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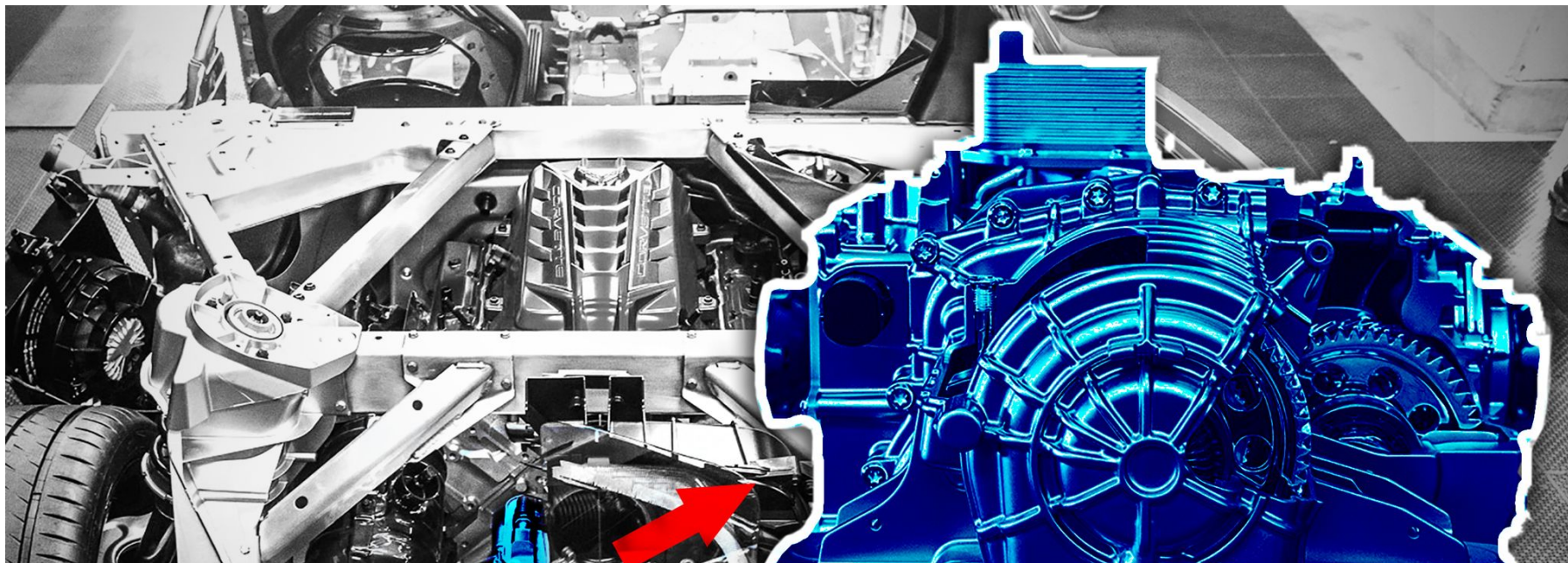
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Digging into the C8 Corvette's Dual-Clutch-Transmission Issues

Since Chevy's C8 Corvette hit the market, some owners have reported transmission issues, and GM has issued 17 service bulletins. Here's what we know.

BY LUCAS BELL APR 3, 2023



of the transmission issues. To get more clarity, however, *R&T* closely examined the 17 TSBs filed by GM, and spoke with eight C8 owners, Tremec, and industry experts.

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The Tremec TR9080 is an eight-speed, dual-clutch transmission that is proprietary to the C8 Corvette. When it works, it *really* works. But online Corvette forums (which are known to attract a vocal minority of customers with negative experiences) are flooded with owners raising questions and reporting concerns about the transmission. The 17 GM-issued transmission TSBs currently filed with the National Highway Traffic Safety Administration (NHTSA) are specifically related to the TR9080's service procedures.

