

ANCHOR SYSTEMS – GENERAL INFORMATION



Simpson Strong-Tie Anchor Systems® manufactures a full line of anchoring and fastening products for concrete and masonry. The product line includes adhesives for anchoring and crack injection, mechanical anchors, powder-actuated fasteners, gas-actuated concrete nailer and drill bits. Anchor Systems products offer unique solutions to applications in the light-framed construction market when used with, and without, Simpson Strong-Tie® connectors.

For complete information on product performance, installation requirements and appropriate code listings for Simpson Strong-Tie Anchor Systems® products, please call Simpson Strong-Tie and request an Anchor Systems CD-ROM which contains all of the information you need for your anchoring and fastening needs. In addition to complete product information and the Anchor Designer, Drill Bit Selector and Adhesive Estimator programs, the CD also contains product code reports, MSDS sheets and product fliers.

SET-XP™ Structural Epoxy-Tie Anchoring Adhesive for Cracked and Uncracked Concrete



SET-XP™ Adhesive

SUGGESTED SPECIFICATION:

Anchoring adhesive shall be a two-component high-solids, epoxy-based system supplied in manufacturer's standard cartridge and dispensed through a static-mixing nozzle supplied by the manufacturer. The adhesive anchor shall have been tested and qualified for performance in cracked and uncracked concrete per ICC-ES AC308. Adhesive shall be SET-XP™ Epoxy-Tie® adhesive from Simpson Strong-Tie, Pleasanton, CA. Anchors shall be installed per Simpson Strong-Tie instructions for SET-XP Epoxy-Tie adhesive.

SET-XP™ is a 1:1 two component, high solids epoxy-based anchoring adhesive formulated for optimum performance in both cracked and uncracked concrete. SET-XP™ adhesive has been rigorously tested in accordance with ICC-ES AC308 and 2006 IBC requirements and has proven to offer increased reliability in the most adverse conditions, including performance in cracked concrete under static and seismic loading. SET-XP™ adhesive is teal in color in order to be identified as a high-performance adhesive for adverse conditions. Resin and hardener are dispensed and mixed simultaneously through the mixing nozzle. SET-XP™ adhesive exceeds the ASTM C881 specification for Type I and Type IV, Grade 3, Class C epoxy.

USES: • When SET-XP™ adhesive is used with the IXP™ anchor, all-thread rod or rebar, the system can be used in tension and seismic zones where there is a risk of cracks occurring that pass through the anchor location. It is also suitable for uncracked concrete conditions.



CODES: ICC-ES ESR-2508; City of L.A. RR 25744; Florida FL 11506.5 NSF/ANSI Standard 61 (216 in²/1000 gal). ⚠ The load tables list values based upon results from the most recent testing and may not reflect those in current code reports. Where code jurisdictions apply, consult the current reports for applicable load values.

APPLICATION: Surfaces to receive epoxy must be clean. The base-material temperature must be 50° F or above at the time of installation. For best results, material should be 70–80° F at the time of application. Cartridges should not be immersed in water to facilitate warming. To warm cold material, the cartridges should be stored in a warm, uniformly-heated area or storage container for a sufficient time to allow epoxy to warm completely. Mixed material in nozzle can harden in 5–7 minutes at a temperature of 40° F or above.

SET-XP Cartridge System

Model No.	Capacity ounces (cubic inches)	Cartridge Type	Carton Quantity	Dispensing tool(s)	Mixing Nozzle
SET-XP22	22 (39.7)	side-by-side	10	EDT22B, EDT22AP, EDT22CKT	EMN22i

1. Cartridge estimation guides are available on page 64 of 2009-2010 Simpson Strong-Tie Anchoring and Fastening Systems for Concrete and Masonry catalog.
2. Detailed information on dispensing tools, mixing nozzles and other adhesive accessories is available on pages 87–92 2009-2010 Simpson Strong-Tie Anchoring and Fastening Systems for Concrete and Masonry catalog.
3. Use only appropriate Simpson Strong-Tie mixing nozzle in accordance with Simpson Strong-Tie instructions. Modification or improper use of mixing nozzle may impair epoxy performance.

Cure Schedule

Base Material Temperature		Cure Time
°F	°C	
50	10	72 hrs.
70	21	24 hrs.
90	32	24 hrs.
110	43	24 hrs.

