PRINCIPLES OF TOLERANCE

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CONSTRUCTION OF A WASHER

- In order to maintain a universal standard when machine parts are manufactured, it should have a specific tolerance.

CONSTRUCTION OF A WASHER

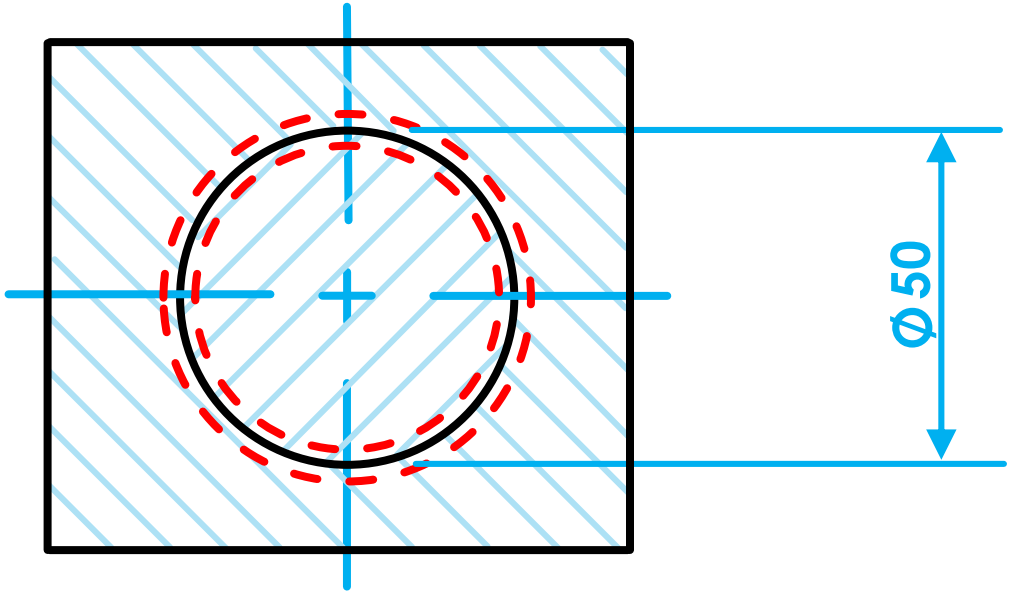
- All machine parts that are manufactured for **replacement**, will have a certain degree of tolerance to fit into the position of the previous machine part.

CONSTRUCTION OF A WASHER

- Tolerance therefor is the total amount by which a given dimension may differ.

