

# Rebar and Dowel Bar



**Stainless steel rebar and dowel bar manufactured in accordance with BS 6744 supplied cut and bent in accordance with BS 8666.**

With the ever increasing concerns regarding structural corrosion, lifetime costing and with the advent of the Highways guidance document for the use of stainless steel bars on road and bridge structures, a secure supply of stainless steel is required.

## Benefits

- Supplied in up to 12 metre lengths
- Can be cut, bent or threaded to order
- Excellent corrosion resistance
- Low life cycle cost
- High ductility and strength
- Resistant to seismic loading
- CARES approved rebar supplier
- Low magnetic permeability

## Applications

- Reinforcing concrete
- Precast
- Bridge decks
- Marine structures
- Water retaining structures
- Holding down bolts

# Technical Data

## Selecting the correct Rebar and Dowel bar grades

### New Grades for Stainless Steel Ribbed Bar BS 6744:2001+A2:2009

In March 2009 British Standards issued an amendment to BS 6744. The revised Standard included two new Grades of Duplex Stainless Steel. These new Grades have the same mechanical performance as existing Grades but have lower Nickel and Molybdenum contents to offer greater price stability. The corrosion resistance of the new grades 1.4162 and 1.4362 are equivalent to Grades 304 and 316 respectively. The table below shows where BS 6744 recommends different Grades of Stainless Steel can be used.

### Guidance on the use of stainless steel reinforcement for different service conditions

Grades of Rebar and Dowel Bar readily available within BS 6744											
Grades in accordance with BS EN 10088-1	Rebar	Dowel bar	For structures or components with either a long design life, or which are inaccessible for future maintenance	For structures or components exposed to chloride contamination with no relaxation in durability design (e.g. concrete cover or water proofing treatment requirements)	Reinforcement bridging joints, or penetrating the concrete surface and also subject to chloride contamination (e.g dowel bars or holding down bolts)	Structures subject to chloride contamination where reductions in normal durability requirements are proposed (e.g. reduced cover, concrete quality or omission of water proofing treatment)	Key:				
							Readily Available	1 Appropriate choice for corrosion resistance and cost			
	✓	✓					1	1	5	3	2 Over specification of corrosion resistance for the application
	✓						1	1	5	3	3 May be suitable in some instances: specialist advice should be obtained
	✓						2	2	1	1	
							2	2	1	1	
	✓						2	2	1	1	4 Grades suitable for specialist applications which should only be specified after consultation with corrosion specialists
							2	2	1	1	
							4	4	4	4	
							4	4	4	4	
Grades used for Dowel Bar which are not listed in BS6744 but commonly used							5 Unsuitable for the application				
1.4307 (304L)		✓	1	1	5	3					
1.4401 (316)		✓	2	2	1	1					
1.4404 (316L)		✓	2	2	1	1					

- Key:**
- 1 Appropriate choice for corrosion resistance and cost
  - 2 Over specification of corrosion resistance for the application
  - 3 May be suitable in some instances: specialist advice should be obtained
  - 4 Grades suitable for specialist applications which should only be specified after consultation with corrosion specialists
  - 5 Unsuitable for the application

### Dowel Bars

Dowel bars are cast or drilled into concrete and used to transfer loads across joints. In applications where movement is expected, the dowel bar is debonded on one side of the joint. Stainless steel dowel bars can be supplied in strength grades 200, 500 and 650 as specified in BS6744.

### Rebar

Rebar is generally used for the reinforcement of concrete, it can be supplied cut and bent to BS8666 and threaded to BS3643. Please see back page for bending schedule.

### Threaded Ends

Stainless UK can also supply bar with threaded ends for fixing applications to suit customer requirements. The ends are threaded with ISO metric threads to BS 3643.

### Rebar Couplers



Bar			Coupler	
Bar Dia (mm)	Thread Size	Thread Length (mm)	Diameter (mm)	Length (mm)
12	M 12	17	18	37
16	M 16	21	25	45
20	M 20	25	30	53
24	M 24	30	33	63
32	M 30	37.5	42	81
40	M 39	50	60	107



# Rebar and Dowel Bar

## Rebar and Dowel Bar sizes and strengths

Rebar is generally supplied with a minimum 0.2% proof of 500N/mm<sup>2</sup>, a UTS of 550 N/mm<sup>2</sup> and Elongation of 14%. 650 N/mm<sup>2</sup> proof can be produced to order or see Grip Rib/Grip Bar Data Sheet for equivalents.

Dowel bar is generally supplied with a 0.2% proof of 250 N/mm<sup>2</sup> and a UTS of 500N/mm<sup>2</sup>. Higher proof strength of 500 N/mm<sup>2</sup> and 650 N/mm<sup>2</sup> are available.

Rebar 500 proof 550 UTS							
Unthreaded					Threaded		
Ref	Kg/m	Cross Section Area (mm <sup>2</sup> )	Ultimate tensile load kN	Proof load 0.2% N/mm kN	Metric threaded size	Ultimate tensile load kN	Proof load 0.2% N/mm kN
RB 5	0.155	19.6	10	9			
RB 6	0.224	28.3	15	14	M6	12	11
RB 8	0.304	50.3	27	25	M8	21	17
RB 10	0.397	78.5	43	39	M10	34	31
RB 12	0.62	113.1	62	56	M12	50	45
RB 16	1.589	201.1	110	100	M16	91	82
RB 20	2.484	314.2	172	157	M20	143	130
RB 25	3.878	490.9	269	245	M24	207	188
RB 32	6.353	804.2	442	402	M30	327	296
RB 40	9.927	1256.6	691	628	M39	570	517
RB 50	15.512	1963.5	1079	981	M48	859	777

Dowel bar 250 proof 500 UTS			
Unthreaded			
Ref	Kg/m	Ultimate tensile load kN	Proof load 0.2% N/mm kN
DB 5	0.154	9.5	4.7
DB 6	0.222	14	7
DB 8	0.395	25	12
DB 10	0.617	39	19
DB 12	0.73	56	28
DB 16	1.3	100	50
DB 20	2.1	157	78
DB 25	2.9	245	122
DB 32	5.75	402	201
DB 40	8.25	618	314
DB 50	12.4	981	490

## System Accessories

Bar is available with full strength couplers, load nuts, lock nuts, and standard plates, however plates and end connections can be manufactured to meet individual contract requirements.

