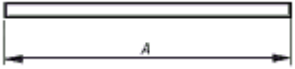
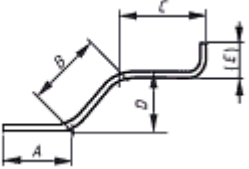
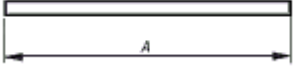
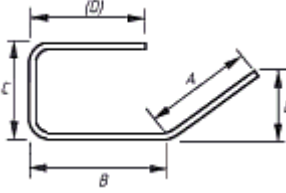
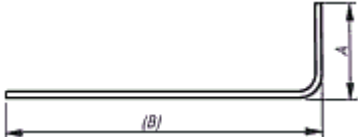
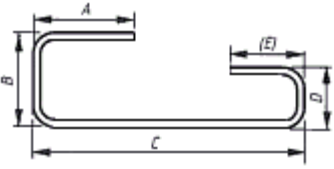
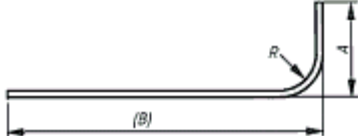
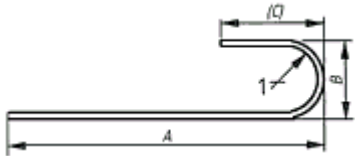


Table 3 - Standard shapes, their method of measurement and calculation of length

Method of measurement of bending dimensions	Total length of bar (L) measured along centre line	Method of measurement of bending dimensions	Total length of bar (L) measured along centre line
<p>Shape Code 00</p> 	<p>A</p>	<p>Shape Code 35</p> 	<p>A + B + C + (E) - 0.5r - d</p> <p>Neither A nor (E) shall be less than P in Table 2. See Note 1.</p>
<p>Shape Code 01</p> 	<p>A Stock lengths.</p> <p>See Note 4.</p>	<p>Shape Code 36</p> 	<p>A + B + C + (D) - r - 2d</p> <p>Neither A nor (D) shall be less than P in Table 2. See Note 1.</p>
<p>Shape Code 11</p> 	<p>A + (B) - 0.5r - d</p> <p>Neither A nor B shall be less than P in Table 2</p>	<p>Shape Code 41</p> 	<p>A + B + C + D + (E) - 2r - 4d</p> <p>Neither A nor (E) shall be</p>
<p>Shape Code 12</p> 	<p>A + (B) - 0.43R - 1.2d</p> <p>Neither A nor B shall be less than P in Table 2 nor less than (R + 6d)</p>		

Shape Code

13



$$A + 0.57B + (C) - 1.6d$$

B shall not be less than $2(r + d)$. Neither A nor C shall be less than P in Table 2 nor less than $(B/2 + 5d)$. See Note 3.

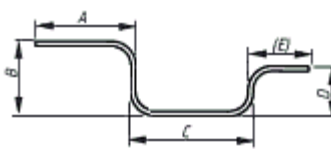
Key
1 Semi-circular

less than P in Table 2.

May also be used for a flag link viz:

Shape Code

44

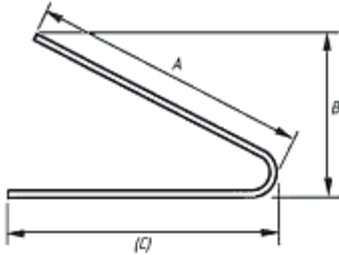


$$A + B + C + D + (E) - 2r - 4d$$

Neither A nor (E) shall be less than P in Table 2.

Shape Code

14

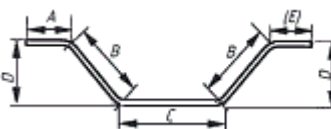


$$A + (C) - 4d$$

Neither A nor (C) shall be less than P in Table 2. See Note 1.

Shape Code

46



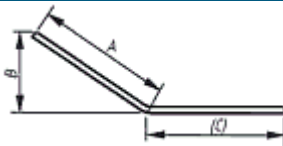
$$A + 2B + C + (E)$$

Neither A nor (E) shall be less than P in Table 2.

See Note 1.

Shape Code

15

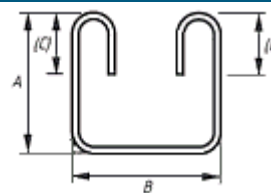


$$A + (C)$$

Neither A nor (C) shall be less than P in Table 2. See Note 1.