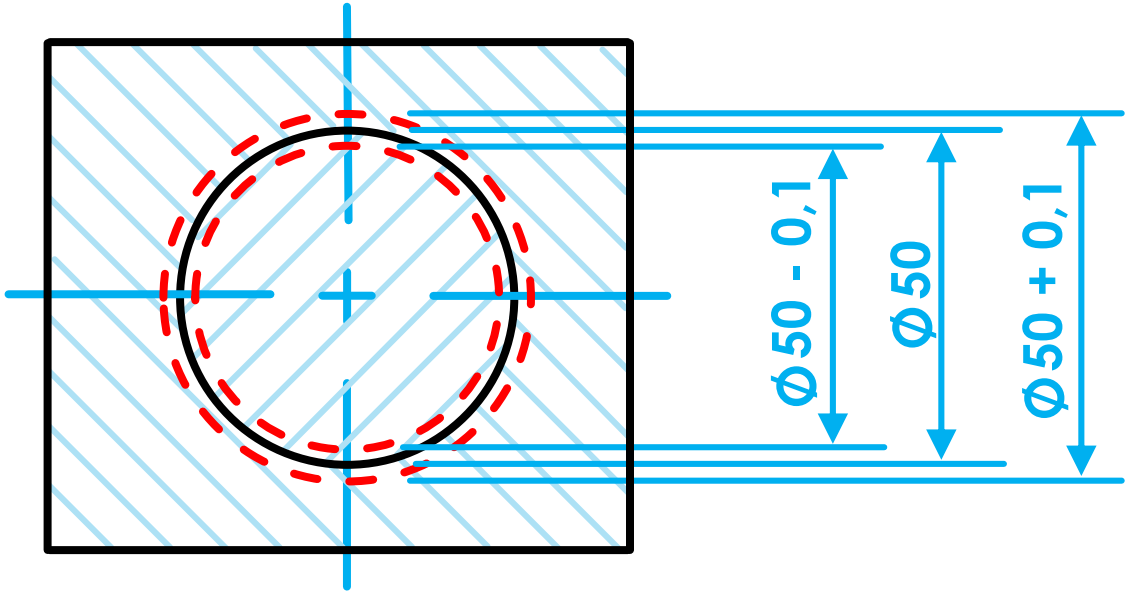
CONSTRUCTION OF A WASHER

- A dimension will therefor have an **upper limit** and a **lower limit** which may not be exceeded (e.g. ∅50 + 0,1 and ∅50 – 0,1).



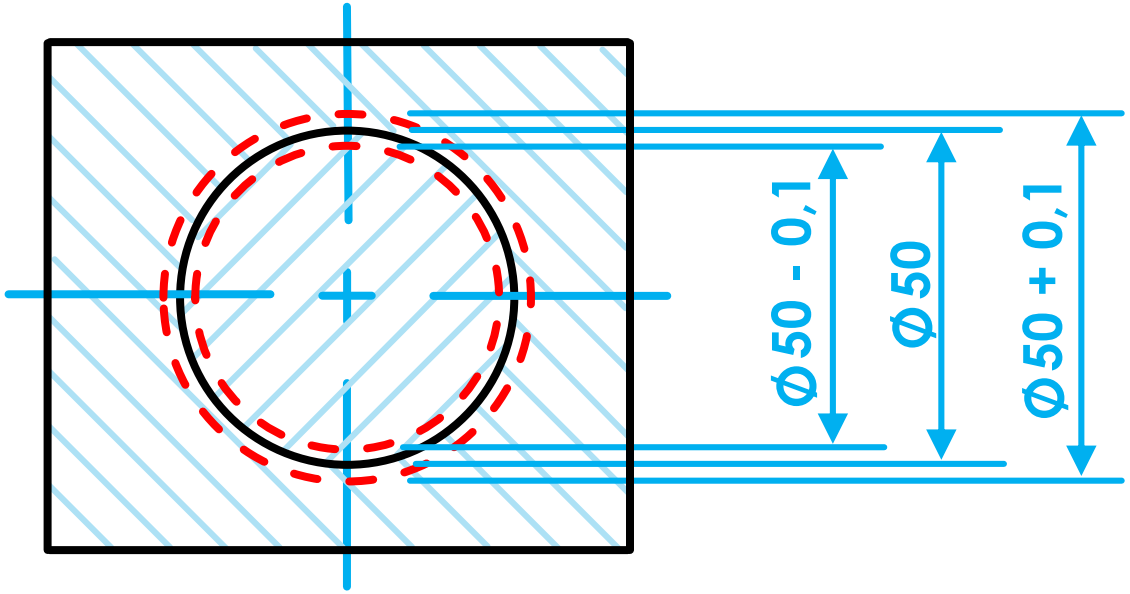
CONSTRUCTION OF A WASHER

- It is clear that the two components will not be able to fit if the shaft have the maximum dimension and the hole its minimum dimension.



