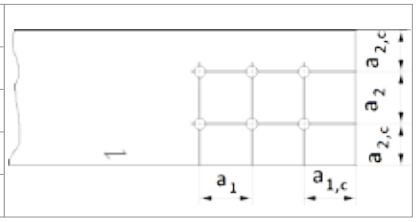
schmid schrauben hainfeld

Minimum distances[b] (in mm)

Distance a_2 can be reduced to 2.5 x d (3 x d) if 25 x d^2 (21 x d^2) can be maintained for the product for the distances a_1 and a_2.
This is valid for screws with d ≤ 8 mm and can be applied - specific to Ø10 mm and Ø12 mm - exclusively to half-point screws.

	Ø 4	Ø 4,5	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12
a_1	20	22,5	25	30	40	70	84
a_2	20	22,5	25	30	40	50	60
$a_{1,c}$	20	22,5	25	30	40	100	120
$a_{2,c}$	16	18	20	24	32	40	48



Legend:

[a]...For these measurements, there are no shearing distances for wood-wood connections, because the necessary thickness of fixture according to ETA 12/0373 Appendix 7 Table A7.1 is not reached.
For steel-wood connections there is no stipulated minimum thickness of fixture.

[b]...The minimum distances are specified in accordance with ETA 12/0373 A.7.3 for stress in the screw axis, and apply - specific to Ø10 and Ø12 - exclusively to half-point screws.

[c]...In order to be able to apply these minimum heights (12 x d), the minimum distances must be selected in accordance with Eurocode 5 .

[d]...$a_{2,red}$ was selected according to the table of minimum distances (contingent upon the screw pairs).

[e]...The specified tolerance (Tol.) was selected for any mounting inaccuracies in angular position and embedment depth of the screws. For the user, the rated values are reduced.

[f]...The thickness of fixture (AD) was determined as follows: AD = L - b/2
According to ETA 12/0373 Appendix 7 Table A7.1 the required thickness of fixture for wood-wood connection has to be observed.
d = 8 mm.....ADmin = 30 mm
d = 10 mm.....ADmin = 40 mm
d = 12 mm.....ADmin = 80 mm
For steel-wood connections there is no stipulated minimum thickness of fixture.

[g]...The minimum height of the attachment ADmin is calculated on the basis of the length of the screw as follows:
ADmin = [L - (b/2)] • sin(45°)] + (Tol./2)

[h]...Other head types are available upon request.

[i]...For those diameters ETA-values are not available.

[j]...No Half-tip

Information:

- m....mounted installation dimension, m_{OFL}....screw attachment point
- Geometry and mechanical properties comply with ETA 12/0373.
- The extraction values of the threat are calculated based on an angle of 45° to 90° to the wood grain.
- The specified values relate to wood with a characteristic gross density ρk = 350 kg/m³ (C24). The calculation for softwoods is made with the factor $(\rho k/350)^{0,8}$.
- In shear joints, 50% of the thread portion of the fullthread screw must be screwed in on both sides of the joint.
- The thickness of the fixture has been choosen equal to the shaft length.
- All values are calculated on fully screwed-in threats.
- The drill diameter for the RAPID® Dual and RAPID® SuperSenkFix is 1mm larger than the shoulder diameter.
- In the case of steel-wood connections, a steel plate with a thickness t = d (thick steel plate) was taken as the basis of the calculation.
- In primary/secondary support joints, the primary support must be adequately embedded so as to be able to bear torsion and anchor the shaft.
- In primary/secondary support joints, the specified values apply only to vertically aligned stress. Any transverse stresses that exist must be separately verified.
- For the calculation the rope effect was considered.
- Note: In shear joints (with unilateral skewing), only unidirectional forces can be absorbed.
- Allowable stress design values R_{ASD} (grey columns): Measurement according to DIN 1052:1988 and according to German licences Z-9.1-656 for RAPID® Vollgewinde, Z-9.1-564 for RAPID® Komprex, RAPID® 2000 and Z-9.1-435 for StarDrive GPR®, RAPID® Dual and RAPID® SuperSenkFix
- Characteristic values (blue columns): Measurement according to Eurocode 5 (EC5) and ETA 12/0373
- The rated value of load capacity $F_{v,Rd}$ for the final design of the timber joint is obtained from the characteristic values as follows:

$$F_{R,d} = \frac{F_{R,k} \cdot k_{mod}}{\gamma_m}$$

$F_{R,d}$...design value of bearing capacity on shearing and extraction per connection element

$F_{R,k}$...characteristic value of bearing capacity on shearing and extraction per connection element

γ_m , k_{mod}...coefficients of corresponding national norms