HONDA CB750F

Sportiest 750 of Them All

CYCLE WORLD TEST

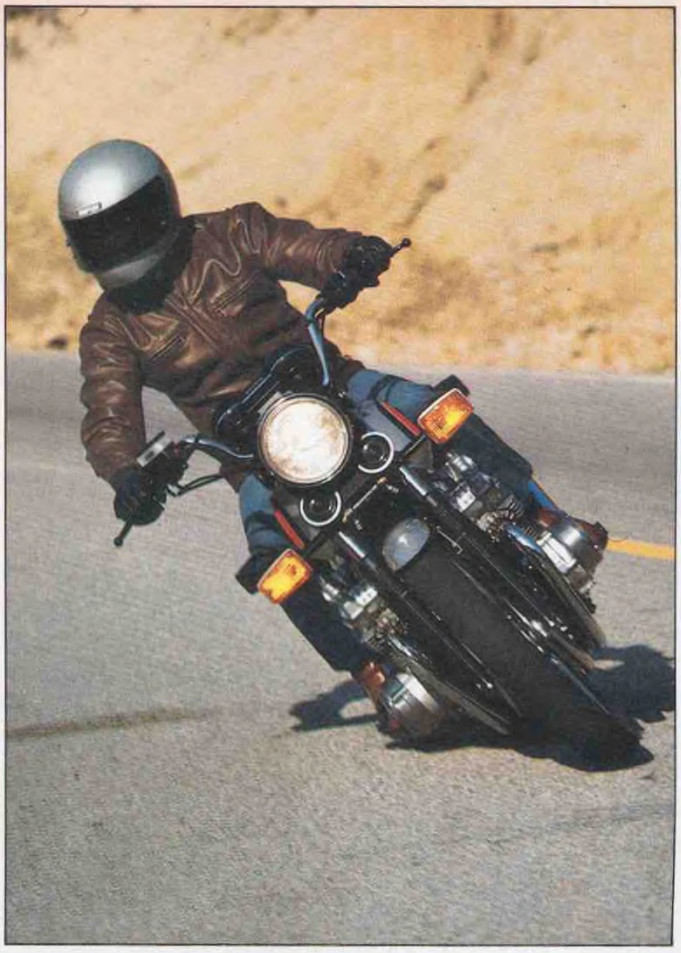
■ Just two issues ago (*Cycle World*, April 1979) we declared the Suzuki GS750 the best all-around 750cc motorcycle, in spite of the fact that the competition had tried for three years to equal the Suzuki's brilliant combination of handling, power and flexibility. When that Suzuki GS750EN test was written, we had tested the new Honda CB750K, but hadn't yet tried the Honda CB750F.

Now that we have ridden, raced and lived with the sportier Honda CB750F, we can only say this: On the high-speed banking of the sporting motorcycle marketplace, the F model Honda catches the Suzuki's draft, slingshots past, shifts into high gear and disappears into the distance ahead.

Our test of the CB750K in the January, 1979 issue covered the insides of the new dohc, 16-valve, 749cc Honda engine that the F shares with the K. For review, bore and stroke are exactly square at 62 x 62mm; the crankshaft runs on Kelmet plain bearings; ignition and alternator are driven off the ends of the crankshaft; two Hy-Vo link-plate chains drive the dual camshafts, one chain leading from crankshaft to exhaust cam, the other from exhaust cam to intake cam; each cylinder has four valves, each valve with its own adjusting shim, follower bucket, and camshaft lobe; and carburetion is via four 30mm constant-vacuum Keihins with accelerator pump.

Honda claims 72 bhp for the K and 75 bhp for the F, the extra three horsepower coming from minor exhaust system and carburetor jetting changes on the F. Unlike the K, which has four individual exhaust pipes and mufflers, the F model Honda has twin two-into-one exhaust systems, each consisting of individual header pipes and single upswept mufflers. The F system is lighter than the K's, and is more efficient. To match the exhaust, the F has larger carburetor main jets, size 102 versus the K's size 98. The only other engine difference is that the pipe mounting studs in the F's cylinder head are 8mm, while the K's are 6mm.

The most significant differences between the F and K model Hondas are not in the power-related changes in the exhaust and carburetion systems, but rather



in the frame and running gear. At 530 lb. with a half-tank of fuel, the 750F is 16 lb. lighter than the 546 lb. K, the weight savings coming from the exhaust system, all-aluminum ComStar wheels and plastic fenders and seat base. Honda engineers say that for the number of units planned for CB750F production, it would have been cheaper to stamp fenders and seat bases out of metal than to build the injection molds necessary to make the same parts out of plastic; the F has plastic parts to reduce overall weight, not save money.

F and K models share the basic double cradle frame design, including the same swing arm pivot and bolt as the CBX and the same swing arm as the European-model CB900FZ Four. The 750F's frame is more rigid than the K's, thanks to double-wall tubing used at stress points and an increase in downtube wall thickness. The F has more cornering clearance than the K because the F's exhaust system is tucked in closer to the frame—it's actually inside the frame rails beneath the engine.

The F has Honda's patented ComStar composite wheels; DID rims and Honda hubs are connected by 10 aluminum stampings riveted in pairs to form five spokes. The F's wheels and disc brakes (twin 10.9-in. front; single 11.7-in. rear) are identical to those on the CBX, while the K has wire-spoked wheels with a single 11.6-in. front disc and a 7-in. single-leading-shoe rear drum brake. The ComStar wheels are more rigid than the K's wire-spoked wheels, yet are lighter than cast alloy wheels. For example, the CB750F's front wheel weighs 33.5 lb. complete with tire and discs, while the Suzuki GS750EN's cast front wheel weighs 37 lb. with tire and discs. The fact that the Honda runs tubeless tires also contributes to less wheel assembly weight.

