

## Velo Vision Sample Article

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If you have any problems or suggestions about the magazine in general, or this PDF article in particular, please email me at

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I hope you enjoy the read.

Peter Eland  
Editor and Publisher, Velo Vision

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### Small print

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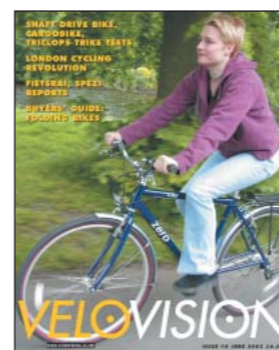
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VELO VISION AND VELO-VISION  
We weren't first with the name. Velo-Vision (note the hyphen) is a progressive HPV-friendly bike shop in Körten, near Bergisch-Gladbach, Germany, who also make their own recumbents. Velo Vision magazine is working in friendly harmony with Velo-Vision in Germany. Contact them on [www.velo-vision.de](http://www.velo-vision.de)



Cover photograph: Peter Eland.

Opposite: Michael Brandist stretches his legs in front of Leicester's National Space Centre after a ride in the Cargobike. Read Steven Brandist's review on page 32. Photo: Steven Brandist

- 4 News**  
Disk brake peril, bicycle pasta, Moultons ride out, a human-powered bus and more...
- 10 London leads the way**  
How an enlightened Mayor is putting cycling on the capital's map
- 16 Thwarting theft**  
A revolutionary theft-proof bike from Amsterdam – and how to lock yours tight
- 18 Art on the island**  
A cycling artist lets creativity flow in Canada's countryside
- 20 Technology roundup**  
A rolling road trike, latest from the Läufer, and two up-and-coming folding bikes
- 24 Triking on the Triclops**  
A reader reviews his Organic Engines recumbent trike
- 28 Look no chain!**  
We test a shaft-drive commuter bike, with surprising results
- 31 A heavenly hub**  
The Pantour suspension hub courier-tested
- 32 Sounds like a job for... Cargobike Man!**  
Family cycling transport isn't just for superheroes
- 36 Letters**  
Your feedback, ideas and more
- 40 FietsRAI 2003**  
A full eight pages of reports from Amsterdam's annual trade show
- 48 SPEZI 2003**  
Readers report back from the Special Bike Show in Germany
- 50 Buyer's Guide Feedback**  
Your comments on last issue's Guide – and some we missed
- 52 Buyer's Guide: folding bikes and portables**  
Our overview of the best fold-up or take-apart bikes and trikes available today
- 58 Subscribe – and win a KMX Kart!**  
A KMX Trike up for grabs in our competition
- 59 Adverts**  
The best, most interesting advertising around!  
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### THE RIGHT BIKE

Sad news. The bike on which I began my cycling life has finally gone to the great scrapheap in the sky. A cheap, secondhand steel-rimmed 'racer', it did sterling service – at the age of 16 giving me the cycling bug, and even taking me on my first proper cycle tour in Corsica before becoming my student steed in London. Then it was adopted by my younger brother James and for almost a decade it's been his daily city transport – despite my best efforts to get him to buy something better, with brakes that work in the wet.

But a few months ago, with buckled wheels and a utterly shot transmission, it had reached the point where, sentiment aside, a new bike really was called for. So he found a newer, younger model to take him to work and back... and is delighted. I couldn't persuade him to go for hub gears, but at least he has decent brakes and gears that, for now, click not graunch.

The point of this slightly sentimental rambling? That while you can have a great time, catch the cycling bug and be happy for years on any old rust-bucket of a bike, the right machine for the job can make a huge difference to your cycling pleasure and safety. This is especially the case when you start to take on cycling tasks that go a bit beyond the ordinary – for example train travel or child-carrying. We've ideas in this issue for both...and much more besides.

