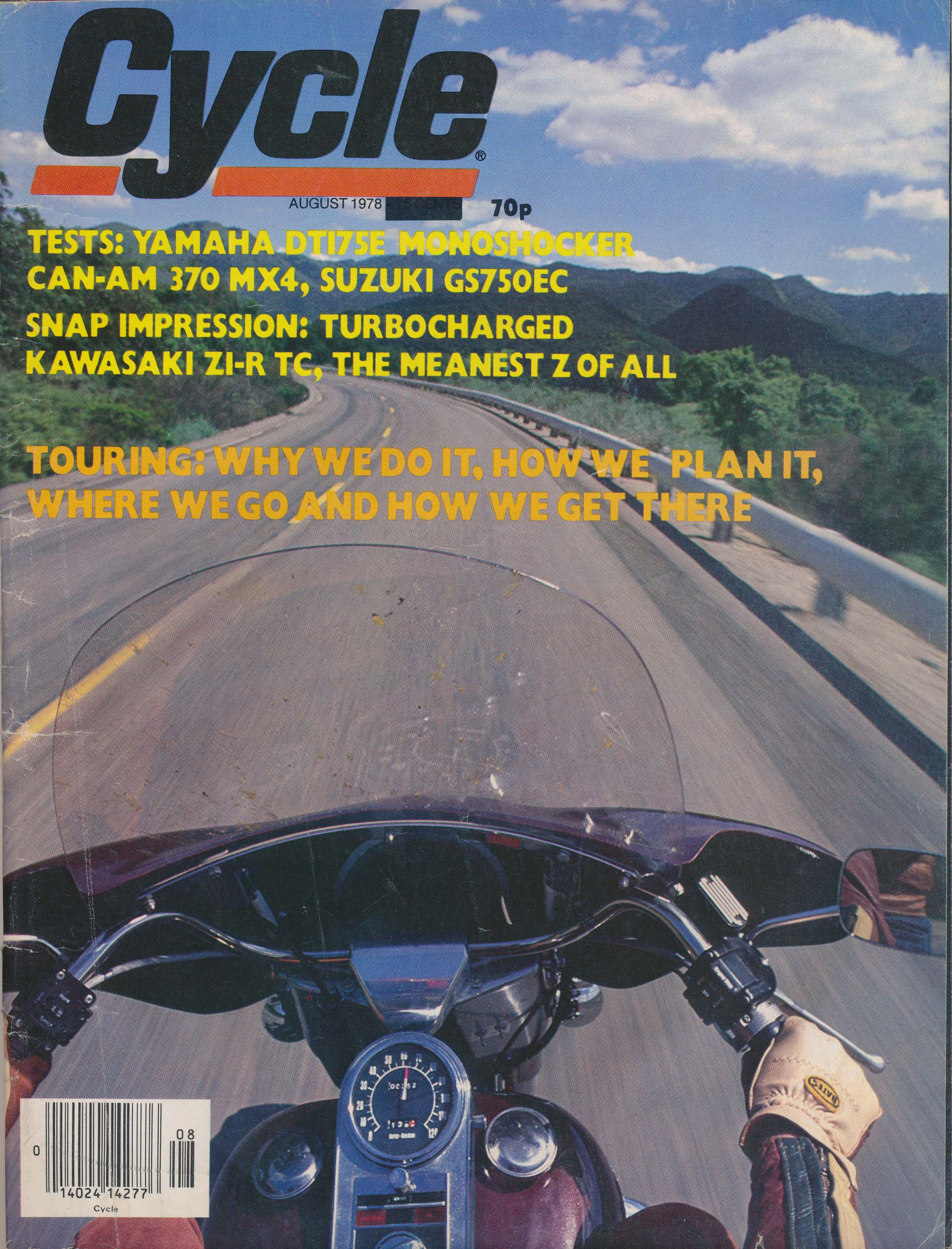
Cycle®

AUGUST 1978 75 CENTS 70p

TESTS: YAMAHA DT175E MONOSHOCKER CAN-AM 370 MX4, SUZUKI GS750EC

SNAP IMPRESSION: TURBOCHARGED KAWASAKI ZI-R TC, THE MEANEST Z OF ALL

TOURING: WHY WE DO IT, HOW WE PLAN IT, WHERE WE GO AND HOW WE GET THERE



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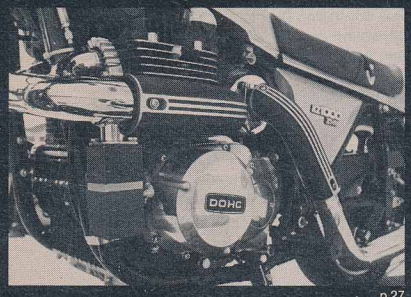

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This Month's Cover: Cycle *presents its You-Are-There Touring Cover. You're on a Harley-Davidson FLH-80, and yes, you are