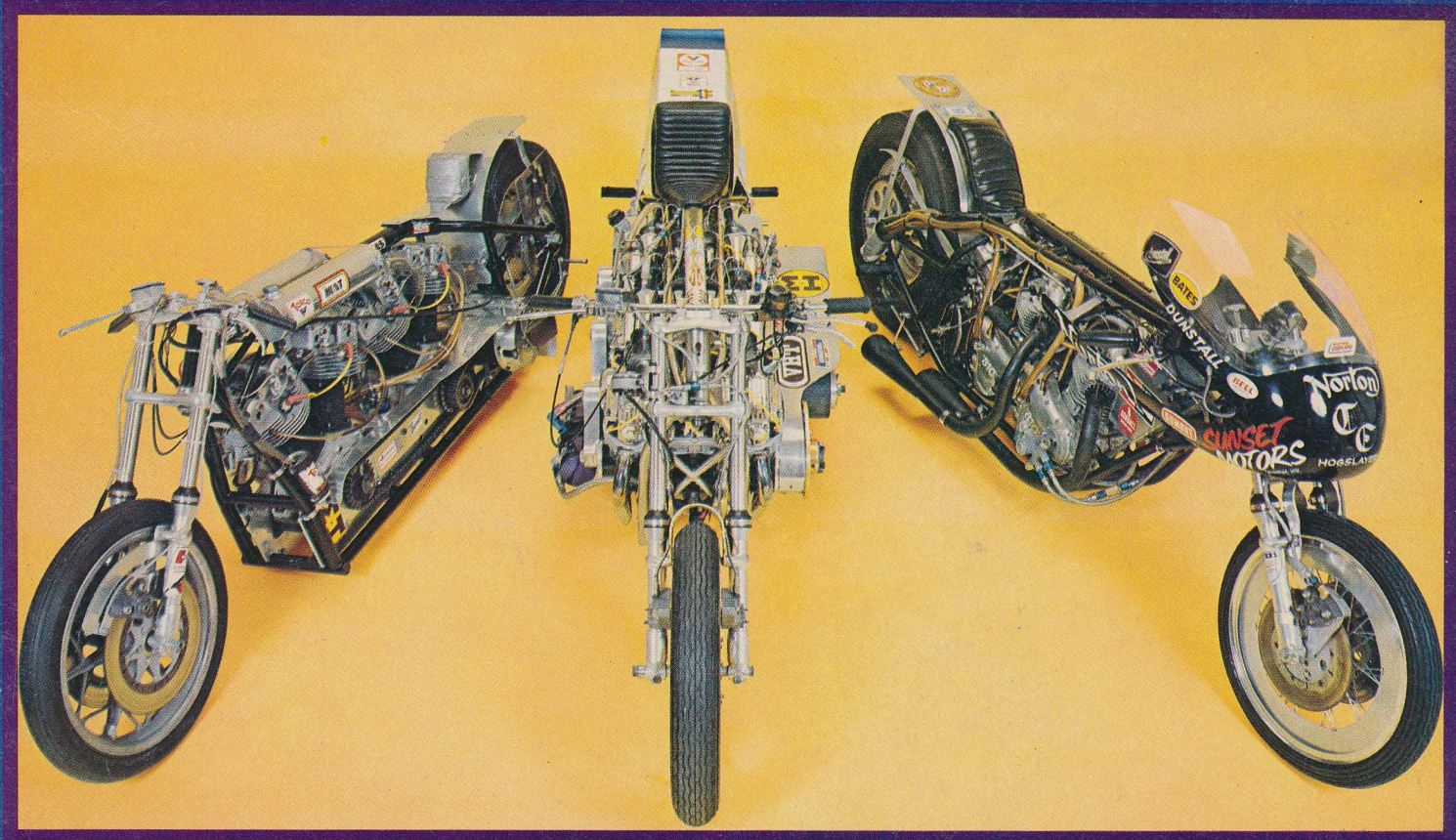


Cycle

FEBRUARY 1976 75 CENTS

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RUSS COLLINS' HONDA (7.86 - 179 mph)
JOE SMITH'S HARLEY-DAVIDSON (8.02 - 183 mph)
T.C. CHRISTENSON'S NORTON (7.93 - 177 mph)



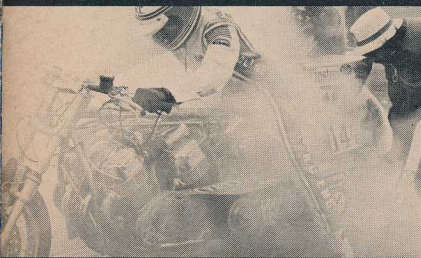
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3 Ways To Make It A Winner

180 mph Factory Road Racer

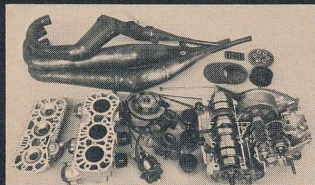
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This Month's Cover: Three bikes, seven engines, and 900 horsepower—that's the substance of the machinery Larry Willett was asked to photograph for *Cycle's* February cover. To assemble that much power any other way would have taken ten Honda GL-1000s, 12 Kawasaki Z-1s, 45 Suzuki 125 MXers or 90 Honda CB-125s.



