

CAN-AM 250 GP

• Inside the crate along with Can-Am's new GP motocrosser is a large three-ring binder which contains the Operator's Manual. The first instruction found in this lavishly illustrated book refers to the throttle twist grip:

To open the throttle, turn twist-grip toward you.

To close the throttle, turn twist-grip away from you.

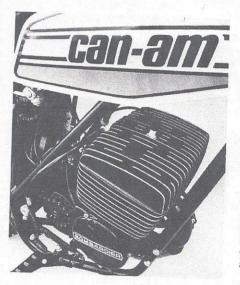
Telling this to anyone capable of operating the 250 GP is like telling Joe Namath how to hold onto a football. Tucked neatly between these carefully described open and closed throttle positions are 34.29 of the most vicious, berm-gobbling horses ever offered to the public—and attached to the twist-grip is a motorcycle almost as ironic as the advice in its Operator's Manual. Few bikes require more skill to ride than the Can-Am 250 GP.

This won't affect the average reader, however, because only about 200 of these GP bikes (Gary Jones/Jimmy Ellis replicas) were manufactured and most of them have been kept by dealers to use as shop racers for the whiz kids they sponsor in local motocrosses. Bombardier, the Canadian company that builds Can-Am motorcycles, wants dealers to support local riders with GP bikes so the fans can see Can-Am horsepower at work zapping other brands on straightaways all over America.

Cycle wanted to ride a 250 GP to see what one of the top factories in motocross was building as a semi-works machine. Just what would a privateer on a Honda have to do to keep up? How much faster does the factory touch really make it? Will a GP make an average rider a winner? Does it really have 36 horsepower like the factory claims? With Gary Jones carrying the Number 1 plate on his Can-Am and Jimmy Ellis winning everything in sight this year, Bombardier has dominated U.S. motocross for the last 18 months. No bikes are hotter. But how hot are they?

Our 250 GP started cooling off the minute it arrived. A close look at the forks revealed that they were standard 6.5-inch travel Betors. Where were the new 8-inch travel Betors used on the GP circuit—the only ones that can properly match the long-travel rear end? "Back or-CYCLE"

It spits entire berms and yanks the dyno off the floor, but horsepower isn't everything.



dered," said a Can-Am spokesman on the first of many calls to Quebec. Betor promised delivery in time for Bombardier's production, but simply didn't make the deadline. It is rumored that Bultaco, one of Betor's oldest and biggest customers, has ordered, and will get, almost all the 8-inch travel forks produced this year. As a result, Can-Am's hot-shot has an outdated front end.

The same can be said for the rear suspension. In an era when air shocks, gas shocks and monoshocks have replaced the standard damper in controlling long-travel rear ends, the Can-Am comes equipped with a standard S & W shock absorber in the forward-mount position. S & Ws are superb on the street and fine on enduro bikes when mounted near the axle, but neither they nor any other standard shock can cope with 7 inches of

forward-mounting on a motocrosser. The small amount of oil inside gets hot and/or aerates, and damping goes away. S & W makes a new larger-bodied shock which carries much more oil, and Bombardier is retro-fitting all GPs with this unit in hopes that rear end damping will last a whole moto. However, Cycle found a basic problem with these new shocks that still left the rear end far from perfect. Stiff springs and considerable compression damping rob travel and make the back end bound high in the air when hitting certain types of bumps. Harsh shocks bring on rider fatigue quickly. Finding traction also becomes a greater problem with the bigger shocks.

Suspension proved to be the GP's downfall. Betor makes good forks and S & W makes good shocks, but in combination on the GP, they don't harmonize. Anybody racing one will have to experiment with shocks and forks and oils and springs to discover a combination that fits the rider's style. That's what the factory is doing with their own Team bikes—Ellis will appear with Marzocchi forks one week and Betors the next; with gas shocks in practice and prototype long-travel S & Ws in the race. Until the right suspension emerges, a rider won't be able to take advantage of all that horsepower.

When the Cycle staff had trouble riding the bike to the engine's potential, we called in a couple of outside motocross lions for another opinion. When riding alone on the track, they came back with raves—mostly about the engine. But the Can-Ams great power and stiff suspension evidently made them feel more speed than reality proved was there, for a Honda Elsinore with only moderate modifications beat the GP two out of three motos in a local Southern California race.

