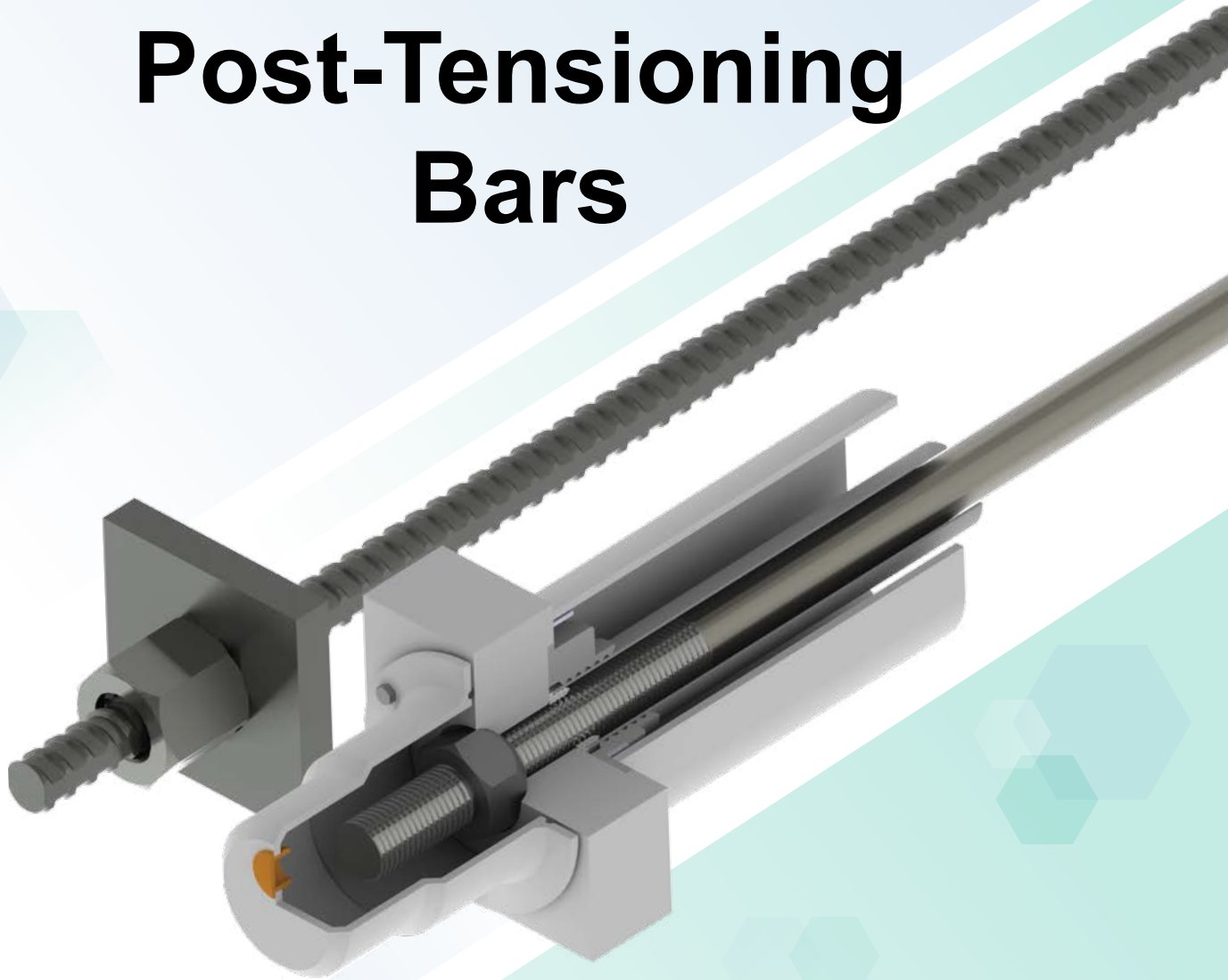


# Post-Tensioning Bars



**Dextra**

# Post-Tensioning Bars







## About our range

Post-Tensioning bars are used for **permanent works** such as connecting various segments of bridge structures, shear keys for seismic resistance at the connection of segments or girders and piers, and reinforcement of piers that are subject to horizontal pre-stressing forces.

They are also used for **temporary works** such as anchoring of temporary steel frame supports, lifting bars for segment launching trusses, and stitching bridge segments.

These bars need to have sufficient strength properties to carry the heavy loads of structures and pre-loading to balance the external loads structures are subjected to at a later stage.

Our post-tensioning range features both **fully-threaded bars** and **smooth bars**, with a full range of accessories.

The services of a fully dedicated design team are available to provide engineering support to our customers.

