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Case Study: From Total Loss to Back on the Road – A Customer's Engine Swap Success Story

Client Success Story – Beelines Automotive

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Client Overview

Client Name: Mark Jensen

Location: Denton, Texas

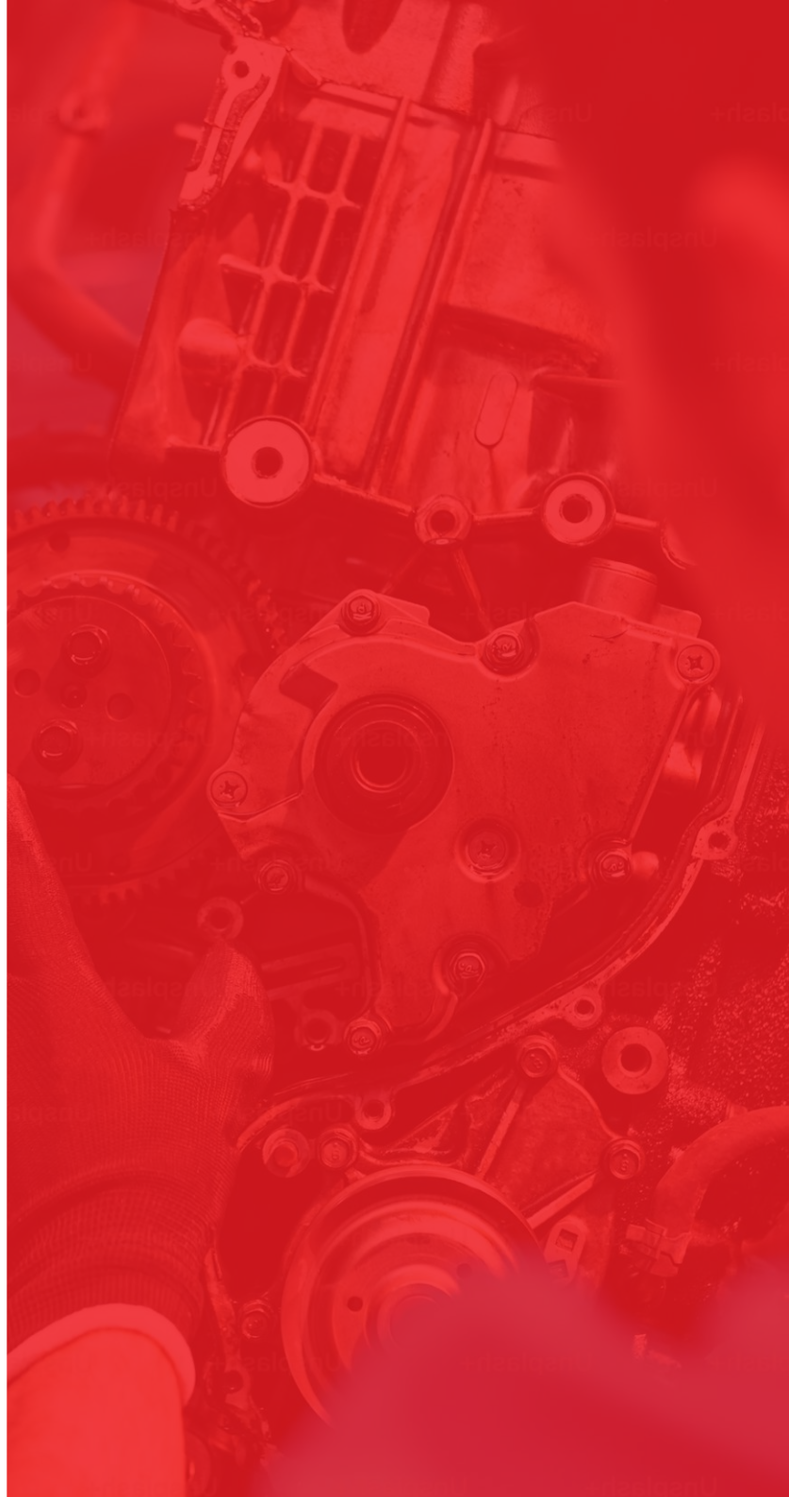
When 29-year-old Mark Jensen from Denton, Texas was told by his insurance company that his 2014 Subaru WRX was a total loss after a highway rear-end collision, most people would've walked away. The frame was untouched, but the rear sub-frame was bent, taillights shattered, and trunk lid twisted beyond repair. More importantly, the engine had taken a hard jolt during the hit, misfiring ever since, and was diagnosed with cracked ring lands on cylinders 2 and 4.

