

**ROAD TEST**

# HONDA CIVIC

## V-TEC

**U**P UNTIL now, South African motorists have been denied access to what is generally acclaimed to be one of the world's finest small engines, Honda's V-TEC (Variable valve Timing and lift Electronic Control). The reason for withholding the V-TEC was that it was incompatible with leaded fuel. However, the motors are now compatible to coincide with the local release of the new Ballade saloon and, for the first time in SA, its hatchback sister, the Civic. (In other markets, the Ballade is also called Civic.) V-TEC is available on a number of engine sizes and configurations, but we are being restricted to the high-performance d-o-h-c 1.6-litre, which makes its local debut in the Civic as tested here.

The Civic is a 3-door and available in three derivatives – a 160i Luxline manual (R87 250), a 160i Luxline automatic (R91 800), and the flagship V-TEC (R109 700). (For the full story on the Ballade/Civic model launch, see CAR's special report in last month's issue.) And despite what the badging says on the car's tailgate, the Civic is a hatchback – calling it a Coupe (with no accent on the e) is marketing hype suggesting sporting pretensions, which the V-TEC certainly has, but the moniker is misleading.

Not surprisingly, it is the engine that is at the heart of this particular model's appeal. Honda

### Redefining the pocket rocket

claim a whimsical origin to the development of the ingenious valve actuation principle. Apparently, a Honda engineer sat watching small pieces of chicken and green onion turning over a hot fire. He noticed that one particular long piece of onion was not rotating with the other pieces, and was catching on the hot coals. He realised that pushing a second skewer through all the pieces would force them to rotate together. This prompted the idea, and subsequent development of, the innovative V-TEC technology.

What V-TEC does is to provide separate valve settings for low/mid and high engine revolutions with the aim of giving optimum efficiency in all driving conditions. Two pairs of standard cam lobes and rocker arms operate the four valves per cylinder and are supplemented by an extra, high-profile cam lobe actuating an extra rocker

arm. Up to 6 000 r/min the high lift cam free-wheels, but above 6 000, a hydraulic piston mechanism slides across and locks it to the camshaft which increases both valve lift and duration. For a 1 600 engine the maximum outputs are amazing – 118 kW at 7 800 r/min and 160 N.m at an equally dizzy high of 7 400 r/min. The rev-counter is redlined at 8 000 and runs to 9 500, but a limiter restrains right-foot enthusiasm to around 8 400. Incidentally, the V-TEC in local state of tune is just a whisker under reaching the magical 100 bhp (75 kW) per litre mark, something rarely achieved with a road-going naturally aspirated engine.

### Seamless thrust

On the road, these motor cycle-like figures result in a seamless thrust accompanied by a spirited bark. At the



upper engine speed limits, people in the vicinity of the car tend to turn and stare because the motor sounds ready to explode, but the V-TEC's appetite for revs appears insatiable – it is a boy racer's dream. But when we compared our test figures with some published overseas, we were disappointed to find performance slightly below par. However, there

are factors that could explain the disparity. Firstly, the car we tested had only done 1 432 km so it was likely to be still "tight". Two, the changes to the engine to make it compatible with leaded fuel resulted in a minor power loss against an unleaded-spec engine. Three, the octane rating of our unleaded fuel, which was used for the test run, is slightly down on

Large, reptilian headlights dominate the frontal aspect of the new Civic and are as powerful as they look. *Au revoir* jellymould shape – all of the new Hondas sport grilles that contribute towards a distinctive nose. Steering and handling are sharp (left). Front and rear overhangs are short, and the wheelbase is relatively long for its overall length. Despite integral side-impact protection beams, the doors are light (below).

premium unleaded available abroad.

