



WHERE
PRECISION
DRIVES
PRODUCTION



RD100 & RD200

OWNER'S MANUAL

Rev A

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1. Introduction

Before you operate this system, read the operation and setup manual. This will help you to become familiar with the product and ensure successful operation.

If any questions or problems arise, contact PVA's Technical Support department.

1.1 PVA Contact Information

Main Office	PVA Six Corporate Drive Halfmoon, NY 12065 Tel +1-518-371-2684 Fax +1-518-371-2688 Website http://www.pva.net Email info@pva.net
Technical Support	Tel +1-844-734-0209 Email cs@pva.net

1.2 Document History

Revision	Revision Date	Reason for Changes
Revision A	November 2016	Initial Release

NOTE: All photographs and CAD model representations in this document are a "general representation" of the system and its components. The actual appearance of the system and its components can differ based upon customer specific configuration.

1.3 Safety

Certain warning symbols are affixed to the system and correspond to notations in this manual. Before operating the system, identify these warning labels and read the notices described below. Not all labels may be used on any specific system.



Always wear approved safety glasses when you operate or work near the workcell.



Before you operate the system, read and understand the manuals provided with the unit.



Never put hands or tools in areas with this symbol when the machine is in operation. A dangerous condition may exist.



Read and understand the manuals provided with the unit before any repairs or maintenance is done. Only a qualified individual should do service.



Use caution when there are pressurized vessels. Find and repair any leaks immediately. Always wear appropriate safety equipment when you work with pressurized vessels or vessels that contain chemicals.



Shear hazard from moving parts. Avoid contact



Pinch hazard from moving parts. Avoid contact.



Do not remove protective guarding.

1.4 Personal Protective Equipment

Operators must use eye protection because material contents are under pressure. Always wear gloves when handling materials and solvents. Refer to MSDS sheets on the material being dispensed for other precautions.

1.5 Notices and Warnings

- Use safety glasses and long sleeved clothing when you work with automated industrial equipment. Stay clear of all moving parts when the system is in operation.
- Read and understand all operating manuals before using this equipment.
- Do not disable the safety features of the system.
- Lock-out and tag-out the air supply before any service is done.
- Do not remove any hose, either air or fluid, without relieving the pressure.
- All replacement hoses must have adequate pressure ratings. Use replacement parts recommended or supplied by the manufacturer.

1.6 Waste Disposal

Dispose of all used parts and materials in accordance with local laws and regulations.

2. System Overview

Any uses other than listed could result in a dangerous condition and cannot be protected against by the safety features installed on the system. The system can have one or two rotary tables and one or two valves. The system can also have a foot pedal or finger switch(es). If there is only one rotary table, you will not see options for “R” or “L” valves and rotary tables on the HMI screens.

2.1 Theory of Operation

The RD100 and RD200 have a programmable rotary table that is ideal for dispensing circular or angled patterns. This simple dispense system uses a stepper motor on the base to rotate the part simultaneously as the dispense head above accurately applies a bead of fluid. Flexibility and adjustment of the dispense head, rotation angle, and programmable control interface allow this simple dispense system to apply seamless beads of adhesives and sealants.

2.2 Operation and Storage Environment

- Handling and transportation should be done to minimize the vibration and shock on the system. Use an air-ride truck for transport.
- The system should be installed and stored on a level surface away from standing water, possible overspray and overhead leaks.
- Operate and store the system at 40°F - 105°F (4°C – 41°C) and low humidity. Do not let condensation collect on the system. Cover the system if it will be left for an extended period of time.

2.1 Environmental

2.1.1 *Noise Levels*

The audible noise level of the machine is below 70 dBA.

2.1.2 *Materials/Chemicals*

There are no dangerous materials or chemicals used in the operation of the machine. Refer to the MSDS sheet on the material being dispensed.

2.2 Description of Components

Refer to Section 3.2 for an overview image.

Component	Description
Valve	The valve is installed at a set position that can be adjusted by the operator. The valve operates based on the settings in Setup mode.
Rotary Table	The rotary table turns clockwise or counterclockwise with the part installed on it. The part will rotate at the set speed and direction while the valve dispenses. The base is bolted to the rotary table and can be changed for different sized parts.
HMI	The HMI is the display used to control the system. Machine status and error messages are shown on the screen

3. Setup

Before you operate the system, know the system components. Do the steps instructed below for safe and correct operation.

