Removing and Refitting Plate Recuperator Removable Drain Tray

How To Guides

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Figure 1. Typical ECE air handling unit. The removable stainless-steel drain tray beneath the plate heat exchanger (recuperator) collects condensate formed during heat recovery operation.

Video Duration: 9 minutes 29 seconds

Applies to: Plate Heat Exchanger (Recuperator) Section with Removable Stainless-Steel Drain Tray

Document Status: Controlled technical instruction

1. Purpose

This procedure describes the safe removal, inspection, cleaning, and refitting of the removable drain tray located beneath the plate heat exchanger (recuperator) section.

2. Important AHU Information

ECE AHUs are bespoke. Do not assume that information, access arrangements, terminal numbers, wiring colours, component selections or controls logic from another AHU applies to the AHU being reviewed or worked on.

The certified drawing and current project-specific documentation are the primary sources for the AHU arrangement and component technical information.

Where component technical information is checked, it must be checked against the certified drawing and related manufacturer data for the exact AHU.

IMPORTANT: Always use the project-specific asset information, certified drawing, relevant ECE product-range IOM, quotation scope and component information for the exact AHU being reviewed or worked on.

3. Safety and Competency Requirements

Only competent and authorised personnel should carry out this procedure. The required competency depends on the task being undertaken.

Before starting, confirm the correct AHU, asset tag, certified drawing, relevant ECE product-range IOM and any applicable wiring diagram, controls description, component technical information or manufacturer data sheet.

Follow all site-specific RAMS, permits, PPE, isolation and access requirements.

Where the task requires physical access to the AHU, do not open access doors, remove panels or work inside the AHU unless fans and relevant equipment are isolated, stationary and safe to access.

Do not bypass safety devices, interlocks, alarms or controls.

Stop and escalate if the AHU identity, current technical information, safe isolation, access condition or required competency cannot be confirmed.

Figure 2. Site personnel in PPE reviewing the certified drawing. Confirm AHU identity and the project-specific drain/condensate arrangement before opening any access panel.

Task-specific requirements:

- Before opening access doors or removing panels, select Maintenance Mode where applicable, allow fans to ramp down fully, confirm airflow has stopped, isolate relevant equipment and apply lock-off/tag-out where required by site procedure.
- Water, condensate and pressure-related services must be worked on by competent personnel in accordance with current statutory, project and site requirements.
- Use suitable PPE and hygiene controls for standing water, contaminated deposits, sharp edges, drain outlets, traps and condensate connections.
- Do not alter drain falls, traps, condensate pipework or drainage components unless this is approved and checked against the certified drawing and relevant IOM.
- Stop and escalate if the tray, drain connection, trap arrangement, access route or hygiene condition cannot be made safe or does not match the certified drawing.

4. Before You Begin

Access the AHU asset information via the ECE Client Portal using the asset tag or 18-digit reference number where available.

Confirm the AHU reference, project name, location and latest document revision.

Review the certified drawing, relevant ECE product-range IOM, quotation scope, component schedule and manufacturer data sheets where applicable.

Review the wiring diagram, controls description and commissioning information where the task involves electrical, controls or BMS interfaces.

Confirm the required personnel, tools, PPE, access equipment, permits and isolation method before starting work.

Figure 3. Asset Tag plate carrying the unique 18-digit reference number used to retrieve AHU technical information from the ECE Client Portal.

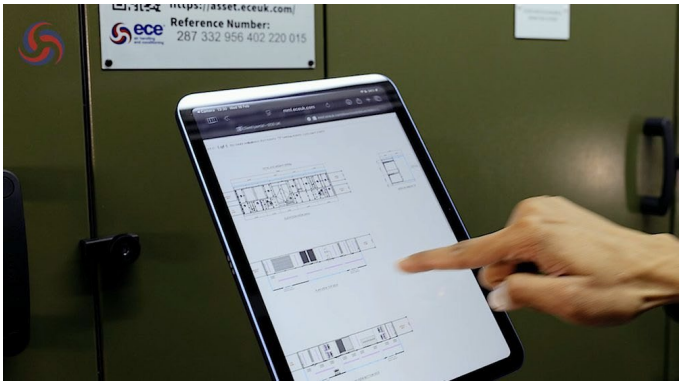

Figure 3b. AHU technical information opened on a device via the Asset Tag link, used to confirm AHU reference, drawing revision and fan information before starting work.

