



**AUTOMATIC DRAWDOWN MACHINE**  
**MODEL DP-8301**

**INSTRUCTION MANUAL**



---

**Paul N. Gardner Company, Inc.**

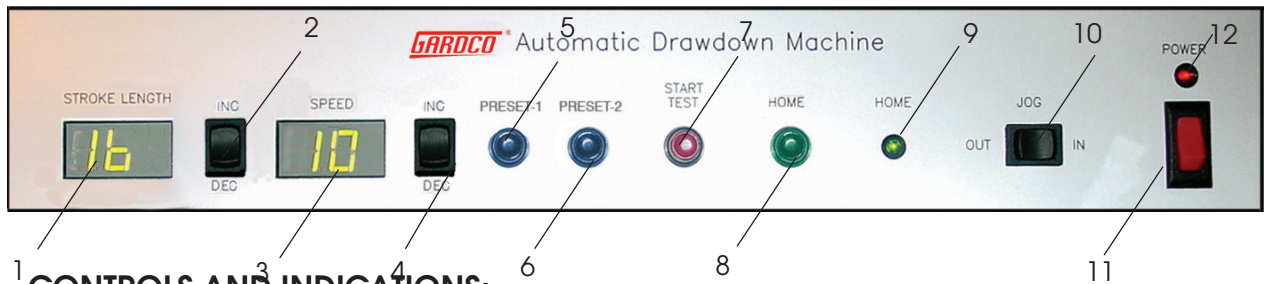
316 N.E. FIRST STREET • POMPANO BEACH, FL 33060  
PHONE (954) 946-9454 • 800-762-2478 • FAX (954) 946-9309  
www.gardco.com • e-mail: gardner@gardco.com

# GARDCO AUTOMATIC DRAWDOWN MACHINE

## MODEL DP-8301

### GENERAL SPECIFICATIONS:

- Input Power: 115 VAC, 5 AMPS, 60 Hz
- Input Voltage: 115/230 VAC Switch Selectable
- Input Frequency: 50/60 Hz
- Speed Range: 1.0 to 18.0 inches per second (IPS), in 0.1 IPS increments
- Jog Speed 3.0 Inches per Second
- Stroke Length: 0.1 to 16.0 inches, in 0.1-inch increments, or manual stroke lengths
- Controls/Indication: Digital Microprocessor Based
- Surface Load: Not to exceed 25 lbs.
- Drive Load: 19 lbs @ 1 IPS, 12 lbs @ 6 IPS, 3 lbs @ 12 IPS, 2 lbs @ 18 IPS
- Bidirectional Drive System
- NEMA 23 type stepper motor
- Static torque rating of 264 OZ-IN
- Manual positioning capability
- Working Surface: 12 x 18 inch glass plate with clamp or optional vacuum plate
- Universal mounting for applications
- Intrinsically safe
- Drip and spill resistant
- Can accommodate an approximate 1/4" substrate.



### CONTROLS AND INDICATIONS:

#### **1- Three-digit, digital STROKE LENGTH Display (0.75-inch, green LED)**

#### **2- STROKE LENGTH INCREASE/DECREASE control momentary rocker switch**

**STROKE LENGTH INCREASE Control.** Pressing this rocker switch increments the Stroke Length display in steps of 0.1 inch. However, when the switch is held closed for 2 seconds or more, the stroke steps will change at a faster rate.

**STROKE LENGTH DECREASE Control.** Pressing this rocker switch decrements the Stroke Length display in steps of 0.1 inch. However, when the switch is held closed for 2 seconds or more, the stroke steps will change at a faster rate.

