
PDA®
Powers Design Assist
Real-Time Anchor Design Software V2.0
Free Download at:
www.powersdesignassist.com
Strength Design+
Technical Capability & SD Anchoring Systems
Powers is a proud member of:
Evergreen MARKETING GROUP
Powers®
FASTENING INNOVATIONS
A domestic company headquartered in Brewster, NY

About Powers

Powers Fasteners, Inc. has been a worldwide pioneer in the fastening industry since 1921 and today is the leading supplier of concrete and masonry anchors and fastening systems in North America. Powers has extensive engineering and manufacturing expertise in several product groups, including mechanical anchors, adhesive anchoring systems and powered forced-entry systems such as powder-actuated and gas fastening systems.

Powers Design Assist (PDA):

Our PDA software provides code-compliant anchoring solutions in a dynamic environment with real-time results. It does more than just provide calculations; it is also a comprehensive digital library for mechanical anchors, adhesive anchoring systems and cast-in-place anchor products. Multiple products in the PDA software can be compared in utilization ratings using the innovative Anchor Tree feature. **For FREE download go to: www.powersdesignassist.com.**

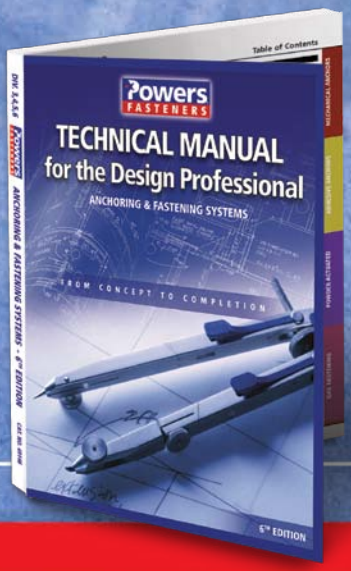
Other services for design professionals

Our engineering and field support teams can offer educational seminars/workshops, technical support and field-testing of Powers Fasteners products. We also offer our national Powers Training Vehicle (PTV) program for product installation demonstrations, instruction, and training for designers and contractors. We have a fully dedicated staff of customer support specialists and engineers to answer all of your technical needs. If you should have any questions or feedback, please contact customer service at (914) 356-300 or toll free at (800) 524-3244 or by email at engineering@powers.com.

New A&E Manual

The 6th Edition of the Powers Technical Manual for the Design Professional

This comprehensive technical manual was developed for the design professional and specifier. It is an update to our previous technical manual and is based on several decades of industry experience. The manual is the culmination of our efforts to include the latest in anchor technology, testing standards, performance data and product listings. It should be used as



Version 2.0 PDA Powers Design Assist®
Real-Time Anchor Design Software V2.0

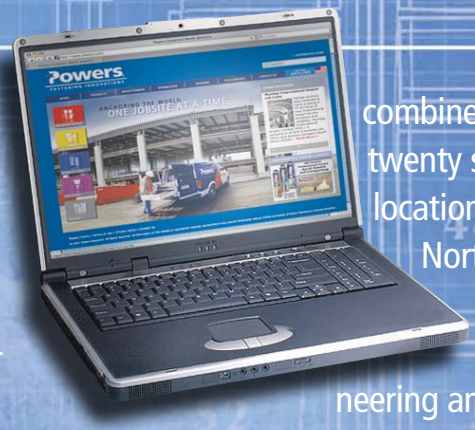
a reference for selecting and specifying the proper products for your anchoring and fastening applications.

Product approvals and listings

Powers is committed to obtaining the approvals and listing necessary to ensure that our products meet the latest requirements of the building codes and local, state, and federal agencies. Some of the various approvals and listing that we seek include ICC-ES Evaluation Service Reports (ESRs), DOT Listings, Factory Mutual approvals, Underwriters Laboratories listings, City of L.A. Research Reports (COLA), Miami-Dade County (NOA), and General Service Administration (GSA).

www.powers.com advantages

The Powers website contains our product information, documentation and updates. This includes product approvals and listings, MSDS sheets, general product information, software tools, contact information, newsletters and announcements. These program resources and supplements,



combined with over twenty stocking locations throughout North America, provide one of the best engineering and field support systems available in the anchoring industry.

Individual help & tools

Improve your firm's specifications by adding our code compliant products into your design documents. If you would like assistance writing our products into your specifications, please contact our engineering department toll free at (888) 745-2633 or by email at engineering@powers.com. We look forward to earning your specification and working with you.

Anchor Qualification Legend

Uncracked Concrete

Cracked Concrete

Seismic

Power-Stud™ + SD1

Wedge Expansion Anchor

CODE LISTED
ICC-ES ESR-2818
CATEGORY 1
CRACKED & UNCRACKED CONCRETE

CODE LISTED
ICC-ES ESR-2966
CATEGORY 1
MASONRY

THREAD VERSION
UNC Threaded Stud

ANCHOR MATERIALS
Zinc plated carbon steel body and expansion clip, nut and washer

ANCHOR SIZE RANGE (TYP.)
1/4″ diameter (uncracked concrete)
3/8″ through 1-1/4″ diameter

SUITABLE BASE MATERIALS
Normal-weight concrete
Structural sand-lightweight concrete
Concrete over steel deck
Grouted concrete masonry

PRODUCT DESCRIPTION

The Power-Stud+ SD1 anchor is a fully threaded, torque-controlled, wedge expansion anchor which is designed for consistent performance in cracked and uncracked concrete. Suitable base materials include normal-weight concrete, structural sand-lightweight concrete, concrete over metal deck and grouted concrete masonry. The anchor is manufactured with a zinc plated carbon steel body and expansion clip. Nut and washer are included.

