CYCLE ROAD TEST

CZ 250 ENDURO

If you are just beginning to ride off-road, the new CZ Enduro is a machine which you might consider. But you shouldn’t. And why not? Because this motorcycle is for enduro experts who can deal with a 279-pound machine which has a rather peaky engine, wide gearbox spreads and high overall gearing.

PHOTOGRAPHY: BILL DELANEY

• Bear in mind two facts about the new CZ 250 Enduro. One, it is not merely a motocrosser with lights and instruments attached; and two, it will not instantly make a better rider out of an average Japanese play-bike owner.

For CZ’s first attempt at an enduro-type bike to be marketed in America, the Czechoslovakian engineers modified their 250 motocrosser to include most of the requirements of a street-legal trail machine. They weren’t afraid to tear into the motocrosser where necessary to change its specialty from track to trail. A whole new set of parameters applies, and indeed, CZ has offered a machine which conforms to their definition of what enduro parameters are. When their interpretations don’t jive with our unique requirements in America, the bike comes up short. In cases when our needs parallel theirs, the bike is stellar. It’s that simple.

Several indications of the CZ’s enduro purpose are seen in the two-stroke pistontop engine. To reduce possible heat build-up and detonation on long stretches of deep sand or mud, compression has been dropped from 10.5:1 on the motocrosser to 9.5:1 on the Enduro by machining a deeper combustion chamber and squish band in the head. The actual head casting is the vertical-fin type used on motocrossers before radial sunburst fins appeared this year. Only one spark plug is used on the Enduro as opposed to two on the motocrosser. It would be interesting to know why CZ went to the trouble and expense of adapting a single-plug head from the existing twin-plug head when they could have simply blanked off one of the twin-plug holes with a bolt and thus offered a provision for a compression release.

Slightly different porting in the iron-lined alloy cylinder lowers and widens the torque band with help from an all-new upswept silenced expansion chamber. To facilitate street riding and reduce shifting off-road, a wide-ratio transmission replaces the close-ratio MX box.

Electrics on the Enduro consist of the novel “inside-out” CZ flywheel/magnet assembly surrounding a three-coil stator mounted in the right sidecover. Together these units comprise an alternator. One coil generates current for the ignition coil and spark plug, one charges the battery in combination with a rectifier located under the tank, and the third supplies a booster current to the headlight upon flipping a manual switch. The six-volt battery alone is not strong enough to provide adequate current to the headlight since it is also the sole source of power for the horn, taillight, instrument lights and parking light. The high beam and horn controls are in a tidy switch box.

Everything else in the Enduro and MX
engine is identical. This basic powerplant—with its several unique design features—debuted in 1968 and promptly won the 250 World MX title with Joel Robert and the 500 class with Paul Friedriehs. Five years later you get basically the same engine in the Enduro, since there have been only minute changes over the years. A pressed-together forged crankshaft spins in two single-row ball bearings on the left (drive) side and a huge double-row bearing on the right (alternator) side to ensure exact concentric rotation of the breaker point cam at the end of the crankshaft. Timing thus remains constant because breker-cam fluctuations due to crankshaft whip are eliminated. Rod bearings are a single-row roller on the big end and a caged needle bearing on the small end. Four studs clamp the cylinder deep into the cases where charge transfers to the combustion chamber through three oval-shaped ports—no reeds or rotaries or 7-come-11 porting or other slick tricks for CZ.

This simple system is fed by a 33mm Jikov carburetor, attached to a removable intake manifold with a short rubber hose and to a large air-cleaner chamber under the seat with a contoured rubber boot. Hose clamps secure the carb front and rear.

Another CZ departure from the norm is a dry clutch. Four friction and three steel plates are controlled by a rack-and-pinion thrust bearing and five springs. The whole unit is completely isolated from the gear-drive primary oil bath and is accessible for all maintenance by simple removal of the left-rear sidecover. This clutch has a light pull and extremely smooth and progressive engagement. A double-row needle bearing on the pressure plate insures concentricity and free spinning when the clutch is disengaged and the bike is in gear, thereby assisting clean shifts and easy neutral-finding.

