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V-TAI · PTW-1900 Roll-in Rack Trolley Washer

PTW-1900 Operator Manual

Daily operation, PLC walkthrough, cycle profiles, troubleshooting

Document version 1.0

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Product: V-TAI PTW-1900 Roll-in Rack Trolley Washer

Audience: shift operators, wash-bay supervisors, HACCP coordinators

Manufacturer: Shenzhen Vtai Electrical Appliance Co., Ltd.

1. Safety first

■■ Before operating the PTW-1900, every operator MUST read this section.

1.1 General safety rules

- **Never** operate the machine with doors not fully latched. Door interlock will prevent cycle start, but never bypass the interlock.
- **Never** open the chamber doors during a running cycle. A safety relief vents chamber pressure before doors can be opened post-cycle — wait for the "Cycle Complete" indicator before pulling the door handles.
- **Always** wear food-grade gloves and slip-resistant footwear in the wash bay.
- **Never** insert hands into the chamber while spray arms are rotating.
- **Never** spray water onto the PLC touch-screen panel or the electrical enclosure.
- **Always** turn off the supply breaker before any chamber service (nozzle removal, gasket replacement).

1.2 Chemical handling

- Detergent and acid rinse are alkaline (pH 12) and acidic (pH 2) respectively. Both can burn skin on prolonged contact.
- Wear chemical-resistant gloves when refilling reservoirs.
- Eye protection mandatory when handling chemicals.
- Eye-wash station must be within 10 m of the machine (regulatory requirement in most jurisdictions).

1.3 Hot water and steam

- Chamber rinse water is 82°C — do not insert hands until 60 seconds after cycle completion.
- Steam version: the steam line (1" pipe at machine left rear) carries 8–10 bar saturated steam. Do not touch.

2. Daily operation

2.1 Startup (5 minutes)

1. **Power on** the machine — main breaker, then PLC power button on front panel.
2. **Wait for boot** — PLC shows splash screen for ~20 seconds, then Home screen.
3. **Check chemical reservoirs** — alkaline detergent and acid rinse levels visible through the side panel. Top up if below 25%. Use only V-TAI-approved or food-grade equivalent chemistries.

4. **Open the chamber doors**, visually inspect for any debris from prior shift. Wipe clean if needed.
5. **Verify drain is open** — drain valve handle at machine bottom should point downward (open position).
6. **Run a sanitization-only validation cycle** — Profile **Sanitization Only**, no load. This brings the booster tank up to 82°C and confirms operational readiness.

2.2 Production cycle

For each trolley to be washed:

1. **Open both chamber doors** — both leaves swing 90° to fully clear the chamber width.
2. **Wheel the trolley into the chamber** on its own wheels. Center the trolley on the rotating base; do not push past the visible alignment mark on the base floor.
3. **Close doors** — both leaves; latch handles must click into the locked position.
4. **Select cycle profile** on PLC touch-screen. See Section 3 for profile guidance.
5. **(Optional) Scan trolley barcode** if your facility uses barcode traceability. The PLC will associate this cycle's log with the scanned trolley ID.
6. **Press Start** (green button or screen button).
7. **Cycle runs unattended** — 6 to 12 minutes depending on profile selected.
8. **Cycle Complete** indicator illuminates; PLC may auto-unlatch doors (depends on configuration).
9. **Open doors, wheel out the trolley.** Visually verify cleanliness; if any tray shows residue, re-run with Heavy profile.

2.3 End-of-shift shutdown (10 minutes)

1. **Press Drain Tank** on PLC. Wash tank dumps to drain (~80 L).
2. **Open chamber doors**, wipe interior with damp cloth (no solvents).
3. **Remove and rinse the wash-tank strainer** (lift-out stainless mesh at chamber bottom). Empty food debris.
4. **Inspect spray nozzles** — clear any visible blockage with the supplied nozzle-cleaning pick.
5. **Wipe door gaskets clean** with damp cloth.
6. **Leave chamber doors ajar** to allow interior to dry overnight (prevents mildew).
7. **Power off** PLC (front button), then main breaker (only if facility policy requires nightly breaker-off).

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3. Cycle profile selection guide

The PLC ships with these profiles. Operator selects per load by tapping the profile icon on the Home screen.

3.1 Standard 6-minute

Use for: daily mixed-soil cleaning of baking trays, GN containers, lightly soiled bakery trolleys.

Chemistry: alkaline detergent dosed at 2.0 g/L, 82°C sanitization rinse.

Throughput: 10 cycles/hour = up to 450 trays/hour.

3.2 Heavy 9-minute

Use for: butterfat-heavy bakery (croissant, brioche), rotisserie pans, light carbonization.

Chemistry: alkaline pH 12.2, extended wash dwell, optional acid rinse.

Throughput: ~6.7 cycles/hour = 300 trays/hour.

3.3 Heavy 12-minute (with pre-soak)

Use for: caramelized sugar (donut glaze, gingersnap), severe carbonized residue.

Chemistry: alkaline pH 12.5 + 60-second pre-soak.

Throughput: ~5 cycles/hour.

3.4 Sanitization Only 8-minute

Use for: shift-change sanitation reset, allergen-class changeover, audit validation runs.

Chemistry: NO detergent — 82°C clean-water rinse continuous for 8 minutes.

Audit use: PLC log of this cycle is the documented allergen-reset evidence in your sanitation SSOP.

3.5 Acid Cycle 6-minute

Use for: weekly mineral-scale removal in hard-water installations.

Chemistry: food-grade phosphoric or peroxyacetic acid 0.5–1.0%.

