

# 3 *Basic Operations*

## Purpose

This chapter provides step-by-step instructions on how to load and wash parts. Read it before you operate the washer for the first time.

## Prerequisites

Before you read this chapter or operate the washer for the first time, we recommend that you read the following thoroughly:

- *"Important Safety Instructions and Warnings"* (in the front material)
- Chapter 1, *"Overview"*

This chapter, *"Basic Operations,"* assumes that appropriate operating parameters have been established for your washer. Refer to chapter *"Advanced Operations: Process-Control"* for information on establishing process-control parameters.

## Safety/Precautions

Before you operate the washer, read and follow these recommended safety/precaution instructions:

**WARNING! NEVER get inside the washer cabinet when the main power supply is ON. This could result in severe injury or death.**

**CAUTION! WHEN LOADING AND UNLOADING PARTS! -- Always wear gauntlet-type thermally protected and water-repellent protective gloves, protective eyewear, a filter-type air mask, and a full body apron that is thermally protected and water-repellent.**

**CAUTION! WHEN LOADING AND UNLOADING PARTS! -- After a cleaning cycle, parts are very hot. Trace amounts of chemical residue remain on part surfaces and in recesses. Before you remove a part from the washer cabinet, be sure to drain back into the washer any solution that remains on a part surface or in recesses.**

## What You Will Learn In This Chapter

In this chapter you will learn the following about operating the washer:

- Control panel
- Standard cleaning cycle
  - Checking water temperature
  - Using the clock-override switch
  - Opening the Door
  - Loading and Securing Parts
  - Closing and locking the Door
  - Verifying Wash Temperature
  - Setting the Timer
  - Setting the Rinse Cycle (optional)
  - Starting the Washer
  - Verifying Proper Function
  - Opening the Door after a Cycle
  - Unloading Parts
- Continuous operation

# 1. Control Panel

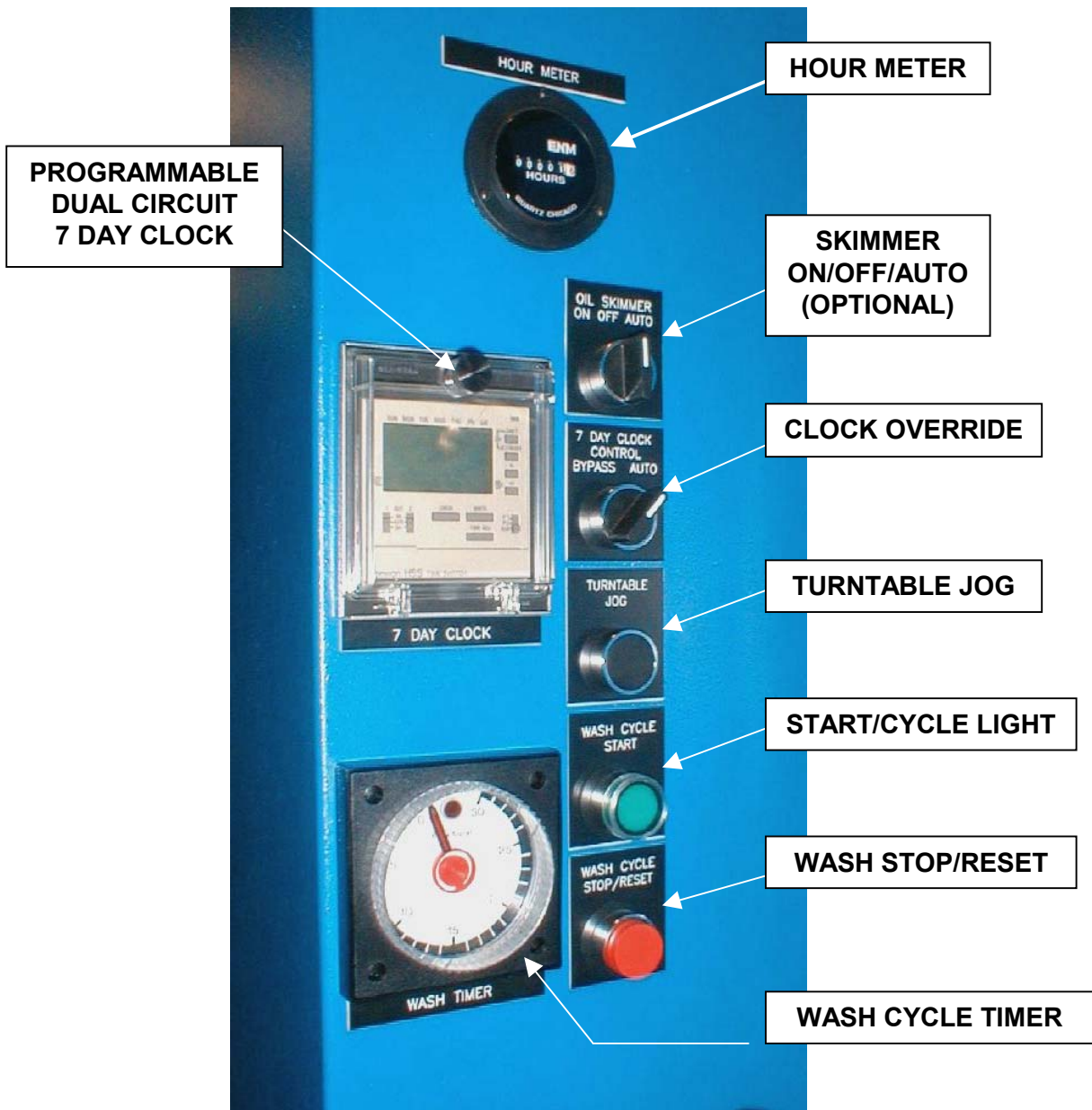
The following figure shows the standard control panel, located on the outside of the washer cabinet to the left of the door. The operator uses these controls in day-to-day cleaning-cycle operations:

