

DATSUN-OF-A-GUN

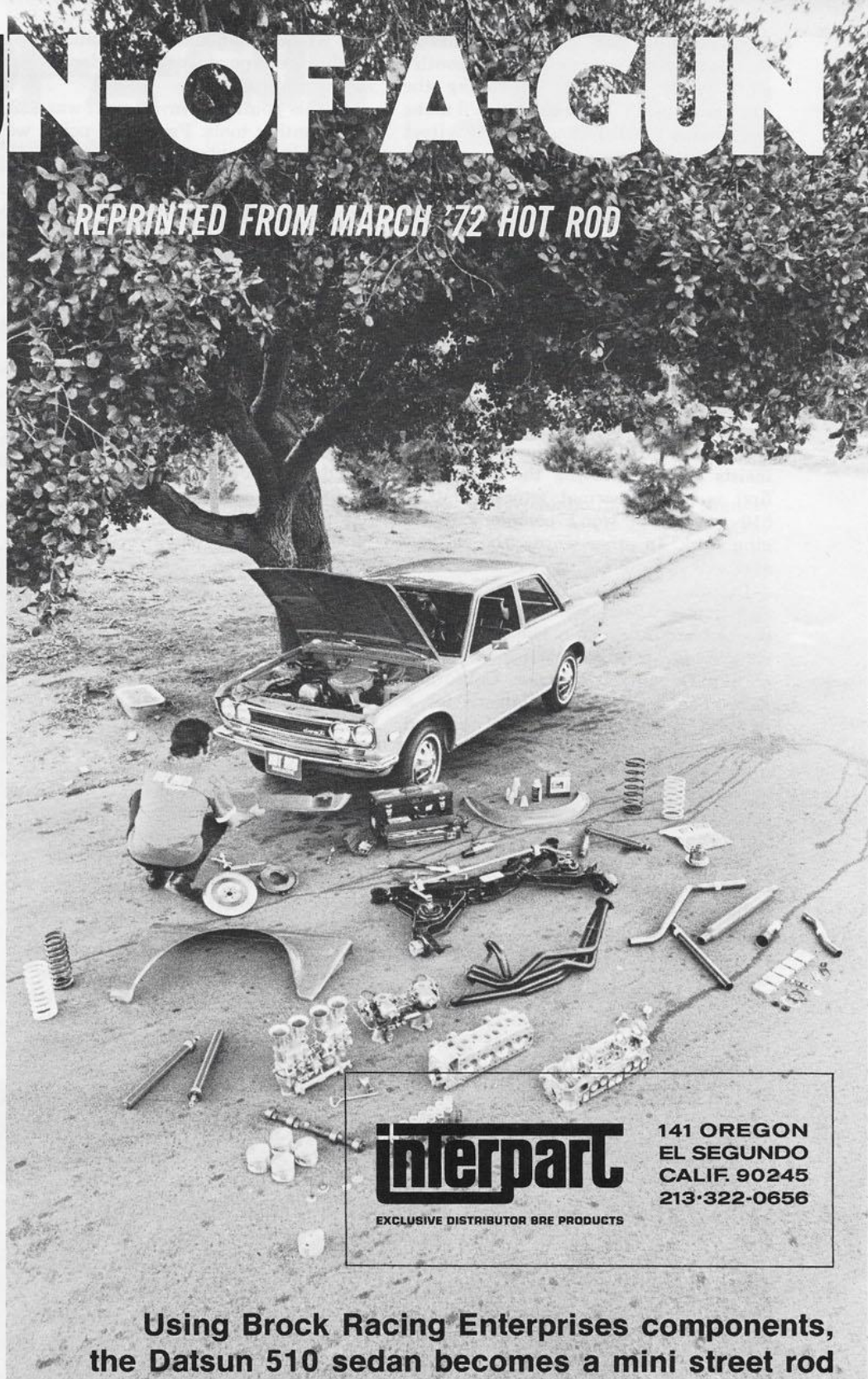
REPRINTED FROM MARCH '72 HOT ROD

By Steve Kelly ■ Wheels, tires, springs, shocks, stabilizer bars, headers, mufflers, intake manifolds, carburetors, clutches, five-speed transmissions, flywheels, camshafts, pistons, valves, cylinder heads, carburetors, axles, gears, fiberglass body components and just about anything else you can think of that will make a Datsun 510 run better are neatly stacked inside the Brock Racing Enterprises store. The stock 510 sedan is a well-engineered little car, but it isn't much of a performance car in the eye of the hot rodder. Because of BRE's success in Datsun racing, more people are aware of the availability and good quality of BRE parts from El Segundo, California, rather than performance parts from Nissan Motors' Gardena, California, parts depot. Nissan Motors has a large competition department and a good inventory of performance parts.

