Load overhang tables

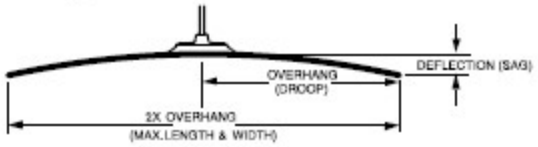
The following charts can be used as general guides for determining the number of vacuum pads required to handle glass or metal sheet and plate. The lifter you select must have both a sufficient capacity to handle your heaviest load as well as an adequate number of pads to support your thinnest material and prevent the load from peeling away from the vacuum pads as the load deflects during lifting.

Overhang is defined as the distance from the center of a vacuum pad to the edge of the load. To prevent the load from 'peeling away' from the pads, overhang values for 5" deflections should never be exceeded when using mechanical vacuum lifters. For maximum safety, we recommend that the overhang values for 2" deflections be followed for all vacuum lifters.

Lifting thin pickled, oiled, or magnetized sheet with a single pad or single row of pads can create a bond or vacuum between the sheets. This can pucker or deform the top sheet and scratch the sheet below it. This bonding can also occur with thicker sheets if the surface texture is very smooth. Lifters with rows of multiple pads placed near the edges of such sheet allows lifting from the outside edges of the sheet which immediately breaks the bond and permits safe lifting of one sheet at a time.

Heavy thick plate has sufficient structural rigidity such that deflection and peeling away from overhang is generally not a problem. However, it can be difficult to center a single pad on a large sheet. We also recommend limiting the total load length to be not more than 144 inches per pad.

For Single Pad Lifters



For Multi-Pad Lifters

1. Locate the thickness or gauge column of the thinnest sheet or plate.
2. Read across to the 2 inch deflection column.
3. This is the distance from the edge of the sheet to the center of the first inside pad(s).
4. Double this number for the recommended maximum distance between the centers of all pads over the length of the load.

   Remember to check both the length and width dimensions. See page 2 for additional information.

Carbon Steel Sheet and Plate

(Use this table for stainless steel sheet and plate)

GAUGE	DECIMAL EQUIVALENT	WEIGHT/FT.^{2}	OVERHANG	
			2" Deflection	5" Deflection
26	.0179	0.75	14	18
24	.0239	1.00	17	21
22	.0299	1.25	19	24
20	.0359	1.50	20	26
19	.0418	1.75	22	28
18	.0478	2.00	24	30
16	.0598	2.50	26	33
14	.0747	3.13	30	37
13	.0897	3.75	32	41
12	.1046	4.38	35	44
11	.1196	5.00	37	47
10	.1345	5.63	40	50
8	.1644	6.88	44	55
7	.1793	7.50	46	58
3/16	.1875	7.66	47	59
1/4	.2500	10.21	54	68
5/16	.3125	12.76	60	76
3/8	.3750	15.32	66	84
7/16	.4375	17.87	72	90
1/2	.5000	20.42	77	97
9/16	.5625	22.97	81	103
5/8	.6250	25.53	86	108
11/16	.6875	28.05	90	113
3/4	.7500	30.63	94	118
7/8	.8750	35.74	101	128
1	1.0000	40.84	108	137

Aluminum Sheet and Plate

(Based on 6061 Specifications)

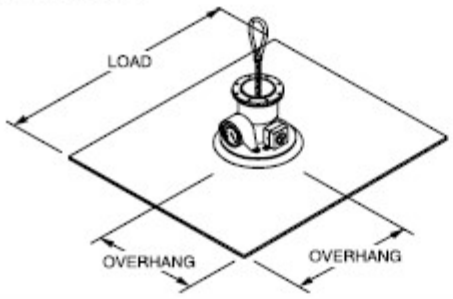
(Aluminum over 0.25" use above overhang tables.)

