

Grip-Bar® Anchor Systems



Grip Bar® is a unique high bond, high strength stainless steel threaded bar designed for rock anchors, soil nails, masonry fixings and concrete applications.

The Grip Bar® Anchor System has been developed specifically for civil engineering and geotechnical applications where high load capacity, durability and corrosion resistance are required.

Benefits

- High strength, thread rolled stainless steel bars
- Proven high bond performance
- Fully threaded – can be cut on site without damage to thread form
- Excellent corrosion resistance
- Supplied in standard 6-metre lengths
- Superior ductility, suitable for seismic applications

Applications

- Rock bolts
- Soil nails
- Docks and harbours
- Building and bridge cross ties
- Ground anchors
- Holding down bolts
- Coastal defence walls, slopes and slabs

Manufacturing Process

High strength Grip Bar® is manufactured from cold drawn stainless steel bar feedstock. The cold working process provides elevated strength while retaining the inherent ductility of stainless steel.

Grip Bar® is supplied as fully threaded bars in standard 6-metre lengths. Bespoke end threading and non standard lengths can be supplied to special order.

All Grip Bar® products utilise a thread rolling process. This cold forging method forms a coarse thread without removing material from the bar. The resulting grain flow significantly improves thread strength.

Corrosive Considerations

The corrosion performance of Grip Bar® anchor systems is governed primarily by the selection of an appropriate stainless steel grade for the intended service environment.

Stainless steel resists corrosion through a passive chromium rich oxide layer that is inherent to the material and is self healing in the presence of

oxygen. Long term durability depends on correct grade selection matched to environmental exposure and required design life.

Key factors influencing grade selection include:

- Exposure conditions (atmospheric, buried or immersed)
- Presence of chlorides (marine spray, de icing salts or contaminated ground)
- Moisture levels and oxygen availability
- Temperature and pollutant levels
- Required design life and access for inspection

Grade 304 (1.4301) is suitable for dry internal or mildly corrosive external environments where chloride exposure is low.

Grade 316 (1.4401 / 1.4436) is recommended for external, highway and coastal applications where chlorides may be present, offering improved resistance to pitting and crevice corrosion.

Duplex stainless steel grade 1.4462 may be specified for aggressive environments with high chloride concentrations or where increased resistance to stress corrosion cracking is required.



Skomer Island rock face stabilisation.

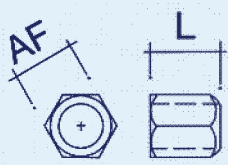
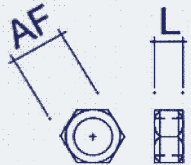
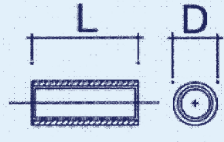
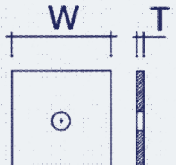
Technical Data

Minimum mechanical properties: Ultimate tensile stress 750 N/mm², 0.2% proof stress 650 N/mm², minimum elongation 15%.

Typical length: 6 m | Straightness: 2 mm in 1000 mm | Maximum bundle weight: 1 tonne.

Ultimate Tensile Stress (minimum)	750 N/mm ²
0.2% proof stress (minimum)	650 N/mm ²
Minimum elongation	15%
Typical lengths	6m
Straightness	2 in 1000
Standard bundle weight	1 tonne max.

Ref.	Nom. Dia. (mm)	CSA (mm ²)	0.2% Proof Load (kN)	Ultimate Tensile Load (kN)	Weight per metre (Kg/m)	Torque to Develop 0.15% of UTS (Nm)
GB10	10	62	40	46	0.49	50
GB12	12	91	54	64	0.73	60
GB16	16	167	108	124	1.30	90
GB20	20	261	170	196	2.10	135
GB22	22	322	203	235	2.60	155
GB24	24	378	246	283	2.90	180
GB27	27	492	320	368	3.90	220
GB30	30	596	388	446	4.70	265
GB33	33	737	480	552	5.75	325
GB36	36	873	568	653	7.00	375
GB39	39	1037	674	776	8.25	440
GB42	42	1197	778	896	9.50	495
GB45	45	1388	903	1038	10.90	570
GB48	48	1562	1016	1168	12.40	625