speeding. Complainers should consider taking it up with St. Joan of Claymore. That's an inside joke, literally, so see page 8. Cycle's touring features begin on page 50. Photographic evidence of our highway perpetration has been provided by Robin Riggs.*

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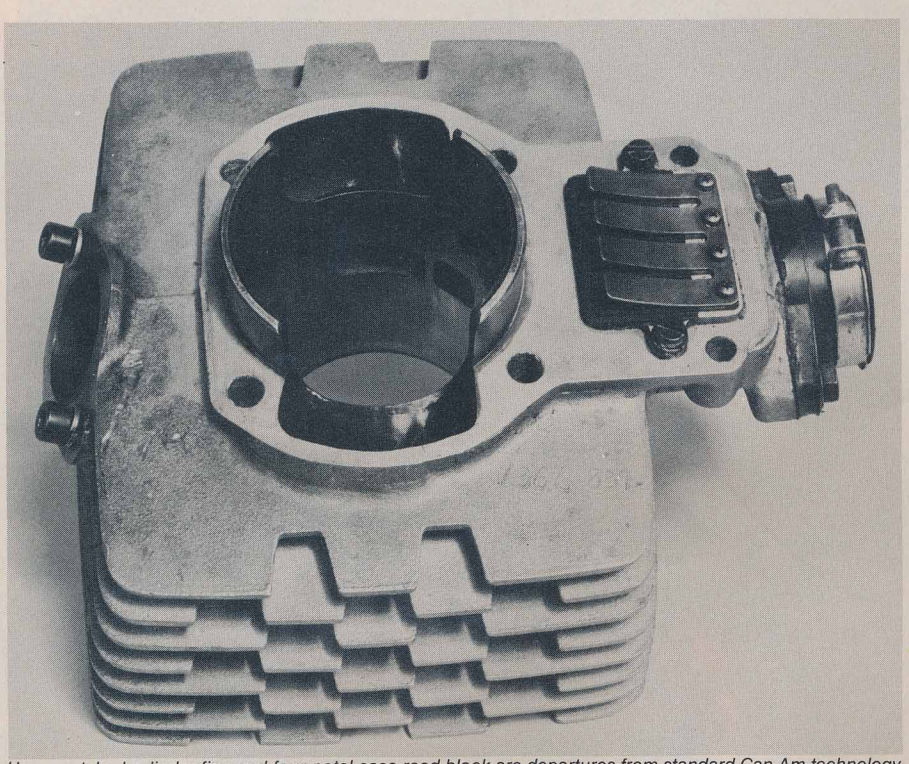
CYCLE DIRT TEST

CAN-AM MX4 370

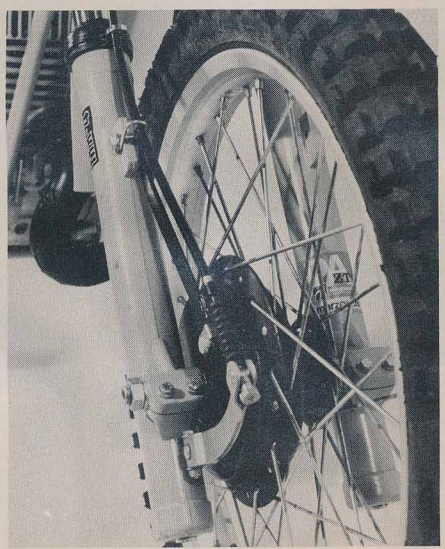
After years of producing smaller displacement bikes the MX4 370 can catapult Can-Am to the head of the open-class. It's that good.

