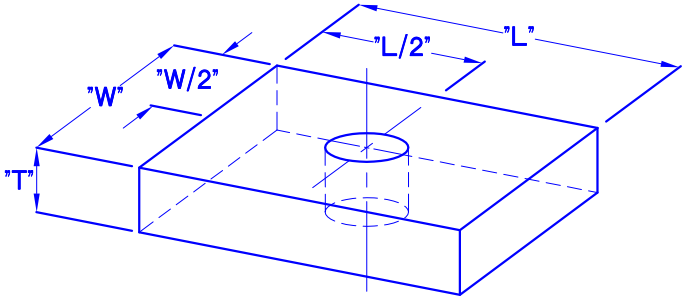
Bearing Plates



Bearing Plates carry compression loads into the structure by bearing on the wood. AutoTight plates satisfy the flexural requirements of AISC 360 and the wood-bearing requirements of the 2005 NDS. (ICC ES AC391 Sect 1.4.6, July 1, 2010)

Per 2005 NDS, plates assume deformation of 0.040 inch at the compressive design value with a linear load deformation.
(ICC ES AC 391 section 3.2.1.2).

Determining Compression Deflection

AutoTight Bearing plates provide the minimum deformation (0.040") at rated capacitiy.

1. Determine the reaction load.
2. Select the smallest plate that can carry the reaction load.
3. The wood deformation at the actual load is linear.
   The load deformation relationship is 0.040 * design load / rated load.

Example:
Reaction is 11,000 pounds on Douglas Fir.
Selecting an S12 bearing plate (capacity 12,360 pounds) provides the required capacity.

Deformation (per AC 391, section 3.2.1.2) is 0.040 * 11,000 / 12,360 = 0.036"
Add this deformation to the rod and shrinkage compensator deformation.

Minimizing Total Deformation To lower deformation increase the size of the bearing plate.

Example:
Reaction load is 11,000 pounds on Douglas Fir.
If an L20 plate is selected, the plate deformation will change as follows:

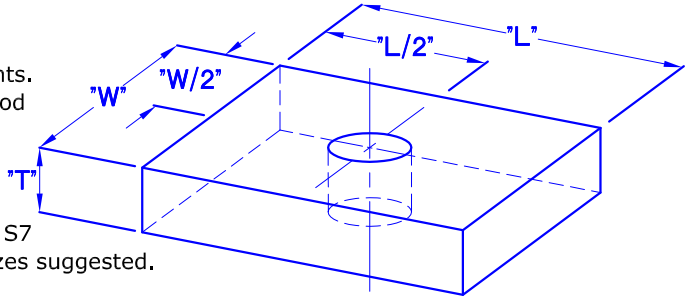
Deformation will be 0.040 * 11,000 / 21,016 = 0.021"

Changing the bearing plate allows you to adjust the total deflection (elongation) to achieve a tight system.

This example shows how to manually adjust components to achieve a desired deflection.
The AutoDesign Software allows you to easily change rod, bearing plates or shrinkage compensators to get the required system deflection.

Bearing Plates

Bearing Plates transfer uplift loads into the structure at reaction points. Bearing loads are limited by wood crushing at the NDS allowable wood bearing capacity.



Material: Complies with ASTM A36
Finish: Black Iron
Identification: Plates or boxes marked with Part #. Example S7
Tip: Minimize the number of sizes used on any single job. "Best" sizes suggested.