#### **3- Three-digit, digital SPEED Display (0.75-inch, green LED)**

#### **4- SPEED INCREASE/DECREASE Control momentary rocker switch**

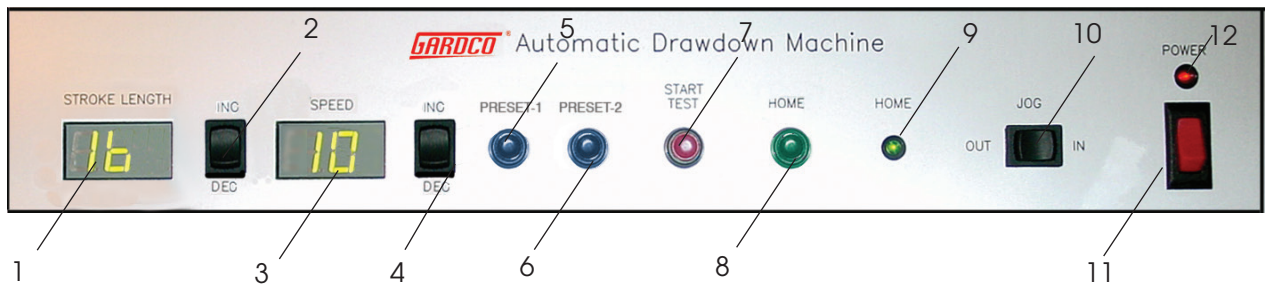
**SPEED INCREASE Control.** Pressing this rocker switch increments the Speed display in steps of 0.1 inch. However, when the switch is held closed for 2 seconds or more, the speed steps will change at a faster rate.

**SPEED DECREASE Control.** Pressing this rocker switch decrements the Speed display in steps of 0.1 inch. However, when the switch is held closed for 2 seconds or more, the speed steps will change at a faster rate.

#### **5- PRESET-1, Recall/Store Memory Control momentary switch**

This switch has dual functionality. It recalls a previously stored speed and stroke length data set from memory, when the switch is momentarily pressed for less than 0.5 seconds. Conversely, it stores the currently displayed, operator selected speed and stroke length data set, when the pushbutton is pressed and held for more than 2 seconds. The HOME indicator flashes twice to indicate that the storing operation has been completed.

## **CONTROLS AND INDICATIONS CONT'D:**



### **6- PRESET-2, Recall/Store Memory Control momentary switch**

This button has dual functionality. It recalls a previously stored speed and stroke length data set from memory, when the switch is pressed for less than 0.5 seconds. Conversely, it stores the currently displayed, operator selected speed and stroke length data set, when the switch is pressed and held for more than 2 seconds. The HOME indicator flashes twice to indicate that the storing operation has been completed.

### **7- START TEST Control momentary switch**

Initiates a single forward stroke movement, defined by the operator and as indicated by the STROKE LENGTH and SPEED indicators. The movement stops upon reaching the selected stroke length indicated on the STROKE LENGTH display.

### **8- HOME Control momentary switch**

Initiates a single stroke movement from the last arm location, towards the HOME position, at 6.0 (IPS), regardless of the speed indicated on the SPEED display. The movement stops upon reaching the HOME position, at which point the HOME indicator will illuminate.

### **9- HOME Position Indicator**

### **10- Manual Positioning JOG IN/OUT Control momentary rocker switch**

JOG-IN Control. Initiates a stroke movement, towards the home position, at 3.0 IPS. The movement stops upon releasing the JOG IN rocker switch or reaching the HOME position. If the HOME position is reached during this jogging motion, the HOME indicator will illuminate.

JOG-OUT Control. Initiates a stroke movement, away from the home position, 3.0 IPS. The movement stops upon releasing the JOG OUT rocker switch or reaching the end of travel limit.

### **11- POWER ON/OFF maintained rocker switch**

### **12- POWER ON indicator**

Provides power to the machine and illuminates the POWER ON indicator. This switch also provides a system reset when turned off momentarily. This should be done in the case of a drive motor stall or malfunction. This will not cause a loss of speed or stroke settings as this information is stored in the microprocessor memory.

# OPERATING PROCEDURES FOR THE GARDCO AUTOMATIC DRAWDOWN UNIT:

## SET UP:

1. Visual Inspection, Ensure NO foreign objects are in the path of moving parts and that there is no visible damage to the unit.
2. Verify the Power Control Switch on the front control panel is in the OFF position. Connect the Input Power Cord, first to the power entry module at the rear of the unit and then to a grounded 120 VAC power source.

## OPERATION:

### 1. System start up:

After connecting power as described in SETUP section, apply power to the unit by placing the Power Control Switch to the ON position. The Power Control Switch LED should be energized.

### 2. Pretest Unit Setup:

Select the desired Stroke Length using the INC/DEC rocker switch or preset.

Set desired test speed by using the INC/DEC rocker switch or preset.

### 3. Home Positioning:

Operation of the Home push-button will automatically return the unit to the Home position at the completion of each test. However, to ensure a valid point of origin (Home) is referenced, the unit must be in the Home position prior to each test run. Verify the Green Home LED is on, if not, perform following:

Depress and Hold the Jog rocker switch in the direction desired until the Home LED is on. If motion is in the opposite direction of that desired, perform the following:

Release Jog rocker switch.