GENERAL APPLICATIONS AND USES

- Structural connections, i.e., beam and column anchorage
- Safety-related attachments
- Interior applications / low level corrosion environment
- Tension zone applications, i.e., cable trays and strut, pipe supports, fire sprinklers
- Seismic and wind loading applications

FEATURES AND BENEFITS

- Consistent performance in high and low strength concrete
- Nominal drill bit size is the same as the anchor diameter
- Length ID code and identifying marking stamped on head of each anchor
- Anchor can be installed through standard fixture holes
- Anchor design allows for follow-up expansion after setting under tensile loading

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2818 for concrete. Code compliant with the 2009 IBC, 2009 IRC, 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC and 1997 UBC
- International Code Council, Evaluation Service (ICC-ES), ESR-2966 for masonry. Code compliant with the 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC, 2000 IBC, and 1997 UBC
- Tested in accordance with ACI 355.2 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (Strength Design method using Appendix D)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors)
- FM Global (Factory Mutual) - File No. 3033795, 3/8″ and 1/2″ diameters. Pipe hanger components for automatic sprinkler systems
- Underwriters Laboratories (UL Listed) - File No. EX1289. See listing for sizes.

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 05090 -Metal Fastening.* Expansion anchors shall be Power-Stud+ SD1 anchors as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATION

Anchor Component	Specification
Anchor body	Medium carbon steel
Hex nut	Carbon steel, ASTM A 563, Grade A
Washer	Carbon steel, ASTM F 844; meets dimensional requirements of ANSI B18.22.2, Type A Plain
Expansion wedge (clip)	Carbon steel
Plating (anchor body, clip, nut and washer)	Zinc plating according to ASTM B 633, SC1, Type III (Fe/Zn 5) Minimum plating requirement for Mild Service Condition

This product available in

PDA Powers Design Assist®

Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
SEISMIC REGION QUALIFICATION
ICC ES LISTED
FM APPROVED
UL LISTED
COLA RESEARCH REPORT

CODE LISTED
ICC-ES ESR-2502
CATEGORY 1
CRACKED & UNCRACKED CONCRETE

Power-Stud™ + SD2

Wedge Expansion Anchor

PRODUCT DESCRIPTION

The Power-Stud+ SD2 anchor is a fully threaded, torque-controlled, wedge expansion anchor which is designed for consistent performance in cracked and uncracked concrete. Suitable base materials include normal-weight concrete, structural sand-lightweight concrete and concrete over metal deck. The anchor is manufactured with a zinc plated carbon steel body and stainless steel expansion clip for premium performance. Nut and washer are included.

GENERAL APPLICATIONS AND USES

- Structural connections, i.e., beam and column anchorage
- Safety-related attachments
- Interior applications / low level corrosion environment
- Tension zone applications, i.e., cable trays and strut, pipe supports, fire sprinklers
- Seismic and wind loading applications

FEATURES AND BENEFITS

- Consistent performance in high and low strength concrete
- Nominal drill bit size is the same as the anchor diameter
- Length ID code and identifying marking stamped on head of each anchor
- Anchor can be installed through standard fixture holes
- Anchor design allows for follow-up expansion after setting under tensile loading

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2502 for concrete. Code compliant with the 2009 IBC, 2009 IRC, 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC and 1997 UBC
- Tested in accordance with ACI 355.2 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (Strength Design method using Appendix D)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors)
- FM Global (Factory Mutual) - File No. 3033795, 3/8″ and 1/2″ diameters. Pipe hanger components for automatic sprinkler systems
- Underwriters Laboratories (UL Listed) - File No. EX1289 - See listing.

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 05090-Metal Fastenings.* Expansion anchors shall be Power-Stud+ SD2 anchors as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATION

Anchor Component	Specification
Anchor body	Medium carbon steel
Hex nut	Carbon steel, ASTM A 563, Grade A
Washer	Carbon steel, ASTM F 844; meets dimensional requirements of ANSI B18.22.2, Type A Plain
Expansion wedge (clip)	Type 316 stainless steel
Plating (anchor body, nut and washer)	Zinc plating according to ASTM B 633, SC1, Type lll (Fe/Zn 5) Minimum plating requirement for Mild Service Condition

THREAD VERSION
UNC Threaded Stud

ANCHOR MATERIALS
Zinc plated carbon steel body and expansion clip, nut and washer

ANCHOR SIZE RANGE (TYP.)
3/8″ through 3/4″ diameter

SUITABLE BASE MATERIALS
Normal-weight concrete
Structural sand-lightweight concrete
Concrete over steel deck
Grouted concrete masonry

This product available in

PDA Powers Design Assist®

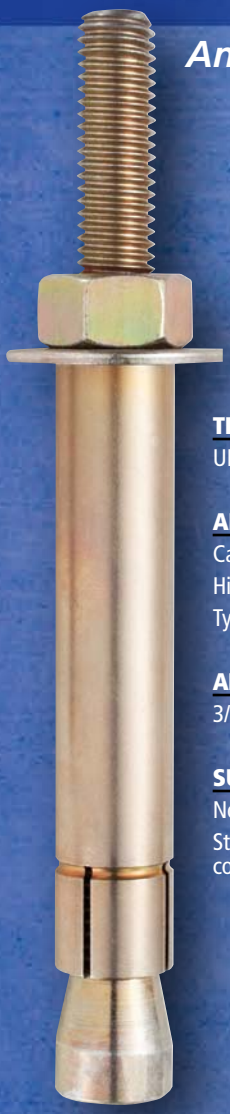
Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
SEISMIC REGION QUALIFICATION
ICC ES LISTED
FM APPROVED
UL LISTED
COLA RESEARCH REPORT

Atomic+™ Undercut

Anchor

CODE LISTED
ICC-ES ESR-3067
CATEGORY 1
CRACKED & UNCRACKED CONCRETE



THREAD VERSION
UNC Threaded Stud

ANCHOR MATERIALS
Carbon Steel
High Strength Carbon Steel
Type 316 Stainless Steel (B7)

ANCHOR SIZE RANGE (TYP.)
3/8" through 3/4" diameter

SUITABLE BASE MATERIALS
Normal-weight concrete
Structural sand-lightweight concrete

PRODUCT DESCRIPTION

The Atomic+ Undercut anchor is designed for applications in cracked and uncracked concrete, and is available in standard ASTM A 36 steel, high strength ASTM A 193 Grade B7 high strength steel and Type 316 stainless steel designations. The Type 316 stainless steel version can be considered for exterior use and industrial applications where a high level of corrosion resistance is required.