CAN-AM MX4 370



Huge, notched cylinder fins and four-petal case reed block are departures from standard Can-Am technology.

MX4 370 is Can-Am's first open class motocrosser. Its engine produced 37.6 horsepower at 7500 rpm.



Marzocchi's new ZTi magnesium fork is used on the 370 and works well; the Dunlop front tire does not.

● IN MOTOCROSS THERE'S A SHORT WAY TO spell horsepower: Can-Am. Bombardier's early rotary-valve motorcycles booted their small-bore opposition right off the first available straightaway and into the nearest weed patch. Had motocross tracks been dragstrips, Can-Ams would have ruled absolutely. But motocross tracks weren't, and the Can-Ams didn't. When tracks got serious in a treacherous sort of way, better handling motocrossers kicked in the Can-Ams' rotary valves. So Can-Am learned. The MX4 series brought the Canadian bikes into the world of contemporary suspension, and at the same time Bombardier dialed the horsepower down to make life easier for riders.

But the page-one sensation in the MX4 series is Can-Am's all-new 370 open class motocrosser. There's not a rotary valve in sight. To Can-Am's disc-valve faithful, this piston-port, case-reed 370 is no less heretical than appointing Rasputin to the College of Cardinals. Can-Am has made the switch work, and the new 370 will heat up open class motocross.

When you climb aboard the Can-Am MX4 370, you notice at once that your feet can rest comfortably on the ground, something that's becoming increasingly rare as motocross designers increase suspension travel every year. The spring-loaded, folding footpegs are mudproof and really grip your boots in wet or dry conditions. The riding position and controls are quite comfortable. The 370's handgrips are our personal favorite. They're so good, in fact, that they would make a good accessory for any bike. Other soft rubber grips develop a slick glaze after extended use; the Can-Am grips don't. The throttle assembly and contoured levers are Magura components; and although the throttle isn't as fast as some quick throttles, it's suited to the power characteristics of the engine.

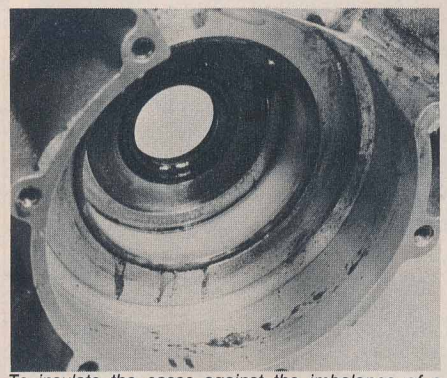
The orange plastic tank holds two gallons; while this small capacity tank will discourage enduro and desert use, its design provides for a narrow tank/seat junction—just perfect for motocross. The large, Preston Petty fenders are orange with black pin-striping; these plastic units are both light and strong.

The 370's frame, built in pure-grade chrome-moly, is exactly the same as the smaller MX4 250. Can-Am, like European manufacturers, makes the same frame serve double duty in both the 250 and open class. This saves money on the production line but sometimes leaves a company with a pudgy 250. The Can-Am 370 engine fits the frame perfectly, and it weighs a trim 238 pounds. That's only two pounds more than the 250 Can-Am prototype *Cycle* tested in March 1978.