Pete Brock has been racing Datsuns for Nissan Motors for several years, and has developed winning ways. His cars have been SCCA National Champions at the past two American Road Race of Champions, and 1971 was his best year. On top of the National Championship earned by BRE's John Morton-driven 240Z, Morton also drove a BRE Datsun 510 to a Championship in the SCCA "Two-Five" (2.5-liter-engine class) Trans-Am circuit. No wonder Brock can make a street-driven 510 really handle.

Not being blind to the fact that mini cars are steadily becoming more popular with hot rodders and everyone who appreciates performance, we've begun to get ourselves more involved with this kind of car. Our Datsun 510 is just one of many import and/or mini cars we

BELOW → Rear bar is a quick fit after four holes are drilled in rear member. It doesn't adversely affect ground clearance. BELOW CENTER — Front coil (left) is substantially taller, and thinner, than BRE replacement. Same goes for rear coils (far right), and that's why the 510 will ride stiffer and handle better after installation. The swap is easy.

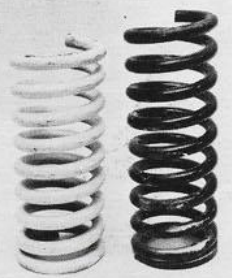
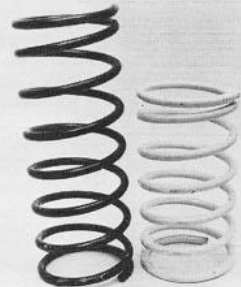
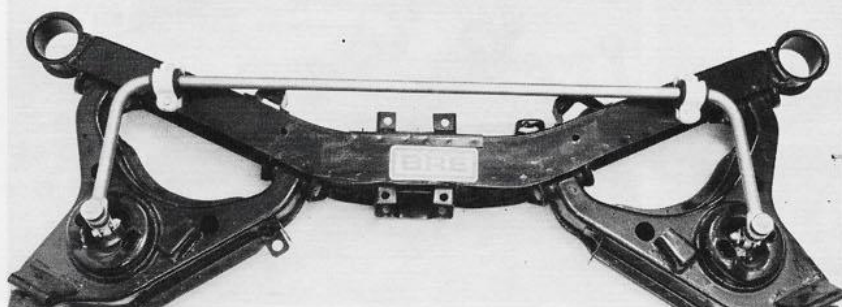


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Using Brock Racing Enterprises components, the Datsun 510 sedan becomes a mini street rod



MORE GO FOR DATSUN

by JOHN THAWLEY

One of the most durable and responsive small engines to come down the pike in many a moon is the 1600cc overhead cam Datsun L-16. This little twister has been standard in all the "510" sedans since late 1967, and in the 1970 models, replaced the 1300 pushrod engine in the Datsun pickups. With Datsun dealers all over the country selling everything that even looks like a 510 sedan or pickup, it is little wonder that there is now some interest in prodifying the little engine into a bit more streetable response. Pete Brock, the talented head of BRE (Datsun's U.S. race development shop), volunteered to conduct a series of dyno tests for us, in an effort to see just how much more could be had from the stock engine without resorting to alcohol and 20 pounds of boost from a blower.

