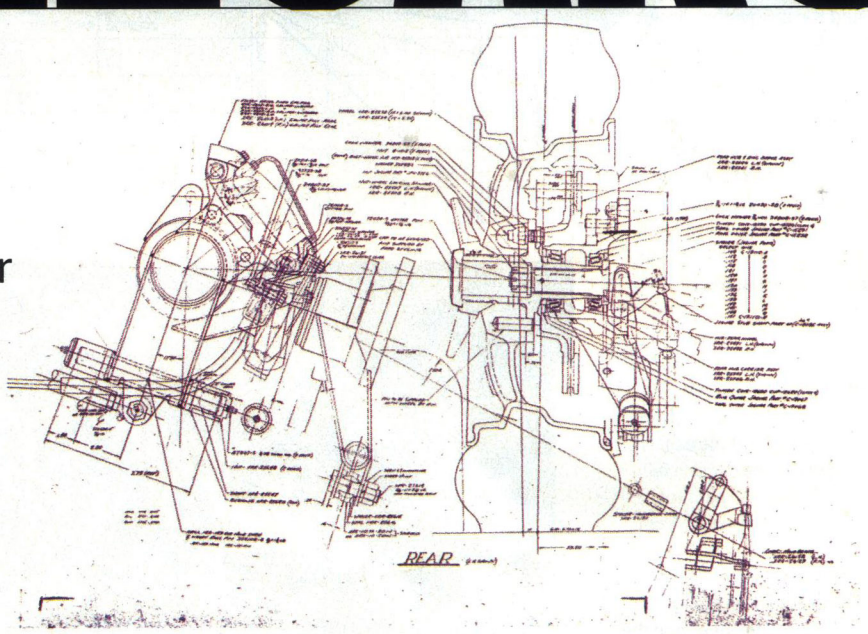
# IRS FOR MU


> Don't think IRS belongs in a muscle-car? This one does.

# SCLECARS

## Forget Custom-Fabbed Jaguar and Corvette Setups; Bolt-in Independent Rear Suspensions for Musclecars Are Now a Phone Call Away.

**By Christopher Campbell**
Photography: Christopher Campbell and the Manufacturers




Traditional musclecars all came with live rear axles, and the sporty-car guys and clean-hands media have long used that as a reason to support their belief that stock Camaros, Mustangs, and Challengers don't handle very well. The "sophistication" of an independent rear suspension is the only way to go, or so they say. The boys in Detroit have been on the fence about it over the years, occasionally taking a stab at independent rears, such as on the '03-'04 Cobra Mustangs. Of course, as soon as guys started running fast with those cars, they grenaded the IRS. That problem was fixed on the new GT500 . . . with a solid axle. Obviously drag racing isn't their strong suit.

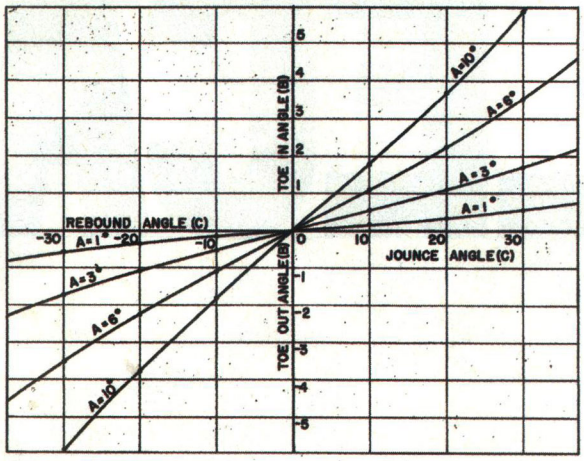
But what, really, are the pros and cons of an IRS setup in a traditional '60s musclecar? We've driven IRS-equipped musclecars before and they were impressive, but they were also pro-built cars with such extensive suspension and chassis modification that it was nearly impossible to isolate what the real benefit of the IRS was. But then again it would be silly to bolt an IRS into an otherwise stock or mildly modified car, right? Maybe not.

