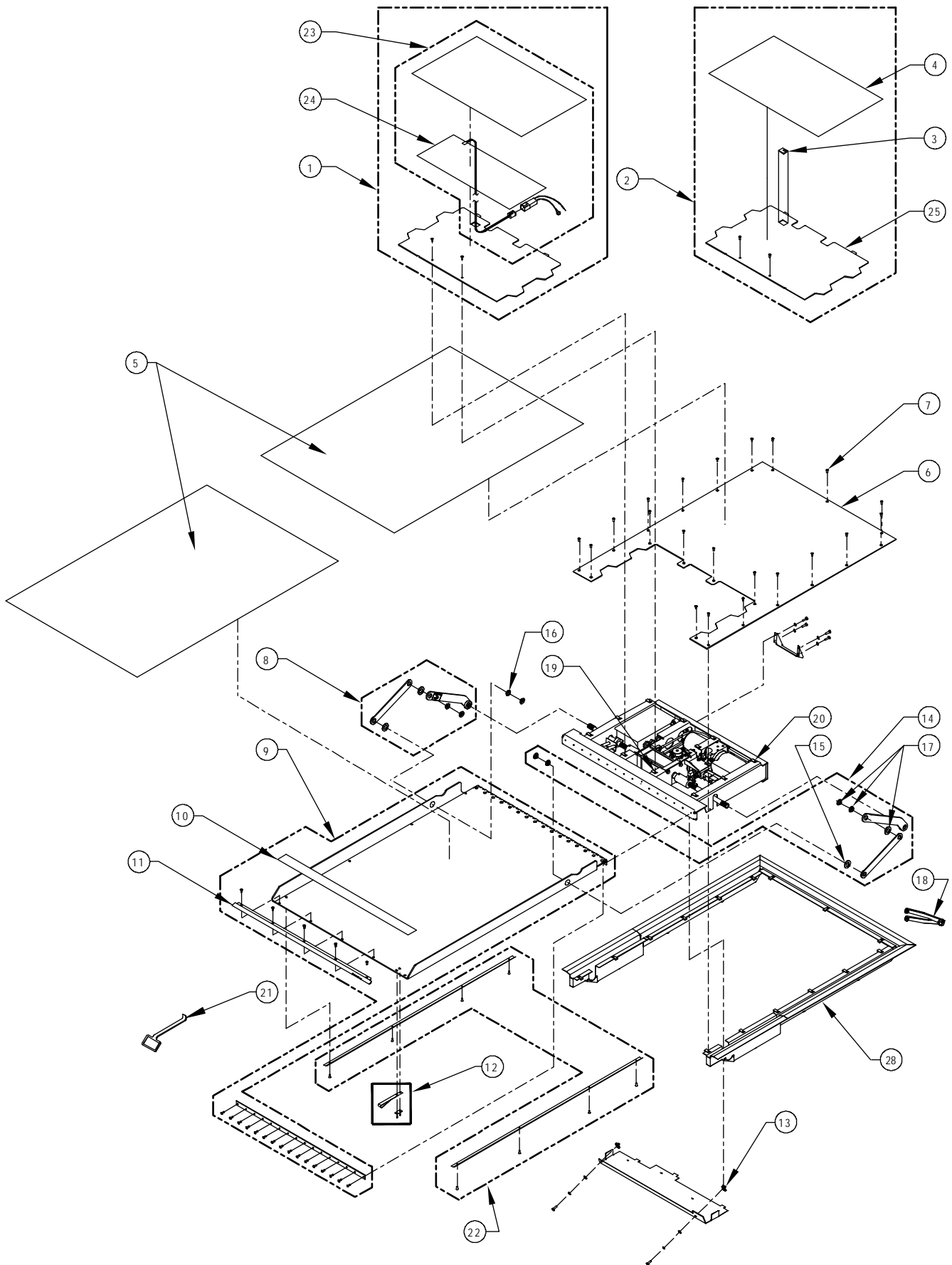


FIGURE 5-1: FR2SS DECAL LOCATIONS

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FIGURE 5-2: FR2SS-SERIES RAMP ASSEMBLY

FIGURE 5-2: FR2SS RAMP ASSEMBLY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	ACCESS COVER ASSY WITH HEATER MAT	1		29239
1A ***	ACCESS COVER ASSY, WITH HEATER MAT, 12V	1		46229
2	ACCESS COVER ASSY WITH WIRE ACCESS PLATE	1		29247
3	PLATE, WIRE ACCESS	1		27478
4 *	SAFETREAD, BLK, 3M #310, 18"X28"	1		29248
5 *	SAFETREAD, BLK, 3M #310, 34"X52"	3		29249
5A ****	FLOOR MATERIAL, ALTRO, 29"X45"	REF	FR2SS05	30428
5B ***	FLOORING, RCA, RIBBED, BLK W/WHITE FLECK W/ADHSV	REF	FR2SS13	33728
5C ***	FLOORING, ALTRO, CHROMA NO.30/WHT NOSE	REF	FR2SS14-11B00000	33789
5D ***	FLOORING, ALTRO, CHROMA 2703/SCRMNG YEL NOSE	REF	FR2SS14-11C00000	37280
5E ***	FLOORING, RCA, RIBBED, SLATE GRAY	REF	FR2SS17-10400700	31454
5F ***	FLOORING, RCA, RIBBED, TR852 BLUE, YEL NOSE	REF	FR2SS01-10D00000	44979
5G ***	FLOORING, TARABUS, ANTHRACITE/YEL NOSE	REF	FR2SS00-10F00000	46241
5H ***	FLOORING, ALTRO, META (2702/YEL)	1	FR2SS00-10G00000	55208
5H ***	FLOORING, ALTRO, META (2702/YEL)	1	FR2SS00-10G00500	55208
6	FLOOR PLATE, 30"X44"	1	FR2SS12	32528
6A ***	FLOOR PLATE, 30"X45"	1	FR2SS15	33784
6B ***	FLOOR PLATE, 30"X48"	1	FR2SS00	22923
6B ***	FLOOR PLATE, 30"X48"	1	FR2SS17	22923
6C ****	FLOOR PLATE, 30"X49"	REF	FR2SS05	24867
6D ***	FLOOR PLATE, 30"X52"	1	FR2SS16-11000000	35837
6E ***	FLOOR PLATE, 32"X32"	1	FR2SS08	30402
6F ***	FLOOR PLATE, 32"X39"	1	FR2SS09	31415
6G ***	FLOOR PLATE, 32"X41"	1	FR2SS04	25941
6G ***	FLOOR PLATE, 32"X41"	1	FR2SS07-10000001	25941
6G ***	FLOOR PLATE, 32"X41"	1	FR2SS13	25941
6H ***	FLOOR PLATE, 32"X43"	1	FR2SS03-10000000	27407
6J ***	FLOOR PLATE, 32"X44"	1	FR2SS02	32061
6J ***	FLOOR PLATE, 32"X44"	1	FR2SS11	32061
6K ***	FLOOR PLATE, 32"X48"	REF	FR2SS01	22963
6L ***	FLOOR PLATE, 32"X50"	1	FR2SS06	28833
6M ***	FLOOR PLATE, 32"X50"	1	FR2SS14	33762
7	SCREW, FHH, M5-.8X20 MM, SST, BLK OXIDE (BAG OF 10)	3		29246
8	KIT, ARM ASSY, RAMP, LH, W/HARDWARE	1		28791
9 **	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X41"	1	FR2SS04	29205
9 **	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X41"	1	FR2SS07-10000001	29205
9 **	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X41"	1	FR2SS13	29205
9A ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X43"	1	FR2SS03	29206
9B ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X44"	1	FR2SS02	42085

CONTINUED

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

- \* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.
- \*\* Some applications require a separate flooring trim kit (Item #22) when replacing the ramp and hinge assembly.
- \*\*\* Not shown.
- \*\*\*\* Discontinued item.