The anchor is installed into a pre-drilled hole which has been enlarged at the bottom in the shape of a reversed cone using the Powers Undercut drill bit. The result is an anchor which transfers load mainly through bearing, and unlike a typical expansion anchor is not dependent upon friction between the expansion sleeve and the concrete. Due to the use of a thick walled expansion sleeve, the load is distributed to a large area which can provide ductile behavior of the anchor even at relatively shallow embedments

GENERAL APPLICATIONS AND USES

- Structural connections, i.e. beam and column anchorage
- Safety related attachments
- Tension zone applications, i.e. cable trays and strut, pipe supports, fire sprinkler
- Seismic and wind loading
- Heavy duty loading

FEATURES AND BENEFITS

- Consistent performance in high and low strength concrete
- For standard installations and for through bolt applications where the fixture is already in place
- Length ID code and identifying marking stamped on head of each anchor
- Load transfers to concrete through bearing, not friction
- Bearing load transfer allows for closer spacing and edge distances
- Can be designed for predictable ductile steel performance, behaves like a cast in place bolt
- Undercut created in seconds with durable tool

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-3067
- Code compliant with the 2009 IBC, 2009 IRC, 2006 IBC, 2006 IRC, 2003 IBC, and 2003 IRC
- Tested in accordance with ACI 355.2 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (Strength Design method using Appendix D)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors)

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 05090-Metal Fastenings.* Expansion anchors shall be Atomic Undercut+ anchors as supplied by Powers Fasteners, Inc.,Brewster, NY. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATION

Anchor Component	Anchor Designation		
	Standard ASTM A 36	High Strength ASTM A 193 Grade B7	Type 316 Stainless Steel
Threaded Rod	ASTM A 36	ASTM A 193 Grade B7	Type 316 Stainless Steel
Expansion Coupling	ASTM A 108 12L14		
Expansion / Spacer Sleeve	ASTM A 513 Type 5		
Hex Nuts	Carbon Steel, ASTM A 563, Grade A		Type 316 Stainless Steel, ASTM A 563, Grade A
Washer	Carbon Steel, ASTMA 844; Meets dimensional requirements of ANSI B18. 2.22.2, Type A Plain		Type 316 Stainless Steel, ASTM F 844, meets dimensional requirements of ANSI B18.22.2, Type A
Plating	Zinc Plating according to ASTM B 633, SC1, Type III (Fe/Zn 5) Minimum plating requirement for Mild Service Condition		N/A

This product available in

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Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
SEISMIC REGION QUALIFICATION
ICC ES LISTED

TESTED TO ICC-ES AC193 CRACKED & UNCRACKED CONCRETE

PB+ (Power-Bolt+)

Heavy Duty Sleeve Anchor

PRODUCT DESCRIPTION

The PB+ anchor is a torque controlled, heavy duty sleeve style anchor which is designed for consistent performance in cracked and uncracked concrete. Suitable base materials include normal-weight concrete and sand-lightweight concrete. The anchor is manufactured with a zinc plated carbon steel bolt, sleeve, cone and expansion clip. The PB+ has a finished hex head.

GENERAL APPLICATIONS AND USES

- Structural connections, i.e., beam and column anchorage
- Safety-related attachments
- Interior applications / low level corrosion environment
- Tension zone applications, i.e., cable trays and strut, pipe supports, fire sprinklers
- Heavy duty applications

FEATURES AND BENEFITS

- Consistent performance in high and low strength concrete
- Nominal drill bit size is the same as the anchor diameter
- Anchor can be installed through standard fixture holes
- Length ID code and identifying marking stamped on head of each anchor
- Anchor design allows for follow-up expansion after setting under tensile loading
- Internal Grade 8 equivalent bolt is removable
- High shear load capacity

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR pending for concrete
- Tested in accordance with ACI 355.2 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (Strength Design method using Appendix D)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors)

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 05090-Metal Fastenings.* Expansion anchors shall be PB+ anchors as supplied by Powers Fasteners, Inc.,Brewster, NY. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATION

Anchor Component	Specification
Bolt	Medium carbon steel (Grade 8 equivalent)
Washer	Conforms to ASTM F844
Cone	AISI C1035-C1040
Expansion clip	AISI C1045-C1050
Metal sleeve	Medium carbon steel tubing (seamless)
Compression ring	Engineered plastic
Retainer nut	Engineered plastic
Plating	Zinc plating according to ASTM B 633, SC1, Type III (Fe/Zn 5). Minimum plating requirement for Mild Service Condition

HEAD STYLES

Finished Hex Head

ANCHOR MATERIALS

Zinc plated carbon steel bolt, washer, cone, sleeve, and expansion clip assembled with a plastic compression ring and retainer nut

ANCHOR SIZE RANGE (TYP.)

1/2″ through 5/8″ diameter

SUITABLE BASE MATERIALS

Normal-weight concrete

Structural sand-lightweight concrete

This product available in

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Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE

TENSION ZONE CRACKED CONCRETE

SEISMIC REGION QUALIFICATION

ICC ES PENDING

Wedge-Bolt®+

Screw Anchor

CODE LISTED
ICC-ES ESR-2526
CATEGORY 1
CRACKED & UNCRACKED CONCRETE

CODE LISTED
ICC-ES ESR-1678
FOR CMU

ANCHOR MATERIALS

Zinc plated carbon steel body and hex washer head or mechanically galvanized carbon steel body and hex washer head

ANCHOR SIZE RANGE (TYP.)

1/4" diameter (uncracked concrete)

3/8" through 3/4" diameter (cracked and uncracked concrete)

SUITABLE BASE MATERIALS

Normal-weight concrete

Structural sand-lightweight concrete

Concrete over steel deck

Grouted concrete masonry (CMU)

Clay brick masonry

PRODUCT DESCRIPTION

The Wedge-Bolt+ anchor is a one piece, heavy duty screw anchor with a finished hex head. It is simple to install, easy to identify and fully removable. The Wedge-Bolt+ has features and benefits that make it well suited for many applications. The steel threads along the anchor body tap into the hole during installation to provide keyed engagement. Suitable base materials include normal-weight concrete, structural sand-lightweight concrete, concrete over steel deck, concrete masonry and solid clay brick. The anchor is designed for structural loading in cracked and uncracked concrete.

