ROAD & TRACK

HONDA CITY
The enthusiast's commuter car
TRIHIWAK 304
Let's strap on our fourth wheel, boys, and see what she'll do

Here's a sports car so astonishingly different that other drivers seem pointedly to overlook its basic unorthodoxy. Imagine driving it almost 1000 miles around our little corner of southern California and being asked again and again, "Hey, what sort of engine's in it?" No self-respecting car-hip southern Californian would get caught citing the obvious: "Wow, it has only THREE wheels!"

The Trihawk 304 (as in wheels and development stages, respectively) owes its existence to the morass of government auto regulations, the race car design expertise of Bob McKee of Can-Am and Indy fame, the enthusiasm for things mechanical of a man named Lou Richards—and everyone's appetite for hamburgers. Lou, you see, owns a company that manufactures mindset-forming equipment, but he has long been fascinated with the idea of building a simple, lightweight and entertaining car. He cites the BMC Mini Moke, Lotus 7 and Morgan 3-wheeler as influential in his musings: thinking processes that evidently got a lot more serious when Lou sat down with Bob to discuss a practical design. Their conversations focused on a specialty car of limited production, not simply a one-off, and this is when government regs entered the picture. What with emission, safety and other standards numbered in the hundreds (and compliance costs therewith figured in several more zeros, at least), it's not surprising that attention turned to the time-honored tradition of 3-wheel motoring. After all, Morgan 3-wheelers enjoyed popularity for years with British tax laws treating them as motorcycles. Why not a high-tech Morgan, a high-performance 3-wheeler that would be a sports car to us, but a motorcycle to those interpreting our laws and regulations?

Elsewhere in these pages you'll find theoretical discussion of 3-wheeler pros and cons. Let's not repeat ourselves here, but it's worth observing how nicely the Trihawk follows the optimal theoretical layout. Its pair of wheels is in front, the terminal understeering mode as opposed to the rear-pair/oversteering situation. Drive is through these front wheels, to exploit grip at the loaded end of the triangle. And its engine is horizontally opposed, to keep the center of gravity low, thus enhancing the triangle's overturn resistance. But all this theoretical stuff overlooks an elemental reality: The Trihawk is as entertaining a sports car as any we've driven in a long time. "Gadzooks," noted one staff member, "this little critter is fun!"

Initially, the Trihawk struck us as strange. It looks insect-like from many angles and smaller than it really is. But then who's to say what constitutes 3-wheeler esthetics? And, in fact, it's not really all that small. The car's 98.0-in. wheelbase, for instance, coincides with a Corvette's. Its 154.5 in. overall length is just a hair short of a Rabbit's 155.3 and, at 73.2 in. overall, its width is right up there with the Rolls-Royce Silver Spirit's. On the other hand, this maximum width is from cycle fender to fender and, in truth, the rest of the Trihawk is a tidy 1380-lb 2-seater that tapers down (and up, in profile) to a tail just a bit wider than its single taillight. The latter, exemplifying 3-wheel esthetics, no doubt, echoes the width of the Trihawk's single rear tire.

The car is doorless so you clamber over the side, racer fashion, or as one staff member recalled nostalgically, "like Fangio did and like I used to do with my MGB, looking pretty stupid because using the door was so much quicker." Once snuggled in place, you find everything quite comfy, if not overly spacious, with the necessary controls and instruments located where they belong. The seats are similar to those in the Renault Turbo, but close enough to each other that cooperation is fostered in such activities as driver and passenger belting up. Relationships of steering wheel/pedals/shifter lever and seat are all well high perfect, given the coziness of the surroundings. The stubby shift lever connects to a 5-speed gearbox of Citroën origin and a twist of the key fires up the air-cooled side flat-4 tracing similar parentage. This 1299-cc powerplant, same as in the Citroën GSA,
produces 69 bhp at 5500 rpm, 72 lb-ft of torque at 3500 and a thumping twackiness that's in tune with the Trihawk's spirit.

It's a spirit, though, that takes you by surprise. You keep looking for some indication of the car's 3-wheel nature, some quick in handling, some strangeness mirroring its appearance. But only two things remind you of this: other drivers' double takes and the occasional yump when you straddle a bump only to nail it spot-on with the third wheel. Not that you'd confuse the view forward with that offered by any other car. The hood is dominated by an air cleaner bulge; the cycle fenders steer with the wheels, following your input and road irregularities; and your view to either side or through the steeply raked windshield wouldn't be a favorite of one susceptible to agoraphobia. A couple of us likened it all to a Lotus 7; another imagined a wide formula car with fenders.