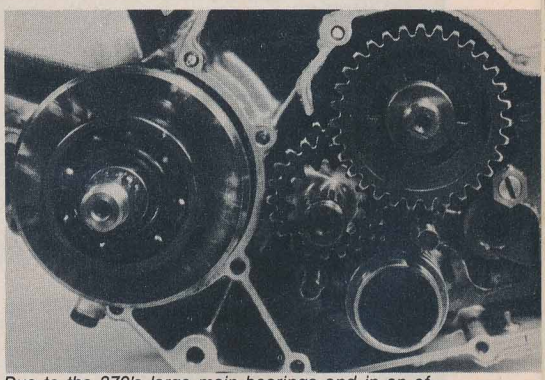
Viewed from the side with the tank and seat off, the Can-Am frame appears to sag worse than a milk wagon's horse. The

main backbone and the seat-support rails intersect to form a V-shape. This design is primarily responsible for the bike's low seat height, despite the fact that the Can-Am has 9.8 inches of rear wheel travel and over nine inches up front. On the starting line both feet can be planted firmly on the ground, and that's a good thing. However, the seat—though it's thickly padded and very comfortable—angles downward into the tank and tends to slide you forward in sand or under heavy braking. This becomes uncomfortable when you brake hard just before hitting a berm, or when centrifugal force shoves you into the back of the gas tank.

In the steering head are two adjustable cones that can be positioned to alter the rake angle as much as six degrees. Large O-rings protect the cones, and the radial needle bearings supporting the steering stem, from dirt. When we received our test bike the steering rake was set at 31 degrees. After riding the bike on hard-packed motocross tracks and a sand course, we changed the rake angle to 29 degrees. The Can-Am then steered much quicker but developed straight-line instability in the sand. The quicker 29-degree setting works well for tight motocross tracks, while more rake will be required for desert racing events. The rake can be varied from 26 to 32 degrees. Assuming you know what you're doing and can actually track-tune the suspension, the Can-Am's adjustability can give you an edge. But if you're lost when you start fiddling with the cones, you'll probably dig yourself deeper down a one-way mineshaft. Depending upon one's mechanical expertise, the rake changeover operation can take from 10 to 40 minutes.



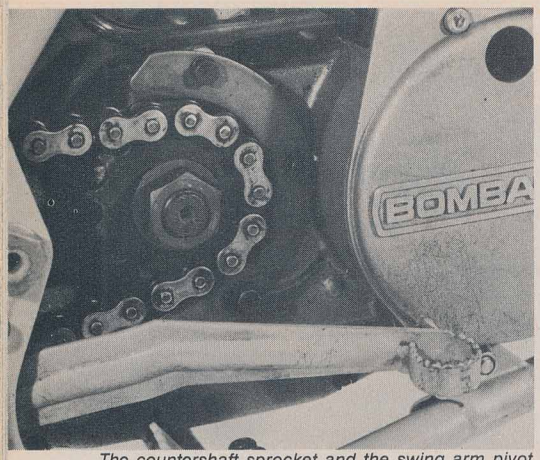
To insulate the cases against the imbalance of a single-cylinder engine and to keep the main bearing from creeping, a nylon race is fitted in the case.



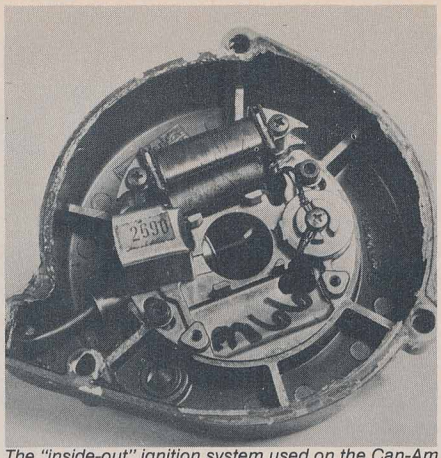
Due to the 370's large main bearings and in an effort to keep the engine narrow enough for motocross, Can-Am replaced traditional rotary valves with reeds.

The frame's front downtubes drop from the stem, run under the engine and rise up again to join the base of the massive frame backbone Just above the swing-arm pivot area, two tubes run on a diagonal up to the main backbone's midpoint. Another pair of tubes is angled toward the rear of the bike, forming the structure for both the upper shock mounts and the base of the seat.

