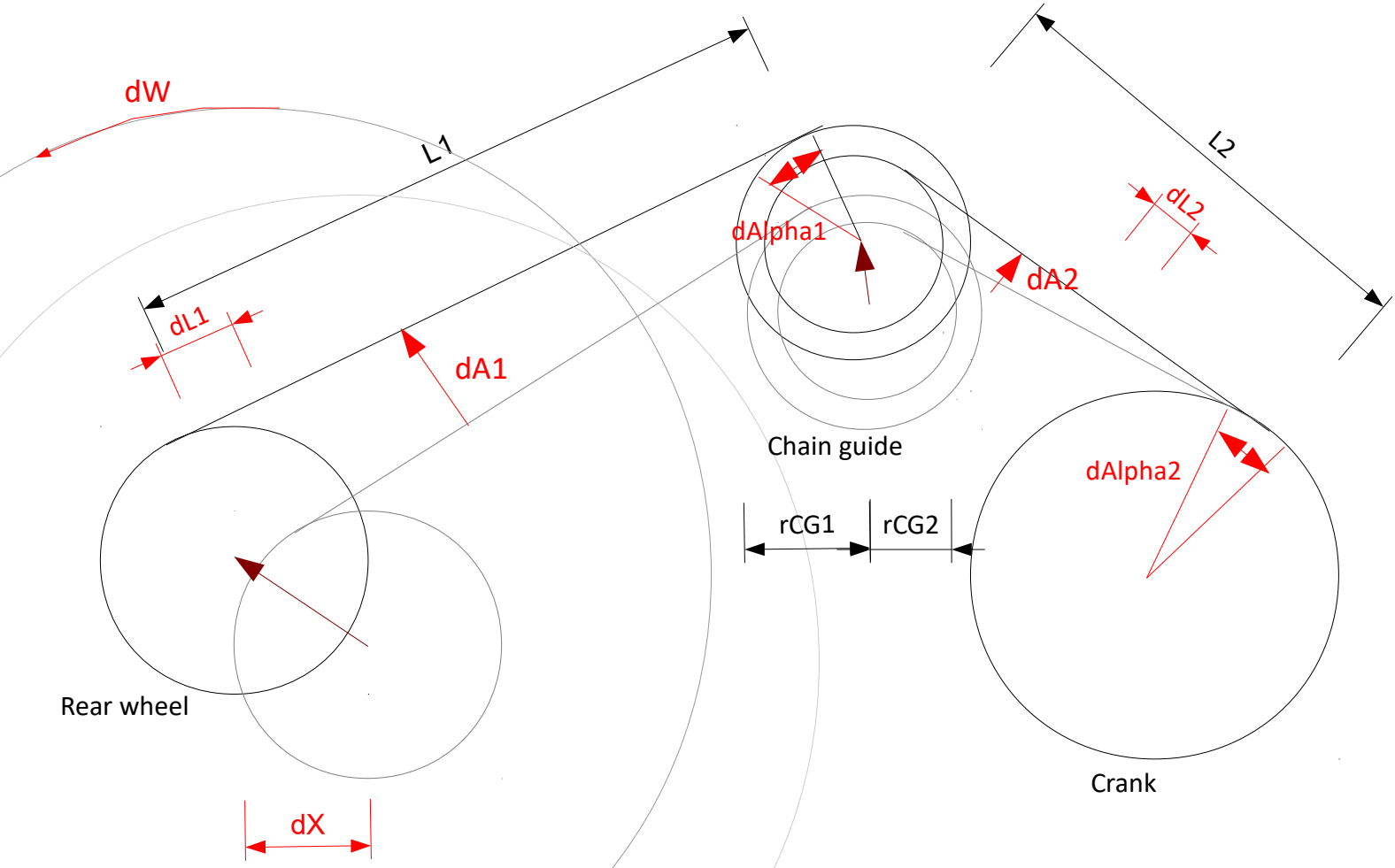

Jack-shaft – chain length change with suspension movement causing crank/pedal-feedback (rotation)

Crank rotates (in radians): dLCrank / rCrank
where
dLCrank : chain movement length at crank rCrank : radius)

dLCrank = dL2 + dLAlpha2 + dACG * rCG2

Where
dACG : total rotation of jackbox roller
dACG = dLCG / rCG1
dLCG = dL1 + dLW + dLAlpha1

dLW: chain moves backwards as rear wheel moves back by axle path, so rotates backwards. dLW = dW * rRearCogs = dX / rWheel * rRearCogs

dL1, dL2 : chain length change between tangent points of chain on cogs

dLAlpha : chain laying on/off cogs make a change in length if cog numbers differ
dLAlpha1 = dAlpha1 * rCG1 = dA1*((rRearCogs/rCG1)-1) * rCG1
dLAlpha2 = dAlpha2 * rCrank = dA2*((rCG2/rCrank)-1) * rCrank

Note: dAlpha1 and 2 are not total rotations of rollers/crank, only component for chain lay on/off.

© 2019 Gergely Kovacs, www.bikechecker.com