3.1 Unpacking and Inspection

1. Remove all packing materials and straps.
2. Examine the system for damage, loose fasteners, etc.
3. Inspect all tubing connections, gauges, and regulators for damage. Make sure all connections are tight.
4. There is a ¼" NPT female fitting on the back of the system. Connect to a source of clean, dry air. A hose of 1/4" inside diameter is sufficient.
5. Connect the AC power cable to the system and to a 115/230 VAC electrical outlet. Your system was shipped with the correct fuses. If you change the voltage, refer to the schematic for the correct fuses.

WARNING: Failure to comply with electrical specifications can result in damage to the machine as well as injury to installation personnel. Electrical hookup must be made by a qualified electrician and must comply with any applicable local standards.

6. Connect the foot pedal to the foot pedal socket on the rear of the machine, if necessary.



Figure 1: Unpack the System

7. Attach the valve stands. Put the posts in the holes and turn the post clockwise until they are tight.
8. Use a wrench on the flats of the posts and turn them clockwise an additional turn, or until they are tight.

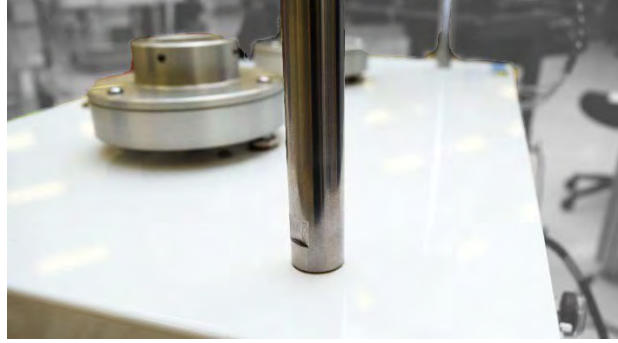


Figure 2: Valve Stands Installed

3.2 Overview

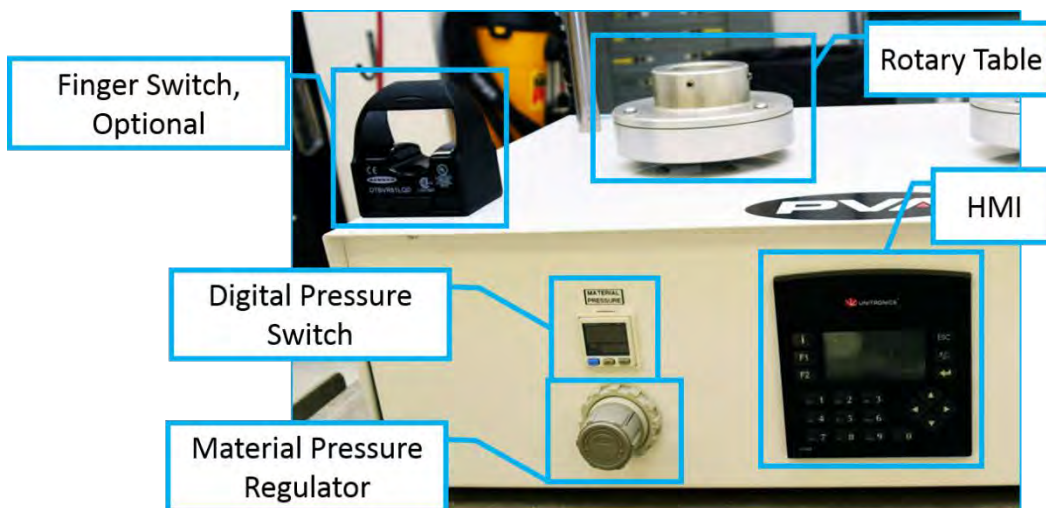


Figure 3: Example System Components



Figure 4: Example RD100 Back Panel

3.3 How to Use the HMI



Figure 5: HMI Screen

1. Use the **up** and **down arrows** to scroll through the screens and the **side to side arrows** to scroll through the options on the screens.
2. Select the **Enter** button to select an option.
3. If it is a value option, use the number pad to enter a new value and then select the **Enter** button to save the change.
4. Select “**ESC**” at any time to return the home screen.
5. If the options on the screen have small arrows pointing out, use the buttons on the HMI to select the related option. For example, in the figure below, “**F1**” will select **Manual** mode.



Figure 6: Select Options on the HMI

3.4 How to Use the Foot Pedal

1. In Ready mode, use the foot pedal to operate the system. Press the pedal to dispense the material. Release the pedal to stop the flow of material.

