

Dwuteowniki szerokostopowe europejskie HE

Wymiary: HE A, HE B i HE M 100-1000 według poprzedniej Normy Europejskiej 53-62; HE 1000 z $G_{HE} > G_{HEM}$ zgodne z ASTM A 6/A 6M - 07

HE C zgodne z PN-H-93452: 2005; HE AA 100-1000;

Tolerancje: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 przy $G_{HE} > G_{HEM}$

Powierzchnia według EN 10163-3: 2004, klasa C, podklasa 1

European wide flange beams

Dim.: HE A, HE B and HE M 100 - 1000 in accordance with former standard EU 53-62; HE 1000 with $G_{HE} > G_{HEM}$ in accordance with ASTM A 6/A 6M - 12

HE AA 100-1000 in accordance with AM standard

Tolerances: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 with $G_{HE} > G_{HEM}$

Surface condition: according to EN 10163-3: 2004, class C, subclass 1

Evropské nosníky širokopřirubové

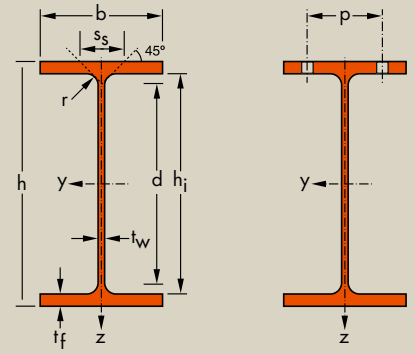
Rozměry: HE A, HE B und HE M 100 - 1000 dle dřívější normy EU 53-62; HE 1000 mit $G_{HE} > G_{HEM}$ dle ASTM A 6/A 6M - 12

HE AA 100-1000 dle AM Standard

Tolerance: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 s $G_{HE} > G_{HEM}$

Povrchová úprava: dle EN 10163-3: 2004, třída C, podtřída 1



| Oznaczenie Designation Označení | Wymiary Dimensions Rozměry | | | | | | A mm ² x10 ² | Wymiary do projektowania Dimensions for detailing Konstrukční rozměry | | | | | Powierzchnia Surface Povrch | |
|---------------------------------------|----------------------------------|---------|---------|----------------------|----------------------|---------|--|---|---------|---------|------------------------|------------------------|-------------------------------------|-------------------------------------|
| | G kg/m | h mm | b mm | t _w mm | t _r mm | r mm | | h _i mm | d mm | Ø mm | p _{min} mm | p _{max} mm | A _L m ² /m | A _G m ² /t |
| HE 100 AA* | 12,2 | 91 | 100 | 4,2 | 5,5 | 12 | 15,6 | 80 | 56 | M 10 | 54 | 58 | 0,553 | 45,17 |
| HE 100 A | 16,7 | 96 | 100 | 5 | 8 | 12 | 21,2 | 80 | 56 | M 10 | 54 | 58 | 0,561 | 33,68 |
| HE 100 B | 20,4 | 100 | 100 | 6 | 10 | 12 | 26,0 | 80 | 56 | M 10 | 56 | 58 | 0,567 | 27,76 |
| HE 100 M | 41,8 | 120 | 106 | 12 | 20 | 12 | 53,2 | 80 | 56 | M 10 | 62 | 64 | 0,619 | 14,82 |
| HE 120 AA* | 14,6 | 109 | 120 | 4,2 | 5,5 | 12 | 18,6 | 98 | 74 | M 12 | 58 | 68 | 0,669 | 45,94 |
| HE 120 A | 19,9 | 114 | 120 | 5 | 8 | 12 | 25,3 | 98 | 74 | M 12 | 58 | 68 | 0,677 | 34,06 |
| HE 120 B | 26,7 | 120 | 120 | 6,5 | 11 | 12 | 34,0 | 98 | 74 | M 12 | 60 | 68 | 0,686 | 25,71 |
| HE 120 M | 52,1 | 140 | 126 | 12,5 | 21 | 12 | 66,4 | 98 | 74 | M 12 | 66 | 74 | 0,738 | 14,16 |
| HE 140 AA* | 18,1 | 128 | 140 | 4,3 | 6 | 12 | 23,0 | 116 | 92 | M 16 | 64 | 76 | 0,787 | 43,53 |
| HE 140 A | 24,7 | 133 | 140 | 5,5 | 8,5 | 12 | 31,4 | 116 | 92 | M 16 | 64 | 76 | 0,794 | 32,21 |
| HE 140 B | 33,7 | 140 | 140 | 7 | 12 | 12 | 43,0 | 116 | 92 | M 16 | 66 | 76 | 0,805 | 23,88 |
| HE 140 M | 63,2 | 160 | 146 | 13 | 22 | 12 | 80,6 | 116 | 92 | M 16 | 72 | 82 | 0,857 | 13,56 |
| HE 160 AA* | 23,8 | 148 | 160 | 4,5 | 7 | 15 | 30,4 | 134 | 104 | M 20 | 76 | 84 | 0,901 | 37,81 |
| HE 160 A | 30,4 | 152 | 160 | 6 | 9 | 15 | 38,8 | 134 | 104 | M 20 | 78 | 84 | 0,906 | 29,78 |
| HE 160 B | 42,6 | 160 | 160 | 8 | 13 | 15 | 54,3 | 134 | 104 | M 20 | 80 | 84 | 0,918 | 21,56 |
| HE 160 M | 76,2 | 180 | 166 | 14 | 23 | 15 | 97,1 | 134 | 104 | M 20 | 86 | 90 | 0,970 | 12,74 |
| HE 180 AA* | 28,7 | 167 | 180 | 5 | 7,5 | 15 | 36,5 | 152 | 122 | M 24 | 84 | 92 | 1,018 | 35,51 |
| HE 180 A | 35,5 | 171 | 180 | 6 | 9,5 | 15 | 45,3 | 152 | 122 | M 24 | 86 | 92 | 1,024 | 28,83 |
| HE 180 B | 51,2 | 180 | 180 | 8,5 | 14 | 15 | 65,3 | 152 | 122 | M 24 | 88 | 92 | 1,037 | 20,25 |
| HE 180 M | 88,9 | 200 | 186 | 14,5 | 24 | 15 | 113,3 | 152 | 122 | M 24 | 94 | 98 | 1,089 | 12,25 |
| HE 200 AA* | 34,6 | 186 | 200 | 5,5 | 8 | 18 | 44,1 | 170 | 134 | M 27 | 96 | 100 | 1,130 | 32,62 |
| HE 200 A | 42,3 | 190 | 200 | 6,5 | 10 | 18 | 53,8 | 170 | 134 | M 27 | 98 | 100 | 1,136 | 26,89 |
| HE 200 B | 61,3 | 200 | 200 | 9 | 15 | 18 | 78,1 | 170 | 134 | M 27 | 100 | 100 | 1,151 | 18,78 |
| HE 200 M | 103 | 220 | 206 | 15 | 25 | 18 | 131,3 | 170 | 134 | M 27 | 106 | 106 | 1,203 | 11,67 |
| HE 220 AA* | 40,4 | 205 | 220 | 6 | 8,5 | 18 | 51,5 | 188 | 152 | M 27 | 98 | 118 | 1,247 | 30,87 |
| HE 220 A | 50,5 | 210 | 220 | 7 | 11 | 18 | 64,3 | 188 | 152 | M 27 | 98 | 118 | 1,255 | 24,85 |
| HE 220 B | 71,5 | 220 | 220 | 9,5 | 16 | 18 | 91,0 | 188 | 152 | M 27 | 100 | 118 | 1,270 | 17,77 |
| HE 220 M | 117 | 240 | 226 | 15,5 | 26 | 18 | 149,4 | 188 | 152 | M 27 | 108 | 124 | 1,322 | 11,27 |
| HE 240 AA* | 47,4 | 224 | 240 | 6,5 | 9 | 21 | 60,4 | 206 | 164 | M 27 | 104 | 138 | 1,359 | 28,67 |
| HE 240 A | 60,3 | 230 | 240 | 7,5 | 12 | 21 | 76,8 | 206 | 164 | M 27 | 104 | 138 | 1,369 | 22,70 |
| HE 240 B | 83,2 | 240 | 240 | 10 | 17 | 21 | 106,0 | 206 | 164 | M 27 | 108 | 138 | 1,384 | 16,63 |
| HE 240 M | 157 | 270 | 248 | 18 | 32 | 21 | 199,6 | 206 | 164 | M 27 | 116 | 146 | 1,460 | 9,318 |

- Minimalne zamówienie dla S235 JR, cf. Warunki dostawy strona 8; dla innych gatunków 40t lub według uzgodnienia.
- Minimum order: for the S235 JR grade cf. delivery conditions page 8; for any other grade 40t or upon agreement.
- Minimální objednávka: pro S235 JR, dodací podmínky strana 8; pro ostatní druhy 40t nebo dle dohody..

