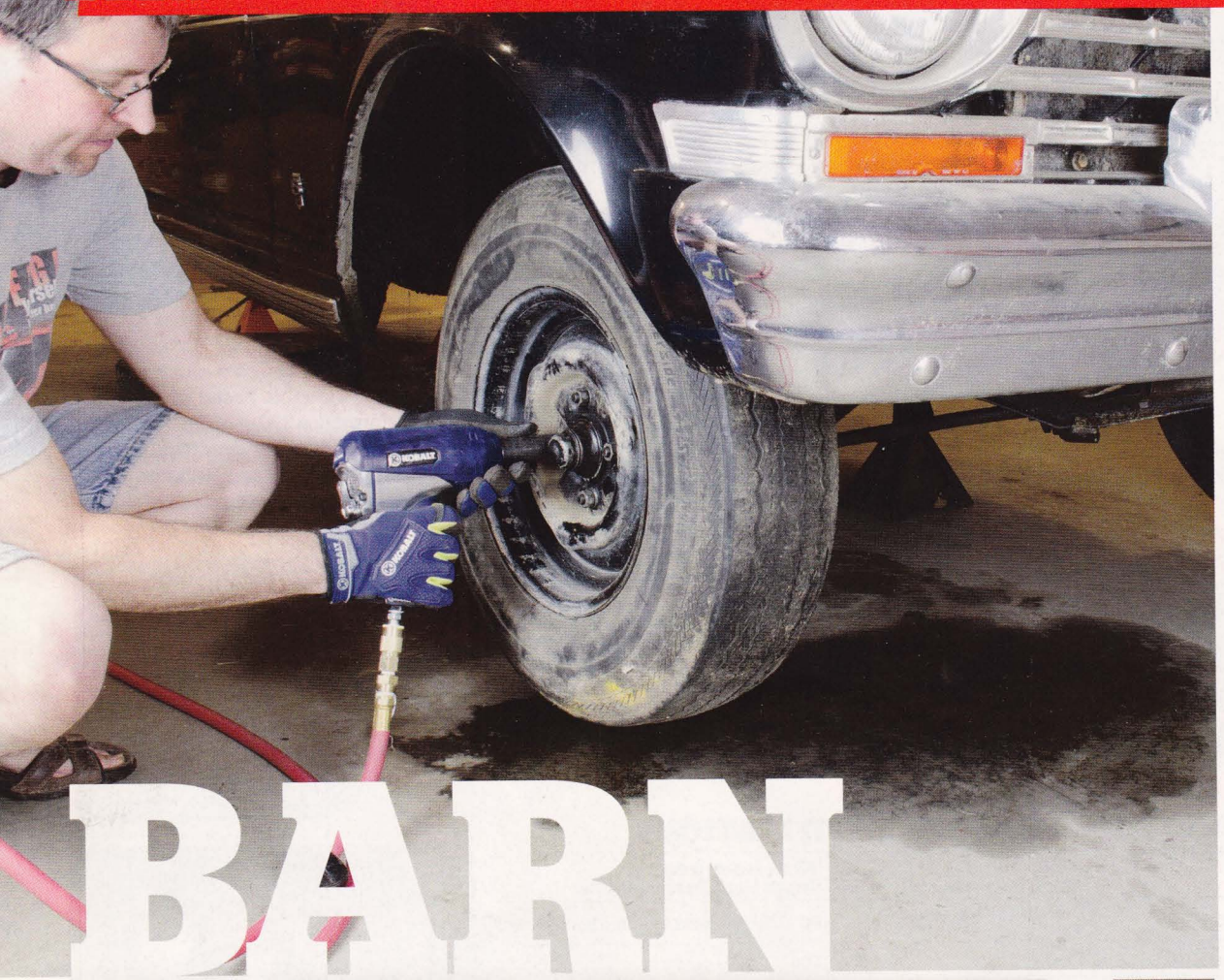


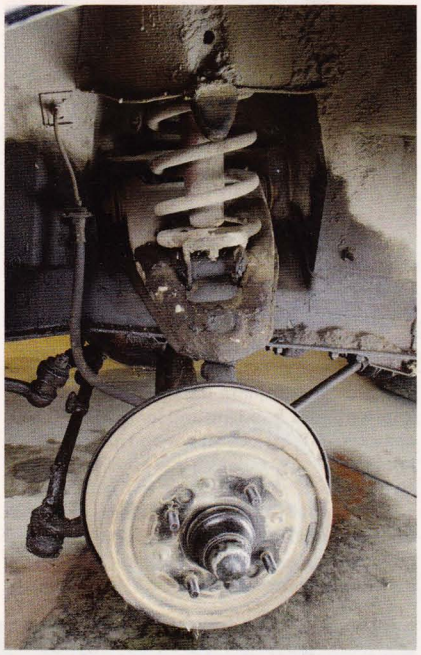
BARN REVIVAL

Part 2: Rebuilding the Suspension and Upgrading the Front Brakes

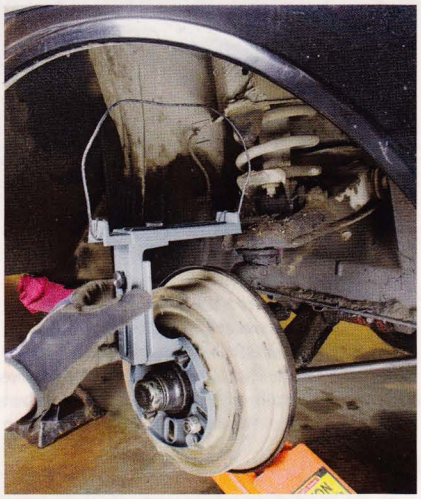
If you're one of the lucky ones who have stumbled across a barn find and are interested in getting the forgotten jewel back on the road, this article is for you. It's all about rescuing a muscle car that has been sitting for way too long and making it roadworthy once again. We're not doing a full-on restoration, and it's not about getting it running well enough to just limp home. We are giving you the steps to follow to truly make the car dependable and enjoyable to drive again.

Last month we went over the basics, replacing every inch of rubber fuel line, radiator hose, and fan belt. We also changed the engine oil and trans fluid, and read the diff oil. Our particular car is an early '60s Chevy with points-style ignition, which we upgraded with a PerTronix electronic ignition conversion, cap, rotor, coil, and plug wires. We also replaced the gas tank and the radiator.

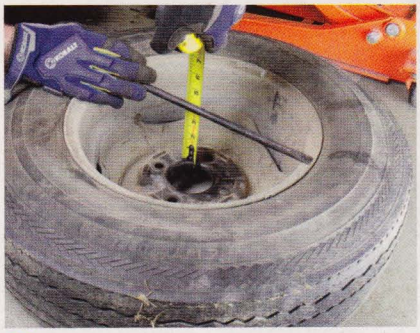