Depress and Hold the Jog rocker switch in the opposite direction until the Home LED is on.

### 4. Drawdown Surface Preparation:

Choose your substrate to drawdown on. Place it on the glass surface and slide it upward until it is directly under the clamp. To clamp the substrate down, push the clamp handle toward the substrate until the clamp locks down. (Note: The clamp may be used to hold down both the glass surface and your substrate if needed.)

If the optional vacuum plate is to be used, position your substrate on the plate and open the ball valve (located between the vacuum plate and the vacuum supply) enough to sufficiently hold down the substrate.

### 5. Applicator Mounting and Placement:

The drawdown machine can be used with an assortment of different applicators. See illustration of available applicators on page 7. The drive armature will hold either 3/8" or 1/2" standard wire wound lab applicator rods. These rods snap in on the underside of the arm holding them firmly so that the arm and applicator may be lifted from the surface. With the arm in the upward position, various block or adjustable applicators can be used. A bar is

---

## Paul N. Gardner Company, Inc.

316 N.E. FIRST STREET • POMPANO BEACH, FL 33060  
PHONE (954) 946-9454 • 800-762-2478 • FAX (954) 946-9309

mounted across the length of the arm to push this type of applicator. If additional weight is needed the aperture is made to swing down and rest on top of the applicator applying a constant downward force.

#### **6. Normal System Operation:**

Verify that the Unit is in the Home position as previously described

Verify that the test stroke and speed are set as desired.

Momentarily depress the Start Test push-button to start the Unit

When the unit has come to a complete stop and the operator is ready, the system may be reset by momentarily depressing the Home push-button. This action will return the unit to the Home position and reset the control system for the next testing operation.

**\* Important Note: Make sure the applicator is removed from the substrate before resetting the unit to the home position.**

#### **7. Manual Positioning Operation:**

Manual positioning allows the operator the flexibility to pre-position the unit to start at any point in addition to the Home position. The unit must still be Homed prior to any further positioning to allow for proper control circuit enabling.

Manual positioning of the unit is performed as follows:

Verify that the Unit is properly Homed.

Depress and Hold the Jog rocker switch to the outward position

Release the Jog rocker switch when the desired position is reached.

Verify that the test stroke and speed are set as desired.

Note: The unit will travel outward at 3.0 I.P.S. The operator must ensure that the pre-selected stroke length does not exceed the maximum travel.

Momentarily depress the Start Test push-button to start the Unit

#### **8. System shutdown:**

Verify the unit in the Homed position.

Place the Power Control Switch to the OFF position.

The Power Control Switch LED should be de-energized.

Clean unit in preparation for additional testing.

#### **9. Master Program Reset:**

This Reset will clear all presets and re-initialize the operating program. It is performed by placing the Power Control Switch to the OFF position. Depress the Home push-button and hold it depressed while placing the Power Control Switch to the ON position. Release the Home pushbutton and resume normal operation.

**\* Important Note: If the unit is not in the Home position when performing the Master Program Reset then it will automatically move to the Home position when the Power Control Switch is placed to the ON position.**

---

## **Paul N. Gardner Company, Inc.**

316 N.E. FIRST STREET • POMPANO BEACH, FL 33060

PHONE (954) 946-9454 • 800-762-2478 • FAX (954) 946-9309

## **MAINTENANCE:**

The Gardco Model DP-8301 automatic Drawdown Machine does not require any scheduled preventative maintenance other than general cleanliness. Care should be taken to keep the side sealing brushes free of hardened paint which could possibly impede the linear action of the machine. There are no lubricated fittings. All bearings used are made of Frelon® and are thereby maintenance free.