Because Honda feels compelled to obey Federal noise and emission laws, the XL 350 has lost its thump, sprung the scale and become complicated. But there's still something about a four-stroke single. . .

● This motorcycle and others like it are struggling for identity. Now that a serious off-road rider can choose from close to 20 true enduro bikes, he won't consider a dual-purpose street-trail machine like the XL 350 because its dirt performance has been thrust into obsolescence by the enduros. Nor will the average street enthusiast buy a bike with bumpy tires, steel pegs and no electric starter. What is to become of these machines that have served us so well since Yamaha's DT-1 Enduro popularized the whole dual-purpose concept in 1967? Has evolution's pitiless march left the dual-purpose bikes on the fringe of extinction?

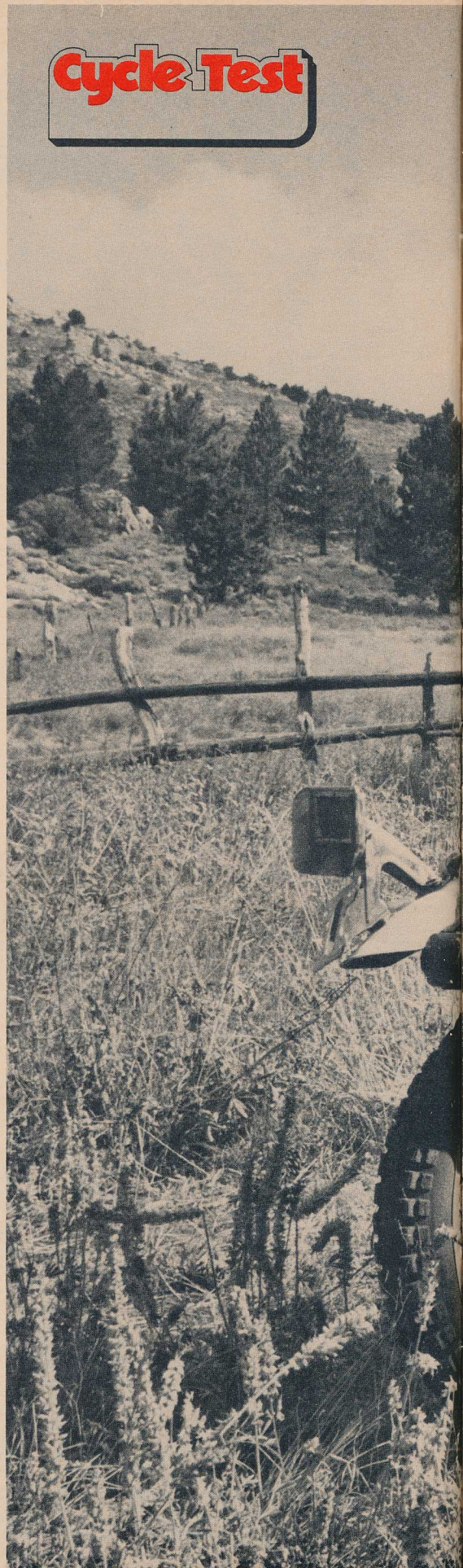
Not at all. As long as enough people want to ride both street and dirt and can't afford separate machines for each, the dual-purpose market will remain strong. In some cases sales will be stimulated by strict enforcement of licensing laws which prevent non-street-legal machines from utilizing popular riding areas. But never again will the dual-purpose market be as large as it was when true enduros were much more expensive and not that much better. Today's enduros are closer in price to dual-purpose machines, and vastly superior in performance. Bultaco Fronteras, Ossa Pioneers, Montesas, Pentons and MR Hondas are suddenly a major cause of unsold street-trail bikes.

