

FULL TEST: HONDA 750 AUTOMATIC

cycle guide

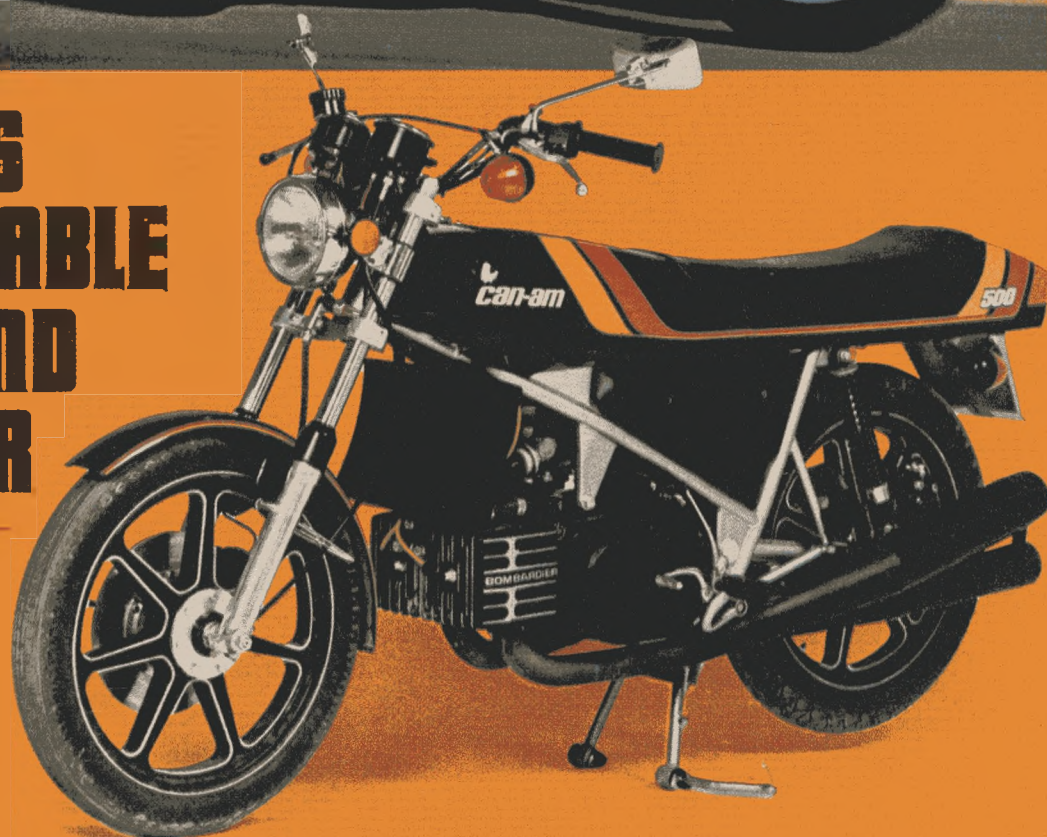
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**The No-Shift
Revolution
Begins**



**CAN-AM'S
UNBELIEVABLE
330-POUND
Z-I EATER**

**DAYTONA '76:
RIDING TO IT
BEING AT IT
RACING IN IT**



NEW MOTOCROSSERS: TWO BULTACOS AND AN OSSA G.P.

GIANT KILLER

Had it been built, Can-Am's 500cc two-stroke street twin would have made existing cafe racers as obsolete as the suicide clutch