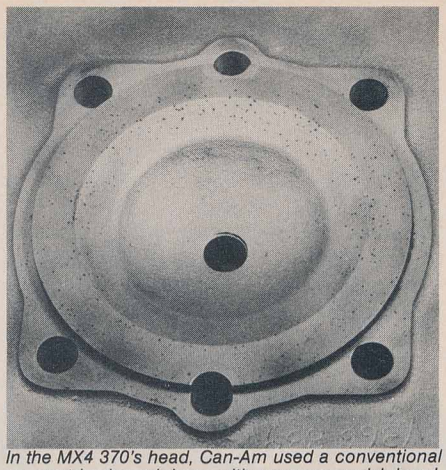
The swing arm is bent slightly so that it



The countershaft sprocket and the swing arm pivot are only 76mm apart. Ignition cover is magnesium.



The "inside-out" ignition system used on the Can-Am 370 has both high and low-speed energizing coils.



In the MX4 370's head, Can-Am used a conventional concentric-shaped dome with a narrow squish band.

Make and model	Can-Am MX4 370
Price, suggested retail	$1899

ENGINE

Type	Two-stroke, air cooled, case reed
Bore and stroke	84 x 66mm (3.31 x 2.60 in.)
Piston displacement	366cc (22.33 cu. in.)
Compression ratio	12.5:1 (uncorrected)
Carburetion	1; 36mm Bing
Exhaust system	Expansion chamber with Super Trapp silencer
Ignition	Magnetically triggered, magneto-energized electronic Bosch CDI
Air filtration	Gauze element
Oil filtration	None required
Bhp @ rpm	37.62 @ 7500
Torque @ rpm	27.56 @ 6500

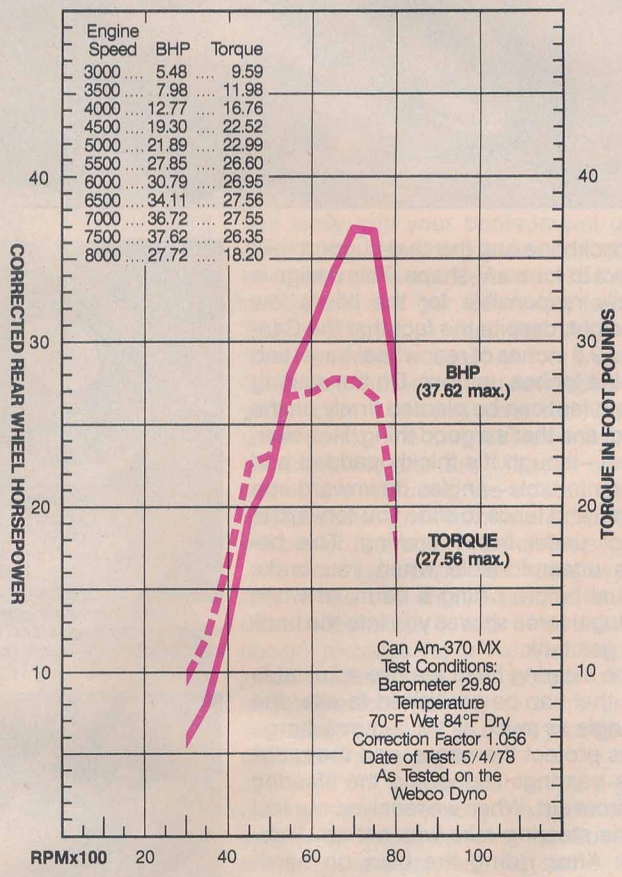
TRANSMISSION

Type	Constant mesh, five speed
Primary drive	Straight cut gears
Final drive	⅝ x ¼ chain
Gear ratios, overall	(1) 2.38, (2) 1.75, (3) 1.39, (4) 1.10, (5) 0.91
Oil capacity	1100cc (1.2 qt.)