FIGURE 5-2: FR2SS RAMP ASSEMBLY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
9C ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X44"	1	FR2SS02	29207
9C ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X44"	1	FR2SS11	29207
9D ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X44"	1	FR2SS02	29208
9D ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X44"	1	FR2SS11	29208
9E ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X48"	1	FR2SS01-10001000	29209
9E ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X48"	1	FR2SS01-10000300	29209
9E ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X48"	1	FR2SS01-10D00000	29209
9E ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X48"	1	FR2SS01-10G00000	29209
9E ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X48"	1	FR2SS01-10G00500	29209
9E ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X48"	1	FR2SS01-11000400	29209
9F ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X48"	1	FR2SS01-11000100	29210
9G ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X50"	1	FR2SS06	29211
9G ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X50"	1	FR2SS14	29211
9H ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 30"X44"	1	FR2SS12	42044
9J ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 30"X45"	1	FR2SS15	42045
9K ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 30"X48"	1	FR2SS00	42046
9K ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 30"X48"	1	FR2SS17	42046
9L ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 30"X52"	1	FR2SS16	42047
9M ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X32"	1	FR2SS08-10000201	42048
9M ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X32"	1	FR2SS08	42056
9M ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X32"	1	FR2SS08	42060
9N ***	KIT, RAMP & HINGE ASSY, W/HARDWARE, 32"X39"	1	FR2SS09	42049
10	SAFETREAD, 2"X60FT ROLL, YELLOW, SAFETY (BULK ITEM)	1		17250
11 ****	SKID PLATE (FOR 32"X48" RAMP PLATE ASSY)	1	FR2SS01	27421
11 ****	SKID PLATE (FOR 32"X44" RAMP PLATE ASSY)	1	FR2SS02	27421
11 ****	SKID PLATE (FOR 32"X43" RAMP PLATE ASSY)	1	FR2SS03	27421
11 ****	SKID PLATE (FOR 32"X41" RAMP PLATE ASSY)	1	FR2SS04	27421
11 ****	SKID PLATE (FOR 32"X50" RAMP PLATE ASSY)	1	FR2SS06	27421
11 ****	SKID PLATE (FOR 32"X41" RAMP PLATE ASSY)	1	FR2SS07	27421
11 ****	SKID PLATE (FOR 32"X41" RAMP PLATE ASSY)	1	FR2SS13	27421
11A ***	SKID PLATE (FOR 30"X48" RAMP PLATE ASSY)	1	FR2SS00	22953
11A ***	SKID PLATE (FOR 30"X48" RAMP PLATE ASSY)	1	FR2SS17	22953
11B ***	SCUFF PLATE (FOR 32"X48" RAMP PLATE ASSY)	1	FR2SS01	31437
11B ***	SCUFF PLATE (FOR 32"X44" RAMP PLATE ASSY)	1	FR2SS02	31437
11B ***	SCUFF PLATE (FOR 32"X50" RAMP PLATE ASSY)	1	FR2SS06	31437
11B ***	SCUFF PLATE (FOR 32"X44" RAMP PLATE ASSY)	1	FR2SS11	31437
11B ***	SCUFF PLATE (FOR 32"X50" RAMP PLATE ASSY)	1	FR2SS14	31437
11B ***	SCUFF PLATE (FOR 32"X50" RAMP PLATE ASSY)	1	FR2SS18	31437

CONTINUED

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

\* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.

\*\* Some applications require a separate flooring trim kit (Item #22) when replacing the ramp and hinge assembly.

\*\*\* Not shown.

\*\*\*\* Discontinued item.

FIGURE 5-2: FR2SS RAMP ASSEMBLY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
11C ***	SKID PLATE (FOR 32"X48" RAMP PLATE ASSY)	1	FR2SS01	27498
11C ***	SKID PLATE (FOR 32"X44" RAMP PLATE ASSY)	1	FR2SS02	27498
11D ***	SCUFF PLATE (FOR 32"X48" RAMP PLATE ASSY)	1	FR2SS01	32098
11E ***	SCUFF PLATE (FOR 32"X32" RAMP PLATE ASSY)	1	FR2SS07	30463
11F ***	SCUFF PLATE (FOR 32"X32" RAMP PLATE ASSY)	1	FR2SS08	34966
11G ***	SCUFF PLATE (FOR 32"X32" RAMP PLATE ASSY)	1	FR2SS08	38427
11H ***	SCUFF PLATE (FOR 32"X41" RAMP PLATE ASSY)	1	FR2SS09	31453
11J ***	SCUFF PLATE (FOR 30"X44" RAMP PLATE ASSY)	1	FR2SS00	32538
11J ***	SCUFF PLATE (FOR 30"X45" RAMP PLATE ASSY)	1	FR2SS12	32538
11J ***	SCUFF PLATE (FOR 30"X45" RAMP PLATE ASSY)	1	FR2SS15	32538
11J ***	SCUFF PLATE (FOR 30"X45" RAMP PLATE ASSY)	1	FR2SS17	32538
11K ***	SCUFF PLATE (FOR 30"X52" RAMP PLATE ASSY)	1	FR2SS16	31040
11L ***	KIT, SKID PLATE, RETROFIT, 32.75"W	1		29631
12	KIT, LIFTING STRAP	1		18625
13	SPRING NUT, 1/4-20" MULTI THD (BAG OF 10)	1		15952
14	KIT, ARM ASSY, RAMP, RH, W/ HARDWARE	1		28792
15	WASHER, THRUST, LH or RH (BAG OF 10)	4		18692
16	BUSHING, FLANGE, LH or RH (BAG OF 10)	4		18691
17	KIT, BUSHING REBUILD, LH or RH, 4 EA ITEM 14 + 4 EA ITEM 15 W/ 3/8-16 BOLT	1		19975
18	SPANNER WRENCH	1		18756
19	RECEPTACLE, 1/4-TURN, CLIP-ON, SST (BAG OF 10)	1		29250
20	SPRING NUT, M5-.8, MULTI-THD (BAG OF 10)	1		19793
21	TOOL, MANUAL DEPLOY	1	FR2SS01	19534
21	TOOL, MANUAL DEPLOY	1	FR2SS02	19534
21	TOOL, MANUAL DEPLOY	1	FR2SS11	19534
21	TOOL, MANUAL DEPLOY	1	FR2SS12	19534
21	TOOL, MANUAL DEPLOY	1	FR2SS14	19534
21	TOOL, MANUAL DEPLOY	1	FR2SS16	19534
22	KIT, FLOORING TRIM	REF	FR2SS01-11000000	27483
22	KIT, FLOORING TRIM	REF	FR2SS01-10G00000	27483
22A ***	KIT, FLOORING TRIM	1	FR2SS02	28823
22B ***	KIT, FLOOR, RCA, RIBBED, BLK W/FLECKS	1	FR2SS15	36648
23	KIT, SAFETREAD AND HEATER MAT	1		29251
24	HEATER MAT W/ HARNESS	1	FR2SS00	28803
24	HEATER MAT W/ HARNESS	1	FR2SS01	28803
24	HEATER MAT W/ HARNESS	1	FR2SS09	28803
24	HEATER MAT W/ HARNESS	1	FR2SS15	28803
25	COMPONENT ACCESS COVER	1		23996

END OF TABLE

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

- \* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.
- \*\* Some applications require a separate flooring trim kit (Item #22) when replacing the ramp and hinge assembly.
- \*\*\* Not shown.



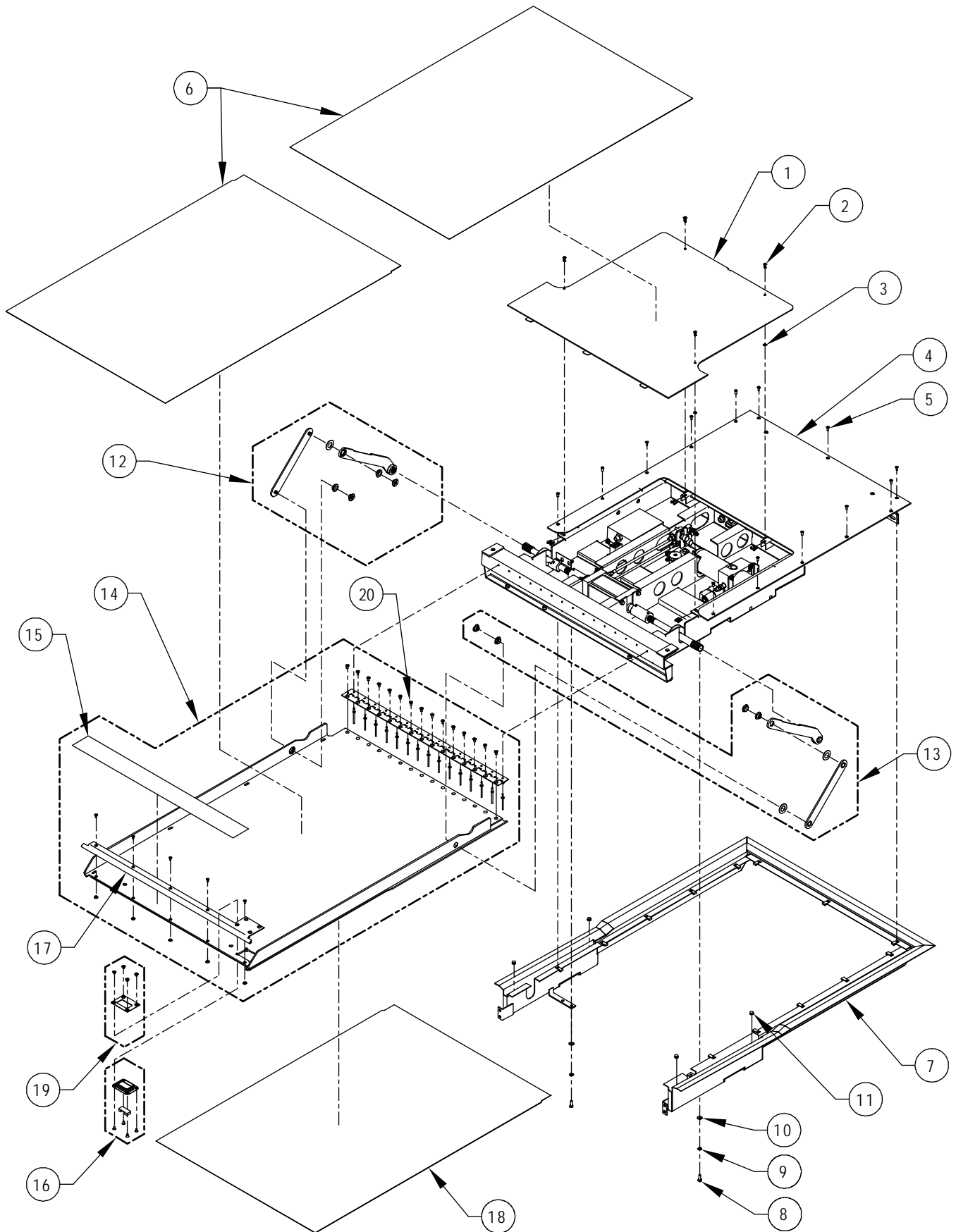
FIGURE 5-2: FR2SS RAMP ASSEMBLY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
25A ***	COVER WLDT, ACCESS PANEL	1	FR2SS01	36602
26 ***	HANDLE, RECESSED	1		27485
27 ***	PLUG, HANDLE	1		27486
27 ***	PLUG, HANDLE	1		27486
28	TRIM POCKET ASSY	1	FR2SS01	23933
28A ***	TRIM POCKET ASSY	1	FR2SS09	31451
28B ***	TRIM POCKET ASSY	1	FR2SS18	45587
<b>END OF TABLE</b>				