### 1. Dowel Bar Sleeves



Plastic debonding sleeves for use in dowelled movement joints.

### 2. Expansion Dowel Cap



Rigid PVC caps with compressible filter to allow for expansion.

### 3. Safety End Caps



Plastic protection caps for exposed bar ends.

### 4. Double Loop Ties



Stainless steel double loop ties and wire binder tool.

### 5. Tying Wire



Stainless steel tying wire. 1.2mm diameter in a range of coil sizes.

### 6. Mesh



Mesh is manufactured with tolerances within BS8666. Material is within BS6744. Please see Welded Mesh Data Sheet for full range.

### 7. Patress Plates



Available in ductile iron or fabricated to customers specific requirements. Please see Patress Plates Data sheet.

### 8. Stainless Plate Washer



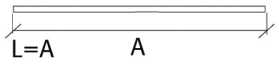
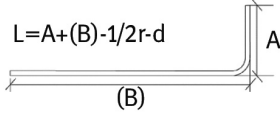
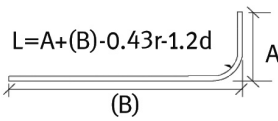
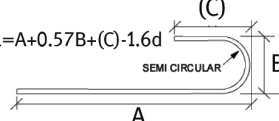
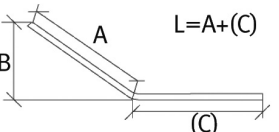
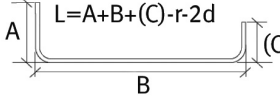
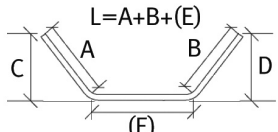
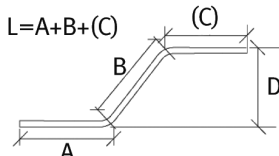
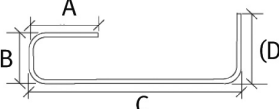
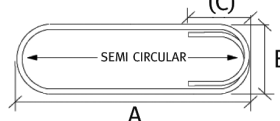
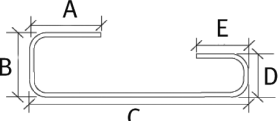
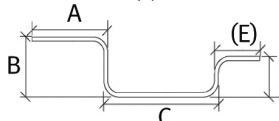
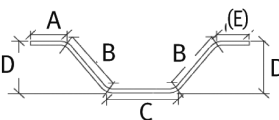
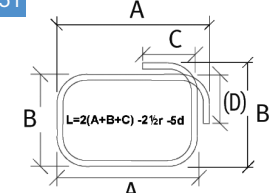
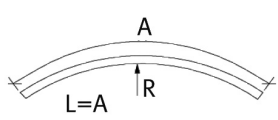
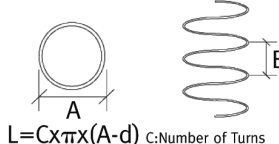
Manufactured either flat which can take up to 8 degree misalignments or dished to suit up to 45 degree misalignment. Can be supplied with a hemi nut or washer to suit.

## Rebar and Dowel bar

### Shape Codes

The following table shows the shape codes for the current standard : BS8666

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

<b>00</b>  $L=A$	<b>11</b>  $L=A+(B)-1/2r-d$	<b>12</b>  $L=A+(B)-0.43r-1.2d$	<b>13</b>  $L=A+0.57B+(C)-1.6d$
<b>15</b>  $L=A+(C)$	<b>21</b>  $L=A+B+(C)-r-2d$	<b>25</b>  $L=A+B+(E)$	<b>26</b>  $L=A+B+(C)$
<b>31</b>  $L=A+B+C+(D)-1\frac{1}{2}r-3d$	<b>33</b>  $L=2A+1.7B+2(C)-4d$	<b>41</b>  $L=A+B+C+(E)-2r-4d$	<b>44</b>  $L=A+B+C+D+(E)-2r-4d$
<b>46</b>  $L=A+2B+C+(E)$	<b>51</b>  $L=2(A+B+C)-2\frac{1}{2}r-5d$	<b>67</b>  $L=A$	<b>77</b> Non-preferred Shape  $L=C\pi\times(A-d)$ C: Number of Turns

**99** All shapes where standard shapes cannot be used.

A dimensioned sketch to be drawn over the dimension columns A - E. Total length to be calculated.

BS8666 specifies minimum radius (r) and minimum end dimension (A) as follows:

Bar Dia (mm)	6	8	10	12	16	20	25	32	40
Min radius [r]	12	16	20	24	32	70	87	112	140
Min. end dimension [A]	110	115	120	125	130	190	240	305	380

Stainless UK has taken care to ensure that this information is accurate, but cannot be responsible for interpretation of the details nor is any liability implied or accepted.



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