

FEBRUARY 11-24, 1983
Volume 16 Number 8

Registered by Australia Post — Publication No NBP-0243

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HONDA CX650E

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ROAD TEST: Honda CX650E

OUT OF THE SHADOW

Honda's CX500 Shadow has been around for some five years and aside from being one of the more unusual bikes in Honda's line-up, has also been one of the most successful. It has not only been a consistent seller for Honda but has earned respect from touring riders who don't own one, and admiration from those who do.

CX owners will tell you the strength of their bike lies in its quiet, reliable, smooth and easy to maintain motor (and shaft drive) and to a lesser extent its comfortable ergonomics. Those same owners will also tell you they still like the bike despite its weak front-end, dubious quality rear shocks, overly thirsty fuel use at higher speeds and an obese 200 kg weigh-in. They may also criticise the power characteristics for being too much on the sporty side with not enough mid-range power, so desirable in a touring bike.

While some of these problems can be partially cured — correct selection of accessory suspension units and fork oil bring the high speed handling up to an acceptable level while constant use of the gearbox can overcome the shortage of mid-range power — there is no doubt more than one CX owner has dreamed of a CX with more grunt and better road manners. And while a better CX is easy to conceive; the engineering already being there, at least in part with the 750 cm³ US flat track NS750 V-twin, it has taken Honda a long time to produce this much dreamed about bike.

Distractions along the way to produce this bike included the turbo CX — a rather pointless exercise in one upmanship and engineering excess — and last year, the CX500EC. The EC or Euro as it has become known, is a nice enough bike in itself, retaining just about all of the older bike's virtues as well as acquiring some of its own. But balancing its price against the improvements finds a bike which is more of a sideways step than a leap into the

future. But at last Honda has produced a serious attempt at a second generation CX, the CX650.

In 'growing' the 650 (actually 673 cm³) from the 500, Honda's engineers were left with little choice as to how to go about the task. With a 78 x 52 mm bore and stroke the 500 was already more oversquare than is currently fashionable so a bore increase alone was out of the question. Instead, Honda relied mainly on lengthening the stroke by some 11 mm to gain the extra capacity. The bore is larger but only by 4.5 mm, the dimensions of the '650' being 82.5 x 63 mm.

With this longer stroke the red-line has been dropped from the 500's high 9750 to 9000 rpm for the 650 while other internal changes include a lower compression ratio (9.8:1 vs 10.0:1). According to Honda specifications, the carburettor size has also been decreased from the 500's 35 mm units to 34 mm for the 650.

As a result of these changes, the 650 produces more peak power than the 500 but of more significance is the increase in mid-range power. Factory claims put the maximum power of the 650 at 47.5 kW at 8000 rpm compared with 36.7 kW at 9000 rpm for the 500. The increase in torque is more impressive though. The 500 was rated at 43 Nm at 7000 rpm while the 650 puts out a strong 61 Nm at 6500 rpm, an increase of around 42 percent over that of the 500.

Otherwise the engine layout is straight forward CX; the crank lies along the frame, BMW/Moto Guzzi style, and carries both rods on a single crankpin with plain bearings. The cylinders are off-set at 80 degrees and each use four valves operated by short push-rods from a single cam mounted high in the V between the cylinders. Cooling is taken care of by a sealed liquid system, the coolant pump being driven off the rear of the cam, while the fan, unlike



that of the 500, which was constantly engaged, is thermostatically controlled.

Primary drive is taken off the front of the crank via helical cut gears to the clutch and thence to the five-speed transmission that lies adjacent to the crank, rather than behind it. To enable the 650 to fully realise the new potential of its higher power and torque, overall

gearing has been raised some 17 percent (top gear) although not through the simple expediency of a final drive change. An alteration to the primary drive reduction (from 2.24:1 to 2.114:1) accounts for part of this change but in addition the 650 uses an entirely different gearbox than does the 500. All the ratios in this new box are between 8



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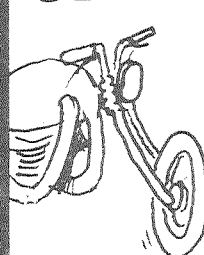
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ROAD TEST: Honda CX650E



Suspension tuning is critical to get the best out of the 650, but the Pro-Link set-up is still not up to the standard of many conventional twin shock systems.

