



HONDA V65 MAGNA

**From the Folks Who Brought Us
VHD, TRAC, FOIL and CVCC Comes TBBYES
(The Baddest Bike You've Ever Seen)**

■ The guy drove a '57 Chevy, primer grey and jacked up with huge wide rear tires and a staggering idle punctuated by deep-throated bursts of rpm. He leaned out of his window at a stoplight, sneered at the kid on the brand-new Honda CB450 in the next lane and laughed, "This car turns elevens."

The year was 1970. The guy meant that his car would do the quarter mile in 11 sec. and change, and that the motorcycle before him, which couldn't break into the 13-sec. bracket, was trash for its lack of speed.

The guy knows who he is. We want a rematch at that same intersection.

We're ready.

The kid with the 450 works here, he's been to the drag strip with the 1983 Honda V65 Magna, and he says elevens ain't nothin'.



That's a strong statement when you're talking about an absolutely stock, production motorcycle exactly like the ones anybody can buy off a dealer's showroom floor for \$3898. But the V65 Magna, a 1098cc dohc water-cooled V-Four with four valves per cylinder, makes more horsepower over a broader range of rpm than any motorcycle ever sold for street use. The bike is big and long and heavy, weighing 579 lb. with gas and measuring in with a wheelbase of almost 63 in., yet its amazing 116 bhp and 70 lb.-ft. of torque make it the most wheelie-prone machine since the short-coupled 1972 Kawasaki 750 H-2, a two-stroke Triple with a violent powerband.

All right, we'll admit that our test bike didn't run tens in the quarter. We'll confess that it only turned 11.07 sec. with a terminal speed of 123.62 mph.

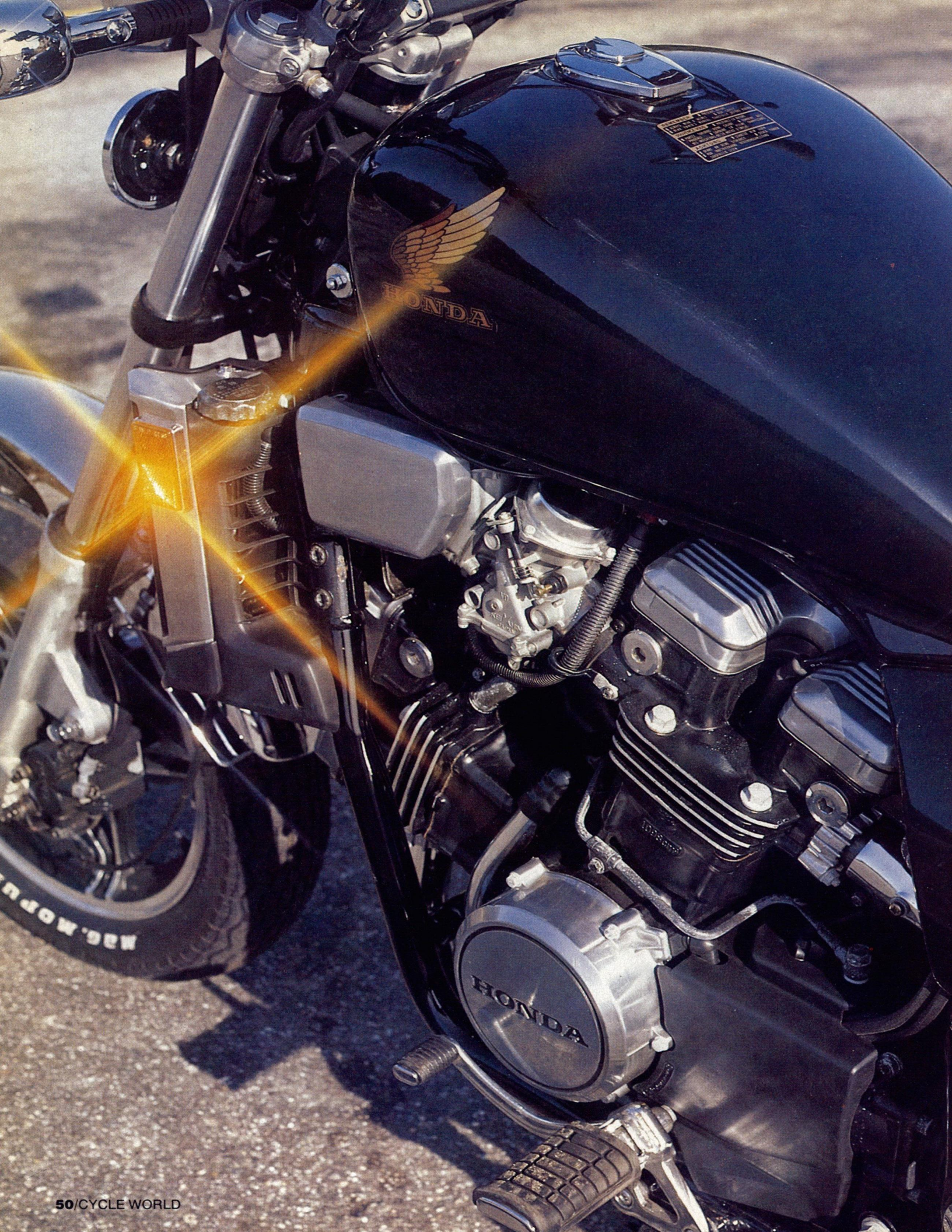
With the throttle turned off in second gear.

