ROLL DOWN MACHINE

MODEL RD-1000/RD-3000

OPERATING INSTRUCTIONS

CHEMINSTRUMENTS

510 COMMERCIAL DRIVE

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1.0 PRODUCT DESCRIPTION

Congratulations on the purchase of your new ChemInstruments Rolldown machine. You now have a machine that will meet the requirements as specified in the Pressure Sensitive Tape Council Test Methods manual, Appendage B, Section 2.7.

Warning: This equipment can cause injury if not used properly. It is the operator's responsibility to observe all safety rules and warnings.

This unit has the following features:

- PSTC standard 4.5 pound (2 Kg), 1.75 inch (44 mm) wide, 80 Durometer rubber covered rolls
- Adjustable stroke length from 0.5 – 8 inches (1 – 20 centimeters)
- Selectable speeds from 5 – 150 inches per minute (2 – 60 millimeters per second)
- Programmable cycle counts from 1 to 10 or continuous
- Accommodates test panels up to 3 inches (76 mm) wide and 9 inches (229 mm) long
- Emergency stop switch

SPECIFICATIONS

Electrical	120/240 VAC, 50/60 Hz, 5 amps
Speed	5 – 150 inches/minute (1 inch/minute increments) 2 – 60 millimeters/second (1 millimeter/second increments)
Stroke Length	0.5 – 8 inches (0.5 inch increments) 1 – 20 centimeters (1 centimeter increments)
Physical Dimensions	Width: 22 inches (56 centimeters) Depth: 13 inches (33 centimeters) Height: 9 inches (23 centimeters) with rolls

2.0 UNPACKING

ChemInstruments has made every effort to ensure that the RD-1000/3000 arrives at your location without damage. Carefully unpack the instrument and check for any damage that may have occurred during shipment. If any damage did occur during transit, notify the **carrier** immediately.

The ChemInstruments RD-1000/3000 consists of the following parts:

- Rolldown machine base with yoke fixture for roll(s)
- Roll(s) and power cord are packed in a separate box
- An envelope with this manual and the power cord
- International machines include 2 wrenches for maintenance

Make sure all of these components are present before discarding the packaging material.

3.0 ASSEMBLY

Carefully remove the Rolldown machine and rolls from the packaging and set them on a sturdy bench top. Check the physical dimensions listed previously for the space required for the instrument. As with any precision piece of laboratory equipment, it is preferable to locate the RD-1000/3000 in an area where temperature and humidity are controlled to standard conditions of 72 ± 2°F and 50 ± 5% relative humidity.

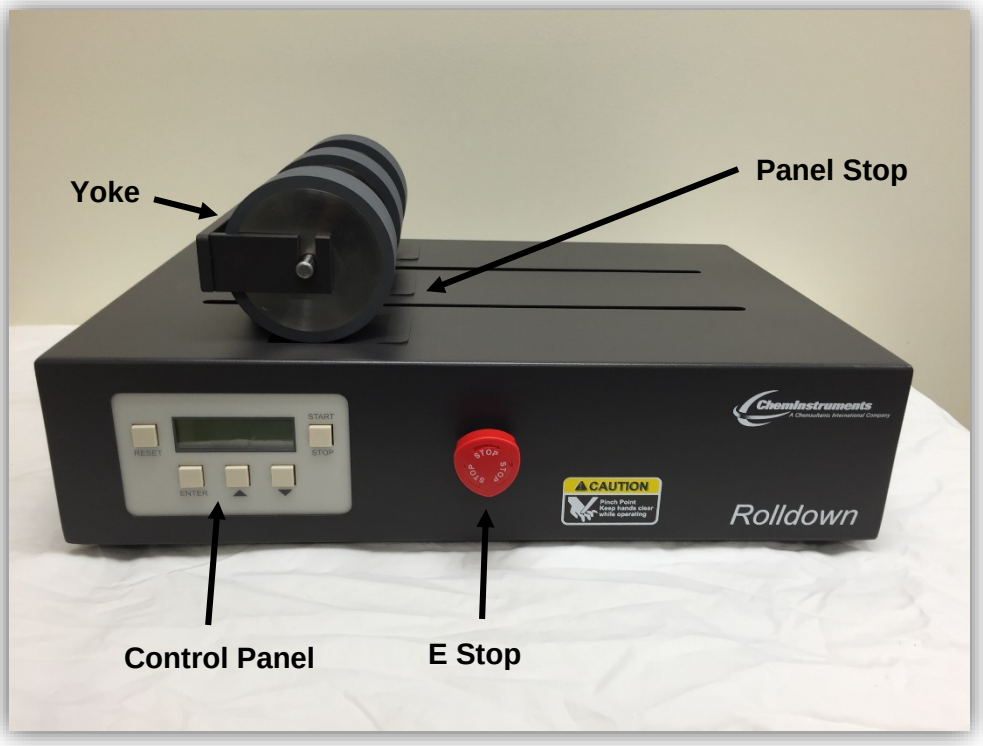
Connect the power cord to its receptacle on the backside of the control cabinet. Complete the connection by inserting the male end of the power cord into a convenient AC outlet. Notice that the on/off power switch is located directly next to the power cord receptacle. A 3 amp fuse protects the motor.