TITEN HD® Heavy-Duty Screw Anchor for Concrete and Masonry



Titen HD® screw anchor
U.S. Patent 5,674,035 and 6,623,228

The Titen HD® anchor is a patented, high-strength screw anchor for concrete and masonry. It is designed for optimum performance in both cracked and uncracked concrete; a requirement that the 2006 IBC places on post-installed anchors. The high-strength, easy-to-install Titen HD anchor has been tested and shown to provide outstanding performance in cracked and uncracked concrete under both static and seismic loading conditions. The self-undercutting, non-expansion characteristics of the Titen HD anchor make it ideal for structural applications, even at reduced edge distances and spacings. Recommended for permanent dry, interior, non-corrosive environments or temporary outdoor applications.

INSTALLATION: Holes in metal fixtures to be mounted should be 1/8" oversized for material thicker than 171 mil (7 ga). Use 1/16" oversized holes for material 171 mil (7 ga) and thinner.

Caution: Oversized holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor's load capacity. Use a Titen HD screw anchor one time only. Installing the anchor multiple times may result in excessive thread wear and reduced load capacity.

- Drill a hole in the base material using a carbide drill bit the same diameter as the nominal diameter of the anchor to be installed. Drill the hole to the specified embedment depth plus 1/2" minimum to allow the thread tapping dust to settle and blow it clean using compressed

air. Overhead installations need not be blown clean. Alternatively, drill the hole deep enough to accommodate embedment depth and dust from drilling and tapping.

- Insert the anchor through the fixture and into the hole.
- Tighten the anchor into the base material until the hex washer head contacts the fixture.
- If the anchor will not install completely, remove the anchor and assure that all dust has been evacuated or drill the hole deeper. Begin re-installation of the anchor by hand to prevent cross-threading.
- Do not use impact wrenches to install into hollow CMU.

SUGGESTED SPECIFICATIONS: Screw anchors shall have 360-degree contact with the base material and shall not require oversized holes for installation. Fasteners shall be manufactured from carbon steel and are heat-treated. Anchors shall be zinc-plated in accordance with ASTM B633 or mechanically galvanized in accordance with ASTM B695. Anchors are not to be reused after initial installation. Screw anchors shall be Titen HD® anchors from Simpson Strong-Tie, Pleasanton, CA. Anchors shall be installed per the Simpson Strong-Tie instructions for the Titen HD anchor.

*Some jurisdictions require an additional square-plate washer for sill-plate applications.

ANCHOR SYSTEMS SET-XP™ Structural Epoxy-Tie Anchoring Adhesive for Cracked and Uncracked Concrete

Simpson Strong-Tie Anchor Systems® products offer several post-installed anchorage solutions for holdowns and bases. Often times these products are used when cast-in-place anchors are omitted or mislocated, or in retrofit applications. The following design values provide solutions to common applications encountered in the light frame construction market.

For complete information on product performance, installation requirements and appropriate code listings for Anchor Systems products please refer to the Anchor Systems catalog (form C-SAS) or visit www.simpsonanchors.com. Also refer to page 10 for Important Instructions to the Designer.

For Corrosion Information, see pages 12–13.

SEISMIC VALUES: IBC Section 1908.1.16 requires that concrete anchors in Seismic Design Categories C through F be governed by the strength of a ductile steel anchor. Anchors noted as limited by the steel capacity satisfy this requirement (footnote 9). Alternately, for anchor solutions limited by the concrete capacity, the IBC requires that either the attachment to the structure shall undergo ductile yielding at a load level less than the anchor design capacity, or the anchor strength shall be at least 2.5 times the demand force.