by Tony Murphy





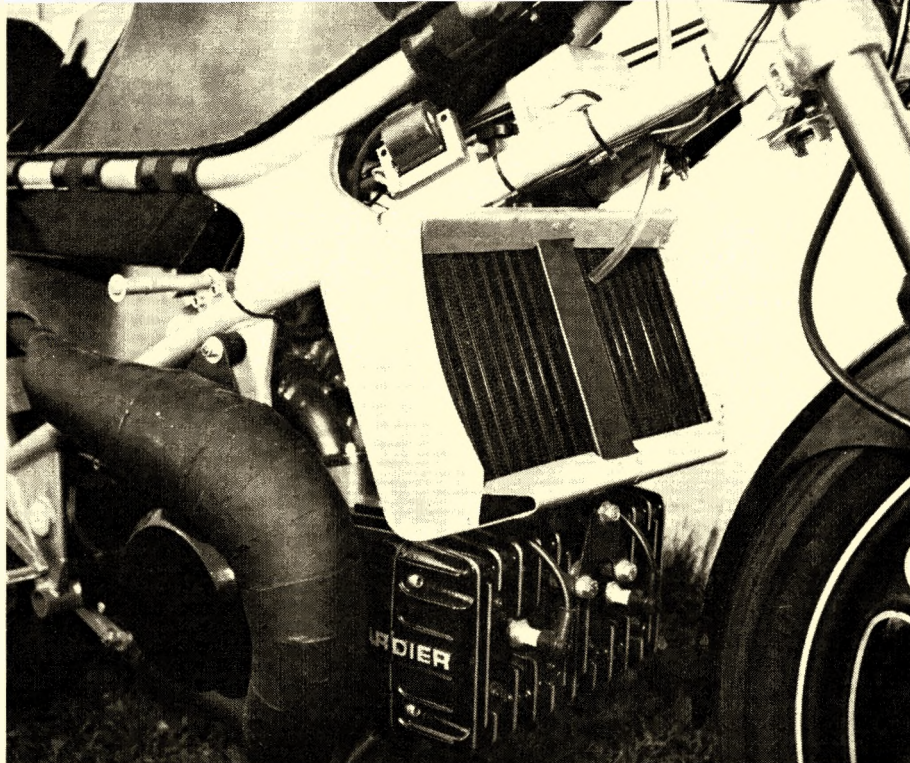
GIANT KILLER

It could have been the ultimate Superbike. It was faster than the awesome Kawasaki 750 H-2, lighter and narrower than most 250 or 350 street bikes, and its center of gravity was so low that its 330 pounds felt like 230. And that was the *street* version. The racing model was faster, lighter, even more awesome. It was the Can-Am 500c water-cooled, two-stroke twin, and it could have added a new dimension to the word "performance."

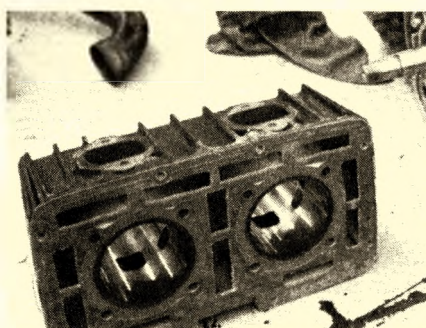
Sadly, the world may never see this gem of engineering ingenuity. The corporate heads at Can-Am decided to "shelve" the 500 twin because of stringent emission control regulations proposed by the Environmental Protection Agency for motorcycles by 1980. The engine could easily meet pollution requirements for the next couple of years, but the 500 would not have hit the streets at least until the 1977 model year, and its life span would have been too short to be economically practical. The tooling, production, and advertising costs for this model would have been very high, and the further expense of developing 1980-level emission controls put the whole project out of sight. It would take an act of God (or a similar move by the EPA) to reverse Can-Am's decision.

The 500 project began about four years ago when Gary Robison, then head honcho for Can-Am, charged ex-roadracer Bob Barker with developing a street twin around an already-successful Rotax engine used in the parent company's Ski-doo snowmobiles. That engine was compact, very powerful, and had proven its reliability through several seasons of snowmobile racing. An 85-plus horsepower version had an excellent reliability record, so the 50-to-60-horse version used in the street bike should have proven quite bulletproof.

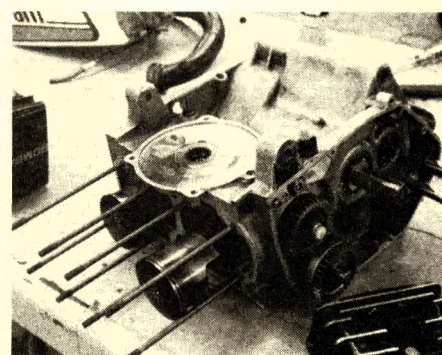
The engine is as unique in concept as it is in appearance. The cylinders are horizontal instead of vertical, making the engine perfectly "flat," and placing the mass of the powerplant incredibly low. A rotary valve induction is used, but there is only one large valve disc, located on top of the crankcases, just below the base of cylinders. Since the pistons are on a 180-degree crankshaft, the separate functions of each cylinder are 180 degrees apart, and one large valve disc can control the intake timing of both cylinders. The valve is crank-driven by a small geared shaft that runs vertically from the middle of the crankshaft to the center of the disc.



The upswept right expansion chamber on the racing version is for the left cylinder, and the downswept left pipe is for the right cylinder.



Water flows through passages on all four sides of each cylinder to keep temperatures consistent for better performance. Four main transfer ports are aided by a boost port at the rear of each cylinder.



Originally developed for belt-driven snowmobiles, the motorcycle engine needed special cases to house the five-speed gearbox and wet multi-plate clutch.

