Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

PIN SPECIFICATIONS

- Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
- Typical tensile strength: 270,000 psi
- Typical shear strength: 162,000 psi
- **STANDARD FINISHES**
  Proprietary black

  Mechanical zinc plate to a minimum thickness of .0002 meets requirements of ASTM B695—Class 5 Type I

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**

  #ESR-2579 TrakFast Pins #ESR-1955 T3/T4 Fasteners

- **City of Los Angeles**

  #RR-25264 TrakFast pins #RR-25739 T3/T4 pins

ICC ES

Collated Gas Fasteners in Concrete (TrakFast and T3/T4)

PART NUMBER SERIES	SHANK DIA (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN SOLID CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD - *Ultimate Load*					
			2,000 PSI		3,000 PSI		4,000 PSI	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
FPP - Straight Shank	0.109	5/8	**60** *434*	**55** *546*	**55** *453*	**75** *615*	**55** *472*	**95** *685*
		3/4	**60** *595*	**80** *650*	**55** *583*	**95** *699*	**55** *571*	**115** *749*
FPP - Step Shank	0.104/0.118	3/4	— —	— —	— —	— —	**51** *256*	**83** *418*

			2,000 PSI		4,000 PSI		6,000 PSI	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
T3/T4 Straight Shank	0.125	5/8	**83** *414*	**109** *611*	**78** *426*	**80** *574*	**95** *545*	**128** *686*
		3/4	**107** *541*	**156** *855*	**104** *593*	**195** *977*	**132** *658*	**206** *1057*
T3/T4 Step Shank	0.104/0.125	5/8	— —	— —	**102** *525*	**138** *795*	**101** *511*	**119** *634*

PART NUMBER SERIES	SHANK DIA (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN LIGHTWEIGHT CONCRETE / DECK / BLOCK ALLOWABLE LOAD - *Ultimate Load*					
			3,000 PSI LIGHT WEIGHT CONCRETE		3,000 PSI LIGHT WEIGHT CONCRETE WITH METAL DECK - LOWER FLUTE		HOLLOW CONCRETE MASONRY UNITS (CMU ANY LOCATION)	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
FPP - Straight Shank	0.109	5/8	**35** *234*	**55** *403*	**30** *239*	**205** *1,025*	**35** *347*	**50** *435*
		3/4	**80** *630*	**100** *756*	**40** *330*	**235** *1,248*	— —	— —
FPP - Step Shank	0.104/0.118	3/4	— —	— —	— —	— —	**36** *184*	**58** *290*
T3/T4 Straight Shank	0.125	5/8	**84** *418*	**108** *540*	**72** *361*	**242** *1,210*	**20** *243*	**34** *264*
		3/4	**108** *540*	**173** *864*	**93** *470*	**288** *1,442*	— —	— —
T3/T4 Step Shank	0.104/0.125	5/8	**109** *543*	**181** *904*	**95** *473*	**219** *1,096*	**71** *357*	**123** *613*

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance in concrete is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa. **Note 9:** T3/T4 straight shank allowable tension value in face shell of hollow CMU is 133 lbs.

Fastener Assemblies in Concrete

	PART NUMBER SERIES	SHANK DIA. (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN SOLID CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD - *Ultimate Load*						HOLLOW BLOCK Grade N, Type 1	
				4,000 PSI		6,000 PSI		3,000 PSI LIGHT WEIGHT LOWER FLUTE		FACE SHELL Min 1-1/4" face thickness	
				TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
GAS ASSEMBLIES	MP034TH*, M034* M100*, BR2*	0.125	5/8	**78** *426*	**80** *574*	**95** *545*	**128** *686*	**72** *361*	**242** *1210*	**133** *691*	— —
			3/4	**104** *593*	**195** *977*	**132** *658*	**206** *1057*	**93** *470*	**288** *1442*	**84** *444*	**84** *446*
	M034BB	0.104/.118	5/8	**51** *256*	**83** *418*	— —	— —	— —	— —	**36** *184*	**58** *290*
	34 CLIP	0.104/.125	5/8	**62** *310*	— —	**106** *528*	— —	**44** *220*	— —	— —	— —
	38HSMP034, 12HSMP034 34HSMP034, 10HSMP034 114HSMP034, 14TRHMP034 38TRHMP034, TSHMP034 12CCMP034L, 34CCMP034L	0.104/.125	5/8	**60** *357*	**117** *587*	**107** *533*	**191** *957*	**54** *269*	**230** *1150*	**71** *357*	**123** *613*
POWDER ASSEMBLIES	M100BB, 38HSSS10 12HSSS10, 34HSSS10 10HSSS10, 14TRHSS10, 38TRHSS10	0.125/.150	3/4	**107** *559*	**213** *1067*	**161** *803*	**248** *1240*	**96** *478*	**231** *1156*	**102** *512*	**166** *831*

