SMART DI+™

Internally Threaded Expansion Anchor

PRODUCT DESCRIPTION

The Smart DI+ is an all-steel, machine bolt anchor available in carbon steel. It can be used in solid concrete, hard stone, and solid block base materials. The Smart DI+ is specifically designed to be easier to fully set during installation as a benefit to the user.

GENERAL APPLICATIONS AND USES

- Suspending Conduit
- Fire Sprinkler
- Cable Trays and Strut
- Concrete Formwork
- Pipe Supports
- Suspended Lighting

FEATURES AND BENEFITS

+ Installs with reduced effort compared to traditional drop in style anchors.
+ Can be installed using the manual setting tool or Smart DI+ system with a hammer-drill.
+ Setting indicater makes identification of properly set anchors easy (when installed using the smart tool and smart bit).
+ Internally threaded anchor for easy bolt removability and service work
+ Anchor can be installed through standard fixture holes.

TESTING, APPROVALS AND LISTINGS

- FM Global (Factory Mutual) - Report No. 3040746 (see ordering information
- Underwriters Laboratory (UL Listed) – File No. EX1289 (N) (see ordering information)

GUIDE SPECIFICATIONS

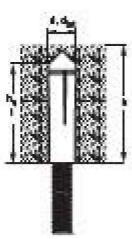
CSI Divisions: 03151 - Concrete Anchoring, and 05090 - Metal Fastenings. Dropin anchors shall be Smart DI+ as supplied by Powers Fasteners, Inc., Brewster, NY.

MATERIAL SPECIFICATIONS

Anchor component	Specification
Anchor Body	AISI 1008
Plug	AISI 1008
Zinc Plating	ASTM B 633, SC1 Type III (Fe/Zn 5)

INSTALLATION SPECIFICATIONS

Anchor (Rod) Size	1/4"	3/8"	1/2"	5/8"	3/4
Nominal Outside Diameter d (in.)	0.375	0.500	0.625	0.875	1.000
ANSI Drill Bit Size, d_{bit} (in.)	3/8	1/2	5/8	7/8	1
Maximum Tightening Torque, T_{max} (ft.-lbs.)	5	10	20	40	80
Thread Size (UNC)	1/4-20	3/8-16	1/2-13	5/8-11	3/4-10
Thread Depth (in.)	7/16	5/8	13/16	1-3/16	1-3/8
Anchor Length l, h_v (in.)	1	1-9/16	2	2-1/2	3-3/16



Nomenclature

d = Diameter of anchor
d_{bit} = Diameter of drill bit
h = Base material thickness. The minimum value of h should be $1.5h_v$ or 3" min. (whichever is greater)
h_v = Minimum embedment depth
l = Overall length of anchor

SECTION CONTENTS

General Information
Material Specifications
Installation Specifications
Performance Data
Design Criteria (Allowable Stress Design)
Ordering Information

SMART DI+™

THREAD VERSION

Coarse (UNC)

ANCHOR MATERIALS

- Zinc Plated Carbon Steel

ROD/ANCHOR SIZE RANGE (TYP.)

- 1/4" to 3/4" diameter (UNC)

SUITABLE BASE MATERIALS

- Normal-Weight Concrete

STANDARD DROP-IN

SMART DI+™ DROP-IN

Anchor prior to installation

When properly set, anchor indicator will leave blue paint in recessed cavities. Note: Blue does not have to be removed from all four top surfaces to be fully set.

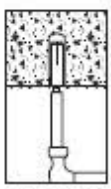
- Easier to Set
- More Expansion
- Expansion Indicator with a Smart DI+ System

INSTALLATION SPECIFICATIONS

Manual Installation

1. Drill a hole into the base material to the depth of embedment required. The tolerances of the drill bit used must meet the requirements of ANSI Standard B212.15. Use any ANSI Standard carbide drill bit.

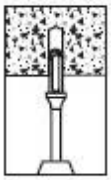
2. Blow the hole clean of dust and other materials. Insert the anchor into the hole and, if necessary tap flush with surface.



