



Checking Fan Rotation Direction

How To Guides





Checking Fan Rotation Direction



Figure 1. Typical ECE air handling unit with EC plug fan. Correct fan rotation direction is critical to deliver designed airflow performance and protect the motor.

Video Duration: 4 minutes 53 seconds

Applies to: EC Plug Fans / Centrifugal Fans Installed Within AHU Fan Section

Document Status: Controlled technical instruction

1. Purpose

This booklet accompanies the video demonstrating how to visually verify correct fan rotation direction and airflow alignment using the manufacturer's airflow arrow indicator.

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 fan type, airflow direction and wiring before any rotation check.

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.
- Fan rotation checks must be carried out by competent personnel who understand the AHU airflow direction, fan type, fan manufacturer data and applicable control method.
- Any phase change, wiring alteration or electrical corrective action must be carried out by electrically competent and authorised personnel.
- Stop and escalate if safe isolation cannot be confirmed, the fan airflow/rotation direction cannot be verified, or the correction method is unclear.

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.

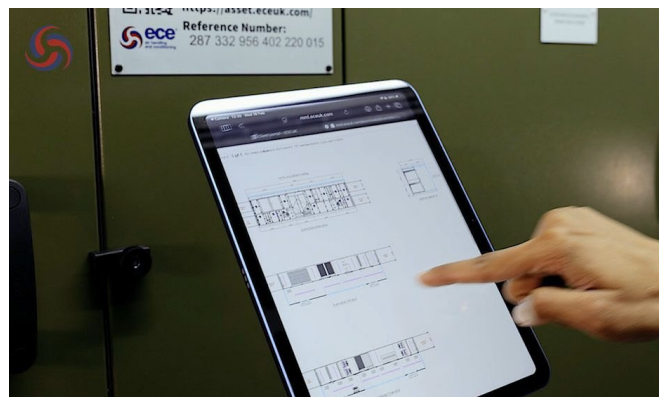


Figure 3b. AHU technical information opened on a device via the Asset Tag link, used to confirm AHU reference, drawing revision and fan information before starting work.

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
- HMI or controller access
- Fan rotation/airflow visual confirmation method
- Electrical test support where phase or configuration changes are required

6. Procedure

Correct rotation is critical to ensure:

- Designed airflow performance
- Energy efficiency
- Motor protection
- Compliance with commissioning requirements

Before accessing the fan section:

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

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

6.1 Accessing the Fan Section

- Release the access door latches.
- Open the fan section door fully.
- Confirm fan is stationary.

6.2 Withdrawing the Fan Diaphragm Plate

The fan assembly might be mounted on a sliding diaphragm plate. If not please continue from step 4.

- Carefully pull the diaphragm plate outward using the integrated handle.
- The drag chain system will extend automatically to support electrical cables.
- Withdraw only to the safe service position.
- Ensure the plate is stable before proceeding.

Do not strain or twist the drag chain cables.



Figure 4. Carefully pulling the diaphragm plate outward using the integrated handle — the drag chain extends to support the electrical cables.

6.3 Identify the Correct Direction of Rotation

Before re-energising the fan:

- Locate the manufacturer's airflow direction arrow on the fan casing.
- Identify the arrow indicating airflow direction.
- Observe the impeller blade curvature.



Figure 5. Locating the manufacturer's airflow direction arrow on the fan casing.



Figure 6. Close-up of the airflow direction arrow used to determine the correct impeller rotation direction.

Determine:

- The direction the impeller must rotate to produce airflow in the direction of the arrow.
- Whether rotation should be clockwise (CW) or counter-clockwise (CCW) when viewed from the access side.

This establishes the correct reference direction.

6.4 Return the Diaphragm Plate to Operating Position

- Carefully slide the diaphragm plate back into the fan section.
- Ensure it seats fully into its housing.
- Confirm drag chain is correctly aligned.
- Close and secure the access door.

Never run the fan with the diaphragm plate partially extended.



Figure 7. Sliding the diaphragm plate back into the fan section and seating it fully before closing the access door.

6.5 Running the Fan at Reduced Speed

- Turn on the control panel.
- Using the controller, run the fan at 30% speed.
- Allow the fan to stabilise at low speed.

Running at reduced speed allows safe visual confirmation.

Key Visual Checks:

- The impeller rotates in the expected direction.
- Airflow arrow and blade rotation are aligned.
- No abnormal vibration.
- No scraping or unusual noise.

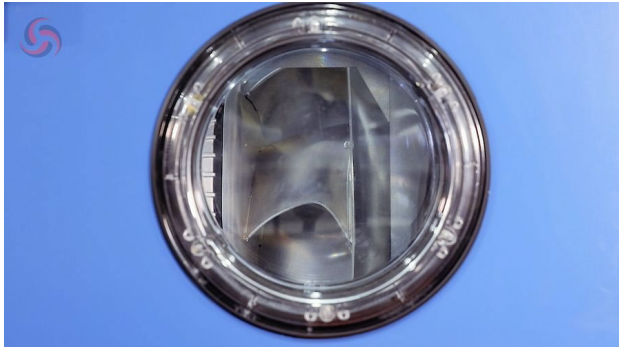


Figure 8. Viewing the fan through the inspection view port — impeller stationary before rotation check.



Figure 9. Impeller rotating at reduced speed — observe rotation direction matches the airflow arrow identified at Step 4.

6.6 Correct vs Incorrect Rotation

Correct Rotation:

- Fan rotates in the direction matching the airflow arrow.
- Air moves in the intended direction.
- Stable operation.

Incorrect Rotation:

- Impeller rotates opposite to airflow arrow.
- Reduced airflow.
- Possible motor overload.
- Inefficient operation.

If incorrect rotation is observed:

- Stop the fan immediately.
- Isolate the unit.
- Check phase wiring (for three-phase motors).
- Confirm control configuration (for EC fans).

6.7 Final Confirmation

After confirming correct rotation:

- Stop the fan.
- Return speed control to automatic mode.
- Exit Maintenance Mode.
- Restore normal operating parameters.

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.
- Rotation direction, airflow direction, running status, current/noise/vibration and fault status are checked.

Additional Verification Notes

- Observe the fan through the inspection view port.
- Watch the rotation of the impeller blades.
- Confirm the direction of rotation matches the direction identified in Step 4.

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.
- Fan rotation or airflow direction is incorrect after energisation.
- Abnormal noise, vibration, current or fault indication is present.

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. Task-Specific Completion Checks

- AHU isolated before access
- Diaphragm plate withdrawn safely
- Airflow arrow identified
- Correct rotation direction determined
- Diaphragm plate refitted
- Fan run at 30% speed
- Rotation confirmed via view port
- Matches airflow arrow
- No abnormal vibration or noise

13. Learning Outcome

After completing this guide, the user should be able to complete or review Checking Fan Rotation Direction using the correct AHU information, with clear safety controls, defined verification, completion records and escalation criteria.