ANCHORING ADHESIVE SOLUTIONS

Shear Loads for Threaded Rod in Normal-Weight Concrete

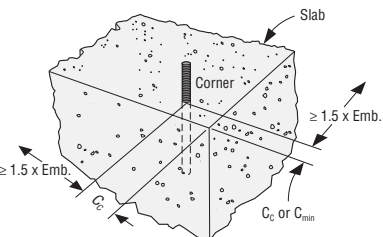
Anchor Size	Drill Bit	Edge Distance	End Distance	Emb. Depth	Concrete Thick.	Spacing	Shear Loads ⁶ (lbs/ft)						
							Concrete ⁴				Cold-Formed Steel (ASD) ⁵		
							LRFD ¹ (seismic)	LRFD ¹¹ (wind)	ASD ^{1,2} (seismic)	ASD ^{2,11} (wind)	33 mil (20 ga)	43 mil (18 ga)	54 mil (16 ga)
½	¾	1¼	5	4	6½	0' - 8"	1,360	1,815	970	1,130	895	1,320	2,485
						1' - 0"	905	1,205	645	755	595	880	1,655
						1' - 4"	680	905	485	565	445	660	1,240
						2' - 0"	455	605	325	375	300	440	830
						2' - 8"	340	450	240	285	225	330	620
						4' - 0"	225	300	160	190	150	220	415
						6' - 0"	150	200	110	125	100	145	275
¾	¾	1¼	5	5	8½	0' - 8"	1,525	2,035	1,090	1,270	960	1,490	2,995
						1' - 0"	1,015	1,355	725	845	640	995	2,000
						1' - 4"	760	1,015	545	635	480	745	1,500
						2' - 0"	510	680	365	425	320	495	1,000
						2' - 8"	380	510	270	315	240	375	750
						4' - 0"	255	340	180	210	160	250	500
						6' - 0"	170	225	120	140	105	165	335
¾	¾	1¼	5	6	10	0' - 8"	1,675	2,235	1,195	1,395	965	1,600	3,320
						1' - 0"	1,115	1,485	795	930	640	1,065	2,215
						1' - 4"	835	1,115	595	700	480	800	1,660
						2' - 0"	560	745	400	465	320	535	1,110
						2' - 8"	420	555	300	350	240	400	830
						4' - 0"	280	375	200	230	160	265	555
						6' - 0"	185	245	135	155	105	180	370

Tension Loads for Threaded Rod in Normal-Weight Concrete

Anchor Dia.	Drill Bit	Emb. Depth	Tension Loads ⁶ (lbs)										Tension Loads ¹⁰ Fu = 58 ksi Steel (lbs)	
			Edge and End Distance (C _c)				Minimum Edge (C _{min}) + Critical End (C _c)						LRFD	ASD
			C _c	LRFD ¹ (seismic)	LRFD ¹¹ (wind)	ASD ^{1,2} (seismic)	ASD ^{2,11} (wind)	C _{min}	LRFD ¹ (seismic)	LRFD ¹¹ (wind)	ASD ^{1,2} (seismic)	ASD ^{2,11} (wind)		
½	¾	4	6	3,175	4,235	2,270	2,645	1¼	1,620	2,160	1,155	1,350	6,175	4,265
		7	8	5,525	6,175 ⁹	3,945	3,860	1¼	2,750	3,665	1,965	2,290		
		10	8	6,175 ⁹	6,175 ⁹	4,410	3,860	1¼	3,925	5,235	2,805	3,270		
¾	¾	5	8	3,415	4,555	2,440	2,845	1¼	1,630	2,175	1,165	1,360	9,830	6,675
		8½	8	5,820	7,760	4,155	4,850	1¼	2,735	3,645	1,950	2,280		
		12	9	8,230	9,830 ⁹	5,880	6,145	1¼	3,870	5,160	2,765	3,225		
¾	¾	6	9	6,085	8,115	4,345	5,070	1¼	2,750	3,665	1,965	2,290	14,530	9,615
		10½	12	10,150	13,535	7,250	8,460	1¼	5,050	6,735	3,605	4,210		
		15	15	14,530 ⁹	14,530 ⁹	10,380	9,080	1¼	7,800	10,400	5,575	6,500		
¾	1	8	10	5,305	8,845	3,790	5,530	1¼	2,380	3,965	1,700	2,480	20,095	13,070
		12	12	7,960	13,265	4,975	8,290	1¼	3,570	5,950	2,550	3,720		
		18	14	11,610	19,355	8,295	12,095	1¼	5,205	8,675	3,720	5,420		
1	1½	8	12	9,375	12,500	6,695	7,815	1¼	3,990	5,320	2,850	3,325	26,360	17,075
		14	18	17,890	23,855	12,780	14,910	1¼	7,910	10,545	5,650	6,590		
		20	23	26,360 ⁹	26,360 ⁹	18,830	16,475	1¼	11,645	16,570	8,320	10,355		

