C3 SIDE-PIPE INSTALL
PG. 62

EXCLUSIVE: STINGRAYS THROUGH THE YEARS

Vette

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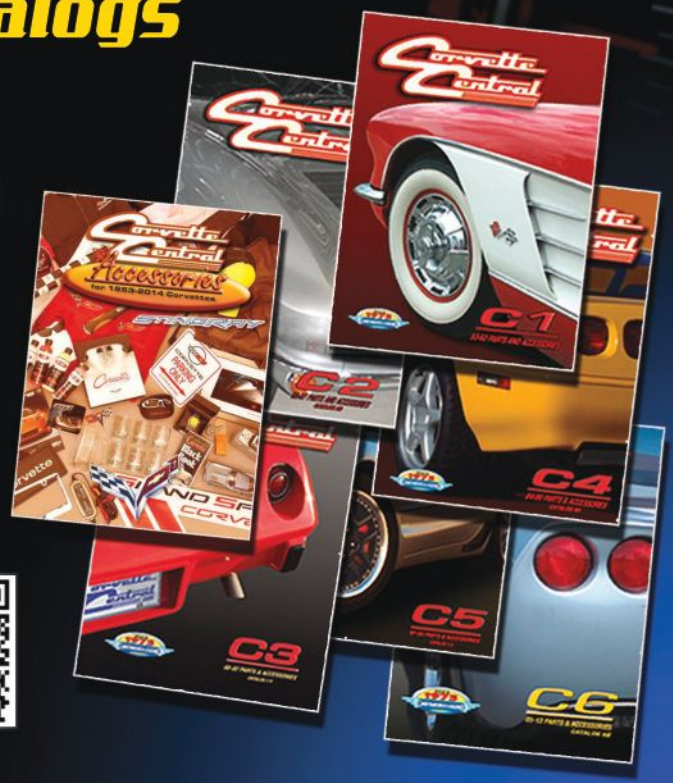

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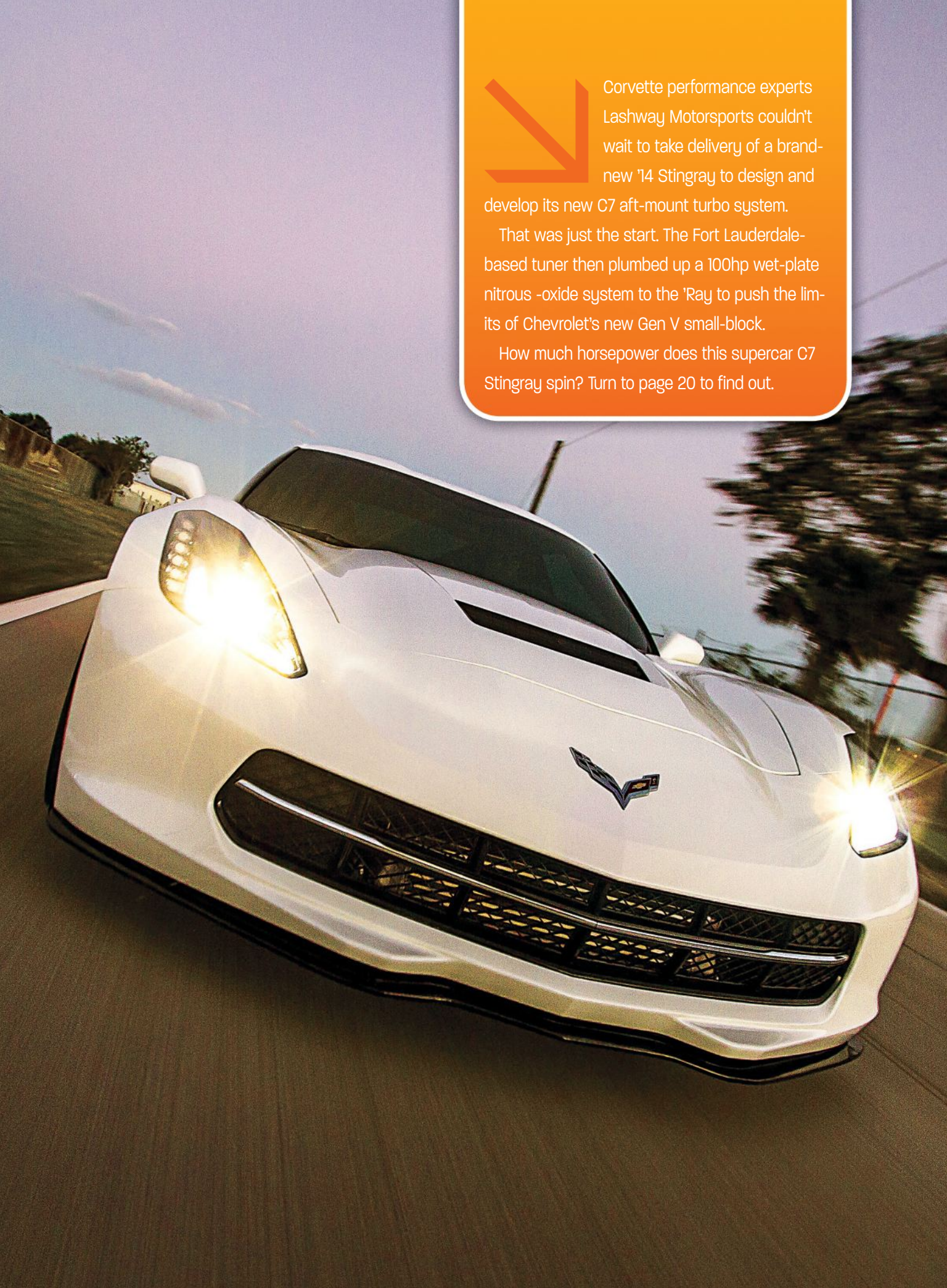

Corvette performance experts Lashway Motorsports couldn't wait to take delivery of a brand-new '14 Stingray to design and develop its new C7 aft-mount turbo system.

That was just the start. The Fort Lauderdale-based tuner then plumbed up a 100hp wet-plate nitrous -oxide system to the 'Ray to push the limits of Chevrolet's new Gen V small-block.

How much horsepower does this supercar C7 Stingray spin? Turn to page 20 to find out.

Vette

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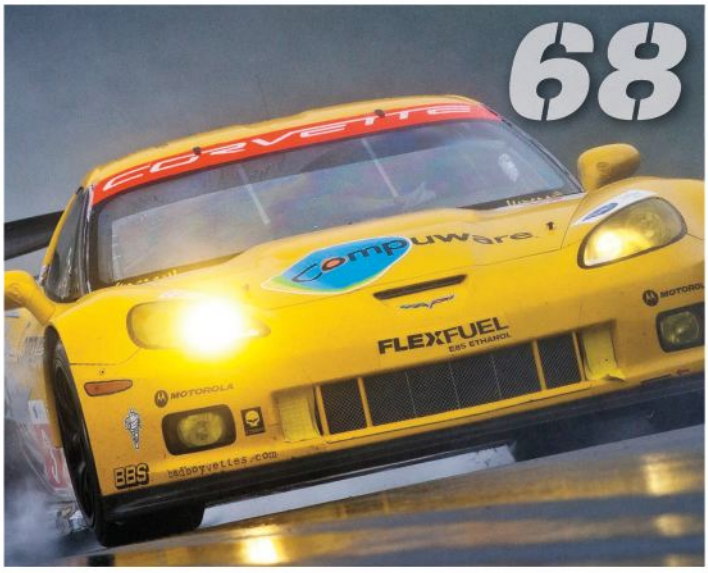
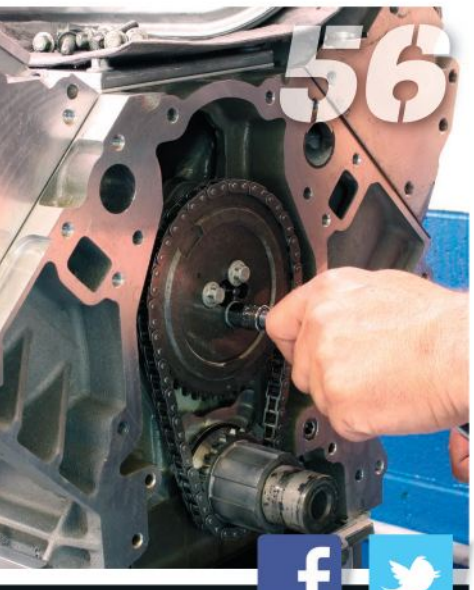


ON THE COVER

This month's cover car takes what might be described as the "Doublemint Gum" approach to C7 power, relying on not one, but two power adders (nitrous oxide and a rear-mounted turbo kit) to double the driver's motoring pleasure. Unwrap the whole story starting on page 20. ➔ PHOTO BY KEVIN DIOSSI



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IDLE CHATTER

JAY HEATH EDITOR

OVERHEARD *IN THE OC*

Say, "Ah": ProCharger's new C7 supercharger system offers a choice of vertical or (shown) horizontal intercooler configurations to chill the compressed intake charge.

I've just returned from Santa Ana, California, a site that has nothing to do with Mexican military history but everything to do with the annual Motorsports Parts Manufacturers Council confab. Unlike other big industry shows such as SEMA and PRI, MPMC, as it's commonly known, comprises a series of intensive, 30-minute meetings between representatives of the performance aftermarket and the writer types who cover it. Think of it as the gearhead equivalent of speed dating—minus, presumably, the potential for postprandial romantic interludes.

As you might imagine, this year's event was abuzz with details on new C7 products, many of which are scheduled to hit the market around the time you read this. I'll be using this month's column to preview some of them, and to divulge a few other interesting Corvette tidbits as well.

AIR SUPERIORITY

If you follow our website or Facebook page, you already know that our friends from Lenexa, Kansas, have been hard at work on an intercooled blower setup for the '14 Stingray. Their efforts recently paid off in the form of a P-1SC–based system said to safely swell the car's output by at least 40 percent at the rear wheels. Even better, you won't have to remove the steering rack, pin the crank, or relocate the ABS module to complete the five-hour installation. I'll be visiting ProCharger HQ in the near future to drive a few of the company's C7 development cars; look for a full write-up in an upcoming issue.

ENGINES OF COMMERCE

If keeping track of LS-parts compatibility makes your temples throb, AFR has a line of cylinder heads just for you. Described as "LS3/LS7 hybrids," the new heads will be available in three different port sizes to fit all LS1, LS6, LS3, and LS7 engines.

Edelbrock's fresh-from-the-foundry LS3 head, meanwhile, will be offered in small- and large-port versions when it goes on sale in April. Look for an all-new LS composite intake manifold to join it later in the year.

In Gen V news, Chevrolet Performance Parts is putting the finishing touches on the LT1 crate engine it first showed at SEMA last fall. I'm told the high-tech motor's cylinder-deactivation feature will carry over to the à la carte version, making this the first CPP offering to incorporate the fuel-saving technology. (Possible downside: the sound of four-cylinder mode piped through a set of long-tube headers.)

SPEAKING OF EXHAUST...

Considering that free-flowing exhaust systems are among the aftermarket's top-selling performance parts, it's a little surprising that more C7 kits haven't already hit the shelves. According to Corsa rep we spoke with, the delay has to do with the complexity of the factory setup, which employs a pair (or, in the case of the NPP system, a quartet) of vacuum-actuated valves to manage both the characteristics and the overall level of the exhaust sound. Fortunately there should be plenty of free horsepower available from a performance-oriented system, as the stocker is loaded with bends and necks down to around 2.25 inches inside the mufflers. Note that Corsa is expending no small effort to ensure that its system sounds sufficiently sporty in both four- and eight-cylinder configurations.

MORE FUEL, PLEASE

Though it didn't have to do with aftermarket parts specifically, one of the session's more eye-opening revelations came during a conversation with Lingenfelter Performance Engineering VP of Operations Mike Copeland. According to Copeland, LPE has determined that the LT1's direct-injection fuel system is only good to around 600 pound-feet of torque at certain throttle inputs (though not, surprisingly, at WOT). With several tuners already meeting or exceeding that output level in forced-induction C7s, the road to Stingray performance supremacy could prove to be paved with melted pistons. VETTE

MASTH

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FRONT LINES


PHOTO BY JAY HEATH

C7, YEA

I found your March 2014 op-ed very interesting, as I too have been perplexed as to why so many feel so negatively about the new Corvette without ever having driven one. In fact, the negativity started even before the car had been released or subjected to the scrutiny of the automotive world. Now nearly every automotive publication is singing its praises, yet the detractors persist.

My theory is that many people are just naturally resistant to change. I believe many of the naysayers will come around as they are exposed to the car and get used to the many positive changes.

For the others, I think they are having a hard time swallowing the fact that the very cars they have come to love—their C5s and C6s—are no longer kings of the hill. Nobody likes to "lose" to a newcomer. But again, I believe time will win many of them over.

I love your publication. Keep up the good work, and if you are looking to attend a great Corvette show, come on down to the 19th annual Corvettes at Myrtle Beach (SC) this June 7. Information on this year's show will be up on our website, www.myrtlebeachcorvetteclub.com, very soon.

Larry Beall, President
Myrtle Beach Corvette Club

C7, NAY

The problem with the new C7 is not so much that the rear looks hideous, or that the interior looks like a '90 C4 (with better material and new gauges), but that the car is too heavy and feels more like a cruiser than a sports car.

The Corvette reached its high-water mark in 2004 with the C5 Z06. The C6 had numb steering, it felt heavier, and it had stupid keyless/handle-less doors and ignition switches that caused problems. The C6 Z06 had snap oversteer, and the LS7 is a ticking time bomb that's expensive to fix when an intake valve drops.

The C7 Corvette should have been a modern version of a '93 Mazda RX-7 with an LS3 engine. Instead GM made it bigger, heavier, and with more electric gizmos that will fail after the warranty has expired. The new LT1 is a very good and torquey truck engine, but the LS6 and LS3 were much more eager to rev above 5,000 rpm. And performance-wise, an '02 C5 Z06, an '08 C6 LS3 Z51, and a '14 C7 are virtually identical—not good for a $70,000 car.

Chris Geuting
Durham, CA

Heavy or not, the C7 Stingray accelerates faster, sticks harder, and stops shorter than both the C5 Z06 and the LS3 C6. And while it's certainly possible to option one above the $70,000 mark, a base '14 coupe starts at just $51,000.

ANOTHER OIL OPTION

I genuinely enjoyed Rick Jensen's "All About Oil" article (Mar. '14), which contained much useful and enlightening information about black gold.

PHOTO BY RICK JENSEN

Owners of Corvettes with flat-tappet engines may be pleased to learn that Mobil 1 also markets a High Mileage motor oil. It has a zinc content of 1,000 ppm and a phosphorus content of 1,100 ppm, plus an additive package that benefits older engine seals. That's quite a bit more ZDDP than the 800 ppm found in other "normal" Mobil 1 oils.

For additional information, a chart showing the zinc and phosphorus content of Mobil 1 products may be found at www.mobiloil.com/USA-English/MotorOil/Files/Mobil_1_Product_Guide.pdf.

Mike Waal
Chestertown, MD

SEEKING VALVE GUIDANCE

I have a stock '07 Z06 that is street driven. At 21,000 miles, my dealer replaced the cylinder heads due to the exhaust valves failing a "wiggle" test. I have no confidence that the same wear will not occur again, given that no one has figured out the root cause of the problem, and there is no indication of any changes having been made to the replacement parts that were installed.

There have been many theories brought forth in Internet forums, but someone needs to do some investigative reporting and find out what is wrong with the LS7's valve guides. Polls on Corvette Forum show that guide wear is widespread among '06-'08 Z06s, and that, given enough use, the potential for one of the two-piece, hollow, sodium-filled exhaust valves to drop and thereby destroy the entire $15,000 engine is quite realistic.

Soon my warranty will be expiring, leaving me to wonder whether my new cylinder heads are truly fixed. I'm not seeking a recall, a class-action lawsuit, or anything of that sort. I simply want to know what the root cause of the problem is, why it's so widespread, and what I need to do about it to enjoy my car again. I can't keep extending my warranty forever.

Sean P. Murphy
Via email

It just so happens that we have an illuminating tech article on the LS7 valvetrain on page 56 in this issue. VETTE

WHAT DO YOU SAY?

Got a question, comment, or complaint? Log on to www.vetteweb.com and share your thoughts. We can also be reached by email at vette@sorc.com or through our postal address at *VETTE* Magazine, 9036 Brittany Way, Tampa, FL 33619. All letters must be typed and are presumed to be for publication. *VETTE* reserves the right to edit letters.

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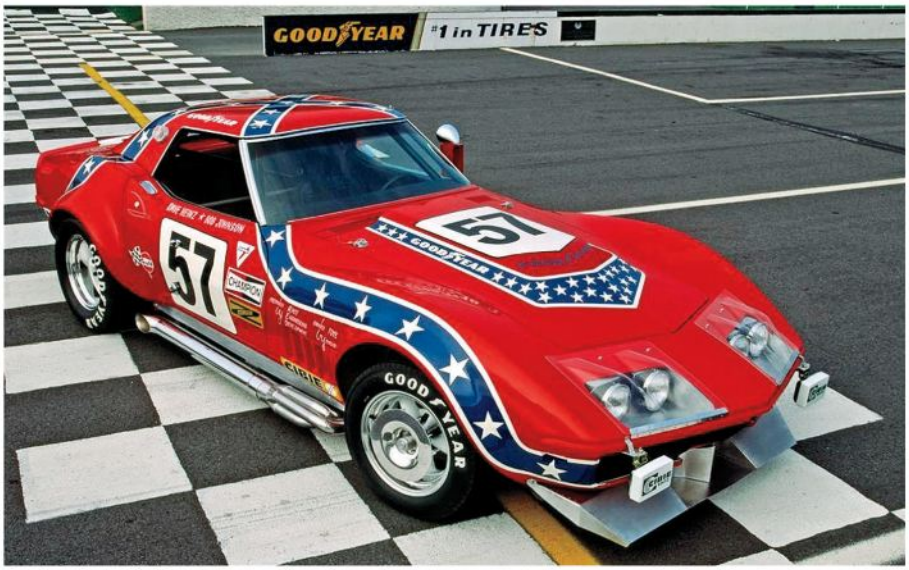

PHOTO BY BILL ERDMAN

L88 VETTES DOMINATE *EARLY '14 AUCTIONS*

L88 Corvettes have long ranked among the most coveted cars on the auction circuit, and the results of this season's kick-off events prove that the storied RPO has lost none of its allure.

Leading the charge at Barrett-Jackson Scottsdale (Arizona) was the legendary '69 "Rebel" racer (shown), which we profiled in our Mar. '14 article, "Best of the Best." The car sold for a staggering $2.86 million, making it the event's top seller to that point.

It was eclipsed shortly thereafter by a Rally Red '67 four-speed coupe, which sold for a new Corvette auction-price record of $3.85 million. The car boasted an impressive list of NCRS laurels, including a Duntov Mark of Excellence Award from 2001.

Another pair of L88 Corvettes enjoyed top-10 placement at the Mecum Auction in Kissimmee, Florida, though their hammer prices did fall well below the stratospheric sums paid in Scottsdale. A thoroughly documented Cordovan Maroon '68 coupe brought $530,000, while a '69 Fathom Green convertible went for $510,000.

Look for a full recap of these early-season auctions in an upcoming issue.

DREAM GIVEAWAY *WINNER TO RECEIVE TWO 427 VETTES*

James DeGreve of Moline, Illinois, was recently named the grand prize winner in the 2013 Corvette Dream Giveaway. The giveaway is sponsored by New Life Center, a charitable organization that provides food, support, and emergency shelter for needy families with children.

DeGreve will receive both a topless '69 L71 and a Lingenfelter-enhanced, 615hp '13 427 Convertible (shown), along with $45,000 to help cover the prize taxes. The "matching" cars both feature a white exterior over a blue interior.

"Having the opportunity to help support a great cause such as this is the best part of it all," DeGreve said. "It makes your decision to enter so easy, because you know your donation will be helping a wonderful cause."

CORVETTE RESULTS MIXED AT DAYTONA ENDURO

Teams displaying the crossed-flags logo endured both the thrill of victory and the agony of defeat at the Rolex 24 at Daytona on January 25-26. Falling squarely in the latter category was Corvette Racing, whose all-new C7.Rs were stricken with mechanical problems that removed them from contention in the GT Le Mans category.

The No. 4 car of Oliver Gavin, Tommy Milner, and Robin Liddell was running second in class with less than three hours remaining when a transmission bearing failed and sent the car limping into the pits. After a 30-minute gearbox swap, Milner returned to the track to secure a Fifth Place class finish.

Meanwhile, the No. 3 car of Antonio Garcia, Jan Magnussen, and Ryan Briscoe fared less well, succumbing to an overheating problem near the halfway point of the race.

On a more positive note, the Corvette Daytona Prototypes proved the class of the field, taking First through Fourth Place overall. The top-finishing Action Express No. 5 car of João Barbosa, Christian Fittipaldi, and Sébastien Bourdais edged out the No. 10 Wayne Taylor Racing DP by less than 1.5 seconds to secure the win. VETTE

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PRODUCT PREVIEW

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In addition to the killer "ITB" look, the manifold features four dowel pins at each corner, so the ports match up perfectly with the heads every time. Try that with an ancient mechanical fuelie setup!

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FINE-TUNE YOUR C7'S CHASSIS

Is the seventh-generation Corvette the nimblest one yet? Probably, but Baer's got something that'll make it handle even better: a new adjustable rear toe link, which features sleeves and pins made specifically for the C7.

With a fixed mounting position that eliminates the factory eccentric, this setup allows you to make fine-tuning adjustments to improve cornering and response. Install it, and your Vette's performance through the twisties will put a "perma-grin" on your face!

CHECK IT OUT! www.baer.com

PAINKILLER

It's no secret that GM's LS-series engines are the hot ticket when it comes to great performance. But what if the Vette you drive didn't have one in it when it left Bowling Green or St. Louis?

Not to worry—a new swap harness from Painless Performance makes this conversion a snap, whether you're running the factory LS EFI system, starting from scratch, or in need of a complete chassis kit.

