



# Filter Replacement Front Withdrawal

**How To Guides**



# Filter Replacement Front Withdrawal



Figure 1. Typical ECE air handling unit with front-withdrawal filter sections. Replacement of panel and bag filters uses universal filter frames with C70 fastening clips.

Video Duration: 5 minutes 36 seconds

Applies to: Universal Filter Frames with C70 Clips – Front Access Configuration

Document Status: Controlled technical instruction

## 1. Purpose

This procedure describes the safe replacement of front-withdrawal panel or bag filters in accordance with ECE IOM guidance.

## 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 document revision before opening any access door.

### 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.
- Do not open AHU access doors while fans are rotating.
- Use suitable PPE and manual-handling controls for the component being removed, cleaned, replaced, inspected or tested.
- Do not leave tools, fixings, debris, packaging or loose items inside the AHU.
- Stop and escalate if safe isolation cannot be confirmed, the component does not match the certified drawing, or the access/withdrawal route is obstructed.

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

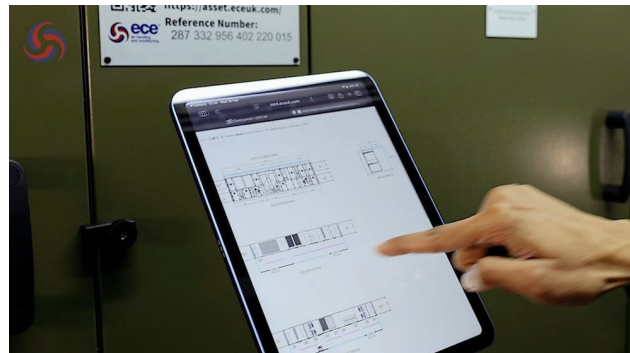


Figure 2b. AHU technical information opened on a device via the Asset Tag link, used to confirm AHU reference, drawing revision and fan information before starting work.

## 5. Required Tools, Equipment, PPE and Information

- Correct replacement filters confirmed from asset information
- PPE for filter handling
- Waste bags or containment for used filters
- Vacuum or cleaning materials where required
- Maintenance record or filter change log

## 6. Procedure

### Before accessing the filter section:

- Select Maintenance Mode via the control panel (if applicable).
- Allow fans to ramp down fully.
- Confirm airflow has 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 Filter Section

- Release all external door latches.
- Open the access door fully.
- Ensure the door is stable and secure in the open position.
- Visually inspect the filter bank before removal.



Figure 3. Releasing all external door latches and opening the access door fully.



Figure 4. Visually inspecting the filter bank before removal.

## 6.2 Removing Existing Filters

Filters are fitted into universal filter frames and secured using C70 fastening clips.

### Step 1 – Release Fastening Pins

- Unclip each fastening pin (C70 clip).
- Pivot the pins back into their base position.
- Ensure all clips securing the filter are released.

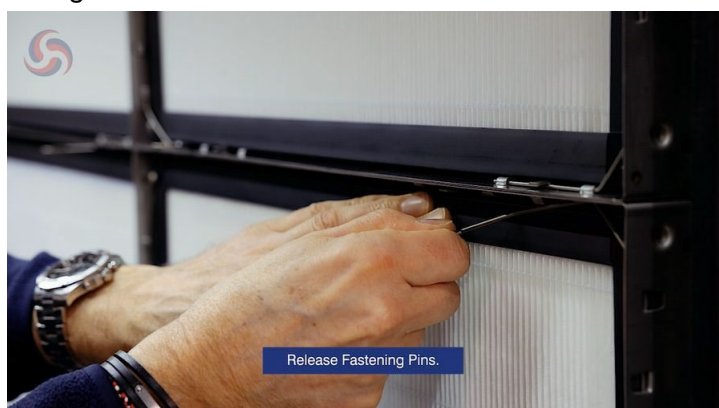


Figure 5. Releasing the C70 fastening pins on the filter frame.

### Step 2 – Remove Filter

- Once clips are loosened, the filter will begin to ease forward from the top.
- Support the filter evenly.
- Pull the filter forward and out of the frame.

Avoid damaging surrounding frames or neoprene seals during removal.



