Looking for Mr. Goodcar

What do experienced eyes look at during a pre-purchase inspection? Jeff Glenn learns how the pros do the job on an early C3.

We're taking a little detour this time from this section's usual fix-this-and-grind-that format. Instead, this installment is designed to help you avoid lots of fixing and grinding in the first place: We're going to do a pre-purchase inspection.

The car we'll be working with is an early C3, but a lot of these concepts transcend generations. Pat Hendrix, *CM*'s faithful consultant from Precision Motive in Hayward, California, took some time off to guide me down the same comprehensive checklist that he uses when asked to inspect one of these cars in his own Corvette shop *(photo 1)*.

Before getting into the list, Pat pointed out that the first thing a buyer must do is get clear in his own mind just what it is that he's looking for. Is the Corvette in question meant to be an investment or NCRS candidate? Is the goal just a cool-looking car for the driveway? Or is it to find a good-running driver that can be used regularly without too much risk?

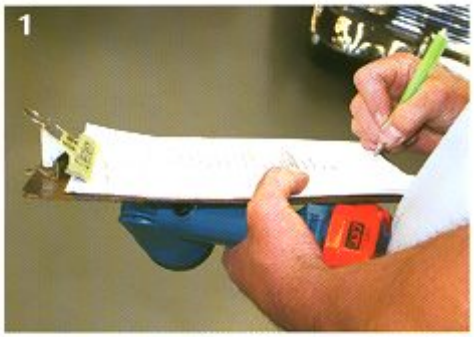
Why the distinction? Because a typical pre-purchase inspection on a driver-type Corvette runs about $150 to $200—maybe even $300 if the shop decides to perform a compression test. A top-level showcar inspection and document-sniffing can cost an order of magnitude more, and should really be left to recognized experts on that particular car's generation. In any case, we'll be giving the once-over to Bonnie Andreason's clean-driver '72 coupe.

A: Starting on the outside, walk around the car slowly and let the overall impression sink in. Does it seem tidy and pleasant, or give off a beat-down vibe? Subtle errors in ride height, symmetry, and finish can give you gut feelings that your mind doesn't instantly recognize. Never shrug these off—they're often telling you something you really should know.

B: Now get up closer and check the paint for small blemishes; sight down the sides for ripples and abnormalities; and check the panel gaps at the hood, doors, and fenders. Just about all Corvettes have a few wonky panel gaps, but everything here is relative. Look for stress cracks, especially around areas where the corners of panels are joined. Also look at the exterior rubbers and felts; are they pliable and fresh, or cracked and deteriorating? What about the glass: clear, or pitted and scratched? Bonnie's car had a high-quality respray with no visible evidence of shoddy repairs. Even so, fluorescent lighting revealed imperfections that weren't visible in regular sunlight, including two spots on the side of the hood blister probably caused by drips from the painter's spray gun *(photo 2)*. They'd been properly buffed and levelled, so they wouldn't be an issue on any kind of street car. For a top-level showcar, it would've been more of a problem.

C: Another spot that's notoriously tricky to paint on early C3 coupes is the curved area around the backlight *(photo 3)*. In resprays this section is frequently missed, so it ends up feeling dimply and rough.

At the nose, look for signs of rivets just in front of the leading edge of the hood; there's a steel header bar under there, and imperfect repairs often let the rivet heads show through *(photo 4)*. The same rivets are also susceptible to rust, which shows up as cracks or subsurface dimpling. Pat found evidence of slight patchwork on one front corner, but felt that "Unless this was represented as a 100-point showcar, I wouldn't be alarmed by anything that minor."



D: Scoping out the car's stance, Pat said "It's maybe a bit high in the back, probably thanks to heavy-duty springs." After checking the tire pressures to be sure they were even, he took out a tape measure and verified the distance from the ground to each fender lip *(photo 5)*—a surefire way to detect tired springs. The car sat a tad lower on the driver's side than the passenger's side—not unusual given less-than-brand-new springs—but it was close enough.

E: Upon popping the hood, Pat pointed out a cockeyed distributor shield *(photo 6)*. "Very common; it's easy to mix up the brackets that bolt to the manifold, and putting one on the first time is always trial-and-error." He took off the distributor shield to gain access to the coil wire, which would come in handy later during the cranking-compression check. While he was in there, he inspected the wires and contacts for cracking, corrosion, and condition.