* ESR-1955 pin data applies. **Note 1: ALLOWABLE** loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190 **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads and other design criteria may require a different safety factor. **Note 6:** Job-site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance is 3 inches unless otherwise approved. In hollow block applications, no more than one fastener per cell. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa. **Note 9:** 20 ga metal deck.

Gas Fasteners in Steel

PART NUMBER	SHANK DIA (INCH)	TYPE OF SHANK	INSTALLED IN A36 STRUCTURAL STEEL STEEL THICKNESS INCHES ALLOWABLE LOAD - *Ultimate Load*					
			3/16 (.1875)		1/4 (.250)		3/8 (.375)	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS
FPP012	0.109	SMOOTH	**195** *1047*	**292** *1570*	**223** *1220*	**278** *1526*	**181** *1048*[7]	**186** *1076*[7]
FPP012S	0.104/0.118	SMOOTH	— —	— —	**148** *744*	**157** *787*	**166** *832*[7]	**157** *787*[7]
T3012 / T4012	0.125	SMOOTH	**63** *676*	**162** *1356*	**239** *1285*	**211** *1417*	**113** *914*[8]	**197** *1327*[8]
T3012S / T4012S	0.125	TAPER SMOOTH	**183** *958*	**332** *1660*	**237** *1184*	**356** *1782*	**189** *943*[10]	**392** *1960*[7]
			INSTALLED IN ASTM A 572 GRADE 50 STEEL					
T3012 / T4012	0.125	SMOOTH	**103** *733*	**222** *1682*	**147** *950*	**119** *973*	**147** *856*[9]	**112** *1014*[9]

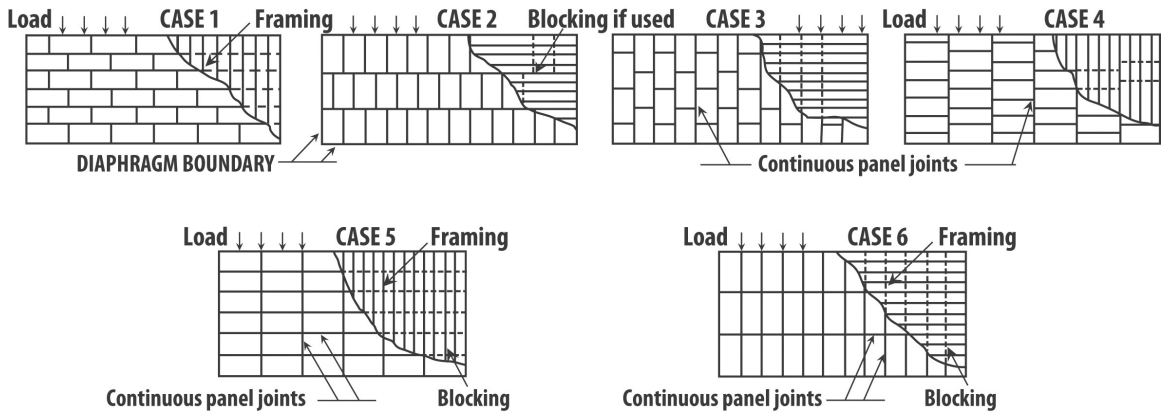
Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Cyclic, fatigue, shock loads and other design criteria may require a different safety factor. **Note 5:** Job site testing may be required to determine actual job site values. **Note 6:** Values shown are for fastenings that have the entire pointed end of the fastener driven through the steel plate; except as noted below. **Note 7:** Fastener penetration is .31" minimum. **Note 8:** Fastener penetration is .29" minimum. **Note 9:** Fastener penetration is .27" minimum. **Note 10:** Fastener penetration is .25" minimum. **Note 11:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