GENERAL APPLICATIONS AND USES

- Racking, shelving and material handling
- Support ledgers
- Interior applications / low level corrosion environment
- Temporary attachments
- Retrofits, repairs and maintenance
- Fencing and railing
- Seismic and wind loading

FEATURES AND BENEFITS

- Consistent performance in high and low strength concrete
- Anchor can be installed through standard fixture holes
- Wedge-bit size is the same as the nominal anchor diameter
- Diameter, length and identifying marking stamped on head of each anchor
- Fast installation with a powered impact wrench
- One-piece, finished head design eliminates improper assembly or missing components

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2526 for concrete.
- International Code Council, Evaluation Service (ICC-ES), ESR-1678 for concrete masonry. Code compliant with the 2009 IBC, 2009 IRC, 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC and 1997 UBC
- Tested in accordance with ACI 355.2 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (Strength Design method using Appendix D)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors)
- Evaluated and qualified by an accredited independent testing laboratory for reliability against brittle failure, e.g. hydrogen embrittlement
- Tested in accordance with ASTM E488 and AC106 criteria

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 04081-Masonry Anchoring and 05090-Metal Fastenings.* Screw anchors shall be Wedge-Bolt+ anchors as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATION

Anchor Component	Specification
Anchor body & hex washer head	Case hardened carbon steel
Plating	Zinc plating according to ASTM B 633, SC1, Type III (Fe/Zn 5) Minimum plating requirement for Mild Service Condition
	Mechanically galvanized zinc plating according to ASTM B 695, Class 55

This product available in

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COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
SEISMIC REGION QUALIFICATION
ICC ES LISTED
FM APPROVED
COLA RESEARCH REPORT

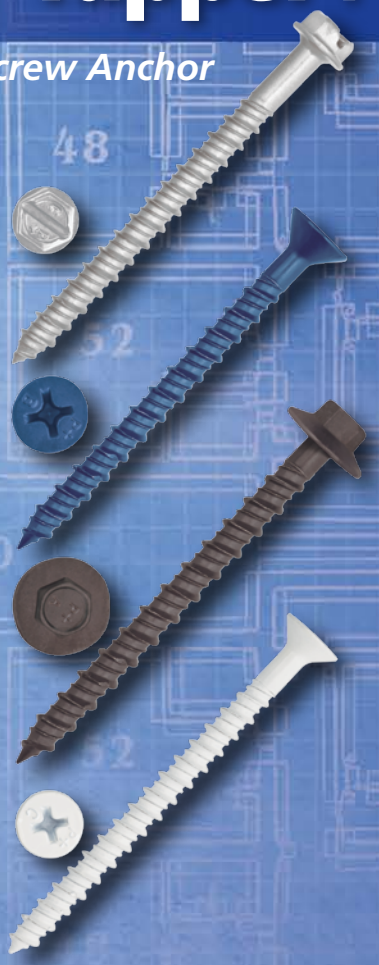
Tapper+

Screw Anchor

CODE LISTED
ICC-ES ESR-3068
UNCRACKED CONCRETE

CODE LISTED
ICC-ES ESR-3042
WOOD-TO-WOOD

CODE LISTED
ICC-ES ESR-3213
CHEMICALLY TREATED LUMBER



PRODUCT DESCRIPTION

The Tapper+ anchoring system is a complete family of screw anchors for light to medium duty applications in concrete, masonry block, brick and wood base materials. The Tapper+ is fast and easy to install and provides a neat, finished appearance. The Tapper+ screw anchor is engineered with matched tolerance drill bits and installation tools designed to meet the needs of the user and also provide optimum performance, The Tapper+ features a gimlet point for self-drilling into wood base materials without pre-drilling.

The Tapper+ screw anchor is available in carbon steel with a Perma-Seal climate coating in several colors. Head styles include a slotted hex washer head, Phillips flat head, trim Phillips flat head and hex flange washer head.

GENERAL APPLICATIONS AND USES

Perma-Seal Tapper+

- Window installations
- Interior hand rails
- Metal door frames
- Joint flashing
- Storm shutters
- Interior lighting fixtures
- Thresholds
- Screened enclosures

FEATURES AND BENEFITS

- Available in several head styles
- Several colors and finishers to match application
- Removable (reusable in wood)
- High-low thread design for greater stability and grip
- Does not exert expansion forces
- No hole spotting required
- Good corrosion protection with Perma-Seal coating
- Gimlet point for self drilling into wood base material

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-3068 for uncracked concrete. Code compliant with the 2009 IBC, 2009 IRC, 2006 IBC, 2006 IRC, 2003 IBC, 2003 IC and 1997 UBC
- Compliant with the 2007 Florida Building Code (Building and Residential)
- Tested in accordance with ACI 355.2 and ICC-ES ACI 193 for use in structural concrete, ICC-ES AC 106 for use in masonry, ICC-ES AC233 for use in wood, and ICC-ES AC257 for use in pressure treated lumber
- Evaluated and qualified by an accredited independent testing laboratory for reliability against brittle failure, e.g. hydrogen embrittlement
- Miami-Dade Count Notice of Acceptance (NOA) 10-0505.05

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 04081-Masonry Anchorage and 05090-Metal Fastenings.* Concrete screw anchors shall be Tapper+ anchors as supplied by Powers Fasteners, Inc., Brewster, NY.

MATERIAL SPECIFICATION

Anchor Component	Specification
Anchor body	Case hardened carbon steel
Coating / plating / finish	Perma-seal coating (various colors)

ANCHOR MATERIALS

Carbon steel with Perma-Seal Coating

ANCHOR SIZE RANGE (TYP.)