## Typical applications

- Post-tensioning of concrete structures.
- Temporary bracing / Temporary post-tensioning.
- Heavy lifting.
- Seismic restrainer system.
- Hold down for steel structure, wind turbine.
- Structural steel frame ties.
- Bridge segment connections.
- Bridge segment continuity tendons.
- Pre-stressed concrete.
- Pile-testing.

## Corrosion protection

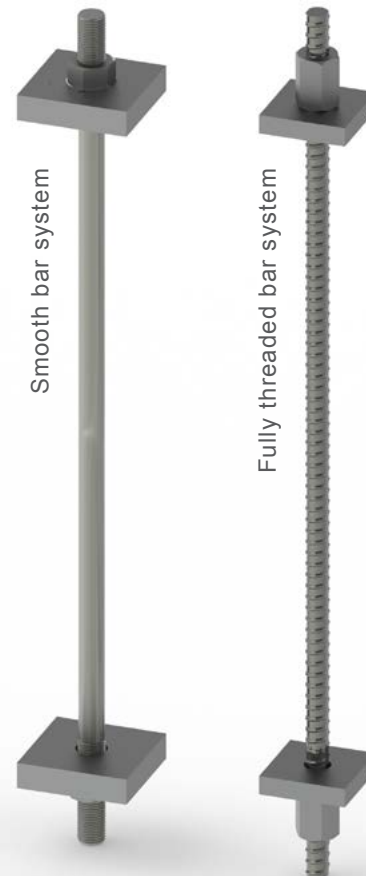
Various corrosion protection are available depending on whether tendon is temporary permanent, bounded, unbounded, with or without free length.

Protection is usually achieved with a combination of heat shrink, grease, paint and/or grout.

The smooth bars for shear key applications are normally supplied in a HDPE tube injected with grease and specially designed accessories.

## Design references

- AASHTO
- Eurocode 2



# Smooth bar range



## Product features

- Diameter range from 28 mm to 100 mm.
- Three steel grades available.
  - › Gr 835/1030
  - › Gr 930/1080
  - › Gr 1050/1200
- Rolled threads (obtained with cold plastic deformation of the metal between two dies) optimized for fatigue performance.
- Thread profile is ISO metric thread according to ISO 262 - NFE 03014 and 03053.

## Special application: Shear key & Hold down bars application

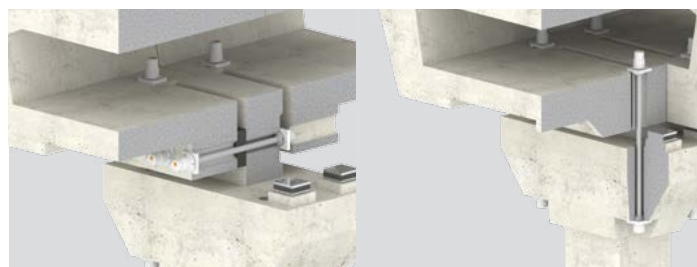
- Shear key and hold down bars are a special application of PT smooth bar systems where assembly acts as a permanent seismic restrainer for the connection of elevated metro/roads precast segments.
- Shear key bar systems and hold down bar systems are available with their full range of accessories for grade 1050/1200 and come in two diameters: 37 mm (thread M39) and 43 mm (thread M45).

## Product benefits

- High impact resistance.
- Smaller pitch allows finer adjustment and brings less draw-in loss.
- Full range of accessories for specific applications.
- High fatigue performance.

