



# Fan Replacement Timed 20 Minute Procedure

**How To Guides**



# Fan Replacement Timed 20 Minute Procedure



Figure 1. Typical ECE air handling unit with twin EC plug fans. Where one fan fails, the EasyShift rail system enables rapid removal and installation of the replacement assembly while the second fan maintains airflow.

Video Duration: 15 minutes 01 seconds

Applies to: Twin EC Plug Fans with EasyShift / Rail System & Electrical Plug Connections

Document Status: Controlled technical instruction

## 1. Purpose

This procedure describes the safe and efficient replacement of a failed EC fan assembly using the integrated EasyShift / sliding rail system.

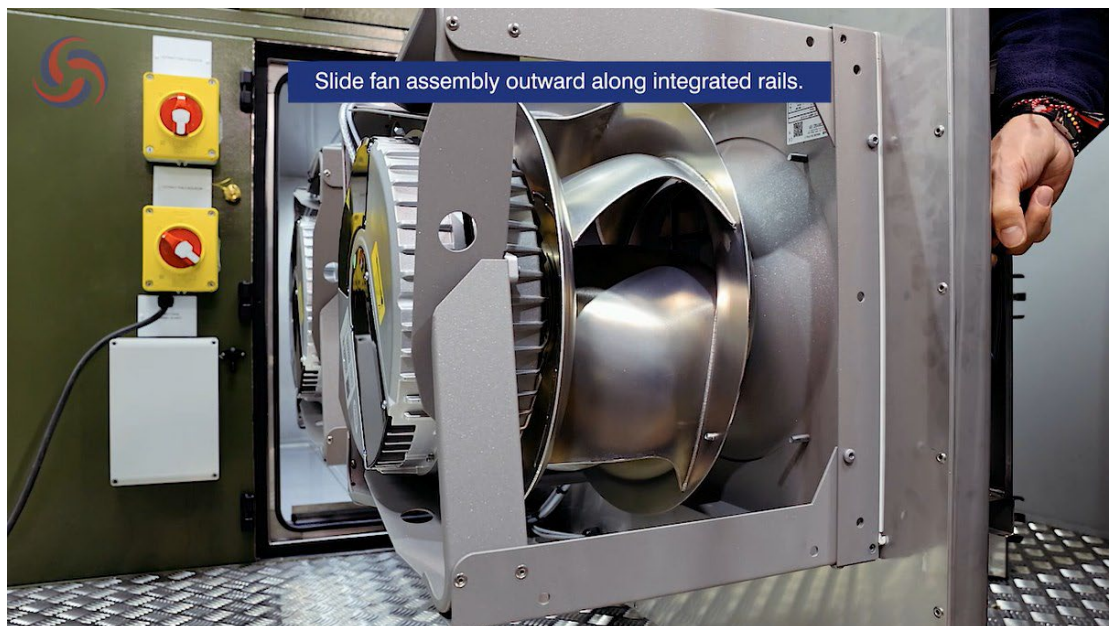


Figure 2. Sliding fan assembly outward using the EasyShift / sliding rail system

## 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.



Figure 3. Site personnel in PPE reviewing the certified drawing. Confirm AHU identity, asset tag and document revision before opening any access door.

### 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.

#### 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 the relevant fan supply and apply lock-off/tag-out where required by site procedure.

Do not open AHU access doors while fans are rotating.

- Electrical plug/socket disconnection, reconnection and any electrical testing must be carried out by competent and authorised personnel using the AHU wiring information and fan manufacturer data where applicable.
- Use suitable PPE, manual-handling controls and lifting aids for the fan assembly being removed, 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 fan assembly or plug/socket 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 4. Asset Tag plate carrying the unique 18-digit reference number used to retrieve AHU technical information from the ECE Client Portal.

