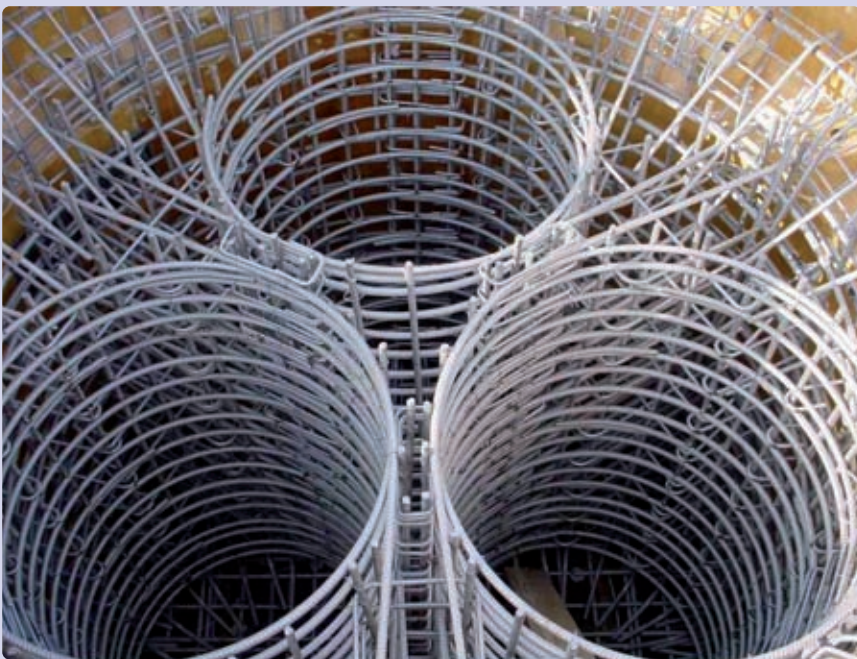




Introduction of British Standard BS 8666:2005



Courtesy of Valbruna UK Ltd

**Scheduling, Dimensioning, Bending
and Cutting of Steel Reinforcement
for Concrete**





Important changes have taken place in the scheduling of reinforcement. The revised British Standard Specification for scheduling, dimensioning, bending and cutting of steel reinforcement for concrete, BS 8666:2005, came into effect on 1st January 2006. This replaces BS 8666:2000, which has been withdrawn. Significant differences in the two standards can be summarised as follows:

- **Notation** – changes in the designation of the type and grade of steel reinforcement
- **Shape codes** – increased from 16 to 34
- **Electronic data files** – by agreement bar and fabric schedules may be in the form of electronic data files
- **Plain round Grade 250 bar** – no longer referenced
- **Dowel bars** – reference should be made to BS EN 10025 or BS EN 13877-3
- **Bending formers** – unchanged. A diameter is now given for 50mm bar.

Despite the issue of this new standard it is clear that BS 8666:2000 and BS 8666:2005 will run in parallel for some time and reinforcement fabricators will be expected to process orders according to both. You can, however, be assured that CARES approved reinforcement fabricators who operate an approved management system for quality, will ensure that your order requirements are fulfilled in full compliance with the required British Standard.

For ease of reference the shape codes from BS 8666:2000 and BS 8666:2005 are shown overleaf. Should you have any queries regarding the use of these standards, how they differ in detail or how they should be used in practice, please contact your CARES reinforcement fabricator. Alternatively contact CARES directly, or visit our website:

BS 8666:2005 Standard Shapes

Shape and total length of bar (L) measured along centre-line

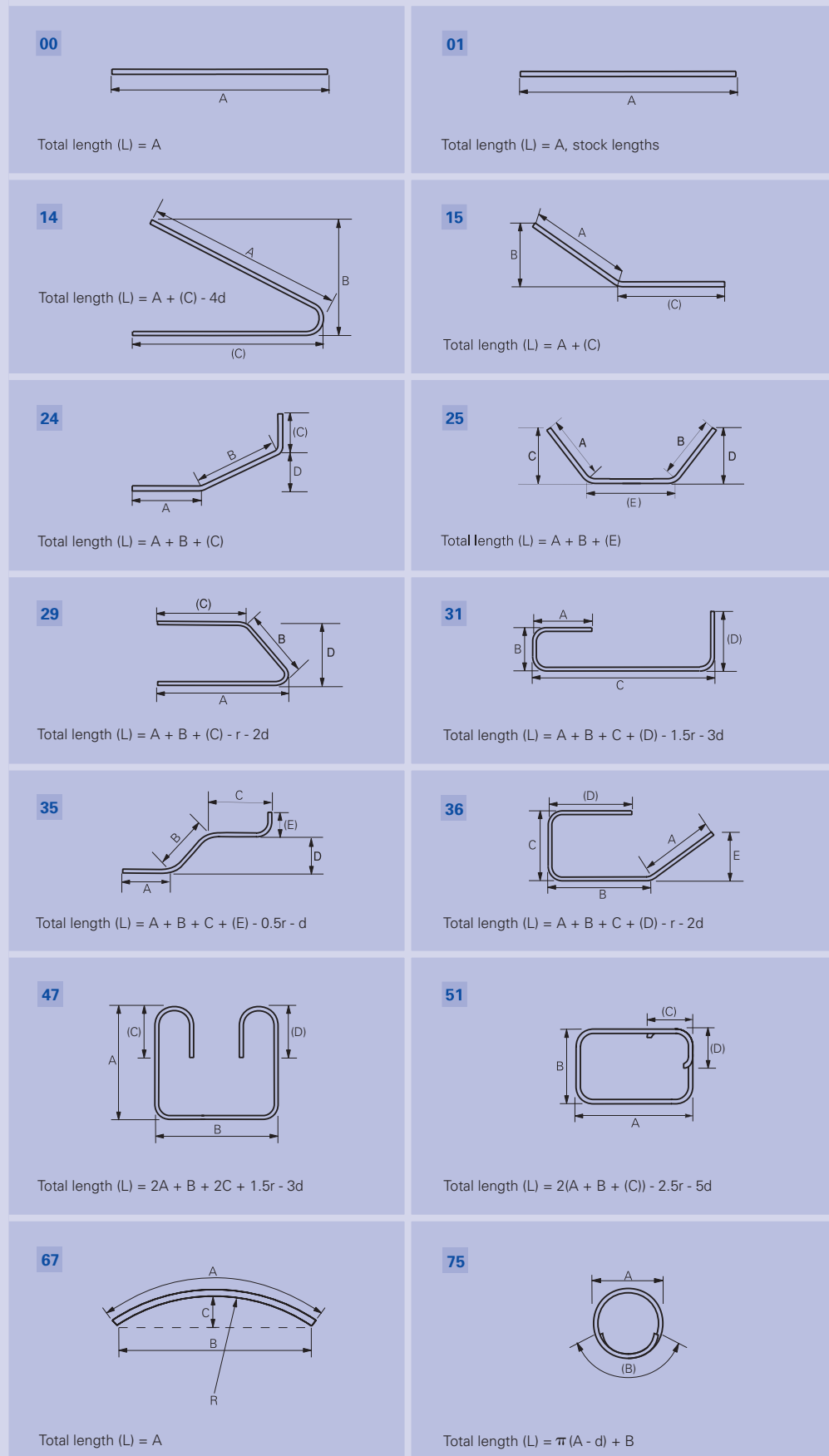
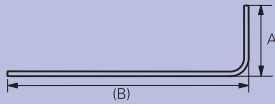


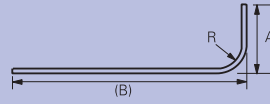
Figure 1

11



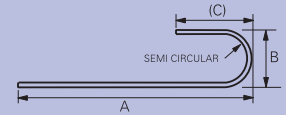
$$\text{Total length (L)} = A + (B) - 0.5r - d$$