Below par? Under the circumstances, 0-100 km/h in 8.65 seconds, a standing kilometre in 30.28 seconds at 171.4 km/h, and a top speed of 194 km/h is hardly sluggish – they are figures comparable with Nissan's 2-litre Sentra STi and Sabre GXi which are generally considered to be quite "hot" amongst Formula Shopping Car Grand Prix contenders. Accelerating in the Civic V-TEC is deceptive for there is no fluctuation in the power delivery; the car just goes and goes, its exhaust note hardening as the rev counter needle nears the end of its arc. In fact, the linear delivery reminds us of a Wankel rotary's characteristics. Torque delivery is noticeably smooth, there being no evidence of peaking anywhere along the rev range, but the slick gearshift needs to be used to drop a couple of ratios when some







The straightforward facia drew mixed reactions from our testers. The steering wheel has rake adjustment but no airbag (above). Not as distinctive-looking as the front, the Civic is a hatch despite what the badging says. Cornering generates only slight body roll (right). The car features power-assisted rack and pinion steering and all-strut suspension (below).



lugging or urgent overtaking power is needed. The slender lever is a pleasure to use and whips through the gate with precision, even during brutal acceleration runs where, not surprisingly, wheel-spin is easily induced.

The car is geared to make the most of the motor's brio and it is a little alarming to see 4 171 r/min on the rev counter at a steady 120 km/h in top gear. Even at 60 km/h, the crank is turning at 2 085 r/min. The temptation to edge towards the red line in the gears is hard to resist, so fuel consumption can be expected to suffer drastically – and it does. The 45 litre tank is inadequate for long rapid journeys, necessitating fill-ups every 380 kilometres or so. Even steady-speed consumption is thirsty at 8,47 litres/100 km at 100 km/h (overall consumption works out to 11,86 litres/100 km); as with any performance car, you pay for your exuberance at the pumps.

### Styling

So the engine is a little marvel, what about the rest of the car? Externally, the new Civic looks quite distinctive from the front but rather ordinary from the back. A simple narrow grille fronts a fluted

### KEY FIGURES:

Maximum speed.....	194 km/h
1 km sprint.....	30,28 secs
Fuel tank capacity.....	45 litres
Litres/100 km at 100.....	8,47
*Fuel index.....	11,86 litres/100 km
	8,43 km/litre
Estimated fuel range.....	379
Engine revs per km.....	2 085
Odometer error.....	2,05 per cent over
National list price.....	R109 700
Factory options fitted:..	Metallic paint R650
	Becker radio/tape R2 500
(*Consumption at 100 plus 40%)	

bonnet lying ahead of a deep wind-screen, but the dominant frontal aspect are the huge reptilian headlights, which are as powerful as they look.

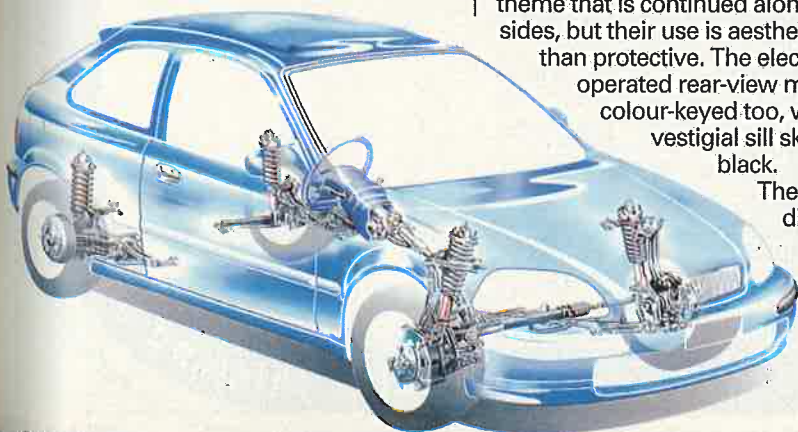
In profile, the Civic has fairly short overhangs – 870 mm at front, 700 at back – and has a generous-for-its-size 2 620 mm wheelbase. The impact-protective side doors are light and permit reasonably easy entry/exit, although only the front passenger seat has a tilt and slide facility for access to the rear. A spoiler is fitted to the top of the tailgate and includes a high-level stop light. The body colour bumpers have a thin black inlay, a theme that is continued along the body-sides, but their use is aesthetic rather than protective. The electrically operated rear-view mirrors are colour-keyed too, while the vestigial sill skirts are black.

