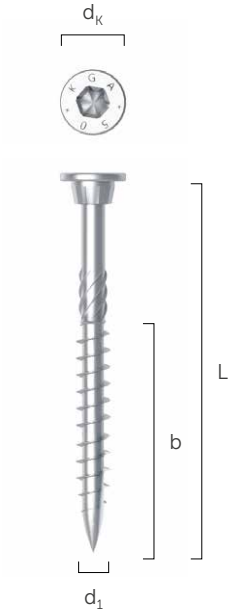


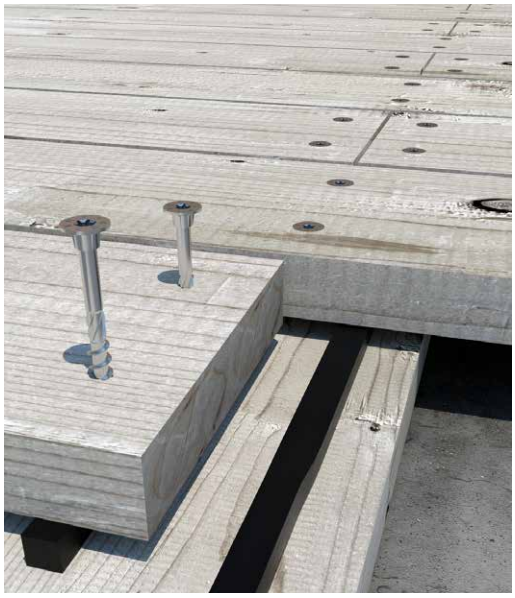

# KGA

ICC ES AC233 ESR-4645 CE ETA-11/0030

## UNIVERSAL PAN HEAD SCREW

- The flat under-head accompanies absorption of the shavings, preventing the formation of cracks in the timber for an excellent surface finish
- Martensitic stainless steel with an excellent balance between mechanical resistance and corrosion resistance. Outdoor use
- Application on timber boards with density of < 780 kg/m³ (without pre-drilling hole) and WPC boards (with pre-drilling hole)

**MATERIAL**: AISI 410 martensitic stainless steel

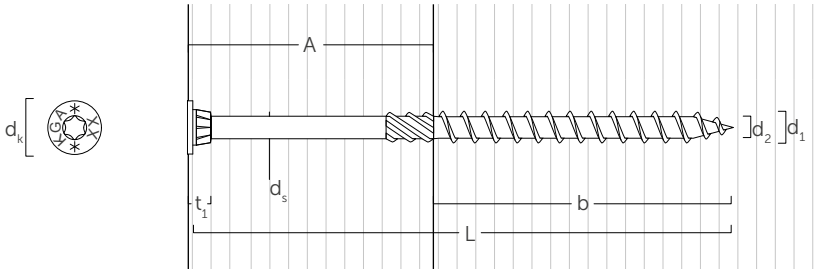


410 AISI

INCLUDED

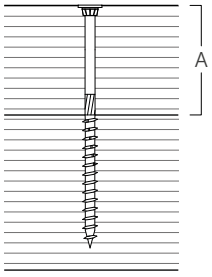
| $d_1$ [mm] | $d_K$ [mm] | CODE | L [mm] | b [mm] | A [mm] | pcs |
|---|---|---|---|---|---|---|
| 4 TX 20 | 7,70 | KKF440 | 40 | 24 | 16 | 500 |
| | | KKF445 | 45 | 30 | 15 | 200 |
| 4,5 TX 20 | 8,70 | KGA4550 | 50 | 30 | 20 | 250 |
| | | KGA4560 | 60 | 35 | 25 | 200 |
| | | KKF4570 | 70 | 40 | 30 | 200 |
| 5 TX 25 | 9,65 | KGA550 | 50 | 30 | 20 | 200 |
| | | KGA560 | 60 | 35 | 25 | 200 |
| | | KGA570 | 70 | 40 | 30 | 100 |