Between this fiberglass body and its inner tub defining the cockpit lies a tubular steel frame incorporating the rollbar, a second hoop structure built into the dashboard and a third, of smaller stock, to which the overhanging engine is mounted. Front suspension borrows heavily from Bob McKee's racing experience (and also from Renault parts bins) with unequal-length A-arms suspended and damped by coil-over shock units. The lower arms are from the Renault Le Car; the uppers, McKee designed and fabricated from tubular stock. Steering is rack-and-pinion and there's also an anti-roll bar up front. Renault also provides the brakes, the usual disc/drum combination (if the term "usual" can be stretched to include a single drum situation). Also at the rear is a single trailing arm curving to the left of the wheel, suspended and damped by another coil-over unit. Tires are identical at all three corners, Goodyear Eagle ST P185/70R-13s.

Needless to say, most of the weight is at the front, 74 percent to be exact: all of the driving force is there; and all of the roll resistance is up front as well. Think of the rear suspension as something to hold up the 4.3 cu ft of storage space, a nicely finished cubby lurking beneath a latching lid aft of the cockpit.

But the amazing thing is how rarely you think of the rear wheel's uniqueness, because the Trihawk's handling is as responsive and predictable as any proper 4-wheel sports car's. As
predicted by all the theory, the Trihawk understeers, though not to a fault. Accelerate hard in a lower gear, and there's commendably little torque steer or torque tightening of the steering. Lift off in a hard corner and the understeer lessen a bit to help you position the car. Brake hard in a corner, even in the wet, for goodness sake, and the car still retains its composure while sliding more or less laterally outward. Under anything less than a handbrake-induced twitch, you can be confident of that single rear wheel following those in front. Only twice did we experience any indication of the rear tire working alone back there. One driver sensed a slight nibble when the rear tire encountered some middle-of-the-lane grooving. And our tester noted some wiggle as one or the other driving wheel went hydroplaning during an atypically wet day at the track. We should also observe that he was approaching the Trihawk's 90+ mph top speed at the time and aiming for the deeper puddles.

In more normal driving, the Trihawk was extremely stable and maneuverable. Steering effort with our test car was on the heavy side, though we're told a reduction in caster is planned to counter this. An earlier prototype we drove displayed the opposite tendency, light steering with a bit too little self-return, so there's reason to believe a second iteration of caster will be on target.

The Trihawk's width became especially apparent in weaving around our slalom pylons, but this didn't keep it from posting a speed of 60.9 mph. To put this in perspective, it's a bit quicker through the slalom than an Audi Coupe or Porsche 924, for instance. During this exercise, the Trihawk's steering gave excellent input about the front tires' grip and the rear tire could be heard, though barely felt, in transition. Our tester came away feeling the car would have been quicker but for a quirk of gearing: Its 3rd-gear redline was less than the suspension's slalom capability, but in 4th the car was power-limited and not quite as tossable.

Around the skidpad, the Trihawk was a pusher whether traveling to the left or right. But it understeered its way to an impressively high 0.830g, beaten at our skidpad by precisely four cars: the BMW M1, Ferrari Boxer, Lamborghini Countach and Porsche 930 Turbo. Lofty company indeed.

If you're wondering about 3-wheel braking, consider two things: Front brakes do most of the work anyway, and a race car designer like Bob McKee knows his way around brake systems. An implication of these observations is the Trihawk earning one of our rare "excellent" brake ratings. Its panic stop distances from 60 and 80 mph were impressively short, at 148 and 250 ft, respectively, with nary a hint of anything but straightline behavior. Pedal pressure of the car's unboosted system was clearly on the high side, at 65 lb for our 0.5g stop. On the other hand, the Trihawk has the sort of brakes we usually associate with competition cars, which is to say well balanced fore/aft, fade-proof and extremely easy to modulate once the heavy pedal pressure is expected.

Nor is the Trihawk's acceleration anything to be ashamed of. We card-shuffled its raspy flat-4 through the gears to a 0-60 mph time of 10.2 seconds and quarter-mile figures of 17.6 sec at 75.5 mph. This puts the Trihawk just a tick behind the Dodge Charger 2.2, for example, and considerably quicker in acceleration than the other sports coupes compared in our March 1982 issue.

Around town, a favorite Trihawk milieu, it displays a dual character depending on whether you're simply trundling about or, more likely, as one staff member put it, "heavy into the throttle, shifting from gear to gear, being rewarded with the sights and sounds of an electronic race game." The Trihawk brings out this latent formula-car driver in anyone and, what's more, it returns the compliment with high entertainment value.

Speaking of value brings us to an element of the Trihawk about which we're rather more mixed: its price. At close to $15,000 it's hardly a poor man's toy. There's an excellent argument, of course, that someone else's used toy could be bought for considerably less and the difference allotted to making it every bit as enjoyable as new. On the other hand, a look at the limited production specialty car market suggests that $15,000 is not out of line, especially when you factor in the engineering implicit in the Trihawk. It's clearly not simply a production car chassis re-bodied in flashy fiberglass.

Production Trihawks are expected to differ only a little from the prototype we tested. Our Trihawk, for instance, had a base, though well designed canvas top. Augmenting this on the production version will be side curtains as well. Other minor changes include different sources for the alloy wheels and instruments, a hood that hinges forward rather than the prototype's lift-forward-and-off variety, a rear bumper bar and the caster change already noted. Other plans underway include a full service facility at Hawk Vehicles, Inc.'s southern California home base, with such niceties as a 24-hour owner hot line and mobile service.