PLY138 TrakFast Plywood to Steel Pin Performance Tables

ALLOWABLE SHEAR FOR WIND OR SEISMIC FORCES IN POUNDS PER FOOT FOR HORIZONTAL PLYWOOD DIAPHRAGMS WITH STEEL FRAMING

PLYWOOD GRADE	MINIMUM STEEL GAUGE [4, 6]	MINIMUM PANEL THICKNESS (Inches)	BLOCKED DIAPHRAGM PIN SPACING (Inches) [5, 6] Pin spacing at diaphragm boundaries (all cases), at continuous panel edges parallel to load (cases 3 &4) and at the panel edges (cases 5 & 6) ALLOWABLE LOAD				UNBLOCKED DIAPHRAGM PIN SPACING (Inches) [5, 6] Pins spaced 6 inches max. at supported edges	
			6	4	2-1/2	2	Case 1 (no unblocked edges or continuous joints parallel to load)	All other configurations (cases 2, 3, 4, 5 & 6)
			Pin spacing at other panel edges					
			6	6	4	3		
Structural 1	20 16	7/16 15/32	185 205	280 305	420 460	475 520	185 205	140 150
Grades other than Structural 1	20 16	7/16 15/32	165 185	250 275	380 415	430 470	165 185	125 140

Note 1: These values are for short-time loads due to wind or earthquake and shall be reduced by 25 percent for normal loading. **Note 2:** The pin shall be long enough to penetrate through the thickness of the steel a minimum of 1/4 inch. **Note 3:** Minimum width of framing is 1-1/2 inches. **Note 4:** These shear values also apply to framing made of thicker steel. **Note 5:** Spacing of fasteners along intermediate framing members is 12 inches on center. **Note 6:** The minimum panel edge distance is 3/8 inch. **Note 7:** Values shown reflect a 5:1 safety factor. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa



Note: Framing is permitted to be oriented in either direction for diaphragms, provided sheathing is designed for vertical loading.

ALLOWABLE WITHDRAWAL LOADS IN POUNDS PER FASTENER DUE TO WIND OR SEISMIC FORCES FOR PLYWOOD AND LUMBER ATTACHED TO STEEL FRAMING [1, 2, 3, 4]

PIN DIAMETER (Inches)	MINIMUM STEEL THICKNESS (Gauge or Inches)	MINIMUM THICKNESS OF PLYWOOD (Inches) ALLOWABLE LOAD			
		3/8	7/16	15/32	19/32
0.100	22 / 0.030"	15	15	—	—
0.100	20 / 0.036"	20	25	25	25
0.100	18 / 0.048"	30	35	40	40
0.100	16 / 0.060"	40	45	60	60

Note 1: Plywood shall be Structural 1 rated. For other grades, values shall be reduced by 10 percent. **Note 2:** These values are for loads due to wind or earthquake and shall be reduced by 25 percent for other applications. **Note 3:** Minimum panel edge distance is 3/8 inch. **Note 4:** The pin shall be long enough to penetrate through the metal a minimum of 1/4 inch. **Note 5:** Values shown reflect a 8:1 safety factor. **Note 6:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

PLY138 TrakFast Plywood to Steel Pin Performance Tables

ALLOWABLE SHEAR FOR WIND FORCES IN POUNDS PER FOOT FOR PLYWOOD SHEAR WALLS WITH STEEL FRAMING

PLYWOOD GRADE	MINIMUM STEEL GAGE [5]	MINIMUM PANEL THICKNESS (Inches)	PIN SPACING, ALL PANEL EDGES (Inches) ALLOWABLE LOAD			
			6	4	3	2
Structural 1	22	3/8 [6]	120	180	240	305
	22	7/16 [6]	130	195	260	330
	22	15/32	145	215	290	365
	20	3/8 [6]	155	235	310	395
	20	7/16 [6]	170	255	340	435
	20	15/32	205	305	410	520
Grades other than Structural 1	22	3/8 [6]	110	165	215	275
	22	7/16 [6]	120	175	235	300
	22	15/32	130	195	260	330
	20	3/8 [6]	140	210	280	360
	20	7/16 [6]	155	230	310	390
	20	15/32	185	275	370	470

Note 1: Values are for loads imposed by wind and shall be reduced by 25 percent for normal loading. **Note 2:** The pin shall be long enough to penetrate through the metal framing a minimum of 1/4 inch. **Note 3:** The minimum panel edge distance for pin placement is 3/8 inch. **Note 4:** Spacing of fasteners along intermediate framing members is 6 inches on center for 3/8 inch and 7/16 inch panels when studs are 24 inches on center and 12 inches on center when studs are 16 inches on center. For other panel thickness, spacing along intermediate framing members is 12 inches from center. **Note 5:** Framing to be spaced 24 inches on center or closer except as provided in Footnote 6. **Note 6:** The values for 3/8-inch and 7/16-inch panels may be increased by 20 percent and 10 percent, respectively, for framing spaced 16 inches on center. **Note 7:** Values shown reflect a 5:1 safety factor. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