Load Nut - GBLN				Lock Nut - GBN			Coupler - GBCR			Plate Washer			
													
GB Dia.	AF (mm)	Length (mm)	Weight (kg)	AF (mm)	Length (mm)	Weight (kg)	Dia. (mm)	Length (mm)	Weight (kg)	Size (mm)	T (mm)	Weight (kg)	GB Dia.
GB10	17	18	0.02	17	9	0.01	18	41	0.06	100 × 100	8	0.62	GB10
GB12	19	20	0.03	19	10	0.02	18	51.5	0.07	100 × 100	8	0.62	GB12
GB16	24	26	0.06	24	13	0.03	25	64	0.14	100 × 100	8	0.62	GB16
GB20	30	32	0.12	30	16	0.06	30	76	0.23	125 × 125	10	1.22	GB20
GB22	36	35	0.23	36	17	0.12	33	85	0.32	150 × 150	10	1.74	GB22
GB24	36	38	0.21	36	19	0.11	36	91	0.41	150 × 150	10	1.74	GB24
GB27	42	44	0.35	42	23	0.18	41	104	0.69	150 × 150	10	1.74	GB27
GB30	46	48	0.45	46	24	0.22	45	107	0.79	200 × 200	12	3.75	GB30
GB33	50	60	0.65	50	27	0.29	50	115	1.07	210 × 210	15	5.20	GB33
GB36	56	66	0.93	56	29	0.41	55	122	1.34	225 × 225	20	7.99	GB36
GB39	60	68	1.08	60	32	0.51	59	130	1.67	250 × 250	20	9.87	GB39
GB42	65	70	1.32	65	34	0.64	64	137	2.04	250 × 250	20	9.87	GB42
GB45	70	72	1.58	70	36	0.79	68	145	2.48	300 × 300	30	21.42	GB45
GB48	75	76	1.93	75	38	0.96	73	152	2.95	300 × 300	30	21.42	GB48

Bond Performance

The Grip Bar® thread profile has been developed through extensive testing undertaken by Stainless UK and the University of Sheffield.

Bond tests conducted in accordance with BS 8110 Type 2 reinforcing bar requirements demonstrated bond strength well in excess of code limits.

Additional testing in rock bolting applications with varying free and bonded lengths has shown Grip Bar® to significantly outperform reinforcement bar comparators.

Site Performance

Grip Bar® uses a cold rolled coarse pitch thread that enhances strength and provides a robust, user friendly thread well suited to site handling.

The coarse pitch reduces susceptibility to galling compared with traditional metric threads and allows faster assembly.

The large flank angle supports the thread crown, enabling the bar to withstand significant site abuse while remaining fully serviceable.

Fittings

Grip Bar® fittings are designed to provide an anchorage capacity equal to the theoretical minimum strength of the Grip Bar.

Fittings are kept as compact as possible to minimise drill hole diameters, reducing drilling time and installation costs.

Use Loctite® 268 with Activator 7649 to prevent nuts loosening under vibration.

Comparison with Threaded Reinforcement Bar

Conventional rock anchoring systems using reinforcement bar with cut threads suffer strength reduction due to loss of cross section.

Grip Bar® is manufactured from higher strength material and benefits from work hardening through thread rolling, giving a minimum proof stress of 650 N/mm².

University of Sheffield testing has shown Grip Bar® bond strength up to first slip to be at least 2.8 times that of equivalent reinforcement bar.

Grip Bar® is fully threaded along its length and can be cut to size on site without compromising thread integrity, offering greater installation flexibility.



Berwick-upon-Tweed, Royal Border Bridge strengthened with 39mm Grip Bar.

System Accessories

Grip-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.

Hemispherical Seating and Washer

Hemi Seating with Hemi washers are to accommodate angular misalignment.



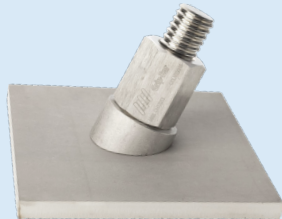
Dished plate with Hemi Washer

Dished plate washers with Hemi washers are to accommodate angular misalignment.



Taper Washer

Manufactured to provide a required static installation angle.



Spike Plate

Used to secure and retain rock netting in place.



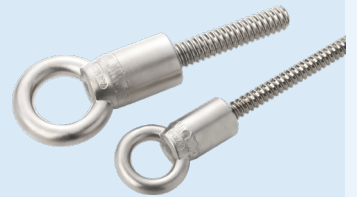
Pattress Plates

Available in ductile iron or fabricated to customers specific requirements.



Grip Bar Eye Nut

Suitable for a variety of applications, including rock netting.



Nuts and Couplers

Designed to provide a strength of anchorage equal to the theoretical minimum required by the bar.



Grip Sock

A flexible sock which fits over the anchor bar. As it is filled with grout it expands into cracks and holes.



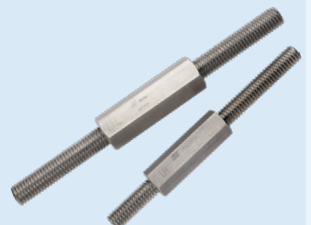
Wire Rope

Used in rock netting to secure and tension mesh, for effective rockfall containment.



Turnbuckles

Provide an adjustable connection for controlling tension and length within bar assemblies.



Homing Cap

Stainless steel or nylon cap to center the bar end.



Lantern Spacers

Centralisation of single bar within a bore hole enables an even flow of grout around the bar.