THICKNESS	WEIGHT/FT^2	OVERHANG	
		2" Deflection	5" Deflection
.020	0.28	15	19
.025	0.35	17	21
.032	0.45	18	24
.040	0.56	22	27
.050	0.71	24	31
.063	0.89	27	34
.080	1.13	31	39
.090	1.27	33	41
.100	1.41	34	43
.125	1.76	38	48
.160	2.26	44	55
.190	2.68	47	60
.250	3.53	54	68

Glass Sheet

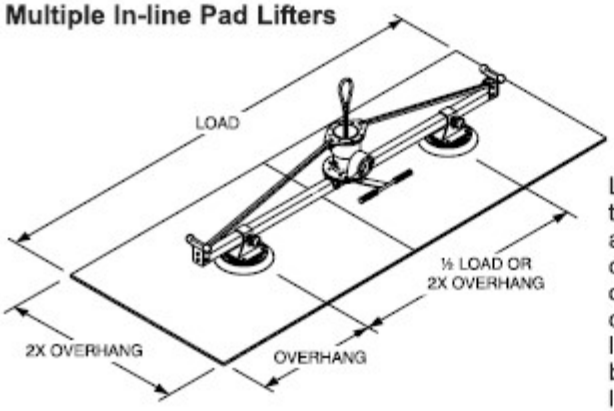
THICKNESS	DECIMAL EQUIV.	WEIGHT/FT.^{2}	OVERHANG
1/8	.1250	1.7	20
3/16	.1875	2.5	25
1/4	.2500	3.4	29
5/16	.3125	4.2	32
3/8	.3750	5.1	35
1/2	.5000	6.7	41
5/8	.6250	8.4	46
3/4	.7500	10.1	50
7/8	.8750	11.8	54
1	1.0000	13.5	58

Single Pad Lifters



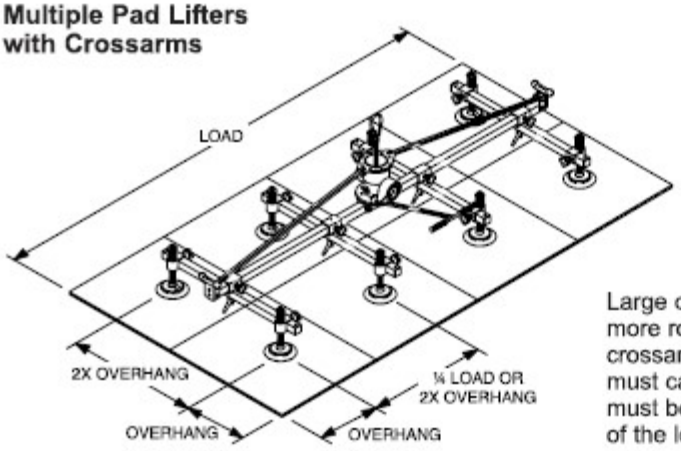
Single pad vacuum lifters are normally used to lift and transport single sheets of manageable dimensions. These dimensions vary greatly depending upon the material and application, and must be decided by the end user**,** ANVER recommends the use of single pad lifters only on rigid or fairly rigid materials and where the operator can conveniently place the lifter in the center of the load. Even if the material is thick and light, such as foam core aluminum panels, a single pad lifter is difficult to center over a six foot or greater edge-to-edge load distance. A multiple pad lifter should be selected.

Multiple In-line Pad Lifters



Large loads, or a load with a length dimension of two or three times its width, are best handled with a multiple-pad lifter. When possible, a center-cup to center-cup distance of one half, but not less than one third, of the length of the load should be chosen. When lifting a load with a three-pad, in-line lifter, the center-cup to center-cup dimension must be one third the length of the load to obtain correct load distribution.

Multiple Pad Lifters with Crossarms



Large or flexible loads are best handled with two or more rows of pads suspended from two or more crossarms. For best balance and safety, each cup must carry the same share of the load. The cups must be evenly spaced along the width and length of the load for equal loading of the pads.

A two inch (2") deflection or sag is the maximum we recommend for safe load handling. Equal loading of pads should be determined for the longest, widest load to be handled. Some limp or flexible materials require more support points to ensure level load handling. For very flexible materials, the overhang must be less than shown on the chart. Though we recommend near level load handling, the end user must determine the acceptable overhang for their application.