The V65 Magna never made a pass slower than 11.33 and never registered a terminal below 122 mph.

And never made it all the way down the strip at full throttle.

We tried, the rider telling himself that he could surely keep the gas on if he just got his weight more forward, the men in the drag strip tower watching in astonishment as the Magna, rider firmly seated on the gas tank, shot straight up at the shift from first to second gear, the rider finally notching back the throttle, the front wheel finally floating earthward, the run continuing, the E.T. a measly eleven-ohh-something.

This is Honda's top-of-the-line high performance motorcycle. Nothing Honda has ever sold has had a powerband like this.



The Magna also reached 137 mph in a half mile; ran away from GPz and GS1100s in fifth-gear roll-ons from highway speeds; has a very tall sixth gear—Honda calls it an overdrive—that reduces rpm to 3500 at 60 mph and 5000 at 90 mph (redline is 10,000 rpm); and delivered 39 mpg on the *Cycle World* mileage test loop.

Anybody reading this might think that the V65 impressed us, that something about its capabilities caught our eye, engaged our fancy.

Let's put it this way: the first guy on the staff to ride it came back more excited than he's been since riding a Top Fuel dragbike a couple of years ago. The V65, as the drag racers like to say, definitely caught our attention.

This is Honda's top-of-the-line high-performance motorcycle, a machine the company's representatives call their muscle bike.

The name is accurate. The purpose, though, isn't as clear. The V65 isn't a sports bike; for that Honda offers the CB1100F, which isn't as powerful but is much better at putting its power to good use.

The V65 isn't a touring bike. That's the role of the Gold Wing, which has better reasons for being this big and heavy, and which is ever so much better suited for dawn to dusk in the saddle.

The V65 is a Magna, cruiser styled because that's what the buying public wants. Honda wants to sell a lot of V65s, company men say and to do that the V65 must look the way it looks.

Which is pretty much the same as the V45 Magna. There are differences to be spotted by the sharp-eyed, such as the V65's muffler shape, rectangular headlight and tailsection treatment, but the overall lines of the seat and tank and front end are the same.

The concept and general design of the V65 engine are like the V45. Two cylinders forward and nearly horizontal, two cylinders rearward and almost vertical,

90° between the two banks. But the V65 shares no parts or dimensions with the smaller V45.

Externally, the V65 engine is both longer and wider overall, measuring 26.6 in. end to end to the V45's 25.4 in., and 17.4 side to side to the V45's 15.9 in. The V65's bore and stroke are 79.5 x 55.3mm, displacement equalling 1098cc, all three figures being far larger than the V45's measurements of 70 x 48.6mm and 748cc.

The cylinder liners are iron, cast into the top half of the horizontally-split aluminum crankcases, and the two cylinder heads—one for the forward cylinders, one for the rearward cylinders—bolt to the cases. Each cylinder head includes two combustion chambers, eight valves, two camshafts. Each combustion chamber holds two 30mm intake and two 26mm exhaust valves set at a narrow angle, just 19° from vertical. The narrow valve angle makes possible straight ports and a shallow, small-volume combustion chamber, the straight ports improving breathing, the shallow combustion chamber discouraging detonation despite a 10.5:1 c.r. achieved with flat-topped, cast pistons.

Each pair of intake and exhaust valves is opened by a single camshaft lobe operating a forked rocker arm with a conventional screw tappet for each valve. Measured from and to 1mm lift, intake valves open 8° BTDC and close 40° ABDC, and lift 8.0mm. Exhaust valves open 43° BBDC and close 7° ATDC, again with 8.0mm lift.