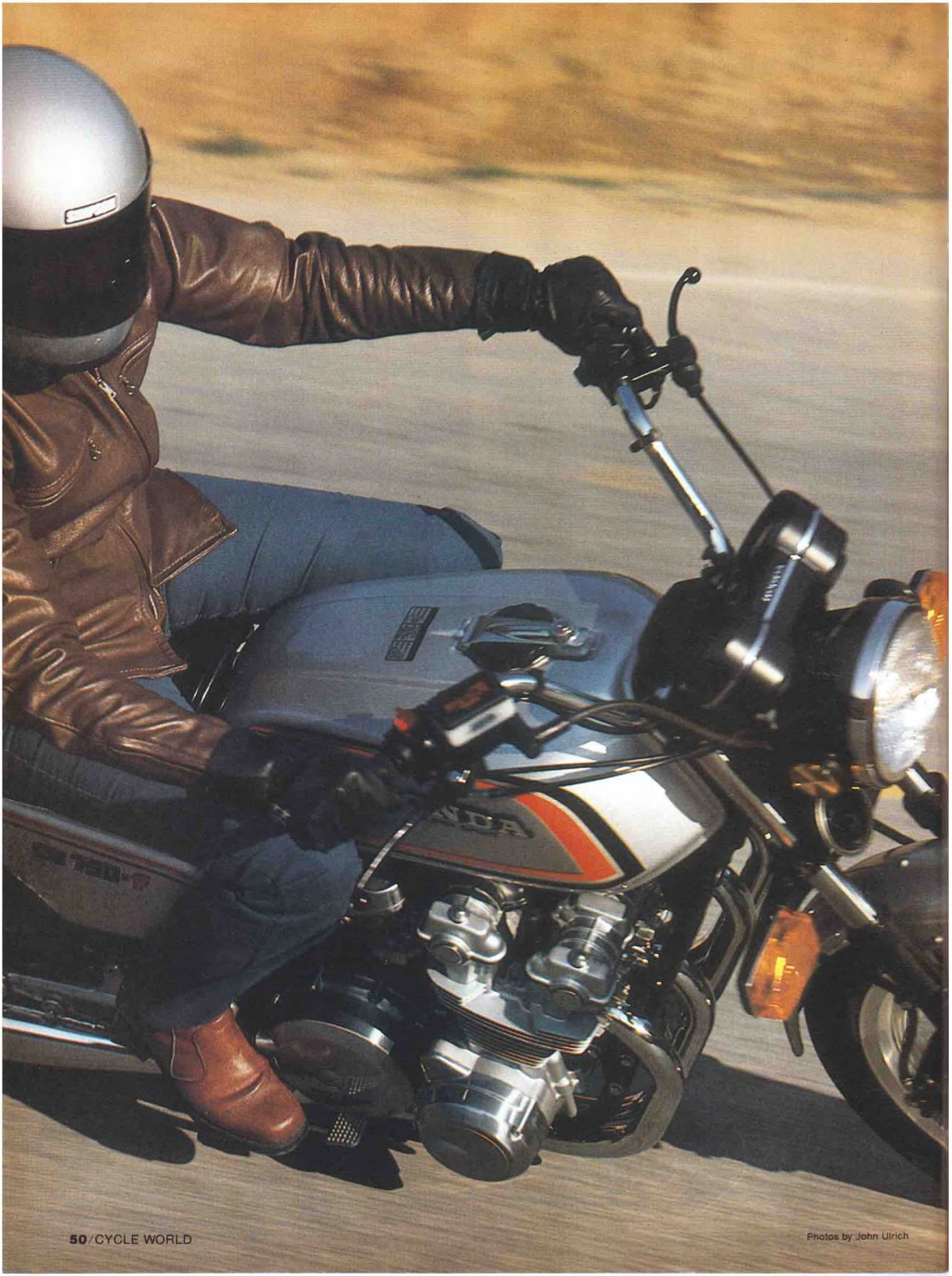
But what is the significance of the differences between the 750F and the 750K? The combination of three more horse-

power and 16 less pounds translates into a lower E.T. and higher terminal speed at the dragstrip, 12.52 sec. at 107.27 for the F versus the K's 12.69 sec. at 105.5 mph. The effect of the F's more rigid frame and wheels is better handling than the K, which wobbled driving out of turns at racetrack speeds and shook its head tapped out in a straight line. The F is steady out of turns and runs straight as an arrow on the straights, (until the shocks heat up and fade, but more on that later.) And the dual front discs and single rear disc haul the F down from 60 mph in 131 ft. and from 30 mph in 30 ft., compared to the K's 145 ft. from 60 and 34 ft. from 30.

While on the subject of comparative specifications, it's interesting to note that relative tire sizes have produced differences in trail and effective gearing, at least in the case of the machines we tested. The F has a 3.25-19 front tire and 4.5 in. of trail. The K's larger 3.50-19 front tire produces 4.7 in. of trail with the same head angle of 27.5°. Similarly, the F's smaller rear tire (a 4.00-18) reduces its effective gearing and increases engine rpm at 60 mph to 4573 (calculated, based on the circumference of a new tire). With a 4.25-18 rear tire, the K turns 4447 rpm at 60 mph.

More important than the actual differences between the K and the F is the overall effect of all the changes taken together, especially when considered within the context of the motorcycle marketplace.>

Photos by John Ulrich



Photos by John Ulrich

For Honda, the changes shoot the marque from an also-ran position into the same league as the Suzuki GS750.