This month we dive deeper into the car and address the brakes, front suspension, and steering systems, starting with the brakes. When a car sits for more than a few years, several things happen in the brake system that need attention. The brake fluid breaks down, absorbing moisture and causing corrosion in the brake lines, wheel cylinders, master cylinders, and calipers. At the very least, you should flush all of the old fluid out of the system and look in the bottom of the master cylinder to get an idea of how bad the system is. If it looks good, fill it with new fluid, bleed the brakes, and consider replacing the pads and shoes. If it looks like the bottom of Lake Erie, you really should replace the master and most likely the wheel cylinders and calipers. If everything is ugly, you should replace the hardlines too, as they can corrode from the inside out.



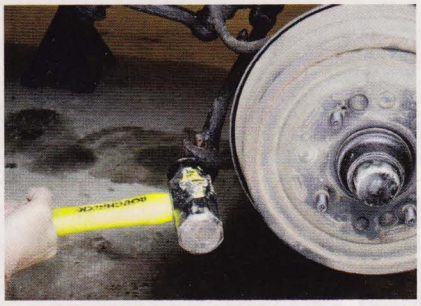
1 Nearly all muscle cars have some variation of this front suspension: double control arms with coil springs and shocks, and a tie-rod and center-link steering system. The control arms have bushings where they mount on the frame (or in this case the unibody) and ball joints where the arms bolt to the steering knuckle. The ball joints and bushings are the parts that wear. There's also a good chance that the shocks are shot after sitting for a couple of decades.