The street bike uses only one carburetor, and that feature alone makes it unique among superbikes. The racer uses dual carbs for better breathing on the top end. The carbs themselves are unusual units being developed by Can-Am, and company officials are reluctant to divulge any information about them.

The right end of the crank turns a magneto ignition and A.C. generator, and the left end uses straight-cut gears to drive a five-speed gearbox—which did not exist on the original snowmobile engine that used a variable-pulley belt drive. Mating a gearbox and clutch to the crankcase required different engine cases.

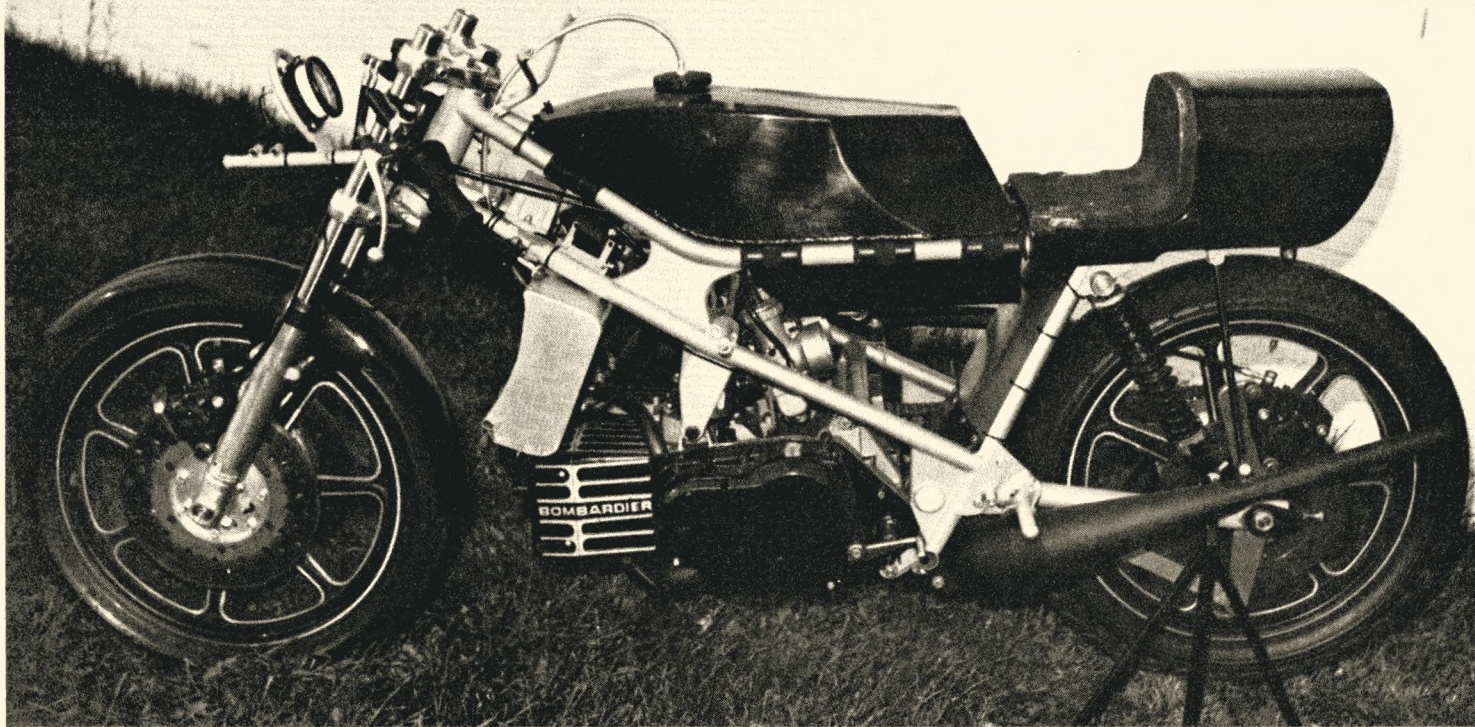
The chassis is a combination of specially-built components and readily-available pieces. The cantilever frame was designed just for the 500, with the engine suspended below the diagonal main tubes.

The front fork is a Ceriani, with Koni shocks at the rear and special Can-Am cast wheels at both ends.

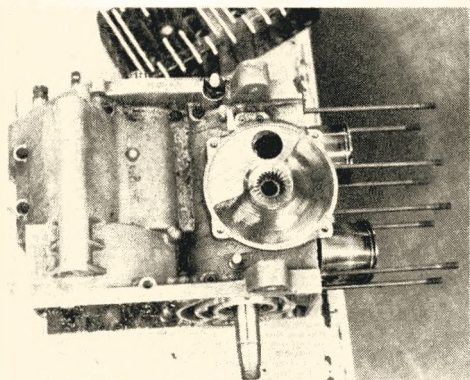
The gas tank is under the seat like on the Honda Gold Wing, and the factory people claim they had the idea long before they ever knew a GL-1000 existed. The "dummy" tank conceals the air cleaner and various pieces of electrical equipment, and a small electric fuel pump on the right frame tube insures a sufficient delivery of fuel to the carburetor.