Mark didn’t care what the insurance paper said. He bought the car back from the company for $2,300 and made it his full-time side project. Not just a basic fix—it was time for a full performance build. His plan was simple: strip the damaged EJ255 engine and drop in a stronger, built version from a trusted source. It wouldn’t be cheap, but the availability of used auto parts made him believe that it could be done.

Locating the Replacement: Used, Not Junk

Mark knew better than to pick up just any used WRX engine. He didn’t want a tired short block on its last legs. He scoured multiple salvage yards and listings before landing on beelinesautomotive.com, where he found a rebuilt EJ257 block pulled from a 2017 STI—built with forged internals, ARP head studs, and 8.5:1 compression, already broken in, and dyno-tested.

The seller had solid reviews and compression numbers posted. Mileage was under 15K since rebuild. Mark confirmed the block was mated to a WRX-compatible AVCS setup and came with a warranty. It cost him $3,400, shipped to his buddy’s shop in Krum, just outside Denton.



The Prep Work: Building the WRX for Boost

Before the swap even started, Mark did three weeks of prep work. The goal wasn't just to replace the broken engine but build something ready for higher boost and daily use. Here's what he installed ahead of time:

- Killer B oil pickup and baffle plate
- Upgraded aluminum radiator
- Front-mount intercooler
- Invidia catted downpipe
- IAG TGV deletes
- Cobb 3-port boost control solenoid
- New Exedy Stage 1 clutch kit
- Equal-length headers for smoother spool

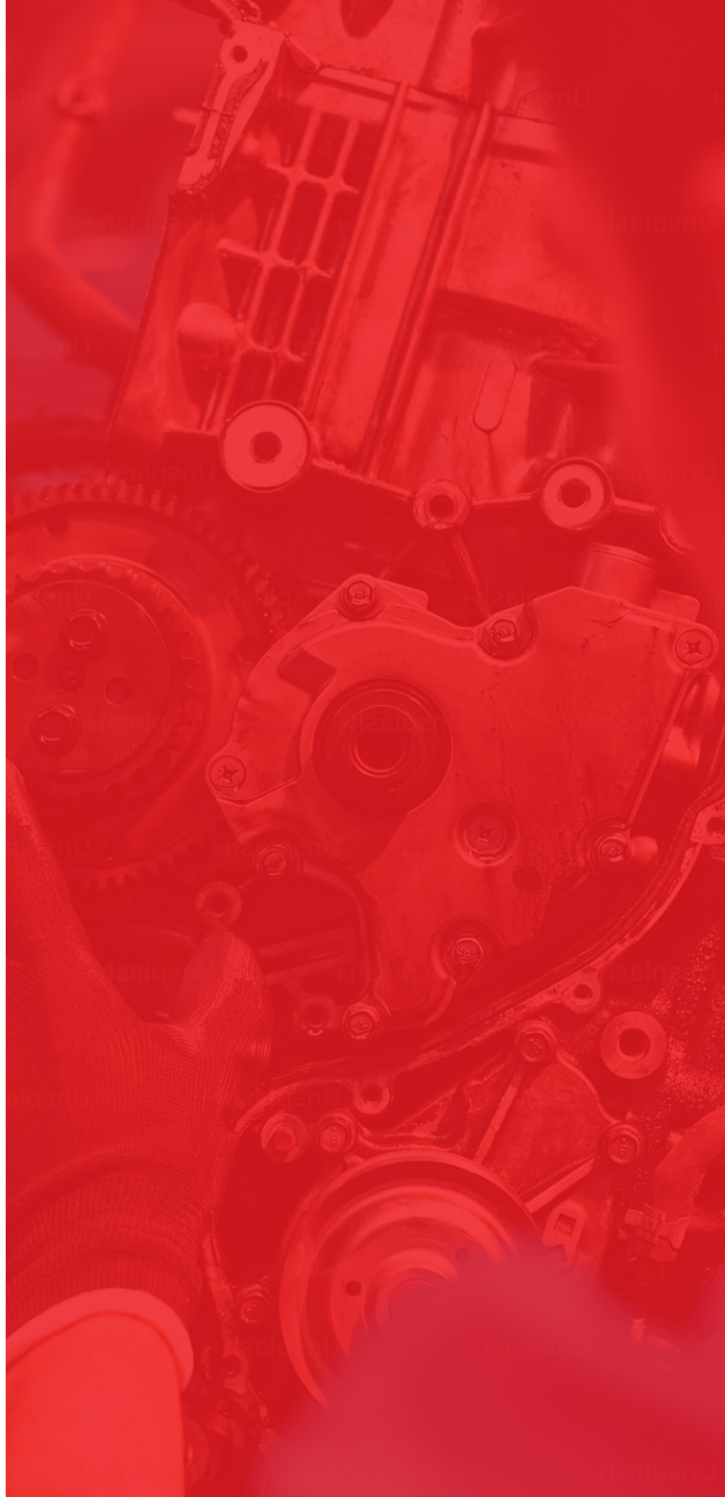
He also cleaned the engine bay thoroughly, replaced every worn or brittle vacuum line, and rewrapped key parts of the harness that had heat damage. All hardware got anti-seize and thread locker where needed. He didn't just throw in parts—everything was test-fit, torqued, and checked.

