



# MTS 400

## OPERATIONS MANUAL



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## 1. Introduction and Features of the MTS 400



The MTS 400 is a semi-automated fill and seal machine designed by MTS Packaging Systems Inc. to prepackage medication punch cards. The MTS 400 features the latest developments from MTS, including a high pressure sealing system to reduce cycle times and a versatile filling system capable of handling virtually all of the medications dispensed in today's pharmacy.

The MTS 400 is fully portable within the pharmacy, and includes its own silent air compressor.

The MTS 400 produces 8 to 9 filled and sealed medication punch cards per minute. The unit is capable of filling various configurations, including 28, 30, 31, 60, 62 and custom dose cards.

## 2. Components of the MTS 400

The major components of the MTS 400 are, the cabinet, fill station, seal station, rotating table, compressor, plates and platens.

### 2.1 Cabinet

This houses a silent air compressor and all plates to be used on the machine. The cabinet sits on four swivel wheels, allowing the MTS 400 to be a self contained mobile unit. The fill and Seal button is on the top of the seal head.

### 2.2 Control panel

Mounted on the right hand side of the unit, it includes an on/off switch, temperature control and electrical connectors.

### 2.3 Fill Station

Comprises of the following components: Motor Control Box, Brush Assembly, Hopper, Top Plate, Center Plate, Bottom Plate and Supporting Structure. Located on the filler head, are switches for turning on/off the brush motor and fill cycle (allowing for manual filling). There is also a brush speed control.



The MTS 400 uses a three **plate** filling system. These consist of top, center, and bottom plates.

In the filling station, the **platen** (in which the card & blister sit) is rotated directly under the 3 plates, allowing the blister to be filled. Using different plate configurations allows many combinations of medication sizes and shapes to be effectively filled.

## 2.4 Seal Station

Comprises of Air Cylinder, Spare Medication Holder, Heat Plate and Supporting Structure.



A self-contained, silent **compressor** is located in the right side of the cabinet, accessible from the rear of the machine.



### 3. Installation - Fitting the Jun-Air Compressor

- Unpack the compressor from the box.
- With an adjustable wrench attach the brass elbow to the regulator.
- Ensure the compressor is set to Auto
- Open the left rear door on the cabinet, and slide out the compressor tray.
- Lift (this may take 2 people) the compressor on to the slide tray, locating the feet in the receptacles.
- Push the compressor fully into the cabinet.
- Connect compressor to the electrical outlet, located on the upper right hand side of the cabinet.
- Connect the blue ¼” air hose to the brass elbow you added earlier, this is done simply by pushing the hose in, and then pulling, you should not be able to remove the hose.
- Close the door.



#### **4. Safety**

The MTS 400 should be on a level work surface in an area free from distractions, near an electrical outlet, close proximity to the bulk medications and to the area in which they will be stored after prepackaging, would also be an advantage.

When making your electrical connection use only a 110Volt, 20Amp electrical power source.

As with any piece of electrical and air driven equipment, the safe operation requires the operator to observe and follow safe operating practices. Please report all unsafe operating practices to your immediate supervisor for local resolution.

Please ensure that you turn off and unplug the machine whilst not in use, or carrying out any maintenance.

**Note: Some surfaces are hot during operation.**

## 5. Set-Up of the MTS 400

As previously mentioned the MTS 400 uses a 3 plate filling system. Different combinations of these plates allow for many different sized medications to be packaged.

### **Please Note:**

Once you have found an effective plate combination for a particular medication, it is advisable to note it, and build up a log of these combinations to enable swifter change over times in the future. (See Appendix 1 for suggested Drop Chart)

Before plate selection, please ensure plates are clean.

To reduce cross product contamination via plates and brushes they should be clean and dry prior to use. Clean the plates and brushes with a household soap solution or an alcohol solution, as recommended by your risk manager or infection control manager.

### **5.1 Bottom Plate Selection.** (Designation on plate of “BP...”)

This plate funnels product into the card and blister below. Bottom plates are numbered. Selection of this plate is based on the medications ability to drop through without interference, without being oversized. Place this plate in the main frame of the filler station, with the identification marking positioned in the upper left corner.

### **5.2 Center Plate Selection.** . (Designation on plate of “CP.....”)

The function of the center plate is to transport the meds from the top plate to the bottom plate. There are 3 types of center plates i.e. T (circular) plates for round medication, C (oblong) plates for capsule shaped or tablets dropped on edge and V (Oval) plates, for football and caplet shapes. The selected plate should match the size of the medication being filled. It must allow the medication to fall easily into position, without allowing a second medication access. If the hole is too big, then a second medication may also fall onto the hole, which will either mean some of the blisters will be double filled, or during the fill cycle the second medication can be cut in half, requiring the machine to be stopped and debris cleared.