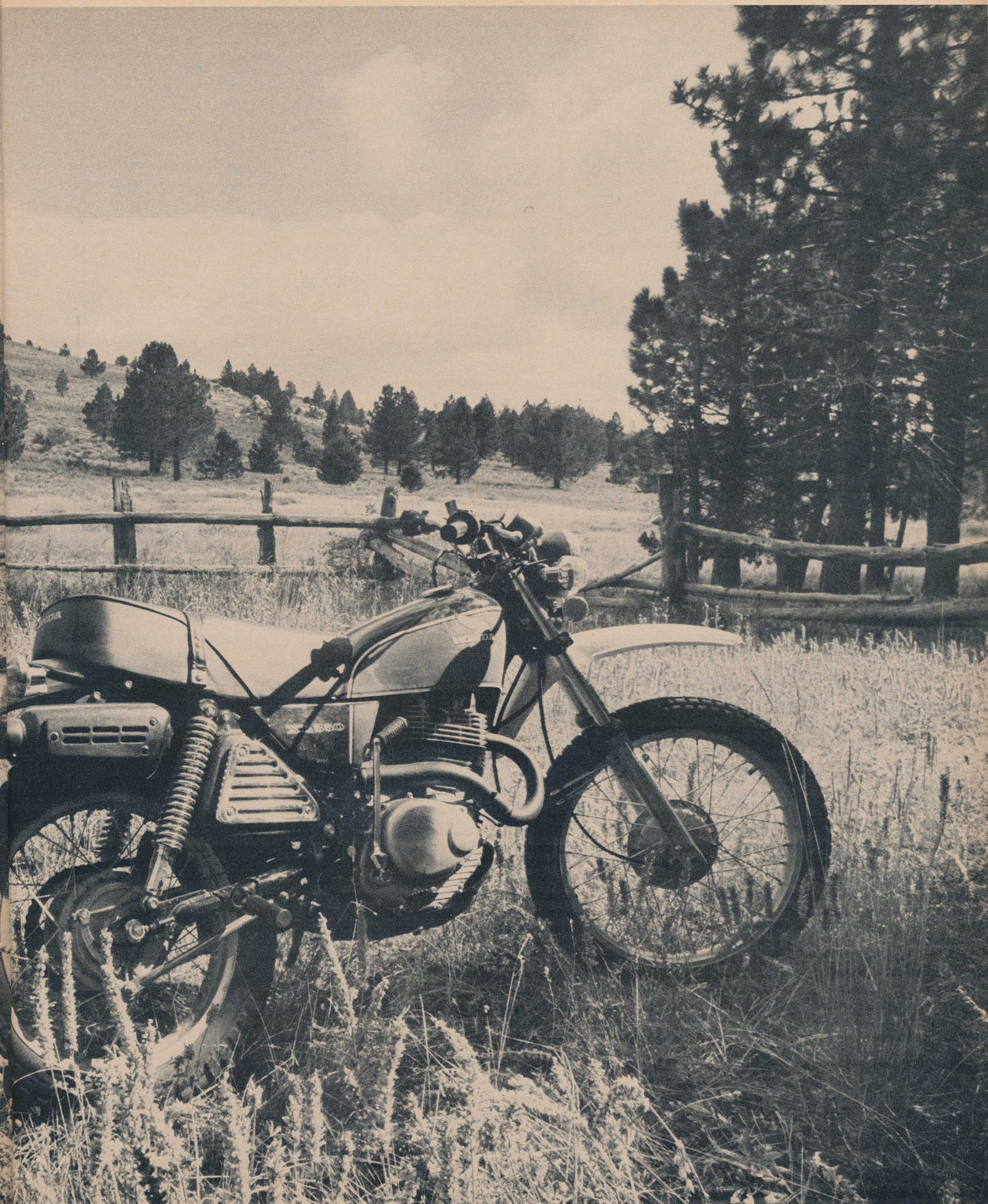
In evaluating dual-purpose machines (which are basically all street-legal trail bikes from Japan), we cannot compare their street performance to that of a street bike or their dirt performance with an enduro's. This approach would leave little favorable to report, because performance gaps have become so wide. References to specialized machinery must be used for perspective only, not comparison.