Odnošniki 215-219 / Notations pages 215-219 / Poznámky a vzorce 215-219

| Oznaczenie Designation Označení | Właściwości statyczne / Section properties / Statické vlastnosti | | | | | | | | | | | | | Classification EN 1993-1-1: 2005 | | | | | | EN 10025-2: 2004 | EN 10025-4: 2004 | EN 10225:2009 |
|---------------------------------------|--|--|--|---|--------------------|---|--|---|--|--------------------|---------------------|--|--|-------------------------------------|------|------|------|------|------|------------------|------------------|---------------|
| | oś y-y strong axis y-y silná osa y-y | | | | | | oś z-z weak axis z-z slabá osa z-z | | | | Pure bending y-y | | | Pure compression | | | | | | | | |
| | G kg/m | I_y mm ⁴ x10 ⁴ | W_{ely} mm ³ x10 ³ | $W_{ply}♦$ mm ³ x10 ³ | i_y mm x10 | A_vz mm ² x10 ² | I_z mm ⁴ x10 ⁴ | $W_{el,z}$ mm ³ x10 ³ | $W_{pl,z}♦$ mm ³ x10 ³ | i_z mm x10 | s_s mm | I_t mm ⁴ x10 ⁴ | I_w mm ⁶ x10 ⁹ | S235 | S355 | S460 | S235 | S355 | S460 | | | |
| HE 100 AA | 12,2 | 236,5 | 51,98 | 58,36 | 3,89 | 6,15 | 92,06 | 18,41 | 28,44 | 2,43 | 29,26 | 2,51 | 1,68 | 1 | 1 | 2 | 1 | 1 | 2 | ✓ | ✓ | ✓ |
| HE 100 A | 16,7 | 349,2 | 72,76 | 83,01 | 4,06 | 7,56 | 133,8 | 26,76 | 41,14 | 2,51 | 35,06 | 5,24 | 2,58 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 100 B | 20,4 | 449,5 | 89,91 | 104,2 | 4,16 | 9,04 | 167,3 | 33,45 | 51,42 | 2,53 | 40,06 | 9,25 | 3,38 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 100 M | 41,8 | 1143 | 190,4 | 235,8 | 4,63 | 18,04 | 399,2 | 75,31 | 116,3 | 2,74 | 66,06 | 68,21 | 9,93 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 120 AA | 14,6 | 413,4 | 75,85 | 84,12 | 4,72 | 6,90 | 158,8 | 26,47 | 40,62 | 2,93 | 29,26 | 2,78 | 4,24 | 1 | 3 | 3 | 1 | 3 | 3 | ✓ | ✓ | ✓ |
| HE 120 A | 19,9 | 606,2 | 106,3 | 119,5 | 4,89 | 8,46 | 230,9 | 38,48 | 58,85 | 3,02 | 35,06 | 5,99 | 6,47 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 120 B | 26,7 | 864,4 | 144,1 | 165,2 | 5,04 | 10,96 | 317,5 | 52,92 | 80,97 | 3,06 | 42,56 | 13,84 | 9,41 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 120 M | 52,1 | 2018 | 288,2 | 350,6 | 5,51 | 21,15 | 702,8 | 111,6 | 171,6 | 3,25 | 68,56 | 91,66 | 24,79 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 140 AA | 18,1 | 719,5 | 112,4 | 123,8 | 5,59 | 7,92 | 274,8 | 39,26 | 59,93 | 3,45 | 30,36 | 3,54 | 10,21 | 2 | 3 | 3 | 2 | 3 | 3 | ✓ | ✓ | ✓ |
| HE 140 A | 24,7 | 1033 | 155,4 | 173,5 | 5,73 | 10,12 | 389,3 | 55,62 | 84,85 | 3,52 | 36,56 | 8,13 | 15,06 | 1 | 1 | 2 | 1 | 1 | 2 | ✓ | ✓ | ✓ |
| HE 140 B | 33,7 | 1509 | 215,6 | 245,4 | 5,93 | 13,08 | 549,7 | 78,52 | 119,8 | 3,58 | 45,06 | 20,06 | 22,48 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 140 M | 63,2 | 3291 | 411,4 | 493,8 | 6,39 | 24,46 | 1144 | 156,8 | 240,5 | 3,77 | 71,06 | 120,0 | 54,33 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 160 AA | 23,8 | 1283 | 173,4 | 190,4 | 6,50 | 10,38 | 478,7 | 59,84 | 91,36 | 3,97 | 36,07 | 6,33 | 23,75 | 1 | 3 | 3 | 1 | 3 | 3 | ✓ | ✓ | ✓ |
| HE 160 A | 30,4 | 1673 | 220,1 | 245,1 | 6,57 | 13,21 | 615,6 | 76,95 | 117,6 | 3,98 | 41,57 | 12,19 | 31,41 | 1 | 1 | 2 | 1 | 1 | 2 | ✓ | ✓ | ✓ |
| HE 160 B | 42,6 | 2492 | 311,5 | 354,0 | 6,78 | 17,59 | 889,2 | 111,2 | 170,0 | 4,05 | 51,57 | 31,24 | 47,94 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 160 M | 76,2 | 5098 | 566,5 | 674,6 | 7,25 | 30,81 | 1759 | 211,9 | 325,5 | 4,26 | 77,57 | 162,4 | 108,1 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 180 AA | 28,7 | 1967 | 235,6 | 258,2 | 7,34 | 12,16 | 730,0 | 81,11 | 123,6 | 4,47 | 37,57 | 8,33 | 46,36 | 2 | 3 | 3 | 2 | 3 | 3 | ✓ | ✓ | ✓ |
| HE 180 A | 35,5 | 2510 | 293,6 | 324,9 | 7,45 | 14,47 | 924,6 | 102,7 | 156,5 | 4,52 | 42,57 | 14,80 | 60,21 | 1 | 2 | 3 | 1 | 2 | 3 | ✓ | ✓ | ✓ |
| HE 180 B | 51,2 | 3831 | 425,7 | 481,4 | 7,66 | 20,24 | 1363 | 151,4 | 231,0 | 4,57 | 54,07 | 42,16 | 93,75 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 180 M | 88,9 | 7483 | 748,3 | 883,4 | 8,13 | 34,65 | 2580 | 277,4 | 425,2 | 4,77 | 80,07 | 203,3 | 199,3 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 200 AA | 34,6 | 2944 | 316,6 | 347,1 | 8,17 | 15,45 | 1068 | 106,8 | 163,2 | 4,92 | 42,59 | 12,69 | 84,49 | 2 | 3 | 3 | 2 | 3 | 3 | ✓ | ✓ | ✓ |
| HE 200 A | 42,3 | 3692 | 388,6 | 429,5 | 8,28 | 18,08 | 1336 | 133,6 | 203,8 | 4,98 | 47,59 | 20,98 | 108,0 | 1 | 2 | 3 | 1 | 2 | 3 | ✓ | ✓ | ✓ |
| HE 200 B | 61,3 | 5696 | 569,6 | 642,5 | 8,54 | 24,83 | 2003 | 200,3 | 305,8 | 5,07 | 60,09 | 59,28 | 171,1 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 200 M | 103 | 10640 | 967,4 | 1135 | 9,00 | 41,03 | 3651 | 354,5 | 543,2 | 5,27 | 86,09 | 259,4 | 346,3 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 220 AA | 40,4 | 4170 | 406,9 | 445,5 | 9,00 | 17,63 | 1510 | 137,3 | 209,3 | 5,42 | 44,09 | 15,93 | 145,6 | 3 | 3 | 4 | 3 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 220 A | 50,5 | 5410 | 515,2 | 568,5 | 9,17 | 20,67 | 1955 | 177,7 | 270,6 | 5,51 | 50,09 | 28,46 | 193,3 | 1 | 2 | 3 | 1 | 2 | 3 | ✓ | ✓ | ✓ |
| HE 220 B | 71,5 | 8091 | 735,5 | 827,0 | 9,43 | 27,92 | 2843 | 258,5 | 393,9 | 5,59 | 62,59 | 76,57 | 295,4 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 220 M | 117 | 14600 | 1217 | 1419 | 9,89 | 45,31 | 5012 | 443,5 | 678,6 | 5,79 | 88,59 | 315,3 | 572,7 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 240 AA | 47,4 | 5835 | 521,0 | 570,6 | 9,83 | 21,54 | 2077 | 173,1 | 264,4 | 5,87 | 49,10 | 22,98 | 239,6 | 3 | 3 | 4 | 3 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 240 A | 60,3 | 7763 | 675,1 | 744,6 | 10,05 | 25,18 | 2769 | 230,7 | 351,7 | 6,00 | 56,10 | 41,55 | 328,5 | 1 | 2 | 3 | 1 | 2 | 3 | ✓ | ✓ | ✓ |
| HE 240 B | 83,2 | 11260 | 938,3 | 1053 | 10,31 | 33,23 | 3923 | 326,9 | 498,4 | 6,08 | 68,60 | 102,7 | 486,9 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | ✓ | ✓ |
| HE 240 M | 157 | 24290 | 1799 | 2117 | 11,03 | 60,07 | 8153 | 657,5 | 1006 | 6,39 | 106,6 | 627,9 | 1152 | 1 | 1 | - | 1 | 1 | - | ✓ | ✓ | ✓ |

♦ W_{pl} : Do obliczeń plastycznych, kształt musi należeć do klasy 1 lub 2 wymaganej klasy. Zobacz stronę 219.
♦ W_{pl} : for plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity. See page 219.
♦ W_{pl} : pro plastický design musí tvar odpovídat třídě 1 nebo 2 dle požadované rotační kapacity. Viz strana 219.