<b>Hour Meter</b>	Monitor the total number of hours of washer cycle time for scheduled maintenance procedures, from <i>start</i> to the <i>end</i> of cycle.
<b>Rinse off/auto</b>	set the rinse switch to <i>AUTO</i> to enable the rinse cycle; <i>OFF</i> bypasses the rinse cycle.
<b>7-Day Dual-Circuit Clock</b>	Program heat-up days and start/stop times for heat and water-fill; program circuit #2 to control the "auto" runtime for the optional Clean Machine or Oil Skimmer.
<b>Wash Cycle Timer</b>	Set 0-30 minute wash cycle
<b>7 Day Clock</b>	Select <i>BYPASS</i> to override the 7-day clock. Select <i>ON</i> to enable the 7-day clock control.
<b>Turntable Jog</b>	Press the <i>TURNTABLE JOG</i> button to rotate the turntable for easier loading/unloading.
<b>Start (Run Light)</b>	Press the <i>START</i> button all the way to begin the wash cycle. The green run light illuminates indicating cycle running.  <b>Note</b> ...The start circuit is interlocked with the door closed limit switch. The opening and closing of the washer door resets the start circuit.
<b>Stop/Reset</b>	Press the <i>STOP</i> button to stop washer operations (heat source and water-fill functions are not affected). The green "Run Light" extinguishes indicating cycle terminated.

**NOTE:** If you have purchased any options, such as the Clean Machine, Oil Skimmer, or Conductivity Controller, their operator controls will appear on the control panel, if applicable. Refer to chapter "*Options*" for more information.

**NOTE:** If you specified any custom features, your control panel may differ slightly from the standard panel. For example, your wash timer may be located inside the electrical control panel. If you requested a *water fault indicator*, it illuminates only if the water level falls below operational requirements.

For more information on installing, operating, and maintaining options, refer to chapter "*Options*."



**FIG. 3-1: Standard Turntable Power Washer Control Panel**

## 2. Standard Cleaning Cycle

This section explains how to operate the washer. Read it before you run a cleaning cycle for the first time.

### 2.1. Checking Water Temperature

Check the water temperature gauge to verify that the washer has reached the *minimum operating temperature* specified by your process-control instructions. Refer to the following figure for the gauge's location.

**WARNING!** Do NOT operate the washer unless it has reached minimum operating temperature.

**Scheduled Shift:** During a scheduled shift, check the temperature gauge about every 15 minutes until it reaches the specified operating temperature. If the gauge shows no change after 30 minutes or so and the washer has not reached the specified operating temperature, refer to chapter "*Troubleshooting.*"

**Non-scheduled Shift:** To run a wash cycle during a non-scheduled shift, use the *clock-override switch* to bypass the 7-day clock. Refer to the next section.