This particular harness is for the '07-'10 4.8L, 5.3L or 6.2L truck engine, and it's designed to connect to the factory ECU and TCU from your donor vehicle. Painless also offers kits for other applications, and will even provide an ECU re-flash service to ensure your control unit is dialed in for your specific application.

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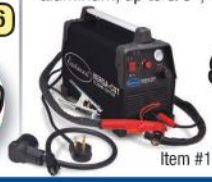

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UNDERHOOD STYLE

Corvette customizers, here's something to help bring your LS-swapped Vette's engine bay into the 21st Century: March Performance's billet Style Track pulley system.

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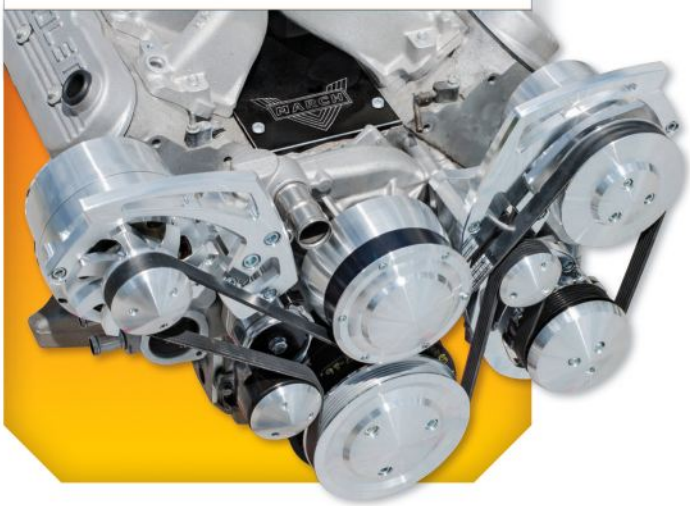
CHECK IT OUT! www.marchperformance.com



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Got a '98 Indy 500 Pace Car Corvette that needs fresh stripes and graphics? Check out Phoenix Graphix' new GM-licensed reproduction decal-and-stripe kit.

Manufactured on high-performance, automotive-grade vinyl, these graphics are identical to the originals. The complete kit (seen here) includes 17 large, multi-colored pieces for only $1,295—a fraction of the original GM cost. The hood stripes are also available separately, for $595 per set.

Note that because of the '98 IPC's low production volume, Phoenix has only manufactured a limited run of kits. Get yours now, because they may not be available later.

CHECK IT OUT! www.phoenixgraphix.com

VETTE

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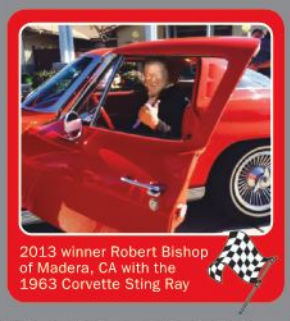

2013 winner Robert Bishop of Madera, CA with the 1963 Corvette Sting Ray

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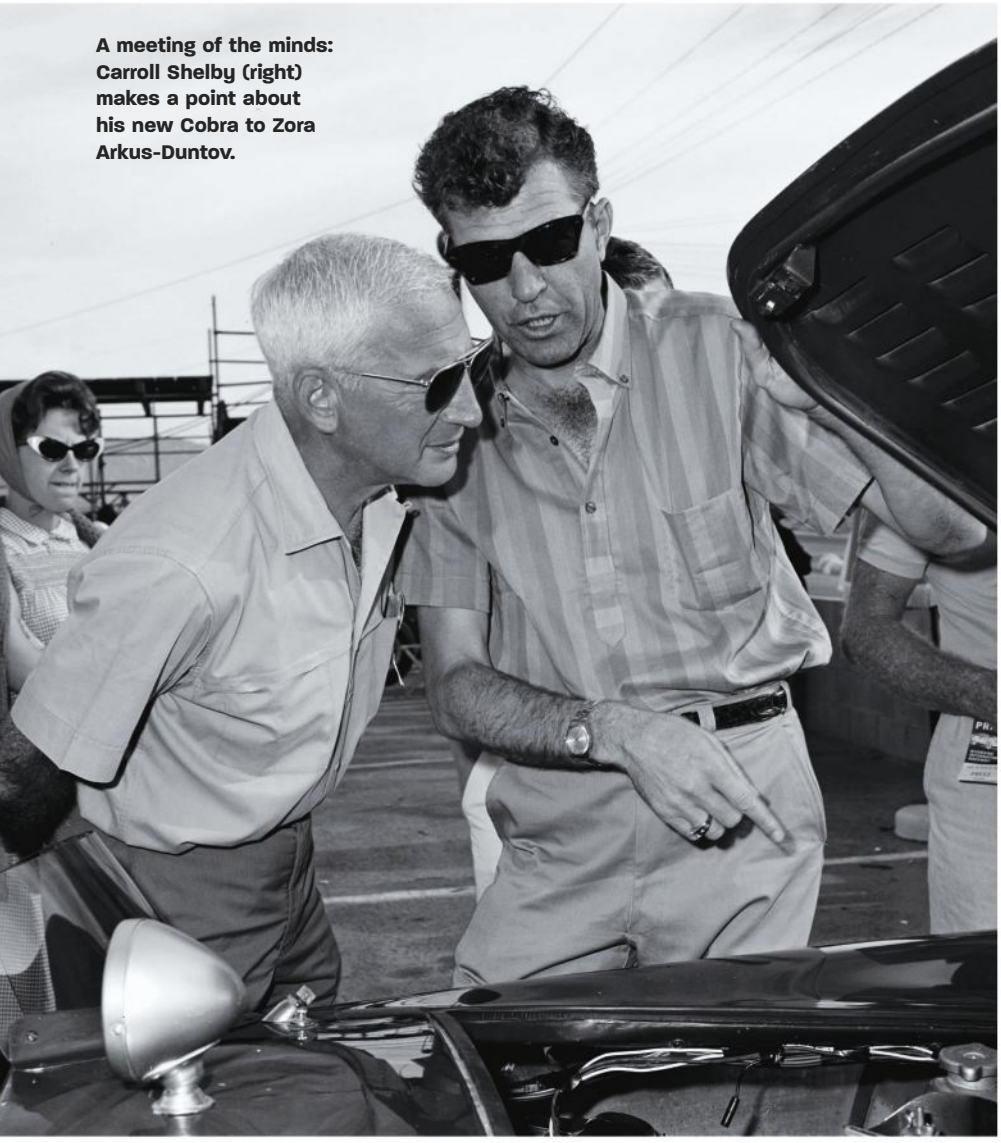
FROM THE ARCHIVES

DREW HARDIN WORDS
SOURCE INTERLINK MEDIA ARCHIVES PHOTOS



A meeting of the minds: Carroll Shelby (right) makes a point about his new Cobra to Zora Arkus-Duntov.

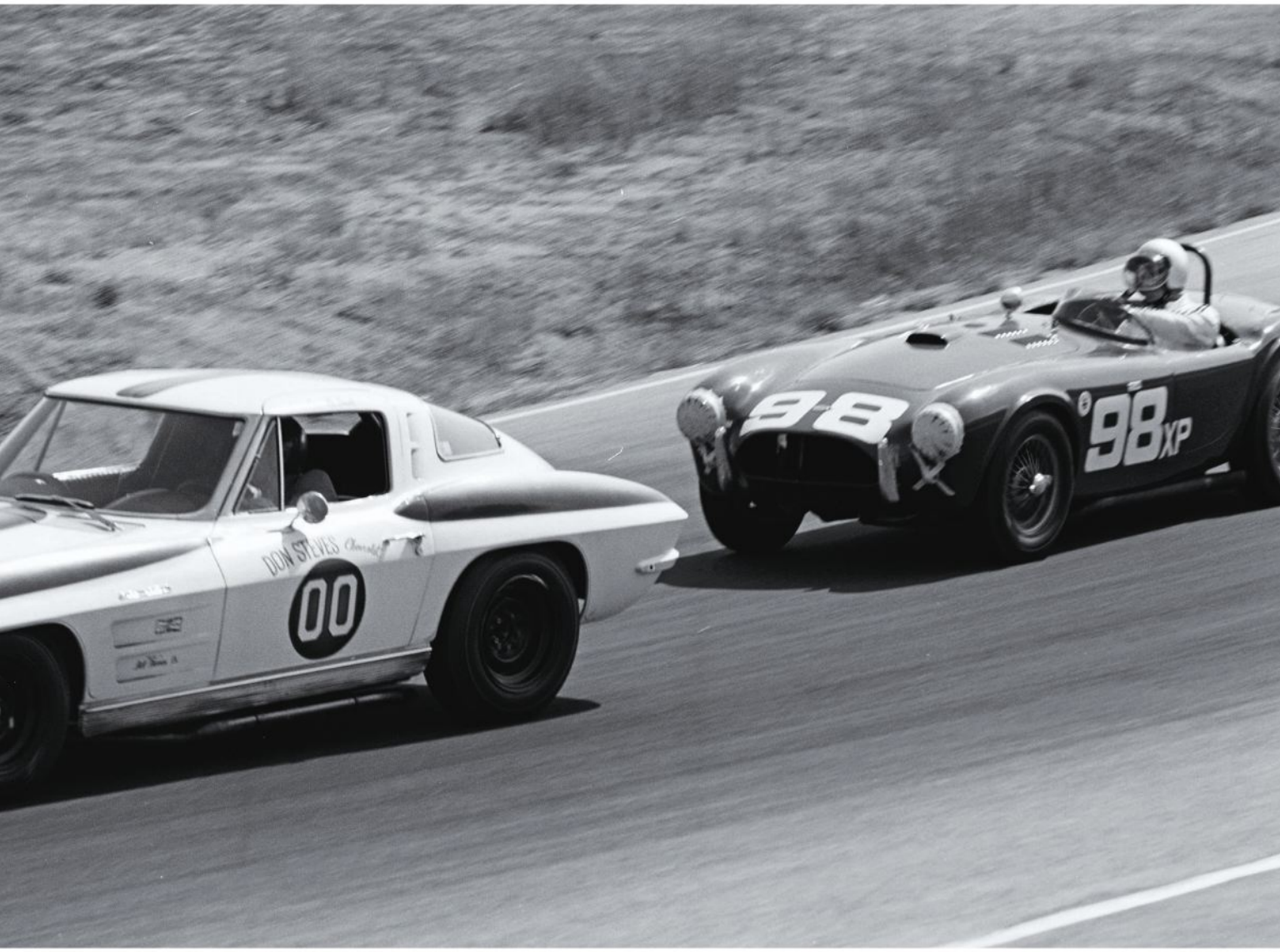
CLASH OF THE TITANS

With Chevrolet readying a new Z06 version of the C7 Stingray for the 2015 model year, we thought this would be a good time to look back at the history of the legendary RPO number.

As with so many things associated with Corvette history, the Z06 was the brainchild of Zora Arkus-Duntov. It was a Special Performance Equipment package for the new-for-'63 Sting Ray—and a way to sidestep Chevrolet's "official" ban on racing while still getting hot parts into racers' hands. Costing $1,818.45 (when the Vette's base price hovered around $4,200), the Z06 package included higher-rate springs, bigger shocks, a thicker front sway bar, and (at least at first) a 36.5-gallon fuel tank and knock-off aluminum wheels. There were also several significant upgrades to the Vette's brakes, including a vacuum-assisted dual master cylinder, finned-and-vented brake drums, and ducts that routed cool air to the front brakes. The Z06 RPO brought with it mandatory options, including the fuel-injected, 360hp 327 V-8; close-ratio manual transmission; and Positraction differential.

A couple months after the Z06 parts group went on sale, Chevrolet removed the big gas tank and knock-off wheels from the package, lowering its price to just under $1,300. The big tank was still available as a stand-alone option, though the wheels apparently had trouble with air leaks and were discontinued early in the program.

Just 199 Z06 Vettes were built, and the first four received their baptism by fire by entering a three-hour sports-car race at the *Los Angeles Times* Grand Prix at Riverside in October 1962. Duntov made sure these first cars went to top drivers and teams. Mickey Thompson



fielded one, driven by Doug Hooper; and racers Bob Bondurant, Dave MacDonald, and Jerry Grant drove theirs from the St. Louis assembly plant to Southern California to shake them down before hitting the track.

Race officials established a new factory experimental (XP) class for these cars, and for another new sports car making its debut at Riverside: Carroll Shelby's Cobra. Yes, the Z06's first race was also the first-ever matchup between Corvette and Cobra.

An excellent retelling of the race may be found on the Dave MacDonald website (www.davemacdonald.net), accompanied by photography by Dave Friedman. The photos you see here, shot by Petersen's Pat Brollier, are outtakes from the race coverage that ran in the January 1963 issue of *Sports Car Graphic* magazine.

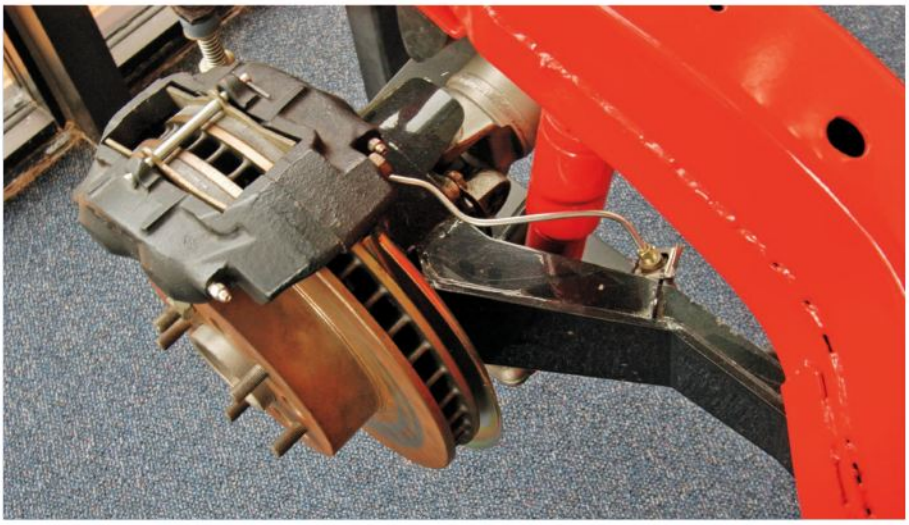
The race featured a Le Mans–type start, and MacDonald's Z06, white with double zeros on the door, was the first Vette away. Bill Krause, driving the Cobra for Shelby, was mid-pack when he left the starting line, but soon caught up to MacDonald. For much of the first hour, these two pulled ahead of the rest of the field and swapped leads, until a broken rear axle ended Krause's day. Just few laps later, MacDonald's car lost its left rear wheel, and he, too, posted a DNF (did not finish).

Not a very auspicious start for either icon. Except…at the end of the three-hour enduro, Thompson's black Z06, driven by Hooper, was the race's overall winner.

Potent as it was, the Z06 package was short-lived, soon overshadowed by Duntov's Grand Sport. And not all the Corvette/Cobra battles to come would end in Chevy's favor. But on this October day in 1962, the Z06 earned serious bragging rights. VETTE

TECHNICALLY SPEAKING

JAMES BERRY CORVETTE TECH GURU



GETTING THE BEARINGS STRAIGHT

Q: I'm a Corvette enthusiast and love the magazine—especially all the technical articles, since I do most of my own work on my Vettes.

I was out for a weekend cruise in my '79 recently when I noticed a problem. After an hour or so of driving, the driver-side rear wheel started to make a grinding, squeaking noise. I brought the car home, let it sit for a few hours to cool off, then took it back out to try to diagnose the problem. It seemed to have gone away for the first few minutes, but then it returned. It seems worse when turning or accelerating.

I was hoping the brakes were to blame, but when I removed the wheel, I heard a squeaking noise right behind the hub. Now I'm thinking it's a wheel-bearing problem.

I'm told the rear wheel bearings are difficult to replace. Do you think the average mechanic could do the job at home, or would it be cheaper to remove the rear trailing arm (with the bearing) and take it to a machine shop to get it pressed in?

Bryan
Via email

A: The rear wheel bearings on '63-'82 Corvettes are notoriously problematic. In fact, if the vehicle has more 75,000 miles on it, the factory bearings are probably due for service.

This is indeed a difficult job, but with some patience, a good mechanic should be able to get through it. Just be prepared to have the vehicle torn down for a while. Some original spindles may even need to be machined, to help them run true with the bearing journals.

Start by using the following procedure to determine if the wheel bearings need to be replaced on any '63-'82 Corvette:

1. Raise the vehicle and position four jackstands under the framerails, distributing the weight of the vehicle equally.
2. Separate the halfshafts from the spindle flange. This will allow the rear wheels to spin freely.
3. While spinning the rear wheels, listen for any grinding noise that could indicate a failing wheel bearing. Also feel for any roughness or binding while spinning the rear wheel; this is also an indication that the bearing could have an internal failure. At this step I can usually determine whether a bearing has failed.
4. Next, remove the rear wheels from the vehicle and position a dial indicator so that the point is perpendicular to the outer rotor surface. Bolt the rotor onto the hub with the lug nuts, keeping the rotor in its normal position.
5. Measure the movement by gently prying the rotor outwards with a prybar, then prying inwards with the bar placed between the spindle flange and the inside of the trailing arm. On '63 and '64 Corvettes, the drum will need to be removed so you can pry directly on the spindle.
6. If the measurement is less than 0.008-inch, and the rotation of the wheel is smooth, there is no bearing failure. (Note that if your car has more than 75,000 miles, it's probably time to replace the bearings anyway.)

You'll need special tools to perform a wheel-bearing replacement. These may be purchased from most Corvette-parts suppliers for about $185. (They may also be available on a rental basis.) While the job can be performed without them, it is considerably more difficult.

- Spindle-removal tool: This tool threads onto the old spindle and protects the housing from "mushrooming" while it's being struck.
- Spindle-setup tool: This tool allows you to slide the bearings on a mandrel (instead of on the spindle itself) to check the endplay of the assembly. Final endplay should be between 0.001- and 0.008-inch.
- Spindle-installation tool: This tool threads onto the new spindle and allows you to torque the spindle into place.

REMOVING AND REINSTALLING '63-'82 REAR SPINDLES

You don't need to remove the trailing arms to replace the rear wheel bearings. However, if the bearings are worn, it's possible that the trailing-arm bushings are worn as well. This would be a good time to visually inspect them.

1. Raise the vehicle and position four jackstands under the framerails, distributing the weight of the vehicle equally.
2. Unbolt the rear brake caliper and allow it to hang free. Partially disconnecting the

IF YOUR '63-'82 CORVETTE HAS MORE THAN 75,000 MILES ON IT, THE FACTORY WHEEL BEARINGS ARE PROBABLY DUE FOR SERVICE

calipers in this way will keep you from having to bleed the brakes when the job is completed.

3. Remove the brake rotor. If the rotors are riveted to the spindle, the rivets will need to be removed.
4. Separate the halfshafts from the spindle flange.
5. Remove the cotter pin from the spindle castle nut. If the cotter pin is rusted into the castle nut, you may need drill out the pin.
6. Remove the castle nut from the spindle.
7. Pull the spindle flange off the spindle.
8. Screw on the removal tool and hit it squarely and sharply until the spindle releases.
9. Use a punch to remove the bearing races from the housing.
10. Completely clean the old grease from the bearing-support housing.
11. Install the new bearing races, making sure they're seated all the way into the housing.
12. Now you'll use the setup tool:
    - » Place the outer bearing on the shoulder.
    - » Install the spacer and thickest shim on the mandrel, then place the assembly in the housing from the outside.
    - » From the inside, place the inner bearing on the tool. Use the thick spindle washer, nut, and sleeve.
    - » Torque to 100 ft-lbs.
13. Measure the endplay with a dial indicator. The minimum measurement is 0.001 while the maximum is 0.008. I prefer to have no more than 0.001 to 0.005. Repeat the process until the correct endplay is achieved.
14. It's time to pack the bearings and the housing with grease, preferably Mobil 1.
15. This next step is a little difficult and may require more than one try:
    - » Install the outer bearing onto its race.
    - » Install the outer grease seal.
    - » Insert the spindle from the outside through the grease seal and the outer bearing.
    - » Working from the inside, slide on the spacer and shim.
    - » Install the inner bearing and inner grease seal.
16. Slide the spindle flange into the spindle and install the installation tool. Tightening the nut on the end of the tool will draw the spindle into place.
17. Torque to 125 ft-lb and ensure that the spindle is properly seated.
18. Remove the installation tool and place the washer with the concave side down. Thread the nut on the end of the spindle and torque the nut to 100 ft-lb.
19. Complete the job by reinstalling the castle nut, cotter pin, half shafts, brake rotor, brake caliper, and wheels.

If the foregoing sounds too daunting, you can always pull the rear wheel-bearing carriers off and send them to a company that specializes in bearing replacement (for example, Van Steel).

Good luck, and let me know how it goes.

TALES FROM THE HOOD

Q: I hope you can help me with a problem. I recently went out to check on my '85 Corvette, which I haven't used for about six months. When I pulled the hood release, the hood would not open. What's the best way to rectify this situation?

Joey P.
Via email

A: This is a common problem on C4 Corvettes. The first thing to try is to have someone actuate the release handle while you pull up on each corner of the hood. This will sometimes cause the hood to release from the latch.

If that doesn't work, you may need to purchase a hood-release tool. These are available from most Corvette vendors for about $20. Note that if you're handy, you might be able to fabricate your own tool using the accompanying photo as a reference.

OPENING A C4 HOOD WITH A HOOD-OPENING TOOL

1. Open the driver door and position yourself near the doorjamb.
2. Insert the small end of the hood-opening tool between the hood and the door-hinge pillar, making sure the tip of the tool is pointing up.
3. Rotate the handle of the tool 180 degrees clockwise. This should position the tool's tip next to the latch lever.
4. Push the tip of the tool to the right; this should force the latch toward the center of the car and release it.
5. It may take several attempts to maneuver the tool into the correct position to release the latch. If the latch is stuck, it may be necessary to have someone press down lightly on the hood directly over the latch while using the tool.
6. Lift the hood and remove the tool.

When you get the hood open, be sure to lubricate all of the moving parts and adjust the slack out of the latch-release cable. If the cable has already been adjusted several times, or it has excessive slack, it's best to replace it. VETTE

QUESTIONS?