Shape Code

47

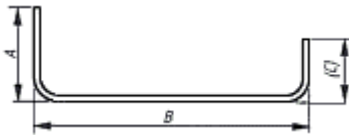


$$2A + B + 2C + 1.5r - 3d$$

(C) and (D) shall be equal and not more than A nor less than P in Table 2.

Shape Code

21



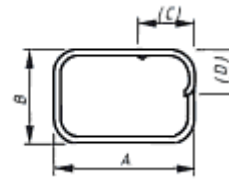
$$A + B + (C) - r - 2d$$

Neither A nor (C) shall be less than P in Table 2.

Where (C) and (D) are to be minimized the following formula may be used: $L = 2A + B + \max(21d, 240)$

Shape Code

51



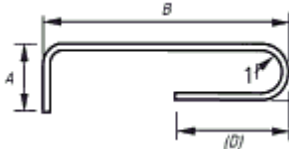
$$2(A + B + (C)) - 2.5r - 5d$$

(C) and (D) shall be equal and not more than A or B nor less than P in Table 2.

Where (C) and (D) are to be minimized the following formula may be used: $L = 2A + 2B + \max(16d, 160)$

Shape Code

22

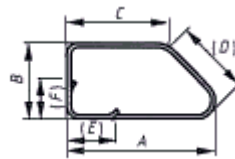


$$A + B + C + (D) - 1.5r - 3d$$

C shall not be less than $2(r + d)$. Neither A nor (D) shall be less than P in Table 2. (D) shall not be less than $C/2 + 5d$.

Shape Code

56



$$A + B + C + (D) + 2(E) - 2.5r - 5d$$

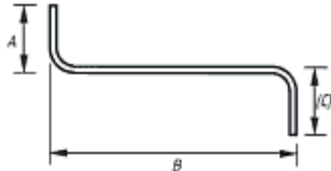
(E) and (F) shall be equal and not more than B or C, nor less than P in Table 2.

Key

1 Semi-circular

Shape Code

23

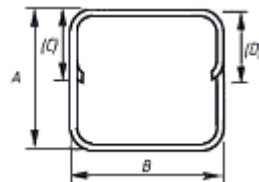


$$A + B + (C) - r - 2d$$

Neither A nor (C) shall be less than P in Table 2.

Shape Code

63

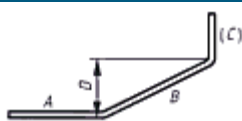


$$2A + 3B + 2(C) - 3r - 6d$$

(C) and (D) shall be equal

Shape Code

24



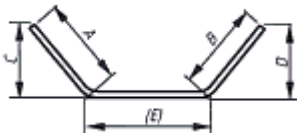
$$A + B + (C)$$

A and (C)

are at 90° to one another.

Shape Code

25



$A + B + (E)$

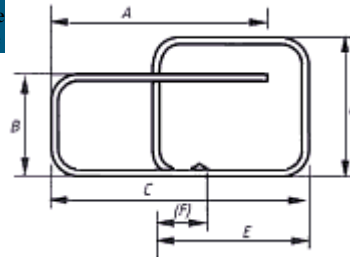
Neither A nor B shall be less than P in Table 2. If E is the critical dimension, schedule as 99 and specify A or B as the free dimension. See Note 1.

and not more than A or B nor less than P in Table 2.

Where (C) and (D) are to be minimized the following formula may be used: $L = 2A + 3B + \max(14d, 150)$

Shape Code

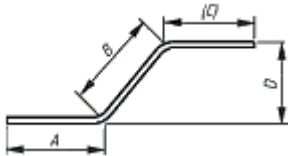
64



$A + B + C + 2D + E + (F) - 3r - 6d$

Shape Code

26



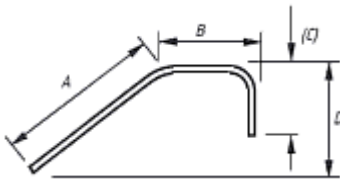
$A + B + (C)$

Neither A nor (C) shall be less than P in Table 2. See Note 1.

Neither A nor (F) shall be less than P in Table 2. See Note 2.

Shape Code

27

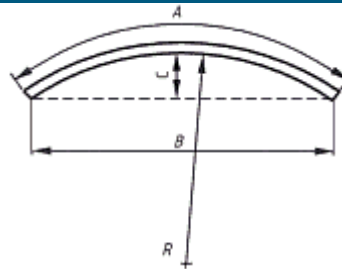


$A + B + (C) - 0.5r - d$

Neither A nor (C) shall be less than P in Table 2. See Note 1.

Shape Code

67

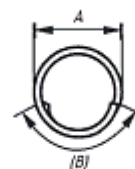


A

See clause 10.