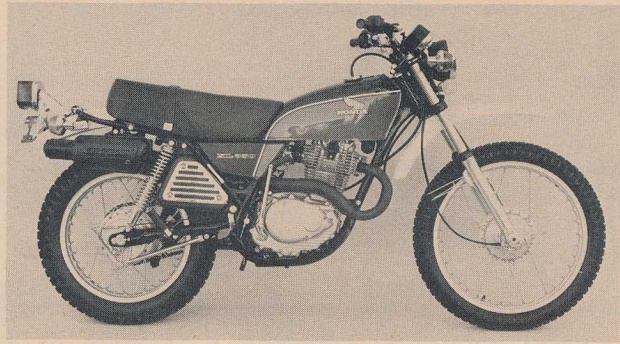
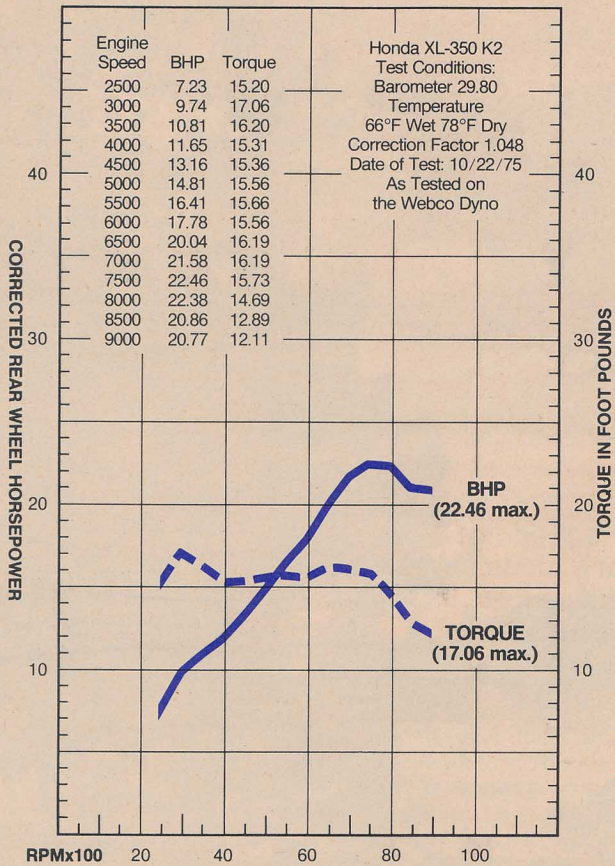
The reasons for performance gaps are twofold. First, while enduros are ignoring street-legal considerations, dual-purpose bikes have been conforming to tougher and tougher Federal noise and emission standards. A huge labyrinthian airbox system on the XL 350 has enough passages and compartments to make a whole family of New York sewer rats feel at home. A correspondingly complex exhaust system meets noise levels but adds 15 pounds to the bike's weight. Don't blame Honda for these power-robbing features (that result in a 331-pound tractor that won't handle brisk speeds in the dirt); blame the laws. Machines that adhere to these laws will never perform off the road as well as those that don't.

Secondly, a performance gap exists because Honda builds the XL for the average rider. Therefore it can't be expected to dance through rocks and surprise the dynamometer. That takes a spe-