Look at the dragstrip figures: The Honda turns 12.52 at 107.27, the Suzuki 12.72 at 103.80. On the street, the Honda runs away from the Suzuki in a roll-on from any speed, whether the bikes start in fifth or fourth or third gear. On twisty roads at sporting speeds, the Honda steams harder out of corners and has more top speed as well. In half-mile speed tests, the 750F reaches 123 mph compared to the Suzuki's 119 mph.

But remember also that the Honda churns along at 4600 rpm at 60 mph in 5th gear while the Suzuki turns 4400 rpm (although, because of instrument inaccuracies, those numbers won't necessarily correlate with what a rider sees on his own bike's speedometer and tachometer.) The Honda's overall fifth gear ratio is 5.81:1, compared to the Suzuki's 5.65:1. Exchanging the Suzuki's stock 15-tooth countershaft sprocket for a 14-tooth sprocket (we got ours from Circle Industries, an aftermarket manufacturer) lowers the GS750's overall fifth gear ratio to 6.06:1 and instantly changes the numbers. Suddenly the heavier (547 lb. versus the CB750F's 530 lb.) Suzuki turns 12.49 at 106.50 in the quarter mile, an improvement of more than 0.2 sec. and almost 3.0 mph.

It should be noted, however, that varying conditions—such as track surface, barometric pressure, air density, prevailing winds—can have significant effect on drag strip times. The day the Suzuki turned 12.49 offered nearly perfect conditions. The best the Honda could manage on the same day was 12.60 at 108.56 with a slipping clutch (more on that later).

No surprise: The Honda has more horsepower.

Surprise: The extra power doesn't come from the four-valve head.

Intake valve area for the Honda is 981.7 mm^2, and the exhaust valve area is 760.3 mm^2. The Suzuki's intake area is 1017.9 mm^2, and the exhaust is 706.9 mm^2.

So Honda's paired 25mm intakes give a smaller area than the Suzuki's lone 36mm intake, while Honda's two 22mm exhaust valves have a larger combined area than the Suzuki's 30mm.

Still playing with numbers, the Honda has a 4 percent disadvantage coming in, and a 7 percent advantage going out.

There's more to it than valve area. The Honda has a higher compression ratio, 8.9:1 vs 8.7:1. Honda's 30mm Keihin carbs are larger than Suzuki's 26mm Mikunis and we suspect more attention was paid by Honda to the exhaust system diameter and length and restriction.

Camshaft timing is a bit longer on the Honda, so it delivers peak torque and peak power at higher rpm. This works well with the larger carbs, and means the Honda has more beans in stock form, although either engine could easily be modified to produce far more power for racing than it has in stock form.

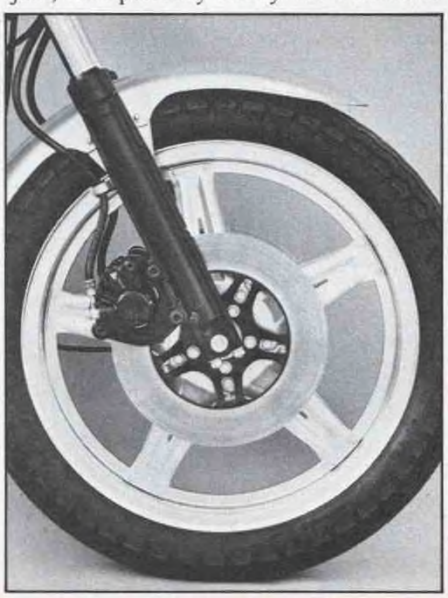
In a perhaps more practical area, the CB750 delivered 47 mpg on the CW loop, against the GS750's 45, even though the Honda's engine spins faster at equal road speeds. On the highway, the F did 52 mpg, giving a useful range of 160 miles before reserve.

For another sign of a well-designed engine, the Honda fired quickly when cold and was ready for riding after a few seconds on the choke. Yes, a Honda that isn't cold blooded. The '79 Suzuki 750, among others and that includes at least one Honda, gave us terrible fits during the winter.

Still another virtue of the Keihins is that the throttle cables only open and close small butterfly valves, instead of lifting spring-loaded slides. The springs on the CV Keihins needn't be as stiff, and that means a pleasantly light throttle, the sort of thing you won't notice on that demonstration spin around the block but will give thanks for at the end of a day on the road.

Then, there's the accelerator pump, which squirts gas into the intake ports when the rider grabs a handful of throttle. The pump adds crispness to throttle response, in spite of the fact that the carbs are jetted lean to pass EPA emissions control standards.

But as good as they are—especially in cold-engine performance—the Honda's Keihins are not perfect. The accelerator pumps do wonders for response off idle when the rider gasses it up, but there is a very fine, narrow area of carburetor hesitation when the twist grip movement isn't enough to stimulate the accelerator pump, but is just enough to slightly move the throttle butterfly valves. Then too, steady state cruising in low-rpm, low-speed situations (as in the middle of a highway traffic jam) isn't perfectly steady. It's difficult to hold the engine rpm at one point—the motorcycle seems to endlessly, minutely accelerate and decelerate no matter how still the rider attempts to keep the twist grip. In this respect, the CB750F isn't as annoying as the Gold Wing, but it isn't as good as the slide-throttle-carbureted Suzuki, either.