Dwuteowniki szerokostopowe europejskie HE (cięższy)

Wymiary: HE A, HE B i HE M 100-1000 według poprzedniej Normy Europejskiej 53-62; HE 1000 z $G_{HE} > G_{HEM}$ zgodne z ASTM A 6/A 6M - 07

HE C zgodne z PN-H-93452: 2005; HE AA 100-1000;

Tolerancje: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 przy $G_{HE} > G_{HEM}$

Powierzchnia według EN 10163-3: 2004, klasa C, podklasa 1

European wide flange beams (continued)

Dim.: HE A, HE B and HE M 100 - 1000 in accordance with former standard EU 53-62; HE 1000 with $G_{HE} > G_{HEM}$ in accordance with ASTM A 6/A 6M - 12

HE AA 100-1000 in accordance with AM standard

Tolerances: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 with $G_{HE} > G_{HEM}$

Surface condition: according to EN 10163-3: 2004, class C, subclass 1

Evropské nosníky širokopřirubové (pokračování)

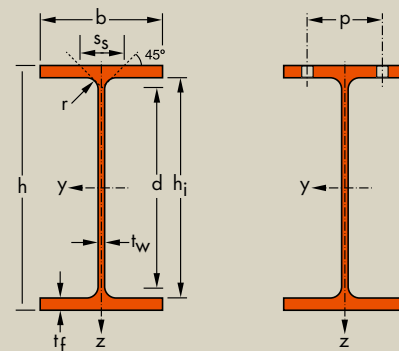
Rozměry: HE A, HE B und HE M 100 - 1000 dle dřívější normy EU 53-62; HE 1000 mit $G_{HE} > G_{HEM}$ dle ASTM A 6/A 6M - 12

HE AA 100-1000 dle AM Standard

Tolerance: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 s $G_{HE} > G_{HEM}$

Povrchová úprava: dle EN 10163-3: 2004, třída C, podtřída 1



| Oznaczenie Designation Označení | Wymiary Dimensions Rozměry | | | | | | Wymiary do projektowania Dimensions for detailing Konstrukční rozměry | | | | | Powierzchnia Surface Povrch | | |
|---------------------------------------|----------------------------------|-----|-----|----------------|----------------|----|---|----------------|-----|------|------------------|-----------------------------------|-------------------|-------------------|
| | G | h | b | t _w | t _r | r | A | h _i | d | Ø | p _{min} | p _{max} | A _L | A _G |
| kg/m | mm | mm | mm | mm | mm | mm | mm ² x10 ² | mm | mm | | mm | mm | m ² /m | m ² /t |
| HE 260 AA* | 54,1 | 244 | 260 | 6,5 | 9,5 | 24 | 69,0 | 225 | 177 | M 27 | 110 | 158 | 1,474 | 27,22 |
| HE 260 A | 68,2 | 250 | 260 | 7,5 | 12,5 | 24 | 86,8 | 225 | 177 | M 27 | 110 | 158 | 1,484 | 21,77 |
| HE 260 B | 93,0 | 260 | 260 | 10 | 17,5 | 24 | 118,4 | 225 | 177 | M 27 | 114 | 158 | 1,499 | 16,12 |
| HE 260 M | 172 | 290 | 268 | 18 | 32,5 | 24 | 219,6 | 225 | 177 | M 27 | 122 | 166 | 1,575 | 9,133 |
| HE 280 AA* | 61,2 | 264 | 280 | 7 | 10 | 24 | 78,0 | 244 | 196 | M 27 | 110 | 178 | 1,593 | 26,01 |
| HE 280 A | 76,4 | 270 | 280 | 8 | 13 | 24 | 97,3 | 244 | 196 | M 27 | 112 | 178 | 1,603 | 20,99 |
| HE 280 B | 103 | 280 | 280 | 10,5 | 18 | 24 | 131,4 | 244 | 196 | M 27 | 114 | 178 | 1,618 | 15,69 |
| HE 280 M | 189 | 310 | 288 | 18,5 | 33 | 24 | 240,2 | 244 | 196 | M 27 | 122 | 186 | 1,694 | 8,984 |
| HE 300 AA* | 69,8 | 283 | 300 | 7,5 | 10,5 | 27 | 88,9 | 262 | 208 | M 27 | 116 | 198 | 1,705 | 24,42 |
| HE 300 A | 88,3 | 290 | 300 | 8,5 | 14 | 27 | 112,5 | 262 | 208 | M 27 | 118 | 198 | 1,717 | 19,43 |
| HE 300 B | 117 | 300 | 300 | 11 | 19 | 27 | 149,1 | 262 | 208 | M 27 | 120 | 198 | 1,732 | 14,80 |
| HE 300 M | 238 | 340 | 310 | 21 | 39 | 27 | 303,1 | 262 | 208 | M 27 | 132 | 208 | 1,832 | 7,699 |
| HE 320 AA* | 74,2 | 301 | 300 | 8 | 11 | 27 | 94,6 | 279 | 225 | M 27 | 118 | 198 | 1,740 | 23,43 |
| HE 320 A | 97,6 | 310 | 300 | 9 | 15,5 | 27 | 124,4 | 279 | 225 | M 27 | 118 | 198 | 1,756 | 17,98 |
| HE 320 B | 127 | 320 | 300 | 11,5 | 20,5 | 27 | 161,3 | 279 | 225 | M 27 | 122 | 198 | 1,771 | 13,98 |
| HE 320 M | 245 | 359 | 309 | 21 | 40 | 27 | 312,0 | 279 | 225 | M 27 | 132 | 204 | 1,866 | 7,616 |
| HE 340 AA* | 78,9 | 320 | 300 | 8,5 | 11,5 | 27 | 100,5 | 297 | 243 | M 27 | 118 | 198 | 1,777 | 22,52 |
| HE 340 A | 105 | 330 | 300 | 9,5 | 16,5 | 27 | 133,5 | 297 | 243 | M 27 | 118 | 198 | 1,795 | 17,13 |
| HE 340 B | 134 | 340 | 300 | 12 | 21,5 | 27 | 170,9 | 297 | 243 | M 27 | 122 | 198 | 1,810 | 13,49 |
| HE 340 M | 248 | 377 | 309 | 21 | 40 | 27 | 315,8 | 297 | 243 | M 27 | 132 | 204 | 1,902 | 7,670 |
| HE 360 AA* | 83,7 | 339 | 300 | 9 | 12 | 27 | 106,6 | 315 | 261 | M 27 | 118 | 198 | 1,814 | 21,67 |
| HE 360 A | 112 | 350 | 300 | 10 | 17,5 | 27 | 142,8 | 315 | 261 | M 27 | 120 | 198 | 1,834 | 16,36 |
| HE 360 B | 142 | 360 | 300 | 12,5 | 22,5 | 27 | 180,6 | 315 | 261 | M 27 | 122 | 198 | 1,849 | 13,04 |
| HE 360 M | 250 | 395 | 308 | 21 | 40 | 27 | 318,8 | 315 | 261 | M 27 | 132 | 204 | 1,934 | 7,730 |
| HE 400 AA* | 92,4 | 378 | 300 | 9,5 | 13 | 27 | 117,7 | 352 | 298 | M 27 | 118 | 198 | 1,891 | 20,46 |
| HE 400 A | 125 | 390 | 300 | 11 | 19 | 27 | 159,0 | 352 | 298 | M 27 | 120 | 198 | 1,912 | 15,32 |
| HE 400 B | 155 | 400 | 300 | 13,5 | 24 | 27 | 197,8 | 352 | 298 | M 27 | 124 | 198 | 1,927 | 12,41 |
| HE 400 M | 256 | 432 | 307 | 21 | 40 | 27 | 325,8 | 352 | 298 | M 27 | 132 | 202 | 2,004 | 7,835 |
| HE 450 AA* | 99,7 | 425 | 300 | 10 | 13,5 | 27 | 127,1 | 398 | 344 | M 27 | 120 | 198 | 1,984 | 19,89 |
| HE 450 A | 140 | 440 | 300 | 11,5 | 21 | 27 | 178,0 | 398 | 344 | M 27 | 122 | 198 | 2,011 | 14,39 |
| HE 450 B | 171 | 450 | 300 | 14 | 26 | 27 | 218,0 | 398 | 344 | M 27 | 124 | 198 | 2,026 | 11,84 |
| HE 450 M | 263 | 478 | 307 | 21 | 40 | 27 | 335,4 | 398 | 344 | M 27 | 132 | 202 | 2,096 | 7,959 |

- Minimalne zamówienie dla S235 JR, cf. Warunki dostawy strona 8; dla innych gatunków 40t lub według uzgodnienia.
- Minimum order: for the S235 JR grade cf. delivery conditions page 8; for any other grade 40t or upon agreement.
- Minimální objednávka: pro S235 JR, dodací podmínky strana 8; pro ostatní druhy 40t nebo dle dohody..