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

- \* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.
- \*\* Some applications require a separate flooring trim kit (Item #22) when replacing the ramp and hinge assembly.
- \*\*\* Not shown.

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FIGURE 5-2.1: FR2G-SERIES RAMP ASSEMBLY

FIGURE 5-2.1: FR2G RAMP ASSEMBLY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PLATE, FLOOR, FRONT	1	FR2G01-ALL	24868
1A ***	PLATE, ACCESS PANEL, HEATER	1	FR2G01-ALL	32503
1B ***	PLATE, ACCESS PANEL	1	FR2G02-ALL	24859
1B ***	PLATE, ACCESS PANEL	1	FR2G03-ALL	24859
1B ***	PLATE, ACCESS PANEL	1	FR2G04	24859
1C ***	PLATE, ACCESS PANEL, HEATER	1	FR2G04	45439
2	STUD, 1/4-TURN, CSK, PHIL, SST(KIT OF 2)	2		34867
3	RETAINER, 1/4-TURN FASTENER, SST (BAG OF 10)	4		35490
4	PLATE, FLOOR, BACK	1		24867
5	SCREW, FHH, M5-.8X20MM, SST (BAG OF 10)	1		29246
6	SAFETREAD, 4FT X 60FT, BLK, 3M #310	2		17792
7 **	TRIM WLDT, NO CUTOUT	1	FR2G01-ALL	31026
7A ***	TRIM WLDT, SML CUTOUT	1	FR2G01	31024
7B ***	TRIM WLDT, LRG CUTOUT	1	FR2G01	31022
7C ***	TRIM WLDT, LRG CUTOUT, WHITE WRINKLE	1	FR2G01	35848
7D ***	TRIM POCKET ASSY, LRG NOTCH	REF	FR2G02-ALL	38121
7E ***	TRIM WLDT, ANGLED FLOOR	REF	FR2G03-ALL	35080
7F ***	TRIM POCKET ASSY, LRG NOTCH	REF	FR2G04-ALL	43755
8	SCREW, HEX, 1/4-20X3/4 SST (BAG OF 10)	1		13389
9	WASHER, SPL, 1/4 SST (BAG OF 10)	1		13399
10	WASHER, FLT, .281X.625X.065 SST (BAG OF 10)	1		13398
11	PLUG, LOCKING HOLE, .38 DIA, BLK PLASTIC (BAG OF 10)	1		35440
12	KIT, ARM ASSY, RAMP, LH, W/HRDWR	1	FR2G01	42063
12	KIT, ARM ASSY, RAMP, LH, W/HRDWR	1	FR2G02	42063
13	KIT, ARM ASSY, RAMP, RH, W/HRDWR	1	FR2G01	42064
13	KIT, ARM ASSY, RAMP, RH, W/HRDWR	1	FR2G02	42064
14	KIT, RAMP & HINGE ASSY, W/HRDWR, 30"X49", NO CUTOUT	1	FR2G01	42065
14A ***	KIT, RAMP & HINGE ASSY, W/HRDWR, 30"X49", SML CUTOUT	1	FR2G01	42066
14B ***	KIT, RAMP & HINGE ASSY, W/HRDWR, 30"X49", LRG CUTOUT	1	FR2G01	42067
14C ***	KIT, RAMP & HINGE ASSY, W/HRDWR, 30"X49"	1	FR2G02	42068
14D ***	KIT, RAMP & HINGE ASSY, W/HRDWR, 30"X49", W/STRAP	1	FR2G02	42069
14E ***	KIT, RAMP & HINGE ASSY, W/HRDWR, 30"X49", WHITE	1	FR2G02	42070
15	SAFETREAD, 2"X60FT ROLL, YELLOW, SAFETY (BULK ITEM)	1		17250
16	KIT, COVER, HANDLE W/HARDWARE	1		35499
17	SCUFF PLATE	1	FR2G01	27441
17A ***	SCUFF PLATE	1	FR2G01	35003
17B ***	SCUFF PLATE	1	FR2G02	31040
17B ***	SCUFF PLATE	1	FR2G03	31040

CONTINUED

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

- \* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.
- \*\* Some applications require a separate flooring trim kit (Item #7) when replacing the ramp and hinge assembly.
- \*\*\* Not shown.

FIGURE 5-2.1: FR2G RAMP ASSEMBLY (CONT'D)

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
17C ***	SCUFF PLATE	1	FR2G04	43176
17C ***	SCUFF PLATE	1	FR2G04	43176
18	FLOORING, ALTRO, STORM	1	FR2G01-002300	31019
18A ***	FLOORING, ALTRO, MIDNIGHT	1	FR2G01-001500	31021
18A ***	FLOORING, ALTRO, MIDNIGHT	1	FR2G01-002500	31021
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G01-000400	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G01-001400	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G01-002400	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G01-012400	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G01-001E10	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G02-RY0766AW0	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G02-RY0766BW0	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G02-RY0766BW1	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G04-RY0766BY0	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G04-RY0766BY1	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G04-RY0766CY0	31454
18B ***	FLOORING, RCA, RIBBED, SLATE GRAY	1	FR2G04-RY0852AY0	31454
18C ***	FLOORING, ALTRO, WAVE	REF	FR2G01-001600	32048
18C ***	FLOORING, ALTRO, WAVE	REF	FR2G01-002600	32048
18D ***	FLOORING, RCA, RIBBED, 992 COLOR CODE	REF	FR2G01-002700	32049
18D ***	FLOORING, RCA, RIBBED, 992 COLOR CODE	REF	FR2G01-002701	32049
18D ***	FLOORING, RCA, RIBBED, 992 COLOR CODE	REF	FR2G02-RWX992AW0	32049
18D ***	FLOORING, RCA, RIBBED, 992 COLOR CODE	REF	FR2G04-RW0992BY0	32049
18E ***	FLOORING, ALTRO, CYBER, SCREAMING YELLOW NOSING	REF	FR2G01-001800	32507
18F ***	FLOORING, RCA, RIBBED, (466 YELLOW)	1	FR2G01-001900	32572
18F ***	FLOORING, RCA, RIBBED, (466 YELLOW)	1	FR2G02-RY0466BW0	32572
18F ***	FLOORING, RCA, RIBBED, (466 YELLOW)	1	FR2G04-RY0466BY0	32572
18G ***	FLOORING, ALTRO, IM 001, SCREAMING YELLOW	1	FR2G01-000D00	33745
18H ***	FLOORING, RCA, RIBBED, (604)	1	FR2G01-000C00	33746
18H ***	FLOORING, RCA, RIBBED, (604)	1	FR2G01-001C00	33746
18H ***	FLOORING, RCA, RIBBED, (604)	1	FR2G01-001E10	33746
18H ***	FLOORING, RCA, RIBBED, (604)	1	FR2G02-RY0604AW0	33746
18H ***	FLOORING, RCA, RIBBED, (604)	1	FR2G04-RY0604BY0	33746
18J ***	FLOORING, ALTRO, CHROMA (030), WHT NOSE	REF	FR2G01-002E00	33768
18K ***	FLOORING, ALTRO, CHRO(030), SCREAMING YELLOW	REF	FR2G01-001F00	33769
18K ***	FLOORING, ALTRO, CHRO(030), SCREAMING YELLOW	REF	FR2G02-CC2730BW0	33769
18L ***	FLOORING, RCA, RIBBED COLOR 630)	1	FR2G01-001G00	34120
18M ***	FLOORING, RCA, RIBBED (852) YELLOW	1	FR2G01-000100	35008
18M ***	FLOORING, RCA, RIBBED (852) YELLOW	1	FR2G01-001100	35008

CONTINUED

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

\* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.