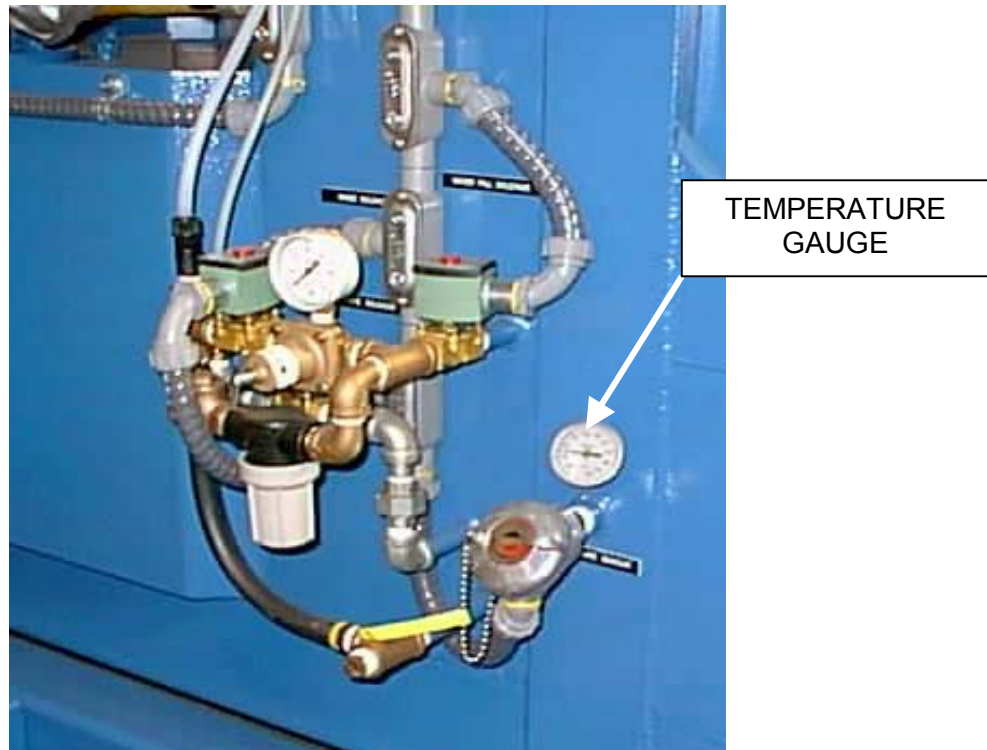


Fig. 3 - 2: Water Temperature Gauge Location

**NOTE.**

The water temperature gauge monitors and displays the wash solution temperature (at a specific location) in the wash tank. During the start of a cleaning cycle, wash solution temperature will decrease for the following reasons:

- A cold washer cabinet (first wash of the day or extended idle time between washes).
- Cold air in washer cabinet (door left open for extended time).
- Washing action on cold parts (cooling of returning water).
- Stratification of hot and cold water during extended idle times.
- Excess steam extraction (ASE system extracting excessive steam and heat).

This fluctuation from temperature setpoint (highest desired solution temperature as set on the internal temperature control unit) is to be considered normal operation of the system.

To increase the “average” wash temperature, increase the set point temperature on the control unit inside of the electrical control enclosure. This will increase the “starting” wash solution temperature.

## 2.2. Using the Clock-Override Switch

Use the clock-override switch to bypass the 7-day clock and heat the washer. Refer to Fig. 3-1. Generally, you would use this switch under the following conditions:

- You are not on a scheduled production shift
- And you need to run a wash cycle
- And the gauge shows the washer is not at operating temperature

Check the temperature gauge about every 15 minutes until it reaches the specified operating temperature. If the gauge shows no change after 30 minutes or so and has not reached the specified operating temperature, refer to chapter “*Troubleshooting*.”

Allow approximately 1-2 hours for the washer to reach operating temperature from an “ambient” condition.

## 2.3. Opening the Door

### *Door Latch*

Pull the latch *handle* away from the washer cabinet to release the latch. Refer to the following figure.

Swing the latch *hook* away from the door handle.

Pull the door open *slowly*.



**Fig. 3 - 3: Cabinet Door Latch**

**Position Lock**

Pull the door open *slowly*, until it locks in the *first* position.

To lock the door in the *second* position:

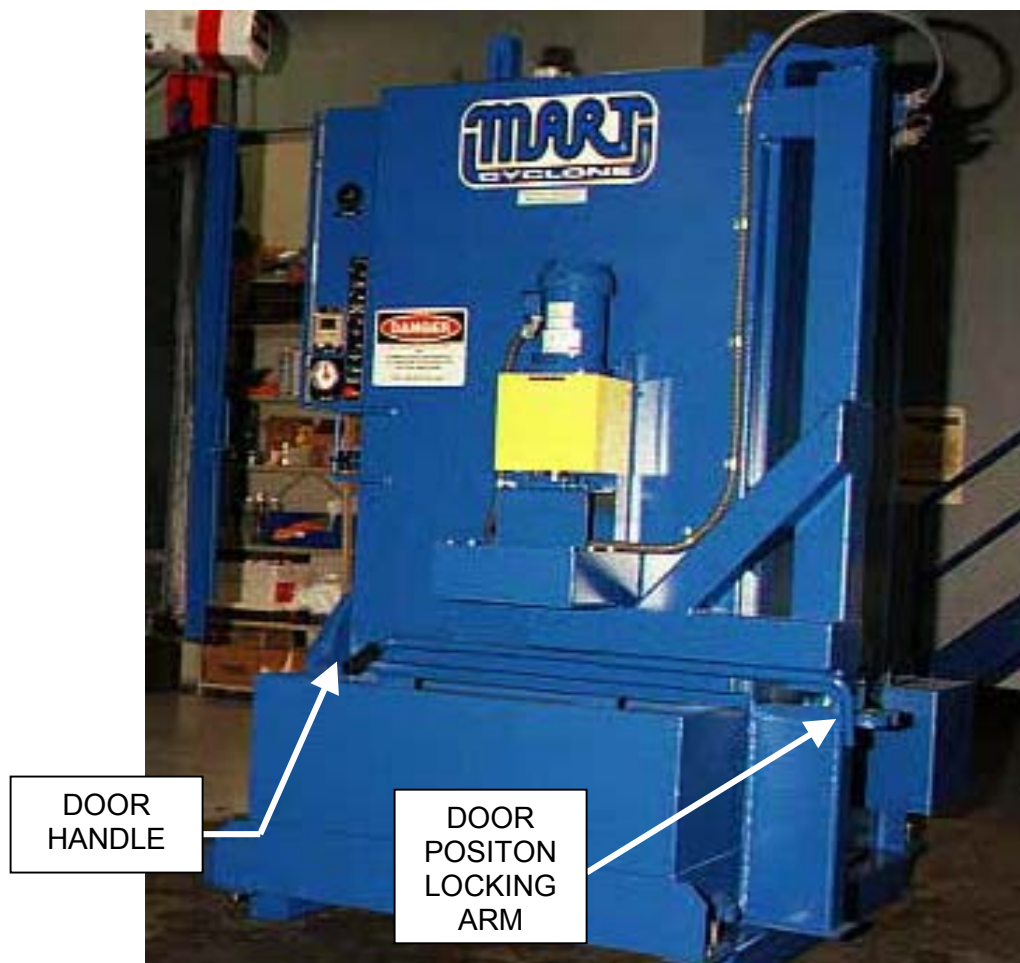
1. *Rotate the position-lock handle upward to release the lock from the first position.*
2. Move the *door back slowly.*
3. Release the *position lock.*
4. Continue pushing the *door* until it locks in place.

The position-lock handle is located at the bottom of the door. The two position locks hold the door open at approximately 60° angle and 90° angle, respectively, from the front of the cabinet. Refer to the following figure.

**Securing the Door**

Always be sure that the open door is locked in position:

- Visually check the position lock, *or*
- Try to pull or push the door



**Fig. 3 - 4: Cabinet Door Position Lock**



## 2.4. Loading and Securing Parts

Place all parts as near to the center of the turntable as possible. Position parts vertically whenever possible in order to take greatest advantage of the PBM's blasting system.

**WARNING!** All parts must fit within the diameter of the turntable. The load should be centered on the turntable and must not extend beyond the edge of the turntable.

**Securing Devices** All parts, small or large must be loaded at the center of the turntable and secured to the turntable. The type, size, and weight of the part determine whether you would use, for example, chains or nylon tie-downs. Remember that the washer blasts parts with a lot of power, especially models with larger pumping systems.

**NOTE!** Turntable load ratings are for parts loaded *exactly* at the center of the turntable.

**Guideline:** Assume that every nozzle hits every part with 15 lbs. (6.8 kg) of force.

Recommendations:

- Wrap securing devices *tightly* around all fixtures and parts.
- Loop securing devices through eyelets, stems, hooks, and handles on fixtures.
- Wrap securing devices around the outer perimeter of the part load at least once, and through any part openings, ports, etc., if possible.
- Wrap the ends of each securing device into appropriate slots, handles, etc., on fixtures, or attach to hooks on the turntable, so they don't catch on the turntable sprocket drive.
- Be sure that all securing devices clear the lower manifold nozzles and the turntable support arms, if the devices extend below the bottom of the turntable.

**Fixtures** Smaller parts can be placed into *baskets*. Fasten larger parts to the turntable using *fixtures*.

The turntable contains *adapter holes* for securing fixtures.

If you have purchased optional "quick change" fixtures from MART, refer to chapter "*Options*" for more information on using them.

