GENERAL INFORMATION

SPIRAL CSI PIN

Domed Head Pins with 0.157" Shank Diameter

INTRODUCTION

Spiral CSI Drive Pins are designed for permanently fastening a fixture to concrete, some types of masonry, and A36 or A572 structural steel. The pins are manufactured with an 8mm head and 0.157" diameter shank in various lengths. A spiral knurled shank design provides consistent optimized performance in steel base materials. A 8mm plastic washer is mounted over the point to retain the drive pin in the fastener guide of the tool providing centered guidance during the driving operation.

GENERAL APPLICATIONS AND USES

- Attaching Steel to Concrete, Block or Steel
- Attaching Wood members to Concrete, Block or Steel
- Attaching accessories to Concrete, Block or Steel
- Attaching ceiling clips and threaded rod to Concrete or Steel

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2024

SECTION CONTENTS

General Information.....10
Selection Chart Guide.....10
Performance Data.....11
Ordering Information.....13

SPIRAL CSI PIN

SPIRAL CSI PIN COLLATED

SPIRAL CSI PINS WITH WASHER

SELECTION CHART GUIDE

Pins		Dimensions		Base				Powers Tools												Other Tools																					Approvals & Listings
		Shank Length	Shank Diameter	Concrete	Lightweight Concrete	Grout-filled CMU	Steel	P1000	T1000	P2201	P35s	P7201	P3500/PA3500	P3801	P3600	PA351	P60	Sniper	721	M70	D45	D60/D60L	D45/D60/D60L	MD380	SA270	Cobra	Viper	DXE72/DX400	DX600N	DX35	DX2	DX350/DX351/DX36M	DX451	DXA40	DXA41	DX2	DX460	
Spiral CSI Drive Pins	**Spiral CSI Drive Pins**	1/2" to 2-7/8"	0.157"	●	●	○	●	●	●	●	●	○	●			●	●			●			●		●	●		●				●	●		○	●	●	ICC-ES ESR-2024
	Spiral CSI Drive Pins Collated	5/8" to 2"	0.157"													●																●					●	ICC-ES ESR-2024
	Spiral CSI Drive Pin w/ Washer	3/4" to 2-7/8"	0.157"	●	●		●	●	●	●	●	○	●			●	●			●			●		●	●		●				●	●		○	●	●	ICC-ES ESR-2024

● Suitable ○ May be Suitable

PERFORMANCE DATA

Ultimate and Allowable Load Capacities for CSI Fasteners in ASTM A36 Steel[1,2,3,6,7]

Fastener Description	Load Capacity	Nominal Steel Thickness (inch)									
		1/8		3/16		1/4		3/8		≥ 1/2[4,5]	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
Spiral CSI Drive Pin (0.157 Shank)	Ultimate	1,400 (6.2)	2,700 (12.0)	2,575 (11.5)	2,925 (13.0)	3,675 (16.3)	2,675 (11.9)	3,075 (13.7)	2,475 (11.0)	2,675 (11.9)	2,825 (12.6)
	Allowable	280 (1.2)	540 (2.4)	515 (2.3)	585 (2.6)	735 (3.3)	535 (2.4)	615 (2.7)	495 (2.2)	535 (2.4)	565 (2.5)
Spiral CSI Step Shank Drive Pin (0.145 Shank)	Ultimate	225 (1.0)	1,000 (4.4)	1,200 (5.3)	1,925 (8.6)	1,250 (5.6)	2,075 (9.2)	1,475 (6.6)	1,925 (8.6)	1,375 (6.1)	1,900 (8.5)
	Allowable	45 (0.2)	200 (0.9)	240 (1.1)	385 (1.7)	250 (1.1)	415 (1.8)	295 (1.3)	385 (1.7)	275 (1.2)	380 (1.7)

1. Fastener capacities are based on the base steel with a minimum yield strength (Fy) of 36 ksi and a minimum ultimate tensile strength (Fu) of 58 ksi. The pointed portion of the fastener must penetrate the steel member unless otherwise noted.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected to the steel substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. The fasteners with 0.157 inch shank must be embedded a minimum of 0.50 inch into the steel; fastener point penetration through the steel is not necessary provided the minimum embedment is achieved.
5. The fasteners with 0.145 inch shank must be embedded a minimum of 0.41 inch into the steel; fastener point penetration through the steel is not necessary provided the minimum embedment is achieved.
6. Fasteners must have a minimum spacing distance of 1-1/2 inches and a minimum edge distance of 1/2 inch in accordance with ASTM E 1190. Consideration of smaller spacing distances may be given based on application or jobsite testing.
7. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for CSI Fasteners in ASTM A572 or A992 Steel[1,2,3,6,7]

Fastener Description	Load Capacity	Nominal Steel Thickness (inch)									
		1/8		3/16		1/4		3/8		≥ 1/2[4,5]	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
Spiral CSI Drive Pin (0.157 Shank)	Ultimate	1,625 (7.2)	2,550 (11.3)	2,750 (12.2)	3,150 (14.0)	3,975 (17.7)	2,900 (12.9)	3,300 (14.7)	2,675 (11.9)	2,900 (12.9)	3,050 (13.6)
	Allowable	325 (1.4)	510 (2.3)	550 (2.4)	630 (2.8)	795 (3.5)	580 (2.6)	660 (2.9)	535 (2.4)	580 (2.6)	610 (2.7)
Spiral CSI Step Shank Drive Pin (0.145 Shank)	Ultimate	225 (1.0)	1,000 (4.4)	1,300 (5.8)	2,075 (9.2)	1,375 (6.1)	2,250 (10.0)	1,600 (7.1)	2,075 (9.2)	1,500 (6.7)	2,025 (9.0)
	Allowable	45 (0.2)	200 (0.9)	260 (1.2)	415 (1.8)	275 (1.2)	450 (2.0)	320 (1.4)	415 (1.8)	300 (1.3)	405 (1.8)

1. Fastener capacities are based on the base steel with a minimum yield strength (F_y) of 50 ksi and a minimum ultimate tensile strength (F_u) of 65 ksi. The pointed portion of the fastener must penetrate the steel member unless otherwise noted.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected to the steel substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. The fasteners with 0.157 inch shank must be embedded a minimum of 0.50 inch into the steel; fastener point penetration through the steel is not necessary provided the minimum embedment is achieved.
5. The fasteners with 0.145 inch shank must be embedded a minimum of 0.41 inch into the steel; fastener point penetration through the steel is not necessary provided the minimum embedment is achieved.
6. Fasteners must have a minimum spacing distance of 1-1/2 inches and a minimum edge distance of 1/2 inch in accordance with ASTM E 1190. Consideration of smaller spacing distances may be given based on application or jobsite testing.
7. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for CSI Fasteners in Normal-Weight Concrete[1,2,3,4,5,6]

Fastener Description	Mini. Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength, f 'c											
		2,500 psi				3,000 psi				4,000 psi			
		Tension		Shear		Tension		Shear		Tension		Shear	
		Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)
Spiral CSI Drive Pin (0.157 Shank)	3/4 (19)	750 (3.3)	120 (0.5)	850 (3.8)	170 (0.8)	660 (2.9)	130 (0.6)	960 (4.3)	190 (0.8)	690 (3.1)	140 (0.6)	1,005 (4.5)	200 (0.9)
	1 (25)	950 (4.2)	190 (0.8)	1,225 (5.4)	245 (1.1)	1,125 (5.0)	225 (1.0)	1,400 (6.2)	280 (1.2)	1,175 (5.2)	235 (1.0)	1,460 (6.5)	290 (1.3)
	1-1/4 (32)	1,550 (6.9)	310 (1.4)	1,925 (8.6)	385 (1.7)	1,710 (7.6)	340 (1.5)	2,100 (9.3)	420 (1.9)	1,785 (7.9)	355 (1.6)	2,195 (9.8)	440 (2.0)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Concrete member thickness must be a minimum of three times the fastener embedment depth.
5. Fasteners must have a minimum spacing distance of 4 inches and a minimum edge distance of 3-1/2 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for CSI Fasteners in Lightweight Concrete and Sand-Lightweight Concrete with or without Steel Deck (3-inch Deep Profile)[1,2,3,8]

Fastener Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength, f 'c = 3,000 psi											
		Directly into Concrete[4,5]				Through Soffit of Steel Deck Into Concrete (3-inch Deep Profile)							
						Upper Flute[6,7]				Lower Flute[6,7]			
		Tension		Shear		Tension		Shear		Tension		Shear	
		Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)
Spiral CSI Drive Pin (0.157 Shank)	1 (25)	775 (3.4)	155 (0.7)	900 (4.0)	180 (0.8)	600 (2.7)	120 (0.5)	1,525 (6.8)	305 (1.4)	600 (2.7)	120 (0.5)	1,525 (6.8)	305 (1.4)
	1-1/4 (32)	775 (3.4)	155 (0.7)	900 (4.0)	180 (0.8)	1,300 (5.8)	260 (1.2)	2,725 (12.1)	545 (2.4)	700 (3.1)	140 (0.6)	1,850 (8.2)	370 (1.6)
	1-1/2 (38)	775 (3.4)	155 (0.7)	900 (4.0)	180 (0.8)	1,300 (5.8)	260 (1.2)	2,725 (12.1)	545 (2.4)	1,125 (5.0)	225 (1.0)	2,250 (10.0)	450 (2.0)

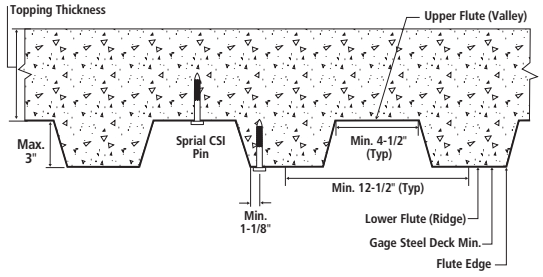
1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. For fasteners installed directly into concrete, the member thickness must be a minimum of 3.25 inches.
5. Fasteners must have a minimum spacing distance of 4 inches and a minimum edge distance 3-1/2 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. For fasteners installed into the upper flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 3.25 inches. For fasteners installed into the lower flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 2.25 inches.
7. Fasteners installed into the steel deck profile must have a minimum spacing distance of 4 inches (upper and lower flute) and a minimum edge distance of 1-1/8 inches (lower flute); there is no minimum edge distance requirement for fasteners installed in the upper flute. Consideration of smaller spacing distances may be given based on application or jobsite testing.
8. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for CSI Fasteners in Lightweight Concrete and Sand-Lightweight Concrete with or without Steel Deck (1-1/2-inch Deep Profile)[1,2,3,8]

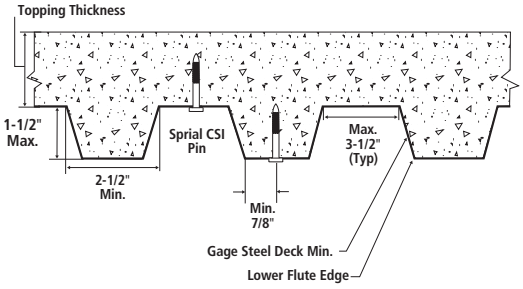
Fastener Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength, f 'c = 3,000 psi							
		Directly into Concrete[4,5]				Through Soffit of Steel Deck Into Concrete (1-1/2-inch Deep Profile)			
						Upper or Lower Flute[6,7]			
		Tension		Shear		Tension		Shear	
		Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)
Spiral CSI Drive Pin (0.157 Shank)	1 (25)	775 (3.4)	155 (0.7)	900 (4.0)	180 (0.8)	1,000 (4.4)	200 (0.9)	2,050 (9.1)	410 (1.8)
	1-1/4 (32)	775 (3.4)	155 (0.7)	900 (4.0)	180 (0.8)	1,050 (4.7)	210 (0.9)	2,075 (9.2)	415 (1.8)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. For fasteners installed directly into concrete, the member thickness must be a minimum of 3.25 inches.
5. Fasteners must have a minimum spacing distance of 4 inches and a minimum edge distance 3-1/2 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. For fasteners installed into the upper flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 3.25 inches. For fasteners installed into the lower flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 2.25 inches.
7. Fasteners installed into the steel deck profile must have a minimum spacing distance of 4 inches (upper and lower flute) and a minimum edge distance of 7/8 inches (lower flute); there is no minimum edge distance requirement for fasteners installed in the upper flute. Consideration of smaller spacing distances may be given based on application or jobsite testing.
8. Multiple fasteners are recommended for any attachment for increased reliability.