HONDA XL 350 K2

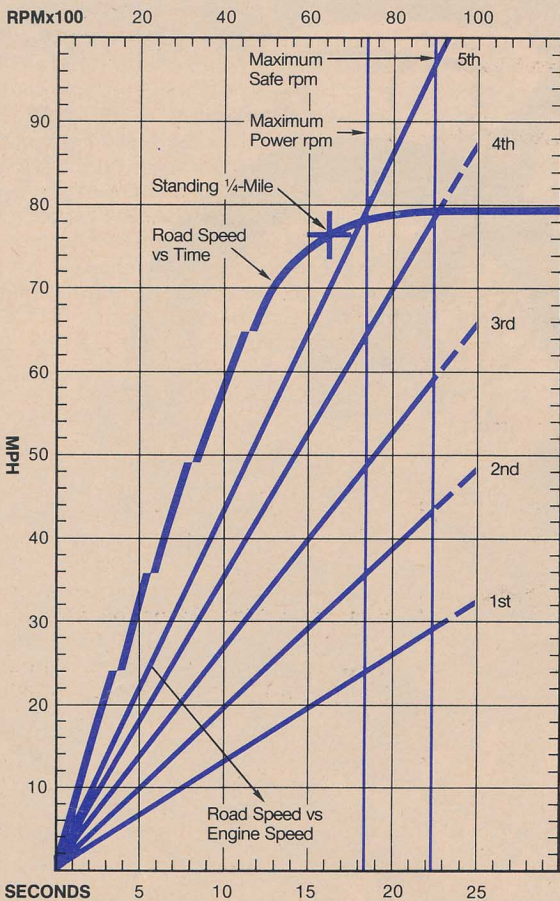




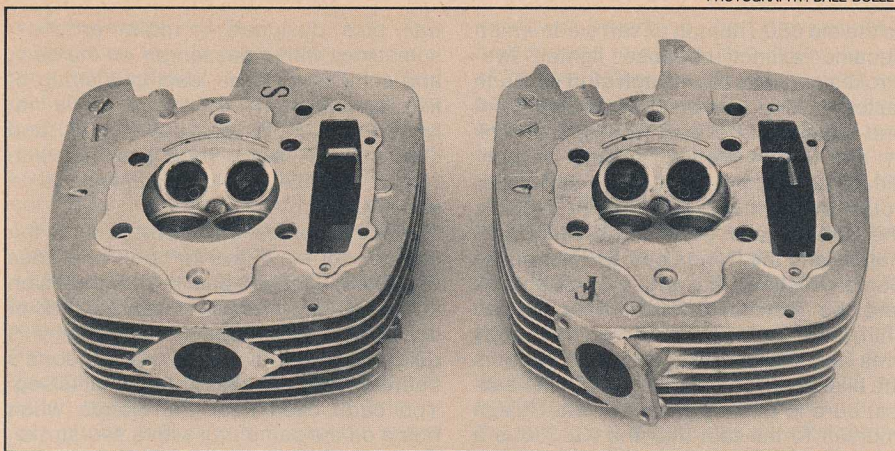


HONDA XL 350 K2

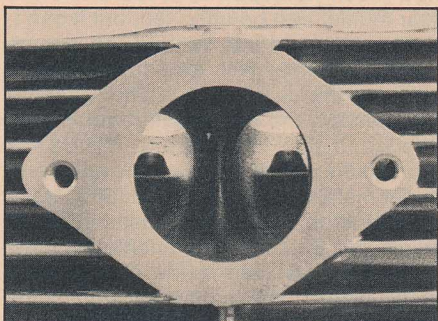
Price, suggested retail \$1192 West; \$1201 East
 Tire, front 3.00 x 21 Bridgestone Trials
 rear 4.00 x 18 Bridgestone Trials
 Brake, front 6.1 x 1 in. (155 x 25.4mm)
 rear 5.5 x 1 in. (140 x 25.4mm)
 Brake swept area 36.5 sq. in. (235 sq. cm)
 Specific brake loading 13.4 lbs./sq. in.
 at test weight
 Engine type Four-stroke OHC single
 Bore and stroke 79 x 71mm
 Piston displacement 348cc
 Compression ratio 8.5:1
 Carburetion 1; 32mm; Keihin
 Air filtration Oiled polyurethane foam
 Ignition Magneto
 Bhp @ rpm 22.46 @ 7500 rpm; actual
 Torque @ rpm 17.06 @ 3000 rpm; actual
 Rake/Trail 32°/5.5 in. (140mm)
 Mph/1000 rpm, top gear 10.6 mph
 Fuel capacity 2.5 gal. (9.5 liter)
 Oil capacity 2 qts. (1.9 liter)
 Electrical power 80 watts @ 5000 rpm
 Battery 6V, 6AH
 Primary transmission Spur gear 3.13:1
 Secondary transmission $\frac{15}{45}$ x $\frac{3}{10}$ D.I.D. chain
 15/45 3.0:1
 Gear ratios, overall (1) 23.45 (2) 15.62 (3) 11.63
 (4) 8.73 (5) 7.03
 Wheelbase 55 in. (1397mm)
 Seat height 34 in. (864mm)
 Ground clearance 9.3 in. (236mm)
 Curb weight 331 lbs. (150 kg)
 Test weight 491 lbs. (223 kg)
 Instruments Seiki tach and speedo with
 odometer & trip meter
 resettable both ways by 10ths
 Standing start ¼-mile 16.345 sec.; 76.33 mph
 Average fuel consumption 40-44 mpg
 Speedometer error 30 mph actual 29.47
 60 mph actual 53.85



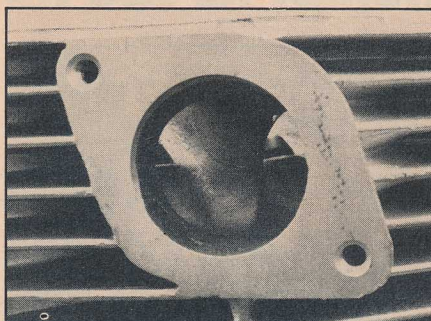
HONDA XL 350 K2



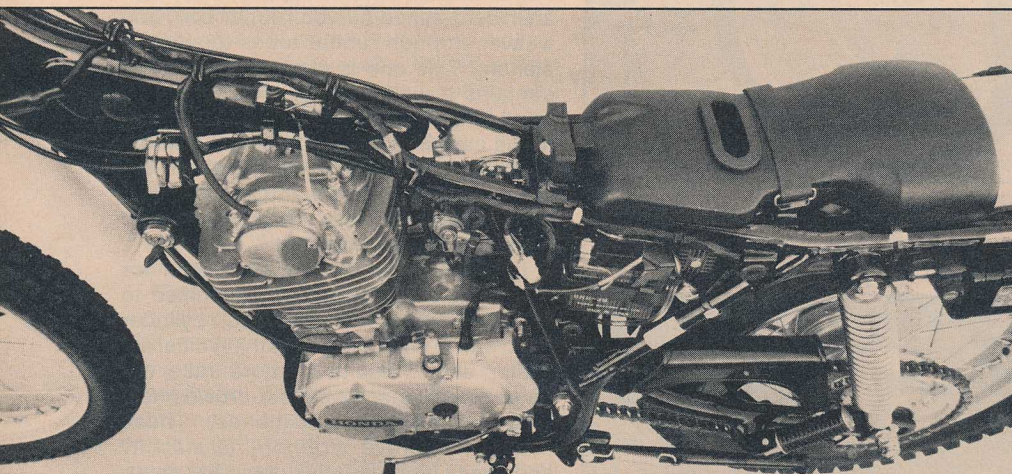
New head at left differs only in straight-through intake manifold, so it will fit on existing cylinders.



