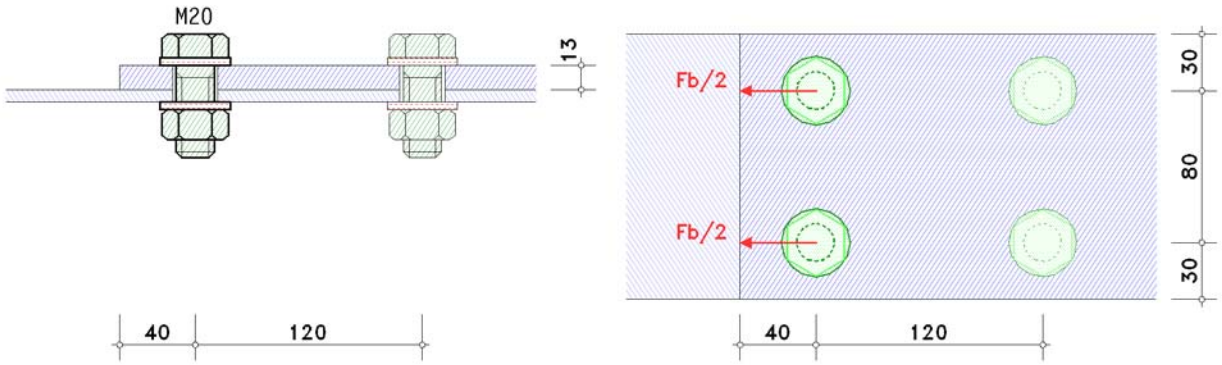
bc 12, plate with bearing resistance

4H-EC3GK version: 10/2012-3j

EC 3-1-8 (12.10), NA: Deutschland

1. input report

M 1:4.0



connection device:
bolt class 8.8, bolt size M20
large wrench size (high strength bolt), preloaded (for info: preloading $F_{p,C}^* = 0.7 \cdot f_{yb} \cdot A_s = 109.8$ kN)
connection plate:
thickness t = 13.0 mm, steel grade S275
1-shear connection
bearing resistance in direction of load transfer:
edge distance $e_1 = 40.0$ mm, pitch $p_1 = 120.0$ mm
bearing resistance across to direction of load transfer:
number of bolts per bolt-row $n_{s2} = 2$
edge distance $e_2 = 30.0$ mm, pitch $p_2 = 80.0$ mm
material safety factor: $\gamma_{M2} = 1.25$ (standard)
stress:
lc 1 : $F_{b,Ed} = 150.0$ kN

2. calculation

2.1. resistance

bolt 1: bearing resistance $F_{b,Rd} = (k_1 \cdot \alpha_b \cdot f_u \cdot d \cdot t) / \gamma_{M2} = 114.82$ kN, $k_1 = 2.12$, $\alpha_b = 0.61$
bolt 2: bearing resistance $F_{b,Rd} = (k_1 \cdot \alpha_b \cdot f_u \cdot d \cdot t) / \gamma_{M2} = 114.82$ kN, $k_1 = 2.12$, $\alpha_b = 0.61$
bearing resistance of 1x2 bolts: $\Sigma F_{b,Rd} = 229.64$ kN

2.2. verification

lc 1: $F_{Ed} = 150.0$ kN $<$ $F_{Rd} = 229.6$ kN $\Rightarrow$ $U = 0.653 < 1$ ok

verification succeeded