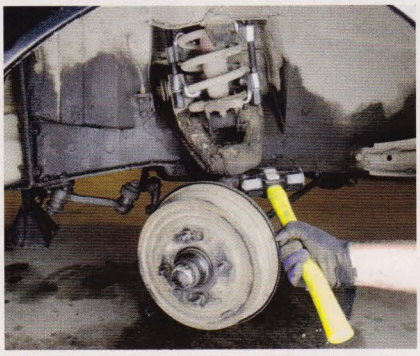
2 Since we are changing wheels and tires, we used a Percy's High Performance Wheelrite from Taylor Cable Products to determine the tire size and backspacing. The Wheelrite is adjustable and can simulate a variety of wheel and tire sizes, making it easy to see what will fit. The CPP disc brake kit we're using does not widen the track width—important to know if you're measuring using your old brake system like we are here. Use a jack under the lower A-arm to compress the suspension to ride height.



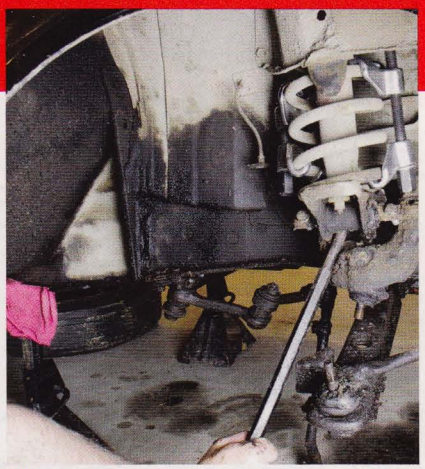
3 If you're not using a Wheelrite, you can measure your existing wheels and tires and measure the available space around the package when it's installed on the car. To determine backspacing, place a straight edge across the inside wheel lip and measure the distance to the wheel mounting flange. If your car has decent-sized tires on it, you can just order replacements. Our Chevy II had undersized tires in addition to having stock 13-inch wheels, both situations we'll remedy thanks to Coker Tire.



4 To separate the tie-rod end from the steering arm, remove the castle nut and hit the side of the steering arm with a heavy hammer. You don't need to hit it too hard, but you'll probably need to hit it several times. The impact releases the pressure on the tapered part of the tie-rod end, letting it drop out.

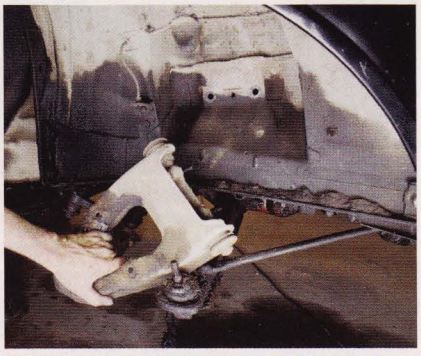


5 This same technique is used to release the ball joints with one important difference. We've used spring compressors to remove the spring pressure from the A-arm. On this style of suspension, you have to do this to separate the ball joint from the steering knuckle. On systems with the spring mounted between the two A-arms, the force of the spring can be very dangerous if the ball joint releases and the spring is not contained.



6 Next, the spring and shock are removed. The Chevy II has a suspension design unique in the GM family of cars, although it is similar to Ford suspension systems from the same era. It uses a spring mount on top of the upper A-arm. The lower arm is simply a straight channel with a support rod that triangulates it to the front of the car. The support rod uses large rubber bushings that we also replaced with new ones from CPP.

7 We ordered new springs, shocks, shock mounts, and coil spring plates from CPP. The company offers stock height and lowering coil springs. We opted to lower the car approximately 2 inches while we were making these changes. The new spring has the same wire diameter but is shorter, which should retain a very good ride quality.



8 To replace the bushings in the upper and lower control arms, the arms must be removed from the car. With the spring and shock out, the upper arm unbolts from the shock tower. The lower control arm is held in place with a single bolt and a suspension alignment cam plate.

