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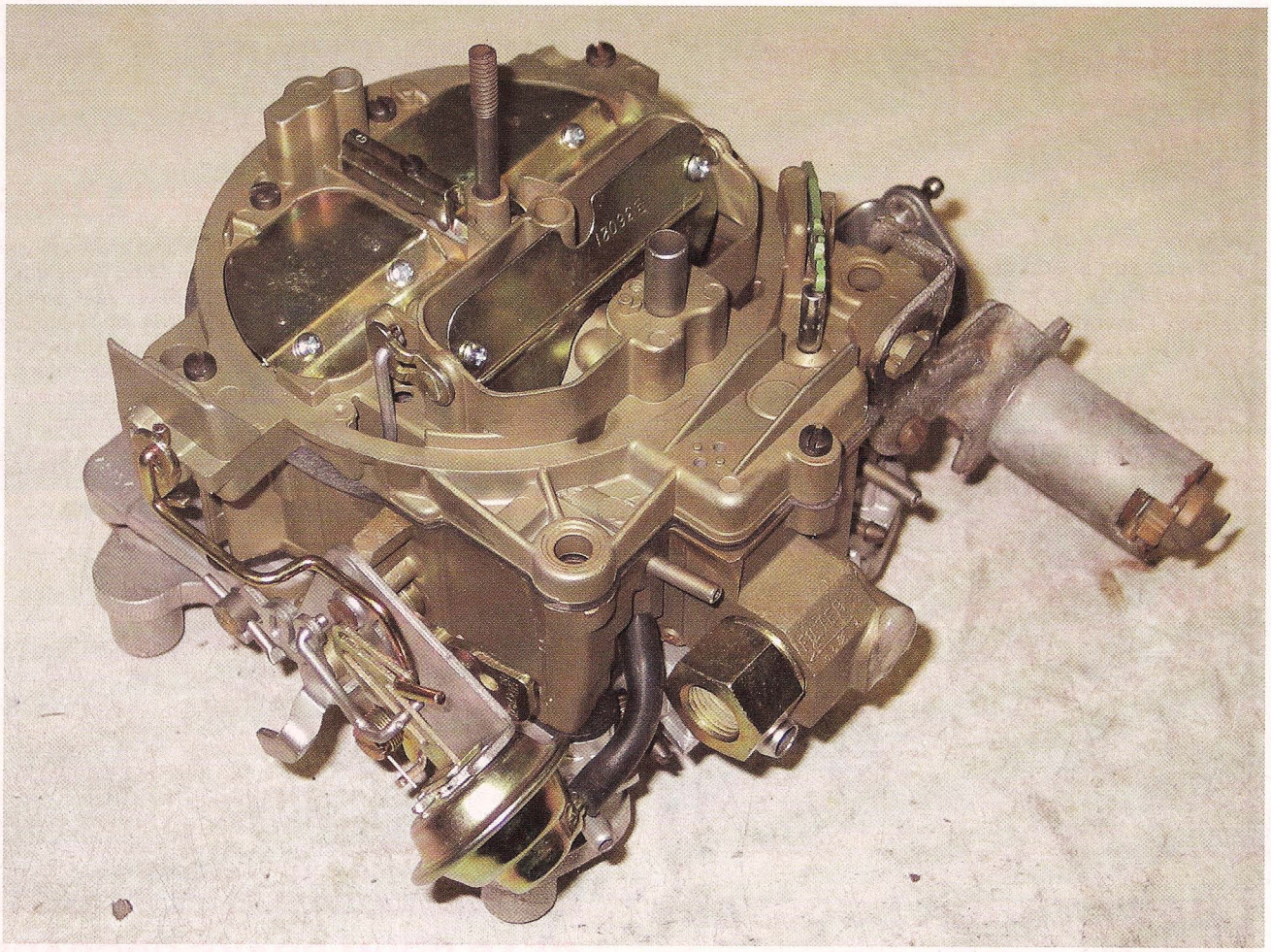