Warning: Make sure the power source matches the requirements of the Rolldown machine. Damage will occur if this unit is plugged into the incorrect power supply.

Warning: Before proceeding with using the RD-1000/3000, it is advisable to become familiar with the Key Components. These Key Components and a brief description of their function follow in the next section.

4.0 KEY COMPONENTS

- **POWER SWITCH** is located on the back panel of the control cabinet to the left the power cord connection**.**
- **CONTROL PANEL** is located on the front of the cabinet.
- **YOKE** holds the roll(s) and is located on the top of the cabinet.
- **ROLL(S)** are located on the top of the cabinet and rest within the Yoke.
- **START/STOP BUTTON** located on Control Panel. Starts the rolldown cycle.
- **RESET BUTTON** located on Control Panel. Returns the Yoke and Rolls to the HOME position.
- **ENTER BUTTON** located on the Control Panel.
- **UP ARROW BUTTON** located on the Control Panel.
- **DOWN ARROW BUTTON** located on the Control Panel.
- **PANEL STOP** located on the top of the cabinet.
- **HOME POSITION** located on the top of the cabinet.
- **E STOP** emergency stop button on front panel of cabinet.



5.0 THEORY OF OPERATION

Warning: Possibility of crushing or pinching. Do not insert limbs in the path of the rolls or insert objects in the openings on the top of the cabinet.

The PSTC Test Methods manual specifies in Appendage B, Section 2.7.2 that “a mechanically driven 4.5 pound rubber covered roll(s) should apply pressure to the specimen at a rate of 12 inches per minute in one direction and return in the opposite direction.” The ChemInstruments Rolldown meets this specification.

POWER UP

Turn on the master power switch located on the back panel of the control cabinet next to the power line receptacle. The display will go through a power on self-test.

Warning: Operating temperature for this equipment is 0 to 70 Celsius. The equipment needs to be completely free of condensation, inside and out, before applying power.

OPERATION

SETUP PARAMETERS

The RD-1000/RD-3000 instrument allows the user to program the following parameters: speed, stroke length, number of cycles, and units. See Table 1 for a listing of parameters.

The procedure for programming these parameters is as follows:

1. Press and hold the **Up Arrow** and **Down Arrow** at the same time for 3 seconds to enter Setup Mode.
2. Use the Up and Down Arrows to select the parameter to change.
3. To select the parameter for editing, press the **ENTER** button.
4. Use the Up and Down Arrows to change the value of the parameter. Press the **ENTER** button to accept the displayed value.
5. Pressing the **START/STOP** button at any time will exit setup.

