

## UNION Series No. 5 and No. 15 Roller Coater

DATE:

SERIAL NO.:

### OPERATING MANUAL INDEX

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## INTRODUCTION

**IMPORTANT NOTE:** Each roller coater is built with the specific needs of the materials and coating application in mind.

The following operating instructions apply to the basic machine. Your requirements may be different to suit your special needs and you are advised to check the specification of your machine and to make note of any variations.

UNION Roller Coaters apply an even, smooth coat of liquid materials, such as glue, resinous adhesives, drawing lubricants, paint, wax, oil, sizing, plastics and many others to reasonably flat surfaces.

Roller coating eliminates the human error, wasteful application and the poor general coverage of spray or hand coating. "Dry Spots" and "Squeeze Out" is prevented and quality control is easily maintained.

Production is increased and man hours reduced. Users have claimed savings from 30% to 70% in coating material costs. Operating conditions are cleaner and no booths or exhausts are required resulting in lesser floor space for greater efficiency.

The UNION #5 or #15 Roller Coaters are designed to apply accurately controlled coatings. It is ruggedly constructed of welded tubular steel frame work.

## **INTRODUCTION** *(Continued)*

The rolls are supported in antifriction, self-aligning bearings and the diameter of the Series #5 Coating Rolls is 4"; the diameter of the Doctor Roll is 2-3/4".

The Series #15 coating rolls are 6-1/2"; the diameter of the Doctor Roll is 4-3/8".

UNION Roller Coaters are most versatile in that additions or modifications can be made to accommodate almost any type of coating problem. Coaters have been designed to contain deburring rolls, brush rolls, squeegee rolls, heated or chilled rolls in addition to coating rolls. Coating rolls can be chrome plated steel or covered with Neoprene, Gelatin, Thiokol, Buna N, Aluminum, or such material as suits your special needs.

Rolls can be spiral or longitudinally corrugated, depending on the type and amount of coating material used.

In most cases a smooth ground roll will apply the desired amount of coating material to the stock being run.

## **INSTALLATION**

The coating machine is mounted on skids and crated for shipment after factory test. The crating is fastened to the skids and must be removed first.

Remove the skids next, taking care that the machine is not upset.

A packing list accompanies each machine and is tacked to the crating.

Check the packing list against the machine as delivered and take prompt action to report any discrepancies.

## **Location**

The machine should be located with due consideration for the movement of materials in and out of the machine and the ease of movement required by the operator.

Mounting holes are provided in the "feet" of the machine for the purpose of leveling. The machine must be on a solid, level surface and a spirit level should be used longitudinally on the channel at the top of the machine and on the lateral top section of the frame. The machine must be secured to the floor by bolts or equal to ensure stable running.

## WIRING

Make sure proper wiring is carried out to prevent damage to the circuit. Refer to packing list or wiring diagram inside the electrical control box. This will ensure correct voltage to all motors.

MACHINE SHOULD BE GROUNDED FOR SAFETY OF OPERATOR.

# **OPERATING INSTRUCTIONS**

## **Roll Adjustments**

Generally, the upper roll assembly is the only one that requires vertical adjustments. This is done to accommodate various thickness of stock being run. Handcranks on top of the machine control this action. All upper roll assemblies are spring loaded. This safety feature ensures that an uneven thickness of stock or variation can be compensated for automatically. Should a foreign object pass through the rolls, there is less chance of damaging rolls. The doctor roll is independently controlled by separate adjusting screws on either end of the rolls. This controls the opening between the doctor roll and coating roll, thereby, controlling the desired coating film thickness.

The doctor rolls are also spring loaded to compensate for any foreign object that might pass through between doctor roll and coating roll.

**NOTE:** Coaters with steel coating rolls have a stop-block adjusted and preset at 0.010" gap.

Removal of rolls (see Roller & Slide Block Assembly Drawing).

### **To remove the Coating Roll:**

1. Remove Sprocket & Chain.
2. Lift the entire top assembly by operating handcranks at right and left on top of the machine.

## **OPERATING INSTRUCTIONS**

### **Roll Adjustments *(Continued)***

3. Unscrew and remove coating roll bearings each end.
4. Drop coating roll assembly out of slide blocks and remove horizontally to rear of machine.

#### **To remove Doctor Roll:**

1. Unscrew doctor roll adjusting screw at right and left of machine.
2. Remove top doctor roll gibs on either end. These are situated over the doctor roll take-up bearings.
3. If doctor roll is driven, remove gear.
4. Lift at right hand and remove.

To replace, follow these sequences in reverse.

When installing new rolls, care should be taken to insure that the vertical coating roll springs are firmly positioned on the screw shoulder and screw thrust bearing. This adjustment is done by the hex nut on the lower end of the elevating screw. Minimum tension prevents damage to the rolls should a varied stock thickness be passed through.

## **ROLL MOUNTINGS**

All rolls are mounted in self-aligning ball bearings. Self-aligning seals effectively keep grease in and prevent entry of dirt regardless of alignment. All bearings are mounted on smooth surfaces to ensure proper mounting and alignment.

## **ROLL MOUNTINGS**

### **Feeding**

On the basic coaters, feeding is done on an adjustable infeed table of solid sheet metal fabrication, mounted level with the roll pass line. A series of adjustable pickoff fingers are mounted on the offbearing side of the machine to ensure positive pickoff of the stock being run.

## ROLL MOUNTINGS

### Before Starting

Two areas must be checked before operating this machine. Be sure the rolls are apart; be sure the pickoff fingers and infeed table are not touching the rolls. Serious damage to the rolls or the machine will occur if these points are not checked and corrected before operation. Careful reading of these instructions will ensure you of satisfactory operation. Tighten all bolted pieces to the machine (jarring and jolting during shipment may cause loosening of parts or assemblies).