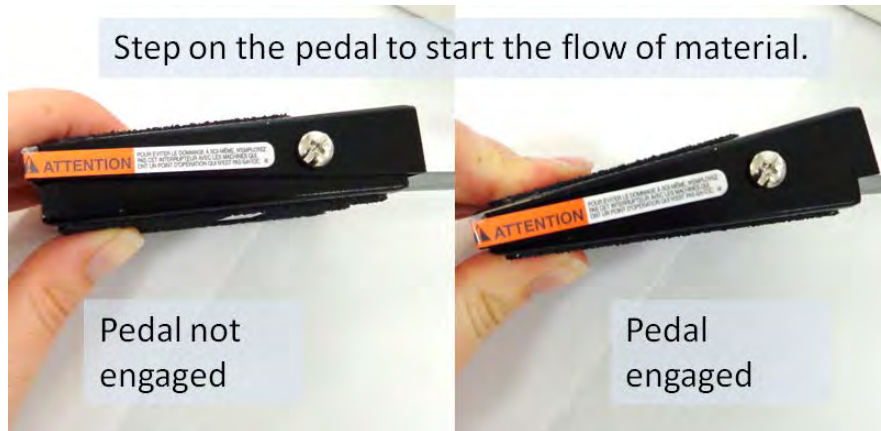


Figure 7: Foot Pedal Use

3.5 How to Use the Finger Switch

In Ready mode, use the finger switch to operate the system. Put your finger in the switch as shown. Your finger must remain in the finger switch for the entire cycle.



Figure 8: Finger Switch Use

4. Operation

When power is turned on, the OIT will show the POWER OFF screen.

1. Set the POWER ON/OFF switch to “On”. Operation of the machine is controlled by the OIT and the optional foot pedal or finger switch.
2. To adjust the air pressure, use the regulator knob on the front panel.
3. Vacuum pressure can be increased or decreased by the vacuum control knob, also on the front panel, if applicable.

4.1 Quick Start

1. After the system is correctly connected, turn the POWER OFF/ON switch on the back to the ON position.
2. Disengage the Emergency Stop button.
3. Home the machine.
4. Select Ready mode.
5. For each cycle press F1, use the finger switch or engage the foot pedal to start the machine.

4.2 Cyclestop

1. In Cyclestop, select the mode you want; manual, ready, or setup.
2. Select the “ESC” button at any time, in any mode to return to the cycle stop screen.



Figure 9: Cyclestop

4.3 Logon

1. Select **Logon** to change who is logged on and enter the necessary password.
2. Use the key pad to enter the necessary pin and select **Enter**.



Figure 10: Logon

4.1 Ready

Ready mode uses the settings from Setup mode to operate.

1. Select **Ready** from Cyclestop.
2. When the parts are correctly installed, use the HMI, foot pedal, or the finger switches to activate a cycle. You must leave your finger in the finger switch for the entire cycle.
3. The heading in Ready mode will show either "Timed" or "Continuous". This is set in Setup mode. Timed mode will operate the rotary table and the valve for a set amount of time. Continuous mode will operate the rotary table and the valve as long as the button is held (this includes the pedal or the finger switch).

NOTE: The values shown cannot be changed in this screen.

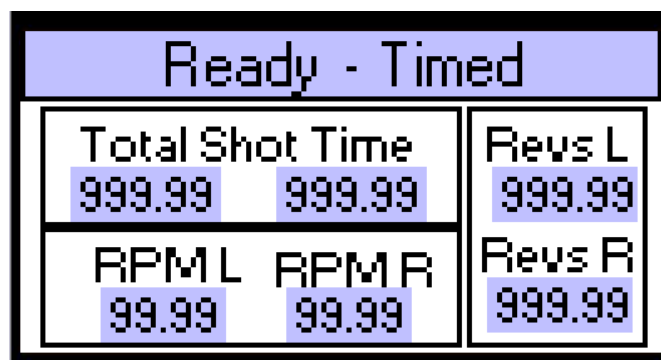


Figure 11: Ready Mode

4.2 Manual

In manual mode, all the settings apply only to this mode. You can operate all components of the system individually.

1. Select **Manual** from Cyclestop.

4.2.1 *Manual Purge*

2. Use the up and down arrows to scroll to the Manual Purge screen.
3. Use the buttons on the left and right of the screen to select a valve to **Purge** or toggle a **Z-Slide**.

NOTE: *The Z-Slide will not activate when you use this option to purge.*



Figure 12: Manual Purge

4. Use the left and right arrows to select the **Tank psi**. Select **Enter**.
5. Use the key pad to enter the new value.
6. Select **Enter** to save the new value.

4.2.2 *Manual, Timed Shot*

7. Use the up and down arrows to scroll to the Timed Shot screen.
8. Use the buttons on the left and right of the screen to select a valve to **Purge** or toggle a **Z-Slide**.

