

VALID SLIDE CONTROL

Operation Guide

CONTROLLER FIRMWARE VERSION 2.1

CONTROLLER HARDWARE VERSION 01



Valid Manufacturing Ltd.
Advanced Technologies... Simple Solutions

Last revision: 03/31/05

Copyright © 2007 Valid Manufacturing Ltd. All rights reserved.
Information in this document is subject to change without notice. No part of this document may be reproduced or transmitted, in whole or in part, in any form, or by any means, electronic or mechanical, for any purpose, without the express written permission of Valid Manufacturing Ltd.

TABLE OF CONTENTS

For Your Safety	5
Introduction	7
Using the Control Panel	9
Control Mode	9
Service Mode.....	10
Setup Procedures	15
Pressure Switch Initial Setup.....	15
Pressure Switch Set Point Adjustment.....	15
Setting the Pressure Regulator	16
Troubleshooting	17
Warranty & Service	21
Warranty.....	21
Service.....	21
Index.....	23

Addenda:

- Motor junction box schematic
- Pneumatic multi-slide, primary air panel schematic
- Pneumatic multi-slide, secondary air panel schematic
- Slide-out control electrical schematic
- Replacement parts list

FOR YOUR SAFETY

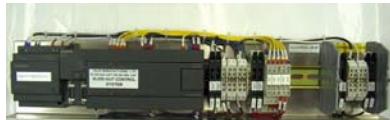
- Read and understand the entire operator's manual before using or servicing your Valid Slide Control.
- Ensure that the area around the vehicle is clear of obstructions before operating the slide control.
- Your Valid Slide Control should be serviced only by qualified personnel.

INTRODUCTION

Using technology that has been proven in some of the most demanding applications imaginable, Valid Manufacturing Ltd. has developed the Valid Slide Control, a room extension system that takes the conversion coach to new heights.

- The extremely low friction, precision bearing rails provide the most stable and reliable room extension in the industry.
- The innovative cam drive system is simply the most effective and lowest-maintenance actuation system available. It provides automatic locking in both extended and retracted positions, even in the event of a complete loss of power and air.
- The high thrust ball screw drive provides smooth, quiet, low friction actuation of the room extension.
- There are no bulky hydraulic systems and therefore no chance of any damaging oil leaks.
- The all-stainless steel frame construction ensures that your slide-out system will stand up to the test of time.

PLC



The Valid Slide Control consists of several components: a programmable logic controller (or PLC), a panel controlling the air flow, an operator control panel, and the slide structure itself. A coach may have up to 4 slides.

Air panel



Slide control panel



The following pages describe how to extend and retract slide-out rooms; check the status of signals and devices; and set up the pressure switch and pressure regulator. There is also a troubleshooting section—please note that some of the suggestions require the help of qualified service personnel.

USING THE CONTROL PANEL

All functions for the slide-out control are accessed through the slide control panel. There are three operational modes:

- **Control Mode:** This mode allows you to select the slide you wish to activate (if your coach has more than one), and extend or retract the slide.
- **Service Mode:** In Service mode, you may check the status of devices or signals during troubleshooting. Note that this is merely a check – you cannot change any settings in this mode.

Control Mode

Normally the control panel is left in Control mode as this is the mode most often used. Control mode is identified by the message indicating the current status of the slide-out. Usually this is *SLIDE SECURE*.

To perform all slide operation sequences (selecting, extending, and retracting a slide), you must be in Control mode.



To ensure the slide control is in Control Mode:

If the control panel was left in Service mode, press **CONTROL/SERVICE** once to return to Control mode.

Note: The coach ignition switch must be in the ON position and the park brake must be engaged before the following operations can be performed.

Selecting a slide

If you have more than one slide in your vehicle, you must select which one to activate before extending or retracting it.

To select a slide:

Press **SLIDE SELECT** to scroll through all the available slides until the desired slide is displayed in the message window. This feature is disabled on coaches with a single slide.



Extending the slide

To extend the slide, press and hold **EXTEND**. The controller will sequence through all the necessary actions required. The message window displays each operation as it takes place during the cycle, such as *SLIDE EXTENDING* and *SEAL INFLATING*.

Release the **EXTEND** button when the control panel displays the *RELEASE BUTTON* message.

Once the cycle is completed the display will read *SLIDE SECURE*. This indicates that:

- All functions have taken place.
- The slide is in a fully extended position.
- The seal is fully inflated.

Retracting the slide

1. To retract the slide, press and hold **RETRACT**.

The cycle is complete when the control panel displays the *RELEASE BUTTON* message. Release any buttons you are pressing when you see this message.



