



1. Control of the presence of straight knurling on a transparent plastic closure

On a transparent plastic closure the straight knurling should be detected. On incorrect closures the straight knurling is partly not present. At this a laser through beam sensor parameter type **A-LAS-F12-3.0x0.3-50/50** is used. An additional aperture at the receiver side avoid that the deflected laser light (the deflection is caused from the straight knurling) can pass the receiver optics, the signal decreases in this case. However, if there is not a knurling, the laser beam can pass the receiver optics without any noteworthy reduction. Additionally to the analog laser light barrier an **A-LAS-CON1** control electronic is used. With the MAX-MIN mode, the difference between the maximum value and the minimum value will be calculated. In case of no knurling, the MAX-MIN value is equal to zero. If knurling is present, the MAX-MIN value is bigger than zero. As shown in the screen shots, the straight knurling can be detected properly.