SAND-LIGHTWEIGHT CONCRETE OVER STEEL DECK (MINIMUM 3,000 PSI), 3-inch Deep Profile



SAND-LIGHTWEIGHT CONCRETE OVER STEEL DECK (MINIMUM 3,000 PSI), 1-1/2-inch Deep Profile



Ultimate and Allowable Tensile Pullover Capacities for Light Steel Framing with Powder Actuated Fasteners[1,2,3]

Fastener Description	Minimum Thickness of Sheet Steel or Framing Member					
	16 Gage		20 Gage		25 Gage	
	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)
Spiral CSI Drive Pin (0.157" Shank)	1,940 (8.6)	390 (1.7)	735 (3.3)	145 (0.6)	470 (2.1)	95 (0.4)
Spiral CSI Drive Pin w/ 1" washer (0.157" Shank)	2,280 (10.1)	455 (2.0)	1,695 (7.5)	340 (1.5)	1,050 (4.7)	210 (0.9)

1. Tabulated allowable pullover load values were tested in accordance with ICC-ES AC70 and are based on an applied safety factor of 5.0.
2. Allowable pullover capacities of sheet steel or framing member should be compared to the fastener tensile load capacities in concrete, steel and masonry to determine the controlling resistance load.
3. For pins with washer assemblies, the washer thickness is 14 gage minimum.

ORDERING INFORMATION

Spiral CSI Drive Pins

Cat.No.	Shank Length	Shank Diameter	Standard Box	Standard Carton
50197-PWR	1/2"(K)	0.145"	100	1000
50201-PWR	5/8"(K)	0.157"	100	1000
50203-PWR	3/4"(K)	0.157"	100	1000
50204-PWR	7/8"(K)	0.157"	100	1000
50205-PWR	1"(K)	0.157"	100	1000
50208-PWR	1-1/4"(K)	0.157"	100	1000
50207-PWR	1-1/2"(K)	0.157"	100	1000
50217-PWR	1-5/8"(K)	0.157"	100	1000
50209-PWR	2"(K)	0.157"	100	1000
50241-PWR	2-1/2" (K)	0.157"	100	1000
50211-PWR	2-7/8"(K)	0.157"	100	1000

(K)- Knurled

Spiral CSI Drive Pins Collated

Cat.No.	Shank Length	Shank Diameter	Standard Box	Standard Carton
50450-PWR	5/8"(K)	0.157"	100	1,000
50452-PWR	3/4"(K)	0.157"	100	1,000
50454-PWR	7/8"(K)	0.157"	100	1,000
50456-PWR	1"(K)	0.157"	100	1,000
50458-PWR	1-1/4"(K)	0.157"	100	1,000
50460-PWR	1-1/2"(K)	0.157"	100	1,000
50461-PWR	1-5/8"(K)	0.157"	100	1,000
50462-PWR*	2"(K)	0.157"	100	1,000

(K)- Knurled *DX460 Only

Spiral CSI Drive Pins with Washer

Cat.No.	Shank Length	Shank Diameter	Washer	Standard Box	Standard Carton
50245-PWR	3/4" (K)	0.157"	3/4"	100	1000
50247-PWR	1" (K)	0.157"	3/4"	100	1000
50249-PWR	1-1/4" (K)	0.157"	3/4"	400	1000
50261-PWR	1-1/4" (K)	0.157"	1"	400	1000
50263-PWR	2-1/2" (K)	0.157"	1"	400	1000
50265-PWR	2-7/8" (K)	0.157"	1"	400	1000

(K)- Knurled

GENERAL INFORMATION

.300" HEAD DRIVE PINS

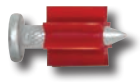
Standard Pins with 0.145" Shank Diameter

SECTION CONTENTS

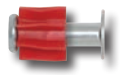
General Information.....14
Selection Chart Guide.....14
Performance Data.....15
Ordering Information.....18

INTRODUCTION

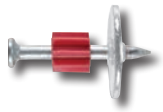
Drive pins with a 0.300" diameter head are designed for permanently fastening a fixture to concrete, some types of masonry and A36 or A572 structural steel. Drive pins are manufactured with a 0.145" diameter shank in various lengths. Knurled shank designs are available to increase performance in steel base materials. A plastic flute is mounted over the point to retain the drive pin in the fastener guide of the tool providing guidance during the driving operation.



.300" HEAD DRIVE PIN



.300" HEAD DRIVE PINS WITH TOP HAT



.300" HEAD DRIVE PINS WITH WASHER

GENERAL APPLICATIONS AND USES

- Attaching Steel to Concrete, Block or Steel
- Attaching Wood members to Concrete, Block or Steel
- Attaching accessories to Concrete, Block or Steel

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2024

SELECTION CHART GUIDE

Pins		Dimensions		Base				Powers Tools										Other Tools																							Approvals & Listings
		Shank Length	Shank Diameter	Concrete	Lightweight Concrete	Grout-filled CMU	Steel	P1000	T1000	P2201	P35s	P7201	P3500/PA3500	P3600	P60	Sniper	721	M70	D45	D60/D60L	D45/D60/D60L	MD380	SA270	Cobra	Viper	DX E37	DXE72	DX400	DXE72/DX400	DX600N	DX35	DX350/DX351/DX36M	DX451	DXA40	DXA41	DX2	DX460	
0.300" Head Drive Pins	.300 Head Pin	1/2" to 1-1/2"	0.145"	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●		●	●	●				●		●	●		●	○	●	○	ICC-ES ESR-2024
	.300 Head Pin	1-3/4" to 3"	0.145"	●	●	○		●	●	●			●		●			●			●		●	●		●			●			●	●		○	●		ICC-ES ESR-2024
	.300 Head Pin w Top Hat	1/2" to 1"	0.145"	●	●	○	●	●	●	●	●	●	●		●	●	●	●			●		●	●	●				●		●	●	●	●	○	●	○	ICC-ES ESR-2024
	.300 Head Pin w Washer	3/4" to 1-1/2"	0.145"	●	●	●	●	●	●	●	●	●	●		●	●	●	●			●		●	●	●	●			●		●	●	●	●	○	●	○	ICC-ES ESR-2024
	.300 Head Pin w Washer	2" to 3"	0.145"	●	●	○		●	●	●			●		●			●			●		●	●		●			●			●	●		○	●		ICC-ES ESR-2024

● Suitable ○ May be Suitable

PERFORMANCE DATA

Ultimate Load Capacities for Powder Actuated Fasteners in Normal-Weight Concrete[1,2,3,4,5,6]

Fastener Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)							
		2,000psi		3,000psi		4,000psi		5,000psi	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
0.300" Head Drive Pin (0.145" Shank)	5/8 (15.9)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)
	3/4 (19.1)	300 (1.3)	475 (2.1)	475 (2.1)	625 (2.8)	475 (2.1)	625 (2.8)	500 (2.2)	625 (2.8)
	1 (25.4)	500 (2.2)	700 (3.1)	650 (2.9)	775 (3.4)	775 (3.4)	775 (3.4)	870 (3.9)	1,000 (4.4)
	1-1/4 (31.8)	550 (2.4)	775 (3.4)	775 (3.4)	825 (3.7)	975 (4.3)	825 (3.7)	1,175 (5.2)	1,000 (4.4)
	1-1/2 (38.1)	575 (2.6)	875 (3.9)	900 (4)	875 (3.9)	1,175 (5.2)	1,175 (5.2)	1,450 (6.4)	1,000 (4.4)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Concrete member thickness must be a minimum of three times the fastener embedment depth.
5. Fasteners must have a minimum spacing distance of 3 inches and a minimum edge distance of 3 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. Multiple fasteners are recommended for any attachment for increased reliability.

Allowable Load Capacities for Powder Actuated Fasteners in Normal-Weight Concrete[1,2,3,4,5,6]

Fastener Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)							
		2,000psi		3,000psi		4,000psi		5,000psi	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
0.300" Head Drive Pin (0.145" Shank)	5/8 (15.9)	25 (0.1)	45 (0.2)	60 (0.3)	95 (0.4)	45 (0.2)	95 (0.4)	25 (0.1)	95 (0.4)
	3/4 (19.1)	60 (0.3)	95 (0.4)	95 (0.4)	125 (0.6)	95 (0.4)	125 (0.6)	100 (0.4)	125 (0.6)
	1 (25.4)	100 (0.4)	140 (0.6)	130 (0.6)	155 (0.7)	155 (0.7)	155 (0.7)	180 (0.8)	200 (0.9)
	1-1/4 (31.8)	110 (0.5)	155 (0.7)	155 (0.7)	165 (0.7)	195 (0.9)	165 (0.7)	235 (1)	200 (0.9)
	1-1/2 (38.1)	115 (0.5)	175 (0.8)	180 (0.8)	175 (0.8)	235 (1)	175 (0.8)	290 (1.3)	200 (0.9)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Concrete member thickness must be a minimum of three times the fastener embedment depth.
5. Fasteners must have a minimum spacing distance of 3 inches and a minimum edge distance of 3 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for Powder Actuated Fasteners in Lightweight Concrete and Sand-Lightweight Concrete With or Without Steel Deck[1,2,3,8]