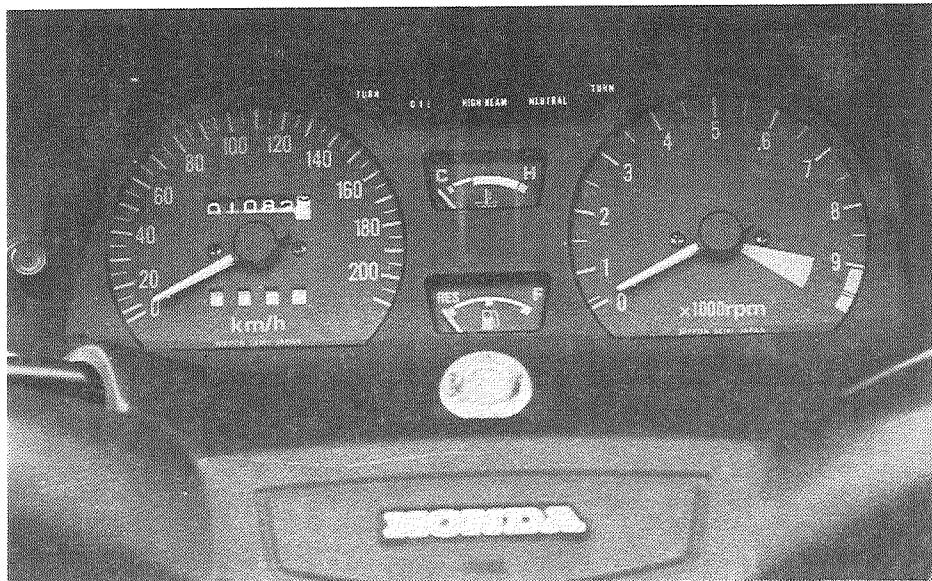
and 10 percent taller than those of the 500 while the ratio spread, bar and gap between first and second, is also wider.

For those who have ridden a CX500, the feel of the 650 will be immediately familiar, but at the same time different. The 650 has the same burbling exhaust note of the 500 and the same unfussed power delivery. On the other hand it is more noticeably a 'twin' with more emphatic power pulses at lower rpm. Even at idle it tends to shake more from side to side, a little reminiscent of a Guzzi 850.

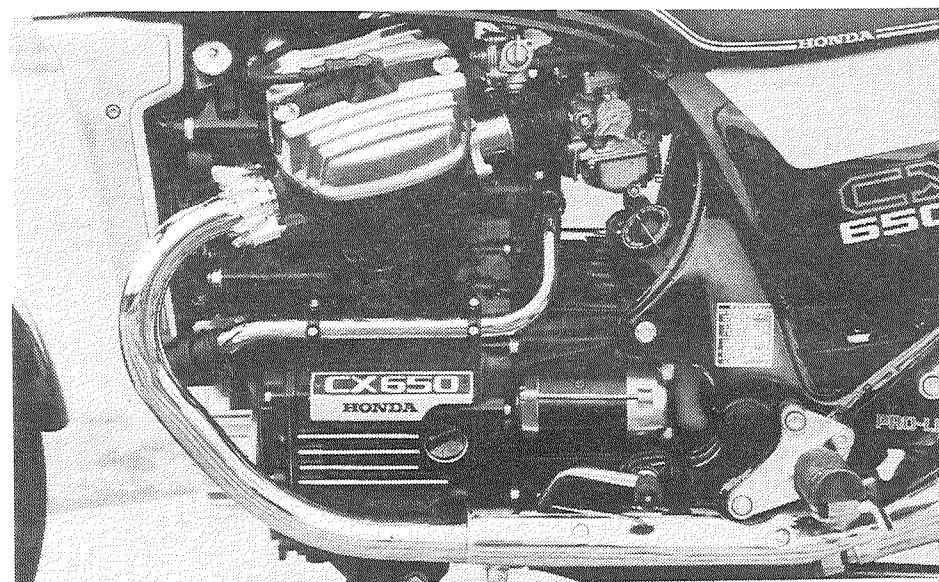
Once underway it is considerably quicker than the 500 despite its taller gearing although not as much in the top-end as it is through the gears. From

100 or even 120 km/h in top gear it will still not better an 800 cm³ BMW but should be able to see off the 650 fours. Unlike the 500, there is no flattening out of the power in the mid-range; bang the throttle open in any of the lower gears and the motor will spin without hesitation right through to red-line.