- Anchorage designs conform to ACI 318 Appendix D and assume cracked concrete with no supplementary reinforcement.
- Allowable Stress Design (ASD) values are obtained by dividing Load Resistance Factor Design (LRFD) capacities by 1.4 for seismic and 1.6 for wind.
- Load values based on the following: minimum concrete strength of 2,500 psi, dry hole temperature range 1 and continuous special inspection. Reference ICC-ES ESR-2508 for further information.
- Shear load is applied parallel to the edge of concrete. Anchor is considered as an individual anchor without influence from other anchors.
- Cold-Formed Steel (CFS) shear values are based on 2001 AISI NAS, Eq. E3.3.1-1, $m_f = 0.75$, $\Omega = 2.5$. Reference General Notes for CFS properties. To convert from ASD to LRFD multiply value by 1.5.

- Governing shear load is the lesser of concrete and CFS. Governing tension load is the lesser of concrete and steel.
- For conditions not covered by these tables use the Simpson Anchor Designer ACI 318 Software available at www.simpsonanchors.com.
- Third and fourth edge distances must be $\geq 1.5 \times$ Embedment Depth.
- Failure mode governed by ductile steel rod (A307 Grade C).
- LRFD steel strength based on ACI 318 Appendix D. ASD steel strength based on AISC Steel Construction Manual, 13th Edition, $F_u = 58$ ksi.
- Wind design includes SDC A & B.



ANCHOR SYSTEMS – TITEN HD® Heavy-Duty Screw Anchor for Cracked and Uncracked Concrete

The Titen HD is a patented, high-strength threaded anchor for concrete and masonry. The self-undercutting, non-expansion characteristics of the Titen HD makes it the ideal anchor for structural applications, even at minimum edge distances and under reduced spacing conditions. The proprietary cutting teeth enable the Titen HD to be installed in significantly less time than traditional expansion anchors, and at significantly reduced installation torques. This heat-treated anchor undercuts the concrete to form a strong mechanical interlock over the entire length of the anchor. The anchor can be installed with a standard ANSI masonry drill bit and is removable. The Titen HD is recommended for permanent dry, non-corrosive applications or temporary outdoor applications.

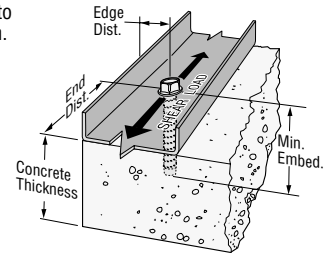
FEATURES:

- **Higher load capacity and vibration resistance:** Threads along the length of the anchor efficiently transfer the load to the base material.
- **Less spacing and edge distance required:** The anchor does not exert expansion forces on the base material.
- **No special drill bit needed:** Designed to install using standard sized drill bits.
- **Installs with 50% less torque:** Testing shows that when compared with a major competitor, the Titen HD requires 50% less torque to be installed in concrete.
- **Less installation time:** No secondary setting or torquing is required.
- **Stamped Hex-washer head:** Requires no separate washer and provides a clean installed appearance. The head is stamped with the Simpson Strong-Tie sign and the anchor length in inches for easy inspection. (Some local building jurisdictions may require a separate washer.)
- **Removable:** Ideal for temporary anchoring (e.g. formwork, bracing) or applications where fixtures may need to be moved.

• Mechanical galvanized coating is available. Refer to www.strongtie.com/info for corrosion information.

CODES: ICC ESR-2713; ICC ESR-1056; City of L.A. RR25560; City of L.A. RR25741; Florida FL 11506.7.
SEISMIC VALUES: IBC Section 1908.1.16 requires that concrete anchors in Seismic Design Categories C through F be governed by the strength of a ductile steel anchor. Alternately, for anchor solutions limited by the concrete capacity, the IBC requires that either the attachment to the structure shall undergo ductile yielding at a load level less than the anchor design capacity, or the anchor strength shall be at least 2.5 times the demand force.

For complete technical information please refer to the Simpson Strong-Tie® Anchoring and Fastening Systems for Concrete and Masonry catalog.