ALLOWABLE LATERAL LOADS IN POUNDS PER FASTENER DUE TO WIND OR SEISMIC FORCES FOR STRUCTURAL[1] PLYWOOD AND LUMBER ATTACHED TO STEEL FRAMING [1, 2, 3, 4, 6]

PIN DIAMETER (INCHES)	MINIMUM PANEL THICKNESS (Inches)	MINIMUM THICKNESS OF PLYWOOD (Inches) ALLOWABLE LOAD					
		3/8	7/16	15/32	19/32	23/32	1-1/8
0.100	22	80	80	80	80	80	80
0.100	20	105	105	115	115	115	115
0.100	16	105	105	115	170	170	170

Note 1: Plywood shall be Structural 1 rated. For other grades, values shall be reduced by 10 percent. **Note 2:** These values are for loads due to wind or earthquake and shall be reduced by 25 percent for other applications. **Note 3:** Minimum panel edge distance for placement is 1 inch from the fastener to the sheathing edge measured in the direction of the load and 3/8 inch measured perpendicular to the direction of the load. **Note 4:** The pin shall be long enough to penetrate through the metal a minimum of 1/4 inch. **Note 5:** Values for 16 gage also apply to 14 gage. **Note 6:** The above values apply to groups of at least five fasteners. For fewer fasteners in a group, use one-half of the tabulated value. **Note 7:** Values shown reflect a 5:1 safety factor. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

GypFast fasteners for the attachment of gypsum sheathing to light gage steel framing

PIN SPECIFICATIONS

- Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
- Typical tensile strength: 270,000 psi
- Typical shear strength: 162,000 psi
- **STANDARD FINISHES**
  Electro zinc nickel to a minimum thickness of .0002 meets the requirements of ASTM F1941

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**

  #ESR-2174 GypFast Gypsum Sheathing
  #ER-5380 GypFast Plywood Sheathing

Allowable Negative Loads Using Ramset GypFast Fasteners

SHEATHING TYPE	MINIMUM STEEL STUD GAGE	MAXIMUM STEEL STUD SPACING (IN)	FASTENER SPACING (IN)	ALLOWABLE NEGATIVE LOAD (PSF)
1/2" GP DensGlass Gold Exterior Sheathing	20g to 12g	24	8	6
		16	8	8
5/8" GP DensGlass Gold Fireguard Type X Sheathing	20g to 12g	24	8	24
		16	8	32
1/2" USG Sheetrock Brand Sheathing	20g to 12g	24	8	12
		16	8	16
5/8" USG Sheetrock Brand Fire Code Type X Sheathing	20g to 12g	24	8	18
		16	8	24
1/2" USG Fiberock Brand Aquatough	20g to 12g	24	8	30
		16	8	40
5/8" USG Securock Glass-Mat Sheathing	18g	16	8	35
5/8" CertainTeed GlasRoc Sheathing Type X	18g	24	8	20
5/8" CertainTeed GlasRoc Sheathing Type X	16g	24	8	18
National Gypsum e2XP Extended Exposure Sheathing	18g	16	8	39

Note 1: Tested in accordance with ASTM E330. **Note 2:** Values shown reflect a 3:1 safety factor. **Note 3:** The fasteners must be driven to a depth at which the shank pierces the steel, such that the tip protrudes from the base metal a minimum of 1/2-inch. **Note 4:** Tabulated values do not allow any overdriving of fasteners into sheathing.

GypFast fasteners for the attachment of plywood sheathing to light gage steel framing

PIN SPECIFICATIONS

- Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
- Typical tensile strength: 270,000 psi
- Typical shear strength: 162,000 psi
- **STANDARD FINISHES**
  Electro zinc nickel to a minimum thickness of .0002 meets the requirements of ASTM F1941

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**

  #ESR-2174 GypFast Gypsum Sheathing
  #ER-5380 GypFast Plywood Sheathing

Allowable Withdrawl and Lateral Loads for a GypFast Fastener Used to Attach Structural Plywood Panels to Steel Framing Members [1,2,3]

MINIMUM STEEL THICKNESS (gauge)[4]	MINIMUM THICKNESS OF STRUCTURAL PANELS				MINIMUM THICKNESS OF STRUCTURAL PANELS			
	3/8 Inch	15/32 Inch	19/32 Inch	23/32 Inch	3/8 Inch	15/32 Inch	19/32 Inch	23/32 Inch
	WITHDRAWL LOADS (POUNDS)				LATERAL LOADS (POUNDS)			
14	90	90	95	120	135	160	190	215
16	90	90	90	110	135	160	165	185
18	90	90	90	90	135	160	160	160
20	70	70	70	70	110	130	130	130
22	50	50	50	50	110	110	110	110

For SI: 1 Inch = 25.4 mm, 1 Pound = 4.448 N.