TECH

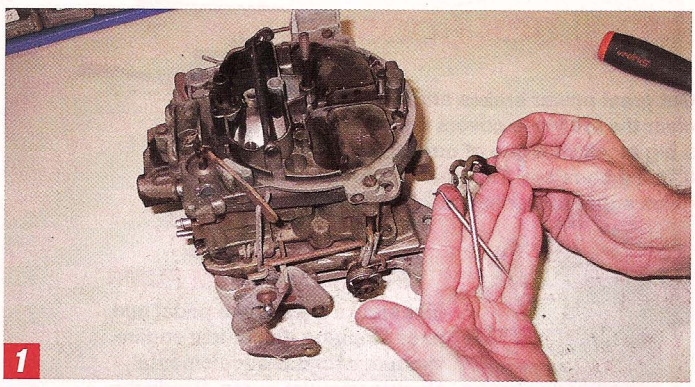
# Special Q

## A Well-Built Quadrajet Is Just the Thing for *CHP*'s Z28

*Text and Photos by* ***John Nelson***

**1 This Q-jet was dirty but still working well enough when we rolled our '74 Z28 into the *CHP* shop. With a stouter engine in the works, however, we wanted this mixer in tip-top shape. Sean Murphy begins the teardown by removing the secondary rod hanger; the rods themselves pull right out with it.**

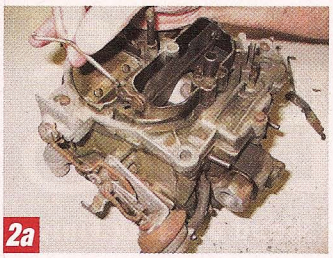
**During its years of creating** mechanical fuel-delivery systems for GM vehicles, The Rochester Products Division certainly turned out some misunderstood creations. Early Rochester fuel injection almost reached red-headed-stepchild status as more than a few frustrated Corvette owners replaced these unique but complex systems with carbs. Of course, at least one of Rochester's carburetor-type offspring also developed a bad rap. Ever hear of a "Quadraflush" or a "Quadrabog?" Naysayers notwithstanding, the Quadrajet four-barrel carburetor has proved its mettle, doing its duty on hundreds of thousands of GM vehicles, from the '60s all the way into the computer-controlled '80s.



1

*CHP*'s as-yet unnamed project '74 Z28 is topped with a Q-jet, and we decided to yank the old mixer off and get it back into shape for service on whatever hot little small-block we decide to drop into our Camaro. We tabbed Sean Murphy, proprietor of Sean Murphy >>

**2a-b** In this photo, Murphy has already removed the idle-speed solenoid, as well as the accelerator pump rod and lever. Next, the choke rod (*2a*) must be removed, as well as the vacuum break assembly (which must actually be pried off) and its rod (*2b*).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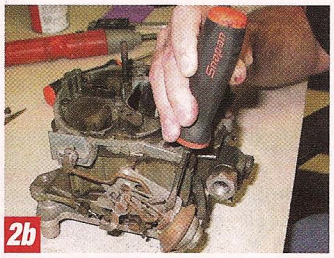
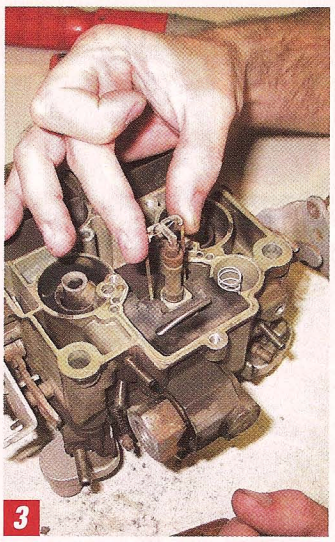