The interior is distinctly

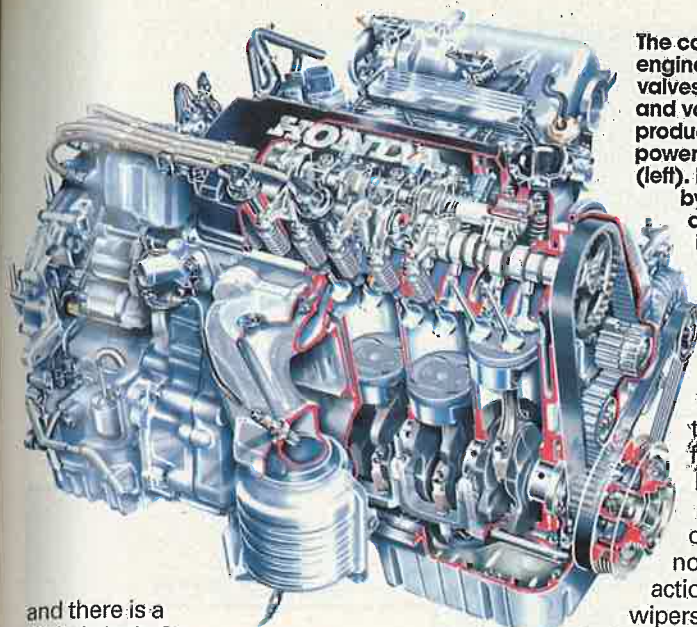
sombre. From the waist line down, the trim colour is black, upholstery being a combination of perforated and plain leather. The front seats are comfortable even though they have only basic fore/aft and backrest angle adjustment. Surprisingly, the upper seatbelt anchorages are not adjustable.

Space in the rear is good, aided by the relatively long wheelbase, and our tall tester's self-behind-self check was acceptable if a bit cramped. As the roofline is straight, headroom is good beneath the grey felt headliner, but the Civic is a strict four-seater – there is no lapstrap for a middle rear passenger. The rear side-glass is fixed, very basic arm rests are moulded into the side panels, and slim map pockets are set into the rear of the front seats. The folding rear squab is split 50/50 and when laid down increases luggage capacity from 208 to 976 dm<sup>3</sup>. Boot trim is mediocre and the covering of the neat folding clip-in parcel tray looked a potential case for splitting. Although the tail opening is wide, the inner wheel-arches encroach considerably (in order to house the rear suspension struts) on usable boot space. The loading lip is a bit high and wide for really easy ingress/egress of heavy goods.

Back up front, the driver is faced by a facia whose appearance aroused controversy amongst our test team, some liking it and some not, but it is fresh and modern-looking. Soft-touch button and slider controls operate the ventilation system that includes air-conditioning as standard, and an RDS radio/tape with four speakers is also part of the kit. A manual telescopic aerial is mounted in the A-pillar. The instrument binnacle contains a rev counter, 230° km/h speedometer, fuel and coolant temperature gauges that are all minimally calibrated in orange markings (except the total and-trip odos, which are white),







The complex 1.6-litre V-TEC engine incorporates four valves per cylinder, d-o-h-c and variable valve timing to produce some amazing power and torque figures (left). Boot space is limited by intrusion of the wheel arches. The loading lip is fairly high and wide (below, left). The interior is sombre. Seats are upholstered in perforated and plain leather (below, right).

the wash/wipe for both front and rear screens. However, most actions require rotating collars on the stalks which is not necessarily a natural action. The windscreen wipers have a fixed intermittent, two constant speeds and a flick wipe option, while the wiper for the heated rear window can be switched either on or off.