Fastener Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength, f 'c = 3,000 psi											
		Directly into Concrete[4,5]				Through Soffit of Steel Deck Into Concrete (3-inch Deep Profile)							
						Upper Flute[6,7]				Lower Flute[6,7]			
		Tension		Shear		Tension		Shear		Tension		Shear	
		Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)
0.300 Head Drive Pin (0.145 Shank)	3/4 (19)	445 (2.0)	70 (0.3)	465 (2.1)	70 (0.3)	375 (1.7)	75 (0.3)	675 (3.0)	135 (0.6)	350 (1.6)	70 (0.3)	600 (2.7)	120 (0.5)
	7/8 (22)	675 (3.0)	135 (0.6)	725 (3.2)	145 (0.6)	625 (2.8)	125 (0.6)	1,075 (4.8)	215 (1.0)	475 (2.1)	95 (0.4)	1,025 (4.6)	205 (0.9)
	1 (25)	1,000 (4.4)	200 (0.9)	1,075 (4.8)	215 (1.0)	875 (3.9)	175 (0.8)	1,450 (6.4)	290 (1.3)	600 (2.7)	120 (0.5)	1,450 (6.4)	290 (1.3)
	1-1/4 (32)	1,250 (5.6)	250 (1.1)	1,525 (6.8)	305 (1.4)	1,400 (6.2)	280 (1.2)	1,700 (7.6)	340 (1.5)	950 (4.2)	190 (0.8)	1,700 (7.6)	340 (1.5)
	1-1/2 (38)	1,700 (7.6)	340 (1.5)	1,875 (8.3)	375 (1.7)	1,400 (6.2)	280 (1.2)	1,900 (8.5)	380 (1.7)	1,175 (5.2)	235 (1.0)	1,900 (8.5)	380 (1.7)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength. For a concrete compressive strength of 4,000 psi, the tabulated allowable loads may be increased by 12 percent.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. For fasteners installed directly into concrete, the member thickness must be a minimum of 3.25 inches. Tabulated values are also applicable to the tops of concrete-filled steel deck profiles.
5. Fasteners must have a minimum spacing distance of 3 inches and a minimum edge distance 3 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. For fasteners installed into the upper flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 3.25 inches. For fasteners installed into the lower flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 2.25 inches.
7. Fasteners installed into the steel deck profile must have a minimum spacing distance of 4 inches (upper and lower flute) and a minimum edge distance of 1-1/8 inches (lower flute); there is no minimum edge distance requirement for fasteners installed in the upper flute. Consideration of smaller spacing distances may be given based on application or jobsite testing.
8. Embedment is measured from the surface of the steel deck; the steel deck panel must have a base-metal thickness of 0.030-inch (22 gage) to 0.048-inch (18 gage). Consideration for the thickness of the material fastened to the base material must be given to achieve the required embedment for the fasteners.
9. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for Powder Actuated Fasteners used to Install Wood Sill Plates into Normal-Weight Concrete[1,2,3,4,5,6,7,8,9]

Fastener Description	Minimum Embedment Depth hv in. (mm)	Minimum Concrete Compressive Strength, f 'c = 2,000 psi					
		Tension		Load Perpendicular to Edge		Load Parallel to Edge	
				Tension		Shear	
		Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
0.300 Head Drive Pin (0.145 Shank)	1-1/2 (38)	625 (2.8)	125 (0.6)	750 (3.3)	150 (0.7)	1,150 (5.1)	230 (1.0)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. The tabulated tension and shear values are for the fasteners only. Wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Concrete member thickness must be a minimum of three times the fastener embedment depth.
5. Fasteners must have a minimum spacing distance of 3 inches and a minimum edge distance of 1-3/4 inches.
6. Minimum nominal washer size is 7/8 inch; minimum washer bearing area is 0.55 inch^2.
7. Fastener bending yield strength (F_{yb}) is 90,000 psi and dowel bearing strength (F_e) is 7,500 psi.
8. For interior nonstructural walls, fasteners must be placed at 6 inches from ends of the sill plates with a maximum fastener spacing of 3 feet which is applicable to a maximum wall height of 14 feet in accordance with ICC-ES AC70. Interior nonstructural walls are limited to locations where bearing walls, shear walls or braced walls are not required by the approved plans. Other attachments including perimeter anchorage must be investigated for compliance with the applicable code using the tabulated and noted information.
9. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for Powder Actuated Fasteners in Masonry[1,2,3,9,10]

Fastener Description	Min. Embed. Depth h_v in. (mm)	Minimum Masonry Compressive Strength, f 'c = 1,500 psi											
		Hollow CMU[4,5]				Grout-filled Concrete Masonry[6,7,8]							
		Cell Face				Cell Face				Mortar Joint			
		Tension		Shear		Tension		Shear		Tension		Shear	
		Ultimate lbs. (kN)	Allowable lbs (kN)	Ultimate lbs. (kN)	Allowable lbs (kN)	Ultimate lbs. (kN)	Allowable lbs (kN)	Ultimate lbs. (kN)	Allowable lbs (kN)	Ultimate lbs. (kN)	Allowable lbs (kN)	Ultimate lbs. (kN)	Allowable lbs (kN)
0.300 Head Drive Pin (0.145 Shank)	1 (25)	280 (1.2)	35 (0.2)	475 (2.1)	95 (0.4)	520 (2.3)	65 (0.3)	575 (2.6)	115 (0.5)	440 (2.0)	55 (0.2)	600 (2.7)	120 (0.5)

1. Fasteners must not be driven until the masonry has reached the minimum designated compressive strength. Concrete masonry must be minimum 8-inch wide, minimum Grade N, Type II, lightweight, medium-weight or normal-weight units conforming to ASTM C90. Mortar must be minimum Type N.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Fasteners installed into the face or end of hollow CMU must have a minimum end distance of 3-3/4 inches. No more than one fastener may be installed in an individual hollow concrete masonry unit cell.
5. For installations into hollow CMU walls, fasteners may not be placed into the mortar joint.
6. Fasteners installed into grout-filled concrete masonry must have a minimum spacing distance of 4 inches and a minimum edge distance 3-3/4 inches.
7. For installations into grout-filled concrete masonry walls, fasteners may be placed into the bed joint (horizontal mortar joint) provided the fasteners have a minimum spacing distance of 8 inches along the bed joint and have a minimum edge distance of 8 inches.
8. Installations directly into the head joint (vertical mortar joint) and within 1-1/2 inch of the head joint is not recommended and must not be permitted.
9. Multiple fasteners are recommended for any attachment for increased reliability.
10. Successful fastening into the face shell of hollow CMU and into the horizontal mortar joint is typically conducted with the lightest powder load level.

Ultimate and Allowable Load Capacities for Powder Actuated Fasteners in ASTM A36 Steel[1,2,3,5,6]

Fastener Description	Load Capacity	Nominal Steel Thickness (inch)									
		1/8		3/16		1/4		3/8		1/2 [4]	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
0.300 Head Drive Pin (0.145 Knurled Shank)	Ultimate	1,100 (4.9)	990 (4.4)	1,705 (7.6)	3,050 (13.6)	2,240 (10.0)	2,800 (12.5)	2,600 (11.6)	3,025 (13.5)	2,650 (11.8)	2,875 (12.8)
	Allowable	220 (1.0)	200 (0.9)	340 (1.5)	610 (2.7)	445 (2.0)	560 (2.5)	520 (2.3)	605 (2.7)	490 (2.2)	575 (2.6)
0.300 Head Drive Pin (0.145 Smooth Shank)	Ultimate	865 (3.8)	1,325 (5.9)	1,775 (7.9)	2,825 (12.6)	2,050 (9.1)	2,800 (12.5)	2,410 (10.7)	2,620 (11.7)	1,970 (8.8)	2,600 (11.6)
	Allowable	170 (0.8)	265 (1.2)	355 (1.6)	565 (2.5)	410 (1.8)	560 (2.5)	465 (2.1)	390 (1.7)	390 (1.7)	520 (2.3)

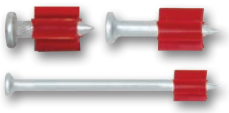
1. Fastener capacities are based on the base steel with a minimum yield strength (F_y) of 36 ksi and a minimum ultimate tensile strength (F_u) of 58 ksi. The pointed portion of the fastener must penetrate the steel member unless otherwise noted.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected to the steel substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. The fasteners must be embedded a minimum of 0.50 inch into the steel; fastener point penetration through the steel is not necessary provided the minimum embedment is achieved.
5. Fasteners must have a minimum spacing distance of 1-1/2 inches and a minimum edge distance of 1/2 inch in accordance with ASTM E 1190. Consideration of smaller spacing distances may be given based on application or jobsite testing.
6. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Tensile Pullover Capacities for Light Steel Framing with Powder Actuated Fasteners[1,2,3]

Fastener Description	Minimum Thickness of Sheet Steel or Framing Member									
	16 Gage		18 Gage		20 Gage		22 Gage		25 Gage	
	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)
0.300" Head Drive Pin with 7/8" washer (0.145" Shank)	790 (3.6)	160 (0.7)	790 (3.6)	160 (0.7)	790 (3.6)	160 (0.7)	645 (2.9)	130 (0.6)	500 (2.3)	100 (0.5)
0.300" Head Drive Pin (0.145" Shank)	-	-	1,470 (6.6)	295 (1.3)	1,050 (4.7)	210 (0.9)	730 (3.3)	145 (0.7)	415 (1.9)	85 (0.4)

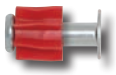
1. Tabulated allowable pullover load values were tested in accordance with ICC-ES AC70 and are based on an applied safety factor of 5.0.
2. Allowable pullover capacities of sheet steel or framing member should be compared to the fastener tensile load capacities in concrete, steel and masonry to determine the controlling resistance load.
3. For pins with washer assemblies, the washer thickness is 14 gage minimum.

ORDERING INFORMATION



.300" Head Drive Pins

Cat.No.	Shank Length	Shank Diameter	Std. Box	Std. Carton
50012-PWR	1/2" (K)	0.145"	100	5,000
50016-PWR	5/8" (K)	0.145"	100	5,000
50022-PWR	3/4"	0.145"	100	5,000
50023-PWR	3/4" Black	0.145"	100	5,000
50026-PWR	1"	0.145"	100	5,000
50032-PWR	1-1/4"	0.145"	100	1,000
50034-PWR	1-1/2"	0.145"	100	1,000
50038-PWR	2"	0.145"	100	1,000
50040-PWR	2-1/4"	0.145"	100	1,000
50044-PWR	2-1/2"	0.145"	100	1,000
50048-PWR	3"	0.145"	100	1,000
(K) = knurled				

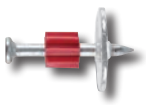


.300" Head Drive Pins with Top Hat

Cat.No.	Shank Length	Shank Diameter	Std. Box	Std. Carton
50136-PWR	1/2" (K)	0.145"	100	5,000
50138-PWR	5/8" (K)	0.145"	100	5,000
50140-PWR	3/4"	0.145"	100	5,000
(K) = knurled				

.300" Head Drive Pins with 3/4" Washer

Cat.No.	Shank Length	Shank Diameter	Std. Box	Std. Carton
50070-PWR	3/4"	0.145"	100	1,000
50080-PWR	2-1/2"	0.145"	100	5,000



.300" Head Drive Pins with 7/8" Washer

Cat.No.	Shank Length	Shank Diameter	Std. Box	Std. Carton
50090-PWR	1"	0.145"	100	1,000
50092-PWR	1-1/4"	0.145"	100	1,000
50094-PWR	1-1/2"	0.145"	100	1,000
50096-PWR	2"	0.145"	100	1,000
50098-PWR	2-1/2"	0.145"	100	1,000
50100-PWR	3"	0.145"	100	1,000

.300" Head Drive Pins with 1" Washer

Cat.No.	Shank Length	Shank Diameter	Std. Box	Std. Carton
50108-PWR	1-1/4"	0.145"	100	1,000
50110-PWR	1-1/2"	0.145"	100	1,000
50112-PWR	2"	0.145"	100	1,000
50114-PWR	2-1/4"	0.145"	100	1,000
50116-PWR	3"	0.145"	100	1,000

.300" Head Drive Pins (Mechanically Galvanized)

Cat.No.	Shank Length	Head Dia.	Shank Dia.	Std. Box	Std. Carton
50034MG-PWR	1-1/2"	0.300"	0.145"	1000	5000
50038MG-PWR	2"	0.300"	0.145"	1000	5000
50045MG-PWR	2-1/2"	0.300"	0.145"	1000	5000
50047MG-PWR	3"	0.300"	0.145"	1000	5000

.300" Head Drive Pins with 1" washer (Mechanically Galvanized)

Cat.No.	Shank Length	Head Dia.	Shank Dia.	Std. Box	Std. Carton
50110MG-PWR	1-1/2"	0.300"	0.145"	1000	5000
50112MG-PWR	2"	0.300"	0.145"	1000	5000
50113MG-PWR	2-1/2"	0.300"	0.145"	1000	5000
50115MG-PWR	3"	0.300"	0.145"	1000	5000

Powers Mechanically Galvanized (MG) Powder Actuated Fasteners are designed for fastening through pressure treated lumber into concrete and grout filled masonry. The fasteners are available with a round washer for increased pullover resistance.