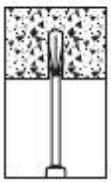
3. Using a Powers manual setting tool specifically, set the anchor by driving the tool with a sufficient number of hammer blows until the shoulder of the tool is seated against the anchor. Anchor will not hold allowable loads required if shoulder of Powers manual setting tool does not seat against anchor. Proper manual installation may not remove blue indicator paint.

4. If using a fixture, position it, insert bolt and tighten so as not to exceed the maximum tightening torque. Most overhead applications utilize threaded rod. Minimum thread engagement should be at least one anchor diameter.

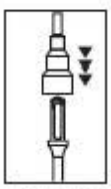
Smart DI+™ System Installation



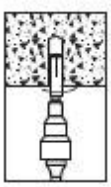
1. Drill a hole into the base material to the depth of embedment required using the appropriate Powers DI+™ Drill. The tolerances of the drill bit used must meet the requirements of ANSI Standard B212.15. Standard installation with a DI+™ Drill may result in the anchor being slightly subset from the surface. Minimum published embedment depths must be achieved by using the shoulder of the DI+™ Drill as a guide.



2. Blow the hole clean of dust and other materials. Insert the anchor into the hole and, if necessary, tap flush with the surface.



3. Slide the appropriate Powers DI+™ Tool over the DI+™ Drill used to drill the hole and twist counterclockwise to lock the setting tool onto the bit. If tool does not fit snug onto bit it may be necessary to replace the internal rubber spring plug in the tool (see ordering information). Replacement kit sold separately.



4. Once attached, insert the tip of the setting tool into the Smart DI+™ anchor and drive the internal plug fully using the rotation with hammer mode of the SDS+ drill (see table below for suggested tools).

5. For proper installation, the shoulder of the setting tool must come briefly in full contact with the Smart DI+™ resulting in the blue indicator paint being removed from the raised top of the anchor. The paint will remain in the recessed portion of the top indicating full expansion.

6. If using a fixture, position it, insert the bolt and tighten so as not to exceed the maximum tightening torque. Most overhead applications utilize threaded rod. Minimum thread engagement should be at least one anchor diameter.

Recommended SDS+ Rotary Hammer Drill Specification for Smart DI+TM Anchor (Drop-In) with Smart DI+TM System Installation

Diameter	Concrete Compressive Strength (psi)	Rated Tool Impact Energy Suggested Range* (ft-lbs)	Recommended Rotary Hammer Tool Part Number
1/4"	2,500	1.3 - 2.6	D25313K
	6,500	2.0 - 3.5	
3/8"	2,500	1.3 - 4.0	D25313K
	6,500	2.1 - 4.0	
1/2"	2,500	2.0 - 4.0	D25404K
	6,500	2.5 - 4.0	

* Local concrete conditions and rotary hammer impact efficiency vary greatly. Please verify that the tool impact energy is sufficient to fully set the internal plug of the Smart DI+ prior to using the system.

PERFORMANCE DATA

Ultimate Load Capacities for Smart DI+™ Anchor (Drop-In) in Normal-Weight Concrete[1,2]

Nominal Anchor Diameter d in.	Minimum Embedment Depth in.	Minimum Concrete Compressive Strength - f'c (psi)							
		2,500		3,000		4,000		6,000	
		Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)
1/4	1	1,300	2,495	1,390	2,510	1,565	2,550	1,910	2,620
3/8	1-9/16	1,985	4,160	2,275	4,360	2,850	4,755	4,000	5,550
1/2	2	3,630	7,170	3,815	7,280	4,190	7,505	4,935	7,955
5/8	2-1/2	5,765	9,850	6,290	10,805	7,935	12,710	9,430	16,525
3/4	3-3/16	6,200	16,110	7,320	16,730	9,565	17,975	14,045	20,460

1. Tabulated load values are for anchors installed in concrete. Concrete compressive strength must be at the specified minimum at the time of installation.
2. Ultimate load capacities must be reduced by a minimum safety factor of 4.0 or greater to determine allowable working load.