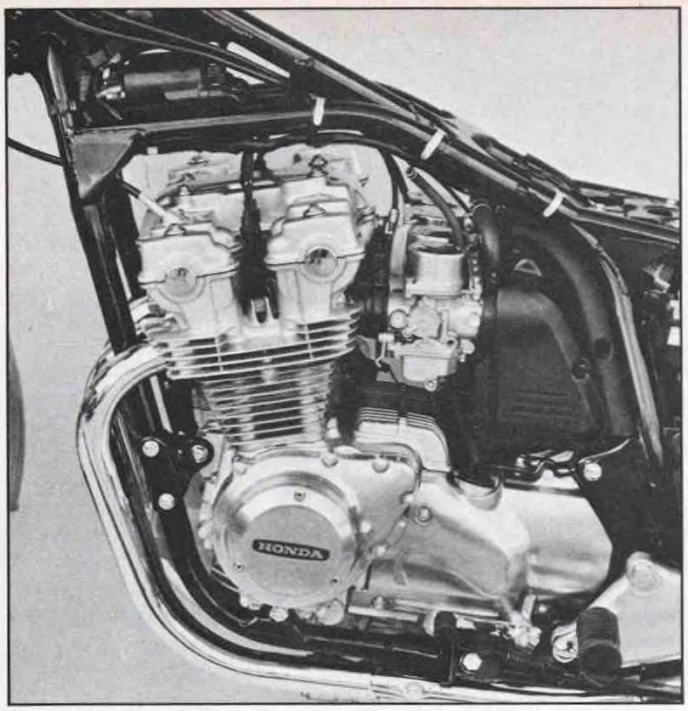


Front brakes are strong, but developed pulse and squeal within 100 miles of hard test use.

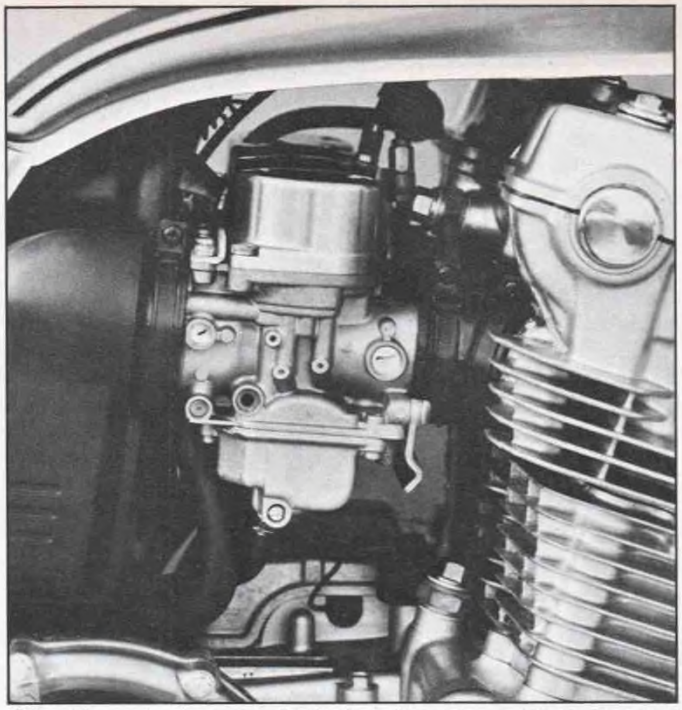
While the Honda's single biggest advantage on the street is its bank of CV carbs, riding on the racetrack widens the gap between the 750F and its main competitor, the Suzuki GS750. Some have argued that street bikes should be tested on the road, not on the racetrack, but we disagree. It is possible to reach the limits of a 125-mph streeter on public roadways—long straightways and demanding curves are not difficult to find, at least in our area. But pushing a bike to its maximum performance on the road—an environment full of cars, dogs, foreign substances on the pavement, police and other hazards—is dangerous and subject to many variables. Instead, we prefer to enter club road races at local racetracks and do our high-speed testing in a controlled, relatively-safe environment. We entered both the Honda CB750F and a Suzuki GS750EN in the 750 Box Stock and Production classes at an American Federation of Motorcyclists (AFM) race held on Ontario Motor Speedway's road course.

Both machines were completely stock—including gearing—as delivered to *Cycle World* by the importers (except for slightly colder heat range spark plugs as recommended by the manufacturers for extended high running: NGK D9ES for the Honda: NGK B9ES for the Suzuki.) Mirrors, stands and turn signals were removed and drain plugs safety wired as per AFM rules.

As expected, the Honda had more speed on the straightaways and came off the turns harder than the Suzuki. One thing that wasn't expected—but which became readily apparent when switching from bike to bike between practice sessions—was that the Honda's front brakes delivered more stopping power with less lever pressure, with the lever itself easier to reach and use. Further investigation revealed that the gripping surface of the Honda's brake lever is 2.2 in. away from the handlebar at the point closest to the lever pivot, and 3.1 in. at the lever ball end. The Suzuki's brake lever is 2.4 in. from the handlebar at the pivot, and 3.3 in. away at the ball end. The combination of requiring less pressure at the lever and the lever itself being closer to the grip made it less tiring for the rider to brake the Honda hard lap after lap. The 750F's rear disc was also very controllable. Many rear discs have too much power and not enough feel, making it too easy to lock up the wheel when diving into a turn. A locked wheel can send the rear end hopping and skidding sideways, blowing the entry line at best and making control difficult at worst. That wasn't a problem with the Honda. >



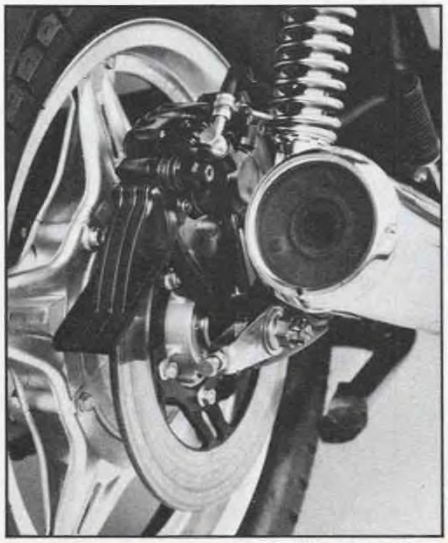
749cc dohc 16-valve Four is quick and fast, but gearing and 30mm CV carbs are as important as the cylinder head in yielding performance.