At the front of the engine, the next revealing inspection involved belt alignment. First Pat checked the clearance between the lower radiator hose and the drive belt. Chevy used a bracket to act as a shield here, but on a neglected car the belt often works free and starts cutting the hose. "These cars are also notorious for having the air-pump and power-steering pumps askew—I'm constantly modifying the brackets to get them straight. On this car, the alignment *(photo 7)* is fantastic."

The engine-compartment lip was checked for damage or cracking next *(photo 8)*, especially at the junction where it meets the fender. Cars that have been hit can show signs of hasty repairs in these areas. If the surfaces are smooth and you don't find anything rough or bumpy, it's okay to move on.

F: The next step was to pop off the radiator cap and inspect the coolant *(photo 9)*. You want to see fairly clean fluid with no rust and no signs of foaming or milky discoloration (indicating a blown headgasket or worse). Pat likes to take a quick sniff of the cap, too, just to see if he smells any combustion gasses. If he does, he'll take an old-style exhaust-gas analyzer and use it to double-check for hydrocarbons. Bonnie's '72 was due for a coolant flush, but showed no sign of major issues.

G: Moving along under the hood, he pulled out the dipstick *without wiping it* and held it up in the sun to assess the oil—whether it was dirty, clean, or (in this case) even there at all *(photo 10)*. With no fluid on the stick, this car was a minimum of two quarts low. Two quarts later, the level in this engine was right on the money, and what was already in there seemed clean. "I always check that because later, out on a test drive, I'd have the throttle on the floor and not enough oil in the sump." Pat made a mental note to check for any indication of oil-burning or leakage later in the inspection—as it happened, he didn't find any.

H: Looking around the intake manifold for puddles of anything that shouldn't be there, he noticed a blop of coolant in a crevice near the thermostat housing *(photo 11)*. From the location, Pat felt it was probably due to a seeping thermostat housing or an imperfect heater hose; in either case, a very minor fix.

I: Pat likes to listen to the engine crank to help him decide if a full compression test is necessary. The sound alone gives him a pretty accurate sense of whether the compression is even at each of the eight cylinders. However, the engine temp for this test is just like Goldilocks' porridge—it can't be too cold (or you might have a lifter that isn't pumped up), and it can't be too hot (or you can get detonation and uneven cranking). Thus, before pulling the coil wire to perform this test, Pat had me start the engine and run it about a minute. As I turned the key, he stood at the side and had a close look at the exhaust tip; a small puff of blue smoke on startup pointed to drying-up valve-guide seals, a potentially annoying but hardly critical internal issue. Pat was also looking for excessive steam or a smell of antifreeze out of the pipes, two further indications of a failing headgasket.

J: After running the engine for about a minute, he had me shut it off and then pulled the coil wire from the distributor, carefully putting the loose end down near some grounded metal to give the spark someplace to go *(photo 12)*. The next step was to crank the engine a few times and carefully listen to the pattern. A steady, even, rhythmic sound is what you're hoping for. A regular hitch in the sequence or a pattern that continually changes its speed or its pitch means you'd better pull out the gauge and the sparkplug wrench.

K: During the brief warmup and cranking test, Hendrix observed that the fan kept spinning long after the engine was stopped *(photo 13)*. "That means that the fan clutch isn't working well; we'll have to keep an eye on the temp on the test drive."

L: On these cars the power-steering filler and dipstick is located under the alternator, which makes it a pain to remove. Still, it's worth the trouble; as with the engine oil, you're looking for level, cleanliness, and the absence of foamy or milky inclusions *(photo 14)*. Ditto the automatic-transmission fluid, which has its own dipstick at the right-rear of the engine compartment. Good ATF should be clearish red *(photo 15)*; if it's muddy or smells burnt, it's time for a change—and maybe for a deeper transmission inspection. If it's low, try finding the source of the leak.

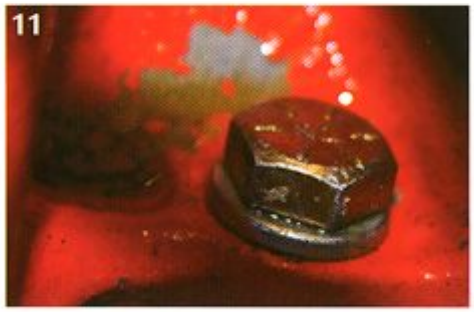
M: The last key reservoir is the brake master. After undoing the bails so as not scratch the chrome cap, Pat carefully lifted the top and peered in *(photo 16)*. You're again looking mostly for level and color. Clear, clearish-yellow, or even translucent-brown fluid is normal. If the fluid is opaque brown or black, it at best needs a flush. At worst, you may be facing a costly hydraulic rebuild. Another trick is to look at the expandable rubber boots in the bottom of the reservoir cap. Most people don't return these to the proper collapsed position *(photo 17)*, which indicates less-than-zealous knowledge and attention.