\*\* Some applications require a separate flooring trim kit (Item #7) when replacing the ramp and hinge assembly.

\*\*\* Not shown.

FIGURE 5-2.1: FR2G RAMP ASSEMBLY (CONT'D)

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
18M ***	FLOORING, RCA, RIBBED (852) YELLOW	1	FR2G01-002100	35008
18M ***	FLOORING, RCA, RIBBED (852) YELLOW	1	FR2G02-CC2702AW0	35008
18M ***	FLOORING, RCA, RIBBED (852) YELLOW	1	FR2G02-RYX852AW0	35008
18M ***	FLOORING, RCA, RIBBED (852) YELLOW	1	FR2G04-RY0852AY0	35008
18M ***	FLOORING, RCA, RIBBED (852) YELLOW	1	FR2G04-RY0766BY1	35008
18N ***	FLOORING, RCA, RIBBED, (BLK)	REF	FR2G01-001H00	35036
18N ***	FLOORING, RCA, RIBBED, (BLK)	REF	FR2G02-RY0BLKBW0	35036
18P ***	FLOORING, ALTRO, CHROMA (2702/EP) SCREAMING YEL	REF	FR2G01-001K00	35038
18P ***	FLOORING, ALTRO, CHROMA (2702/EP) SCREAMING YEL	REF	FR2G02-CC2702BW0	35038
18P ***	FLOORING, RCA, RIBBED, TR466 GRAY, WHT NOSE	REF	FR2G02-RWX753AW0	35073
18P ***	FLOORING, RCA, RIBBED, TR466 GRAY, WHT NOSE	REF	FR2G02-RWX753AT0	35073
18S ***	FLOORING, ALTRO, META (903/EP)	REF	FR2G01-000N00	35831
18S ***	FLOORING, ALTRO, META (903/EP)	REF	FR2G01-001N00	35831
18S ***	FLOORING, ALTRO, META (903/EP)	REF	FR2G01-002N00	35831
18S ***	FLOORING, ALTRO, META (903/EP)	REF	FR2G02-MC0903BW0	35831
18S ***	FLOORING, ALTRO, META (903/EP)	REF	FR2G02-MC0903CW0	35831
18S ***	FLOORING, ALTRO, META (903/EP)	REF	FR2G04-MC0903BY0	35831
18T ***	FLOORING, ALTRO, META (89/EP)	REF	FR2G01-001R00	35832
18U ***	FLOORING, ALTRO, CHROMA (019/EP)	1	FR2G01-001T00	35856
18U ***	FLOORING, ALTRO, CHROMA (019/EP)	1	FR2G02-CC2719BW0	35856
18U ***	FLOORING, ALTRO, CHROMA (019/EP)	1	FR2G04-CC2719BY0	35856
18U ***	FLOORING, ALTRO, CHROMA (019/EP)	1	FR2G04-CC2730BY0	35856
18V ***	FLOORING, ALTRO, META (892/EP)	1	FR2G01-000U00	36612
18V ***	FLOORING, ALTRO, META (892/EP)	1	FR2G01-002U00	36612
18W ***	FLOORING, ALTRO, META (2706/EP)	REF	FR2G02-MC2706AW0	37262
18W ***	FLOORING, ALTRO, META (2706/EP)	REF	FR2G02-MC2706BW0	37262
18W ***	FLOORING, ALTRO, META (2706/EP)	REF	FR2G02-MC2706CW0	37262
18W ***	FLOORING, ALTRO, META (2789/YEL)	REF	FR2G04-MC2706AY0	37262
18X ***	FLOORING, ALTRO, TFCR 2703/SCREAMING YEL NOSE	REF	FR2G02-CC2703BW0	37281
18Y ***	FLOORING, RCA, RIBBED, SLATE GRAY, WHT NOSE	REF	FR2G02-RW0766CW0	37296
18Z ***	FLOORING, ALTRO, CHR, EBONY ASF/YEL NOSING	REF	FR2G02-CC7010CW0	38409
18AA ***	FLOORING, ALTRO, META (2789/YEL)	REF	FR2G02-MC2789AW0	38449
18AA ***	FLOORING, ALTRO, META (2789/YEL)	REF	FR2G04-MC2789BY0	38449
18AA ***	FLOORING, ALTRO, META (2789/YEL)	REF	FR2G04-MC2789AY0	38449
18AB ***	FLOORING, ALTRO, META (2702/YEL)	REF	FR2G02-MC2702AW0	38450
18AB ***	FLOORING, ALTRO, META (2702/YEL)	REF	FR2G02-MC2702AW2	38450
18AB ***	FLOORING, ALTRO, META (2702/YEL)	REF	FR2G04-MC2702BY0	38450
18AC ***	KIT, FLR, RCA, RIBBED, TR 992/YEL NOSING	REF	FR2G02-RY0992BW0	38477
18AD ***	FLOORING, RCA, RIBBED, TR 452 (ROYAL BLUE)	REF	FR2G02-RY0452AW0	39030

CONTINUED

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

- \* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.
- \*\* Some applications require a separate flooring trim kit (Item #7) when replacing the ramp and hinge assembly.
- \*\*\* Not shown.

FIGURE 5-2.1: FR2G RAMP ASSEMBLY (CONT'D)

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
18AD ***	FLOORING, RCA, RIBBED, TR 452 (ROYAL BLUE)	REF	FR2G04-RY0452AY0	39030
18AE ***	FLOORING, ALTRO, CHRM, ZEAL/YELLOW NOSE	REF	FR2G02-CC2733AW0	39057
18AE ***	FLOORING, ALTRO, CHRM, ZEAL/YELLOW NOSE	REF	FR2G02-CC2733BW0	39057
18AE ***	FLOORING, ALTRO, CHRM, ZEAL/YELLOW NOSE	REF	FR2G02-CC2733CW0	39057
18AE ***	FLOORING, ALTRO, CHRM, ZEAL/YELLOW NOSE	REF	FR2G04-CC2733BY0	39057
18AF ***	KIT, FLR, TARABUS, 8414 W/6203 NOSING	REF	FR2G02-PY8414AW0	39248
18AG ***	KIT, FLOORING, RCA, RIBBED, TR 628/YEL NOSING	REF	FR2G02-RYX628AW0	39266
18AH ***	KIT, FLOORING, RCA, RIBBED, TR 872/YEL NOSING	REF	FR2G02-RYX872BW0	39267
18AJ ***	FLOORING, RCA, RIBBED, TR466 GRAY, WHT NOSE	REF	FR2G02-RW0466AW0	4242
18AK ***	FLOORING, RCA, RIBBED, TR604 BLK, WHT NOSE	REF	FR2G02-RWX604CW0	42488
18AK ***	FLOORING, RCA, RIBBED, TR604 BLK, WHT NOSE	REF	FR2G04-RY0604AY0	42488
18AL ***	FLOORING, ALTRO, META (2775/EP)	REF	FR2G04-MC2775BY0	44463
18AM ***	FLOORING, ALTRO, CHROMA (2761/EP)	REF	FR2G04-CC2761AYS	44906
18AN ***	FLOORING, ALTRO, META (27892/EP)	REF	FR2G04-MCX892BY0	43757
18AN ***	FLOORING, ALTRO, META (27892/EP)	REF	FR2G04-MC7892AY0	43757
18AN ***	FLOORING, ALTRO, META (27892/EP)	REF	FR2G04-MC7892CY0	43757
18AN ***	FLOORING, ALTRO, META (27892/EP)	REF	FR2G04-RY0766AY0	43757
18AO ***	FLOORING, RCA, RIBBED, TR766/WHT	REF	FR2G04-RW0766CY0	46239
18AP ***	FLOORING, RCA, RIBBED, TR766/WHT	REF	FR2G04-MCX421BY0	44143
19	KIT, COVER, HANDLE W/HDWR	1		35499
20	SCREW, FHH, 10-24 X 3/8 SST (BAG OF 10)	1		15962
<b>END OF TABLE</b>				

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

- \* New floor coverings are being introduced regularly and yours possibly will not be listed here. Consult Ricon Product Support if your covering is not listed.
- \*\* Some applications require a separate flooring trim kit (Item #7) when replacing the ramp and hinge assembly.
- \*\*\* Not shown.