12



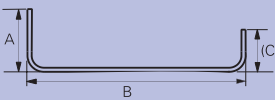
$$\text{Total length (L)} = A + (B) - 0.43R - 1.2d$$

13



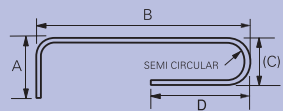
$$\text{Total length (L)} = A + 0.57B + (C) - 1.6d$$

21



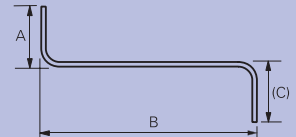
$$\text{Total length (L)} = A + B + (C) - r - 2d$$

22



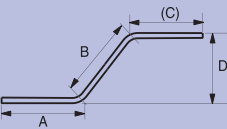
$$\text{Total length (L)} = A + B + C + (D) - 1.5r - 3d$$

23



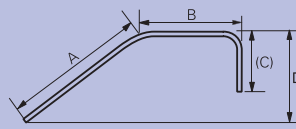
$$\text{Total length (L)} = A + B + (C) - r - 2d$$

26



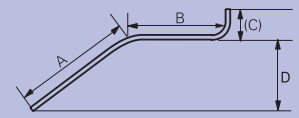
$$\text{Total length (L)} = A + B + (C)$$

27



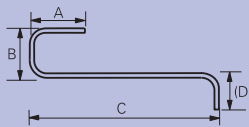
$$\text{Total length (L)} = A + B + (C) - 0.5r - d$$

28



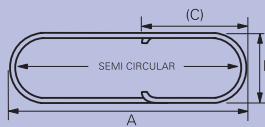
$$\text{Total length (L)} = A + B + (C) - 0.5r - d$$

32



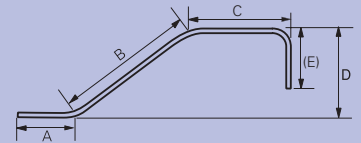
$$\text{Total length (L)} = A + B + C + (D) - 1.5r - 3d$$

33



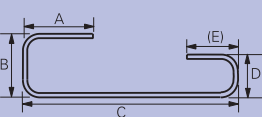
$$\text{Total length (L)} = 2A + 1.7B + 2(C) - 4d$$

34



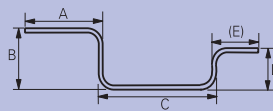
$$\text{Total length (L)} = A + B + C + (E) - 0.5r - d$$

41



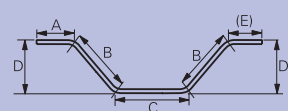
$$\text{Total length (L)} = A + B + C + D + (E) - 2r - 4d$$

44



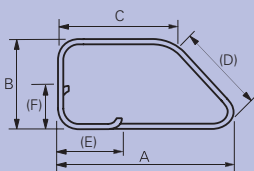
$$\text{Total length (L)} = A + B + C + D + (E) - 2r - 4d$$

46



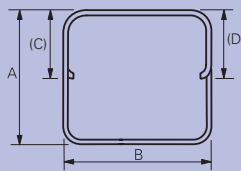
$$\text{Total length (L)} = A + 2B + C + (E)$$

56



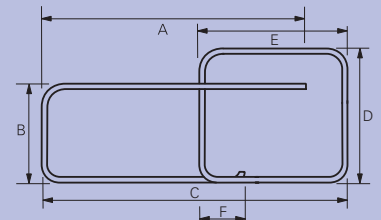
$$\text{Total length (L)} = A + B + C + (D) + 2(E) - 2.5r - 5d$$

63



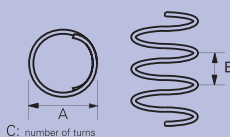
$$\text{Total length (L)} = 2A + 3B + 2(C) - 3r - 6d$$

64



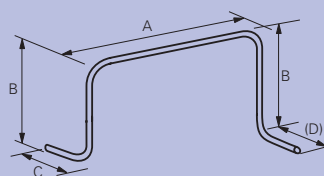
$$\text{Total length (L)} = A + B + C + 2D + E + (F) - 3r - 6d$$

77



$$\text{Total length (L)} = C \cdot \pi \cdot (A - d)$$

98



$$\text{Total length (L)} = A + 2B + C + (D) - 2r - 4d$$

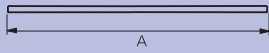
99

All other shapes where standard shapes cannot be used. No other shape code number, form of designation or abbreviation shall be used in scheduling. 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.