Figure 6. Easing the filter forward from the top and pulling it out of the frame.

## 6.3 Inspecting the Frame and Seals

Inspect the neoprene tape sealing surface.

**Check for:**

- Tears
- Compression damage
- Gaps
- Contamination

Replace neoprene tape if damaged to maintain air-tight sealing.

Failure to maintain seal integrity may cause bypass leakage and reduced filtration performance.



Figure 7. Inspecting the neoprene tape sealing surface for tears, compression damage, gaps and contamination.



Figure 8. Cleaning the sealing surface with a brush to remove debris before fitting the new filter.

## 6.4 Disposal of Dirty Filters

- Place removed filter directly into designated recycling or clinical waste bag.
- Avoid compressing the filter excessively.
- Seal bag in accordance with site infection control or environmental procedures.

## 6.5 Selecting Replacement Filters

Retrieve new filters from the heated or protected storage compartment.

**Confirm:**

- Correct dimensions
- Correct ePM rating and efficiency classification
- No physical damage
- Verify airflow direction arrow on filter frame.

Do not install incorrect grade filters.

## 6.6 Installing New Filters

### Step 1 – Orientation Check

- Ensure pleats are vertical (for panel filters).
- Confirm airflow arrow matches system airflow direction.

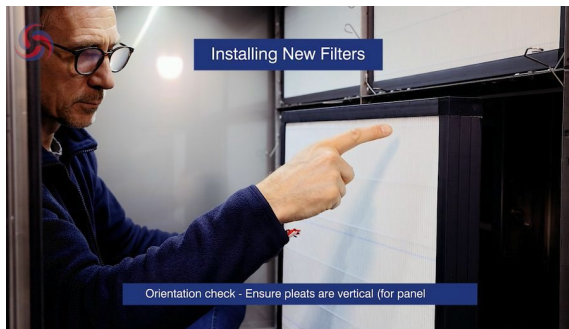


Figure 9. Orientation check: ensure pleats are vertical on panel filters.



Figure 10. Confirming the airflow arrow on the new filter matches the system airflow direction.

### Step 2 – Insert Filter

- Position filter squarely in frame.
- Push filter fully into housing.
- Ensure even contact with neoprene sealing tape.

The filter must sit flush with no visible gaps.

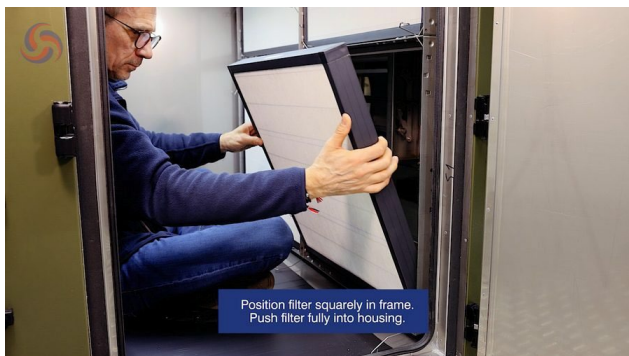


Figure 11. Positioning the new filter squarely in the frame and pushing it fully into the housing.

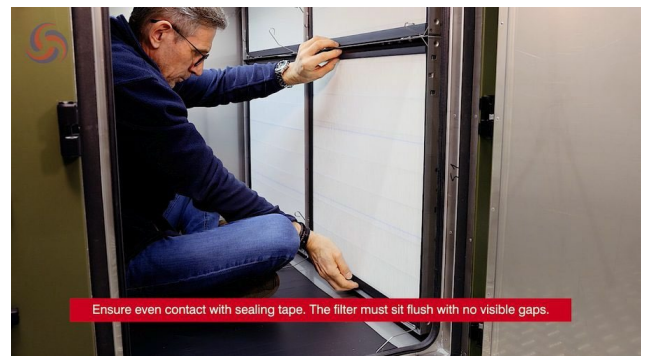


Figure 12. Ensuring even contact with the sealing tape — the filter must sit flush with no visible gaps.

### Step 3 – Re-Fasten Clips

- Rotate C70 fastening pins back into securing position.
- Ensure all clips are firmly engaged.
- Confirm filter cannot move within frame.