## 2.5. Closing and Locking the Door

**CAUTION!** Close the door slowly! Be especially careful if the floor is wet or slippery!

*Position Lock* To close the door, rotate the *position-lock handle upward* to release the lock from the first or second position. Then, hold the handle up and push the door *slowly* toward the cabinet, until it shuts.

The position-lock handle is located at the bottom of the door. Refer to Fig. 3-4.

*Door Latch* Swing the latch *hook* toward the door handle.

Push the latch *handle* toward the washer cabinet to close and lock the latch. Refer to Fig. 3-3.

## 2.6. Verifying Wash Temperature

Check the water temperature gauge again to verify that the washer has reached the *minimum operating temperature* specified by your process-control instructions *before* setting the timer. Refer to Fig. 3-2 for the gauge's location.

If the gauge still has not reached the specified operating temperature, refer to chapter "*Troubleshooting*."

**WARNING!** Do NOT operate the washer unless it has reached *minimum operating temperature*. Excessive foaming and additional water loss may occur.

## 2.7. Setting the Wash-Cycle Timer

Rotate the 0-30 minute wash-cycle timer knob *counterclockwise* to desired time to set wash-cycle time. Refer to Fig. 3-1. During a wash cycle, the black pointer on the timer will remain at set point. The red cycle-progress pointer will move to indicate time remaining. At the end of a wash cycle, the red pointer will reset to the time indicated by the black pointer. This feature allows you to repeat the same cycle time by just pressing *start*.

**NOTE!** The red pilot light on the timer is on during the wash portion of a cleaning cycle.

*Actual Wash Time* Set the timer to your shop's normal operating standards. If none exist, you will have to develop them. Only experimentation will give you optimal wash time.

**NOTE:** In general, most cleaning cycles can be completed in less than 15 minutes.

## 2.8. Setting the Rinse Cycle (optional)

If you have the optional Automatic Rinse Cycle (ARC), setting the *rinse off/auto switch* to the *auto* position will *enable* the rinse cycle. Setting the switch to *off* will *bypass* the cycle; no rinse will occur. Refer to Fig. 3-1.

## 2.9. Starting the Washer

Press the *start* button to begin the wash cycle. Refer to Fig. 3-1. The button will remain illuminated during the cycle.

**Shifting Load:** If the load on the turntable is not centered on the turntable and secured to the turntable, it will shift (noisily) as soon as the main wash pump starts. The turntable-drive-motor jackshaft may also stop rotating. If this occurs:

1. Press the *STOP* button. Wait at least 10 seconds for the pumps to stop running. (Refer to Fig. 3-1.)
2. Verify that the *start* button light is off.
3. Open the door *slowly* (parts could fall out on you).

**CAUTION!** Open the door slowly! Stand back to avoid any traces of steam! Stand back to avoid falling parts!

4. Center the parts on the turntable.
5. Secure the parts.
6. Close and lock the door.
7. Press the *START* button again.

**NOTE:** To stop the cleaning cycle at any time, press the *STOP* button. To restart the washer the start circuit must be reset by opening and reclosing the washer door.

## 2.10. Verifying Proper Function

*Normal Cycle* During the cleaning cycle, verify proper function in the following ways:

- Listen to the pump -- does it sound normal?
- Is the turntable drive-motor jackshaft rotating?

*Cycle Completion* At the end of the cleaning cycle, the following things should happen:

- *START* button light turns off
- Turntable drive-motor and ASE blower turns off.
- Wash timer red pointer resets to set point wash time.

## 2.11. Opening the Door after a Cycle

Wait for the lighted *start* button to turn off before you open the door after a cleaning cycle.

**CAUTION!** *Open the door slowly! Stand back to avoid any traces of steam! Stand back to avoid falling parts!*

*Door Latch* Pull the latch *handle* away from the washer cabinet to release the latch. Refer to Fig. 3-3.

Swing the latch *hook* away from the door handle.

Pull the door open ***slowly***.

**Position Lock** Pull the door open *slowly*, until it locks in the *first* position. Do not open the door past the first position lock: this allows remaining solution to drip into the reservoir, not onto the floor.

The position-lock handle is located at the bottom of the door. Refer to Fig. 3-4.

**Securing the Door** Always be sure that the open door is locked in position:

- Visually check the position lock
- Or-
- Try to pull or push the door

## 2.12. Unloading Parts

Press the *TURNTABLE JOG* button to rotate and position the table for easier unloading. Refer to Fig. 3-1.

Remove the cleaned parts.

## 3. Continuous Operation

To operate the washer continuously, repeat "2.4. Loading and Securing Parts" through "2.12. Unloading Parts."

You may need to add chemical or perform maintenance. Refer to chapters "Advanced Operations: Process-Control" and "Maintenance" in this manual.