BS 8666:2000 Standard Shapes

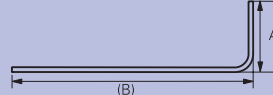
Shape and total length of bar (L) measured along centre-line

00



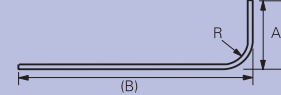
Total length (L) = A

11



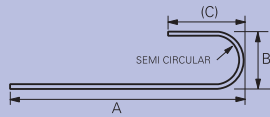
Total length (L) = A + (B) - 1/2r - d

12



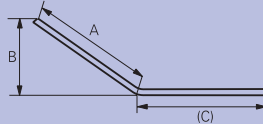
Total length (L) = A + (B) - 1/2R - d

13



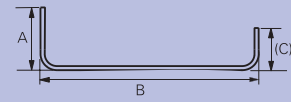
Total length (L) = A + 0.57B + (C) - 1.57d

15



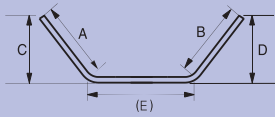
Total length (L) = A + (C)

21



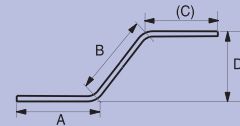
Total length (L) = A + B + (C) - r - 2d

25



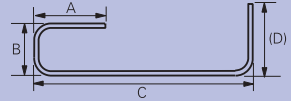
Total length (L) = A + B + (E)

26



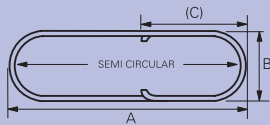
Total length (L) = A + B + (C)

31



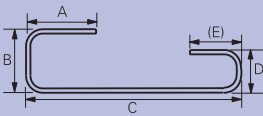
Total length (L) = A + B + C + (D) - 1 1/2r - 3d

33



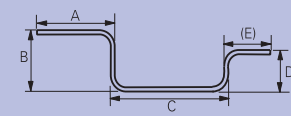
Total length (L) = 2A + 3B + 17d

41



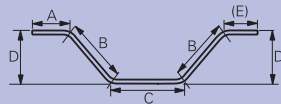
Total length (L) = A + B + C + D + (E) - 2r - 4d

44



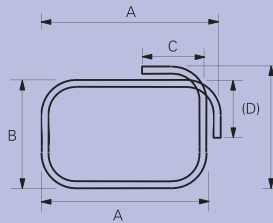
Total length (L) = A + B + C + D + (E) - 2r - 4d

46



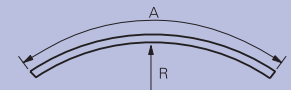
Total length (L) = A + 2 B + C + (E)

51



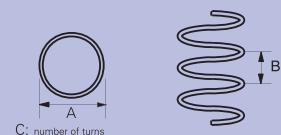
Total length (L) = 2 (A + B + C) - 2 1/2r - 5d

67



Total length (L) = A

77



Total length (L) = C.π.(A - d)

99 All shapes where standard shapes cannot be used. A dimensioned sketch shall be drawn over the dimension columns A - E.
Total length (L) = To be calculated.

