



Recalibrating a Magnehelic Pressure Gauge

How To Guides





Recalibrating a Magnehelic Pressure Gauge



Figure 1. AHU showing multiple Magnehelic differential pressure gauges fitted to monitor filter pressure drop across the unit.

Video Duration: 4 minutes 50 seconds

Applies to: Magnehelic differential pressure gauges used to monitor filter pressure drop within the AHU filter section.

Document Status: Controlled technical instruction

1. Purpose

This guide shows how to check and recalibrate a Magnehelic gauge and confirm the pressure tubes are connected correctly so the gauge reads accurately.

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 2. Site personnel reviewing the certified drawing for the AHU before commencing work on the Magnehelic gauge.

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

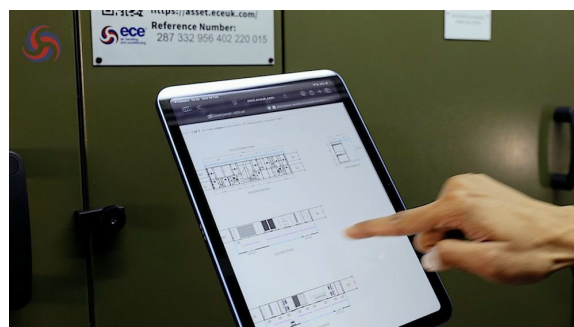


Figure 3b. AHU technical information opened on a device via the Asset Tag link, used to confirm AHU reference, drawing revision and fan information before starting work.

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
- Flathead screwdriver for gauge zero adjustment
- Pressure tube inspection access
- Magnehelic gauge data/scale reference

6. Procedure

6.1 Overview

The Magnehelic gauge measures the pressure drop across the filter.

For the gauge to read correctly:

- It must be set to 0 Pa when no pressure is present
- The pressure tubes must be connected to the correct sides of the filter

6.2 Safe Isolation Before Opening

Before accessing the filter section:

- Switch to Maintenance Mode at the AHU control panel.



Figure 4. AHU on-board controller used to access Maintenance Mode before opening the filter section.

- Confirm the fan has stopped rotating.
- Follow site lock-off/tag-out procedures where required.



Figure 5. Local fan isolator with red lock-off handle, used to electrically isolate the AHU prior to opening the filter section.

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

6.3 Access the Filter Section

- Locate the AHU filter section.
- Open the air-on (upstream) door.
- Open the air-off (downstream) door.

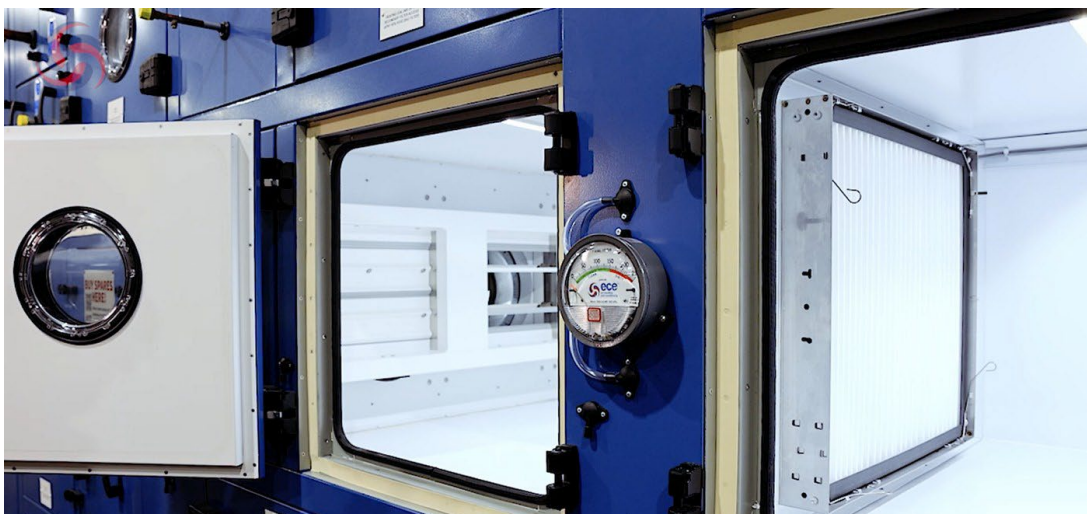


Figure 6. Filter section with both air-on and air-off access doors open, allowing pressure to equalise across the filter for the zero check.