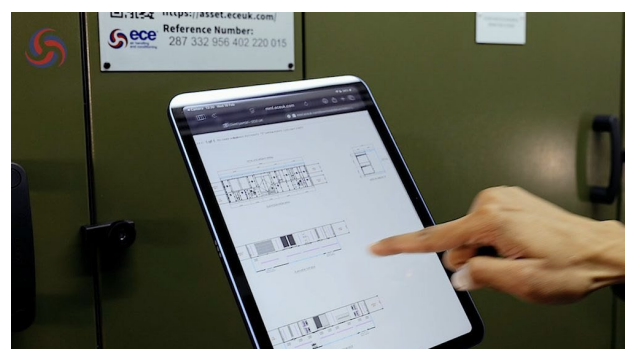


Figure 4b. AHU technical information opened on a device via the Asset Tag link, used to confirm AHU reference, drawing revision and fan information before starting work.

## 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
- Correct replacement EC fan assembly confirmed from AHU asset information
- Fan access tools and lifting/manual handling aid where required
- Lock-off/tag-out equipment
- Electrical plug/socket inspection method

## 6. Procedure

### The design allows:

- System continuity during single fan failure
- Controlled shutdown via maintenance mode
- Safe isolation and removal using sliding rails
- Rapid installation of spare fan assembly
- Restoration to dual-fan duty sharing

Target completion time: ≤ 20 minutes

### 6.1 System Behaviour During Fan Failure

#### When one EC fan fails:

- Fault is detected by controls.
- Remaining EC fan automatically ramps up to maintain required airflow.
- System remains operational (subject to duty limits).
- Fault alarm is generated at BMS / controller.

No manual intervention is required for initial airflow continuity.



Figure 5. AHU controller status indicators showing fan and AHU operational state.

#### Before accessing the fan compartment:

- Notify relevant personnel of maintenance activity.
- Confirm replacement fan assembly is available and compatible.
- Select Maintenance Mode via control panel or BMS:
- Remaining operational fan ramps down gradually.
- Supply and extract dampers close (plenum made safe).
- Confirm airflow has stopped.

- Isolate fans electrically:
- Turn local fan isolators to OFF.
- Verify isolation.
- Apply lock-off/tag-out if site procedure requires.

Do not open access doors while fans are rotating.



Figure 6. Turning the local fan isolator to OFF before opening the fan compartment. Verify isolation and apply lock-off/tag-out if required.

## 6.2 Accessing the Fan Compartment

- Release door latches.
- Open access door fully.
- Confirm fans are stationary.
- Remove internal door guard / safety mesh where fitted.
- Inspect internal wiring and drag chain routing.

Ensure working area is clear before sliding assembly.



Figure 7. Releasing the door latches and opening the access door fully to reach the fan compartment.



Figure 8. Confirming the fans are stationary before proceeding.

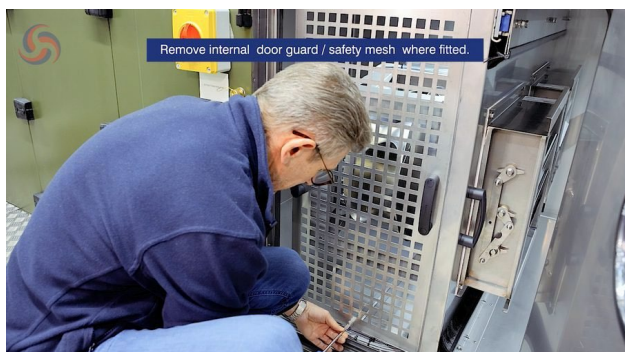


Figure 9. Removing the internal door guard / safety mesh where fitted.

## 6.3 Sliding Fan Assembly Out

- Release retaining bolts or locking brackets securing fan frame.
- Support frame evenly.
- Slide fan assembly outward along integrated rails.
- Allow assembly to extend fully to service position.

