

# BS 970 : Part 1 : 1996

## Wrought steels for mechanical and allied engineering purposes

Part 1: General inspection and testing procedures and specific requirements for carbon, carbon manganese, alloy and stainless steels

### Dimensional Tolerance Black Bar

Tolerances shall be in accordance with tables 1-3

#### Length

The standard tolerance on length for random length bars shall be 600mm

NOTE. Closer tolerances may be agreed between the purchaser and the supplier

Table 1. Tolerances for hot rolled round and square bar and rough turned rounds							
Size  mm		Permitted variation					
		General Applications				Special applications	
		Primary rolled out material		Re-rolled material		Re-rolled material	
		Diameter ± mm	Out of section (a) mm	Diameter or width across flats ± mm	Out of section (a) mm	Diameter or width across flats ± mm	Out of section (a)
≤ 16	-	-	0.2	0.3	0.2	0.3	
> 16 ≤ 26	-	-	0.3	0.5	0.2	0.3	
> 26 ≤ 38	-	-	0.4	0.6	0.25	0.4	
> 38 ≤ 51	-	-	0.5	0.8	0.3	0.5	
> 51 ≤ 64	-	-	0.6	0.9	0.4	0.6	
> 64 ≤ 76	-	-	0.7	1.1	0.5	0.8	
> 76 ≤ 90	1.3	2.0	0.7	1.1			
> 90 ≤ 120	1.5	2.3	0.8	1.2			
> 120 ≤ 160	2.0	3.0					
> 160 ≤ 200	2.5	3.8					
> 200	3.0	4.5					

(a) In relation to table 13, the definition of 'out of section' is as follows

Round bar : The difference between the maximum and the minimum diameter of the bar measured at the same cross-section

Square bar : The difference between the two dimensions measured across the two pairs of opposing (parallel) sides at a common cross-section of the bar.

Note: By agreement between purchaser and supplier, the tolerances may be all plus or all minus, e.g. the general applications tolerance for 16 mm may be + 0.4mm

**Table 2. Tolerances for hot rolled hexagonal bar**

Table 2. Tolerances for hot rolled hexagonal bar					
Size  mm		Permitted variation			
		General applications		Special applications	
		Re-rolled material		Re-rolled material	
		Width across flats ± mm	Out of section (a) mm	Width across flats ± mm	Out of section (a)
≤ 16	0.2	0.3	0.2	0.3	
> 16 ≤ 26	0.3	0.5	0.2	0.3	
> 26 ≤ 38	0.4	0.6	0.25	0.4	
> 38 ≤ 51	0.5	0.8	0.3	0.5	
> 51 ≤ 64	0.6	0.9	0.4	0.6	
> 64 ≤ 76	0.7	1.1	0.5	0.8	

(a) In relation to table 14, the definition of 'out of section' is as follows

Hexagonal bar : The difference between the least and the greatest dimensions measured across the three pairs of opposing (parallel) flats at a common cross-section of the bar

Note: By agreement between purchaser and supplier, the tolerances may be all plus or all minus, e.g. the general applications tolerance for 16 mm may be + 0.4mm

**Table 3. Tolerances for hot rolled flat bar**

Table 3. Tolerances for hot rolled flat bar		
Size  mm	Permitted variation	
	General applications ± mm	Special applications ± mm
<b>Width</b>		
≥ 10 ≤ 35	0.5	0.4
> 35 ≤ 75	0.8	0.6
> 75 ≤ 100	1.0	0.7
> 100 ≤ 125	1.3	0.9
> 125 ≤ 150	1.5	1.0
<b>Thickness</b>		
≤ 10	0.4	0.3
> 10 ≤ 20	0.5	0.3
> 20 ≤ 40	0.6	0.4
> 40 ≤ 60	0.8	0.5
> 60	1.0	0.7

Note: By agreement between purchaser and supplier, the tolerances may be all plus or all minus, e.g. the standard tolerance on width for 35mm wide flats may be + 1.0 mm