Got a question for our Tech Corner expert? Just jot it down on a paper towel or a lightly soiled shop rag and send it to us at *VETTE* Magazine, Attn: Technically Speaking, 9036 Brittany Way, Tampa, FL 33619. Alternatively, you can submit your question via the Web, by emailing it to us at vette@sorc.com. Be sure to put "Technically Speaking" in the subject line.

LEADING FROM THE REAR

01

01 ➔ **Remember the Lashway Motorsports C6 that graced our December cover? The South Florida tuner is at it again, this time with a new Stingray.**

AN AFT-MOUNT TURBO PROPELS C7 PERFORMANCE FORWARD

SCOTT ROSS WORDS
KEVIN DIOSSI PHOTOS

"I DRIVE IT AND I CAN'T BELIEVE I'M IN A VETTE!"—ERIK BENTLEY

How soon did you figure that modifiers would start working their magic on the C7 Corvette?

Like most ambitious Vette tuners, Lashway Motorsports started almost as soon as the seventh-generation model went on sale. "We ordered it in March 2013 and got it in September," says Lashway's Erik Bentley of the shop's base-version Stingray. "We didn't get it with the Z51 option, because we knew we'd be changing the wheels, brakes, and all kinds of stuff. We didn't want to spend the money to have the upgrades made at the factory, and then take them off."

Upgrades for the C7, as seen here, are the product of less than six months' work to date. In that time, the Lashway crew began hitting their power goals, thanks in large part to a rear-mounted turbocharger.

Why mount a turbo in back, instead of under the C7's hood? "To mount a single or twin [turbocharger] system under the hood of a C7 is…extremely hard," says Bentley. "Things have to be relocated and so on." He adds that due to the lack of underhood space, aftermarket turbos have to be mounted low, next to the oil pan or in the fenders.

And there are other considerations: "Our [system] will be under 10 grand installed," notes Bentley, adding that Lashway should be able to install one in six to eight hours.

For that exchange of time and cash, your C7 would return with quite a bit more than the stock car's 460 horsepower, though, as of this writing, the Lashway crew have yet to reach all their goals. "As far as power goes, we haven't got any final numbers yet, but we've already eclipsed the 500 lb-ft mark in rear-wheel torque at 3,800 rpm," says Bentley, who adds, "Our goal is 550 to 600 horsepower at the rear wheels. I think we'll hit that very easily." He also says that's with the turbo developing

SPECSHEET

'14 CORVETTE STINGRAY COUPE

OWNER	Lashway Motorsports; Fort Lauderdale, FL
BLOCK	Stock aluminum with cast-iron cylinder liners and six-bolt nodular-iron main caps
DISPLACEMENT	376 ci
HEADS	Stock aluminum
VALVES	Stock 2.13-in hollow nitrided (intake) / 1.59-in sodium-filled (exhaust)
CAMSHAFT	Stock hydraulic roller with variable valve timing
PISTONS	Stock hypereutectic aluminum with oil-spray cooling
COMPRESSION	11.5:1
CRANKSHAFT	Stock forged steel
RODS	Stock powdered-metal steel
OIL SYSTEM	Stock wet sump with variable-displacement pump
INTAKE MANIFOLD	Stock "runners in a box" composite
FUEL INJECTION	Stock with primary electric/secondary mechanical fuel pumps and 125.7-lb/hr injectors
POWER ADDERS	Custom Lashway Motorsports remote turbocharger, Nitrous Express 100hp "wet plate" nitrous-oxide system
IGNITION	Stock electronic coil-on-plug
EXHAUST	Stock, modified for remote-mounted turbocharger
TRANSMISSION	Stock Tremec TR6070 seven-speed manual with Active Rev Matching
CLUTCH	Stock dual-disc
DRIVESHAFT	Stock
REAREND	Stock with 3.42 gears
SUSPENSION	Stock short/long arm with composite leaf springs and tubular shock absorbers, lowered on West Coast Corvettes lowering bolts
BRAKES	Stock four-wheel discs with white-powder-coated calipers
WHEELS	Strasse Forged Wheels SM5 forged aluminum; 20x9.5-in (front), 20x12-in (rear)
TIRES	Michelin Pilot Super Sport; 285/25ZR20 (front), 325/25ZR20 (rear)
MILEAGE	2,000

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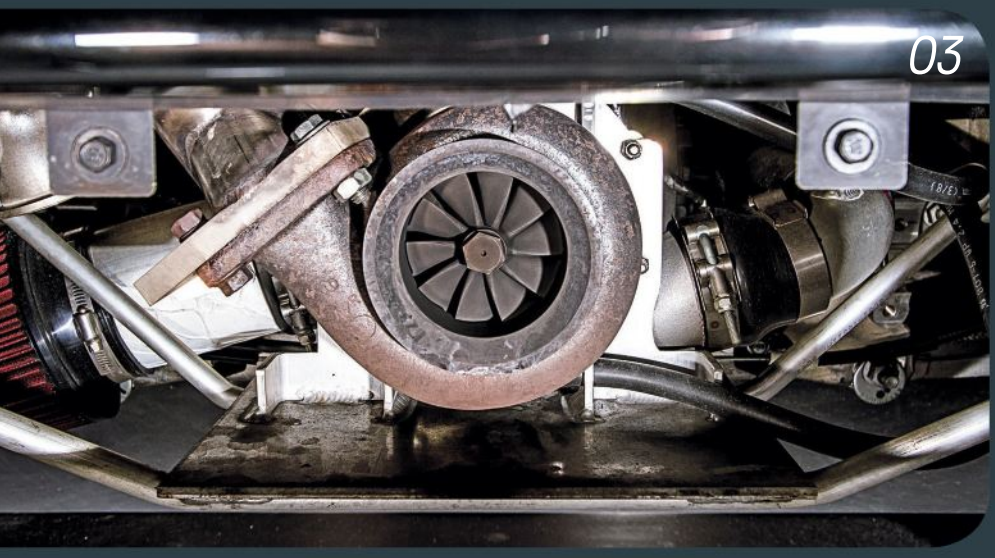
02



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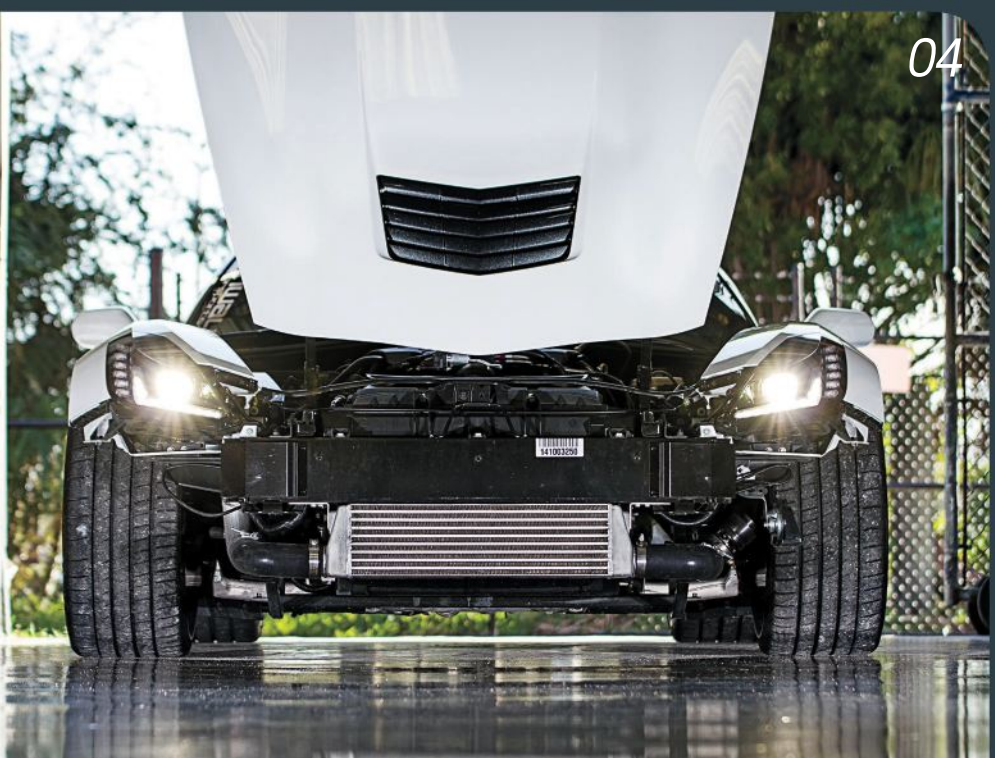

04

05

06

02 ➔ Here's one reason why Lashway went with the unconventional turbo-mounting location: the tight C7 engine bay. 03 ➔ Prototype rear-mounted turbocharger looks to boost the LT1's output well beyond the factory 460 hp figure. 04 ➔ The intercooler mounts up front, just as it would in a typical turbo install. Lashway hopes to achieve a final boost level of 7-8 psi at the engine. 05 ➔ The huffer mounts under the rear plate, behind a rear fascia that's been upgraded with a custom diffuser. 06 ➔ Also adding power: a Nitrous Express 100hp "wet" system.

between 7 and 8 pounds of boost. "The turbocharger itself is making about 10 to 12 psi," he says. "We're only getting about 4 to 5 pounds at the engine, which isn't bad, but we want to get to around 7 [or] 8. Changes we're making now will get us there."

Lashway also added a second power booster: a 100hp Nitrous Express setup. "They were eager to test their Stingray system out, so as soon as we got our car, they sent us one of their plate systems," says Bentley.

As with the rear-mount turbocharger, Bentley says little modification was needed to add the nitrous. "For a couple-hour install, we wound up with almost 530 rear-wheel horsepower," he says of the increase in the LT1's output (without the turbo). Plus, a custom Lashway dyno tune added about 30 rwhp when they plugged HP Tuners software into the C7's diagnostic port.

With the horsepower mods well underway, a set of Strasse Forged SM5 carbon-series wheels on Michelin Pilot Super Sports went on the car, as did a lowering-bolt kit from West Coast Corvettes. (Interestingly, Bentley notes that it's the same one used on the C5 and C6.) One more chassis upgrade may be in the works, as well: a big-brake kit for the front. "The standard C7 brakes are pretty good, but we want a nice, big, six-piston caliper up there," says Bentley.

Lest you think that the all-new Stingray body was left alone, it, too, received the Lashway treatment. "We designed and built a custom aero package that consists of a splitter and side skirts, as well as a rear diffuser," says Bentley. "All those parts have been mounted on our car, and we [also] sell them in a choice of carbon fiber or fiberglass

07

08

07 ➔ The Stingray's Adrenaline Red cabin is still stock, so far. 08 ➔ The factory brakes remain for now, but that's likely to change in favor of bigger rotors and six-piston calipers.

that's painted Carbon Flash Metallic."

As mentioned above, the Lashway crew is closing in on its rear-wheel-power goals. But in the meantime, what's this work-in-progress like to drive? "It's unbelievable," Bentley says. "I had a C6 Z06 that was featured in *VETTE* ("Extreme of the Crop," Dec. '13), which was pretty cool. That car was unbelievably powerful. But when I compared it with the C7, and how it drives with the modifications, the difference was like night and day. It's almost like you're driving a supercar."

Bentley can't say enough about the C7, even in its current, lightly modified form. "I drive it, and I can't believe I'm in a Vette," he says. "The acceleration is great, and the handling is superb, especially considering that we did nothing to it other than lower it. There's no Magnetic Ride suspension—it's the base suspension. It's a completely different driving experience from a C6 or a C5."

Does he have advice for those looking to upgrade the latest Corvette? "The first thing you're going to want to do…for performance is a tune. We picked up almost 30 horsepower [from that], because the direct injection is so powerful and has so much potential. All we did was unlock that potential with better timing and a more-optimal air/fuel ratio."

The Corvette has long been the foundation of choice for U.S.-based tuners seeking to build a legitimate home-brewed supercar. With shops like Lashway Motorsports on the case, that trend seems likely to continue with the latest edition. VETTE

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LOT NO. 68127/ 69865/61489

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40 LB. CAPACITY FLOOR BLAST CABINET

SAVE $120

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LOT NO. 47016/67181

SAVE 66%

Item 47016 shown

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CHICAGO ELECTRIC WELDING

Item 46092 shown

LOT NO. 46092/61611

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PILOT CAR

AN EARLY-BUILD '57 CORVETTE THAT FLEW HIGH ON THE ROAD-RACING CIRCUIT

BARRY KLUCZYK WORDS | PHOTOS

With its fender flares and simple hoop rollbar, the '57 Corvette former race car of Randy and Ann Scott is definitely a snapshot from another era—and then there's the engine. It's a big-block. In a C1 road racer. Talk about swatting flies with sledgehammer.

Who would put a huge, heavy big-block in a C1 road-race car? That's exactly what the Scotts have been trying to find out for nearly five years. They bought the car in 2008 while attending a car show near their Michigan home. It was sitting on a side street and drawing little attention.

"With its bodywork, many people assumed it was some sort of kit car," says Ann Scott. "Others didn't believe the sign that mentioned a big-block, but Randy and my son, Brian, checked under the hood. When they saw the old big-block [there], they were convinced."

While Randy and Brian continued to inspect the car's mechanicals, Ann checked out the interior, which contained a few vintage Stewart Warner gauges, the aforementioned rollbar, no radio (thanks to the work of some sticky-fingered neighborhood kids years earlier), and a dashboard missing the characteristic "humps." There was also a leather-wrapped "Duntov" steering wheel.

On the outside, the flared fenders were definitely evocative of Cobras, while other cues—the boxy hoodscoop, a single windshield wiper, deleted door handles, and an aluminum fuel-filler cap—reinforced the race-car

aesthetic. And there was another item that caught the Scotts' collective eye: The vehicle identification number (VIN) was E57S100017.

"We looked at one another and were thinking the same thing: Could the car really be the 17th car off the assembly line for 1957?" says Ann. "We were really interested at that point, thinking we'd found something pretty unique."

Apparently the owner was neither aware of what he had nor particularly concerned about finding out. He had received the car as part of a legal settlement, and it was taking up valuable real estate in his garage. He wanted it gone. The Scotts negotiated with him and took the car home.

As soon as it was in the Scotts' garage, they wasted little time in confirming the identification number. Unfortunately the VIN on the doorjamb was long gone, which meant squeezing under the car with a flashlight and mirror to locate the one on the frame. It matched the number on body. As it turns out, VIN E57S100017 was one of the first 24 cars produced that year. They were pilot cars, all painted Cascade Green and fitted with the range of features and options intended for production. An anomaly on the Scotts' car is a power antenna located on the passenger-side rear fender, rather than on the driver side.

When it came to tracing the car's competition

01 ➔ With its flared fenders, shaved bumpers, and other body modifications, the Scotts' '57 could almost be mistaken for a kit car.

02 ➔ The '57 at speed. "The acceleration is instant and awesome," says Randy Scott. 03 ➔ A full set of Stewart-Warner gauges track engine vitals such as water temp, oil pressure, and (shown) rpm. 04 ➔ Transplanted 427/390 big-block provides exhilarating acceleration but heats up quickly.

history, the story became much cloudier. The Scotts found the previous owner in Texas, a pilot who lost the car in the lawsuit to the gentleman they purchased it from, who also happened to be a pilot. The Texan told them that prior to his time with the car, it had been owned by yet another pilot, this time a fighter jockey at the famed Miramar "Top Gun" Air Force Base in California who teamed up with a fellow flyboy to go racing. They set up the car for SCCA Solo events and apparently claimed back-to-back points championships at Sears Point (now known as Sonoma Raceway and previously Infineon Raceway). That's when the Corvette was apparently transformed into a race car and fitted with the big-block powerplant.

At first blush, running a heavy big-block seems antithetical to the balance required to make a C1 competitive on a road course, but on second thought, maybe it wasn't such a bad idea. The 2.52-mile Sonoma course has 160 feet in elevation changes, enough to require some serious downshifting by torque-challenged cars. The big-block, on the other hand, would enable the Corvette to squirt up the grades effortlessly. Of course, cornering and braking with the nose-heavy C1 was probably a white-knuckle experience suited to a fighter pilot, but those consecutive championships prove that the sledgehammer approach was effective, if not exactly delicate.

The four-barrel-fed big-block powering the Corvette is a 1966-vintage Corvette 427/390-hp version backed by a matching Muncie M21 four-speed transmission and connected to the original solid rear axle. It was reportedly enough to push the little C1 to 160 mph. A set of '72 Chevelle front disc brakes were adapted to the car, along with a Mopar proportioning valve mounted under the driver-side front fender. There's also a two-stage power-assisted master cylinder for the braking system.

The Scotts dug deeper into the backstory of the fighter-pilot driver, but so far have come up empty. Our inquiries at Sonoma Raceway have been fruitless, too, after being told the track's owners weren't exactly diligent record keepers in the early days. However, Sonoma's public-relations manager suggested we speak with Gary Horstkorta, the archivist for SCCA San Francisco region.

Based on the information we had, Horstkorta told us a championship, either in road-racing or solo competition, would not have

05 ➔ High-flying, perhaps, but not Top Flight: Much of the original interior has been removed, including the C1's signature "double hump" dash. 06 ➔ A fat rollbar provides a modicum of safety during on-track excursions.

been run or won solely at Sears Point, but at a number of venues throughout the year, with the points earned at each event totaled to determine the class/regional champion. Based on the mods to the Corvette, it most likely would have been classified as a "modified" car.

The trophy that went with the championship, however, wasn't a tool that kept the car competitive. The brutal effectiveness of the Corvette's devastating power-to-weight ratio wasn't enough to fend off newer, nimbler sports cars, and, like so many winners that went before it and after, it was put out to pasture. That's the natural order in racing. In this case, the pasture was a dealer's lot in Oklahoma, where a pair of brothers bought it. Reportedly, one of the brothers bought out the other's interest and drove the car for a few years before selling it to the Texas pilot at a Super Chevy Show.

The Scotts weren't privy to all the sordid details behind the lawsuit that saw the Corvette wind up with the seller they bought it from in Michigan, but he was a pilot, too, and the legal morass apparently also involved an airplane. The car sat untouched for years in Texas during the drawn-out litigation.

"We drove the car home after purchasing it, and we were really worried the engine was on its last legs, because it registered only about 10 pounds of oil pressure," says Randy. "The oil had that milky appearance, too, from moisture contamination. It had started breaking down."

But old big-blocks never really die. They just need a transfusion, and that's what the Scotts performed.

"We drained out the old oil and added some 20W-50, adjusted the carburetor and replaced the spark plugs," says Randy. "The engine fired right up, and the oil pressure instantly went to 50 psi. It's been running great ever since."

Since then, the Scotts have put some additional elbow grease into the car, wet-sanding the very subtle baby-blue pearl lacquer paint it has worn for decades. Their efforts yielded a presentable shine that looks wholly appropriate for a race car from a bygone era. They also tackled a couple of minor yet necessary fiberglass repairs, added carpet, and replaced the previous pair of worn-out seats. A set of Hoosier-wrapped standard Corvette steel wheels were bolted to the hubs, too.

"We added the racing number, because it really needed one as a race car, but we don't know what the car's number was back in the day," says Randy. "The numbers are removable, and when we learn what the original number was, we'll put it on."

While the Scotts were thrilled to locate and revive the vintage race car, they're still assessing their plans for it. All the lights and signals work, so it's definitely streetable, but there's also the lure of the racetrack.

"It must have been a real handful on the track," says Randy. "There's so much torque in such a comparatively small, lightweight package. The acceleration is instant and awesome, but there's not a lot of room under the hood for cool air, and it heats up quickly. A more elaborate cooling system would be necessary for more than pleasure drives. I don't know how those pilots kept it cool when racing."

Establishing the provenance of a vintage Corvette is one of the more fascinating aspects of the Corvette lifestyle, and the Scotts have carved out an intriguing mystery with their pilot-build and pilot-driven race car. Not all of the blanks have been filled in yet, so if you recognize the car and can help with the back story, email us at vette@sorc.com, and we'll pass along the information. VETTE

TOMBOY HOT-RODDER BUILDS A TANGERINE-HUED C3

SCOTTY LACHENAUER WORDS | PHOTOS

To those who didn't know her well, young Karen Viray might have looked like a typical all-American girl growing up in the vast suburban sprawl that makes up Northern New Jersey. But little did the outside world know, Viray was holding a secret, a secret her immediate family acknowledged and, interestingly enough, helped nurture whenever possible.

You see, Viray didn't like to play with Barbies and Malibu Kens (though she did take a liking to Barb's mean little plastic Mustang). No, dolls just didn't satisfy this girl's curiosity in the least. What grabbed her interest, and gripped it tight like a heated-up race slick, were the sleek American muscle cars that cruised and cooked rubber on her neighborhood's streets.

Growing up the youngest of four, Viray was a major tomboy. She shadowed her big brother Bobby and Uncle Bill during her formative years, following them to car shows, swap meets, drag races, and the like. And for Viray, playing dress-up had nothing to do with makeup and frilly dresses. No, it was more like throwing on an oversized mechanic's bib, digging into a box of ratchets and wrenches, and popping the hood of a classic cruiser.

Later on in life, Viray would come across a copy of the 1978 *Hot Rod Show World Annual*

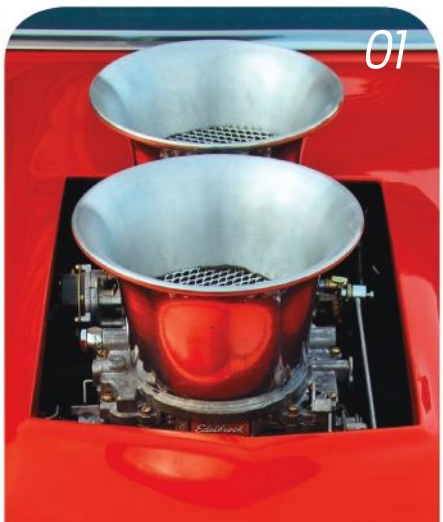
E-WHIP

magazine. Inside was a feature article on Merv Shipman's world-beating '69 Corvette. Viray resolved then to build her own '69, drawing from not only Shipman's radical creation, but also from the Zinger Corvettes, those wacky '70s rides that strutted cartoonishly exaggerated engine-to-body proportions.