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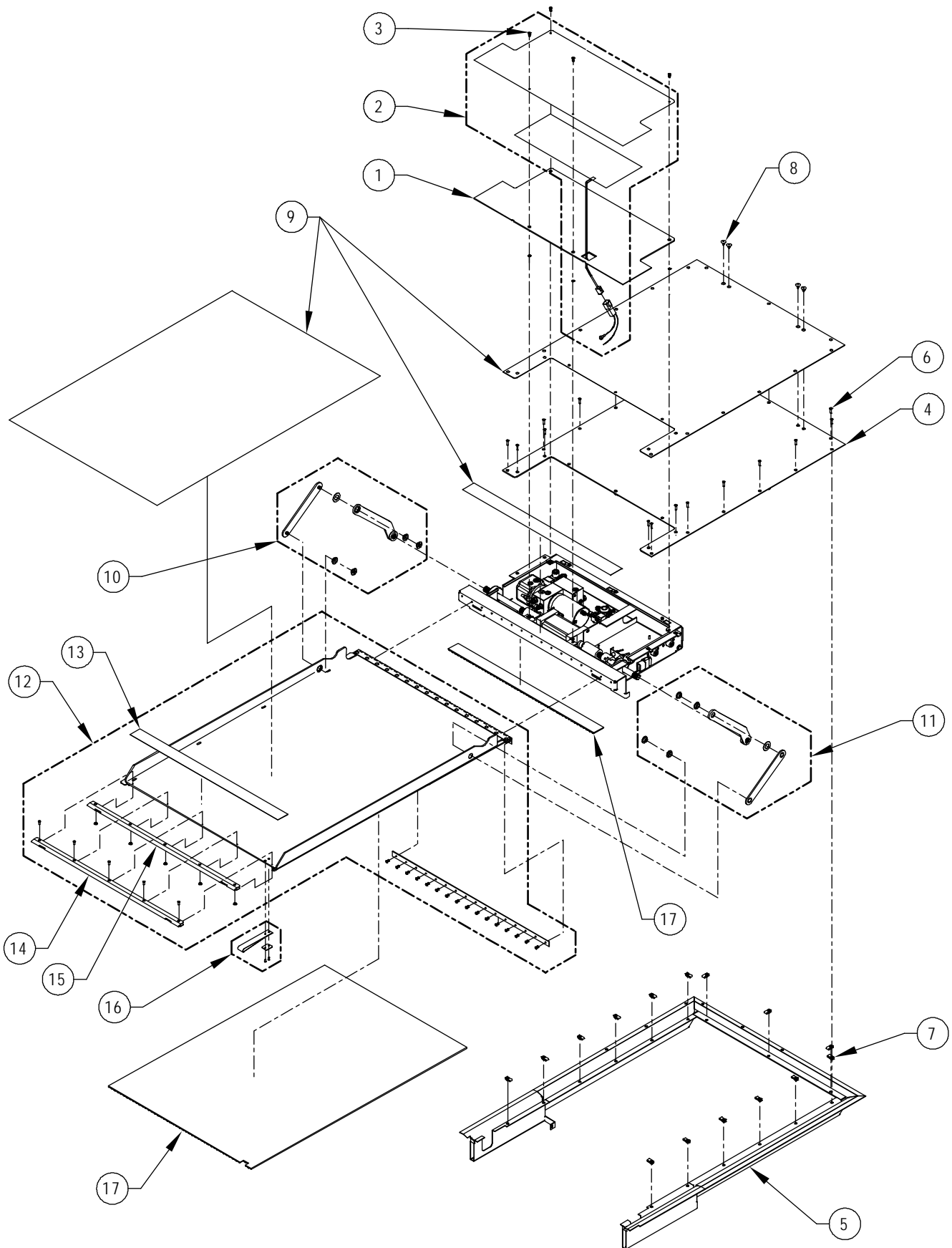


FIGURE 5-2.2: FR2N01-SERIES RAMP ASSEMBLY

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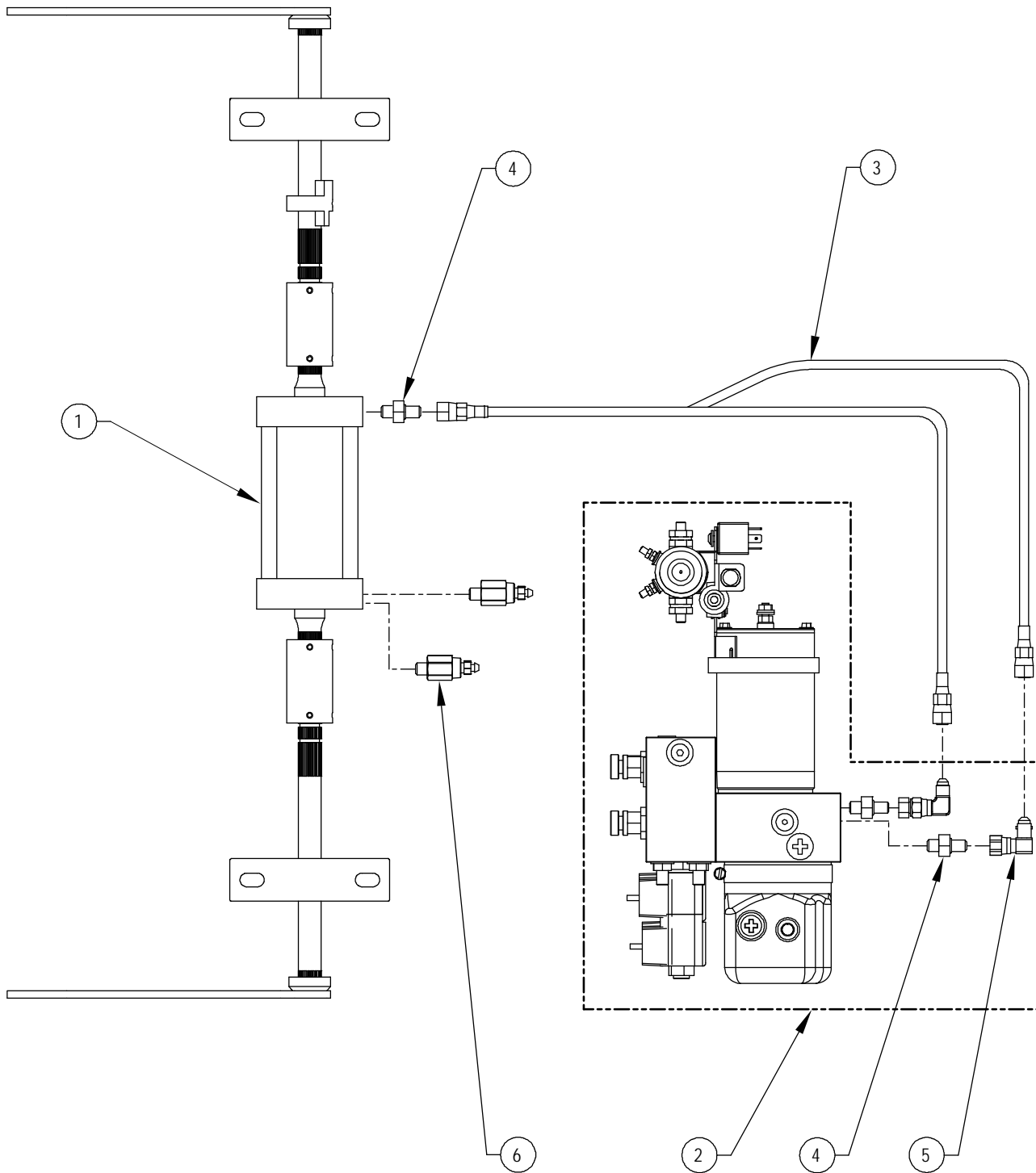
**FIGURE 5-2.2: FR2N RAMP ASSEMBLY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	COVER WLDT, ACCESS PANEL	REF		32001
2	KIT, FLOORING AND HEATER MAT	1		29251
3	STUD, 1/4-TURN, CSK, PHIL, SST (KIT OF 2)	2		34867
4	FLOOR WLDT	REF		32000
5	TRIM WLDT	REF		32004
6	SCREW, FHH, M5-.8X20MM, SST, BLK OXIDE (BAG OF 10)	1		29246
7	NUT, SPRING, M5-.8, MULTI-THD (BAG OF 10)	1		19793
8	SCREW, PHP, 10A X 1/2"	4		283895
9	NONSKID, RAMP, BLACK	1		16730
10	KIT, ARM ASSY, RAMP, LH, W/ HARDWARE	1	FR2N01-ALL	42082
11	KIT, ARM ASSY, RAMP, RH, W/ HARDWARE	1	FR2N01-ALL	42083
12	KIT, RAMP AND HINGE ASSY, W/HARDWARE, 30"X48"	1	FR2N01-ALL	42084
13	SAFETREAD, 2"X60FT, ROLL, YELLOW, SAFETY	1		17250
14	SCUFF PLATE	1		35048
15	BAR, SUPPORT, SCUFF PLATE	1		32537
16	KIT, LIFTING STRAP	1		18625
17	FLOORING, RCA, RIBBED, (452)	1	FR2N01-10101010	35056
17A *	FLOORING, ALTRO, CHROMA (2731/EP)	REF	FR2N01-10200000	38471
17B *	FLOORING, ALTRO, CHROMA (27MTS/EP)	REF	FR2N01-10300000	38483
17C *	FLOORING, TARABUS, LONG BEACH LOGO	REF	FR2N01-10400000	42442
17D *	FLOORING, ALTRO, CHROMA (2761/EP)	REF	FR2N01-10500000	43403
17E *	FLOORING, ALTRO, CHROMA (2772/EP)	REF	FR2N01-10600000	43419
17F *	KIT, FLOORING, TARABUS, NT HELIOS 8805/YEL NOSE	REF	FR2N01-10700000	44419
17G *	FLOORING, ALTRO, META 27421/EP(MIDNITE BLU)	REF	FR2N01-10800000	44932
17H *	FLOORING, ALTRO, CHROMA 2702/EP (CYBER)	REF	FR2N01-10900000	45449