CV carbs maintain port velocity in spite of huge intake area and are the 750F's key to streetability.

Problems *were* presented by the Honda's shocks and tires, however. Four or five hot laps caused the shocks to heat up and fade, allowing the CB750F to wallow slightly when coming off the banking into the Ontario esses, and inducing minor pogo action in some fast sweepers. At its worst, the F was far better than the wobbly CB750K. Still, considering that the Suzuki's shocks took the same treatment without fading at all, and considering that the Suzuki's handling stayed constant through practice sessions and races, the Honda's shocks are obviously less than state of the art for OEM equipment. The F's Dunlop F11 front and K127 rear tires limited cornering speed and drives exiting turns. When pushed, the tires often slid suddenly, sending the motorcycle sideways as the rider frantically crossed up to correct. And while the Honda has excellent cornering clearance, heaven help the man who touches anything, because the slightest unloading of the tires at speed could—and did—send the F skidding across the racetrack. The Suzuki's IRC GS11-AW tires, on the other hand, held when they shouldn't have, as when the rider had the alternator cover jammed into the pavement in a motorcycling imitation of an aircraft pylon turn. Evidence that the Suzuki's tires offered better traction wasn't hard to find—after almost 100 racetrack miles covered in the course of two practice sessions and three races, the right side of the Honda's rear tire was worn down to tread block wear indicators. (Ontario's road course is mostly right-hand turns.) The Suzuki's rear tire still had plenty of tread left. Slipping, spinning and sliding contribute to accelerated tire wear.

With the stock tires, the Honda touched down only the footpeg on the left side. The right-side footpeg, lower dyno cover bolt and headpipe all scraped, but the headpipe hit only once. That was in the middle of a right-hand ess at 120 mph as the rider—who was leading the 750 class—tried to stuff the 750F underneath a couple of 1000s. That fleeting contact with the pavement lifted the rear wheel and sent the bike sideways across the track, the rider getting the bike straightened out just in time to run over a concrete alligator bump and onto the dirt at over 100 mph. The force of the impact with the 4-in. high alligator bump dinged the front ComStar wheel and knocked the rear wheel ¼-in. out of true laterally. Regaining control after a lengthy excursion into the boondocks, the rider rejoined the fray back with the 400s and worked his way up into third 750, behind our GS750 and 1978 AFM 550 Production Champion Larry Shultz on a private CB750F.



Rear brake is more controllable than other rear discs.

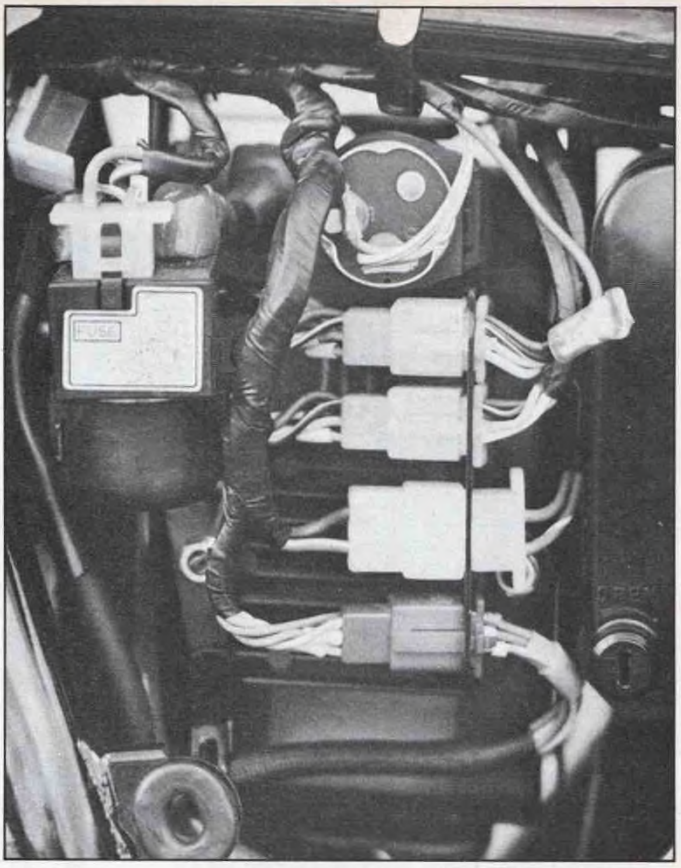
Running in the 750 Production class against machines with wide rims, slicks, aftermarket shocks, and internal engine modifications, our box stock Honda finished first, with Shultz second and our Suzuki third.

Our racetrack experience showed that the Honda is limited by its tires. Because it has better cornering clearance and is faster and quicker than the Suzuki, a Honda CB750F with decent aftermarket tires (see *Cycle World* tire tests, August 1978, January 1979) would be unbeatable in Box Stock classes, providing the rider was competitive. We'd also be tempted to try metal bushings for the swing arm pivot. The 750F comes with plastic bushings, a bit out of date at a time when most of the other sporting bikes use roller bearings. The Honda plastic held up well during our testing, but such material usually wears quickly.

