IN-WALL[®] SLIDE-OUT OWNER'S MANUAL

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LIPPERT Components°

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Introduction

The In-Wall[®] Slide-out System is intended for the sole purpose of extending and retracting the slide-out room. Its function should not be used for any purpose or reason other than to actuate the slide-out room. To use the system for any reason other than what it is designed for may result in death, serious injury or damage to the coach.

Before actuating the system, please keep these things in mind:

- 1. Parking locations should be clear of obstructions that may cause damage when the slide-out room is actuated.
- 2. Be sure all persons are clear of the coach prior to the slide-out room actuation.
- 3. Keep hands and other body parts away from slide-out mechanisms during actuation.
- **4.** To optimize slide-out actuation, park coach on solid and level ground.

For information on the assembly or individual components of this product, please visit: <u>https://support.lci1.com/slide-outs</u>.

NOTE: Images used in this document are for reference only when assembling, installing and/or operating this product. Actual appearance of provided and/or purchased parts and assemblies may differ.

Safety

Read and understand all instructions before installing or operating this product. Adhere to all safety labels. This manual provides general instructions. Many variables can change the circumstances of the instructions, i.e., the degree of difficulty, operation and ability of the individual performing the instructions. This manual cannot begin to plot out instructions for every possibility, but provides the general instructions, as necessary, for effectively interfacing with the device, product or system. Failure to correctly follow the provided instructions may result in death, serious personal injury, severe product and/or property damage, including voiding of the LCI limited warranty.

AWARNING

The "WARNING" symbol above is a sign that a procedure has a safety risk involved and may cause death or serious personal injury if not performed safely and within the parameters set forth in this manual.

AWARNING

Failure to follow instructions provided in this manual may result in death, serious personal injury and/or severe product and property damage, including voiding of the component warranty.

ACAUTION

The "CAUTION" symbol above is a sign that a safety risk is involved and may cause personal injury and/or product or property damage if not safely adhered to and within the parameters set forth in this manual.

ACAUTION

Always wear eye protection when performing service, maintenance or installation procedures. Other safety equipment to consider would be hearing protection, gloves and possibly a full face shield, depending on the nature of the task.

Operation

Prior To Operation

- 1. Coach should be parked on the most level surface available.
- 2. Leveling or stabilizing system should be actuated to ensure coach will not move during operation of slide-out system.

NOTE: In the case of a motorized unit, ignition **MUST** be off to operate the slide-out.

3. Be sure to keep all persons and pets clear of slide-out system during operation.

NOTE: Install transit bars (if so equipped) on the slide-out room during storage and transportation.

ACAUTION

Always make sure that the slide-out room path is clear of people and objects before and during operation of the slide-out. Always keep away from the gear racks when the room is being operated.

Extending Slide-Out Room

1. Level the unit.

NOTE: In the case of a motorized unit, ignition **MUST** be off to operate the slide-out.

- 2. Remove the transit bars (if so equipped).
- **3.** Press and hold the IN/OUT switch (Fig. 1B) in the OUT position until the room is fully extended and stops moving.

- **NOTE:** It is important to continue to press the slide-out switch for a few seconds after the room is fully extended until the motor shuts off. The control will sense that the room has stopped and will shut off the motor after a few seconds.
- **4.** Release the switch, which will lock the room into position.

Retracting Slide-Out Room

NOTE: In the case of a motorized unit, ignition **MUST** be off to operate the slide-out.

- 1. Press and hold the IN/OUT switch (Fig. 1A) in the IN position until the room is fully retracted and stops moving.
- **NOTE:** It is important to continue to press the slide-out switch for a few seconds after the room is fully retracted until the motor shuts off. The control will sense that the room has stopped and will shut off the motor after a few seconds.
- 2. Release the switch, which will lock the room into position.
- **3.** Install the transit bars (if so equipped).





Status LEDs: 2 LEDs, 1 green and 1 red, are provided to indicate current controller status and faults.
Power Connection: 12V DC input. Unit will operate from 8V DC to 18V DC.
Switch Connection: Spade connection for the switch wiring.
Motor 1 Connector: Power and encoder input for motor 1.
Motor 2 Connector: Power and encoder input for motor 2.

NOTE: Version B motor harnesses have five wire in-line connectors at the controller and the molded connector at the motor end (Figs. 3 and 4). Wire colors match with color codes on control board. It does not matter which motor is 1 or 2.



Status LEDs: 2 LEDs, 1 green and 1 red, are provided to indicate current controller status and faults. **Mode Button:** Used to engage the electronic manual override.

Power Connection: 12V DC input. Unit will operate from 8V DC to 18V DC.

Switch Connection: Spade connection for the switch wiring.

Motor 1 Connector: Power and encoder input for motor 1.

Motor 2 Connector: Power and encoder input for motor 2.

NOTE: Motor harnesses have Molex[®] connectors at the controller and a molded connector at the motor end (Figs. 6 and 7). Wire colors match with color codes on control board. It does not matter which motor is 1 or 2.

Motor and Controller Compatibility

Part #	Controller Version	Controller Replacement	Motor(s) Used	
<u>239657</u>	A (Daisy Chain) (Fig. 8)	A Only	Round-Square (Fig. 16), Round-Round (Fig. 17A)	
	B (Fig. 9)	B/C2* Only	Round Square (Fig. 16)	
	C (Fig. 10)	C/C2* Only		
<u>211852</u>	C1 (Fig.11)	C1/C2* Only	Round-Round (Fig. 17A, 17B),	
	C2 (Fig. 12)	C2	Round-Square Plate (Fig. 18)	
	D-0 (Fig. 13)	B/C1/C2	1	
326876	8 Amp (Fig. 14)	8 Amp Only (Fig. 15)	Round-Round (Fig.17B)	
NOTE: Alw (F	NOTE: Always replace the motor in the system with the same motor except the Round-Square Plate (Fig. 18) which is obsolete. That motor will be replaced with the Bound-Bound (Fig. 17A, 17B)			
NOTE: (*) [Denotes that (2) new motor e used. See next page.	harnesses MUST be ordered, and	re-wiring instructions MUST	
Fig. 8	Fig.	9 Fig. 10	Fig. 11	
A standard for the stan	997-A hronous controller sy-Chain Makerone A prone between the system between the system	398-B I Motor horonous locity Controller	r	
Fig. 1	2 Fig.	13 Fig. 14 - Old	Fig. 15 - Current	
CONFIGURATION Decidity Silde Car Vertication Market Resources Market Resources		Model Synchronous Occi Silois Controller Water Controller Harden Strategie Controller	Control of the second sec	



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J6:SWITCH OT X

NOTE: Ensure that a 300:1 motor is replaced with a 300:1 motor (Fig. 17A), and that a 500:1 motor is replaced with a 500:1 motor (Fig. 17B).

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JS: SWITCH

Rewiring Instructions

If it is necessary to replace a malfunctioning Rev. B, C, or C1 controller, it is recommended that the customer do so with a new Rev. D-0 controller. In order to properly rewire a Rev. B, C, or C1 controller to a new Rev. D-0 controller, the customer will need two new motor harnesses (one for each motor.) Additionally, it will be necessary to modify the power wire from the controller to the extend/retract switch by adapting the wire to piggyback the connection at the power junction. This wire comes from the positive side of the buss bar to the controller (Fig. 19).



Motors and Harnesses

- 1. Check for proper connections between the motors and harnesses (Fig. 20).
- 2. Visually inspect the exposed harnesses to ensure they are not pinched or damaged.
- **NOTE:** Ribs on motor connector line up with notch inside of female connector on wiring harness. Color codes on wires also match (black to black, red to red, etc.)



Resynchronizing the Slide-Out Motors

- 1. Fully extend the slide room using the switch. Keep the switch engaged until the motors shut down on their own.
- 2. Retract the room 1-2 inches.
- **3.** Repeat steps 1 and 2 until both motors shut down at the same time. In many cases, two or three repetitions are necessary to re-sync the system.
- 4. Fully extend the slide-out and keep the switch engaged until the motors shut down on their own. Fully retract the slide-out, again keeping the switch engaged until the motors shut down on their own. If both motors shut down at the same time at full extension and full retraction, the room is properly synchronized. If they do not shut down at the same time, repeat the process until they do.

Extend and Retract Switch Connections

Rev. A - Rev. C1 Controllers: Common connection on controller goes to common connection on extend and retract switch.

Rev. C2 and 8 amp Controllers: Extend and retract connections on the controller go to the extend and retract terminals on the switch. Switch is powered by the OEM supplied 12V DC power source.

Power and Ground Connections At the Controller

Power and ground are supplied to the controller through the spade terminals located on the right-hand side of the controller (Figs. 2 and 5 - Power Connection). 12V DC is recommended. A 10ga wire is the minimum size recommended. A 30 amp resetting or blade fuse is required (OEM supplied).

Troubleshooting

Checking Circuit Breakers

The In-Wall[®] Slide-out requires a minimum of a 30-amp circuit breaker. Check the 12-volt circuit breaker box for blown circuit breakers, and replace any if necessary. Consult the RV manufacturer's documentation for the location of the 12-volt circuit breaker box, and the location of the In-Wall[®] Slide-out controller's circuit breaker. If the circuit breaker blows immediately upon replacement, there is a problem with the wiring to the In-Wall[®] Slide-out controller. Have gualified service personnel check and repair.