Other convenience items include two-stage remote central locking, electrically operated front door glass with a one-touch facility for the driver, and floor-

and there is a digital clock. On the passenger side there is a non-locking cubby, and further oddments stowage is provided in the centre console (a lidded bin cum armrest, plus three trays) and in the front doors.

The right-hand steering column stalk controls the lights, the left-hand wand

mounted releases for the fuel filler flap and the tailgate.

## Exhilarating drive

On the move, the Civic V-TEC provides an exhilarating drive albeit with a couple of complaints. Noise is one, and not just from the motor which anyone attracted to the V-TEC's character would probably not find offensive anyway. The source is mainly tyre roar, the substantial 195/55 Continental Sport Contacts mounted on 15-inch 6JJ wide five-spoke alloys generate quite a racket over many surfaces. At high speed, wind rush also intrudes. Turning the radio volume up is not the answer!

Faced with a demanding stretch of road, the V-TEC really comes alive. Because of the huge rev band available in each gear, cog-swopping is kept to a minimum so driver input centres on throttle, steering and brakes.

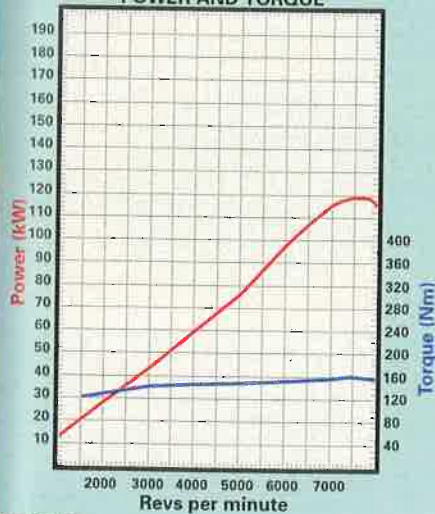
The three-spoke steering wheel is rake adjustable but has no airbag, and the leather covering has red stitching. Why this arty feature was not extended to include the leather covered gear knob and the seats is odd. But the wheel is comfortable to hold and the power

assistance has not eliminated feedback. The V-TEC's all-strut suspension is set up stiffly without being harsh, but the body does jiggle over rough surfaces. Turn-in is precise and progressive, and handling is as neutral as one could reasonably expect. On smooth, swoopy blacktop, this Civic is an enthusiast's delight. Hustling the car



## SPECIFICATIONS

### POWER AND TORQUE



### ENGINE:

Cylinders.....four in-line, transverse  
Fuel supply.....PGM-FI multipoint injection  
Bore/stroke.....81/77.4 mm  
Cubic capacity.....1595 cm<sup>3</sup>  
Compression ratio.....10.2 to 1

Valve gear.....d-o-h-c V-TEC  
Ignition.....electronic  
Main bearings.....five  
Fuel requirement.....premium unleaded or leaded  
Cooling.....water

### ENGINE OUTPUT:

Max power I.S.O. (kW).....118  
Power peak (r/min).....7 800  
Max usable r/min.....8 400  
Max torque (N.m).....160  
Torque peak (r/min).....7 400

### TRANSMISSION:

Forward speeds.....five  
Gearshift.....centre floor  
Low gear.....3.230 to 1  
2nd gear.....2.105 to 1  
3rd gear.....1.458 to 1  
4th gear.....1.107 to 1  
Top gear.....0.875 to 1  
Reverse gear.....3.000 to 1  
Final drive.....4.266 to 1  
Drive wheels.....front

### WHEELS AND TYRES:

Road wheels.....15-inch alloy  
Rim width.....6JJ  
Tyre make.....Continental Sport Contact  
Tyre size.....195/55 R15  
Tyre pressures (front).....220 kPa  
Tyre pressures (rear).....210 to 240 kPa

### BRAKES:

Front.....ventilated discs  
Rear.....solid discs

Hydraulics.....dual circuit, ABS  
Boosting.....vacuum  
Handbrake position.....centre floor

