Why Are RTX 5090 Missing GPU Memory Chips And How To Check If The Graphics Card Is Defective Tampered Or Affected By Manufacturing Issues

By Vipin PG | Published March 31, 2026 | Updated March 31, 2026 | Topic: Solution | 5 min read

Quick answer

A small batch of early RTX 5090, 5090D, and 5070 Ti cards left the factory with fewer ROPs than specified (168 instead of 176), which Nvidia says affected under 0.5% of cards and reduced gaming performance by roughly 4%.

Here’s what’s actually going on - there are two separate issues getting mixed up in online discussions, and they’re not the same thing at all.

- Official manufacturing issue: Nvidia came out and said that a small batch of early GeForce RTX 5090, 5090D, and 5070 Ti cards left the factory with fewer ROPs than they should have had . This is a silicon defect baked into the GPU itself, not a situation where physical memory chips are literally missing from the circuit board. According to Nvidia, this affected under 0.5% of those cards, knocked gaming performance down by roughly 4% on average , left AI and compute tasks untouched , and has since been fixed in production.
- Tampering / scam / parts theft: Then there are completely different reports of RTX 5090 boards showing up with the GPU chip and GDDR7 memory modules physically ripped off the board . That’s not a factory mistake. That’s someone opening the card and stealing parts, or swapping hardware somewhere between the warehouse and your doorstep.

So when you see people saying RTX 5090s are "missing memory chips," what they usually mean is:

- Missing ROPs = the confirmed manufacturing defect Nvidia acknowledged.
- Missing physical memory packages on the board = almost certainly tampered, swapped, or seriously damaged hardware.

How to check whether your RTX 5090 is defective, tampered, or affected by the known manufacturing issue

1) Know what the card is supposed to look like spec-wise

An RTX 5090 should come with 32 GB of GDDR7 memory running on a 512-bit memory bus. Nvidia’s Blackwell architecture documentation confirms the full GB202 chip uses a 512-bit interface with sixteen 32-bit memory controllers, and the official GeForce spec sheets list the RTX 5090 as a 32 GB GDDR7 card.

2) Check the card in software before you crack it open

1. Install the card like normal.
2. Grab the latest Nvidia driver straight from Nvidia.
3. Fire up a hardware ID tool like GPU-Z or use a system utility you trust.

4. Make sure you see:
    - Name: GeForce RTX 5090
    - Memory size: 32 GB
    - Memory type: GDDR7
    - Bus width: 512-bit
    - ROP count: 176

If you're seeing less than 32 GB or a narrower memory bus, that's a red flag pointing to either a hardware problem or tampering. If it's showing 168 ROPs instead of 176, that lines up with the known Nvidia manufacturing issue some early cards had.

3) Run a quick sanity check

1. Boot into Windows.
2. Open Device Manager and make sure there's no warning icon next to the GPU.
3. Run a couple of quick GPU benchmarks or fire up a game.
4. Keep an eye out for:
    - No display output at all
    - Driver crashes happening over and over
    - Visual glitches, corruption, or black screens
    - Benchmark scores way below what an RTX 5090 should be hitting

A card that's had memory chips or the GPU physically removed will usually fail way more dramatically than one with the missing-ROP issue. The missing-ROP cards can still run, just with a bit less gaming performance. Nvidia said the average hit was around 4%.

4) Look over the outside for signs someone's been messing with it

1. Check if the antistatic bag, box seals, and serial stickers look legit and match up.
2. Take a close look at the screws on the cooler and backplate.
3. Watch for:
    - Stripped or rounded-off screws
    - Scratches around screw holes or shroud edges
    - Broken warranty stickers
    - Worn PCIe connector on what's supposed to be a brand-new card
    - Residue, flux, tool marks, or fingerprints

The tampered RTX 5090 cases people have reported showed exactly these kinds of warning signs - stripped screws, evidence someone had already taken it apart.

5) Only pop the cooler off if you're okay with the warranty risk

> Quote: Worth mentioning: Opening the card might complicate warranty claims depending on where you are and who you bought from. If the card is new and something feels off, you're usually better off documenting everything and starting an RMA right away.

1. Take photos of the sealed box, labels, serial numbers, and every side of the card before you touch anything.
2. If you do pull the cooler off, check the PCB around where the GPU sits.
3. A normal RTX 5090 board should have the GPU package mounted and the GDDR7 memory chips sitting around it.

4. If the GPU or memory chips are straight-up missing, the card has been tampered with or gutted - this isn't just Nvidia's missing-ROP thing. People have already documented this exact scenario.

6) Cross-check the serial number and where you bought it

1. Make sure the serial number on the card matches the one on the box.
2. Think about whether you bought from:
   - The manufacturer directly
   - A big authorized retailer
   - A marketplace seller or third-party refurbisher
3. If you went through a marketplace, save the listing, seller name, invoice, and any delivery photos.

Tampered cards have shown up even when the outer packaging looked fine, so the purchase trail matters.

What the results mean

If the card shows 32 GB, 512-bit, and 176 ROPs

Your card is not affected by the known missing-ROP defect. If it's still crashing or showing visual artifacts, the problem is something else - driver issue, power supply, thermals, board fault, or some other hardware defect.

If the card shows 32 GB and 512-bit, but only 168 ROPs

This matches the known Nvidia manufacturing issue. Get in touch with the board partner or retailer and ask for a replacement. Nvidia publicly said affected customers should reach out to the board manufacturer for a swap.

If the card shows less than 32 GB VRAM, the wrong bus width, or won't even initialize

That does not match the published Nvidia missing-ROP issue. Treat it as a serious hardware defect, wrong-board situation, or tampering case.

If you find missing physical chips or obvious rework marks

The card is almost definitely tampered with, swapped, or damaged way outside normal manufacturing tolerance. Stop testing it. Start a refund, replacement, or fraud claim right now.

What to do next

1. Don't keep stress-testing a card that looks suspicious.
2. Take photos and video of the box, seals, serial numbers, card condition, GPU-Z readout, and any weird benchmark results.
3. Contact the seller first if you're still in the return window.
4. If the seller won't help or the card is covered by a board partner warranty, contact the manufacturer for RMA .
5. Be clear about whether the issue is:
   - Known missing-ROP manufacturing defect , or
   - Suspected tampering / missing GPU or memory chips

Why this happened

The confusion exists because two unrelated problems popped up around the same product launch. Nvidia confirmed a real but limited factory problem involving missing ROPs on some early RTX 5090-family cards. At the same time, high resale prices and tight supply created a perfect storm for fraud, parts theft, and hardware swaps, which led to reports of boards showing up with the GPU or memory chips physically removed. Those physical-removal cases aren’t a normal "bad batch" situation - they’re consistent with tampering or supply-chain abuse.

Fastest practical check

1. Install the card.
2. Open GPU-Z.
3. Verify 32 GB , 512-bit , and 176 ROPs .
4. If the card is new, also check screws, seals, and serial numbers.
5. If anything looks off, stop and start the return or RMA process with full photo evidence.