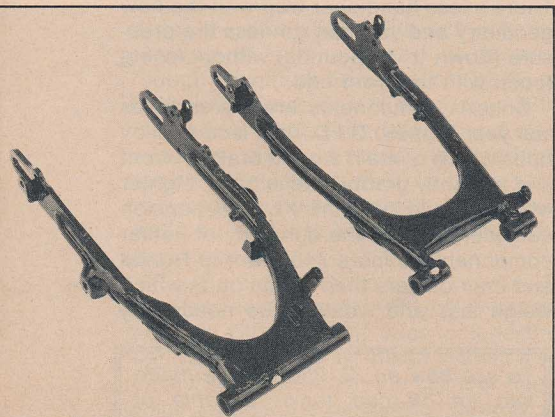
Tuners will be able to get much more power from XL engines because of the center intake location.



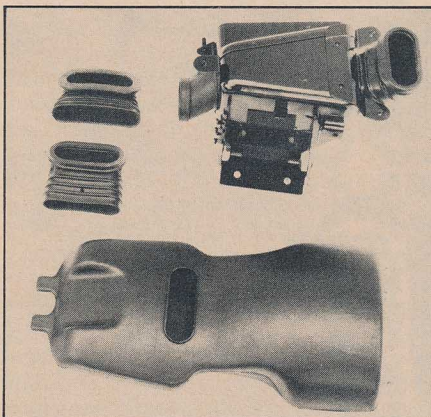
New head on left has only the two valve stems to interrupt flow. An angled entry obstructs old head.



Giant outer plenum is needed to quiet intake drone but the seat has less foam and is harder as a result.



New swingarm (left) is stronger at the pivot, a bit longer and bracketed for folding passenger footpegs.



Bedpan plenum and steel air-cleaner housing combine with rubber snorkels to damp intake noise.

cial long-travel suspension and a narrow powerband, neither of which the casual trail rider will miss on the Honda. If you want a serious Honda dirt bike, buy an MR or a CR Elsinore. The XL is for people who want what it delivers, which is excellent street suitability for a dual-purpose bike and for the most part acceptable performance off-road. In the case of the engine, off-road performance is outstanding because of good old four-stroke torque and reliability.

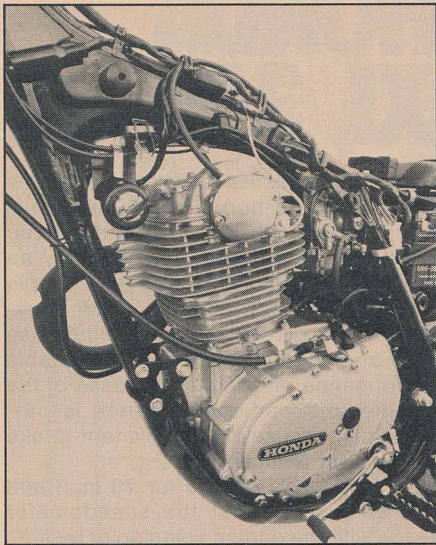
The Honda is geared for 79 mph and this is exactly what the speedometer reads with the engine spinning at redline, but it takes a slight downhill to do it. On level ground acceleration quits at 75 mph. Vibration becomes intrusive at 65 mph, so cruising at the speed limit is more comfortable. There's no question that the XL 350 Honda is the best street performer of all the dual-purpose bikes, primarily because of the engine's steadfast reliability, long life and ability to stay crisp with very little maintenance.

On a long desert road far from civilization and marauding patrol cars, we set the tachometer on 9000 revs and left it there for 15 minutes. The Honda never flinched during the ordeal and settled into a quiet idle afterwards. Certain two-strokes could do the same, but you wouldn't feel comfortable trying it. No two-stroke can perform one of the Honda's easiest tricks—and that is to slog up a deep sandwash with the engine at its torque peak. As temperatures rise power sags a little, but in a two-stroke the piston would sag under similar conditions. The Honda engine is abuse-proof, and that feature alone firmly seats the XL on top of the dual-purpose street heap.

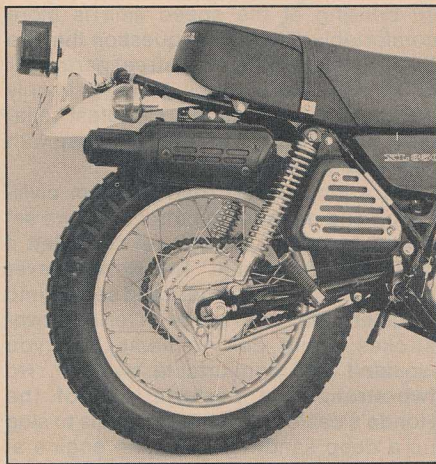
It's also not a bad handler on pavement. With no ground clearance problems and neutral steering, you can pitch off into a corner more vigorously than you might expect with trials tires. Posted speed limits on mountain roads seem slow aboard the Honda. Quiet operation, comfortable seating and silky controls make the XL 350 agreeable to ride in the city, though not inspiring. It's a 45-mpg transportation workhorse, but nothing that will snap heads or outpower a Corvette.