We see the Trihawk as a welcome addition to the specialty car market. It's a proper sports car, well designed and well executed with just a touch of zaniness mixed in, an entertaining way to get from here to there. Or maybe just back to here again, purely for the fun of it, with a smile on your face and on the faces of passersby and drivers around you.
## Road Test

**Trihawk 304**

### Price
- List price: $14,888
- Price as tested: $14,888

### Manufacturer
- Hawk Vehicles, Inc., 3408 S. Coast Hwy., Dana Point, Calif. 92629

### General
- Curb weight, lb/kg: 3180 / 1440
- Test weight: 3000
- Weight dist (with driver), f/r, %: 54 / 46
- Wheelbase, in./mm: 96.0 / 2439
- Track, front: 56.0
- Track, rear: 56.0
- Length: 154.5
- Width: 73.2
- Height: 43.2
- Ground clearance: 5.0
- Overhang, f/r: 46.5 / 16.0
- Track space, c/w f/r: 112
- Fuel capacity, U.S. gal./Liters: 11.0

### Engine
- Type: SOHC flat 4
- Bore x stroke, in./mm: 9.13 x 258
- Displacement, cu/in. cc: 79.4 x 86
- Compression ratio: 8.7:1
- HP @ rpm, SAE net/kW: 69 / 52 @ 5500
- Equivalent mph/ km/h: 96 / 155
- Torque @ rpm, lb-ft/ Nm: 72 / 98 @ 3500
- Equivalent mph/ km/h: 96 / 155
- Carburetor: 1 Weaber (2V)
- Fuel requirement: 0.91 octane

### Drivetrain
- Transmission: 5-speed manual
- Gear ratios: 5th (0.91): 3.76:1
- 4th (1.13): 4.68:1
- 3rd (1.50): 6.19:1
- 2nd (2.29): 9.46:1
- 1st (3.82): 15.75:1
- Final drive ratio: 4.12:1

### Instrumentation
- Instruments: 85-mph speedo, 7000-rpm tach, 99,999.9 odometer, oil temp, oil press, voltmeter, fuel level
- Warning lights: high beam, directionals

### Accommodation
- Seating capacity, persons: 2
- Head room, in./mm: 35.5 / 902
- Seat width, in./mm: 2 x 19.0 / 2 x 483
- Seatback adjustment: °

### Maintenance
- Service intervals, mi: 5000 / 10,000
- Oil filter change: none
- Chassis tube: none
- Tires: Goodyear Eagle ST (60"
- Warranty, mo/mi: 12 / 12,000

### Calculated Data
- Lb/lbhp (test weight): 23.2
- Mph 1000 rpm (5th gear): 17.4
- Engine revs/mi (60 mph): 3450
- Piston travel, ft/ft: 1480
- R&W steering index: 1.20
- Brake swept area, sq in./ft: 145

### Road Test Results

#### Acceleration

<table>
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<tr>
<th>Time to distance, sec</th>
<th>0-100 ft</th>
<th>0-500 ft</th>
<th>0-1500 ft</th>
<th>Speed at end of mph</th>
<th>Time to speed, sec</th>
<th>0-30 mph</th>
<th>0-50 mph</th>
<th>0-60 mph</th>
<th>0-80 mph</th>
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<td>3.4</td>
<td>9.3</td>
<td>17.6</td>
<td>75.5</td>
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<td>7.1</td>
<td>10.2</td>
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#### Speed in Gears

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<th>4th</th>
<th>3rd (6000)</th>
<th>2nd (6000)</th>
<th>1st (6000)</th>
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<tbody>
<tr>
<td>Speed</td>
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<td>85</td>
<td>65</td>
<td>43</td>
<td>26</td>
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#### Fuel Economy
- Normal driving, mpg: 26.0

#### Handling
- Lateral accel, 100-ft radius, g: 0.830
- Speed thru 700-ft slalom, mph: 80.9

#### Interior Noise
- Idle in neutral, dBA: 74
- Maximum, 1st gear: 91
- Constant 30 mph: 88
- 50 mph: 87
- 70 mph: 95

#### Speedometer Error
- 30 mph indicated is actually: 25.0
- 60 mph: 54.0
- 80 mph: 71.0

#### Brakes
- Minimum stopping distances, ft: 146
- From 60 mph: 250
- From 80 mph: 300
- Control in panic stop: excellent
- Pedal effort for 0.5g stop, lb: 85
- Fade: percent increase in pedal effort to maintain 0.5g deceleration in 6 stops from 60 mph: 0%
- Parking: hold 0% grade? yes
- Overall brake rating: excellent

#### Diagram

- Acceleration vs Time
- Distance vs Time

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*This information is based on the data provided in the image.*