When we went in search of musclecar IRS systems, we discovered that so far there are only a handful of companies on the market that have developed kits that are bolt-in deals for musclecars. Each kit appears well thought out, but we were drawn to CTM Engineering's (www.mustangirs.com) because it's more than just a bolt-in IRS for Mustangs and Fords—it's the IRS that was *supposed* to be in them. Back in 1964, Ford engineer Klaus Arning and his team designed an IRS that would bolt directly into a stock Mustang with no changes to the car other than the addition of a few more bolt holes. Dubbed T-5 during its development, it was intended as a performance and racing option for the new Mustang. It was also supposedly the first Detroit suspension designed by a brand-new technology: the computer. Two prototype units were installed in Falcons in 1963 for testing, with the idea that the IRS would go into the new Mustang, making it the only car in its class to be so equipped. But as with a lot of things, the bean counters argued that the trick new suspension would cost too much money and that the average consumer wouldn't be able to tell the difference. In the end they won, and the suspension became the basis for several Ford race cars—but no street cars.

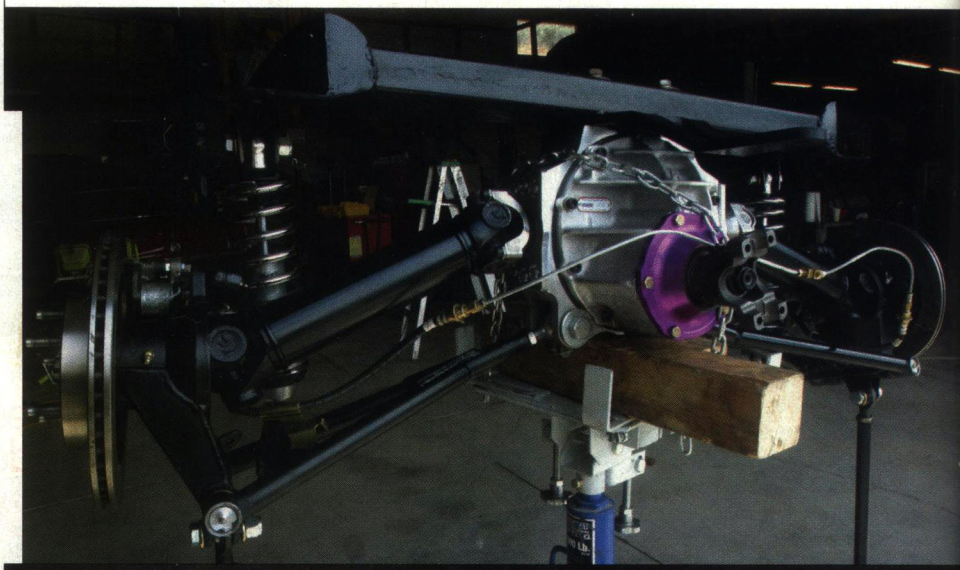
"That [Falcon] was built by Ford in 1964 with full independent rear suspension, four-wheel discs, and knock-off wheels. That setup was supposed to be on the Shelby GT350." —Wally Peat, ex-Shelby America employee

> **Above:** Duane's exhaustive search turned up the original blueprints for the T-5 independent suspension. This sketch is taken from those blueprints, penned by Klaus Arning in the early '60s. The suspension incorporates anti-squat and rear steering—in a turn, the outside wheel toes slightly inward and the inside wheel toes slightly out, making the steering feel more responsive. Everything is adjustable: caster, camber, toe, ride height, and the amount of antisquat and rear steer.

CTM's Duane Carling has spent the past couple of decades on a mission to track down those original plans, interviewing whomever he could until he had every source and part number identified. With original blueprints in hand, Carling recreated the innovative design with little deviation and now offers it for sale. At a starting price of seven grand, however, it ain't cheap. But does it work? After driving an early Mustang with the CTM IRS, we can honestly say we've not come across something that so completely changes the attitude of an otherwise stock Mustang.




> This chart from the original patent filed by Arning shows the degree of toe change in the IRS under jounce and rebound. This can also be dialed out of the system if desired. If you'd like to research the system yourself, check out CTM's other Web site, www.geocities.com/ctmengineering, or just go to www.google.com/patents and search "Arning."



> **Right:** The CTM IRS kit for '64½ to '73 Mustangs comes in three separate boxes, but the easiest way to get it in the car is in fully assembled form. An aluminum Ford 9-inch centersection from Strange Engineering is standard, but a cast-iron housing is available as an option. All tubing is DOM high-strength steel, and the hub carriers are CNC-machined and TIG-welded. Pro brand coilover shocks are the most popular option, but Koni and other brands are available. JDH calipers and 11¼-inch vented rotors are standard, but Baer brakes are an option, as is an adjustable sway bar. The whole assembly is available bare or powdercoated. Base packages start at $6,999.99. The same unit with few changes is also available as a bolt-in for '05 and later Mustangs.