The camshafts run directly in the cylinder head castings and are driven off the crankshaft by link-plate chains with automatic tensioners. There are two sprockets located on the center of the crankshaft, one sprocket for the forward cylinders' cam chain, the other sprocket

for the rearward cylinders' cam chain.

The crankshaft rides in plain bearings and has two throws in the same plane, each throw carrying the two-piece connecting rods for two cylinders, side-by-side. The left rearward cylinder's rod shares a throw with the left forward cylinders' rod, and the same arrangement is used for the right throw and the rearward and forward cylinders on that side; to make everything fit, the rearward cylinders are offset slightly to the left of the forward cylinders. There are four main bearings, one set flanking each throw and its counterweights, and in effect the V-Four is two V-Twins nestled together.

Four 36mm Keihin CV carburetors fit in the center of the Vee, positioned by an aluminum tray that doubles as the airbox bottom. The exhaust pipes for the forward cylinders exit at the front of the forward cylinder head, and the exhaust pipes for the rearward cylinders exit at the back of the rear cylinder head.

Primary drive is via straight-cut gears, one gear fitting on the splined right end of the crankshaft and meshing with two thin, side-by-side gears on the clutch basket. The clutch basket gears are in effect one wider gear split in two, the two halves spring loaded to be slightly offset and take up any slack between the teeth of the crankshaft gear. That reduces gear backlash and mechanical noise without sacrificing horsepower the way helical-cut gearsets do.

The clutch is an interesting collection of parts and features. It is much larger than the clutch found in the V45, and has more plates. It uses a single diaphragm spring instead of several small coil springs, and it is hydraulically operated from a master cylinder on the handlebars. Because the clutch is hydraulic, it is self-adjusting the way hydraulic disc brakes are self-adjusting.

But the most unusual feature of the clutch is a one-way disengaging device, a sprag clutch. Developed on Honda's road racers to decrease engine braking and



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subsequent rear wheel hopping, the system has changed both in location and function during its course from racetrack to street. In the racebikes, the sprag clutch is located either on the crankshaft (FWS1000) or on the countershaft (NR500), and its function is adjustable and easy to understand—at maximum adjustment, the engine can accelerate the rear wheel, but cannot decelerate the rear wheel because the sprag clutch disengages.

In the V65 (and a few other Honda street bikes), the sprag clutch is built into the motorcycle's drive-train clutch and isn't noticeable in normal use. Rolling off the throttle makes the bike decelerate and engine braking feels normal. But if a clumsy or inexperienced or inattentive rider slams down through the gears without regard to matching engine rpm, then the sprag clutch disengages about half the clutch plates, not completely eliminating the engine's influence on the rear wheel, but allowing the remaining engaged plates to slip.

To accomplish that, that Magna's clutch basket is split vertically. The inner half is aluminum. The outer half, carrying the sprag clutch, is cast iron. Because of the basket's construction, only three of the eight friction plates are fully always loaded, while four can be completely disengaged by the sprag clutch. Another plate is only engaged on one side.

The clutch hub rides directly on the transmission main shaft, and a bevel gear used to drive the final drive shaft rides on the countershaft. The transmission has six gears, five normally-spaced ratios and that tall sixth which Honda labels overdrive. The Magna's fifth gear ratios are about the same as the fifth gear ratios used in competing 1100s, but the sixth gearset drops engine speed dramatically and makes an LCD gear position indicator in the instrument cluster read "OD."

The tall top gear ratio makes it easy for a rider to find himself traveling a lot faster than he intended. Shift through the gears, plunk into sixth at a nice, casual 4500 rpm . . . then look down to discover the bike's doing 80 mph!

The V65's hydraulic clutch, although self-adjusting, lacks the engagement point feel of cable-operated clutches and is grabby pulling away from a stop, especially when cold.

This clutch held up better than most Honda clutches at the dragstrip, but after 20 passes the

grabiness was pronounced and smooth shifts were almost impossible. Replacing the clutch plates restored the V65 to normal, but still, what is normal for the V65 cannot be classified as smooth shifting. The transmission doesn't pop out of gear, nor does it resist going into gear, it just doesn't shift from one gear to another as smoothly and slickly as we'd like. In two words, the shifting is slightly notchy.