5. Required Tools, Equipment, PPE and Information

- Project-specific certified drawing and relevant ECE product-range IOM
- Task-specific hand tools
- Replacement components or spares where applicable
- PPE required by site procedure
- Cleaning materials or seal inspection tools where applicable
- Maintenance record or site log

6. Procedure

The plate recuperator drain tray is designed to:

- Collect condensate formed during heat recovery operation
- Prevent moisture carryover
- Maintain hygiene compliance
- Protect downstream components

This procedure follows the same safety principles as eliminator and cooling coil drain tray maintenance.

Before opening the access panel:

- Select Maintenance Mode via the control panel (if applicable).
- Allow fans to ramp down fully.
- Confirm airflow has completely stopped.
- Isolate fans electrically using local isolators.
- Apply lock-off/tag-out if required by site procedure.

> **WARNING:** Do not open access doors while fans are rotating.

6.1 Accessing the Plate Recuperator Section

- Release all external door latches.
- Open the plate heat exchanger access door fully.
- Secure the door safely.
- Visually inspect the plate pack and drain tray below.
- Confirm no active condensate flow before disconnecting any drainage components.

6.2 Disconnecting Drain Connection

- Identify the drain outlet spigot.
- Disconnect flexible drain hose (if fitted).
- Ensure residual condensate is captured.
- Use absorbent material to prevent water spillage.

6.3 Removing the Internal Retaining Panel (If fitted)

Some units include a removable stainless-steel panel covering the drain tray.

Step 1 – Identify Fixing Method

Panel may be secured with:

- Allen key bolts
- Finger-tight thumb screws

Figure 4. Identifying the fixing type — an Allen key is used here for the access panel bolts.

Step 2 – Release Fixings

- Loosen all fixings evenly.
- Support panel while removing final fastener.
- Carefully withdraw the panel.
- Place safely aside.
- Do not distort or bend panel edges.

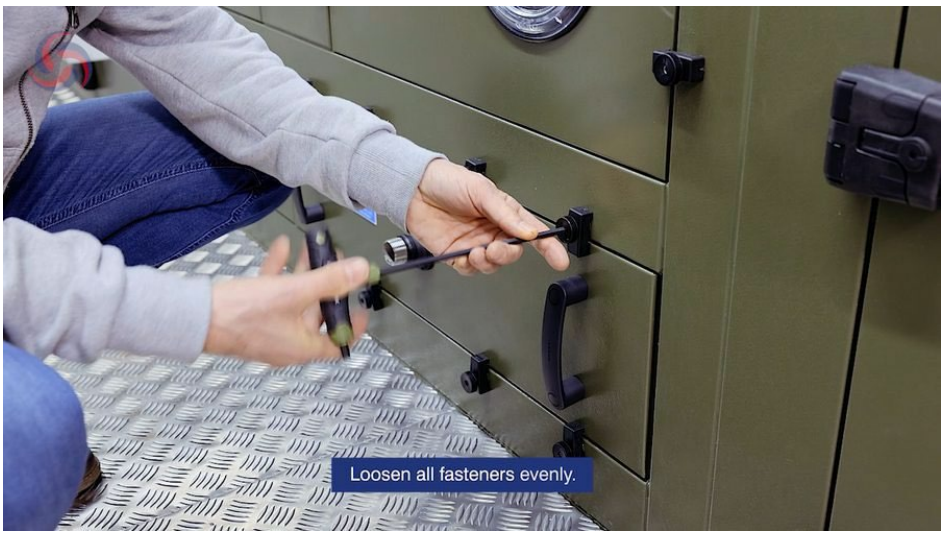

Figure 5. Loosening all retaining-panel fixings evenly before withdrawing the panel.