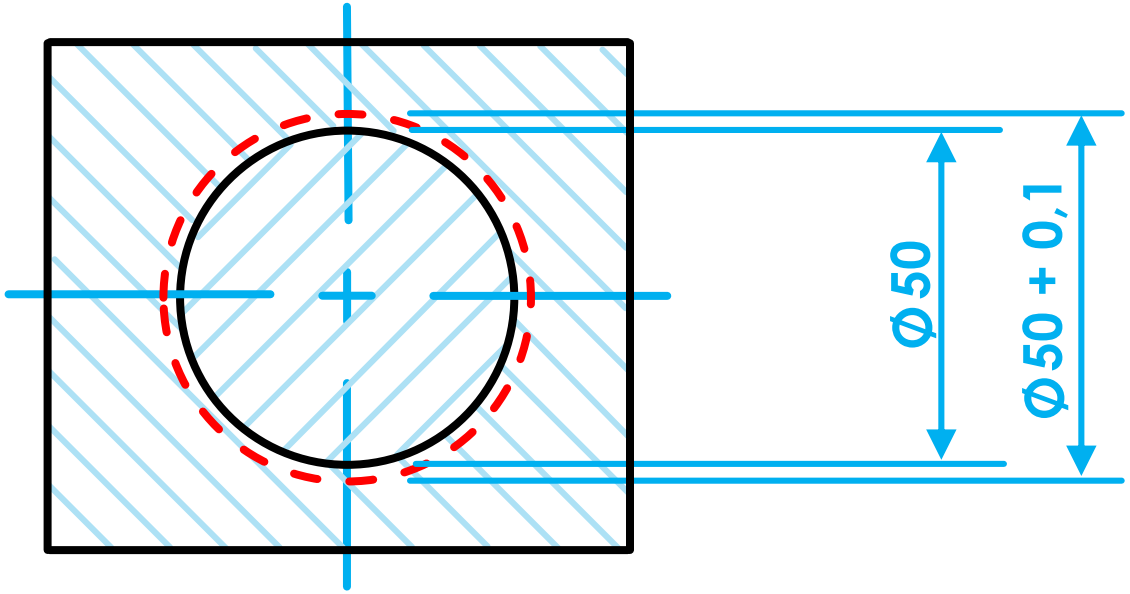
CONSTRUCTION OF A WASHER

- Therefor either a **shaft-basis system of fit** or a **hole-basis system of fit** will be used.



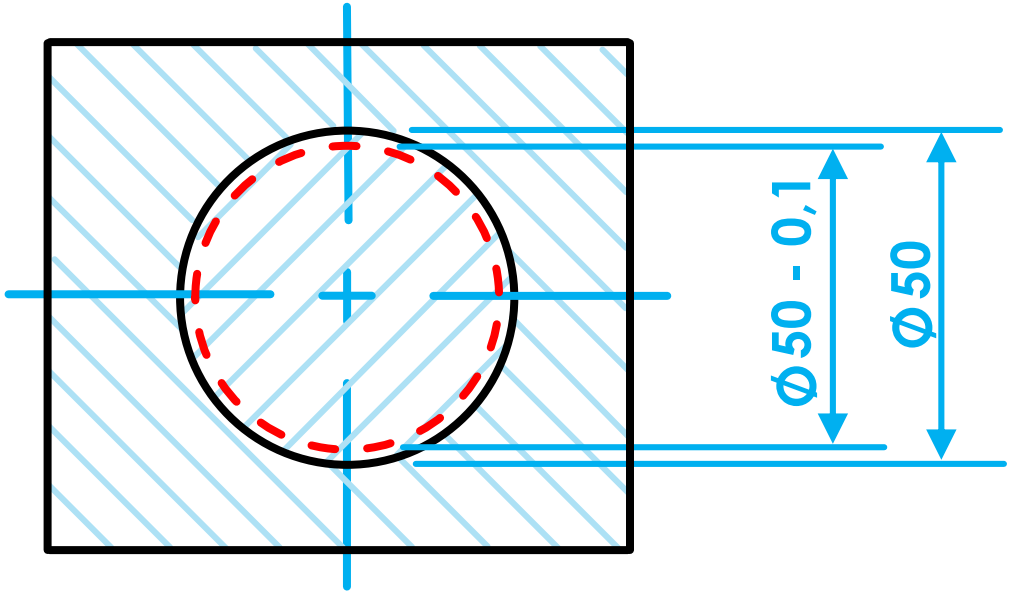
CONSTRUCTION OF A WASHER

- With a **shaft-basis system of fit** the shaft is used as the constant and the size of the hole will differ



CONSTRUCTION OF A WASHER

- With a **hole-basis system of fit** the hole dimension is used as the constant and the size of the shaft will differ.



CONSTRUCTION OF A WASHER

- The upper and lower deviations are shown in **micrometres (µm)**
  - 1 µm = 1 millionth of a metre
  - = 1 thousandth of a millimetre
  - = 0,001 mm

CONSTRUCTION OF A WASHER

- A dimension of 40± 0,25 can therefor be seen as
  - **Upper limit:** 40 + 0,25 = 40,25mm
  - **Lower limit:** 40 – 0,25 = 39,75mm