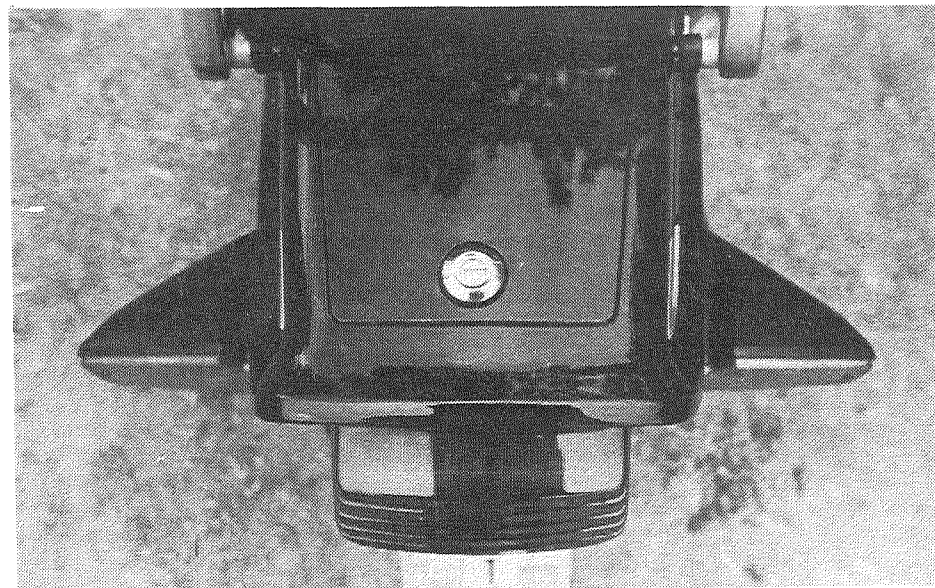
Out on the highway the 650 is much more a top gear bike than the 500. Provided the motor is turning at least 5000 rpm (110 km/h in top) there is little need, unlike the 500, to change down a gear to effect a rapid overtaking manoeuvre. In hilly country too the 650 will happily pull top at times when the 500 would at least require fourth gear to maintain reasonable progress.



Instrumentation is neat and easy to read, but fuel gauge is pessimistic.



Stroking the CX500 by 11 mm and opening out the bores 4.5 mm results in the 673 cm³ CX650. Bottom-end power is considerably improved.



Integrated rear indicators look neat but could be expensive to fix in the event of damage.

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As a result, the 650's fuel consumption at higher speeds is a little better than that of the 500. At 100 to 120 km/h both machines use around 4.8 to 5.0 l/100 km but at higher speeds, where the 500 would often use 6.0 l/100 km or more, the 650 will rarely use more than 5.8 l/100 km and more generally around 5.5 l/100 km. Like the 500EC, the 650 has a bigger fuel tank (19 litre) than the older 500, and on the highway, will see a comfortable 300 km or more between refills.

For those interested in performance figures, top speed of the 650 is 10 km/h up on the 500's 180 km/h, while its standing start 400 metre time is down from 14.4 seconds to around 13.4 seconds. There is, however, a small price to pay for this increased capacity and performance. With the CX's cylinders off-set at 80 rather than 90 degrees, primary balance is not perfect and while this never caused any problems with the 500, the 650 is not quite as vibration-free at higher speeds. It is still a pleasantly relaxed motor, especially when compared to most mid-capacity fours, but the 650 still falls a little short of the 500 in this regard.

Chassis wise, the 650 follows the theme of the 500EC; the frame, with its triple tube backbone (the earlier 500s used a single pressed member backbone) is similar to that of the turbo CX while the rest of the running gear is unique to the 500EC/650ED. Specifications list a half degree steering rake change (27.5 to 28 degrees) from the 500EC to the 650 but otherwise there would appear to be no other changes.

For those not familiar with the 500EC, a brief resume of the changes from the earlier 500s as outlined in our



SPECIFICATIONS

Honda CX650ED

ENGINE

Liquid cooled, transverse, 80 degree V-twin four-stroke. Plain bearing one-piece crankshaft carries both con-rods on a common crankpin. Wet sump lubrication. Single chain driven camshaft operates four valves per cylinder via cam followers, pushrods and forked rockers.

Capacity 673 cm³
Bore and stroke 82.5 x 63.0 mm
Compression ratio 9.8:1
Stated maximum rpm 9000
Carburetion 2 x 34 mm Keihin CV
Starter system electric only
Ignition system Capacitor discharge
Claimed maximum power 47.5 kW at 8000 rpm
Claimed maximum torque 61 Nm at 6500 rpm

TRANSMISSION

Gear primary drive off the front of the crankshaft through a wet multi-plate clutch to a five-speed constant mesh gearbox. Final drive through spring-

loaded drive torque damper, universal joint and enclosed shaft to a spiral bevel rear hub.

Gear ratios	km/1000 rpm
1 2.500:1	7.4
2 1.714:1	10.75
3 1.280:1	14.4
4 1.035:1	17.8
5 0.838:1	22.0
Primary reduction	2.114:1
Final reduction	3.090:1

CHASSIS

Welded tubular and pressed steel frame incorporating the engine as a stressed member. Front suspension: Telescopic forks, internal coil springs, hydraulic damping and air-assistance. Fork tube diameter: 37 mm. Rear suspension: Air-assisted 'Pro-Link'.