9 CPP offers both replacement-style rubber bushings and its Polyplus front-end kit that includes graphite-impregnated bushings for better handling and longer life. The complete kits include upper and lower ball joints, inner and outer tie-rod ends, adjusting sleeves, an idler arm, control arm bushings, and strut rod bushings. You'll need a press like this one from Harbor Freight Tools to push the old bushings out of the control arms and to install the new ones.

10 Separating the inner tie rods from the center link is a bit more challenging than freeing the outer tie-rod ends. Harbor makes a five-piece front-end service tool set that has all of the tools you need for this task as well as for removing the pitman and idler arms.

If your barn find is a late '60s or newer car, it may already have front disc brakes. In that case, all that's really needed to make it a safe and capable driver is to replace the worn and crumbling parts. If your car has four-wheel drum brakes and you intend to make it a driver, you should consider upgrading the front brakes to discs. There are kits for just about any muscle car, and there's a really good chance Classic Performance Products (CPP) has a bolt-on kit in stock. CPP also offers front end kits and steering components to help you either restore or upgrade the suspension and steering.

The '63 Chevy II we're reviving needed new rubber throughout all the front suspension. Most of the brake system needed replacing because of rot and decay. These cars had four-lug wheels and pitiful four-wheel drums. Since this car is destined to be driven, we just couldn't see rebuilding a four-wheel drum brake system with four-lug wheels. CPP offers a very complete front disc brake upgrade kit that also converts the car to five-lug wheels. The rearend proved to be a bit more challenging to convert to five-lug, which we cover in the "Five Lugs to Go" sidebar.

Changing a car from four to five lugs also means new wheels. In the case of our Chevy II, we were going to need new wheels to fit the front disc brake conversion anyway. The car originally came with 13-inch wheels, and the disc brake caliper just won't clear a wheel that small. We ordered 15-inch wheels and tires from Coker Tire. The 15-inch wheels will look great on the car, fit the brakes, and be much easier to find replacement tires for in the future.

Next month we will wrap up this barn-find revival and take our little Chevy II for a ride!

11 You will need to have your car aligned after replacing the inner and outer tie-rod ends and A-arm bushings, but you'll want to get the overall length of the new tie-rod assembly close to the old pieces. Thread one tie-rod end into the sleeve first and then the other.

12 If your car has the original ball joints, they will most likely be riveted in place. You'll need to cut or chisel off the ends of the rivets and then use a punch to push the remains of the rivets through the ball joint and control arm. This is not easy, and it's safe to say that it would be hard to find rivets as stout as what was originally used in this application!

13 The rivets were a bit smaller than 5/16 inch, which is the size of the bolts that came with the new CPP ball joints. Use a 5/16-inch drill bit to slightly enlarge the three holes on the upper and lower control arms where the new ball joints will attach.

14 Grade 8 hardware and Nylock nuts are included with the ball joints. CPP uses Nylock nuts for the ball joints instead of a traditional castle nut and cotter pin.

15 We also needed to open up the holes for the new lower spring and shock mounts in the upper control arm. This would be easier to do off the car, but we didn't mock it up for fitment until after we had the upper control arm reinstalled.

FIVE LUGS TO GO

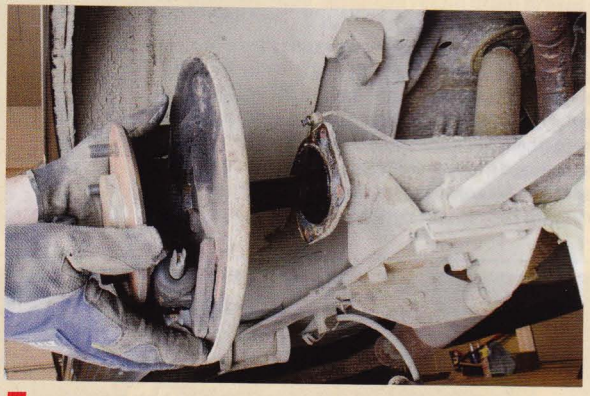
The '62 Chevy II was Chevrolet's first attempt at a true economy car. It was smaller and lighter than anything else in the lineup, which made it great muscle car material when outfitted with a V-8. But its econocar status also brought some low-cost or light-duty equipment that just won't work in a muscle application. For example, our car and other '62 and '63 Chevy IIs were equipped with four-lug wheels. In a V-8 application four-lug wheels is a bad idea. In fact, the factory V-8 cars came with five-lug wheels.