Obstructions

Check outside the RV for possible obstructions: tree, post, car, etc. Check inside the RV for any obstructions: luggage, furniture, open cabinets, etc. Also, check for smaller objects that may be wedged under the floor or in the sides of unit. Remove obstructions before proceeding.

<u>Debris In the Rack</u>

Check the sides of the slide room for any dirt or debris. Small dirt clumps or metal shavings can cause the spur gear to bind up and stop the movement of the slide-out. Use compressed air or a dry brush to remove any dirt or debris from the rack before attempting to actuate the system again.

Error Codes

During operation when an error occurs, the board will use the LEDs to indicate where the problem exists (Fig. 21). For motor-specific faults the green LED will blink 1 time for motor 1, and 2 times for motor 2. The red LED will blink from 2 to 9 times depending on the error code (Fig. 22). When an error code is present, the board needs to be reset. Energizing the extend/retract switch (Fig. 1) resets the board. Energize the extend/ retract switch again for normal operation.

Fig. 21		Fig. 22 - Error Code Description	
	Error Code	Name	Description
CONFIGURATION Ve	2	Battery Drop Out	Battery capacity low enough to drop below 6 volts while running or short in switch wiring.
	3	Low Battery	Voltage below 8 volts at start of cycle.
Green LED	4	High Battery	Voltage greater than 18 volts.
FAULT INDICATION: GREEN LED: 1 BLINK = MOTOR 1 2 BLINKS = MOTOR 2	5	Excessive Motor Current	High amperage, also indicated by 1 side of slide continually stalling.
RED LED: BLINKS FAULT 2 BATTERY DROPOUT 3 LOW BATTERY	6	Motor Short Circuit	Motor or wiring to motor has shorted out.
4 HIGH BATTERY 5 EXCESSIVE MTR CURRENT 6 MOTOR SHORT CIRCUIT 8 WIRE SHORT BETWEEN CONTROLLER AND MOTOR 9 HALL PWR SHORT TO GND	8	Wire Short Between Controller and Motor	Encoder is not providing a signal. This is usually a wiring problem.
	9	Hall Power Short To Ground	Power to encoder has been shorted to ground. This is usually a wiring problem.

Electronic Manual Override (Controllers C-1, C-2 and D-0 Only)

NOTE: See (Fig. 23) for locations of the mode button and LEDs.

- 1. Press the mode button on the controller six times and hold on the seventh for five seconds to enter electronic manual override mode.
- 2. Use the extend/retract switch to move both motors in or out.

NOTE: Over-current and short circuit detection are still enabled. Electronic manual override provides 12V directly to both motors.

- **3.** To exit the mode, push and hold the mode button until the LEDs begin to blink simultaneously. Exiting the override mode resets the motor positions (you will have to resync motors).
- **NOTE:** During this override procedure the motors are not synchronized. Visually watch the room: if one side is moving significantly slower than the other (or not at all) then immediately stop and use the "Motor Disengagement Procedure" below.

Motor Disengagement Procedure

- 1. Remove motor retention screws located near the top of each vertical column on the outside of the coach (under bulb seal if equipped with bulb seal on column).
- **2.** Locate motor.
 - **A.** On units built prior to 2011: Bend back wipe seal from outside of coach.
 - **B.** On units from 2011 to current: See slot in H-column on the inside of the coach.
- **3.** Pull motor up until disengaged (roughly ½"). A flat-head screwdriver can be used to pry the motor up.
- 4. Reinstall motor retention screw to hold motor in place or remove motor.

<u>Low Voltage</u>

The In-Wall[®] Slide-out Controller is capable of operating the room with as little as 8 volts. But at these lower voltages the amperage requirement is greater. Check voltage at the controller, see Figs. 2 and 5 for the location of power connections. If the battery is low, it needs to be charged or the unit should be plugged into shore power or the generator can be run, if equipped. It may be possible to "jump" the RV's battery temporarily to extend or retract the room. Consult the RV manufacturer's owners manual.

NOTE: Always connect directly to the battery and never to the controller power connections.

Motor Direction Switches

Motor direction switches (Fig. 23) are used to change the direction of individual motors. If when trying to extend or retract the room, one side goes in and the other side goes out, then there is a problem in the wiring. The motor direction switches can be used to correct this problem. The left switch controls motor 2 and the right switch controls motor 1. If motor 1 is going in the wrong direction then change switch 1's position. If motor 2 is going in the wrong direction then change switch 2's position.

The motor direction switches can also be used to change the direction of the extend/retract switch. If the room extends when the extend/retract switch is moved to the retract position, its direction can be reversed by moving both switch 1 and switch 2 to their opposite positions. This feature can be used if it is more convenient to change the motor direction switches than to rewire the extend/retract switch.

System Maintenance

It is recommended that when operating In-Wall[®] Slide-out system in harsh environments (road salt, ice buildup, etc.) that the gear racks and seals be kept clean and free of debris. They can be washed with mild soap and water.







LIPPERT Components

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Please recycle all obsolete materials.

For all concerns or questions, please contact Lippert Components, Inc. Ph: (574) 537-8900 | Web: <u>lci1.com</u> | Email: <u>customerservice@lci1.com</u>

IN-WALL® SLIDE-OUT TROUBLESHOOTING AND SERVICE MANUAL

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Introduction

The In-Wall[®] Slide-out system is intended for the sole purpose of extending and retracting the slide-out room. Its function should not be used for any purpose or reason other than to actuate the slide-out room. To use the system for any reason other than what it is designed for may result in death, serious personal injury, severe product or property damage.

For information on the assembly or individual components of this product, please visit: <u>https://support.lci1.com/in-wall-slide-out</u>

Safety

AWARNING

Failure to act in accordance with the following may result in death, serious personal injury, severe product or property damage.

AWARNING

Make sure that the slide-out room path is clear of people and objects before and during operation of the slide-out. Always keep away from the gear racks when the room is being operated.

AWARNING

The In-Wall[®] Slide-out System is intended for the sole purpose of extending and retracting the slide out room. It should not be used for any purpose other than to actuate the slide-out room. To use the system for any reason other than what it is designed for may result in death, serious injury or damage to the trailer.

ACAUTION

Moving parts can pinch, crush or cut. Keep clear and use caution.

Resources Required

- Drill or cordless screw gun
- Fast-bonding adhesive
- Electric drill or cordless screw gun
- Rubber mallet
- 2"x 4" (length=gap between T-molding and side of unit-1/4")
- Utility knife
- Floor jack
- Voltmeter
- Flat head screwdriver

Preparation

Prior to actuating the system:

- 1. Parking locations should be clear of obstructions that may cause damage to the unit when the slideout room is actuated.
- 2. Make sure all persons are clear of the unit prior to the slide-out room actuation.
- 3. Keep hands and other body parts away from slide-out mechanisms during actuation.
- 4. To optimize slide-out actuation, park unit on solid and level ground.

Operation

Prior to Operation

- 1. Unit should be parked on the most level surface available.
- 2. Leveling or stabilizing system should be actuated to make sure unit will not move during operation of slide-out system.

NOTE: In the case of a motorized unit, ignition must be off to operate the slide-out.

3. Make sure to keep all persons and pets clear of slide-out system during operation.

NOTE: Install transit bars (if so equipped) on the slide-out room during storage and transportation.

Extending Slide-Out Room

1. Level the unit

NOTE: In the case of a motorized unit, ignition must be off to operate the slide-out.

- 2. Remove the transit bars (if so equipped).
- **3.** Press and hold the IN/OUT switch in the OUT (Fig. 1B) position until the room is fully extended and stops moving.
- **NOTE:** It is important to continue to press the slide-out switch for a few seconds after the room is fully extended until the motor shuts off. The control will sense that the room has stopped and will shut off the motor after a few seconds.
- **4.** Release the switch, which will lock the room into position.

Retracting Slide-Out Room

NOTE: In the case of a motorized unit, ignition must be off to operate the slide-out.

- 1. Press and hold the IN/OUT switch in the IN (Fig. 1A) position until the room is fully retracted and stops moving.
- **NOTE:** It is important to continue to press the slide-out switch for a few seconds after the room is fully retracted until the motor shuts off. The control will sense that the room has stopped and will shut off the motor after a few seconds.
- 2. Release the switch, which will lock the room into position.
- **3.** Install the transit bars (if so equipped).





Status LEDs: 2 LEDs, 1 green and 1 red, are provided to indicate current controller status and faults. **Power Connection:** 12V DC input. Unit will operate from 8V DC to 18V DC.

Switch Connection: Spade connection for the switch wiring.

Motor 1 Connector: Power and encoder input for motor 1.

Motor 2 Connector: Power and encoder input for motor 2.

NOTE: Version B motor harnesses have five wire in-line connectors at the controller and the molded connector at the motor end (Figs. 3 and 4). Wire colors match with color codes on control board. It does not matter which installed motor is designated as 1 or 2.

