

AI-04658 Problem-ML350 Intermittent No Start

Repair Video <https://youtu.be/eXYMEEFIRL0?si=bKODDjMXwkpj50gv>

Intermittent ignition key will not turn on 2006 ML350, help me diagnose and repair the issue without breaking the bank. I tried another key fob and similar symptoms. The car starts healthy and battery seems to be in good health.

Yes. Given that **both key fobs behave similarly**, the engine starts normally when the system works, and the battery appears healthy, I would **not buy another key** and I would **not start replacing expensive parts randomly**.

For a 2006 ML350 (W164), the **Electronic Ignition Switch (EIS/EZS)** moves very high on the suspect list. The W164 is known for intermittent EIS problems that can progress from occasional failure to a permanent no-start. ([Auto Module Lab](#))

First: tell me exactly what happens

When the problem occurs, try this and observe:

1. Insert the key.
2. **Does the key physically go fully into the slot?**
3. Does the instrument cluster/warning lights come alive?
4. Can you rotate the key at all?
5. Do you hear a **click/buzz from the steering column** as the steering lock releases?
6. Does the radio/dashboard wake up?
7. Does the key eventually work if you remove it and reinsert it several times?
8. Does gently moving the steering wheel left/right while inserting the key make any difference?

Those observations will let us distinguish **EIS vs. electronic steering lock (ESL) vs. power/ground vs. key**.

My preliminary diagnosis

EIS/EZS	 High	Diagnose/repair original
ESL steering lock	 Moderate	Diagnose before replacing
Suspect	Probability from your description	Cost-saving approach
Battery/terminals/ground	 Low-moderate	Verify with voltage-drop test
Fuse/power supply	 Possible	Check before modules
Starter	 Low	Key itself isn't authorizing ignition
Transmission selector/interlock	 Low	Consider only if specific symptoms
ECU	 Very low initially	Don't replace without evidence

The important distinction is that the W164 doesn't use a conventional mechanical ignition switch. The **EIS is an electronic security/authorization module**. It communicates with the key, steering lock and engine electronics before allowing the vehicle to start. ([Auto Module Lab](#))

A particularly important clue

If the symptom is:

Insert key → absolutely nothing happens → key won't turn

that is a very strong EIS/EZS clue.

If instead:

Insert key → dash comes alive → steering lock doesn't release → key won't turn

then **ESL becomes much more interesting.**

Before spending \$500+, do these tests

Test 1 — Battery under load

Don't rely only on "battery seems good."

With a multimeter:

Engine OFF:

~12.6 V = excellent

~12.4 V = acceptable

<12.2 V = investigate

Then monitor voltage while attempting to start.

Also check:

- battery terminals
- chassis ground
- engine ground
- positive cable connections

A W164 owner troubleshooting a similar no-start specifically reported that battery/ground checks were important before condemning the EIS. ([MBWorld](#))

Test 2 — Compare the two keys

You already did something very useful.

If:

Key #1 → intermittent

and

Key #2 → same intermittent behavior

then the probability shifts heavily away from the key and toward something **common to both keys**, particularly the EIS.

Don't buy a third key yet.

Test 3 — Watch the cluster

This is probably the most useful test you can do yourself.

When the failure occurs:

A. Insert key → cluster remains completely dead

→ EIS/power supply becomes highly suspicious.

B. Insert key → cluster wakes up → key won't rotate

→ EIS/ESL authorization problem.

C. Key rotates → cluster works → no crank

→ broaden diagnosis to ESL/EIS authorization, starter relay, starter, transmission authorization, etc.

D. Steering wheel lock makes an unusual clicking/buzzing sound

→ pay particular attention to ESL.

The diagnostic tool I'd use

A basic OBD-II scanner may not be enough.

You ideally want a scanner capable of communicating with the Mercedes **EIS/EZS, ESL and DAS/drive authorization system**.

A proper Mercedes diagnostic system can determine whether the key is being recognized and whether the EIS is communicating with the steering lock. ([Mercedes Medic](#))

That's important because **a generic "no codes" scan does not prove the EIS is good**.

If the EIS is confirmed bad

This is where you can save a lot of money.

DON'T immediately buy a used EIS from eBay.

A used EIS generally isn't plug-and-play because it contains vehicle-specific security information. It needs to be repaired, cloned, or properly matched to the vehicle. ([Go-Parts](#))

The economical hierarchy is roughly:

Best option

Remove original EIS → have original EIS repaired → reinstall

This preserves your existing vehicle/key data.

Second option

Original EIS cannot be repaired → specialist clones/transfers the data to a compatible replacement.

Most expensive option

Dealer → new EIS + programming + labor.