### STEERING:

Type.....rack and pinion, power assisted  
Lock to lock.....2.9 turns  
Turning circle.....10.8 metres

### MEASUREMENTS:

Length overall.....4 182 mm  
Width overall.....1 693 mm  
Height overall.....1 397 mm  
Wheelbase.....2 622 mm  
Front track.....1 478 mm  
Rear track.....1 488 mm  
Ground clearance.....160 mm  
Licensing mass.....1 120 kg  
Mass as tested.....1 120 kg

### SUSPENSION:

Front.....independent  
Type.....double wishbones, MacPherson struts, stabiliser bar  
Rear.....independent  
Type.....double transverse arms, spring struts, longitudinal control arm

### CAPACITIES:

Seating.....4  
Fuel tank.....45 litres  
Luggage trunk.....208 dm<sup>3</sup>  
Utility space.....976 dm<sup>3</sup>

### WARRANTY:

Honda maintenance plan

### TEST CAR FROM:

Mercedes-Benz of South Africa



demands concentration but the rewards are well worthwhile.

The all-disc arrangement is ventilated at front, and ABS is standard. Our Civic achieved a perfect score of ten three-second stops from 100 km/h – stopping power does not get much better than that.

Under the lightweight bonnet, there is a crowded engine bay topped by a brace joining the strut towers, but all routine service points are easily accessible.

### Test summary

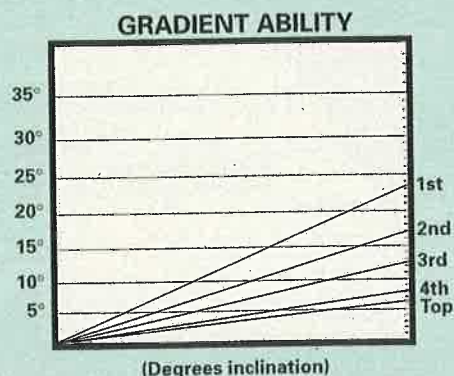
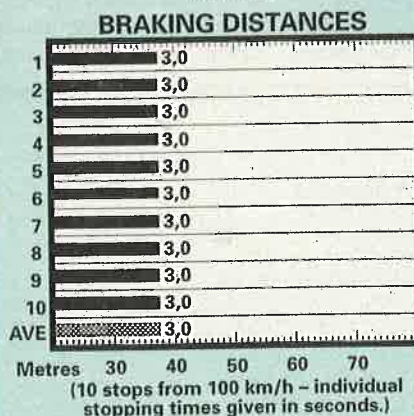
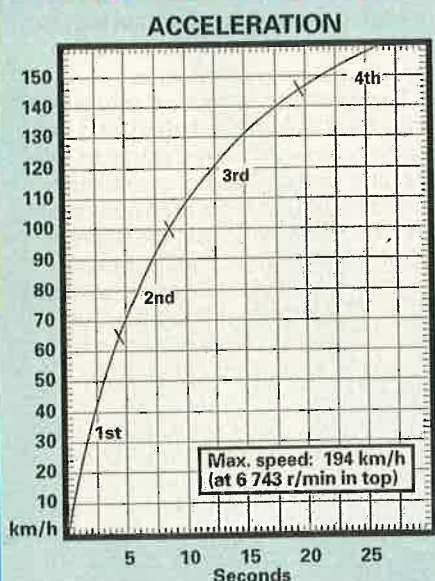
Has the V-TEC usurped the Golf GTi as the quintessential hot hatch? Yes,



Front door windows are electrically controlled and feature a one-touch facility on the driver's side. The rear side windows are fixed.

but at R109 700 the Civic V-TEC is not cheap (R4 200 more than a GTi Executive) although Hondas have always sold at premium prices on the local market, and the V-TEC motor obviously represents costly technology. Thus far Honda motors have earned a reputation for bullet-proof reliability, so hopefully this new high performance screamer will continue the tradition. It offers a different driving experience, immensely satisfying for those who enjoy precision machinery and can afford to indulge themselves with this latest state-of-the-art pocket rocket.