Table 1 - Setup Parameters and Ranges

Speed	5 – 150 inches/minute (1 inch/minute increments) 2 – 60 millimeters/second (1 millimeter/second increments)
Stroke Length	0.5 – 8 inches (0.5 inch increments) 1 – 20 centimeters (1 centimeter increments)
Cycles	1-10 or Continuous
Units	English or Metric

PRODECURE FOR PREPARING SAMPLES ACCORDING TO PSTC STANDARDS

1. Place the test panel, with the sample, in line with the roll and against the panel stop.
2. Set the speed and stroke length via the control panel's setup menu.
3. Select the number of cycles or continuous operation desired, depending on the test method being used. The control panel contains everything needed to make these selections.
   a) **SINGLE** - Set the number of cycles in Setup to "1". Press the **START/STOP** button and the carriage will move at the programmed speed. The carriage will travel the stroke length defined in Setup and then return to the Home Position and stop.
   b) **MULTIPLE CYCLES** – Set the desired number of cycles in Setup. Press the **START/STOP** button and the carriage will move at the programmed speed. The carriage will travel the stroke length defined in Setup and then return to the Home Position. The display will count the number of cycles traveled. The unit will stop after the last cycle.
   c) **CONTINUOUS** - Set the number of cycles in Setup to "Continuous". Press the **START/STOP** button and the carriage will move at the programmed speed. The carriage will travel the stroke length defined in Setup and then return to the Home Position. The unit will cycle between the desired stroke length and the Home Position until the **START/STOP** button is pressed.
   d) **RESET** - Pressing the **RESET** button will cause the carriage to move to the Home Position. It can be pressed when the display informs the user that the system needs to return to the Home Position. The unit will stop after returning to the Home Position.

6.0 MAINTENANCE

TROUBLESHOOTING

WARNING: Unplug the machine before attempting the following maintenance procedures. Electric shock may occur if the machine is connected to a power source.

NOTE: The motor inside the machine may make some noise initially. It will only make this noise during the "break-in period." This noise is nothing to be alarmed about and will stop over time.

The troubleshooting chart describes some problems that may occur over time. After determining the problem, follow one of the following maintenance procedures.

Table 2 – Troubleshooting Chart

Problem	Possible Cause	Procedure
Front display not lit	Machine not plugged in	Plug machine into appropriate power outlet
	Check E-Stop	Make sure that the E-Stop is in the out position
	Blown fuse	Replace with a 3 amp mini fuse
	On/Off Switch	Make sure the one is down
Rollers do not move	Drive belt is disconnected	Reconnect drive belt
	Set screw on drive shaft is loose	Retighten set screw
	Drive fuse blown	Call ChemInstruments for replacement
Unit locks cart at either end	Limit switch fault	Check limit switch
	Drive belt or set screw fault	Check drive belt and set screws

MAINTENANCE PROCEDURES

For the following procedures, the crossbar must first be removed. This is held onto the drive arms by four 8-32 flat head screws. The top cabinet of the machine can then be removed. To remove the top cabinet, remove the ten 8-32 button head screws using a 3/32" allen key. It will be necessary to rest the machine on its side to gain access to these screws. When the screws are removed, carefully return the machine to its proper position. Carefully pull the top cabinet away from the rest of the machine. The unit is wired in such a way to allow the top cabinet portion to be rested on its left side standing perpendicular to the base plate.

WARNING: Do not adjust any of the potentiometers on the circuit board under any circumstances.

WIRING CONNECTIONS

Make sure that there are no loose wires. If a wire has come loose, please call ChemInstruments and a technician will provide instructions on where to connect it.

LIMIT SWITCH

1. Remove the two 6-32 screws holding the switch in place.
2. Disconnect the wires one at a time and connect them to their respective terminals on the new switch.
3. Replace the switch using the 6-32 screws.

REPLACING/TIGHTENING THE DRIVE CABLE

1. Loosen the two ¼-20 button head screws in the idler shaft assembly.
2. Remove the 4 Philips head screws that hold the clamping block to the drive arm assembly.
3. Line up the drive cable in the machined grooves in the clamping block.
4. Remount the clamping block with Philips head screws making sure to clamp as much of the cable as possible while keeping the cable taunt.
5. Pull the idler shaft assembly to tighten the chain and retighten the two ¼-20 button head screws.

SET SCREW IN DRIVE SHAFT

1. Make sure to line up the setscrew with the flat on the motor shaft.
2. Check the setscrew on the gear at this time also.
3. To prevent further slippage, remove the setscrews and put a drop of *removable* thread locking compound on the setscrews before replacing them.