Message window Press and hold EXTEND



Release button message



Press and hold RETRACT

Notes:

- You may stop the slide at any time by simply releasing whichever button you are currently holding. If the slide is stopped in mid-position the pneumatic seal will NOT inflate.
- The coach will not be able to travel until all slides are fully retracted and the *SLIDE SECURE* message is displayed on the control panel.
- The park brake must be engaged for the slides to be extended or retracted. A message will be displayed if you attempt to use your slide without the park brake on.

Service Mode

Service mode is a diagnostic mode for checking the various components of the slide control system. In Service mode, the status of a device or signal can be

viewed but not changed. Service mode is identified by the message indicating *SLIDE ENABLE ON* or *SLIDE ENABLE OFF*. Note that if you have more than one slide on your vehicle, you will need to select which slide you wish to check the status of.

To put the slide control into Service Mode:

2. If the control panel is in Control mode, press **SHIFT** once.

Press **CONTROL/SERVICE**. This will place the control panel in Service mode.

In Service mode, press **NEXT** or **PREVIOUS** to scroll through each electrical device or signal and check its current status.

If you have more than one slide, you can press **SLIDE SELECT** to choose the slide of which you wish to check the status.



To return to Control Mode:

Press **CONTROL/SERVICE** once.

The following is a list of the device status messages that you can check while in Service Mode.

Message	Meaning
SLIDE ENABLE ON/OFF	The slide enable control is on or off. On = the slide is in a state to be extended or retracted. Off = the slide is not available to be extended or retracted.
IGNITION ON/OFF	The ignition switch is on or off.
SLIDE EXT PROX ON/OFF	The proximity switch for the slide extend is on or off. On = the slide is fully extended. Off = the slide is fully retracted.
SLIDE RET PROX ON/OFF	The proximity switch for the slide retract is on or off. On = the slide fully retracted. Off = the slide is fully extended.
FLOOR UP PROX ON/OFF	The proximity switch for floor up is on or off. On = Slide floor is up and slide is fully extended. Off = Slide floor is down and slide is retracted.
FLOOR DOWN PROX ON/OFF	The proximity switch for the floor down is on or off. On = Slide floor is down and slide is retracted. Off = Slide floor is up and slide is fully extended.

Message	Meaning
SEAL PRES SWITCH ON/OFF	The seal pressure switch is on or off: On = the air seal is fully pressurized, and the slide is fully extended or retracted. Off = the air seal is not fully pressurized, as when the slide is in the process of moving.
SEAL VAC SWITCH ON/OFF	The seal vacuum switch is on or off: On = the air seal is fully vacuumed, as when the slide is in process of moving. Off = the air seal is pressurized.
SLIDE CLR SWITCH ON/OFF	The slide clear switch is on or off. This is a safety input for the coach manufacturer. It may be connected to anything that requires an input to indicate that the item is ready for the slide to be activated. (For example, a baggage bay door.) If on = the slide is clear and ready for activation.
VAC EJECT VALVE ON/OFF	The vacuum eject valve is on or off. On = the air seal is in process of being vacuumed.
COACH DISABLE ON/OFF	The coach disable switch is on or off. This is an output wired to the enable switch on the transmission. On = the coach is unable to travel. Off = the coach is ready to travel.
SLIDE EXT DRIVE ON/OFF	The slide extend drive is on or off. On = the motor is running to extend the slide.
SLIDE RET DRIVE ON/OFF	The slide return drive is on or off. On = the motor is running to retract the slide.
FLOOR LIFT DRIVE ON/OFF	The floor lift drive to raise the slide floor is on or off.
FLOOR DROP DRIVE ON/OFF	The floor drop drive to lower the slide floor is on or off.
SEAL CTRL VALVE ON/OFF	The seal control valve is on or off. On = the air seal is venting to atmosphere, or being vacuumed. Off = the air seal is being pressurized.
EXT REQ COUNT	The number of times in the slide's lifetime that it has been requested to extend.
EXTENDED COUNT	The number of times in the slide's lifetime that it has actually been extended (as opposed to being requested to extend).

SETUP PROCEDURES

Pressure Switch Initial Setup

Note: This procedure is normally followed when replacing a pressure switch.

To adjust the pressure switch settings:

3. Press and hold **SET** for 2-4 seconds. The display now shows the units indicator and the current display units.

Using the **UP** arrow, sequence through the choices until **PSI** is displayed.

Press and release **SET** once. The display now shows the contact type for Output 1. Using the **UP** arrow, toggle through the choices until **1no** is displayed.