*Peter Eland*

# LOOK NO CHAIN!

**Shaft drive bikes have been around since the dawn of cycling – is this the year they make it into the mainstream? We review the Zero Cycles shaft drive commuter bike to find out.**

## BACKGROUND

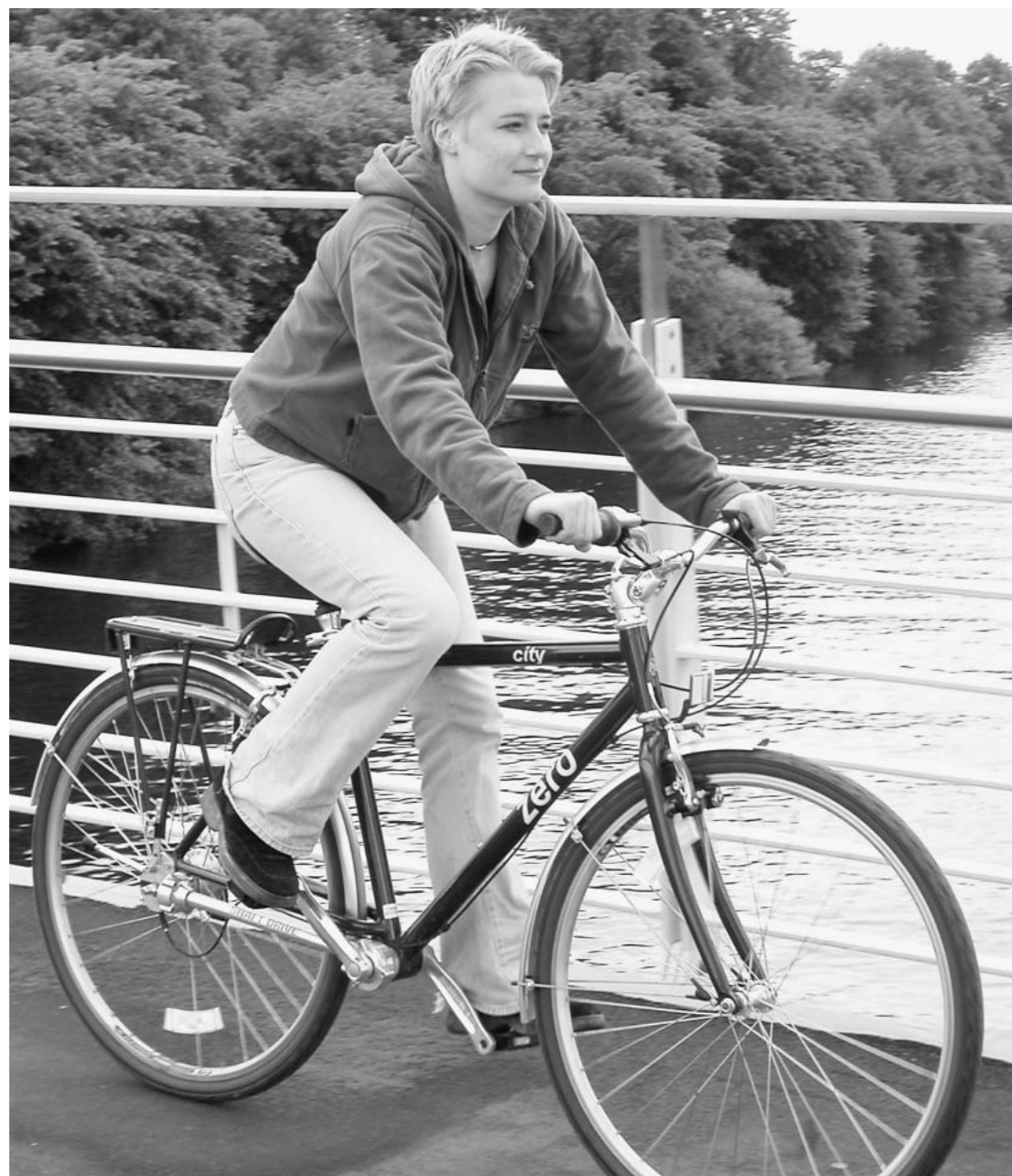
Our recent series of articles about chainless bikes prompted Tom Agbabi of Zero Cycles, based near Bristol, to get in touch and suggest a review of one of the bikes he imports.

