



RSR - Ralf`s Selfmade Recumbent

Easy to see – this is not a normal Dutch Speed Bicycle (DSB), but my self-produced recumbent using Parts from DSB. And this is the story how it came to it. Just to show what is possible to do and encourage those who also want to try this. But look out: this is not an exact construction guidance – this is my bicycle. And yours can look different. Variations in parts that you use may cause variations in your construction. So: whatever you do you do it at your own risk. And: neither I nor Dutch Speed Bicycles will be responsible for what you do!

the idea

Why a recumbent? And why a selfmade one? My experiences with recumbents were restricted to few testrides at expos and at dealers, but I was infected. My Bicycle should perform this points:

- an understeerer for easy arm-holding,
- a 26-inch rear wheel for a mounting on a cycletrainer at the winter season,
- a fullsuspension concept for comfortable riding even on worser roads,
- somehow foldable for a transport in my car,
- and not too expensive.

Now, hours for hours surfing in the internet wasn't much help and so I finally stranded on the homepage of Dutch Speed Bicycles, and the idea of a selfmade recumbent was born. My Experience on that field? Nothing! Sure, I am a graduated engineer, but working in health business. But with the help of my neighbour (and his blowpipe) it should be working. At the beginning there was only a rough picture in my mind and don't ask me of the hours I spent with paper and pencil until I got an useful concept. After that I began with the selection of the parts that I wanted to use and it started with this one:

the donor-frame



I thought: if I only need a rear frame why not use only a rear frame? Instead of cutting off an old frame I used a rear triangle of a cheap MTB-frame (an eBay-Auction like several other parts on my recumbent) with a so-called unified rear triangle, that means the bottom bracket is part of the rear

triangle. That was necessary because that got later the pivot point. After the disassembly the only work to do was cutting off the supports of the original pivot point.

the connector-part

The DSB connector-part needed some changes to get fit for action on my frame. The



problem was the exact connection to the main frame tube so that the rear triangle can be switched under the main tube. For maximum stability I chose this design: in the angled part of the connector part I cut two slots for the main frame tube, in the bottom part a bigger cut makes place for the 'seat tube' of the rear triangle.

the main frame



The main frame comes with the same 45*45*1,5mm rectangle steel tube like it is used on the original DSB frame. The connector-part is fitted in a 70°-angle on the main tube. Extra care is necessary at this step because the rear triangle must be in exact rectangle to the main frame later on. After welding it looks like this:

After fixing the pivot point it went on to the next step. The sloping tube has to perform two functions: the support for the seat and for the rear shock. For exact positioning you have to consider that in unloaded condition there must be enough room between the chain and the edge of the connector-part (respectively the nuts of the U-screws) for a proper function. The



rear shock support comes from that MTB-frame like the short circular tube too. The main frame stands in a 15° angle to the ground. To achieve a 35° seat angle the seat tube has to



fit in a 50° angle to the main frame. The length of the seat tube is given by the outline of the wooden seat. Different to the DSB frame the seat isn't supported on its top end but it is stable enough so there will be no problem. The lower support for the seat is also built from a piece of the rectangular tube. The slots were needed for the possibility of removing the seat.

After temporarily mounting the seat and with the help of the steerer I could fix the position of the head tube exactly. This tube comes also from that MTB-frame but was shortened slightly. For a requested head tube angle of 70° the tube had to fit in a 85°-angle to the main frame. Again exact working is necessary at this step to get an perfect alignment on the complete recumbent later on.

The last working operation on the raw frame was creating the 10°-angle at the front end. This one is necessary to lower the chain line thereby the chain gets not in contact with the understeerer. Besides that the frame looks a little better.

the seat



The seat is cut in the same contour like on the DSB, but fastening is somewhere different. In order to remove the seat I use drive-in nuts in the wood and rim screws from the bottom side for fastening. Two pieces of rubber are laid between seat and frame and for the support of the front nose of the seat I use a piece of wood

with adapted contour instead of the vibration isolator.

the understeerer



Maybe the most interesting chapter because I could imagine to supply the original DSB with an equal steerer. (Probably you have to lower the upper chain line with a chain roll and have to lift the seat with some big washers or

so under the vibration isolator to give room for the steerer). The general construction I looked upon HPV's Street Machine Gt. It consists of a 150mm MTB-Ahead-stem (5° Flip-flop), a cromoly-steerer without rise (approx. 550mm wide) and parts of an old pair of bar-ends of that type you stick inside the steerer for fastening, not clamp it on the outside. Instead of the bented tubes of the bar-ends I cut two tubes of a straight aluminium



steerer and equipped them with suitable holes. The stem is fitted that way that it shows downwards, its end is then positioned tight upon the main frame. After that the complete steerer has to be adjusted that it gets fully liberty of action until the grips are touching the seat. The practicable steering angle is even big enough for narrow turns.

the complete recumbent



and so looks it like after all parts are mounted!

After painting with silver-grey hammered paint I could start with the assembly. Mounting of the rear frame is like on the original DSB with U-bolts and self-locking nuts and I use the original crankshaft bolts too. The aluminium parts of the crankshaft unit were not polished but anodised. And the tube for the front derailleur is a piece of an alu seat tube with 28,6mm diameter.



the recumbent`s left side...

the equipment:

- RST 200 K front fork
- RST 21 rear shok,
- SRAM ESP 7.0 halfpipe-shifters and rear derailleur and Deore front derailleur,
- Shimano Deore 26 – 36 – 48 Crankshaft and 11 – 32 cassette,
- Shimano Deore V-Brakes,
- Wheels with Shimano Deore Hubs, black spokes, Grünert Dynamic rims and Continental Contact tires 37-406 / 47-559



...the back...



...and the front side!

and folded?



Folding is very easy and is finished in at least one minute: release brakes, open quick releases of the hubs and remove wheels, loosen the three bolts of the seat and remove seat, loosen the screw of the rear shock and turn down the rear frame!

The folded package has a size of approx. 140*65*65 cm and after turning down the rear seats I can store it in my car without problems. The total weight is approx. 19,5 kg, not really light, but with that stable steel frame I expected nothing other.

and so it rides!



After a short acclimatisation from upright to recumbent riding (even the hairpins needed a little practice) I became enthusiastic about the characteristics of my recumbent. It's very comfortable and handy. It is a lot of pleasure – my face is showing it!