Controller Overview (C2 Version)



Status LEDs: 2 LEDs, 1 green and 1 red, are provided to indicate current controller status and faults. **Mode Button:** Used to engage the electronic manual override.

Power Connection: 12V DC input. Unit will operate from 8V DC to 18V DC.

Switch Connection: Spade connection for the switch wiring.

Motor 1 Connector: Power and encoder input for motor 1.

Motor 2 Connector: Power and encoder input for motor 2.

NOTE: Motor harnesses have Molex[®] connectors at the controller and a molded connector at the motor end (Figs. 6 and 7). Wire colors match with color codes on control board. It does not matter which installed motor is designated as 1 or 2.

Motor and Controller Compatibility

Part #	Controller Version	Controller Replacement	Motor(s) Used
239657	A (Daisy Chain) (Fig. 8)	A Only	Round-Square (Fig. 14), Round- Round (Fig. 15A)
	B (Fig. 9)	B/C2* Only	Round Square (Fig. 14)
211852	C (Fig. 10)	C/C2* Only	
	C1 (Fig.11)	C1/C2* Only	Round-Round (Fig. 15A, 15B), Round-Square Plate (Fig. 16)
	C2 (Fig. 12)	C2	Nound Square Flate (Fig. 10)
326876	8 Amp (Fig. 13)	8 Amp Only	Round-Round (Fig. 15B)
NOTE: Always replace the motor in the system with the same motor except the Round- Square Plate (Fig. 16), which is obsolete. That motor will be replaced with the Round-Round (Fig. 15A, 15B).			
*Two new motor harnesses must be ordered and re-wiring instructions must be used. See Rewiring Instructions section.			





NOTE: Make sure that a 300:1 motor is replaced with a 300:1 motor (Fig. 15A), and that a 500:1 motor is replaced with a 500:1 motor (Fig. 15B).

Motors and Harnesses

- 1. Check for proper connections between the motors and harnesses (Fig. 17).
- 2. Visually inspect the exposed harnesses to make sure they are not pinched or damaged.
- **NOTE:** Ribs on motor connector line up with notch inside of female connector on wiring harness. Color codes on wires also match (black to black, red to red, etc.).

Synchronizing the Slide-Out Motors

- 1. Fully extend the slide room using the switch. Keep the switch engaged until the motors shut down on their own.
- 2. Retract the room 1-2 inches.
- **3.** Repeat steps 1 and 2 until both motors shut down at the same time. In many cases, two or three repetitions are necessary to synchronize the system.
- **4.** Fully extend the slide-out and keep the switch engaged until the motors shut down on their own. Fully retract the slide-out, again keeping the switch engaged until the motors shut down on their own. If both motors shut down at the same time at full extension and full retraction, the room is properly synchronized. If they do not shut down at the same time, repeat the process until they do.

Extend and Retract Switch Connection

- 1. Rev. A Rev. C1 Controllers: Common connection on controller goes to common connection on extend and retract switch.
- 2. Rev. C2 and 8 amp Controllers: Extend and retract connections on the controller go to the extend and retract terminals on the switch. Switch is powered by the OEM-supplied 12V DC power source.

Power and Ground Connections at The Controller

Power and ground connections are supplied to the controller through the spade terminals located on the right-hand side of the controller (Figs. 2 and 5 - Power Connection). 12V DC is recommended. A 10 AWG wire is the minimum size recommended. A 30 amp, OEM-supplied resetting or blade fuse is required.

Visual Inspections

<u>Measurements</u>

- Measure from the outside edge of the column to the face of the gear rack (Fig. 18). The standard measurement tolerance should be 2 1/2" plus or minus 1/8". Take this measurement on both the "Fixed" and "Float" sides when the room is fully extended and again when the room is 3" from fully retracted.
- **NOTE:** The plastic shear pin in the "Float" side bearing block may be sheared. This is acceptable as long as the measurements are within tolerance.

NOTE: For units with non-standard installations, contact the OEM for their specific measurements.

- 2. Measure the gear racks for parallelism. There should be less than 1/8" difference between the parallel measurements.
- **3.** Check for proper seal engagement (no binding, 1/4" nominal overlap).

Floor Rollers

- 1. Check that the seals are not getting caught in the rollers, which could cause binding of the slide-out.
- 2. Check for proper roller engagement (Fig. 19).
 - **A.** Rollers should not be digging into the floor of the slide-out.
 - **B.** Rollers should not spin freely beneath slide-out.

Gear Racks

- 1. Check to make sure the screws in the gear rack (Fig. 20B) are secured flush and not getting caught in the seals.
- **2.** Gear Racks must be parallel.

V-Rollers

1. Visually inspect V-roller (Fig. 20D) for obstructions or damage.

Callout	Description
А	Motor
В	Gear Rack
С	Shoe
D	V-Roller

Troubleshooting

Checking Circuit Breakers

The In-Wall[®] Slide-out requires a minimum of a 30-amp circuit breaker. Check the 12-volt circuit breaker box for blown circuit breakers, and replace any if necessary. Consult the RV manufacturer's documentation for the location of the 12-volt circuit breaker box, and the location of the In-Wall[®] Slide-out controller's circuit breaker. If the circuit breaker blows immediately upon replacement, there is a problem with the wiring to the In-Wall[®] Slide-out controller. Have qualified service personnel check and repair.

Obstructions

Check outside the unit for possible obstructions: tree, post, car, etc. Check inside the unit for any obstructions: luggage, furniture, open cabinets, etc. Also, check for smaller objects that may be wedged under the floor or in the sides of unit. Remove obstructions before proceeding.

Debris In the Rack

Check the sides of the slide room for any dirt or debris. Small dirt clumps or metal shavings can cause the spur gear to bind up and stop the movement of the slide-out. Use compressed air or a dry brush to remove any dirt or debris from the rack before attempting to actuate the system again.

Error Codes

During operation when an error occurs, the controller will use the LEDs (Fig. 21) to indicate where the problem exists. For motor-specific faults, the green LED will blink one time for motor 1, and two times for motor 2. The red LED will blink from 2-9 times depending on the error code. When an error code is present, the controller needs to be reset. To reset the controller, press IN on the slide-out switch (Fig. 1A), then release. Press IN on the slide-out switch again for normal operation.

Error Code	Name	Description
2	Battery Drop Out	Battery capacity low enough to drop below 6V DC while running or short in switch wiring.
3	Low Battery	Voltage below 8V DC at start of cycle.
4	High Battery	Voltage greater than 18 volts.
5	Excessive Motor Current	High amperage, also indicated by one side of slide continually stalling.
6	Motor Short Circuit	Motor or wiring to motor has shorted out.
8	Wire Short Between Controller and Motor	Encoder is not providing a signal. This is usually a wiring problem.
9	Hall Power Short To Ground	Power to encoder has been shorted to ground. This is usually a wiring problem.

Electronic Manual Override (Controllers C-1 and C-2 Only)

- 1. Press the mode button (Fig. 22) on the controller six times and hold on the seventh for five seconds to enter electronic manual override mode.
- 2. Use the slide-out switch (Fig. 1) to move both motors in or out.
- **NOTE:** Over-current and short circuit detection are still enabled. Electronic manual override provides 12V DC directly to both motors.
- **3.** To exit the electronic manual override mode, press and hold the mode button until the LEDs begin to blink simultaneously. Exiting the override mode resets the motor positions. Motors will have to be resynchronized.
- **NOTE:** During the manual override procedure the motors are not synchronized. Visually watch the room. If one side is moving significantly slower than the other (or not at all) then immediately stop and follow the Motor Disengagement Procedure.

Motor Disengagement Procedure

- 1. Remove motor retention screws located near the top of each vertical column on the outside of the unit. If slide-out is equipped with bulb seal on column, look under bulb seal.
- **2.** Locate motor.
 - **A.** On units built prior to 2011: Bend back wipe seal from outside of unit.
 - **B.** On units from 2011 to current: See slot in H-column on the inside of the unit.
- **3.** Pull motor up until disengaged (roughly 1/2"). A flat-head screwdriver can be used to pry the motor up.
- **4.** Reinstall motor retention screw to hold motor in place or remove motor.

<u>Low Voltage</u>

The Lippert In-Wall[®] Slide-out Controller is capable of operating the room with as little as 8V DC. But at these lower voltages the amperage requirement is greater. Check voltage at the controller (Figs. 2 and 5) for the location of power connections. If the battery is low, it needs to be charged or the unit should be plugged into shore power or the generator can be run, if equipped. It may be possible to "jump" the unit's battery temporarily to extend or retract the room. Consult the unit manufacturer's owner's manual.

NOTE: Always connect directly to the battery and never to the controller power connections.

Motor Direction Switches

Motor direction switches (Fig. 22) are used to change the direction of individual motors. When extending or retracting the room, if one side goes in and the other side goes out, then there is a problem in the wiring. The motor direction switches can be used to correct this problem. The left switch controls motor 2 (Fig. 22B) and the right switch controls motor 1 (Fig. 22A). If motor 1 is going in the wrong direction then change switch 1's position. If motor 2 is going in the wrong direction then change switch 2's position. The motor direction switches can also be used to change the direction of the slide-out switch. If the room extends when the slide-out switch is moved to the retract (IN) position, its direction can be reversed by moving both switch 1 and switch 2 to their opposite positions. This feature can be used if it is more convenient to change the motor direction switches than to rewire the slide-out switch.