The Zero machines use a shaft drive unit which I've seen around for a good number of years at trade shows – it's produced by the Sussex company in Taiwan. I think it's probably more popular in the far east, where the cleanliness of the shaft drive would be important, particularly on folding bikes which are carried into small apartments for storage. There must be a certain level of demand for the unit to still be in production! But in Europe, certainly, shaft drive has never really caught on.

Perhaps, of course, that's because there haven't been active distributors like Zero pushing the idea – or perhaps it's because the shaft drive has a tough task. Can it succeed where so many other transmission ideas have failed? Can it improve on the chain drive?

The promise of shaft drive is for near-zero maintenance, trouser-cleanliness and simplicity. The downsides have always been efficiency, hooking it up to a decent gearing system, and ease of wheel removal for puncture repair.

We decided to take Tom up on his offer and see how a modern shaft drive system measures up. From their range of touring, commuting, MTB and BMX machines we chose the Zero City commuter bike, which retails in the UK at £560. It's



available either through dealers or direct from Zero – contact them to see if there's a dealer in your area.

Soon the bike arrived, fully-assembled and requiring just pedals fitting and handlebars straightening before riding off.

## FIRST IMPRESSIONS

The bike itself is a well-made, more or less standard diamond frame machine. The aluminium frame is a special design, with an extra-large bottom bracket shell and elevated chainstays to provide clearance for the shaft drive unit. It's coated with

a tough, dark blue paint – nice and unobtrusive for town use, yet smart with it. A set of bottle cage bosses are fitted to the downtube.

The bike comes with good-quality parts and accessories: V-brakes front and rear, well-built 700c wheels with good street tyres: Specialized Nimbus, some of my favourites, and with puncture protection built in. An adjustable-angle alloy stem supports MTB-style 'riser' bars – too wide for my taste, and as I've said before I don't really get on with straight bars anyway – but a hacksaw and a set of bar ends would

easily sort that one out.

The saddle is a rather radical-looking but comfy enough 'Body Geometry' design from Specialized. It's supported on a suspension seatpost. I'm not a fan of these – they make stopping and starting more difficult, by rising up whenever you get out of the saddle. Still, it would be easily and cheaply swapped out, and I daresay some people would like it.

Also, it might be a good idea to replace the seatpost quick-release with a simple bolt if you'll be leaving this bike locked up in town.

The shaft drive unit itself is chunkily constructed from aluminium. As the diagram shows, the spiral bevel gears are supported by plenty of ball bearings. At the rear wheel, it joins up with a Shimano seven-speed hub gear, with its usual cog replaced by an appropriate gear-wheel. The whole gubbins is all enclosed with a neat plastic cover. The gears are controlled from a twist-grip type changer.

Finally, the City has full-length mudguards front and rear, a prop stand that does the job, and a quality aluminium carrier rack. Weight of the smallest (20") men's frame (which fitted me, at 6' 2", fine with the seatpost out) is around 14 kg.

## THE RIDE

So how does it go? Pretty well. My first impression was that it reminded me of riding knobby mountain bike tyres on the road – a sort of thrumming which hums through the drive back up your legs. Presumably due to tiny unevenness as the teeth of the gears mesh, this 'buzz' isn't harsh or noisy – in fact you can hardly hear the transmission. But a reasonably-oiled chain bike really feels smoother.

It did feel noticeably more sluggish than my own town bike – hardly a model of efficiency with its heavy frame, dirty chain and Nexus four-speed hub. But it was by no means horrendously inefficient, nor was there any disconcerting 'slop' or flexibility – the bike was responsive enough. Stressing the drive as much as I could by hard acceleration and climbing out of the saddle provoked no ill-effects.

Others who rode it didn't even notice it was a shaft drive bike until I pointed it out to them. For most 'normal' people who ride a bike, I don't think there's a problem. There are benefits, though. If you ride your bike to work and back, need to keep your clothes clean and don't like bike maintenance, the idea of a shaft drive bike is very appealing.