CHASSIS

Type	Chrome-moly tubular steel, double downtube cradle
Wheelbase	1473mm (58 in.)
Rake/Trail	27°–32°/127mm (5.0 in.) @ 31°
Brake and hub, front	Drum, conical, double shoe
rear	Drum, conical, double shoe
Wheel, front	Sun, shoulderless alloy
rear	Sun, shoulderless alloy
Tire, front	3.00 x 21 in. Dunlop Sports Senior, 4 PR
rear	5.00 x 18 in. Dunlop K-88, 4 PR
Seat height	914.4mm (36 in.)
Ground clearance	292mm (11.5 in.)
Fuel capacity	7.57 liters (2.0 gal.)
Curb weight, full tank	107.96 kg (238 lbs.)
Suspension, front	Marzocchi magnesium, telescopic, forward-axle fork
rear	Gas-charged Girlings

CUSTOMER SERVICE CONTACT
Bombardier Corp.
4505 W. Superior St.
Duluth, Minnesota 55807
Attn: Customer Service



can accommodate the rear shocks and still not alter the frame's geometry. The chrome-moly arm is strong and light; gussets are welded on both the top and bottom of the swing arm to increase its rigidity. The arm pivots on Can-Am's exclusive "Nylatron" bushings. While properly designed and selected needle bearings can be excellent, such bearings must be kept clinically clean or they will self-destruct. The Nylatron bushings—which appear to be a combination of nylon and teflon—are claimed to be virtually maintenance-free. You might expect that the material wouldn't be tough or hard enough to survive in such a dirty environment; on the contrary, a post-test inspection revealed almost no signs of wear. And during the test, there was no behavior that would indicate the swing arm was sloppy in its bushings.

Unlike Can-Am's other two-stroke engines, the 370 is a piston-port engine. The charge is fed into the cylinder through piston-controlled ports, assisted by a case-reed arrangement.

The 370 uses fiberglass reeds. If chips come off a reed, there's at least a chance that they will pass through the cylinder without damaging anything. But a metal fragment from a stainless steel reed will very likely tear things up in the engine. On the other hand, stainless steel reeds won't fret and come apart like fiberglass reeds, so the steel flappers require less maintenance. So it's something of a tradeoff, danger vs. durability.

When the piston is in the bottom portion of its stroke, the charge flows across the top of the four-petal reed block directly through the intake ports and into the crankcases. As the piston returns toward Top Dead Center, a negative atmosphere is created in the crankcase. This causes the reed petals to open, thus drawing additional mixture down into the crankcases. At low revs it's technically possible for part of the intake charge to flow through the petals, into the crankcase and up the transfers. At higher revs, of course, the charge goes through the petals into the crankcase and stays there until the piston begins its next downstroke. As the piston goes down after combustion, it first uncovers the exhaust port and then opens the transfer ports. At this point, the fuel-air mixture begins to flow out of the crankcase and into the cylinder through the transfer ports.

To make the 370 Can-Am a rotary valve was physically impossible. There is simply not enough room (while keeping the engine narrow enough for a motocross bike) for a rotary valve. Nor is there space to get a rotary valve intake tract through the side and into the interior of the crankcase, because the huge main bearings rule out such an entry way. In any event, racetrack results are more important than fancy techo-prejudices. The case-reed 370 has a smooth powerband that allows you to increase speed without any hesitation or flat spots in carburetion.

On our dyno test of the MX4, the Can-Am developed 5.5 horsepower at 3000 rpm and pulled steadily to its peak of 37.6 horsepower at 7500 rpm. Compared to the Yamaha YZ400E, the Can-Am is down about 3.5 horsepower at peak output levels; by numbers alone the Can-Am again would seem to be at a disadvantage. But extensive starting-line drag races demonstrated that the 370 could hold its own against any open class bike, including the Yamaha. The Can-Am's 37 horsepower proved to be more than most riders can use at most motocross tracks anyway.