Rewiring Instructions

If it is necessary to replace a malfunctioning Rev. B, C or C1 controller, it is recommended to do so with a new Rev. C2 controller. In order to properly rewire a Rev. B, C, or C1 controller to a new Rev. C2 controller, the customer will need two new motor harnesses (one for each motor) will be required. Additionally, it will be necessary to modify the power wire from the controller to the slide-out switch by adapting the wire to piggyback the connection at the power junction. This wire comes from the positive side of the buss bar to the controller (Fig. 23).

Motor Replacement

H-Column with Motor Notch (Current Style)

NOTE: There must be access to both the interior and exterior of the unit to perform this procedure.

- 1. Extend the slide-out halfway out of the unit.
- 2. On the exterior, slide the bulb seal down to access the motor retention screw (Fig. 24).
- **3.** Remove the motor retention screw (Fig. 24).
- 4. Inside the unit, remove the bulb seal from the wipe seal (Fig. 25).
- 5. Peel back the wipe seal (Fig. 25) and disconnect the wiring harness from the motor.

- 6. Pull motor up and tip the bottom of the motor out of the notch to remove it (Fig. 26).
- 7. Place new motor into the H-column, making sure that the wiring is facing the back of the H-column.
- **NOTE:** Look into the column and note the orientation of the coupler and set screw holes in the bearing block. Rotate the drive shaft on the motor to approximately align with the coupler before sliding the new motor into the column.
- 8. While applying pressure to the top of the motor, push on the room, which will slowly rotate the torque shaft so the coupler and torque shaft can line up with the motor shaft. When the shafts are aligned, the motor will drop into place (Fig. 27).
- **9.** Reattach the wiring harness.
- **10.** Push the wipe seal back into position (Fig. 28).
- **11.** Fasten the wipe seal to the H-column with fast-bonding adhesive.
- **12.** Replace the bulb seal (Fig. 28).
- **13.** Replace the motor retention screw on the outside of the H-column (Fig. 24).

H-Column Without Motor Notch (Old Style)

NOTE: There must be access to both the interior and exterior of the unit to perform this procedure.

- 1. Extend the slide-out halfway out of the unit.
- 2. Adequately support the slide room, but do not lift it.
- **3.** From the exterior, slide the bulb seal down to access the motor retention screw (Fig. 30).
- **4.** Remove the motor retention screw (Fig. 29).
- **5.** Remove screws from H-column, top to bottom (Fig. 30).
- **6.** Unplug the wiring harness from the motor.

- 7. From the inside of the unit, push the slide-out out until the top of the H-column is accessible (Fig. 31).
- **8.** Pull the motor up and out of the H-column (Fig. 32).
- **9.** Place new motor into the H-column, making sure that the wiring is facing the back of the H-Column.
- **NOTE:** Look into the column and note the orientation of the coupler and set screw holes in the bearing block. Rotate the drive shaft on the motor to approximately align with the coupler before sliding the new motor into the column.
- 10. While applying pressure to the top of the motor, push on the column, which will slowly rotate the torque shaft so the coupler and torque shaft can line up with the motor shaft. Once they are lined up, the motor will drop into place (Fig. 33).
- **11.** Reattach the wiring harness to the motor.
- **12.** Push the slide-out back into place.
- **13.** Replace all screws into the H-column to reattach the slide-out to the unit (Fig. 34).
- **14.** Replace the motor retention screw (Fig. 34).
- **15.** Slide the bulb seal back up into position (Fig. 34).
- **16.** Reseal H-column according to RV manufacturer recommendations.
- **17.** Fasten the wipe seal to the H-column with fast-bonding adhesive.

Assembly Removal

<u>Procedure</u>

- **NOTE:** If the slide-out will not move by use of the slide-out switch it may be necessary to use one of the three following methods:
 - A. Use electronic override mode on the In-Wall[®] controller.
 - I. Press the "mode button" six times quickly, press a 7th time and hold for approximately five seconds (Fig. 35A).
 - II. The red and green LED lights will begin to flash indicating system is in override mode (Fig. 35B).
 - **III.** Using the slide-wall switch, press and hold the IN button until the unit completely retracts.
 - **B.** Disconnect the motor harnesses from the In-Wall[®] controller (Fig. 36A) to allow the slide room to be manually pushed into position.
 - **C.** Disengage the motor (Fig. 36B) to allow the slide room to be manually pushed into position.
- 1. Remove first three sets of screws in each rack on the interior side of slide room.
- 2. Extend the slide room until about 8" of the room is left inside the unit.
- **3.** Support the slide room with a floor jack or other adequate support before continuing.
- **4.** Place the 2"x 4" block on top of the slide room (standing on its edge between the T-molding and side of the unit).
- 5. Reach inside the top of the slide column to disconnect the wiring harness from the motor.
- **6.** Using a utility knife, carefully cut the caulk bead along the edge of the slide column.
- 7. Remove the screws from the slide column attaching it to the side wall of the unit.
- 8. Using an extra motor wiring harness with the motor wire connector intact, cut harness to 3'. Strip the ends of the red (power) and black (ground) wires (Fig. 37).
- Plug the jumper harness motor wire connector (Fig. 37) into the motor's wire connector.
- **10.** Holding the black and red wires of the jumper harness against the terminals of your cordless screw gun's battery, determine which polarity actuates the motor in the retract direction. The slide column should slide away from the side of the unit.

11. Remove all screws from the gear racks (Fig. 38).

- **12.** You may need to pry the gear racks away from the sides of the slide room with a flathead screwdriver or putty knife. Do this carefully to prevent damage to the finish on the side of the slide room.
- **13.** Carefully slide the ends of the gear racks past the bulb seal on the T-molding.
- **14.** Pull the full system out and set aside.
- **NOTE:** LCI recommends that inspection and repair of the assembly be done on a clean workbench to prevent further damage to the slide-out system.

Assembly Installation Procedure

- **NOTE:** The left-hand and right-hand sides of the slide-out are determined by standing on the exterior of the slide-out and facing it. The "Fixed" assembly will have the installation alignment flange of the shipping angle on the right-hand side of the assembly, when looking at the "S" track on the gear rack. The "Fixed" assembly has an aluminum rivet in the bearing block that prohibits the bearing block from moving. The "Float" assembly will have the installation alignment flange of the shipping angle on the left-hand side of the assembly, when looking at the "S" track on the gear rack. The "Float" assembly will have the installation alignment flange of the shipping angle on the left-hand side of the assembly, when looking at the "S" track on the gear rack. The "Float" assembly has a plastic rivet in the bearing block that is designed to shear to allow for movement of the bearing block.
- 1. Prepare the slide room and side of the unit for the new install by cleaning the surfaces of any adhesive residue using a putty knife and a solvent, being careful not to damage the finishes on the unit.
- 2. Prepare the new system for installation: measure the distance (center to center) from one gear rack to the next gear rack along the slide column. Write these measurements down.
- **3.** Apply OEM-recommended sealant to the entire length of the H-column along the inside edge where it will contact the side face of the unit.

NOTE: If installing a new assembly, remove the shipping angles before continuing this procedure.

4. Gently slip the system through the opening between the slide room and the side wall opening. Tuck the gear racks inside the bulb seal attached to the T-molding.

- Align the bottom lip (alignment flange) of the lower gear rack with the bottom edge of the slide room (Fig. 39).
- 6. Push the bottom gear rack tight against the bottom of the slide room and put a screw into each end of the gear rack.
- 7. Measure from the bottom gear rack (center-to-center) to the next gear rack and align that rack so that it matches the measurement taken during step 2. This will make sure that the racks are installed parallel and square. Put a screw in each end of the gear rack to hold it in place until all gear racks are aligned.
- **8.** After gear racks are aligned and secured, install all previously removed screws into the gear racks.
- **9.** Attach the jumper wires to the motor in top of the slide column and then to the cordless screw gun battery. Actuate the motor to move the slide column in towards the unit. Stop the column when it is still a few inches away from the unit. Remove the jumper cable.
- **10.** Make sure the motor cable is tucked into the top of the slide column.
- **11.** Remove the 2" x 4" block.
- **12.** Push the slide room in by hand until the slide column is flush with the side wall of the unit.

- Screw the slide column into the side wall by placing a screw in the column by each rack and in the middle of the column to ensure the rack is straight, then fill in remaining screws (Fig. 40). Remove the floor jack.
- **14.** From the inside of the unit, connect the wiring harness to the motor cable.
- **15.** Repeat this process for the other side of the slide room (if required).
- **16.** Once you have completed both sides of the slide room, synchronize the slide system motors. See Synchronizing The Slide-Out Motors section.