Current specialist repair services advertise W164 EIS repair in roughly the **\$250–\$400 range**, although actual cost depends on the exact module and failure. ([Auto Module Lab](#))

One W164 owner documented taking this route and reported roughly **\$595 including the replacement/repair process**, substantially below the dealer route. ([MBWorld](#))

One thing I would NOT do

Don't start opening the EIS and randomly re-soldering components just because someone on YouTube says "bad solder joint."

There are reports of intermittent EIS failures associated with internal connections, but the module contains **immobilizer/security data**. You don't want to turn an intermittent \$300–\$400 repair into a dead module that now requires cloning.

Diagnose first.

My "don't break the bank" strategy

I'd approach your ML350 like this:

\$0

↓

Verify battery voltage + terminals + grounds

↓

\$0

↓

Test both keys and document exactly what happens

↓

\$0

↓

Check EIS-related fuses/power

↓

Low cost

↓

Mercedes-capable diagnostic scan

↓

Diagnosis

↓

EIS? → repair original

ESL? → repair/replace ESL

Power/ground? → fix wiring

Starter? → diagnose starter circuit

↓

Only then spend money.

The big mistake would be **throwing an EIS, ESL, starter, battery and keys at the car until something works.**

One more thing

Because your ML350 **currently starts normally when the key cooperates**, I would treat this as a "**fix it before it strands me**" problem, not a "wait until it completely dies" problem. Intermittent EIS failures can progress to a permanent no-start.

(Auto Module Lab)

Send me what happens during the failure using this format:

Key inserts: Yes/No

Key turns: Yes/No

Dash lights: Yes/No

Radio: Yes/No

Steering lock sound: Yes/No

Starter cranks: Yes/No

Eventually works after reinserting: Yes/No

Moving steering wheel helps: Yes/No

With those eight observations, I can walk you through a **battlefield-style W164 EIS vs. ESL diagnosis**, including what you can test yourself before paying a Mercedes specialist.

Dash does not come alive. I noticed that one key I'm using is hard to insert, the red button panic button is slightly swollen. But when I wiggle and keep trying, it will start.

That new information **changes the diagnosis significantly**.

My leading suspect: the key itself / key insertion mechanism

The combination of:

- **Dash completely dead**
- Key is **physically hard to insert**
- Panic-button area is **slightly swollen**
- Repeated insertion/wiggling eventually makes the car wake up
- Another key has shown similar symptoms

makes me want to **inspect the keys and EIS before condemning the EIS**.

The swollen key is particularly interesting. A swollen case can mechanically interfere with the key entering the EIS slot or prevent the key's internal electronics/transponder from being positioned correctly.

Do this first — essentially free

Stop using the swollen key for now.

Use the other key and carefully compare:

Slides smoothly into EIS	?	?
Requires force Check	Swollen key	Other key
Dash wakes immediately	?	?
Needs wiggling	?	?

Don't force the swollen key. If the case is physically distorted, forcing it into the EIS can potentially damage the slot.

Very useful experiment

Take the **other key that inserts normally** and try it several times when the vehicle is cold.

If:
Normal key → inserts smoothly → dash immediately comes alive every time
then I'd put the key itself at the top of the list.

If:
Normal key → inserts normally → **dash still sometimes stays completely dead**
then the **EIS becomes the leading suspect**.

About the swollen panic button

I'd also inspect the swollen area closely.

If the swelling is actually coming from the **battery**, don't continue using that key. A damaged/swollen battery can leak or damage the key electronics.

If it's simply the **plastic key housing/button physically bulging**, the key shell may be damaged and interfering with insertion.

You can remove the key's mechanical blade and inspect the shell carefully, but **don't start disassembling the electronics yet**.

One important correction to my previous diagnosis

I would **not yet spend money repairing/replacing the EIS**.

Your new observation that the key is **physically difficult to insert and responds to wiggling** gives us a very inexpensive diagnostic path first.

Think of it as:

- Key physically difficult → inspect key**
- ↓
- Good key works consistently → replace/repair key**
- ↓
- Good key also intermittently gives totally dead dash → investigate EIS**

Your next test

- Try the **other key** about **10 times**:
1. Insert gently.
 2. Don't wiggle it.
 3. See whether the dash comes alive.
 4. Remove it.
 5. Repeat.

Tell me whether you get:

10/10 successful starts, some failures, or no difference.

That single test will tell us a lot before you spend a dollar.

3 out of 10 is the key piece of evidence. That makes me much less suspicious of the swollen key itself.

If the **normal-looking second key also fails 7/10 times**, and when it fails the **entire dash remains dead**, I would now put the **EIS/EZS (Electronic Ignition Switch)** at the top of the list.