Pulling the Old Motor: A Mess with a Purpose

- Battery out, fluids drained, intake system removed, harness disconnected, then they labeled everything. One bolt snapped in the turbo elbow, and they spent an hour and a half drilling and rethreading it, which is typical in such cases.

- Once the old block was out, Mark tore it down on the floor to salvage the AVCS solenoids, cam gears, and a few odds and ends. That's when he confirmed what the shop suspected—ringlands were toast, and one rod had play. It was junk.

- The new EJ257 build came in a crate, preassembled and sealed. They reused the WRX intake manifold and most sensors after testing. The wiring was mostly plug-and-play, with only minor differences in the crank sensor connector. Mark soldered a splice and used heat shrink tubing for a clean finish.



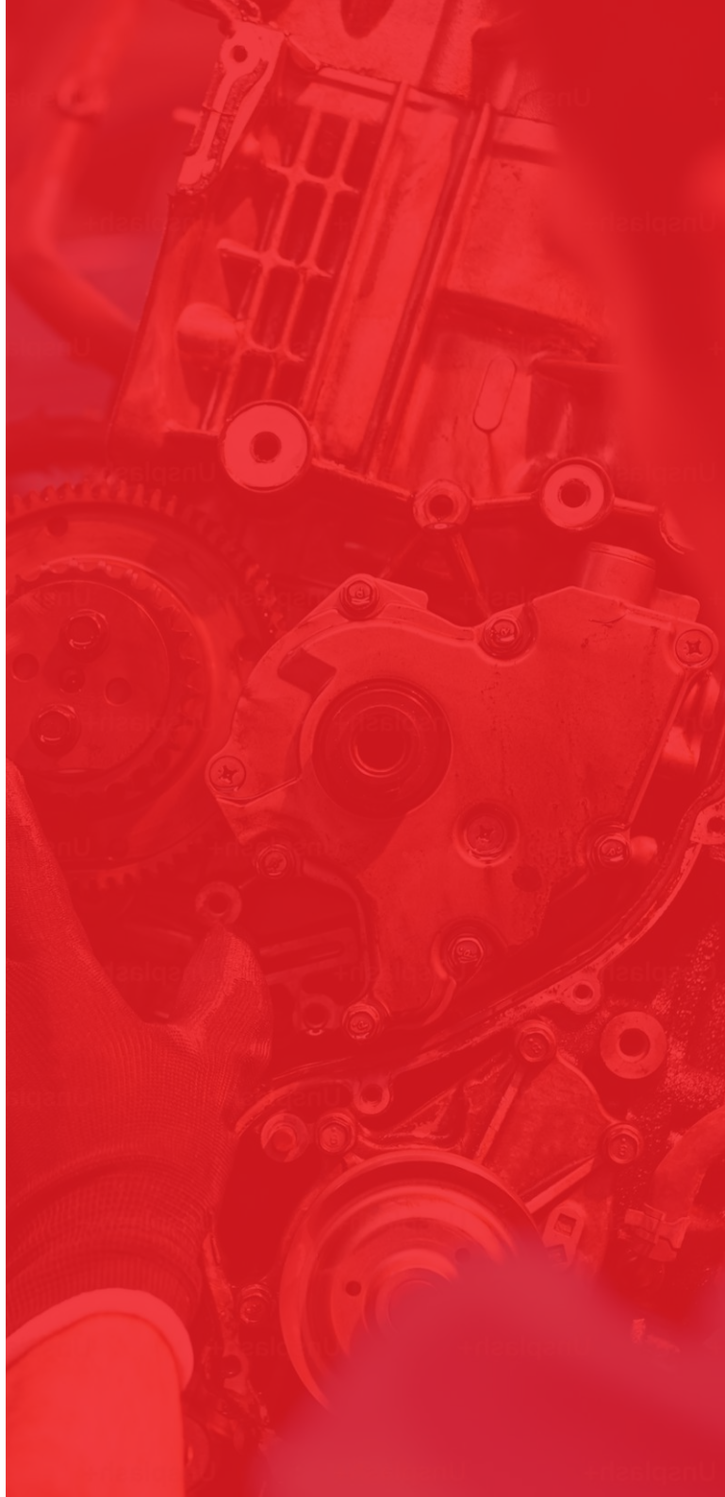
Install and Fire-Up: First Start Wasn’t Perfect

