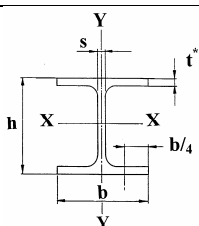
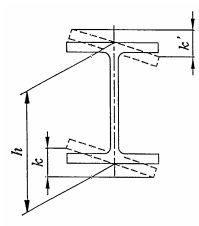
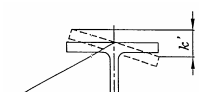
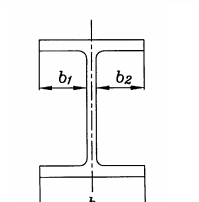


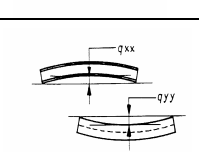
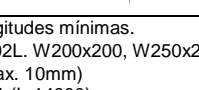


## Tolerancias de perfiles estructurales: IPN, IPE, HE, HD, HP, UB, UC, W

Propiedad	Norma	IPE, HEA, HEB HEM, HD260, HD320, HP, UB, UC, UBP		IPN		W, HD360, HD400, HP(ASTM)	
		EN 10034: 1993		EN 10024: 1995		ASTM A6 – 98	
Altura: h (mm)		$h \leq 180$	+ 3,0/- 2,0	$h \leq 200$	$\pm 2.0$	+4/-3	$c \leq h+6$
		$180 < h \leq 400$	+ 4,0/- 2,0	$200 < h \leq 400$	$\pm 3.0$		
		$400 < h \leq 700$	+ 5,0/- 3,0	$400 < h$	$\pm 4.0$		
		$h > 700$	+ 5,0/- 5,0				
Anchura del ala: b (mm)		$b \leq 110$	+ 4,0/- 1,0	$b \leq 75$	$\pm 1.5$	+6/-5	
		$110 < b \leq 210$	+ 4,0/- 2,0	$75 < b \leq 100$	$\pm 2.0$		
		$210 < b \leq 325$	+ 4,0/- 4,0	$100 < b \leq 125$	$\pm 2.5$		
		$b > 325$	+ 6,0/-5,0	$400 < b$	$\pm 3.0$		
Espesor del alma: s (mm)		$s < 7$	$\pm 0,7$	$s < 7$	+0.5/-1.0	Limitado por la tolerancia en masa	
		$7 \leq s < 10$	$\pm 1,0$	$7 < s \leq 10$	+0.7/-1.5		
		$10 \leq s < 20$	$\pm 1,5$	$10 < s$	+1.0/-2.0		
		$20 \leq s < 40$	$\pm 2,0$				
		$40 \leq s < 60$	$\pm 2,5$				
		$s \geq 60$	$\pm 3,0$				
Espesor del ala: t (mm)		$t < 6,5$	+ 1,5/- 0,5	$t \leq 7$	+1.5/-0.5	Limitado por la tolerancia en masa	
		$6,5 \leq t < 10$	+ 2,0/- 1,0	$7 < t \leq 10$	+2.0/-1.0		
		$10 \leq t < 20$	+ 2,5/- 1,5	$10 < t \leq 20$	+2.5/-1.5		
		$20 \leq t < 30$	+ 2,5/- 2,0	$20 < t$	+2.5/-2.0		
		$30 \leq t < 40$	+ 2,5/- 2,5				
		$40 \leq t < 60$	+ 3,0/- 3,0				
Falta de paralelismo: k + k' (mm)		$b \leq 110$	1,5	$b \leq 100$	2,0	$h \leq 310$	6
		$b > 110$	2% de b (máx, 6,5)	$100 < b$	2% de b	$h > 310$	8
Asimetría del alma: e (mm) donde $e = (b_1 - b_2)/2$		$t < 40$		$b \leq 100$	2,0	$G \leq 634 \text{ kg/m}$	5
		$b \leq 110$	2,5	$100 < b$	3,0	$G > 634 \text{ kg/m}$	8
		$110 < b \leq 325$	3,5				
		$b > 325$	5,0				
		$t \geq 40$					
		$110 < b \leq 325$	5,0				
Rectitud $q_{xx}$ y $q_{yy}$ (mm)		$80 < h \leq 180$	0,0030 L	$80 < h \leq 180$	0,3 % de L	0.001 L <sup>2)</sup>	
		$180 < h \leq 360$	0,0015 L	$180 < h \leq 360$	0,15 % de L		
		$h > 360$	0,001 L	$360 < h$	0,1 % de L		
Longitud: L (mm)		-0/+100 <sup>1)</sup>		-0/+100 <sup>1)</sup>		-0/+100 <sup>1)</sup>	
		$\pm 50$		$\pm 50$		$\pm 50$	
Masa: M (%)		$\pm 4,0$		$\pm 4,0$		$\pm 2.5$	

1) Si se solicitan longitudes mínimas.  
 2)  $b < 150$ :  $q_{yy} \leq 0.002L$ . W200x200, W250x250, W310x310, W360x370, W360x410 si se especifica:  
 $L \leq 14m$  : 0.001(max. 10mm)  
 $L > 14m$  : 10+0.001 (L-14000)