The Honda was able to take bumpy turns faster and hook up to the ground more readily than the Can-Am. It beat the Canadian on all three starts. Our rider went farther over the straightaway jump because his speed was greater, but he still couldn't pick up distance on the Honda because of wheelspin coming onto the straight out of a slow turn. In winning the second moto, our Cam-Am rider dived inside the Honda on the same high berm

where our cover shot was taken and pelted its rider with 20 pounds of dirt—enough to make him back off. "Wheelspin came in handy there," quipped our tester. But he was tired after a 20-minute moto, even though he's in condition for longer ones.

With the suspension not yet sorted out, the Can-Am is both hard and tiring to ride. A Maico with even more horsepower is a cinch by comparison, so it's not the GP's great power that requires awesome skill to overcome. It's suspension. Not steering, not geometry—just the forks and shocks. The rest of the bike is excellent.

Like all Can-Ams, the GP comes with 30 degrees of rake and slightly over 5 inches of trail built into a rigid frame of high tensile steel. This particular geome-

try provides beautifully neutral steering and allows controlled slides much like a half-miler. If you are experimenting with long-travel suspension or encounter a track with peculiar turning requirements, simply adjust the rake angle by swapping eccentrics in the steering head. Settings from 25 to 31 degrees will tailor handling to most any riding style or track. A complete set of eccentrics with needle bearings and caged-needle thrust washers are available from Can-Am dealers for \$9.

Lightweight (and expensive) Trelleborg knobbies grip well in turns, but wear out quickly due to their soft rubber compound. The engine can easily handle a wider weenie in back, so a 4.50 in place of the stock 4.00 would greatly improve traction—especially on starts. You can safely try 10 pounds of air for even more bite because there are double rim clamps in back.

In the past certain Can-Ams had spongy brakes which couldn't even skid the tires on pavement. A new lining makes braking on the GP more than adequate for motocross in feel and stopping power. Both backing plates interchange to save production costs, so the rear one cannot have its own fully floating design. Consequently the Can-Am hops a bit in heavy braking on rough ground. Other wheel

(Specifications page 32; test continued on page 34)



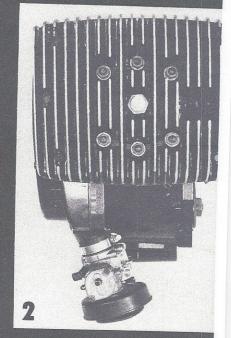
Special GP pipe is quite loud. A Diamond chain (% x %) rotates on a lightweight alloy sprocket.



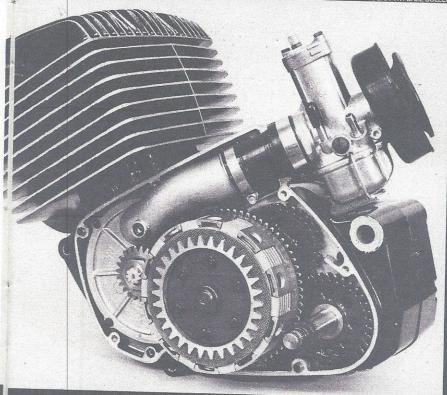


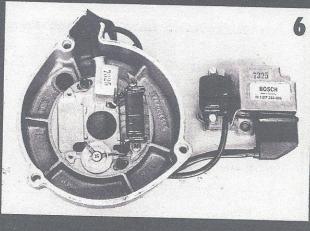
CAN-AM 250 GP

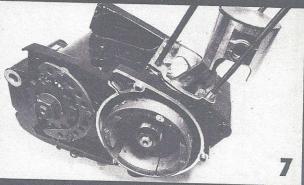
1. No 250 motocrosser has more muscle. Air enters Bing carb through rubber velocity stack and picks up oil through O-ringed hole in tubular manifold. Gears in back of clutch enable starting in any gear. Engine is no wider than its head. Few non-rotaryvalve engines are narrower. Plug is a Champion N-57G Gold Palladium gapped .020". 3. Huge chunk out of rotary valve is a dead giveaway of high performance tuning. A gear on the crank snout turns valve at crankshaft speed. Long inlet tract has a ram effect on the fuel mixture. 4. Enormous finning keeps the cylinder head cool even during dyno tests. Large squish area accommodates high compression and must be set at .030". Engine doesn't use head gasket. 5. One of the factory touches given to the GP is evidenced in a specially drilled clutch hub (left) as compared to the stock item on the right. 6. Tiny black coil to left of Bosch decal sparks a 30,000volt CDI ignition system. 7. Rather heavy rotor adds to engine's flywheel effect so power isn't so explosive. Note intake port in back of rod. 8. Egg-shaped intake port aims charge to front of crankcase. Gear on crank drives oil pump.

