



TERRATORQUE HELICAL ANCHORS AND HELICAL PILING

PRODUCT CATALOG

INTRODUCTION

TerraTorque offers quality helical anchors and helical piling to the construction industry. Our products are available in solid square shaft (type TSA), hollow round shaft (type TRP) and hollow square shaft (type TSP) configurations. Standard series TSA solid square anchors are available in 1-1/2", 1-3/4" and 2" square sizes. Standard series TRP hollow round piles are available in 2-7/8" OD up to 12-3/4" OD and series TSP hollow square piles are available in 2-1/2" to 5" sizes. Custom sizes per customer request can be easily accommodated. Type TSA, TRP and TSP are suitable for compression and tension applications in a wide variety of soils and load capacities. The TSA series anchors are also utilized for our TPL pipeline anchor sets.

For pipeline buoyancy control, our TPL series pipeline anchors are offered as a complete pipeline anchor set. This product is commonly used on pipelines worldwide to provide buoyancy control for onshore pipelines. The TPL series anchor sets are also utilized offshore to provide pipeline stabilization solutions, span rectification and buoyancy control. The sets are designed to meet the project specifications and are supplied complete with anchors, extensions, saddles, corrosion protection and fasteners.

The TSA solid square shaft anchors utilize a high strength steel coupling to bolt the sections together to reach the required depth. The TRP round pipe and TSP square tubing incorporates a welded sleeve/coupling and high strength bolts to connect sections together. Our helices are machine pressed to form a true helical shape that does not auger or dig its way into the soil, but slowly screws into the soil with minimal soil disturbance.

The lead section has helical plates welded to the shaft. The lead may be a single helix or multiple helices, depending on the site soil conditions and the design loads. If additional helices are required, a helical extension may be used. Plain extensions are then added to the assembly as required until the lead sections penetrate into the bearing strata of the soil and the installation torque requirements are achieved.

Our materials are fabricated in our ISO 9001-2008 certified factory using new materials and industry accepted fabrication techniques. Our on premises hot dip galvanizing is available for all our products.

Worldwide shipping is no problem. Our experienced shipping team can ship our products worldwide to your destination quickly, efficiently and economically.

Common material configurations are provided in this catalog. We can also readily manufacture products to meet the specific requirements of our customers. In addition to what we present in our catalog we also have the flexibility, upon request, to provide custom designed product with:

1. Larger or smaller size square shafts or round shafts
2. Any diameter pipe for helical shafts as specified by a project requirement or customer
3. Any wall thickness of pipe for helical piling shafts as specified by project requirement or customer
4. Higher grades of pipe for helical piling shafts as specified by project requirements or customer
5. Wide range of component lengths
6. Various grades, thicknesses, diameters and quantities of helices
7. Stepped or transition piling / combination piles

TerraTorque, Inc.

Labuan, Malaysia

Phone: +66 91 782 9491

Website: www.terratorque.com

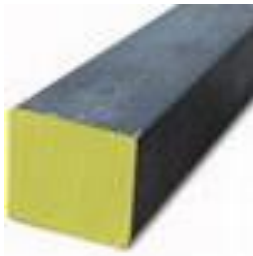
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TERRATORQUE FAMILY OF PRODUCTS

Our Product Line at a Glance:

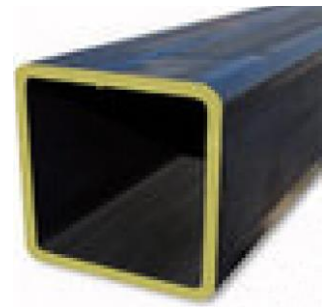
Product	Description	Standard Sizes
TSA	Solid Square Shaft Helical Anchors	1-1/2" to 2" Solid Square Bar
TPL	Pipeline Anchor Sets Utilizing TSA Anchors	1-1/2" and 1-3/4" Solid Square Bar
TRP	Hollow Round Shaft Helical Piling	2-7/8" O.D. to 12-3/4" O.D pipe
TSP	Hollow Square Shaft Helical Piling	2-1/2" to 5" square tubing