Odnošniki 215-219 / Notations pages 215-219 / Poznámky a vzorce 215-219

| Oznaczenie Designation Označení | Właściwości statyczne / Section properties / Statické vlastnosti | | | | | | | | | | | | | Classification EN 1993-1-1: 2005 | | | | | | EN 10025-2: 2004 | EN 10025-4: 2004 | EN 10225:2009 |
|---------------------------------------|--|--|--|---|--------------------|---|--|---|--|--------------------|---------------------|--|--|-------------------------------------|------|------|------|------|------|------------------|------------------|---------------|
| | oś y-y strong axis y-y silná osa y-y | | | | | | oś z-z weak axis z-z slabá osa z-z | | | | Pure bending y-y | | | Pure compression | | | | | | | | |
| | G kg/m | I_y mm ⁴ x10 ⁴ | W_{ely} mm ³ x10 ³ | $W_{ply}♦$ mm ³ x10 ³ | i_y mm x10 | A_vz mm ² x10 ² | I_z mm ⁴ x10 ⁴ | $W_{el,z}$ mm ³ x10 ³ | $W_{pl,z}♦$ mm ³ x10 ³ | i_z mm x10 | s_s mm | I_t mm ⁴ x10 ⁴ | I_w mm ⁶ x10 ⁹ | S235 | S355 | S460 | S235 | S355 | S460 | | | |
| HE 260 AA | 54,1 | 7981 | 654,1 | 714,5 | 10,76 | 24,75 | 2788 | 214,5 | 327,7 | 6,36 | 53,62 | 30,31 | 382,6 | 3 | 3 | 4 | 3 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 260 A | 68,2 | 10450 | 836,4 | 919,8 | 10,97 | 28,76 | 3668 | 282,1 | 430,2 | 6,50 | 60,62 | 52,37 | 516,4 | 1 | 3 | 3 | 1 | 3 | 3 | ✓ | HI | HI |
| HE 260 B | 93,0 | 14920 | 1148 | 1283 | 11,22 | 37,59 | 5135 | 395,0 | 602,2 | 6,58 | 73,12 | 123,8 | 753,7 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 260 M | 172 | 31310 | 2159 | 2524 | 11,94 | 66,89 | 10450 | 779,7 | 1192 | 6,90 | 111,1 | 719,0 | 1728 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 280 AA | 61,2 | 10560 | 799,8 | 873,1 | 11,63 | 27,52 | 3664 | 261,7 | 399,4 | 6,85 | 55,12 | 36,22 | 590,1 | 3 | 3 | 4 | 3 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 280 A | 76,4 | 13670 | 1013 | 1112 | 11,86 | 31,74 | 4763 | 340,2 | 518,1 | 7,00 | 62,12 | 62,10 | 785,4 | 1 | 3 | 3 | 1 | 3 | 3 | ✓ | HI | HI |
| HE 280 B | 103 | 19270 | 1376 | 1534 | 12,11 | 41,09 | 6595 | 471,0 | 717,6 | 7,09 | 74,62 | 143,7 | 1130 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 280 M | 189 | 39550 | 2551 | 2966 | 12,83 | 72,03 | 13160 | 914,1 | 1397 | 7,40 | 112,6 | 807,3 | 2520 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 300 AA | 69,8 | 13800 | 975,6 | 1065 | 12,46 | 32,37 | 4734 | 315,6 | 482,3 | 7,30 | 60,13 | 49,35 | 877,2 | 3 | 3 | 4 | 3 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 300 A | 88,3 | 18260 | 1260 | 1383 | 12,74 | 37,28 | 6310 | 420,6 | 641,2 | 7,49 | 68,13 | 85,17 | 1200 | 1 | 3 | 3 | 1 | 3 | 3 | ✓ | HI | HI |
| HE 300 B | 117 | 25170 | 1678 | 1869 | 12,99 | 47,43 | 8563 | 570,9 | 870,1 | 7,58 | 80,63 | 185,0 | 1688 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 300 M | 238 | 59200 | 3482 | 4078 | 13,98 | 90,53 | 19400 | 1252 | 1913 | 8,00 | 130,6 | 1408 | 4386 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 320 AA | 74,2 | 16450 | 1093 | 1196 | 13,19 | 35,40 | 4959 | 330,6 | 505,7 | 7,24 | 61,63 | 55,87 | 1041 | 3 | 3 | 4 | 3 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 320 A | 97,6 | 22930 | 1479 | 1628 | 13,58 | 41,13 | 6985 | 465,7 | 709,7 | 7,49 | 71,63 | 108,0 | 1512 | 1 | 2 | 3 | 1 | 2 | 3 | ✓ | HI | HI |
| HE 320 B | 127 | 30820 | 1926 | 2149 | 13,82 | 51,77 | 9239 | 615,9 | 939,1 | 7,57 | 84,13 | 225,1 | 2069 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 320 M | 245 | 68130 | 3796 | 4435 | 14,78 | 94,85 | 19710 | 1276 | 1951 | 7,95 | 132,6 | 1501 | 5004 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 340 AA | 78,9 | 19550 | 1222 | 1341 | 13,95 | 38,69 | 5185 | 345,6 | 529,3 | 7,18 | 63,13 | 63,07 | 1231 | 3 | 3 | 4 | 3 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 340 A | 105 | 27690 | 1678 | 1850 | 14,40 | 44,95 | 7436 | 495,7 | 755,9 | 7,46 | 74,13 | 127,2 | 1824 | 1 | 1 | 3 | 1 | 1 | 3 | ✓ | HI | HI |
| HE 340 B | 134 | 36660 | 2156 | 2408 | 14,65 | 56,09 | 9690 | 646,0 | 985,7 | 7,53 | 86,63 | 257,2 | 2454 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 340 M | 248 | 76370 | 4052 | 4718 | 15,55 | 98,63 | 19710 | 1276 | 1953 | 7,90 | 132,6 | 1506 | 5584 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 360 AA | 83,7 | 23040 | 1359 | 1495 | 14,70 | 42,17 | 5410 | 360,7 | 553,0 | 7,12 | 64,63 | 70,99 | 1444 | 2 | 3 | 3 | 2 | 3 | 3 | ✓ | ✓ | ✓ |
| HE 360 A | 112 | 33090 | 1891 | 2088 | 15,22 | 48,96 | 7887 | 525,8 | 802,3 | 7,43 | 76,63 | 148,8 | 2177 | 1 | 1 | 2 | 1 | 1 | 2 | ✓ | HI | HI |
| HE 360 B | 142 | 43190 | 2400 | 2683 | 15,46 | 60,60 | 10140 | 676,1 | 1032 | 7,49 | 89,13 | 292,5 | 2883 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 360 M | 250 | 84870 | 4297 | 4989 | 16,32 | 102,4 | 19520 | 1268 | 1942 | 7,83 | 132,6 | 1507 | 6137 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 400 AA | 92,4 | 31250 | 1654 | 1824 | 16,30 | 47,95 | 5861 | 390,8 | 599,7 | 7,06 | 67,13 | 84,69 | 1948 | 2 | 3 | 3 | 2 | 3 | 4 | ✓ | ✓ | ✓ |
| HE 400 A | 125 | 45070 | 2311 | 2562 | 16,84 | 57,33 | 8564 | 570,9 | 872,9 | 7,34 | 80,63 | 189,0 | 2942 | 1 | 1 | 1 | 1 | 2 | 2 | ✓ | HI | HI |
| HE 400 B | 155 | 57680 | 2884 | 3232 | 17,08 | 69,98 | 10820 | 721,3 | 1104 | 7,40 | 93,13 | 355,7 | 3817 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 400 M | 256 | 104100 | 4820 | 5571 | 17,88 | 110,2 | 19340 | 1260 | 1934 | 7,70 | 132,6 | 1515 | 7410 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 450 AA | 99,7 | 41890 | 1971 | 2183 | 18,16 | 54,70 | 6088 | 405,8 | 624,4 | 6,92 | 68,63 | 95,61 | 2572 | 1 | 3 | 3 | 2 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 450 A | 140 | 63720 | 2896 | 3216 | 18,92 | 65,78 | 9465 | 631,0 | 965,5 | 7,29 | 85,13 | 243,8 | 4148 | 1 | 1 | 1 | 1 | 2 | 3 | ✓ | HI | HI |
| HE 450 B | 171 | 79890 | 3551 | 3982 | 19,14 | 79,66 | 11720 | 781,4 | 1198 | 7,33 | 97,63 | 440,5 | 5258 | 1 | 1 | 1 | 1 | 1 | 2 | ✓ | HI | HI |
| HE 450 M | 263 | 131500 | 5501 | 6331 | 19,80 | 119,8 | 19340 | 1260 | 1939 | 7,59 | 132,6 | 1529 | 9251 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |

HI = HISTAR®

- ♦ W_{pl} : Do obliczeń plastycznych, kształt musi należeć do klasy 1 lub 2 wymaganej klasy. Zobacz stronę 219.
- ♦ W_{pl} : for plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity. See page 219.
- ♦ W_{pl} : pro plastický design musí tvar odpovídat třídě 1 nebo 2 dle požadované rotační kapacity. Viz strana 219.