[1] Tabulated values are for loads due to wind or earthquake, and must be reduced by 25 percent for other applications.

[2] Tabulated values allow for no more than 20 percent of the fasteners to be overdriven more than 1/16 inch.

[3] Minimum edge distance and spacing are 3/8 inch and 3 inches, respectively.

Allowable Shear for Wind Forces for Structural Plywood Shear Walls Attached to Light Gage Steel Studs with GypFast Fasteners [1,2,3] (pounds per foot)

PANEL TYPE	MINIMUM PANEL THICKENESS	FRAMING		FASTENER SPACING [4,5] (INCHES ON CENTER)			
		MINIMUN GAGE[6]	SPACING (INCHES ON CENTER)	6	4	3	2
Structural I or Rated Sheathing and Siding	3/8	22	16	180	270	360	459
	3/8		24	144	216	288	367
	15/32		16 or 24	170	255	340	433
	3/8	20	16	180	270	360	459
	3/8		24	144	216	288	367
	15/32		16 or 24	208	313	417	531
	3/8	18	16	214	321	428	546
	3/8		24	171	257	342	437
	15/32		16 or 24	253	380	506	645
	19/32		16 or 24	259	389	518	661
	23/32		16 or 24	259	389	518	661
	19/32	16	16 or 24	266	399	532	679
	23/32		16 or 24	296	445	593	756
	19/32	14	16 or 24	304	456	608	776
	23/32		16 or 24	345	517	690	879

For SI: 1 Inch = 25.4 mm, 1 Pound/Lineral Foot = 0.0146 N/mm.

[1] These values are for short-term loads due to wind and must be reduced 25 percent for normal loading

[2] The pin must be long enough to penetrate through the metal framing a minimum of 1/4 inch

[3] Tabulated values allow for a maximum of 20 percent of the fasteners to be overdriven more than 1/16 inch

[4] All panel edges must be blocked with mimum nominal 2-inch framing. Panels are mermitted to be installed either horizontally or vertically. Fasteners must be spaced a maximum of 6 inches on center along intermediate framing members for 3/8 inch-thick panels installed on framing spaced 24 inches on center, and 12 inches on center for framing 16 inches on center or thicker panels

[5] Tabulated values are for structural plywood panels applied to one side of a wall. Values cannot be increased for panels attached to both sides of a wall

Ramsets fasteners may be specified by their type or catalog number to satisfy fastening requirements.

PIN SPECIFICATIONS

- Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
- Typical tensile strength: 270,000 psi
- Typical shear strength: 162,000 psi
- **STANDARD FINISHES**
  Proprietary black
  Electro zinc nickel to a minimum thickness of .0002 meets the requirements of ASTM F1941

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**

  #ESR-2690 Sill Plate
  #ESR-1799 Powder Pins & Clips

FASTENERS IN NORMAL WEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIA (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN SOLID CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD - *Ultimate Load*					
			2,000 PSI		4,000 PSI		6,000 PSI	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
1500 SERIES	0.145	3/4	**50** *655*	**66** *739*	**100** *511*	**104** *552*	— —	— —
		1	**152** *943*	**166** *1229*	**157** *937*	**182** *1342*	— —	— —
		1-1/4	**159** *1078*	**265** *1665*	**179** *1043*	**267** *1538*	— —	— —
		1-1/2	**154** *1450*	**340** *2027*	**209** *1357*	**342** *1712*	— —	— —

FASTENERS IN LIGHT WEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIA (INCH)	MINIMUM PENETRATION (INCH)	ALLOWABLE WORKING VALUES INSTALLED IN 3,000 PSI LIGHTWEIGHT CONCRETE ALLOWABLE LOAD - *Ultimate Load*			
			3,000 PSI LIGHTWEIGHT W/DECKING		3,000 PSI LIGHTWEIGHT	
			LOWER FLUTE TENSION	LOWER FLUTE SHEAR	TENSION	SHEAR
1500 SERIES	0.145	3/4	**76** *395*	**260** *1409*	**167** *837*	**179** *894*
		1	**134** *668*	**265** *1505*	**200** *998*	**228** *1141*
		1-1/4	**157** *784*	**269** *1344*	**333** *1664*	**400** *2090*
		1-1/2	**233** *1163*	**346** *1728*	**391** *1957*	**410** *2050*