Frequency: weekly (set as recurring task in your maintenance log).

3.6 Custom profiles

V-TAI can supply additional profiles for unique operations (frozen-food pre-warm, neutropenic 90°C × 8-min, chocolate-mold 60°C gentle). Contact info@v-tai.com with your soil description and target HACCP CCP — we return a tested profile within 1 week.

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4. PLC interface walkthrough

4.1 Home screen

Six profile icons across the top. Cycle status indicator below. Recent cycle log at bottom.

4.2 Profile selection

Tap a profile icon → confirm selection on popup → tap Start. The profile icon glows blue while the cycle runs.

4.3 Cycle log access

Bottom-right button **Cycle Log** → list of last 100 cycles → tap a cycle to view detail (timestamp, profile, peak temperatures, duration, operator ID).

4.4 Cycle log export

In **Cycle Log** screen, insert USB stick into front USB port → tap **Export CSV** → select date range → file copies to USB. Eject USB when "Export Complete" message appears.

4.5 Supervisor menu

Access via PIN-protected button (default PIN supplied separately with delivery). Supervisor functions:

- Edit existing profiles
- Add new profiles
- Reset operator IDs
- Calibrate temperature sensors
- Restore factory defaults

■■ **Never share the supervisor PIN with shift operators.** Audit-grade traceability depends on operator-level controls.

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5. Loading guidance

5.1 Trolley loading

- Center the trolley on the rotating base; alignment mark visible on chamber floor
- Do not push past the rear stop bumper
- Total trolley + load weight not to exceed 250 kg (standard floor) or 400 kg (reinforced)

5.2 Tray-by-tray loading (when no trolley)

For loose trays, use the supplied multi-tier loading rack (accessory):

- Up to 45 sheet pans per loading rack
- Up to 30 GN1/1 hotel pans per rack
- Up to 25 GN1/2 or 30 GN1/3 stacked
- Up to 8 Hobart 60-quart mixer bowls (inverted on bottom tier)

5.3 Mixed load loading

Mixed loads (trays + GN + bowls on the same trolley) are supported. Configure the trolley so heaviest soils sit at the bottom (most direct nozzle impact).

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6. Common troubleshooting

6.1 Cycle won't start

Symptom: Press Start, nothing happens, PLC shows "Door not latched"

Cause: One or both door leaves not fully latched

Fix: Open both doors fully, close again firmly until latch handles click into locked position. Try again.

6.2 Cycle aborts with "Under temperature"

Symptom: Mid-cycle, machine alarms; PLC log shows rinse temperature below 82°C

Cause: Booster tank failed to reach setpoint; possible heater element failure or hard-water scaling

Fix: Run an Acid Cycle to descale. If problem repeats, schedule heater element inspection (Section 9 in maintenance manual).

6.3 Trays come out with visible residue

Symptom: After Standard cycle, trays still show food residue

Possible causes & fixes:

1. Wrong cycle profile selected — try Heavy 9-min
2. Detergent reservoir empty — refill
3. Spray nozzles clogged — clear with nozzle-cleaning pick
4. Wash-tank strainer full — empty and rinse
5. Cycle time too short for soil — escalate to Heavy 12-min

6.4 Excessive steam venting

Symptom: Heavy visible steam plume from exhaust during cycle

Cause: Steam-condensation hood (if equipped) malfunctioning, or exhaust duct restricted

Fix: Confirm condensation hood drain is clear; inspect exhaust duct for obstruction. Call service if persistent.

6.5 Detergent dose alarm

Symptom: PLC alerts "Detergent reservoir low"

Cause: Reservoir below 10%

Fix: Refill reservoir with food-grade alkaline detergent. Reset the alert from the PLC.

6.6 Door won't open after cycle

Symptom: Cycle complete but door latches won't release

Possible cause: Chamber pressure relief not complete (rare)

Fix: Wait 60 seconds, try again. If persistent, the manual override key (supplied with delivery, kept in supervisor's office) releases the latches. Then call service.

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7. Routine operator checks

7.1 Hourly during production

- Chemical reservoir levels visible at >25%
- No visible water leaks at any joint
- Cycle log: all cycles in last hour show profile = expected, temp = 82°C+

7.2 End of every shift

- Drain tank
- Empty strainer

- Wipe doors and gaskets
- Leave doors ajar

7.3 Weekly (during light shift)

- Run Acid Cycle (descaling)
- Check door gasket for tears
- Verify temperature sensor calibration (use a handheld thermocouple)

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8. Emergency stop and recovery

The **Emergency Stop** is the red mushroom button on the front panel (lower right of the PLC enclosure).

When to press E-Stop:

- Smoke or fire visible from machine
- Operator hand caught in any moving part
- Water flooding the machine
- Any safety hazard

Effect: All motors stop within 1 second. Doors remain latched (do not force open). Power remains on the PLC for safe shutdown.

Recovery procedure:

1. Resolve the emergency condition (clear hands, mop water, etc.)
2. Twist the E-Stop button clockwise to release
3. Press **Reset** on the PLC Alarm screen
4. Inspect the chamber and machine for any damage before resuming production
5. Document the E-Stop event in the daily log

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9. Support contacts

- **WhatsApp service** (fastest): +86 135 0962 3269
- **Email service**: info@v-tai.com (response in 12 business hours)
- **Authorized local service** (if applicable): contact your V-TAI sales rep for local partner details
- **Spare parts**: stocked at V-TAI Shenzhen; 4-week lead time worldwide

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This operator manual is provided with every PTW-1900. Replacement copies free on request.