**END OF TABLE**

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

\* Not shown.



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FIGURE 5-3: HYDRAULIC COMPONENTS AND FITTINGS

FIGURE 5-3: HYDRAULIC COMPONENTS AND FITTINGS

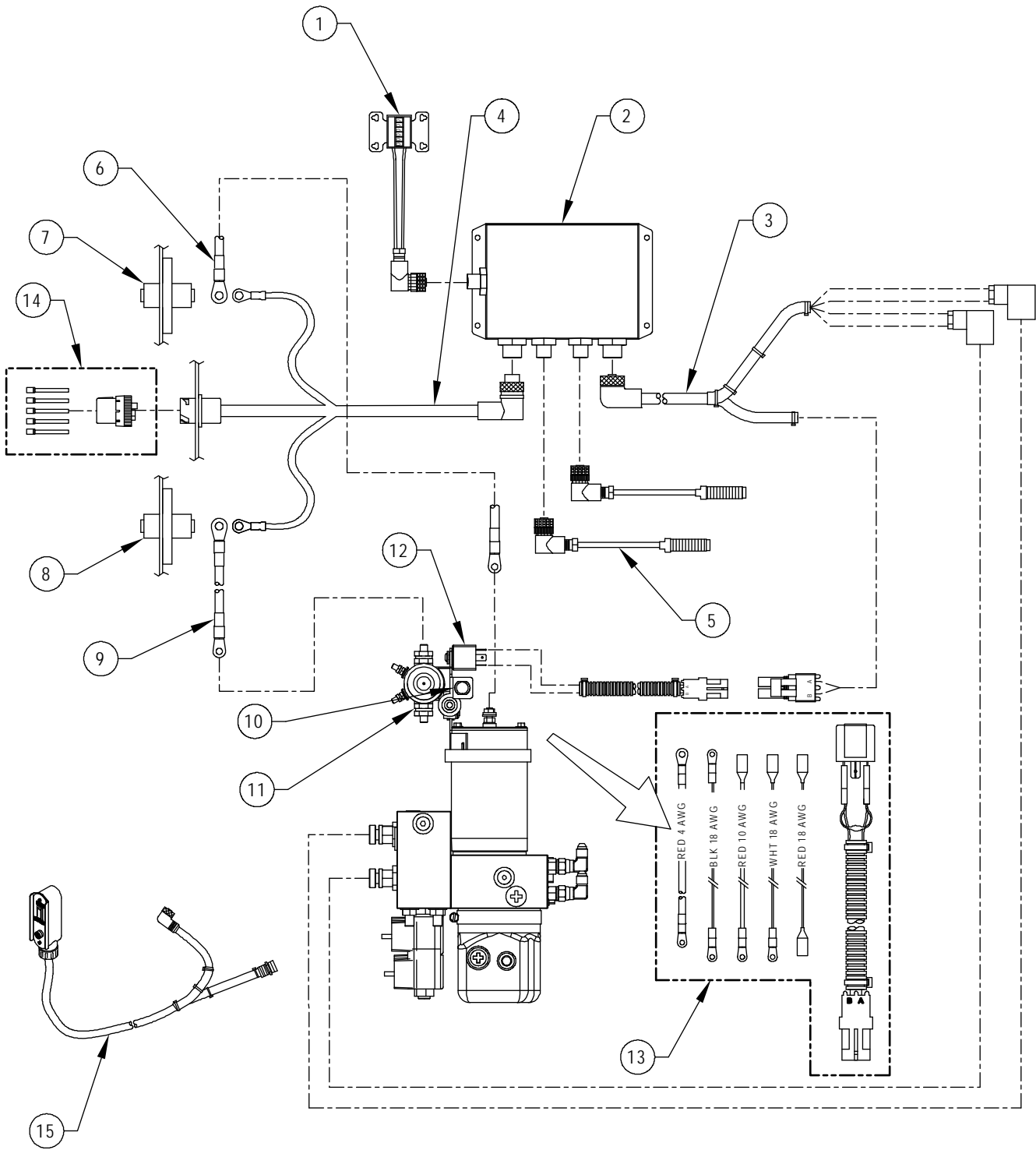
FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	ACTUATOR, ROTARY	1		98048
1A ****	KIT, ACTUATOR WITH ADAPTERS AND FITTINGS	1		18619
2 *	PUMP ASSY, 24V	1	FR2SSXX	32801
2 ****	PUMP ASSY, 24V	1	FR2G01-ALL	32801
2 ****	PUMP ASSY, 24V	1	FR2G02-ALL	32801
2 ****	PUMP ASSY, 24V	1	FR2G03-ALL	32801
2 ****	PUMP ASSY, 24V	1	FR2G04-ALL	32801
2 ****	PUMP ASSY, 24V	1	FR2N01-102000000	32801
2	PUMP ASSY, 24V	1	FR2N01-103000000	32801
2	PUMP ASSY, 24V	1	FR2N01-104000000	32801
2	PUMP ASSY, 24V	1	FR2N01-105000000	32801
2	PUMP ASSY, 24V	1	FR2N01-106000000	32801
2	PUMP ASSY, 24V	1	FR2N01-107000000	32801
2	PUMP ASSY, 24V	1	FR2N01-108000000	32801
2	PUMP ASSY, 24V	1	FR2N01-109000000	32801
2A ****	PUMP ASSY, 24V	1	FR2SS01-10001505	35051
2A ****	PUMP ASSY, 24V	1	FR2N01-10101010	35051
2B ****	PUMP ASSY, 12V	1	FR2SS01-00000000	32881
2B ****	PUMP ASSY, 12V	1	FR2SS02-00000000	32881
2B ****	PUMP ASSY, 12V	1	FR2SS02-01000000	32881
2B ****	PUMP ASSY, 12V	1	FR2SS11-01000000	32881
2B ****	PUMP ASSY, 12V	1	FR2SS12-00000000	32881
2C **	KIT, INSTALLATION, 24V PUMP CONVERSION, GILLIG	1		32829
2D ***	KIT, INSTALLATION, 24V PUMP CONVERSION, NON-GILLIG	1		32830
2E ****	KIT, INSTALLATION, 12V PUMP CONVERSION	1		32896
3	HOSE ASSY, HYD., 25.0"	1		98065
4	ADAPTER, ORB, 4XJIC, 4 STL	4		17208
5	FITTING, SNL, 1/4J, 1/4J, STL	2		VS-SH-06
6	FITTING, BLEEDER	2		25710
7 ****	OIL, HYDRAULIC, TEXACO #15, MEETS MIL-H-5606G	1 GAL		20-16051

\* Use this pump ONLY for GILLIG models beginning with Serial Numbers 7303-Above and for NON-GILLIG models beginning with Serial Numbers 7290-Above. DO NOT use kits with this pump if model serial numbers fall within the ranges listed for GILLIG and NON-GILLIG models.

\*\* Use this Pump Replacement Kit for GILLIG models with Serial Numbers 7302-Lower.

\*\*\* Use this Pump Replacement Kit for FR2SS models with Serial Numbers 7289-Lower.

\*\*\*\* Not shown.