Allowable Load Capacities for Smart DI+™ Anchor (Drop-In) in Normal-Weight Concrete[1,2,3]

Nominal Anchor Diameter d in.	Minimum Embedment Depth in.	Minimum Concrete Compressive Strength - f'c (psi)							
		2,500		3,000		4,000		6,000	
		Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)
1/4	1	325	623	347	627	391	637	477	655
3/8	1-9/16	496	1,040	568	1,090	712	1,188	1,000	1,387
1/2	2	907	1,792	953	1,820	1,047	1,876	1,233	1,988
5/8	2-1/2	1,441	2,462	1,572	2,701	1,985	3,177	2,357	4,131
3/4	3-3/16	1,550	4,027	1,830	4,182	2,391	4,493	3,511	5,115

1. Allowable load capacities listed are calculated using and applied safety factor of 4.0.
2. Linear interpolation may be used to determine allowable loads for intermediate compressive strengths.
3. Allowable load capacities are multiplied by reduction factors found in the Design Criteria section when anchor spacing or edge distances are less than critical distances.

DESIGN CRITERIA (ALLOWABLE STRESS DESIGN)

Combined Loading

For anchors loaded in both shear and tension, the combination of loads should be proportioned as follows:

$$\left(\frac{Nu}{Nn}\right)^{\frac{5}{3}} + \left(\frac{Vu}{Vn}\right)^{\frac{5}{3}} \leq 1 \quad \text{OR} \quad \left(\frac{Nu}{Nn}\right) + \left(\frac{Vu}{Vn}\right) \leq 1$$

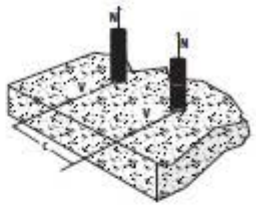
Where:
N_u = Applied Service Tension Load
N_n = Allowable Tension Load
V_u = Applied Service Shear Load
V_n = Allowable Shear Load

Load Adjustment Factors for Spacing and Edge Distances[1]

NOTE: Allowable load values found in the performance data tables are multiplied by reduction factors when anchor spacing or edge distances are less than critical distances. Linear interpolation is allowed for intermediate anchor spacing and edge distances between critical and minimum distances. When an anchor is affected by both reduced spacing and edge distance, the spacing and edge reduction factors must be combined (multiplied). Multiple reduction factors for anchor spacing and edge distance may be required depending on the anchor group configuration.

LOAD ADJUSTMENT FACTORS FOR NORMAL-WEIGHT CONCRETE

Spacing Distance - Tension



Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
s_c		3	4-1/2	6	7-1/2	9-1/2
s_{cr}		1-1/2	2-3/8	3	3-3/4	4-3/4
Spacing Distance (inches)	1/2					
	1					
	1-1/2	0.90				
	2	0.94				
	2-1/2	0.97	0.84			
	3	1.00	0.87	0.85		
	3-1/2		0.91	0.88		
	4		0.95	0.90	0.80	
	4-1/2		1.00	0.93	0.83	
	5			0.95	0.86	0.80
	5-1/2			0.98	0.89	0.82
	6			1.00	0.91	0.84
	6-1/2				0.94	0.87
	7				0.97	0.89
	7-1/2				1.00	0.91
	8					0.93
	8-1/2					0.96
	9					0.98
	9-1/2					1.00

Spacing Reduction Factors - Shear

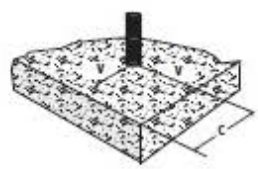
Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
s_c		3	5	6	7-1/2	9-1/2
s_{cr}		1-1/2	2-3/8	3	3-3/4	4-3/4
Spacing Distance (inches)	1/2					
	1					
	1-1/2	0.62				
	2	0.75				
	2-1/2	0.88	0.65			
	3	1.00	0.73	0.62		
	3-1/2		0.81	0.69		
	4		0.89	0.75	0.60	
	4-1/2		0.97	0.81	0.66	
	5		1.00	0.88	0.71	0.60
	5-1/2			0.94	0.77	0.64
	6			1.00	0.83	0.69
	6-1/2				0.89	0.73
	7				0.94	0.78
	7-1/2				1.00	0.82
	8					0.87
	8-1/2					0.91
	9					0.96
	9-1/2					1.00