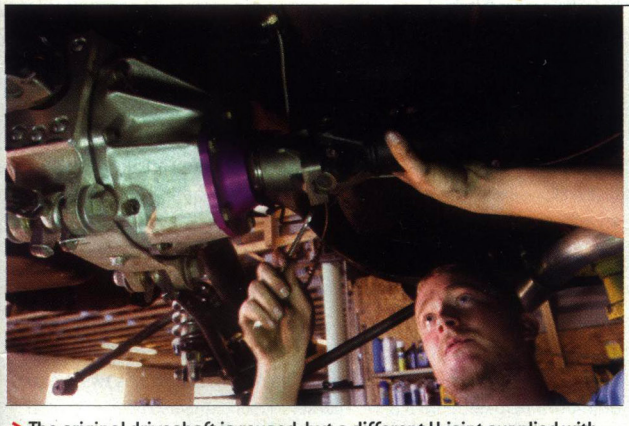
> **Right:** This lower trailer arm connected to the bottom of the carrier hub bolts directly into the factory leaf-spring pocket. The black washers are polyurethane shims that are inserted between the rod end and the wall of the pocket.



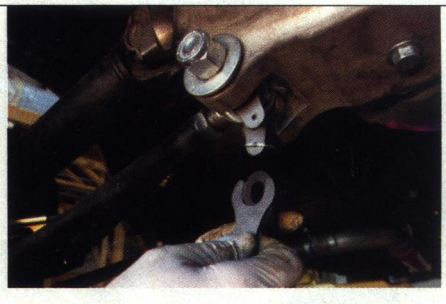
> **Right:** Carling shows one of the reasons he doesn't care for the factory leaf-spring design on a car that's driven aggressively—bent shackles. Typically this doesn't happen, but without a Panhard rod or Watt's link in place, the rear shackles take the lion's share of the lateral load. This one was removed from our test car.

> Installing the suspension requires far less drilling than we figured, and most holes are in discreet locations. After removing the axle snubbers, raise the IRS, position the crossmember (which locates the centersection and coilovers) in the frame arch, and mark the holes to be drilled in the factory brackets. Behind the coilover mount is another hole that must be drilled up into the trunk floor. A mounting plate is provided to distribute the pressure on the trunk floor.

> The rear trailing arms bolt to this bracket, which attaches to the rear frame via the holes for the factory shipping tie-downs.



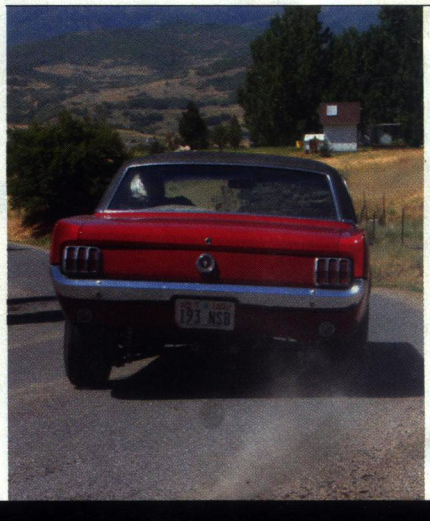
> The original driveshaft is reused, but a different U-joint supplied with the kit is required. Note the bracket and bolt directly above the U-joint. The rear seat needs to be removed to install the bolt and its mounting plate.



> These shims are used to dial in the lower control arms. It's easier than it sounds, and CTM can walk you through it.

> We've been in many stock Mustangs before, but just for a point of reference we drove the test car down a cracked and potholed washboard road near CTM's shop before the IRS swap. The worn-out stock suspension behaved like we expected: lots of body roll, and when we leaned hard into the turns, handling became skittish and the binding from the leaf spring made the rear bounce and skip over the rough patches.


> With everything bolted in, the IRS looks surprisingly at home under the Mustang—but then again, it was designed to be there. Enough staring; it's time to get it on the road and see what we've got.



> We weren't expecting such a drastic difference. With the IRS, the newfound stability in the rear was actually so good that it made up for much of the slop in the front suspension, and we were able to push the Mustang much faster through the curves without a loss of traction. We almost doubled our speed through this curve.