Viray's first task was to find a solid '69 chassis on which to build her dream ride. She had a long talk with good friend Mario Colasuonno, a member of the highly regarded Dead Man's Curve Car Club, after which the pair decided to visit Corvettes at Carlisle to see if the car corral contained any suitable C3s.

Luckily for them, a sweet Monaco Orange '69 had also made the trip. Viray spotted the brightly colored C3 among a sea of potential projects, sitting in the grass high up on a hilltop. It was love at first sight, though the deal initially seemed too good to be true.

Colasuonno and fellow DMC'er Ed "The Mad Hawaiian" Stinson checked out the well-maintained Vette thoroughly for Viray. After crawling up, down, and around the car, they



01 ➔ The hood is a one-off piece loosely based on a C3 big-block unit. Note the tapered lip on the velocity-stack cut-out.


02


03


04

pronounced it fit for the project. This mission wasn't over, however, as Viray had to chase away a few other prospective buyers who were homing in on her find. With that in mind, she quickly closed the deal on the Vette and prepared it for the trip back to New Jersey.

As noted before, Viray's goal for the build was to make a full-sized version of an early-'70s slot-car-styled ride, with a little Zinger Corvette personality added in. A plan was soon devised on paper, and then set into motion. Viray's dream was about to become a reality.

The Corvette was stripped down, and the appropriate parts were bagged and stored for future use. Some bodywork was needed, and since she was already digging into the car's Monaco Orange skin, Viray decided to apply a more arresting shade of paint to the outside panels. She wanted a color-changing hue that would look like molten lava flowing down the car's flanks when exposed to direct sunlight.

After checking out a few different samples, she decided on House of Color Kustom Kandy Tangerine three-stage paint. It was laid on by Rob Pilone of Dynamic Body Works in Roxbury, New Jersey, who had previously done the intense paint work on Colasuonno's award-winning '40 Willys. After laying a silver base over the perfected bodywork, Pilone added four coats of Kandy Tangerine to give the car its fiery hue. The finish was completed with several rounds of clear and buffed to an intense shine.

02 ➔ House of Kolor Kandy Tangerine paint subtly shifts colors under changing light conditions. 03 ➔ Moderately warmed-over 355ci small-block features Comp valvetrain components and, most noticeably, an Offenhauser tunnel-ram intake. 04 ➔ Karen Viray—shown here with husband Al on their wedding day—has been tinkering with cars since childhood. The Corvette is the culmination of her hot-rodding efforts to date. 05 ➔ Inside, black crocodile hides stitched by Roger Wagner contribute to the '70s-show-car vibe. 06 ➔ Fat 15-inch Pro-Tracs channel an estimated 400 horses to the pavement. 07 ➔ A Mooneyes flip-top gas cap and classic pinstriping by Alan Johnson adorn the back deck. 08 ➔ Despite its show-worthy appearance, this car was built to drive, as owner/builder Viray demonstrates here.

With the paintwork out of the way, Viray shifted her attention to the car's powerplant. After several swap-meet trips and countless orders from suppliers, Colasuonno was ready to sit down and rebuild the original small-block with some added flair.

First off, the block was cleaned, hot-tanked, and magnafluxed. The 350 received a 0.030-inch overbore to freshen up its cylinders, the original crank was cleaned up and reused, and 10:1-compression slugs were used to fill the block. A Comp Cams bump-stick with 280 degrees of duration and 0.480-inch lift was chosen to help get the valves working in sync.

Chrome Corvette-badged valve covers, Cool-Flex hoses, and a re-anodized vacuum modulator add some typical hot-rod touches to the small-block, while a custom-painted shroud, polished expansion tank, and chrome alternator and pulleys supply plenty of "bling" to the engine bay. An Offenhauser tunnel-ram intake and twin 500 carbs feed the engine a much-needed a fuel/air cocktail, while a pair of polished velocity stacks provide the finishing touch and boldly announce that this ride means business.

The stock Muncie four-speed was rebuilt but retains its factory-issue shifter. Outside, the original sidepipes sing a proud small-block song while contributing to the overall aesthetic.

Viray wanted something special for the hood treatment, ultimate deciding on a totally custom three-tier piece. It's based on an original big-block hood but has additional rises and tiers. This undertaking proved difficult because C3 Corvette motors are not centered on the frame, but rather offset by about 2 inches to the passenger side to clear the steering box. The finished piece features a tapered lip that smooths out the transition to the cut-out for the velocity stacks.

For running gear, a polished quartet of vintage Ansen sprints, sized 15x7 inches up front and 15x10 out back, furnish the desired stance. A set of Pro-Trac tires—F70-15 in the front and 275/60/15 in the rear—put plenty of rubber to the pavement, an important consideration given the small-block's output and the 3.73 gears inhabiting the Positraction rear. Standard four-wheel discs, meanwhile, do a capable job of hauling the car down from speed.

The interior work was done by upholstery guru Roger Wagner of Wharton, New Jersey. Wagner has been stitching cool rides now for more than 40 years, and his expertise shines on this build. He did a beautiful job putting together custom skins featuring black-on-black crocodile, a look that is both suitably radical and faithful to the era.

Viray admits to being a bit overwhelmed by just how beautifully the car turned out. The paint doesn't just pop out in the sun, it *explodes*. The hot spots change colors from warm orange, to burning yellow, to white hot, and the overall shimmer of the HOK paint is just mesmerizing. The 400-plus ponies help it run with the best of the muscle out on the streets, a critical factor for this unrepentant gearhead. VETTE

You can take a step back in time, while keeping your mechanicals modern, with the new '67 Corvette conversion from Classic Reflection Coachworks (www.crcoachworks.com). Its custom body panels are made from a vacuum-bagged lamination of e-glass and pre-preg carbon fiber that can be installed on a wide range of newer ('98-'13) Corvettes.

Also new from CRC is a Stingray Turbine Wheel, patterned after the '58 Corvette hubcap rim and complete with simulated whitewall. Available in 18-to-20-inch sizes, it's designed to fit C5 and C6 Vettes.

While the name sounds French, Livernois Motorsports (www.livernoismotorsports.com) is all-American when it comes to engine performance. The company's new head-and-cam package for the Gen V LT1 is a complete top-end upgrade solution that includes CNC-ported cylinder heads, an AFM/VVT delete system with custom camshaft, head studs, and a tuning device.

While the C7 offers superb handling right out of the box, you can tune it even further using Baer Brakes' (www.baer.com) new Rear Adjustable Toe Link. With a fixed mounting position (eliminating the factory eccentric), plus specific sleeves and pins for the C7 setup, this link offers a range of settings to suit your specific application and driving style.

THE FOUNTAINHEAD

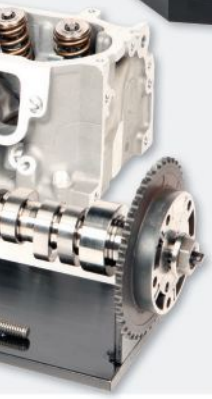
PART 2: SEMA PROVES A WELLSPRING OF FRESH CORVETTE PARTS

STEVE TEMPLE WORDS | PHOTOS

We had our work cut out for us at the most recent Specialty Equipment Market (SEMA) show. That's because it was clearly "The Year of the Corvette," what with all the new Stingrays and Corvette upgrades on display. Out of a sense of due diligence, we realized it would take more than one feature to squeeze in as many as possible. So what you see here is a follow-up, in no particular order, covering several more of the eye-catching components we came across.

Editor's note: While putting together Part 2 of our SEMA coverage, we realized that we omitted the Web addresses of the manufacturers included in Part 1. In an effort to remedy this oversight, we've included them at the end of this article.

Keep your C6 ahead of the competition with a ProCharger (www.procharger.com) i-1 intercooled supercharger for '08-'13 LS3 Corvettes. This innovative programmable-ratio system is said to provide 200-plus additional horsepower on stock engines, while offering the convenience of touch-screen boost adjustability. It comes with all components needed for a complete installation, and is designed to support a max output of 900 horses.



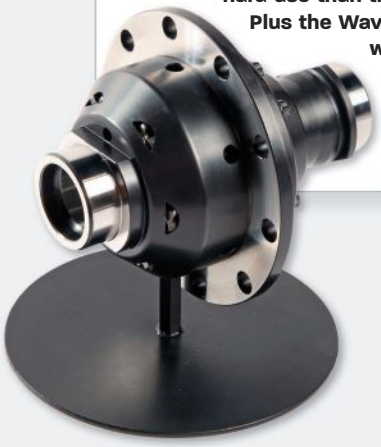
Need new instrumentation for your '69 to '71 Corvette resto project? Classic Industries (www.classicindustries.com) now offers a full battery of reproduction dash gauges. Pre-calibrated and ready to install, this set includes a speedometer with a push-on-type cable end; a 6,500-rpm-redline tachometer; a clock; and fuel-level, oil-pressure, coolant-temp, and ammeter gauges.

It's full speed ahead with Billy Boat's (www.bbexhaust.com) C7 header/X-pipe/exhaust system. The headers are handcrafted from T304 stainless steel and feature 1 7/8-inch tubes arranged in a 4-into-1 merge collector to maximize scavenging. (Tri-Y configurations are also available.) The crossover is said to improve scavenging as well, while further refining the exhaust tone. This system is available with high-flow catalytic converters and features dual-valve technology.

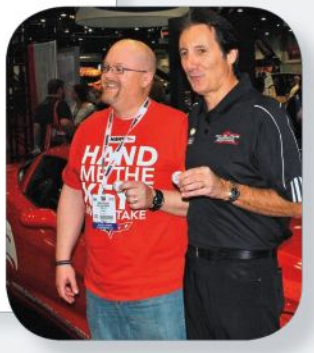
When customizing a Corvette, carbon-fiber treatments are the new black, literally. Get that appearance without the price using Dupli-Color's (www.duplicolor.com) new Carbon Fiber Paint Kit. This two-can system uses the company's Dimensional Effex Template to create a carbon-fiber finish on any metal or plastic surface.

Those balky headlight doors on midyear Corvettes can be a pain, but Detroit Speed and Engineering (www.detroitspeed.com) has a quick fix. The company's 1963-1967 Corvette Electric Headlight Door Kit replaces the stock electric system with current sensing technology that needs no adjustment. It comes with two electric actuators, a control module, a harness, mounting brackets, and all necessary hardware.

Beef up the limited-slip feature in your C5 or C6 with a Wavetrac (www.wavetrac.net) differential. This made-in-the-USA unit is said to improve traction with no trade-offs in driveability, while also offering better durability and consistency under hard use than the OEM unit. Plus the Wavetrac comes with a limited lifetime warranty, even when raced.



Chris Pearson won Hawk Performance's (www.hawkperformance.com) "Hand Me the Keys" sweepstakes, fittingly awarded by Corvette Racing legend Ron Fellows. How did he react to being given this customized C6? "Stunned silence," Pearson admits. "I kinda disappointed everyone." After picking up the car in Nashville, the Ohioan claims to have "kept it under 100" on the drive home. Right now, he's waiting for the weather to improve before taking it out again. When asked if he'll be able to hammer it on the airstrip where he works, he says his boss probably wouldn't approve. "But it'll definitely get driven," he adds.



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Mantic (www.mantic.com.au) normally supplies clutches for later-model Corvettes, so when the company was asked to provide one for an LS1-powered '65, there was some hesitation. But after seeing photos of John Kundrat's Goldwood Yellow restomod, it was obvious that Kundrat is a Mantic kind of guy. Not only that, he miles to the SEMA show in Las Vegas. The Corvette's 410hp LS1 is backed by a six-speed linked with a Mantic 9000 series cushioned-button, twin-disc clutch. The polished 19-inch C6 wheels required reworking the rear wheel arches 2 inches for clearance, but it's done so well that it looks factory stock.

While Bushwacker may be best known for fender flares and other aftermarket pickup and Jeep parts, company CEO Jerry Logan has a thing for Corvettes, specifically the silver '63 shown here. The car boasts a Ram Jet 350 injected by Arizona Speed & Marine, plus Flaming River steering, Vintage Air HVAC, Moon custom mirrors, and Circle Racing 88-series 17-inch rims wrapped with sidewall-smoothed Michelins.

Inspired by the popularity of its three-piece Series S1 wheel line, HRE (www.hrewheels.com) has created a single-piece Monoblok interpretation called the Series P1. The rim's lightweight design minimizes unsprung mass and rotational inertia for optimal acceleration, handling, and braking performance. Shown here on the Nowicki Autosport/Design C7 is the five-spoke mesh P101. Rounding out the line are the "V" five-spoke P104, the split-six-spoke P106, and the split-five-spoke P107, all available in diameters ranging from 19 to 22 inches and widths from 8.5 to 13 inches.

DiabloSport (www.diablosport.com) says its computer module adds as much as 20 hp and 30 lb-ft of torque to the '14 Stingray's LT1. This tuning device is also designed to handle a host of other modifications, such as calibrating the speedo for different gear ratios and tire sizes, adjusting shift points and firmness, advancing spark timing, disabling AFM, boosting throttle response, and more.

Part 1 Sources

AIRAID	www.airaid.com
COMP CAMS	www.compcams.com
EDELBROCK	www.edelbrock.com
GREEN FILTER	www.greenfilterusa.com
HOLLEY	www.holley.com
KOOKS HEADERS AND EXHAUST	www.kooksheaders.com
LEGACY INNOVATIONS	www.legacyinnovations.com
LINGENFELTER PERFORMANCE ENGINEERING	www.lingenfelter.com
NITROUS EXPRESS	www.nitrousexpress.com
NOWICKI AUTOSPORT DESIGN	www.nowickiautosport.com
PFADT RACE ENGINEERING	www.pfadtracing.com
QUANTA HYBRID PERFORMANCE	www.quantahybridperformance.com
RIDETECH	www.ridetech.com
STS TURBO	www.ststurbo.com
TRICK FLOW SPECIALTIES	www.trickflow.com
WILWOOD	www.wilwood.com
WISECO	www.wiseco.com

FROM STINGRAY TO STING RAY AND BACK

CORPORATE INFIGHTING, SECRET DESIGN ROOMS, AND THE MOST ICONIC CORVETTES EVER BUILT

DREW HARDIN TEXT

COURTESY THE SIM ARCHIVES, **GM**, AND **THE GM HERITAGE CENTER** PHOTOS

The actual inspiration that led to Corvettes wearing the Stingray name is cloudy. Bill Mitchell, who took over GM's styling department when Harley Earl retired in 1958, chose the moniker for a race-car prototype he had built in 1959 using European-inspired design themes and the mule chassis from Zora Arkus-Duntov's SS Corvette. Legend has it that Mitchell, a deep-sea fisherman, was influenced by the sleek undersea creature when designing the car. But Peter Brock, who as a young engineer and designer was instrumental in the car's creation, knows the winged ocean flier didn't play a role in the car's development. More likely, Brock says, the name came to mind after the car was done.

When it first appeared on Mitchell's racer, the "Stingray" name was rendered in script and as one word. Later, the car wore new badges with the separate words "Sting" and "Ray" in block

Editor's note: With all the excitement swirling around the spectacular seventh-generation Stingray, it's easy to overlook the many exceptional production and concept Corvettes that carried that appellation in the past. With that in mind, we've decided to take a look back at the Stingrays (and Sting Rays) of yore, starting with Peter Brock's seminal 1957 rendering.

letters. The "Corvette" name was added to the car in 1961, just a year before similar "Corvette Sting Ray" badges were seen on the first of the new-generation '63 models.

The cars were known as Sting Rays for the duration of the C2 generation, which ended in '67. The all-new C3 Corvette didn't carry the creature's name at its debut in '68, but it did again in '69, rendered as one word and in script form again. The name would stay on the car through the '76 model year, and then disappear again, not to be used until the corporation deemed the seventh-generation Corvette worthy of wearing it.

01 ➔ This sketch, done by Peter Brock on November 22, 1957, was the rendering that caught Bill Mitchell's eye. It would serve as the jumping-off point for further design sketches, clay models, and prototypes, all of which would lead to the restyled second-generation Corvette. RENDERING COURTESY PETER BROCK

02 ➔ Mitchell's '59 Stingray was the first embodiment of the design themes penned by Brock, rendered in fiberglass by Larry Shinoda. It's seen here following its 2002 restoration. 03 ➔ John Lamm photographed the Stingray in 1974 for a

But really, the history behind the Stingray is a lot more fascinating than how the name is spelled. And it begins years before Mitchell's car saw the light of day.

YOUNG GUNS

Imagine you're a 19-year-old engineering-and-design student, freshly plucked from art school and dropped into a General Motors

PRODUCTION STING RAYS AND STINGRAYS

1963

1963 ➔ The second-generation Corvette was launched as a Sting Ray. The all-new car boasted several Vette firsts: coupe and roadster body styles, hideaway headlights, independent rear suspension, and optional power brakes and steering. It was also the first (and only) model year with the controversial split rear window.

1964 ➔ The most noticeable change for '64 was the rear window, now a single piece of glass. The top-of-the-line fuel-injected 327 was fitted with better heads and a more aggressive cam, raising peak hp from 360 to 375.

1965 ➔ Though there were some exterior changes—the faux hood vents/indentations were gone, and the front fender vents became three vertical slots—the big news was under the

1964

1965

1966

"Retrospective" article in *Motor Trend*, written by Corvette historian Karl Ludvigsen. This shot of the cockpit shows what faced Mitchell when he drove his Stingray. 04 ➔ As if to tease Vette buyers about the upcoming redesign, Mitchell integrated the sharp rear-end styling of the XP-700 prototype into the production Corvette for '61. 05 ➔ As if the '61's rear styling weren't tease enough, Mitchell had Shinoda design a concept car for the 1961 show season that veiled the upcoming redesign behind exposed exhaust pipes and a "fade" paintjob. This car is now known as the Mako Shark I, but it got that name only after the Mako Shark II was built.

design studio, and the chief of the design department tasks you with creating the new Corvette. That's exactly where Peter Brock found himself in 1957—gathered with other young engineers at the GM Tech Center as Mitchell discussed his ideas for the second-generation Corvette. Mitchell had been inspired by several exotic, aerodynamic Italian cars he saw at the Turin Auto Show, and he wanted his young guns to use those themes to create a Corvette completely different from the car currently in production.

Each stylist drew up a number of sketches, but it was a rendering Brock did in November of that year that Mitchell kept coming back to as the basis for the car he wanted. More drawings were ordered, and the design progressed into the clay-model phase. The car received a GM code name—XP-87—but Mitchell kept its development quiet, putting his team in a small, downstairs studio in the Tech Center, away from chance visits by GM brass.

Why the secrecy? At the time GM was operating under the Automobile Manufacturer's Association's (AMA) racing ban, and any project that looked like a performance vehicle would be quashed by the corporation.

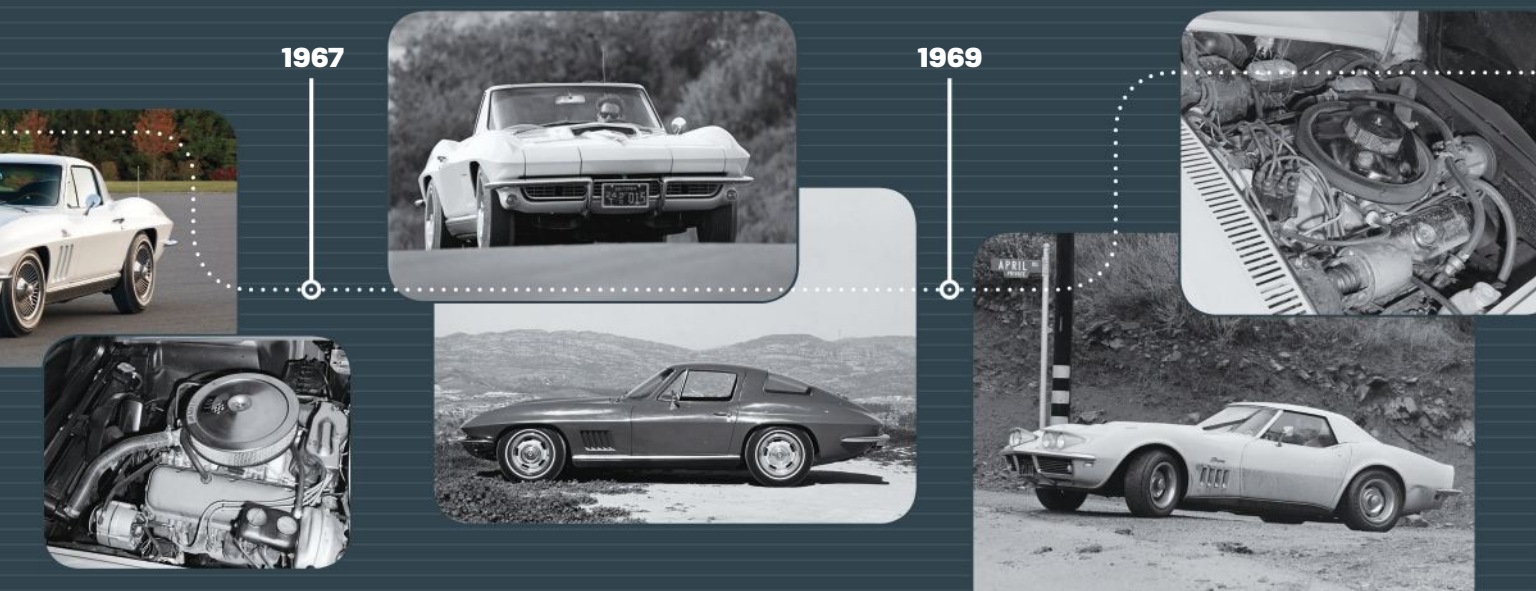
That had happened to Duntov, whose beloved Corvette SS project was cancelled

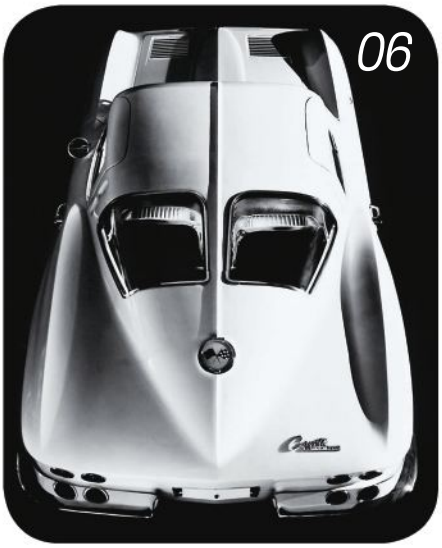
skin: the 396ci L78 big-block was available as an option, and four-wheel disc brakes became standard equipment.