Rake 28/62 degrees
Trail 105 mm
Front wheel 2.50 x 18 Comstar
Rear wheel 2.50 x 18 Comstar
Front tyre 100/90 x 18 Tubeless 4 Ply
Rear tyre 120/80 x 18 Tubeless 4 Ply
Front brake Twin disc with twin piston floating calipers

Rear brake Single disc with twin piston floating caliper

DIMENSIONS

Overall length	2250 mm
Overall width	760 mm
Overall height	1190 mm
Wheelbase	1495 mm
Dry weight	210 kg
Fuel capacity	19 litre

PERFORMANCE

Standing start 400 metre	13.4 seconds
Achieved top speed	190 km/h
Fuel consumption, city	5.8 l/100 km
Fuel consumption 100-120 km/h, highway	5.0 l/100 km
Fuel consumption high speed, highway	5.6 l/100 km
Average fuel consumption for test	5.3 l/100 km

GENERAL

Manufacturer	Honda Motor Corporation, Japan
Test machine	courtesy of Bennett Honda, Sydney
Price	\$3469 (NSW plus on-road)
Warranty	12 months/20,000 km

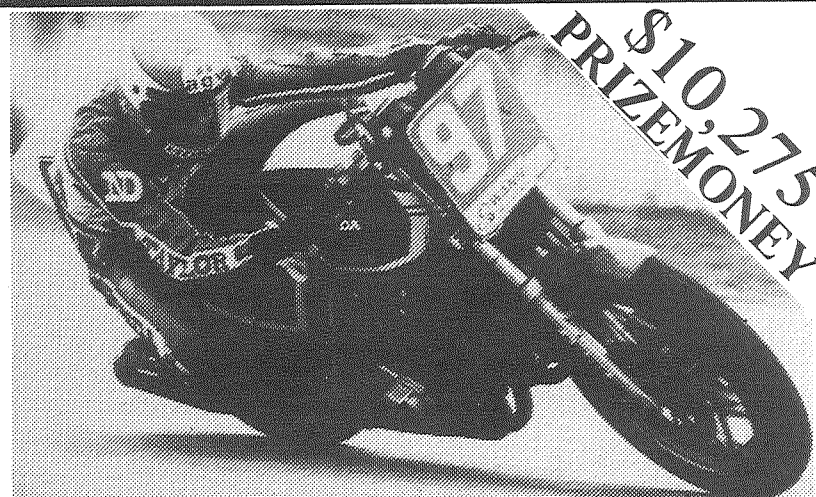
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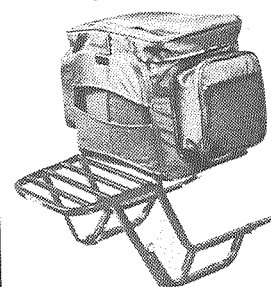
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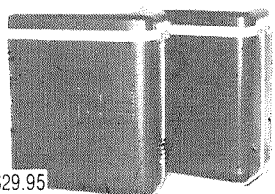
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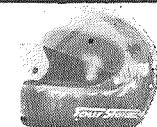
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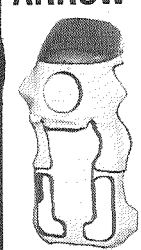
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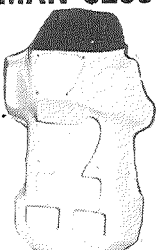


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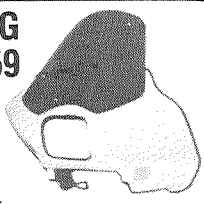


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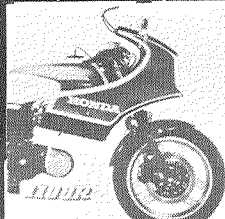


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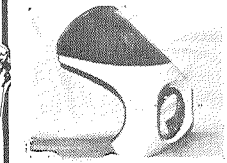
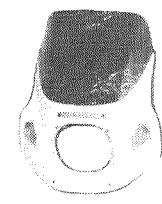
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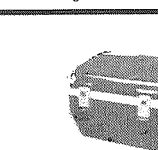
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Honda CX650E

test (REVS Vol 16, No 2) is as follows. Up front the spindly 33 mm forks of all the 500s up to the EC have been replaced with 37 mm diameter units complete with air-caps and Honda's mechanically activated anti-dive. These forks carry an 18 inch x 2.50 rim where the older machines used a 19 x 2.15 rim. Both the 500EC and 650ED are fitted with twin piston, floating caliper brakes.