RSM0011000

FIGURE 5-4: ELECTRICAL HARNESSES AND COMPONENTS

FIGURE 5-4: ELECTRICAL HARNESSES AND COMPONENTS

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	COUNTER W/HARNESS	1		22978
2	CONTROLLER ASSY, 24V (SEE KIT P/N 20707)	1		38416
2A **	CONTROLLER ASSY, 24V (SUPERSEDED BY P/N 38416)	REF		34898
2B **	CONTROLLER ASSY, 24V (SUPERSEDED BY P/N 34898)	REF		25972
2C **	CONTROLLER ASSY, 12V (SUPERSEDED BY P/N 34898)	REF		27432
2D *	KIT, CONTROLLER, UNIV, W/PROGRAM INSTRUCTIONS	1		20707
3	HARNESS ASSY, J4, 20", 24V	1		22996
3A *	HARNESS ASSY, J4, 39", 12V	1	FR2SS01-00000000	23562
3A *	HARNESS ASSY, J4, 39", 12V	1	FR2SS02-00000000	23562
3A *	HARNESS ASSY, J4, 39", 12V	1	FR2SS11-01000000	23562
3A *	HARNESS ASSY, J4, 39", 12V	1	FR2SS12-00000000	23562
3B *	HARNESS ASSY, J4, 39 ", 24V	1	FR2SS00-10000000	18226
3B *	HARNESS ASSY, J4, 39 ", 24V	1	FR2SS00-10001000	18226
3B *	HARNESS ASSY, J4, 39 ", 24V	1	FR2SS06-10000200	18226
3B *	HARNESS ASSY, J4, 39 ", 24V	1	FR2SS17-10000000	18226
3B *	HARNESS ASSY, J4, 39 ", 24V	1	FR2N01-ALL	18226
4	HARNESS ASSY, J1, PANEL MOUNT	1		22979
4A *	HARNESS ASSY, J1	1	FR2SS07-10000001	28867
4A *	HARNESS ASSY, J1	1	FR2SS08-10000201	28867
4A *	HARNESS ASSY, J1	1	FR2SS08-10000501	28867
4B *	HARNESS ASSY, J1, PANEL MOUNT	1	FR2G01-ALL	29620
4B *	HARNESS ASSY, J1, PANEL MOUNT	1	FR2G02-ALL	29620
4B *	HARNESS ASSY, J1, PANEL MOUNT	1	FR2G03-ALL	29620
4B *	HARNESS ASSY, J1, PANEL MOUNT	1	FR2G04-ALL	29620
4C *	HARNESS, J1, FLUID LEVEL SENSOR	1	FR2N01-ALL	35052
5	SENSOR ASSY, PROXIMITY	REF		98071
6	JUMPER, CABLE, 4 AWG, BLACK 10"	1		22997
6A *	JUMPER, CABLE, 4 AWG, BLACK 14"	1	FR2SS07-10000001	28868
6A *	JUMPER, CABLE, 4 AWG, BLACK 14"	1	FR2SS08-10000201	28868
6B *	JUMPER, CABLE, 4 AWG, BLACK 10"	1	FR2G01-ALL	27454
6B *	JUMPER, CABLE, 4 AWG, BLACK 10"	1	FR2G02-ALL	27454
6B *	JUMPER, CABLE, 4 AWG, BLACK 10"	1	FR2G03-ALL	27454
6B *	JUMPER, CABLE, 4 AWG, BLACK 10"	1	FR2G04-ALL	27454

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

\* Not shown.

\*\* Superseded item

FIGURE 5-4: ELECTRICAL HARNESSES AND COMPONENTS

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
3B *	HARNESS ASSY, J4, 39", 24V	1	FR2SS17-10000000	18226
6C *	JUMPER, CABLE, 4 AWG, BLACK 21"	1	FR2N01-ALL	28540
7	KIT, TERMINAL BLOCK, NEGATIVE, W/HARDWARE	1		29255
7A *	KIT, TERMINAL BLOCK, NEGATIVE, MODIFIED, W/HARDWARE	1	FR2SS07-ALL	29257
8	KIT, TERMINAL BLOCK, POSITIVE, W/HARDWARE	1		29256
8A *	KIT, TERMINAL BLOCK, POSITIVE, MODIFIED, W/HARDWARE	1	FR2SS07-ALL	29258
9	JUMPER, CABLE, 4 AWG, RED 7"	1		22976
9A *	JUMPER, CABLE, 4 AWG, RED 11"	1	FR2SS07-10000001	28869
9A *	JUMPER, CABLE, 4 AWG, RED 11"	1	FR2SS08-10000201	28869
9A *	JUMPER, CABLE, 4 AWG, RED 11"	1	FR2SS08-10000501	28869
9A *	JUMPER, CABLE, 4 AWG, RED 11"	1	FR2N01-ALL	28869
9B *	JUMPER, CABLE, 4 AWG, RED 10"	1	FR2G01-ALL	27493
9B *	JUMPER, CABLE, 4 AWG, RED 10"	1	FR2G02-ALL	27493
9B *	JUMPER, CABLE, 4 AWG, RED 10"	1	FR2G03-ALL	27493
9B *	JUMPER, CABLE, 4 AWG, RED 10"	1	FR2G04-ALL	27493
10	CIRCUIT BREAKER, 8 AMP, RED	1		265108
11	KIT, SOLENOID, 24V SINGLE POLE, W/HARDWARE	1		20667
11A*	KIT, SOLENOID, 12V SINGLE POLE, W/HARDWARE	1	FR2SS02-ALL	20668
12	RELAY, 24V COIL, 40A	1		28-36-406
12A*	RELAY, 12V COIL, 40A	1	FR2SS02-ALL	28-36-405
13	KIT, ELECTRICAL HARNESS, HYDRAULIC PUMP	1		28778
14	KIT, CONNECTOR W/PINS	1		22985
15	PENDANT, TEST	1		17263

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

\* Not shown.

\*\* Superseded item

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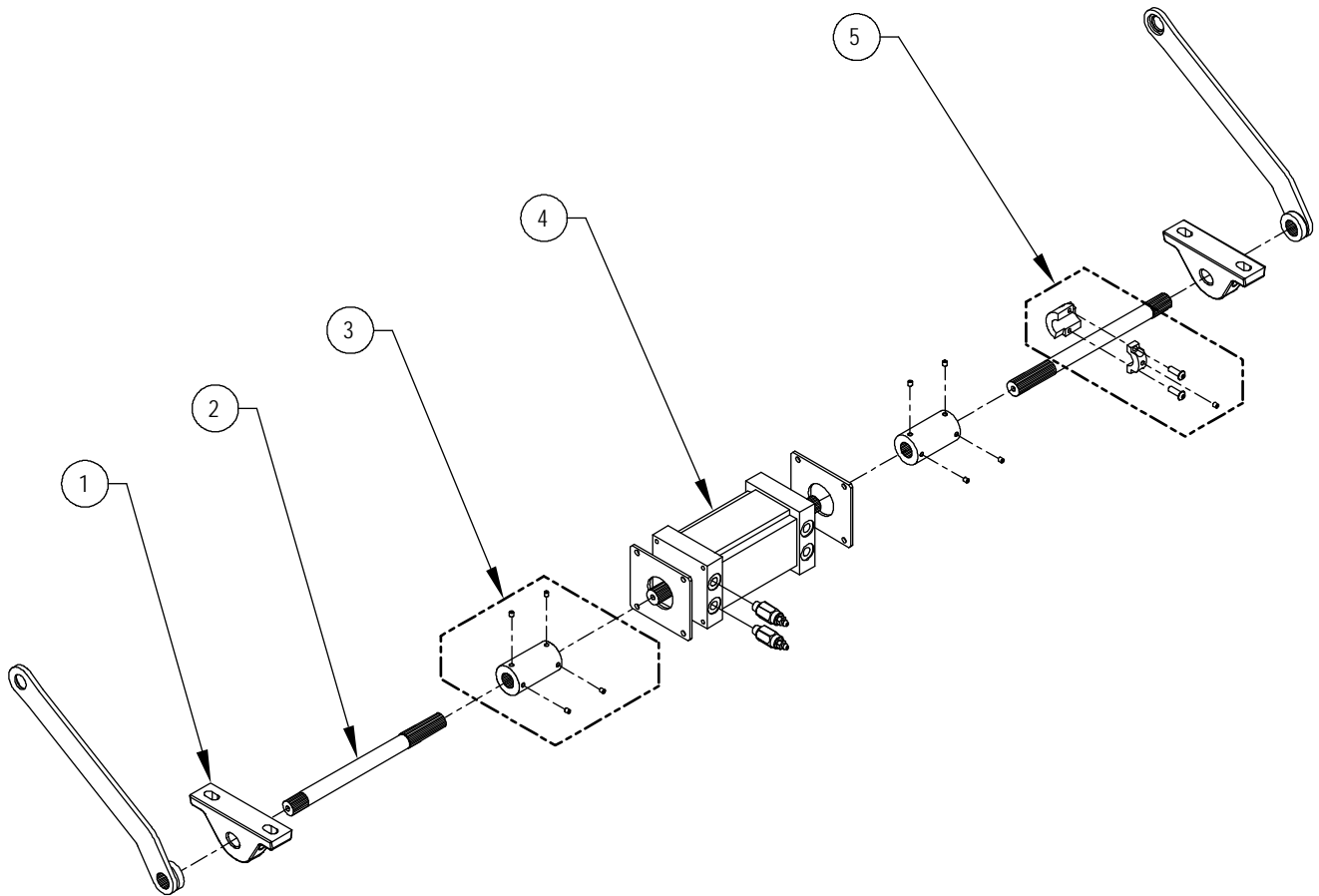