1966 ➔ Another year of minimal styling differences—there was a new egg-crate grille, and the faux vents on the C-pillar were removed—and major underhood improvement. The 396 grew to 427 ci and was offered in hydraulic-cam (390hp) and solid-cam (425hp) versions.

1967 ➔ The final year for the C2 was its best, say some. The body was stripped of much of its badging, cleaning up the car's flanks, while the fender louvers were made smaller. The Rally wheel was introduced for '67, as was the new "stinger" big-block hood. Under that hood, the 427 could be ordered with triple carburetion, rated as high as 435 hp in the L71 versions. A select few could have ordered the mighty L88, conservatively rated at 430 hp.

1969 ➔ The C3 "shark" Corvette era started with '68 models, though the Stingray name wasn't found on the car until a year later. That badge was one of the few external clues to differentiate the '68s and '69s. This would be the final year for the L88 engine, and it was joined on the options list for this year only by the aluminum ZL1. Like the L88, the ZL1 carried an understated 430hp rating, though actual output was well north of 500 hp. Just two were sold.





06 ➔ Innovations for the '63 redesign were many, including putting the Vette on a shorter wheelbase and incorporating independent rear suspension. The Corvette was also available as a coupe for the first time, and Mitchell's "windsplit" rear-window design was that year's most iconic feature. 07 ➔ Mitchell had Shinoda design another Mako Shark concept car in 1965 to preview the coming C3 makeover. Like the Mako I, the Mako Shark II is clearly an exaggerated take on the car's overall theme, but the major styling elements are there.

before it could be properly developed. That presented an opportunity for Mitchell, who bought the SS project's development chassis from GM for $1 and decided to marry it with the XP-87, turning it into his personal race car—thereby circumventing the ban.

Mitchell put Larry Shinoda in charge of a team that would design and build the racer's fiberglass body, using elements from the XP-87 design project but rendered now as a roadster. Again worried that higher-ups might end his project, Mitchell relocated the team to a secret studio that was hidden behind false walls.

The Stingray that emerged from that hidden room was a thing of beauty, a single-seat roadster painted glossy red. Beneath the sleek fiberglass skin the car was still basically the Corvette SS, with its 283-inch fuel-injected small-block, fully independent suspension, and drum brakes that weren't up to the rigors of competition.

Mitchell and his driver, Dr. Dick Thompson, had a less-than-successful 1959 race season, but lessons learned went into improving the car for 1960. A new fiberglass body, which weighed less than the first, was fitted to the chassis, as were improved brakes. Now silver, the Stingray won the SCCA's C-Modified class championship.

From there the Stingray became a show car in 1961, and once its work on the show stand was done, it was fitted with a passenger seat and dual windshields so Mitchell could drive it. Which he did, and often.

1970 ➔ Slightly flared fenders, a mesh pattern for the fender louvers, and rectangular exhaust tips were the easiest external clues to identify the '70 Vette. The L88 and ZL1 big-blocks disappeared; joining the engine-options list was the 350ci LT-1, a solid-lifter small-block rated at 370 hp.

1971 ➔ New emissions regulations took their toll, as Corvette endured the first reduction in compression ratios and horsepower. The base engine was down from 300 to 270 hp; the LT-1

1970

1972

1971

SPLIT WINDOW

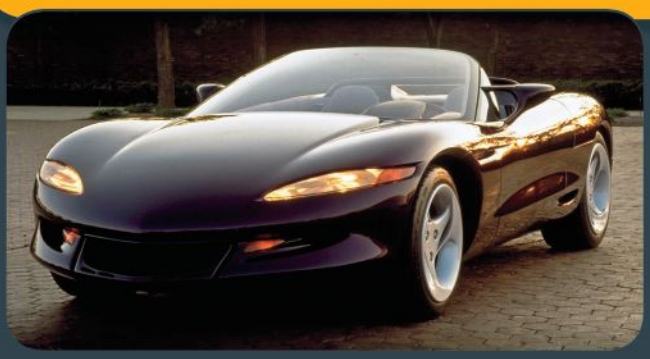
Compared with other cars available for sale in 1961, the sharp-edged Stingray looked like it came from the future. In a way it did, previewing many of the design cues that would appear on the '63 model. Mitchell orchestrated another glimpse into the future of Vette styling when he incorporated the rear-end design elements from the Stingray and another styling exercise, the XP-700, into the '61 production model. Additional clues into the look of the upcoming Corvette were evident in a project codenamed XP-755, a show car that became known as the Mako Shark.

When the second-generation Vette finally materialized for the '63 model year, it wholly transformed the car. Not only was the design a leap forward, Duntov finally got what he considered a missing piece of the engineering puzzle: an independent rear suspension.

dropped to 330. Performance wasn't completely lost, though, thanks to the addition of the LS6 version of the 454. While down on compression like the rest, the LS6 was still rated at 425 hp.

1972 ➔ Performance took another hit in '72 as the automotive industry collectively switched from gross horsepower ratings to SAE net. The new standard would cause output numbers to fall dramatically: The base 350, rated at 270 hp in '71, carried a 200hp rating in '72. The LS6 disappeared entirely, and the remaining LS5 big-block became a 49-state motor, unavailable to California buyers. This would also mark the end of the line for the LT-1 and chrome front bumpers.

CONCEPT STINGRAYS



Sting Ray III ➔ **Debuting at the Detroit Auto Show in 1992, Sting Ray III was a design exercise penned by John Schinella and the Advanced Concepts Center crew in Southern California. It was shorter overall than a C4 but had a longer wheelbase, pushing its 35-series tires to the car's corners. Unlike some concept cars, it was a runner, with a then-new 5.7L LT1 V-8 bolted to an experimental BorgWarner T5 five-speed transaxle. Though it did not foretell the shape of Vettes to come, its exposed headlamps and functioning trunk did wind up on future models.**

Sideswipe ➔ **Officially called the 50th Anniversary Stingray Concept, this 2009 Vette earned its nickname as a cast member in *Transformers: Revenge of the Fallen*. It's an interesting combination of Corvettes past—it has a split rear window—and, with a gas/electric hybrid powertrain, not yet realized.**

Another big difference for the '63 model year was the availability of two body styles: a roadster and a new coupe. Mitchell had pushed for two strong styling elements in the coupe's design: pointed "stingers" at each end of the car, and a two-piece rear window with a spine running between them, what Mitchell called a "windsplit." Mitchell took his inspiration for the window from one of his favorite designs, the Bugatti Atlantique coupe built in the late '30s.

It may have been a Mitchell favorite, but the split window was not universally admired within GM. Duntov, especially, had big issues with the design, which led to heated arguments between the engineer and the styling chief. Mitchell won, at least temporarily. The windsplit stayed on the '63

1973

1973 ➔ The shark underwent its first facelift, as the chrome front bumpers were replaced by body-color urethane front ends that could withstand a 5-mph impact. The traditional chrome rear bumper remained, but for this year only. The new nose was joined by a new hood, with a cowl-induction feature that opened for increased airflow when the gas pedal was romped.

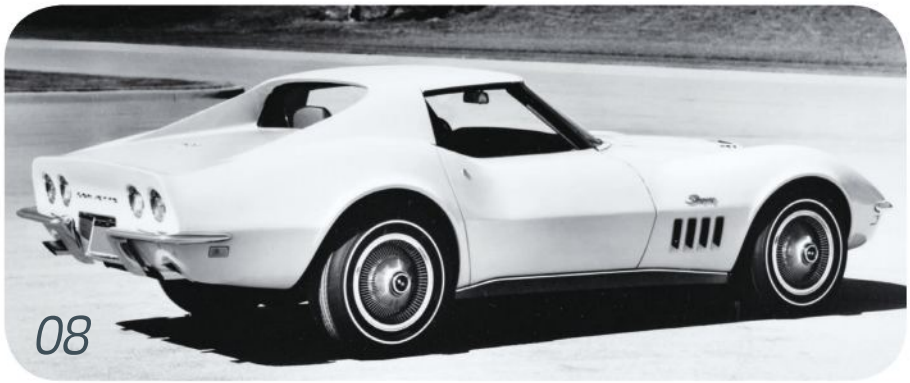
1974 ➔ The Corvette was fitted with urethane impact-absorbing bumpers front and rear, completing the restyle that began the year before. This would mark the final year for the LS5 454 big-block, now down to a mere 270 hp—100 hp less than the LT-1 small-block made just four years before.

1974

1975 ➔ Changes to the Corvette were few this year: The urethane rear bumper was now one piece rather than two, and this would be the last year a Corvette convertible was made until 1986. Internally at GM, though, there was a sea change, as Duntov

1975

08 ➔ The Stingray name didn't appear on the first of the C3 Corvettes, but by the '69 model year it was back, prominent on the front fenders. 09 ➔ The Sting Ray badge went through some changes during the '60s. The emblem on the black car is from '64, the other from '67.



model but would last just one year.

SHARK-RAY

The 10-year lifespan of the first Corvette generation was considered too long by many within GM, so the second-generation car was given a much shorter schedule. Original plans called for the Vette to be redesigned for the '67 model year, but developmental delays pushed its debut back to '68.

To tease the public with yet another look into the Corvette's future, Mitchell had Shinoda design a concept car for the 1965 show season, the Mako Shark II. Like its predecessor and the Stingray racer before it, the second shark was more exaggerated than was feasible for a production model, but there's no mistaking the eventual C3 within the design exercise.

For budgetary reasons, the third-generation Corvette would essentially consist of a restyled body placed over the C2's mechanicals. The renderings and clay models generated in those years show essentially a toned-down Mako Shark II: Its tall fender bulges were cut down for better road visibility, its long nose shortened, and the tapered, stinger-shaped rear roofline was transformed into a vertical rear window recessed within tunnel-shaped buttresses.

The Mako Shark II was designed with a single removable roof panel—a targa top, borrowed from European makes—but in practice, removing that panel caused the body to flex too much. The solution was to fix a reinforcing strut between the windshield frame and the rear buttresses and put removable roof sections on either side of the reinforcement, thus inventing the T-top.

Once prototypes were up and running, engine cooling proved to be a big problem, one that was worked on by the engineering staff and Duntov himself right up to the car's press introduction. A chin spoiler was added to direct airflow to the radiator, cooling vents were cut into the front fenders, and additional vents forward of the air dam—hastily added to the car by Duntov just before the media drove the car—helped direct even more cool air to the radiator.

Our research doesn't indicate why, but the first C3 models were not badged as Stingrays. That emblem arrived on the '69 models and would remain on the front fenders through the '76 model year. At that point the Stingray name was retired, or so it would seem. It would take the engineering and styling advancements of the seventh-generation Corvette to bring the Stingray back. Not as one word this time, or two. Instead, the badge is a gleaming graphic representation of the sea creature, its wings and trailing venomous tail forming an arrow shape pointing toward the Vette's future. VETTE

2014

retired and turned the Vette's engineering reins over to Dave McLellan.

1976 ➔ The final C3 to wear the Stingray badge, the '76 model received a new hood with a less complex cold-air induction system, two different "Corvette" lettering treatments on the rear bumper, and the stylish YJ8 aluminum wheel option.

1976

2014 ➔ After a 38-year hiatus, the Stingray returns to regular production, this time as the base version of the all-new seventh-generation model. Powered by a 460hp direct-injected LT1, the revivified 'ray is the quickest base Corvette in marque history.

Sources

CORVETTE STING RAY: GENESIS OF AN AMERICAN ICON, BY PETER BROCK
BROCK RACING ENTERPRISES LLC
www.bre2.net

THE COMPLETE BOOK OF CORVETTE, BY MIKE MUELLER
MBI PUBLISHING
www.motorbooks.com

01

BY ANY OTHER NAME...

...PHOENIX AND ITS ENVIRONS WOULD STILL MAKE FOR ONE SWEET DRIVE

STEVE TEMPLE WORDS | PHOTOS

Before there was ever a city named Phoenix in Arizona, there were pumpkins—lots of 'em. So many, in fact, that the area was named Pumpkinville. Patches of these orange gourds flourished along the canals a few miles east of the current city center. So while not exactly as romantic sounding or socially sophisticated as a mythological bird of fire, this early fruit-inspired appellation was nonetheless appropriate.

The name Phoenix eventually won out because the city was born from Indian ruins, much like the eponymous creature that arose from its ashes. Those pumpkin-lined canals actually dated back to much earlier times when the Hohokam Native Americans lived there for about 2,000 years, building some 135 miles of irrigation ditches and turning the desert into arable land.

As you might expect in such an arid area, water resources have traditionally dictated the ebb and flow of the fortunes of Phoenix. After a combination of extended drought and severe flooding, the Hohokam were forced to abandon what had become a substantial trade center.

Yet some infamous events have also influenced the city's colorful, "Wild West" character, which in the long run turned it into an ideal destination for touring, especially in a souped-up Corvette. No surprise then, that Phoenix has nearly a dozen different clubs for Vette owners. But before touching on those various sights and routes, including the area's passion for cars in general, we should provide a bit more information on the background that gave rise to the city's auto-centric culture.

With the arrival of Confederate Army veteran Jack Swilling in the 1860s, the ancient Indian water system was revived. It would endure to serve as the foundation for some modern-day water projects as well. And while railroads were also a key factor in the growth of Phoenix, the city's streetcars eventually became a source of contention. Their suspicious torching in 1947 led to the development of an extensive road system, with automobiles subsequently becoming the preferred method of transportation.

This shift to reliance on cars and trucks no doubt contributed to the area's current automotive enthusiasm, evidenced by the massive collector-car auctions held each year in Scottsdale. So whether you plan on bidding on or selling a collectible, or piloting a new Stingray at the Bondurant School of High Performance Driving, there are all sorts compelling Corvette "roads" to explore in and around Phoenix.

To aid us in our quest, we turned to long-time resident and Corvette owner Chuck McCleary, who was generous with his time and knowledge of the area. He's owned his matching-numbers Miglia Red '71 Vette since 2005, and he's put thousands of miles on the odometer exploring the city and environs. Powered by a 350 and backed by a Turbo 400, it's a dependable runner, and it gives a good account of itself when tooling around town or through the canyons.

Speaking of in-town touring, another Phoenix native we contacted—John Washington of Reaction Research, which makes a Ferrari GTO–style body conversion for the C4—pointed out how the streets are laid out in a systematic grid, with the traffic lights all operating pretty much in sync. That makes for fewer stoplights starts, plus simpler navigation.

If you prefer to stay close to town, one of our favorite stops is Papago Park, dotted with eerie sandstone formations and surrounded by walking trails. The park is also home to a couple of the city's more popular destinations, the Phoenix Zoo and the Desert Botanical Garden.

Interesting historical side note: This location was once the site of a WWII–era POW camp. German soldiers interned there hatched an escape scheme that involved floating down the Salt River to Mexico (a questionable stratagem, considering that Mexico had declared

01 ➔ Located about 10 minutes from the downtown area, Papago Park offers otherworldly rock formations with walking trails and other sights.

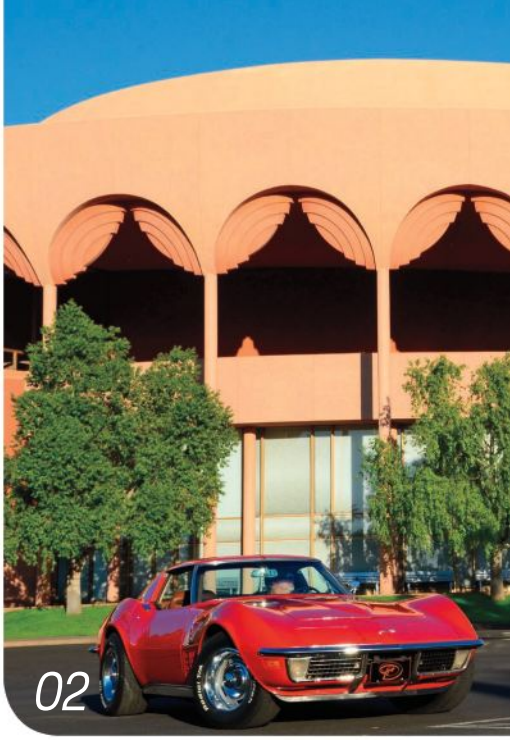
war on the Axis powers in 1942.) What they didn't realize is that the bed of this waterway was mostly unnavigable, so they were left high and dry, and were quickly apprehended.

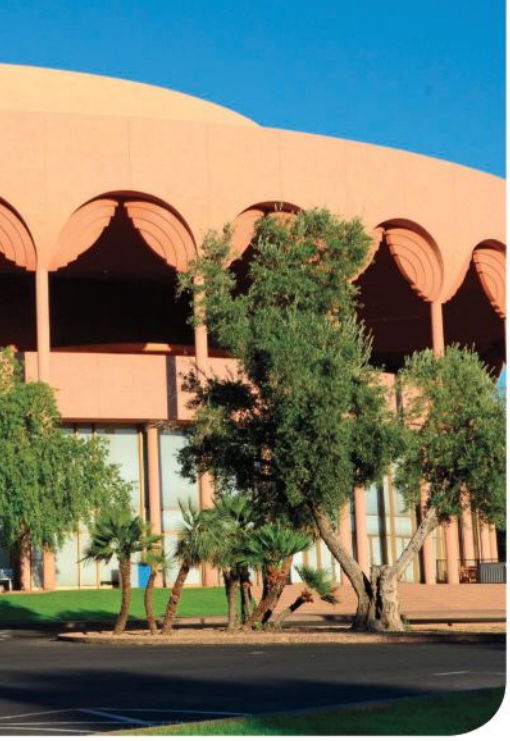
Escaping from Papago Park to other sights in the area is much easier by road. We'd recommend a visit to Scottsdale's Old Town district, to savor its rustic Western style. Located a few minutes northwest of Phoenix, downtown Scottsdale is a tony spot that combines cowboy and couture, as it's chockfull of art galleries, restaurants, shops, museums, and nightclubs.

02 ➔ Concert halls, along with sports and other activities, can be found on the campus of Arizona State University. 03 ➔ Golfers can take year-round advantage of the sunny Phoenix climate.

If you'd rather flee from the urban experience to blow out the pipes on your Vette, there's all sorts of expansive desert terrain outside of the city, making it easy to find remote roads suitable for triple-digit bursts of speed. On a couple of cross-country drives, we've veered off the main highway to take a shortcut heading northeast through Payson and Holbrook on Routes 87, 260, and 377. These detours offer a thrilling combination of winding mountain roads and long, flat straightaways.

Another excursion was shared by Phoenix resident Bruce Dickson of Corvette Performance Arizona (www.corvetteperformanceaz.com), who hosts the popular "Corvettes and Caffeine" monthly gathering at his shop. "I recommend taking Hwy 260 north of Phoenix to Cottonwood, then 89A to Jerome, and then backtracking on 89A to Sedona," he advises. "It's a real 'Corvette Road', with lots of twists and turns." He adds that a great place to stay in Cottonwood is the Tavern Hotel (www.thetavernhotel.com), which offers an excellent weekend package.





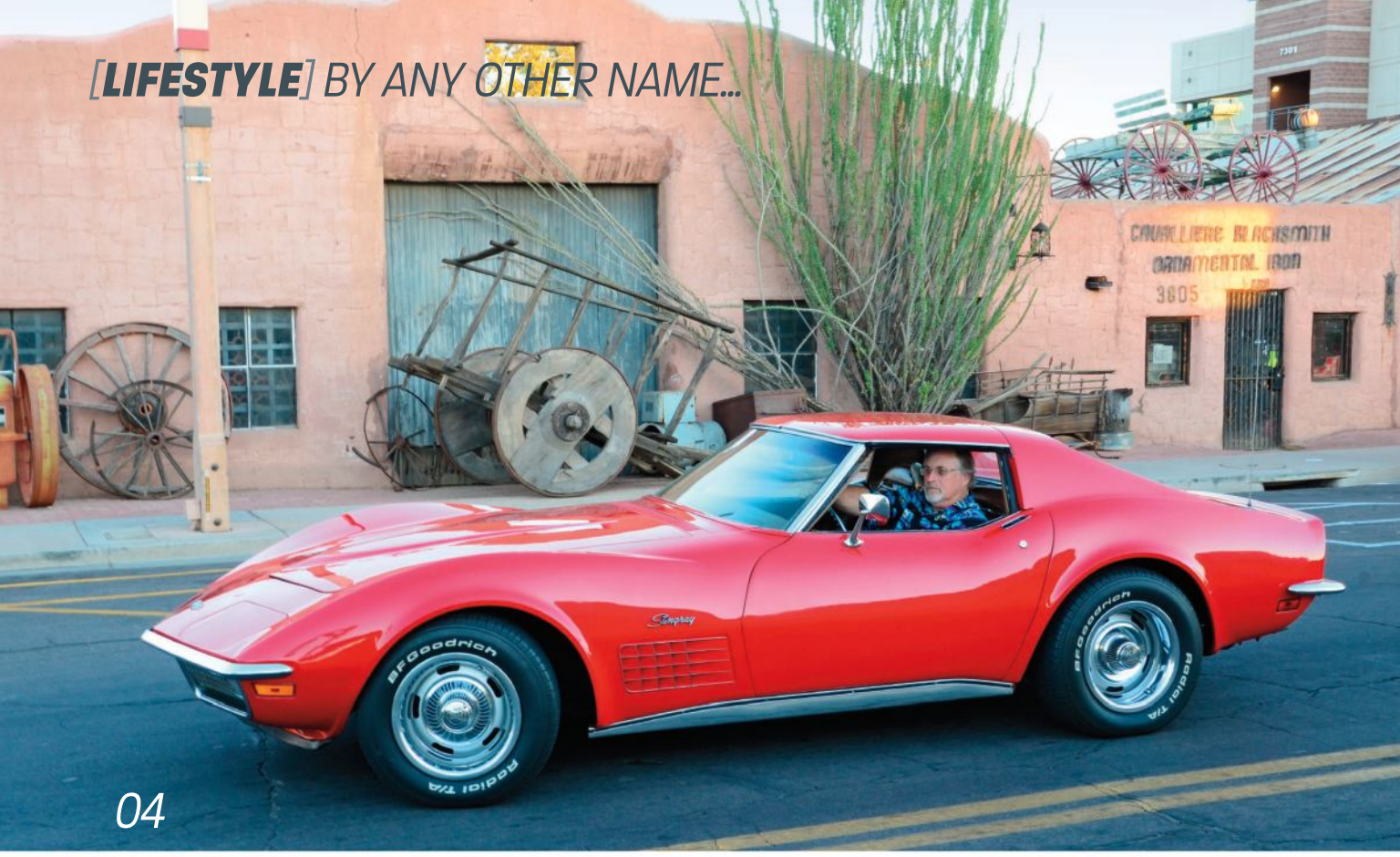
Another option, especially if you're headed either to or from Las Vegas, is to take 93 through Wickenburg. City slickers are welcome in this Western enclave, but be prepared to get your boots dusty. Located around 60 miles northwest of Phoenix, Wickenburg feels a million miles away from the bustle of the city. Known for its working ranches, this waypoint is a colorful place where visitors can ride, camp, and even work alongside weathered ranch hands.