Synchronizing The Slide-Out Motors

- 1. Fully extend the slide room using the slide-out switch. Keep the switch engaged until the motors shut down on their own.
- **2.** Retract the room 1-2 inches.
- **3.** Repeat steps 1 and 2 until both motors shut down at the same time. In many cases, only two or three repetitions are necessary to synchronize the system.
- **4.** Fully extend and retract the room. Always let the motors shut down on their own before releasing the switch.

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IN-WALL[®] SLIDE-OUT OEM INSTALLATION MANUAL

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System and Safety Information

AWARNING

Always make sure that the slide-out room path is clear of people and objects before and during operation of the slide-out. Always keep away from the gear racks when the room is being operated.

AWARNING

Do not work on your slide-out system unless the battery is disconnected. Failure to act in accordance with the following may result in death or serious personal injury.

AWARNING

The In-Wall[®] Slide-out System is intended for the sole purpose of extending and retracting the slideout room. It should not be used for any purpose other than to actuate the slide-out room. To use the system for any reason other than what it is designed for may result in death, serious injury or damage to the trailer.

Moving parts can pinch, crush or cut. Keep clear and use caution.

Page 2
IN-WALL[®] SLIDE-OUT SPECIFICATION SECTION

In-Wall Slide



Room Stroke (Inches)

IN-WALL[®] SLIDE-OUT INSTALLATION SECTION

Structural Requirements

NOTE: Slide mechanism is not intended to provide structural integrity for the slide room box or slide room opening.

Additional Support

Additional support must added for any applications that may cause the structure to deviate from square, i.e. rooms with overhangs, large rooms or rooms with heavy appliances. The floors must be supported at all points. Examples of support include rollers, wear bars or wooden toe kicks wrapped in carpet.

Roller Requirements

- Rooms over 650 lbs (estimated gross room weight*) or over 72" in length require rollers.
- For rooms under 650 lbs (estimated gross weight*) and under 72" in length:
 - floor rollers are required OR wear bar (Boyd 3157-XXX) or approved equivalent may be used, with plastic coated or painted (no grit) floors.
- * Estimated Gross Room Weight is defined as a fully-loaded room, including the room itself and its contents.

Outrigger Placement

For trailers with rollers mounted to the floor a minimum of four outriggers will be required, one outrigger at each end of the slide room within 3" (+/-) (depending on wheel locations) (Fig. 1) from the edge of the wall cutout of the unit and two others spaced evenly under the room but no more than 36" apart from any other outrigger. Add additional outriggers as needed to maintain the 36" maximum spacing.

NOTE: For laminate walls with sufficient structure 48" maximum outrigger placement will be allowed.



For slide rooms with rollers mounted to the wall (Fig. 2) the outrigger placement is the same as described when rollers are mounted on the floor. For laminate structures 6" of wall is recommended beneath the slide room (or adequate structure for support). For stick and tin construction, continuous support is needed for the header and footer for adequate support.



Slide Room Construction

Wall Backer Specifications		
Thickness	Structure	
Greater than or equal to .125"	Non Stuffed	
Less than .125" to .055"	Stuffed	
Less than .055"	Not Approved	

<u>Square</u>

The slide wall opening and the slide box (each) **MUST** not be out of square more than $\frac{1}{4}$ " in any direction. The corner to corner diagonal dimensions on the slide room opening or the slide room box **MUST** not differ by more than $\frac{1}{4}$ ".

Backers

Backers are to be incorporated into slide room construction, positioned where the In-Wall gear racks will be mounted. Lippert recommends the backers be a 1" x 3" .055" (25.4mm x 76.2mm 1.5mm) aluminum that is wood stuffed. See diagram (Fig. 3) of slide room with backers. The backers do not need to be stuffed with wood if the aluminum wall thickness being used is at least .125". Backer location is determined by hole center from the slide system. Measure from the top of the bottom rack to the top of the top rack.



Prior to Installation

Resources Required

- Cordless or electric drill or screw gun
- Appropriate drive bits
- #10 screws

Inspect Slide-Out Mechanism

- 1. Check the back side of each gear rack to ensure there is foam tape running the entire length of the gear rack. (Figs. 4A and Fig. 4B).
- 2. Hole center span must be within ¹/₁₆" end-to-end (Fig. 4C).
- NOTE: In-Wall assemblies are shipped with shipping angles (Fig. 4D) to keep the gear racks parallel and to assist with the installation process. Do NOT remove shipping angles until the gear racks have been installed on the side wall. Removal of the angle results in racks not being installed parallel to one another and perpendicular to the H column.
- NOTE: In-Wall assemblies will have attached shipping angles that permit installation of exterior slide room T-molding without removal of the angles. The width of the vertical exterior shipping angle leg does not extend past the gear rack flange. Installers can place the exterior shipping angle flush against the inside of the T-molding and the lower gear rack flange while squaring up to the bottom of the slide box.

- Glue
- Sealant



Slide Room Opening Inspection

1. Measure the slide room width and the wall opening (Fig. 5). The wall opening needs to be 5 $\frac{1}{4}$ " wider than the actual slide room measurement. Do not attempt to install the slide room in the trailer if this dimension is more than 5 $\frac{1}{4}$ " or less than 5".

NOTE: T-molding may or may not be installed at this point.



Installing Slide Mechanism to Slide Room

NOTE: The gear rack notch must be toward the exterior of the slide box and the flange of H-column will be to the exterior of the unit. Exceptions must be approved by Lippert engineering.

- 1. Place the "Fixed" assembly against the left-hand side wall of the slide room (Fig. 6) while facing the unit from the outside.
- 2. Hook the lower gear rack installation alignment flange on the bottom of the slide-out (Fig. 7).
- 3. Place the installation alignment flange at the exterior shipping angle flat to the exterior of the slide room (Fig. 6A). Always align the slide-out assembly to the exterior and bottom of the slide room. At this point the system can be adjusted to a tolerance of $-\frac{1}{8}$ "/+0" at the interior and exterior to center the system on the wall. The gap at the interior or exterior should be no more that $\frac{1}{16}$ " variance from the top gap to the bottom gap on the same end of the slide room wall.



- 4. While maintaining alignment with the bottom and exterior of the slide room, attach the lower gear rack to the side of the slide room with #10 screws (Fig. 8). The lower gear rack will only have screw holes above the track of the gear rack. Screws should be installed secure and level.
- 5. While maintaining alignment with the bottom and exterior of the slide room, attach upper gear rack to the side of the slide room with #10 screws (Fig. 8). The upper gear rack will have screw holes above and below the track of the gear rack.
- 6. Remove the exterior shipping angle from the gear racks.
- 7. Repeat steps 1 through 4 for attaching the "Float" assembly to the right-hand side of the slide room while facing the unit from the outside.
- **NOTE:** Although the plastic rivet in the "Float" assembly bearing block is designed to shear, it must remain in place during installation.
- 8. Measure the hole center distance (Fig. 3 and 4) between the upper and lower gear racks at each end to make sure the racks are parallel.
- **NOTE:** A more common practice is to hook the tape measure in the shoe track of the upper gear rack and then measure to a similar point at the lower gear rack.



9. Attach the exterior slide room T-molding, if not already installed.

NOTE: Once the T-molding has been installed, the slide room is ready to be installed into the trailer.

Prepare Wall Opening For Slide Room Installation

1. Prepare upper (Fig. 10A) and lower (Fig.10B) outer wall surfaces according to seal manufacturer's requirements to clean and prepare the area for complete adhesion of sealant.

NOTE: Corners need to be at 90° with no obstructions.

2. Set both left (Fig.11A) and right (Fig. 11B) molded corner cups. Remove liner from tape adhesive.



Refer to Fig. 12 for steps 3 through 8. Refer to Fig. 13 for measuring a room with an overhang.

- 3. Cut lower wipe seal pan to allow a $2\frac{1}{4}$ gap from the edge of the wall to the edge of the pan.
- **4.** Remove the liner from adhesive tape and install as shown.
- 5. Cut the upper wipe seal to allow a $1\frac{3}{8}$ " gap from the edge of the wall. Track extends $\frac{7}{8}$ " past wall opening on both ends.
- 6. Remove liner from adhesive tape and install with tape to outside of wall.
- 7. Finish by attaching with screws or staples in the clip area for the upper and lower seals.
- **8.** Install rollers per guidelines: End rollers 6" from wall opening side wall; span rollers along the slide room sill a maximum of 36" between rollers to support the weight of the slide room.

NOTE: The number of rollers need to be adequate to hold the weight of the slide room.



If the room has an overhang in the interior, use the measurements noted in Fig. 13 to install rollers under the overhang. See "Structural Requirements - Additional Support" on Page 4.

1. Install rollers per guidelines: Span rollers along the slide room sill a maximum of 36" between rollers to support the weight of the slide room.



Slide Room Installation

- 1. Insert the completed slide room into wall opening, taking care to center "H" columns within the opening.
- **2.** Center the box in slide opening.
- **3.** Starting at the bottom of one "H" column, measure $2\frac{1}{2}$ " from the outside edge of the column to the face of the gear rack (Fig. 15).
- 4. Install one #10 screw in the closest hole to the bottom gear rack (below the gear rack) (Fig. 16A and 15A), while maintaining the $2\frac{1}{2}$ " measurement.
- 5. At the top of the same "H" column, confirm the $2\frac{1}{2}$ " measurement from the outside edge of the column to the face of the gear rack (Fig. 14).
- 6. Install one #10 screw in the first hole above the top gear rack (Fig. 14A and 16B).
- 7. Double check the $2\frac{1}{2}$ " measurement at top and bottom gear racks.