Shape Code

75

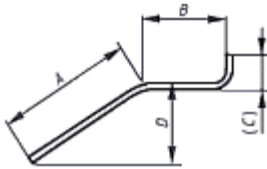


$\pi(A - d) + B$

Where B is the lap.

Shape Code

28

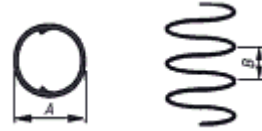


$$A + B + (C) - 0.5r - d$$

Neither A nor (C) shall be less than P in Table 2. See Note 1.

Shape Code

77



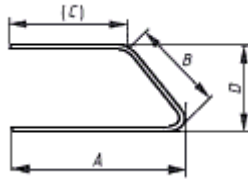
$$C\pi(A-d)$$

C = number of turns

Where B is greater than A/5 this equation no longer applies, in which case the following formula may be used: $L = C((\pi(A-d))^2 + B^2)^{0.5}$

Shape Code

29

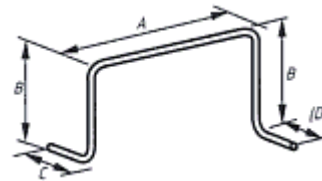


$$A + B + (C) - r - 2d$$

Neither A nor (C) shall be less than P in Table 2. See Note 1.

Shape Code

98



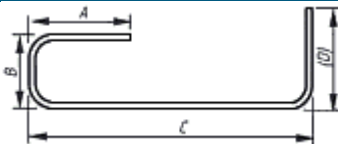
$$A + 2B + C + (D) - 2r - 4d$$

Isometric sketch

Neither C or (D) shall be less than P in Table 2.

Shape Code

31



$$A + B + C + (D) - 1.5r - 3d$$

Neither A nor (D) shall be less than P in Table 2.

Shape Code

99

All other shapes

To be calculated

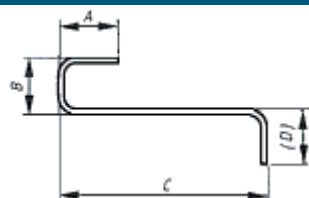
See Note 2.

Where standard shapes cannot be used.

No other shape code number, form of designation or abbreviation shall be used in scheduling.

Shape Code

32

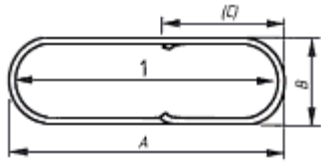


$$A + B + C + (D) - 1.5r - 3d$$

A dimensioned sketch shall be drawn over the dimension columns A to E. Every dimension shall be specified and the dimension that is to allow for permissible deviations shall be indicated in parenthesis, otherwise the fabricator is free to choose which dimension shall allow for tolerance.

Neither A nor (D) shall be less than P in Table 2.

Shape Code
33

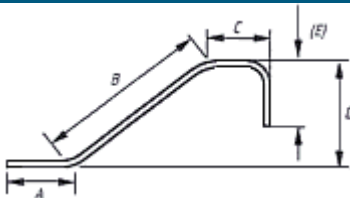


$$2A + 1.7B + 2(C) - 4d$$

A shall not be less than $12d + 30\text{mm}$. B shall not be less than $2(r+d)$. (C) shall not be less than P in Table 2, nor less than $B/2 + 5d$. See Note 3.

Key
1 Semi-circular

Shape Code
34



$$A + B + C + (E) - 0.5r - d$$

Neither A nor (E) shall be less than P in Table 2. See Note 1.

The values for minimum radius and end projection, r and P respectively, as specified in Table 2, shall apply to all shape codes (see 7.6).

The dimensions in parentheses are the free dimensions. If a shape given in this table is

required but a different dimension is to allow for the possible deviations, the shape shall be drawn out and given the shape code 99 and the free dimension shall be indicated in parentheses.

The length of straight between two bends shall be at least 4d, see Figure 6.

Figure 4, Figure 5 and Figure 6 should be used in the interpretation of ending dimensions.

Note 1 The length equations for shape codes 14, 15, 25, 26, 27, 28, 29, 34, 35, 36 and 46 are approximate and where the bend angle is greater than 45°, the length should be calculated more accurately allowing for the difference between the specified overall dimensions and the true length measured along the central axis of the bar. When the bending angles approach 90°, it is preferable to specify shape code 99 with a fully dimensioned sketch.

Note 2 Five ends or more might be impractical within permitted tolerances.