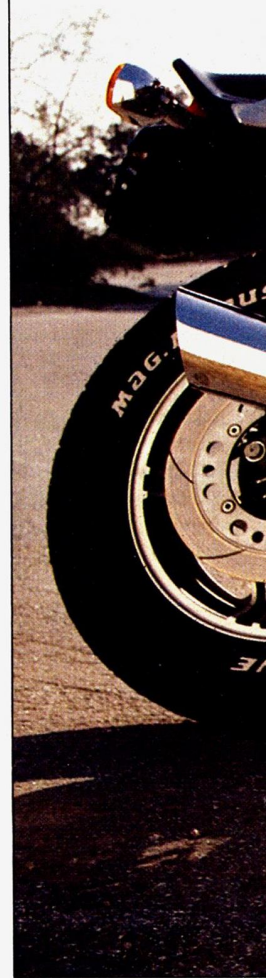
The speed capabilities of the V65 caused representatives of American Honda to actually test and reject the model several times in prototype stages. Not because the Americans didn't like the power and speed, but because the chassis and suspension were not initially up to handling the stresses caused by actually using lots of horsepower.

In a sort of technical shuttle diplomacy, a team of hard-riding Americans tested prototypes at various stages of development, trying the machine on road race courses in Japan (Suzuka) and the U.S. (Willow Springs). By the time the Americans were satisfied, the bike had frame tubes with thicker walls and new suspension components with altered damping ranges and spring rates.

The frame is a basic double-cradle design, with two downtubes and two backbone tubes. A section of the left downtube unbolts to ease engine removal and installation, and that removable section doubles as a line carrying coolant from the water pump to the radiator, which is mounted ahead of the engine, below the steering head. The engine is completely rubber mounted.

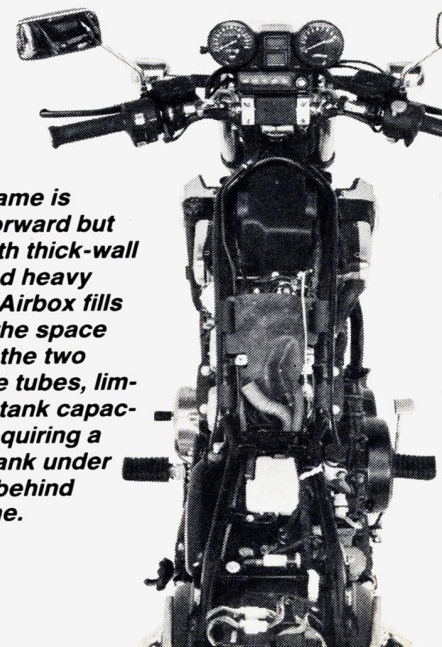
The box-section steel swing arm rides on tapered roller bearings. So does the steering stem, and the steering head is extra long to firmly fix the front end and to space the substantial triple clamps almost 11 in. apart on the 41mm fork stanchion tubes.

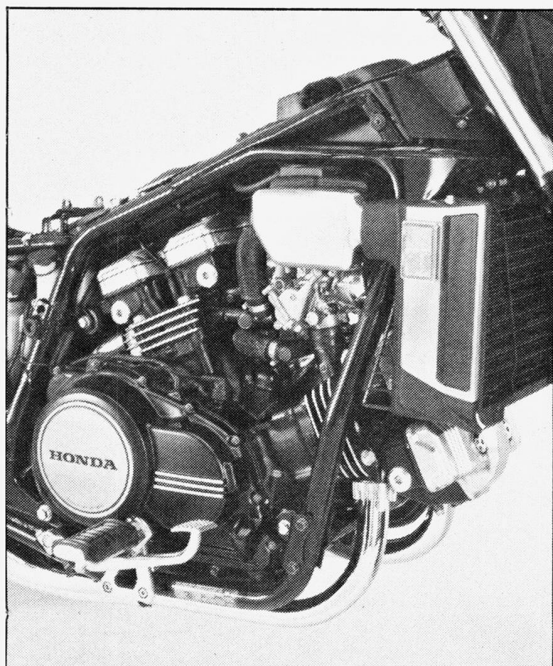
The forks are leading axle with an aluminum brace bolted between the sliders, above the fender. The forks run air pressure—added to the linked legs through a single fitting—in addition to dual-rate coil springs. The sliders are each supported by two low-friction bushings, and the left slider incorporates Honda's TRAC mechanical anti-dive. The TRAC system increases compression damping, thus slowing front end dive, by rerouting fork oil with a plunger valve when the brakes are applied. Unlike most anti-dives, the TRAC system is not activated by brake fluid pressure but rather by the