Other routes recommended by the award-winning *Arizona Highways* magazine include Gila-Pinal Scenic Road, a 26-mile stretch of U.S. Route 60 from Phoenix to Globe. This scenic drive runs past some of Arizona's more interesting landmarks and places of legend. From the road, you can see the peaks of the Superstition Mountains, the rocky columns in Devil's Canyon, and picturesque Queen's Creek Canyon.

From there, consider taking the Desert to Tall Pines Scenic Road. It spans 76 miles of State Route 288 from 15 miles northwest of Globe to State Route 260. Be warned, however, that only a portion of it is suitable for Corvettes, since it eventually turns into a dirt road.

The paved, first section of the route snakes along the Salt River Mountains, then crosses the Salt River on a single-lane bridge, where it ascends into the majestic Sierra Ancha. From that vantage point, terrific views of Roosevelt Lake are possible. The second, unpaved stretch features wilderness on both sides as you travel through the sleepy town of Young and then up the Naegelin Rim.

Another recommended drive is on the Apache Trail Historic Road, running northeast on 41 miles of State Route 88 from Apache Junction to Theodore Roosevelt Lake. This excursion exemplifies how Arizona can be both harsh and lush, offering views of the Superstition Mountain range and unique roadside attractions on the



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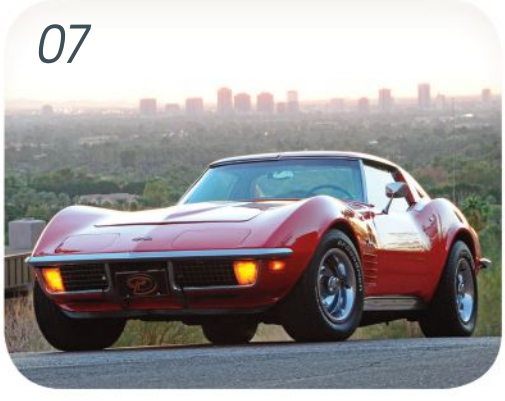
04 ➔ In addition to a rustic Old Town area, Scottsdale's downtown is known for its art galleries, restaurants, shops, museums, and night life. 05 ➔ The Tempe Mill Avenue Bridge is the second-oldest automobile crossing on the Salt River in the Phoenix metropolitan area, and has been in continuous use since its completion in 1931. It was the major transportation link in three transcontinental highways (U.S. Routes 60, 70, and 80), and was Arizona's only north-south route until the freeway system was begun in the 1950s. 06 ➔ Water control on the Salt River is critical in the arid desert. 07 ➔ Overlooking the city at sunset, northwest of Phoenix.



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way to Roosevelt Dam. The initial portion of the route is paved, and meanders past places such as Goldfield, a ghost town with tours and attractions and Canyon Lake.

All told, whether you prefer the allurements of the city or the spectacular scenery of the Southwest, Phoenix has it all. Even if you call it Pumpkinville. VETTE

A WEIGHTY DECISION

A LOOK AT HOW REPLACING THE LS7'S EXHAUST VALVES AFFECTS VALVETRAIN STABILITY—AND WHY IT MATTERS

BARRY KLUCZYK WORDS | PHOTOS

In the pre-LS era, a typical small-block-powered street car would rev willingly to around 5,000 rpm. You could assemble a cam package for it—even using heavy components—and you probably wouldn't have any problems. With LS engines, however, the redline is in the mid-6,000-rpm range, and the mighty LS7 revs to 7,000 rpm, with some owners pushing things even higher. On top of that, valve lift is typically far greater than anything an old-school small-block would see, with upwards of 0.650-inch lift from a street-friendly hydraulic roller cam.

With engine speeds so much higher than they used to be, valvetrain stability has become a more important issue. It's all too easy to slap together an unproven package that generates instability beyond the 6,000-rpm mark, beating up valvetrain components and adversely affecting performance.

"Some people think it's all good, as long as it's not floating the valves on the chassis dyno," says Katech's Jason Harding. "Valve float kills the power, which is pretty much a [known] fact, but it's the valve bounce that accompanies an instable setup that does the most harm. It's kind of like that adage, 'It's not the fall the kills you, it's the sudden stop at the bottom.'"

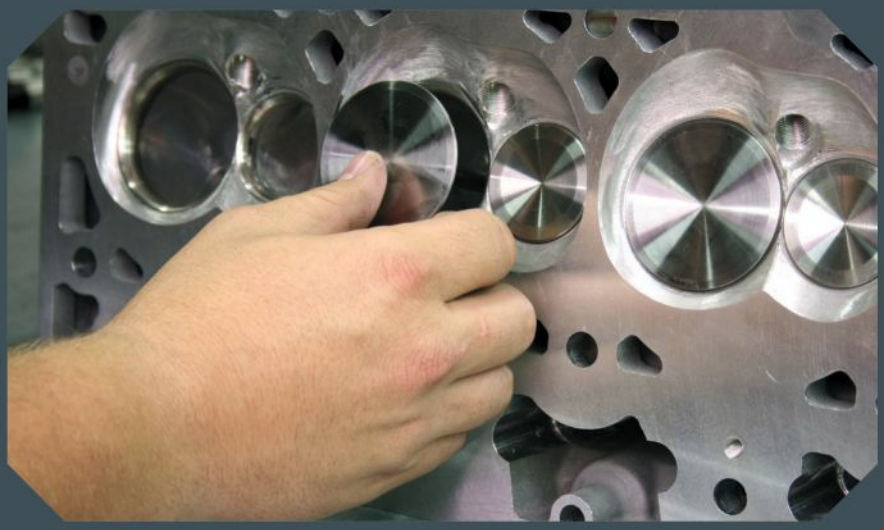
When that valve slams shut and then bounces open, sometimes numerous times,

it beats up the seats and can break valves or springs.

"Some believe having a double spring makes them safer, because if the main spring breaks, the inner spring will hold the valve from dropping into the cylinder," says Harding. "Well, how about just making a combination that doesn't break springs? That's our philosophy with the beehive springs that are carefully tested and combined with our packages."

The theory and practice of valvetrain stability are particularly relevant when it comes to the LS7, because one of the urban legends about it—that it has a tendency to drop or break the exhaust valves—has some merit. There are plenty of documented cases of the lightweight, two-piece, sodium-filled parts breaking. Typically, the valve's head separates from the stem, causing catastrophic damage.

This is an issue experienced mostly by racers and those with more-modified



01 **The LS7 cylinder head is a modern marvel of airflow, but the issue of dropped exhaust valves has prompted many enthusiasts and builders to consider replacing them with single-piece stainless units.**

02 **The problem with changing the stock two-piece, sodium-filled exhaust valves is weight: A stainless, single-piece valve is heavier, which can adversely affect valvetrain stability.**

03 **The rest of the valvetrain parts can also affect stability, from the springs to the pushrods and even the camshaft. Each incremental change can have a comparatively large impact on high-rpm performance.**

04 **Katech's valvetrain test involved comparing the stability of replacement valves vs. the stock LS7 exhaust valves, as well as the stability of popular camshaft and spring upgrades.**

engines—particularly when employing a larger cam—but owners of stock, street-driven Z06s have also encountered it.

Katech engineers tell us their research has found extremely high valve-guide wear in LS7 and LS9 engines—so much so, that in some cases a valve can "wiggle" around in the guide. That, they say, is the culprit behind failures of both intake and exhaust valves, not the valves themselves. For the purposes of this article, we'll be focusing on valvetrain stability rather than valve-guide wear, which is another story entirely.

IMPLICATIONS OF A VALVE CHANGE

Of course, an enthusiast who's going to the trouble of upgrading or rebuilding an LS7 will want to know whether replacing the stock valves is prudent. At a glance, swapping the hollow-stem, two-piece sodium valves for conventional single-piece valves seems like a no-brainer, but there are critical implications on valvetrain stability to consider, regardless of the camshaft or valve springs used.

"Since Newton's Law of Motion tells us force equals mass times acceleration, if we change either the mass of the valvetrain components, or the acceleration rates of the camshaft, we change the forces applied to the valvetrain components." says Harding. "Changing the lightweight valvesprings with heavier, solid-stem one-piece valves is going to fundamentally affect the durability of the valvetrain and, ultimately, the engine's performance."

05 When it came to spring testing, the standard beehive-type was evaluated against conventional dual-coil springs. Many builders use duals as a failsafe against dropped valves, but Katech's tests would show it's not necessarily the best solution.

Think of it this way: The mass of the valve and all the reciprocating components of the valvetrain affect the forces in the system. The acceleration and force of the system are dictated by the camshaft lobe profile—or the rate at which the lobe moves the hydraulic lifter—so a careful balance of component mass, stiffness, natural frequency, cam-lobe acceleration, and forces experienced in the system is critical to high-rpm valvetrain stability.

That's why simply replacing the exhaust valves with those with a different mass has significant implications on performance: It upsets the balance that was built into the system in the first place.

We recently attended a test session at Katech's Detroit-area headquarters, in which company engineers tried to definitively determine the effect on LS7 valvetrain stability that comes with changing to heavier solid-stem, stainless-steel exhaust valves.

Note that while there is much more to valvetrain stability than simply the valves—the rocker arms, springs, pushrods, and camshaft all play critical roles—for this experiment, we're focused solely on how heavier valves affect stability.

"You can test combinations endlessly," says Harding. "Typically, taking weight out of the system can improve stability. You can try a lighter lifter—if one exists—a lighter pushrod, different spring, lighter retainer, lighter valve, and so on. You want the lightest-possible spring that can control the valve. Some try to 'over-spring' the

06 **Katech's test cell is fitted with a specially equipped LS7 "spin buck," which is used with a laser to gauge valve bounce across the rpm band. Less bounce means greater stability.**

system, thinking a stronger spring will close the valve better, but sometimes slamming it shut hard can cause it to bounce. That's why the lighter beehive springs are usually better."

SETUP AND TEST COMPONENTS

Katech has a Spintron valvetrain test cell that's set up specifically for such stability evaluations. It features a DC electric motor that drives a "spin buck," which is essentially a test engine with a window cut into a cylinder. There is a dummy crankshaft (no rod journals or bobweights) and camshaft in the engine, but no pistons or rods. And, of course, there's a complete valvetrain for just one cylinder.

The setup aims a laser at the bottom of a valve, which enables engineers to watch in real time at the control panel how it deflects under load, lofts (floats), and bounces, helping them determine the relative stability of the valvetrain. Katech's equipment measures valve lift in 0.0005-inch increments at 1 crank degree resolution up to 12,000 rpm. With such precise measurement, you can see things you might not expect. The closing event is not the only place you can see a valve or lifter bounce. Sometimes lifters can actually bounce up the camshaft lobe during valve opening.

For the record, the test used a stock LS7 camshaft and valvetrain as the baseline and featured tests with Katech's higher-lift Torquer camshaft and PSI beehive springs, as well as dual springs. When it came to the exhaust valves, the stock ones were compared with heavier single-piece, stainless valves from Racing Engine Valves (REV) and Katech's own lightweight titanium valves with molybdenum-coated stems.

The stock LS7 exhaust valve weighs 74 grams, while the REV exhaust valve weighs 98 grams—a significant 33-percent increase. The titanium valve used in the test came in at a featherweight 66 grams.

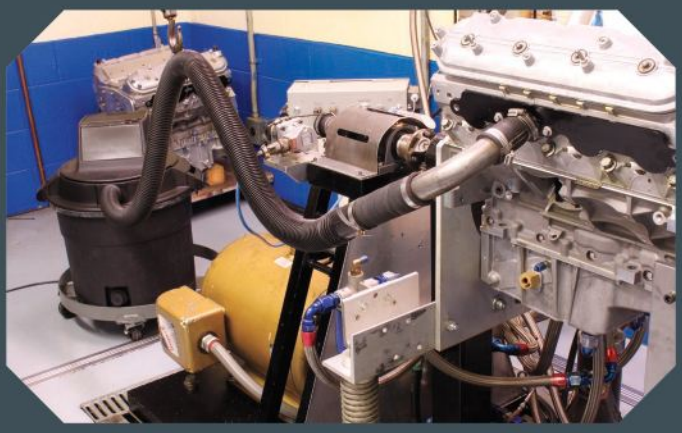
It should be noted that while lighter than the stock exhaust valves, titanium valves should not be swapped directly without additional cylinder-head preparation aimed at preventing stem and/or head wear. Some race shops insist on having them micro-polished and coated with a chromium-nitride or similar material. Katech recommends molybdenum-coated stems on titanium valves, and only when used with bronzed valve guides in the heads.

RESULTS AND RECOMMENDATIONS

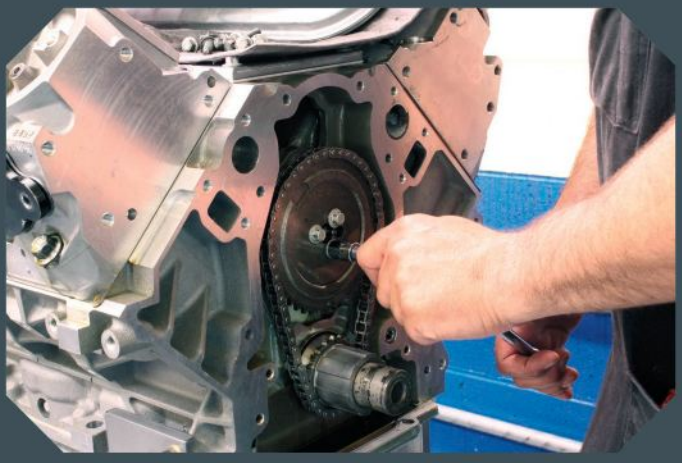
To no one's surprise at Katech, changing to solid-stem stainless valves proved to have a negative effect on the LS7's valvetrain stability. Interestingly, while the test was focused primarily on the exhaust valve, the effect on the intake valve was also noteworthy.

"Consideration for when a valve is out of control is subject to debate; however, 0.015-inch of bounce is the basis we use for our recommendations," says Harding. "Keep in mind

07 The sacrificial LS7 engine was relieved of a cylinder wall in order to insert the laser gauge. It goes in the cylinder and is aimed up at the valve faces.



08 Complementing the high-tech laser gauge tool is the decidedly low-tech shop vac, which is used to draw a vacuum on the test cylinder, simulating engine operation.



09 The spin buck is equipped with a crankshaft and camshaft. They're spun together via the standard timing chain, but there are no rods or pistons in the engine.

10 The combustion chamber and valve faces are painted white on the test head for more-accurate readings with the laser, which measures the movement of each valve as it opens and closes.

that we only tested for limiting speeds and did not perform durability testing. If this was a professional racing program, we would go back to the tests we want and run 24-100 hours of durability on the configuration to see what breaks, if anything."

Here's how seven combinations performed, along with Katech's test notes:

TEST 1: Stock cam and springs, with stock exhaust valve

- Intake valve: 0.006-in. max bounce at 7,000 rpm; tested to 7,500 rpm
- Exhaust valve: 0.008-in. max bounce at 7,100 rpm; tested up to 7,500 rpm

TEST 2: Stock cam and springs, with REV solid exhaust valve

- Intake valve: 0.006-in. max bounce at 7,000 rpm; tested to 7,500 rpm
- Exhaust valve: 0.015-in. max bounce at 7,100 rpm; tested up to 7,500 rpm
- Katech notes: Nearly twice the bounce by simply changing the valve. This combination is fine for a street car, if the rev limiter is set at 7,000 rpm. In road-racing conditions, we prefer to see a 500-800-rpm safety margin, which would mean a 6,300-6,600-rpm rev limit.

TEST 3: Stock cam and dual-coil springs, with REV solid exhaust valve

- Intake valve: 0.014-in. max bounce at 7,300 rpm; tested to 7,500 rpm
- Exhaust valve: 0.016-in. max bounce at 7,200 rpm; tested up to 7,500 rpm
- Katech notes: Twice the bounce overall of the stock configuration, but within the realm of acceptability. This combination is fine for a street car with the rev limiter set at 7,000 rpm. In road-racing conditions, it would be a 6,400-6,700-rpm rev limit.

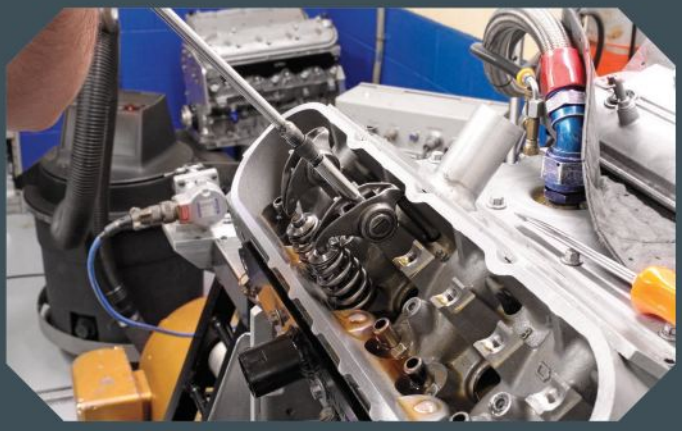
TEST 4: Katech Torquer cam and PSI beehive springs, with stock exhaust valve

- Intake valve: Not tested
- Exhaust valve: 0.015-in. max bounce at 7,700 rpm; tested up to 7,700 rpm
- Katech notes: This is a strong combination—proven and stable. Fuel cut-off should be 7,100 rpm with it.

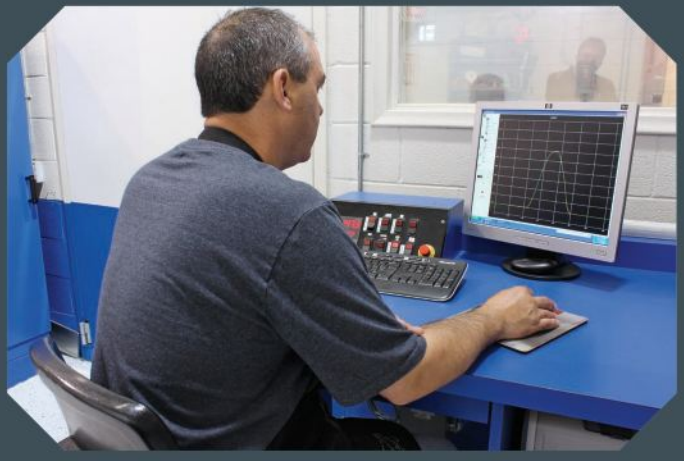
TEST 5: Katech Torquer cam and PSI beehive springs, with REV solid exhaust valve

- Intake valve: Not tested
- Exhaust valve: 0.016-in. max bounce at 7,100 rpm; tested up to 7,500 rpm
- Katech notes: This combination is not recommended, because valve bounce exceed the 0.15-inch threshold, although the PSI

11 The test measured the performance of the stock LS7 valve (74 grams), a REV stainless valve (98 grams) and a titanium valve (66 grams). The heavier stainless valve doesn't have the separation issue that has occurred with some factory sodium-filled units, but with about a 33 percent increase in weight, it is less stable at high rpm.



12 Katech's test also measured the stability of the valves with the stock beehive springs, higher-rate PSI beehive springs, and dual-coil springs. The beehive design proved to be the most stable at high rpm.



13 The bounce of each valve on the valve seat was measured and compared with the baseline test.

14 Bottom line: When it comes to high-rpm valvetrain stability, the stock LS7 exhaust valve performs best with beehive springs. Builders worried about dropping the stock valve at high rpm can have the head fitted with bronze valve guides, which should do the trick. The titanium valve performed well, too, but it's a costly alternative that also requires bronze guides.

spring did control the REV valve better than did the dual spring.

TEST 6: Katech Torquer cam and dual-coil springs, with REV solid exhaust valve

- Intake valve: 0.018-in. max bounce at 7,100 rpm; tested to 7,100 rpm
- Exhaust valve: 0.029-in. max bounce at 7,100 rpm; tested up to 7,100 rpm
- Katech notes: Talk about instability! The severe bounce displayed at comparatively low rpm made it unwise to continue testing up to 7,500 rpm. We flat-out don't recommend this setup.

TEST 7: Katech Torquer cam and PSI beehive springs, with titanium exhaust valve

- Intake valve: Not tested
- Exhaust valve: 0.014-in. max bounce at 7,900 rpm; tested up to 7,900 rpm
- Katech notes: Minimal bounce at 7,900 rpm! This is an excellent combination all the way to 7,800 rpm—as long as the prep work has been done to the valve stems and bronze guides are used in the head.

In summation, the factory configuration unsurprisingly delivered the most stable performance, with the heavier, solid stainless valve matched with a dual-coil spring delivering the greatest instability. There's excellent high-rpm performance with the titanium valve, but it's a decidedly pricy endeavor.

"Since we are able to get a stable valvetrain with the OEM valve and have demonstrated it to be durable when using our completely tested systems, we don't find it necessary to change the exhaust valve," says Harding.

And what about the fear of dropping one of those OEM valves? Harding suggests that while it's certainly a concern, it shouldn't be an overriding factor when considering the valvetrain – even if it involves a "bigger" camshaft.

"We believe using the titanium exhaust valve delivers the best performance when used with bronze guides," he says. "If cost is a factor, OEM valves are proven to be durable when combined with a valvetrain system that has been validated."