Figure 2



Standard Fabric Types and Stock Sheet Size

Fabric reference	Longitudinal bars			Transverse bars			
	Normal wire size mm	Pitch mm	Area mm ² /m	Normal wire size mm	Pitch mm	Area mm ² /m	Mass kg/m ²
Square Mesh:							
A393	10	200	393	10	200	393	6.16
A252	8	200	252	8	200	252	3.95
A193	7	200	193	7	200	193	3.02
A142	6	200	142	6	200	142	2.22
Structural Mesh:							
B1131	12	100	1 131	8	200	252	10.9
B785	10	100	785	8	200	252	8.14
B503	8	100	503	8	200	252	5.93
B385	7	100	385	7	200	193	4.53
B283	6	100	283	7	200	193	3.73
Long Mesh:							
C785	10	100	785	6	400	70.8	6.72
C636	9	100	636	6	400	70.8	5.55
C503	8	100	503	6	400	70.8	4.51
C385	7	100	385	6	400	70.8	3.58
C283	6	100	283	6	400	70.8	2.78
Wrapping Mesh:							
D98	5	200	98	5	200	98	1.54
D49	2.5	100	49	2.5	100	49	0.77

Tolerances shall be in accordance with **Table 5** of BS8666. For standard fabric the type of wire shall be designated as a suffix to the fabric reference as illustrated in the example in **Figure 2** of BS8666. Standard lengths and widths shall be 4.8m and 2.4 m respectively, giving a sheet area of 11.52m².

Table 1



FAQ's

Why has BS8666 been changed again so soon?

The reinforcing steel standards which are specified in BS8666, have been revised and will become effective from the 1st January 2006. BS8666 therefore required a corresponding amendment. The opportunity was taken to include many of the shape codes that were excluded in the previous amendment.

How do I specify exactly what I want and how can I be confident I will receive it?

By following the material notations defined in BS8666:2000 or BS8666:2005 as appropriate (see **Table 2**). CARES approved fabricators will ensure that the steel supplied will comply with the notification used on the schedule for reinforcement.

What will happen when Grade 460MPa steel becomes no longer available from reinforcement fabricators?

CARES approved reinforcement fabricators will offer to supply an alternative grade from BS4449:2005, which should comply with your requirements. Please check.

Why was the plain round Grade 250 MPa excluded from BS4449?

This grade was being used less frequently and mainly for dowel bars. Its cost was increasing, and other standards were available for the specification of plain round bars, such as BS EN10025-1 S275 or BS EN 13877-3.

Why has BS4449 changed from a 460 to 500 MPa yield strength and why has it included an additional ductility grade?

To align with the strength of steel most commonly used within Europe. The additional ductility grade, Grade B500C, was added to align with the material requirements of Eurocode 2.

Notation for Reinforcing Steels

BS8666 2005	BS 8666 2000	Grade
	R	Not covered by BS 4449 2005
	T	Grade 460A or 460B conforming to BS 4449 1997
	D	Grade 460A conforming to BS 4449 1997
H		Grade B500A, B500B or B500C conforming to BS 4449 2005
A		Grade B500A conforming to BS 4449 2005
B		Grade B500B or B500C conforming to BS 4449 2005
C		Grade B500C conforming to BS 4449 2005
S	S	A specified grade and type of stainless steel conforming to BS 6744 2001
X	X	Reinforcement of type not included in the above list having material properties that are defined in the design or contract specification.

Table 2

Why has BS8110 reverted to the use of a partial factor for safety of 1.15?

The reduction of the partial safety factor to 1.05 was based on an analysis of test data which proved that a significant overstrength was being achieved by manufacturers producing steel to 460 MPa yield strength. The BSI design committee concluded that, until it could be confident that the manufacturers would consistently achieve a characteristic yield strength of 500MPa with the same margin of comfort, it should revert to this higher factor. It may be possible to revert to a factor of 1.05 when this confidence is

once again restored. CARES will provide independently verified test data for future analysis when requested.

Why does the fabric standard BS4483:2005 now only use BS4449 grades of steel?

By specifying the use of BS4449 grades of steel for the manufacture of fabric, the constituent bars are considered to meet the requirements of Eurocode 2 in terms of bar geometry and, in the main, ductility. By adopting this approach, the majority of reinforcing fabrics can be considered as suitable for structural applications to Eurocode 2.



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