Edge and end distances for Titen HD in concrete slab corner condition
U.S. Patent 5,674,035

Titen HD® – Shear and Tension Loads Attaching Cold-Formed Steel To Normal-Weight Concrete

Anchor Size	Drill Bit	Edge Distance	End Distance	Min. Emb. Depth	Concrete Thick.	Spacing	Concrete ^{2,4} (seismic)				Cold-Formed Steel (ASD) ⁵			
							LRFD ¹ (seismic)	LRFD ⁸ (wind)	ASD ^{1,2} (seismic)	ASD ^{2,8} (wind)	33 mil (20 ga)	43 mil (18 ga)	54 mil (16 ga)	68 mil (14 ga)
Shear Loads Parallel-to-Edge⁶ (lbs/ft)														
3/8 x 3	3/8	1 1/4	7	2 1/2	3 3/4	0' - 8"	660	880	475	550	765	1,030	1,860	2,350
						1' - 0"	440	585	315	365	510	685	1,240	1,565
						1' - 4"	330	440	235	275	385	515	930	1,175
						2' - 0"	220	295	155	185	255	340	620	780
						2' - 8"	165	220	120	135	190	255	465	585
						4' - 0"	110	145	80	90	130	170	310	390
1/2 x 4	1/2	1 1/4	8	3 3/4	5	0' - 8"	1,065	1,420	760	890	895	1,320	2,485	3,130
						1' - 0"	710	945	505	590	595	880	1,655	2,085
						1' - 4"	535	710	380	445	445	660	1,240	1,565
						2' - 0"	355	475	255	295	300	440	830	1,045
						2' - 8"	265	355	190	220	220	330	620	780
						4' - 0"	180	240	130	150	150	220	415	520
Tension Loads⁶ (lbs)														
3/8 x 3	3/8	1 1/4	3	2 1/2	3 3/4	6	600	800	430	500	390	505	920	1,160
1/2 x 4	1/2	1 1/4	4	3 1/4	5	8	940	1,255	670	785	390	505	920	1,160
		4	4	3 3/4	5	8	1,490	1,985	1,065	1,240				

1. Seismic tabulated values are for cracked concrete; an adjustment factor of 0.75 is assumed per ACI 318 Section D.3.3.3 for SDC C through F. See note regarding SEISMIC VALUES.
2. Converting LRFD to ASD assume LRFD values divided by 1.4 and 1.6 for seismic and wind respectively.
3. Shear load is applied parallel to the edge of concrete. Anchor is considered as an individual anchor without influence from other anchors
4. Concrete shall have a minimum f'c of 2,500 psi. Reference ICC-ES ESR-2713 for further information.

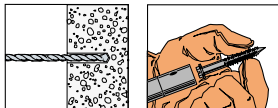
5. CFS values are based on 2001 AISI NAS, Eq. E3.3.1-1 for shear (m_f = 0.75, Ω = 2.5) and Eq. E4.4.2-1 for tension (Ω = 3.0, d_w = 0.5"). Reference General Notes for CFS properties.
6. Governing load is the lesser of Concrete and CFS.
7. For conditions not covered by this table use the Simpson Anchor Designer ACI 318 Software available at www.simpsonanchors.com.
8. Wind tabulated values are for uncracked concrete without supplemental reinforcement. Wind design includes SDC A and B.

TITEN® Concrete & Masonry Screws

Titen screws are 3/16" and 1/4" diameter masonry screws for attaching all types of components to masonry. Carbon-steel Titen screws are available in hex and phillips head designs in blue, white or silver colors. Use with appropriately sized Titen drill bits included with each box.

CODES: FL 2355.1 (Carbon-steel Titen)

Titen Installation Sequence



WARNING: Carbon Steel: Industry studies show that hardened fasteners can experience performance problems in wet environments. Accordingly, use this product in dry, interior applications only. Stainless Steel: Acceptable for use in exterior environments. See corrosion on page 16 of C-SAS-2009.



Special hex adapter on the bit allows the Titen Installation Tool to slide over the bit and lock in, ready to drive screws.