There are multiple W164 ML owners reporting essentially this pattern: **key inserted → no dash/no response → eventually works after repeated attempts**, with the EIS ultimately identified as the problem. ([MBWorld](#))

Your diagnosis is now roughly:

● EIS/EZS	Very likely
● Swollen/damaged key Suspect	Possible, but second key failing makes it unlikely My assessment
● ESL steering lock	Possible, but less consistent with totally dead dash

● Battery	Low probability given your observations
● Starter	Very unlikely

The EIS is specifically the module that the key goes into. When it doesn't recognize/authorize the key, the vehicle can remain completely electrically "asleep." Current W164 repair references specifically list **key won't turn + no dashboard illumination + intermittent operation** as EIS symptoms. ([Auto Module Lab](#))

But don't buy an EIS yet

I'd spend **\$0–\$50 diagnosing it first.**

Test #1 — Repeat the 10 attempts with the good key

You already effectively did this, but let's make it more diagnostic.

When it fails:

Do NOT wiggle the key initially.

Insert it normally and wait ~2 seconds.

If:

✗ No dash → remove key → reinsert → eventually dash appears

that's highly suggestive of an **EIS recognition/electronic contact problem.**

If simply **pushing the key inward** makes the dash suddenly wake up, then we need to investigate the **mechanical/key-to-EIS interface** more carefully.

Test #2 — Try the swollen key only as a comparison

Don't force it.

If the swollen key:

fails → wiggle → works

and the good key:

fails → wiggle → works

then the common denominator is **the EIS**, not the key.

One very useful test

When the dash is completely dead, **don't try to start it yet.**

Tell me whether these work:

- Interior lights?
- Power windows?
- Radio?
- Door locks?
- HVAC controls?

We're trying to determine whether the **vehicle itself has electrical power but the EIS isn't waking the ignition circuits**, versus a broader power-distribution problem.

And I found something particularly relevant

There's a W164 owner report of a **2008 ML350** that developed almost exactly this type of intermittent failure:

approximately **1 out of 10 key turns** → **no cluster lights**

and the diagnosis pointed to an internal EIS fault. ([MBWorld](#))

Your **7 failures out of 10** suggests you're considerably farther along that failure curve.

So I would **not wait until it becomes 10/10**. That's when you're potentially stuck wherever you happen to park.

The good news

You probably don't need a \$2,000–\$3,000 Mercedes dealer repair.

There are current independent W164 EIS repair services advertising approximately **\$399** for repair, with the original immobilizer data retained; other documented owners have repaired/replaced an EIS for substantially less than dealer pricing. ([Auto Module Lab](#))

But let's prove it before spending anything.

Next test: When the key fails and the dash is completely dark, tell me whether **the interior lights, power windows, radio, and door locks** still work. That will let us narrow the fault another step before we touch the EIS.

Nothing turns on when failed

That is **very strong evidence that the problem is in the ignition authorization/power-up path**, not the starter.

With the failure occurring:

- Key inserted
- **No dash**
- **No radio**
- **No windows**
- **No other ignition-related electrical activity**
- Both keys behave the same
- Good key works only ~3/10 attempts
- Wiggling/reinserting eventually wakes the car

I would now put the **EIS/EZS at ~80–90% suspicion**, with **EIS power/fuse/ground/SAM** needing to be eliminated before spending money on the module.

This exact W164 symptom—key inserted, no steering-column response, no lights, no start, intermittent operation with both keys—has been reported by other ML owners. ([MBWorld](#))

The good news: don't buy anything yet

I would diagnose it in this order:

1. Battery/terminals/grounds

↓

2. EIS fuse & power supply

↓

3. EIS connector/wiring

↓

4. EIS itself ← currently my leading suspect

↓

5. ESL/steering lock

One particularly useful clue

When the car is **working**, does the sequence look like this?

Insert key → steering column unlocks/clicks → dash wakes up → key turns → starts

And when it fails:

Insert key → NOTHING → steering wheel stays locked → key won't turn

If yes, that's almost the textbook symptom we're looking for.

There are documented W164 cases where an intermittent EIS fault eventually became a complete no-start, and independent repair of the original EIS was used instead of replacing the entire system. ([Auto Module Lab](#))

Before removing the EIS

There's one very simple test I'd like you to do.

When it is FAILED, measure the battery voltage

Put your multimeter directly across the battery terminals.

Then tell me:

A. Voltage with car failed: ___ V

B. Voltage when car subsequently wakes up: ___ V

If you have ~12.5 V during the failure, that makes a weak battery much less likely.

Then we'll check whether **12 V is actually reaching the EIS**.

And don't throw away the swollen key

Keep both keys.

The swollen one may have a separate mechanical/key-shell problem, but because your **other key fails 70% of the time**, it isn't explaining the primary failure.

The repair strategy I'd favor

If we prove the EIS is bad, **repair your original EIS rather than buying a random used one**.