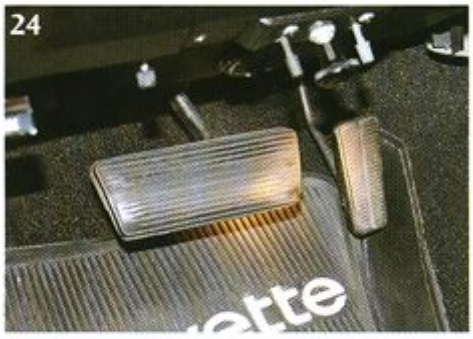
N: At the steering column, Pat inspected the coupler (also called a rag joint) while I turned the wheel back and forth *(photo 18)*. There should be no cracks and virtually no relative motion. Then he turned the wheel from side to side by himself, feeling for on-center play and listening for funny noises. Play and/or creaks and clunks may indicate linkage problems or other worn steering hardware.

O: The next check was to pop off the distributor cap and look at the rotor and (if any) points. You don't want to see any dirt, grime, or oil, and the points should look clean and even, not scored, misaligned, or burned. "I like to feel the centrifugal advance and throw a timing light on it to see where that is, too" Pat added. After that, he reinstalled the wires, restarted the car, and pulled the vacuum line off the distributor *(photo 19)*. If the idle doesn't change when you do this, the vacuum-advance hardware probably isn't working.

P: Another area under the hood worthy of a glance is the tops of the upper control arms, the inner mounts of which can be seen along the front sides of the engine bay. Bonnie's '72 had gotten its bushings changed recently, and somehow the control arms hadn't been retightened properly. The arms were moving on their inner mounts as a result, leaving scratches along the inner fenderwell.

Pat's final underhood check again required a helper. He pulled the aircleaner off and, after looking at the carb for leaks or staining, had me mash the pedal to the floor *(photo 20)* with the engine off as he watched. He was checking to see that the butterflies were fully opening—which they weren't. The primaries were barely reaching half-throttle, in fact, and the secondaries were not even moving. This could require a simple adjustment to fix, or mean a reworking of the entire linkage system. It's also a good idea to verify that a nicely atomized shot of fuel gets delivered as you manually snap open the throttle linkage.





Q: Before getting deep into the interior, Pat popped off the T-tops to check their weather seals and headliners. "Two things happen to these: The weatherstrips get folded over on the inside lip *(photo 21)*, and the headliners get loose and start hanging down *(photo 22)*." Droopy headliners are difficult to set right, and as long as they don't bug the driver they're best left alone. A damaged weatherstrip, on the other hand, is easy to repair and can lead to costly leaks. (Sometimes, you can get the rubber to shift back into the proper location by putting to T-top back on while using a thin piece of cardboard as sort of shoe-horn. After the T-top is locked in, just slip out the cardboard and go.) Some of the most expensive C3 repairs involve rust in the substructures of the windshield and greenhouse. Leaky T-top seals are one of the biggest causes of that condition, so a thorough inspection of both the seals and the steel parts below is a must.

R: Leaving the T-tops off to get maximum light in the cabin, Pat likes to climb in and soak up a general impression. Just as with the exterior, is the gut feeling positive or negative? Does the cabin feel tidy and cozy, or cramped and dishevelled? Next, take a close look at the odometer *(photo 23)*. Are the numbers lined up in an orderly row, or jumbled and uneven? An uneven string can point to a physical rollback. Also, does the mileage figure jibe with the wear on the pedal pads *(photo 24)*, console, seats, steering wheel, and other controls? And is the wear fairly consistent throughout, or are some items noticeably fresher than others?

Pat checked the tilt/telescope feature after that *(photo 25)*. Many of these get damaged because drivers use the steering wheel for leverage as they get out of the car. "That's always a good $500 fix," Pat noted. A close check for cracks, delamination, worn fabric, and similar flaws followed. Among the things to watch out for on C3s: Consoles often develops cracks around the parking brake *(photo 26)*; the detailing on flat surfaces can wear off; and the backings for doorpanels and kickpanels may swell up and warp due to moisture.