LOAD ADJUSTMENT FACTORS FOR NORMAL-WEIGHT CONCRETE

Edge Distance - Tension

Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
c_{ac}		2	4-11/16	6	7-1/2	9-9/16
c_{min}		2	3-1/8	4	5	6-3/8
Edge Distance (inches)	1/2					
	1					
	1-1/2					
	2	1.00				
	2-1/2					
	3					
	3-1/2		0.98			
	4		0.99	0.93		
	4-1/2		1.00	0.95		
	5			0.97	0.85	
	5-1/2			0.98	0.88	
	6			1.00	0.91	
	6-1/2				0.94	0.85
	7				0.97	0.88
	7-1/2				1.00	0.90
	8					0.93
	8-1/2					0.95
	9					0.98
	9-1/2					1.00

Edge Reduction Factors - Shear



Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
c_{ac}		3	4-11/16	6	7-1/2	9-9/16
c_{min}		2	3-1/8	4	5	6-3/8
Edge Distance (inches)	1/2					
	1					
	1-1/2					
	2	0.87				
	2-1/2	0.94				
	3	1.00				
	3-1/2		0.96			
	4		0.98	0.91		
	4-1/2		1.00	0.93		
	5			0.95	0.85	
	5-1/2			0.98	0.88	
	6			1.00	0.91	
	6-1/2				0.94	0.85
	7				0.97	0.88
	7-1/2				1.00	0.90
	8					0.93
	8-1/2					0.95
	9					0.98
	9-1/2					1.00

ORDERING INFORMATION

Smart DI+™ Anchor (Drop-In) Carbon Steel Smooth Wall Dropin

Peco Part No.	Bar Code	Rod/ Anchor Size	Overall Length	Thread Depth	Package Type	Package Quantity	Item Weight	FM or UL
6325J	96462	1/4"	1"	7/16"	Jar	100	2.5	
6325J-20	43000	1/4"	1"	7/16"	Jar	20	0.5	
6337J	96464	3/8"	1-9/16"	5/8"	Jar	50	3.13	FM/UL
6337J-20	43001	3/8"	1-9/16"	5/8"	Jar	20	1.26	FM/UL
6350J	96466	1/2"	2"	13/16"	Jar	50	6.0	FM/UL
6362	43008	5/8"	1-1/2"	1-1/8"	Box	25	9.75	FM/UL
6375	43010	3/4"	3-3/16"	1-3/16"	Box	25	4.8	FM/UL

DI+™ Tool

Peco Part No.	Bar Code	Rod/Anchor Size	Pin Length	Package Quantity
Available By Request	Available By Request	1/4"	39/64"	1
Available By Request	Available By Request	3/8"	61/64"	1
Available By Request	Available By Request	1/2"	1-3/16"	1

DI+™ Tool Repair Kit (Each Kit contains 2 Guide Screws & 1 Rubber Spring Plug)

Peco Part No.	Bar Code	Fits Tool Number	Package Quantity
Available By Request	Available By Request	00425SD	1
Available By Request	Available By Request	00427SD	1
Available By Request	Available By Request	00429SD	1

DI+™ Drill

Peco Part No.	Bar Code	Smart DI+ Description	Bit Diameter	Package Quantity
Available By Request	Available By Request	1/4" Dia.	3/8"	1
Available By Request	Available By Request	3/8" Dia.	1/2"	1
Available By Request	Available By Request	1/2" Dia.	5/8"	1

Manual Setting Tools for Smart DI+™ Anchor (Drop-In)

Peco Part No.	Bar Code	Rod/ Anchor Size	Pin Length	Package Type	Package Quantity	Item Weight
6305DIT	43012	1/4"	39/64"	Clamshel	1	0.18
6307DIT	43014	3/8"	61/64"	Clamshel	1	0.32
6309DIT	43016	1/2"	1-3/16"	Clamshel	1	0.50
6311DIT	43018	5/8"	1-5/16"	Clamshel	1	
6313DIT	43020	3/4"	1-61/64"	Clamshel	1	

© 2015 Powers Fasteners, Inc. All Rights Reserved. Smart DI+ is a registered trademark of Powers Fasteners, Inc. For the most current product information please visit www.powers.com.