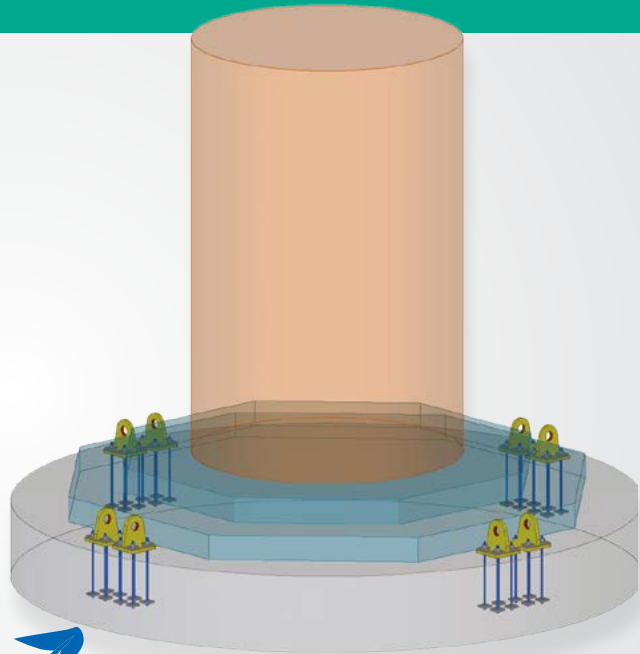
Shear Key Bar

Hold down bar



## Load table

Thread Size	Critical Cross Section Area	Nominal diameter	Linear weight	Grade 835/1030		Grade 930/1080		Grade 1050/1200	
	(mm <sup>2</sup> )	(mm)	(kg/m)	Yield load (kN)	Ultimate load (kN)	Yield load (kN)	Ultimate load (kN)	Yield load (kN)	Ultimate load (kN)
M30	561	28	4.83	468	578	522	606	589	673
M33	694	31	5.92	579	715	645	750	729	833
M36	817	34	7.13	682	842	760	882	858	980
M39	976	37	8.44	815	1,005	908	1,054	1,025	1,171
M42	1,121	40	9.86	936	1,155	1,043	1,211	1,177	1,345
M45	1,307	43	11.40	1,091	1,346	1,216	1,412	1,372	1,568
M48	1,474	45	12.48	1,230	1,518	1,371	1,592	1,548	1,769
M52	1,758	49	14.80	1,468	1,811	1,635	1,899	1,846	2,110
M56	2,031	53	17.32	1,695	2,092	1,889	2,193	2,133	2,437
M60	2,363	57	20.03	1,972	2,434	2,198	2,552	2,481	2,836
M64	2,676	61	22.94	2,234	2,756	2,489	2,890	2,810	3,211
M68	3,056	65	26.04	2,551	3,148	2,842	3,300	3,209	3,667
M72	3,460	69	29.35	2,889	3,564	3,218	3,737	3,633	4,152
M78	4,114	75	34.67	3,435	4,237	3,826	4,443	4,320	4,937
M83	4,702	80	39.45	3,926	4,843	4,373	5,078	4,937	5,642
M88	5,329	85	44.54	4,450	5,489	4,956	5,755	5,595	6,395
M93	5,996	90	49.93	5,006	6,176	5,576	6,476	6,296	7,195
M98	6,702	95	55.63	5,596	6,903	6,233	7,238	7,037	8,042
M103	7,447	100	61.64	6,218	7,670	6,926	8,043	7,819	8,936

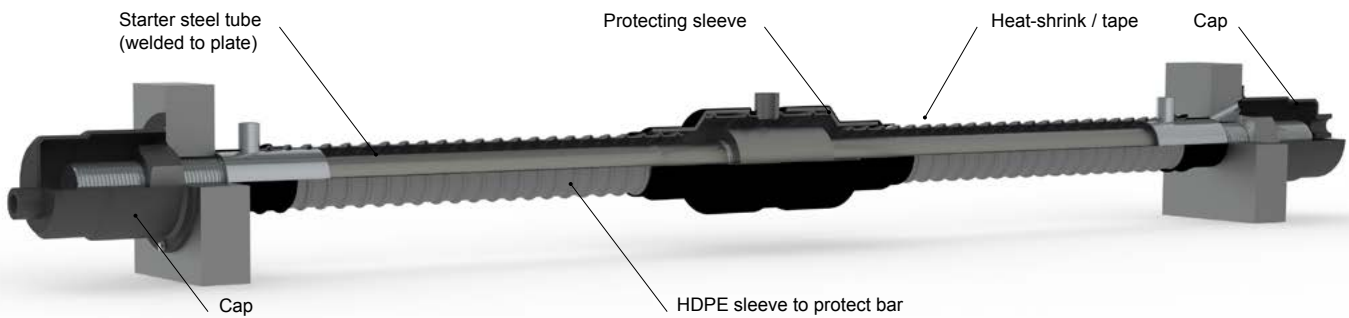


## Dextra smooth bar systems in action

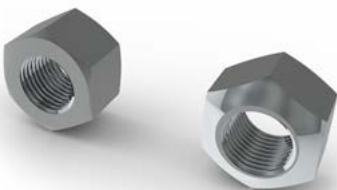
For the new coastal elevated highway Nouvelle Route du Littoral in La Réunion Island, Dextra bar systems (threaded bars, nuts and plates) were used in order to provide lifting points in the base of bridge piles. Each of the M64 bar set was tensioned prior to lifting to perform at loads up to 200 tons. More than 1,500 bar systems Grade 930/1080 were used for this project.

## System accessories

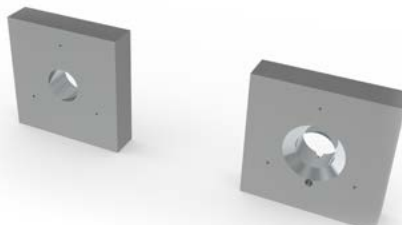
### Corrosion protection accessories



### Nuts



### Bearing plates



### Coupler system



# Fully-threaded range



## Product features

- Diameter range from 25 mm to 50 mm.
- Three steel grades available:
  - 830/1030.
  - 930/1080.
  - 1080/1230 N/mm<sup>2</sup>.
- Continuous hot rolled thread.