Before getting under way, Brock explained that the "L" series of engines is a "family" of engines that can inter-

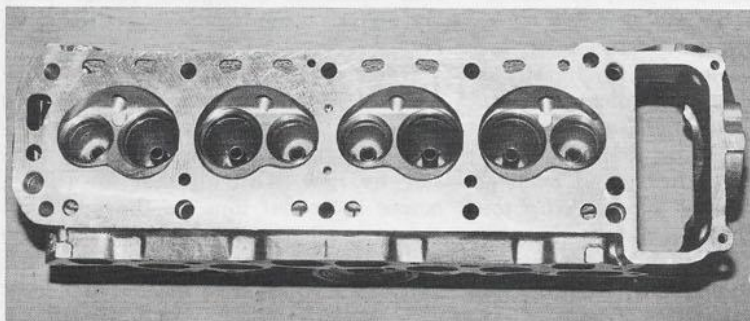
change components. For example, the L-24 engine is a six-cylinder version used in Datsun's hot new 240-Z sports car. All L-16 engines (the "16" stands for 1600cc) delivered into the United States are equipped with the L-13 series cylinder heads off the Japanese 1300cc model. The basic difference between the L-16 and the L-13 heads is the size of the intake ports and valves. The L-13 has 1 $\frac{3}{16}$ -inch ports and 1 $\frac{1}{2}$ -inch valves; with the L-16, port runners are 1 $\frac{1}{2}$ inches and the valve diameter is 1.65 inches. Although our series of dyno runs was conducted with the stock U.S. version (the L-13 head), BRE has also run the L-16 head extensively and found that, due to the restricted breathing in the L-13, no amount of camming or carburetion on this head can duplicate the ultimate power to be gained from the L-16. We'll save the L-16 head for another day, though, and watch BRE pick up 30 horses with the L-13 head in place.

Initial running on the dyno revealed that the Datsun's water pump cavitated at almost any rpm over 4000, and that

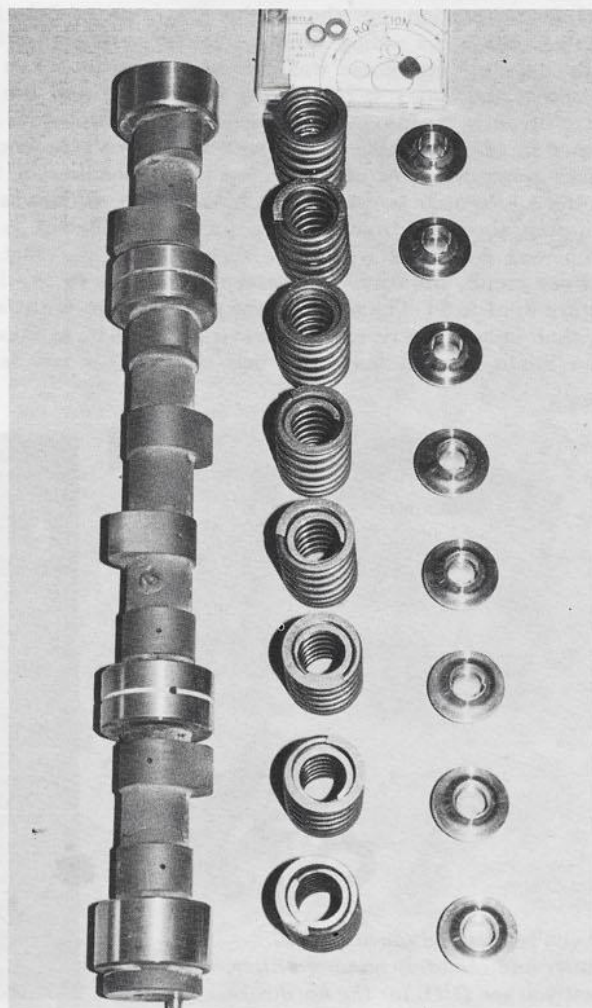
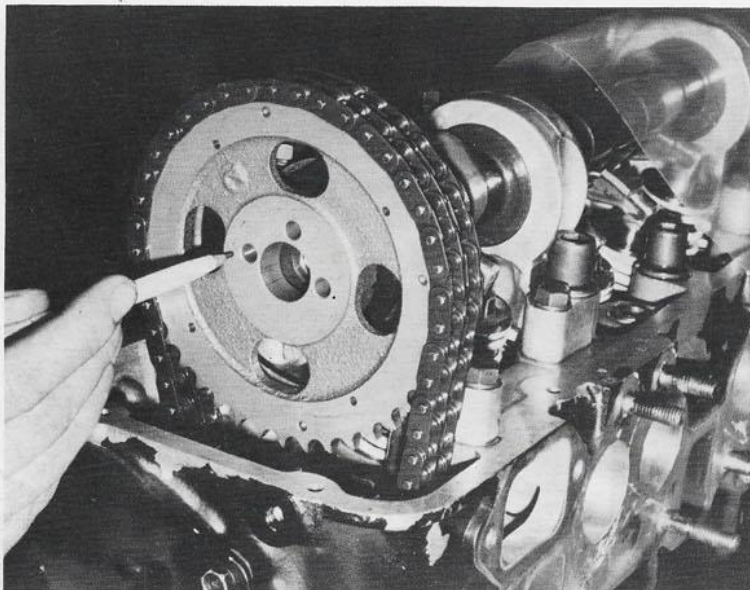
the timing was off by five degrees at all settings, since the mark on the pulley was off by that amount. Seems that an outside supplier goofed on a small run of these units for the U.S. market, so it's worth the effort to check out TDC, as timing is really critical for best performance. (Would you believe 12 bhp?) The water pump cavitation can be cured by placing a restrictor on the outlet side of the head, which necks the water down to flow through a $\frac{5}{8}$ -inch-diameter tube.

