

ICATT	APPRENTICESHIP PROGRAM TRAIN.RETAIN.GROW.	Information
Date:	Tolerances and Fits– Exercises	

Exercise 4:

A designer plans the following measurements for 2 components:

$\varnothing 18$ N5 and $\varnothing 18$ r8

- a) Calculate the Dimensions of the fit
- b) What fit do we have here? Explain your answer!

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Exercise 4:

A designer plans the following measurements for 2 components:

Ø 18 N5 and Ø 18 r8

- Calculate the Dimensions of the fit
- What fit do we have here? Explain your answer!

Note:

Ø 18 = nominal dimension

N5 / r8 = Tolerance class

N / r = Fundamental deviation (always letters)

5 / 8 = Tolerance grade

Step 1:

Determine the fundamental tolerances for tolerance grade 5, aka IT5 for the Ø 18 , according page 105

Hole

IT 5 = 8µm = 0.008mm = fundamental tolerance

Check fundamental deviation for shafts, Page 106

ES = -12 + Δ

Δ check page 107 table = 3µm

⇒ ES = -0,012mm + 0.003mm = -0.009mm

⇒ Th = ES – EI ⇒ EI = ES-Th = -0,017mm

⇒ Guh = 17,991mm

⇒ Gih = 17,983mm

Shaft

IT8 = 27µm = 0.027mm = fundamental tolerance

Check fundamental deviation for holes, Page 106

⇒ ei = +23µm = 0.023mm

⇒ es = ei + IT = 0.023mm + 0.027mm = 0.05mm

⇒ Gus = 18,05mm

⇒ Gis = 18,023mm

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Exercise 3:

A designer plans the following measurements for 2 components:

Ø 50 H9 and Ø 50 m 7

- Calculate the Dimensions of the fit
- What fit do we have here? Explain your answer!

Hole

$$\Rightarrow G_{uh} = 17,991\text{mm}$$

$$\Rightarrow G_{ih} = 17,983\text{mm}$$

Shaft

$$\Rightarrow G_{us} = 18,05\text{mm}$$

$$\Rightarrow G_{is} = 18,023\text{mm}$$

$$G_{uh} - G_{is} = 17,991\text{mm} - 18,023\text{mm} = -0,032\text{mm}$$

$$G_{ih} - G_{us} = 17,983\text{mm} - 18,05\text{mm} = -0,067\text{mm}$$

Interference Fit, because we have 2 negative results