The radiator for the 500's water-cooling system was designed and positioned according to wind-tunnel tests for maximum airflow and minimum wind resistance. A gear-driven pump on the lower left of the engine circulates the coolant.

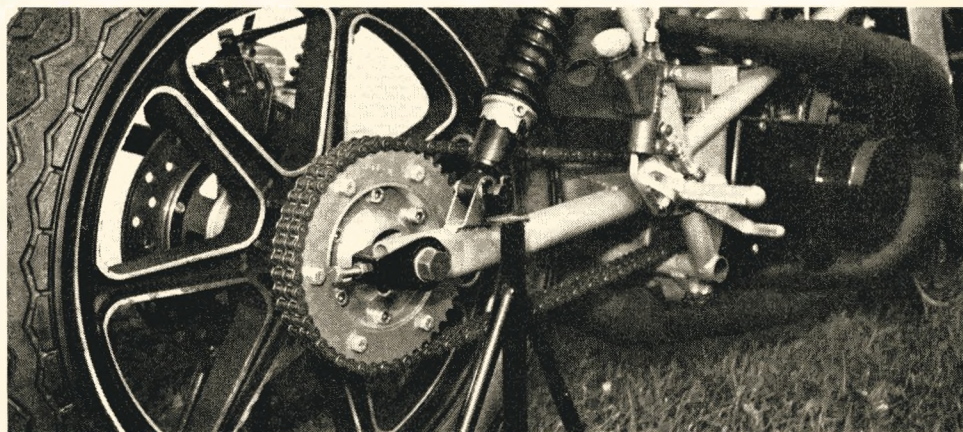
The exhaust system is bizarre and unusual. Two of the four "mufflers" are not really mufflers at all. They are also *not* an



The 85-horsepower roadracing version uses dual Mikuni slide/needle carbs and a regular backbone-mounted gas tank. The street model has been "shelved" indefinitely, but the racer may see some competition in the near future.



A vertical shaft geared to the crankshaft drives one large-diameter rotary valve that controls the intake port timing for both cylinders.



Both machines use a dual-row chain to handle the final drive. The cast alloy wheels are special items done up by Can-Am just for these bikes.

attempt to make the bike look like a four-cylinder machine. In reality, the lower pipe on either side is an expansion chamber, while the upper one is a muffler, with a small pipe interconnecting each muffler and chamber. According to Barker, the system provides the best features of a good muffler *and* a good expansion chamber—that is, excellent performance with a very quiet exhaust note.

Much of the 500's development came about through the input of Jim Allen, Can-Am test rider and twelfth-place finisher in the 1975 Daytona on a Yamaha TZ700. Allen has cut hundreds of laps on the 500 around the Talladega Speedway in Alabama, where Can-Am maintained a testing facility for the twin until the project was folded. When we visited the track, Allen invited us to try the bike on the course and compare it to a Honda 750 and

a Norton 750 Interstate that were there at the time. It was a revelation, to say the least.

It took about a dozen laps to get used to the twisty-turny course in the infield of the Speedway. Allen led the way on the Honda 750 for the first few laps to point out the best lines. But just about the time we started gassing it up on the 500, Allen waved us in and insisted we try the Honda and Norton. What a difference. We've always felt the 750 Honda to be pretty fast, and the Norton has always been one of the best-handling bikes of its type. But both felt like underpowered, bulky, overweight slugs compared to the Can-Am.

We got back on the 500 for some long sessions on the track, and often squared off against the Honda and Norton. Regardless of who was riding the Can-Am, it would pull away from the other two at a rate of

four or five seconds a lap. The Honda and Norton riders berserked it all the way, wallowing and scraping things just to keep their lap times within five seconds of the Can-Am's. Meanwhile, only an occasional grounding of the right exhaust pipe would interrupt the 500's smooth, effortless flow around the race track.

While riding, we had to keep reminding ourselves that it was a fully-equipped street machine, not an all-out roadracer. The word "impressed" doesn't even begin to describe our feelings about this motorcycle. It was the finest-handling, fastest road machine we had ever ridden, but was still completely civilized. And with very little modification, it could have been a terror on the race track. But now, it is just a little piece of history.

We lost again. Score: Boredom One, Motorcycling Zero. 