2b

**3** Lift the lid, and our Q-jet's internals are in plain view. The top of the power piston assembly protrudes through the air-horn gasket, so be careful when peeling it off. Once the gasket is out of the way, the power piston and the attached primary metering rods pull right out. Don't forget the power piston assembly spring underneath; it might be easier to get at once the fuel-bowl insert and float-and-needle assembly (*arrow*) are removed.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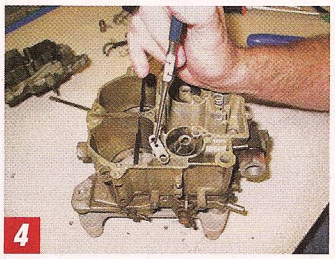
**4** The intermediate choke lever disconnects from inside the carb after the intermediate choke shaft and the fast-idle cam are pulled from the side.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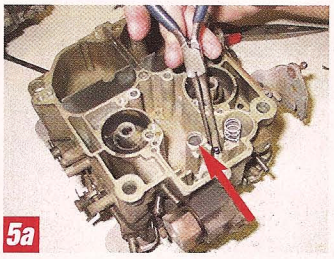
**5a-b** Here, the float-bowl needle seat has been removed (*arrow*), as has the pump-discharge ball screw. Next to come free are the pump-discharge ball (*5a*) and the unscrewed main jets (*5b*).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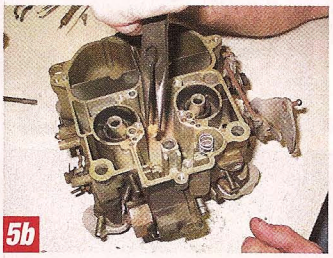
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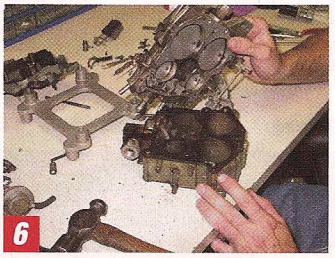
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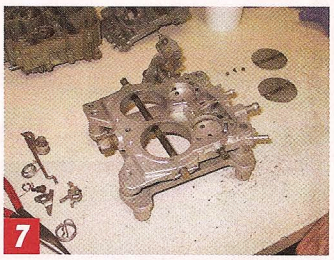
**6** The main body and the throttle-body can then be separated. The idle needle screws are removed from the throttle-body, as are the old gaskets and the fuel filter in the main body, then both bodies are chemical-dipped and air-blown clean.

**7** Murphy then disassembles the throttle-body assembly. In this shot, the fast-idle cam follower has already been removed, as have the secondary butterfly valves. The secondary blades had never been removed, so the flattened ends of the factory retaining screws had to be ground down before disassembly.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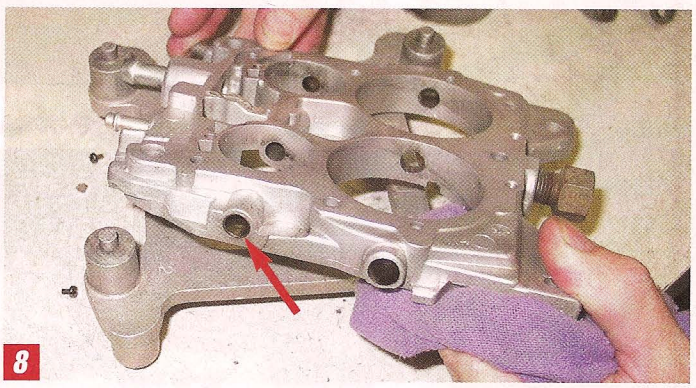
**8** The primaries, however, had already been out. Look closely, and you'll see that the throttle shaft has bushings installed to guard against leaks (*arrow*). This is a normal part of SMI's Q-jet rebuild and tuning service.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Induction in Huntington Beach, California, to do our rebuild and tweaking for us, and he discussed this particular carb's peccadilloes. "The Quadrajet got a bad rap," he told us, "because they're misunderstood. They're sophisticated, but have proven to be a good carb, especially in heavier vehicles with automatic transmissions." This sophistication is the Q-jet's advantage *and* its Achilles' heel.