Even if you have a stock I-6 car and don't plan on swapping in a V-8, it's a good idea to upgrade to five-lug wheels because it's hard to find wheels and brake drums for the four-lug application. Up until about 10 years ago, the way to fix this was to go to a salvage yard and grab a five-lug rear axle and front steering knuckle/brake assembly from a '64-'67 Chevy II. But these cars are no longer plentiful.

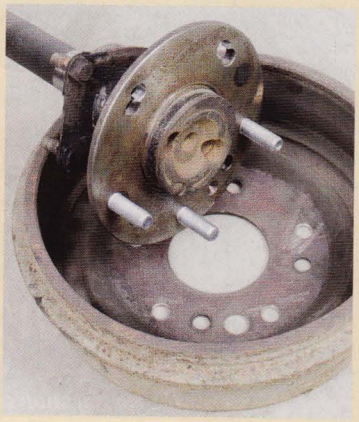
The CPP front disc brake kit we installed converts the front to five lugs, making this pretty simple. The rear is a completely different story. We found that the axle ends on the early four-lug Chevy II rear axles are unique, preventing you from bolting on a readily available complete drum brake assembly or aftermarket disc brake kit. The drums on these early cars are even a different dimension than later cars, so you can't swap to later drums and shoes.

Chevy II enthusiasts say that a standard 10-bolt rearend from an S-10 pickup truck is the correct length for a swap. To do this, you'd need to cut off the spring perches and shock mounts and weld on new ones. Another alternative is to order a brand-new axle from Moser or another aftermarket axle company.

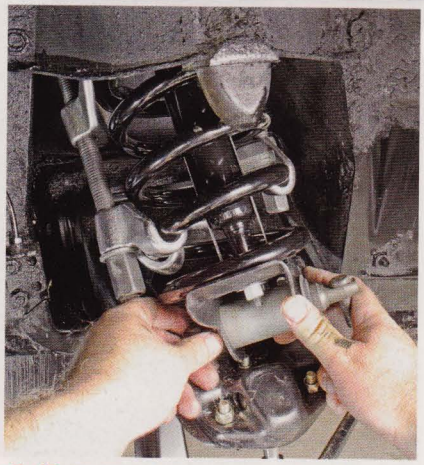
For our car we decided to take the axleshafts and drums to a local machine shop and have them drilled with the five-lug pattern. The upside is that this costs just $100 and all of our parts still fit because we didn't change any of them. The downside, though, is that two of the new holes intersect with the old holes. This would not be a good idea with a V-8 car. Also, we won't be able to get replacement drums, and may have to locate another pair of four-lug drums and have them redrilled in the future. Perhaps by that time we will have found one of the now elusive '64-'67 five-lug rear axles.



There is no easy, inexpensive, or good way to convert the rear of a '62-'63 Chevy II to five lugs. The brake drum is unique, as is the rear axle tube flange, preventing you from bolting on aftermarket brake alternatives. The only upside is that it's not a C-clip axle assembly, so you can unbolt the backing plates and remove the axleshafts to have them redrilled.

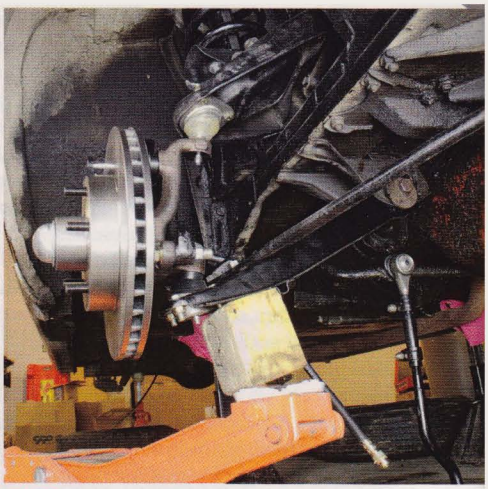


We took our axleshafts and brake drums to a local machine shop to have a five-lug pattern drilled in them. Because of the spacing, two of the holes will overlap, which is not good for strength. The new wheel studs pulled into the thick axle flange straight and solid, so we feel OK running this with our stock 140hp I-6, but we wouldn't advise this for a V-8 car.

