

POS. 16: 2 BOLTS (BSP. KOMP.)

standardized IM-joint

moment resistant joints IM acc. to EC 3-1-8 (12.10), NA: Deutschland

dimensions of beam, bolts, end-plate and welds, material and arrangement of bolts are taken of the following literature:

'Typisierte Anschlüsse im Stahlhochbau nach DIN EN 1993-1-8, Ergänzungsband 2018, Stahlbau Verlags- und Service GmbH, Ausgabe 2018'

the current number and associated parameters are recorded.

the column has no reference to the literature, web stiffeners are continuously fixed.

MN-interaction follows Cerfontaine (in Jaspart/Weyand: Design of Joints in Steel Structures).

maximum resistance of normal forces are calculated without components of compression/shear and linearization.

beam-column connection, steel grade S235, bolt class of bolts 10.9

10106: beam section IPE240, bolt size M16, connection with 2 bolts per row

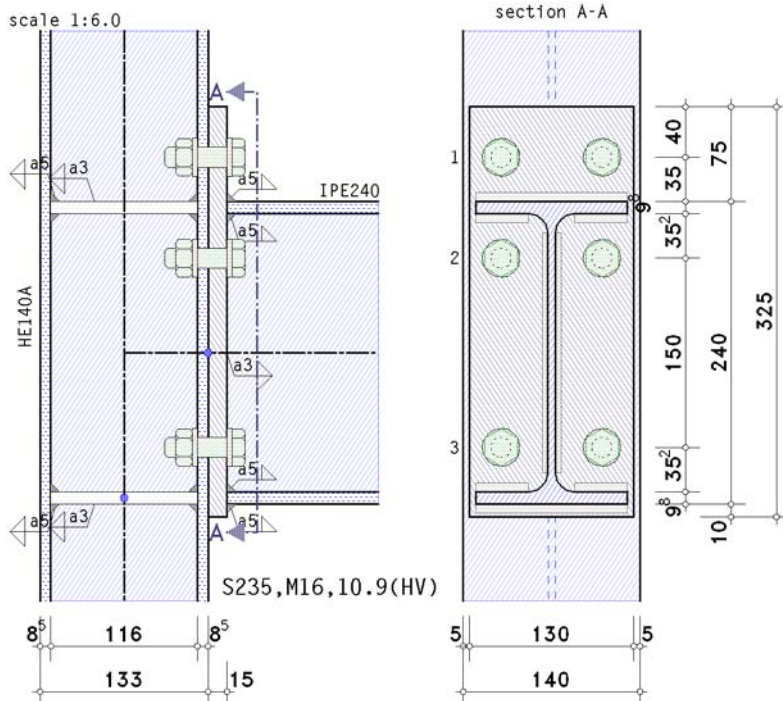
end-plate: $t_p = 15$ mm, $b_p = 130$ mm, $h_p = 325$ mm, $e_1 = 40$ mm, $p_{1,1} = 80$ mm, $p_{1,2} = 150$ mm
 $u_1 = 75$ mm, $w = 80$ mm

fillet welds: $a_f = 5$ mm, $a_w = 3$ mm

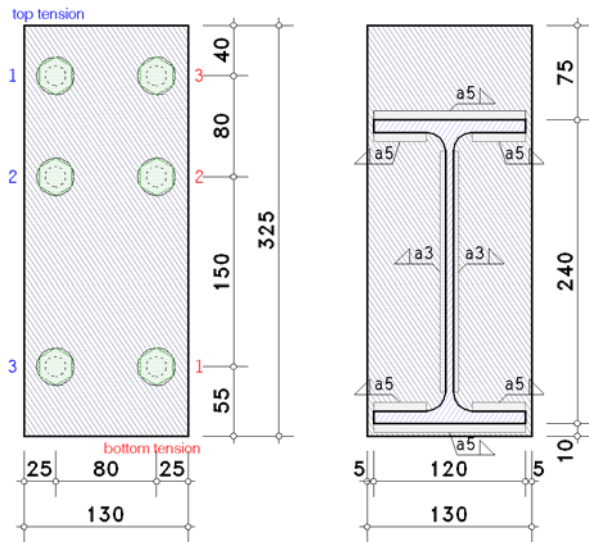
column: section HE140A

horizontal web stiffeners

Rigid beam connection



details



Component method

notes

connection is verified due to EC 3-1-8 regardless of preloading.
however, connections may be constructed with prestressed high strength bolts.
no verification for cross-sections.
the welds are not regarded by calculation the T-stub resistance.
simplified calculation of shear force resistance takes all bolt-rows into account.

Final Result

initial stiffness:	$S_{j,ini} = 12.4 \text{ MNm/rad}$
moment resistance (M+):	$M_{j1,Rd} = 35.6 \text{ kNm}$
moment resistance (M-):	$M_{j2,Rd} = 24.3 \text{ kNm}$
tension resistance:	$N_{jt,Rd} = 186.2 \text{ kNm}$
compression resistance:	$N_{jc,Rd} = 267.9 \text{ kNm}$
shear force resistance:	$V_{j,Rd} = 129.9 \text{ kNm}$
moment resistance of beam section:	$M_{c,Rd} = 82.9 \text{ kNm}$