S: The next sensible check was to cross-reference the VIN tag (at the base of the left A-pillar) and trim tag (driver's side hinge pillar) against the car's existing paperwork and visible engine number. The trim tag seemed appropriately patinated and aged *(photo 27)*, as did the rivets that held it in place. That's often not true on restored cars like this one. Finding a suspiciously clean, shiny trim tag means the buyer has to assume that it isn't original—thus, its data might not be accurate.

With the door still open, Pat inspected the front edge of the bodywork next. The condition of the flexible drip rail *(photo 28)* and any staining on the hardware below can give an indication of what's been kept out—and, more importantly, what's already gotten in.

Next he felt around the carpet all along the door opening and floors for moisture. While performing the same check on the passenger's side, he also took a look up under the dash at an exposed metal plate pop-riveted into place there. Third-gens that have gotten wet inside tend to have heavy surface rust on this plate; drier cars usually don't. After that he flipped the seats forward, glanced at the condition of the seatbacks, then turned his gaze to the bulkhead below the back window. The drain tubes coming out of the deck vents in early C3s often become plugged or dislodged, which soon causes water to enter the car in this area.

T: Declaring the cabin check satisfactory, Pat moved next to the underside of car. After raising it on a chassis lift, he took a quick look at the suspension and body bushings to make sure they weren't overly dried out or cracked. He also looked at the U-joints, in particular the lock tabs that secure the bolts. "These are notorious for not holding well," Pat said—and, sure enough, on one side they weren't locking anything at all *(photo 29)*. It's also important feel for play in the driveshaft and halfshaft assemblies. Following the halfshafts back to the differential, find the side yokes that attach to the splines off the diff; snap rings keep the

side yokes from sliding off, and a lot of side load passes through these attachments. There are two different styles, a heavy-duty yoke threaded for a bolt and cap *(photo 30)*, and a standard yoke with a strap and a nut. This car had the heavy version, which was a common upgrade in the 1970s. ("I don't want to say the standard ones weren't heat-treated properly at the factory," Pat offered, "but the ends certainly tended to wear off. From about '76 to '79 we did hundreds of rear ends.") If this assembly becomes worn you can feel play at the rear wheel—it's easy to mistake this for a bad wheel bearing. Also make sure to look at the cotter pins on the trailing-arm bolts; our '72 was missing one *(photo 31)*.

While you're in the area, it's a good idea to take a dip of rear-end fluid on the end of your finger and hold it up into the light. Look for cleanliness and a lack of inclusions, especially metal filings.

U: Moving a bit forward, the differential-carrier bracket has two bushings that Pat checked on next. The upper unit isn't visible, while the lower one is *(photo 32)*. Naturally, the lower bushing almost never wears out, and the upper one is highly perishable. When it goes, the carrier starts to move around. Usually, it will leave a rust trail on the paint nearby.

Up inside the frame at the rear Pat looked at the trailing-arm bushings and then inspected the frame rails between the controls arms and the rear of the car, looking closely for signs of suspicious welding, bending, or rust, especially on the outside edges. It also became apparent that the rear valance was an aftermarket piece, since the pattern of the fiberglass's inner surface didn't match that on the inside of the surrounding fenders. "I'd bet that was changed when they went to the side exhausts," said Pat.

The real concern underneath any Corvette is major corrosion: The steel framework supporting these cars can be highly susceptible, so any good inspection includes a very close look at every inch of the frame rails and crossmembers—especially those places where two sections meet or the metal curves back into a tight-fitting angle. Wherever dirt or snow can accumulate, that's where the rust will begin. The extruded channels along the lower inside front-A-arm mounts *(photo 33)* are notorious as well. Ideally these are nice and straight, but "When a car hits a curb hard," Pat said, "it bends this right where it's stitch-welded; then they can crack and rust. Also, if a bushing fails, it can go metal-to-metal and tear a hole here." Pat closely studied the front crossmember and (highly susceptible) radiator-support area for rust after that.

As for the A-arms themselves, he looked at the lower balljoints *(photo 34)* to judge their condition and type. If they're riveted onto the arm the balljoints are probably original. That's neat for a showcar, but it's probably not so neat for a driver, since the joint is likely to be very tired. He also checked the coil springs, looking for serious corrosion and checking the springs' orientation inside their frame pockets *(photo 35)*. Off-center springs tend to bind and eventually fail.