GENERAL INFORMATION

8MM HEAD DRIVE PIN

Domed Head Pins with 0.145" Shank Diameter

INTRODUCTION

Drive Pins with a 8mm head are designed for permanently fastening a fixture to concrete, some types of masonry, and A36 or A572 structural steel. The pins are manufactured with a 0.145" diameter shank in various lengths. Knurled shank designs are available to increase performance in steel base materials. A 8mm plastic washer is mounted over the point to retain the drive pin in the fastener guide of the tool providing centered guidance during the driving operation.

GENERAL APPLICATIONS AND USES

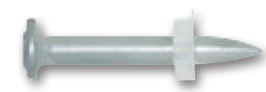
- Attaching Steel to Concrete, Block or Steel
- Attaching Wood members to Concrete, Block or Steel
- Attaching accessories to Concrete, Block or Steel

APPROVALS AND LISTINGS

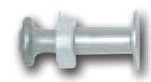
- International Code Council, Evaluation Service (ICC-ES), ESR-2024

SECTION CONTENTS

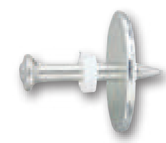
General Information....................19
Selection Chart Guide.................19
Performance Data........................20
Ordering Information..................23



8MM HEAD DRIVE PIN



8MM HEAD DRIVE PINS WITH TOP HAT



8MM DIAMETER HEAD DRIVE PINS WITH 1" WASHER

SELECTION CHART GUIDE

	Pins	Dimensions		Base				Powers Tools									Other Tools																					
		Shank Length	Shank Diameter	Concrete	Lightweight Concrete	Grout-filled CMU	Steel	P1000	T1000	P2201	P35s	P7201	P3500/PA3500	P3600	P60	Sniper	721	M70	D45	D60/D60L	D45/D60/D60L	MD380	SA270	Cobra	Viper	DX E37	DXE72	DX400	DXE72/DX400	DX600N	DX35	DX350/DX351/DX36M	DX451	DXA40	DXA41	DX2	DX460	Approvals & Listings
8mm Head Drive Pins	8mm Head Pin	5/8" to 1-1/2"	0.145"	●	●	●	●	●	●	●	●	●	●		●	●	●	●			●		●	●	●	●			●		●	●	●	●	○	●	●	ICC-ES ESR-2024
8mm Head Drive Pins	8mm Head Pin	1-5/8" to 2-7/8"	0.145"	●	●	○		●	●	●			●		●			●			●		●	●		●			●			●	●		○	●	●	ICC-ES ESR-2024
8mm Head Drive Pins	8mm Head Pin w Top Hat	5/8" to 1"	0.145"	●	●	○	●	●	●	●	●	●	●		●	●	●	●			●		●	●	●				●		●	●	●	●	○	●	●	ICC-ES ESR-2024
8mm Head Drive Pins	8mm Head Pin w Washer	1" to 1-1/2"	0.145"	●	●	○	●	●	●	●	●	●	●		●	●	●	●			●	●		●	●	●			●	●	●	●	●	●	○	●	●	ICC-ES ESR-2024
8mm Head Drive Pins	8mm Head Pin w Washer	2" to 2-7/8"	0.145"	●	●	○		●	●	●			●		●			●			●		●	●		●			●			●	●		○	●	●	ICC-ES ESR-2024

● Suitable ○ May be Suitable

PERFORMANCE DATA

Ultimate Load Capacities for Powder Actuated Fasteners in Normal-Weight Concrete[1,2,3,4,5]

Fastener Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)							
		2,000psi		3,000psi		4,000psi		5,000psi	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
8mm Head Drive Pin (0.145" Shank)	5/8 (15.9)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)
	3/4 (19.1)	300 (1.3)	475 (2.1)	475 (2.1)	625 (2.8)	475 (2.1)	625 (2.8)	500 (2.2)	625 (2.8)
	1 (25.4)	500 (2.2)	700 (3.1)	650 (2.9)	775 (3.4)	775 (3.4)	775 (3.4)	870 (3.9)	1,000 (4.4)
	1-1/4 (31.8)	550 (2.4)	775 (3.4)	775 (3.4)	825 (3.7)	975 (4.3)	825 (3.7)	1,175 (5.2)	1,000 (4.4)
	1-1/2 (38.1)	575 (2.6)	875 (3.9)	900 (4)	875 (3.9)	1,175 (5.2)	1,175 (5.2)	1,450 (6.4)	1,000 (4.4)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. Concrete thickness must be a minimum of three times the embedment depth.
3. The ultimate tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
4. The values listed above are ultimate load capacities which must be reduced by a factor of safety to determine the allowable working load. For allowable load capacities, see the allowable load tables.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Allowable Load Capacities for Powder Actuated Fasteners in Normal-Weight Concrete[1,2,3,4,5]

Fastener Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)							
		2,000psi		3,000psi		4,000psi		5,000psi	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
8mm Head Drive Pin (0.145" Shank)	5/8 (15.9)	25 (0.1)	45 (0.2)	60 (0.3)	95 (0.4)	45 (0.2)	95 (0.4)	25 (0.1)	95 (0.4)
	3/4 (19.1)	60 (0.3)	95 (0.4)	95 (0.4)	125 (0.6)	95 (0.4)	125 (0.6)	100 (0.4)	125 (0.6)
	1 (25.4)	100 (0.4)	140 (0.6)	130 (0.6)	155 (0.7)	155 (0.7)	155 (0.7)	180 (0.8)	200 (0.9)
	1-1/4 (31.8)	110 (0.5)	155 (0.7)	155 (0.7)	165 (0.7)	195 (0.9)	165 (0.7)	235 (1)	200 (0.9)
	1-1/2 (38.1)	115 (0.5)	175 (0.8)	180 (0.8)	175 (0.8)	235 (1)	175 (0.8)	290 (1.3)	200 (0.9)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. Concrete thickness must be a minimum of three times the embedment depth.
3. The allowable tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
4. The values listed above are allowable load capacities. The values are based on minimum required factors of safety. Consideration of additional safety factors may be necessary depending on the application, such as life safety or overhead.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for Powder Actuated Fasteners in Lightweight Concrete and Sand-Lightweight Concrete With or Without Steel Deck[1,2,3,8]

Fastener Description	Min. Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength, f 'c = 3,000 psi											
		Directly into Concrete[4,5]				Through Soffit of Steel Deck Into Concrete (3-inch Deep Profile)[6,7,8]							
						Upper Flute				Lower Flute			
		Tension		Shear		Tension		Shear		Tension		Shear	
		Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
8mm Head Drive Pin (0.145 Shank)	3/4 (19)	445 (2.0)	70 (0.3)	465 (2.1)	70 (0.3)	-	-	-	-	-	-	-	-
	1 (25)	350 (1.6)	70 (0.3)	625 (2.8)	125 (0.6)	875 (3.9)	175 (0.8)	1,450 (6.4)	290 (1.3)	600 (2.7)	120 (0.5)	1,450 (6.4)	290 (1.3)
	1-1/4 (32)	650 (2.9)	130 (0.6)	900 (4.0)	180 (0.8)	1,100 (4.9)	220 (1.0)	1,700 (7.6)	340 (1.5)	950 (4.2)	190 (0.8)	1,700 (7.6)	340 (1.5)
	1-1/2 (38)	650 (2.9)	130 (0.6)	900 (4.0)	180 (0.8)	1,175 (5.2)	235 (1.0)	1,900 (8.5)	380 (1.7)	1,175 (5.2)	235 (1.0)	1,900 (8.5)	380 (1.7)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength. For a concrete compressive strength of 4,000 psi, the tabulated allowable loads may be increased by 12 percent.
2. The tabulated tension and shear values are for the fasteners only. Steel or wood members connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. For fasteners installed directly into concrete, the member thickness must be a minimum of 3.25 inches. Tabulated values are also applicable to the tops of concrete-filled steel deck profiles.
5. Fasteners must have a minimum spacing distance of 3 inches and a minimum edge distance 3 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. For fasteners installed into the upper flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 3.25 inches. For fasteners installed into the lower flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 2.25 inches.
7. Fasteners installed into the steel deck profile must have a minimum spacing distance of 4 inches (upper and lower flute) and a minimum edge distance of 1-1/8 inches (lower flute); there is no minimum edge distance requirement for fasteners installed in the upper flute. Consideration of smaller spacing distances may be given based on application or jobsite testing.
8. Embedment is measured from the surface of the steel deck; the steel deck panel must have a base-metal thickness of 0.030-inch (22 gage) to 0.048-inch (18 gage). Consideration for the thickness of the material fastened to the base material must be given to achieve the required embedment for the fasteners.
9. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate Load Capacities for Powder Actuated Fasteners used to Install Sill Plates onto Normal-Weight Concrete[1,2]

Fastener Description	Minimum Embedment Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)		
		f'c ≥ 2,000 psi (13.8 (MPa)		
		Tension	Shear	
		lbs. (kN)	Perpendicular to Concrete lbs. (kN)	Parallel to Concrete lbs. (kN)
8mm Head Drive Pin (0.145" Shank)	1-1/2 (38.1)	600 (2.7)	900 (4.0)	1,150 (5.1)

1. The values listed above are ultimate load capacities which should be reduced by a minimum factor of safety of 5.0 or greater to determine the allowable working load. Consideration of safety factors of 10 or higher may be necessary depending on the application, such as life safety or overhead.
2. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate Load Capacities for Powder Actuated Fasteners in ASTM A36 Steel[1,2,3,5]

Fastener Description	Shank Type	Nominal Steel Thickness									
		1/8"		3/16"		1/4"		3/8"		1/2"[4]	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
8mm Head Drive Pin (0.145" Shank)	Knurled	1,100 (4.9)	990 (4.4)	1,705 (7.6)	3,050 (13.6)	2,240 (10.0)	2,800 (12.5)	2,600 (11.6)	3,025 (13.5)	2,650 (11.8)	2,875 (12.8)
	Smooth	865 (3.8)	1,325 (5.9)	1,775 (7.9)	2,825 (12.6)	2,050 (9.1)	2,800 (12.5)	2,410 (10.7)	2,620 (11.7)	1,970 (8.8)	2,600 (11.6)

1. The ultimate tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
2. The values listed above are ultimate load capacities which must be reduced by a factor of safety to determine the allowable working load. For allowable load capacities, see the allowable load tables.
3. Fasteners must be driven to obtain an embedment equivalent to the nominal steel thickness with the point of the fastener penetrating through the steel base material.
4. Fasteners must be driven to obtain a minimum embedment of 1/2". The point of the fastener does not need to penetrate through the steel base material.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Allowable Load Capacities for Powder Actuated Fasteners in ASTM A36 Steel[1,2,3,5]