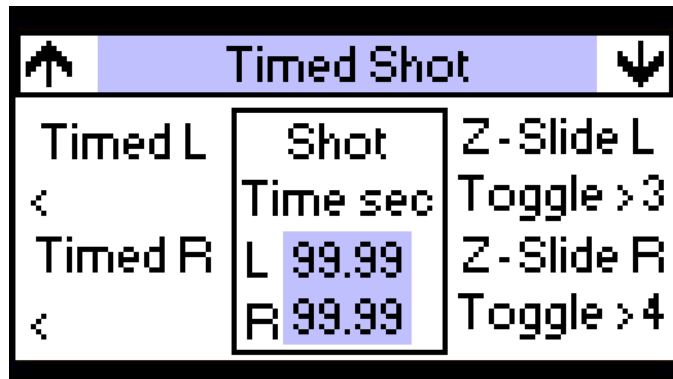


Figure 13: Manual Timed Shot

9. Use the left and right arrows to select the **Shot Time** you want to change. Select **Enter**.
10. Use the key pad to enter the new value.
11. Select **Enter** to save the new value.

4.2.3 *Manual, Rotating L and R*

12. Use the up and down arrows to scroll to the Rotary L or the Rotary R screen.

NOTE: *If you have only one Rotary table, you will have only one screen.*

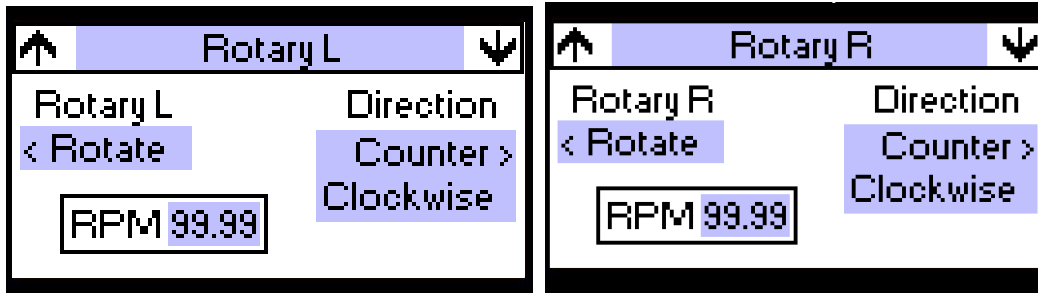


Figure 14: Rotating L and R

13. Use the buttons on the left and right of the screen to select **Rotate** or to toggle the **Direction** between **Counterclockwise** and **Clockwise**.
14. Use the left and right arrows to select the **RPM** value. Select the **Enter** button to change the value.
15. Use the key pad to enter the new value.
16. Select **Enter** to save the new value.

4.3 Setup

In setup mode, the tank setup applies to all modes and the other settings apply to Ready mode.

1. Select **Setup** from Cyclestop.

4.3.1 Setup Rotary

NOTE: *If you have only one Rotary table, you will have only one screen.*

1. Use the up and down arrows to scroll to the Setup Rotary screen(s).
2. Use the buttons on the left and right of the screen to toggle the **Rotary** between **Enable** and **Disable** or toggle the **Direction** between **Counterclockwise** and **Clockwise**.

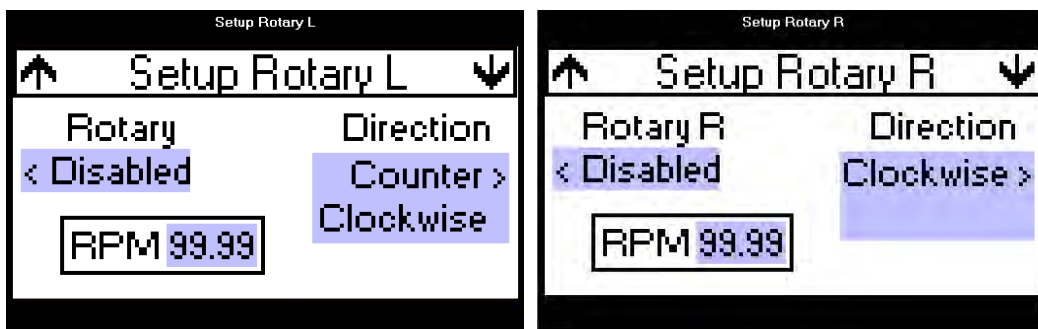


Figure 15: Setup Rotary L and R

3. Use the left and right arrows to select the **RPM**. Select Enter.
4. Use the key pad to enter a new value.
5. Select **Enter** to save the value.