A five-speed gearbox, new this year on all CZ dirt bikes, still employs the rugged design and unique shifting technique of the time-proven four-speed box. Single-row ball bearings support all transmission shafts except where a double-row bearing gives added rigidity to the final-drive output sprocket on the right side of the countershaft. These bearings are complemented by needle-roller assemblies on the gearbox idler pinions and brass bushings where the shafts dead-end in the cases. Shifting is accomplished by horizontal movement of a sliding metal plate which engages three shifter forks in three grooves cut clear through the plate. The "shifting gate," as this plate is called, slides in ball bearings and moves forward and back when the shift lever is depressed or raised. A considerable amount of rotation is necessary for the shifter shaft to provide the required horizontal gate movement, so all CZs have a long shift throw. This is a small price to pay for accurate, reliable gear changing with a positive feel through the boot and a minimum of missed shifts. Some riders even prefer a long throw to keep the transmission from coming out of gear with every inadvertent nudge or bump of the shift lever.

Final drive is through a CZ-manufactured chain. Most all the big-name European motocrossers use this chain in grand prix competition regardless of what brand they ride. Based on the chain's performance on the 250 Enduro, we would have to say it resists stretch and wear superbly. In 280 miles of dusty and wet off-road riding, the chain never needed adjusting. Its $\frac{3}{4}$-inch size may fit your bike.

Handling is a great hallmark of CZ motocrossers and the Enduro inherits the entire MX chassis without modification—from steering geometry to tires. A mild steel
frame with heavy flat-plate gussets welded to fully encircling saddles is as flex-free as any frame produced today. So is the inboard-mounted swingarm, because of a large-diameter strengthening tube curving between the tubes in front of the tire. Thirty degrees of rake and six long inches of trail contribute to high-speed stability, especially over ruts or logs, without robbing significantly from tight-turn response.

Forks are also made entirely in the CZ factory. In fact the spark plug, horn, headlight, taillight and tires are the only non-CZ items on the entire motorcycle. This compels the factory to bear all the blame or take all the credit for just about everything. In the case of their forks, it's mostly credit.

Once ATF is substituted for the thick oil recommended in the owner's manual, front suspension is excellent in every respect—soft springing and quick recovery, no topping or bottoming and a full 6.7 inches of travel. The forks are secured in a forged aluminum triple crown by a taper-fit on top and a single pinch bolt below. A spring-policed valve controls damping rates while a multi-lip seal retained with a circlip prevents weeping at the slider/stanchion junction.

Rear dampers are equally effective with a heavier rider. CZ designed the shock absorbers and springs for a 180 to 200-pound rider and left no provision for spring preload. Except at the drag strip, all of Cycle's testing was done by a 220-pound rider who had no complaints whatsoever about the shocks and their spacious 3.5 inches of travel. But not everyone weighs enough or rides hard enough to prefer the CZ's action, and no one should have to buy accessory replacements when paying nearly $1,300 for a bike in the first place. CZ should offer spring and damper options or provide external damping and preload adjustments.

Conical magnesium alloy hubs lace to steel rims with 36 spokes. Aluminum brake shoes bear against a cast iron liner and cannot be faulted with respect to feel, power and fade resistance. Though not fully floating, the rear brake rarely causes wheel hop and clatter during rough-ground or downhill braking. Waterproofing of both hubs could
be better, however, since relatively shallow stream crossings encountered in the famous Cal Poly Hi Mountain Enduro soaked up a noticeable amount of stopping power. Both brakes may be dried quickly with intentional dragging at 25 to 30 mph. In the rear an aluminum backing plate is bolted to an aluminum torque arm which also mounts a chain guide.

Tires are the final running-gear items. In back a fantastic 4.25 x 18 Barum Six Day knobby works like a bearclaw on dirt and provides the most stable pavement ride of any knobby we have experienced. Part of its lateral stability comes from a design conceived for the ISDT which enables the tire to work better when flat than standard tires do. A highly reinforced right-angle step in the casting just above the bead protrudes horizontally a full inch from each side of the rim to act as an unflexible track when the tire is flat. Naturally, the tire is also stronger when inflated. Up front the Czechs fit a skinny 2.75 x 21 Barum knobby which is far too narrow for accurate tracking in desert sand, not as popular in America as a 3.00 for mud and certainly unsuitable for the street.

