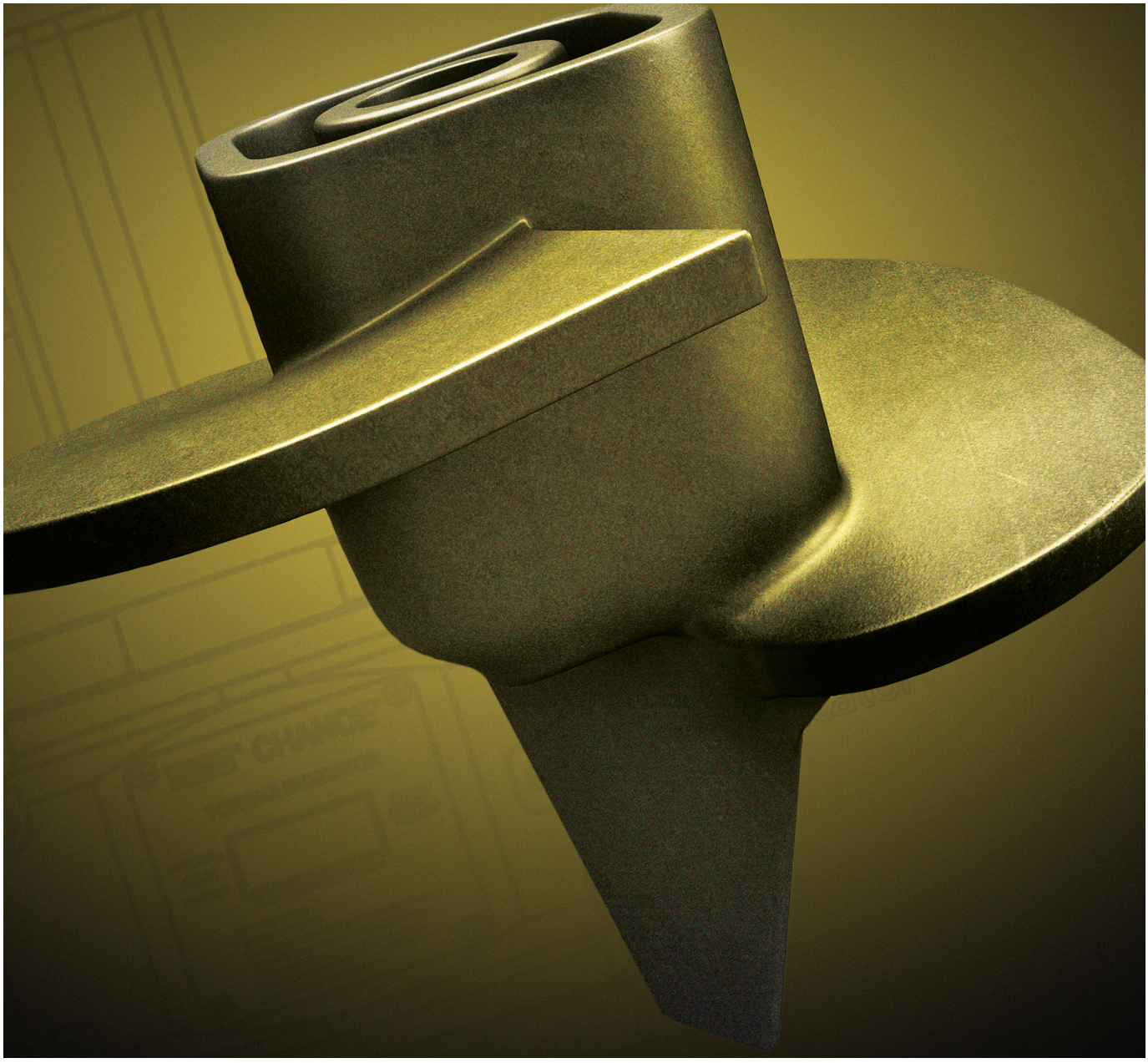
HUBBELL
Power Systems, Inc.



Anchoring

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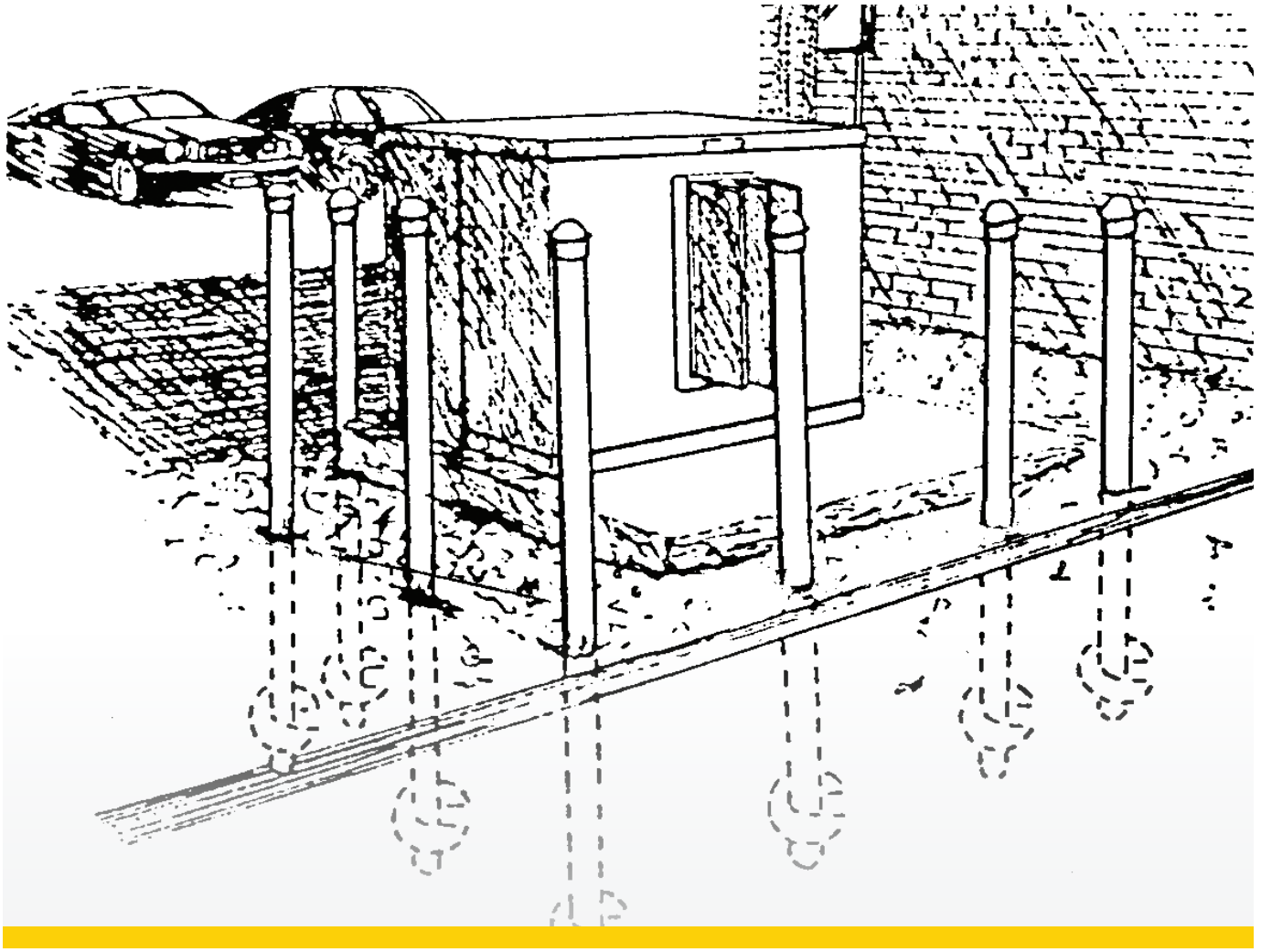


Dependable Anchoring Solutions

Hubbell Power Systems is the proud manufacturer of CHANCE® Anchors and Anchor Installing Tools. Employing lean manufacturing principles, continuous improvements and unmatched customer service, HPS delivers these internationally renowned products to electric utility and communications providers around the globe.

Engineered for dependability and long-term stability, our anchoring systems feature exclusive anchoring techniques, tools, designs and sizes. Our precision production and meticulous quality assurance produce reliable products that adhere to the strictest industry standards and perform in even the most challenging soil conditions, landslides, floods and time.

Anchor Selection

Soil Mechanics and Holding Capacity

During the early stages of the screw anchor, the load resistance of an installed anchor could not be predicted with reasonable accuracy. Specific information on soil conditions was lacking, making anchor selection more or less a guess. With little consideration for soil variations and the effects of seasonal weather changes or drainage, soils were classified as "sand, clay, hardpan or swamp." There wasn't any definitive explanation for such soil conditions.

CHANCE® soil classification data opened new horizons in predicting anchor holding capacity. Initially, it was necessary to obtain soil samples from the projected anchor depth in order to classify the soil and to make anchor recommendations. However, this method was inconvenient, costly and time-consuming.

Soil Probe, A Logical Development

CHANCE engineers developed the "Soil Test Probe," a mechanical tool makes it possible to infer subsoil conditions from the surface of the earth. The Soil Test Probe is screwed into the soil. As it displaces the soil, probe installation torque is measured in inch-pounds on a torque gauge, which is an integral part of the installing tool. Probe torque readings are then compared with the information on the CHANCE Soil Classification Data Chart and translated into the appropriate soil classification.

PISA®: Power-Installed Screw Anchors

More than 50 years ago, A.B. Chance Company introduced this system of utilizing the power of digging equipment to install screw anchors. The system consists of a screw anchor, anchor rod and a special installing wrench. Each anchor has a galvanized steel threaded anchor rod with an upset hex, single or twin helices and a galvanized guy wire nut that is screwed to the anchor rod end. PISA Anchors can be installed in a matter of minutes.

Torque and Performance

Later this method was improved with the development of CHANCE Torque Indicators and sets of holding capacity values for given anchor types. This did not obviate the soil classification data, but strengthened and simplified it so the utility employee could install a PISA Anchor or other CHANCE anchor to a given torque value and predict with relative accuracy the holding capacity of the installed anchor. Actually, the correlation between installing torque and anchor performance required thousands of tests throughout the United States and in every conceivable soil condition. It is much labor, engineering research and investment that have made possible the development of this reliable and predictable anchoring philosophy.

Anchor Selection and Application (continued)

Torque Ratings

CHANCE® Screw Anchors are designed and manufactured for maximum torsional strength. During installation, some of the torque applied by the digger and measured by installation torque indicators is dissipated by friction along the wrench and not applied to the anchor itself, so it is possible to apply more torque than the anchor alone can withstand. CHANCE anchors are rated by maximum working torque or, for the more recent designs, by the 5 percent exclusion limit which is a more explicitly defined criterion based on statistical analysis of on-line quality control testing. Both ratings take into consideration the variation to be expected in anchor torsional strength due to normal variations in materials and manufacturing processes. Customers should consider this variation along with the wide variation that can be seen in the frictional loss along the wrench in deciding how much torque can be applied safely during installation. The fact that CHANCE ratings are set near the minimum credible torsional strength also should be considered in comparing CHANCE ratings to those of manufacturers who rate their anchors based on average strength.

Application Information

Where applicable, anchors manufactured by Hubbell Power Systems, Inc. are made from steel produced in accordance with ASTM A575 and/or ASTM A576. Where galvanized, items are galvanized in accordance with ASTM A153. Call your Hubbell representative for conformance of particular items to the above specifications.

Soil Classification Data

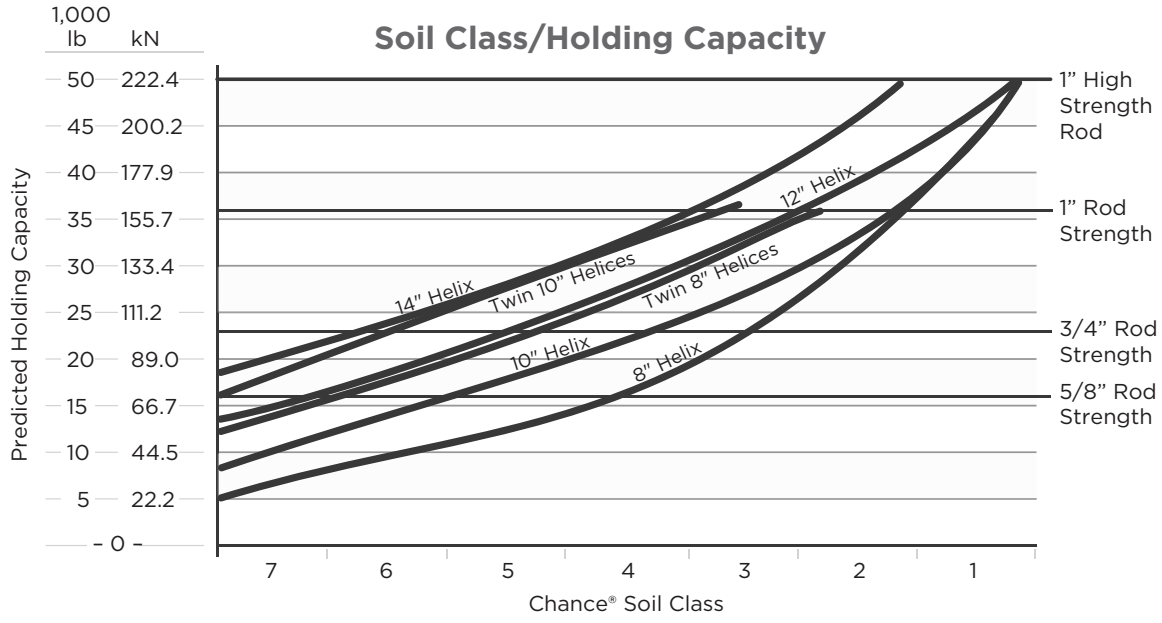
Class	Common Soil Type Description	Geological Soil Classification	Probe Values ft-lb (nm)	Typical Blow Count "N" per ASTM-D1586
0	Sound hard rock, unweathered (bedrock)	Granite, Basalt, Massive Limestone	—	—
1	Very dense and/or cemented sands; coarse gravel and cobbles	Caliche, (Nitrate-bearing gravel/rock)	Over 60 (85 - 181)	60-100+
2	Dense fine sands; very hard silts and clays (may be preloaded)	Basal till; boulder clay; caliche; weathered laminated rock	Over 50 (68 - 85)	45-60
3	Dense sands and gravel; hard silts and clays	Glacial till; weathered shales, schist, gneiss and siltstone	42 - 50 (56 - 68)	35-50
4	Medium dense sand and gravel; very stiff to hard silts and clays	Glacial till; hardpan; marls	33 - 42 (45 - 56)	24-40
5	Medium dense coarse sands and sandy gravels; stiff to very stiff silts and clays	Saprolites, residual soils	25 - 33 (34 - 45)	14-25
6	Loose to medium dense fine to coarse sands to stiff clays and silts	Dense hydraulic fill; compacted fill; residual soils	17 - 25 (23 - 34)	7-14
7[(1)]	Loose fine sands; Alluvium; loess; medium - stiff and varied clays; fill	Flood plain soils; lake clays; adobe; gumbo, fill	8 - 17 (11 - 23)	4-8
8[(1)]	Peat, organic silts; inundated silts,fly ash very loose sands, very soft to soft clays	Miscellaneous fill, swamp marsh	Under 8 (0 - 11)	0-5

NOTE: Class 1 soils are difficult to probe consistently and the ASTM blow count may be of questionable value.

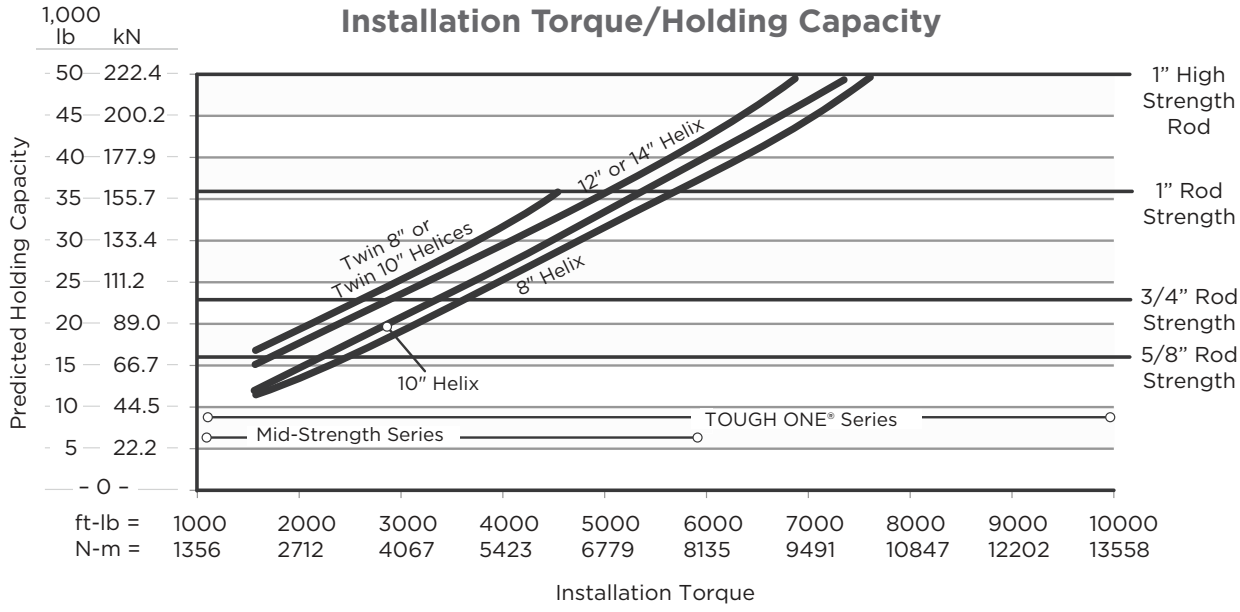
(1) It is advisable to install anchors deep enough, by the use of extensions, to penetrate a Class 5 or 6, underlying the Class 7 or 8 soils.