4.3.2 Setup Run Mode

6. Use the up and down arrows to scroll to the Setup Run Mode screen.
7. Use the button on the left of the screen to set the **Run Mode** as **Continuous**, **Timed**, or **Revolutions**.



Figure 16: Setup Run Mode

8. Use the left and right arrows to select the **Revolution** speed you want to change. Select **Enter**.
9. Use the key pad to enter the new value.
10. Select **Enter** to save the new value.

4.3.3 *Setup Tank*

11. Use the up and down arrows to scroll to the Setup Tank screen.
12. Use the button on the left of the screen to toggle the **Low Level** sensor between **Enable** and **Disable**.



Figure 17: Setup Tank

13. Use the left and right arrows to select the **Min** or **Max psi** speed you want to change. Select **Enter**.
14. Use the key pad to enter the new value.
15. Select **Enter** to save the new value.

4.3.4 Setup Valve

NOTE: *If you have only one Rotary table, you will have only one screen.*

16. Use the up and down arrows to scroll to the Setup Valve screen(s).
17. Use the buttons on the left and right of the screen to toggle the **Valve** or the **Z-Slide** between **Enable** and **Disable**.

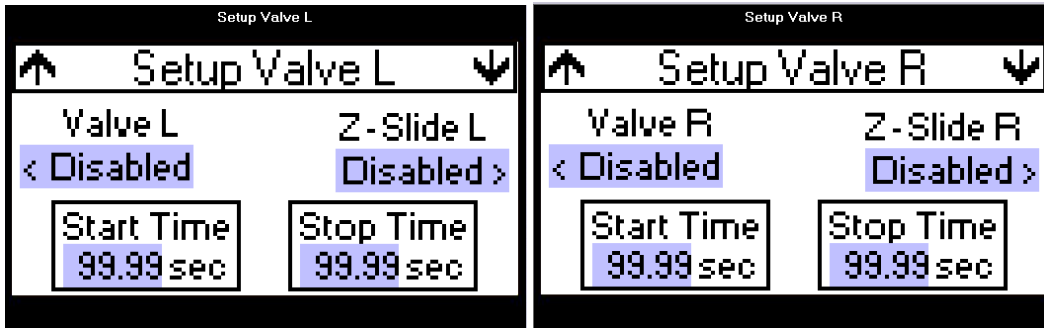


Figure 18: Setup Valve L and R

18. Use the left and right arrows to select the **Start Time** or **Stop Time** speed you want to change. Select **Enter**. Start time is the time the valve starts to dispense before the rotary table moves. Stop time is the time the valve continues to dispense after the rotary table has stopped moving.
19. Use the key pad to enter the new value.
20. Select **Enter** to save the new value.

4.4 Shutdown

Make sure the system is correctly shutdown when it is not in use.

1. If the system is in the middle of a cycle, let it finish.
2. Push the “**ESC**” button on the HMI to return to the home screen.
3. Engage the **Emergency Stop** button.
4. Reduce the system pressure to 0psi.
5. Turn the main power to “**Off**”.
6. If maintenance will be done, lock-out and tag-out the system.

5. Maintenance

Interval	Action
Every Shift	<ul style="list-style-type: none">• Check all fluid pressures and dispense weights
Weekly	<ul style="list-style-type: none">• Make sure the pneumatics operate correctly• Drain any accumulated water from the main Filter/Regulator• Clean any material buildup on fixtures and locating surfaces• Examine the system for any leaks around compression fittings, tighten or replace if necessary• Make sure there is no chaffing of wires, pneumatic lines, or material lines
Monthly	<ul style="list-style-type: none">• Examine and clean cooling fans in power supplies
Quarterly	<ul style="list-style-type: none">• Examine the slides for wear and smooth operation• Examine the inline material filter for clogs• Examine the motors for overheating and smooth operation• Examine all sensors and clean with warm water, a mild solvent (like dish soap), and a soft cloth. DO NOT use moderate or harsh solvents, such as Isopropyl Alcohol, Acetone, OS120, etc.

5.1 Change the Base

1. To change the base on the rotary table, do the shutdown procedure in Section 4.4.
2. Remove the three bolts in the base.



Figure 19: Rotary Base

3. Install a new base.
4. Use a hex key to install the three bolts and turn them clockwise until they are tight.
5. Make sure the base is correctly aligned on the rotary table.
6. Operate the system as necessary.