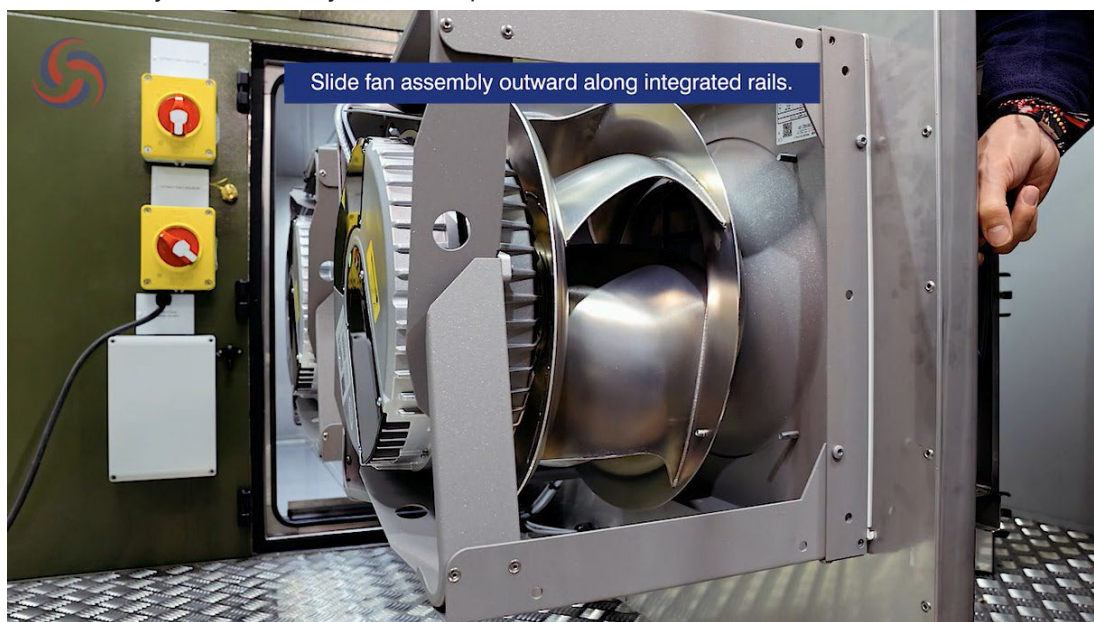


Figure 10. Sliding fan assembly outward using the EasyShift / sliding rail system

### The drag chain system will:

- Support power and control cabling.
- Prevent strain on connectors.

Do not force the rail system. Movement should be smooth and level.



Figure 11. Supporting the weight of the fan after the assembly is slid outward along the EasyShift rails.



Figure 12. Fan assembly extended fully to the service position. The drag chain supports power and control cabling.

## 6.4 Disconnecting and Removing Faulty Fan

- Identify faulty fan (labelled e.g., SF1 / SF2).
- Disconnect electrical plug/socket connection.
- Secure loose cable away from moving components.
- Remove mounting bolts securing fan to support frame.
- Lift and remove faulty fan from frame.

Observe safe manual handling practices.

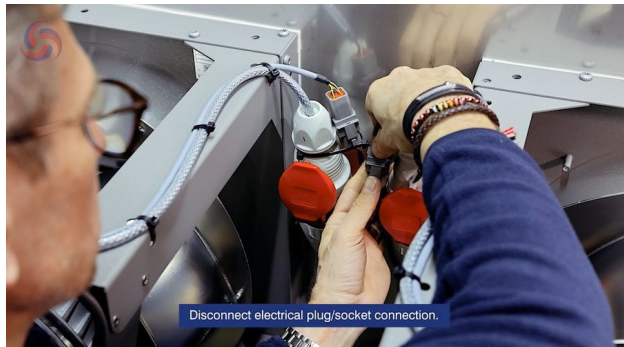


Figure 13. Disconnecting the electrical plug/socket connection from the faulty fan.



Figure 14. Removing the mounting bolts securing the fan to the support frame.



Figure 15. Lifting and removing the faulty fan from the frame. Observe safe manual handling practices.