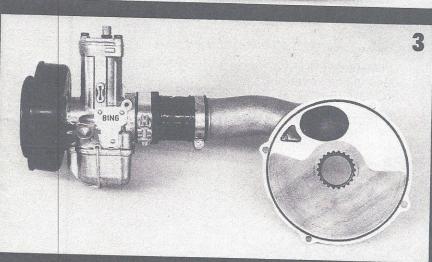


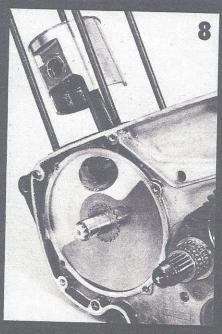
PHOTOGRAPHY: DALE BOLLER

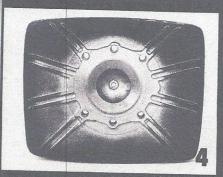


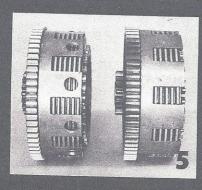




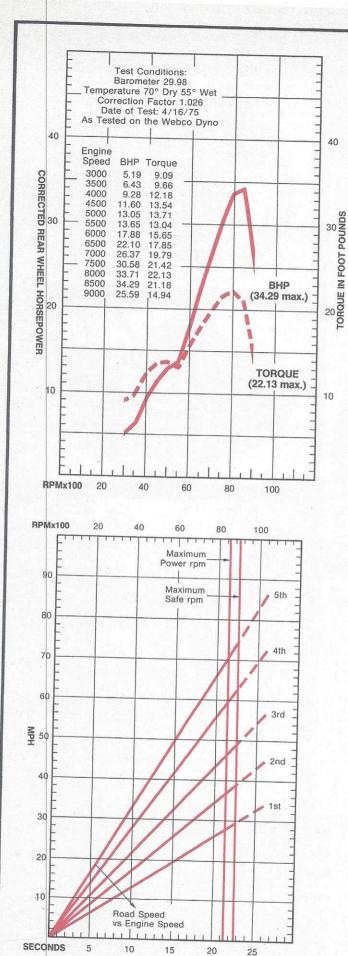








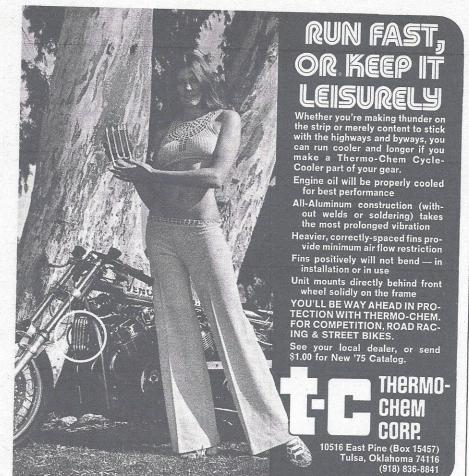
THE HORSEPOWER KING





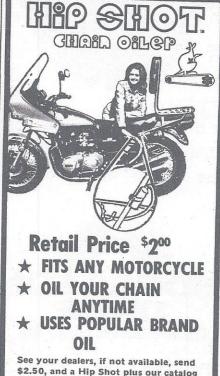
CAN-AM GP 250

D .	
Price, suggested retail	Set by dealer
Tire, front	3.00 x 21 Trelleborg Motocross
rear	4.00 x 18 Trelleborg Motocross
Brake, front	5.90 x 1 in. (150 x 25.4mm)
rear	5.90 x 1 in. (150 x 25.4mm)
Brake swept area	37 sq. in. (239cm²)
Specific brake loading	
	at test weight
Engine type	Two-stroke rotary-valve single
Bore and stroke	74 x 57.5mm
Piston displacement	247cm ³
Compression ratio	14:1
Carburetion	1; 32mm; Bing
Air filtration	Oiled foam
Ignition	Bosch electronic
Bhp @ rpm	34.29 @ 8500; actual
Torque @ rpm	
Hake/Irail	Adjustable: 25°-31°- 4-6 in
Mph/1000 rpm, top gea	10.27 mph
Fuel capacity	1.9 gal. (7 liters)
On capacity	
Primary transmission	
Gear ratios, overall	(1) 23.28 (2) 17.12 (3) 13.59
	(4) (0
Wheelbase	(4) 10.71 (5) 8.93 55½ in. (141cm)
Seat height	34 in. (86cm)
Ground clearance	
Curb weight	
	with a full took of
Test weight	



CIRCLE NO. 56 ON READER SERVICE PAGE.





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components include D.I.D. aluminum rims laced to conical alloy hubs which incorporate the new magnesium backing plates. Nine-gauge steel spokes require frequent tightening but they won't pop out of place because of tiny rubber safety grommets on the wheel flange. Snail-type rear axle adjusters make quick work of adjusting the chain.

Running gear components are first rate. Magura power levers clamp to V-braced chrome moly bars. The aforementioned twist-grip is a 1/4-turn Magura. There's a chance you'll despise the kill button because a wrinkle in its rubber housing is all there is to tell you whether its on or off. If the bike doesn't start on the first kick, the button has probably disconnected the CDI. Other goodies include tough plastic fenders and an unbreakable gas tank with a non-leak wide-mouth cap. The gas tank has U.S.-made rubber Lord mounts which employ the only odd-ball nuts on the bike-7/16-inch National Course-but an 11-millimeter wrench will twirl them on and off. A narrow seat with firm padding has a non-slip covering which works best with rough-out leathers. Number plates are stock, the pegs fold and a skid plate fends off exhaust pipe dings. Bombardier publishes an excellent service manual and will sell you a parts manual for \$6.