People who can't tolerate vibration had better forget the Honda, because a buzz of varying severity and frequency is always there. But it's not totally intrusive. If you start enjoying the scenery, you won't notice vibration until you purposely think of it again. The same applies to drive-train slop, which makes the whole bike jerk when the throttle is turned off or on. You learn to minimize it with smooth throttle movements and careful shifting.

In dirt the motorcycle is severely limited by overall weight, poor shocks and trials tires. Its wet weight of 331 pounds is 12 more than last year and about the same



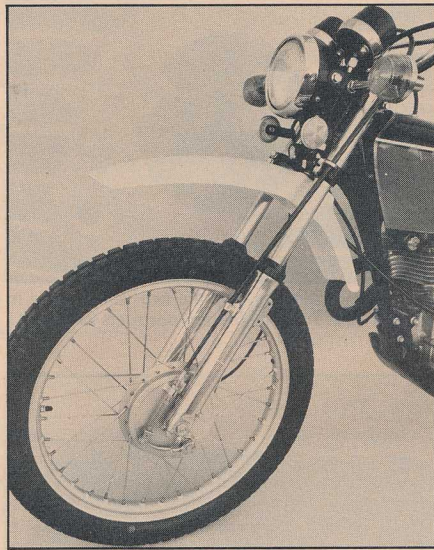
A steadfast engine is surrounded by a maze of wires and tubes which discourage owner maintenance.



Remember the 1968 Bultaco Matador? If you do, this exhaust system will look familiar. It is ultra quiet.

as the old 650 Triumph desert sleds which became extinct because lighter two-strokes could fly over rough stuff so much faster. In sand or mud the heavy front end causes the skinny front tire to sink in, and if the bike isn't exactly perpendicular to the ground, the tire plows and you start weaving to stay upright. In back, the shocks are gone in 30 seconds. Bumps and the Honda come together like Sumo wrestlers—the whole earth shakes and the motorcycle must fight to stay shiny-side-up. You could install knobby tires and new shocks and nearly double the bike's off-road efficiency, but the easiest cure is to simply slow down. Resign yourself to the fact that the XL 350 is a

HONDA XL 350 K2



Changes in geometry improve steering accuracy considerably, but you can't tell without changing tires.

trail bike designed to poke around—sometimes with a passenger on the back and sometimes while leading a string of kids on minis. *Where* it can go is not limited; the engine will pull any hill and slug through awful rock sections with wondrous ease. The only limitation is on sheer speed.

A couple of kicks will always start the engine, but they have to be strong ones or you won't make it past the compression stroke. Bump-starting requires lots of speed and solid traction. The engine is quiet enough to idle all night in someone's bedroom without disturbing their sleep. You can't even hear the Honda when riding on the same trail with a two-stroke. A heavy double-muffler exhaust system soaks up the sound and who-knows-how-much horsepower. It looks like the rear muffler can be unbolted, but it can't, because Honda has welded the two silencers together with a connector pipe.

Under the seat, more silencing apparatus shows the complicated equipment needed to quiet intake drone. Honda has more money in plastic injection molds and sheet metal stamps for the XL 350 intake system than some companies have in frame jigs. Endless experimentation must have been involved in the design; what exists wouldn't have occurred to anyone in the first few tries. An upper plastic plenum resembles a hospital bed pan and nestles nicely between the seat and top frame rails. Air enters the plenum through an inward-aimed curved rubber boot and weaves through rubber tubes to another plenum. This one is stamped steel, and contains a wet foam air cleaner just in front of a third rubber boot which leads to the carburetor bellmouth. Not a single decibel escapes. Honda literature describes the new intake and exhaust systems as being "less fatiguing for the rider and the environment."

The Honda got more than quieter for 1976. The frame was highly modified to accommodate a new center-port cylinder head and to improve geometry. A different caster angle results in more rake (32 degrees) and increased fork-crown offset adds to trail (now 5.5 inches). These changes improve straight-line stability and would normally slow down the steering, if a shorter swing arm didn't maintain the same 55-inch wheelbase as before. There's less handlebar wag with the new geometry and you can run less tire pressure (down to 12 pounds) without losing touch with the front end.

Chassis components are the same as last year. Superb D.I.D. rims lace to alloy hubs which contain a good brake in front and a slightly grabby one in back. Lighter wheels would help the XL's suspension considerably, but the durability of heftier components is more important to Honda and their dealers than exotic parts which weigh less and wouldn't be noticed by

This fellow is using the XL 350 the way it should be used off-road—going slowly over smooth terrain.



To see how an XL 350 can be made into an off-road terror capable of winning Baja or "Best Custom" at the local Motorama, turn to page 44.

most buyers anyway.