- The install took two full weekends. Mark didn’t rush. The new block fit like it should, and the upgraded mounts made alignment a bit stiffer, but manageable. Fuel lines, grounds, coolant lines, vacuum hoses—all rechecked twice.

- They primed the engine using the starter method—coils unplugged, fuel pump off, cranked in short bursts until oil pressure built up. After that, fuel pump fuse in, coils reconnected, and it was go time.

- On first crank, it stumbled and died. No spark on cylinder 3. After some digging, Mark traced it back to a pinched harness near the intake manifold that broke continuity. A quick solder fix and rewrap, and it started like it should’ve the first time.

- Idle was solid. AFRs were smooth. No CEL. No leaks. Just a quiet, healthy rumble. The smell of fresh heat cycles and new headers was strong in the garage that day.



Tuning and Dyno Numbers: Real Gains, No Hype

Mark booked a tune session in Dallas with a trusted Cobb Pro Tuner. He drove the car there on a base map, keeping RPMs under 3,000 and boost completely disabled.

Tuning took about 4 hours. They did five pulls total. Final numbers:

- 319whp
- 352 lb-ft torque
- Boost peaked at 18 psi

But the numbers weren’t even the highlight—it was how the car felt. No hesitation, consistent throttle, boost came in smoothly, and idle was rock solid even with the TGV deletes.

Total Breakdown: Time, Money, and Lessons

Time Invested: 5 weekends (roughly 50 hours)

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- $3,400 on rebuilt engine
- $1,000 in bolt-ons and supporting mods
- $800 for tuning and dyno time
- $300 in tools and small parts

Grand Total: Around $5,500

Mark’s Takeaways: What Made It Work

- **Know What You're Getting**
  Mark didn’t settle for a junkyard block. He found a tested, documented rebuild and asked every question before buying. That saved him later headaches.

- **Build Around the Engine**
  Supporting mods mattered—cooling, fuel, airflow, and tuning. Without those, the engine wouldn’t have lasted.

- **Label Everything. Twice.**
  Nothing slows you down like guessing where plugs go. Mark labeled every wire, hose, and bolt bag. It saved hours.

- **Fix What’s Not Obvious**
  The broken harness didn’t show up until first crank. Be ready for small things to trip you up. They always do.

- **Don’t Rely on Luck—Rely on Prep**
  Every gasket, seal, and torque spec was double-checked. The work up front paid off on the back end.

Conclusion: It Wasn’t Just About the Engine

Mark didn’t just get his car back on the road—he built something better than stock. The WRX pulls harder, runs cooler, and responds sharper than it ever did off the lot. For a car that was declared dead by an insurance adjuster, it now turns heads on I-35 and roasts tires in second gear.

What started as a total loss turned into a full-blown success story—and a serious performance upgrade that Mark built with his own hands, right in a Texas driveway.

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Thank You

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