SMART DI+™

Internally Threaded Expansion Anchor

PRODUCT DESCRIPTION

The Smart DI+ is an all-steel, machine bolt anchor available in carbon steel. It can be used in solid concrete, hard stone, and solid block base materials. The Smart DI+ is specifically designed to be easier to fully set during installation as a benefit to the user.

GENERAL APPLICATIONS AND USES

- Suspending Conduit
- Fire Sprinkler
- Cable Trays and Strut
- Concrete Formwork
- Pipe Supports
- Suspended Lighting

FEATURES AND BENEFITS

+ Installs with reduced effort compared to traditional drop in style anchors.
+ Can be installed using the manual setting tool or Smart DI+ system with a hammer-drill.
+ Setting indicater makes identification of properly set anchors easy (when installed using the smart tool and smart bit).
+ Internally threaded anchor for easy bolt removability and service work
+ Anchor can be installed through standard fixture holes.

TESTING, APPROVALS AND LISTINGS

- FM Global (Factory Mutual) - Report No. 3040746 (see ordering information
- Underwriters Laboratory (UL Listed) – File No. EX1289 (N) (see ordering information)

GUIDE SPECIFICATIONS

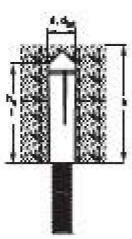
CSI Divisions: 03151 - Concrete Anchoring, and 05090 - Metal Fastenings. Dropin anchors shall be Smart DI+ as supplied by Powers Fasteners, Inc., Brewster, NY.

MATERIAL SPECIFICATIONS

Anchor component	Specification
Anchor Body	AISI 1008
Plug	AISI 1008
Zinc Plating	ASTM B 633, SC1 Type III (Fe/Zn 5)

INSTALLATION SPECIFICATIONS

Anchor (Rod) Size	1/4"	3/8"	1/2"	5/8"	3/4
Nominal Outside Diameter d (in.)	0.375	0.500	0.625	0.875	1.000
ANSI Drill Bit Size, d_{bit} (in.)	3/8	1/2	5/8	7/8	1
Maximum Tightening Torque, T_{max} (ft.-lbs.)	5	10	20	40	80
Thread Size (UNC)	1/4-20	3/8-16	1/2-13	5/8-11	3/4-10
Thread Depth (in.)	7/16	5/8	13/16	1-3/16	1-3/8
Anchor Length l, h_v (in.)	1	1-9/16	2	2-1/2	3-3/16



Nomenclature

d = Diameter of anchor
d_{bit} = Diameter of drill bit
h = Base material thickness. The minimum value of h should be $1.5h_v$ or 3" min. (whichever is greater)
h_v = Minimum embedment depth
l = Overall length of anchor

SECTION CONTENTS

General Information
Material Specifications
Installation Specifications
Performance Data
Design Criteria (Allowable Stress Design)
Ordering Information

SMART DI+™

THREAD VERSION

Coarse (UNC)

ANCHOR MATERIALS

- Zinc Plated Carbon Steel

ROD/ANCHOR SIZE RANGE (TYP.)

- 1/4" to 3/4" diameter (UNC)

SUITABLE BASE MATERIALS

- Normal-Weight Concrete

STANDARD DROP-IN

SMART DI+™ DROP-IN

Anchor prior to installation

When properly set, anchor indicator will leave blue paint in recessed cavities. Note: Blue does not have to be removed from all four top surfaces to be fully set.

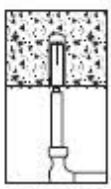
- Easier to Set
- More Expansion
- Expansion Indicator with a Smart DI+ System

INSTALLATION SPECIFICATIONS

Manual Installation

1. Drill a hole into the base material to the depth of embedment required. The tolerances of the drill bit used must meet the requirements of ANSI Standard B212.15. Use any ANSI Standard carbide drill bit.

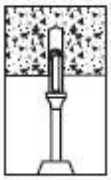
2. Blow the hole clean of dust and other materials. Insert the anchor into the hole and, if necessary tap flush with surface.



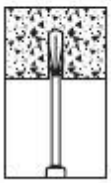
3. Using a Powers manual setting tool specifically, set the anchor by driving the tool with a sufficient number of hammer blows until the shoulder of the tool is seated against the anchor. Anchor will not hold allowable loads required if shoulder of Powers manual setting tool does not seat against anchor. Proper manual installation may not remove blue indicator paint.