The front fork is satisfactory as delivered, although the recommended 170cc of fluid is too much to allow air in the system to expand harmlessly when hot. Instead the fork pumps up, and the result is diminished travel and stiffer action. The cure is to drain 20–25cc of fork oil.

In back, the shocks keep the fender from resting on the wheel and not much else. All the evils of fluid dynamics plague the feeble Showas: cavitation, aeration, heat retention and ill-designed damping which tries to force too much fluid too quickly through a too-small orifice. On the street, piston speeds aren't enough to deteriorate shock action and it can be labeled "passable." If you're going to ride off-road, even at casual speeds, pitch the Showas and install S&Ws or Konis.

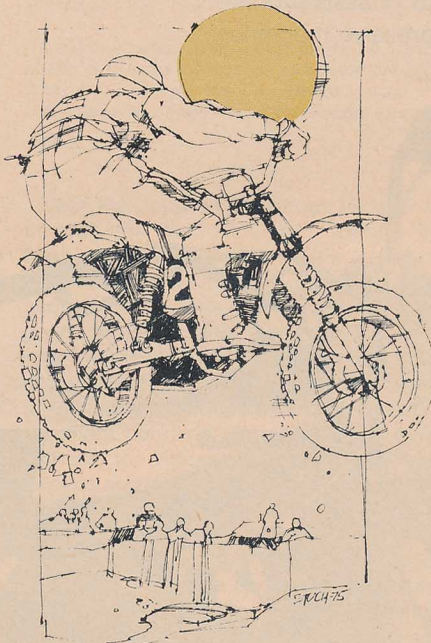
Other running gear components are excellent. The best steel pegs in motorcycling are joined this year by rubber-covered buddy pegs with a unique lattice on the right side to prevent the passenger's foot from tangling with the chain. In riding two-up in the Pasadena Fire Department's Hook and Ladder Enduro (a family event not characterized by speed), *Cycle* finished fifth in the buddy class, but our 99-pound lady passenger was enough to bend the flimsy rear pegs. Obviously they need to be stronger. New plastic fenders this year are wider and deeper for better control of mud. New tank styling and paint alter the bike's appearance considerably by pulling it farther away from the traditional look.

Due to its street-legality, the XL is decorated with all kinds of labels, buttons and indicator lights, but none compares to the extravagance of a little window in the speedometer face which tells whether the trip mileage indicator is on or off. The bike needs that like J. Paul Getty needs Social Security. If Honda had just spent that extra money on shock absorbers. . . .

There's no question that the bike's finest component is the engine. Webco has tested more than 120 motorcycles on their dynamometer and never recorded a flatter powerband. Maximum torque of 17.06 foot pounds is registered at the incredible low engine speed of 3000 rpm. Torque stays between 15 and 17 foot pounds all the way up to 7500 revs. In the field, this flat torque curve just about eliminates the need for shifting. A twist of the throttle moves the bike ahead with authority regardless of engine speed or terrain. Though maximum horsepower (22.46 at 7500 revs) is certainly not much for a 350, the engine's spacious powerband and tractability make up for any lack of high numbers. Only the slowest, roughest sections require clutch-slipping. No engine would be easier to live with off-road unless it was electric.

The Honda's engine is an overhead-cam four-valve single with a five-speed gearbox. Changes this year include the high pipe, the new air intake system and a major modification to the cylinder head which locates the carburetor directly in line with the two intake valves rather than off to one side. The center port location

improves breathing—but the resultant horsepower increase is nullified by restrictions in the quieter intake and exhaust systems. The straight shot will help tuners extract more power from the new head because the intake tract is now equidistant from both valves. Before, the charge followed the shortest, or inside, line through the curved manifold, so most of it passed through the right-hand valve. This reduced the effectiveness of the second valve. We surmise that the side port was originally designed to provide easy access to the carburetor and free up room directly behind the engine for frame tubes. Honda probably rearranged the port to exploit the engine's full racing potential and help offset the effect of power-robbing noise and emission standards. The carburetor's more hidden lo-



cation won't make much difference to the average buyer, because it functions so perfectly that he'll likely never have to touch it.

This is typical of the whole motorcycle. Other than filling the tank, an owner doesn't have to touch anything. He just rides. If he cleans the air filter once in a while and drains the oil occasionally, the XL 350 will outlast his car. That's a good thing, too, because the bike is complicated for a four-stroke single. Pull off the tank and there's a multitude of wires and tubes which surround the backbone like jungle vines. There are relays, breathers and zeners. The carburetor has an intricate vacuum-operated diaphragm valve which controls an auxiliary air supply for the idling system to prevent back-firing. How would somebody fix that if the Honda started popping off on Wilshire Blvd? Chances are no one will have to. And the average rider would rather have that kind of reliability than DeCoster-performance accompanied by a demanding personality. All the Honda asks: a little less speed in the dirt, if you don't mind. ●

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