For racing in the modified production classes, the Honda's larger carbs and better potential high-rev power make it a logical mount. Fitted with rims, racing tires, aftermarket shocks and whatever hop-up equipment (cams, pistons, etc.,) your club allows, CBF Hondas should be able to run off from similarly equipped rivals even if the riders are of equal skill. For sporting use the Honda clearly holds the aces.

Consider other areas of street performance. The Suzuki and the Honda F are an even match in handling. Neither must be forced into turns or wrestled out of curves; both are stable at speed. Both have excellent suspension compliance and control over small, repetitive bumps as well as on large jolts. The Honda stops shorter, requiring 10 less feet from 60 mph and

Taillight is the same as used on the CBX, has two bulbs and is very bright.

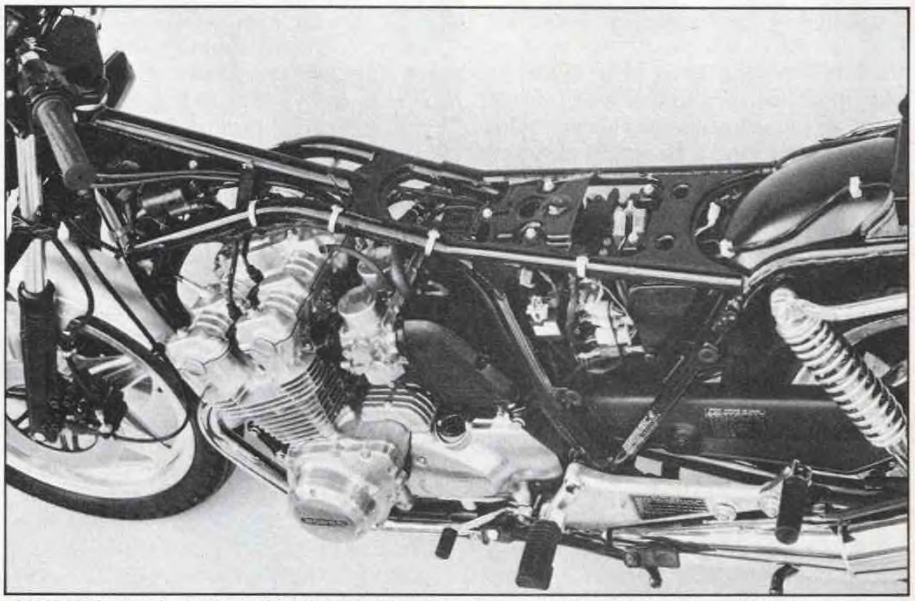


Wiring harness gang connectors are located underneath left side cover.

three less feet from 30 mph. But the Honda's brakes squeal and the front discs quickly developed a slight pulsation felt when the rider stopped gradually with moderate lever pressure. The Suzuki's brakes never howled or pulsed or did anything other than deliver even, steady braking under all conditions.

As much of a hot rod as it is, the 750F makes a good day-to-day street bike (and even a tourer, if the rider doesn't mind staring at 5600 rpm at an indicated 70 mph) as well. The 630 drive chain uses o-rings to seal factory-applied lubricant inside the rollers. The chain requires little attention and stretch isn't a problem. Although Honda recommends against using aerosol chain sprays because the solvents in some brands of chain lube attack the rubber o-rings, we have used both Kal-Gard and PJ-1 brand chain sprays with excellent results. Neither damage the o-rings, and both do a better-than-average job of staying on the chain.

The Honda's instruments, like the styling, are heavily influenced by the CBX. They glow red at night, like the Suzuki's instruments, but a lower intensity red. Speedometer and tachometer faces are easy to read at night, but the resettable tripmeter isn't. Located between the instruments and just above the odometer, the tripmeter's illumination falls short and it's hard to see the numbers from a normal riding position. The odometer lighting is fine.



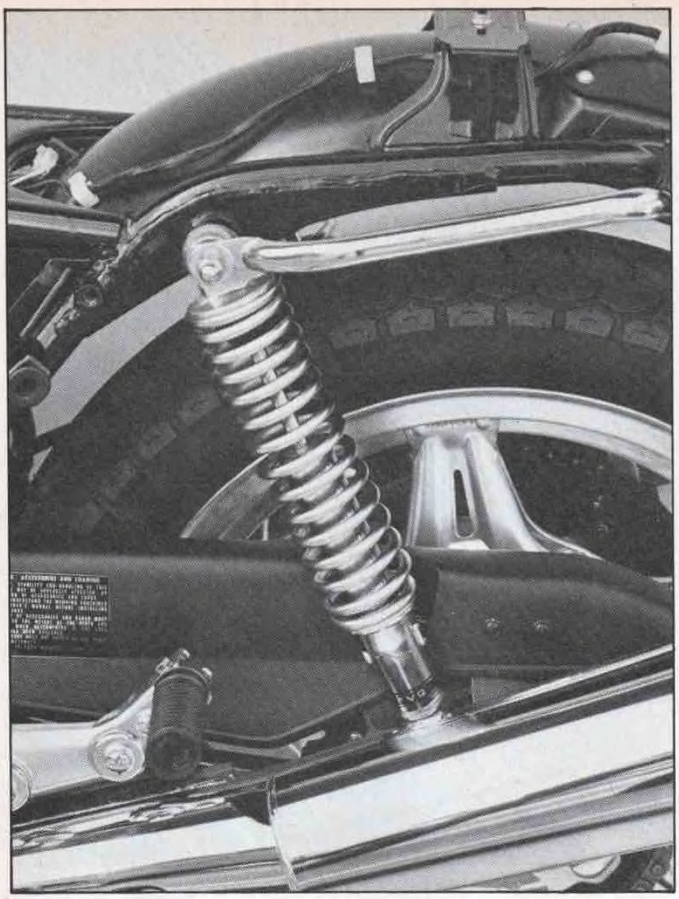
CB750F frame is gusseted in the steering head area, built with double-wall tubing at stress points and has downtubes with greater wall thickness than used in similar K model frame.