Once the Center Plate is selected, place it on top of the aluminum slide plate, aligning holes with the pins. Place one of the meds to be packed into a center plate aperture. Look/feel across the top of the center plate. Check if the medication is raised above, or below the surface of the center plate. If so, then use the height adjustment on the front of the filler station, turning the handle in an anti-clockwise direction will raise the level of the center plate. Raise or lower the center plate, until the medication lies just below the surface.

**Note: This adjustment is critical.** If set too high, then during the fill action, the top plate will chop the medication lying within the center plate in half. Similarly if set too low, then a second medication will enter the center plate and be chopped.

Make a note of your selection in your logbook or MTSP product inventory card.

### **5.3 Top Plate Selection. (Designation of “TP.....”)**

The top plate's function is to funnel product to the plates below and to cover the center plate while the medications drop through the bottom plate. The top plate selection also determines the number of blisters to be filled.

Once the top plate is identified place it on top, aligning the holes of plate with the pins. The chamfered side of the plate to be face up.

### **5.4 Hopper**

Place the Hopper on the Fill Station, aligning the cylinder between the four pins.

The filler head may then be lowered into the hopper.

The height of the brushes may be adjusted using the black 'star' handle, on the filler head. As a general rule, the brushes should gently rest on the top plate.

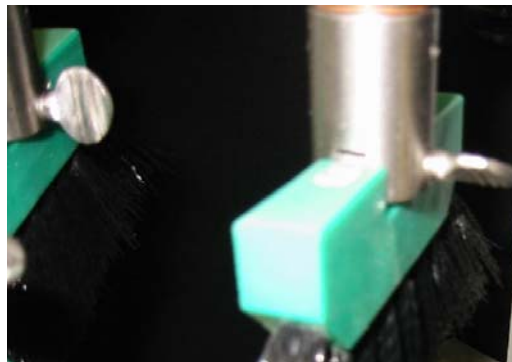
### **5.5 Brush Selection.**

There are white, green and blue/black brushes. The white brushes are stiffer than the green. The medication type, size and weight determine brush selection.

Brush selection is an objective task on the part of the operator. Proper brush selection will result in the meds being moved on the top plate without being kicked or brushed out of the plate apertures. Adjust the brush speed via the control panel.

For most applications the blue brushes will be more than adequate. If you find that meds are not falling into the center plate cavity, then try adding one white brush at a time, until the cavities are being filled.

Loosening the thumbscrews enables the brushes to be easily changed.



### **5.6 Mirror Adjustment**

Adjust the mirror so that you can clearly see the platen at the back of the machine. This allows you to check medication is in all the blisters without leaning over the machine.

Loosen the screws on the back of the mirror to do this.

## 6. Operating the MTS 400

Once you have made your plate selections and set the correct height as described in the previous section, you are now ready to pack medication on your MTS 400.

**NOTE:** Please ensure your plates, brushes and hopper system are clean.

In the Top left hand side of the cabinet, directly below the Fill Station, you will find a tray. This will catch any medication that falls through the fill station, i.e. if the system is activated without a blister being in the platen to catch it.

1. Select Plates and Height selection, as described in SET-UP.
2. Fit Hopper and lower the Filler Head assembly into the hopper. Ensure the brushes are in gentle contact with the top plate. Adjust height using the star nut on the Filler assembly.
3. Ensure hands are away from the filler and seal station. Connect to power outlet and turn on, using the red switch on the right hand side of the machine. Allow the machine to reach operating temperature. – factory set to 350F. readout on right hand side of machine.
4. To start the filler brushes rotating, turn them on using the switch on the fill head, turning the “Brush Speed” dial clockwise will increase the speed.
5. Add medication to the Hopper.
6. Observe how well Medication is being distributed around the top plate. If necessary, adjust brush speed. If this is ineffective, consider changing brushes, as detailed in the SET UP section of this manual.
7. “Break the back” of the cards to allow them to fold easily. Add card and blister to the Platen in front of you, aligning the holes of the platen with the blister through the card.
8. Rotate the platen fully under the Fill Station, the button will illuminate when in the correct position
9. For the first ‘fill’ per set-up, it is advised that you do it by hand. Use the lever on the left of the fill station, this will give you a ‘feel’ for the machine set up. If you feel anything other than spring resistance, then there may be, for example, a tablet stuck between top and center plates, suggesting your set up requires modification.
10. When filled, add another card/blister to the platen in front of you, and rotate the turntable clockwise again, so the second card is now under the fill station. The first card is now opposite you, at the back of the machine. Check all the blisters have been filled using the mirror.
11. Fill the card now under fill station, then rotate the turntable again. - Ensuring the card at the rear closes as you turn.