5.2 Adjust the Material Pressure

1. To adjust the material pressure, pull the regulator knob out so that the orange ring can be seen. Turn the knob counterclockwise to decrease the pressure or clockwise to increase the pressure.

NOTE: *the pressure will change slowly, wait for the pressure to change on the digital pressure switch.*

2. Push the knob in to save the setting.



Figure 20: Pressure Regulator

5.3 Digital Pressure Switch

On the digital pressure switch, the set point is shown as the number at the bottom of the screen in smaller text size and the actual pressure is shown as the larger, top number. There are two set points a high and a low.

To set the low set point:

1. Push the blue mode button on the digital pressure switch.
2. The set point “Hi” or “Lo” will flash briefly. Push the blue mode button until you see “Lo”.



Figure 21: Low Set Point

3. The word will go out of view and the value for that set point will be shown. Use the up and down arrow buttons to adjust the set point to the necessary value.

To set the high set point:

4. Push the blue mode button on the digital pressure switch.
5. The set point “Hi” or “Lo” will flash briefly. Push the blue mode button until you see “Hi”.
6. The word will go out of view and the value for that set point will be shown. Use the up and down arrow buttons to adjust the set point to the necessary value.



Figure 22: High Set Point

5.4 Valve Position Adjustment

1. Use a hex key to loosen the necessary bolts.
2. Slide the related valve post to the necessary position and tighten then bolts.

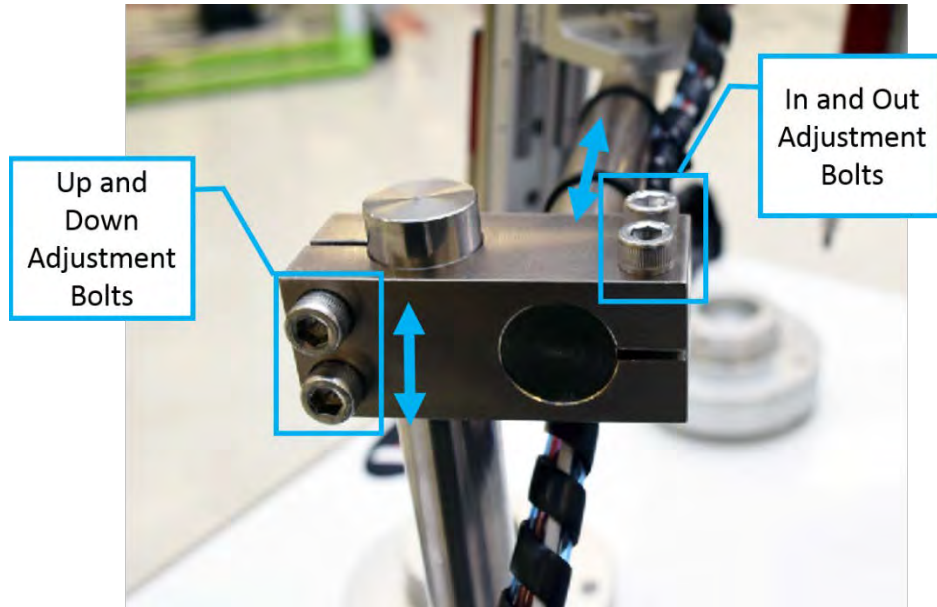


Figure 23: Valve Position Adjustment Bolts

3. For the valve rotation, loosen the bolt.
4. Rotate the valve to the necessary position and then tighten the bolt.

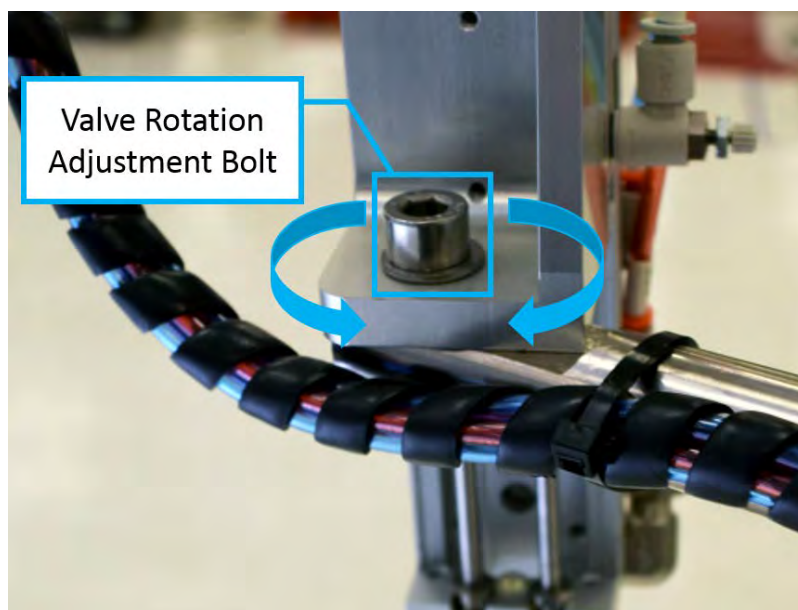


Figure 24: Valve Rotation Adjustment

5.1 Home Sensor

There is a home sensor on the rotary table. The table may continue to turn after the cycle has ended to return to home.

