Residential Equipment Calibration & Field Check Guidance

A reference guide for Retrotec customers and field technicians.

Retrotec • July 2026

Model 5000 Blower Door Fan

Model 340x DucTester Fan

DM32X Manometer

Contents

Overview

This document covers the procedures for calibrating and field-checking three tools you likely use most often: the DM32X gauge, the Model 5000 blower door fan, and the Model 340x DucTester fan. For each tool, you get the calibration interval, the field check processes to run between factory calibrations, and other best practices to ensure your tools are working as intended.

> **Calibration and field check: two different things.**
>
> A factory calibration is a lab procedure that checks the device across its ranges, and it should be done every five years for current equipment. A field check is the process you do yourself to determine if your tools are operating as they were when they were last calibrated, usually right before an important test or on a monthly basis. One doesn't replace the other. But the field check is what catches the problems that occur on a job such as blocked, leaking, or pinched tubes.

Calibration accreditation. Every Retrotec fan, blower door, duct tester, and gauge are calibrated in our lab which is accredited to ISO/IEC 17025:2005 by the ANSI-ASQ National Accreditation Board. The pressure and flow standards used in that calibration are traceable to NIST. The equipment meets RESNET and the related standards, including ASTM E779, ISO 9972-2015, and the applicable U.S. state energy codes.

Quick reference: recommended calibration intervals at a glance

Device	Factory calibration interval	How often to field-check
DM32X/DM32 manometer (gauge)	5 years, or sooner if field check shows more than 2% difference between channels	Monthly, or before any important test
Model 5000 blower door fan	5 years, or sooner if a field check shows more than ~10–15% error	Monthly (RESNET wants yearly with records kept); pre-test checks before each use
Model 340x DucTester fan	5 years, or sooner if the system check is out of tolerance	Regularly / before important tests (RESNET wants yearly records for flow devices)

Retrotec recommends a 5-year factory calibration for the fans, the same interval as the gauge. In between, your fan holds its calibration unless something physically damages it. If a field check determines your fan or gauge is no longer working as it did when it was last calibrated, you should send it in immediately for repair. RESNET has a separate requirement: they want documented annual field verification either way. If a jurisdiction or standard you are testing within requires more frequent calibrations, those take precedence over our recommended interval.

DM32X Manometer (Digital Gauge)

A dual-channel digital gauge — it controls the fan and does the math for your leakage results.

Accuracy is ±0.4% of reading (or ±0.07 Pa) at 22°C, and ±0.6% of reading (or ±0.15 Pa) from 0 to 44°C. Gauge errors don't happen often, so when a test goes sideways it's almost never the gauge's calibration. If the issue isn't user error, then the problem likely resides with the tubing. That's the whole reason for the field check below. Any field check procedures, calibration intervals, and other practices stated in this document for the DM32X also apply to the legacy DM32.

Calibration interval & manufacturer recommendation

> **Recommended interval**
>
> Retrotec recommends that gauges be factory calibrated every 5 years. The digital sensors we use today do an excellent job at holding their calibration compared to the analog sensors we used to use. But the interval isn't the main point: You want to know if the gauge is reliable. Sometimes sensors can drift, pressure switches can fail, and air pathways inside can leak or clog. The only way to catch any of these issues is to field-check it regularly.

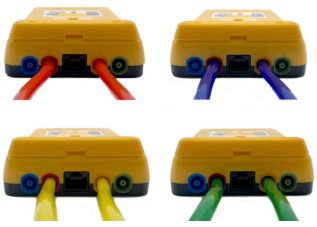
One other thing worth knowing: the lithium-polymer battery is good for about 4 years or 6,000 cycles. Therefore, battery life between gauges can vary depending on how often each one gets deployed to job sites. Once it stops holding a charge, it must go back to the factory to be swapped, which tends to land right around when the gauge is due for recalibration anyway.

Field check procedures for tubing

Check the tubes for blockage, leaks, or pinching, and check the gauge, about once a month or before any important test. It only takes a few seconds. The idea is simple: run one tube between Channel A and Channel B. If both channels read within 2% of each other, the tube and the ports are fine, because it's very unlikely both channels are off by the exact same amount.

Tubing check

1. Set both channels to read pressure in Pa.
2. If a baseline pressure exists under the reading for Ch. A, tap [Bias] → [Clear] → [Clear] to drop any captured baseline. Then tap the back arrow in the upper lefthand corner.
3. Tap [Avg] in the center of the screen → [Time Averaging] and select 5 s. Then tap the back arrow in the upper lefthand corner twice to return to the gauge display.
4. Run a tube between Channel A and Channel B. The yellow and red ports will work fine.
5. Check that the readings are within 2% of each other.
6. Do the same for the other ports: yellow tube from yellow to red; blue from blue to green (that's the negative side); green from green to red (negative against positive).