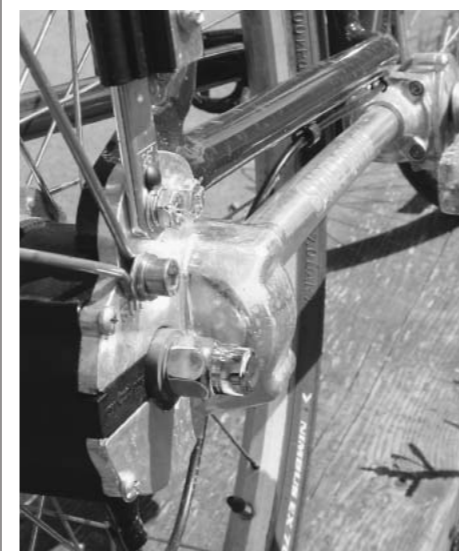


**LEFT: A twist-grip changer for the seven-speed hub gear**

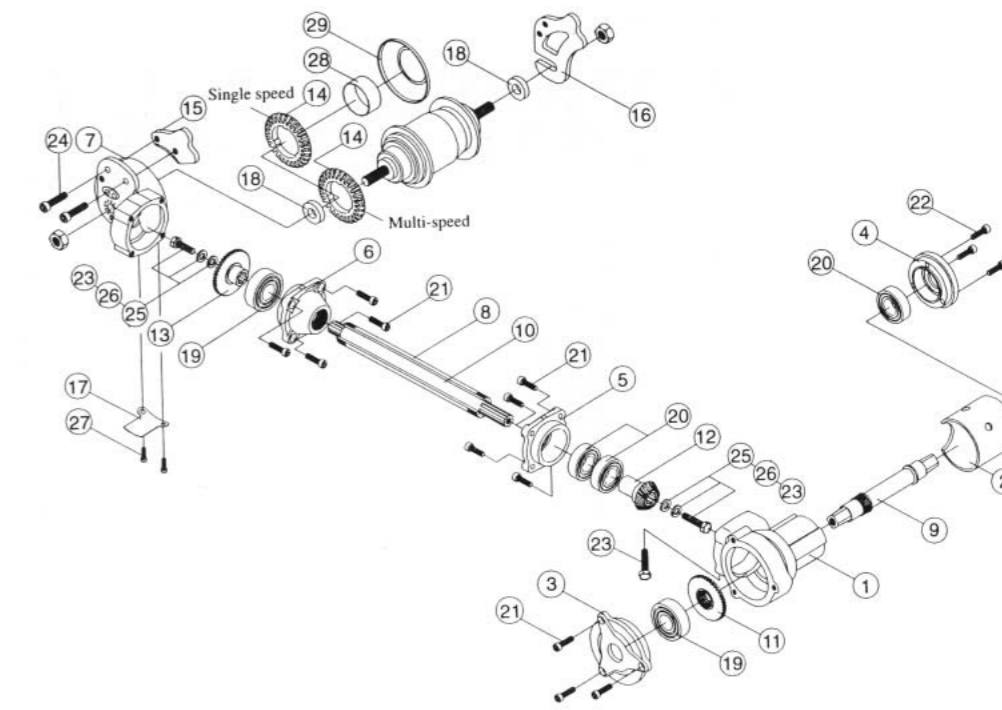


**MIDDLE: An angle-adjustable stem is provided – a nice touch**

**BELOW LEFT: Chunky aluminium housings enclose the gears**



**BELOW: This schematic is slightly out of date I'm told (it was the best ZERO could get) but it gives an idea of the inner workings of the drive.**



Some of the efficiency loss is of course down to the Nexus hub gear, which shifted nicely throughout the test. I found the gear range a bit high for flat town use – it certainly would be for hilly commuting. But then again, I like to ride with a fast cadence – most ‘non-cyclist’ cycle users prefer to pedal slower. So maybe it’s about right. If you disagree, unfortunately, you’re rather stuck: there’s no way to change the ratio apart from using a different hub gear (or change the wheel size, but that’s a bit drastic!)