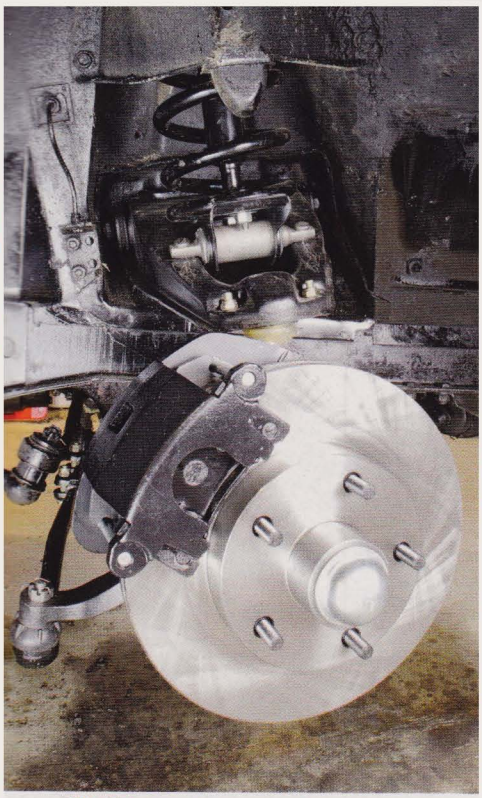


16 We used locking pliers to hold the new CPP upper coil spring seat in place. Then we compressed the new coil spring and bolted the new shock to the lower mount. Do not cut the nylon strap off of the shock yet or else installation will be much more difficult. Wiggle and push the assembly into place on the upper arm.

17 CPP makes disc brake upgrades for a range of cars including the Chevy II we're working on. Most companies do not make a steering arm for the early Chevy II with manual steering, requiring you to find an original power-steering system or converting to aftermarket rack-and-pinion. Our disc brake kit came completely assembled, including the correct non-power-steering arm.

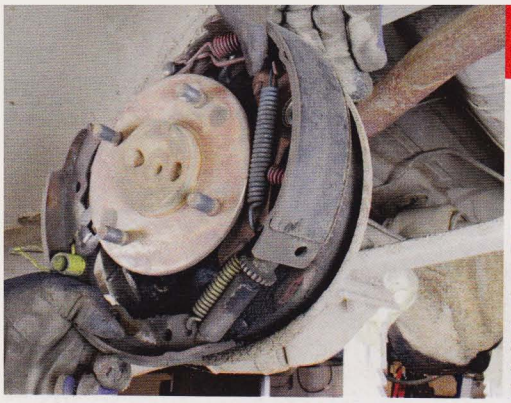


18 We set the CPP steering knuckle and brake assembly on the ball joint in the lower control arm first. Then we used a floor jack to raise the arm and assembly to meet the upper control arm.



20 Here's the completely rebuilt front suspension and disc brake upgrade. The suspension rebuild is a critical safety step before putting a barn find back on the road, and the disc brakes will make this car stop better time after time, making the car significantly safer. We still need to install the new dual-reservoir master cylinder, proportioning valve, and brake lines included with the CPP disc brake swap kit.

19 Now you can cut the nylon strap off the gas-charged shock. Install the lower washer and rubber bushing, and then guide the threaded end of the shock through the top of the shock tower. The CPP shocks for this application have an Allen fitting in the top of the shock that you can use to hold the shock rod while tightening the nut.



21 At the rear of the car, you can retain drum brakes because 70 percent of the stopping power is provided by the front brakes. We replaced the shoes, hardware, and wheel cylinders on the rear. The shoes had plenty of material left on them, but 20-year-old shoes have a way of coming apart when they are put back into service. **MCR**