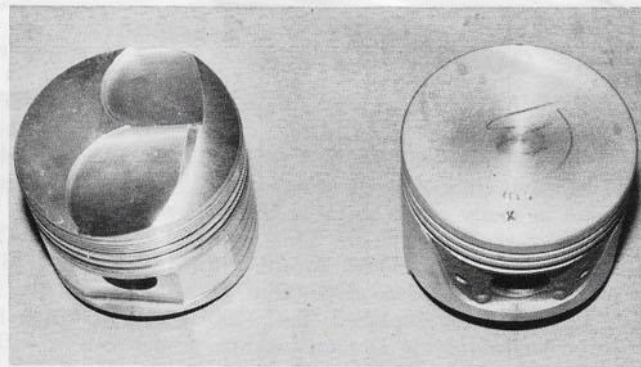
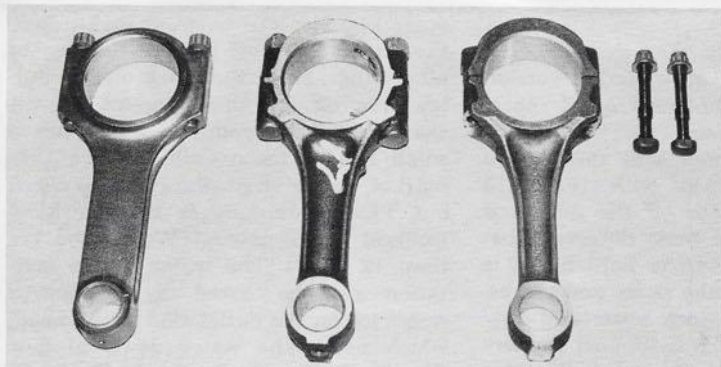
So with the water pump ailments cured, the timing corrected and valve lash set at .008 on the intake and .010-inch on the exhaust (cold), the engine managed to bend the arm around to a corrected brake horsepower reading of 74 at six grand. Not bad for a stocker of that displacement with nothing more than timing set correctly. The engine was equipped with stock NGK B 7E plugs, and the carburetor and exhaust manifolds were left just as they were in the truck.

Datsun has anticipated chain wear
Continued



The big-valve L-16 head is the key to real power for any of the overhead cam 1600 engines exported to the United States. The head increases air flow and allows several variations in carburetion. Although stock cam can be advanced by using one of three holes in the upper timing chain gear, hot setup is the SSS factory camshaft kit or one of BRE's grinds which will allow the little engine to wind on out to 7500 — and that ain't bad for street use.





in the cam driving mechanism and has thoughtfully provided us with a quick, no-cost way of advancing the stock cam timing four degrees or eight degrees by drilling three holes (in the cam gear) which are a press fit onto the locating pin in the front of the cam. As it comes from the factory, the cam is set on the No. 1 hole. For the second run on the BRE engine dyno, the cam was slipped over to the No. 2 hole and was thus advanced four degrees. With no other changes than the cam timing advance, corrected brake horsepower reading went to 81.7 at six grand. This is quick and low-cost horsepower any way you slice it.