- 8. If measurement is correct, finish attaching the "H" column to the wall of unit with #10 screws in the remaining holes in any order (Fig. 16C).
- 9. Repeat steps 3-7 on the opposite side of the slide box.
- **10.** Remove the interior shipping angles from the gear racks.
- **11.** Attach the interior slide room fascia. Fastener spacing must be 6" to 8" apart unless using side-mounted stop angles.

NOTE: Interior slide room fascia must be attached prior to operating the slide room for safety precautions.

12. Apply glue to the back of the upper wipe seal and lay it over the top of the vertical wipe seal on the column (Figs. 17and Fig. 18).

AWARNING

Do not attempt to operate the slide room until both the exterior T-molding and the interior fascia are attached to the slide room.



Optional: Installation of In-Wall Column Clamp

The In-Wall column clamp PN 389787 should be utilized for installed In-Wall Slide-out systems only.

NOTE: Clamps are strongly recommended and available for all In-Wall slide systems from Lippert. Customers may also use their own Lippert-approved version of inside clamp if they choose.

AWARNING

Do not work on your slide-out system unless the battery is disconnected. Failure to act in accordance with the following may result in death or serious personal injury.

Moving parts can pinch, crush or cut. Keep clear and use caution.

Resources Required

- Cordless or Electric Drill or Screw Gun
- Appropriate Drive Bit
- #10 x ³⁄4" screws

Installation - Full Length Clamp

1. Place the In-Wall column clamp (Fig. 19A) on the interior of the slide system (Fig. 19B). The clamp should be flush to the top of the channel, against the bulb seal on the system and hang out over wall.

NOTE: Use self-drilling screws or drill pilot holes.

- **2.** Use $\#10 \times \frac{3}{4}$ " screws to attach the In-Wall column clamp to the interior of the In-Wall system.
- **3.** Use #10 screws to fasten the In-Wall column clamp to the wall of the unit.
- 4. Repeat steps 1 3 for the opposite side.

NOTE: Notches around the rivet heads are an indication that the clamp is placed correctly (Fig. 19C).



Installation - Two 16" Clamps - PN 7013241

The fixed side top (Fig. 20) and bottom (Fig. 21) 16" clamp correct positions are:

- Three holes screwed to the column.
- Four holes screwed to the wall opening edge, butted up against the edge of silver rivets and against the rubber seals edge on the column. The clamp will be below the silver rivet for top clamp position and above the silver rivet for bottom clamp position.

The float side clamp installations will be a mirror of the fixed side.

NOTE: Any other orientation of the clamps or added screws could result in damage to the slide-out system.



Controller Installation

- 1. Mount controller by securing to a solid surface with #8 x 1" wood screws or equivalent.
- **NOTE:** The compartment where the controller is installed must be protected from the elements because the controller is not waterproof. Additionally, the controller should be located away from interior water sources that may cause damage.
- **NOTE:** The controller (Fig. 22) must be mounted with the face visible, allowing the indicator lights and mode button to be accessible for resetting and troubleshooting purposes.
- **NOTE:** OEM suppled wire and circuit protection to be 10 AWG wire with 30 amp circuit protection installed in-line between the power supply and controller. All wiring to conform to RVIA standards.



Wiring Diagram



Startup and Final Inspection

- **1.** Inspect both the interior fascia and the exterior T-molding and verify they are securely fastened.
- 2. Inspect the connections at the controller and verify they are securely attached.
- **3.** Visually inspect all of the gear rack mounting screws to verify they are tight and flush against the gear racks.
- **4.** To synchronize the slide motors:
 - **A.** Using the wall switch, press the "IN" button.
 - **B.** Verify that both motors are moving the room in the same direction. If not, stop and check the wiring and connections to verify proper operation. Replace any damaged harness or motor if the wiring is damaged.
 - **C.** Allow the room to power all of the way in and continue pressing the "IN" button until both sides have completely stopped and the motors turn off by themselves.
 - **D.** Extend the room 1".
 - **E.** Retract the room until the motors amp out.
 - **F.** Repeat steps D and E. In many cases two or three repetitions are necessary to synchronize the system. When the motors are synchronized they will shut down (amp out) at the same time.
- 5. Using the wall switch, extend the room all of the way out until it stops. Conduct these inspections:
 - **A.** Verify the room did a full stroke and that the interior seals are evenly compressed.
 - **B.** Verify the vertical wipe seals are in uniform contact with the side walls of the slide room.
 - **C.** Verify the upper and lower wipe seals are in uniform contact with the floor and ceiling.
 - **D.** Verify that all of the floor rollers are in constant contact with the slide box floor.
 - **E.** Verify the lower wipe seal is of proper length and is clear of all of the rollers.
 - **F.** Verify the exterior top wipe seal is overlapped and glued at each corner to the vertical wipe seal.

IN-WALL[®] SLIDE-OUT BEST PRACTICES SECTION

Recommended Wall Construction or Equivalent

Wall Support Specifications		
Thickness	Structure	
Greater than or equal to .125"	Non Stuffed	
Less than .125" to .055"	Stuffed	
Less than .055"	Not Approved	

Travel Trailer

Opening perimeter needs to be 1" x 3" .055" (25.4mm x 76.2mm 1.5mm) aluminum for the header and vertical uprights. The header (Fig. 23) should extend 2' (609.6mm) beyond the vertical uprights (Fig. 23) for extra support. The vertical uprights need to be stuffed with wood for securing. If the vertical uprights have a minimum wall thickness of .125", the uprights do not need to be stuffed with wood. Upright wall thickness below .055" is not acceptable.

<u>Fifth Wheel</u>

The room opening will be the same except for using 1" x 5" .070" (25.4mm x 127mm 1.78mm) aluminum for the header and 1" x 3" .070" for the vertical uprights. Header should extend 2' (61cm) beyond the room opening. Vertical uprights should be stuffed with wood (Fig. 3). If the vertical uprights are at least .055" thick, the uprights do not need to be stuffed with wood. Upright wall thickness below .055" is not acceptable.

Supports on Top of Slide Room on Main Frame Only

Supports need to be at least .040" (1mm) aluminum and 1" x 1" (25.4mm x 25.4mm) aluminum tube and should extend from the header up into a cross tube. If the room size in the slide wall is less than 4' (121.9cm) in width, no vertical supports are needed above the header. Any room that is more than 4' (121.9cm) and up to under 8' (243.8cm) needs to have one support centered on the room. Every room that is over 8' (243.8cm) up to 12' (365.8cm) needs to have two vertical supports evenly spaced over the top of the room. For example, a 9' opening would have a vertical support 3' (91.4cm) in from each upright (See Fig. 23 for reference). So for every 4' (121.9cm) in room width, one additional vertical support will be needed.

NOTE: These instructions are based off a 1" (25.4mm) sidewall thickness. For example, a 1.5" x 3" (38.1mm x 76.2mm) tube may be used if walls are 1.5"(38.1mm) thick.



Upper Deck Slide Room Opening

For slide openings in the upper deck area, the bottom cross tube should be equal to, or longer than, the header tube. If additional height is needed, the manufacturer will need to add another cross tube that is .060" (1.5mm) gauge minimum and add vertical supports for strength. The supports must be a minimum 1" x 1" (25.4mm x 25.4mm) aluminum tube and placed accordingly. This applies to top and bottom supports only in the upper deck area (Fig. 24).

- **A.** Room is 5' (152.4cm) and under, two vertical supports are needed spaced evenly.
- **B.** More than 5' (152.4m) up to 7' (213.4cm), three supports are needed spaced evenly.
- **C.** More than 7' (213.4cm) up to 9' (274.32cm), four supports are needed spaced evenly and so on.
- **D.** Vertical supports need to be .040" (1mm) minimum gauge.



Slide Room Opening Bottom Section

The bottom tube in the slide room can be .040" (1mm) aluminum unless it falls into the wheel well or upper deck area as explained in the "Upper Deck Slide Room Opening" section. This piece is typically removed when installing the Lippert In-Wall[®] slide, depending on how the side wall sets in relation to the floor (Fig. 25). When the bottom support tube is left in place, it is because wall openings may fall into a wheel well area that sets higher than the floor (Fig. 25). The bottom tube needs to be .060" (1.5mm) aluminum for travel trailers and .070" (1.8mm) aluminum for fifth wheels only when a tube is needed for the wheel well area.

NOTE: If slide room is in wheel well area, the slide wall structure should start at least 6" above the bottom of the rest of the wall (Fig. 26A). Slide outriggers will not be recommended in this case.



Notes



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Please recycle all obsolete materials.