Power-Installed Screw Anchors (PISA®)

Soil Class/Holding Capacity



Installation Torque/Holding Capacity



Helix Diameter	Rod Diameter	Rod Strength
8" = 203.2 mm 10" = 254.0 mm 12" = 304.8 mm 14" = 355.6 mm	5/8" (0.625") = 15.9 mm 3/4" (0.756") = 19.1 mm 1" = 25.4 mm 1" High Strength = 25.4 mm	16,000 lb / 71.2 kN 23,000 lb / 102.3 kN 36,000 lb / 160.1 kN 50,000 lb / 222.4 kN

NOTE: Predicted ultimate holding capacities are based on results of extensive CHANCE® tests and interpretation and are offered as an application guide only. They do not represent a guarantee of holding capacity in a particular soil class. A user must factor in his individual, appropriate safety factor. Torque values shown are steady values in homogenous soils, not peak values that might occur in non-homogenous soil. Torque values shown were obtained by averaging readings from the last 2 feet of anchor penetration. The anchor shaft must be aligned with the guy load to prevent premature failure of the rod. Under no circumstance should the rod and guy strand join at an angle of departure exceeding ± 5° on PISA anchors.

Tough One® Anchor Helix Assemblies

Torque Ratings: 10,000 ft-lb

Small Hub (2-1/4" Square Inside)

- The C10252xx series of Tough One anchors have a smaller inside hub diameter than our C10250xx series. The smaller hub is designed to be installed with the CHANCE® Anchor Wrench C1021583.
- Tough One anchors give users high-strength anchor capability in all soils. You get a better anchor at an economical price.
- The anchor's sloped lead point improves penetration and helps soil flow from below the hub to above the anchor.
- Tough One anchors use standard PISA® rods (see pages 8-9).
- Tough One anchors are painted with black paint.

Use High-Strength 10,000 ft-lb Tough One Anchor in soft and medium-hard soils.

10,000 ft-lb Tough One Anchor 2-1/4" Square Inside Hub

Install with the CHANCE Standard (10,000 ft-lb) Wrench (see page 30)

	8" Diameter	Standard Pkg/Pallet	10" Diameter	Standard Pkg/Pallet
For 3/4" & 1" Diameter Rods	C1025200	4/192	C1025201	4/144
For 5/8" Diameter Rods	C1025208	4/144	C1025209	4/144
	12" Diameter	**Standard Pkg/Pallet**	**14" Diameter**	**Standard Pkg/Pallet**
For 3/4" & 1" Diameter Rods	C1025202	2/72	C1025203**	2/48
For 5/8" Diameter Rods	C1025210	2/72	-	2/48

***RUS Pending*

**RUS Listed*

Tough One® Anchor Helix Assemblies

Torque Ratings: 10,000 ft- lb and 15,000 ft- lb

Large Hub (2-1/2" Square Inside)

- Tough One anchors give users high-strength anchor capability in all soils. You get a better anchor at an economical price. With Tough One anchors, there's little concern about anchor breakage when encountering hard soils.
- The anchor's sloped lead point improves penetration and helps soil flow from below the hub to above the anchor.
- Tough One anchors use standard PISA® rods (see pages 8-9).
- It's easy to upgrade your entire program with Tough One anchors.
- If soil conditions require installations above 10,000 ft-lb, you will need our Tough One wrench system consisting of Drive-End Assembly, Kelly Bar Adapter and Locking Dog Assembly. The high-strength system will also install PISA 6 and 7 anchors. See pages 32-33 for high-strength anchor installing wrench information.
- Tough One Anchors are painted with black paint.

10,000 ft-lb Tough One Anchor 2-1/2" Square Inside Hub

Install with the CHANCE® Hybrid or Tough One Wrench (see pages 29-30)

	8" Diameter	Standard Pkg/Pallet	10" Diameter	Standard Pkg/Pallet
For 5/8" Diameter Rods	C1025008	4/144	C1025009	4/144
For 3/4" & 1" Diameter Rods	C1025004	4/144	C1025005	4/144
	12" Diameter	**Standard Pkg/Pallet**	**14" Diameter**	**Standard Pkg/Pallet**
For 5/8" Diameter Rods	C1025010	2/72	C1025007	2/48
For 3/4" & 1" Diameter Rods	C1025006	2/72		

Use 10,000 ft-lb Tough One anchor in soft and medium-hard soils.

15,000 ft-lb Tough One Anchor 2-1/2" Square Inside Hub

Install with the CHANCE® Tough One Wrench System (see pages 29-30)

	8" Diameter	Standard Pkg/Pallet	10" Diameter	Standard Pkg/Pallet
	C1025000	4/144	C1025001	3/108
For 3/4" & 1" Diameter Rods	**12" Diameter**	**Standard Pkg/Pallet**	**14" Diameter**	**Standard Pkg/Pallet**
	C1025002	2/72	C1025003	2/48

Use high-strength 15,000 ft-lb Tough One in very hard soils short of solid rock.

PISA® Anchor Helix Assemblies

Mid Strength

CHANCE® Mid-Strength 6,000 ft-lb anchors have curvilinear leading edges to help penetrate rocky soils and to reduce damage during installation. These anchors are available in single and twin-helix designs. The same installing wrench installs Mid-Strength anchors as well as Tough One® C10252xx series anchors. See pages 29-30 for installing wrench information. Anchors are painted with black paint.

PISA anchor installation takes about five minutes with two workers.

Mid-Strength Anchor Series

1-3/8" Core – 6000 ft-lb Typical Working Torque – Squared Helix 3" Helix Pitch

Single Helix	Catalog Number							
	8" Diameter	Standard Pkg/Pallet	10" Diameter	Standard Pkg/Pallet	12" Diameter	Standard Pkg/Pallet	14" Diameter	Standard Pkg/Pallet
For 5/8" Diameter Rods	**E1021629**	8/240	**E1021630**	4/144	**E1021631**	4/96	—	—
For 3/4" & 1" Diameter Rods	**E1021632**	8/240	**E1021633**	4/144	**E1021634**	4/96	**E1021801**	2/32

Twin Helix	Catalog Number					
	4" Diameter	Standard Pkg/Pallet	8" Diameter	Standard Pkg/Pallet	10" Diameter	Standard Pkg/Pallet
For 3/4" & 1" Diameter Rods	**E1021635**	1/30	**E1021636**	1/30	**E1021637**	1/30

NOTE: See pages 8-9 for PISA anchor rods and eyenuts.

PISA® 6 and PISA 7 Anchor Helix Assemblies

- CHANCE® PISA-6 6000 ft-lb anchors and PISA -7 7000 ft-lb anchors have curvilinear leading edges to help penetrate rocky soils and to reduce damage during installation. These anchors are available in single and twin-helix designs.
- PISA-6 and PISA-7 anchors have a 1-1/2" square solid core for added strength. See pages 29-30 for information on the 1-1/2" installing wrench.
- Anchors are painted with black paint.

PISA 6 Anchor

1-1/2" Core – 6000 ft-lb Typical Working Torque – Squared Helix – 3" Helix Pitch

Single Helix	Catalog Number							
	8" Diameter	Standard Pkg/Pallet	10" Diameter	Standard Pkg/Pallet	12" Diameter	Standard Pkg/Pallet	14" Diameter	Standard Pkg/Pallet
For 5/8" Diameter Rods	**E1020816**	8/240	**E1020817**	4/144	—	–	—	–
For 3/4" & 1" Diameter Rods	**E1020819**	8/240	**E1020820**	4/144	**E1020821**	4/80	**T1022142**	2/32

Twin Helix	Catalog Number			
	Two 8" Diameter	Standard Pkg/Pallet	Two 10" Diameter	Standard Pkg/Pallet
For 3/4" & 1" Diameter Rods	**E1020822**	1/30	**E1020823**	1/30

PISA 7 Anchor

1-1/2" Core – 7000 ft-lb Typical Working Torque – Squared Helix – 3" Helix Pitch

Single Helix	Catalog Number							
	8" Diameter	Standard Pkg/Pallet	10" Diameter	Standard Pkg/Pallet	12" Diameter	Standard Pkg/Pallet	14" Diameter	Standard Pkg/Pallet
For 3/4" & 1" Diameter Rods	**E1021223**	8/240	**E1020250**	4/96	**T1022143**	4/80	**T1022319**	2/32

Twin Helix	Catalog Number					
	Two 8" Diameter	Standard Pkg/Pallet	Two 10" Diameter	Standard Pkg/Pallet	Two 4" Diameter	Standard Pkg/Pallet
For 3/4" & 1" Diameter Rods	**E1021219**	1/30	**E1021220**	1/30	**V1021428**	1/30

NOTE: See pages 8-9 for PISA anchor rods and eyenuts.

PISA® Anchor Rods, Eyenuts and Couplings

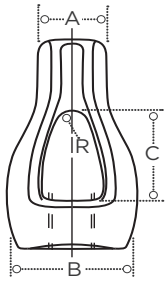
Eyenut

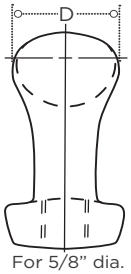
	Catalog Number					
	Thimbleye®	Standard Pkg/Pallet	Twineye®	Standard Pkg/Pallet	Tripleye®	Standard Pkg/Pallet
For 5/8" Diameter Rods	**12587**	25/2250	**12589**	25/1200	**12593**	25/750
For 3/4" & 1" Diameter Rods	**6512**	25/1200	**6562**	25/1200	**12585**	25/1200
For 1" Diameter HS (1)	—	—	**6562H**	25/1200	**12585H**	25/1250
For 5/8" Diameter Rod – Communication Market Stamp	—	—	**12589BS**	25/1200	—	—
For 1" Diameter Rod – Communication Market Stamp	—	—	**6562BS**	25/1200	—	—

(1) HS Eyenuts are galvanized and painted orange.

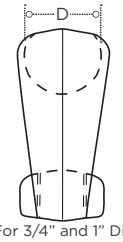
Thimbleye Nuts

	A Inches	B Inches	C Inches	D Inches	R Inches
For 5/8" Diameter Rods	7/8	1-7/8	1-3/8	1-11/64	1/4
For 3/4" & 1" Diameter Rods	1-1/8	2-25/64	1-19/32	1-5/8	13/32





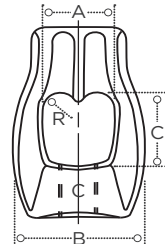
For 5/8" dia.

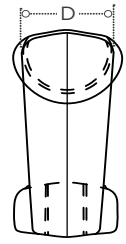


For 3/4" and 1" Dia.

Twineye Nuts

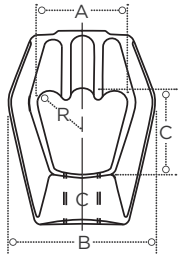
	A Inches	B Inches	C Inches	D Inches	R Inches
For 5/8", 3/4" & 1" Diameter Rods	1-13/32	2-25/64	1-27/64	1-1/2	5/16

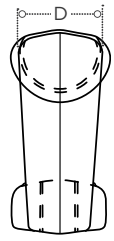




Tripleye Nuts

	A Inches	B Inches	C Inches	D Inches	R Inches
For 5/8", 3/4" & 1" Diameter Rods	1-3/4	2-13/16	1-5/8	1-1/2	1/4





Rod

	3-1/2-ft Rod		7-ft Rod		Ultimate Strength lb(1)
	Catalog Number	Standard Pkg/Pallet	Catalog Number	Standard Pkg/Pallet	
For 5/8" Diameter	**12336P**	5/50	**12332P**	5/50	16,000
For 3/4" Diameter	**12634P**	5/50	**12632P**	5/50	23,000
For 1" Diameter	**12338P**	5/50	**12334P**	1/50	36,000
For 1" Diameter HS	**C1021987**	5/50	**C1021986**	2/50	50,000

(1) Ultimate strength ratings apply to properly installed anchors only. Failure to install within 5° of alignment with the guy load will significantly lower strength.
NOTE: All components shown on this page are hot-dip galvanized per ASTM A153.

PISA® Anchor Rods, Eyenuts and Couplings (continued)

Coupling

Coupling	Catalog Number	Standard Pkg/Pallet	Ultimate Strength
For 5/8" Diameter Rods	**12245P**	50/1950	16,000 lbs
For 3/4" & 1" Diameter Rods	**12247P**	50/2400	50,000 lbs

NOTE: Couplings are required only when it is necessary to add additional rods of 3-1/2 ft or 7 ft to form an extension.

Extension Rod & Coupling Combinations

Extension Rod & Coupling Combinations	3-1/2- ft Rod		7-ft Rod	
	Catalog Number	Standard Pkg/Pallet	Catalog Number	Standard Pkg/ Pallet
5/8" Diameter	**12249A**	5/50	—	—
3/4" Diameter	**12250A**	5/50	**C1022328**	5/50
1" Diameter	**12251A**	5/50	**12255A**	2/50

PISA Rod & Eyenut Combinations

Catalog Number	Rod & Eyenut
E1020031	5/8" x 3-1/2' Rod & Thimbleye Nut
E1020047	5/8" x 3-1/2' Rod & Tripleye Nut
E1020035	5/8" x 7' Rod & Thimbleye Nut
E1020043	5/8" x 7' Rod & Twineye Nut
E1020051	5/8" x 7' Rod & Tripleye Nut
E1020032	3/4" x 3-1/2' Rod & Thimbleye Nut
E1020040	3/4" x 3-1/2' Rod & Twineye Nut
E1020036	3/4" x 7' Rod & Thimbleye Nut
E1020044	3/4" x 7' Rod & Twineye Nut
E1020052	3/4" x 7' Rod & Tripleye Nut
E1020041	1" x 3-1/2' Rod & Twineye Nut
E1020049	1" x 3-1/2' Rod & Tripleye Nut
E1020037	1" x 7' Rod & Thimbleye Nut
E1020045	1" x 7' Rod & Twineye Nut
E1020053	1" x 7' Rod & Tripleye Nut

Corrosion-Protected PISA Rod & Coupling

Rod Catalog Number	Fits Rod Size	Standard Pkg/Pallet
C1021996	1" x 7'	2/50
C1022061	1" x 3-1/2'	5/50
Coupling Catalog Number	**Fits Rod Size**	**Standard Pkg/Pallet**
C1025240	1"	50/2400

NOTE: Rod is asphalt-coated galvanized with heat-shrink and plastic tube covering. Coupling is galvanized and covered with heat-shrink tubing.

NOTE: All components shown on this page are hot-dip galvanized per ASTM A153.

RR (Round Rod) Screw Anchors

The Round-Rod (RR) multi-helix anchors are used in areas where weak soil conditions exist and moderate holding capacities are required. All helix lead sections are 7-ft long. Extension shafts may be required for installation to proper depth. RR Screw Anchors consist of three galvanized components: Lead Section, Extension Shaft (which includes an integral coupling), and the Guy Adapter. Each extension and guy adapter includes a high-strength bolt and nut. Type RR anchors torque rating is 2,300 ft-lb. Ultimate tension rating for RR mechanical strength is 70,000 lb. Failure to install within 5° of alignment with the guy load will significantly lower strength.