If the readings match within 2% and hold, the tube is in good shape. Nothing is blocked, and the gauge is almost certainly accurate. If the pressure drops to zero in about 10 seconds, something is leaking. Swap the tube or move the same tube to a different port and see whether it is the tube or the gauge. If the tube end is chewed up or frayed, cut 1/8 inch off and try again.

Cross-port check (checking the gauge itself)

Once you know the tubes are in good condition, check the gauge.

1. Set both channels to Pascals (Pa).
2. Connect Channel A's Input port to Channel B's Input port with a tube you know is in working condition. Both should read within 2%.
3. Disconnect, connect the two Reference ports with the same tube, and check again; both should be within 2%.

The same process works across two gauges: tie the matching ports together, and if one gauge is known to be good, the other should land within 2% of it. If the channels keep disagreeing no matter which tube you use, test against a second gauge before you send anything back.

Documenting the field check: the Gauge Field Check Tracker

Retrotec has a Gauge Field Calibration Checker spreadsheet that walks you through the DM32X cross-port check and does the pass/fail for you. It's the easiest way to prove the gauge got checked, which is handy for whatever records your program wants. You punch in the two channel readings for each step; the sheet works out the difference and marks PASS or FAIL against the 2% line.

What the tracker records

Calibration information is recorded at the top, including:

- Test date and the date of the last factory calibration
- Gauge model and serial number
- Which Retrotec fan series you're on (that sets which tube colors it asks for)
- Technician and company

The four-step check

For each step, connect a tube between the two ports that the sheet calls for, then type in what Channel A and Channel B read. Steps 1 through 3 compare the two channels against each other, which confirms the tubes are clear, and the positive and negative ports agree. Step 4 is the zero check: leave every tube disconnected, and both channels should read near zero.

The tube colors listed below are for the standard fans. If you select a 200, 300, 400, or 3000SR fan at the top of the sheet, it automatically asks for green and blue tubes instead of yellow and red.

Step	Connect tube from → to	Reads	Pass criterion
1	Blue port → Yellow port	Channel A vs Channel B pressure	Channels agree within ~2%
2	Red port → Green port	Channel A vs Channel B pressure	Channels agree within ~2%
3	Red port → Green port (2nd tube)	Channel A vs Channel B pressure	Channels agree within ~2%
4	No tubes connected	Channel A vs Channel B (zero)	Both near zero

> **How it decides**
>
> For each step, the sheet works out how far each channel sits from the average of the two. A step passes when that's under about 1% per channel (so the channels are within roughly 2% of each other), or the absolute half-difference is under 0.5 Pa. The gauge only “PASSES the field calibration check” if all four steps pass. Fail, and it tells you to run Steps 1–4 again; still fail, and it points you to support@retrotec.com.

Why 2%? The DM32X only needs recalibration once its two channels disagree by 2% or more. For both channels to drift the same amount in the same direction is highly unlikely, so when they agree, the gauge is almost certainly reading true. Logging passing checks in the tracker gives you a dated record tied to the gauge's serial number, so you can confirm accuracy anytime without waiting on the 5-year factory interval.

Model 5000 Blower Door Fan

A calibrated blower door fan for measuring whole-house airflow.

The Model 5000 reads from approximately 300 to 5,500 CFM at ±3%, which meets the California Energy Commission and RESNET.

Calibration interval & manufacturer recommendation

A Retrotec door fan keeps its calibration unless something physically moves, leaks, or clogs. This includes the motor and blades shifting in the housing, a damaged nacelle, or a leak or clog in the sensor or the tubing back to the pressure tap.

Retrotec recommends a 5-year factory calibration for the fan, matching the gauge interval. However, you can field check between calibrations. A full factory calibration runs the fan at the top, middle, and bottom of every range, and it isn't cheap. The rig to do it right costs north of $100,000. **Rule of thumb:** if a field check shows the fan is off by more than about 10 to 15%, don't wait for the 5-year mark, send it in. Below that, checking one range regularly is plenty for most work.

> **RESNET requirement**
>
> The manual recommends field-verifying the fan roughly each month. Some programs, RESNET included, want it done yearly with records kept.

Field check procedures

Pre-test checks (before each use)

- Look at the tubes and connections for blockages from water or dust. (The exact tube check is in the gauge manual; see the DM32X section.)
- If there's dust, or the fan's been somewhere dusty or damp, vacuum out the four ports on the nacelle where the tubing connects.
- Power on the fan and check that the LED comes on. No light means no power to the motor, so check the outlet.
- **Important note:** gypsum dust from sheetrock sanding wears the bearings out early and can plug the pressure ports, which kills your pressure and flow readings.