Other components are a steel front fender, two-piece rear fender (fiberglass in front and steel in back), a huge steel air-cleaner chamber housing a Filtron element, three steel number plates and a three-gallon steel gas tank. The tank has two petcocks for no other reason than security—if one breaks, the other can save the day. Instruments are a 7,500-rpm redline tachometer driven off the crankshaft and a speedometer driven off the countershaft sprocket. Steel bars with a crossbrace are clamped in place with aluminum blocks and allen-head bolts.

Construction is robust throughout. The CZ is tough, but the penalty is weight—279 pounds with a full tank of gas—and the bike doesn’t camouflage its bulk. It feels heavy and it requires a strong rider working hard to sustain a brisk pace in a rough enduro. But the Czechs are accustomed to their tough, well-trained countrymen winning the
CZ 250 ENDURO

Price, suggested retail .................................................. West Coast, POE $1,285
Tire, front ................................................................. 2.75 in. x 21 in. Barum
rear ......................................................................... 4.25 in. x 18 in. S25A Barum Six Day
Brake, front ............................................................... 7.08 in. x .985 in.
rear ......................................................................... 7.08 in. x .985 in.
Brake swept area ........................................................ 43.8 sq. in.
Specific brake loading .................................................... 10.0 lb./in., at test weight
Engine type ................................................................. Piston-port two-stroke single
Bore and stroke ........................................................ 2.758 in. x 2.519 in., 70mm x 64mm
Piston displacement ..................................................... .15 cu. in., 246cc
Compression ratio ......................................................... 9.6:1
Carburetion ................................................................. 1; 33mm; Jikov
Air filtration ................................................................. Oiled polyurethane foam
Ignition ........................................................................ Magneto
Bhp @ rpm (claimed) ....................................................... 24 @ 6,200 rpm
Rake/Trail ...................................................................... 30°/6° in.
Fuel capacity ................................................................. 3 gal.
Oil capacity .................................................................. 20:1 mix with fuel
Lighting ....................................................................... 6v, 60 watts
Battery ......................................................................... 6v, 8 ah
Gear ratios, overall ....................................................... (1) 18.98 (2) 11.72 (3) 9.98
(4) 7.21 (5) 6.106
Wheelbase ..................................................................... 54.5 in.
Seat height ................................................................... 30 in., with rider
Ground clearance ........................................................ 8 in., with rider
Curb weight ................................................................. .279 lbs., with full tank of gas
Test weight ................................................................... .493 lbs., with rider
Instruments ................................................................. Speedometer, Tachometer, Odometer
Sound level, (California Standard) ................................ 87 dB(A)
Standing start ¼-mile .................................................. 16.405 seconds 75.82 mph
Top speed ................................................................. .80 mph (actual)

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Test Conditions: Barometer 29.90
Temperature 70°F Dry
60°F Wet
Correction Factor 1.034

Date of Test: April 20, 1973
Extremely long exhaust pipe tucks in well around rider's leg. There is no built-in spark arrester.

CZ engine is strong in mid-range and delivers good speed, but needs more low-end torque for enduros.

ISDT on even heavier Jawas, so they are relatively unconcerned with going out of their way to prune 20 pounds from their Enduro—as evidenced by an almost exclusive use of steel components throughout. Magnesium hubs are the only trick weight-savers on the entire motorcycle, and they affect unsprung weight, and area far more critical to handling than overall weight.

But weight alone is not the main reason a rider finds himself continually at work. First of all, there are two serious gearing problems on the Enduro. The new wide-ratio transmission has too great a gap between first and second gear—18.98 to 11.72, or a 38 per cent spread. Most wide-ratio transmissions vary 26 to 30 per cent. This problem is compounded by its altitudinous final drive ratio: 2.88:1 from a 52-tooth wheel sprocket and an 18-tooth countershaft sprocket. On CZ's motocrosser, which has a more powerful engine, a 13- or 14-tooth countershaft sprocket is used with the 52-tooth sprocket.