4. If using a fixture, position it, insert bolt and tighten so as not to exceed the maximum tightening torque. Most overhead applications utilize threaded rod. Minimum thread engagement should be at least one anchor diameter.

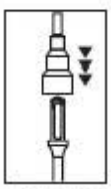
Smart DI+™ System Installation



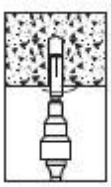
1. Drill a hole into the base material to the depth of embedment required using the appropriate Powers DI+™ Drill. The tolerances of the drill bit used must meet the requirements of ANSI Standard B212.15. Standard installation with a DI+™ Drill may result in the anchor being slightly subset from the surface. Minimum published embedment depths must be achieved by using the shoulder of the DI+™ Drill as a guide.



2. Blow the hole clean of dust and other materials. Insert the anchor into the hole and, if necessary, tap flush with the surface.



3. Slide the appropriate Powers DI+™ Tool over the DI+™ Drill used to drill the hole and twist counterclockwise to lock the setting tool onto the bit. If tool does not fit snug onto bit it may be necessary to replace the internal rubber spring plug in the tool (see ordering information). Replacement kit sold separately.



4. Once attached, insert the tip of the setting tool into the Smart DI+™ anchor and drive the internal plug fully using the rotation with hammer mode of the SDS+ drill (see table below for suggested tools).

5. For proper installation, the shoulder of the setting tool must come briefly in full contact with the Smart DI+™ resulting in the blue indicator paint being removed from the raised top of the anchor. The paint will remain in the recessed portion of the top indicating full expansion.

6. If using a fixture, position it, insert the bolt and tighten so as not to exceed the maximum tightening torque. Most overhead applications utilize threaded rod. Minimum thread engagement should be at least one anchor diameter.

Recommended SDS+ Rotary Hammer Drill Specification for Smart DI+TM Anchor (Drop-In) with Smart DI+TM System Installation

Diameter	Concrete Compressive Strength (psi)	Rated Tool Impact Energy Suggested Range* (ft-lbs)	Recommended Rotary Hammer Tool Part Number
1/4"	2,500	1.3 - 2.6	D25313K
	6,500	2.0 - 3.5	
3/8"	2,500	1.3 - 4.0	D25313K
	6,500	2.1 - 4.0	
1/2"	2,500	2.0 - 4.0	D25404K
	6,500	2.5 - 4.0	

* Local concrete conditions and rotary hammer impact efficiency vary greatly. Please verify that the tool impact energy is sufficient to fully set the internal plug of the Smart DI+ prior to using the system.

PERFORMANCE DATA

Ultimate Load Capacities for Smart DI+™ Anchor (Drop-In) in Normal-Weight Concrete[1,2]

Nominal Anchor Diameter d in.	Minimum Embedment Depth in.	Minimum Concrete Compressive Strength - f'c (psi)							
		2,500		3,000		4,000		6,000	
		Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)
1/4	1	1,300	2,495	1,390	2,510	1,565	2,550	1,910	2,620
3/8	1-9/16	1,985	4,160	2,275	4,360	2,850	4,755	4,000	5,550
1/2	2	3,630	7,170	3,815	7,280	4,190	7,505	4,935	7,955
5/8	2-1/2	5,765	9,850	6,290	10,805	7,935	12,710	9,430	16,525
3/4	3-3/16	6,200	16,110	7,320	16,730	9,565	17,975	14,045	20,460

1. Tabulated load values are for anchors installed in concrete. Concrete compressive strength must be at the specified minimum at the time of installation.
2. Ultimate load capacities must be reduced by a minimum safety factor of 4.0 or greater to determine allowable working load.