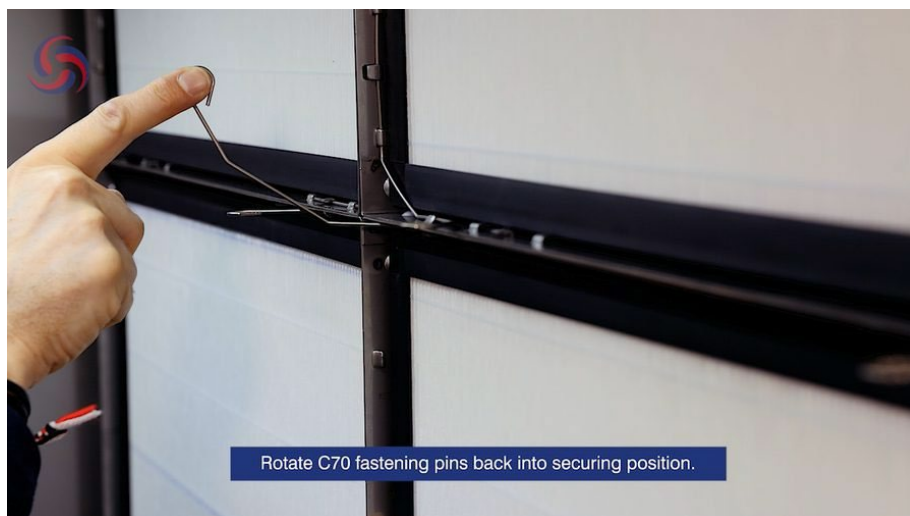


Figure 13. Rotating the C70 fastening pins back into the securing position.

## 6.7 Torch Test (Seal Integrity Check)

Darken the immediate inspection area if possible.

Use a torch around filter perimeter.

### Check for:

- Light penetration
- Visible gaps
- Uneven compression

No light should pass around the filter edges.

Repeat replacement process for each filter in the bank until all dirty filters have been replaced with clean units.



Figure 14. Torch test: using a torch around the filter perimeter to check for light penetration, visible gaps and uneven compression. No light should pass around the filter edges.

## 6.8 Closing the Unit

Conduct final visual inspection.

### Confirm:

- All filters correctly seated.
- All clips fastened.
- No tools left inside.
- Close access door fully.
- Secure all latches evenly.

Door compression must be consistent to maintain air-tightness.



Figure 15. Closing the access door fully and securing all latches evenly. Door compression must be consistent to maintain air-tightness.

## 6.9 Restarting the AHU

- Remove lock-off devices (if applied).
- Restore electrical supply at isolators.
- Exit maintenance mode.
- Allow fans to ramp up gradually.
- Confirm dampers reopen.

## 7. Verification / Functional Test

- Correct filter grade, size, airflow direction and quantity are fitted.
- Filters are seated evenly in the frames and C70 clips or retaining devices are secure.
- Seals are continuous and undamaged.
- Pressure indication or filter status is reasonable after restart.
- Filter airflow direction arrows are correct and no bypass path is visible.

### Additional Verification Notes

- Observe panel filter Magnehelic gauge.
- Confirm pressure reading returns to clean resistance range (green zone).
- Compare against baseline commissioning value if available.

A clean filter bank should show significantly reduced differential pressure compared to pre-change reading.

## 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.
- Replacement filters do not match the certified drawing or spares information.
- Filter frame, retaining clip or seal damage prevents proper sealing.
- Airflow cannot be stopped safely before access.
- Filter media condition, frame damage or contamination presents a hygiene risk outside routine replacement.

## 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.

## 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.

- Filter type and quantity recorded
- Filter frame and seal condition checked
- Used filters disposed of correctly
- Post-change check completed

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

- Fans isolated before access
- All dirty filters removed
- Neoprene seals inspected/replaced if required
- Correct ePM filters installed
- Clips secured
- Torch test completed
- Door latched and sealed
- System restarted
- Pressure reading in green zone

## 13. Learning Outcome

After completing this guide, the user should be able to complete or review Filter Replacement – Front Withdrawal using the correct AHU information, with clear safety controls, defined verification, completion records and escalation criteria.