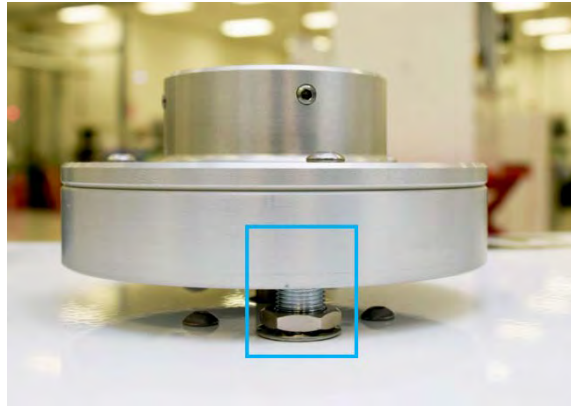


Figure 25: Home Sensor

6. Electrical

6.1 Main Power Supply

Before you turn on the system, examine the voltage setting on the power supply to make sure it is set correctly for 115vac or 230vac as necessary. The number shown in the red box is the current power setting.

6.2 Change Voltage Input

If necessary, do the steps below to change the voltage on the power entry.

1. If connected, remove the main power cord from the power entry.
2. Insert the end of a flat head screwdriver into the slot on the left side of the red indicator box to pry the cover open.



Figure 26: Remove the Cover

3. Use the flat heat screwdriver to pry the red fuse holder out of the power entry.



Figure 27: Remove the Fuse

4. Spin the fuse holder 180° and install it into the power entry.

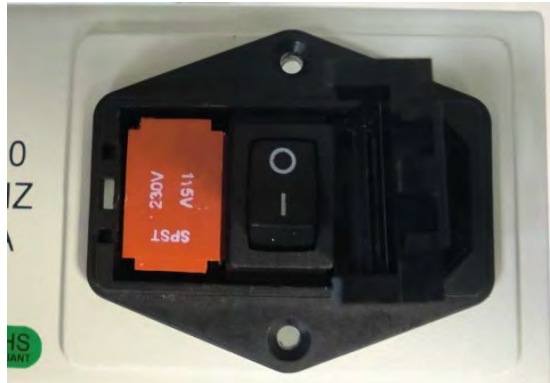


Figure 28: Install the Fuse

5. Close the cover. The new voltage setting should be shown in the red box.



Figure 29: Install the Cover

7. Technical Specifications

Table 1: RD100 and RD200 Technical Specifications

Power	110-220 VAC 50-60 Hz
Air Supply	80psi dry unlubricated air at < 10 CFM
Maximum Part Diameter	241 mm
Maximum Bead Diameter	241 mm
Maximum Part Height	127 mm
Payload Capacity	2.28 kg (5 lbs)
Repeatability	0.04 mm (0.0016")
Resolution	0.02 mm (0.0008")
Maximum Revolution Speed	60 rpm
Degree of Revolution	1°-1080°
Operating Pressure	80-100psi
Maximum Pressure	100psi

8. Troubleshooting

Troubleshooting Problem	Possible Cause	Corrective Action
Z-Slide 1 Up fault Check Main Air Pressure		<p>Check the main air regulator to make sure the machine has air pressure.</p> <p>Make sure the Z-Slide sensor is correctly positioned, adjust it as necessary</p>
Z-Slide 1 Down Fault Check Main Air Pressure	The Z slide did not turn on the sensor	Make sure the Z-Slide light comes on when you move the Z-slide up and down, if it does not even after it has been adjusted, the sensor may need to be replaced.
Z-Slide 1 Down Fault Check Main Air Pressure	The Z slide did not move	<p>Check the main air regulator to make sure the machine has air pressure.</p> <p>Check the pneumatic connections to the Z slide.</p> <p>If the Z slide is connected correctly, disconnect the airline and try to move the slide by hand. If it does not move or binds up, replace the slide.</p>
When power is turned on, the OIT says "TURN POWER ON TO START"	There is a bad contact in the power switch.	Have a maintenance person check the switch and replace as necessary.