3/16″ diameter x , 1-1/2″ length to
1/4″ diameter x 6″ length

SUITABLE BASE MATERIALS

Normal-weight concrete
Structural sand-lightweight concrete
Grouted concrete masonry (CMU)
Hollow concrete masonry (lightweight & normal weight)
Solid brick masonry
Wood

This product available in

PDA Powers Design Assist®

Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE

ICC ES LISTED

MIAMI-DADE COUNTY APPROVED

ACQ

Vertigo™ +

Rod Hanger Anchor

CODE LISTED
ICC-ES ESR-2989
CATEGORY 1
CRACKED & UNCRACKED CONCRETE

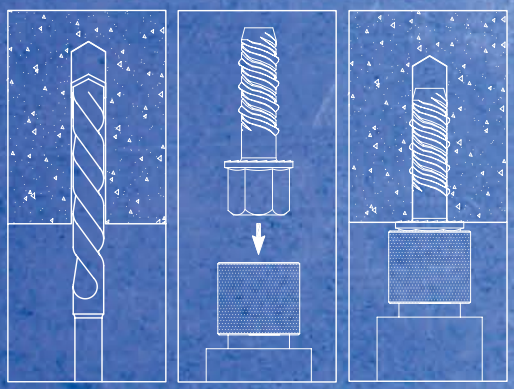
INTERNAL THREAD VERSION
Unified coarse thread (UNC)

ANCHOR MATERIALS
Zinc plated carbon steel
(yellow dichromate finish)

ROD / ANCHOR SIZE RANGE (TYP.)
1/4″ through 1/2″ diameter

SUITABLE BASE MATERIALS
Normal-weight concrete
Structural sand-lightweight concrete
Concrete over steel deck

Hex Coupler Heads



PRODUCT DESCRIPTION

Vertigo+ is a one-piece, all steel threaded fastening system for suspending threaded rod in pipe hanging, fire protection, electrical conduit and cable-tray applications. They can be installed in a variety of base materials including normal-weight concrete, structural sand-lightweight concrete and concrete over steel deck. Vertigo+ accepts threaded rods and bolts in 1/4″, 3/8″ and 1/2″ diameters. Vertigo+ anchors are designed for simple, fast installations and for reliable performance in cracked and uncracked concrete.

GENERAL APPLICATIONS AND USES

- Hanging pipe and sprinkler systems
- Lighting systems and overhead utilities
- Suspended ceilings
- Suspending conduit and cable trays
- HVAC ductwork and strut channels

FEATURES AND BENEFITS

- Simple system for all rod hanging applications in concrete
- Internally threaded coupler for easy removability of service items
- Ease and speed of installation and attachment
- Lower in-place cost, when compared to traditional anchors
- Can be installed with an adjustable torque impact driver
- Consistent performance in high and low strength concrete

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2989 code compliant with the 2009 IBC, 2009 IRC, 2006 IBC, 2003 IBC, 2003 IRC and 1997 UBC
- Tested in accordance with ACI 355.2 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (Strength Design method using Appendix D)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors)
- Evaluated and qualified by an accredited independent testing laboratory for reliability against brittle failure, e.g. hydrogen embrittlement
- Evaluated and qualified by an accredited independent testing laboratory for supplemental recognition in redundant fastening applications

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 05090-Metal Fastenings.* Anchors shall be Vertigo+ as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATION

Anchor Component	Specification
Anchor body / coupler head	Case hardened carbon steel
Plating	Zinc plating according to ASTM B 633, SC1, Type II (Fe/Zn 5) Minimum plating requirement for Mild Service Condition

This product available in

PDA Powers Design Assist®

Real Time Anchor Design Software
www.powersdesignassist.com

Matched Tolerance System

Each box of Vertigo+ Anchors includes one SDS 3/8″ x 6″ Blue Wedge-Bit

COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
SEISMIC REGION QUALIFICATION
ICC ES LISTED
FM APPROVED
COLA RESEARCH REPORT PENDING

CODE LISTED
ICC-ES ESR-2272
CATEGORY 1
CRACKED & UNCRACKED CONCRETE

Snake+™

Internally Threaded Screw Anchor

PRODUCT DESCRIPTION

The Snake+ anchor is an internally threaded, self-tapping screw anchor designed for performance in cracked and uncracked concrete. Suitable base materials include normal-weight concrete, structural sand-lightweight concrete and concrete over steel deck. The Snake+ screw anchor is installed into a drilled hole with a power tool and a Snake+ setting tool. After installation a steel insert element is threaded into the anchor body.

GENERAL APPLICATIONS AND USES

- Suspending conduit
- Cable trays and strut
- Pipe supports
- Fire sprinklers
- Seismic tie-down
- Interior applications / low level corrosion environment
- Tension zone applications
- Seismic wind loading applications
- Suspended lighting

FEATURES AND BENEFITS

- Designed for use in holes drilled with standard ANSI carbide drill bits
- Anchor design allows for shallow embedment and mechanically interlocks with base material
- Internally threaded anchor for easy adjustment and removability of threaded rod or bolt
- Fast anchor installation with a powered impact wrench
- Hammer not used for installation

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2272. Code compliant with the IBC, and IRC (see report for applicable code editions)
- Tested in accordance with ACI 355.2 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318 (Strength Design method using Appendix D)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchor)
- Evaluated and qualified by an accredited independent testing laboratory for reliability against brittle failure, e.g. hydrogen embrittlement
- Evaluated and qualified by an accredited independent testing laboratory for supplemental recognition in redundant fastening applications
- FM Global (Factory Mutual) - File No. 3024502 (see report for sizes) www.approvalguide.com - Pipe hanger components for automatic sprinkler systems

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 05090-Metal Fastenings.* Internally threaded anchors shall be Snake+ screw anchors as supplied by Powers Fasteners, Inc.,Brewster, NY. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

MATERIAL SPECIFICATION

Anchor Component	Specification
Anchor body	Case hardened carbon steel
Plating	Zinc plating according to ASTM B 633, SC1, Type lll (Fe/Zn 5)

Each box of Snake+ anchors includes a setting tool

THREAD VERSION

Unified coarse thread (UNC)

ANCHOR MATERIALS

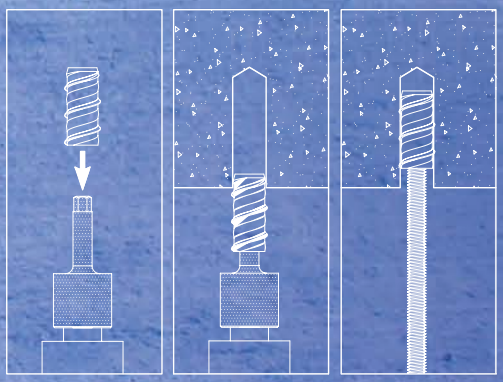
Zinc plated carbon steel body

ANCHOR SIZE RANGE (TYP.)