And those bronze valve guides help, too. VETTE

Source

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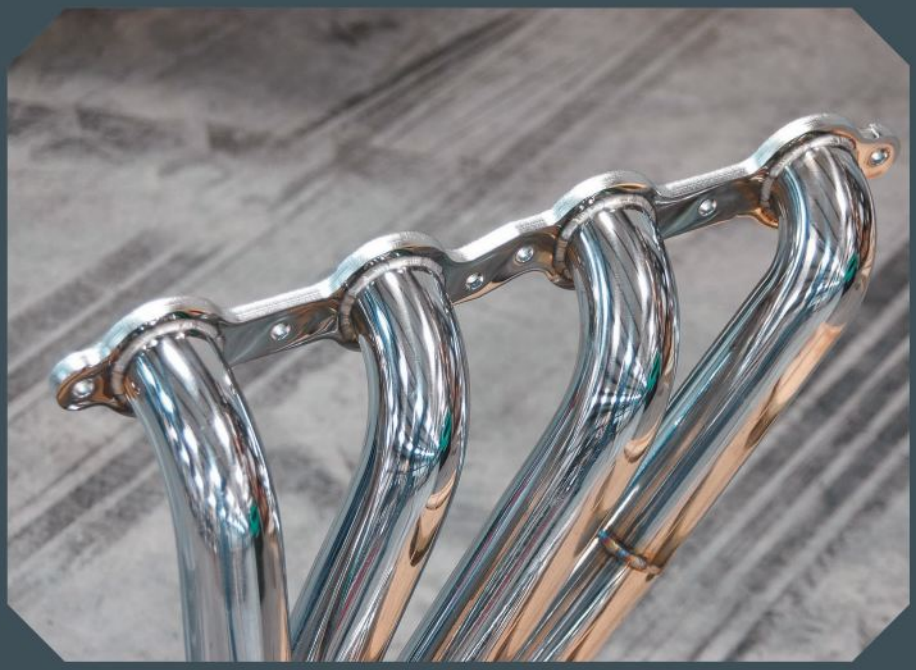
HOWL AT THE MOON

INSTALLING LS CONVERSION SIDE-PIPES ON OUR '72 PROJECT CAR

JEREMY D. CLOUGH WORDS | PHOTOS

In our last installment on Scarlett, our '72 coupe project, we shoehorned in a fire-breathing LS3 stroker motor that should rocket the former small-block car to far quicker times while reducing weight and adding a little bump in fuel economy, thanks to the EFI. With the 600-plus-horsepower 416 bolted in place, it's now time to let it breathe by installing the exhaust system. Even if I'd wanted to keep the headers, pipes, and mufflers that were on the old 350, the switch to an LS required a different header-primary configuration. And besides, the extra airflow from the bigger, hotter motor was going to need more than a pair of 2.25-inch pipes to breathe through.



01 We ordered our Stainless Headers Mfg. LS-conversion pipes through Street Shop. The polished 304 stainless pipes are beautifully made, and the purge TIG welding on the flange is a sight to behold.

02 The attention to detail isn't limited to the things that you can see. Note the smoothness of the inside of the collector, where there's nothing to disrupt the flow of the hot exhaust gases as they leave the motor.

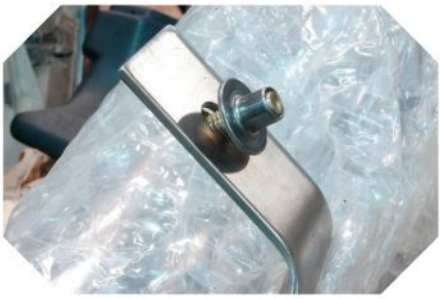
03 The sidepipes came with "muffler inserts" tack-welded in place. I'll have to hear them before I make a final decision, but I'll bet the local noise ordinance will necessitate the installation of something a little more restrictive before it's all over with.

Considering both the power and the general audacity of the shark body style, I decided early on that the car would need sidepipes—and not the shielded factory ones, either. While there's absolutely nothing wrong with that look, Scarlett's inspiration comes from the early road-race C3s, which frequently eschewed both factory sidepipes and undercar exhaust for OK Kustom side-mount headers, the design of which lives on in Hooker's sidepipes (which unfortunately are only available for conventional small- and big-block applications). Featuring four primary tubes that exit the underside of the car just behind the front wheel and dump into a single, exposed collector, the bundle-of-snakes look is both classic and unmistakably aggressive.

"In for a penny, in for a pound" is a pretty good way to describe building a car, not least because the further you get, the more things tend to cost. The pipes were no exception. As of this writing, several companies are beginning to make a side-mount-style header for LS conversions, but at the time we got this project underway, the only ones in regular production were from Stainless Headers Mfg. Made in 304 stainless steel, beautifully bent and welded, they're absolutely gorgeous, especially in the polished finish we ordered. They look the business on the side of a chrome-bumper shark—and they're priced accordingly.

The good news is that a fair amount of R&D goes into the Stainless Headers sidepipes. For example, the narrowing where the primaries enter the collector isn't there for looks, but actually increases power. The headers themselves were designed with input from Street Shop's Tray Walden so that they will fit both a factory frame (such as Scarlett's) as well as Street Shop's aftermarket chassis. They can also be had with bungs welded in for an O_2 sensor, which you'll need for an LS conversion.

Since we're performing our conversion at Street Shop (and since they're a dealer for Stainless Headers), we ordered the pipes through them. The system came well-packaged, with both the headers and the separate sidepipes. The pipes allegedly came with a "muffler insert"



04 The sidepipes are mounted to the car using a pair of brackets that bolt to the frame beneath the rocker moulding. The nut is actually a threaded insert that will be welded into a hole in the frame to ease assembly.

05 Although we mocked up the first header install without them, for the final installation we used a multi-layer steel gasket. We also put antiseize on the header bolts to protect the threads in the aluminum heads.

06 The rearmost trim screw on each rocker moulding mounts through this fiberglass tab that hangs beneath the body. Don't be surprised if one or both of them are hanging on by the proverbial thread when you get the moulding off. Ours will be glassed back into place.

07 For the first test fit, we wrapped the headers with protective foam, then slipped them up underneath the car and bolted them into place.

08 It didn't take long to figure out that the primary tubes were hitting the aluminum rocker moulding and the fiberglass beneath it. With both the headers and moulding in place, we used a Sharpie to mark the moulding to show where we would need to cut it for clearance.

09 Also during our test fit, we used a rubber mallet to tap the sidepipes onto the rear of the headers to verify fit. This allowed us to check the alignment of their mounting tabs and corresponding frame holes as well.

10 With that done, we dropped the headers to cut away the fiberglass they were contacting. This is the driver's side, where we removed pretty much all the black portion, some of which is backed with metal.

in place, but I can say confidently that what's tack-welded in the pipe may be an insert, but it ain't a muffler. The part of me that loves the churning snarl of a big-inch engine through open sidepipes will have to hear it before we change it, but I see something quieter getting stuffed into those pipes before all is said and done.

Since I've learned to work under the assumption that everything has to be done at least three times, we started the installation by wrapping the headers and pipes carefully to protect them, and then installing the headers, without the sidepipes, while the car was up on the lift. They have to go in from the bottom, and while the job isn't terribly hard, there's a little moving around required to get them oriented correctly. Once they were bolted in place, we lowered the car to the ground and slipped the pipes onto the rear of the collectors, using a rubber mallet to tap them forward into place.

Having the pipes fitted also gave us a chance to assess how best to bolt them on. Each one has a pair of tabs that pass beneath the rocker moulding and bolt to the car, and each tab has a hole that should more or less align with one the few holes in the frame. After examining the frame holes, we chose to weld in a threaded insert that would let us run a bolt through the hole in the tab and directly into the insert. This obviated the need to fish a bolt through and hold it in

11 **Here's the passenger side, showing where we trimmed the 'glass using an air-powered cutoff wheel and reciprocating saw. Since this area won't be visible with the rocker moulding in place, we cut it straight across.**

12 **We used a Sharpie to mark the fore-and-aft locations where the pipes were contacting the rocker moulding, then used a measuring tape and straightedge to lay out the vertical dimensions of where the moulding needed to be cut.**

13 **After marking the moulding, I used a wheelie cutter to *rough in* the clearance cuts. I then dressed the cut with a handheld grinding wheel so its radius loosely matched the curve of the pipes.**

14 **Once Tray Walden had checked the locations of the frame holes (to make sure they lined up with the mounting tabs on the sidepipes), I hit the holes with a disc sander to remove the paint around them and prepare them for welding.**

15 **Walden welds in the threaded inserts, giving the pipes' mounting bolts an easy attachment point.**

16 **Once the inserts were welded into place, I ground the welds down close to the frame to give the mounting tabs a flat surface against which to lie. I then sprayed on some black paint to protect against corrosion.**

17 **Since the pipes tend to hang "downhill" once they've been slipped onto the collector, we used a jack at the rear to slowly raise them into the correct position. This allowed the mounting tabs to be bolted into place in the now-threaded frame holes.**

place while attempting to tighten a nut on it.

Walden first double checked the hole locations, and then I hit the area around the holes with a sander to prepare it to be welded. A shower of sparks and a little bright-blue light later, and we had inserts welded in. Once they had cooled, I ground the welds back close to flush with the frame and applied some black spray paint to protect against corrosion.

One of the other things I learned from our initial header mock-up is that the primary tubes hit the rocker moulding where they passed under it on their way to the outside of the car. Accordingly, we were going to need to trim both the moulding and the fiberglass beneath it to make room. The keen-eyed reader will have noticed that since the sidepipes run the length of the car and bolt into place beneath the moulding, they have to be installed before the moulding can go on. As you might imagine, it can be tricky to ease this piece into place behind the pipes without scratching the paint.

For the initial install, though, we left the moulding in place and used a Sharpie to mark where the primary tubes contacted it. (Neither the sidepipes nor their mounting tabs interfered with the moulding.) With that done, I unbolted the headers and unscrewed the rocker moulding, noting how much of the fiberglass underneath it would need to be trimmed. Since that part of the fiberglass is concealed

18 Here's the mounting tab bolted into place on the frame—note how the body interferes with the bolt head. Since a socket can't fit on it in this position, this is open-ended-wrench territory. Remember, all of this will be covered by the rocker moulding once it's reinstalled.

19 Once we knew where the pipes would sit when bolted in place, Walden welded the hole for the O_2-sensor bung into the passenger-side pipe. While not usually needed for carbureted applications, this sensor is a must for an EFI motor that runs on a closed-loop system.

20 The O_2-sensor bung is shown after welding. Once installed, the sensor should sit roughly horizontal. Note that it's located behind the bulged end that slips over the collector. Any farther forward, and the collector would need to be cut as well.

21 While different computers require different setups, the FAST XFI system we're using only needs one sensor (shown here screwed into place). It was supplied along with the computer and wiring harness.

22 Most side-mount headers are patterned after the OK Kustom pipes found on historic racers such as this one. The aggressive, bundle-of-snakes look imparted by the four primary pipes is perfectly in keeping with the theme of our project.

behind the moulding, I simply cut it straight across using an air-powered cutoff wheel and a reciprocating saw (aka *wheelie cutter*). Lest this seem indiscriminate, remember also that these pipes get hot, and having a little extra clearance around them reduces the risk of fire.

Again using a wheelie cutter, I then cut the moulding, removing the portion of the aluminum that contacted the tubes and leaving about a 0.25-inch clearance around them. I finished by cleaning up the cuts with a grinding wheel so the resultant cutout loosely followed the contour of the pipes. After checking everything, Walden and I bolted the headers back in place using a multilayer steel gasket and stainless-steel header bolts, smearing a little anti-seize on the bolts prior to assembly to protect the threads in the aluminum heads. While most of them are easy to access, note that the one farthest back, by the number-seven cylinder, is really tight.

With the headers in place, the next order of business was to install the O_2 sensor bung. Since our pipes came without bungs (fortunately we had a couple on hand), that meant going through the wiring harness and instructions for our FAST XFI computer and verifying that we would only be using one sensor, then slipping the sidepipes back into place to locate the hole for the bung that the sensor would screw into.

Since the purpose of the sensor is to provide feedback to the computer running the fuel injection, it needs to be located where it will get the best mix of all four cylinders on the bank feeding into the collector. Instead of placing it in the collector itself—where we'd run the risk of only reading data from one of the four cylinders—we situated it farther back in the pipe.

After deciding to use the passenger side for the sensor (it'll be closest to the computer there), Walden carefully marked the hole location, removed the pipe, drilled the hole, and welded the bung in place. After it all cooled, we screwed in the O_2 sensor and slipped the pipes back onto the collectors. Since the pipes tend to run a little "downhill" as they head aft, we then used a floor jack to carefully raise them at the rear until the tabs lined up with their holes and the pipes could be bolted into place.

After carefully snaking the moulding in behind the pipes and installing the trim screws, what was once a relatively demure-looking bumper car was starting to look like something else entirely. Now it's time to get the 416 wired and plumbed, so we can hear that beast howl at the moon. VETTE

Sources

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THE END OF AN ERA

A SUCCESSFUL OUTING AT PETIT LE MANS CAPS A BRILLIANT RUN FOR CORVETTE RACING IN ALMS

JOHN MACHAQUEIRO WORDS | PHOTOS

Corvette Racing turned its last lap in the immensely successful C6.R last fall, with the all-new C7.R set to debut in the new Tudor United SportsCar Championship in January 2014. The American Le Mans Series likewise took the checkered flag as a sanctioning body, having merged with the Grand-Am Rolex Sports Car Series.

The Corvette squad came into its final race at the 2013 Petit Le Mans (PLM) having already accomplished most of the goals set out at the beginning of the year. At the previous round, at Virginia International Raceway, the team wrapped up its 10th series Team Championship and won Chevrolet's 10th Manufacturer's title. The only carrot still dangling was the Drivers' Championship, which would give the team a second straight clean sweep of the ALMS GT titles.

With three victories and six podium finishes under their belt, the No. 3 Corvette pairing of Antonio Garcia and Jan Magnussen led the drivers' standings with 125 points leading up to PLM, followed by BMW driver Dirk Muller with 109. The No. 4 Corvette of Oliver Gavin and Tommy Milner had 105 points. The PLM race was worth 24 points for a victory, so the No. 4 Corvette duo was mathematically eliminated from the title chase, leaving it up for grabs between the No. 3 C6.R pairing and Muller. For Garcia and Magnussen, a Seventh Place finish or better was all that was needed to seal the deal. Joining them as the third driver for

01 ➔ The No. 3 C6.R finished Sixth in class at Petit Le Mans, good enough to secure the 2013 Drivers' titles for Jan Magnussen and Antonio Garcia. 02 ➔ After a rocky inaugural season, Corvette Racing scored its first ALMS victory at the Texas Grand Prix in 2000. Many more would follow. PHOTO BY WALT THURN

the race was newly crowned Grand-Am Rolex Sports Car Series Daytona Prototype champion Jordan Taylor. Richard Westbrook backed Gavin and Milner in No. 4.

With dismal weather on the Thursday leading up the race, both Corvettes saw very little track time. On Friday, the weather conditions improved, which facilitated qualifying. After that session was in the books, the No. 3 car sat fourth in class and 17th overall, with a time of 1:19.128, while the No. 4 car was seventh in class and 20th overall, with a time of 1:19.440. Seven of the 11 GT entries—and at least one car from each of the five manufacturers represented—were separated by a scant 0.579 seconds. The question facing Corvette Racing at this point was whether it should try to win both the battle and the war.

"We need to keep racing as we have up to this point," said Garcia before the race. "We need to use a percentage of caution; we won't risk as much…as we normally would. But in this case, you can't hold back and wait. If you hold back a little too much, you become vulnerable. The key is to remain consistent and keep doing the same things we have earlier in the year."

Saturday's race was not without its obstacles for both Corvettes. Perhaps most challenging were the usual traffic and class races taking place simultaneously. Both Corvette squads had different goals to accomplish, and both experienced on-track difficulties. The No. 3 tangled with the pole-sitting Risi Ferrari shortly after the start of the race. As a result, the Ferrari sustained rear-end damage, while the Corvette, piloted by Magnussen, inherited the lead briefly before pitting.

The No. 4 car had a promising start, with Gavin moving from seventh to second in the first two laps. However, the telemetry showed that the alternator was not charging the battery. Thirty minutes in, Gavin pitted for fuel, tires, and a driver change, along with a belt replacement. That belt swap didn't fix the problem. With Milner now behind the wheel, the Corvette was forced to pit again on the next lap for another belt. That one did the trick, but the time lost effectively put the car out of contention by dropping it eight laps behind the class leader.

Throughout the middle of the race, the action in GT was fierce. Taylor was running comfortably in the No. 3 car at the six-hour mark when he ran over an oil slick and spun out of control. By the time he got back on track, he had dropped to fifth, where he ran for most of the final two hours before falling back to sixth position toward the end. At the drop of the checkered flag, the No. 3 car crossed the finish line in Sixth Place in GT, good enough to

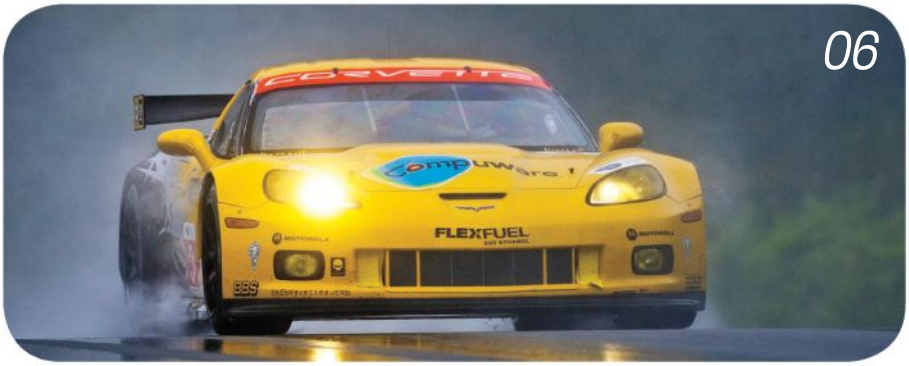
03

CORVETTE RACING HIGHLIGHTS, 1999-2013

- **Race wins:** 90 (82 ALMS, 7 Le Mans, 1 Grand-Am)
- **1-2 finishes:** 58 (54 ALMS, 4 Le Mans)
- **ALMS Manufacturer's Championships:** 10 (2001-2008, GT1; 2012-2013 GT)
- **ALMS Team Championships:** 10 (2001-2008, GT1; 2012-2013, GT)
- **ALMS Drivers' Championships:** 9 (2002-2008, GT1; 2012-2013, GT)
- **24 Hours of Le Mans class wins:** 7 (2001-2002, 2004-2006, 2009, 2011)
- **Sebring 12 Hours class wins:** 8 (2002-2004, 2006-2009, 2013)
- **Petit Le Mans class wins:** 8 (2000-2002, 2004-2005, 2007-2008, 2010)
- **Rolex 24 at Daytona class wins:** 1 (2001, GT and overall)
- **ALMS records:** Most race wins by entrant (82); most 1-2 finishes by entrant (54); longest winning streak in GT1 (25, 2007 Sebring-2009 Long Beach); most poles in GT1

04

05



06

03 ➔ The C5-Rs continued their winning ways through their final season in 2004. The No. 3 car (rebadged as No. 63 for international competition) is shown here at the '04 Le Mans race, where Corvette Racing captured a class victory. 04 ➔ The new-in-2005 C6.Rs faced serious competition for '06, in the form of the Prodrive Aston Martin DBR9s. Corvette Racing eked out an overall title in the ALMS, and pipped the factory-supported Astons at Le Mans as well. 05 ➔ By 2008, rising development costs in GT1 had left the C6.Rs to race among themselves. Not surprisingly, they swept the season, but victory at Le Mans proved elusive. 06 ➔ The 2010 season was a bit of a downer for Corvette Racing, which had made the switch to the GT2 class partway through the previous year. The team captured only one race win that year, and no titles.

give Garcia and Magnussen the drivers' title.

Overall, Corvette Racing accomplished most of its objectives for 2013. Beyond the previously mentioned titles, Magnussen also won the ALMS' Most Popular Driver award for the second time in his career. Chevrolet also won the Green Challenge GT championship. This award goes to the manufacturer that is consistently fastest, while also being the most efficient with its fuel consumption and having the cleanest exhaust emissions.

The No. 3 car also won the Michelin Green X Challenge, an award that goes to leading GT and prototype teams and uses the same criteria as the Manufacturer trophy. The only disappointment to an otherwise stellar season for Corvette Racing was the failure to win an eighth class title at the 24 Hours of Le Mans. Victory at Le Mans has always been the season's most coveted prize.

Corvettes in the ALMS: A Look Back

While we look forward to 2014 and the C7.R, we must also look back at the success that Corvette Racing achieved in the ALMS over the years. The right commitment from a number of key entities within GM created the right environment for the return of the Corvette brand to endurance GT racing. With the debut of the C5 in 1997, support from upper management grew to showcase the performance capabilities of the new car by entering it in a production-based racing series. Having the right support in key places would prove to be pivotal for the long-term success of the nascent racing program.

The first outing for this new effort was in 1999 at Daytona with a pair of C5-Rs. Run by both Pratt & Miller (P&M) and Riley & Scott, both cars finished well off the pace at the Rolex 24. The rest of the '99 season saw a few DNFs (did not finish) and mediocre finishes behind the dominant factory-backed Dodge Vipers.

The following year, P&M became the sole steward of the C5-R. The Corvette squad had

07 ➔ The team had returned to form by 2012, and it continued its winning ways through the following season. Shown here are (from left) Antonio Garcia and Jan Magnussen accepting their Drivers' Championship trophies at PLM '13. 08 ➔ The still-disguised C7.R undergoes final testing at Sebring in December. The car will have made its racing debut—at January's 24 Hours of Daytona. 09 ➔ The C7.R will compete this season in the all-new Tudor United SportsCar Championship, which combines elements of ALMS and Grand-Am racing.

a better showing at Daytona, finishing a close Second overall behind one of the Vipers. Their debut at Le Mans was also promising, with Third and Fourth Place finishes in class. Back in the ALMS after Le Mans, the cars gradually became more competitive with the Vipers, and at the Texas Motor Speedway race, the team took its first win. That was followed by a win at Petit Le Mans.

