

Table 7-3									
Group 120 Bolts ^[a]		Slip-Critical Connections							
Available Slip Resistance, kips (Class A Faying Surface ^[b] , $\mu = 0.30$)									
Group 120 Bolts									
Hole Type	Loading	Nominal Bolt Diameter, d , in.							
		$\frac{5}{8}$		$\frac{3}{4}$		$\frac{7}{8}$		1	
		Minimum Group 120 Bolt Pretension, kips							
		19		28		39		51	
		r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
STD/SSLT	S	4.29	6.44	6.33	9.49	8.81	13.2	11.5	17.3
	D	8.59	12.9	12.7	19.0	17.6	26.4	23.1	34.6
OVS/SSLP	S	3.66	5.47	5.39	8.07	7.51	11.2	9.82	14.7
	D	7.32	10.9	10.8	16.1	15.0	22.5	19.6	29.4
LSL	S	3.01	4.51	4.44	6.64	6.18	9.25	8.08	12.1
	D	6.02	9.02	8.87	13.3	12.4	18.5	16.2	24.2
Hole Type	Loading	Nominal Bolt Diameter, d , in.							
		$1\frac{1}{8}$		$1\frac{1}{4}$		$1\frac{3}{8}$		$1\frac{1}{2}$	
		Minimum Group 120 Bolt Pretension, kips							
		64		81		97		118	
		r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
STD/SSLT	S	14.5	21.7	18.3	27.5	21.9	32.9	26.7	40.0
	D	28.9	43.4	36.6	54.9	43.8	65.8	53.3	80.0
OVS/SSLP	S	12.3	18.4	15.6	23.3	18.7	28.0	22.7	34.0
	D	24.7	36.9	31.2	46.7	37.4	55.9	45.5	68.0
LSL	S	10.1	15.2	12.8	19.2	15.4	23.0	18.7	28.0
	D	20.3	30.4	25.7	38.4	30.7	46.0	37.4	56.0
STD = standard hole OVS = oversized hole SSLT = short-slotted hole with length transverse to the line of force SSLP = short-slotted hole with length parallel to the line of force LSL = long-slotted hole with length transverse or parallel to the line of force									
S = single shear D = double shear									
Hole Type	ASD	LRFD	^[a] Group 120 includes ASTM F3125/F3125M Grades A325 and F1852 bolts. ^[b] For Class B faying surfaces, multiply the tabulated available strength by 1.67. Notes: Slip-critical bolt values assume no more than one filler has been provided or bolts have been added to distribute loads to the fillers. See AISC Specification Sections J3.9 and J5 for provisions when fillers are present.						
STD and SSLT	$\Omega = 1.50$	$\phi = 1.00$							
OVS and SSLP	$\Omega = 1.76$	$\phi = 0.85$							
LSL	$\Omega = 2.14$	$\phi = 0.70$							

Table 7-3 (continued)
Slip-Critical Connections
Available Slip Resistance, kips
(Class A Faying Surface^[b], $\mu = 0.30$)

Group 144
and 150
Bolts^[a]