Though filed through the same federal agency, a TSB isn't a recall, which is a government-required edict for safety-related issues that legally mandate repairs. A TSB, on the other hand, addresses an issue with a vehicle that isn't deemed a threat to consumers or public safety, and manufacturers are not required to notify purchasers of these issues. These are issues service-department employees can often suss out after retail customers have purchased and operated a new vehicle. Automakers issue TSBs to keep service departments and vehicle owners up to speed with recurring problems specific models may experience and recommend the appropriate repairs. Repairs associated with TSBs are generally considered optional, with

service limited to customers whose vehicles show signs of a TSB-related fault. Repair costs related to TSBs may be covered under warranty terms, but the automaker is under no obligation to do the repairs after that warranty has expired or if there is no warranty.

The Tremec TR9080 is the sole transmission used by the C8—Stingray, Z06, or upcoming E-Ray. It's one of Tremec's first DCTs and the first dual-clutch unit used in any production Corvette. Technically, it's an automated-manual transmission; this means the C8 is the first Corvette since the 1982 model year not offered with a traditional manual transmission. The TR9080 features a die-cast aluminum case, inside of which sits nested concentric clutch packs and an integrated differential. The wet-clutch system is an in-house design and utilizes Tremec's bespoke optimized friction materials. Depending on the trim level of the car, that integrated differential is either a mechanical limited-slip or an electronic limited-slip unit. Both differentials utilize common sump, cooler, fluids, and filtration equipment to improve packaging efficiencies. A Tremec-designed transmission controller manages the electro-hydraulic actuation system, allowing for shifts to take place in less than 100 milliseconds. This is exotic-car performance and a real turn toward modernity for the Corvette. To get to this level, GM and Tremec had to reach outside their own knowledge base.

"There was a recognition that as much as we like manual transmissions, the manual-transmission market was declining and was going to continue to decline, and to compete in that space we would need to change," Matthew Memmer, director of engineering and program management at Tremec, told *R&T*. "So we would have to get into automatics in some way. And so at that time, there was a division of Horberger in Belgium that did mechatronics and software and controls for dual-clutch gearboxes in Europe. So Tremec made an acquisition of that division in 2012, and combining that with the manual-transmission business, the dual-clutch was kind of a natural product. A dual-clutch is essentially two manual gearboxes together with a bunch of controls."

GM issued its first TSB related to the Tremec TR9080 in October 2020. The bulletin was filed after customers began reporting check-engine lights and messages about reduced engine power without any realized loss of performance. GM instructed its technicians that affected Corvettes required a Transmission

Control Module software update, specifically in the presence of two Diagnostic Trouble Codes. This TSB was updated most recently in March 2022, adding vehicles from the 2021 and 2022 model years.

In November 2021, GM issued a TSB asking dealers to collect and return all of the DCT filters taken off of C8 Corvettes during the car's initial 7500-mile service for analysis by GM engineers. The automaker wished to inspect the filters after reports of clogged solenoids impacting shift quality and drivability. A second filter service is required at 22,500 miles and every multiple of that thereafter, with a fluid replacement required every 45,000 miles. That 7500-mile service is a shocking figure in the context of other performance cars. For reference, Porsche's PDK, among the dual-clutch transmissions longest on the market, needs a fluid service every 12 years or 120,000 miles.

In July 2022, GM issued another TSB with additional instructions for dealers as it relates to addressing TR9080 service requirements. Chevrolet dealerships have stopped tearing down TR9080s, with corporate instead asking that troublesome gearboxes be pulled and replaced entirely. The automaker is requesting that every replaced unit be returned to its engineers for analysis, complete with the fluid inside the case. Kevin Harty of Munro & Associates, a group of automotive and industrial engineering and teardown specialists, told *R&T* that if they are investigating the fluid, they may be searching for a wear issue within the gearbox.

"If they're looking through fluid, they are looking for wear," said Harty. "They're looking for essentially a premature failure mode, which in something like that, if it's not a catastrophic failure per se, it might be these little, more subtle failures that are related to aggressive wear."

In early March, General Motors issued a voluntary emissions recall involving certain C8 Corvette models from the 2020 and 2021 model years. According to the document, the recall is related to the vehicles' Transmission Control Module, which may incorrectly clear the loss of Diagnostic Trouble Code

communications from other control modules, stemming from a direct loss of communication. When this takes place, the gearbox will continue operating in its default settings, without abiding by the previous DTCs or illuminating a check-engine light. Dealers are now being tasked with reprogramming the TR9080's TCMs with an updated software set. GM confirmed to *R&T* that this is the second round of communications it has sent to owners related to this emissions recall, as the take rate on repairs did not meet the required quotas after the initial round in California.