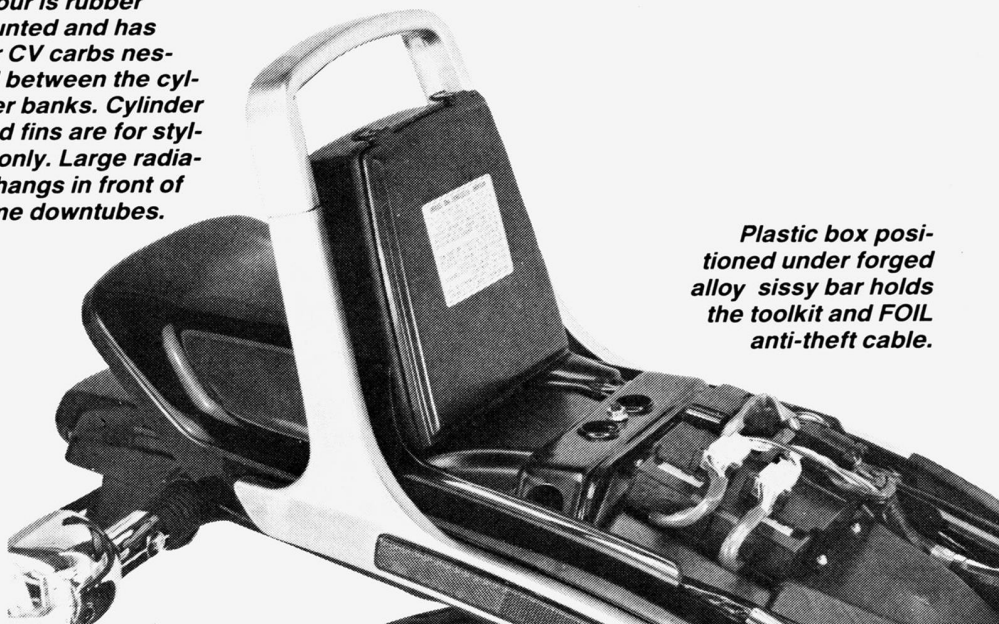
The V65's powertrain: straight-cut primary gears, two-shaft transmission, and a sprag clutch to reduce rear wheel hop under quick downshifting.

Magna frame is straightforward but beefy, with thick-wall tubing and heavy gussets. Airbox fills much of the space between the two backbone tubes, limiting fuel tank capacity and requiring a second tank under the seat behind the engine.





Honda's biggest V-Four is rubber mounted and has four CV carbs nestled between the cylinder banks. Cylinder head fins are for styling only. Large radiator hangs in front of frame downtubes.



Plastic box positioned under forged alloy sissy bar holds the toolkit and FOIL anti-theft cable.

mechanical action of the left caliper pivoting forward on its upper mount as its pads grip the disc.

The V65's rear suspension is an example of function working around form. Having done lots of work and spent lots of money telling us all about the advantages of single rear shocks with rising-rate linkage, etc., Honda fitted the V65, its flagship, with good ol' dual rear shock/springs. For style, they admit. The people to whom Honda hopes to sell the V65 know motorcycles have two shocks, tilted forward, so that's what the V65 gets.

Concealed within the traditional form, though, is the latest in suspension technology. The shocks have adjustable compression and rebound damping as well as the usual spring preload settings. Rebound damping has four adjustments, made by turning a numbered collar at the top of each shock. Rebound damping doubles between position one and position four. Compression damping is adjusted with a small knob at the base of the shock body; there are two positions, position two delivering twice the compression damping of position one.

The wheels are aluminum castings, an 18-in. front with a 2.50 in. rim, a 16-in. rear with a 3.00-in. rim. Tires are Bridgestone, a 110/90-18 L303 front and 140/90-16 G508 rear. The disc brakes are one piece, bolting directly to expanded wheel hubs without carriers. The two front discs measure 10.6 in. The single rear disc measures 11.7 in. All three calipers have two small pistons on one side, pushing against a rectangular brake pad.

Initial riding impressions are quickly given: this is a Big Bike! Not just in engine size and power, but in overall weight, of which the V65 has 30 or 40 more lb. than the other Fours. In the wheelbase sweepstakes the V65 is shorter than the SuperGlide and Aspencade, longer than an FLT or FLH.