Lead Sections

Catalog Number	Length ft	Helix Combinations Inches	Standard Pkg/Pallet	Holding Capacity vs Soil Class lb		
				Class 7	Class 6	Class 5
012690AE	7	8 - 10	1/20	19,000	23,000	27,000
012690AEJ	7	8 - 10 - 12	1/20	26,000	32,000	39,000
V1090007	7	10 - 10 - 10	1/15	25,000	31,000	—
V1090006	7	10	1/20	17,000	21,000	24,000

Extensions

Catalog Number	Nominal Length ft	Standard Pkg/Pallet
12696	3-1/2	1/50
12697	5	1/50
12698	7	1/30
12699	10	1/50

Guy Adapters

Catalog Number	Nominal Length Inches	Description	Standard Pkg/Pallet
C1020023	18	Thimbleye®	5/175
C1020024	18	Twineye®	5/250
C1020025	18	Tripleye®	5/250
C1100026	20	Threaded Stud	5/130
C1100041	18	Ovaleye	5/200

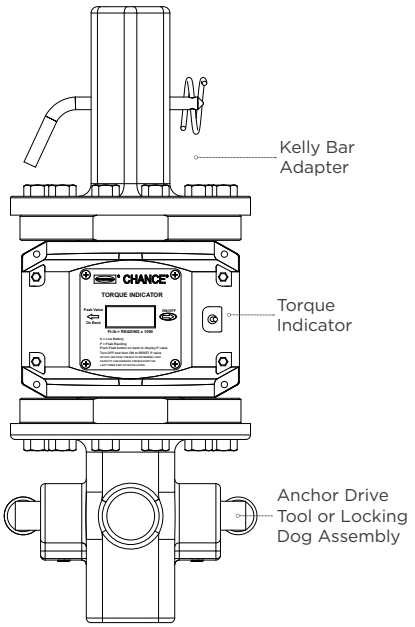
Load Capacity(1) Based on Installation Torque(2)
Load Capacity of RR Anchors in Soil (Pounds Tension)

Helix Combinations Inches	Installation Torque		
	1,500	2,000	2,300
10	16,000	22,000	28,000
8 - 10	17,000	23,000	29,000
10 - 10 - 10	19,000	25,000	31,000
8 - 10 - 12	19,000	25,000	31,000

(1) Load capacities listed above are ultimate values based on average test data and are offered as an application guide. Typical deflection at ultimate load ranges between 2 and 4 inches. The listed values should be reduced by an appropriate factor of safety. More specific data on soils and anchor performance in any site condition can be obtained by contacting Hubbell Power Systems, Inc.

(2) The torque values shown are steady values in homogeneous soils, not peak values that can occur in non-homogeneous soils such as glacial till or other rocky soils. The torque values shown are obtained by averaging the readings from the last 2 feet of anchor penetration.

Typical "RR" Drive String



Extension

Guy Adapter

Lead Section

SS5 (Square Shaft) Screw Anchors

Square-Shaft (SS) multi-helix screw anchors are designed for heavy-guy loading. They have 1-1/2" square steel shafts. Extension shafts must be coupled to the helix section for installation to the proper depth. For installation tool options, see pages 29-44. SS Screw Anchors consist of three galvanized components: Lead Section, Extension Shaft (which includes an integral coupling) and Guy Adapter. Extensions and Guy Adapters include a high-strength bolt and nut. Typical working torque is 5,500 ft-lb and minimum ultimate tension strength is 70,000 lb. Ultimate strength ratings apply to properly installed anchors only. Failure to install within 5° of alignment with the guy load will significantly lower strength.

Lead Sections[1]

Catalog Number	Length ft	Helix Combinations Inches	Standard Pkg/ Pallet	Holding Capacity – lb vs Soil Class					
				Class 7	Class 6	Class 5	Class 4	Class 3	Class 2
012642AE	3	8 - 10	1/20	19,000	23,000	27,000	32,000	36,000	41,000
012642EJ	3-1/2	10 - 12	1/20	21,000	26,000	31,000	36,000	41,000	46,000
012642AEJ	5-1/2	8 - 10 - 12	1/20	26,000	32,000	39,000	46,000	51,000	58,000
012642EJN	7	10 - 12 - 14	1/20	29,000	37,000	45,000	53,000	61,000	69,000
012642AEJN	10-1/2	8 - 10 - 12 - 14	1/20	31,000	40,000	49,000	58,000	67,000	—
012642EJNS	10-1/2	10 - 12 - 14 - 14	1/20	40,000	51,000	62,000	70,000	—	—

(1) Lead sections are banded to wood blocks to facilitate forklift handling.

NOTE: Other lengths available upon request. Holding capacity based on Helix Combination, not Lead Length

Extensions

Catalog Number	Nominal Length ft	Helix Dia Inches	Standard Pkg/Pallet
12655	3-1/2	—	1/50
12656	5	—	1/50
12657	7	—	1/40
12658	10	—	1/30
12656N	5	14	1/20
12655J	3-1/2	12	1/20

NOTE: Extension shafts are banded to wood blocks to facilitate forklift handling.

Guy Adapters

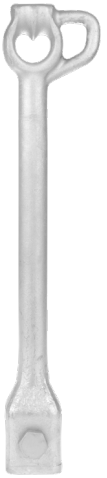
Catalog Number	Nominal Length Inches	Description	Standard Pkg/Pallet
C1020023	18	Thimbleye®	5/200
C1020024	18	Twineye®	5/200
C1020025	18	Tripleye®	5/200
C1100026	20	Threaded Stud	5/200
C1100041	18	Ovaleye	5/200

NOTE: Guy adapters are shipped in corrugated cartons.

NOTE: Load capacities listed above are ultimate values based on average test data and are offered as an application guide. Typical deflection at ultimate load ranges between 2 and 4 inches. The listed values should be reduced by an appropriate factor of safety. More specific data on soils and anchor performance in any site condition can be obtained by contacting Hubbell Power Systems, Inc. The torque values shown are steady values in homogeneous soils, not peak values that can occur in non-homogeneous soils such as glacial till or other rocky soils. The torque values shown are obtained by averaging the readings from the last 2 feet of anchor penetration. Minimum depth is five x diameter of largest helix.

Extra Bolt & Nut for Extensions & Guy Adapters Standard Package: 10 each

Catalog Number	Description
P0010041P	Extra SS5 Bolt
055449P	Extra SS5 Nut



Guy Adapter

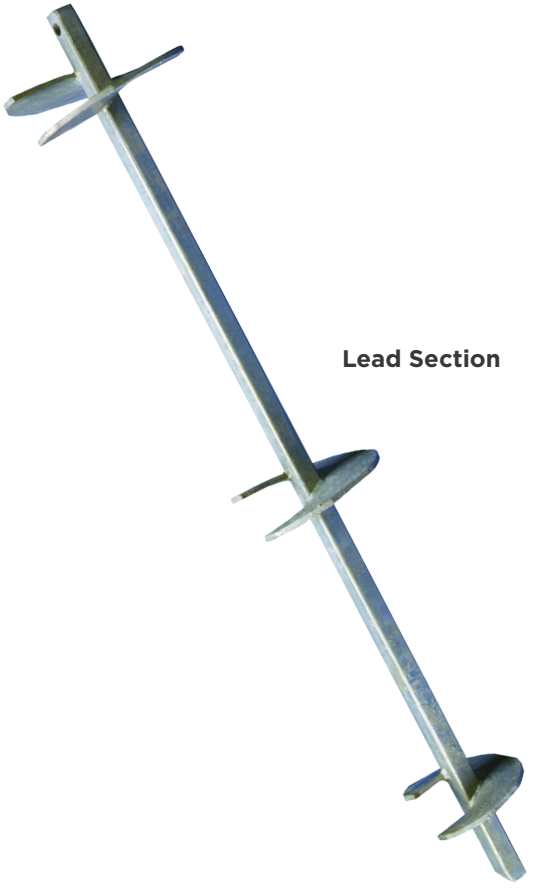
Extension

SS5 (Square Shaft) Screw Anchors (continued)

Lead Section & Guy Adapter Combinations[1]

Catalog Number	Guy Adapter	Helix Combinations Inches
126541AE	Thimbleye®	8 - 10
126541EJ	Thimbleye®	10 - 12
126541AEJ	Thimbleye®	8 - 10 - 12
126541EJN	Thimbleye®	10 - 12 - 14
126541EJNS	Thimbleye®	10 - 12 - 14 - 14
126542AE	Twineye®	8 - 10
126542EJ	Twineye®	10 - 12
126542AEJ	Twineye®	8 - 10 - 12
126542EJN	Twineye®	10 - 12 - 14
126542EJNS	Twineye®	10 - 12 - 14 - 14
126543AE	Tripleye®	8 - 10
126543EJ	Tripleye®	10 - 12
126543AEJ	Tripleye®	8 - 10 - 12
126543EJN	Tripleye®	10 - 12 - 14
126543EJNS	Tripleye®	10 - 12 - 14 - 14

(1) Lead sections are banded to wood blocks to facilitate forklift handling. Guy adapters are shipped in separate corrugated cartons.



Lead Section

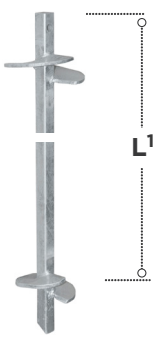
Load Capacity[1] Based on Installation Torque[2]
Load Capacity of SS Anchors in Soil (Pounds Tension)

Helix Combinations Inches	Installation Torque								
	1,500	**2,000**	**2,500**	**3,000**	**3,500**	**4,000**	**4,500**	**5,000**	**5,500**
8 - 10	17,000	23,000	29,000	34,000	40,000	46,000	52,000	58,000	63,000
10 - 12	18,000	24,000	30,000	36,000	42,000	48,000	54,000	60,000	66,000
8 - 10 - 12	19,000	25,000	31,000	38,000	44,000	50,000	56,000	62,000	68,000
10 - 12 - 14	20,000	26,000	32,000	39,000	46,000	52,000	58,000	65,000	70,000
8 - 10 - 12 - 14	20,000	27,000	34,000	40,000	47,000	54,000	61,000	68,000	70,000
10 - 12 - 14 - 14	21,000	28,000	35,000	42,000	49,000	56,000	63,000	70,000	70,000

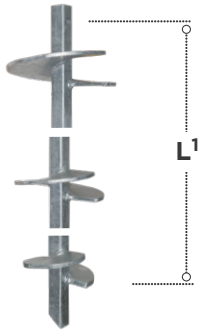
(1) Load capacities listed above are ultimate values based on average test data and are offered as an application guide. Typical deflection at ultimate load ranges between 2 and 4 inches. The listed values should be reduced by an appropriate factor of safety. More specific data on soils and anchor performance in any site condition can be obtained by contacting Hubbell Power Systems, Inc.

(2) The torque values shown are steady values in homogeneous soils, not peak values that can occur in non-homogeneous soils such as glacial till or other rocky soils. The torque values shown are obtained by averaging the readings from the last 2 feet of anchor penetration. Minimum depth is five x diameter of largest helix.

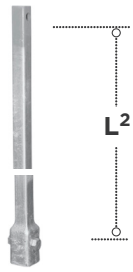
High-Strength SS Anchors for Heavy Tension Loading



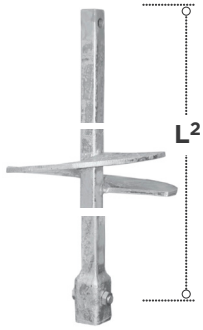
Lead Section



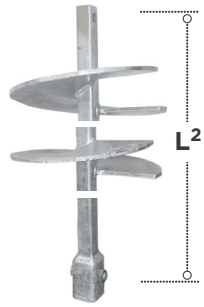
Lead Section



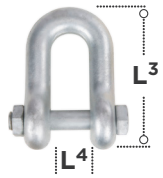
Plain Extension



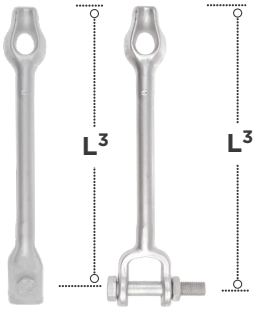
Single Helix Extension



Twin Helix Extension

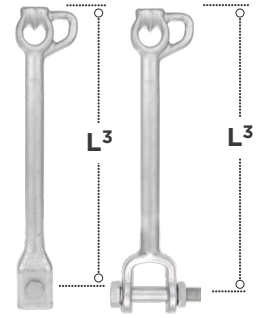


Chain Shackle



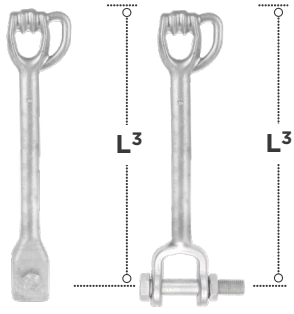
Socket Clevis

Thimbleye® Adapter



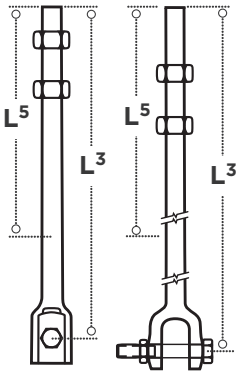
Socket Clevis

Twineye® Adapter



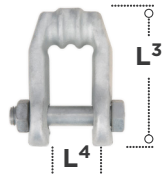
Socket Clevis

Tripleye® Adapter



Socket Clevis

Threaded Adapter



Tripleye® Chain Shackle

Ratings

Mechanical Properties	SS 150 1-1/2" Square Shaft	SS 175 1-3/4" Square Shaft	SS 200 2" Square Shaft	SS 225 2-1/4" Square Shaft
Max Installation Torque	7,000 ft-lb	10,500 ft-lb	16,000 ft-lb	21,000 ft-lb
Min Ultimate Tension Strength	70,000 lb	100,000 lb	150,000 lb	200,000 lb

Lead Sections – Hot-Dip Galvanized

Helix Configuration Inches	SS 150		SS 175		SS 200		SS 225	
	Catalog Number	L1 Inches	Catalog Number	L1 Inches	Catalog Number	L1 Inches	Catalog Number	L1 Inches
8 & 10	**C1100385**	30	**C1100227**	30	—	—	—	—
10 & 12	**C1100871**	42	**C1100884**	58	—	—	—	—
6, 8 & 10	—	—	—	—	**C1100569**	60	**C1100543**	54
8, 10 & 12	**C1100386**	57	**C1100235**	60	**C1100570**	60	**C1100544**	75
10, 12 & 14	**C1100838**	84	**C1100923**	84	**C1100791**	84	—	—
14, 14 & 14	**C1100504**	120	**C1100505**	124	**C1100572**	122	**C1100545**	114
8, 10, 12 & 14	**T1100521**	—	**C1100247**	124	**C1100573**	122	**C1100591**	115

High-Strength SS Anchors for Heavy Tension Loading (cont'd)

Extensions – Hot-Dip Galvanized

Helix Configuration	SS 150		SS 175		SS 200		SS 225	
	Catalog Number	L^2 Inches	Catalog Number	L^2 Inches	Catalog Number	L^2 Inches	Catalog Number	L^2 Inches
None	**C1100388**	37	**C1100136**	37	**C1100563**	37	**C1100645**	33
None	**C1100470**	59	**C1100137**	59	**C1100564**	58	**C1100646**	60
None	**C1100389**	80	**C1100138**	80	**C1100565**	80	**C1100647**	80
None	**C1100440**	122	**C1100140**	124	**C1100566**	123	**—**	120
Single 14″ Helix	**C1100471**	48	**C1100472**	48	**C1100577**	45	**C1100650**	39
Twin 14″ Helices	**C1100454**	80	**C1100450**	80	**C1100581**	80	**C1100652**	78
Triple 14″ Helices	**C1100475**	123	**C1100476**	124	**C1100586**	123	**—**	120

Termination Adapters – Hot-Dip Galvanized

Description	SS 150			SS 175		
	Catalog Number	Notes	L3 Inches	Catalog Number	Notes	L3 Inches
Thimbleye Adapter	**C1020023**	—	17	**T1100311**(1)	—	17
Twineye Adapter	**C1020024**	—	17	**T1100964**(1)	—	—
Tripleye Adapter	**C1020025**	—	17	**T1100465**(1)	—	17
Ovaleye Adapter	**C1100041**	—	17	**—**	—	—
Threaded Adapter	**C1100026**	L5=13-1/2	20	**T1100352**(1)(3)	L5=36″	48
Chain Shackle	**C1100574**(4)	L4=1-1/2	5-1/8	**T1100134**	L4=1-13/16	6-5/8

Description	SS 200			SS 225		
	Catalog Number	Notes	L3 Inches	Catalog Number	Notes	L3 Inches
Thimbleye Adapter	**T1100312**(2)	—	17	**—**	—	—
Twineye Adapter	**—**	—	—	**—**	—	—
Tripleye Adapter	**T1100629**(2)	—	—	**—**	—	—
Ovaleye Adapter	**—**	—	—	**—**	—	—
Threaded Adapter	**—**	—	—	**—**	—	—
Chain Shackle	**C1100557**	L4=2-1/4″	8-1/4	**C1100558**	L4=2-3/8″	9

(1) Clevis fitting. Others have Socket fitting.

(2) Rated at 70,000 lb.

(3) T1100352 includes two nuts.

(4) Tripleye shackle.

