

Hydraulic drumbrakes - abstract presentation velomobiel seminair

by. H. Meckelburg & P.A. Hollebrandse

Background Because of the closed wheelarches of a velomobile, drumbrakes seems to be the ideal brake for a velomobile. The decades old design of the simplex type of drumbrakes from Sturmey Archer however, as used currently on a lot of velomobiles, lacks braking force and durability and it may overheat during fast descents. This results in frequent maintenance and replacement of worn parts.

Goal Design, test and eventually produce a (hydraulic) drumbrake suitable for all type of bikes: velomobiles, recumbents, ATB, city bikes, Tandem etc. During the seminair we would like to collect users and manufacturers feedback and input.

Content presentation All work on the improvement of the (existing) drumbrake of the members of the workgroup will be presented, this included the SwingCam design by Dave Wrath Sharmann, the Keronite drums by Flevobike, and several others. Also a thorough analyse will be given of various braking systems and in the end we will put down requirements for a ideal drumbrake for velomobiles before presenting the new drumbrake design of Harald Meckelburg. The biggest part of the presentation will focus on his work. He will present the new brake design for velomobiles: the Triplex T90 hydraulic drumbrake.

Duplex D 70 prototype

The Triplex T 90 is the successor of Harald's D70 Duplex prototype drumbrake. He rode more then 40000 km with this prototype in his Milan velomobile. This prototype will be shown during the seminair.



Figuur 1: D 70 hydraulic drumbrake



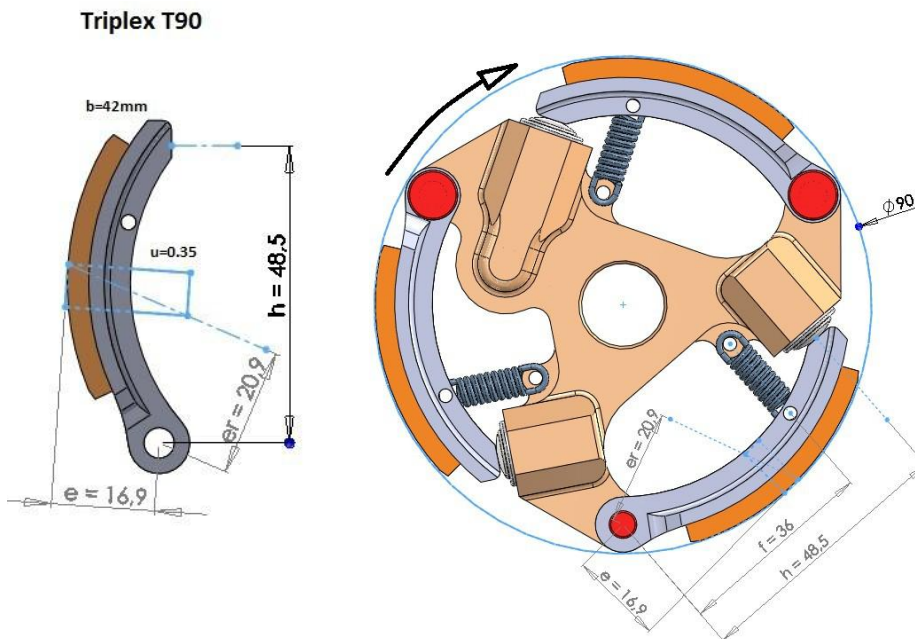
Figuur 2: D-70 hydraulic drumbrake + Mc Pherson strut