Dwuteowniki szerokostopowe europejskie HE (cięższy)

Wymiary: HE A, HE B i HE M 100-1000 według poprzedniej Normy Europejskiej 53-62; HE 1000 z $G_{HE} > G_{HEM}$ zgodnie z ASTM A 6/A 6M - 07

HE C zgodnie z PN-H-93452: 2005; HE AA 100-1000;

Tolerancje: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 przy $G_{HE} > G_{HEM}$

Powierzchnia według EN 10163-3: 2004, klasa C, podklasa 1

European wide flange beams (continued)

Dim.: HE A, HE B and HE M 100 - 1000 in accordance with former standard EU 53-62; HE 1000 with $G_{HE} > G_{HEM}$ in accordance with ASTM A 6/A 6M - 12

HE AA 100-1000 in accordance with AM standard

Tolerances: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 with $G_{HE} > G_{HEM}$

Surface condition: according to EN 10163-3: 2004, class C, subclass 1

Evropské nosníky širokopřirubové (pokračování)

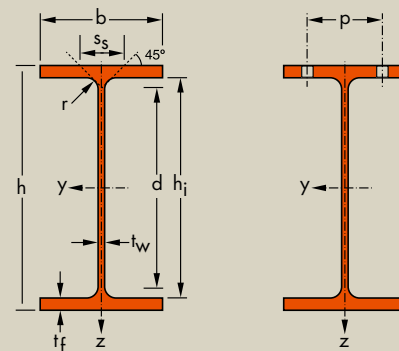
Rozměry: HE A, HE B und HE M 100 - 1000 dle dřívější normy EU 53-62; HE 1000 mit $G_{HE} > G_{HEM}$ dle ASTM A 6/A 6M - 12

HE AA 100-1000 dle AM Standard

Tolerance: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 s $G_{HE} > G_{HEM}$

Povrchová úprava: dle EN 10163-3: 2004, třída C, podtřída 1



| Oznaczenie Designation Označení | Wymiary Dimensions Rozměry | | | | | | Wymiary do projektowania Dimensions for detailing Konstrukční rozměry | | | | | | Powierzchnia Surface Povrch | |
|---------------------------------------|----------------------------------|---------|---------|----------------------|----------------------|---------|---|----------------------|---------|---------|------------------------|------------------------|-------------------------------------|-------------------------------------|
| | G kg/m | h mm | b mm | t _w mm | t _r mm | r mm | A mm ² x10 ² | h _i mm | d mm | Ø mm | p _{min} mm | p _{max} mm | A _L m ² /m | A _G m ² /t |
| HE 500 AA* | 107 | 472 | 300 | 10,5 | 14 | 27 | 136,9 | 444 | 390 | M 27 | 120 | 198 | 2,077 | 19,33 |
| HE 500 A | 155 | 490 | 300 | 12 | 23 | 27 | 197,5 | 444 | 390 | M 27 | 122 | 198 | 2,110 | 13,60 |
| HE 500 B | 187 | 500 | 300 | 14,5 | 28 | 27 | 238,6 | 444 | 390 | M 27 | 124 | 198 | 2,125 | 11,34 |
| HE 500 M | 270 | 524 | 306 | 21 | 40 | 27 | 344,3 | 444 | 390 | M 27 | 132 | 202 | 2,184 | 8,079 |
| HE 550 AA* | 120 | 522 | 300 | 11,5 | 15 | 27 | 152,8 | 492 | 438 | M 27 | 122 | 198 | 2,175 | 18,13 |
| HE 550 A | 166 | 540 | 300 | 12,5 | 24 | 27 | 211,8 | 492 | 438 | M 27 | 122 | 198 | 2,209 | 13,29 |
| HE 550 B | 199 | 550 | 300 | 15 | 29 | 27 | 254,1 | 492 | 438 | M 27 | 124 | 198 | 2,224 | 11,15 |
| HE 550 M | 278 | 572 | 306 | 21 | 40 | 27 | 354,4 | 492 | 438 | M 27 | 132 | 202 | 2,280 | 8,195 |
| HE 600 AA* | 129 | 571 | 300 | 12 | 15,5 | 27 | 164,1 | 540 | 486 | M 27 | 122 | 198 | 2,272 | 17,64 |
| HE 600 A | 178 | 590 | 300 | 13 | 25 | 27 | 226,5 | 540 | 486 | M 27 | 122 | 198 | 2,308 | 12,98 |
| HE 600 B | 212 | 600 | 300 | 15,5 | 30 | 27 | 270,0 | 540 | 486 | M 27 | 126 | 198 | 2,323 | 10,96 |
| HE 600 M | 285 | 620 | 305 | 21 | 40 | 27 | 363,7 | 540 | 486 | M 27 | 132 | 200 | 2,372 | 8,308 |
| HE 600 x 337* | 337 | 632 | 310 | 25,5 | 46 | 27 | 429,2 | 540 | 486 | M 27 | 138 | 202 | 2,407 | 7,144 |
| HE 600 x 399* | 399 | 648 | 315 | 30 | 54 | 27 | 508,5 | 540 | 486 | M 27 | 142 | 208 | 2,450 | 6,137 |
| HE 650 AA* | 138 | 620 | 300 | 12,5 | 16 | 27 | 175,8 | 588 | 534 | M 27 | 122 | 198 | 2,369 | 17,17 |
| HE 650 A | 190 | 640 | 300 | 13,5 | 26 | 27 | 241,6 | 588 | 534 | M 27 | 124 | 198 | 2,407 | 12,69 |
| HE 650 B | 225 | 650 | 300 | 16 | 31 | 27 | 286,3 | 588 | 534 | M 27 | 126 | 198 | 2,422 | 10,77 |
| HE 650 M | 293 | 668 | 305 | 21 | 40 | 27 | 373,7 | 588 | 534 | M 27 | 132 | 200 | 2,468 | 8,411 |
| HE 650 x 343* | 343 | 680 | 309 | 25 | 46 | 27 | 437,5 | 588 | 534 | M 27 | 138 | 202 | 2,500 | 7,278 |
| HE 650 x 407* | 407 | 696 | 314 | 29,5 | 54 | 27 | 518,8 | 588 | 534 | M 27 | 142 | 206 | 2,543 | 6,243 |
| HE 700 AA* | 150 | 670 | 300 | 13 | 17 | 27 | 190,9 | 636 | 582 | M 27 | 122 | 198 | 2,468 | 16,46 |
| HE 700 A | 204 | 690 | 300 | 14,5 | 27 | 27 | 260,5 | 636 | 582 | M 27 | 124 | 198 | 2,505 | 12,25 |
| HE 700 B | 241 | 700 | 300 | 17 | 32 | 27 | 306,4 | 636 | 582 | M 27 | 126 | 198 | 2,520 | 10,48 |
| HE 700 M | 301 | 716 | 304 | 21 | 40 | 27 | 383,0 | 636 | 582 | M 27 | 132 | 200 | 2,560 | 8,513 |
| HE 700 x 352* | 352 | 728 | 308 | 25 | 46 | 27 | 448,6 | 636 | 582 | M 27 | 138 | 200 | 2,592 | 7,359 |
| HE 700 x 418* | 418 | 744 | 313 | 29,5 | 54 | 27 | 531,9 | 636 | 582 | M 27 | 142 | 206 | 2,635 | 6,310 |
| HE 800 AA* | 172 | 770 | 300 | 14 | 18 | 30 | 218,5 | 734 | 674 | M 27 | 130 | 198 | 2,660 | 15,51 |
| HE 800 A | 224 | 790 | 300 | 15 | 28 | 30 | 285,8 | 734 | 674 | M 27 | 130 | 198 | 2,698 | 12,03 |
| HE 800 B | 262 | 800 | 300 | 17,5 | 33 | 30 | 334,2 | 734 | 674 | M 27 | 134 | 198 | 2,713 | 10,34 |
| HE 800 M | 317 | 814 | 303 | 21 | 40 | 30 | 404,3 | 734 | 674 | M 27 | 138 | 198 | 2,746 | 8,655 |
| HE 800 x 373* | 373 | 826 | 308 | 25 | 46 | 30 | 474,6 | 734 | 674 | M 27 | 144 | 200 | 2,782 | 7,469 |
| HE 800 x 444* | 444 | 842 | 313 | 30 | 54 | 30 | 566,0 | 734 | 674 | M 27 | 148 | 206 | 2,824 | 6,357 |

- Minimalne zamówienie dla S235 JR, cf. Warunki dostawy strona 8; dla innych gatunków 40t lub według uzgodnienia.
- Minimum order: for the S235 JR grade cf. delivery conditions page 8; for any other grade 40t or upon agreement.
- Minimální objednávka: pro S235 JR, dodací podmínky strana 8; pro ostatní druhy 40t nebo dle dohody..