## 6.5 Preparing Spare Fan

Spare fan should be:

- Stored in protected area.
- Periodically rotated if required by manufacturer.
- Remove spare fan from storage rack.
- Inspect for transit damage.
- Remove mounting bolts securing spare to storage bracket.
- Disconnect storage securing restraints if fitted.



Figure 16. Spare EC plug fan stored on the wall-mounted storage bracket inside the plant room.



Figure 17. Removing the mounting bolts securing the spare fan to its storage bracket.

## 6.6 Installing Replacement Fan

- Position replacement fan into support frame.
- Align mounting holes precisely.
- Insert and tighten fixing bolts evenly.
- Reconnect electrical plug/socket.
- Ensure cable routing follows original path.
- Confirm drag chain moves freely and cables are not twisted.

Check that fan impeller rotates freely by hand.



Figure 18. Positioning the replacement fan into the support frame and aligning the mounting holes.



Figure 19. Inserting and tightening the fixing bolts evenly.



Figure 20. Reconnecting the electrical plug/socket. Ensure the cable routing follows the original path.

## 6.7 Returning Assembly to Operating Position

- Slide complete fan assembly back into plenum along rails.
- Ensure frame is fully seated.
- Re-secure locking bolts or brackets.
- Refit safety guard or mesh panel.
- Inspect door seals and internal brush strips.

Do not close door until assembly is fully secured.



Figure 21. Sliding the complete fan assembly back into the plenum along the rails. Ensure the frame is fully seated.

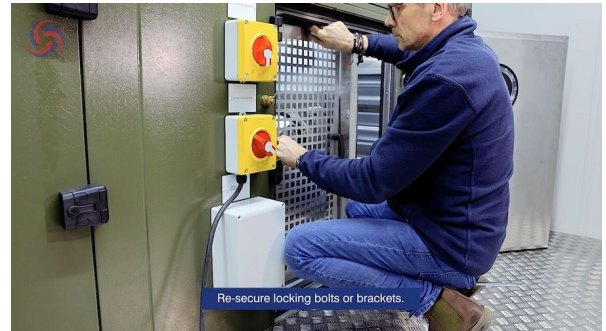


Figure 22. Re-securing the internal door guard / safety mesh where fitted.

## 6.8 Restoring System Operation

- Close and latch access door securely.
- Remove lock-off devices if applied.
- Turn fan isolators back to ON.
- Exit maintenance mode via controller.
- System sequence:
  - Dampers reopen.
  - One fan ramps up.
  - Second fan ramps up.
  - Both fans share duty at balanced speed.

Monitor current draw and airflow setpoint stabilisation.



Figure 23. Closing and latching the access door securely once the fan assembly is fully secured.



Figure 24. Turning the fan isolators back to ON and exiting maintenance mode to restore normal duty.

## Confirm:

- No vibration or abnormal noise.
- Both fans display normal status.
- No active fault alarms.
- Airflow and pressure values return to setpoint.
- BMS confirms healthy feedback from both fans.

Record replacement in maintenance log.

## 6.9 Expected Timeline (Best Practice)

Stage	Target Time
Isolation & access	3-5 mins
Slide out & remove faulty fan	5 mins
Install spare fan	5-7 mins
Reassemble & restart	3-5 mins
Total	≤ 20 mins

## 6.10 Operational Design Advantage

This twin EC fan configuration ensures:

- Automatic redundancy
- Reduced downtime
- Rapid field replacement
- Minimal airflow interruption

Plug-and-play electrical reconnection

## 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.
- Failed fan is removed without damage to the rail system, plug/socket, guards or adjacent components.
- Replacement fan runs correctly and duty sharing is restored.

## 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.
- The remaining fan cannot maintain a safe or acceptable duty while the failed fan is isolated.
- The replacement fan assembly, plug/socket or rail arrangement does not match the installed fan.

## 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.

- 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. Learning Outcome

After completing this guide, the user should be able to complete or review Fan Replacement (Timed – 20 Minute Procedure) using the correct AHU information, with clear safety controls, defined verification, completion records and escalation criteria.