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

FASTENERS IN STEEL

PART NUMBER SERIES	SHANK DIA (INCH)	TYPE OF SHANK	INSTALLED IN A36 STRUCTURAL STEEL-STEEL THICKNESS (INCHES) ALLOWABLE LOAD - *Ultimate Load*									
			3/16		1/4		3/8		1/2		≥ 3/4	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
1500	0.145	SMOOTH	**81** *790*	**373** *2039*	**181** *1269*	**273** *1642*	**397** *2169*	**489** *2771*	**243** *1328* [8]	**277** *1514* [8]	— —	— —
		KNURLED	**296** *1633*	**636** *3516*	**584** *3384*	**659** *3822*	**680** *3755*	**730** *4030*	**253** *1459* [8]	**293** *1632* [8]	— —	— —

PART NUMBER SERIES	SHANK DIA (INCH)	TYPE OF SHANK	INSTALLED IN A572 GRADE 50 STRUCTURAL STEEL-STEEL THICKNESS (INCHES) ALLOWABLE LOAD - *Ultimate Load*									
			3/16		1/4		3/8		1/2		≥ 3/4	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
1500	0.145	SMOOTH	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
		KNURLED	**260** *1609*	**499** *3182*	**579** *3411*	**725** *4272*	**383** *2216* [7]	**595** *3431* [7]	— —	— —	— —	— —

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 5:** Job site testing may be required to determine actual job site values. **Note 6:** Values shown are for fastenings that have the entire pointed end of the fastener driven through the steel plate; except as noted below. **Note 7:** Fastener penetration is 3/8" minimum. **Note 8:** Fastener penetration is 7/16" minimum. **Note 9:** Fastener penetration is 1/2" minimum **Note 10:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa.

SP SERIES PERFORMANCE/SUBMITTAL "POWER-POINT"

Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

PIN SPECIFICATIONS

- Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
- Typical tensile strength: 270,000 psi
- Typical shear strength: 162,000 psi
- **STANDARD FINISHES**
  Mechanical zinc plate to a minimum thickness of .0002 meets requirements of ASTM B695—Class 5 Type 1

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**
  #ESR-2690 Sill Plate
  #ESR-1799 Powder Pins & Clips
- **City of Los Angeles**
  #RR-22668 Powder pins

FASTENERS IN NORMAL WEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIA (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN SOLID CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD - *Ultimate Load*					
			2,000 PSI		4,000 PSI		6,000 PSI	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
SP SERIES	0.150	3/4	— —	— —	**150** *803*	**105** *786*	**81** *493*	**82** *454*
SP SERIES	.150/.180	1	**154** *1043*	**200** *1173*	**243** *1307*	**175** *1037*	**189** *1125*	**210** *1177*
		1-1/4	**207** *1553*	**230** *1636*	**298** *1749*	**218** *1471*	**213** *1568*	**305** *1780*
		1-1/2	— —	— —	**384** *2126*	**391** *1957*	**239** *1886*	**594** *2968*

FASTENERS IN LIGHT WEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIA (INCH)	MINIMUM PENETRATION (INCH)	ALLOWABLE WORKING VALUES INSTALLED IN 3,000 PSI LIGHTWEIGHT CONCRETE ALLOWABLE LOAD - *Ultimate Load*			
			3,000 PSI LIGHTWEIGHT W/DECKING		3,000 PSI LIGHTWEIGHT	
			LOWER FLUTE TENSION	LOWER FLUTE SHEAR	TENSION	SHEAR
SP SERIES	.150/.180	1	**119** *593*	**336** *1679*	**226** *1129*	**250** *1249*
		1-1/4	**175** *957*	**372** *1860*	**329** *1644*	**377** *1885*
		1-1/2	**179** *1055*	**426** *2128*	**406** *2030*	**380** *1900*