1/4″ diameter (uncracked concrete)
3/8″ and 1/2″ diameter (cracked & uncracked concrete)

SUITABLE BASE MATERIALS

Normal-weight concrete
Structural sand-lightweight concrete
Concrete over steel deck



This product available in

PDA Powers Design Assist®

Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
SEISMIC REGION QUALIFICATION
ICC ES LISTED
FM APPROVED
COLA RESEARCH REPORT

Safe-T+Pin™

Nail Anchor

CODE LISTED
ICC-ES ESR-3057
CRACKED AND UNCRACKED CONCRETE (REDUNDANT FASTENING)

ANCHOR MATERIALS
Zinc plated carbon steel

ROD / ANCHOR SIZE RANGE (TYP.)
1/4″ diameter (6mm) x 1-3/8″ length
1/4″ diameter (6mm) x 2-1/2″ length

SUITABLE BASE MATERIALS
Normal-weight concrete
Structural sand-lightweight concrete
Grout-filled concrete masonry
Brick masonry
Stone

PRODUCT DESCRIPTION
The Safe-T+Pin is a small-steel nail anchor which is designed for use in a variety of applications and as an improved alternative to traditional zamac nailin anchors where overhead use is not recommended. The Safe-T+Pin can be used in pre-drilled holes in solid base materials such as concrete, grouted block, brick and stone. It can also be used in cracked concrete applications where the anchors are engineered for redundant fastening.

GENERAL APPLICATIONS AND USES
- Electrical fixtures
- Signage
- Maintenance
- Interior applications / low level corrosion environment
- HVAC / Mechanical
- Drywall track
- Redundant fastening

FEATURES AND BENEFITS
- General purpose anchoring
- Installs in a variety of solid base materials
- Suitable for overhead use where specified
- All-steel anchor components

APPROVALS AND LISTINGS
- International Code Council, Evaluation Service (ICC-ES) ESR-3057 for concrete. Code compliant with the 2009 IBC, 2009 IRC, 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC
- Tested in accordance with ICC-ES AC193 for use in structural concrete
- Evaluated and qualified by an accredited independent laboratory for recognition in redundant fastening applications in cracked and uncracked concrete
- Tested in accordance with ASTM E488

GUIDE SPECIFICATIONS
CSI Divisions: *03151-Concrete Anchoring, 04081-Masonry Anchorage and 05090-Metal Fastenings.*
Pin anchors shall be Safe-T Pin+ as supplied by Powers Fasteners, Inc., Brewster, NY.

MATERIAL SPECIFICATION

Anchor Component	Specification
Anchor body	Low carbon steel (AISI 1008 or equivalent)
Plating	Zinc plating according to ASTM B 633, SC1, Type III Minimum plating requirement for Mild Service Condition

This product available in

PDA Powers Design Assist®

Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
ICC ES LISTED

PE1000+®

CODE LISTED
ICC-ES ESR-2583
CRACKED & UNCRACKED CONCRETE

High Strength Epoxy Anchoring System

PRODUCT DESCRIPTION

The PE1000+ is a two-component, high strength adhesive anchoring system. The system includes injection adhesive in plastic cartridges, mixing nozzles, dispensing tools and hole cleaning equipment. PE1000+ is designed for bonding threaded rod and reinforcing bar hardware into drilled holes in concrete and solid masonry base materials.

GENERAL APPLICATIONS AND USES

- Bonding threaded rod and reinforcing bar into hardened concrete and grouted CMU
- Evaluated for use in dry and water-saturated concrete including water-filled holes
- Suitable to resist loads in cracked and uncracked concrete base materials for cases where anchor design theory and criteria applies
- Can be installed in a wide range of base material temperatures

FEATURES AND BENEFITS

- Designed for use with threaded rod and reinforcing bar hardware elements
- Consistent performance in low and high strength concrete (2,500 to 8,500 psi)
- Evaluated and recognized for freeze/thaw performance
- Evaluated and recognized for long term and short term loading
- Evaluated and recognized for variable embedments (see installation specifications)
- Cartridge design allows for multiple uses using extra mixing nozzles
- Mixing nozzles proportion adhesive and provide simple delivery method into drilled holes
- Easy dispensing reduces applicator fatigue

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES) ESR-2583. Code compliant with the 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC, 2000 IBC, 2000 IRC and 1997 UBC
- Tested in accordance with AC308 for use in structural concrete according to ACI 318 Appendix D (Strength Design) and as amended by provisions of ICC-ES AC308 Annex A, Section 3.3 (www.icc-es.org)
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading
- Compliant with NSF/ANSI Standard 61 for drinking water system components – health effects; minimum requirements for materials in contact with potable water and water treatment
- Conforms to requirements of ASTM C 881, Types I, II, IV and V, Grade 3, Classes B & C (also meets type III except for elongation)
- Department of Transportation listings – see www.powers.com or contact transportation agency

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring and 04081-Masonry Anchorage and 05090-Metal Fastenings.* Adhesive anchoring system shall be PE1000+ as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and requirements of the Authority Having Jurisdiction.

PACKAGING

Dual (Side-by-Side) Cartridge
13 fl. oz. (385 mL), 20 fl.oz. (585 mL)

STORAGE LIFE & CONDITIONS

Two years in a dry, dark environment with temperature ranging from 41˚F to 95˚F (5˚C to 35˚C)

ANCHOR SIZE RANGE (TYP.)