Further, the seat is high and wide, so the ground is a stretch even for a rider 5-foot-10. Even allowing for a nice bit of adjustability, the bars are relatively high and narrow. The bike's bulk is carried high. There's a lot of sideways motion for degree of lean, and a lot of handgrip motion for degree of steer.

About those wheelies. Let us make this crystal clear: wheelies are voluntary. The long black thing works both ways. The brave can have great fun lifting the front wheel. The less-brave can ride for days with both wheels on the ground.

The bike doesn't get lighter at speed, but it does get better. The chassis and brake combination is a good one, up to the job of handling the Magna's big power and high speed. The bike doesn't wobble in sweeping turns with the shocks set at number three rebound, number two compression and number three pre-

load, and there's ample cornering clearance. When things do drag, the pegs on both sides touch down first, followed by the footpeg mount bracket on the frame tube. The Magna is a big, heavy, long motorcycle with a wide front tire and a lot of rake (30.3°), and as speeds go up, so does the amount of force needed at the handlebars to turn. A rider new to the Magna and heavy on the throttle will find himself running wide entering turns, but the measures needed to bring the Magna back on course—such as rolling off the throttle or tapping the brakes—don't make the motorcycle do anything unusual.

The big payoff from the Magna's wide front rim and tire is in braking performance. At 117 ft., its 60-0 stopping distance is nothing other than spectacular.

The spring rates and damping settings needed to make the Magna controlled at full throttle or full braking aren't the same spring rates and damping settings needed for a plush freeway ride. To get stability at the edges of the performance envelope, the Magna sacrifices some comfort, but not much. It is a trifle stiff over concrete highway expansion joints.

Which leads us to an irony: The Magna's performance chassis orientation affects cruising comfort, and its cruising styling affects performance comfort.

We're talking about the relationship between the stepped seat, the footpegs, the adjustable pullback, high-rise handlebars. The riding position is bolt upright, feet forward, arms up, and hanging on in the face of the wind blast at anything over legal speeds reminds one of a workout at the local gym. It's a struggle at a fast pace.

Styling also dictated the shape of the gas tank, and since the space between the frame backbone tubes just aft of the steering head is largely occupied by the top of the airbox, that shape doesn't hold much gas.

So the Magna has a second gas tank, hidden under the seat and left sidecover, connected to the visible tank by a large rubber hose. A fuel pump delivers fuel from the lower tank to the carburetors.

Combined, the two tanks hold 4.5 gal. Given the tall top gear and the relaxed gait on the highway, that should be enough for an open-road cruising range of 160-170 mi. On the mileage loop the V65 returned 39 mpg, not too impressive. When the power was put to use, mpg dropped to 33. Under the latter conditions the fuel warning light came on at 140 mi. and that can be a problem.

The V65's petcock has no reserve setting. Neither is there a fuel gauge. Instead, the rider must rely on a warning light. Trouble is—and we learned this the hard way—eight miles after the warning light came on the V65 rolled to a bone-dry stop.

This is not adequate. Honda policy re-

quires 30 mi. of travel between warning time and empty, whether that warning comes from switching to reserve or a gauge or a light. The factory reps said our example was flawed and suggested we bend the sender lever, thus turning the light on earlier. That's a fix, but be ready: know how much warning the light gives before setting out on a trip.

There are other interesting features, like Honda's FOIL anti-theft system. FOIL stands for Fiber Optic Integrated Lock. All that means that the bike has a steel cable which plugs into a locking socket located just below the left side cover. The cable has at its center an optical fiber, and, if it is cut, an alarm sounds. The alarm has its own AA batteries and horn, independent of the motorcycle's electrical system. The cable is stored in a plastic box fitted behind the seat, under the sissy bar. That box also carries the tool kit.

Other lights alert the rider to taillight failure and oil pressure loss and indicate use of high beam, turn signals and neutral. Two LCD gauges tell the rider which gear he's in and advertise coolant temperature, represented by blocks across a non-numbered face: the more blocks show, the higher the temperature.

The turn signals are self-cancelling, triggered by a steering-head switch that tells an electronic control box when the handlebars are turned. Since every turn must be initiated by some movement of the handlebars, the switch indicates the beginning of a turn. Before shutting off the signals, the control box also considers time elapsed and distance covered.

Nice touches, all. But because Honda has other models with more technology, i.e. the CX650 Turbo, more sporting nature as in the CB1100F and more long haul appeal as shown by the Wing, the essence of the V65 remains brute power and sheer speed. Which makes it a shame that the V65 Magna looks near-as-dammit like the V45 Magna.