Allowable Load Capacities for Smart DI+™ Anchor (Drop-In) in Normal-Weight Concrete[1,2,3]

Nominal Anchor Diameter d in.	Minimum Embedment Depth in.	Minimum Concrete Compressive Strength - f'c (psi)							
		2,500		3,000		4,000		6,000	
		Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)	Tension (lbs.)	Shear (lbs.)
1/4	1	325	623	347	627	391	637	477	655
3/8	1-9/16	496	1,040	568	1,090	712	1,188	1,000	1,387
1/2	2	907	1,792	953	1,820	1,047	1,876	1,233	1,988
5/8	2-1/2	1,441	2,462	1,572	2,701	1,985	3,177	2,357	4,131
3/4	3-3/16	1,550	4,027	1,830	4,182	2,391	4,493	3,511	5,115

1. Allowable load capacities listed are calculated using and applied safety factor of 4.0.
2. Linear interpolation may be used to determine allowable loads for intermediate compressive strengths.
3. Allowable load capacities are multiplied by reduction factors found in the Design Criteria section when anchor spacing or edge distances are less than critical distances.

DESIGN CRITERIA (ALLOWABLE STRESS DESIGN)

Combined Loading

For anchors loaded in both shear and tension, the combination of loads should be proportioned as follows:

$$\left(\frac{Nu}{Nn}\right)^{\frac{5}{3}} + \left(\frac{Vu}{Vn}\right)^{\frac{5}{3}} \leq 1 \quad \text{OR} \quad \left(\frac{Nu}{Nn}\right) + \left(\frac{Vu}{Vn}\right) \leq 1$$

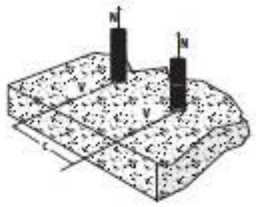
Where:
N_u = Applied Service Tension Load
N_n = Allowable Tension Load
V_u = Applied Service Shear Load
V_n = Allowable Shear Load

Load Adjustment Factors for Spacing and Edge Distances[1]

NOTE: Allowable load values found in the performance data tables are multiplied by reduction factors when anchor spacing or edge distances are less than critical distances. Linear interpolation is allowed for intermediate anchor spacing and edge distances between critical and minimum distances. When an anchor is affected by both reduced spacing and edge distance, the spacing and edge reduction factors must be combined (multiplied). Multiple reduction factors for anchor spacing and edge distance may be required depending on the anchor group configuration.

LOAD ADJUSTMENT FACTORS FOR NORMAL-WEIGHT CONCRETE

Spacing Distance - Tension



Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
s_c		3	4-1/2	6	7-1/2	9-1/2
s_{cr}		1-1/2	2-3/8	3	3-3/4	4-3/4
Spacing Distance (inches)	1/2					
	1					
	1-1/2	0.90				
	2	0.94				
	2-1/2	0.97	0.84			
	3	1.00	0.87	0.85		
	3-1/2		0.91	0.88		
	4		0.95	0.90	0.80	
	4-1/2		1.00	0.93	0.83	
	5			0.95	0.86	0.80
	5-1/2			0.98	0.89	0.82
	6			1.00	0.91	0.84
	6-1/2				0.94	0.87
	7				0.97	0.89
	7-1/2				1.00	0.91
	8					0.93
	8-1/2					0.96
	9					0.98
	9-1/2					1.00

Spacing Reduction Factors - Shear

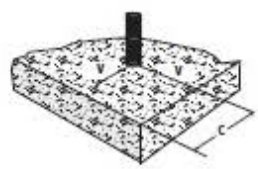
Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
s_c		3	5	6	7-1/2	9-1/2
s_{cr}		1-1/2	2-3/8	3	3-3/4	4-3/4
Spacing Distance (inches)	1/2					
	1					
	1-1/2	0.62				
	2	0.75				
	2-1/2	0.88	0.65			
	3	1.00	0.73	0.62		
	3-1/2		0.81	0.69		
	4		0.89	0.75	0.60	
	4-1/2		0.97	0.81	0.66	
	5		1.00	0.88	0.71	0.60
	5-1/2			0.94	0.77	0.64
	6			1.00	0.83	0.69
	6-1/2				0.89	0.73
	7				0.94	0.78
	7-1/2				1.00	0.82
	8					0.87
	8-1/2					0.91
	9					0.96
	9-1/2					1.00