## Product benefits

- Re-usable.
- Cuttable at site.
- Continuous thread makes connection possible at any point.
- Large pitch especially suitable for fast installation and temporary applications.
- Re-tensioning possible without any damage.
- Full range of accessories, including corrosion protection accessories, also supplied by Dextra.
- High grades 1080/1230 available.



## Fully threaded systems load table

Nominal Diameter	Cross-section area	Linear weight	Grade 830/1030		Grade 930/1080		Grade 1080/1230	
			Yield load (kN)	Ultimate load (kN)	Yield load (kN)	Ultimate load (kN)	Yield load (kN)	Ultimate load (kN)
(mm)	(mm <sup>2</sup> )	(kg/m)						
25	491	4.10	407	506	457	530	530	604
32	804	6.65	667	828	748	869	869	989
36	1,018	8.41	845	1,049	947	1,099	1,099	1,252
40	1,257	10.34	1,043	1,294	1,169	1,357	1,357	1,546
50	1,964	16.28	1,630	2,022	1,826	2,121	-	-

Note 1: Yield loads and ultimate loads are unfactored.

Note 2: Diameter 63.5 available upon request and subject to minimum order quantities

Note 3: Grade 555 and Grade 785 available upon request and subject to minimum order quantity.

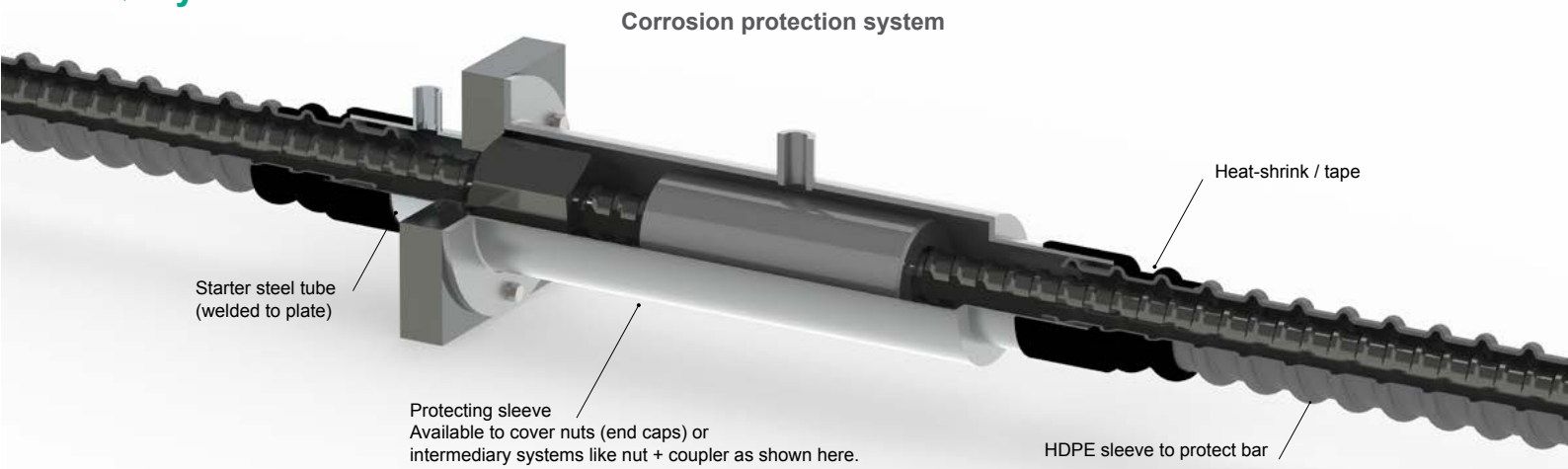




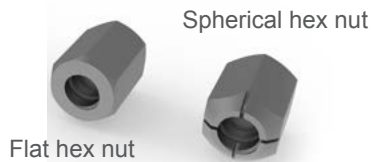
## Dextra fully threaded bar systems in action

For the Jahra Road project in Kuwait, Dextra supplied reusable fully-threaded bar systems in diameters 36mm & 50mm, grade 930/1080. The high-grade bars were used for the heavy lifting of precast girders, temporary support of the concrete structures, and temporary bracing of supporting structure.

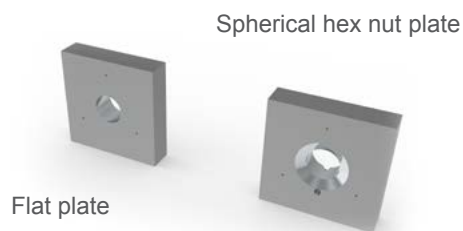
### System accessories



#### Nuts



#### Bearing plates



#### Coupler system



# References

**Sutong Bridge, China**



**Delhi Metro, India**



**Mandovi Bridge, Goa, India**

**Satara Wind farm, Maharashtra, India**

## Commercial presence in more than 55 countries

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