Or, for that matter, that the V65 is named the V65. Honda's reference is the 65 cubic in. of engine displacement. But the big Magna must share the number. Already on the market are the BMW R65 and the Moto Guzzi V65, both Twins of nominal 650cc displacement.

What the V65 Magna really needs is a big decal on the sidecover reading "V-Four 1100" or "116 Horsepower" or "TBBYES" (The Baddest Bike You've Ever Seen).

Unless, of course, a V65 owner wants to quietly obscure the V65 on the sidecovers, leave the "Magna," and head off to a street race, looking wide eyed at the sport-styled bikes with loud pipes and short handlebars and asking if maybe, just maybe he could race somebody with his little ol' V45 Magna.

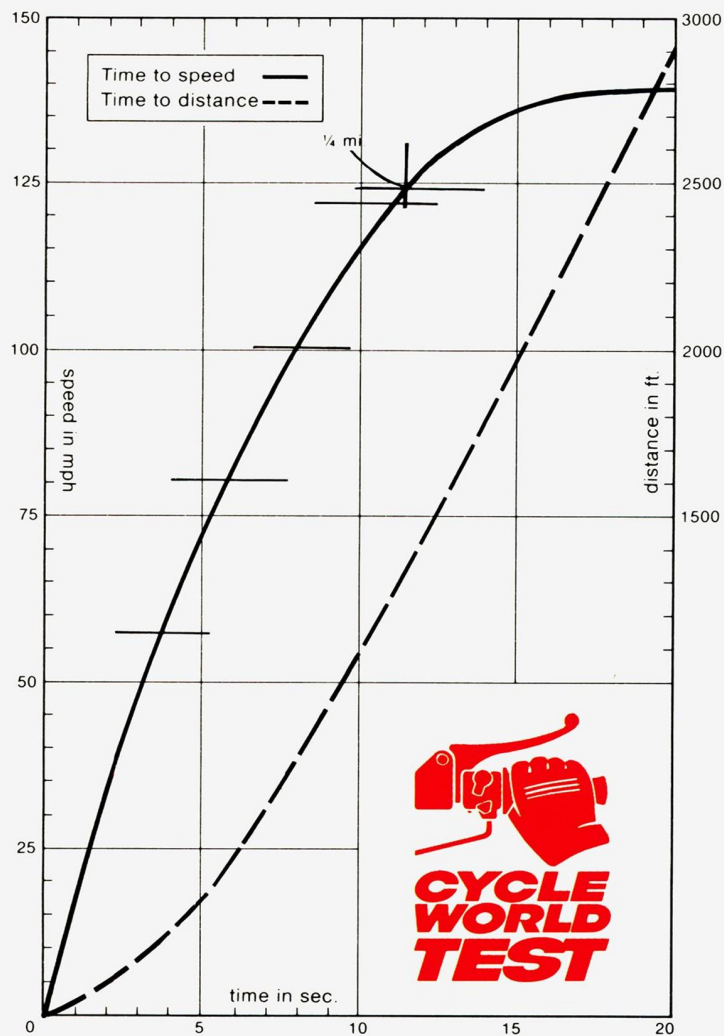
With a little gas money wagered, just to make things interesting. . . .