**SUMMARY**

This bike was a nice surprise. I came into this review thinking it would be a straightforward confirmation of what I’d heard about shaft drive – inefficiency would be a killer, and I’d end up recommending hub gears and a full chaincase instead for anyone wanting clean trousers and low maintenance.

But it’s not that simple. Yes, the shaft drive is a bit of a friction-box, but only side-by-side against a chain drive. It’s perfectly useable. And most utility cyclists would never notice the difference.

As far as we can tell from the short test period, it really is low maintenance. Puncture fixing is actually easier (and cleaner) than it would be on a chaincase-equipped bike.

Sure, the shaft drive system has a weight penalty and a price penalty against a standard chain drive – you could probably buy a lighter ‘normal’ bike with similar levels of equipment for £200 less or so – but cost in maintenance, new chains etc and it looks less unreasonable. As to the weight – if that matters to you, you’re probably not really interested anyway.

Finally, the shaft drive wins a pragmatic argument: it’s almost impossible to buy a bike with a full chaincase in the UK – barring a few Dutch roadster imports. I’d love to be proved wrong, but I don’t yet know of a widely-available bike using a decent, modern full chaincase (like the one pictured in our FietsRAI report). The Dutch ones are all very well, but tend to be heavy and have that very upright

riding position you either love or hate (sorry, I’m with ‘hate’ here).

So, if you’re in the UK (or indeed the USA) and are looking for a very low-maintenance, high-cleanliness bike, perhaps for a ‘non-cyclist’ partner or friend – or even maybe if you hire bikes out to the public – try to get a test-ride on one of these before you rule them out.

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**NO MAINTENANCE?**

Of course, these bikes require the usual maintenance of brakes, headset and the like. But the shaft drive itself? Assuming an annual mileage of 3000 miles per year, the manufacturers recommend lubrication of the hub gear and rear gears every six months, and the front gearbox every year. This either involves pumping new grease in through the grease nipples on front and rear gear housings or, if you don’t have a grease gun, opening the housings and smearing grease on by hand.

For the people this bike is aimed at, that sounds like a job for a dealer (or cyclist friend/partner!) – and for the mechanically uninclined, a six-monthly checkup of all of the bike’s systems is no bad thing anyway.

Zero offer a five year warranty on frame and forks, and a two-year warranty on the shaft drive unit itself. If something serious were to go wrong, swapping out the entire drive unit wouldn’t be difficult.

**FIXING A REAR WHEEL PUNCTURE**

First, you remove two small screws and remove the plastic dust-shield ①

Then, use a 15mm spanner to undo the axle nuts. On the shaft drive side, there’s a stepped washer which keys into the housing, making sure the gears are properly aligned. Lift this out and the whole rear wheel can then be removed as far as the gear-change cable allows. That’s plenty far enough for a puncture fix. If you want it completely off, it’s relatively simple to unhook the cable from the hub.

On the test bike I had to also loosen the mudguards to allow the wheel to move backwards enough for the axle to clear the long slot on the drive side. Still, no big problem. ②

With the rear wheel out, the bevel gear on the seven-speed hub is revealed. Try not to get any dirt or grit onto the gears – the grease will attract such stuff as if magnetic! Also, take care as you fix your puncture that the stack of washers on the axle end by the gear doesn’t come off and get lost – the thickness is carefully set so that the gears mesh properly ③

The driving gear is also revealed once the rear wheel is removed. The curved, rather than straight teeth should give a smoother and quieter action than would straight ones ④

Reassembly is straightforward: simply pop the rear wheel back in, engage that tabbed washer in its hole, and push the gear-change cable thingy up around against the housing. Then tighten the axle nuts. If you don’t align the gear change cable support bracket correctly it grates on one of the gears – but this is nice and clear in the instructions, so there shouldn’t be a problem.



Finally, you replace the plastic cover, re-align your mudguards if you’ve had to fiddle with them, and off you go!