STUDY REGARDING THE PRESCRIPTION OF CLEARANCE FOR OPTOMECHANICAL FITS

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The paper presents a study of the relationship between the mounting errors due to mounting clearance and image quality of optomechanical systems (Figure 1 and 2). The descentration and the tilting occur because of the clearance fit and the side run-out of the mounting. The fit to prescribe depends especially on the descentration and is variable to the nominal diameter of the fit. The paper recommends special clearance fits for the optomechanical systems, based on an extended numerical study within the range of [6…65] mm diameter (Table 1).

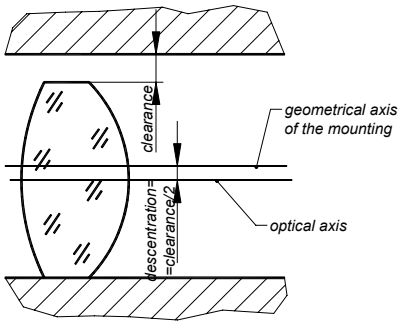

Figure 1. Relation between the clearance and descentration

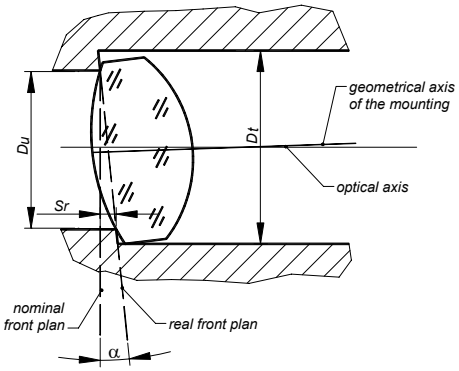

Figure 2. Tilting of the component because of the mounting side run-out

Table 1 Clearance fits correlated to permissible descentration and side run-out

	Permissible descentration [um]							
Dimensions [mm]	**6…10**	**10…14**	**14…18**	**18…24**	**24…30**	**30…40**	**40…50**	**50…65**
H8/f9	21	25.5	25.5	31.25	31.25	37.75	37.75	45
H8/f8	17.5	21.5	21.5	26.5	26.5	32	32	38
H7/f6	12.5	15.25	15.25	18.5	18.5	22.75	22.75	27.25
H6/e7	18.5	23.25	23.25	28.5	28.5	35.25	35.25	42.25
H6/f6	11	13.5	13.5	16.5	16.5	20.5	20.5	24.5
Permissible side run-out [um]	17.45	24.43	31.42	41.89	52.36	69.81	87.27	113.45

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