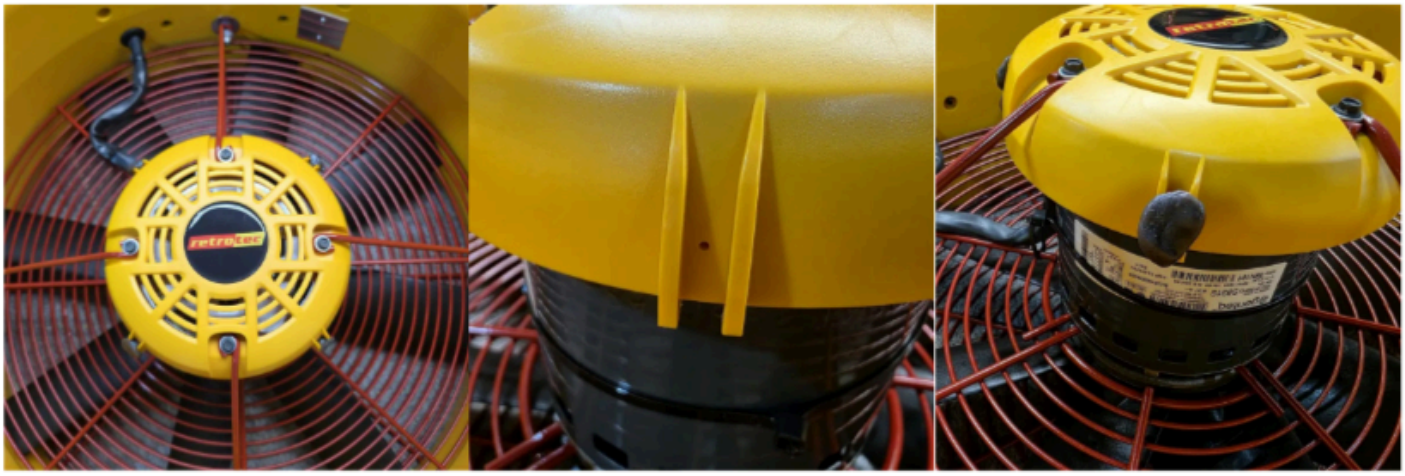
Check motor and fan-blade position

If the motor and blades have shifted in the housing, the calibration goes with them. It's usually easy to spot: the B8 Range Plate won't seat correctly on Range Ring A, or the motor mount looks bent. To check, lay a straight edge across the front of the fan. On the Model 5000 there should be no gap between the straight edge and the decal at the center of the nacelle. Any more than a 1/8” (3 mm) gap and the Open range starts drifting out of spec.

Check for leaks and blockages in fan assembly

The fan has four holes inside the plastic housing on the front. This is where fan pressure is measured. To check them for leaks:

1. Put a piece of tubing on the yellow connector on top of the fan, other end open.
2. Find the four small holes on the yellow nacelle over the motor (top, bottom, left, right) and use Silly Putty to seal them shut. Use Silly Putty only, no other material.
3. Place the other end of the tube to your DM32/X or Solo. Pressure is built inside the tube and will give you a reading on your gauge. It will be + or – depending on which port you put it on. If the reading holds, that means the vacuum holds and the sensor is tight. Give it 5 seconds. If you hear air moving or your reading decreases after a few seconds, something is likely disconnected inside the assembly.
4. Pull the Silly Putty off one hole at a time and make sure you can draw air through each of the four points. As you remove a piece of Silly Putty, the reading should slowly fall to 0 Pa. Do this check for each of the four holes in the nacelle so that each one is independently checked for clogs.



Check for blockages

If you're running a blower door test with everything set up correctly and you are still seeing no flow readings at all, or you fail the fan Field Calibration Plate test, this usually means a blocked tube. If you see a pressure with the tubes connected and the fan off, that's another sign of a blockage in a tube. You can also blow into a tube and listen at each port for a hiss.

Check maximum flow on Open Range

Run the fan at full speed in free air with no back pressure on the Open range and read the fan pressure off the yellow port. It should land within 15% of spec. For 1000/5000 fans that's 142 Pascals at 120 or 240 V. Lower voltage or 50 Hz will read lower.

Check fan-blade clearance

On 1000/5000/6000/7000-series fans you want 1/8” between each blade and the shell.

Monthly field verification (doorway method)

Do this about monthly (yearly with records for RESNET). It's not a calibration of any one range; it just checks whether the pressure pickups are leaking or blocked, which is what usually goes wrong. Run the gauge field check first (see the DM32X section).

1. Cut a 20 × 20-inch hole in a piece of cardboard and put it in the upper part of a doorway, in a room with every supply and return sealed.
2. Set Time Averaging to 10 s and press [@] until “@50.0 Pa” shows.
3. Run a Door Fan test and record the EqLA10 at 50 Pa with the hole open, then again with it sealed.
4. Subtract the first from the second. You want about 400 sq in (at least ±10%, sometimes within 5%), which is roughly 3,100 CFM50.