With both doors open, the pressure is equalised and the gauge should read 0 Pa.

6.4 Check the Gauge Zero Position

Observe the Magnehelic gauge.



Figure 7. Magnehelic gauge with both filter doors open; pressure reading should be 0 Pa - if the needle is not at zero, recalibration is required.

- The needle should read 0 Pa

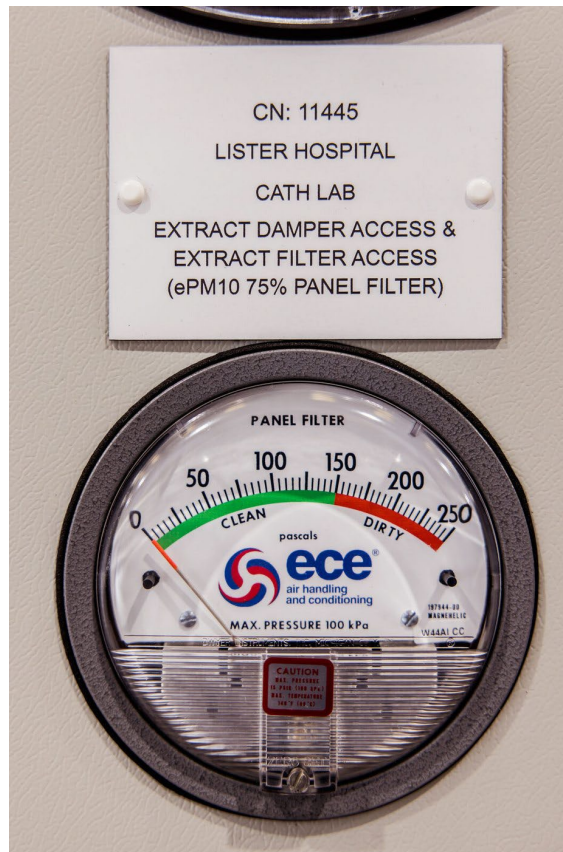


Figure 8. Magnehelic differential pressure gauge mounted on the AHU panel with its identification label for the relevant filter section.

If it does not, the gauge requires adjustment.

6.5 Adjust the Gauge to Zero

- Locate the zero-adjustment screw on the front of the gauge.
- Using a flathead screwdriver, adjust slowly.
- Set the needle to 0 Pa.



Figure 9. Using a flathead screwdriver to slowly turn the gauge zero-adjustment screw on the front of the Magnehelic gauge.

Do not force the adjustment screw.

6.6 Check the Pressure Tube Connections

Confirm the tubing is connected correctly.



Figure 10. Detail of the Magnehelic gauge showing the two pressure tube connections (high and low) routed to the upstream and downstream tapping points.

The gauge measures pressure before and after the filter:

Location	Description	Magnehelic Port
Dirty side	Before the filter (upstream)	High (+)
Clean side	After the filter (downstream)	Low (-)

This allows the gauge to measure the pressure drop across the filter.

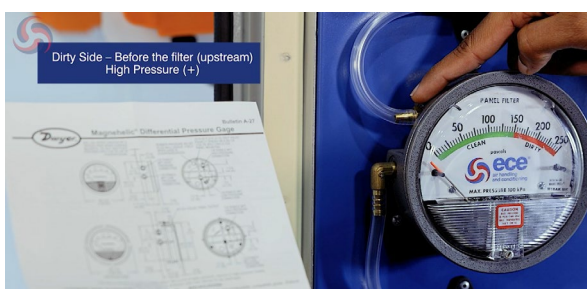


Figure 11. Dirty Side - before the filter (upstream) - connected to the High pressure (+) port of the Magnehelic gauge.