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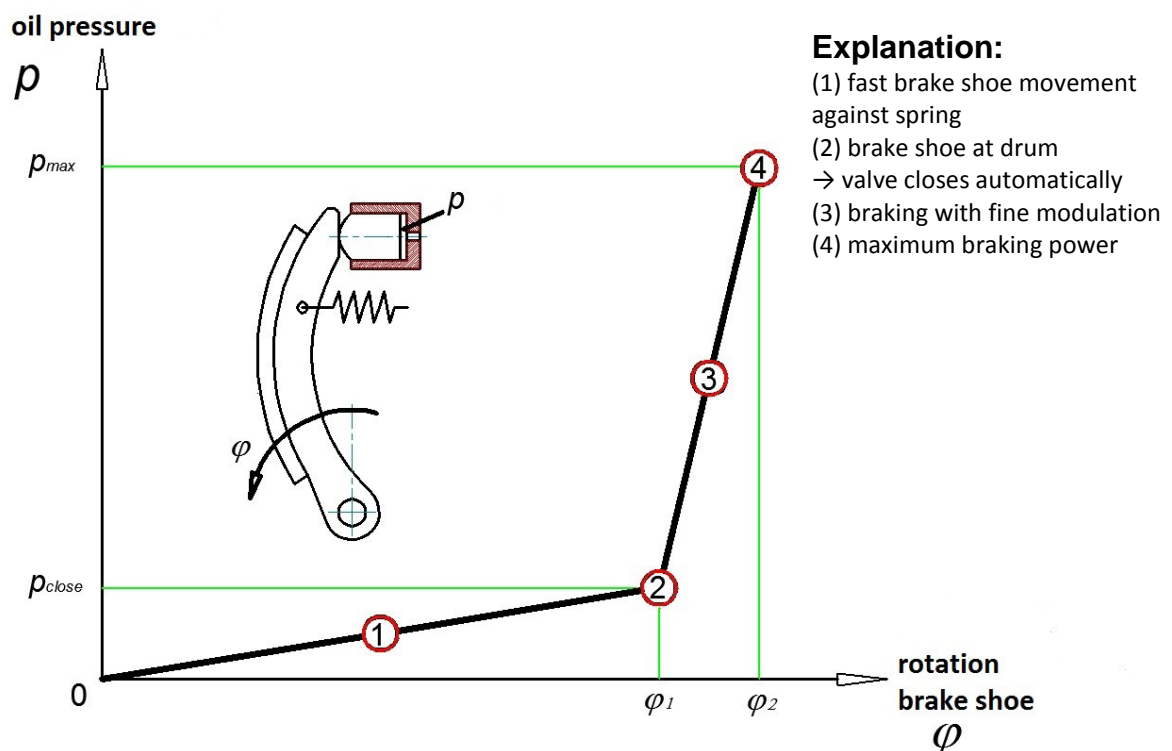
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Triplex T 90 design

Goal of the design of the T 90 was to improve the braking modulation compared to the D70 prototype. This is done by designing a brake shoe geometry with a low self reinforcement factor, combined with a pressure multiplier in order to achieve low pressure in the lever and hoses and to compensate for the high actuation force.



Figuur 3: T 90 geometry

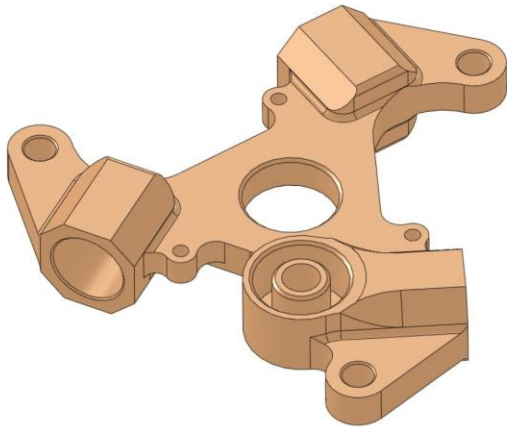


Figuur 4: Pressure multiplier

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The core of the T-90 brake consist of a spider which houses the 3 cylinders with brake pressure multiplier as well as the brakeshoes, this is the only complicated part.



Figuur 5: The 'spider'

The presentation will finish with a summary and a outlook of the work to be done. There will be ample room for questions and input and feedback from users and manufacturers.