For all concerns or questions, please contact Lippert Components, Inc. Ph: (574) 537-8900 | Web: <u>lippert.com</u> | Email: <u>customerservice@lci1.com</u>

IN-WALL[®] SLIDE-OUT REPAIR KIT MANUAL

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LIPPERT Components"

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Safety Information

AWARNING

Failure to act in accordance with the following may result in death, serious injury, coach or property damage.

The In-Wall[®] Slide-out System is intended for the sole purpose of extending and retracting the slide-out room. Its function should not be used for any purpose or reason other than to actuate the slide-out room. To use the system for any reason other than what it is designed for may result in death, serious injury or damage to the coach.

Before actuating the system, please keep these things in mind:

- 1. The unit should be parked on solid and level ground and the area around the unit clear of obstructions that may cause damage when the slide-out room is being repaired.
- 2. Be sure all persons are clear of the coach prior to the slide-out room maintenance.
- 3. Keep hands and other body parts away from slide-out mechanisms during actuation.

Introduction

This document will aid in determining whether it is necessary for the assembly to be repaired or replaced entirely.

Standard Repair Kit Includes:

Upper Gear Rack Lower Gear Rack V-Roller **Snap Ring** Shoe Foam Wear Plug Flat Back Rack Plug

NOT INCLUDED in Kit:

Coupler Lower Bearing Block **Upper Bearing Block** Metal/Plastic Rivets Spur Gear (300:1/ 500:1/Hex)

If the repair necessitates it, replacement bearing blocks, spur gears and couplers can be ordered separately.

NOTE: See Pages 14-15 for more details and part numbers.

Preliminary Visual Inspection

Prior to conducting any repair or replacement, it is imperative to ensure that the problem with the slide-out is properly diagnosed and that the issue will be corrected with a repair or replacement. Proper diagnosis of the issue includes ruling out a slide-out obstruction, a slide-out seal issue, or a slide-out measurement that is outside of suggested parameters. Prior to slide-out repair or replacement, be sure to check the following:

- Check assembly and slide room for any type of obstruction that may have caused the initial concern. 1.
- 2. Inspect the wiper seals for tearing or other damage.
- 3. Make sure that the wiper seals are not being pulled into the gear rack causing binding.
- Check that the interior and exterior bulb seals are compressing properly when the slide-out is 4. extended or retracted.
- It is recommended that measurements be taken to make sure the slide-out is parallel and that the 5. H-Column is square. Make sure the measurements are taken from the same location on both sides (Figs. 1 and 2). Variance could be up to $+/-\frac{1}{8}$ ".
- 6. Measure from the outside edge of the column to the face of the gear rack (Figs. 3 and 4).

NOTE: LCI prefers to have these measurements submitted in picture format to assure proper guidance is given.

NOTE: Slide box T-molding has been removed from (Figs. 3 and 4) for clarity.







Assembly Removal Procedure

Tools Required

- Electric drill or cordless screw gun
- Rubber mallet
- 2x4 (length=gap between T-molding and side of unit-1/4")
- Razor knife
- Floor jack

<u>Procedure</u>

- **NOTE:** If the slide will not move by use of the switch it may be necessary to use one of the three methods (A, B, or C) described below:
 - **A.** Use electronic override mode on the In-Wall controller.
 - I. Press the "mode button" 6 times quickly, press a 7th time and hold for approximately 5 seconds (Fig. 5A).
 - **II.** The red and green LED lights will begin to flash indicating system is in override mode (Fig. 5B).
 - **III.** Using the wall switch, press and hold the "IN" button until the unit comes completely in.
 - **B.** Disconnect the motor harnesses from the In-Wall controller to allow the slide room to be manually pushed into position (Fig. 6A).
 - **C.** Disengage the motors to allow the slide room to be manually pushed into position (Fig. 6B).
- 1. Remove first 3 sets of screws in each rack on the interior side of slide room.
- 2. Extend the slide room until about 8" of the room is left inside the unit.
- **3.** Support the slide room with a floor jack or other adequate support before continuing.
- **4.** Place the 2x4 block on top of the slide room (standing on its edge between the T-molding and side of the unit.)
- 5. Reach inside the top of the slide column to disconnect the wiring harness from the motor.
- **6.** Using a razor knife, carefully cut the caulk bead along the edge of the slide column.
- 7. Remove the screws from the slide column attaching it to the side wall of the unit.
- 8. Create a jumper wire from an extra wiring harness: Cut a 3-foot length of the harness (with the motor wire connector attached) and strip the ends of the red and black wires (Fig. 7).
- **9.** Plug the jumper wire into the motor wire.
- **10.** Holding the black and red wires against the terminals of your cordless screw gun battery, determine which polarity actuates the motor in the retract direction. The slide column should slide away from the side of the unit.







11. Remove all screws from the gear racks (Fig. 8).



- **12.** You may need to pry the gear racks away from the sides of the slide room with a flathead screwdriver or putty knife. Do this carefully so you don't damage the finish on the side of the slide room.
- 13. Carefully slide the ends of the gear racks past the bulb seal on the T-molding.
- **14.** Pull the full system out and set aside.
- **NOTE:** LCI recommends that inspection and repair of the assembly be done on a clear workbench to prevent further damage to the system.
- 15. If the motor is still in the column, remove at this time. The motor is held in place by a retention screw. It is typically located on the exterior side of the column, near the motor ventilation holes (Fig. 9). Removal of the retention screw will allow the motor to easily slide out of the column.
- **16.** Remove the upper, middle (if applicable), and lower racks from the column by grasping the column in one hand and sliding the racks toward your body.
- **NOTE:** All racks will move together. Take necessary precautions to prevent damage to the racks from a possible drop to the ground.



Replacement of Entire Assembly Required

Damages listed below will require the inspected side to be replaced with a completely new assembly.

- A. Torque Shaft Inspect the torque shaft for a bow or bend. Also inspect the torque shaft to assure that it has not dropped. Make sure the stakes in the top of the torque shaft (Fig. 10) are adequately keeping the shaft in place. If the torque shaft is found to be faulty, the inspected side should be replaced entirely.
- **B.** Gibs In the event that a gib is found to be broken or loose, the inspected side should be replaced entirely. This includes a broken, loose, or missing rivet.
- **C.** Metal shavings near the spur gear During inspection of the bearing block it is important to look for shavings around the spur gear (See locations outlined in Fig. 11A, B, C). This could indicate excessive wear around the torque shaft caused by the spur gear digging into the torque shaft.
- **D.** "H" Column In the rare event that the column has been damaged in any way, the inspected side should be replaced entirely.

NOTE: If replacing the entire assembly, skip to the Assembly Installation Procedure on Page 12.





In-Wall Rack

Inspection

NOTE: It will be important to begin with a general inspection of the gear rack to see if replacement is recommended.

<u>Replacement</u>

Below are the steps to replace an In-Wall Gear Rack:

- **NOTE:** If the gear rack being replaced has notches on both ends, the rack will need to be custom ordered. Contact LCI Parts at (574) 537-8900 for ordering assistance.
- **NOTE:** You will notice that included in the In-Wall Repair Kit is an upper and lower gear rack section that is longer than needed. In this case, a cut will be required to match the size of the original gear rack.
- 1. Measure the original gear rack. Index your measurement from the "notched" end (Fig. 12A) of the gear rack and document accordingly.
- 2. Transfer the measurement taken from the original gear rack onto the new gear rack.

NOTE: Remember to start your measurement from the "notched" end (Fig. 12A) of the gear rack to ensure proper end of the gear rack is cut.

- **3.** Check measurement prior to cutting.
- **4.** Make the cut to the non-notched end of the rack (Fig. 12B), preferably with a chop saw to prevent angled cut or "chewed" appearance.
- 5. De-burr the cut end with a fine file or emery paper.
- 6. Insert the corresponding foam plugs into each end of the rack to ensure that water infiltration is prevented prior to installation (Fig. 13 and Fig. 14).
- 7. Gear racks can now be installed back into the columns.

NOTE: Please refer to the **Re-timing Procedure** section of this manual on Page 11.

8. Assembly can now be installed back on the unit. See Assembly Installation Procedure on Page 12.



Shoe

Inspection

A. Damaged or missing shoe (if damage to corresponding foot on bearing block is present, replacement of bearing block (page 10) will be necessary).

<u>Replacement</u>

Below are the steps to replace a shoe (Figs. 15 and 16):

- 1. With the racks removed from the assembly, the shoe replacement is snapped onto the bearing block foot. Align the notch located on foot (Fig. 16A) with the "rib" in the shoe (Fig. 15A) and press into place.
- **2.** Gear racks can now be installed back into the columns.

NOTE: Please refer to the **Re-timing Procedure** section of this manual on Page 11.

3. If all other concerns have been addressed, the assembly can now be installed back onto the unit. See Assembly Installation Procedure on Page 12.



NOTE: On certain systems, the bearing block will not have a notch in it for the tab on the new shoe (Fig. 15A) to properly fit. If this is the case, remove the tab from the shoe with a rotary tool or a utility knife. Be careful not to cut into the body of the shoe.