Extra Bolt & Nut– Hot-Dip Galvanized

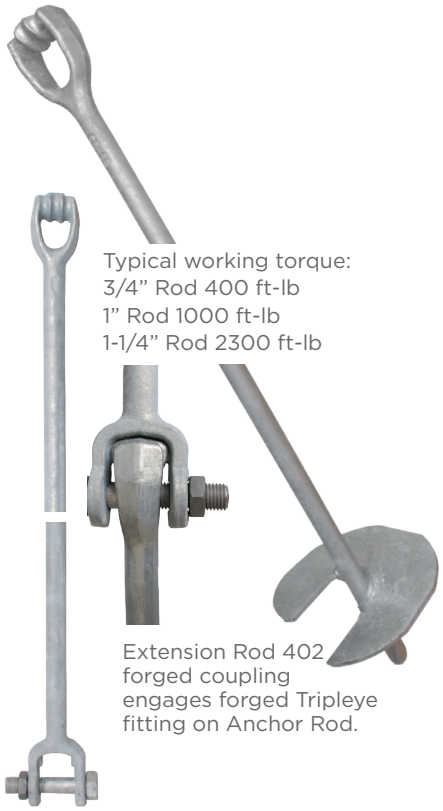
for Extensions & Guy Adapters (socket and clevis types) Standard Package: 10 each

Description	SS5/SS 150	SS 175	SS 200	SS 225
Extra Bolt-Extension	P0010041P	P0011443P	P0011445P	P0011771P
Extra Bolt-Adapter	P0010041P	P0011444P	P0010690P	-
Extra Nut-Both	055449P	055591P	P0010030P	056292P

No-Wrench Screw Anchor

For Hand or Machine Installation

CHANCE® No-Wrench Screw Anchors may be installed by hand or machine. The Thimbleye® Eye or Tripleye® Eye on the rod has a large opening to admit a turning bar for screwing the anchor down. The eye will also fit into an adapter available from most hole-boring machine manufacturers so the anchor may be power-installed. The No-Wrench Screw Anchor consists of a drop-forged steel Thimbleye Eye or Tripleye Eye rod welded to a steel helix. The entire anchor is hot-dip galvanized for long resistance to rust. No-Wrench Screw Anchors can be installed to a greater depth to reach a firmer soil by using an extension rod. Maximum installing torque is 2,300 ft-lb for 1-1/4" diameter rod. Catalog numbers 4345, 6346 and PS816 may be ordered with a forged Thimbleye rod rather than the standard Tripleye rod. To order a Thimbleye rod simply add "1" to the suffix of the catalog number. Example: Catalog Number 63461.



Typical working torque:
3/4" Rod 400 ft-lb
1" Rod 1000 ft-lb
1-1/4" Rod 2300 ft-lb

Extension Rod 402 forged coupling engages forged Tripleye fitting on Anchor Rod.

Application and Ordering Information

Catalog Number	Description	Anchor Size Dia Inches	Rod Dia & Length Inches	Standard Pkg/Pallet	No-Wrench Screw Anchor Holding Capacity lb vs Soil Class		
					Class 5	Class 6	Class 7
4345	Tripleye	4	3/4 x 54	1/100	4,500	3,000	1,500
6346[1]	Tripleye	6	3/4 x 66	1/100	6,500	5,000	2,500
PS816	Tripleye	8	1 x 66	1/60	11,000	9,000	6,000
10146	Tripleye	10	1-1/4 x 66	1/20	13,000	10,000	7,000
10148	Tripleye	10	1-1/4 x 96	1/20	13,000	10,000	7,000
12537	Tripleye	14	1-1/4 x 96	1/20	16,000	15,000	12,000
15148	Tripleye	15	1-1/4 x 96	1/20	19,000	17,000	14,000
43451	Thimbleye	4	3/4 x 54	1/100	4,500	3,000	1,500
63461	Thimbleye	6	3/4 x 66	1/100	6,500	5,000	2,500
8161	Thimbleye	8	1 x 66	1/60	11,000	9,000	6,000
Extension Rod							
402	Tripleye	—	1-1/4 x 72	1/50	—	—	—

(1) RUS accepted.

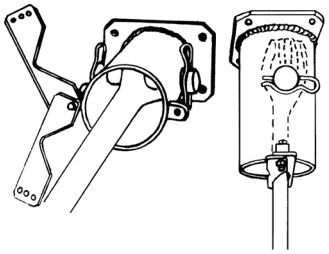
NOTE: If hand installed, holding capacity may be reduced by as much as 10% to 20%. Capacity ratings apply to properly installed anchors only. Failure to install within 5° of alignment with the guy load will significantly lower strength.

No-Wrench Power Installation Tool

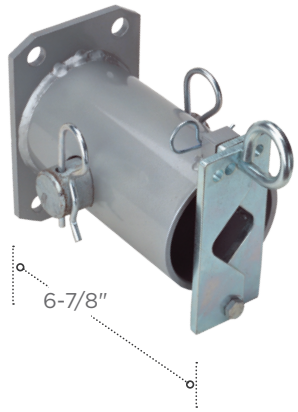
This tool bolts directly to the installer's output flange or appropriate Kelly Bar Adapter. Adjustable pivot plates accept rods from 3/4" to 1-1/4" diameter. Through-pin with retainer clip passes through the eyenut.

It has 4 holes on a 5-1/4" bolt circle for attachment and includes four 1/2" x 1-1/2" bolts, nuts, and lockwashers.

Tool can be attached to any CHANCE Torque Indicator.



No-Wrench
Typical Drive String

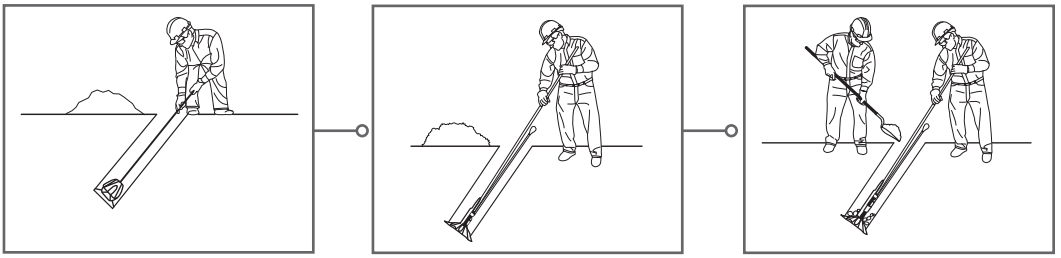


Catalog Number	Weight lb
E3030255	9

Bust Expanding Anchor

More Holding Capacity for Less

- Four different sizes are available with holding capacity as high as 40,000 pounds.
- CHANCE® Bust Expanding Anchors expand to take full advantage of the available area. All eight blades wedge into undisturbed earth and there is no wasted space between blades.
- This anchor should be installed in relatively dry and solid soils. The effectiveness of the anchor is dependent upon the thoroughness of backfill tamping.



Application and Ordering Information

Catalog Number	Anchor Hole Size Inches	Area Square Inches	Rod Size[1] Inches	Standard Pkg/ Pallet	8-Way Anchor Holding Capacity – lb vs Soil Class				
					Class 3	Class 4	Class 5	Class 6	Class 7
6870	6	70	5/8	12/288	16,000	14,000	11,000	8,500	5,000
88135	8	135	5/8 or 3/4	6/150	26,500[2]	22,000[2]	18,000[2]	15,000	10,000
1082	10	200	1	2/48	31,000	26,500	21,000	16,500	12,000
108234	10	200	3/4	2/48	31,000[2]	26,500[2]	21,000	16,500	12,000
1283	12	300	1-1/4	2/36	40,000	34,000	26,500	21,500	16,000
12831	12	300	1	2/36	40,000[2]	34,000	26,500	21,500	16,000

Expanding and Tamping Bar

The improved CHANCE fiberglass handle Expanding and Tamping Bar simplifies the job of expanding anchors. The curved tamper and expander head distributes the weight of the bar evenly around the anchor rod to reduce handle vibration. The hook of the Expanding and Tamping Bar wraps around the anchor rod to keep the expanding head from slipping off the anchor top plate. This tool is also effectively used for tamping in soil above the installed anchor. The base casting is attached directly to the Epoxiglas® handle. To order fiberglass replacement handles or expander head, see page 39.

Catalog Number	Description	Length ft	Weight lb
C3020003	Expanding & Tamping Bar	10	22
C3020004	Expanding & Tamping Bar	12	24

Cross-Plate Anchor

The Cross-Plate Anchor is made for installation in holes drilled by power diggers. Because the size of the hole does not affect holding capacity, the hole can be dug by the same auger that is used to dig the pole holes on transmission projects. Cross-Plate Anchors are installed in a diagonal bored hole which is undercut so the anchor is at right angles to the guy. A rod trench is either cut with a trenching tool or drilled with a small power auger. Both anchor and rod trench should be refilled and tamped.

Application and Ordering Information

Catalog Number	Hole Size Inches	Standard Pkg/Pallet	Approx Wt per Carton(1) lb	Area Sq In	Rod Size(2) Inches	Holding Capacity(3) lb (No Safety Factors Included) vs Soil Class				
						Class 3	Class 4	Class 5	Class 6	Class 7
X16	16	3/162	62	150	5/8 & 3/4	26,500(3)	22,500(3)	18,500(3)	14,500	9,500
X20	20	2/64	64	250	5/8 & 3/4	34,000	29,000(3)	24,000(3)	19,000(3)	14,000
X201	20	2/64	64	250	1	34,000	29,000	24,000	19,000	14,000
X2434	24	1/48	34	400	5/8 & 3/4	45,000(3)	37,000(3)	30,000(3)	23,500(3)	18,000(3)
X24(1)	24	1/48	34	400	1	45,000(3)	37,000(3)	30,000	23,500	18,000
X241(1)	24	1/48	34	400	1-1/4	45,000	37,000	30,000	23,500	18,000

NOTE: Capacity ratings apply to properly installed anchors only. Failure to install within 5° of alignment with the guy load will significantly lower strength.

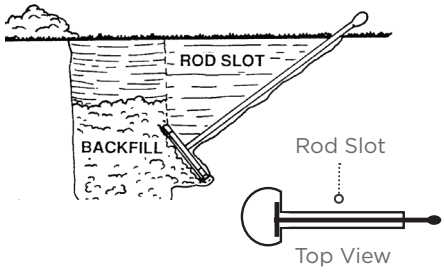
(1) X24 Series are not available in cartons and are shipped as individual pieces.

(2) Order separately.

Holding capacities are ultimate values. An appropriate factor of safety should be used to determine the allowable or service load. Hubbell Power Systems, Inc. recommends a factor of safety of at least 2 for permanent structures

For Class 3, 4, 5, and 6 soils, the depth required to achieve the holding capacities listed in the table is 5 vertical feet to the center of the plate. For Class 7 soils, the depth required is 7 vertical feet to the center of the plate.

(3) Ultimate strength of rod may limit holding capacity. Add suffix "G" for galvanized. Example: X20G.



***Order Anchor Rod Separately**

Anchor Rod Extensions

These Anchor Rod Extensions are primarily for making above-grade connections between installed anchors and guy wires. Each extension's forged eye is designed to distribute pulling stresses uniformly over individual strands of guy wire and keep the guy wire from spreading, kinking or bending. The drop-forged eye of each extension rod is stronger than the rod itself. Rod length and diameter are stamped below each rod eye. Each extension rod is hot-dip galvanized and includes a high-strength bolt and nut.

Welded Clevis Style

Catalog Number	Description	Rod Dia & Length Inches	Clevis Bolt Dia Inches	Standard Pkg/ Pallet	Strength lb
PSC1022176	Tripleye®	3/4 x 24	3/4	5/50	23,000
PSC1022177	Tripleye®	3/4 x 36	3/4	1/50	23,000
PSC1022178	Tripleye®	3/4 x 72	3/4	1/50	23,000
PSC1022183	Twineye®	1 x 24	7/8	5/50	36,000
PSC1022305	Tripleye®	1 x 24	7/8	1/50	36,000
PSC1022184	Twineye®	1 x 36	7/8	1/50	36,000
PSC1022306	Tripleye®	1 x 36	7/8	1/50	36,000
PSC1022185	Twineye®	1 x 72	7/8	1/50	36,000
PSC1022307	Tripleye®	1 x 72	7/8	1/50	36,000

Forged Clevis Style

Catalog Number	Description	Rod Dia & Length Inches	Clevis Bolt Dia Inches	Standard Pkg/ Pallet	Strength lb
4022	Tripleye®	1-1/4 x 24	1	1/50	40,000
PS4023	Tripleye®	1-1/4 x 36	1	1/50	40,000
402	Tripleye®	1-1/4 x 72	1	1/50	40,000

Galvanized Anchor Rods

- Available for one, two or three guys for use with Expanding or Cross Plate Anchors.
- Thimbleye®, Twineye® and Tripleye® rods distribute pulling stresses uniformly over individual strands of guy wire and keep the guy wire from spreading, kinking or bending.
- The drop-forged eye of each anchor rod is stronger than the rod itself.
- Rod length and diameter are stamped below each rod eye.
- Each rod is threaded 3-1/2" minimum length.
- Nuts are included.

Catalog Number				Size	Communication Market Product		
Thimbleye® Adapter	Twineye® Adapter	Tripleye® Adapter	Ovaleye Adapter		Thimbleye® Adapter	Twineye® Adapter	Tripleye® Adapter
5305	—	—	—	1/2" x 5'	—	—	—
5306	—	—	—	1/2" x 6'	—	—	—
5307	—	—	—	1/2" x 7'	—	—	—
5315	—	—	—	5/8" x 5'	—	—	—
5316 (1)	5346	—	—	5/8" x 6'	—	—	—
5317 (1)	5347 (1)	—	PS6417	5/8" x 7'	—	—	—
5318 (1)	5348 (1)	—	—	5/8" x 8'	—	400260980	—
5326 (1)	5356 (1)	—	—	3/4" x 6'	—	—	—
5327 (1)	5357 (1)	7557(1)	—	3/4" x 7'	—	—	—
5328 (1)	5358 (1)	7558	—	3/4" x 8'	—	—	—
—	5359 (1)	7559	—	3/4" x 9'	—	400260998	400261038
—	5360	—	—	3/4" x 10'	—	—	—
5338 (1)	5368 (1)	7568	—	1" x 8'	—	—	—
—	5369	—	—	1" x 9'	—	—	—
5340 (1)	5370 (1)	7570	6440	1" x 10'	—	400261004	400261046
—	—	C2000028	—	1-1/4" x 8'	—	—	—
—	15129	7574	—	1-1/4" x 10'	—	400261012	400261053

(1) IEEE standard.

Tensile Strength (1)

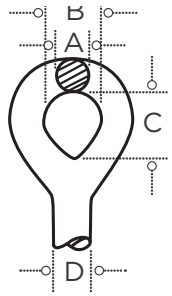
Rod Size inches	Strength lb	Nut Part Number
1/2	10,000	55058P
5/8	16,000	55006P
3/4	23,000	55312P
1	36,000	55320P
1-1/4	58,000	56001P

(1) Ultimate strength ratings apply to properly installed anchors only. Failure to install within 5° of alignment with the guy load will significantly lower strength.

Galvanized Anchor Rods (continued)

Ovaleye Adapter

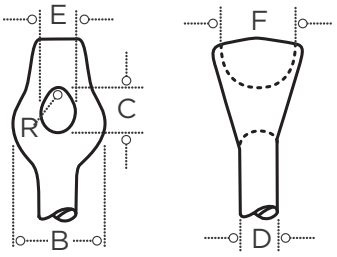
D Inches	A Inches	B Inches	C Inches
5/8	9/16	1-1/2	2
1	7/8	1-1/2	2

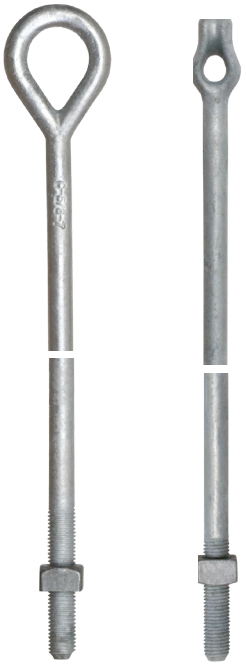


Thimbleye Adapter

D Inches	R (1) Inches	B Inches	C Inches	E Inches	F Inches
1/2	3/16	1-1/4	9/16	1/2	1-1/4
5/8	1/4	1-1/2	11/16	9/16	1-3/8
3/4	9/32	1-5/8	13/16	11/16	1-1/2
1	13/32	2-1/16	1-1/8	15/16	1-5/8

(1) 2 x R or 2 x R1 = maximum-diameter guy strand.



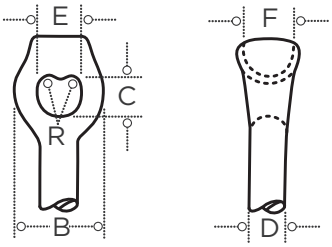


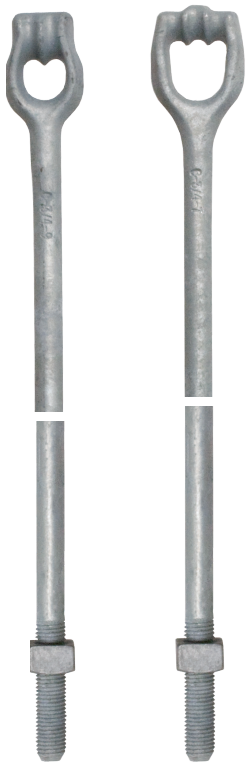
Ovaleye Thimbleye

Twineye Adapter

D Inches	R (1) Inches	B Inches	C Inches	E Inches	F Inches
5/8	7/32	1-3/4	7/8	1-5/16	1-1/4
3/4	1/4	2	1	1-1/16	1-3/8
1	5/16	2-5/8	1-3/16	1-5/16	1-1/2
1-1/4	3/8	21-5/16	1-1/4	1-9/16	1-5/8

(1) 2 x R or 2 x R1 = maximum-diameter guy strand.