TSA/TPL
SOLID SQUARE BAR



TRP
HOLLOW ROUND TUBING/PIPE



TSP
HOLLOW SQUARE TUBING

Note: Above table indicates typical sizes. Custom sizes per customer requirements available on request.
Shipping: Our experienced shipping team can ship our products worldwide quickly and economically



TERRATORQUE SOLID SQUARE SHAFT (TSA) PRODUCTS STRENGTH RATINGS



TSA/TPL
SOLID SQUARE SHAFT

Solid Square Shaft (TSA) Product Strength Ratings

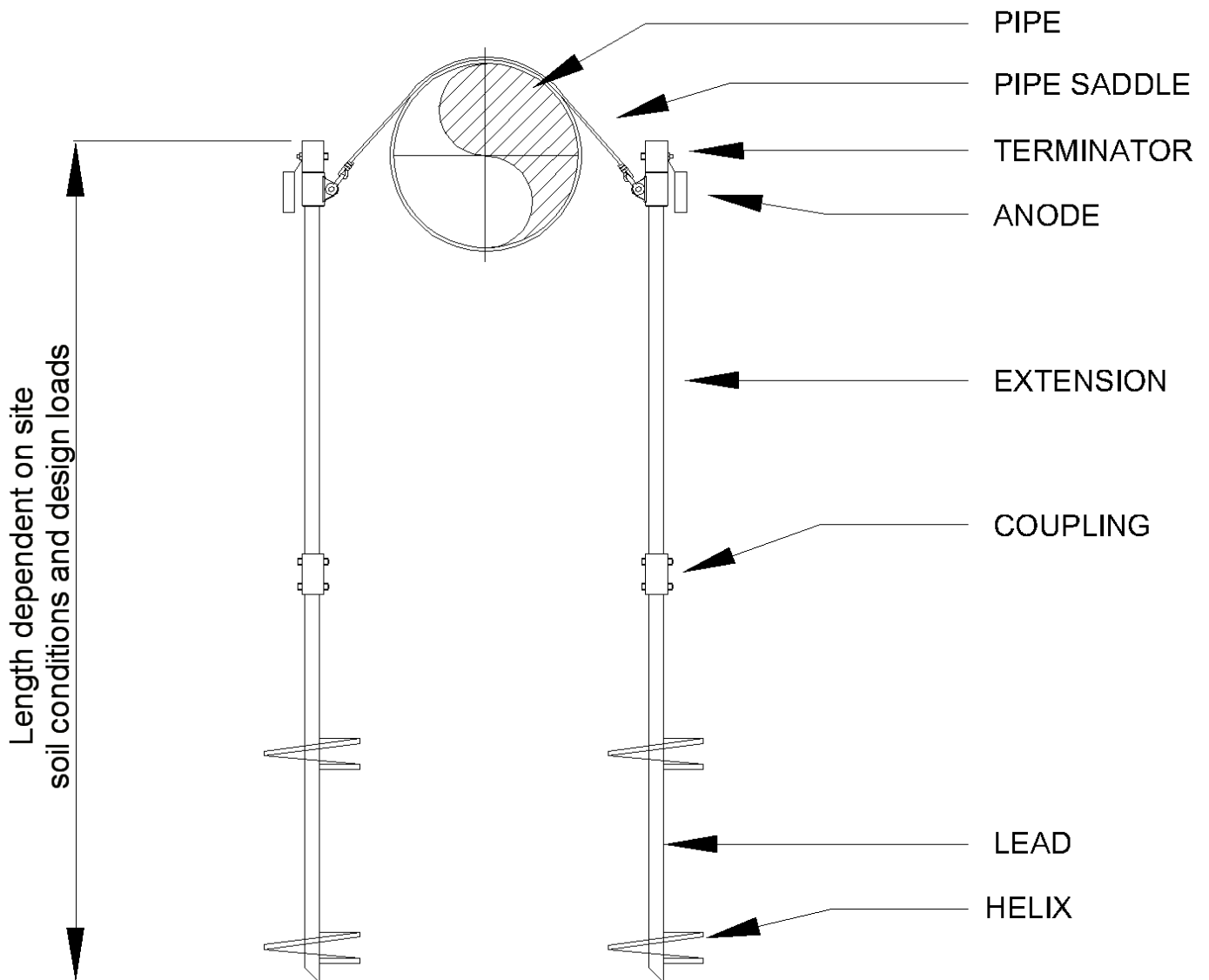
Product	Torque Rating ft-lbs	Ultimate Tension lbs	Ultimate Compression lbs
TSA38 (1-1/2") (also used with TPL38)	7,000	70,000	70,000
TSA44 (1-3/4") (also used with TPL44)	10,000	100,000	100,000
TSA50 (2")	15,000	150,000	150,000