Titen® Screws – Shear and Tension Loads

Anchor Size	Embed Depth	Edge Distance	Spacing	CMU ¹		Cold-Formed Steel ²	
				Screw Steel Type	Carbon	Stainless	33 mil (20 ga)
(ASD) Allowable Shear Load^{3,4} (lbs/ft)							
3/16	1	1 1/8	0'-4"	615	—	795	1020
			0'-6"	410	—	530	680
			1'-0"	205	—	265	340
			1'-6"	135	—	175	225
			2'-0"	100	—	135	170
			3'-0"	70	—	90	115
1/4	1	1 1/2	0'-4"	750	300	1050	1365
			0'-6"	500	200	700	910
			1'-0"	250	100	350	455
			1'-6"	165	65	235	305
			2'-0"	125	50	175	230
			3'-0"	85	35	115	150
(ASD) Allowable Tension Load^{3,4} (lbs)							
3/16	1	1 1/8	2 1/4	110	—	240	315
1/4	1	1 1/2	4	150	110	290	380

1. Allowable loads are based on a safety factor of 5.0 for installations under the IBC and IRC.
2. Cold-Formed Steel (CFS) values are based on 2001 AISI NAS, Section E4, Ω=3.0, d_w=5/16" (3/16" Titen) and d_w=3/8" (1/4" Titen). Reference General Notes for CFS properties.
3. Governing load is the lesser of CMU and CFS.
4. Use interaction formula for combined tension and shear (P_s/P_t) + (V_s/V_t) ≤ 1.0.

GCN150 Gas-Actuated Concrete Nailer

The GCN150 gas-actuated concrete nailer is a portable fastening tool for attaching light-duty fixtures such as drywall track, furring strips, hat track and angle track to concrete, steel, CMU and metal deck. The GCN150 has a portable gas fuel supply that does not require electrical cords or hoses. The GCN150 sets up quickly and offers maximum productivity. With a 500 shot-per-hour capacity and a pin jam release door, the GCN150 makes fastening pins fast and easy. Additional attributes include 2-step pin loading into the magazine, light and well-balanced weight, a battery indicator light and a sure-grip rubber handle pad.

The GDP concrete pins are designed to work with the GCN150 Gas-Actuated Concrete Nailer as well as with most major brand gas concrete nailer tools. The patent-pending plastic collation of the 10-pin strip is a break-away design that minimizes the possibility of a jam. The GDP pins are designed for use in A36 and A572 steel, concrete and CMU block.

GDP pins are code listed under ICC-ES ESR-2811. This report covers the fastening of building components, such as cold-formed-steel framing members, to normal-weight concrete, structural sand-lightweight concrete, structural sand-lightweight concrete on metal deck, concrete masonry units (CMU) and steel base materials. GDP gas-actuated pins were tested in accordance with ICC-ES Acceptance Criteria AC70 for recognition under the 2006 IBC, the 2006 IRC and the 1997 UBC.

CODES: ICC-ES ESR-2811



GDP
(Patent Pending)



Anchors

0.106 Diameter Shank Drive Pins for the GCN150

Model No.	Length	Qty Pins / pack +1 Fuel Cell	Packs/ Carton	Compatible with these Tools
GDP-50KT	½"	1,000	5	Simpson Strong-Tie GCN150 Others: TF1100, C3
GDP-62KT	⅝"	1,000	5	
GDP-75KT	¾"	1,000	5	
GDP-100KT	1"	1,000	5	
GDP-125KT	1¼"	1,000	5	
GDP-150KT	1½"	1,000	5	

GDP Pin – Shear and Tension Loads

Model Type	Dia.	Spacing	Base Material					Attached Material		
			Normal-Weight Concrete ¹		A36 Steel ²			Cold-Formed Steel ³		
			2,000 psi	4,000 psi	¼"	⅜"	½"	33 mil (20 ga)	43 mil (18 ga)	54 mil (16 ga)
GDP	0.106	Allowable Shear Load⁴ (lbs/ft)								
		0'-4"	135	225	435	675	855	445	580	1055
		0'-6"	90	150	290	450	570	295	385	700
		0'-8"	70	115	215	340	430	225	290	525
		1'-0"	45	75	145	225	285	150	195	350
		2'-0"	25	40	75	115	145	75	95	175
	3'-0"	15	25	50	75	95	50	65	115	
0.106	—	Allowable Tension Load⁴ (lbs)								
			30	30	185	210	125	195	255	460

1. For Normal-Weight Concrete the minimum edge distance and spacing is 3" and 4" respectively with ¼" minimum embedment.
2. For A36 Steel the minimum edge distance and spacing is 0.5" and 1" respectively. Fastener must fully penetrate steel base material.
3. Cold-Formed Steel (CFS) values are based on 2001 AISI NAS, Section E4. Reference General Notes for CFS properties.
4. Governing load is the lesser of the base material and CFS.