The original module contains vehicle-specific authorization information. A used EIS isn't generally a simple plug-and-play swap. ([Go Parts](#))

Independent W164 EIS repair services currently advertise roughly **\$399** for mail-in repair, while dealer replacement can be substantially more expensive. ([Auto Module Lab](#))

There are also documented W164 cases where a failed internal EIS connector/solder connection was repaired successfully, although I would **not recommend opening yours until we've established that the EIS is actually the problem**. ([MBWorld](#))

Next step: give me the battery voltage while the ML350 is in its FAILED state. Then I'll walk you through the next electrical test.

If I purchase a used EIS, will it work on my ML350 without programming? Who can program it? Can a non-Mercedes shop do it?

No — a random used EIS/EZS from another 2006 ML350 is generally *not* plug-and-play. The EIS is part of Mercedes' theft/drive-authorization system and is matched to the vehicle's security data. A used unit normally has to be **cloned to your original EIS** or properly virginized and then personalized/programmed. ([Benz Tech Modules](#))

Your three practical options

Repair your original EIS	Specialist repairs your existing module and preserves its security data	👉 Best
Option	What happens security data to donor EIS	My recommendation
Buy used EIS and install directly	Plug it in and hope	❌ Don't do this
Buy new Mercedes EIS	Dealer supplies/programs new module	💰 Most expensive

For example, a current EIS supplier lists used W164 EIS units around **\$160**, but charges separately for **virginization (~\$100)** or **cloning (~\$350)**. Their cloned option is intended to arrive essentially plug-and-play with the original vehicle data. ([Benz Tech Modules](#))

Can a non-Mercedes shop program it?

Absolutely — but not an ordinary repair shop.

You want either:

Mercedes-specialized automotive locksmith / EIS specialist

or

Mercedes independent shop with Xentry/DAS and/or appropriate EIS programming equipment.

Specialized locksmiths can perform EIS/EZS diagnostics, cloning, key programming and related work. Independent specialists advertise W164 support using Mercedes Xentry/DAS or specialized programming equipment. ([Not Your Basic Locksmith](#))

A **normal locksmith who only cuts/programs keys** is *not* necessarily capable of EIS cloning.

For YOUR 2006 ML350, I'd do something slightly different

Because your original EIS is **still intermittently working, don't remove it and throw it away.**

That's valuable.

I'd have a specialist:

1. Diagnose original EIS

↓

2. If confirmed defective, attempt repair of original

↓

3. If unrepairable, clone original EIS → compatible donor

↓

4. Reinstall

This preserves your existing keys and vehicle security data.

Some specialists specifically advertise **mail-in W164 EIS repair for around \$250–\$400**, which could be considerably cheaper than dealer replacement. ([Auto Module Lab](#))

And there's an important 2006-specific detail

Your **2006 W164 is an early production vehicle**, and the exact EIS hardware matters. Early W164 EIS units used different processor generations and several part numbers. One source identifies early 2005–2006 units including **A164 545 05 08 / A164 545 07 08**, while later W164s used other EIS variants. ([Key Programmer](#))

So don't buy a donor EIS based solely on "2006 ML350."

Get the **exact part number from your existing EIS** first.

If you're back in Round Rock

I found several local automotive locksmiths that advertise Mercedes/electronic key programming, but I would **specifically ask whether they perform W164 EIS/EZS cloning**, rather than assuming their normal key-programming service includes it.

For example:

- Quick Key Auto — Austin/Williamson County mobile automotive locksmith; advertises Mercedes key/fob and ECU programming.
- Noble Locksmith Austin — Round Rock-based mobile locksmith with automotive programming.
- Austin Key Guy — automotive key programming and module/vehicle programming services.
- Cobra Locksmith LLC — Cedar Park/North Austin; advertises dealer-software programming and Mercedes services.

I'd call and say exactly this:

"I have a 2006 Mercedes ML350 W164 with an intermittent EIS/EZS. Both keys intermittently fail to wake the vehicle. Can you diagnose the EIS and, if necessary, repair my original EIS or clone its security data to a used donor EIS? I am NOT looking for just key programming."

If they immediately understand what you're talking about, that's a good sign.

💰 My preferred <\$500 strategy

Don't buy the used EIS yet.

First, get the **part number off your original EIS** and confirm the diagnosis.

If the EIS is bad:

Original EIS repair → ~\$250–\$400

OR

Used compatible donor ~\$160 + cloning ~\$350 → potentially ~\$500+ before labor. ([Benz Tech Modules](#))

And because your original is still working **3/10 times**, there is a good chance its security data can still be read—another reason **not to keep hammering the key/wiggling it until it completely dies**.

If you give me the EIS part number (or a photo of the EIS label once you can access it), I can tell you **exactly which donor EIS versions I'd consider for your 2006 ML350 and which ones I'd avoid**.