"General Motors has decided to conduct a Voluntary Emission Recall involving certain 2020 and 2021 model year Chevrolet Corvette vehicles," the recall states. "The Transmission Control Module (TCM), after detecting a loss of communications fault with other control modules, may incorrectly clear the loss of communications Diagnostic Trouble Codes (DTCs) when the vehicle is keyed off and, if the loss of communications fault persists, may not detect it again when the vehicle is keyed back on. If this were to happen, the transmission could operate in a default mode with no DTC set and the MIL not illuminated."

On a call with *R&T*, a GM spokesperson emphasized that this is a voluntary emissions recall and the automaker believes the issue has no impact on vehicle performance or safety.

Mike Brink, the person behind the Corvette-centric Brink of Speed YouTube channel, has been very vocal about the issues he experienced with his former C8. The 2020 C8 was the fourth Corvette Brink had owned,

following a line of C5, C6, and C7 Z06s. Brink managed to drive his first C8 for nearly 17,000 miles without issue before noticing some abnormal shift behaviors at low speeds.

"The easiest way for people to really understand is if they know how to drive a manual transmission," Brink told *R&T*. "It felt like when you start it up, the person driving the car—obviously it's a computer driving it—but it felt like the computer didn't know how to let the clutch out properly. And then when you're stopping, it felt like the computer didn't know how to push the clutch in. They were braking without pushing the clutch in. That's exactly what it felt like."

Brink published a video to his YouTube channel on the day of the dealer inspection, at which point he was told a full transmission replacement could be in the cards. But the owner claims the service department was singing a different tune after GM got word of the situation.

"They thought they were going to have to give me a full, brand-new transmission," Brink said. "But they spoke to GM, told them what was going on, and GM said, well, I think they basically said, most likely you're probably gonna have to get a new one, but try this first because this has worked on a couple of other cars."

Instead of a new gearbox, Brink's 2020 C8 Corvette received some updated software. The car underwent a Global Reset of its computer systems and a new calibration for the aforementioned Transmission Control Module. The whole process only took a day once GM signed off on the repair. Brink never experienced

another transmission issue with the car after that point, driving it another 2000 miles or so before selling the car to a local enthusiast. The situation wasn't enough of a hassle to taint Brink's love of the Corvette brand, as he's gone ahead and purchased a new 2023 model.

Not everyone's situation was as straightforward as Brink's. In an interview with *R&T*, 2021 C8 Corvette convertible owner Mike Perry explained that he first experienced issues with the TR9080 after a post-break-in drive on the roads of the North Georgia Mountains. After passing a slower-moving vehicle, Perry believed his car felt off. He says his C8's rpm started surging and the car wouldn't upshift on its own, leaving Perry to swap over to manual mode in an attempt to calm the V-8 down. On another mountain drive two days later, the check-engine light illuminated. That was quickly followed by a text message from OnStar asking Perry to return the car to the dealer within 24 hours.

On the drive to his dealer appointment later that week, Perry experienced additional strange behavior from the Corvette. The C8 stalled while approaching a red light, according to Perry. A turn of the key was able to get the car restarted, but selecting drive resulted in some serious bucking.

"I put it into gear, and it was wanting to just really buck, and something was wrong," Perry said. "You could tell. So I immediately switched it into the manual mode, and then drove it the rest of the way with no issue whatsoever in manual mode the whole way."

Once the dealership had a chance to investigate Perry's concerns, GM corporate determined the car required a main valve body replacement for the transmission. Service records provided to *R&T* show the car had just 1250 miles at the time of the failure. A parts backorder meant that the process took three weeks from start to finish. Unfortunately, that wasn't the end of Perry's troubles. Less than a month after the valve body swap, Perry once again found himself having issues on Georgia's mountain roads.

"I was on a tight corner, came out of it and then saw that the check-engine light had come on again," Perry said. "Took it back there and, you know, same type of situation. It was probably within a month of each other. And then they just said GM recommends a total DCT replacement."