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

FASTENERS IN STEEL

PART NUMBER SERIES	SHANK DIA (INCH)	TYPE OF SHANK	INSTALLED IN A36 STRUCTURAL STEEL-STEEL THICKNESS (INCHES) ALLOWABLE LOAD - *Ultimate Load*									
			3/16		1/4		3/8		1/2		≥ 3/4	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
SP SERIES	0.150	SMOOTH	**385** *2107*	**662** *3618*	**445** *2549*	**477** *2736*	**393** *2145*	**574** *3137*	**948** *5180*	**597** *3500*	**234** *1244* [8]	**356** *1895* [8]

PART NUMBER SERIES	SHANK DIA (INCH)	TYPE OF SHANK	INSTALLED IN A572 GRADE 50 STRUCTURAL STEEL-STEEL THICKNESS (INCHES) ALLOWABLE LOAD - *Ultimate Load*									
			3/16		1/4		3/8		1/2		≥ 3/4	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
SP SERIES	0.150	SMOOTH	**356** *2123*	**569** *3394*	**554** *3232*	**637** *3710*	**604** *3447*	**602** *3437*	**814** *4473* [9]	**820** *4503* [9]	**243** *1362* [8]	**381** *2141* [8]

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 5:** Job site testing may be required to determine actual job site values. **Note 6:** Values shown are for fastenings that have the entire pointed end of the fastener driven through the steel plate; except as noted below. **Note 7:** Fastener penetration is 3/8" minimum. **Note 8:** Fastener penetration is 7/16" minimum. **Note 9:** Fastener penetration is 1/2" minimum **Note 10:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa.

Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

PIN SPECIFICATIONS

- Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
- Typical tensile strength: 270,000 psi
- Typical shear strength: 162,000 psi
- **STANDARD FINISHES**
  Mechanical zinc plate to a minimum thickness of .0002 meets requirements of ASTM B695—Class 5 Type 1

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**

  #ESR-2690 Sill Plate
  #ESR-1799 Powder Pins & Clips
- **City of Los Angeles**

  #RR-22668 Powder pins

FASTENERS IN NORMAL WEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIA (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN SOLID CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD - *Ultimate Load*					
			2000 PSI		4000 PSI		6000 PSI	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
TE	0.157	3/4	**71** *627*	**116** *713*	**71** *559*	**116** *685*	**109** *753*	**117** *712*
		1	**197** *986*	**216** *1463*	**258** *1390*	**216** *1421*	**214** *1313*	**383** *1998*
		1-1/4	**264** *1399*	**283** *1626*	**377** *1886*	**317** *1846*	**415** *2074*	**349** *1858*
		1-1/2	**212** *1453*	**297** *1719*	**242** *1211*	**479** *2393*		

FASTENERS IN LIGHT WEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIA (INCH)	EMBED (INCHES)	3000 PSI LIGHT WEIGHT CONCRETE	
			TENSION (LBS)	SHEAR (LBS)
TE SERIES	0.157	3/4	**152** *1010*	**159** *998*
		1	**325** *1625*	**347** *1737*
		1-1/4	**358** *1790*	**437** *2239*
		1-1/2	**466** *2332*	**478** *2392*

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

INSTALLED IN A36 STRUCTURAL STEEL (INCHES)

PART NUMBER SERIES	SHANK DIA (INCH)	SHANK TYPE	3/16		1/4		3/8		1/2		≥3/4	
			TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR
TE SERIES	0.157	KNURLED	**323** *1739*	**606** *3257*	**562** *3022*	**673** *3621*	**934** *5095*	**820** *4473*	**603** *3286*	**766** *4178*	**343** [6]	**496** [6]

INSTALLED IN A572-GR50 STRUCTURAL STEEL (INCHES)

PART NUMBER SERIES	SHANK DIA (INCH)	SHANK TYPE	3/16		1/4		3/8		1/2		≥3/4	
			TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR
TE SERIES	0.157	KNURLED	**442** *2400*	**676** *3674*	**630** *3747*	**662** *3942*	**760** *4421*	**725** *4218*	**582** [5] *3118*	**532** [5] *2851*	**311** [5]	**469** [5]

Notes:
1) Fasteners tested to ASTM E1190 & ICC-ES AC70
2) Allowable loads are shown in **bold font**, ultimate loads are shown in smaller, *italic font*
3) Allowable loads and safety factors are based on coefficient of variation in accordance with ICC AC70, the safety factor will be no less than 5
4) Values shown for steel base materials have the pointed end of the fastener driven through the steel plate
5) Fastener penetration into steel must be minimum 7/16 inch
6) Fastener penetration into steel must be minimum 3/8 inch
7) For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