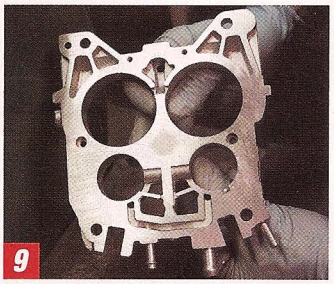
"There's more tunability with a Q-jet," Murphy continued, "which means that they can be calibrated more accurately." On the other hand, that also means this carb is more sensitive to cam and head changes. There's more than just a set of jets to deal with here. Among its many adjustable features, the Quadrajet uses a power piston primary metering system that can be fitted with a wide variety of metering rods and piston springs, an equally large selection of secondary metering rods and rod holders, and an air-valve system on the secondaries that is very sensitive to modification. Oh, and there are main jet sizes to be chosen, of course. The combinations aren't endless, but there are certainly many to chose from.

That being said, Murphy gave us a few general Q-jet tuning tips gleaned during his 15 years of working on the little beasts. Not surprisingly, these pointers center around the metering rods. In general, we were told, the home tuner should stick with main metering rods within the same letter family, i.e., if your carb came with 43B >>

***9*** **At this point, the main body is worked over in the media-blast cabinet and then recolored (along with the disassembled air-horn assembly). The throttle-body gets a *very* light once-over on the sanding wheel, just to make sure its mating surface is true.**

***10*** **Now everything looks like new, right down to the casting plugs.**

***11a-b*** **With the main body and throttle-body back together, the tuning fun starts. The mill that will rest under our fresh Q-jet will have a much more aggressive cam than our Z28's stock 245-horse 350. That means less vacuum, especially at idle. Murphy carefully measured the mixer's idle discharge ports; they came in at 0.066 inch. Murphy enlarged both ports to 0.086. Why? The pressure drop as air moves past them will be less with a hotter cam, so the larger holes will be better able to pick up the appropriate vacuum signal.**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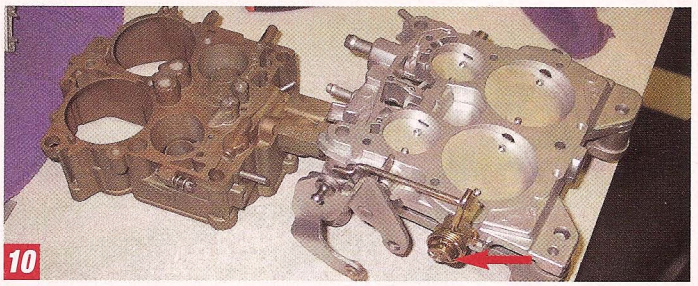
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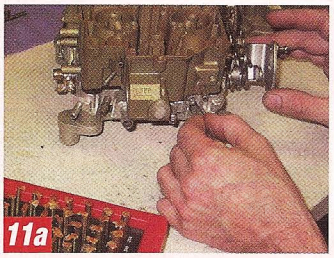
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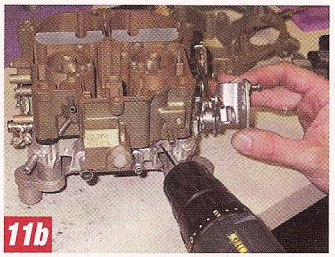
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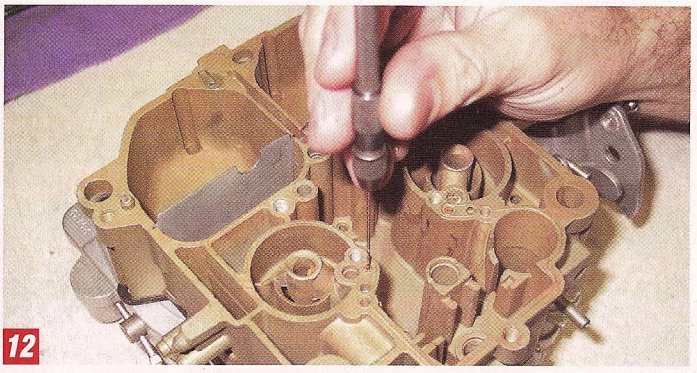
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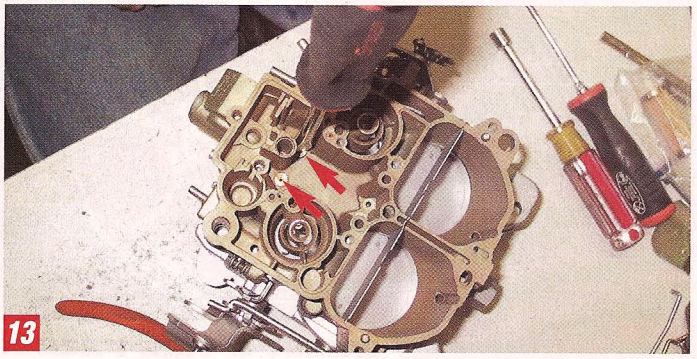
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***12*** **Along the same lines, Murphy also enlarged the idle downtubes (the brass piece being drilled here). Stock sizes vary from 0.026 inch to 0.042; ours were drilled out to 0.038, which will help our new mill get the fuel it needs at idle. The carb's channel-restriction orifices were also spec'd out. These openings intersect the mixture screws, ultimately controlling how much fuel gets through during idle. The orifices measured 0.049 inch, which was acceptable for our purposes.**