	Part No.	Best Sizes	Dimensions T x W x L	Hole Dia	Allowable Load D. Fir-Larch (DFL)	Southern Yellow Pine (SYP)	Spruce-Pine-Fir (SPF)	Hem-Fir (HF)
Fit 4x and 6x walls	S4		3/16" x 2-1/2" x 2-1/2"	3/4"	4,120	3,724	2,801	2,669
	S5	***	1/4" x 3" x 3"		5,964	5,391	4,055	3,864
	S6		1/4" x 3-1/4" x 3-1/4"		7,002	6,330	4,761	4,537
	S7	***	3/8" x 3-1/2" x 3-1/2"	1"	7,863	7,108	5,347	5,095
	S8	***	3/8" x 3-1/4" x 4"		8,281	7,486	5,631	5,366
	S10	***	1/2" x 3-1/4" x 5"		10,322	9,331	7,019	6,689
	S12	***	5/8" x 3-1/4" x 6"		12,360	11,174	8,405	8,010
	S14		3/4" x 3-1/4" x 7"		13,665	12,353	9,292	8,855
	S16		1" x 3-1/4" x 8"		15,696	14,189	10,673	10,171
	S7L	***	3/8" x 3-1/2" x 3-1/2"	1-1/4"	7,540	6,816	5,127	4,886
	S8L	***	3/8" x 3-1/4" x 4"		7,962	7,197	5,414	5,159
	S10L	***	1/2" x 3-1/4" x 5"		10,009	9,048	6,806	6,486
	S12L	***	5/8" x 3-1/4" x 6"		12,051	10,894	8,195	7,809
	S14L		3/4" x 3-1/4" x 7"		13,373	12,089	9,094	8,666
	S16L		1" x 3-1/4" x 8"		15,404	13,926	10,475	9,982
	S19		1" x 3-1/2" x 9"		18,842	17,033	12,812	12,210
	S22		1-1/4" x 3-1/2" x 10"		21,029	19,011	14,300	13,627
	S24		1-1/4" x 3-1/2" x 11"		23,217	20,988	15,787	15,045
	S26		1-1/2" x 3-1/2" x 12"		25,404	22,966	17,275	16,462
	S28		1-1/2" x 3-1/2" x 13"		27,592	24,943	18,762	17,880
	S32		1-1/2" x 3-1/2" x 15"		31,967	28,898	21,737	20,715
	S35		1-1/2" x 3-1/2" x 16"		34,154	30,876	23,225	22,132
	S39		1-1/2" x 3-1/2" x 18"		38,529	34,831	26,200	24,967
	S44		1-1/2" x 3-1/2" x 20"		42,904	38,786	29,175	27,802
Fit 6x walls	L17	***	1/2" x 5" x 5.5"		17,282	15,780	11,870	11,312
	L20	***	5/8" x 5-1/2" x 6"		21,016	18,998	14,291	13,618
	L21		3/4" x 5" x 7"		21,029	19,011	14,300	13,627
	L25		3/4" x 5-1/2" x 7-1/2"		24,936	22,542	16,956	16,158
	L28		1" x 5" x 9"		27,279	24,661	18,550	17,677
	L30		1" x 5-1/2" x 9"		30,092	27,203	20,462	19,500
	L32		1" x 5" x 11"		33,529	30,311	22,800	21,727
4x & 6x	SPW-6	(S5)	1/4" x 3" x 3"	3/4"	5,964	5,391	4,055	3,864
	SPW-8	(S7)	3/8" x 3-1/2" x 3-1/2"	1"	7,863	7,108	5,347	5,095
	SPW-10	(S7L)	3/8" x 3-1/2" x 3-1/2"	1-1/4"	7,540	6,816	5,127	4,886

Notes: S7-S16 Plates Add L suffix for oversize holes. Example: Standard S8 hole is 1", an S8L hole is 1-1/4"
All holes are 1/16" oversize.
Bearing Plates capacity based on ASTM A36 Steel, Fy = 36 ksi. per AISC 13th ed.
Bearing Capacity per NDS 2005: DFL = 625, SP = 565, HF = 405, SPF = 425 psi.
Bearing area factor, Cb, included in listed capacities.
Allowable bearing capacity is not limited by plate bending. Deflection is 0.040" at Allowable Load.
Allowable Capacity = (Fc perp) * Bearing Area * Bearing Factor (per AC 391 3.2.1.2 December 2010)
Bearing Plates are listed in ICCES Report Number 1344

SPW6-10 are often used on the first floor to retain the mudsill. These items are prescriptive. They may also be used as standard bearing plates. Standard plates are used as Sill Plate Washers. Example Use S5 for SPW-6.
"Best" sizes are suggested for the lowest cost systems.