Corvette Racing's first full year of competition in the ALMS came in 2001, and it would prove to be a breakout season for the team. Things got off to an auspicious start with an overall win at the 24 Hours of Daytona. This was followed by five more class wins and, for the first time, a class victory at Le Mans. The following year, the team took nine out of 10 races in ALMS competition, including its first class win at the 12 Hours of Sebring.

For 2003, Prodrive mounted a strong effort in the ALMS with its Ferrari 550 GTS, taking a class win at Le Mans. Corvette Racing won the ALMS title, however, edging out the first serious challenge it had faced since the departure of the Vipers.

The following year Corvette Racing swept the entire season in the ALMS, and also added another Le Mans win to its portfolio. On the horizon was the next generation of the street and race cars, the C6 and C6.R.

The C6.R

The new C6.R entered competition for the first time at the '05 12 Hours of Sebring. That outing proved to be a disappointment, however, as the equally new Prodrive Aston Martin DBR9s finished atop the class. With Prodrive heading back to Europe after the race, the remainder of the season was more positive. Corvette Racing nabbed another class win at Le Mans, and with no real competition stateside in the ALMS, the team swept the remaining races that season.

Prodrive returned the following year, this time with a full-season, two-car effort. With the factory-backed Astons giving the C6.Rs their most consistent competition to date, Corvette Racing took the championship by a mere three points. The teams fought a pitched battle at Le Mans as well, where the Corvettes finished First and Seventh in class; the Astons, Second and Fifth.

By 2007, the tide was turning against the GT1 category. Spiraling costs, coupled with diminishing car counts and declining worldwide economic conditions, helped fuel the eventual demise of the class. In the ALMS, the only competition Corvette Racing faced was itself. The team won another championship stateside, yet failed to score a repeat win at Le Mans.

At that time, some within GM started to ponder the future and direction of the race team. P&M even studied the feasibility of building an LMP1 EVO Corvette. But deepening financial problems at GM, along with undefined LMP1 rules and the elevated costs to run in that class, contributed to the abrupt end of that idea. Beyond those issues, a prototype would have had little in common with what was being sold on the showroom floor, which for many inside GM was a deviation from the original goal of the program. The decision to race in the GT2 ranks was made.

The 2008 season continued in much the same way as the previous year. The C6.Rs swept all the races in the ALMS but came up short at Le Mans. Work on a GT2-spec Corvette was started by P&M, with the goal of racing the car the following year.

The GT2 Era

In 2009 P&M campaigned a pair of largely unchanged C6.Rs in ALMS competition up through Le Mans, where the team scored a class win to send the GT1 Corvettes out in style. Upon returning stateside, the GT2 cars hit the track. They proved to be fast right out of the box, but unlike the GT1 category, GT2 was well populated and fiercely competitive. This was a welcome change for the crews of both Corvettes, who relished the challenge.

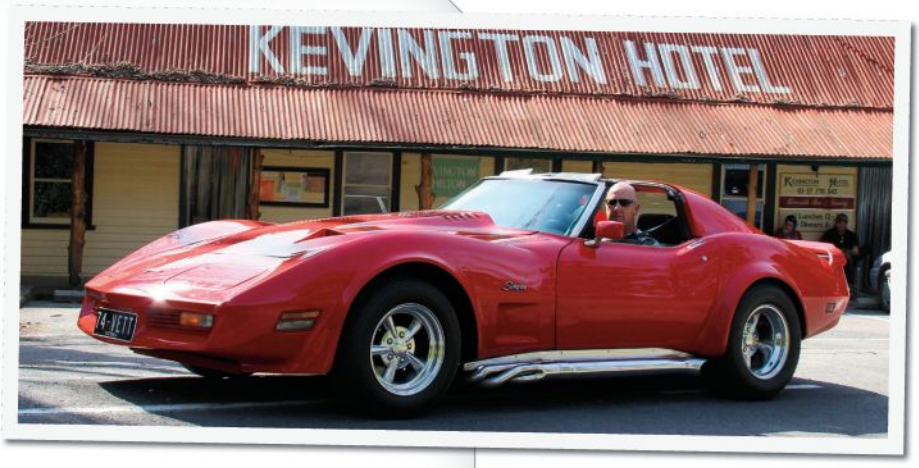
The 2010 season was not an easy one for Corvette Racing. Engine problems and a collision ended its Le Mans aspirations, and it managed only one win—and no titles—in the ALMS. GT2 had matured into a hotly contested class, with manufacturer-backed teams from Ferrari and Porsche, along with some impressive privateer efforts. That continued into 2011, when Corvette Racing enjoyed only one ALMS victory but did manage to secure another class win at Le Mans.

In 2012 the GT2 class was more vibrant than ever, with an old rival—the Viper—making a midseason return to add to the already deep field. Corvette Racing managed to win four races and score enough points to sweep the ALMS Drivers' and Manufacturer's titles, but a follow-up class win at Le Mans eluded the team.

With the end of both the C6.R program and the ALMS itself for 2013, the goal for Corvette Racing was to repeat what it had achieved the previous year. The team did just that by winning five of the 10 series races, with disappointment at Le Mans again being the only negative. It was a fitting end to both the C6.R and ALMS eras. VETTE

THE 'GLASS MENAGERIE

DOWN UNDER SHARK



WHO: Tony Browne WHERE: Australia (no city given) WHAT: '74 C3 coupe ➔ I've been an Aussie subscriber to *VETTE* for the last three or four years, and thought I should let you know about my '74 Stingray.

I purchased the car out of Japan as an undriveable wreck, with a plan of just getting it going and driving it. Before long, I had every bit pulled down and the four coats of existing paint laboriously sanded back to reveal the bare bones. Four-and-a-half years later, I completed a body-off restoration, including engine, transmission, and rearend rebuilds. Only then did I finally get my mildly worked 350/Turbo 400 Stingray on the road for my first-ever drive.

The car features an '80s body-panel upgrade, flares, and custom-made Australian Dragway wheels. It's pictured here at a local bush pub. (That's Australian for bar.)

I'm also currently working on a '74 big-block 454, and will keep you posted on my progress. I love your mag—keep up the good work. Cheers from Oz!

PACE COUSINS

WHO: Kenn and Dean Deike WHERE: Plainfield and Waverly, IA WHAT: '08 C6 Indy Pace Car, '78 C3 Indy Pace Car ➔ We're happy taking the curves with our Pace Cars.

Kenn has the '08 with a Lingenfelter supercharger installed, while Dean has the '78 with upgrades that include a specially built 700R4 transmission in place of the stock Turbo 350.

We both belong to the Cedar Valley Corvette Club (www.cvvettes.org), and we enjoy *VETTE* and the tech hints in each issue. Keep up the good work!

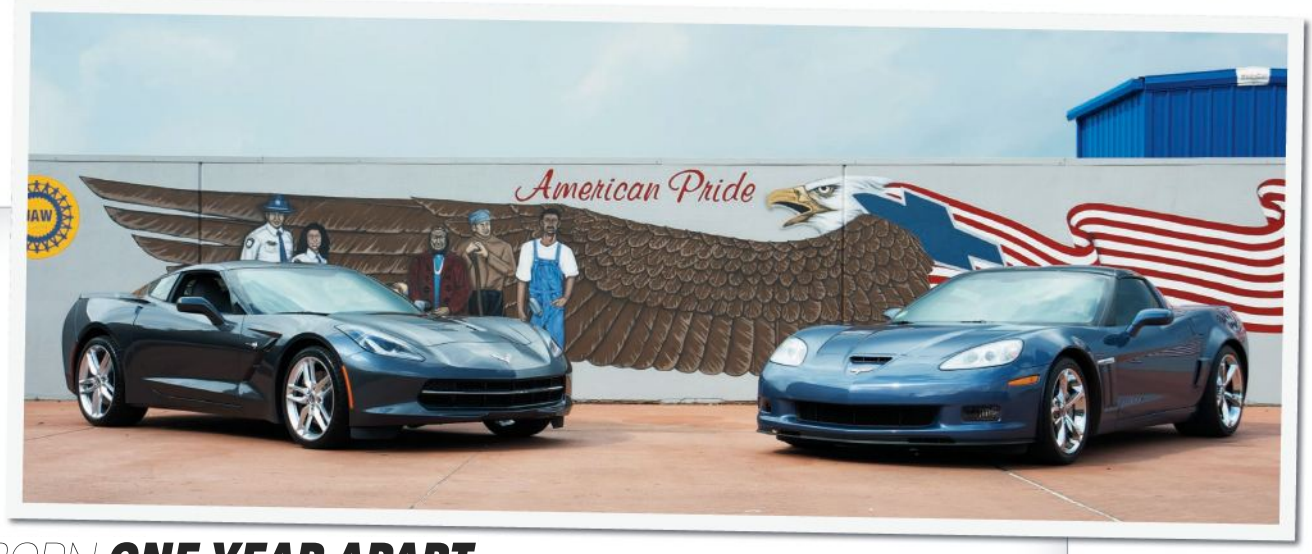
FIRST TIMER

WHO: **Marc Cropper**
WHERE: **Westerville, OH**
WHAT: **'91 C4 coupe**

This is my first Vette. It wasn't in very good condition when I bought it, but the owner needed to sell. I made him an offer, and he accepted.

Now, the L98 engine has an Edelbrock high-flow intake, a Vortex cold-air induction system, a 52mm BBK throttle body, a mild cam, long-tube headers, a MagnaFlow exhaust, and a custom-flashed chip. The interior is from a 40th Anniversary '93, with the anniversary logos replacing the C4 emblems. The pockets on the backside of the hood have all been chromed, along with a lot of the engine and engine bay, and the suspension has also been upgraded.

Now the car is a multiple award winner, and I've received a lot of compliments on its black-and-ruby color combination.



BORN **ONE YEAR APART**

WHO: Boone Trail Corvette Club WHERE: St. Charles County, MO WHAT: '14 C7 coupe, '13 C6 coupe ➔ While these two Corvettes—both owned by members of the Boone Trail Corvette Club—are a generation apart, they have something in common.

The C7, owned by Vince Gabrunas, was built on August 29, 2013, and rolled off the assembly line at approximately 11 a.m. that day. The C6, owned by Bob and Susan Williams, was built on August 29, 2012, at almost exactly the same time.

The C7 has the Z51 package, an exposed carbon-fiber top, and a seven-speed manual transmission, while the C6 has nav, dual-mode exhaust, a six-speed automatic with paddles, and a Johnny O'Connell suspension package.

It was during a club trip to the Tail of the Dragon that Vince got the call that his car was available for delivery from the National Corvette Museum. Several club members went to the Museum to celebrate his taking delivery of his new car.

DREAM **GARAGE**

WHO: Tim Rukavina WHERE: North Huntingdon, PA WHAT: '77 C3, '98 C5 coupe, '70 C3 coupe ➔ Here is my garage with my three Corvettes—two sharks flanking a C5.

As you can see, there's plenty of Corvette-related automobilia alongside the three cars, including hundreds of die-cast Vettes in large and small scale.

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10 PSI, 28 MPG

WHO: Bob Funari WHERE: Long Beach, CA WHAT: '99 C5 coupe ➔ I purchased this car in 1998 as a new automobile, and over the years it's gone through multiple upgrades and enhancements.

It has a custom-built engine that started with a C5-R aluminum block and highly modified cylinder heads. A Magnuson supercharger generates 10 pounds of boost, while a custom-built set of headers expedite the exhaust flow through Borla mufflers. A SPEC high-performance clutch, a strengthened differential, and Wilwood brakes complete the modifications. Despite its incredible power, the car is capable of getting 28 miles per gallon in highway driving.

This car probably has the best combination of performance, driveability, and utility of all the vehicles in my collection. Despite its incredible capabilities, it will carry quite a bit of luggage, and it has been highly reliable in daily commutes to my office. In many ways, this Corvette is a more powerful cousin of the C6 ZR1.

FATHER AND SONS' RESCUE

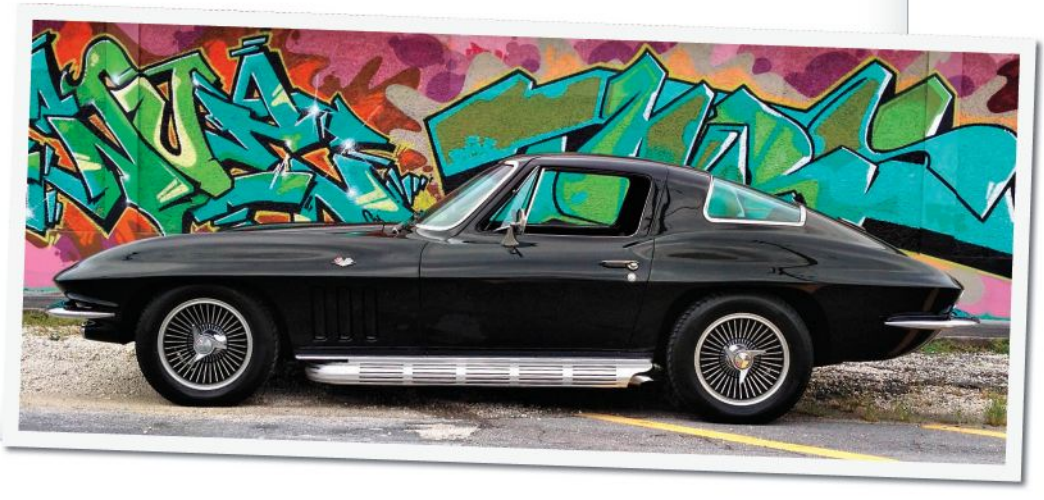
WHO: Larry Grossman WHERE: Boca Raton and Ft. Lauderdale, FL WHAT: '66 C2 coupe ➔ During the year of my recovery after open-heart surgery, I decided to fulfill a lifelong desire to buy a midyear Vette.

After a very long search with my sons, Mitch and Randy, I came across an abandoned restoration project in an Alabama garage. It was a numbers-matching '66 coupe that was in dire need of completion.

We've refurbished the interior, replaced the wiring systems, added Vintage Air HVAC and a new repro radio, plus center and kick-panel speakers. The brake system was replaced, and a power-brake conversion unit went on, as did new shocks and chassis bushings.

All of our efforts have been amply rewarded, as every time we start the engine, it roars to life through the side-mounted exhausts. Everywhere we drive, people wave and give us the "thumbs up," and groups come over and ask if they can take pictures standing next to the car.

With the Beach Boys playing while we cruise around, I get the feeling I'm a teenager again. The feeling is priceless! VETTE



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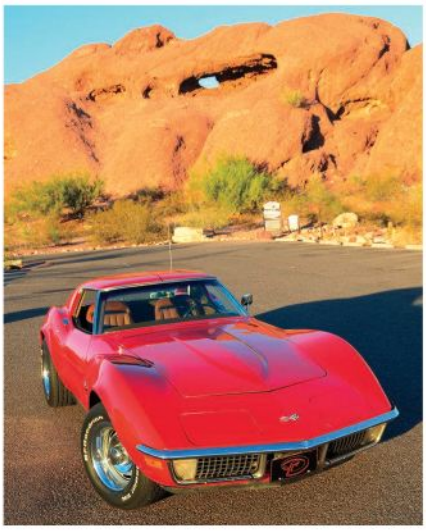

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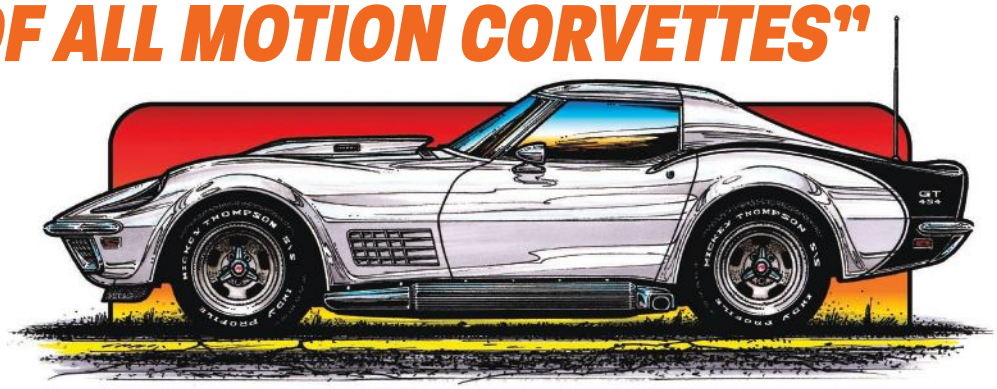
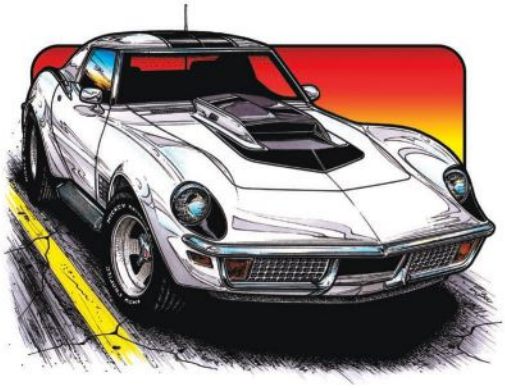
K. SCOTT TEETERS
WORDS | ILLUSTRATIONS

DR. ROLLINGS' '71 PHASE III GT: "THE MOST EXPENSIVE OF ALL MOTION CORVETTES"



Time has been kind to the Baldwin Motion Supercars, and today complete, restored versions sell for hundreds of thousands of dollars. The similarly vaunted Yenkos may boast a COPO pedigree, but those cars never offered the option of buyer personalization. Joel Rosen and Marty Schorr made sure the Baldwin Motion experience was altogether different.

Rosen was the owner of Motion Performance in Baldwin, New York, and Schorr was the editor of *CARS* magazine (as well as the first editor of *VETTE*). The two young men conceived of offering custom-built supercars through local dealership Baldwin Chevrolet. Rosen knew how to build a Chevy muscle car into a dependable supercar, with performance well beyond the factory level. He spun the wrenches, and Schorr spun the copy, filling *CARS* with road tests, in-your-face ads, and other special features.



Rosen's higher vision was to offer an American GT machine based on the big-block Corvette. Along with the "base" 500-plus-horsepower Phase III model, the Phase III GT added custom bodywork that included a fastback rear window to expand the rear cargo area. The Phase III GT was Rosen's vision of the ultimate Motion car for customers with deep pockets. He expected to produce 10 to 12 of them each year, but ended up only making 12 cars from 1969 through 1971.

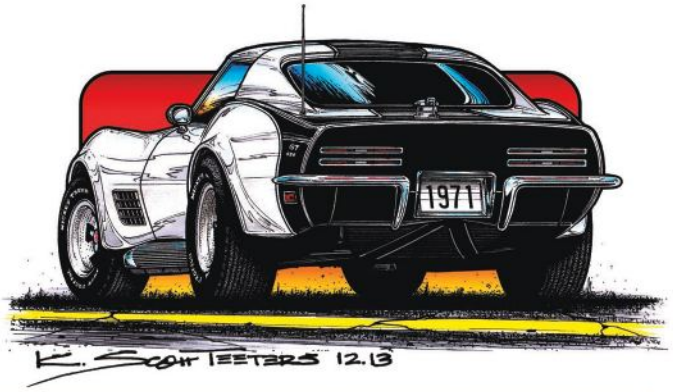
One day in June 1971, Rosen was visited by a Dr. Ed Rollings. The avid pilot and racer had spotted one of Schorr's Phase III GT ads in *CARS* while in town for his daughter's college graduation. Rollings ended up placing a $5,000 deposit for what would prove the most expensive of all the Motion cars. Whereas a typical 454-powered '71 Corvette cost just over $6,700, Phase III GT pricing began at $10,500. Rollings' car, meanwhile, totaled $16,283—almost $94,000 in 2013 dollars.

The car was powered by a 454 big-block with open-chambered L88/ZL1 aluminum heads, a Phase III hydraulic cam, heavy-duty valvetrain hardware, steel tube headers fitted with smog equipment, factory side pipes, and an 850-cfm double-pumper Holley carb with dual electric fuel pumps. Compression was a heady 12.5:1. The Turbo 400 three-speed automatic received a performance shift kit and a Hone overdrive unit that reduced the 4.88 rear gear ratio to a highway-livable 3.42 when engaged. And because it was a grand-touring car, Dr. Rollings opted for air conditioning. Custom features included custom striping around the tail, sides, top, and hood; diamond-tufted upholstery on the seats and door panels; a Formula 1–style steering wheel; and a sound system.

When the car was completed, Rollings promptly tested out its grand-touring bona fides by driving it all the way from New York to his home in Savannah, Georgia. The Corvette served as a daily driver for several years, even accompanying Rollings on the occasional house call. A tow bar was later installed, so the GT could be used to transport the doctor's Jaguar race car. Rollings bought and sold many exotic cars over the years, but the Phase III GT was a keeper. He drove the car hard and even raced it at his local track.

When Rollings died in 2003, the car was passed to his daughter, FBI Special Agent Ellen Glasser. Adam Tuckman, the current owner, bought it in 2010. Aside from its non-original Hugger Orange paint, the car was as complete as the day Rollings took delivery. Tuckman treated it to a frame-off restoration that included a freshening of the custom interior. The engine, trans, and Hone overdrive were rebuilt, and the body was repainted Classic White with the unique black striping. The car's paperwork is complete and even includes the original buildsheets, plus special instructions from Rosen on tuning and maintenance.

While 31,000 miles isn't a lot for a 43-year-old Corvette, it does indicate that its owners have enjoyed the car along the way. VETTE



VETTE (ISSN #0199-7890) Vol. 38, No. 6. Published monthly by Source Interlink Media, LLC., 261 Madison Ave., 6th Floor, New York, NY 10016-2303. Periodicals Postage Paid at New York, NY and at additional mailing offices. SUBSCRIPTIONS: U.S. and U.S. Possessions $29.95 for 12 issues. Canadian orders add $12.00 per year and international orders add $24.00 per year (for surface mail postage). Payment in advance, U.S. funds only. **POSTMASTER:** Send all UAA to CFS. (See DMM 707.4.12.5); NON-POSTAL AND MILITARY FACILITIES: send address corrections to Vette, P.O. Box 420235, Palm Coast, FL 32142-0235.

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