The MX4's strong, steady power—quite unlike the explosive power of Can-Am's rotary-valve engine—makes the 370 the easiest open class bike to ride fast we have tested. While the Can-Am's handling can be tuned to feel like a 250, there's no mistaking the MX4 for a real open class bike when you accelerate out of turns.

This power-anywhere-you-want-it performance makes the front end of the Can-Am seem light everywhere on the track. With just a flick of the throttle, the front can be coaxed into the air to skim over whoops or holes. Though impressive, the power is never surprising.

Both aluminum case halves and the ignition and clutch side covers have small

(Continued on page 96)

CAN-AM 370 ..... *Continued from page 43*

cast-in bosses that serve as fulcrum points for prying the components apart with a screwdriver. To protect the cases from the chain, the 370 has a very close-fitting horseshoe case-saver for the countershaft sprocket. The fit is so precise that Can-Am includes a new saver with each countershaft sprocket they sell. To help prevent accidental chain derailment over rough terrain, the centers of the countershaft and the swing-arm pivot are only 76mm (three inches) apart.

The 370 gearbox has the same ratios as the 250, but the gears themselves are wider and stronger. Credit for the 370's rocket starts largely goes to the gearbox and the way it shifts. The ratios are properly spaced, though in truth it would be difficult to mismatch a gearbox to an engine that has the Can-Am's kind of power. More important to quick starts is the rapidity and accuracy with which the gearbox shifts. Change-ups go through clean and fast even under full power. The quality of the gearbox showed up in distance gained from the starting gate to the first turn. Downshifts, as well as upshifts, could be made with precision and ease.

The main bearings do not ride directly in the aluminum cases. Rather, the bearings fit into nylon inserts that have been pressed into the cases. It's actually possible to slip the main bearings into the nylon inserts without using a press. When the engine is running and up to temperature, the outer races of the main bearings are held secure in the nylon liners. The outer races of the main bearings will not spin in the nylon, nor will the inserts turn in the aluminum case. Different coefficients of expansion of the components—bearings, liners and cases—insure that there's no unwanted slippage.

According to Can-Am, the mains will not orbit inside the nylon liners, though the nylon has some resilience which helps damp out a bit of the natural imbalance inherent in single-cylinder engines. This nylon liner for the bearing races is a design feature peculiar to Can-Am; the inserts were first used on the drive side of the rotary engines to help cushion the pounding which the magnesium cases took in the main bearing areas, and this system has been carried over to the aluminum-cased 370.

The 370 has a magnetically-triggered, magneto-energized Bosch electronic CDI. Its stator/rotor is an inside-out design (similar to the Honda CR250R's), but the Can-Am does not have a way to adjust the timing externally. The ignition case cover has a small plastic timing-inspection plug; removing the plug uncovers a timing mark on the rotor so that the ignition advance can be checked quickly. Bosch ignitions, once upon a time, were trouble-prone on Can-Am motorcycles; currently their reliability record is good.

The 36mm Bing carburetor, in part re-

(Continued on page 98)

CAN-AM 370 ..... *Continued from page 96*

sponsible for the easy starting, has a standard "Mikuni type" choke lever and an additional cold-weather primer plunger, but in sunny California we didn't need the cold-weather feature. It reportedly works quite well in frigid conditions.

Like other Can-Ams, the 370 has a quiet expansion chamber and muffling system. The header pipe is routed up and along the left side of the tank. To tuck the pipe in snugly to the frame, five cylinder head fins have been trimmed. Even so, the pipe will still toast your leathers when you sit forward on the tank to negotiate tight turns. Once past the tank the exhaust system presses tightly against the frame and terminates with a Super Trapp muffler. The Super Trapp muffles the 370 down below 86 dB(A) (the California limit for off-road motorcycles as proposed by the EPA for 1980 standards). The Can-Am is the only open class motocrosser that is legal in stock trim. Consequently the Can-Am is also approved for riding in National Forests with designated off-road trails.