PIN SPECIFICATIONS

- Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
- Typical tensile strength: 270,000 psi
- Typical shear strength: 162,000 psi
- **STANDARD FINISHES**
  Mechanical zinc plate to a minimum thickness of .0002 meets requirements of ASTM B695—Class 5 Type 1

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**

  #ESR-2690 Sill Plate
  #ESR-1799 Powder Pins & Clips
- **City of Los Angeles**

  #RR-22668 Powder pins

FASTENERS INSTALLED THROUGH METAL DECK INTO MINIMUM 3,000 PSI LIGHTWEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIA (INCH)	SHANK DESCRIPTION	MINIMUM PENETRATION (INCH)	3-INCH DEEP W TYPE STEEL DECK		1 1/2 INCH DEEP B TYPE STEEL DECK			
						UPPER FLUTE		LOWER FLUTE	
				TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
TE	0.157	Smooth-tapered	3/4	**106** *529*	**265** *1326*	**131** *656*	**261** *1305*	**154** *769*	**307** *1537*
			1	**152** *761*	**327** *1634*	**156** *782*	**273** *1365*	**138** *692*	**265** *1326*
			1-1/4	**164** *821*	**330** *1650*	— —	— —	— —	— —
			1-1/2	**238** *1191*	**448** *2240*	— —	— —	— —	— —

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

FASTENERS DRIVEN INTO CONCRETE MASONRY UNITS (CMU BLOCK)

PART NUMBER SERIES	SHANK DIA (INCH)	EMBED	HOLLOW UNGROUTED CMU				GROUT-FILLED CMU					
			FACE SHELL		MORTAR JOINT		FACE SHELL		MORTAR JOINT		TOP OF GROUTED CELL	
			TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR
TE	0.157	1	**33** *329*	**100** *693*	**42** *443*	**68** *746*	**139** *875*	**145** *936*	**91** *950*	**127** *1328*	**165** *851*	**171** *922*

For SI: 1 Inch = 25.4 mm, 1 lbf = 4.448 N.
Fasteners must be installed a minimum of 5.1 inches from the end of the wall.
Fasteners must be installed at the center of the CMU cell. No more than one fastener may be installed in an individual CMU cell
Applicable to fasteners installed in the horizontal mortar joint (bed joint). Minimum fastener spacing must be 5.1 inches
Allowable shear load value applies to load applied perpendicular to the mortar joint
Fastener must be installed vertically at the top, center of grouted cell
Shear load can be in any direction perpendicular to the axis of the fastener

TE Embedment depth is easily identifiable by head stamps.


SDC


SPC

Angle Clip in Concrete

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN NORMAL WEIGHT CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD - *Ultimate Load*					
			4000 PSI			6000 PSI		
			TENSION (LBS)	SHEAR (LBS)	OBLIQUE (LBS)	TENSION (LBS)	SHEAR (LBS)	OBLIQUE (LBS)
SDC100 SDC125	0.145	7/8	**115** *575*	**120** *1014*	**145** *726*	— —	— —	— —
SDC125	0.145	1-1/8	**130** *744*	**167** *1090*	**205** *1032*	— —	— —	— —
SPC78	0.150	3/4	**155** *897*	**188** *1050*	— —	**150** *788*	**153** *949*	**140** *769*
SPC114	.150/.180	1-1/8	**127** *811*	**226** *1130*	**181** *904*	**169** *853*	**300** *1500*	**223** *1114*

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	ALLOWABLE WORKING VALUES INSTALLED IN 3000 PSI LIGHTWEIGHT CONCRETE ALLOWABLE LOAD - *Ultimate Load*				
			3000 PSI LIGHTWEIGHT WITH METAL DECKING				
			LOWER FLUTE TENSION (LBS)	LOWER FLUTE SHEAR (LBS)	LOWER FLUTE OBLIQUE (LBS)	UPPER FLUTE TENSION (LBS)	UPPER FLUTE SHEAR (LBS)
SDC100 SDC125	0.145	7/8	**67** *335*	**237** *1186*	**90** *448*	**104** *571*	**310** *1678*
SDC125	0.145	1-1/8	**94** *471*	**276** *1378*	**119** *596*	**106** *528*	**319** *1597*
SPC78	0.150	3/4	**59** *293*	**202** *1109*	**65** *323*	**84** *419*	**324** *1622*
SPC114	.150/.180	1-1/8	**157** *786*	**272** *1358*	**153** *766*	**180** *899*	**334** *1673*

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the clip assembly only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa. **Note 9:** Metal deck is 20g. Ceiling clips = ASTM A653