Oдноšníki 215-219 / Notations pages 215-219 / Poznámky a vzorce 215-219

| Oznaczenie Designation Označení | Właściwości statyczne / Section properties / Statické vlastnosti | | | | | | | | | | | | | Classification EN 1993-1-1: 2005 | | | | | | EN 10025-2: 2004 | EN 10025-4: 2004 | EN 10225:2009 |
|---------------------------------------|--|--|---|---|--------------------|---|--|---|--|--------------------|-------------|--|--|-------------------------------------|---------------------|------|------|------|------|------------------|------------------|---------------|
| | G kg/m | oś y-y strong axis y-y silná osa y-y | | | | | oś z-z weak axis z-z slabá osa z-z | | | | | Pure bending y-y | | | Pure compression | | | | | | | |
| | | I_y mm ⁴ x10 ⁴ | $W_{el,y}$ mm ³ x10 ³ | $W_{ply}♦$ mm ³ x10 ³ | i_y mm x10 | A_vz mm ² x10 ² | I_z mm ⁴ x10 ⁴ | $W_{el,z}$ mm ³ x10 ³ | $W_{pl,z}♦$ mm ³ x10 ³ | i_z mm x10 | s_s mm | I_t mm ⁴ x10 ⁴ | I_w mm ⁶ x10 ⁹ | S235 | S355 | S460 | S235 | S355 | S460 | | | |
| HE 500 AA | 107 | 54640 | 2315 | 2576 | 19,98 | 61,91 | 6314 | 420,9 | 649,3 | 6,79 | 70,13 | 107,7 | 3304 | 1 | 3 | 3 | 2 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 500 A | 155 | 86970 | 3550 | 3949 | 20,98 | 74,72 | 10370 | 691,1 | 1059 | 7,24 | 89,63 | 309,3 | 5643 | 1 | 1 | 1 | 1 | 3 | 4 | ✓ | HI | HI |
| HE 500 B | 187 | 107200 | 4287 | 4815 | 21,19 | 89,82 | 12620 | 841,6 | 1292 | 7,27 | 102,1 | 538,4 | 7018 | 1 | 1 | 1 | 1 | 2 | 2 | ✓ | HI | HI |
| HE 500 M | 270 | 161900 | 6180 | 7094 | 21,69 | 129,5 | 19150 | 1252 | 1932 | 7,46 | 132,6 | 1539 | 11190 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 550 AA | 120 | 72870 | 2792 | 3128 | 21,84 | 72,66 | 6767 | 451,1 | 698,6 | 6,65 | 73,13 | 133,7 | 4338 | 1 | 2 | 3 | 3 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 550 A | 166 | 111900 | 4146 | 4622 | 22,99 | 83,72 | 10820 | 721,3 | 1107 | 7,15 | 92,13 | 351,5 | 7189 | 1 | 1 | 1 | 2 | 4 | 4 | ✓ | HI | HI |
| HE 550 B | 199 | 136700 | 4971 | 5591 | 23,20 | 100,1 | 13080 | 871,8 | 1341 | 7,17 | 104,6 | 600,3 | 8856 | 1 | 1 | 1 | 1 | 2 | 3 | ✓ | HI | HI |
| HE 550 M | 278 | 198000 | 6923 | 7933 | 23,64 | 139,6 | 19160 | 1252 | 1937 | 7,35 | 132,6 | 1554 | 13520 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 600 AA | 129 | 91900 | 3218 | 3623 | 23,66 | 81,29 | 6993 | 466,2 | 724,5 | 6,53 | 74,63 | 149,8 | 5381 | 1 | 2 | 3 | 3 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 600 A | 178 | 141200 | 4787 | 5350 | 24,97 | 93,21 | 11270 | 751,4 | 1156 | 7,05 | 94,63 | 397,8 | 8978 | 1 | 1 | 1 | 2 | 4 | 4 | ✓ | HI | HI |
| HE 600 B | 212 | 171000 | 5701 | 6425 | 25,17 | 110,8 | 13530 | 902,0 | 1391 | 7,08 | 107,1 | 667,2 | 10970 | 1 | 1 | 1 | 1 | 3 | 4 | ✓ | HI | HI |
| HE 600 M | 285 | 237400 | 7660 | 8772 | 25,55 | 149,7 | 18980 | 1244 | 1930 | 7,22 | 132,6 | 1564 | 15910 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | HI |
| HE 600 x 337 | 337 | 283200 | 8961 | 10380 | 25,69 | 180,5 | 22940 | 1480 | 2310 | 7,31 | 149,1 | 2451 | 19610 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | |
| HE 600 x 399 | 399 | 344600 | 10640 | 12460 | 26,03 | 213,6 | 28280 | 1796 | 2814 | 7,46 | 169,6 | 3966 | 24810 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | |
| HE 650 AA | 138 | 113900 | 3676 | 4160 | 25,46 | 90,40 | 7221 | 481,4 | 750,7 | 6,41 | 76,13 | 167,5 | 6567 | 1 | 1 | 3 | 4 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 650 A | 190 | 175200 | 5474 | 6136 | 26,93 | 103,2 | 11720 | 781,6 | 1205 | 6,97 | 97,13 | 448,3 | 11030 | 1 | 1 | 1 | 3 | 4 | 4 | ✓ | HI | HI |
| HE 650 B | 225 | 210600 | 6480 | 7320 | 27,12 | 122,0 | 13980 | 932,3 | 1441 | 6,99 | 109,6 | 739,2 | 13360 | 1 | 1 | 1 | 2 | 3 | 4 | ✓ | HI | HI |
| HE 650 M | 293 | 281700 | 8433 | 9657 | 27,45 | 159,7 | 18980 | 1245 | 1936 | 7,13 | 132,6 | 1579 | 18650 | 1 | 1 | 1 | 1 | 1 | 2 | ✓ | HI | HI |
| HE 650 x 343 | 343 | 333700 | 9815 | 11350 | 27,62 | 189,6 | 22720 | 1470 | 2300 | 7,21 | 148,6 | 2442 | 22730 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | |
| HE 650 x 407 | 407 | 405400 | 11650 | 13620 | 27,95 | 224,8 | 28020 | 1785 | 2803 | 7,35 | 169,1 | 3958 | 28710 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | |
| HE 700 AA | 150 | 142700 | 4260 | 4840 | 27,34 | 100,3 | 7673 | 511,5 | 799,7 | 6,34 | 78,63 | 195,2 | 8155 | 1 | 1 | 2 | 4 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 700 A | 204 | 215300 | 6241 | 7032 | 28,75 | 117,0 | 12180 | 811,9 | 1257 | 6,84 | 100,1 | 513,9 | 13350 | 1 | 1 | 1 | 3 | 4 | 4 | ✓ | HI | HI |
| HE 700 B | 241 | 256900 | 7340 | 8327 | 28,96 | 137,1 | 14440 | 962,7 | 1495 | 6,87 | 112,6 | 830,9 | 16060 | 1 | 1 | 1 | 2 | 4 | 4 | ✓ | HI | HI |
| HE 700 M | 301 | 329300 | 9198 | 10540 | 29,32 | 169,8 | 18800 | 1240 | 1929 | 7,01 | 132,6 | 1589 | 21400 | 1 | 1 | 1 | 1 | 2 | 3 | ✓ | HI | HI |
| HE 700 x 352 | 352 | 389700 | 10710 | 12390 | 29,47 | 201,6 | 22510 | 1461 | 2293 | 7,08 | 148,6 | 2461 | 26050 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | |
| HE 700 x 418 | 418 | 472500 | 12700 | 14840 | 29,80 | 239,0 | 27760 | 1774 | 2797 | 7,22 | 169,1 | 3989 | 32850 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | |
| HE 800 AA | 172 | 208900 | 5426 | 6225 | 30,92 | 123,8 | 8134 | 542,2 | 856,6 | 6,10 | 85,15 | 256,8 | 11450 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 800 A | 224 | 303400 | 7682 | 8699 | 32,58 | 138,8 | 12640 | 842,6 | 1312 | 6,65 | 106,1 | 596,9 | 18290 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | HI | HI |
| HE 800 B | 262 | 359100 | 8977 | 10230 | 32,78 | 161,8 | 14900 | 993,6 | 1553 | 6,68 | 118,6 | 946,0 | 21840 | 1 | 1 | 1 | 3 | 4 | 4 | ✓ | HI | HI |
| HE 800 M | 317 | 442600 | 10870 | 12490 | 33,09 | 194,3 | 18630 | 1230 | 1930 | 6,79 | 136,1 | 1646 | 27780 | 1 | 1 | 1 | 1 | 3 | 4 | ✓ | HI | HI |
| HE 800 x 373 | 373 | 523900 | 12690 | 14700 | 33,23 | 230,3 | 22530 | 1463 | 2311 | 6,89 | 152,1 | 2554 | 34070 | 1 | 1 | 1 | 1 | 2 | 2 | ✓ | HI | |
| HE 800 x 444 | 444 | 634500 | 15070 | 17640 | 33,48 | 276,5 | 27800 | 1776 | 2827 | 7,01 | 173,1 | 4180 | 42840 | 1 | 1 | 1 | 1 | 1 | 1 | ✓ | HI | |

HI = HISTAR®

♦ W_{pl} : Do obliczeń plastycznych, kształt musi należeć do klasy 1 lub 2 wymaganej klasy. Zobacz stronę 219.
 ♦ W_{pl} : for plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity. See page 219.
 ♦ W_{pl} : pro plastický design musí tvar odpovídat třídě 1 nebo 2 dle požadované rotační kapacity. Viz strana 219.