Fastener Description	Shank Type	Nominal Steel Thickness									
		1/8"		3/16"		1/4"		3/8"		1/2"[4]	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
8mm Head Drive Pin (0.145" Shank)	Knurled	220 (1.0)	200 (0.9)	340 (1.5)	610 (2.7)	445 (2.0)	560 (2.5)	520 (2.3)	605 (2.7)	490 (2.2)	575 (2.6)
	Smooth	170 (0.8)	265 (1.2)	355 (1.6)	565 (2.5)	410 (1.8)	560 (2.5)	465 (2.1)	390 (1.7)	390 (1.7)	520 (2.3)

1. The allowable tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
2. The values listed above are allowable load capacities. The values are based on minimum required factors of safety. Consideration of additional safety factors may be necessary depending on the application, such as life safety or overhead.
3. Fasteners must be driven to obtain an embedment equivalent to the nominal steel thickness with the point of the fastener penetrating through the steel base material.
4. Fasteners must be driven to obtain a minimum embedment of 1/2". The point of the fastener does not need to penetrate through the steel base material.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate Load Capacities for Powder Actuated Fasteners in Masonry (f'm ≥ 1,500)[1,2,3,4]

Fastener Description	Minimum Embed. Depth h_v in. (mm)	Hollow CMU				Grout-filled Concrete Masonry	
		Face		Face		Mortar Joint	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
8mm Head Drive Pin (0.145" Shank)	1 (25.4)	320 (1.4)	740 (3.3)	570 (2.6)	900 (4.1)	510 (2.3)	960 (4.3)

1. Successful fastening to the face shell of Hollow CMU is typically done with the lightest powder load level.
2. The values listed above are ultimate load capacities which must be reduced by a factor of safety to determine the allowable working load. For allowable load capacities, see the allowable load tables.
3. Multiple fasteners are recommended for any attachment for increased reliability.
4. Concrete masonry units are typical 8 x 8 x 16 inch units meeting the requirements of ASTM C90, Grade N, lightweight block.

Allowable Load Capacities for Powder Actuated Fasteners in Masonry (f'm ≥ 1,500)[1,2,3,4]

Fastener Description	Minimum Embedment Depth h_v in. (mm)	Hollow CMU		Grout-Filled Concrete Masonry			
		Cell		Cell		Mortar Joint (Full Depth)	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
8mm Head Drive Pin (0.145" Shank)	1 (25.4)	35 (0.2)	95 (0.4)	65 (0.3)	115 (0.5)	55 (0.2)	120 (0.5)

1. Successful fastening to the face shell of Hollow CMU is typically done with the lightest powder load level.
2. The values listed above are allowable load capacities. The values are based on minimum required factors of safety. Consideration of additional safety factors may be necessary depending on the application, such as life safety or overhead.
3. Multiple fasteners are recommended for any attachment for increased reliability.
4. Concrete masonry units are typical 8 x 8 x 16 inch units meeting the requirements of ASTM C90, Grade N, lightweight block.

Ultimate and Allowable Tensile Pullover Capacities for Light Steel Framing with Powder-Actuated Fasteners[1,2,3]

Fastener Description	Shank Diameter	Minimum Thickness of Sheet Steel or Framing Member									
		16 Gage		18 Gage		20 Gage		22 Gage		24 Gage	
		Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)	Ultimate lbs (kN)	Allowable lbs (kN)
8mm Top Hat Pin	0.145"	2,650 (11.9)	530 (2.4)	2,470 (11.1)	495 (2.2)	1,210 (5.4)	240 (1.1)	895 (4.0)	180 (0.8)	580 (2.6)	115 (0.5)
8mm Pin without Washer	0.145"	1,470 (6.6)	295 (1.3)	1,470 (6.6)	295 (1.3)	1,050 (4.7)	210 (0.9)	730 (3.3)	145 (0.7)	415 (1.9)	85 (0.4)
8mm Pin with 1" Washer	0.145"	1,575 (7.1)	310 (1.4)	1,575 (7.1)	310 (1.4)	1,185 (5.3)	235 (1.1)	990 (4.5)	200 (0.9)	795 (3.6)	160 (0.7)

1. Tabulated allowable pullover load values were tested in accordance with ICC-ES AC70 and are based on an applied safety factor of 5.0.
2. Allowable pullover capacities of sheet steel or framing member must be compared to the fastener tensile load capacities in concrete, steel and masonry to determine the controlling resistance load.
3. For pins with washer assemblies, the washer thickness is 14 gage minimum.

ORDERING INFORMATION

8mm Head Drive Pins

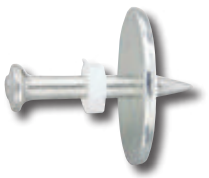
Cat.No.	Shank Length	Shank Diameter	Standard Box	Standard Carton
50180-PWR	16mm (K)-5/8"	0.145"	100	5,000
50182-PWR	19mm (K)-3/4"	0.145"	100	5,000
50184-PWR	22mm-7/8"	0.145"	100	5,000
50186-PWR	27mm-1"	0.145"	100	5,000
50188-PWR	32mm-1-1/4"	0.145"	100	1,000
50190-PWR	37mm-1-1/2"	0.145"	100	1,000
50192-PWR	42mm-1-5/8"	0.145"	100	1,000
50194-PWR	47mm-1-7/8	0.145"	100	1,000
50196-PWR	52mm-2"	0.145"	100	1,000
50198-PWR	57mm-2-1/4"	0.145"	100	1,000
50200-PWR	62mm-2-1/2"	0.145"	100	1,000
50202-PWR	72mm-2-7/8"	0.145"	100	1,000
(K) = knurled				

8mm Head Drive Pins with Top Hat

Cat.No.	Shank Length	Shank Diameter	Standard Box	Standard Carton
50210-PWR	16mm (K)-5/8"	0.145"	100	5,000
50214-PWR	22mm-7/8"	0.145"	100	5,000
50216-PWR	27mm-1"	0.145"	100	5,000
(K) = knurled				

8mm Diameter Head Drive Pins with 1" Washer

Cat.No.	Shank Length	Shank Diameter	Standard Box	Std. Carton
50220-PWR	27mm - 1"	0.145"	100	1,000
50222-PWR	32mm - 1-1/4"	0.145"	100	1,000
50224-PWR	37mm - 1-1/2"	0.145"	100	1,000
50226-PWR	52mm -2"	0.145"	100	1,000
50228-PWR	62mm - 2-1/2"	0.145"	100	1,000



8mm Diameter Head Collated Drive Pins

Cat.No.	Shank Length	Shank Diameter	Standard Box	Std. Carton
50240N	5/8" (K)	.145	500	2,500
50242N	3/4" (K)	.145	500	2,500
50244N	3/4"	.145	500	2,500
50246N	7/8"	.145	500	2,500
50248N	1"	.145	500	2,500
50250N	1-1/4"	.145	500	2,500
50252N	1-1/2"	.145	500	2,500
50254N	1-5/8"	.145	500	2,500
50256N	1-7/8"	.145	500	2,500
50258N	2"	.145	500	2,500
50260N	2-1/4"	.145	500	2,500
50262N	2-1/2"	.145	500	2,500
50264N	2-7/8"	.145	500	2,500
(K) = knurled				

GENERAL INFORMATION

CEILING CLIP ASSEMBLIES

INTRODUCTION

For acoustical applications and suspended ceiling systems or light fixtures. Several styles of angled clips with pre-mounted pins.

GENERAL APPLICATIONS AND USES

- Attaching ceiling clips and threaded rod to Concrete or Steel

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2024

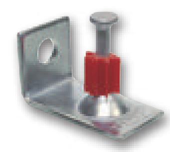
SECTION CONTENTS

General Information....................24
Selection Chart Guide.................24
Performance Data........................25
Ordering Information..................28

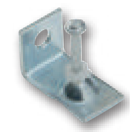
POWDER ACTUATED

CEILING CLIP ASSEMBLIES

SPIRAL CSI DRIVE PIN WITH CEILING CLIP



.300" HEAD DRIVE PINS WITH CEILING CLIPS



8MM HEAD DRIVE PINS WITH CEILING CLIPS

LADD PIN WITH CEILING CLIP

SELECTION CHART GUIDE

	Pins	Dimensions		Base				Powers Tools										
		Shank Length	Shank Diameter	Concrete	Lightweight Concrete	Grout-filled CMU	Steel	P1000	T1000	P2201	P35s	P7201	P3500/PA3500	P3801	P3600	PA351	P60	Sniper
Clips & Assemblies	Spiral CSI and Standard Ceiling Clip Assemblies (.300", 8mm)	1" to 1-1/4"	0.145" 0.157"	●		○	●	●	●	●	●	●	●			●	●	●
Clips & Assemblies	LADD Ceiling Clip	1-1/4"	0.152"	●	○			Requires LADD Tool										

Pins	Other Tools																					Approvals & Listings
	721	M70	D45	D60/D60L	D45/D60/D60L	MD380	SA270	Cobra	Viper	DX E37	DXE72	DX400	DXE72/DX400	DX600N	DX35	DX350/DX351/DX36M	DX451	DXA40	DXA41	DX2	DX460	
Spiral CSI and Standard Ceiling Clip Assemblies (.300", 8mm)	●	●	●				●	●	●	●	●	●			●	●		●	●	●	●	ICC-ES ESR-2024
LADD Ceiling Clip	Requires LADD Tool																					ICC-ES ESR-2024

● Suitable ○ May be Suitable

PERFORMANCE DATA

Ultimate and Allowable Load Capacities for Ceiling Clips in Normal-Weight Concrete[1,2,3,4,5,6,7]