V: Inspecting the brake lines at all four corners came after that. At the rear, Pat also checked the parking-brake cable for fraying and the related hardware for wear; he further made sure the hard lines to the rear calipers weren't getting crunched by the bump stops when the suspension reached full compression.

Up front, Pat looked to see if the soft lines were properly oriented and not scraping the frame. Sure enough, he found that the right-front line was twisted and had rubbed the paint off in one area. The same problem had abraded a fair amount of the rubber off the line *(photo 36)*. After that, eyeballing the pads and rotors revealed no worrying issues; neither did grabbing the front wheels and shaking them to assess the bearings *(photo 37)*. Pat then spun each tire in turn to reveal cupping, wobbling, or other signs of trouble. He also felt across the tread of each tire; when I asked him why, he explained that if the surface feels rougher in one direction than the other, it's often a sign of improper toe.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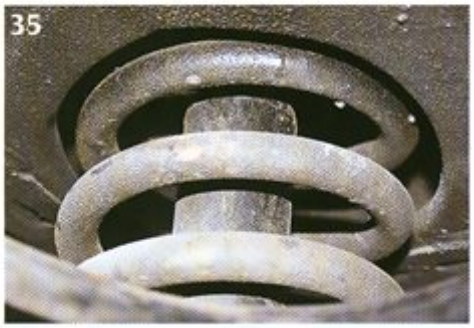

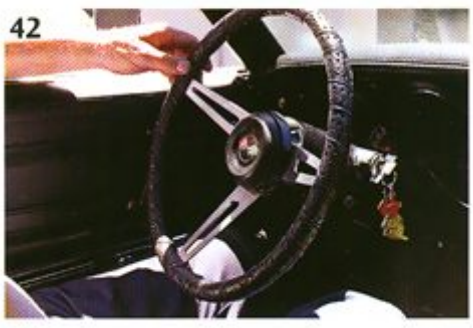

W: As we headed into the home stretch, Pat took a close look at the bottom of the transmission and oil pans for excessive leaks. He did note a couple of drips on the power-steering ram, but said this is virtually universal and not worth getting worked up over. From the bottom, it was also easy for him to see if the engine mounts were coated in oil, cracking, or looking like they'd started to sag.

X: The condition of the frame and underbody can really tell a lot about what kind of life a car has led. Of course rust and accident damage are the main issues, but less obvious signs can tell stories, too. At the rear of the C3 one finds a couple of oblong frame holes *(photo 38)* that tow-truck drivers love hooking into; often that bends the holes open toward the back of the car. If the same holes are bent out toward the front, it may mean the frame has been straightened on a hydraulic crash-repair jig. Similarly, loose bolts at the power-steering ram can eventually rip out of the frame and cause odd steering behaviors. And the bottom surface of the front crossmember *(photo 39)* often has big, scooped-out dents due to overzealous use of a floor jack. While not mechanically hazardous, these dents do say a lot about the people who maintained the car.

Y: Finally, using a strong flashlight and mirrors, Pat looked at as much of the reverse side of the bodywork as possible. Mismatched mat textures and colors, non-original sections or bonding strips, and unexplained cracks should all raise red flags. While minor body repairs are expected, large areas of mismatched fiberglass speak to a major impact.

Z: Satisfied with this car's structural elements, Pat lowered the '72 and hooked it to a charge tester *(photo 40)* to verify the electricals prior to our road test. Then he started the engine and, while it warmed up, checked the function of the headlight doors, head and running lights *(photo 41)*, wipers (with rags under the blades), and gauges. ("Hmm—replacement quartz clock," he observed, eyeing the smooth sweep of the second hand.) As the temperature came up Pat also stayed close to detect heat-induced leaks, smells, or noises.

His test route included a mix of freeway and city driving. Pat tried the a/c, felt out the brakes to check pulling or grabbing, and let the car track on its own *(photo 42)* to betray any alignment issues. He also made sure to roll up the windows at speed and listen for rear-end howling or bad cabin seals. On all counts, the coupe seemed to be reasonably problem-free and unmolested overall.

So how did Bonnie's silver '72 do? "I'd recommend this car," Pat declared. "It's clean and rustfree, and I don't think it's had any major collisions." He went on to say that it's extremely rare not to find a few minor issues during a pre-purchase inspection, and Bonnie's car was no different. More importantly, however, it appeared to be well maintained and honestly represented overall. In other words, there were no indications that previous owners and mechanics had tried to cover up or disguise anything major. As a fun driver to be used and enjoyed, Bonnie seemed to have found a real winner. ❍