Now to the heart of the matter. Can-Am's GP engine is the Kawasaki Z-1 of motocross. It has yards more horsepower and torque than any other 250 and spreads it over a fat 2000-rev range. The GP ran up 34.29 hp on Webco's dyno without flinching and without crowding the dangerous 400-degree head-temperature mark. This power peels the decals off your helmet without fading toward the end of a moto. Shift points are readily discernible because power falls off suddenly after 8500 rpm. Nicely spaced gears drop revs to about 7000, where the Can-Am has more horsepower than a Bultaco Pursang at its peak-and still has 8 to go.

As these 8 ponies cut in, the sensation of acceleration matches anything you'll feel on a 400. With the advantage of 12 percent more horsepower than any 250 Cycle has tested, the Can-Am thrives on straightaways where passing is a sure thing if the tire gets a grip. Surprisingly, its advantage still isn't enough to zap people between tight turns on the basis of pure power alone. You'll still have to cut a quicker line to pass through snug stuff. That's where a healthy torque spread can keep the hammer cocked until just the right moment-even if that time comes before or after you planned, or even if you're leaned over in a left-hand turn and can't reach the gear shifter. The Can-Am produces strong torque from 6500 to 8500 rpm and cracks 22 footpounds at 8000. Other 250s considered to have strong engines make just over 20 foot-pounds of torque.

This engine is a weapon a science fiction writer would create for his hero. Its power and function are almost unreal.

(Continued on page 36)

Two Can-Ams together would produce 68 horsepower from 500ccs-much more than a Kawasaki 750 triple, Honda Four or Triumph Trident; more than an 850 Norton or 900 BMW or 1000cc Harley. Yet it still carburetes cleanly, shifts with a touch and starts in a single kick. It idles, it's easy to maintain and it doesn't leak a particle of oil.