## GEOMETRY AND MECHANICAL CHARACTERISTICS



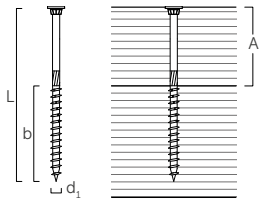
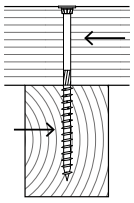
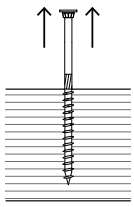
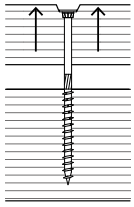

| nominal diameter | $d_1$ | [mm] | 4 | 4,5 | 5 |
|---|---|---|---|---|---|
| head diameter | $d_K$ | [mm] | 7,70 | 8,70 | 9,65 |
| thread diameter | $d_2$ | [mm] | 2,60 | 3,05 | 3,25 |
| shank diameter | $d_S$ | [mm] | 2,90 | 3,35 | 3,60 |
| head thickness | $t_1$ | [mm] | 5,00 | 5,00 | 6,00 |
| pre-drilling hole diameter(1) | $d_V$ | [mm] | 2,50 | 2,50 | 3,00 |
| characteristic yield moment | $M_{y,k}$ | [Nm] | 3,00 | 4,10 | 5,40 |
| characteristic withdrawal-resistance parameter(2) | $f_{ax,k}$ | [N/mm²] | 11,70 | 11,70 | 11,70 |
| characteristic head-pull-through parameter(2) | $f_{head,k}$ | [N/mm²] | 16,50 | 16,50 | 16,50 |
| characteristic tensile strength | $f_{tens,k}$ | [kN] | 5,00 | 6,40 | 7,90 |

**A** maximum fastening thickness




(1) Pre-drilling valid for softwood.
(2) Valid for softwood - maximum density 440 kg/m³. Associated density $\rho_a$ = 350 kg/m³.
For applications with different materials or with high density please see ETA-11/0030.

## STRUCTURAL VALUES

| | | | | SHEAR | TENSION | |
|---|---|---|---|---|---|---|
| geometry | | | | timber-to-timber | thread withdrawal[1] | head pull-through[2] |
|  | | | |  |  |  |
| $d_1$ [mm] | L [mm] | b [mm] | A [mm] | $R_{V,k}$ [kN] | $R_{ax,k}$ [kN] | $R_{head,k}$ [kN] |
| 4 | 40 | 24 | 16 | 0,97 | 1,30 | 1,13 |
| | 45 | 30 | 15 | 0,95 | 1,62 | 1,13 |
| 4,5 | 50 | 30 | 20 | 1,25 | 1,83 | 1,44 |
| | 60 | 35 | 25 | 1,39 | 2,13 | 1,44 |
| | 70 | 40 | 30 | 1,40 | 2,44 | 1,44 |
| 5 | 50 | 30 | 20 | 1,45 | 2,03 | 1,78 |
| | 60 | 35 | 25 | 1,59 | 2,37 | 1,78 |
| | 70 | 40 | 30 | 1,68 | 2,71 | 1,78 |

### NOTES

[1] The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.
[2] The axial resistance to head pull-through was calculated using timber elements.

### GENERAL PRINCIPLES

- Characteristic values comply with the EN 1995:2014 standard in accordance with ETA-11/0030.
- Design values can be obtained from characteristic values as follows:

$$R_d = \frac{R_k \cdot k_{mod}}{\gamma_M}$$

  The coefficients $\gamma_M$ and $k_{mod}$ should be taken according to the current regulations used for the calculation.
- For the mechanical resistance values and the geometry of the screws, reference was made to ETA-11/0030.
- For the calculation process a timber characteristic density $\rho_k$ = 420 kg/m$^3$ has been considered.
- Values were calculated considering the threaded part as being completely inserted into the wood.
- Dimensioning and verification of timber and steel elements must be carried out separately.
- The characteristic shear resistances are calculated for screws inserted without pre-drilling hole. In the case of screws inserted with pre-drilling hole, greater resistance values can be obtained.