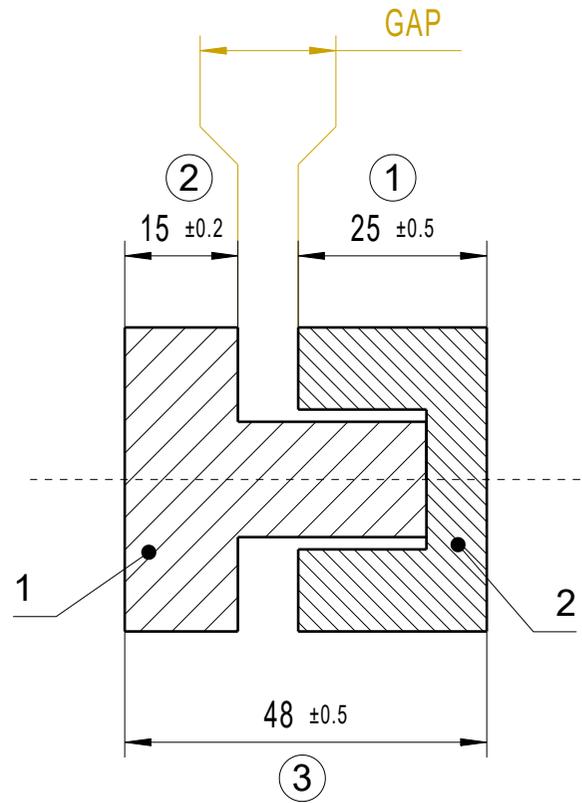


Example 1



Example 2

Material for part 1	Aluminum	Thermal expansion (CLTE) (K ⁻¹)	2.45E-05
Material for part 2	ABS		7.38E-05

Temperature	°C
t0	20
t1	120

Thermal expansion formula $\Delta d = \alpha \cdot d_0 \cdot (t_1 - t_0)$

Temperature 120°C
Example 1

Part name	Dimension	+	-	Tolerance	d0 [mm]	Δd [mm]	d1 [mm]
PART 1(Aluminum)	1	30		0.1	30	0.07	30.07
				0			
PART 2(ABS)	2		29.7	0	29.7	0.22	29.92
				-0.1			

Calculating for worst case, minimum diameter of part 1 and maximum diameter of part 2 at room temperature.

	mm
Nominal gap at 20°C (without tolerances included)	0.3
Nominal gap at 20°C (with tolerances included)	0.3
Gap at 120°C	0.15

Example 2

Part name	Dimension	+	-	Tolerance	l0 [mm]	Δl [mm]	l1 [mm]
PART 1(Aluminum)	1		25	0.5	25.5	0.06	25.56
				-0.5			
PART 2(ABS)	2		15	0.2	15.2	0.11	15.31
				-0.2			
ASSEMBLY OF PART 1&2 (Aluminum & ABS)	3	48		0.5	47.5	????	47.50
				-0.5			

How to consider thermal expansion of assembly since formula need CLTE and for assembly this is not possible to calculate since CLTE count only one material

Here is left l0 as a proposal.

Calculating for worst case, maximum length for part 1 and part 2 and smallest length for assembly.

	mm
Nominal gap at 20°C (without tolerances included)	8
Nominal gap at 20°C (with tolerances included)	6.8
Gap at 120°C	6.63