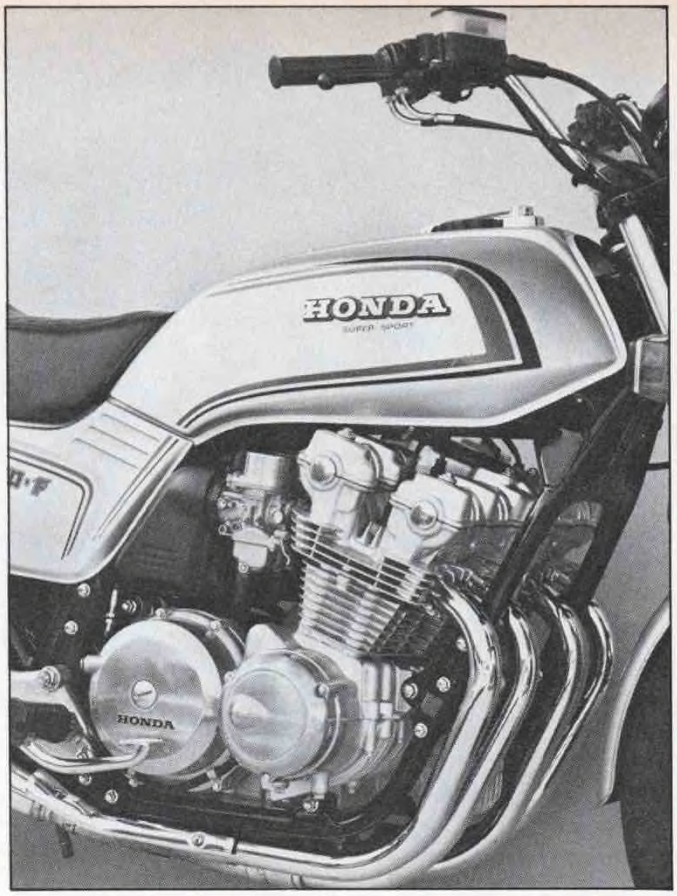
The tripmeter is reset by twisting, then pushing, a button on the instrument console face, sort of like opening a child-proof aspirin bottle, except not as difficult.

The Honda's speedometer is more accurate than most we've encountered, indicating 60 mph at an actual 58 mph and 30 mph at an actual 28 mph. The F's speedometer and tachometer both have nonglare plastic lenses.

Low angle sunlight often makes the oil pressure warning light appear lit when no problem exists.

The F's 7-in. headlight has a 65-watt high beam and a 50-watt low beam with dual-filament bulbs making the front turn signals serve as running lights. Honda spokesmen say that the F's high beam is designed with a wide, far-reaching diffusion pattern to make it easier to see objects on the side of the road, while the low beam's pattern projects more light straight >





FVQ shocks were good when cool and new, but heated up and faded quickly. Within 500 miles they were worn out.

ahead and to the right, than to the left. That last little feature is said to avoid blinding oncoming drivers. Fact is, our test bike illustrated the importance of proper headlight adjustment—both beams were aimed high enough to send oncoming drivers into fits of high/low flashing and to cause drivers ahead of the bike to reach for their rearview mirror adjustment. While the headlight did a marvelous job of irritating surrounding drivers, it was less effective in illuminating the road. The Honda's dual-bulb CBX taillight, however, cannot be faulted.

It used to be that complaining about the anemic horn was an automatic reflex when writing about street bikes. Thankfully, the Honda's horn is more effective than its headlight. Only one word can describe it: Loud! Nobody—not even fat cats in air conditioned, stereo-filled Cadillacs—exceeded the reach of the F's excellent dual high/low tone horns.

Honda's clever hollow-shaft, weighted-head mirrors really work and images are sharp even when the gas tank is resonating and the footpegs (especially the passenger pegs) buzzing at the vibration peak of 5100 rpm. We tried the Honda mirrors on our Suzuki GS750, and they worked as well as they did on the Honda. Now you know what to buy your riding buddy for his birthday—Honda mirrors for his Suzuki (or Kawasaki, or selected model Yamaha).

Less appealing is the location of the fuel petcock, which seems to be scientifically placed to make it impossible to turn it off after a ride without burning one's hand on the hot cam cover. The problem has two solutions: wear gloves when turning off the petcock; or don't turn off the petcock.

For all its competency on the road and at the racetrack, the CB750F's reliability is largely unproven, as is the case with all new bikes. No one can blame prospective buyers for wondering how the Honda fares in durability or even maintenance against its competitors.

Our test bike's rear tire needed replacement less than 100 miles into our testing, (albeit those 100 miles were largely accumulated on a road race course), while the Suzuki's rear tire survived an equal number of racing laps and four times as many hard street miles as well. Ten passes at the dragstrip fried the Honda's clutch, which then slipped and jerked under lower-gear acceleration on the street. The Suzuki's clutch weathered 18 runs without complaint or any sign of failure. The Honda's rear shocks were worn out after 500 miles of testing; the Suzuki's weren't.

The Honda has an electronic ignition which doesn't require adjustment, but has 16 valves to adjust via replaceable shims. The Honda's Hy-Vo cam chain is adjusted manually, but should require attention less often than a roller cam chain.