Perry's C8 Corvette had done just 1462 miles before the replacement gearbox was installed, according to service records. The car has remained trouble-free in the years since the replacement, according to Perry, who now has around 8700 miles on the odometer.

"Car's been an absolute joy," said Perry. "It's a blast and just a fun car to have. Lucky to be in the group and an owner for sure."

Matt Wilson, a driver in NASCAR's ARCA Menards Series, experienced similar issues with his 2020 C8 Corvette 1LT. "Basically I came to a stop at a toll booth and the car shuddered, kinda lurched forward about

a foot, and stalled," Wilson told *R&T*. "I was able to restart it, but it was in some form of limp-home mode and only had gears two, four, and six."

Wilson said he also experienced bucking behavior at low speeds. The car struggled to manage shifts at lower speeds, leaving the impression that it was hunting for a gear, according to Wilson. The car had just 7200 miles on the clock.

"They kept the car for a month," said Wilson. "I was told that GM had a tech bulletin out, instructing dealerships not to attempt to repair the DCTs, but to replace them and send the damaged one in for a GM autopsy. So it took a month for them to get a transmission and replace it. A very labor-intensive process, I'm sure."

Spend time on any Corvette forum and you'll find a number of other posters asserting similar stories. Owners *R&T* spoke with who experienced issues early on in the C8's production run received a transmission teardown at the dealership. According to one owner's service documents, the transmission's valve body was

deemed to be the cause of the issue. In November 2021, GM issued a TSB stating that any C8 that displays error codes P1955 and P0867 has a failed gearbox. The automaker notice states this is the result of the odd shaft module (OSM) not being serviceable at a dealership.

Tremec was unwilling to comment directly on the matter of TR9080 replacements.

"Not going to comment on the warranty numbers," Memmer said. "I think the great thing about having these types of cars is you get that following on all the forums, and people are engaged in the cars and love to talk about them. Whether it's the 'Ask Tadge' thing ['Ask Tadge' is a section of CorvetteForum frequented by the car's executive chief engineer, Tadge Juechter] or something else, people just want to interact with the vehicle and they want to talk about their car. Of course when you get that, you always get a vocal minority that say, 'Hey, I had this.' There's no secrets, you can't say that there are zero problems. There are going to unfortunately be some cases. Our intent, and certainly GM's intent, is to fix those cases as soon as possible and make that as seamless as possible. But you're always going to get those comments. You can read through those and say, 'Well, it must be every car.' The reality is it's a couple of people and they legitimately had problems. We follow, and GM follows, these things. Those are our customers too. Even though GM is our customer, those are the end users too. You want to make sure that those are getting taken care of and that we look at any complaint and make sure we're trying to do everything we can to fix it."

The 2023 Corvette Z06 at Road & Track's 2023 Performance Car of the Year test.

Whereas the Stingray utilizes the M1L variant of the TR9080, the more potent Z06 model receives the tweaked M1M variant. This unit receives a stronger six-plate clutch, as well as an additional clutch plate for odd gears. Tremec also revisited the case and bellhousing designs to handle the additional torque load, along with larger output shaft flanges. It's still unclear at this time whether the beefier box will experience fewer, if any, of the same issues as some Stingray-grade M1Ls.

The TR9080 was developed in parallel with another dual-clutch known as the TR9070. This seven-speed unit is utilized in the [S550 Shelby GT500](#), a car with 270 more horsepower than the Stingray. Unlike the transaxle layout of the TR9080, the Shelby's transmission is packaged into a more traditional bellhousing without an integrated differential. Despite sharing a Transmission Control Module and base-level programming, the two DCTs share more in common with Tremec's manual gearbox than with one another. Ford has issued eight TSBs related to the Shelby's TR9070.

"We issue technical service bulletins to help dealers resolve certain issues," a Ford spokesperson told *R&T* in a statement. "If a customer is experiencing an issue, they should reach out to their local dealership for assistance."

The Tremec TR9070 from the Shelby GT500.

Harty of Murno & Associates noted to *R&T* that the C8 is not the first sports car that has experienced these kinds of issues in the dual-clutch era.