8.1 Fault Recovery

If the machine encounters a system error, this procedure should be followed to return the machine to the home screen.

WARNING: *If the power was turned off because of system failure, do not turn the power back on. Shutdown the system and have qualified personnel repair it.*

1. Clear the fault that caused the emergency stop.
2. Push the “ESC” button on the OIT panel to reset the fault.
3. The machine is now ready for normal operation.

8.2 Z-Slide Sensor

1. The Z-Slide sensor should come on when the valve is in the fully down position.

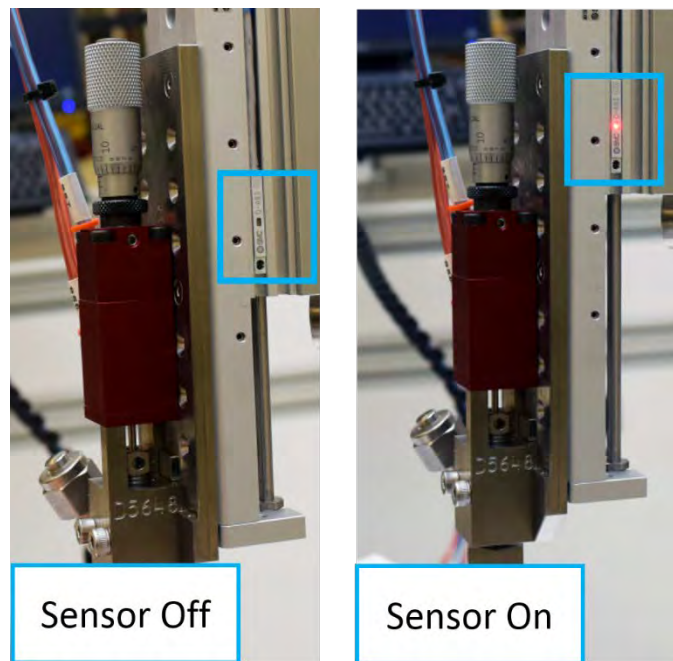


Figure 30: Z-Slide Sensor

2. Adjust the sensor if necessary.
3. If the sensor does not come on after it has been adjusted, replace the sensor.

8.4 Z-Slide Speed

There are adjustment knobs on the Z-Slide air connections. The top knob is for the speed down and the bottom knob is for the speed up.

- Turn the necessary knob counterclockwise to increase the speed or clockwise to decrease the speed.

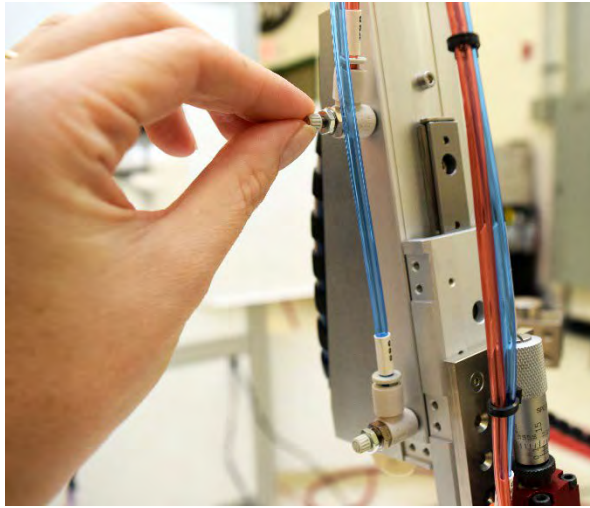


Figure 31: Z-Slide Speed Adjustment

9. Notes

10. Warranty

PVA Warranty Policy

PVA warrants the enclosed product against defects in material or workmanship on all components for one year from the date of shipment.

The warranty does not extend to components damaged due to misuse, negligence, or installation and operation that are not in accordance with the recommended factory instructions. Unauthorized repair or modification of the enclosed product, and/or the use of spare parts not directly obtained from PVA (or from factory authorized dealers) will void all warranties.

All PVA warranties extend only to the original purchaser. Third party warranty claims will not be honored at any time.

Prior to returning a product for a warranty claim, a return authorization must be obtained from PVA's Technical Support department. Authorization will be issued either via the telephone, facsimile, or in writing upon your request.

To qualify as a valid warranty claim, the defective product must be returned to the factory during the warranty period. Upon return, PVA will repair (or replace) all components found to be defective in material or workmanship.

(Retain this for your records)

Product Information:

PRODUCT: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

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