Note 3 For shapes with straight and curved lengths (e.g. shape codes 12, 13, 22, 33 and 47) the largest practical mandrel size for the production of a continuous curve is 400 mm. See also Clause 10.

Note 4 Stock lengths are available in a limited number of lengths (e.g. 6m, 12m). Dimension A for shape code 01 should be regarded as indicative and used for the purpose of calculating total length. Actual delivery lengths should be by agreement with supplier.

Table 4 -

BAR MASS per linear metre (kg/m) :-				
<i>50mm:</i>	<i>40mm:</i>	<i>32mm:</i>	<i>25mm:</i>	<i>20mm:</i>
15.413kg/m	9.864kg/m	6.313kg/m	3.854kg/m	2.466kg/m
<i>16mm:</i>	<i>12mm:</i>	<i>10mm:</i>	<i>8mm:</i>	<i>6mm:</i>
1.579kg/m	0.888kg/m	0.616kg/m	0.395kg/m	0.222kg/m

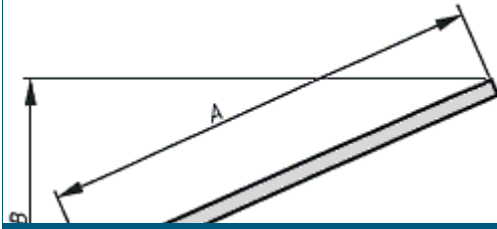
Excerpts From Section 8 - Drawing Forms for Scheduling and Dimensioning

Figure 4 - Dimensioning of an acute angle

8.6 If the angle between two portions of the shape meeting at a bend is not a right angle, it

shall be defined by co-ordinates and not by degrees or radians.

8.7 When dimensioning an acute angle the tangential lines shown in Figure 4 shall be used.



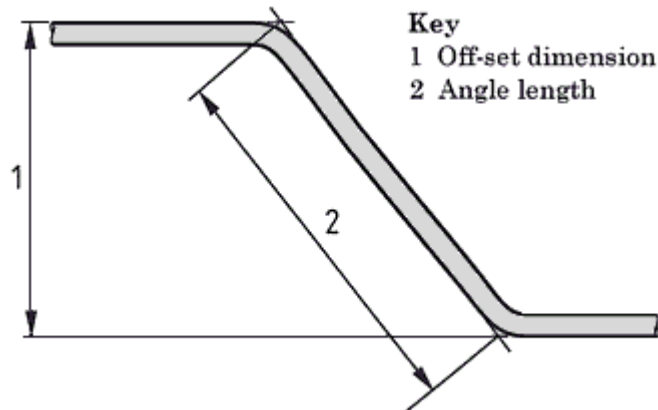
**Figure 5 -
Dimensioning of
cranked bars**

8.8 Apart from shape code 98, bars bent in planes shall be sketched isometrically or shown in two elevations, using first angle projection. The words "*bent in two planes*" or "*isometric sketch*" shall appear on the schedule adjacent to the sketch.

8.9 The overall offset dimension of a crank shall be not less than twice the size of the bar. The angled length (see Figure 5) shall be not less than :

a) 10d for bars not exceeding a nominal size of 16mm

b) 13d for nominal sizes greater than



16mm

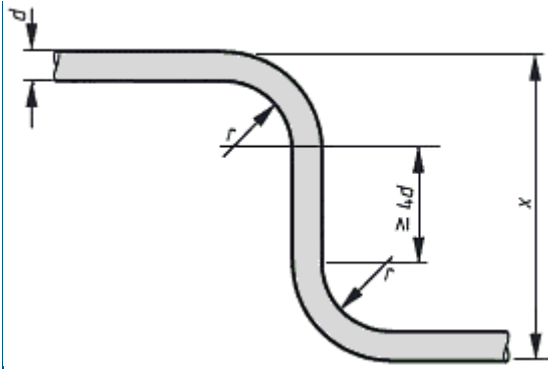


Figure 6 - Example of bar with more than one bend

8.10 For all shapes with two or more bends in the same or opposite directions (whether in the same plane or not), the overall dimension given on the schedule shall always include a minimum straight of $4d$ between the curved portion of the bends, as shown in Figure 6.

The value of x in Figure 6 shall be not less than the following:

- a)** $10d$ for bars not exceeding a nominal size of 16mm
- b)** $13d$ for nominal sizes greater than 16mm

NOTE The minimum values of x are expressed in terms of the nominal size of the reinforcement. In practice, rolling and bending tolerances, and the fact that the circumscribing diameter of deformed reinforcement may be up to 10% greater than the nominal size, should be considered.