Fastener Description	Min. Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength, f 'c															
		2,000 psi				3,000 psi						4,000 psi					
		Tension		Shear		Tension		Shear		45-Degree		Tension		Shear		45-Degree	
		Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
CSI Ceiling Clips w/8mm Head Pin (0.157 Shank)	3/4 (19)	375 (1.7)	75 (0.3)	675 (3.0)	135 (0.6)	500 (2.2)	100 (0.4)	875 (3.9)	175 (0.8)	650 (2.9)	130 (0.6)	500 (2.2)	100 (0.4)	875 (3.9)	175 (0.8)	650 (2.9)	130 (0.6)
	1 (25)	675 (3.0)	135 (0.6)	900 (4.0)	180 (0.8)	850 (3.8)	170 (0.8)	1,150 (5.1)	230 (1.0)	850 (3.8)	170 (0.8)	850 (3.8)	170 (0.8)	1,150 (5.1)	230 (1.0)	850 (3.8)	170 (0.8)
Standard Ceiling Clips w/0.300 Head Pin (0.145 Shank)	3/4 (19)	300 (1.3)	40 (0.2)	325 (1.4)	65 (0.3)	325 (1.4)	65 (0.3)	525 (2.3)	105 (0.5)	-	-	350 (1.6)	70 (0.3)	725 (3.2)	145 (0.6)	-	-
	7/8 (22)	300 (1.3)	40 (0.2)	325 (1.4)	65 (0.3)	445 (2.0)	70 (0.3)	600 (2.7)	120 (0.5)	725 (3.2)	145 (0.6)	350 (1.6)	70 (0.3)	750 (3.3)	150 (0.7)	775 (3.4)	155 (0.7)
	1 (25)	350 (1.6)	40 (0.2)	550 (2.4)	110 (0.5)	450 (2.0)	75 (0.3)	600 (2.7)	120 (0.5)	725 (3.2)	145 (0.6)	500 (2.2)	100 (0.4)	800 (3.6)	160 (0.7)	775 (3.4)	155 (0.7)
	1-1/8 (29)	370 (1.6)	40 (0.2)	620 (2.8)	110 (0.5)	475 (2.1)	95 (0.4)	975 (4.3)	195 (0.9)	975 (4.3)	195 (0.9)	500 (2.2)	100 (0.4)	800 (3.6)	160 (0.7)	775 (3.4)	155 (0.7)
Standard Ceiling Clips w/8mm Head Pin (0.145 Shank)	3/4 (19)	300 (1.3)	40 (0.2)	325 (1.4)	65 (0.3)	325 (1.4)	65 (0.3)	525 (2.3)	105 (0.5)	-	-	350 (1.6)	70 (0.3)	725 (3.2)	145 (0.6)	-	-
	1 (25)	350 (1.6)	40 (0.2)	550 (2.4)	110 (0.5)	450 (2.0)	75 (0.3)	600 (2.7)	120 (0.5)	725 (3.2)	145 (0.6)	500 (2.2)	100 (0.4)	800 (3.6)	160 (0.7)	775 (3.4)	155 (0.7)
	1-1/8 (29)	370 (1.6)	40 (0.2)	620 (2.8)	110 (0.5)	475 (2.1)	95 (0.4)	975 (4.3)	195 (0.9)	975 (4.3)	195 (0.9)	500 (2.2)	100 (0.4)	800 (3.6)	160 (0.7)	775 (3.4)	155 (0.7)
Economy Ceiling Clips w/0.300 Head Pin (0.145 Shank)	3/4 (19)	200 (0.9)	40 (0.2)	375 (1.7)	75 (0.3)	200 (0.9)	40 (0.2)	375 (1.7)	75 (0.3)	-	-	350 (1.6)	70 (0.3)	725 (3.2)	145 (0.6)	-	-
	1 (25)	300 (1.3)	40 (0.2)	600 (2.7)	120 (0.5)	300 (1.3)	40 (0.2)	750 (3.3)	150 (0.7)	-	-	500 (2.2)	100 (0.4)	750 (3.3)	150 (0.7)	-	-

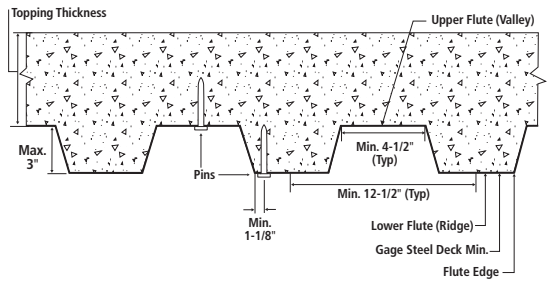
1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength. For a concrete compressive strength of 5,000 psi, the tabulated allowable loads for 0.145-inch shank pins in 4,000 psi concrete compressive strength may be considered for use but loads must not be increased.
2. The tabulated tension and shear values are for the fasteners assemblies. Steel wire or other components connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Concrete member thickness must be a minimum of three times the fastener embedment depth.
5. Ceiling clips with a 0.145-inch shank pin must have a minimum spacing distance of 3 inches and a minimum edge distance of 3 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. Ceiling clips with a 0.157-inch shank pin must have a minimum spacing distance of 4 inches and a minimum edge distance of 3-1/2 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
7. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for Ceiling Clips in Lightweight Concrete and Sand-Lightweight Concrete[1,2,3,8]

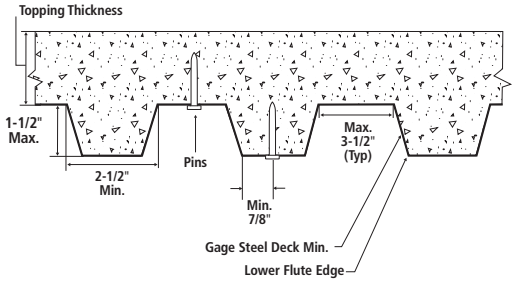
Fastener Description	Min. Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength, f 'c = 3,000 psi											
		Through Soffit of Steel Deck Into Concrete (3-inch Deep Profile)[4,5,6]						Through Soffit of Steel Deck Into Concrete (1-1/2-inch Deep Profile)[4,5,6]					
		Upper or Lower Flute						Upper or Lower Flute					
		Tension		Shear		45-Degree		Tension		Shear		45-Degree	
		Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
CSI Ceiling Clips w/8mm Head Pin (0.157 Shank)	3/4 (19)	400 (1.8)	80 (0.4)	1,100 (4.9)	220 (1.0)	675 (3.0)	135 (0.6)	400 (1.8)	80 (0.4)	1,100 (4.9)	220 (1.0)	675 (3.0)	135 (0.6)
	7/8 (22)	550 (2.4)	110 (0.5)	1,250 (5.6)	250 (1.1)	1,025 (4.6)	205 (0.9)	400 (1.8)	80 (0.4)	1,100 (4.9)	220 (1.0)	675 (3.0)	135 (0.6)
Standard Ceiling Clips w/0.300 Head Pin (0.145 Shank)	3/4 (19)	175 (0.8)	35 (0.2)	600 (2.7)	120 (0.5)	200 (0.9)	40 (0.2)	-	-	-	-	-	-
	7/8 (22)	400 (1.8)	80 (0.4)	1,100 (4.9)	220 (1.0)	600 (2.7)	120 (0.5)	400 (1.8)	80 (0.4)	1,100 (4.9)	220 (1.0)	600 (2.7)	120 (0.5)
	1 (25)	650 (2.9)	130 (0.6)	1,625 (7.2)	325 (1.4)	775 (3.4)	155 (0.7)	-	-	-	-	-	-
	1-1/8 (29)	650 (2.9)	130 (0.6)	1,625 (7.2)	325 (1.4)	775 (3.4)	155 (0.7)	-	-	-	-	-	-
Standard Ceiling Clips w/8mm Head Pin (0.145 Shank)	3/4 (19)	175 (0.8)	35 (0.2)	600 (2.7)	120 (0.5)	200 (0.9)	40 (0.2)	-	-	-	-	-	-
	7/8 (22)	275 (1.2)	55 (0.2)	1,425 (6.3)	285 (1.3)	500 (2.2)	100 (0.4)	-	-	-	-	-	-
	1 (25)	275 (1.2)	55 (0.2)	1,425 (6.3)	285 (1.3)	500 (2.2)	100 (0.4)	-	-	-	-	-	-
Economy Ceiling Clips w/0.300 Head Pin (0.145 Shank)	3/4 (19)	150 (0.7)	30 (0.1)	675 (3.0)	135 (0.6)	200 (0.9)	40 (0.2)	-	-	-	-	-	-
	1 (25)	275 (1.2)	55 (0.2)	675 (3.0)	135 (0.6)	225 (1.0)	45 (0.2)	-	-	-	-	-	-
LADD Ceiling Clips[7]	1-1/8 (29)	275 (1.2)	55 (0.2)	625 (2.8)	125 (0.6)	400 (1.8)	80 (0.4)	-	-	-	-	-	-

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength. For a concrete compressive strength of 4,000 psi, the tabulated allowable loads for 0.157-inch shank pins may be considered for use but loads must not be increased. For a concrete compressive strength of 4,000 psi, the tabulated allowable loads for 0.145-inch shank pins may be increased by 12 percent.
2. The tabulated tension and shear values are for the fastener assemblies only. Steel wire or components connected with the substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. For fasteners installed into the upper flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 3.25 inches. For fasteners installed into the lower flute of the steel deck profile, the concrete thickness above the deck (topping thickness) must be a minimum of 2.25 inches.
5. Fastener assemblies with a 0.157inch shank pin installed into steel deck profiles must have a minimum spacing distance of 4 inches (upper and lower flute). Fastener assemblies with a 0.145 inch shank pin installed into steel deck profiles must have a minimum spacing distance of 3 inches (upper and lower flute). Unless otherwise noted, fastener assemblies must have a minimum edge distance of 1-1/8 inches (lower flute) for 3-inch-deep profiles and a minimum edge distance of 7/8 inches (lower flute) for 1-1/2 inch-deep profiles; there is no minimum edge distance requirement for fasteners installed in the upper flute. Consideration of smaller spacing distances may be given based on application or jobsite testing.
6. Embedment is measured from the surface of the steel deck; the steel deck panel must have a base-metal thickness of 0.030-inch (22 gage) to 0.048-inch (18 gage).
7. LADD ceiling clips are assembled with a 0.310 inch head pin with a 0.152-inch shank.
8. Multiple fasteners are recommended for any attachment for increased reliability.

SAND-LIGHTWEIGHT CONCRETE OVER STEEL DECK (MINIMUM 3,000 PSI), 3-inch Deep Profile



SAND-LIGHTWEIGHT CONCRETE OVER STEEL DECK (MINIMUM 3,000 PSI), 1-1/2-inch Deep Profile



Ultimate and Allowable Load Capacities for Ceiling Clips in ASTM A36 Steel[1,2,3,4,5,6]

Fastener Description	Load Capacity	Nominal Steel Thickness (inch)							
		1/8		3/16		1/4		3/8	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
CSI Ceiling Clips w/0.300 Head Pin (0.157 Shank)	Ultimate	-	-	-	-	1,750 (7.8)	2,100 (9.3)	1,625 (7.2)	2,000 (8.9)
	Allowable	-	-	-	-	350 (1.6)	420 (1.9)	325 (1.4)	400 (1.8)
Standard Ceiling Clips w/0.300 Head Pin (0.145 Shank)	Ultimate	700 (3.1)	1,750 (7.8)	1,100 (4.9)	1,200 (5.3)	1,725 (7.7)	1,925 (8.6)	950 (4.2)	1,275 (5.7)
	Allowable	140 (0.6)	350 (1.6)	220 (1.0)	240 (1.1)	345 (1.5)	385 (1.7)	190 (0.8)	255 (1.1)
Economy Ceiling Clips w/0.300 Head Pin (0.145 Shank)	Ultimate	950 (4.2)	1,300 (5.8)	1,050 (4.7)	1,300 (5.8)	1,050 (4.7)	1,200 (5.3)	-	-
	Allowable	190 (0.8)	260 (1.2)	210 (0.9)	260 (1.2)	210 (0.9)	240 (1.1)	-	-

1. Fastener capacities are based on the base steel with a minimum yield strength (F_y) of 36 ksi and a minimum ultimate tensile strength (F_u) of 58 ksi. The pointed portion of the fastener must penetrate the steel member unless otherwise noted.
2. The tabulated tension and shear values are for the fastener assemblies only. Steel wire or other components connected to the steel substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Ceiling clips with a 0.145-inch shank pin must have a minimum spacing distance of 3 inches and a minimum edge distance of 3 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
5. Ceiling clips with a 0.157-inch shank pin must have a minimum spacing distance of 4 inches and a minimum edge distance of 3-1/2 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate and Allowable Load Capacities for Ceiling Clips in ASTM A572 or A992 Steel[1,2,3,4,5,6]

Fastener Description	Load Capacity	Nominal Steel Thickness (inch)			
		1/4		3/8	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
CSI Ceiling Clips w/0.300 Head Pin (0.157 Shank)	Ultimate	1,750 (7.8)	2,100 (9.3)	1,625 (7.2)	2,000 (8.9)
	Allowable	350 (1.6)	420 (1.9)	325 (1.4)	400 (1.8)
Standard Ceiling Clips w/0.300 Head Pin (0.145 Shank)	Ultimate	1,875 (8.3)	2,075 (9.2)	1,025 (4.6)	1,375 (6.1)
	Allowable	375 (1.7)	415 (1.8)	205 (0.9)	275 (1.2)

1. Fastener capacities are based on the base steel with a minimum yield strength (F_y) of 50 ksi and a minimum ultimate tensile strength (F_u) of 65 ksi. The pointed portion of the fastener must penetrate the steel member unless otherwise noted.
2. The tabulated tension and shear values are for the fastener assemblies only. Steel wire or other components connected to the steel substrate must be investigated for compliance with the applicable code.
3. Allowable load capacities are calculated using minimum required factors of safety in accordance with ICC-ES AC70; the minimum applied factor of safety is 5.0 or greater. Consideration of additional safety factors may be necessary depending on the application such as life safety.
4. Ceiling clips with a 0.145-inch shank pin must have a minimum spacing distance of 3 inches and a minimum edge distance of 3 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
5. Ceiling clips with a 0.157-inch shank pin must have a minimum spacing distance of 4 inches and a minimum edge distance of 3-1/2 inches in accordance with ASTM E 1190. Consideration of smaller spacing and edge distances may be given based on application or jobsite testing.
6. Multiple fasteners are recommended for any attachment for increased reliability.