Note: Our TPL38 and TPL44 Pipeline Anchor Sets listed below utilize our TSA38 and TSA44 series anchors



**TerraTorque 1-1/2" (38mm)
Solid Square Shaft Pipeline Anchor Sets (TPL38 Series)
Shaft Maximum Torque Rating: 7,000 ft-lb
Ultimate Rated Load Capacity: 80,000 lbs per set
Typical Design load: 40,000 lbs per set**

Typical Pipeline Anchor Set Configuration





**TerraTorque 1-1/2" (38mm)
Solid Square Shaft Pipeline Anchors (TPL38 Series)
Shaft Maximum Torque Rating: 7,000 ft-lb
Ultimate Load Capacity: 80,000 lbs per set
Typical Design Load: 40,000 lbs per set**

Series TPL38 Pipeline Anchor Set Data

Product Specifications	
Shaft Dimension	1-1/2" (38mm) round corner square bar
Shaft Material	High strength alloy steel
Coupling	Bolted coupling connections
Coupling Material	High strength steel casting
Helix Material	Yield: 50 ksi (minimum)*
Pipe Saddle	100% polyester, 2 layer**
Anode	Type 2 Zinc

Typical Anchor Set Rated Capacity (50% Torque Utilization)			
Installation Torque		Load Capacity per Set ***	
Maximum	Minimum	Ultimate	Factored (SF=2)
7,000 ft lbs	4,000 ft lbs	80,000 lbs	40,000 lbs

Helix Configurations Options	
Diameters - inches	6, 8, 10, 12, 14, 16
Thicknesses - inches	.375, .500, .625

Fasteners	
High Strength Bolts and Nuts	3/4" diameter, grade 8.8

*higher strength helix material available on request

**Steel saddle option available on request

***Load capacity is the installation torque x 10; this multiplier conforms to industry accepted standard for this size anchor shaft. Typical design load for this anchor set at 50% torque utilization is 40,000 lbs with an ultimate capacity of 80,000 lbs, per set which would include a SF=2. Anchor set maximum center to center (horizontal) spacing should be calculated to ensure the load on each anchor set does not exceed the typical design load for this type of anchor set.

Notes:

An Anchor set consist of 2 anchors, extensions, saddle and connecting hardware.

Anchor length, helix size and quantity is determined by design loads and site soil conditions

Anchor set center to center spacing is calculated based on piping specifications and project parameters.