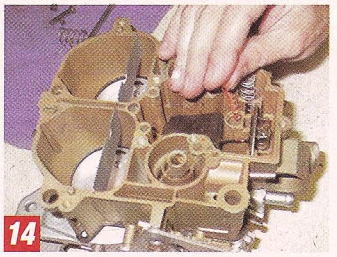
***13*** **Our Q-jet came with 0.075-inch main jets and 43B primary metering rods. In the interests of keeping our new, thirstier powerplant satisfied, our carb guru bumped us up to 0.076 mains (*arrows*) but kept the straight-taper 43B rods. As we stated before, that means we'll have a richer mixture across the rpm range.**

rods (as ours did), and you change your setup, try a 44B or higher. That being said, the more effective way to tune the primary circuit is with main jet size. "Metering-rod changes will only affect performance at light- to mid-throttle," Murphy told us. "Jet changes will affect the entire power range."

With the secondary system, things get a bit more nebulous. In general, more aggressive cars (lighter weight, more horsepower, stiffer gearing, and so on) should have a more aggressive (i.e., higher letter) secondary-metering-rod hanger. As for the rods themselves ... well, there are many, and they're all interchangeable across the several Q-jet variations. The best resource is *Rochester Carburetors*, by Mark Roe (available from your local HP Books dealer). This treasure trove of Q-jet info lists secondary metering rods and their various dimensions, and explains how these tapers and tips will affect your carb's performance. Haynes' *Rochester Carburetor Manual* is also worth a look for the D.I.Y.'er.

In our case, we had two items on our agenda. One was to end up with a reconditioned, rarin'-to-go, and just-like-new Q-jet; the other was that this ready mixer be tweaked just enough to work with our project wreck's intended powerplant: a 355ci small-block making in the neighborhood of 400 ponies. The first goal was no sweat for Murphy, and he was even able to help with our second goal despite the paucity of info we provided about our intended engine combo. Follow along, and we'll show you how this Q-jet got to be the best looking—and performing—part of *CHP*'s Z28 beater. >>