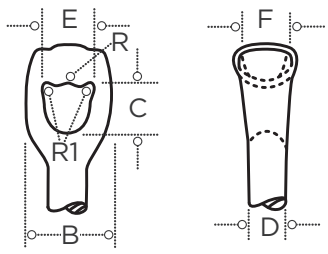


Twineye Tripleye

Tripleye Adapter

D Inches	R (1) Inches	R1 (2) Inches	B Inches	C Inches	E Inches	F Inches
3/4	1/4	7/32	2-1/2	1-11/16	1-1/2	1-1/4
1	1/4	1/4	2-9/16	1-11/16	1-5/8	1-1/2
1-1/4	9/32	1/4	2-7/8	1-11/16	1-11/16	1-5/8

(1) 2 x R or 2 x R1 = maximum-diameter guy strand.



Expanding Rock Anchors

Saves Time, Labor and Money.

The CHANCE® Expanding Rock Anchor saves time, labor, and money, because in most cases, there is no need to mix concrete, melt lead or carry extra bulky equipment to the job. Generally, the cost of installing the Expanding Rock Anchor is about 35% less than the old-fashioned grouting method.

Expands and Wedges.

This anchor expands and wedges against solid walls of rock. And once it is expanded, the harder the pull on the rod, the tighter it wedges. Wedges are made of malleable or ductile iron with a rust-resistant coating. Rod should be in line with the guy.

1, 2 or 3 Guy Strands.

The large drop-forged Tripleye® rod of high-test steel holds up to three guy strands. The contour of the eye grooves keeps the guy strands from spreading, kinking and bending. And it allows slack to be pulled up without binding, damaging or weakening the guy.

Catalog Number	Rod Dia Inches	Rod Length Inches	Anchor Size Inches	Anchor Fully Expanded	Hole Size Inches	Approx Wt Per 100	Number in Bundle
R315	3/4	15	1-3/4	2-3/8	2	500	5
R330	3/4	30	1-3/4	2-3/8	2	700	5
R353	3/4	53	1-3/4	2-3/8	2	960	5
R360	3/4	60	1-3/4	2-3/8	2	1,040	5
R372	3/4	72	1-3/4	2-3/8	2	1,200	4
R384	3/4	84	1-3/4	2-3/8	2	1,300	4
R396	3/4	96	1-3/4	2-3/8	2	1,460	3
R130L	1	30	2-1/4	3-1/8	2-1/2	1,166	3
R153L	1	53	2-1/4	3-1/8	2-1/2	1,833	3
R172L	1	72	2-1/4	3-1/8	2-1/2	2,133	2
R196L	1	96	2-1/4	3-1/8	2-1/2	2,666	2

NOTE: 3/4" rod minimum ultimate strength of 23,000 pounds.

1" rod minimum ultimate strength of 36,000 pounds. Ultimate strength ratings apply to properly installed anchors only. Failure to install within 5° of alignment with the guy load will significantly lower strength. Recommended minimum installation depth is 12" in solid rock. Rods and wedges are hot-dip galvanized.

Open **Closed**

Extendable Rock Anchor

The CHANCE® Extendable Rock Anchor uses standard PISA® couplings and rods to install the rock anchor at depths greater than standard Expandable Rock Anchors (96"). For rods, couplings and eyenuts, see pages 8-9. Hot-dip galvanized.

Catalog Number	Rod Diameter Inches	Rod Length Inches	Standard Pkg/Pallet
R84LE	1	84	2/50

Expanding Rock Anchors (continued)

Socket Style Rock Anchor

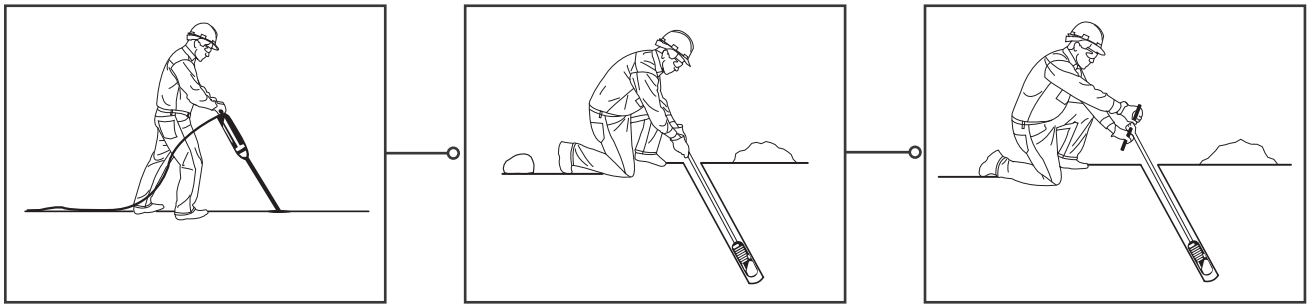
New Style Rock Anchor For Guying AApplications

- Socket makes 360 degrees of contct with rock
- Socket will tighten s load increases
- Spin socket by hand to adjust to hole size before installation
- After anchor is installed, finish tightening by applying torque through rod
- Max tension rting
- 3/4 rod = 23,000 lbs
- 1″ rod = 36,000 lbs
- Steel rod and ductille iron socket
- Galvnized per ASTM A-153

Hubbell SKU	Rod Diameter	Rod Length	Hole Size Required
R315H	3/4″	15″	2″
R330H	3/4″	30″	2″
R353H	3/4″	53″	2″
R360H	3/4″	60″	2″
R372H	3/4″	72″	2″
R384H	3/4″	84″	2″
R396H	3/4″	96″	2″
R130LH	1″	30″	2.5″
R153LH	1″	53″	2.5″
R172LH	1″	72″	2.5″
R196LH	1″	96″	2.5″

Installation is quick and simple.

- Bore the hole with hand or power drill, making sure that the diameter of the hole is 1/4-inch larger than the diameter of the unexpanded anchor.
- Drop the anchor in the hole. Put a bar through the large eye of the anchor rod.
- Turn the rod until the anchor is firmly expanded against the sides of the hole. Grouting should be done if protection of the rock against weathering is a concern.
- This wedging force holds the anchor securely in place to stay.



Grouted Rock Anchors

The CHANCE® Grouted Rock Anchor is designed to be used in situations where the soil is too rocky to use screw anchors, but the rock is fractured preventing the use of wedge style rock anchors. The forged knob on the end of the anchor along with any extension couplings provides the interference fit with the grout. The holding capacity of the anchor is dependent on the bond stress between the rock and the grout. The Grouted Rock Anchor is designed to be used inline with the guy. Failure to install within 5° of alignment with the guy load will significantly lower strength.

Installing a Grouted Rock Anchor requires first drilling a 6" diameter hole. Then insert the anchor, assembled with any Round Rod Extensions and Guy Adapter needed.
Portland Cement grout pumped in to completely fill the hole around the anchor takes approximately 5 days to cure.

Grouted Rock Anchor – 1-1/4" Diameter Rod

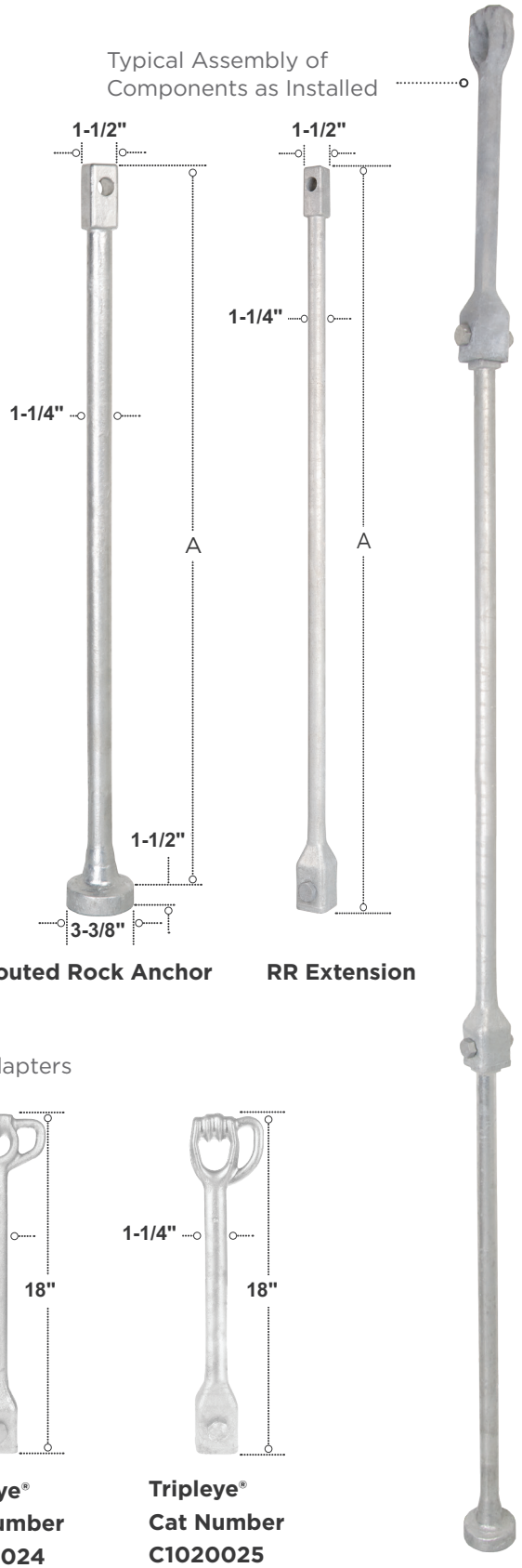
Catalog Number	Length A Inches	Approx Ship Wt Each lb	Standard Pkg/Pallet
W1040004	36	17.6	1/40
W1040055	84	38.0	1/30

Round Rod Extension – 1-1/4" Diameter Rod

Catalog Number	Length A Inches	Approx Ship Wt Each lb	Standard Pkg/Pallet
12696	42	17.6	1/50
12697	60	38.0	1/50
12698	84	24.0	1/30
12699	120	46.8	1/50

NOTE: Galvanized per ASTM A-153. SS5 and SS150 extensions can be used in place of the RR extensions listed above.

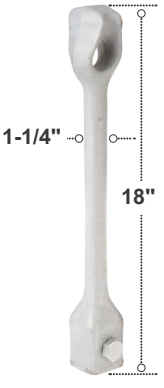
Typical Assembly of Components as Installed



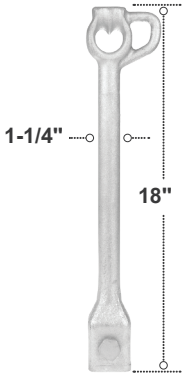
Grouted Rock Anchor

RR Extension

Guy Adapters



Thimbleye®
Cat Number
C1020023



Twineye®
Cat Number
C1020024

Tripleye®
Cat Number
C1020025

Grouted Rock Anchors (continued)

Application Table for Catalog Numbers W1040004 and W1040055

Rock	Ultimate Bond Stress Between Rock & Grout psi (1) (2) (3)	Allowable Load Capacity for 6" Dia x 1' Long Grout Column lb/ft of Length (4)
Granite Basalt Dolomitic Limestone	200	15,000
Soft Limestone Slates & Hard Shales Sandstones	100	7,500
Soft Shales	30	1,800
Soil(5) Class 5	8	600

1. Ultimate bond stress values from the PTI (Post Tensioning Institute) and the grout to ground bond values from the FHWA (Federal Highway Administration) were used to arrive at the indicated ultimate bond stress between rock and grout used in the above chart.

2. Identification of the rock and application of the chart values is the responsibility of those designing the rock anchor.

3. The values in the chart are intended to provide conservative results.

4. Higher bond stress values may be obtainable, but the associated investigation to determine appropriate values and the use of those values is left to those designing the rock anchor.

5. The given ultimate stresses were applied over the surface of a 6" diameter x 1' long grout column, then divided by 3 to obtain the recommended allowed load per foot of length in the indicated rock or soil.

6. Actual capacities will depend on the strength of the rock, the grout strength and the quality of the installation.

7. A rough surface in the drilled hole is preferred as well as a clean hole free of loose material, soil, dust, etc.

8. A 6" diameter hole is recommended for the use of the W1040004 and W1040055 rock anchors.

9. The minimum bond length of the rock anchor to be engaging the rock is 5 feet.

10. It is recommended that field testing be accomplished to confirm capacities.

11. Anchor grout is to be made using Type I, II, III, or V Portland Cement conforming to ASTM C-150 specifications. Pre-packaged blended mixes per ASTM C-595 are also acceptable.

12. The compressive strength of the grout shall be a minimum 3000 psi at the time of stressing.

13. The grout should be flowable to reach the bottom of the drilled hole or pumpable if it is to be placed via a grout pump.

14. The ultimate mechanical strength of the W1040004 and W1040055 rock anchors and associated extensions and terminations is 70,000 lbs when Chance/Hubbell anchor components are used.

15. Water used in the grout mix should be potable (suitable for public consumption), clean and free of substances known to be harmful to portland cement or steel.

16. It is recommended that grout be placed in the hole prior to inserting the rock anchor.

17. When using pre-packaged grout mixes follow directions and use the water cement ratio recommended by manufacturer.

18. For recommendations concerning bonded lengths and unbonded lengths, reference the PTI specifications.

19. The rock anchor is to be installed in line with the guywire. Any misalignment is to be no more than ± 5 degrees

NOTE:

- *The given ultimate stresses were applied over the surface of a 6" diameter x 1' long grout column, then divided by 3 to obtain the recommended allowed load per foot of length in the indicated rock or soil.*
- *Actual capacities will depend on the strength of the rock, grout strength and quality of the installation.*
- *A rough surface in the drilled hole is preferred as well as a clean hole free of loose material, soil, dust, etc.*
- *A 6" diameter hole is recommended for the use of the W1040004 and W1040055 rock anchors.*
- *The minimum bond length of the rock anchor to be engaging the rock is 5 feet.*
- *It is recommended that field testing be accomplished to confirm capacities. Anchor grout is to be made using Type I, II, III, or V Portland Cement conforming to ASTM C-150 specifications or pre-packaged blended mixes per ASTM C-595.*
- *The compressive strength of the grout shall be a minimum of 3000 psi at the time of stressing.*
- *Grout should be flowable to reach the bottom of the drilled hole or pumpable if it is to be placed via a grout pump.*
- *The ultimate mechanical strength of the W1040004 and W1040055 rock anchors and associated extensions and terminations is 70,000 lb when CHANCE/Hubbell anchor components are used.*
- *Water used in the grout mix should be potable (suitable for public consumption), clean and free of substances known to be harmful to Portland Cement or Steel.*
- *It is recommended that grout be placed in the hole prior to inserting the rock anchor.*
- *When using pre-packaged grout mixes, follow the directions and use the water cement ratio recommended by the manufacturer.*
- *The rock anchor is to be installed in line with the guy wire. Any misalignment is to be no more than ± 5 degrees.*

Expanding Pole Key Anchor

Closed

Quicker Installing, More Efficient Than Wood Key

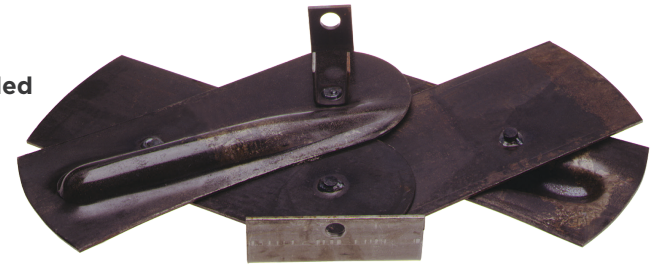
The CHANCE Pole Key can be used to reinforce poles in soft soils where the load is unbalanced and the pole must resist the load. However, it is recommended that Pole Keys only be used where a proper guy wire and guy anchor cannot be used, since a guy and anchor will generally provide more resistance to lateral movement. The Pole Keys will not withstand the same load, or perform as well a proper guy and anchor.

The CHANCE Pole Key can be installed next to the distribution pole butt to help hold it in place against light overturning loads such as service drops, prevailing winds or small line angles.

The additional lateral load and resulting overturning moment which can be resisted by Pole Keys depends on the height of the load, the locations of the Pole Keys, the allowable lateral deflection of the pole at ground line and the quality of the installation.

The % capacity increase shown in the table is based on analyses that used 2" lateral deflection at the ground line as the upper capacity limit.