Instrumentation on the engine revealed that the smog pump which scavenges the crankcase was extremely effective and, in fact, revealed a negative pressure reading of 13 inches of water in the crankcase. Thus, with this much pumping going on, BRE felt that quite a bit could be picked up by just slipping the belt from the air pump. This was done, but with little success. At six grand, the corrected horsepower figure went to 84. The moral of the story is that unless you're at the race track, you might as well leave the belt con-

Get a yen to tip the can and go racing? Then BRE can supply some rods which will take the loading.

The factory offers a high-compression flat-top piston, or BRE can supply Venolia forged racing pistons.

nected for all that you have to gain. We left the belt off, since the next test was to check the efficiency of the exhaust system. By taking the muffler off, but leaving the stock tailpipe attached to the stock exhaust header, the horsepower went to 87.6 at six grand and 88 at 6500. By drilling the main jets to a No. 51 drill size, the horsepower crept up to 88.9 at 6000.

Brock then installed a set of his four-into-one headers, which he stocks for the 510 sedan and the pickup. These are fabricated from 1 5/8-inch tubing, with a primary pipe length of 26 inches. The richer jetting and headers allowed the engine to move on up the rpm ladder to seven grand (we're still with a stock cam now!) and give a reading of 92.5 at 7000. At 6500, the reading was an even 92 horses.

Datsun is a long way from being cold in the high-performance market, and one of the items on the self is an SSS cam with a duration of 261° intake, 244° exhaust, with a lift of .415-inch. This compares to a stock lift on the

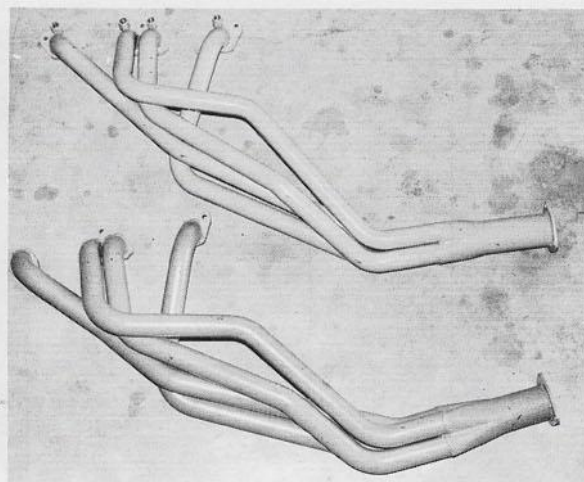
L-16 of .395-inch and a duration of 289° intake, 258° exhaust. When this SSS cam was installed in the testbed engine, the locating pin was run over to the No. 3 hole, which advances the cam timing eight degrees. With this change in hardware, corrected brake horsepower came up reading 98 at 6500, 97.2 at 7000 and 97.7 at 7200. With 100 horsepower within sight, the stock pistons were slid from the block and the Datsun SSS pistons moved into place. These are flat-top units which raise the compression ratio from a stock 8.5:1 to 9.5:1. The increase in compression demands a slightly colder plug, and BRE recommends the Champion N-66Y.

Horsepower went to the century mark at six grand and stayed above 100 hp through 7200 (see chart). The mixture was getting a tad on the lean side by now, with all that air sailing across those flat tops, so the main jetting was taken out the size of a No. 50 drill. Corrected horsepower at this point read 105.2 at seven grand — an honest 31 horsepower over what the engine read when first placed against the water wheel. Not bad for the L-13 head; but as Pete pointed out, we're still a long way from the horsepower produced by the L-16 head. But that's another story for sure. ■ ■



If you're inclined toward an oil cooler and remotely mounted filter, best you see BRE for the hardware.

RPM	Modified horsepower	Stock horsepower
2500	41.7	39.9
3000	55.0	48.3
3500	66.0	55.3
4000	77.3	62.5
4500	85.6	67.2
5000	87.7	69.6
5500	96.0	72.4
6000	102.0	74.4
6500	104.8	74.0
7000	105.2	—
7200	103.3	—



Headers come with or without the smog fittings. Several manufacturers can now supply pipes for 1600 engine.