The Honda utilizes an external oil line to carry lubricant to the cylinder head, thus eliminating any chance of an oil leak at the head gasket caused by an internal-

cylinder oil passageway.

The one-piece, plain-bearing Honda crankshaft is probably indestructable, judging by the cranks used in the original 736cc CB750 introduced in 1969 and replaced this year by the new 749cc dohc model. But Honda connecting rods have a reputation of not being able to stand much additional power without breaking and destroying the engine cases in the process.

There are many considerations however. Taking the Honda CB750F at its face value, as it comes off the showroom floor, it is the best all-around 750 now available for sporting street use. Add a decent set of tires and accessory shocks, and it's the best 750 for Box Stock racing, and maybe for modified Production as well.

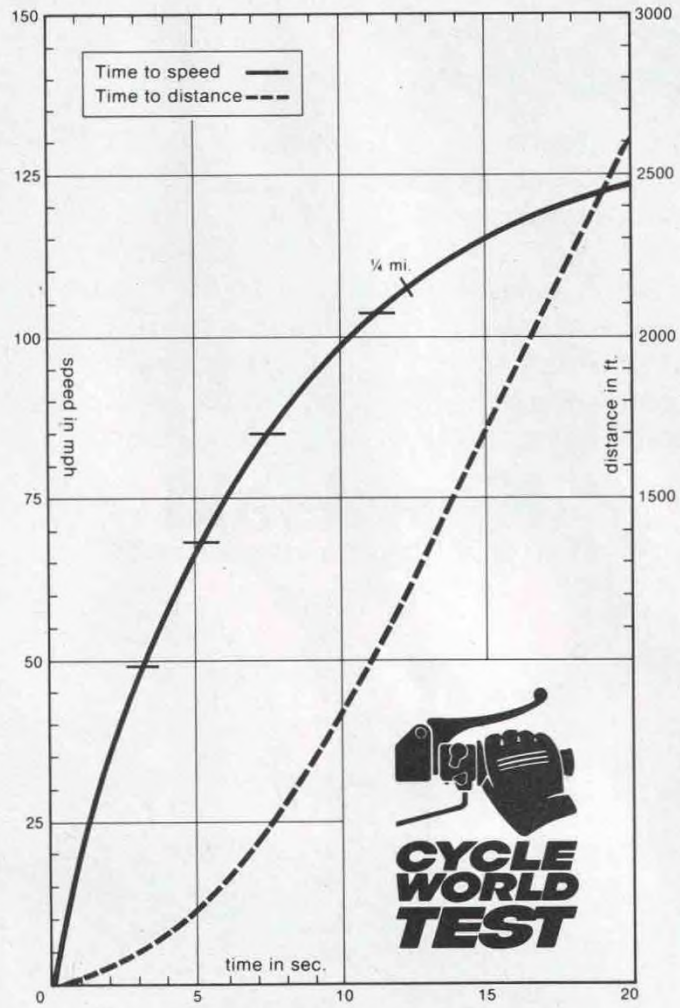
Any way you look at it, the CB750F is a great motorcycle.

HONDA CB750F

SPECIFICATIONS

List price	$2795
Engine	dohc Four
Bore x stroke	62 x 62mm
Displacement	749cc
Compression ratio	9.1
Carburetion	(4) 30mm Keihin
Air filtration	paper
Ignition	transistorized inductive
Claimed power	75 bhp
Claimed torque	na
Lubrication system	wet sump
Oil capacity	4.5 pt.
Fuel capacity	5.3 gal.
Recommended fuel	any, 91 octane minimum
Starter	electric
Alternator	12v 260w
Headlight	65/50w
Clutch	multi-disc wet
Primary drive	Hy-Vo chain
Final drive	# 630 roller chain
Gear ratios, overall:1	
5th	5.81
4th	6.99
3rd	8.39
2nd	10.78
1st	15.27
Suspension, front	telescopic fork
travel	6.3 in.
Suspension, rear	swing arm
travel	4.3 in.
Tire, front	3.25H-19 Dunlop F11
Tire, rear	4.00H-18 Dunlop K127
Brake, front	dual 10.9 in. disc
Brake, rear	11.7 in. disc
Total brake swept area	292.27 sq. in.
Brake loading (160-lb. rider)	2.36 lb./sq.in.
Wheelbase	59.8 in.
Fork rake angle	27.5°
Trail	4.5 in.
Handlebar width	30.75 in.
Seat height	31.9 in.
Seat width	9.5 in.
Footpeg height	12.75 in.
Ground clearance	5.7 in.
Test weight (w/half-tank fuel)	530 lb.
Weight bias, front/rear, percent	47.7/52.3
Gross vehicle weight rating	915 lb.
Load capacity	385 lb.

ACCELERATION



PERFORMANCE

Engine speed @ 60 mph	4573 rpm
Power/weight ratio (160-lb. rider)	9.2 lb./bhp
Fuel consumption	47 mpg
Speedometer error:	
30 mph indicated	28 mph
60 mph indicated	58 mph
Braking distance	
from 30 mph	30 ft.
from 60 mph	131 ft.
Standing start ¼-mile	12.52 sec. @ 107.27 mph
Speed after ½ mile	123 mph
Maximum speed in gears	
1st	47 mph
2nd	67 mph
3rd	86 mph
4th	104 mph
5th	125 mph
Acceleration	
0–30	1.55 sec.
0–40	2.30 sec.
0–50	3.12 sec.
0–60	4.34 sec.
0–70	5.71 sec.
0–80	6.83 sec.
0–90	8.44 sec.
0–100	10.50 sec.