Expanded



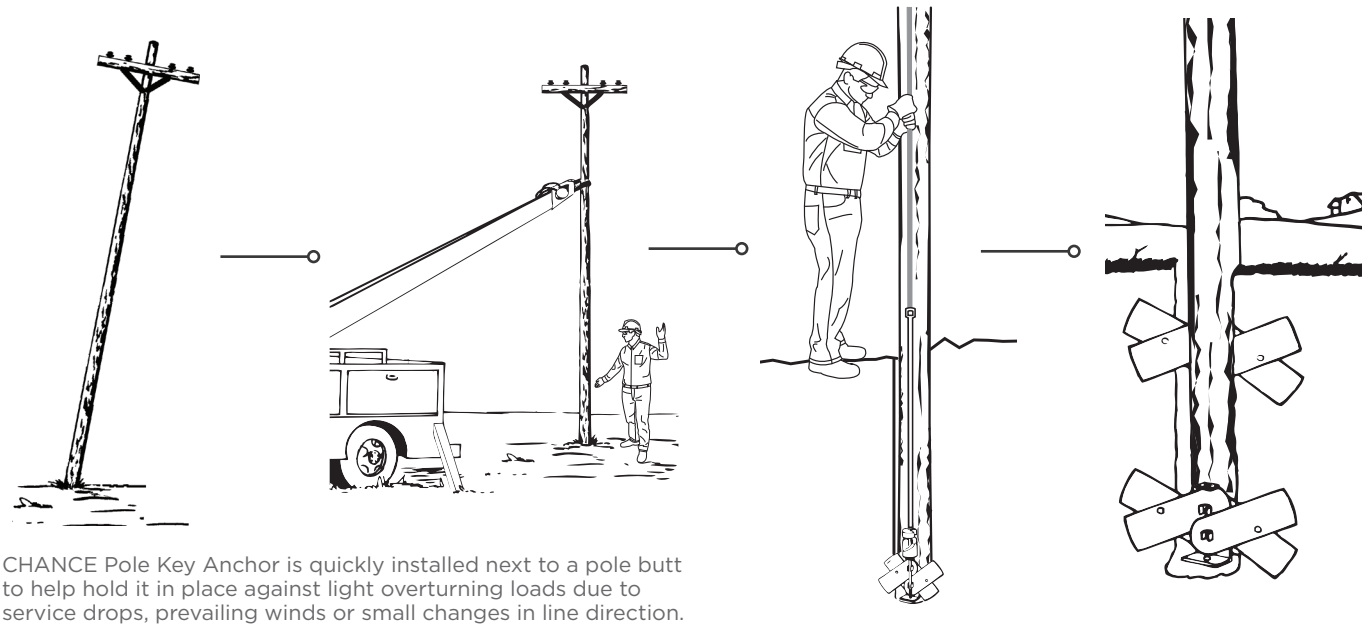
Application and Ordering Information

Catalog Number	Width Expanded Inches	Blade Width Inches	Area Expanded sq in	Approx Weight lb
P4817 (2)	27-1/4	7	276	24-1/2

(1) The lateral load and overturning moment, which can be resisted, depends on the height of the load above ground level, the depths of the two opposing pole keys, and the allowable lateral deflection of the pole at ground line.

(2) RUS accepted. Accommodates any 3/4" diameter rod on page 19.

Pole Height and Class	% Capacity Increase by adding two Pole Keys
35′ Cl 5	30
40′ Cl 4	24
60′ Cl 3	13



CHANCE Pole Key Anchor is quickly installed next to a pole butt to help hold it in place against light overturning loads due to service drops, prevailing winds or small changes in line direction.

Corrosion-Resistant Anchor

CHANCE® Design Offers Many Advantages.

The CHANCE Corrosion-Resistant Disc Anchor is designed for low resistivity, alkaline and acidic soils with electrolyte combinations. The anchor eye is forged directly to the rod, so the eye is an integral part of the anchor. The anchor's flanged cap nut is cast. It's large and heavy for greater protection. The heat-shrink sleeve over the galvanized anchor rod helps prevent moisture from going down the rod. The insulating washer is fiberglass-reinforced thermoset material for better load-bearing properties compared to thermoform materials.

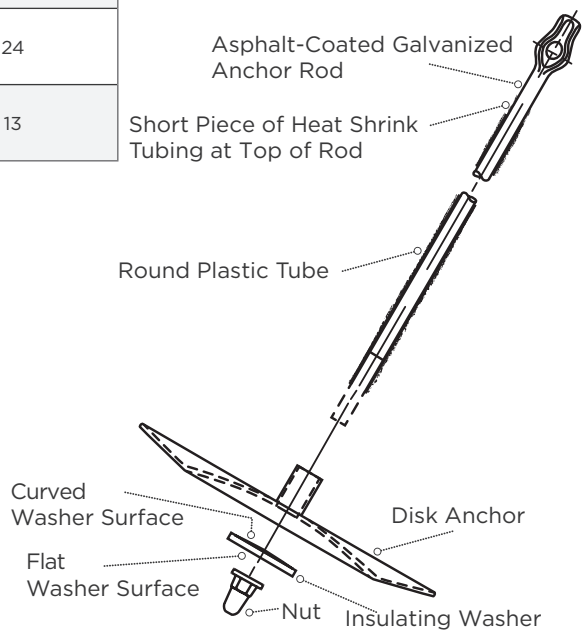
Corrosion-Resistant Anchor

Catalog Number	Description	Hole Size Inches	Fits Protected Rod Size Inches	Holding Capacity (1) – lb (No Safety Factors Included) vs Soil Class				
				Class 3 500-600 in-lb	Class 4 400-500 in-lb	Class 5 300-400 in-lb	Class 6 200-300 in-lb	Class 7 100-200 in-lb
C1022008	16″ Anchor .187″ Thick	16	3/4	31,000 (1)	26,500 (1)	21,000	16,500	12,000
C1022009	16″ Anchor .187″ Thick	16	1	31,000 (1)	26,500	21,000	16,500	12,000
C1022011	20″ Anchor .187″ Thick	20	1	40,000 (1)	34,000	26,000	21,500	16,000
C1022012	20″ Anchor .250″ Thick	20	1	40,000 (1)	34,000	26,000	21,500	16,000
C1022054	24″ Anchor .187″ Thick	24	1	50,000 (1)	41,000 (1)	33,500	26,000	20,000
C1022050	24″ Anchor .250″ Thick	24	1	50,000 (1)	41,000 (1)	33,500	26,000	20,000
C1022381	30″ Anchor .375″ Thick	30	1-1/4	78,100	64,000	52,300	40,600	31,200

NOTE: Capacity ratings apply to properly installed anchors only. Failure to install within 5° of alignment with the guy load will significantly lower strength.

(1) Ultimate strength of rod may limit holding capacity.

Pole Height and Class	% Capacity Increase by adding two Pole Keys
35′ Cl 5	30
40′ Cl 4	24
60′ Cl 3	13



Corrosion-Resistant Anchor (continued)

Fiber-Reinforced Washer

Catalog Number	Fits Rod Size Inches	Approx Wt lb Per 100 Pcs
C2100033	3/4	23
C2100034	1	19
C2100050	1-1/4	30

Cap Nut

Catalog Number	Fits Rod Size Inches	Approx Wt lb Per 100 Pcs
C2050407	3/4	242
C2050408	1	242
C2050590	1-1/4	300

These rods include fiber-reinforced washer and heavy-forged cap nut. Nut and washer is attached to rod.

Galvanized rod meets NEMA specification PH2 and has a paint coating, polyethylene tube and heat shrink collar. For additional sizes of rods, contact Hubbell Power Systems, Inc.

Protected Rod for Corrosion-Resistant Anchor

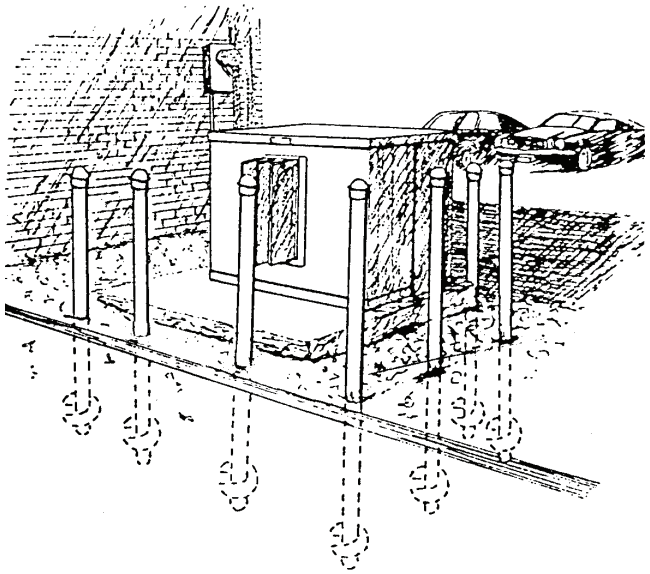
Rod Size	Rod Tensile Strength lb	Thimbleye® Adapter		Twineye® Adapter		Tripleye® Adapter	
		Catalog Number	Lb Per 100 Pcs	Catalog Number	Lb Per 100 Pcs	Catalog Number	Lb Per 100 Pcs
3/4″ x 6′	23,000	**C2000047**	1,330	**C2000053**	1,362	**C2000106**	—
3/4″ x 7′	23,000	**C2000048**	1,450	**C2000054**	1,470	**—**	1,630
3/4″ x 8′	23,000	**C2000049**	1,566	**C2000055**	1,650	**C2000061**	1,783
3/4″ x 9′	23,000	**—**	—	**C2000056**	1,750	**C2000062**	1,883
3/4″ x 10′	23,000	**C2000050**	1,826	**C2000057**	1,910	**—**	—
1″ x 7′	36,000	**—**	—	**C2000114**	—	**—**	—
1″ x 8′	36,000	**C2000051**	2,500	**C2000108**	—	**C2000063**	2,730
1″ x 9′	36,000	**—**	—	**C2000058**	2,800	**—**	—
1″ x 10′	36,000	**C2000052**	3,005	**C2000059**	3,050	**C2000064**	3,270
1-1/4″ x 15′	58,000			**C2000141**	5,000		
1-1/4″ x 15′	58,000					**C2000140***	7,500

** Two piece rod with coupler.*

Bumper Posts

For Instant Equipment Protection

- Protect transformers, switchgear and guys.
- Any equipment needing bumper protection is an ideal candidate.
- Cheaper than concrete.
- Installation in minutes regardless of weather conditions.
- Available power diggers can install through blacktop surfaces.
- Hot-dip galvanized corrosion-resistant finish



Power-Installed Design

C3030739

C3030737

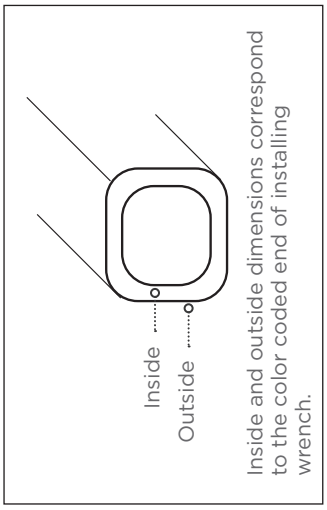
Installing Tools

- Additional tools may not be required for Bumper Post if Kelly Bar can be inserted into the 3.06″ inside diameter of the post and pinned by a Bent Arm Pin.
- Tools are available which bolt directly to CHANCE® Kelly Bar Adapters or which can be used with CHANCE Locking Dog Assembly.
- Order catalog number C3030737 for Kelly Bar attachment or C3030739 for use with Locking Dog Assembly. Bumper Post is inserted into the drive tool and held by the provided Bent Arm Pin.

8,000 ft-lb Typical Working Torque

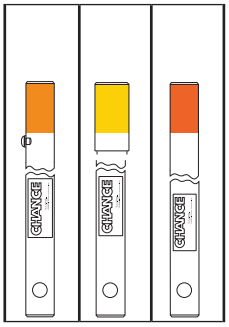
Catalog Number	Standard Pkg/Pallet	Weight Each lb	Description
T1120192	1/12	45	8″ Helix, 3-1/2″ O.D. x 60″ Shaft
T1120224	1/12	53	8″ Helix, 3-1/2″ O.D. x 75″ Shaft
C1120275	1/12	61	8″ Helix, 3-1/2″ O.D. x 84″ Shaft

How to Match Anchors and Installing Wrenches



Inside and outside dimensions correspond to the color coded end of installing wrench.

Installing Wrench Catalog Number	Length ft	Maximum Installing Torque Rating ft-lb	Outside Dimension Inches	Inside Dimension Inches
C1021583[1]	7	10,000	2.16	1.46
C1021595[1]	3-1/2	10,000	2.16	1.46
C3031064[1]	7	10,000	Top Bot. 2.16 2.44	Top Bot. 1.46 1.54
C3031063[1]	3-1/2	10,000	Top Bot. 2.16 2.44	Top Bot. 1.46 1.54
C3030983[2]	7	15,000	2.44	1.54
C3030982[2]	3-1/2	15,000	2.44	1.54



C102-50XX Series Tough One® Anchor - Large Hub							10,000	15,000
C102-50XX Series Tough One® Anchor - Large Hub							10,000	10,000
C102-52XX Series Tough One® Anchor - Small Hub							10,000	6,000
Mid-Strength PISA® Anchor							6,000	6,000
PISA® 7 Anchor							7,000	7,000
PISA® 6 Anchor (formerly PISA® 5 Anchor)							6,000	6,000

Maximum Installation Torque Rating ft-lb

(1) Fits Locking Dog Assembly C3030069HD.

(2) Fits Locking Dog Assembly C3030981.

Standard and Hybrid PISA® Anchor Installing Tools

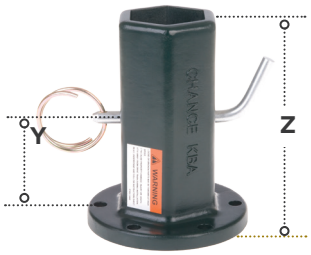
For Installing Torques up to 10,000 ft-lb

A complete tool system consists of: Kelly Bar Adapter, Torque Indicator, Locking Dog Assembly and Drive-End assembly. For instructions for selecting the proper Kelly Bar Adapter, see page 31.

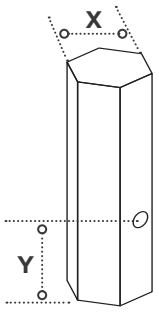
Convertible to Extension Use

Extension assemblies can be added where soil conditions dictate that anchors be set more than one rod length deep or where digger to ground clearances are limited.

Each Standard Kelly Bar Adapter has six holes for 1/2" bolts on a 5-1/4" bolt circle and comes with six 1/2" Grade 5 bolts, nuts, lockwashers and Bent Arm Pin with Coil Lock.



Kelly Bar Adapter



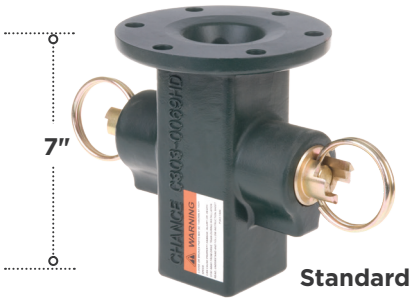
Kelly Bar

Standard Kelly Bar Adaptor with Bent Arm Pin (5" Bolt Circle)

Part Number	Kelly Bar Shape	Kelly Bar Dimension			Wt Each lb
		X	Y	Z	
630013	Hex	2"	5'	6-1/8"	10
630011HD	Hex	2-1/2"	4-1/4"	8-1/8"	18
630012HD	Hex	2-5/8"	4-1/4"	8-1/8"	18
630015	Square	2-1/2"	2-3/4"	7"	13-1/4
630017	Square	2-1/2"	2-1/2"	3-1/2"	9

Bolt, Nut, Lockwasher

Part Number	Description
P0010259P	Hex Bolt
055371P	Lock Washer
055635P	Hex Nut



Standard Locking Dog Assembly C3030069HD

Standard Locking Dog Assembly has six holes for 1/2" bolts on a 5-1/4" bolt circle, comes with six 1/2" Grade 5 bolts, nuts and lockwashers.

Standard Locking Dog Assembly

Catalog Number	Description	Wt Each lb
C3030069HD	Complete Standard Locking Dog Assembly	20
C3030070	Locking Dog replacement Kit includes parts needed to replace both Locking Dogs	4
P1300007P	Replacement ring only	0.10

Standard and Hybrid PISA® Anchor Installing Tools (continued)

For Installing Torques up to 10,000 ft-lb

Transmits Torque to Anchor Core

The wrench transmits the torque from the Kelly Bar of the digger to the hub of the Power-Installed Screw Anchor so that the anchor rod need be only large enough in diameter to support the guy load.