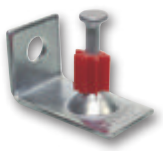
ORDERING INFORMATION

Spiral CSI Drive Pin with Ceiling Clip

Cat.No.	Description	Head Dia.	Shank Dia.	Wire Hole	Std. Box	Std. Ctn.
50212-PWR	7/8" CSI with Ceiling Clip	8mm	0.157"	0.278"	100	1,000
50213-PWR	1" CSI with Ceiling Clip	8mm	0.157"	0.278"	100	1,000
50218-PWR	1-1/4" CSI with Ceiling Clip	8mm	0.157"	0.278"	100	1,000

.300" Head Drive Pins with Ceiling Clips

Catalog Number	Shank Length	Shank Diameter	Wire Hole	Standard Box	Standard Carton	Wt./100
50364-PWR	1"	0.145"	0.278"	100	1,000	3.5
50368-PWR*	1-1/8"	0.145"	0.278"	100	1,000	3.0
50370-PWR	1-1/4"	0.145"	0.278"	100	1,000	3.7
50374-PWR*	1-1/4"	0.145"	0.278"	100	1,000	3.2
* Economy Clip						



Economy Clip

8mm Head Drive Pins with Ceiling Clips

Catalog Number	Shank Length	Shank Diameter	Wire Hole	Standard Box	Standard Carton	Wt./100
50272-PWR	27mm (1")	0.145"	0.278"	100	1,000	3.5
50274-PWR	32mm (1-1/4")	0.145"	0.278"	100	1,000	3.7

Pre-Assembled Pin and Clip for LADD Tool (45°)

Catalog Number	Shank Length	Shank Diameter	Head Diameter	Wire Hole	Standard Box	Standard Carton	Wt./100
50438-PWR	Pre-assembled Pin & Clip (LADD)	0.155"	0.310"	0.278"	100	1,000	4.5
The assembly is designed for use in a LADD type tool.							

Fastener Accessories

Catalog Number	Description	Standard Box	Standard Carton
50400-PWR	Ceiling Clip (no pin) 9/32" and 5/16" holes	100	1,000

GENERAL INFORMATION

THREADED STUDS, ROD HANGERS, AND ASSEMBLIES

INTRODUCTION

Powers offers speciality powder driven fasteners

- Threaded Studs in 1/4" and 3/8"
- Rod Hangers and Post-Nut Clip for 1/4" and 3/8" threaded rods
- BX cable and EMT attachements
- Rebar basket attachments

GENERAL APPLICATIONS AND USES

- Attaching ceiling clips and threaded rod to Concrete or Steel

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-2024

SECTION CONTENTS

General Information.....29
Selection Chart Guide.....29
Fasteners.....30
Performance Data.....32

SELECTION CHART GUIDE

Pins		Dimensions		Base				Powers Tools												Other Tools																										Approvals & Listings
		Shank Length	Shank Diameter	Concrete	Lightweight Concrete	Grout-filled CMU	Steel	P1000	T1000	P2201	P35s	P7201	P3500/PA3500	P3801	P3600	PA351	P60	Sniper	721	M70	D45	D60/D60L	D45/D60/D60L	MD380	SA270	Cobra	Viper	DX E37	DXE72	DX400	DXE72/DX400	DX600N	DX35	DX350/DX351/DX36M	DX451	DXA40	DXA41	DX2	DX460								
Threaded Studs	**1/4"-20 Threaded Stud**	1/2" to 1-1/4"	0.145"	●	●	○	●	●	●	●	●	●	●	○			●	●	●	●						●	●	●		●				●	●	●	●	○	●		ICC-ES ESR-2024
Threaded Studs	**3/8"-16 Threaded Stud**	3/4" to 1-1/4"	0.205"	●	●	○	●							●	●						●				●				●		●		●			●		●							ICC-ES ESR-2024
Rod Hangers	**Rod Hangers and Post Nut Clip (.300", 8mm)**	1-1/8" to 1-1/4"	0.145"	●	●	○	●	●	●	○	●	●	●			●	●	●	○	○	●				●	●	●						●	●		●	●	●	●						ICC-ES ESR-2024
Clips & Assemblies	**BX-EMT Conduit Clip Assemblies (.300", 8mm)**	1" to 1-1/4"	0.145"	●	●	●	○	●	●	●	●	●	●				●	●	●	●	●				●	●	●	●	●	●			●	●		●	●								
Clips & Assemblies	**Rebar Basket Clip Assemblies (8mm)**	2-7/16", 2-7/8"	0.145"	●	●	○	○	●	●	●			●				●			●	●				●	●				●	●			●		●	●	●							

● Suitable ○ May be Suitable

FASTENERS

THREADED STUDS

PRODUCT DESCRIPTION

Threaded studs are available in 1/4"-20 and 3/8"-16 thread diameters with a variety of thread and shank lengths for use in concrete, some types of concrete block, and A36 or A572 structural steel. They are used for applications where it may be desirable to remove the fixture, where shimming may be required or for suspending sprinkler systems.

The shank diameter for the threaded studs is 0.145" for the 1/4"-20 diameter and 0.205" for the 3/8"-16 diameter. Both sizes have a specially designed point to allow proper penetration into the base material. Knurled shank designs are available to increase performance in steel base materials. A plastic flute is mounted over the point to retain the drive pin in the fasteners guide of the tool providing guidance during the driving operation. On the 1/4"-20 threaded studs a plastic cap is also provided to protect the threads of the fastener during the driving process as well as providing guidance during installation.

FASTENERS SIZE

1/4"-20 Threaded Studs

Cat.No.	Thread Length	Shank Length	Shank Dia.	Standard Box	Std. Carton	Wt./100
50322-PWR	3/4"	1/2" (K)	0.145"	100	1,000	1.1
50326-PWR	3/4"	3/4"	0.145"	100	1,000	1.2
50328-PWR	1/2"	1"	0.145"	100	1,000	1.2
50330-PWR	3/4"	1"	0.145"	100	1,000	1.4
50336-PWR	3/4"	1-1/4"	0.145"	100	1,000	1.5
(K) = knurled						

3/8"-16 Threaded Studs

Cat.No.	Thread Length	Shank Length	Shank Dia.	Standard Box	Std. Carton	Wt./100
50340-PWR	1-1/4"	3/4" (K)	0.205"	100	1,000	3.6
50342-PWR	1-1/4"	1"	0.205"	100	1,000	3.8
50344-PWR	1-1/4"	1-1/4"	0.205"	100	1,000	3.8
(K) = knurled						

ROD HANGERS

PRODUCT DESCRIPTION

Rod Hangers and Post-Nut hangers for suspending electrical metal tubing (EMT), mechanical and electrical components from concrete and steel. Rod Hangers and Post-Nut Clip accept either 1/4" or 3/8" threaded rod.

Spiral CSI and 8mm Head Drive Pins with Rod Hanger Clip

Catalog Number	Description	Shank Diameter	Standard Box	Standard Carton
50215-PWR	32mm (1-1/4") Spiral CSI Pin with 1/4"-20 Rod Hanger	0.157"	100	1,000
50219-PWR	32mm (1-1/4") Pin with 1/4"-20 Rod Hanger	0.145"	100	1,000
50221-PWR	32mm (1-1/4") Pin with 3/8"-16 Rod Hanger	0.145"	100	1,000

.300 Head Drive Pins with Post Nut Rod Hanger Clip

Catalog Number	Description	Shank Diameter	Standard Box	Standard Carton
50376-PWR	1-1/8" (29mm) Head Pin with Domed Right Angle Clip Rod Hanger	0.145"	100	1,000
50378-PWR	1-1/4" (32mm) Head Pin with Domed Right Angle Clip Rod Hanger	0.145"	100	1,000

BX AND CONDUIT CLIP ASSEMBLIES

PRODUCT DESCRIPTION

For the electrical trade, BX and conduit clips are provided in various sizes for attaching conduit to base materials where easy removal is not a requirement.

.300" Head Drive Pins with BX Cable Straps

Cat.No.	Shank Length	Shank Dia.	Standard Box	Std. Carton	Wt./100
50150-PWR	1"	0.145"	100	1,000	3.5

.300" Head Pins with Conduit Clips

Cat.No.	Shank Length	Shank Dia.	Standard Box	Std. Carton	Wt./100
50382-PWR	1/2" EMT 1" Pin	0.145"	100	1,000	3.3
50384-PWR	3/4" EMT 1 1/4"	0.145"	100	500	4.6
50385-PWR*	3/4" EMT 1" Pin	0.145"	100	500	5.3
50386-PWR	3/4" EMT 1-1/8" Pin	0.145"	100	500	4.7
50388-PWR*	1" EMT 1" Pin	0.145"	25	250	7.2
* With Top Hat					

8mm Head Drive Pins with Conduit Clips

Cat.No.	Shank Length	Shank Dia.	Std. Box	Std. Carton	Wt./100
50276-PWR	27mm w/ 1/2" EMT	0.145"	100	1,000	3.2
50278-PWR	27mm w/ 3/4" EMT	0.145"	100	500	3.3
50280-PWR	27mm w/ 1" EMT	0.145"	25	250	6.2

REBAR BASKET ASSEMBLIES

PRODUCT DESCRIPTION

Rebar basket clips are typically used in highway construction and paving applications to hold the support baskets for the reinforcing bars in place while the concrete is being poured.