12. The first card will now be located under the Seal station. If you have not done so already, flick the 'fill' switch to automatic, and use the green lit button on top of the seal station. The machine will now fill the card/blister to your left and seal the card on your right.

Note: the button will only light if the platen is correctly located under the fill station.

On first run, ensure the Calibration Control reads over 340°F.

The effective operating temperature for this machine is between 340°F and 350°F.

13. As you rotate the plates again, you must now remove the filled card, replace it with an open card and blister, check the filled medication in the mirror, and activate the seal and fill stations using the green button.

### **6.1 Calibration Control Setting.**



The digital readout from this is the current temperature of the heat sealer.

The MTS 350T is designed to seal effectively at temperatures between 320 and 350F.

The Set temperature, i.e. the temperature which the control is trying to maintain, is fixed at the factory, it will be approximately 350F, but will vary slightly from machine to machine.

To view the set temperature press and hold the left hand (LH) button on the calibration control.

If you are experiencing in-effective seals, you are able to change this setting slightly. Whilst holding down the LH button, use the  $\Delta$  and  $\nabla$  keys, this sets a new desired temperature.

If you try and set this too far away from the factory setting, then, when you release the LH key, 'AL' will be displayed in the readout. Use the emergency stop procedure to reset.

## **7. Routine Maintenance**

As discussed earlier it is important to clean the plates prior to use to avoid product contamination. The machine also needs to be maintained and cleaned daily. Don't forget to also keep the catch tray and spare medication holder clean.

We recommend, daily cleaning of the cabinet and components. Clean the machine using a soft cloth with a household detergent and water solution.

### **7.1 Weekly Maintenance Checklist**

- Drain air regulator bowl of any condensation / moisture.
  - To do this, place a container under the reservoir, and press on the nipple on the bottom, releasing any water into the container.
- Drain compressor of moisture.
  - With a container at the spout of the tap on the air tank, open the valve, any water will be forced into the container. Continue until only air comes out of the tap.

## 8. Troubleshooting

### 8.1 Blister or Medication Have Been Sealed to the Heater Plate.

- The material will need to be removed as soon as possible from the heating plate.
- Turn off and unplug the machine.
- **Using protective gloves**, as the heating plate is still at operational temperature, unscrew the knob on the seal station support and lift the heat plate to a stop.
- Place a protective covering over the cabinet top to catch the material about to be removed. Scrape off the material with a non-metallic spatula, and brush the remaining residue off with a brass or stainless steel wire brush.
- Remove the debris and secure the heat station to its operational position.
- Plug in and turn on.
- Seal 3-4 empty cards to further remove any residue.



## **8.2 Cards Are Not Sealing Adequately**

Check bottom of heat plate for melted material.

If the heater plate has been contaminated, follow above procedure.

If the plate is clean:

- Check temperature, pressure and seal time.
- The temperature should read at least 340° F (Wait at least 15 minutes).
- The air pressure on regulator should read at least 80 PSI.
- The timer should be sealing for 4 seconds.

If any of the above items are incorrect, **please contact MTS. See ‘Contacts’ page.**

## **8.3 Products That Are Being Pre-Packaged Are Getting Shaved/Broken**

- Check machine set up for that medication.
- Review logs and correct as necessary.
- Turn the Fill button to the off position and fill manually to ensure correct set up.

## **8.4 Blister Cavities Are Not Filling Adequately With Product**

- Check machine set up for that medication.
- Review logs and correct as necessary.
- Check brush stiffness, brush height, brush speed and amount of product in hopper.

## **8.5 Blisters Are Not Filling When Activation Button Is Pushed**

Check ‘fill’ switch is in the Auto mode rather than hand fill mode.

**IF YOU ARE EXPERIENCING ANY PROBLEMS  
PLEASE DO NOT HESITATE TO CONTACT MTS.**

**Please See Contact Information - Page 13**

**9. Contact Information**

Technical Service	(727) 571-1616 ext. 596
Technical Service e-mail	technical@mts-mt.com
Customer Service	(800) 845-0053

## 10. Technical Specifications

Power Supply:	110V 20 Amp Supply
Air Supply:	2 CFM at 100 PSI (internally supplied compressor supplied)
Overall Dimensions (approximate):	Width: 40" Depth: 30" Height (Max): 50"
Weight:	380 lbs
Seal Plate Operating Temperature:	350° Fahrenheit
Seal Time:	4 Seconds

**11. Appendices A: Product Drop Chart**