You can run the same check with the Field Verification Plate made for the Modular Door Panel system.

Most common causes of error (check these first)

The gauges are reliable if the tubes aren't blocked or leaking. Even a 20% gauge error only shows up as about 10% on the flow, so when the error's big, suspect the flow device before the gauge. Start here:

Issue	Typical error
Water drop in the end of a tube	Well over 10%
Leaking tube	5 to 10% (common)
Pinched tube	No limit
Fan misalignment	5% at most

Model 340x DucTester Fan

A calibrated DucTester fan for residential duct systems, in both directions.

The Model 340x ships with a DM32X gauge. It came with the DM32 before the DM32X was released. It measures airtightness in residential duct systems in both directions and comes standard with four range configurations (Open, 102, 74, and 47) to cover everything from tight systems to leaky ones. Smaller ranges are available upon request. It meets ATTMA, CGSB 149.10, and RESNET. Since it uses the same gauge, the gauge field check is the same one covered in the DM32X section.

Calibration interval & manufacturer recommendation

Retrotec recommends a 5-year factory calibration for the DucTester fan, the same as the blower door and the gauge. Similar to our other devices, it should be calibrated sooner if it repeatedly fails the field check. Field checking the fan is what finds any errors. At Retrotec, we recommend field checking your DucTester regularly and before any important test. Gauge errors are usually a few percent; blocked, leaking, or pinched tubes happen more often and can run 10 to 90%. RESNET wants documented field verification of flow devices on its interval.

Field check procedures

Field check the gauge

The gauge check is the same one covered in the DM32X section above: run a single tube between Channel A and Channel B and confirm both channels read the same. Since the DucTester uses the same DM32 or DM32X gauge, follow that procedure exactly, no separate steps here. See “Field check procedures” under the DM32X Manometer section for the full tubing and cross-port check.

Field check the DucTester as a system

This check confirms the DucTester is set up correctly and that, run as a full system with the flex duct, it reads within 10% of true flow. It uses the Field Calibration (flow verification) Plate. That plate is optional; you can cut your own from thin, solid cardboard, with a 4” × 4⅝” square hole (18.6 sq in) in the center and a 1/4-inch tube hole in a far corner. Tape the plate to the Flex Duct Flange and put the blue tube on the pressure pickup (or in the cut hole on a homemade plate).

1. Install the Range 74 Flow Plug and set the gauge to Range 74.
2. Attach the flex duct to the fan outlet to pressurize it. (To check the depressurizing direction, put the flex on the fan inlet.)
3. Stretch the flex duct out to full length. Set Ch. B on the DM32X to CFM.
4. Install the Field Calibration Plate to the clear flange at the other end of the flex. Use grille mask or painters’ tape to attach the plate to the flange. Ensure it is taped so there are no air leaks.
5. Press [Set Pressure] [25] [Set] and the fan controls itself to 25 Pa. Press [@] to show “CFM @25 Pa.”
6. Compare what you read against the flow printed on the plate. The result should come in within 5% of 105 CFM.

This checks the fan and flex duct together, which is where a lot of error hides.

Check for leaks or blockages in fan assembly

The fan has eight small holes inside the red plastic inlet on the front. To check them for leaks:

1. Put a piece of tubing on the yellow connector on the side of the fan with the other end of the tube open for now.
2. Find the eight small holes on the red inlet and use masking or painters' tape to seal them shut.
3. Place the other end of the tube to your DM32/X or Solo. A pressure is built inside the tube and will give you a reading on your gauge. It will be + or – depending on which port you put it on. If the reading holds, the vacuum held and the sensor is tight. Give it 5 seconds. If you hear air moving or your reading decreases after a few seconds, something is likely disconnected inside the assembly.
4. Pull the tape off one hole at a time and make sure you can draw air through each of the eight points. As you remove a piece of tape, the reading should slowly fall to 0 Pa. Do this check for each of the eight holes in the inlet so that each one is independently checked for clogs.

You can also check for leaks where the fan reads ambient pressure. You will find four small holes around the outer edge of the red intake. Since the holes are not on a flat surface, you will use Silly Putty in a similar fashion to checking the nacelle on the blower door. Move your tube from the yellow port on the fan to the green port and repeat the process.

Summary

The takeaway is the same for all three tools: Factory calibration runs on a 5-year interval across the board, covering the DM32X gauge and both fans, with a device going back to Retrotec sooner if a field check notes an issue. Making a field check a part of your regular practice can prevent a lot of wasted time and frustration in the field. Field checks catch the blocked, leaking, and pinched tubes behind most big errors, and those are exactly the problems a factory calibration never sees. Programs that require documented field verification, RESNET among them, are asking for precisely this, and the Gauge Field Check Tracker makes those records easy to keep.