6.4 Removing the Plate Recuperator Drain Tray

- Grip tray using handles (if provided).
- Support evenly along both sides.
- Slide tray outward along guide rails.
- Withdraw fully from housing.
- Maintain tray level during removal to prevent spillage.

Figure 6. Sliding the stainless-steel drain tray straight outward along the guide rails.

Figure 7. Carrying the removed drain tray clear of the AHU for cleaning and inspection.

Figure 8. Withdrawing the drain tray completely from the housing — two operatives supporting evenly to maintain tray level.

6.5 Inspection and Cleaning

Once removed, inspect thoroughly for:

Structural Condition

- Corrosion or pitting (especially at welded joints)
- Distortion affecting fall/slope
- Cracks or fatigue damage

Hygiene Condition

- Debris build-up
- Sludge accumulation
- Blocked drain outlet
- Signs of biological growth

Clean using:

- Approved disinfectant solution
- Non-abrasive cloth or brush
- Warm water rinse if required

Ensure tray is fully dry before refitting.

6.6 Inspecting the Plate Recuperator Area

Before refitting the tray:

- Inspect underside of plate pack for debris.
- Confirm no blockages in condensate path.
- Check seals around tray opening.
- Verify drain spigot integrity.
- Confirm no standing water remains within housing.

Pay particular attention to areas where moisture may collect during winter heat recovery operation.

6.7 Refitting the Drain Tray

Step 1 – Orientation Check

- Drain outlet must align with discharge connection.
- Tray must slope toward drain outlet.
- Ensure correct forward/back orientation.

Step 2 – Insert Tray

- Slide tray carefully back into guide rails.
- Push fully inward until seated against rear stop.
- Confirm tray sits square and level.

Figure 9. Refitted tray with handle accessible — confirm the tray sits square and level against the rear stop.

Step 3 – Reconnect Drain

- Reattach flexible drain hose securely.
- Ensure no kinks in hose.
- Confirm connection is tight and leak-free.

6.8 Reinstalling Internal Retaining Panel

- Reposition panel into opening.
- Insert all fixings loosely at first.

Tighten evenly using:

- Allen key, or
- Finger-tight fasteners

Panel must sit flush and provide proper air seal.

Do not overtighten and distort the panel.

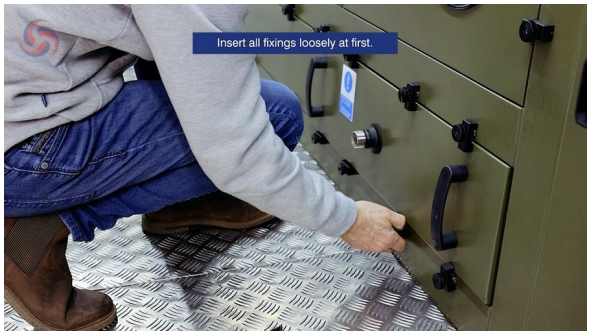

Figure 10. Inserting all retaining-panel fixings loosely at first to allow even tightening.

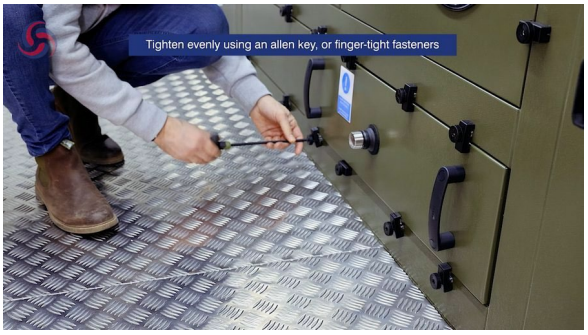

Figure 11. Tightening the fixings evenly using an Allen key or finger-tight fasteners.