## TEST RESULTS: HONDA CIVIC V-TEC



**MAXIMUM SPEED (km/h):**

True speed	194
Speedometer reading	210
(Average of runs both ways on a level road)	
Calibration	60 80 100 120
True speed	55 75 93 111

**ACCELERATION (seconds):**

0-60	4.00
0-80	6.05
0-100	8.65
0-120	12.35
1 km sprint	30.28
Terminal speed	171.4 km/h

**OVERTAKING ACCELERATION (seconds):**

	3rd	4th	Top
40-60	3.32	4.86	6.83
60-80	3.59	4.73	6.96
80-100	3.67	5.41	6.87
100-120	3.63	6.09	9.03
120-140	-	6.65	10.67

**FUEL CONSUMPTION (litres/100 km):**

60	5.90
80	7.28
100	8.27
120	9.27

**BRAKING TEST:**

From 100 km/h	
Best stop	3.0
Worst stop	3.0
Average	3.0

(Measured in seconds with stops from true speeds at 30-second intervals on a good bitumenised surface.)

**GRADIENTS IN GEARS:**

Low gear	1 in 2.3
2nd gear	1 in 3.2
3rd gear	1 in 4.5
4th gear	1 in 7.1
Top gear	1 in 9.1

(Tabulated from Tapley (x gravity) readings, car carrying test crew of two and standard test equipment.)

**GEARED SPEEDS (km/h):**

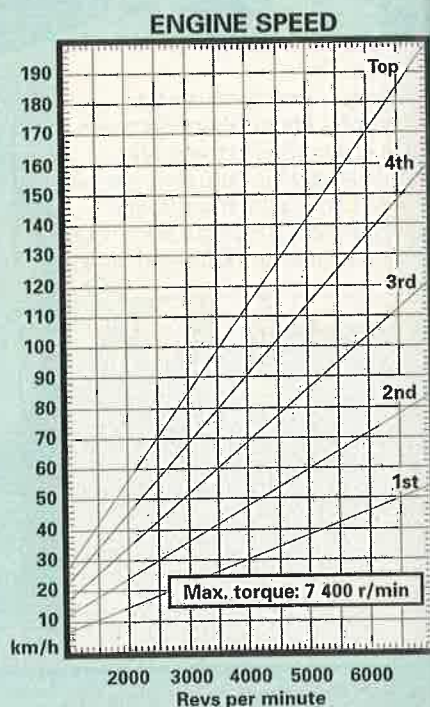
Low gear	61*	65
2nd gear	93*	100
3rd gear	135*	145
4th gear	177*	191
Top gear	224*	242

(Calculated at engine power peak\* – 7 800 r/min and at max. usable r/min – 8 400 r/min.)

**INTERIOR NOISE LEVELS:**

	Mech	Road
Idling	41	-
60	60	-
80	63	70
100	65	72
120	70	75

(Measured in decibels, "A" weighting, averaging runs both ways on a level road: "mechanical" with car closed; "road" on a coarse road surface.)



**PERFORMANCE FACTORS:**

Power/mass (W/kg) net	105.36
Frontal area (m²)	2.36
km/h per 1 000 r/min (top)	28.77

(Calculated on "mass as tested", gross frontal area, gearing and I.S.O. power output)

**TEST CONDITIONS:**

Altitude	at sea level
Weather	cloudy, cool
Fuel used	unleaded 95 octane
Test car's odometer	1 432

### CAR'S ROAD TESTS

CAR is the only South African motor magazine whose performance road tests are carried out at sea level – where naturally aspirated car engines achieve their (rated) peak performance – on a flat road to internationally comparable standards. The test car carries a crew of two, a full tank of fuel and German Peiseler electronic road test equipment. CAR's fuel consumption testing is done with a Pierburg flow meter linked to the Peiseler computer. Top speed and overtaking run times are averaged both ways on a level road.