8mm Head Drive Pins with Rebar Basket Clip

Catalog Number	Shank Length	Shank Diameter	Standard Box	Standard Carton	Wt./100
50702-PWR	32mm (1-1/4") w/ basket clip	0.145"	100	100	4
50704-PWR	37mm (1-1/2") w/ basket clip	0.145"	100	100	4.1
50712-PWR	52mm (2") w/ basket clip	0.145"	100	100	4.4
50716-PWR	62mm (2-1/2") w/ basket clip	0.145"	100	100	4.6
50718-PWR	72mm (2-7/8") w/ basket clip	0.145"	100	100	4.8

PERFORMANCE DATA

Ultimate Load Capacities for Powder Actuated Fasteners in Normal-Weight Concrete[1,2,3,4,5]

Pin Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)							
		2,000psi		3,000psi		4,000psi		5,000psi	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	5/8 (15.9)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)	300 (1.3)	475 (2.1)
	3/4 (19.1)	300 (1.3)	475 (2.1)	475 (2.1)	625 (2.8)	475 (2.1)	625 (2.8)	500 (2.2)	625 (2.8)
	1 (25.4)	500 (2.2)	700 (3.1)	650 (2.9)	775 (3.4)	775 (3.4)	775 (3.4)	870 (3.9)	1,000 (4.4)
	1-1/4 (31.8)	550 (2.4)	775 (3.4)	775 (3.4)	825 (3.7)	975 (4.3)	825 (3.7)	1,175 (5.2)	1,000 (4.4)
	1-1/2 (38.1)	575 (2.6)	875 (3.9)	900 (4)	875 (3.9)	1,175 (5.2)	1,175 (5.2)	1,450 (6.4)	1,000 (4.4)
3/8"-16 Threaded Stud (0.205" Shank)	1 (25.4)	475 (2.1)	675 (3)	475 (2.1)	675 (3)	800 (3.6)	675 (3)	800 (3.6)	675 (3)
	1-1/4 (31.8)	850 (3.8)	1,100 (4.9)	850 (3.8)	1,100 (4.9)	1,000 (4.4)	1,600 (7.1)	1,000 (4.4)	1,600 (7.1)
	1-1/2 (38.1)	1,150 (5.1)	1,375 (6.1)	1,375 (6.1)	1,625 (7.2)	1,475 (6.6)	1,975 (8.8)	1,475 (6.6)	1,975 (8.8)
Post Nut Rod Hanger Clip (0.145" Shank)	1 (25.4)	-	-	900 (4)	-	900 (4)	-	-	-
8mm Head Drive Pin with Rod Hanger Clip (0.145" Shank)	1 (25.4)	-	-	600 (2.7)	-	600 (2.7)	-	-	-
Spiral CSI Pin Rod Hanger (0.157" Shank)	1 (25.4)	-	-	550 (2.4)	-	550 (2.4)	-	-	-

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. Concrete thickness must be a minimum of three times the embedment depth.
3. The ultimate tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
4. The values listed above are ultimate load capacities which must be reduced by a factor of safety to determine the allowable working load. For allowable load capacities, see the allowable load tables.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Allowable Load Capacities for Powder Actuated Fasteners in Normal-Weight Concrete[1,2,3,4,5]

Pin Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)							
		2,000psi		3,000psi		4,000psi		5,000psi	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	5/8 (15.9)	25 (0.1)	45 (0.2)	60 (0.3)	95 (0.4)	45 (0.2)	95 (0.4)	25 (0.1)	95 (0.4)
	3/4 (19.1)	60 (0.3)	95 (0.4)	95 (0.4)	125 (0.6)	95 (0.4)	125 (0.6)	100 (0.4)	125 (0.6)
	1 (25.4)	100 (0.4)	140 (0.6)	130 (0.6)	155 (0.7)	155 (0.7)	155 (0.7)	180 (0.8)	200 (0.9)
	1-1/4 (31.8)	110 (0.5)	155 (0.7)	155 (0.7)	165 (0.7)	195 (0.9)	165 (0.7)	235 (1)	200 (0.9)
	1-1/2 (38.1)	115 (0.5)	175 (0.8)	180 (0.8)	175 (0.8)	235 (1)	175 (0.8)	290 (1.3)	200 (0.9)
3/8"-16 Threaded Stud (0.205" Shank)	1 (25.4)	95 (0.4)	135 (0.6)	80 (0.4)	135 (0.6)	160 (0.7)	110 (0.5)	160 (0.7)	110 (0.5)
	1-1/4 (31.8)	170 (0.8)	220 (1)	165 (0.7)	220 (1)	200 (0.9)	320 (1.4)	200 (0.9)	320 (1.4)
	1-1/2 (38.1)	230 (1)	275 (1.2)	275 (1.2)	325 (1.4)	295 (1.3)	395 (1.8)	295 (1.3)	395 (1.8)
Post Nut Rod Hanger Clip (0.145" Shank)	1 (25.4)	-	-	180 (0.8)	-	180 (0.8)	-	-	-
8mm Head Drive Pin with Rod Hanger Clip (0.145" Shank)	1 (25.4)	-	-	120 (0.5)	-	120 (0.5)	-	-	-
Spiral CSI Pin Rod Hanger (0.157" Shank)	1 (25.4)	-	-	110 (0.5)	-	110 (0.5)	-	-	-

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. Concrete thickness must be a minimum of three times the embedment depth.
3. The allowable tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
4. The values listed above are allowable load capacities. The values are based on minimum required factors of safety. Consideration of additional safety factors may be necessary depending on the application, such as life safety or overhead.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate Load Capacities for Powder Actuated Fasteners in Lightweight Concrete[1,2,3,4,5]

Pin Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)					
		3,000psi Lightweight Concrete		3,000psi Lightweight Concrete, Over 20 Gage Deck			
				Lower Flute		Upper Flute	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	1 (25.4)	350 (1.6)	625 (2.8)	350 (1.6)	850 (3.8)	350 (1.6)	850 (3.8)
	1-1/4 (31.8)	650 (2.9)	900 (4)	525 (2.3)	875 (3.9)	525 (2.3)	875 (3.9)
3/8"-16 Threaded Stud (0.205" Shank)	1 (25.4)	350 (1.6)	650 (2.9)	350 (1.6)	825 (3.7)	350 (1.6)	825 (3.7)
	1-1/4 (31.8)	850 (3.8)	1,325 (5.9)	425 (1.9)	1,125 (5)	425 (1.9)	1,125 (5)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. Concrete thickness must be a minimum of three times the embedment depth.
3. The ultimate tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
4. The values listed above are ultimate load capacities which should be reduced by a factor of safety to determine the allowable working load. For allowable load capacities, see the allowable load tables.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Allowable Load Capacities for Powder Actuated Fasteners in Lightweight Concrete[1,2,3,4,5]

Pin Description	Minimum Embed. Depth h_v in. (mm)	Minimum Concrete Compressive Strength (f'c)					
		3,000psi Lightweight Concrete		3,000psi Lightweight Concrete, Over 20 Gage Deck			
				Lower Flute		Upper Flute	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	1 (25.4)	70 (0.3)	35 (0.2)	35 (0.2)	160 (0.7)	35 (0.2)	160 (0.7)
	1-1/4 (31.8)	70 (0.3)	125 (0.6)	65 (0.3)	170 (0.8)	65 (0.3)	170 (0.8)
3/8"-16 Threaded Stud (0.205" Shank)	1 (25.4)	70 (0.3)	130 (0.6)	45 (0.2)	165 (0.7)	45 (0.2)	165 (0.7)
	1-1/4 (31.8)	170 (0.8)	265 (1.2)	85 (0.4)	225 (1)	85 (0.4)	225 (1)

1. Fasteners must not be driven until the concrete has reached the minimum designated compressive strength.
2. Concrete thickness must be a minimum of three times the embedment depth.
3. The tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
4. The values listed above are allowable load capacities. The values are based on minimum required factors of safety. Consideration of additional safety factors may be necessary depending on the application, such as life safety or overhead.
5. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate Load Capacities for Powder Actuated Fasteners in ASTM A36 Steel[1,2,3,4]

Pin Description	Shank Type	Nominal Steel Thickness							
		1/8"		3/16"		1/4"		3/8"	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	Knurled	1,100 (4.9)	2,230 (9.9)	1,630 (7.3)	2,770 (12.3)	2,160 (9.6)	3,300 (14.7)	2,560 (11.4)	3,760 (16.7)
3/8"-16 Threaded Stud (0.205" Shank)	Knurled	1,120 (5.0)	2,770 (12.3)	2,700 (12.0)	5,460 (24.3)	3,730 (16.6)	8,090 (36.0)	-	-

1. The ultimate tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
2. The values listed above are ultimate load capacities which should be reduced by a factor of safety to determine the allowable working load. For allowable load capacities, see the allowable load tables.
3. Fasteners must be driven to obtain an embedment equivalent to the nominal steel thickness with the point of the fastener penetrating through the steel base material.
4. Multiple fasteners are recommended for any attachment for increased reliability.

Allowable Load Capacities for Powder Actuated Fasteners in ASTM A36 Steel[1,2,3,4]

Pin Description	Shank Type	Nominal Steel Thickness							
		1/8"		3/16"		1/4"		3/8"	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	Knurled	220 (1.0)	445 (2.0)	325 (1.4)	555 (2.5)	430 (1.9)	660 (2.9)	510 (2.3)	750 (3.3)
3/8"-16 Threaded Stud (0.205" Shank)	Knurled	225 (1.0)	555 (2.5)	540 (2.4)	1,090 (4.8)	745 (3.3)	620 (2.8)	-	-

1. The allowable tension and shear values are for fasteners only. Steel or wood members connected to the substrate must be investigated for compliance with the applicable code.
2. The values listed above are allowable load capacities. The values are based on minimum required factors of safety. Consideration of additional safety factors may be necessary depending on the application, such as life safety or overhead.
3. Fasteners must be driven to obtain an embedment equivalent to the nominal steel thickness with the point of the fastener penetrating through the steel base material.
4. Multiple fasteners are recommended for any attachment for increased reliability.

Ultimate Load Capacities for Powder Actuated Fasteners in Masonry (f'm ≥ 1,500)[1,2,3,4]

Pin Description	Minimum Embed. Depth h_v in. (mm)	Hollow CMU				Grout-filled Concrete Masonry	
		Face		Face		Mortar Joint	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	1 (25.4)	320 (1.4)	740 (3.3)	570 (2.6)	900 (4.1)	510 (2.3)	960 (4.3)
3/8"-16 Threaded Stud (0.205" Shank)	1 (25.4)	160 (0.7)	670 (3.0)	860 (3.9)	1,460 (6.6)	1,060 (4.8)	1,030 (4.6)

1. Successful fastening to the face shell of Hollow CMU is typically done with the lightest powder load level.
2. The values listed above are ultimate load capacities which should be reduced by a factor of safety to determine the allowable working load. For allowable load capacities, see the allowable load tables.
3. Multiple fasteners are recommended for any attachment for increased reliability.
4. Concrete masonry units are typical 8 x 8 x 16 inch units meeting the requirements of ASTM C90, Grade N, lightweight block.

Allowable Load Capacities for Powder Actuated Fasteners in Masonry (f'm ≥ 1,500)[1,2,3,4]

Pin Description	Minimum Embedment Depth h_v in. (mm)	Hollow CMU		Grout-Filled Concrete Masonry			
		Cell		Cell		Mortar Joint	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4"-20 Threaded Stud (0.145" Shank)	1 (25.4)	35 (0.2)	95 (0.4)	65 (0.3)	115 (0.5)	55 (0.2)	120 (0.5)
3/8"-16 Threaded Stud (0.205" Shank)	1 (25.4)	20 (0.1)	85 (0.4)	110 (0.5)	185 (0.8)	135 (0.6)	130 (0.6)

1. Successful fastening to the face shell of Hollow CMU is typically done with the lightest powder load level.
2. The values listed above are allowable load capacities. The values are based on minimum required factors of safety. Consideration of additional safety factors may be necessary depending on the application, such as life safety or overhead.
3. Multiple fasteners are recommended for any attachment for increased reliability.
4. Concrete masonry units are typical 8 x 8 x 16 inch units meeting the requirements of ASTM C90, Grade N, lightweight block.