# HBS PLATE

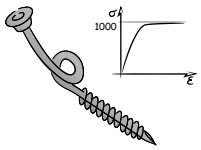
BIT INCLUDED | MY PROJECT SOFTWARE | CE ETA 11/0030

## Pan head plate screws

Galvanized carbon steel

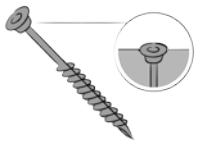
### SPECIAL STEEL

Highly ductile (moves with the wood) and high-resistant steel ($f_{y,k}$ = 1000 N/mm²).

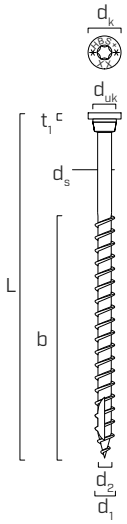



### PAN HEAD

Guarantees an excellent surface finish and the possibility of usage on steel plates with circular holes.



## GEOMETRY AND MECHANICAL CHARACTERISTICS

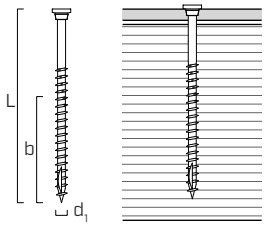
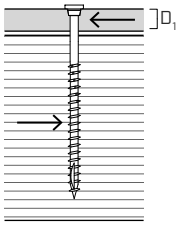
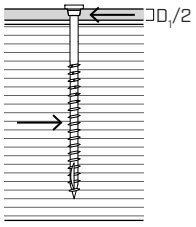



| HBS PLATE SCREW | | | | | |
|---|---|---|---|---|---|
| Nominal diameter | $d_1$ | [mm] | 8 | 10 | 12 |
| | | *[inch]* | *5/16 ″* | *3/8 ″* | *1/2 ″* |
| Head diameter | $d_k$ | [mm] | 14.50 | 18.25 | 20.75 |
| | | *[inch]* | *0.571* | *0.719* | *0.817* |
| Tip diameter | $d_2$ | [mm] | 5.40 | 6.40 | 6.80 |
| | | *[inch]* | *0.213* | *0.252* | *0.268* |
| Shank diameter | $d_s$ | [mm] | 5.80 | 7.00 | 8.00 |
| | | *[inch]* | *0.228* | *0.276* | *0.315* |
| Head thickness | $t_1$ | [mm] | 3.40 | 4.35 | 5.00 |
| | | *[inch]* | *0.134* | *0.171* | *0.197* |
| Pre-drilling diameter | $d_v$ | [mm] | 5.00 | 6.00 | 6.50 |
| | | *[inch]* | *0.197* | *0.236* | *0.256* |
| Bending strength | $F_{yb}$ | [N/mm²] | 1000 | 1000 | 1000 |
| | | *[psi]* | *145038* | *145038* | *145038* |
| Characteristic tensile strength | $f_{tens,k}$ | [kN] | 20.1 | 31.4 | 33.9 |
| | | *[lbf]* | *4.519* | *7.059* | *7.621* |

# PRODUCT CODES AND PIECES PER PACKAGE

| $d_1$ | Length L | CODE | pcs |
|---|---|---|---|
| [mm] *[inch]* | [mm] | | |
| 8 *5/16 "* | 80 | **HBSP880** | 100 |
| | 100 | **HBSP8100** | 100 |
| | 120 | **HBSP8120** | 100 |
| | 140 | **HBSP8140** | 100 |
| | 160 | **HBSP8160** | 100 |
| 10 *3/8 "* | 100 | **HBSP10100** | 50 |
| | 120 | **HBSP10120** | 50 |
| | 140 | **HBSP10140** | 50 |
| | 160 | **HBSP10160** | 50 |
| | 180 | **HBSP10180** | 50 |
| 12 *1/2 "* | 120 | **HBSP12120** | 25 |
| | 140 | **HBSP12140** | 25 |
| | 160 | **HBSP12160** | 25 |
| | 180 | **HBSP12180** | 25 |
| | 200 | **HBSP12200** | 25 |

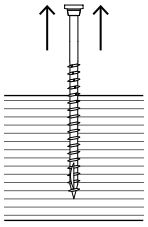
# STATIC VALUES: SHEAR STEEL-WOOD

| GEOMETRY | WOOD-STEEL (thickness=$D_1$) $Z_{II}$ | WOOD-STEEL (thickness=$D_1$/2) $Z_{II}$ |
|---|---|---|
|   |   |   |