POWDER-ACTUATED FASTENERS

Powder-actuated fasteners provide a quick and economical method for fastening cold-formed steel to concrete or steel base materials.

CODES: ICC-ES ESR-2138; City of LA RR 25469; FL 11506.3

In Normal-Weight Concrete

PDP-Series Fasteners

PDP*	PDPW	PDPWL*
PDP-125	PDPW-125	PDPWL-125
PDP-150	PDPW-150	PDPWL-150
PDP-175	PDPW-175	PDPWL-175
PDP-200	PDPW-200	PDPWL-200
PDP-225	—	—
PDP-250	PDPW-250	PDPWL-250
PDP-300	PDPW-300	PDPWL-300
1. *Including stainless steel models.		PDPWL-400

PHN-Series Fasteners

PHN	PHNW	PHSNA
PHN-27	PHNW-27	PHSNA-27
PHN-32	PHNW-32	PHSNA-32
PHN-37	PHNW-37	PHSNA-37
PHN-42	PHNW-42	PHSNA-42
PHN-47	PHNW-47	PHSNA-47
PHN-52	PHNW-52	PHSNA-52
PHN-57	PHNW-57	PHSNA-57
PHN-62	PHNW-62	PHSNA-62
PHN-72	PHNW-72	PHSNA-72

In Lightweight Concrete Over Steel Deck

PDPT-Series Fasteners

PDPT	
PDPT-50K	(knurled)
PDPT-62K	(knurled)
PDPT-75	
PDPT-100	

In Steel

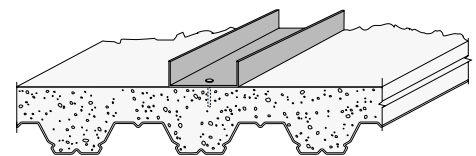
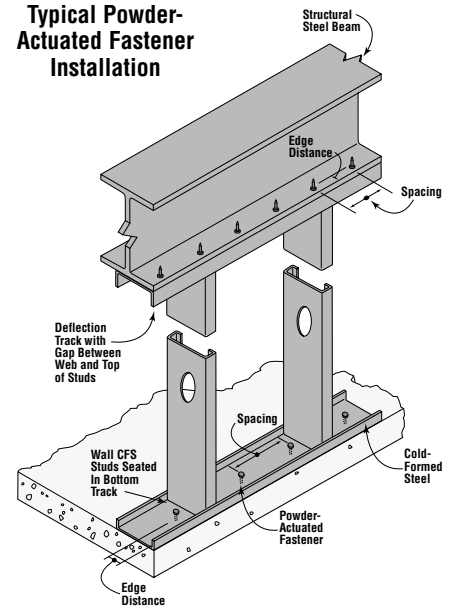
PDP-Series Fasteners

PDP	PDPW	PDPWL
PDP-100	PDPW-100	PDPWL-100
PDP-125	PDPW-125	PDPWL-125
PDP-150	PDPW-150	PDPWL-150
PDP-175	PDPW-175	PDPWL-175
PDP-200	PDPW-200	PDPWL-200
PDP-225	—	—
PDP-250	PDPW-250	PDPWL-250
PDP-300	PDPW-300	PDPWL-300

PHN-Series Fasteners

PHN	PHNW	PHSNA
PHN-27	PHNW-27	PHSNA-27
PHN-32	PHNW-32	PHSNA-32
PHN-37	PHNW-37	PHSNA-37
PHN-42	PHNW-42	PHSNA-42
PHN-47	PHNW-47	PHSNA-47
PHN-52	PHNW-52	PHSNA-52
PHN-57	PHNW-57	PHSNA-57
PHN-62	PHNW-62	PHSNA-62
PHN-72	PHNW-72	PHSNA-72

Typical Powder-Actuated Fastener Installation



PDPT In Lightweight Concrete Over Steel Deck

PRODUCT NOMENCLATURE

EXAMPLE:

PDP-175 = 0.145 Dia. PIN x 1¾" length (no washer)

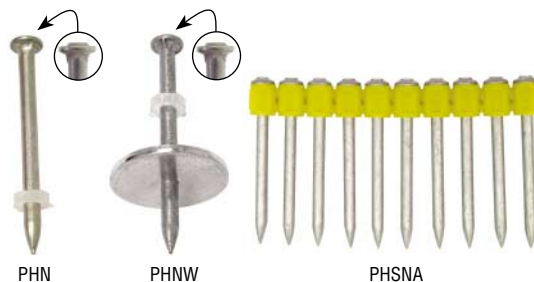
PHN-52 = 0.145 Dia. PIN x 52mm length (no washer)

PDPT-100 = 0.145 Dia. PIN x 1" length (no washer)

W = ¾" Dia. metal washer (PDP)
1" Dia. metal washer (PHN)

WL = 1" Dia. metal washer (PDP)

Refer to the latest Simpson Strong-Tie® Anchor and Fastening Systems for Concrete and Masonry catalog for further information on powder-actuated fasteners



POWDER-ACTUATED FASTENERS

PDP/PHN Pin – Shear and Tension Loads

Model Type	Dia.	Spacing	Base Material			Attached Material				
			Normal Weight Concrete ¹		A36 Steel ²	Cold Formed Steel ³				
			Emb. Depth	2,000 psi	4,000 psi	3/16"	33 mil (20 ga)	43 mil (18 ga)	54 mil (16 ga)	
PDP PHN	0.145	0'-4"	Allowable Shear Load ⁴ (lbs/ft)							
			1	360	615	1185	610	795	1440	
			1¼	795	795					
			0'-6"	1	240	410	790	405	530	960
				1¼	530	530				
			0'-8"	1	180	310	595	305	395	720
		1¼		400	400					
		1'-0"	1	120	205	395	205	265	480	
			1¼	265	265					
		2'-0"	1	60	105	200	100	130	240	
			1¼	135	135					
		3'-0"	1	40	70	130	70	90	160	
	1¼		90	90						
	0.145	—	Allowable Tension Load ⁴ (lbs)							
1			45	150	155	235	305	550		
1¼			140	370						

1. For Normal-Weight Concrete the minimum edge distance and spacing is 3" and 4" respectively.
2. For A36 Steel the minimum edge distance and spacing is 0.5" and 1" respectively. Fastener must fully penetrate steel base material.
3. Cold-Formed Steel (CFS) values are based on 2001 AISI NAS, Section E4. Reference General Notes for CFS properties.
4. Governing load is the lesser of the base material and CFS.
5. Allowable loads for Base Material are based on ESR-2138.

PDPT Pin – Shear and Tension Loads

Model Type	Dia.	Spacing	Base Material				Attached Material		
			Light Weight Concrete ^{1, 2}		A36 Steel ⁴		Cold Formed Steel ⁵		
			Concrete (Top)	Lower Flute ³ (Bottom)	¼"	⅜"	33 mil (20 ga)	43 mil (18 ga)	54 mil (16 ga)
PDPT	0.145	0'-4"	Allowable Shear Load ⁶ (lbs/ft)						
			750	825	2100	1980	610	795	1440
			500	550	1400	1320	405	530	960
			375	415	1050	990	305	395	720
			250	275	700	660	205	265	480
			125	135	350	330	100	130	240
	0.145	—	Allowable Tension Load ⁶ (lbs)						
			85	40	340	290	235	305	550

1. For Light-Weight Concrete the minimum edge distance and spacing is 3" and 4" respectively with ⅝" minimum embedment. Concrete shall have a minimum compressive strength of f_c=3000 psi.
2. For steel deck the minimum depth and thickness is 3" and 33mil (20ga) respectively.
3. For deck web the minimum edge and end distance is 1½" and 4" respectively with 4" minimum spacing.
4. For A36 Steel the minimum edge distance and spacing is 0.5" and 1" respectively. Fastener must fully penetrate steel base material.
5. Cold-Formed Steel (CFS) values are based on 2001 AISI NAS, Section E4. Reference General Notes for CFS properties.
6. Governing load is the lesser of the base material and CFS.
7. Allowable loads for Base Material are based on ESR-2138.