Dwuteowniki szerokostopowe europejskie HE (cięższy)

Wymiary: HE A, HE B i HE M 100-1000 według poprzedniej Normy Europejskiej 53-62; HE 1000 z $G_{HE} > G_{HEM}$ zgodne z ASTM A 6/A 6M - 07

HE C zgodne z PN-H-93452: 2005; HE AA 100-1000;

Tolerancje: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 przy $G_{HE} > G_{HEM}$

Powierzchnia według EN 10163-3: 2004, klasa C, podklasa 1

European wide flange beams (continued)

Dim.: HE A, HE B and HE M 100 - 1000 in accordance with former standard EU 53-62; HE 1000 with $G_{HE} > G_{HEM}$ in accordance with ASTM A 6/A 6M - 12

HE AA 100-1000 in accordance with AM standard

Tolerances: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 with $G_{HE} > G_{HEM}$

Surface condition: according to EN 10163-3: 2004, class C, subclass 1

Evropské nosníky širokopřirubové (pokračování)

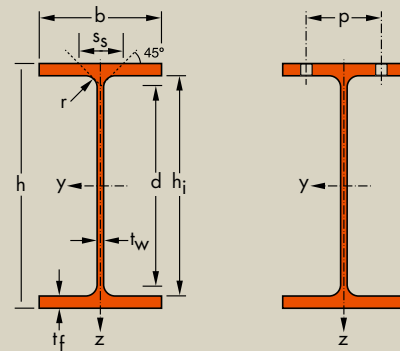
Rozměry: HE A, HE B und HE M 100 - 1000 dle dřívější normy EU 53-62; HE 1000 mit $G_{HE} > G_{HEM}$ dle ASTM A 6/A 6M - 12

HE AA 100-1000 dle AM Standard

Tolerance: EN 10034: 1993 HE 100 - 900; HE 1000 AA-M

ASTM A 6/A 6M - 12 HE 1000 s $G_{HE} > G_{HEM}$

Povrchová úprava: dle EN 10163-3: 2004, třída C, podtřída 1



| Oznaczenie Designation Označení | Wymiary Dimensions Rozměry | | | | | | Wymiary do projektowania Dimensions for detailing Konstrukční rozměry | | | | | | Powierzchnia Surface Povrch | |
|---------------------------------------|----------------------------------|------|-----|----------------|----------------|----|---|----------------|-----|------|------------------|------------------|-----------------------------------|-------------------|
| | G | h | b | t _w | t _f | r | A | h _i | d | Ø | p _{min} | p _{max} | A _L | A _G |
| kg/m | mm | mm | mm | mm | mm | mm | mm ² x10 ² | mm | mm | | mm | mm | m ² /m | m ² /t |
| HE 900 AA* | 198 | 870 | 300 | 15 | 20 | 30 | 252,2 | 830 | 770 | M 27 | 130 | 198 | 2,858 | 14,44 |
| HE 900 A | 252 | 890 | 300 | 16 | 30 | 30 | 320,5 | 830 | 770 | M 27 | 132 | 198 | 2,896 | 11,51 |
| HE 900 B | 291 | 900 | 300 | 18,5 | 35 | 30 | 371,3 | 830 | 770 | M 27 | 134 | 198 | 2,911 | 9,99 |
| HE 900 M | 333 | 910 | 302 | 21 | 40 | 30 | 423,6 | 830 | 770 | M 27 | 138 | 198 | 2,934 | 8,824 |
| HE 900 x 391* | 391 | 922 | 307 | 25 | 46 | 30 | 497,7 | 830 | 770 | M 27 | 144 | 200 | 2,970 | 7,604 |
| HE 900 x 466* | 466 | 938 | 312 | 30 | 54 | 30 | 593,7 | 830 | 770 | M 27 | 148 | 204 | 3,012 | 6,464 |
| HE 1000 AA* | 222 | 970 | 300 | 16 | 21 | 30 | 282,2 | 928 | 868 | M 27 | 132 | 198 | 3,056 | 13,80 |
| HE 1000 x 249* | 249 | 980 | 300 | 16,5 | 26 | 30 | 316,8 | 928 | 868 | M 27 | 134 | 194 | 3,080 | 12,37 |
| HE 1000 A | 272 | 990 | 300 | 16,5 | 31 | 30 | 346,8 | 928 | 868 | M 27 | 132 | 198 | 3,095 | 11,37 |
| HE 1000 B | 314 | 1000 | 300 | 19 | 36 | 30 | 400,0 | 928 | 868 | M 27 | 134 | 198 | 3,110 | 9,905 |
| HE 1000 M | 349 | 1008 | 302 | 21 | 40 | 30 | 444,2 | 928 | 868 | M 27 | 138 | 198 | 3,130 | 8,978 |
| HE 1000 x 393* | 393 | 1016 | 303 | 24,4 | 43,9 | 30 | 500,2 | 928 | 868 | M 27 | 142 | 198 | 3,140 | 8,010 |
| HE 1000 x 415* | 415 | 1020 | 304 | 26 | 46 | 30 | 528,7 | 928 | 868 | M 27 | 144 | 198 | 3,150 | 7,600 |
| HE 1000 x 438* | 438 | 1026 | 305 | 26,9 | 49 | 30 | 556,0 | 928 | 868 | M 27 | 146 | 198 | 3,170 | 7,250 |
| HE 1000 x 494* | 494 | 1036 | 309 | 31 | 54 | 30 | 629,1 | 928 | 868 | M 27 | 148 | 204 | 3,190 | 6,470 |
| HE 1000 x 584* | 584 | 1056 | 314 | 36 | 64 | 30 | 743,7 | 928 | 868 | M 27 | 154 | 208 | 3,240 | 5,560 |

Europejskie belki o bardzo szerokiej stopie

Wymiary: AM Standard

Tolerancje: EN 10034: 1993

Powierzchnia według EN 10163-3: 2004, klasa C, podklasa 1

European extra wide flange beams

Dimensions: AM Standard

Tolerances: EN 10034: 1993

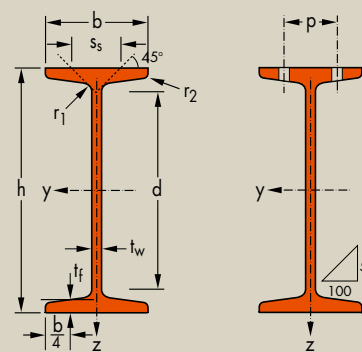
Surface condition: according to EN 10163-3: 2004, class C, subclass 1

Evropské nosníky extra širokopřirubové

Rozměry: AM Standard

Tolerance: EN 10034: 1993

Povrchová úprava: dle EN 10163-3: 2004, třída C, podtřída 1



| Oznaczenie Designation Označení | Wymiary Dimensions Rozměry | | | | | | | Wymiary do projektowania Dimensions for detailing Konstrukční rozměry | | | | | Powierzchnia Surface Povrch | |
|---------------------------------------|----------------------------------|--------|-----|----------------|----------------|----------------|----------------|---|-------|-----|------------------|------------------|-----------------------------------|-------------------|
| | G | h | b | t _w | t _f | r ₁ | r ₂ | A | d | Ø | p _{min} | p _{max} | A _L | A _G |
| kg/m | mm | mm | mm | mm | mm | mm | mm | mm ² x10 ² | mm | | mm | mm | m ² /m | m ² /t |
| HLZ 1100 A* | 393,1 | 1075,4 | 458 | 20,0 | 31,0 | 35 | - | 500,8 | 935,9 | M27 | 154 | 352 | 3,858 | 9,814 |
| HLZ 1100 B* | 407,5 | 1079,4 | 458 | 20,0 | 33,0 | 35 | - | 519,1 | 935,9 | M27 | 154 | 352 | 3,866 | 9,486 |
| HLZ 1100 C* | 430,4 | 1083,4 | 459 | 21,0 | 35,0 | 35 | - | 548,3 | 935,9 | M27 | 154 | 354 | 3,876 | 9,004 |
| HLZ 1100 D* | 453,3 | 1087,4 | 460 | 22,0 | 37,0 | 35 | - | 577,5 | 935,9 | M27 | 156 | 354 | 3,886 | 8,572 |

* Minimalne zamówienie dla S235 JR, cf. Warunki dostawy strona 8; dla innych gatunków 40t lub według uzgodnienia.

