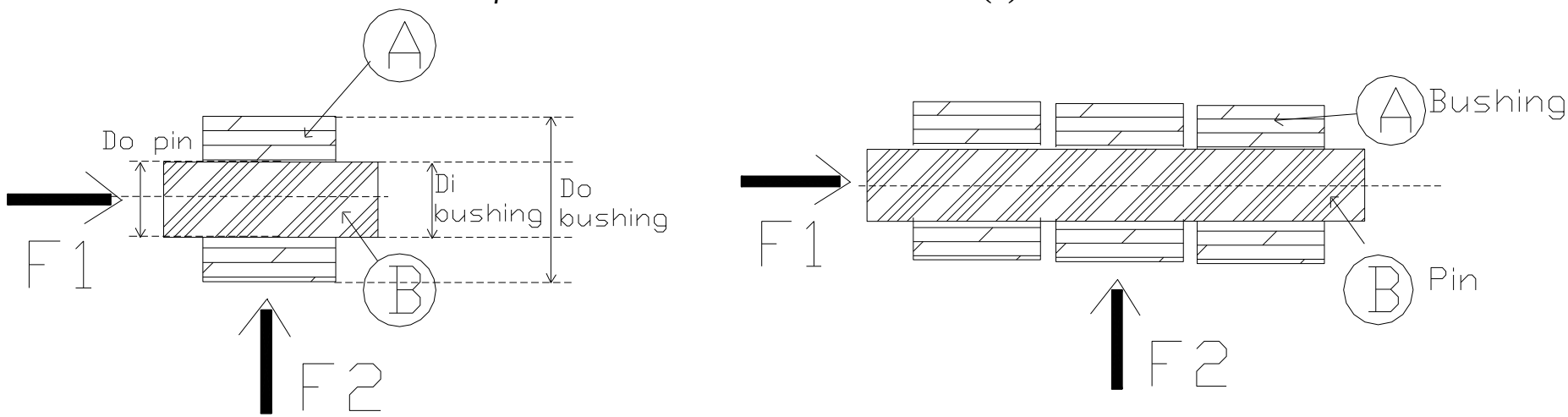
Principe of measurement

In order to measure the friction coefficient, we can reduce the analysis of the mechanical behavior of the LHC IR Quad pin/bushing system to the schematic presented in figure a).
Two perpendicular loads F1 and F2 are applied to several materials combinations, A and B, the pin and the bushing respectively. F1 simulates the force due to the cold down thermal contraction. F2 simulates the weight of the LHC IR quadrupole.
The friction coefficient, *f*, at their interface can be expressed by:

$$f = F1/F2 \qquad (1)$$



a) **b)**

Measurement of the friction coefficient a) for one sub-assembly and b) the total assembly