| | | | | | | | REFERENCE LATERAL DESIGN VALUE (Z) FOR: | | | | REFERENCE LATERAL DESIGN VALUE (Z) FOR: | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $d_1$ | Length L | | Thread length b | | Side member A | | G=0.35 $Z_{II}$ | G=0.42 $Z_{II}$ | G=0.50 $Z_{II}$ | G=0.55 $Z_{II}$ | G=0.33 $Z_{II}$ | G=0.42 $Z_{II}$ | G=0.50 $Z_{II}$ | G=0.55 $Z_{II}$ |
| [mm] *[inch]* | [mm] | *[inch]* | [mm] | *[inch]* | [mm] | *[inch]* | [lbf] | *[lbf]* | [lbf] | *[lbf]* | [lbf] | *[lbf]* | [lbf] | *[lbf]* |
| 8 *5/16 "* | 80 | *3 1/8 "* | 55 | *2 "* | 25 | *0.984* | 357 | *389* | 423 | 442 | 281 | *305* | 329 | *343* |
| | 100 | *4 "* | 75 | *2 3/4 "* | 25 | *0.984* | 357 | *389* | 423 | 442 | 281 | *305* | 329 | *343* |
| | 120 | *4 3/4 "* | 95 | *3 4/8 "* | 25 | *0.984* | 357 | *389* | 423 | 442 | 281 | *305* | 329 | *343* |
| | 140 | *5 1/2 "* | 110 | *4 3/8 "* | 30 | *1.181* | 357 | *389* | 423 | 442 | 281 | *305* | 329 | *343* |
| | 160 | *6 1/4 "* | 130 | *5 1/8 "* | 30 | *1.181* | 357 | *389* | 423 | 442 | 281 | *305* | 329 | *343* |
| 10 *3/8 "* | 100 | *4 "* | 75 | *2 3/4 "* | 25 | *0.984* | 452 | *493* | 535 | *560* | 359 | *390* | 421 | *438* |
| | 120 | *4 3/4 "* | 95 | *3 4/8 "* | 25 | *0.984* | 452 | *493* | 535 | *560* | 359 | *390* | 421 | *438* |
| | 140 | *5 1/2 "* | 110 | *4 3/8 "* | 30 | *1.181* | 452 | *493* | 535 | *560* | 359 | *390* | 421 | *438* |
| | 160 | *6 1/4 "* | 130 | *5 1/8 "* | 30 | *1.181* | 452 | *493* | 535 | *560* | 359 | *390* | 421 | *438* |
| | 180 | *7 1/8 "* | 150 | *6 "* | 30 | *1.181* | 452 | *493* | 535 | *560* | 359 | *390* | 421 | *438* |
| 12 *1/2 "* | 120 | *4 3/4 "* | 90 | *3 4/8 "* | 30 | *1.181* | 591 | *644* | 699 | *732* | 475 | *515* | 556 | *580* |
| | 140 | *5 1/2 "* | 110 | *4 3/8 "* | 30 | *1.181* | 591 | *644* | 699 | *732* | 475 | *515* | 556 | *580* |
| | 160 | *6 1/4 "* | 120 | *4 3/4 "* | 40 | *1.575* | 591 | *644* | 699 | *732* | 475 | *515* | 556 | *580* |
| | 180 | *7 1/8 "* | 140 | *5 1/2 "* | 40 | *1.575* | 591 | *644* | 699 | *732* | 475 | *515* | 556 | *580* |
| | 200 | *7 7/8 "* | 160 | *6 1/4 "* | 40 | *1.575* | 591 | *644* | 699 | *732* | 475 | *515* | 556 | *580* |

# STATIC VALUES: TRACTION THREAD WITHDRAWAL

**WITHDRAWAL**



| $d_1$ [mm] *[inch]* | G=0.33 W [lbs/in] | G=0.42 W *[lbs/in]* | G=0.50 W [lbs/in] | G=0.55 W *[lbs/in]* |
|---|---|---|---|---|
| 8 *5/16"* | 157 | *206* | 268 | *309* |
| 10 *3/8"* | 185 | *244* | 316 | *365* |
| 12 *1/2"* | 212 | *279* | 363 | *418* |

## NOTES

- Values based on the "Technical Design Guide USA", download from **www.rothoblaas.com**
- Values were calculated considering the threaded part as being completely inserted into the wood
- Reference lateral design values (Z) are based on NDS 2018. Characteristic values of mechanical properties and geometries are in accordance with ETA-11/0030
- Reference lateral design values (W) are based on NDS 2018. Characteristic values of mechanical properties and geometries are in accordance with ETA-11/0030
- The axial thread-extraction resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b
- The shear characteristic resistances are calculated considering the case of a thick plate ($S_{PLATE} \geq d_1$)
- The shear characteristic resistances are calculated considering the case of a thin plate ($S_{PLATE} \leq 0.5\ d_1$)
- Download the latest version of this document from **www.rothoblaas.com**

## GENERAL PRINCIPLES

- The reference resistance values for connections shall be multiplied by all applicable adjustment factors (ref. NDS Table 11.3.1)
- Sizing and verification of the wooden elements, panels and steel plates must be done separately
- For different calculation methods, the My Project software is available free of charge. (**www.rothoblaas.com**)
- The characteristic resistances were calculated using solid wood or glulam. In the case of joints with CLT elements, the resistance values may be different and should be calculated taking into account the characteristics of the panel and the connection configuration
- ASTM A36 steel side plates. Bearing strength $F_e$=87.000 [psi]