LOAD ADJUSTMENT FACTORS FOR NORMAL-WEIGHT CONCRETE

Edge Distance - Tension

Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
c_{ac}		2	4-11/16	6	7-1/2	9-9/16
c_{min}		2	3-1/8	4	5	6-3/8
Edge Distance (inches)	1/2					
	1					
	1-1/2					
	2	1.00				
	2-1/2					
	3					
	3-1/2		0.98			
	4		0.99	0.93		
	4-1/2		1.00	0.95		
	5			0.97	0.85	
	5-1/2			0.98	0.88	
	6			1.00	0.91	
	6-1/2				0.94	0.85
	7				0.97	0.88
	7-1/2				1.00	0.90
	8					0.93
	8-1/2					0.95
	9					0.98
	9-1/2					1.00

Edge Reduction Factors - Shear



Dia. (in)		1/4"	3/8"	1/2"	5/8"	3/4"
h_v		1	1-9/16	2	2-1/2	3-3/16
c_{ac}		3	4-11/16	6	7-1/2	9-9/16
c_{min}		2	3-1/8	4	5	6-3/8
Edge Distance (inches)	1/2					
	1					
	1-1/2					
	2	0.87				
	2-1/2	0.94				
	3	1.00				
	3-1/2		0.96			
	4		0.98	0.91		
	4-1/2		1.00	0.93		
	5			0.95	0.85	
	5-1/2			0.98	0.88	
	6			1.00	0.91	
	6-1/2				0.94	0.85
	7				0.97	0.88
	7-1/2				1.00	0.90
	8					0.93
	8-1/2					0.95
	9					0.98
	9-1/2					1.00

ORDERING INFORMATION

Smart DI+™ Anchor (Drop-In) Carbon Steel Smooth Wall Dropin

Peco Part No.	Bar Code	Rod/ Anchor Size	Overall Length	Thread Depth	Package Type	Package Quantity	Item Weight	FM or UL
6325J	96462	1/4"	1"	7/16"	Jar	100	2.5	
6325J-20	43000	1/4"	1"	7/16"	Jar	20	0.5	
6337J	96464	3/8"	1-9/16"	5/8"	Jar	50	3.13	FM/UL
6337J-20	43001	3/8"	1-9/16"	5/8"	Jar	20	1.26	FM/UL
6350J	96466	1/2"	2"	13/16"	Jar	50	6.0	FM/UL
6362	43008	5/8"	1-1/2"	1-1/8"	Box	25	9.75	FM/UL
6375	43010	3/4"	3-3/16"	1-3/16"	Box	25	4.8	FM/UL

DI+™ Tool

Peco Part No.	Bar Code	Rod/Anchor Size	Pin Length	Package Quantity
Available By Request	Available By Request	1/4"	39/64"	1
Available By Request	Available By Request	3/8"	61/64"	1
Available By Request	Available By Request	1/2"	1-3/16"	1

DI+™ Tool Repair Kit (Each Kit contains 2 Guide Screws & 1 Rubber Spring Plug)

Peco Part No.	Bar Code	Fits Tool Number	Package Quantity
Available By Request	Available By Request	00425SD	1
Available By Request	Available By Request	00427SD	1
Available By Request	Available By Request	00429SD	1

DI+™ Drill

Peco Part No.	Bar Code	Smart DI+ Description	Bit Diameter	Package Quantity
Available By Request	Available By Request	1/4" Dia.	3/8"	1
Available By Request	Available By Request	3/8" Dia.	1/2"	1
Available By Request	Available By Request	1/2" Dia.	5/8"	1

Manual Setting Tools for Smart DI+™ Anchor (Drop-In)

Peco Part No.	Bar Code	Rod/ Anchor Size	Pin Length	Package Type	Package Quantity	Item Weight
6305DIT	43012	1/4"	39/64"	Clamshel	1	0.18
6307DIT	43014	3/8"	61/64"	Clamshel	1	0.32
6309DIT	43016	1/2"	1-3/16"	Clamshel	1	0.50
6311DIT	43018	5/8"	1-5/16"	Clamshel	1	
6313DIT	43020	3/4"	1-61/64"	Clamshel	1	

© 2015 Powers Fasteners, Inc. All Rights Reserved. Smart DI+ is a registered trademark of Powers Fasteners, Inc. For the most current product information please visit www.powers.com.