***14*** Here, the float-and-needle assembly have already been replaced, though the needle seat now measures 0.135 inch as opposed to a stock seat's 0.90-0.120-inch diameter. Again, this is done in the interest of making sure our healthy little small-block has enough to drink. The orange power-piston spring has a lower vacuum rating, ensuring that our Q-jet's power piston—and therefore its primary metering rods—will work well with our new combo.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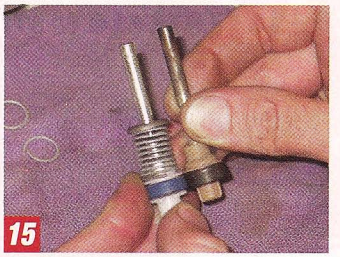
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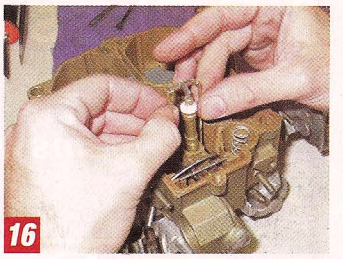
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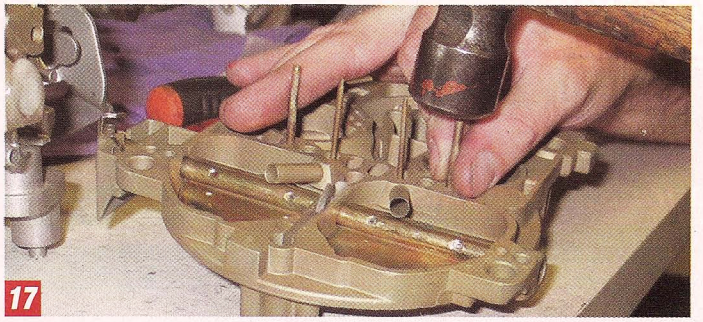
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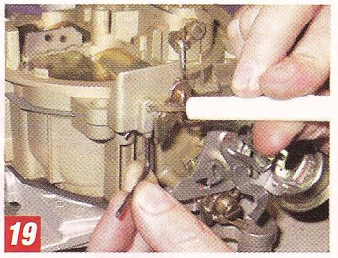
18

***15*** Murphy also replaced our original accelerator-pump-stem assembly with this updated version. Two-and-a-half coils were cut from the spring before it was installed. With the pump cup sitting higher in its bowl, our carb will get a bigger shot of fuel when we step on it, which we like.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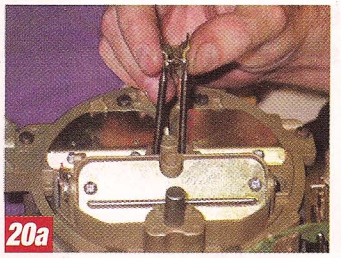
20a

***16*** It's about time to put the lid back on, so Murphy sets a new power piston with the 43B rods into place, making sure the rod tips contact the main jets.


20b


21a

***17*** The air-horn top plate was also recolored, and the secondary pickup tubes tapped back into place.


21b

## Source

**Sean Murphy Induction (SMI)**
*Dept. CHP*
17662 Metzler Ln. #A
Huntington Beach, CA 92647
**714/842-1881**
**www.smicarburetor.com**

***18*** With the air-horn gasket in place (remember to carefully fit it over the protruding top of the power piston assembly), the accelerator pump can be set into place and the lid put back on.

***19*** The air-door tension must then be properly adjusted. If it's too tight, the door won't open under load and the engine will strain. If it's too loose and the door opens too quickly—you guessed it, Quadrabog! If you feel some light-to-moderate resistance when pushing the door open, the adjustment should be about right.

***20a-b*** At this point, our man drops in the secondary-metering-rod assembly using a stock "G" hanger, which he thought was rich but left alone, and DA metering rods, which Murphy said would help give our impending powerplant a healthy midrange.

***21a-b*** Speaking of tuning ... Murphy laid out, from top to bottom in 21a, a small variety of jets, primary metering rods, power piston springs, and secondary metering rods. In 21b, we've got just a few of the many available secondary-metering-rod holders. The variety of rod shapes and sizes is mind-boggling, and the combinations nearly endless. ***CHP***