## **REPAIRS:**

Before performing any maintenance call one of the numbers below for assistance:

**1-800-762-2478 (USA & Canada)**

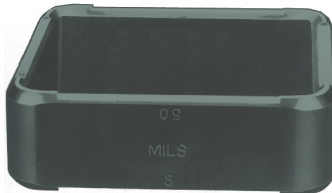
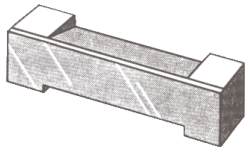
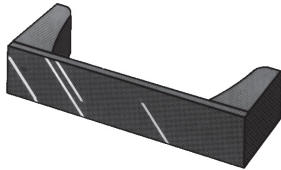
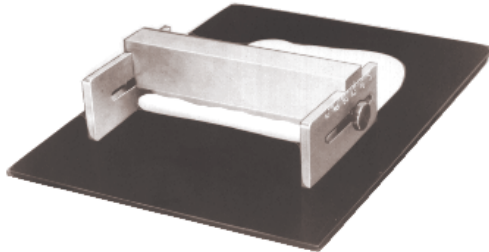
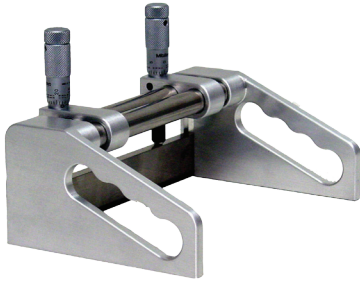
**or (954) 946-9454**

## **PRECAUTIONS:**

- Dangerous voltages exist, DO NOT place fingers or foreign objects behind safety covers.
- Moving parts exist, DO NOT place fingers or foreign objects around moving parts.
- DO NOT operate any control push buttons or switches while system is in motion unless otherwise directed.
- DO NOT hold any button in unless otherwise directed.
- DO NOT depress two buttons simultaneously.
- DO NOT allow handle to fall unrestrained with or without wire wound rod installed. Result could damage glass surface.
- If the unit is stalled or locks up, place the power control switch to the off position. Reset by following the pretest unit setup procedure (Pg. 4).



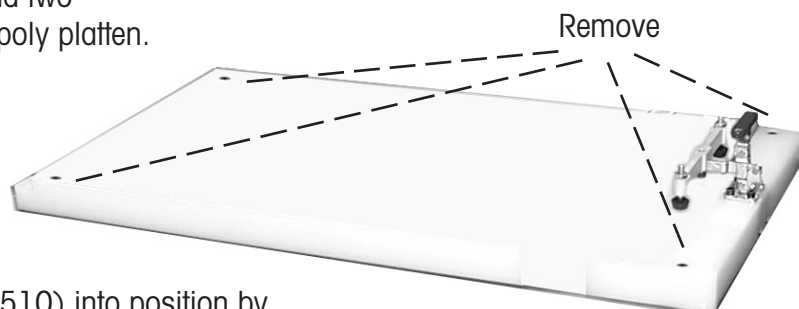
## ACCESSORIES



- **Microm II Film Applicator**  
Application Sizes: 2" to 10" path  
*Available up to 22" path*
- **Universal Blade Applicator (AP-G02 - AP-G10)**  
Application Sizes: 2" to 10" path  
*Available up to 12" path*
- **Wire-Wound Applicator Rod**  
3/8" or 1/2" diameter  
Application size up to 11" path  
*Other sizes available*
- **Bird Type Applicator Bars**  
Application sizes: 2" to 8" path  
*Other sizes available*
- **2 Path Applicators**  
2" to 6" path (U-shaped)  
2" to 8" path (Stainless Steel)
- **8 Path Applicators**  
3, 4 & 5" paths
- **SAG Index Applicators**  
Standard, Low, Medium & High ranges  
(ASM-1, ASM-2, ASM-3, & ASM-4)
- **Vacuum Plate Option (DP-201510)**  
12" x 18"

## OPTIONAL VACUUM PLATE MOUNTING INSTRUCTIONS

1. Using a 3/32 allen wrench (not provided) remove the four 8-32 machine screws (two 1"x 8-32 and two 1-1/2"x 8-32) from each corner of the poly platten.
2. Remove the poly platten by sliding it from underneath the armature. You can use the clamp to provide support for the poly platten.
3. Move the vacuum plate (item# DP-201510) into position by moving it all the way to the left when facing the control panel. To prevent scratching, do not drag the vacuum plate on the top of the instrument.
4. The two 1-1/2"x 8-32 screws removed from the poly platten can be used. An additional two 1-1/2" x 8-32 machine screws will be needed (item # DP-2028).
5. Align the holes of the vacuum plate to the holes of the DP-8301 and secure using four 1-1/2"x 8-32 machine screws.



---

### **Paul N. Gardner Company, Inc.**

316 N.E. FIRST STREET • POMPANO BEACH, FL 33060  
PHONE (954) 946-9454 • 800-762-2478 • FAX (954) 946-9309