7-ft Drive-End Wrench

Catalog Number	Description	Wt Each lb
C1021583	Standard Drive-End Wrench Installs 10,000 ft-lb (small-hub) Tough One Anchors 6,000 ft-lb Mid-Strength PISA Anchors	57
C3031064 (1) (2)	Hybrid Drive-End Wrench Installs 10,000 ft-lb (large-hub) Tough One Anchors 6,000 ft-lb PISA 6 Anchors 7,000 ft-lb PISA 7 Anchors	64

3-1/2-ft Drive-End Wrench

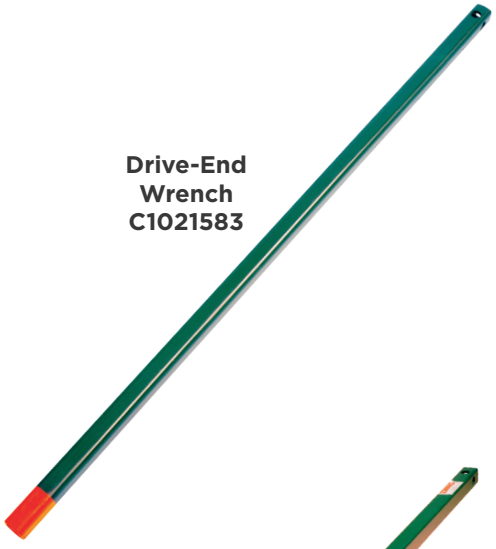
Catalog Number	Description	Wt Each lb
C1021595	Standard Drive-End Wrench Installs 10,000 ft-lb (small-hub) Tough One Anchors 6,000 ft-lb Mid-Strength PISA Anchors	29
C3031063 (1) (2)	HYBRID Drive-End Wrench Installs 10,000 ft-lb (large-hub) Tough One Anchors 6,000 ft-lb PISA 6 Anchors 7,000 ft-lb PISA 7 Anchors	28

Extension Wrench for Standard and Hybrid Drive-End Wrenches

Catalog Number	Description	Wt Each lb
630027	3-1/2 ft Extension	42
630028	7 ft Extension	70

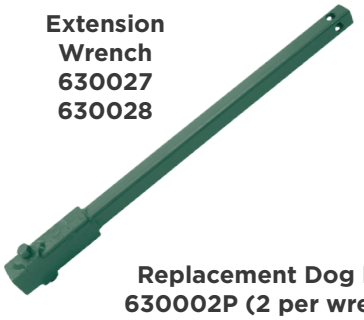
(1) These wrenches will fit 15,000 ft-lb Tough One Anchors dimensionally, but must not be used for torques in excess of 10,000 ft-lb.

(2) The old-style Hybrid wrenches C3031063 and C3031064, having a collar welded around the drive end, fit only PISA 6 and PISA 7 anchors.



Drive-End Wrench C1021583

Drive-End Wrench C3031064



Extension Wrench 630027 630028

Replacement Dog Bolt 630002P (2 per wrench)

Screw Anchor Drive Tool Strings

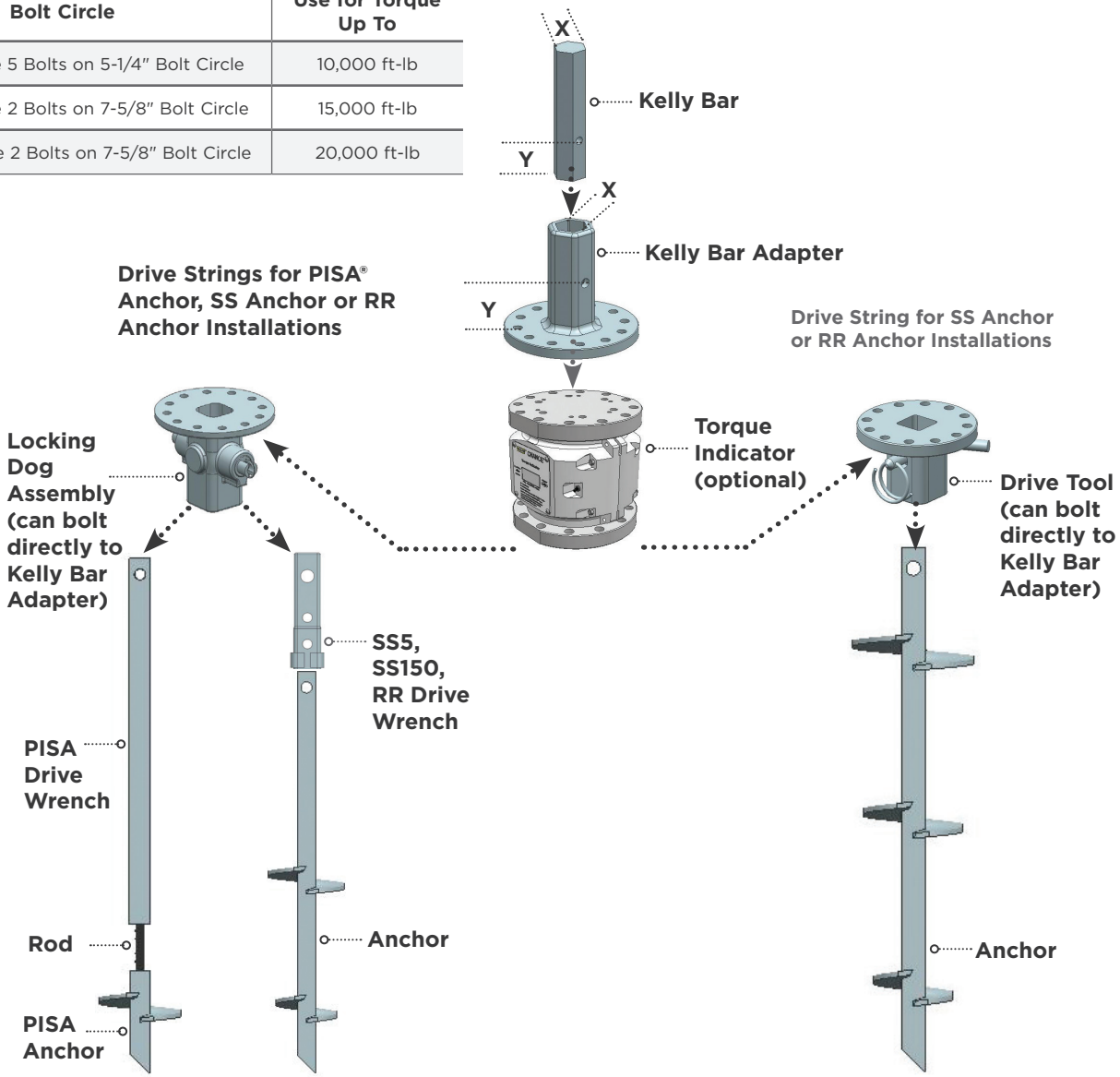
Selecting the correct Kelly Bar Adapter is key to building a successful Drive String. Follow these two easy steps:

1. Remove the auger from the digger and carefully measure the X and Y dimensions of the Kelly Bar.
2. Match the shape of the Kelly Bar and the X and Y dimensions with the Kelly Bar Adapter chart provided on pages 29-30 and 32-33. The Y dimension on the Kelly Bar Adapter must be equal to or greater than the Y dimension on the Kelly Bar itself.

BOLT CIRCLES

CHANCE® anchor installing tools are provided with appropriate bolt circles for the expected service. The torque limitations for the three standard bolt circles are give below. Never exceed the rated torque of any CHANCE installing tool.

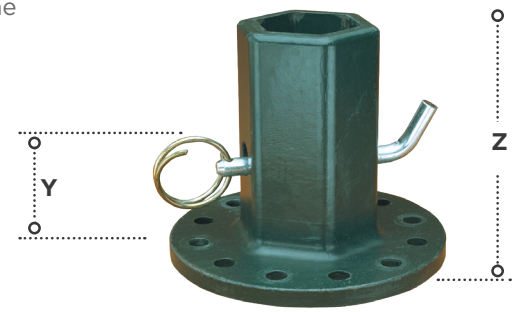
Bolt Circle	Use for Torque Up To
(6) 1/2" Grade 5 Bolts on 5-1/4" Bolt Circle	10,000 ft-lb
(6) 5/8" Grade 2 Bolts on 7-5/8" Bolt Circle	15,000 ft-lb
(12) 5/8" Grade 2 Bolts on 7-5/8" Bolt Circle	20,000 ft-lb



Screw Anchor Drive Tool Strings

For Installing Torques up to 15,000 ft-lb

A complete tool system consists of: Kelly Bar Adapter, Torque Indicator, Locking Dog Assembly and Drive-End Assembly. For instructions for selecting the proper Kelly Bar Adapter, see page 31.



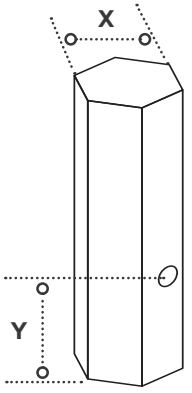
Kelly Bar Adapter

Tough One Kelly Bar Adapter with Bent Arm Pin

(7-5/8" Bolt Circle)

Part Number	Kelly Bar Shape	Kelly Bar Dimensions Inches			Wt lb	5/8" Grade 2 Bolts Included	Bent Arm Pin Included
		X	Y	Z			
C3030936	Hex	2-1/2	3-7/8	8-1/4	23	12	**C3031223**
C3030937	Hex	2-5/8	3-7/8	8-1/4	23	12	**C3031223**
C3030940	Hex	3	4-1/2	8	27	12	**C3031222**
C3030955	Square	2-1/2	4-3/4	7	22	12	**C3031227**
C3030958	Square	3	3-1/2 & 2-1/16	7	23	12	**C3031227**
C3031571	Square	3-1/2	2 & 4	6-11/16	33	12	**C3031227**

NOTE: Each Tough One Kelly Bar Adapter has twelve holes for 5/8" bolts on a 7-5/8" bolt circle, comes with twelve 5/8" Grade 2 bolts, nuts & lockwashers and Bent Arm Pin with Coil Lock.



Kelly Bar

Digital Torque Indicator[1]

Catalog Number	Description	Weight lb
C3031836	Torque Indicator adaptable to 5-1/4" BC or 7-5/8" BC	65

(1) See pages 36-37 for additional information on Torque Indicators.

Torque Indicator

Tough One® Anchor Installing Tools (continued)

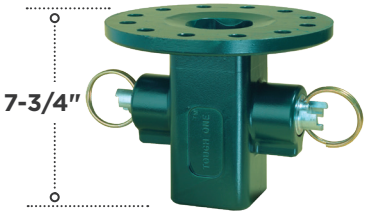
For Installing Torques up to 15,000 ft-lb

Tough One Locking Dog Assembly

Catalog Number	Description	Weight lb
C3030981	Complete Tough One Locking Dog Assembly	28
C3031026	Locking Dog Replacement Kit Includes all parts less casting, bolts, nuts, washers	5

NOTE: Tough One Locking Dog Assembly has twelve holes for 5/8" bolts on a 7-5/8" bolt circle and comes with twelve 5/8" Grade 2 bolts, nuts and lockwashers.

Part Number	Description
056653P	Hex Bolt
055827P	Lock Washer
055803P	Hex Nut



Locking Dog Assembly

Tough One Drive-End Wrenches

Catalog Number	Length ft	Description	Weight lb
C3030982	3-1/2	Installs 15,000 ft-lb (large hub) Tough One anchors, 10,000 ft-lb (large hub) Tough One and all 1-1/2" Core Anchors	36
C3030983	7		73

NOTE: Tough One Drive Ends are painted with a red band on the bottom.

Drive Wrench

Extension Assemblies for Tough One Drive-End Wrenches

Catalog Number	Length ft	Description	Weight lb
C3030987	3-1/2	Extension attaches to drive-end wrench when additional depth is required	53
C3030988	7		89

NOTE: For SS and RR Anchor Tool options when using the Tough One Drive String System, see pages 34-35.

Anchor Installing Tool Bent Arm Pin with Coil Lock

Use with Standard and Tough One® Kelly Bar Adapters, SS, RR and Bumper Post Installing Tools

Each CHANCE® plated-steel Bent Arm Pin is designed to attach a Kelly Bar Adapter to a Kelly Bar, and to secure SS, RR and Bumper Post Anchors to Anchor Drive Tools.

Bent Arm Pins with Coil Locks are included with new tools as required. Order Pins and Coil Locks for existing tools as shown below.

Kelly Bar Adapter	Bent Arm Pin and Coil Lock Assembly
630010(1)	C3031227
630011(1)	C3031223
630011HD	C3031223
630012(1)	C3031223
630012HD	C3031223
630013	C3031223
630013A	C3031223
630014	C3031222
630015	C3031222
630016	C3031227
630017	C3031227
C3030936	C3031223
C3030937	C3031223
C3030940	C3031222
C3030955	C3031227
C3030958	C3031227
C3031571	C3031227

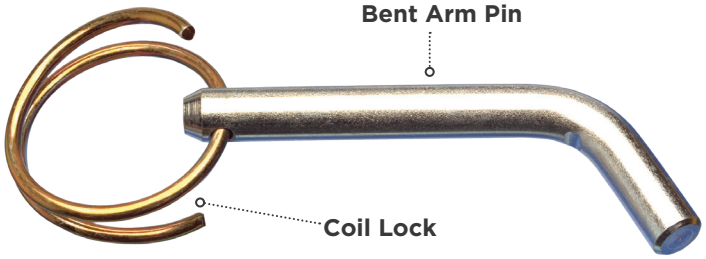
SS/RR Tools	Bent Arm Pin and Coil Lock Assembly
639001	C3031226
C3030195	C3031225
C3030201	C3031224
C3030202	C3031224
C3030020	C3031226

Bumper Post Tools	Bent Arm Pin and Coil Lock Assembly
C3030737	C3031227
C3030739	C3031227

(1) Old-style Kelly Bar Adapters are no longer available.

Bent Arm Pin and Coil Lock Assembly

Catalog Number	Size Inches
C3031226	3 x 5/8
C3031225	3-1/2 x 3/4
C3031224	4-1/2 x 1
C3031227	5 x 3/4
C3031223	4-1/2 x 1/2
C3031222	5 x 5/8



To order Coil Lock only, order Part Number P3031215P.

⚠ WARNING

Always use the approved combination of Coil Locks and Bent Arm Pins. Never attempt to use any other combinations, such as hair pins, cotter keys, etc., with Bent Arm Pins.

⚠ WARNING

CHANCE Bent Arm Pins with Coil Locks are the only tested and approved means for through-pin attachment of drive tools. Do not attempt to use any other means of attachment.

For Torques up to 10,000 ft-lb

Bolt circle adapters

These adapters are used to connect two tools having incompatable bolt circles. The C3030115 is for use between two tools having tapped 5-1/4" bolt circles. The T3030166 is for use between a tool having a 5-1/4" bolt circle and one having a 7-5/8" bolt circle. Both are limited to 10,000 ft-lb.

Catalog Number	Description	Weight lb
C3030115	Bolt Circle Adapter with two 1/2" x 5-1/4" bolt circles	11
T3030166	Bolt Circle Adapter with one 1/2" x 5-1/4" bolt circle and one 5/8" x 7-5/8" bolt circle	18

C3030115

T3030166

For Installing SS or RR Anchors

These Drive Tools require the appropriate Kelly Bar Adapter. Each comes with bolts, nuts and lockwashers.

Catalog Number	Description	Bolt Circle	Approx Wt lb
639001	SS5/SS150/RR Drive Tool	(6) 1/2" holes on 5-1/4" BC	7
C3030195[1]	SS175 Drive Tool	(12) 5/8" holes on 7-5/8" BC	18
C3030201[1]	SS200 Drive Tool	(12) 5/8" holes on 7-5/8" BC	30
C3030202[1]	SS225 Drive Tool	(12) 5/8" holes on 7-5/8" BC	30

(1) Requires use of T3030166 adapter, and limited to 10,000 ft-lb when used with Standard Kelly Bar Adapter (with a 5-1/4" bolt circle).

639001

C3030020

Catalog Number	Description	Unit Fits	Approx Wt lb
C3030020	SS5/SS150/RR Drive Tool	Standard Locking Dog Assembly	8
C3031035	SS5/SS150/RR Drive Tool	Tough One® Locking Dog Assembly	11
T3031403	SS175 Drive Tool	Tough One Locking Dog Assembly	26
C3031077	SS200 Drive Tool	Tough One Locking Dog Assembly	23

NOTE: These tools slide into Locking Dog Adapter and are retained by spring loaded dogs.

Catalog Number	Description	Bolt Circle	Approx Wt lb
C3031650	SS5/SS150 Drive Tool with Locking Dogs	(6) 1/2" holes on 5-1/4" BC	10
C3031645	SS175 Drive Tool with Locking Dogs	(12) 5/8" holes on 7-5/8" BC	21

C3031650

CHANCE® Torque Indicators

For Installing No-Wrench Anchor and Manual Foundation Tool

Designed for use with the CHANCE® Portable Anchor Installer. This tool bolts directly to the installer's output flange or Kelly Bar Adapter having six 1/2" diameter holes on a 5-1/4" bolt circle. Adjustable pivoting plates accept rods from 3/4" to 1-1/4" diameter.

For manually-installed foundations, eyenut must be temporarily installed for installation. Has four holes on 5-1/4" bolt circle for attachment. Includes four 1/2" x 1-1/2" bolts, nuts and lockwashers.