Press and release **SET** once. The display now shows **2no**.



Pressure switch

Using the **UP** arrow, sequence through the choices until **2nC** is displayed.

Press and release **SET** three times. The internal pressure of the air seal in **PSI** (pounds/inch²) will now be displayed.

Note: If the internal air seal pressure is greater than 14 **PSI**, the display will indicate **--.--**. This is normal.

Pressure Switch Set Point Adjustment

To adjust the set point on the pressure switch:

4. Press and release **SET** once. The display will flash between **P_1** and a numeric value.

Using the **UP** and **DOWN** arrows, adjust the value to read **8.00**.

Press and release **SET** once. The display will flash between **P_2** and a numeric value.

Using the **UP** and **DOWN** arrows, adjust the value to read **7.00**.

Press and release **SET** once. The display will flash between **n_3** and a numeric value.

Using the **UP** and **DOWN** arrows, adjust the value to read **-1.00**.

Press and release **SET** once. The display should flash between **n_4** and a numeric value.

Using the **UP** and **DOWN** selection arrows, adjust the value to read **-6.50**.

Setting the Pressure Regulator

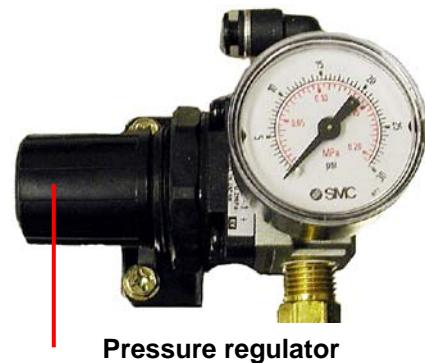
Seal pressure varies among coach manufacturers. If you are unsure of the original air pressure and need to perform an adjustment, you should set the pressure value to approximately 20-25 PSI.

There are as many pressure regulators as slides in your coach. If you have more than one slide, ensure that all regulators are properly set and adjust as necessary.

To adjust the regulator pressure:

5. Pull out the setting knob to unlock it.

Looking at the front of the knob, turn it clockwise to increase the value, or counter-clockwise to decrease the value.



TROUBLESHOOTING

Here we have provided a number of common troubles and their solutions. If you do not see your particular concern addressed here, please contact Valid Manufacturing Ltd. (See page 21 for contact information.)

None of the slides will extend or retract.

Ensure that the park brake is on—no slides will function until the park brake is set.

The display says *Slide Secure* even when I press EXTEND or RETRACT.

Again, slides do not function until the park brake is set. Make sure that the park brake is on before moving any slides.

The display says *Seal Deflating* and no matter how long I hold the button it never goes any further.

The vacuum used to deflate the seal is created by forcing compressed air through a venturi. If there is not sufficient air pressure built up in the coach's air system, then the seal cannot be fully deflated. Make sure that the air system is above 100 PSI before attempting to move any slides.

There may be a rupture in the inflatable air seal which is not allowing the seal to be fully deflated. If the coach air system is above 100 PSI and the seal will still not completely deflate, then the seal or its related air system should be inspected for leaks or ruptures.

Sometimes while the slide is extending or retracting, it stops, the display says *Seal Deflating* for a few seconds and then the slide continues.

The slide control system maintains a vacuum in the inflatable seal at all times during extension or retraction of the slide. If at any time during slide movement, the control system determines that the vacuum level is not sufficient to ensure that the seal stays deflated; it will stop the slide automatically, deflate the seal again, and then continue moving the slide. While this may indicate that there may be a leak in the seal or its plumbing, the stopping and starting of the slide is done intentionally to ensure that the slide never moves with a seal that is partially inflated. If the slide stops more than once during the length of its travel, the seal or its related air system must be inspected for leaks or ruptures.

The display says *Password Required*—what should I do?

For normal operation of the slide there is no need to get into the password-protected portion of the control system. If you have accidentally gotten to this point, simply press **ESC** to take you back to the standard Control mode.

If you need to go into Manual Override mode and access the password-protected portion of the control system, ensure that you have the most recent I/O list for that coach available before overriding any inputs or outputs. Forcing an incorrect input or output can damage the slide—please contact either the coach manufacturer or Valid Manufacturing Ltd. for further support.

When I press **EXTEND OR RETRACT on the display, the status line on the display just tells me whether different things are on or off. Why?**

You have enabled the Service mode of the control system, which is used to diagnose the status of all the inputs and outputs connected to the slide control system. Simply pressing **CONTROL/SERVICE** on the left of the panel will take you back to control mode.