Out on the trail the wide gap between first and second gear causes the engine to fall off its powerband and bog unless all shifts from low are made with the engine spinning hard. The high overall ratio makes the bike barely able to get out of its own way from a standstill without extensive clutch-slipping, and unable to pull its top revs in fifth gear. Luckily the owner may solve this half of the gearing problem by installing a 15- or 16-tooth countershaft sprocket in place of the stock cog. Sixteen teeth proved perfect for the fast pace and steep hills of the Hi Mountain Enduro. Our test bike was regeared only for this run—all drag strip, dyno and field testing was done with stock sprockets.

The whole business of awkward performance due to high gearing and wide gear spreads is amplified by the engine's unwillingness to continue pulling down low on the rev scale. Although modified for more torque and a wider powerband than the motocrosser, the CZ still doesn't grunt as hard in ultra-slow going as an OSSA SDR, Bultaco Matador or even a Honda XL-250 with lower-than-stock gearing. The dyno chart shows the engine doesn't start pulling at all until 2,500 rpm and doesn't come on strong with torque until 3,500 rpm.

However, at anything above a slow crawl, the tractability of the CZ's power is uncanny. The bike will climb any hill on earth if the rider can go fast. Rarely does it dig a hole or break traction suddenly as the pipe cuts in. In fact the pipe eases itself on the scene so gently that the bike simply goes faster without a great, uncontrollable rush. This powerband, even with its low-end reluctance, is perfect for the fast, smooth riding Czechs—the expert Czechs. And it's good for expert Americans too. But they must work constantly to ride the bike as it demands, rather than settling back and enjoying the scenery. The CZ is just tricky enough that a merely average playbike rider would be better off with his Yamaha.

CZ's Enduro is precarious because its myriad little deficiencies aren't quite overshadowed by its basic strong points. For instance, the gas cap leaks, not much, but enough to wet your leathers where they grip the tank. There is a good tool kit, but no place to put it on the bike. The sidestand almost renders itself useless by being two inches too short. Clutch and brake lever pivot points are welded to the handlebars so the owner cannot position the levers to his preference. The pegs have an excellent folding (Continued on page 110)
action and provide good grip, but are located so low that they foul rocks and scrape the ground in tight turns. There is no built-in spark arrester. There is no kill button or mirror. Needle waver on the tachometer defies accurate readings. An enduro bike with no resetting odometer is preposterous and so is a speedometer which indicates 30 mph when the bike is actually going 23.59, and 60 mph at an actual 50.01. CZ should abandon the unnecessary tachometer and invest the money in an accurate front-wheeled drive speedometer. Battery position outboard of the frame crowds the left leg when standing up and is extremely vulnerable in a fall. The seat is soft in one place only, and that place is too far forward for comfort. A rubber ring from the fins contributes to an 87 dB(A) decibel reading, but could be reduced by inserting rubber buttons between the fins. The bike will not start in any gear and does not have automatic oiling: neither of these features make or break any motorcycle, but they are extremely convenient luxuries. Perhaps the worst of these minor problems for the street-legal half of the CZ is excessive and constant smoking with the prescribed 20:1 mixture ratio.

Every single one of these shortcomings may be cured without great expense or challenge to the factory, and when they are, the CZ will be a dynamic dirt bike. Whether the factory bothers to change what their engineers have already deemed satisfactory remains to be seen. A gentleman named Emil Sladoisky heads up CZ in America; he is a receptive sort, and sharp enough to conclude that more sales (money) will result from making the changes. The spark arrester and sidestand problems are already being corrected and turn signals due in September will confirm street legality of the bike in every state. The rest will come in time—all of it.

Don't forget that the bike has an equal number of strong points. There is an ignition lock, skidplate and an extremely light throttle. The engine does not leak. Water or mud do not make the seat slippery. The owner's handbook is a mini-service-manual with reams of useful information. One kickstarting, very or cold, is the rule. Our test bike cruised at 60 mph for 35 miles on the freeway easy as pie. Although we did not calculate exact gas mileage, the Enduro once went 70 miles on pavement and 60 miles off-road without going on reserve.

But in the bewildering tradition of the gourmet chef who spoils a soup lunch, the dirt experts at CZ have managed to take the superb foundation of the motocrosser and build upon it an endurance that's a long way from enduro-ready. Still, it will reward the hotshoe with fall-resistant handling, plenty of power and the ability to absorb yawning gullies with a shrug. And you can ride over your head and get away with it long after your buddy has crashed his Oriental Wonder Bear.