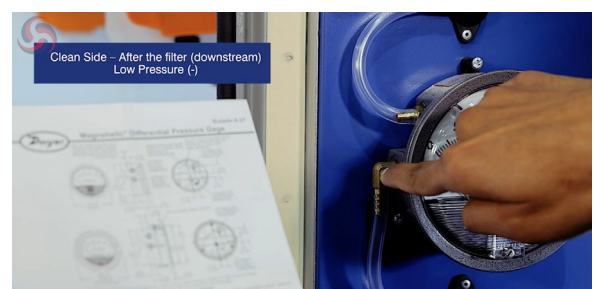


Figure 12. Clean Side - after the filter (downstream) - connected to the Low pressure (-) port of the Magnehelic gauge.

6.7 Following the Tubing

As shown in the video:

- Identify the connections on the Magnehelic gauge
- Follow the tubing to the filter section
- Confirm which side is:
 - Before the filter (dirty side)
 - After the filter (clean side)

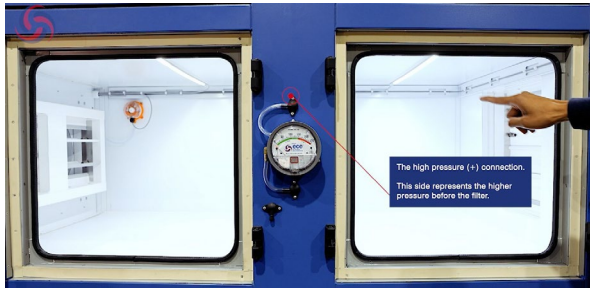


Figure 13. High pressure (+) tube connection between the two filter doors - this side represents the higher pressure before the filter.



Figure 14. Low pressure (-) tube connection between the two filter doors - this side represents the lower pressure after the filter.

6.8 Inspect the Tubing

Check for:

- Loose connections
- Cracked or damaged tubing
- Kinks restricting airflow
- Blocked tapping points



Figure 15. Filter section showing pressure tube tap-off point on the wall adjacent to the installed filter bank.



Figure 16. Alternative view of the filter section showing the tubing route from the tap-off point alongside the filter face.

Any issue may cause incorrect readings.

6.9 Close and Secure the Filter Section

- Close the air-on door
- Close the air-off door
- Ensure all doors are fully latched and sealed

6.10 Restart the AHU

- Turn the AHU back on at the control panel
- Allow the fan to start and stabilise
- Observe the Magnehelic gauge

The gauge should now show the pressure drop across the filter.

Typical indication:

- Low reading - clean filters
- Higher reading - filters becoming loaded

Confirm:

- Doors are closed and latched
- Tubing connections are correct
- Gauge reading is stable

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.
- Gauge reads 0 Pa with pressure equalised and responds correctly after doors are closed and airflow resumes.

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.
- Gauge cannot be zeroed with pressure equalised.
- High/Low pressure tube routing cannot be confirmed.

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 safely
- Filter section opened
- Gauge checked for zero
- Gauge adjusted to 0 Pa
- Tubing connections verified
- Dirty side connected to High (+)
- Clean side connected to Low (-)
- Tubing inspected
- Doors closed and latched
- AHU restarted
- Gauge reading verified

13. Learning Outcome

After completing this procedure, viewers will understand how to:

- Check that a Magnehelic gauge is correctly zeroed
- Adjust the gauge to 0 Pa where required
- Confirm the pressure tubes are connected to the correct sides of the filter
- Verify that the gauge provides a stable and accurate reading once the AHU is running

14. Photo Credits

Installation, plant-room and portal photographs: (c) Kate Darkins. Filter Image stills: ECE training video. Provided by ECE for use in this instruction booklet.