"I can say that some other high-performance vehicles we've kind of bumped around with in the past have had similar issues, and no one heard about it outside of the company," Harty said. "It was a very early launch, they kind of did what they could to address it. Really what they ended up doing was just trying to be as good as they could to the customers that had issues. So when they came in, it was essentially a no-nonsense issue. It got elevated to a certain level with the OEM that someone came through and said if this issue presents itself just replace it. They didn't essentially want to bring it up and kind of soil the vehicle, if you will. As long as you do right by the customers, more often than not they understand that these things happen, especially with high-performance vehicles that are low volume."

The relatively high production numbers of the C8 Corvette mark an interesting distinction when comparing the car to other V-8-powered machines in the class. Ferrari, for example, had its best year on record in 2022, moving some 13,221 units across all of its model lines. For comparison, Chevrolet sold 25,831 Corvettes alone during that same period. Not only is GM building far more of these mid-engined cars than its competitors, it's doing so at a far more accessible price point than its Italian competitors. The question remains whether an automaker like Ferrari would experience similar rates of transmission issues if their production numbers were on par with the likes of GM, or if this is simply the result of GM trying to build a Ferrari competitor for a third of the price.

Some C8 owners who have experienced a transmission replacement have shared details about an extended warranty being offered to them at no cost from GM as compensation for the transmission troubles.

Perry told *R&T* that GM offered him three years of complimentary scheduled maintenance for his trouble, as well as a 100,000-mile transferable warranty for his replacement dual-clutch gearbox. Brink received a five-year, 75,000-mile extended powertrain warranty starting from the date of his initial repairs. That warranty followed the car to its new owner, Brink said.

It is unclear how widespread these issues are among C8 owners. *R&T* is not aware of any accidents or injuries resulting from the reported issues. The current Corvette has been a sales hit, and, through the beginning of March, Chevrolet has built around 110,000 of them, including Stingrays and Z06s. What may

seem widespread in the concentrated environment of an online forum does not necessarily reflect general issues in the real world. But still, the transmission issues some owners have experienced are the subject of intense discussion in those forums.

Chevrolet issued the following statement in response to *R&T's* request for additional information surrounding the TR9080 issues:

"We have advised service departments that select transmission issues should not be serviced at the dealer and a transmission replacement is preferred. The number of transmission replacements to date has been minimal. We strive to meet and exceed the quality expectations of Corvette customers, which is why they continue to return to the nameplate as it is the leader in its class on customer loyalty. It is also the highest-ranking model in the industry per J.D. Power's latest IQS results."

When asked for comment on the transmission issues owners described to *R&T*, a spokesperson for Chevrolet emphasized the automaker's efforts to produce a reliable product.

"The team at Chevrolet really does strive to meet and exceed the quality expectations of Corvette customers. For customers like the ones you mentioned, we do our best to address their concerns as quickly as possible. Being highest-ranking in the industry per J.D. Power's latest IQS results is one sign that we are providing the vast majority of customers an outstanding experience."

Memmer promises that his Tremec crew takes any issue related to their products as seriously as the enthusiast car owners themselves. "Everybody that's on my team, we're all car owners," said Memmer. "A lot of our team members are also car enthusiasts, racing on weekends. So they're very engaged as well. We all understand what it means when your car isn't doing what it's supposed to do. So we take that seriously as well. We don't want people to have that experience."

Memmer would not comment on the specific transmission issues owners described to *R&T*.

"There can be a lot of factors that can impact the vehicle, so speculating on what could be happening in an individual car wouldn't [be] accurate or useful."

For the majority of the affected Corvette owners we spoke to, the experience hasn't ruined their love for the legacy sports car.

"I've had a few [Corvettes] before," Wilson told *R&T*. "It doesn't change how I feel about the brand. The C8 is an entirely new platform, and I have one of the first ones produced. GM should address the issue ASAP, as I'm sure they have/are. A bulletin should be issued once they find the problem, and the owners should be taken care of."

LUCAS BELL

Born and raised in Metro Detroit, associate editor Lucas Bell has spent his entire life surrounded by the automotive industry.

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