6.9 Closing and Restarting the Unit

- Close access door fully.
- Secure all latches evenly.
- Remove lock-off devices.
- Restore electrical supply at isolators.
- Exit Maintenance Mode.
- Allow fans to ramp up gradually.

After system restart:

- Check drain connection for leaks.
- Confirm condensate drains freely.
- Inspect for abnormal noise or vibration.
- Ensure no water carryover into downstream section.
- Verify correct operation through inspection window if fitted.

7. Verification / Functional Test

- Component is correctly refitted, seated, latched, sealed or secured.
- Access doors, panels and latches are fully closed and secure.
- No tools, fixings, packaging or loose items remain inside the AHU.
- AHU is returned to normal operating condition and no abnormal noise, vibration, leakage or alarm condition is present.
- Plate recuperator drain tray is refitted, drains freely and shows no leakage.

Additional Verification Notes

8. Stop-and-Escalate Conditions

STOP: Stop work or stop the review and escalate to the responsible ECE/project technical contact if any of the following apply:

- The AHU reference, asset tag, certified drawing or document revision cannot be confirmed.
- The information found does not match the physical AHU, installed component or project scope.
- Safe access, safe isolation or required site permits cannot be confirmed.
- A required component technical detail, wiring detail, control signal or manufacturer data sheet is missing.
- The task would block or compromise AHU maintenance access, withdrawal routes, isolators, terminal boxes or emergency access.
- Access cannot be obtained safely.
- Door, panel, latch, rail or component condition is damaged or does not match the certified drawing.
- The replacement component does not match the original component or asset information.
- Drain tray cannot be withdrawn without damaging the plate recuperator, seals or drain connection.

9. Final Checks

- Confirm the AHU, component, wiring, control function or approval item has been left in the intended safe and complete condition.
- Confirm access doors, panels, terminal boxes, covers, guards, isolators and labels are secure where applicable.
- Confirm no tools, temporary materials, loose items, debris or packaging remain in or around the AHU.
- Confirm any alarms, faults, abnormal indications or unresolved comments have been recorded and escalated.

Additional Final Checks

- Drain tray fully seated
- Drain connected
- No corrosion concerns unresolved
- No blockages present
- All fasteners secure
- No tools left inside

10. Records to Complete

Record enough evidence to prove that the task, review or test has been completed using the correct AHU information and by competent personnel.

- AHU isolated and made safe
- Component removed/refitted or adjusted
- Final physical inspection completed
- Operational check completed
- Maintenance record updated

Evidence item	Required entry
AHU reference / asset tag	To be completed
Certified drawing revision / document revision	To be completed
Person completing task / review	To be completed
Date completed	To be completed
Result / status	Pass / fail / comment / not applicable
Outstanding actions	To be completed or marked none

11. Completion Checklist

[ ] Correct AHU and guide number confirmed.
[ ] Latest asset information and certified drawing checked.
[ ] Relevant IOM, wiring diagram, controls description or manufacturer data checked where applicable.
[ ] Safety and competency requirements confirmed.
[ ] Procedure completed or approval review completed.
[ ] Verification / functional test completed.
[ ] Stop-and-escalate conditions checked and no unresolved stop condition remains.
[ ] Records to Complete section completed.
[ ] AHU returned to safe condition or review status recorded.

12. Task-Specific Completion Checks

[ ] Maintenance mode selected
[ ] Fans fully stopped and isolated
[ ] Retaining panel removed safely
[ ] Drain disconnected
[ ] Tray removed
[ ] Tray inspected for corrosion
[ ] Drain outlet cleared
[ ] Tray refitted with correct fall
[ ] Drain reconnected
[ ] Panel secured
[ ] Door latched
[ ] Unit restarted
[ ] Drainage verified

13. Learning Outcome

After completing this guide, the user should be able to complete or review Removing and Refitting Plate Recuperator Removable Drain Tray using the correct AHU information, with clear safety controls, defined verification, completion records and escalation criteria.