Ramset DRIVING JOBSITE SPEED

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
  - Electroplated zinc with yellow chromate

APPROVALS/LISTINGS

- **ICC Evaluation Service, Inc.**

  #ER-1147 Sill Plate
  #ESR-1799 Powder Pins & Clips
  #ER-3618 Ladd
  #ER-5001 TrakFast Pins
  #ESR-1955 T3 Fasteners

- **City of Los Angeles**

  #RR-22668 Powder pins
  #RR-24279 Ladd
  #RR-25264 TrakFast pins

COLLATED GAS FASTENERS IN CONCRETE (TRAKFAST, T2 AND T3)

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE CONCRETE COMPRESSIVE STRENGTH **ALLOWABLE LOAD** – *Ultimate Load*											
			2000 PSI				3000 PSI				4000 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*
T3 Straight Shank	0.125	5/8	**83**	*414*	**109**	*611*	-----	-----	-----	-----	**78**	*426*	**80**	*574*
		3/4	**107**	*541*	**156**	*855*	-----	-----	-----	-----	**104**	*593*	**195**	*977*

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE CONCRETE COMPRESSIVE STRENGTH **ALLOWABLE LOAD** – *Ultimate Load*											
			3000 PSI LIGHT WEIGHT CONCRETE				3000 PSI LIGHT WEIGHT CONCRETE WITH METAL DECK				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**	*1025*	**35**	*347*	**50**	*435*
		3/4	**80**	*630*	**115**	*756*	**40**	*330*	**100**	*1284*	-----	-----	-----	-----
FPP - Step Shank	0.104/0.118	3/4	-----	-----	-----	-----	-----	-----	-----	-----	**36**	*184*	**34**	*264*
T3 Straight Shank	0.125	5/8	**84**	*418*	**108**	*540*	**72**	*361*	**242**	*1210*	**20**[9]	*243*	**34**	*264*
		3/4	**108**	*540*	**173**	*864*	**93**	*470*	**288**	*1442*	-----	-----	-----	-----

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 straight shank allowable tension value in face shell of hollow CMU is 133 lbs.
Tables converted to metric are available on our website.

Performance Tables

FASTENERS IN CONCRETE

	FASTENER PART NUMBER	SHANK DIA. (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE CONCRETE COMPRESSIVE STRENGTH **ALLOWABLE LOAD** – *Ultimate Load*						HOLLOW BLOCK Grade N, Type 1	
				4000 PSI		6000 PSI		3000 PSI Lightweight 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*	0.125	5/8	**78** *426*	**80** *574*	**62** *308*	---- ----	**72** *361*	**242***1210*	**133** *691*	---- ----
	M100*, BR2*		3/4	**104** *593*	**195** *977*	**132** *658*	**206** *1057*	**93** *470*	**288** *1442*	**84** *444*	**87** *446*
	14STUD	0.125	5/8	**91** *454*	---- ----	**57** *373*	---- ----	---- ----	---- ----	---- ----	---- ----
	M034BB	0.104/ .118	3/4	**51** *256*	**83** *418*	---- ----	---- ----	---- ----	---- ----	**36** *184*	**58** *290*
	34CLIP	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, TSHSS10 12CCSS10L, 34CCSS10L 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. Tables converted to metric are available on our website.

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	**200** *1047*	**315** *1570*	**230** *1220*	**305** *1526*	**210** *1048* [7]	**215** *1076* [7]
M012 FPP012S	0.104/.118	SMOOTH	----- -----	----- -----	**148** *744*	**157** *787*	**166** *832* [7]	**157** *787* [7]
T3012	0.125	SMOOTH	**63** *676*	**162** *1356*	**239** *1285*	**211** *1417*	**113** *914* [8]	**197** *1327* [8]
			INSTALLED IN ASTM A 572 GRADE 50 STEEL STEEL THICKNESS INCHES					
T3012	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:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa
Tables converted to metric are available on our website.

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 GAGE [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 all 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 and 6)
			Pin spacing at other panel edges					
			6	6	4	3		
Structural 1	20	7/16	**185**	**280**	**420**	**475**	**185**	**140**
	16	15/32	**205**	**305**	**460**	**520**	**205**	**140**
Grades other than Structural 1	20	7/16	**165**	**250**	**380**	**430**	**165**	**125**
	16	15/32	**185**	**275**	**415**	**470**	**185**	**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.

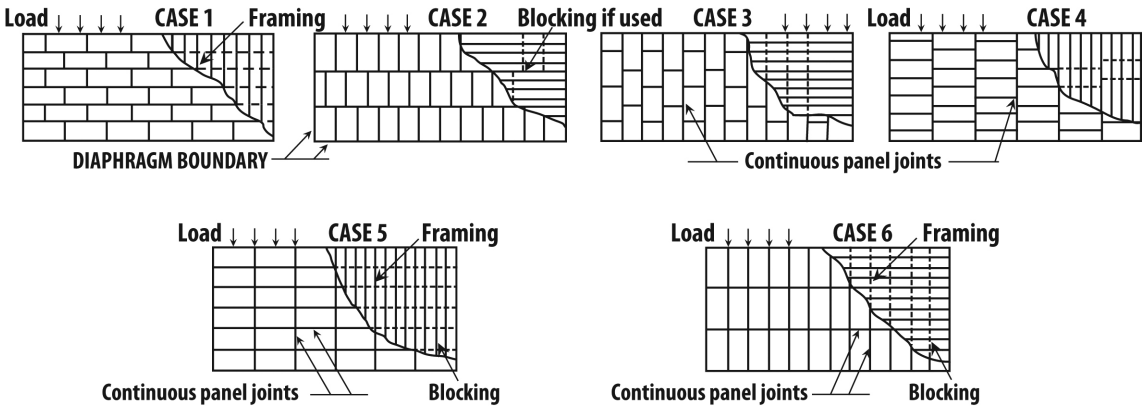
Note 5: Spacing of fasteners along intermediate framing members is 12 inches on center.