Move all rolls away from each other. Steel roll contact with each other may cause a galling action and will ruin the finish of these rolls.

Roll rotation should be checked. If it is wrong recheck circuit for proper wiring.

## ADJUSTMENT OF ROLLS

The upper roll assembly is raised or lowered by the two handcranks at the top of the machine and allows an opening between the coating rolls of 0" to 4". A clockwise turn lowers the top assembly and a counterclockwise turn raises it.

**NEVER ALLOW COATING ROLLS TO TOUCH.** Sharp materials or burrs should never be run through the rubber rolls" This would cut & gouge the roll.

The adjustment for controlling the coating film thickness is incorporated in the doctor roll adjustment. On the Model "A" these are located at the top infeed side of the bottom offbearing side. On the "B", "C" and "D" models, these knobs are located on the infeed side. This adjustment moves the doctor roll to or from the coating roll. Clockwise movement of the knob pulls the doctor roll away from the coating roll and counterclockwise pushes it to the coating roll.

A trough is formed by the doctor roll and coating roll with the ends sealed by Babbitt faced seal plates. These seal plates are preset at the factory and do not require resetting until they wear and allow the coating material to drip through.

## ADJUSTMENT OF ROLLS *(Continued)*

To reset, loosen set screws in the collar locked on the journals of the rolls. Press the collars firmly against the seal plates and tighten set screws.

The coating material is held in the crotch. Before attempting to fill the trough, feeler gauges should be used between the rolls at each end to ensure an even coat. In theory, to set a starting gap between these rolls, the solids in the coating material and the desired dry film thickness should be known. With these two factors a setting for the gap between the rolls can be determined by multiplying the dry finish thickness by the percentage of solids, divided into 100. For example, the desired dry film thickness is 0.002" and the solids in the coating material is 50% or  $100/50 = 2$ . Then  $0.002" \times 2 = 0.004$  which is the gap required. Or, if the dry film thickness required is 0.002" and the solids in the coating material is 20% then  $100/20 = 5$  so  $0.002" \times 5 = 0.010"$  which is the gap required between the doctor and coating roll. This may not give you the dry finished thickness required due to the possibility that not all the coating material passing through the gap is deposited on the stock being run. A small adjustment of the doctor roll may be necessary to produce the required dry finish thickness.

## **ADJUSTMENT OF ROLLS *(Continued)***

The coating material may now be put into the trough of the rolls; and fed by a pump in the recirculating system or a gravity feed tank.

On Model "B" and "D" coaters, the lower pan is used to feed the coating roll. The coating material is picked up from the pan and doctored off to the desired thickness. The pan is mounted on slides and may be removed by unscrewing the two bolts on the offbearing side of the machine.

On "A" and "C" Models, the pan is installed for cleaning purposes only. The pan has a drain plug in the bottom so that removing the pan each time the machine is cleaned is unnecessary.

## **PICKOFF FINGERS**

The series of pickoff fingers should never be moved while the machine is running; any adjustment should have been done while the machine was idle.

Serious damage could occur if these fingers come into contact with the rolls.

## **GUARDS**

Proper guards are installed and care should be taken to see that all guards are securely in place before the power is turned on.

## **DOCTOR ROLL SAFETY FEATURES**

The adjusting screw on the doctor roll assembly is spring loaded. In event of a large object being caught in the trough of the rolls, the pressure can be relieved by vigorously pushing the adjusting screw out of the slotted bracket on the bearing slide block, towards the center of the machine.

## **LUBRICATION**

Lubrication of the machine has been checked at the factory during the testing period. However, a double check of all the lubrication fittings should be made to familiarize the maintenance staff of all the lubrication points. Be sure to check the oil level in the reducer gear box before power is applied.

## CLEANING

Clean all equipment whenever it will be idle for a period in excess of the usable life of the coating material, or at last once daily.

Loosen the doctor roll adjusting screws allowing the doctor roll to be pushed against the coating roll by spring tension only. Pour cleaning liquid into the trough between the doctor roll and the coating roll. This can be done manually or by pouring the cleaning liquid in the sump pan and circulating it with the pump. Allow the rolls to rotate for several minutes to allow the cleaning liquid to thin the coating material. When the rolls appear to be free of coating material, adjust the doctor roll to give a minimum gap between coating and doctor roll. This will allow the solution to drop through the opening between the rolls. **STOP THE MACHINE TO PREVENT AN ACCIDENT.** Wipe the rolls clean.

To remove seal plates, remove split cotter pin where applicable (#15 Models do not have this pin). Lift up from doctor roll journal and pull from coating roll journal. To replace, reverse the procedure.

**WARNING: The cleaning solution should be a compatible solvent for the coating material but it should not attack the rubber covering of the coating roll or corrode the surface of the doctor roll.**

After cleaning, the rolls should be left apart until the machine is to be used again. If the rolls are left together when machine is idle for any length of time "FLATS" may occur.

## SAFETY

Each machine is fitted with a reversing drum switch (see Drawing #\_\_\_\_\_). This can be actuated by hand or body pressure on the cable or rod situated on top of the machine.

Do not use hands or allow loose clothing or hair to come into contact with rotating parts when machine is running.

When running, make sure all safety guards are securely fastened in place.

The electrical circuits must be properly grounded and the correct voltage applied.

Make sure machine is stable, properly anchored and in clean safe working condition.

**DO NOT SMOKE OR USE WELDING EQUIPMENT IN THE VICINITY  
WHEN COMBUSTIBLE MATERIALS ARE BEING USED.**