FIGURE 5-5: ROTARY ACTUATOR ASSEMBLY

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**FIGURE 5-5: ROTARY ACTUATOR ASSEMBLY**

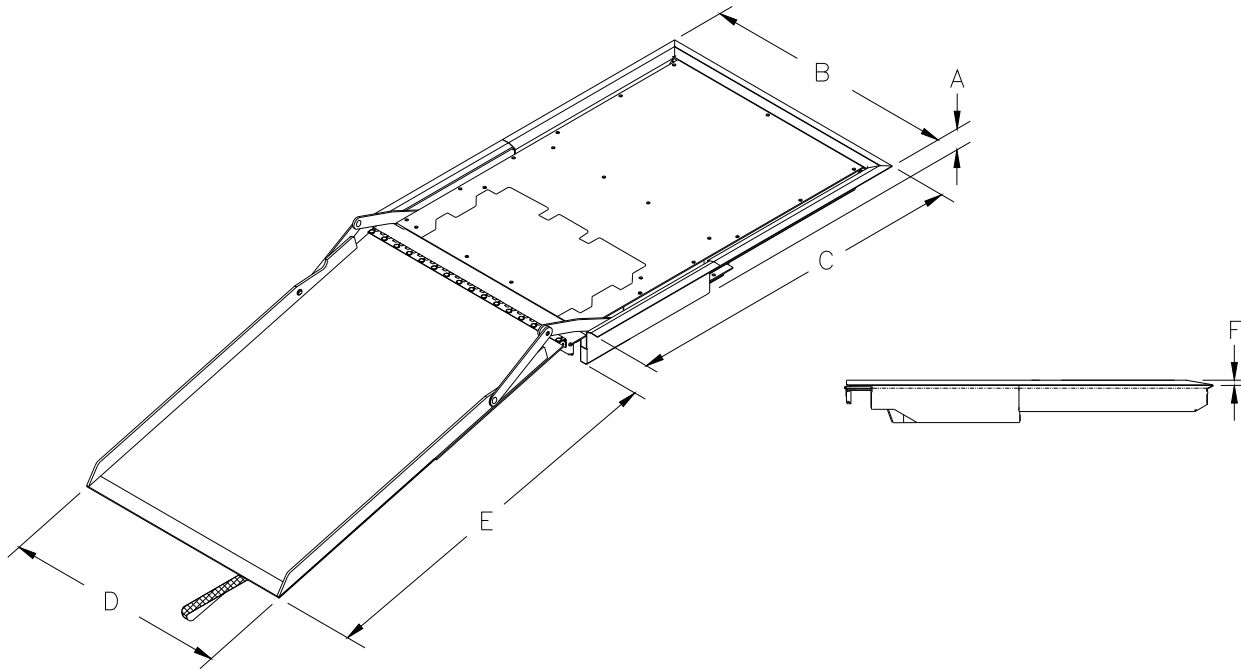
FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PILLOW BLOCK W/ GREASE FITTING	2		98160
2	DRIVESHAFT, RAMP	2		18741
3	KIT, COUPLER SHAFT, W/ HARDWARE	2		18614
4	ACTUATOR, HYDRAULIC, ROTARY	1		98048
5	KIT, TARGET SENSOR, W/ HARDWARE	1		29201

\* Not shown.

APPENDIX 1

**TABLE 2-4: RICON LOW-FLOOR-VEHICLE ACCESS RAMP SPECIFICATIONS**

Power System ..... Electro-hydraulic pump and rotary actuator  
 Power Requirements:  
 Electric \* ..... 24 VDC  
 Maximum Current Draw \* ..... 25 amps  
 Rated Load Capacity ..... 660 lbs. (300kg)  
 Ramp Weight ..... 130 - 150 lbs. (60 – 68 kg)  
 \* Some applications require 12 VDC power in which the maximum current draw is 50 amps.



**DIMENSIONS – inches (cm)**

	A	B	C	D	E	F
MODEL	Ramp frame depth	Ramp trim width	Ramp trim length	Useable platform width	Usable platform length	Stowed height above floor
FR2SS00	4.3 (10.9)	35.1 (89.1)	47.2 (119.9)	30.0 (76.2)	48.0 (122.0)	.1 (2.5)
FR2SS01	4.3 (10.9)	37.1 (94.2)	47.2 (119.9)	32.0 (81.2)	48.0 (122.0)	.1 (2.5)
FR2SS02	4.3 (10.9)	37.1 (94.2)	43.2 (109.7)	32.0 (81.2)	44.0 (111.7)	.1 (2.5)
FR2SS03	4.3 (10.9)	37.1 (94.2)	42.2 (107.2)	32.0 (81.2)	43.0 (109.2)	.1 (2.5)
FR2SS04	4.3 (10.9)	37.1 (94.2)	40.2 (102.1)	32.0 (81.2)	41.0 (104.0)	.1 (2.5)
FR2SS06	4.3 (10.9)	37.1 (94.2)	49.2 (125.0)	32.0 (81.2)	50.0 (127.0)	.1 (2.5)
FR2SS07	4.3 (10.9)	37.1 (94.2)	40.2 (102.1)	32.0 (81.2)	41.0 (104.0)	.1 (2.5)
FR2SS08	4.3 (10.9)	37.1 (94.2)	31.0 (78.7)	32.0 (81.2)	32.0 (81.2)	.1 (2.5)
FR2SS09	4.3 (10.9)	37.1 (94.2)	38.0 (96.5)	32.0 (81.2)	39.0 (99.1)	.1 (2.5)
FR2SS10	4.3 (10.9)	35.1 (89.1)	49.2 (125.0)	30.0 (76.2)	50.0 (127.0)	.1 (2.5)
FR2SS11	4.3 (10.9)	37.1 (94.2)	43.2 (109.7)	32.0 (81.2)	44.0 (111.7)	.1 (2.5)

CONTINUED

**TABLE 2-4: RICON LOW-FLOOR-VEHICLE ACCESS RAMP SPECIFICATIONS**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
MODEL	Ramp frame depth	Ramp trim width	Ramp trim length	Useable platform width	Usable platform length	Stowed height above floor
FR2SS12	4.3 (10.9)	35.5 (90.2)	43.2 (109.7)	30.0 (76.2)	44.0 (111.7)	.1 (2.5)
FR2SS13	4.3 (10.9)	37.1 (94.2)	40.2 (102.1)	32.0 (81.2)	41.0 (104.0)	.1 (2.5)
FR2SS14	4.3 (10.9)	35.1 (89.1)	47.2 (119.9)	30.0 (76.2)	48.0 (122.0)	.1 (2.5)
FR2SS15	4.3 (10.9)	35.1 (89.1)	44.2 (112.2)	30.0 (76.2)	45.0 (114.3)	.1 (2.5)
FR2SS16	4.3 (10.9)	37.1 (94.2)	43.2 (109.7)	32.0 (81.2)	44.0 (111.7)	.1 (2.5)
FR2SS17	4.3 (10.9)	37.1 (94.2)	42.2 (107.2)	32.0 (81.2)	43.0 (109.2)	.1 (2.5)
FR2SS18	4.3 (10.9)	37.1 (94.2)	47.2 (119.9)	32.0 (81.2)	48.0 (122.0)	.1 (2.5)
FR2SS19	4.3 (10.9)	37.1 (94.2)	31.0 (78.7)	32.0 (81.2)	32.0 (81.2)	.1 (2.5)
FR2G01	4.1 (10.4)	35.1 (89.1)	47.7 (121.2)	30.0 (76.2)	49.0 (124.5)	.1 (2.5)
FR2G02	4.1 (10.4)	35.2 (89.4)	48.2 (122.4)	30.0 (76.2)	49.0 (124.5)	.1 (2.5)
FR2G03	4.3 (10.9)	35.1 (89.1)	47.7 (121.2)	30.0 (76.2)	49.0 (124.5)	.1 (2.5)
FR2N01	4.3 (10.9)	34.5 (87.6)	47.2 (119.9)	30.0 (76.2)	48.0 (122.0)	.1 (2.5)

**END OF TABLE**

**NOTES:**