Group 144 and 150 Bolts									
Hole Type	Loading	Nominal Bolt Diameter, d , in.							
		$\frac{5}{8}$		$\frac{3}{4}$		$\frac{7}{8}$		1	
		Minimum Group 144 and 150 Bolt Pretension, kips							
		24		35		49		64	
		r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
STD/SSLT	S D	5.42	8.14	7.91	11.9	11.1	16.6	14.5	21.7
		10.8	16.3	15.8	23.7	22.1	33.2	28.9	43.4
OVS/SSLP	S D	4.62	6.92	6.74	10.1	9.44	14.1	12.3	18.4
		9.25	13.8	13.5	20.2	18.9	28.2	24.7	36.9
LSL	S D	3.80	5.70	5.54	8.31	7.76	11.6	10.1	15.2
		7.60	11.4	11.1	16.6	15.5	23.3	20.3	30.4
Hole Type	Loading	Nominal Bolt Diameter, d , in.							
		$1\frac{1}{8}$		$1\frac{1}{4}$		$1\frac{3}{8}$		$1\frac{1}{2}$	
		Minimum Group 144 and 150 Bolt Pretension, kips							
		80		102		121		148	
		r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
STD/SSLT	S D	18.1	27.1	23.1	34.6	27.3	41.0	33.4	50.2
		36.2	54.2	46.1	69.2	54.7	82.0	66.9	100
OVS/SSLP	S D	15.4	23.1	19.6	29.4	23.3	34.9	28.5	42.6
		30.8	46.1	39.3	58.8	46.6	69.7	57.0	85.3
LSL	S D	12.7	19.0	16.2	24.2	19.2	28.7	23.4	35.1
		25.3	38.0	32.3	48.4	38.3	57.4	46.9	70.2
STD = standard hole OVS = oversized hole SSLT = short-slotted hole with length transverse to the line of force SSLP = short-slotted hole with length parallel to the line of force LSL = long-slotted hole with length transverse or parallel to the line of force									
S = single shear D = double shear									
Hole Type	ASD	LRFD	^[a] Group 144 includes ASTM F3148 bolts; Group 150 includes ASTM F3125/F3125M Grades A490 and F2280 bolts.						
STD and SSLT	$\Omega = 1.50$	$\phi = 1.00$	^[b] For Class B faying surfaces, multiply the tabulated available strength by 1.67.						
OVS and SSLP	$\Omega = 1.76$	$\phi = 0.85$	Notes: Slip-critical bolt values assume no more than one filler has been provided or bolts have been added to distribute loads to the fillers.						
LSL	$\Omega = 2.14$	$\phi = 0.70$	See AISC Specification Sections J3.9 and J5 for provisions when fillers are present.						

Group 200, Grade 2 Bolts ^[a]									
Table 7-3 (continued) Slip-Critical Connections Available Slip Resistance, kips (Class A Faying Surface ^[b] , $\mu = 0.30$)									
Group 200 Bolts									
Hole Type	Loading	Nominal Bolt Diameter, d , in.							
		$\frac{5}{8}$		$\frac{3}{4}$		$\frac{7}{8}$		1	
		Minimum Group 200 Grade 2 Bolt Pretension, kips							
		–		–		–		90	
		r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
STD/SSLT	S D	–	–	–	–	–	–	20.3	30.5
		–	–	–	–	–	–	40.7	61.0
OVS/SSLP	S D	–	–	–	–	–	–	17.3	25.9
		–	–	–	–	–	–	34.7	51.9
LSL	S D	–	–	–	–	–	–	14.3	21.4
		–	–	–	–	–	–	28.5	42.7
Hole Type	Loading	Nominal Bolt Diameter, d , in.							
		$1\frac{1}{8}$		$1\frac{1}{4}$		$1\frac{3}{8}$		$1\frac{1}{2}$	
		Minimum Group 200 Grade 2 Bolt Pretension, kips							
		113		143		–		–	
		r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
STD/SSLT	S D	25.5 51.1	38.3 76.6	32.3 64.6	48.5 97.0	– –	– –	– –	– –
		21.8 43.5	32.6 65.1	27.5 55.1	41.2 82.4	– –	– –	– –	– –
OVS/SSLP	S D	21.8 43.5	32.6 65.1	27.5 55.1	41.2 82.4	– –	– –	– –	– –
		17.9 35.8	26.8 53.6	22.7 45.3	33.9 67.9	– –	– –	– –	– –
LSL	S D	17.9 35.8	26.8 53.6	22.7 45.3	33.9 67.9	– –	– –	– –	– –
STD = standard hole OVS = oversized hole SSLT = short-slotted hole with length transverse to the line of force SSLP = short-slotted hole with length parallel to the line of force LSL = long-slotted hole with length transverse or parallel to the line of force									
S = single shear D = double shear									
Hole Type	ASD	LRFD	– Indicates that this grade is unavailable for the given diameter. ^[a] Group 200 includes ASTM F3043 and F3111. ^[b] For Class B faying surfaces, multiply the tabulated available strength by 1.67. Notes: Slip-critical bolt values assume no more than one filler has been provided or bolts have been added to distribute loads to the fillers. See AISC Specification Sections J3.9 and J5 for provisions when fillers are present.						
STD and SSLT	$\Omega = 1.50$	$\phi = 1.00$							
OVS and SSLP	$\Omega = 1.76$	$\phi = 0.85$							
LSL	$\Omega = 2.14$	$\phi = 0.70$							