V-Roller

Inspection

- **A.** Damaged or missing v-roller: If damage to corresponding v-roller arm on bearing block is present, replacement of the bearing block (Page 10) will be necessary.
- **B.** Stress cracks on or around the v-roller arm: If the v-roller arm is found to be cracked, bent or unable to accept a replacement roller bearing, replacement of the bearing block will be necessary.

NOTE: If damage is evident on either bearing block, **BOTH** the upper and lower bearing blocks **MUST** be replaced.

<u>Replacement</u>

Below are the steps to replace a v-roller (Fig. 17):

- **1.** Remove the corresponding snap ring to allow for removal of damaged v-roller.
- 2. Inspect v-roller arm for damage. If v-roller arm is damaged, see **bearing block replacement** instructions on Page 10.
- **3.** Slide new v-roller onto the v-roller arm.

NOTE: Be careful not to spread the snap ring open too far.

- **4.** Replace the snap ring and inspect for proper seating.
- 5. Lube the v-roller bearings with CRC Power Lube with PFTE (Fig. 17 detail).
- 6. Gear racks can now be installed back into the columns.

NOTE: Please refer to the Re-timing Procedure section of this manual on Page 11.

7. If all other concerns have been addressed, the assembly can now be installed back onto the unit. See Assembly Installation Procedure on Page 12.



Bearing Block/Spur Gear

NOTE: The bearing blocks do not need to be removed if only the spur gears are being replaced.

Inspection

- A. Stress cracks on or around the bearing block foot or v-roller arm: If the bearing block foot is found to be cracked or bent, replacement of the bearing block will be necessary.
- **B.** Excessive damage to spur gear (teeth missing, etc).

Replacement

Below are the steps to replace a bearing block or a spur gear (Figs. 18, 19, 20):

- 1. If the bearing block shows any type of damage that indicates repeated contact with the gear rack, it **MUST** be completely removed from the drive assembly and replaced. If damage is evident on either bearing block, **BOTH** the upper and lower bearing blocks **MUST** be replaced.
- 2. Pull the torque shaft up and out from the top of the column, through both bearing blocks. Be careful not to drop the spur gears if they are not being replaced, as they will be loose in the assembly once the torque shaft is removed.

NOTE: If only replacing the spur gears, place the new spur gears into the

bearing blocks and reinsert the torque shaft from the top of the column back through both bearing blocks and spur gears. Skip to step 6.

- **3.** Remove the rivets that hold the bearing block in place. These rivets may be made out of aluminum (Fig. 19) or plastic (Fig. 20) depending on the side being replaced.
- **4.** Install the replacement upper and lower bearing blocks and spur gears on the torque shaft and reinstall the torque shaft assembly into the column.
- 5. Install shoe and v-roller into the bearing block assembly after the column is reassembled.
- **6.** Reinstall the gear racks.
- 7. Reinsert the coupler and motor into the upper bearing block.

NOTE: Please refer to the Re-timing Procedure section of this manual on Page 11.

- **8.** If all other concerns have been addressed, the assembly can now be installed back onto the unit. See Assembly Installation Procedure on Page 12.
- **NOTE:** Replacing the slide-out on a motorized coach may

require replacement of a narrow bearing block and plastic composite gib (Fig. 21). If this is the case, please contact LCI for information.







Re-Timing Procedure

The top and bottom gear racks on each side of the In-Wall Slide-out System are connected by a torque shaft that runs from the upper bearing block to the lower bearing block. The bearing blocks and torque shaft are mounted inside of the column. The column is fastened to the side wall opening of the unit. The timing of the system from top to bottom is considered to be adjustment free, as it is essentially locked in correct time. In the instance that the system is no longer in time, either the top or the bottom will extend farther than its opposite. The following procedure will help to properly address the concern:

NOTE: If the assembly is still on the slide room, refer to the Assembly Removal Procedure on Page 4. If the assembly is already off the slide room for repair, start at step 1 below.

NOTE: The re-timing process is made easier by taking the system to a work bench.

1. Pull one of the gear racks to remove it from the bearing block.

NOTE: Both gear racks will move. Be sure when removing the gear racks that they do not fall to the floor or sustain any damage.

- 2. Finish pulling the second gear rack free if necessary.
- **3.** When feeding the gear racks back in, start from the notched side. Gently start the gear racks into the bearing blocks evenly.
- **4.** Once both gear racks are engaged, use a tape measure and measure from the column to the end of each gear rack. The measurement must be the same to ensure that the slide room will be timed correctly.
- 5. Apply pressure to one of the gear racks. This will cause both gear racks to move together. At this point, the gear racks will be back in time.

ACAUTION

When reinstalling the system to the slide room, be sure to address the measurements specified in the Preliminary Visual Inspection section on Page 3. If measurements are not within these specifications, make necessary adjustments to screw locations to remedy. Adding additional screws may be necessary in between the pre-drilled spots on the column. If the system is not replaced within those stated specifications, serious damage to the system may occur.

6. If the above procedure corrects the timing, repeat the same process on the opposite side of the slide, if necessary.
Assembly Installation Procedure

- 1. Prepare the slide room and side of the unit for the new install by cleaning the surfaces of any adhesive residue using a putty knife and a solvent, being careful not to damage the finishes on the unit.
- 2. Prepare the new system for installation: measure the distance (center to center) from one gear rack to the next gear rack along the slide column. Write these measurements down.
- **3.** Apply OEM recommended sealant to the entire length of the H-column along the inside edge where it will contact the side face of the unit.

NOTE: If installing a new assembly, remove the shipping angles before continuing this procedure.

- **4.** Gently slip the system through the opening between the slide room and the side wall opening. Tuck the gear racks inside the bulb seal attached to the T-molding.
- 5. Align the bottom lip (alignment flange) of the lower gear rack with the bottom edge of the slide room (Fig. 22).
- 6. Push the bottom gear rack tight against the bottom of the slide room and put a screw into each end of the gear rack.



- 7. Measure from the bottom gear rack (center to center) to the next gear rack and align that rack so that it matches the measurement you took off of the system during step 2 (Page 12). This will ensure that the racks are installed parallel and square. Put a screw in each end of the gear rack to hold it in place until you align all the gear racks.
- **8.** Once you align and secure all the gear racks, put all the screws into the gear racks.
- **9.** Attach the jumper wires to the motor in top of the slide column and then to the cordless screw gun battery. Actuate the motor to move the slide column in towards the coach. Stop the column when it is still a few inches away from the unit. Remove the jumper cable.
- **10.** Make sure the motor cable is tucked into the top of the slide column.
- **11.** Remove the 2x4 block.
- **12.** Push the slide room in by hand until the slide column is flush with the side wall of the coach.
- **13.** Screw the slide column into the side wall by placing a screw in the column by each rack and in the middle of the column to ensure the rack is straight, then fill in remaining screws (Fig. 23). Remove the floor jack.
- **14.** From the inside of the coach, connect the wiring harness to the motor cable.
- **15.** Repeat this process for the other side of the slide room (if required).
- **16.** Once you have completed both sides of the slide room, synchronize the slide system motors (See procedure below).

Synchronizing The Slide-Out Motors

- **1.** Fully extend the slide room using the switch. Keep the switch engaged until the motors shut down on their own.
- **2.** Retract the room 1-2 inches.
- **3.** Repeat steps 1 and 2 until both motors shut down at the same time. In many cases, two or three repetitions are necessary to re-sync the system.
- **4.** Fully extend and then retract the room. Again, always let the motors shut down on their own before releasing the switch.



Repair Kits Part Numbers

Standard (W/ 1.56" Notch)

Clear Part #	Black Part #	Description
366154	366209	Standard Fixed Repair Kit
366156	366211	Standard Float Repair Kit
366158	366212	Inverted Fixed Repair Kit
366159	366213	Inverted Float Repair Kit
366160	366214	Triple Fixed Repair Kit
366161	366215	Triple Float Repair Kit



Bearing Block Repair Kit

If the bearing blocks need to be replaced, a repair kit that includes one upper and one lower bearing block, four plastic rivets, and 2 aluminum rivets is available. Part numbers are on the table below.

NOTE: Triple Bearing Block kit will include one upper and two lower bearing blocks, 6 plastic rivets, and 3 aluminum rivets.

Bearing Block Repair Kit Numbers		
Kit #	Description	
379060	Standard Bearing Block Repair Kit	
379076	Inverted Bearing Block Repair Kit	
379077	Narrow Bearing Block w/ Composite Gibs Repair Kit	
379720	Triple Bearing Block Repair Kit	

<u>Custom</u>

If the system being repaired has a different notch than the 1.56" described on the previous page, use the images below to identify the notch, then contact LCI Parts at (574) 537-8900 for ordering assistance.

NOTE: If the gear rack being replaced has notches on both ends, the rack will need to be custom ordered. Contact LCI Parts at (574) 537-8900 for ordering assistance.

Custom Kit Numbers		
Kit #	Description	
366121	Standard (without gear racks)	
366120	Inverted (without gear racks)	
366106	Triple (without gear racks)	





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SLIDE-OUTS



QR-038



IN-WALL® SLIDE-OUT ORDER GUIDE

SLIDE-OUTS

If your box is 6 ft or less in length, and does not exceed 500 lbs, rollers are not required.



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