The second line of the display says *Press Switch Failed* and I cannot get the slide to extend or retract.

The slide control system has a built-in diagnostic system that monitors the pressure in the inflatable seal. If the seal pressure sensor sends an unexpected signal to the control system, the message window displays **PRESS SWITCH FAILED** and prevents the slide from moving until the system is corrected and the failure reset. This action is taken to ensure that the slide never moves with a partially inflated air seal. On earlier versions of the coach software, this error can be reset by jumpering +24vdc to the **PS_Reset** input for that coach. The reset is instantaneous so the jumper can simply be “touched” to the input terminal briefly. On more recent versions you must press **SHIFT** and then **SLIDE SELECT**.

If resetting is unsuccessful, then further diagnosis of the error is needed. Start by confirming that all signals coming from the pressure switch are as expected. This should be done by physically checking the switch as well as cycling through the sensor status on the slide display.

The slide (or floor) was moving; then it stopped, and now it won't go either way.

The slide and floor actuators each use a common fuse for extending or retracting the actuator. Floor position is monitored by two proximity sensors, one for full up and one for full down. Determine whether the floor proximity switches are on or off by entering service mode and checking the status of the proximity switches. If the floor is not fully down the slide will not extend or retract.

The display says *Floor Lowering* but the floor looks like it's all the way down and has stopped moving.

The floor position is monitored by two proximity sensors, one for full up and one for full down. Determine whether the floor proximity switches are on or off by placing the display in service mode and checking the status of the proximity switches.

- If the floor is not fully down, the slide will not extend or retract.
- If the floor is fully down and the proximity is out of adjustment, you can override the switch input from the panel and then retract the slide.

Warning: If the floor has not lowered far enough to be detected by the switch, then do not attempt to retract the slide or you could hit the floor with the slide and cause significant damage.

If resetting the error is unsuccessful then further diagnosis of the error is needed. Start by confirming that all signals coming from the pressure switch are as expected. This should be done by physically checking the switch as well as cycling through the sensor status on the slide display.

If your slide-out will not extend or retract, and none of the above solutions have helped, you will require assistance from a qualified service depot for both diagnosis and repair.

WARRANTY & SERVICE

Warranty

Your Valid Slide Control is warranted for a period of one year against defects of workmanship.

- If you acquired your Valid Slide Control as a factory-installed option on a new or used coach, then your warranty extends for a one year period commencing from the date the coach was purchased.
- If you purchased your Valid Slide Control and had it installed yourself, then your warranty extends for a one year period commencing from the date the slide control was purchased.

If, during the warranty period, any component of the slide control system fails to operate as indicated in this manual, simply return the part to the point of purchase for a no-questions replacement of the component.

Service

For information or service on your Valid Slide Control, contact your coach manufacturer or Valid Manufacturing Ltd.

Valid Manufacturing Ltd.
5320-B 48 Ave. SE
Salmon Arm, B.C.
Canada
V1E 1X2

Phone: 250-832-6477
Fax: 250-832-7746
Email: sales@validmanufacturing.com

INDEX

A

Air leak, 17

B

Button

- Control/service, 11
- Extend, 10
- Retract, 10
- Slide select, 9

C

- Coach disable on/off, 12
- Control mode, 9
- Control/Service button, 11

E

- Ext req count, 13
- Extend button, 10
- Extended count, 13

F

- Floor down prox on/off, 12
- Floor drop drive on/off, 13
- Floor lift drive on/off, 13
- Floor lowering, 19
- Floor up prox on/off, 12

I

Ignition switch on/off, 12

P

- Parking brake, using, 11
- Press switch failed, 18
- Pressure regulator, setting up, 16
- Pressure switch
 - set point adjustment, 15
 - setting up, 15

R

Retract button, 10

Room

- extending, 10
- retracting, 10
- selecting, 9

S

- Safety measures, 5
- Seal ctrl valve on/off, 13
- Seal deflating, 17
- Seal pres switch on/off, 12
- Seal vac switch on/off, 12
- Seal, air leak in, 17
- Service mode, 11
 - messages. *See entries for specific messages*

Setup

- pressure regulator, 16
- pressure switch, 15

Slide

- extending, 10
- retracting, 10
- selecting, 9

- Slide clear switch on/off, 12
- Slide enable on/off, 12
- Slide ext drive on/off, 12
- Slide ext prox on/off, 12
- Slide ret drive on/off, 13
- Slide ret prox on/off, 12
- Slide select button, 9

T

Troubleshooting, 17

V

Vac eject valve on/off, 12