1/4" to 1-1/4" diameter threaded rod, No. 3 to No. 10 reinforcing bar (rebar)

SUITABLE BASE MATERIALS

Normal-weight concrete
Grouted concrete masonry

This product available in

PDA Powers Design Assist®

Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE
TENSION ZONE CRACKED CONCRETE
SEISMIC REGION QUALIFICATION
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COLA RESEARCH REPORT

AC100+Gold®

Vinylester Injection Adhesive Anchoring System

CODE LISTED
ICC-ES ESR-2582
UNCRACKED CONCRETE

PRODUCT DESCRIPTION

AC100+Gold is a two-component vinylester adhesive anchoring system. The system includes injection adhesive in plastic cartridges, mixing nozzles, dispensing tools and hole cleaning equipment. AC100+Gold is designed for bonding threaded rod and reinforcing bar elements into drilled holes in concrete and masonry base materials.

GENERAL APPLICATIONS AND USES

- Bonding threaded rod and reinforcing bar into hardened concrete and masonry
- Evaluated for use in dry and water-saturated concrete including water filled holes
- Suitable to resist structural loads in uncracked concrete base materials for cases where anchor design theory and criteria applies
- Can be installed in a wide range of base material temperatures

FEATURES AND BENEFITS

- Designed for use with threaded rod and reinforcing bar hardware elements
- Consistent performance in low and high strength concrete (2,500 to 8,500 psi)
- Evaluated and recognized for a range of embedments
- Evaluated and recognized for freeze/thaw performance
- Evaluated and recognized for long term and short term loading
- Versatile low odor formula with quick cure time
- Mixing nozzles proportion adhesive and provide simple delivery method into drilled holes
- Cartridge design allows for multiple uses using extra mixing nozzles
- Evaluated and recognized for structural loads in concrete with temperatures down to 14˚F

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES) ESR-2582
- Code listed with the 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC, 2000 IBC, 2000 IRC, 1997 UBC
- Tested in accordance with ICC-ES AC308 for use in structural concrete and design with ACI 318 Appendix D (Strength Design) and as amended by provisions of ICC-ES AC308 Annex A, Section 3.3 (www.icc-es.org)
- Compliant with NSF/ANSI Standard 61 for drinking water system components – health effects; minimum requirements for materials in contact with potable water and water treatment
- Conforms to requirements of ASTM C 881, Types I, II, IV and V, Grade 3, Classes A & B (meets Type III with exception of elongation)
- Department of Transportation listings – see www.powers.com or contact transportation agency

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring, 04081 Masonry Anchorage and 05090-Metal Fastenings.* Adhesive anchoring system shall be AC100+Gold as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and requirements of the Authority Having Jurisdiction.

PACKAGING

Coaxial Cartridge:
5 fl. oz. (150 mL or 9.2 in^3): 10 fl. oz. (280 mL or 17.1 in^3)

Dual (Side-by-Side) Cartridge:
8 fl. oz. (235 mL or 14.3 in^3); 12 fl. oz. (345 mL or 21.0 in^3)
28 fl. oz. (825 mL or 50.3 in^3)

STORAGE LIFE & CONDITIONS

Fifteen months in a dry, dark environment with temperature ranging from 32˚F to 86˚F (0˚C to 30˚C)

ANCHOR SIZE RANGE (TYP.)

3/8" to 1-1/4" diameter threaded rod No. 3 to No. 10 reinforcing bar (rebar)

SUITABLE BASE MATERIALS

Normal-weight concrete
Grouted concrete masonry
Hollow concrete masonry
Brick masonry

This product available in

PDA Powers Design Assist®

Real Time Anchor Design Software
www.powersdesignassist.com

COMPRESSION ZONE UNCRACKED CONCRETE
ICC ES LISTED
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T308+™ Epoxy

Adhesive Injection System

CODE LISTED
ICC-ES ESR-3066
UNCRACKED CONCRETE

CODE LISTED
ICC-ES ESR-3149
UNREINFORCED MASONRY

PRODUCT DESCRIPTION

The T308+ is a two component epoxy adhesive anchoring system. The system includes injection adhesive in plastic cartridges, mixing nozzles, dispensing tools and hole cleaning equipment. The T308+ is designed for bonding steel threaded rod into drilled holes in hardened concrete and solid and hollow masonry base materials.

GENERAL APPLICATIONS AND USES

- Bonding steel threaded rod into hardened concrete and concrete masonry (CMU)
- Suitable to resist loads in uncracked concrete base materials for cases where anchor design theory and criteria applies
- Evaluated for installation into dry, clean holes only
- Can be installed in a wide range of base material temperatures

FEATURES AND BENEFITS

- International Code Council, Evaluation Service (ICC-ES) ESR-3066
- Code listed with the 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC, 1997 UBC
- Tested in accordance with ICC-ES AC308 for use in structural concrete and design with ACI 318 Appendix D)Strength Design) and as amended by provisions of ICC-ES AC308 Annex A, Section 3.3 (www.icc-es.org)
- Tested in accordance with ICC-ES AC60 for use in unreinforced masonry elements
- Conforms to requirements of ASTM C 881, Types I, II, IV & V, Grade 3, Class C (with exception of gel time)
- Compliant with NSF/ANSI Standard 61 for drinking water system components – health effects; minimum requirements for materials in contact with potable water and water treatment
- Department of Transportation listings (see www.powers.com or contact transportation agency)

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring, 04081-Masonry Anchorage and 05090-Metal Fastenings.* Adhesive anchoring system shall be T308+ Epoxy as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and requirements of the Authority Having Jurisdiction.