HONDA V65 MAGNA

SPECIFICATIONS

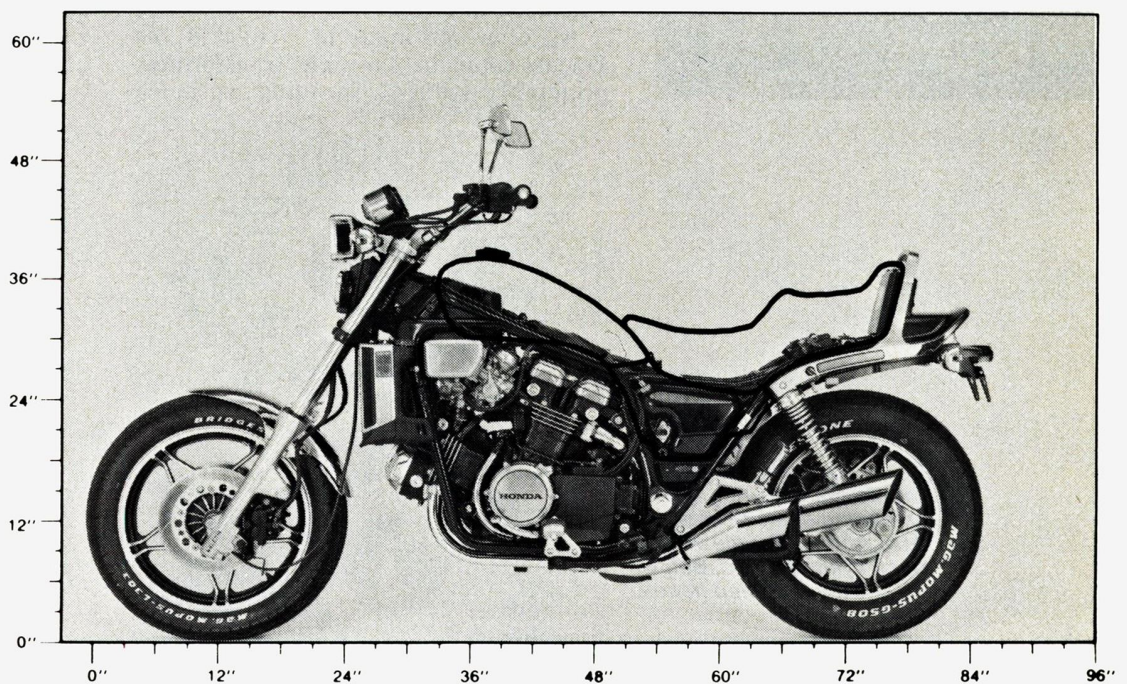
List price \$3898
 Engine dohc V-Four
 Bore x stroke 79.5 x 55.3mm
 Displacement 1098cc
 Compression ratio .. 10.5:1
 Carburetion (4) 36mm Keihin CV
 Air filter pleated paper
 Ignition transistorized electronic
 Claimed power ... 116 bhp @ 9500 rpm
 Claimed torque ... 70 lb.-ft. @ 7500 rpm
 Lubrication wet sump
 Oil capacity 3.7 qt.
 Fuel capacity 4.5 gal.
 Starter electric
 Electrical power 300w @ 5000 rpm
 Battery 12v/18ah
 Headlight 12V 55/60w
 Primary drive .. straight-cut gear
 Clutch multi-plate, wet
 Final drive shaft
 Gear ratios, overall: 1
 6th 4.31
 5th 5.16
 4th 6.18
 3rd 7.43
 2nd 9.31
 1st 13.19
 Suspension:
 Front telescopic fork travel 6.3 in.
 Rear ... swing arm, dual-shocks travel 4.4 in.
 Tires:
 Front 110/90-18 Bridgestone L303
 Rear 140/90-16 Bridgestone G503
 Brakes:
 Front ... dual 10.6-in. discs
 Rear 11.7-in. disc
 Brake swept area 240 sq. in.
 Brake loading (160lb. rider) 3.1 lb./sq. in.
 Wheelbase 62.8 in.
 Rake/Trail ... 30.3°/4.1 in.
 Handlebar width ... 28.5 in.
 Seat height 32.9 in.
 Seat width 10.5 in.
 Footpeg height 13.5 in.
 Ground clearance ... 6.2 in.
 Test weight (w/half-tank fuel) 579 lb.
 Weight bias, % front/rear 46/54
 GVWR 960 lb.
 Load capacity 381 lb.

ACCELERATION



PERFORMANCE

Standing 1/4-mile 11.07 sec. @ 123.62 mph
 Top speed
 in 1/2-mile 137 mph
 Fuel consumption39 mpg.
 Range
 (to reserve light) .. 144 mi.
 Acceleration:
 0-30 mph 1.8 sec.
 0-40 mph 2.6 sec.
 0-50 mph 3.4 sec.
 0-60 mph 4.3 sec.
 0-70 mph 5.2 sec.
 0-80 mph 6.1 sec.
 0-90 mph 7.0 sec.
 0-100 mph 8.3 sec.
 Top gear acceleration:
 40-60 mph 4.2 sec.
 60-80 mph 3.6 sec.
 Calculated speed in gears @ 10,000 rpm:
 1st 57 mph
 2nd 80 mph
 3rd 100 mph
 4th 121 mph
 5th 145 mph
 6th 173 mph
 Speedometer error:
 30 mph indicated 29 mph
 60 mph indicated 56 mph
 Braking distance:
 from 30 mph 29 ft.
 from 60 mph 117 ft.
 Engine speed at 60 mph 3500 rpm



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