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

Tables converted to metric are available on our website.



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 (Gage or Inches)	MINIMUM THICKNESS OF PLYWOOD (Inches) ALLOWABLE LOAD – *Ultimate Load*					
		3/8	7/16	15/32	19/32	23/32	1-1/8
0.100	22	**15**	**15**	-----	-----	-----	-----
0.100	20	**20**	**25**	**25**	**25**	-----	-----
0.100	18	**30**	**35**	**40**	**40**	-----	-----
0.100	16	**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

Tables converted to metric are available on our website.

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

Tables converted to metric are available on our website.

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 STEEL THICKNESS (Gage or 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

Tables converted to metric are available on our website.

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

APPROVALS/LISTINGS

ICC Evaluation Service, Inc.

#ER-1147 Sill Plate
#ESR-1799 Powder Pins & Clips (formerly ER-1639)
#ER-3618 Ladd
#ER-5001 TrakFast Pins
#ESR-1955 T3 Pins

City of Los Angeles

#RR-22668 Powder pins
#RR-24279 Ladd
#RR-25264 TrakFast pins

Performance Tables

FASTENERS IN NORMAL WEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE 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)	
1500/ 1600 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*	-----	-----	-----	-----
SP	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*
3300 SERIES	0.180	1	**196**	*1084*	**100**	*1328*	**255**	*1504*	**284**	*1557*	-----	-----	-----	-----
		1-1/4	**241**	*1207*	**329**	*1710*	**294**	*1574*	**373**	*2104*	-----	-----	-----	-----
		1-1/2	**254**	*1601*	**379**	*1971*	**419**	*2239*	**501**	*2505*	-----	-----	-----	-----
1900	0.145	3/4	**105**	*694*	**71**	*458*	**101**	*685*	**99**	*627*	-----	-----	-----	-----
9100 STUD	0.205	1	**187**	*988*	**212**	*1385*	**186**	*1070*	**303**	*1618*	-----	-----	-----	-----
		1-1/4	**262**	*1450*	**304**	*1674*	**335**	*2161*	**400**	*2000*	-----	-----	-----	-----

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

Tables converted to metric are available on our website.

Ramset DRIVING JOBSITE SPEED

Performance Tables

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/ 1600	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]	---- ----	---- ----		
SP	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]		
3300	0.180	SMOOTH	**281** *1536*	**580** *3169*	**385** *2212*	**507** *2931*	**460** *2631*	**644** *3518*	**641** *3499*	**684** *3739*	---- ----	---- ----		
9100	0.205	KNURLED	**160** *1469*	**931** *5084*	**350** *3115*	**617** *3542*	**843** *4605*	**803** *4391*	**565** *3086*[9]	**547** *3373*[9]	---- ----	---- ----		

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/ 1600	0.145	SMOOTH	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----		
		KNURLED	**260** *1609*	**499** *3182*	**579** *3411*	**725** *4272*	**383** *2216*[7]	**595** *3431*[7]	---- ----	---- ----	---- ----	---- ----		
SP	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]		
3300	0.180	SMOOTH	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----	---- ----		
9100	0.205	KNURLED	**365** *2175*	**903** *5385*	**697** *4061*	**907** *5285*	**155** *842*[7]	**376** *2143*[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

Tables converted to metric are available on our website.

FASTENERS IN LIGHTWEIGHT CONCRETE

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 W/DECKING				3000 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*
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*
9100 SERIES	0.205	3/4	**70**	*351*	**277**	*1386*	-----	-----	-----	-----
		1	**112**	*559*	**378**	*1891*	-----	-----	-----	-----
		1-1/4	**118**	*689*	-----	-----	-----	-----	-----	-----

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

Tables converted to metric are available on our website.

Performance Tables

ANGLE CLIP IN CONCRETE

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE 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	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

Tables converted to metric are available on our website.

LADD 652 ANGLE CLIP ASSEMBLY

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	ALLOWABLE WORKING VALUES INSTALLED IN STONE AGGREGATE CONCRETE CONCRETE COMPRESSIVE STRENGTH **ALLOWABLE LOAD** – *Ultimate Load*					
			3000 PSI				4000 PSI	
			TENSION (LBS)		SHEAR (LBS)		TENSION (LBS)		SHEAR (LBS)	
LADD CEILING SYSTEM	0.152	1-1/8	**211**	*1688*	-----	-----	**193**	*1544*	-----	-----

Note 1: **ALLOWABLE** loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font.

Note 2: Except as noted, values shown reflect an 8 to 1 safety factor.

Note 3: Values shown are for concrete at the designed strength and are for the clip system only.

Note 4: Cyclic, fatigue or 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: Edge distance is 3 inches unless otherwise approved.

Note 7: For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

Tables converted to metric are available on our website.