PACKAGING

Coaxial Cartridge:
8.5 fl. oz. (250 mL)

Dual (Side-by-Side) Cartridge:
14 fl. oz. (410 mL); 21.5 fl.oz. (630 mL); 51 fl.oz. (1508 mL)

STORAGE LIFE & CONDITIONS

Two years in a dry, dark environment with temperature ranging from 41˚F to 95˚F (5˚C to 35˚C)

ANCHOR SIZE RANGE

3/8" to 7/8" diameter threaded rod

SUITABLE BSE MATERIALS

Normal-weight concrete
Grouted concrete masonry
Hollow concrete masonry
Brick masonry (URM)

This product available in

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COMPRESSION ZONE UNCRACKED CONCRETE

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POWERS FASTENERS **BRANCH INFORMATION**

USA LOCATIONS

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Atlanta	5405 Buford Hwy Suite 410 Norcross, GA 30071-3984	Ryan Raica	678-966-0000	678-966-9242
Boston	2 Powers Lane, Brewster, NY 10509	Jack Armour	800-524-3244	914-576-6483
Charlotte	349 L West Tremont Avenue, Charlotte, NC 28203	Bob Aurisy	704-375-5012	704-376-5517
Chicago	2472 Wisconsin Avenue, Downers Grove, IL 60515	Dan Gilligan	630-960-3156	630-960-3912
Dallas	10625 King Williams Drive, Dallas, TX 75220	Matt Henderson	972-506-9258	972-506-9290
Denver	2475 West Second Street #35, Denver, CO 80223	Jared Hemmert	303-922-9202	303-922-9228
Detroit	21600 Wyoming Avenue, Oak Park, MI 48237	Glen Gaskill	248-543-8600	248-543-8601
Florida	2412 Lynx Lane, Orlando, FL 32804	John Christy	813-626-4500	813-626-4545
Houston	13833 North Promenade, Suite 100, Stafford, TX 77477	Chris Salisbury	281-491-0351	281-491-0367
Indianapolis	15290 Stony Creek Way, Noblesville, IN 46060	Bill Trainor	317-773-1668	317-773-1690
Kansas City / St Louis	716 East 16th Avenue, North Kansas City, MO 64116	Don James, Jr.	816-472-5038	816-472-5040
Los Angeles	2761 Dow Avenue, Tustin, CA 92780	Jason Shelburne/Trevor Gillespie	714-731-2500	714-731-2566
Maryland	3137-B Pennsy Drive, Landover, MD 20785	Chris Van Syckle	301-773-1722	301-341-5119
Milwaukee	12020 W. Feerick Street, Milwaukee, WI 53222	Donn Raduenz	414-466-2400	414-466-3993
Minneapolis	351 Wilson Street, NE Minneapolis, MN 55413	Josh Nelson	612-644-3047	612-331-3549
Nashville/Memphis	221 Blanton Avenue, Nashville, TN 37210	Jamie Utley	615-248-2667	615-248-2676
New Orleans	102 Sampson Street, Houston, TX 77003	Cal Zenor	713-228-1524	713-228-1528
New York	2 Powers Lane, Brewster, NY 10509	John Partridge	914-235-6300	914-576-6483
Philadelphia	2 Powers Lane, Brewster, NY 10509	Greg Stephenson	800-524-3244	914-576-6483
Phoenix	3602 E. Southern Ave, Suite 5 Phoenix, AZ 85040	Craig Hering	602-431-8024	602-431-8027
Pittsburgh	1360 Island Avenue, Mckees Rocks, PA 15136	Bill Dugan	412-771-3010	412-771-9858
Portland	129 South Kenyon, Seattle, WA 98108	Jim Swink	360-608-6845	206-762-5817
Rochester	40 Harrison Street, Rochester, NY 14605	Mike Kolstad	585-288-2080	585-288-8732
Salt Lake City	2212 SW Temple #20, Salt Lake City, UT 84115	Don Manning	801-466-9428	801-466-3083
San Francisco	28970 Hopkins Street, Suite B+C, Hayward, CA 94545	John O'Brien	510-293-1500	510-293-1505
Seattle	129 South Kenyon, Seattle, WA 98108	Darin Arnold	206-762-5812	206-762-5817

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New Zealand	PO Box 302 076 North Harbour Auckland	Claye Sesto	+64 9415 2425	+64 9415 2627
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Latin America		Alan Hebert	01150767477749	914-576-6483

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Brazil	HARD, Rua Dr. Humberto Pinheiro Viera, 150 Lote B, 1 B Distrito Industrial, Joinville, Brazil		55-47-40097209	55-47-40097217
Colombia	Electrogeno, S.A., Carrera 52 #71c-38, Bogota, Colombia		(57) 1 6600 9436	
Costa Rica	Electro Mechanics Supply, La Uruca Contiguo Banco Ntnl., De Costa Rica Condominio, Horizontal Bodega #9, San Jose, Costa Rica		(506) 2233-2595	
Dominican Republic	Calle Estancia Nueva #17 E Esquina Cul-De-Sac 9, San Geronimo, Santo Domingo	Rodfor Team	809-224-5615	809-472-8640
Ecuador	Acero Comercial Ecuatoriano S.A., Av. La Prensa N45-14 y Telégrafo 1 – Quito Av. Juan Tanca Marengo Km. 1.7 – Guayaquil	infouio@acerocomercial.com infogye@acerocomercial.com	(593-2) 2454 333 (593-4) 2683 060	(593-2) 2454 455 (593-4) 2683 059
Guatemala	Tecnofijaciones, 6 Avenue 8-56 Zona 9, Zona 9, Guatemala	Oscar Lucas Penagos	502-233-4-3478	
Panama	Centro-Industrial, Via Cincuentenario, No. 7910, Ciudad Panama, Panama		(507) 302-8022	
Peru	Powers Peruana SAC, Av. Santa Catalina, 555 La Victoria, Lima 13, Peru (www.powersperuana.com)	Martin Vasquez	(011) 511 265 8500	(011) 511 330 0909
Venezuela	Calle Sucre/Qta. Maudora, #1721 Entre Cec Acosta Y San Ignacio Chacao, Caracas	Distributor	58 212 264 1313	58 212 263 0219
Trinidad - Tobago	Ft. Farfan, 3-5 Ibis Avenue, Ibis Acres, San Juan	Derek Cumming	(868) 674-7896	

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