UDC 669.14-42

October 1963

Steel Bars
Hot Rolled Half-round Steel and Half-oval Steel
Dimensions, Weights, Permissible Variations

DIN 1018

Stabstahl; Warmgewalzter Halbrundstahl und Flachhalbrundstahl,
Maße, Gewichte, zulässige Abweichungen

Dimensions in mm

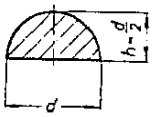
1. Scope

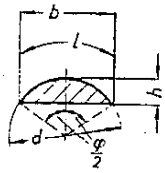
This Standard applies to hot rolled half-round steel with widths ranging from 16 to 75 and to half-oval steel with nominal sizes (width × height) ranging from 14 × 4 to 100 × 25 in the grades of steel according to Section 4.

This Standard does n o t apply to the following:

Flat half-round steel bars for woodruff keys (see DIN 6882)
Flat wire rod (see DIN 59110)

2. Designation





Designation of hot rolled half-round steel of diameter d = 20 mm in a steel covered by the code number St 37-2 or the material number 1.0112 according to DIN 17100:

Half-round 20 DIN 1018 - St 37-2
or Half-round 20 DIN 1018 - 1.0112

Designation of hot rolled half-oval steel of width b = 25 mm and height h = 8 mm in a steel covered by the code number St 37-2 or the material number 1.0112 according to DIN 17100:

Half-oval 25 × 8 DIN 1018 - St 37-2
or Half-oval 25 × 8 DIN 1018 - 1.0112

Instead of writing out "Halbrund" (half-round) or "Flachhalbrund" (half-oval) in full, the simplified forms "Hrd" or "FlHrd" respectively "⌓" or "⌓" according to DIN 1353 may be used.

For Explanations see DIN-Mitteilungen Vol. 41 (1962), No. 11, pp. 517-519.

Continued on pages 2 and 3

3. Dimensions and permissible dimension and form variations

3.1. Diameters, widths and heights

3.1.1. The diameters, widths and heigths in which half-round steel and half-oval steel are preferentially supplied, and the permissible variations on these dimensions are contained in Table 1.

Table 1

Half-round steel					
Diameter equals width d	Perm. var.	Height $h = \frac{d}{2}$	Perm. var.	Cross-sectional area F [1]) cm²	Weight G kg/m
16	±1,0	8	±0,5	1,01	0,789
20		10		1,57	1,23
26		13		2,65	2,08
30		15	±0,6	3,53	2,77
60	±1,2	30	±1,2	14,1	11,1
75	±1,5	37,5	±1,5	22,1	17,3

Half-oval steel					
Nominal size $b \times h$	Width b Perm. var.		Height h Perm. var.		Cross-sect. area F [1]) cm²	Weight G kg/m
14 × 4	14	±1,0	4	±0,5	0,397	0,312
16 × 3	16		3		0,329	0,258
16 × 3,5	16		3,5		0,387	0,304
18 × 3,2	18		3,2		0,394	0,309
20 × 6,5	20		6,5		0,936	0,735
25 × 8	25		8		1,44	1,13
28 × 6	28		6		1,16	0,911
33 × 8	33		8		1,84	1,44
35 × 10	35		10		2,48	1,95
40 × 10	40		10		2,80	2,19
50 × 12	50		12		4,18	3,28
75 × 18	75	±1,5	18	±0,6	9,40	7,38
100 × 25	100		25	±0,8	17,5	13,7

[1]) Cross-sect. area $F = \frac{d^2 \pi}{8} \approx 0{,}3927\, d^2$

[2]) Cross-sect. area $F = \frac{d\,(l - b) + 2b \cdot h}{4}$; $l = \frac{\varphi^\circ}{2} \cdot \frac{\pi}{180^\circ} \cdot d$

$$d = \frac{b^2 + 4h^2}{4h}; \quad \sin\frac{\varphi}{2} = \frac{4b \cdot h}{b^2 + 4h^2}$$

3.2. Straightness

Half-round steel and half-oval steel to this Standard shall be straight to within the permissible variations according to Table 2.

4. Material

Half-round steel and half-oval steel to this Standard shall preferably be made of the grades according to DIN 17100, DIN 17200, DIN 17210 and DIN 1651.

5. Weight

5.1. The weights stated in Table 1 have been evaluated from the cross-section on the basis of a density of 7.85 kg/dm³.

5.2. Permissible weight variations as percentages of total weight are given in Table 3.

Table 2

Diameter d or width b over	to	Permissible variation q from straightness
40	80	$0{,}004 \cdot l$
80	100	$0{,}0025 \cdot l$

Table 3

Diameter d or width b over	to	Permissible weight variation on deliveries of 5 t and above	less than 5 t
–	15	±6%	±8%
15	75	±4%	±5,3%

The weight variation for the purpose of this Standard is the difference between the actual weight supplied and the weight as calculated from the weight according to Table 1 and the metres supplied (when ordering in manufacturing lengths) or the metres ordered (when ordering in fixed lengths and exact lengths).

6. Mode of delivery

6.1. Length data for deliveries of hot rolled half-round steel and half-oval steel are contained in Table 4.

6.2. When ordered by weight it is permissible for the length to vary between the maximum and minimum limits stated for manufacturing lengths.

6.3. Example of order

100 t hot rolled half-round steel of diameter d = 20 mm in a steel according to the code number St 37-2 or the material number 1.0112 according to DIN 17100 in manufacturing lengths:

10 t Half-round 20 DIN 1018 - St 37-2

or 10 t Half-round 20 DIN 1018 - 1.0112

7. Checking accuracy to size

7.1. Scope of test

The number of bars which shall be checked for accuracy to size by measurements made at the manufacturer's works prior to despatch shall be agreed to at the time of ordering.

7.2. Procedure

7.2.1. The diameter according to Section 3.1 shall be measured at a distance of not less than 150 mm from the end of the bars when delivery is made in manufacturing lengths, and at any point desired when delivery is made in fixed lengths and exact lengths.

7.2.2. When checking straightness according to Section 3.2 the dimension q shall be measured over the full length of the bars.

Table 4

Description	Length		Length details to be given when ordering
	Range	Permissible variation	
Manufacturing length	3 000 to 8 000	anywhere between 3000 and 12000	none
Fixed length	up to 8 000	±100	required fixed length in mm
Exact length	up to 8 000	under ± 100 to ± 5; the following being preferred: ± 50, ± 25, ± 10, ± 5	required exact length and required permissible variation in mm