The Can Am's front suspension is the latest magnesium Marzocchi ZTi with 38mm tubes. The sliders hold 365cc of fluid per leg and a 19 pound-inch spring. Unlike other Marzocchi forks we have tested, the 370's fork didn't need the usual break-in period. The Marzocchi produces just over nine inches of front wheel travel. Fork action was excellent.

A good air fork has the infinite adjustability that pressurized air can provide. This led us to try accessory air caps on the standard oil/spring Marzocchi. With air caps, the 370's fork responded just as progressively as the fork without caps. The difference between "air" and "airless" forking became apparent when we changed our riding to include deep sand whoops. The unmodified oil/spring fork bottomed over the largest bumps. With 14 psi in each leg, the fork would not bottom over rough terrain. By adding a heavier oil the fork resisted bottoming out, but the increased viscosity made the fork respond slower and left it quite stiff over smaller bumps.

The rear suspension is handled by a pair of emulsion-type gas-charged Girling shocks. As with all Girlings, the shocks are not rebuildable, but you can replace the entire body for around $31. Girling has upgraded its shocks, and the units on the 370, with increased oil capacity, resisted fading longer than before.

Even with the larger shock bodies the new Girlings begin to fade around the 30-minute mark. For longer motos or extremely rough use, Girling makes accessory reservoir shocks ($150 a set) which use the same bushings and clips as the stock shocks. Compared to other add-on shocks and true to Girling's reputation, the remote-reservoir shocks are less expensive than other aftermarket units.

The standard shocks use two springs

(Continued on page 100)

CAN-AM 370 ..... *Continued from page 98*

that are stacked on top of each other and work together like a dual-rate spring. The short top spring is made of square-section wire and has a 180 pound-inch rating. The longer round-section wire spring has a 128 pound-inch rate. The use of two springs allows for numerous rate combinations. Although the short spring compresses first, it does not coil-bind before the longer spring begins to work.

At 238 pounds the MX4 370 weighs four pounds less than the Yamaha YZ400E. The Can-Am's low weight wasn't an accident. Weight is saved in small increments everywhere. For example, the front axle is tubular rather than bar steel. The fork has magnesium sliders. The new slider castings save 3.5 pounds over the older aluminum units. Magnesium is also used for the brake backing plates on the 370, and the stylish conical hubs also save precious ounces.

The liners in the brake hubs have also been upgraded. The old cast iron piping method, where a long cylinder was cast and the liners cut off the end, has been replaced by a centrifugal casting process. Still, the brakes could be stronger.

The spokes are laced to Sun wheels in the race-proven cross-four spoke pattern. The wheels are light and shoulderless. On the inside of the wheels special conical-shaped pins have been driven into the bead contact edge of the wheels. The hardened steel pins measure 3/16-inch at their base and are 3/16-inch high. When the tire is mounted and inflated, the bead is pressed against the pins which penetrate the surface of the tire's bead.

Dunlop supplies the tires for the Can-Am. Up front is a Sports Senior 3.00 x 21-inch four-ply model. On the Can-Am the Sports Senior is a marginal performer at best. We lowered the air pressure to six pounds psi attempting to get the front tire to stick in hard-packed turns, but we were only partially successful. Unlike the front tire, the rear Dunlop K-88 5.00 x 18-inch four-ply tire was excellent. The tire could handle the Can-Am's acceleration without tailwag or excessive wheelspin, and in corners the tire would bite in well.

The MX4 370 is Can-Am's first open-class bike. As a first year effort, the bike is remarkable. It's light, has plenty of power and is easy to ride. The nimble 370 does not handle like a big open class bike. The bike's 238 pounds work to the rider's advantage, especially when coupled with the powerband; the rider does not tire prematurely or just wheeze out at the 25-minute mark. You can simply ride the Can-Am faster, for longer periods, than any other open class bike in recent memory. And this makes us wonder whether the Japanese, now locked in battle for the 250 motocross market, may have taken their eyes off the open class, at least temporarily. Can-Am has not. Bombardier has arrived with a very competitive open class weapon, first crack out of the crate.◉