E3030255

Catalog Number	Weight lb
E3030255	9

Shear Pin Torque Limiter
Catalog Number C3030044 for Installing Torques up to 10,000 ft-lb

- Protection for anchors and installing tools by disconnecting the power when the installing torque reaches a preselected level.
- Useable in very rocky soil.
- Durable – does not require special storage or handling.
- Top and bottom each has six holes tapped 1/2"-13 on a 5-1/4" bolt circle.

C3030044

Catalog Number	Description	Wt lb
C3030044	Shear Pin Torque Indicator	54
C3030045(1)	One Carton of Shear Pins (approx 1700 pins)	50
T3031420(1)	One Box of Shear Pins (approx 510 pins)	15

(1) Each Shear Pin provides 500 ft-lb of torque.

C3030045

Digital torque indicator

Catalog Number C3031836
Avoid excessive torsional loading

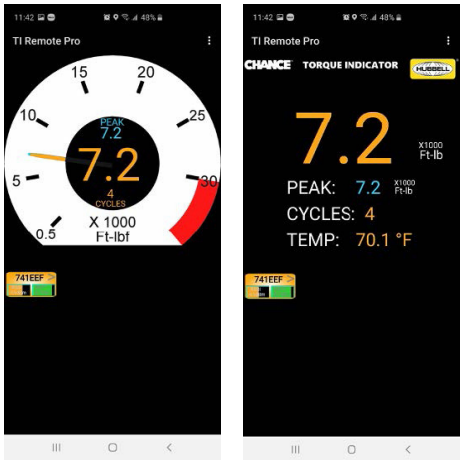
Using the wireless CHANCE® Torque Indicator, you can install screw anchors to a pre-determined torque value, which gives a positive indication of anchor holding capacity in any soil type.

The Indicator mounts between the Kelly bar adapter and drive tool (or locking dog assembly). The LCD display is easy to read in full daylight and gives the operator a direct readout of installation torque at all times.

Base Unit

Features & Benefits

- Measuring torque is the most accurate way to determine the capacity of helical piles and anchors
- Torque is displayed on Base Unit and transmitted via Bluetooth® to Android and iOS phones and smart devices
- Multiple Bluetooth display devices can be linked to Base Unit
- Download free Torque Indicator Remote Pro app from Apple App Store or Google Play Store
- Torque Indicator Remote Pro app allows torque readings to be sent via email to be downloaded
- Certificate of Calibration supplied with each new unit in case
- Operational temperature range: -30° to 70°C (-22° to 158° F)
- Measures torque up to 30,000 ft-lb
- Accuracy: ±500ft-lb at any reading
- Torque is measured using strain gauges mounted inside the Base Unit.
- No shear pins to replace
- Powered by two standard 9V batteries
- Solid one-piece spool design to withstand most bending loads.
- Top and bottom flange, each provides six holes tapped 1/2"- 13 on a 5-1/4" bolt circle and twelve holes tapped 5/8"- 11 on a 7-5/8" bolt circle.
- Supplied with Twelve (12) 1/2 - 13 UNC - 2A bolts, 1-3/4" long, grade 5, with lock washers and Twenty-four (24) 5/8 - 11 UNC - 2A bolts, 2" long, grade 5, with lock washers.



Digital Display

Catalog Number	Description
C3031836	Torque Indicator Base Unit

Soil Test Probe

Determine Soil Conditions Without Taking Core Samples

The CHANCE® Soil Test Probe is a mechanical instrument which enables the operator to determine the condition of the sub-soil without core samples. A ratchet-handle torque wrench which slides up and down on the shaft is used to install or retract the probe. Torque wrench readings, in inch-pounds, provide a way to measure the consistency of the sub-soil. The torque values obtained are translated into soil classifications using the copyrighted CHANCE Soil Classification Table (below) located on the inside flap of the carrying case.

Torque readings are taken at the depth to which an anchor is to be installed, and at least 2 feet above this depth because the average earth consistency 2 to 3 feet above the anchor determines the anchor holding capacity. The probe shaft is marked at 1-foot intervals permitting soil evaluation at every foot of depth.

The length of the Soil Test Probe (including helix) is 5 feet. Each shaft coupled to the probe provides an additional 5 feet. A durable carrying case protects the equipment when not in use.

Soil Test Probe 1800 In-lb Capacity

Catalog Number	Description	Length ft	Weight lb
C3090032	Probe with 3 5-ft Extensions	20	27-1/2

Accessories

Catalog Number	Description	Weight lb
C3090033	5-ft Extension Only	3

Soil Classification Data

Class	Common Soil-Type Description	Geological Soil Classification	Probe Values ft-lb (nm)	Typical Blow Count "N" per ASTM-D1586
—	Sound hard rock, unweathered (bedrock)	Granite, Basalt, Massive Limestone	—	—
1	Very dense and/or cemented sands: coarse gravel and cobbles	Caliche (Nitrate-bearing gravel/rock)	over 60 (85 - 181)	60 - 100+
2	Dense fine sands; very hard silts and clays (may be preloaded)	Basal till; boulder clay; caliche; weathered laminated rock	over 50 (68 - 85)	45 - 60
3	Dense sands and gravel; hard silts and clays	Glacial till; weathered shales, schist, gneiss and siltstone	42 - 50 (56 - 68)	35 - 50
4	Medium dense sand and gravel; very stiff to hard silts and clays	Glacial till; hardpan; marls	33 - 42 (45 - 56)	24 - 40
5	Medium dense coarse sands and sandy gravels; stiff to very hard silts and clays	Saprolites, residual soils	25 - 33 (34 - 45)	14 - 25
6	Loose to medium dense fine to coarse sands to stiff clays and silts	Dense hydraulic fill; compacted fill; residual soils	17 - 25 (23 - 34)	7 - 14
7 (1)	Loose fine sands; Alluvium; loess; medium to stiff and varied clays; fills	Flood plain soils; lake clays; adobe; gumbo, fill	8 - 17 (11 - 23)	4 - 8
8 (1)	Peat, organic silts; inundated silts; fly ash; very loose sands; very soft to soft clays	Miscellaneous fill, swamp marsh	under 8 (0 - 11)	0 - 5

NOTE: Class 1 soils are difficult to probe consistently and the ASTM blow count may be of questionable value.

(1) It is advisable to install anchors deep enough, by the use of extensions, to penetrate a Class 5 or 6, underlying the Class 7 or 8 Soils.

Expanding & Tamping Bar

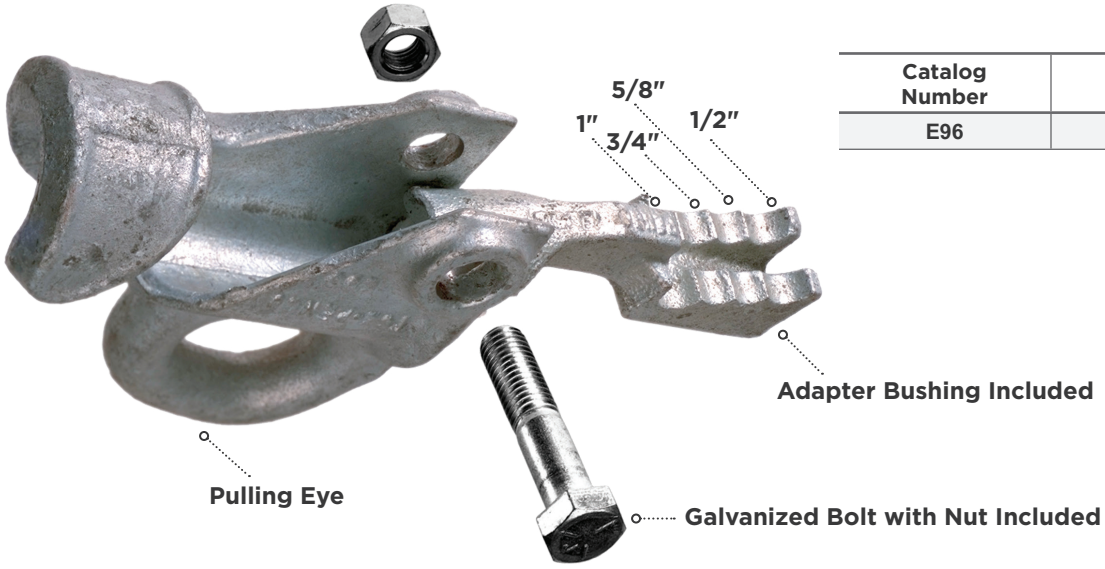
The CHANCE® fiberglass handle Expanding and Tamping Bar simplifies the job of expanding anchors. The curved expander and tamper head distributes the weight of the bar evenly around the anchor rod to reduce handle vibration. The hook of the Expanding and Tamping Bar wraps around the anchor rod to keep the expanding head from slipping off the anchor top plate. This tool is also effectively used for tamping in soil above the installed anchor. The base casting is attached directly to the fiberglass handle.

Catalog Number	Description	Length ft	Weight lb
C3020003	Expanding & Tamping Bar	10	22
C3020004	Expanding & Tamping Bar	12	24
E3020001P (1)	Fiberglass Handle	10	7
E3020006P (1)	Fiberglass Handle	12	8
P3020002P	Expander and Tamper Head	—	14

(1) Includes plug mix to reset handle.

Standard Pulling Eye

This inexpensive cost-cutter provides a large offset eye to accommodate three-ton chain hoist hooks, and leaves the anchor eye free with plenty of clearances for attaching formed wire grips. By removing the adapter bushing, the E96 Pulling Eye fits 1-1/4" rods. The E96 Pulling Eye is inexpensive and easy to use. One person can assemble and hook up in minutes. For working loads to approximately 6,000 pounds (ultimate strength – 18,000 pounds).



Catalog Number	Weight lb
E96	5

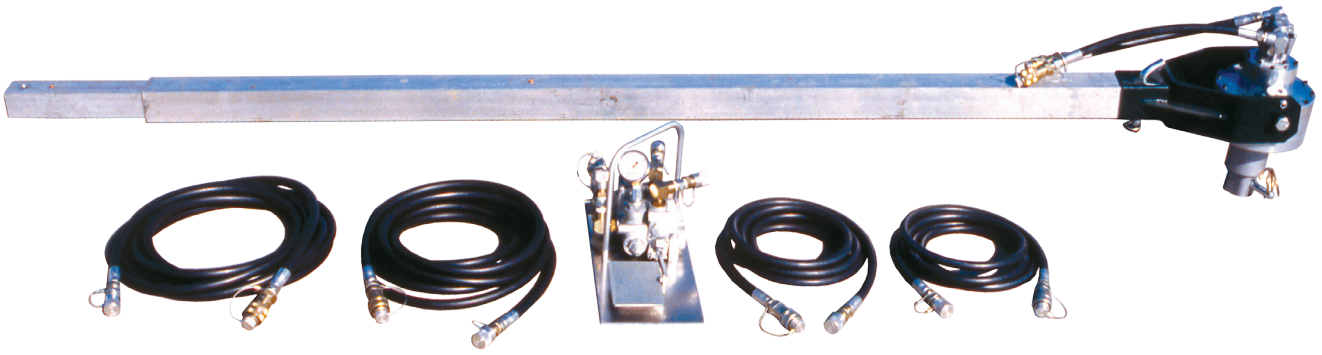
Portable Anchor Installers for Small Foundations

2,500 ft-lb Torque Capacity Hydraulic Power Drive

Economical Manual Operation and Portability for Remote Sites, Common Anchor Installations.

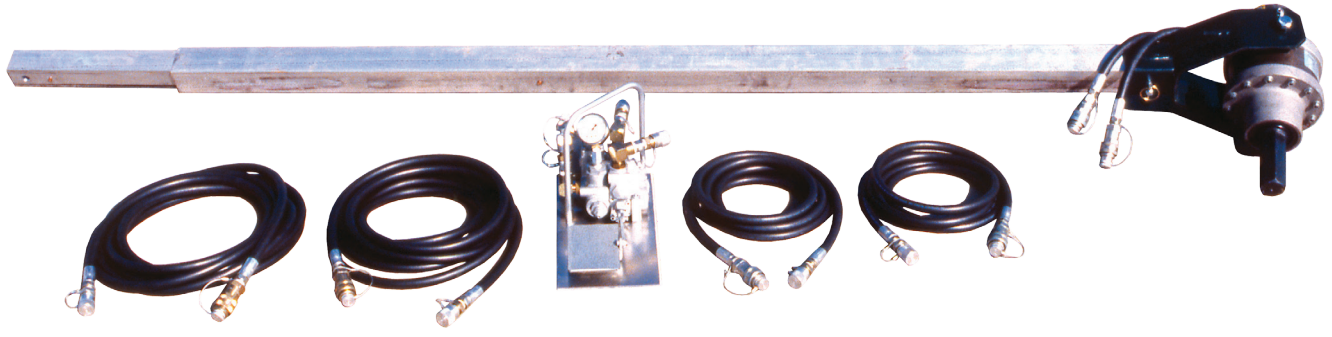
For most shaft-driven guy anchors and smaller screw foundations, these compact drivers get into areas where large equipment cannot go or is impractical. Operator does not need to resist the torque generated by anchor installation. Countertorque transmits through a torque bar from the drive head to the earth or other restraint. This frees the operator for the task of guiding the anchor path.

- Built-in bypass valve limits output to 2,500 ft-lb maximum.
- Two-way foot pedal gives operator direct control over drive and reverse directions.
- Hoses (two 12-ft and two 25-ft) come with quick couplers for all connections from power supply to foot control to drive head.
- Pivoting drive-head yoke connects with Bent Arm Pin to square-tubular torque bar which telescopes from 8 feet to 10 feet as needed.



Catalog Number **C3031032**

Medium-Duty Installer requires 1550 psi at 8 gpm flow rate to deliver 2,500 ft-lb maximum torque.



Catalog Number **C3031244**

Heavy-Duty Installer requires 1,900 psi at 8 gpm flow rate to deliver 2,500 ft-lb maximum torque.

2,500 ft-lb Portable Anchor Installers

Medium-Duty(1) – Catalog Number C3031032

Grease-filled gear case. Single catalognumber above includes all items below. Each item also may be ordered by separate number.

Hydraulic Control Valve (1)	**C3031031**
Two 25-ft. Hydraulic Hoses	**C4176121 (each)**
Hydraulic Drive Head (1)	**C3031180**
Yoke Assembly	**E3030680**
Two 12-ft. Hydraulic Hoses (1)	**E3030876 (pair)**
Square Torque Bar Assembly	**E3031041**

NOTE: Output shaft is 1-1/2" square socket. Requires **C3031230** *and flanged drive tool (order separately) to install anchors other than 1-1/2" square 1-1/4" round shaft.*

(1) Hydraulic components are not interchangeable between **C3031032** *and* **C3031244**.

Heavy-Duty – Catalog Number C3031244

Sealed oil-filled gear case. Single catalog number above includes all items below. Each item also may be ordered by separate number.

Hydraulic Control Valve (1)	**C3031247**
Two 25-ft. Hydraulic Hoses	**C4176121 (each)**
Hydraulic Drive Head (1)	**C3031233**
Yoke Assembly	**E3030680**
Two 12-ft. Hydraulic Hoses (1)	**E3031253 (pair)**
Square Torque Bar Assembly	**E3031041**

NOTE: Output shaft is 2" Hex. – Requires Kelly Bar Adapter and flanged drive tool (order separately) to install all anchors.

(1) Hydraulic components are not interchangeable between **C3031032** *and* **C3031244**.

Adapter Tool Catalog Number C3031230

Anchor Drive Tools

(†) All 5-1/4" bolt-circle tools may be connected directly to Heavy Duty Portable Anchor Installer Catalog Number **C3031244**. Adapter Tool Catalog Number **C3031230** is required to connect 5-1/4" bolt-circle tools to Medium-Duty Portable Anchor Installer Catalog Number **C3031032**. If needed, order Adapter **C3031230** as a separate item.

Optional Hydraulic Power Unit Catalog Number C3031201

For easy wheeling to worksite, hydraulic drive head and foot control are secured by a rubber strap. Unit includes two angle braces atop the cart frame. Hoses may ride on the handles.

Cart-mounted on 5/8" diameter axle with two 4.8" x 8" inflatable (30 psi) tires; 27-1/4" wide x 34-1/2" high x 36" long; shipping weight with oil: 275 lb.

Operating instructions are included with anchor installer and hydraulic power unit.

Hydraulic Pump with Fan Cooling System:

- Typical output pressure —o 2500 psi
- Pump displacement —o 8 gpm @ 3400 rpm
- Reservoir capacity —o 5 gallons US
- Shipping cap and vented fill cap provided

Gasoline Engine System:

- 16 hp Briggs & Stratton
- Industrial/Commercial Model 326437, Type 2527
- 12-Volt push-button start, 3600 rpm (maximum)

Drive head and foot control shown in photo are not included with **C3031201**

HUBBELL®
Power Systems, Inc.

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www.hubbell.com/hubbellpowersystems

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