At the rear, the twin shocks of old have been replaced with an air-adjustable 'Pro-Link' arrangement while the 2.15 rim has been replaced with a 2.50 rim and disc brake substituted for the drum used previously. As outlined in the 500EC test, this chassis revamp is generally a move to the better although at low speeds both the 500EC and the

a rear disc on the other hand is more of a marketing exercise than an attempt to produce a better brake, which it isn't. Discs are certainly better on maintenance but the rear unit on the 650 lacks the road feel of the older drum and is insensitive on gravel or wet roads.

Like the 500EC, the ride position of the 650 is much changed from the earlier CXs. You tend to sit more down into the bike and with the lower handlebars you lean further forward than was the case previously. This riding position is both comfortable in the city and on the highway and is well complimented with a broad and generously padded seat. The pillion position is also comfortable, although the seat slopes too steeply forward.



650 have a more top heavy, less confident feel than did the older CX.

Out on the highway at higher speeds the chassis gives its best despite a rear suspension that can still be caught out on bumpy roads. As we have said many times before, Honda's air-spring 'Pro-Link' as fitted to virtually all of its new road bikes would seem to need more development before it will better a good twin shock set-up. We found the 'Pro-Link' performed at its best when set-up on the firm side, despite the fact the bike was never heavily laden.

Honda recommend a range of pressures from 0 to 70 psi and for a light solo rider with the addition of around 20 kg of touring/camping gear we settled on 45 psi. As you might expect, this produced somewhat of a harsh ride at city speeds but at higher speeds on the highway the compliance naturally improved. Any softer setting and the rear-end just didn't feel right.

The front-end, on the other hand, is very good (we used 3 psi pre-load) although some riders may opt for more damping. This is easy enough to achieve simply by using a heavier grade fork oil.

On smooth and moderately bumpy roads, the bike is very good; it changes direction with little effort, especially considering its 210 kg bulk. It tends to fall into low speed corners but this is something you quickly adjust to without making a conscious effort. Provided the bumps don't get too big the suspension continues to cope well, producing a comfortable ride and sure handling.

Suspension adjustment is not as straightforward as it should be though. The front-end has separate air-caps and with a recommended range of pressures between 0 and 6 psi an accurate low pressure gauge is an essential addition to the tool kit. To adjust the rear suspension, the side cover has to be removed and access to high pressure air is a must. Touring bikes need simple suspension adjustment more than anything else and perhaps Honda should have a close look at the hydraulically operated, mechanical spring adjuster on the Suzuki Turbo and at least fit a connector to the front air-caps.

As we have come to expect from Honda, the performance of the front brake, both in road feel and retardation is very good. Honda leads the Japanese manufacturers in this area. The fitting of

A solid grab rail serves not only to increase the safety of the pillion but doubles as a handy attachment point for luggage straps and a handle for lifting the bike onto the centre stand. It may interfere with the attachment of panniers though (as may the rear indicators) and anyone intending to adapt the bike in this way should carefully check out this aspect of the bike before purchase.

Looking at the other more detailed aspects of the bike finds a typical current Honda offering. The controls are all light and easy to use and the handlebar switch gear is along the usual corporate lines. The well-lit instrumentation is straight forward with a tachometer, speedometer, coolant temperature gauge and a rather pessimistic fuel gauge. At the rear of the bike is a small lockable storage compartment that houses a standard issue tool kit while on the left side of the bike is a lockable helmet holder. The horn is neither worthy of good or bad comment although the headlight is definitely better than average. Like the CX500s, the 650 proved to be an instant starter and like the 500EC, has a thumb operated choke located on the left side handlebar.

One of the strong points of the CX500 has always been its easy maintenance and this too is the case with the 650. The CX has one important advantage over the average four cylinder machine. Valve clearance adjustment is dead simple. Two bolts remove each rocker cover to reveal the easily accessible screw and locknut tappet adjusters. No need to remove the tank (VF750), no shims and no trying to squeeze under the frame rails to get your feeler gauge in place. In addition, it has an auto cam-chain adjuster, electronic ignition and shaft drive.

If ever there was a total home maintenance (Japanese) bike, the CX is it.

As a complete package, the CX650 with its V-twin engine has to be one of the best road bikes, regardless of capacity, currently made by the Japanese. It is probably best suited to touring but it is also an excellent everyday bike and even a reasonable sportster. If it proves to be as reliable as the 500, and there is little reason why it shouldn't, and if Marzocchi or someone put out a high quality replacement for the 'Pro-Link' unit, then it could arguably be the best Japanese road bike. □

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