* Minimalny tonaż i warunki dostawy do uzgodnienia.

* Minimum order: for the S235 JR grade cf. delivery conditions page 8; for any other grade 40t or upon agreement.

* Minimum tonnage and delivery conditions upon agreement.

* Minimální objednávka: pro S235 JR, dodací podmínky strana 8; pro ostatní druhy 40t nebo dle dohody.

* Minimální tonáž a dodací podmínky dle dohody.

HE

Odnošniki 215-219 / Notations pages 215-219 / Poznámky a vzorce 215-219

| Oznaczenie Designation Označení | Właściwości statyczne / Section properties / Statické vlastnosti | | | | | | | | | | | | Classification EN 1993-1-1: 2005 | | | | | | EN 10025-2:2004 | EN 10025-4:2004 | EN 10225:2009 | |
|---------------------------------------|--|--|--|--|--------------------|---|--|--|--|--------------------|-------------|--|--|------|---------------------|------|------|------|-----------------|-----------------|---------------|------|
| | G kg/m | oś y-y strong axis y-y silná osa y-y | | | | | oś z-z weak axis z-z slabá osa z-z | | | | | Pure bending y-y | | | Pure compression | | | | | | | |
| | | I_y mm ⁴ x10 ⁴ | W_{ely} mm ³ x10 ³ | W_{ply} ◆ mm ³ x10 ³ | i_y mm x10 | A_{vz} mm ² x10 ² | I_z mm ⁴ x10 ⁴ | W_{elz} mm ³ x10 ³ | W_{plz} ◆ mm ³ x10 ³ | i_z mm x10 | s_s mm | I_t mm ⁴ x10 ⁴ | I_w mm ⁶ x10 ⁹ | S235 | S355 | S460 | S235 | S355 | | | | S460 |
| HE 900 AA | 198 | 301100 | 6923 | 7999 | 34,55 | 147,2 | 9041 | 602,8 | 957,7 | 5,99 | 90,15 | 334,9 | 16260 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | ✓ | ✓ |
| HE 900 A | 252 | 422100 | 9485 | 10810 | 36,29 | 163,3 | 13550 | 903,2 | 1414 | 6,50 | 111,1 | 736,8 | 24960 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | HI | HI |
| HE 900 B | 291 | 494100 | 10980 | 12580 | 36,48 | 188,8 | 15820 | 1050 | 1658 | 6,53 | 123,6 | 1137 | 29460 | 1 | 1 | 1 | 3 | 4 | 4 | ✓ | HI | HI |
| HE 900 M | 333 | 570400 | 12540 | 14440 | 36,70 | 214,4 | 18450 | 1220 | 1929 | 6,60 | 136,1 | 1671 | 34750 | 1 | 1 | 1 | 2 | 4 | 4 | ✓ | HI | HI |
| HE 900 x 391 | 391 | 674300 | 14630 | 16990 | 36,81 | 254,3 | 22320 | 1454 | 2312 | 6,70 | 152,1 | 2597 | 42560 | 1 | 1 | 1 | 1 | 2 | 4 | ✓ | HI | |
| HE 900 x 466 | 466 | 814900 | 17380 | 20380 | 37,05 | 305,3 | 27560 | 1767 | 2832 | 6,81 | 173,1 | 4256 | 53400 | 1 | 1 | 1 | 1 | 1 | 2 | ✓ | HI | |
| HE 1000 AA | 222 | 406500 | 8380 | 9777 | 37,95 | 172,2 | 9501 | 633,4 | 1016 | 5,80 | 93,15 | 403,4 | 21280 | 1 | 1 | - | 4 | 4 | - | ✓ | | |
| HE 1000 x 249 | 249 | 481100 | 9818 | 11350 | 38,97 | 180,7 | 11750 | 784,0 | 1245 | 6,09 | 103,6 | 584,4 | 26620 | 1 | 1 | 2 | 4 | 4 | 4 | ✓ | HI | HI |
| HE 1000 A | 272 | 553800 | 11190 | 12820 | 39,96 | 184,6 | 14000 | 933,6 | 1470 | 6,35 | 113,6 | 822,4 | 32070 | 1 | 1 | 2 | 4 | 4 | 4 | ✓ | HI | HI |
| HE 1000 B | 314 | 644700 | 12890 | 14860 | 40,15 | 212,5 | 16280 | 1085 | 1716 | 6,38 | 126,1 | 1254 | 37640 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | HI | HI |
| HE 1000 M | 349 | 722300 | 14330 | 16570 | 40,32 | 235,0 | 18460 | 1222 | 1940 | 6,45 | 136,1 | 1701 | 43020 | 1 | 1 | 1 | 3 | 4 | 4 | ✓ | HI | HI |
| HE 1000 x 393 | 393 | 807700 | 15900 | 18540 | 40,18 | 271,3 | 20500 | 1353 | 2168 | 6,40 | 147,3 | 2332 | 48080 | 1 | 1 | 1 | 2 | 4 | 4 | ✓ | HI | |
| HE 1000 x 415 | 415 | 853100 | 16728 | 19571 | 40,17 | 288,6 | 21710 | 1428 | 2298 | 6,41 | 153,1 | 2713 | 51080 | 1 | 1 | 1 | 2 | 3 | 4 | ✓ | HI | |
| HE 1000 x 438 | 438 | 909200 | 17720 | 20750 | 40,43 | 299,9 | 23360 | 1531 | 2463 | 6,48 | 160,0 | 3190 | 55290 | 1 | 1 | 1 | 1 | 3 | 4 | ✓ | HI | |
| HE 1000 x 494 | 494 | 1028000 | 19845 | 23413 | 40,42 | 344,5 | 26820 | 1736 | 2818 | 6,53 | 174,1 | 4433 | 64010 | 1 | 1 | 1 | 1 | 2 | 3 | ✓ | HI | |
| HE 1000 x 584 | 584 | 1246100 | 23600 | 28039 | 40,93 | 403,2 | 33430 | 2130 | 3475 | 6,70 | 199,1 | 7230 | 81240 | 1 | 1 | 1 | 1 | 1 | 2 | ✓ | HI | |

HI = HISTAR®

HLZ

| Oznaczenie Designation Označení | Właściwości statyczne / Section properties / Statické vlastnosti | | | | | | | | | | | | Classification EN 1993-1-1: 2005 | | | | | | EN 10025-2:2004 | EN 10025-4:2004 | EN 10225:2009 | |
|---------------------------------------|--|--|--|--|--------------------|---|--|--|--|--------------------|-------------|--|--|------|---------------------|------|------|------|-----------------|-----------------|---------------|------|
| | G kg/m | oś y-y strong axis y-y silná osa y-y | | | | | oś z-z weak axis z-z slabá osa z-z | | | | | Pure bending y-y | | | Pure compression | | | | | | | |
| | | I_y mm ⁴ x10 ⁴ | W_{ely} mm ³ x10 ³ | W_{ply} ◆ mm ³ x10 ³ | i_y mm x10 | A_{vz} mm ² x10 ² | I_z mm ⁴ x10 ⁴ | W_{elz} mm ³ x10 ³ | W_{plz} ◆ mm ³ x10 ³ | i_z mm x10 | s_s mm | I_t mm ⁴ x10 ⁴ | I_w mm ⁶ x10 ⁹ | S235 | S355 | S460 | S235 | S355 | | | | S460 |
| HLZ 1100 A | 393,1 | 983100 | 18280 | 20670 | 44,30 | 241,2 | 47950 | 2094 | 3308 | 9,78 | 130,4 | 1598 | 122000 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | HI | HI |
| HLZ 1100 B | 407,5 | 1036000 | 19200 | 21650 | 44,68 | 242,9 | 51150 | 2234 | 3517 | 9,93 | 134,4 | 1750 | 131200 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | HI | HI |
| HLZ 1100 C | 430,4 | 1100000 | 20310 | 22940 | 44,80 | 255,0 | 54730 | 2385 | 3784 | 9,99 | 139,4 | 2051 | 141300 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | HI | HI |
| HLZ 1100 D | 453,3 | 1165000 | 21430 | 24230 | 44,92 | 267,2 | 58350 | 2537 | 3993 | 10,05 | 144,4 | 2384 | 151700 | 1 | 1 | 1 | 4 | 4 | 4 | ✓ | HI | HI |

- ◆ W_{pl} : Do obliczeń plastycznych, kształt musi należeć do klasy 1 lub 2 wymaganej klasy. Zobacz stronę 219.
- ◆ W_{pl} : for plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity. See page 219.
- ◆ W_{pl} : pro plastický design musí tvar odpovídat třídě 1 nebo 2 dle požadované rotační kapacity. Viz strana 219.