Everyone will pay a minor price for such ferocious precision: vibration at high revs. Vibration fractured a weld on the reinforcing V of our handlebars. Another price we paid was a minor engine seizure which probably resulted from an oil failure. Since the piston and squishband shim showed evidence of detonation, a quick heat build-up amidst the giant 14:1 compression ratio cooked Can-Am's synthetic injectolube enough to allow scuffing of the piston against the cylinder. The bike continued to run, and the ring was free, but \$30 in repairs and a lot of lost time re-

Can-Am gets their power with remarkably conventional porting. It's the rotary valve that makes the difference. Driven by the crankshaft and located in a sealed chamber outboard of the left flywheel, the valve opens the inlet port irrespective of piston position (Advantage No. 1) and closes it totally so no charge can escape back through the inlet tract (Advantage No. 2). Another benefit in Can-Am's particular rotary valve design is a ram effect generated by a long tubular manifold. This tube also locates the carburetor above

and behind the gearbox where it doesn't contribute to excessive engine width in the normal manner of side-mount carburetors on rotary valve engines.

Apparently the motor's full power potential remains untapped on a production basis, for Can-Am has built several Team Motocross bikes with 38 horsepower at the crankshaft.

Huge main bearings (double row on the left) support a pressed-together crank featuring full-circle flywheels with heavy bob weights cast integrally. Combined with a hefty flywheel to generate spark, crankshaft inertia is enough to eliminate snatch in the driveline and to prevent power from being unpredictable. The crankshaft also drives a Mikuni oil pump via a nylon gear threaded to its left snout. Instead of metering oil in proportion to throttle opening, the GP pump is wired open at a constant rate of 32:1. (This rather lean ratio also may have contributed to our seizure. GP owners might be well advised to splash a little oil in the tank for cheap insurance.)

A Bosch CDI ignition generates current behind the right sidecover and sends it to a magic box mounted near the carburetor. The system includes a tiny coil not much bigger than a thimble. Still, plugs don't foul and the engine never misses, so the coil must throw a hotter spark than the specified 20-thousandths plug gap indicates. Timing on our Can-Am never wavered in two weeks of riding.

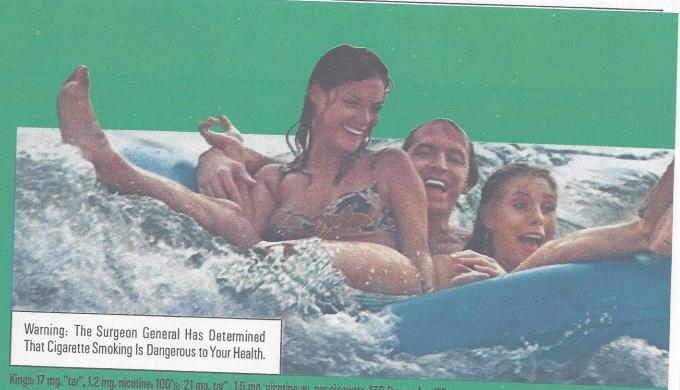
Engine internals follow standard Can-

Am designs. Four transfer ports and a large unbridged exhaust accompany the egg-shaped inlet hole just above the left flywheel. The piston has a single Dykes ring and moves in a steel-lined cylinder. Straight-cut primary gears drive a wet clutch with 11 plates and six springs. Superb diecasting, accurate port matchups and the presence of socket-head and self-locking fasteners throughout are typical of internal workmanship and quality. Can-Am engines are built in Austria by Rotax, the same wholly-owned Bombardier subsidiary that manufactures Ski-Doo snowmobile motors.

Some 4000 standard MX-2s will be built this year, and the only differences between them and the GP is two horsepower and six pounds. It has its own crank, cylinder, piston and head. All GP engine parts interchangeable with the MX-2 are trimmed or drilled for lightness wherever possible. Can-Am doesn't miss a lick. There's simply nothing left for a home tuner to do. There shouldn't be, either, for GPs will likely cost something near \$1800 from dealers willing to sell one. At that price you shouldn't have to do any-

Which brings us back to the suspension problem. A lot of time and money must be spent to get power on the ground and to keep the rider from being pummelled. Call it 34 horsepower on crutches. Call it Can-Am's first mistake.

When they get it straightened out, you'll call it the 250 nothing can touch.



Kings: 17 mg. "ter", 1.2 mg, nicotine; 100's: 21 mg, tar", 1.5 mg, nicotine av, per cigarette, FTC Report Apr. '75.

Alive with pleasure!