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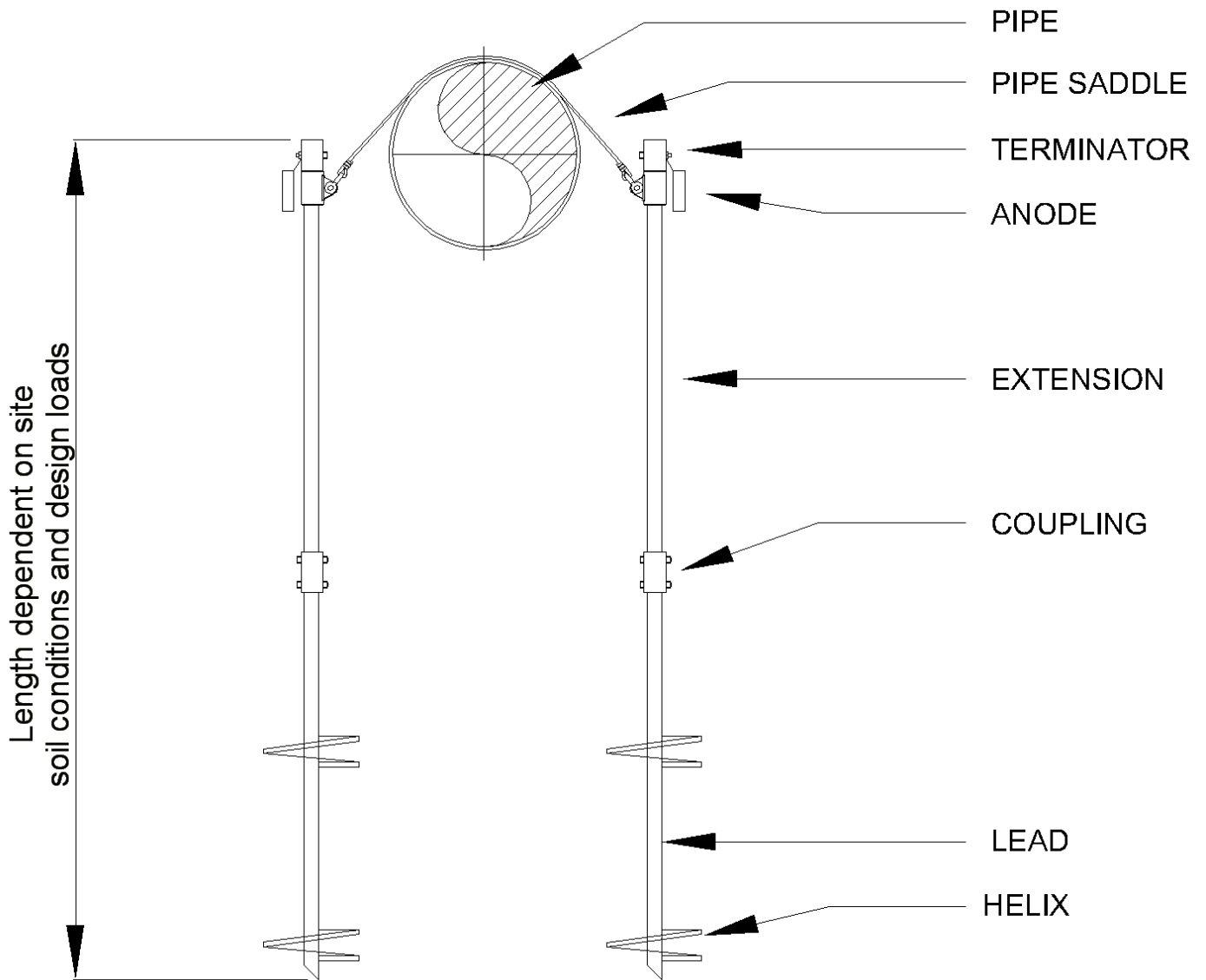
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Email: info@terratorque.com



**TerraTorque 1-3/4" (44mm)
Solid Square Shaft Pipeline Anchor Sets (TPL44 Series)
Shaft Maximum Torque Rating: 10,000 ft-lb
Ultimate Load Capacity: 100,000 lbs per set
Typical Design Load: 50,000 lbs per set**

Typical Pipeline Anchor Set Configuration





**TerraTorque 1-3/4" (44mm)
Solid Square Shaft Pipeline Anchors (TPL44 Series)
Shaft Maximum Torque Rating: 10,000 ft-lb
Ultimate Load Capacity: 100,000 lbs per set
Typical Design Load: 50,000 lbs per set**

Series TPL44 Pipeline Anchor Set Data

Product Specifications	
Shaft Dimension	1-3/4" (44mm) round corner square bar
Shaft Material	High strength alloy steel
Coupling	Bolted coupling connections
Coupling Material	High strength steel casting
Helix Material	Yield: 50 ksi (minimum)*
Pipe Saddle	100% polyester, 2 layer**
Anode	Type 2 Zinc

Typical Anchor Set Rated Capacity (50% Torque Utilization)			
Installation Torque		Load Capacity per Set ***	
Maximum	Minimum	Ultimate	Factored (SF=2)
10,000 ft lbs	5,000 ft lbs	100,000 lbs	50,000 lbs

Helix Configurations Options	
Diameters - inches	6, 8, 10, 12, 14, 16
Thicknesses - inches	.375, .500, .625, .750

Fasteners	
High Strength Bolts and Nuts	7/8" diameter, grade 8.8

*Higher strength helix material available on request

**Steel saddle option available on request

***Load capacity is the installation torque x 10; this multiplier conforms to industry accepted standard for this size anchor shaft. Typical design load for this anchor set calculated at 50% shaft torque utilization is 50,000 lbs with an ultimate capacity of 100,000 lbs, per set which would include a SF=2. Anchor set maximum center to center (horizontal) spacing should be calculated to ensure the load on the anchor set does not exceed the typical design load for this type of anchor set.

Notes:

An anchor set consist of 2 anchors, extensions, saddle and connecting hardware.

Anchor length, helix quantity and helix size is determined by design loads and site soil conditions

Anchor set center to center spacing is calculated based on piping specifications and project parameters.

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Pipeline Anchor Set Notes

Pipeline screw anchor sets are designed and supplied based upon the project parameters. The final anchor set configuration, i.e., shaft length, shaft size, helix size and number of helices, will depend upon the site soil conditions and the anchor set load requirements. Final anchor set components are selected from our standard product sizes. Custom sizes can also be easily accommodated.

The maximum anchor set center to center (horizontal) spacing calculation will consider the net pipeline buoyancy, the allowable stresses on the pipe and the anchor holding capacity based on the soil data provided. Screw anchors can also provide pipeline stabilization/buoyancy control in soils where liquefaction is a concern. In offshore applications, pipeline screw anchors are utilized for pipeline stabilization in storm surge/high current/wave areas, in surf zones, for span rectification and pipeline buoyancy control.

Typical data for calculating center to center spacings between anchor sets includes:

- Pipe Diameter
- Pipe Grade
- Pipe Wall thickness
- Pipeline Design Pressure
- Construction Class
- Coating type and thickness
- Density of soil surrounding the pipeline (backfill density)
- Allowable Pipe Deflection
- Safety Factor
- % of Torque Utilization of Anchor Shaft

Ordering Information

We provide quick turn-around on all piling and anchor orders. Our professional team of engineers, fabricators and support staff follows each order from start to finish. Worldwide shipping to your destination is no problem. Our experienced shipping team will make sure your order is shipped quickly, efficiently and economically to its final destination.

TerraTorque can provide the support you need to assist you in meeting your project pipeline screw anchor set requirement. If your pipeline anchor set design is already established, simply contact us at info@terratorque.com and indicate the details of your anchor set requirements. We will provide you a price and delivery quotation for the pipeline anchors sets your project requires.

If the pipeline anchor set design has not been determined we can assist you in developing the screw anchor design to meet your project specifications. Simply contact us at info@terratorque.com and we can help you determine the anchor set configuration to meet your project specifications. By utilizing the customer supplied soil data, i.e., soil borehole logs and the project design parameters, TerraTorque can provide the anchor design and a recommended maximum anchor set center to center (horizontal) spacing.