



March 22, 2023

Mr. Ryan Estrada
K2 Systems LLC
4665 North Avenue, Suite I
Oceanside, CA 92056

Re: PV Tilt Up Rack System
Creation of Span Tables
Various Locations in the USA

LEI Project No: 21220004.001

Dear Mr. Estrada:

Pursuant to your request, Larson Engineering, Inc. (LEI) has performed a structural analysis of the K2 CrossRail Tilt Up System using the rail type: 44-X, 48-X, 48-XL and 80 for a panel size of 44.8 inches x 67.5 inches in Landscape orientation. The purpose of the analysis was to provide tables for the maximum spans and reactions to the roof under various loading conditions.

The analysis was performed in accordance with the following codes and guidelines:

- *ASCE 7-16 Minimum Design Loads for Buildings and Other Structures*, referenced by the International Building Code 2018 and 2021 editions and the International Residential Code 2018 and 2021 editions, 2019 California Building Standards Code and 2022 California Building Standards Code,
- *2015 Aluminum Design Manual* and the *2020 Aluminum Design Manual* by the Aluminum Association,
- *Wind Design for Low-Profile Solar Photovoltaic Arrays on Flat Roofs Report SEAOC PV2-2012* dated August 2012 by the Structural Engineers Association of California (SEAOC), portions of this are referenced in ASCE 7-16, chapter 29.

The rail system used 6000 series aluminum alloy with a minimum yield strength of 34.8ksi. Section properties for each rail system was provided by K2 Systems, LLC.

DESCRIPTION

The K2 CrossRail Tilt Up System consists of extruded aluminum PV support rails that span between an L-shaped support consisting of two (2) members, the front leg and the rear leg, whose lengths can be adjusted as required to vary the tilt angle of the panels. The front and rear legs are constructed of the same type of rail as the PV support rails. They are connected to one another using plates with screws to form a 90 degree triangle and each leg is attached to the roof using an L-foot. The PV support rails connect to the front leg with angle attachments. The PV panels connect to the PV support rails using a clamp. Attachment of the Tilt Up System to the existing roof shall be the responsibility of the installer and is required to be analyzed by a registered professional or structural engineer.

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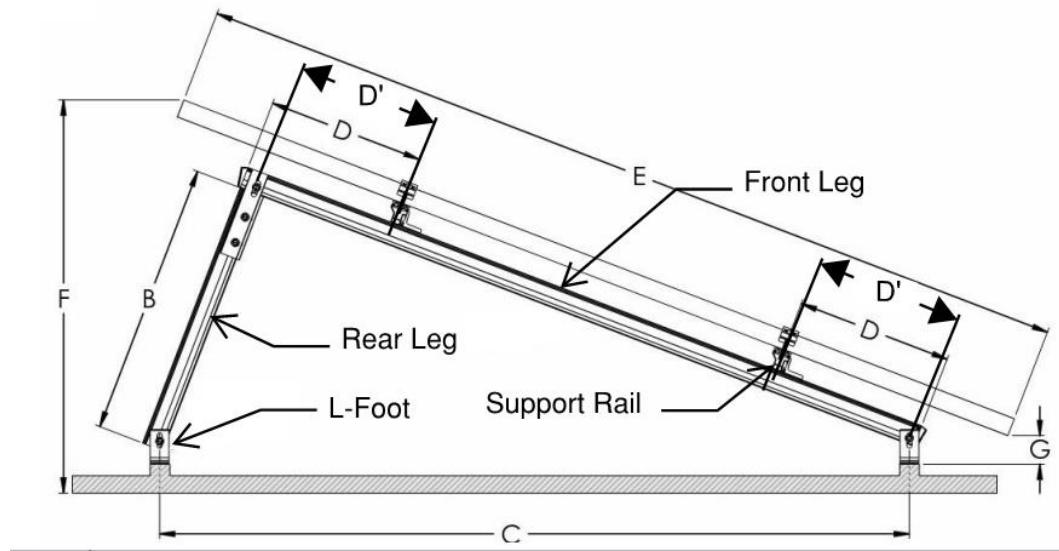


Figure 1 Typical Configuration (refer to K2 CrossRail Tilt Up System Assembly Instructions)

METHODS AND DESIGN PARAMETERS

Load combinations were provided in accordance with the ASCE 7-16 guidelines based on the assumption that the rail is a single span condition or multi-span condition and using an allowable deflection of 1/120. Wind pressure was determined in accordance with ASCE 7-16 chapter 26 and ASCE 7-16 section 29.4.3 "Rooftop Solar Panels for Buildings of all Heights with Flat Roofs or Gable or Hip Roofs with slopes less than 7°" whose tilt angles are less than 35°.

The snow loads indicated in the tables are based on a flat roof snow load. The snow load applied to the system may be adjusted with the tilt angle in accordance with sloped roof snow loads. The appropriate ground snow loads should be determined in accordance with the ground snow load maps in ASCE 7-16 or per the local building code.

The following table shows the equivalent ground snow value associated with the flat snow load shown in the span and reaction tables assuming Ct=1.0, Ce=1.0, I=1.0.

Determine Equivalent Ground Snow for indicated flat snow (psf)

Pf, flat snow (psf)	10	20	30	40	50	60	70
Pg, ground snow (psf)	14.3	28.5	42.8	57.2	71.4	85.7	100

Seismic criteria were considered per the provisions of ASCE 7-16, chapter 13. Seismic effects did not govern the capacity of this system.

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The following design parameters were used for the purpose of this analysis:

<u>General</u>	<u>Wind</u>	<u>Snow</u>	<u>Seismic</u>
Risk Category: II	V, ult: 90 - 180 mph	Flat snow pf: 0 - 70 psf	Site Class: D
Roof Mean Height: <= 30 ft	Exposures: B, C & D	Ce: 1.0	Design Category: A-E
Roof Slope: 0° to 7 °	Pressure Zones: 1, 2 & 3	Ct: 1.0	Ss:<=2.0
Panel Slope: 7° to 25° (from ground)		Cs: Varies	S1:<=1.25
Panel Orientation: See Charts		Is: 1.0	Ip: 1.0
Panel Size: See Charts			ap: 1.0
			Rp: 1.5

DESIGN RESULTS

The allowable span lengths of the system are controlled by applicable wind and snow load combinations. The reaction loads provided in the tables are only applicable to the corresponding span lengths provided. Reaction loads shown are based on the worst case of the front and rear mounting brackets. Reactions may be scaled linearly where shorter spans are used. The reactions shown for Multi Span assumes an interior support location. The maximum span length may be limited due to the capacity of the support rail, the capacity of the front leg to resist the reaction load from the support rail, or the capacity of the L-foot connection.

The following tables are provided for each exposure category, B, C & D for Interior and Edge Multi-Span Conditions in the **Landscape** Orientation:

Maximum Span Length (Inches) Multi Span Only, Tables 1.1, 1.1A, 2.1, 2.1A, 3.1, 3.1A
 Maximum Downward Force (lbs) Multi Span Only, Tables 1.2, 1.2A, 2.2, 2.2A, 3.2, 3.2A
 Maximum Horizontal Force (lbs) Multi Span Only, Tables 1.3, 1.3A, 2.3, 2.3A, 3.3, 3.3A
 Maximum Uplift Force (lbs) Multi Span Only. Tables 1.4, 1.4A, 2.4, 2.4A, 3.4, 3.4A

Please note that simple span (2 supports) will not work for landscape orientation for the panel noted due to the lengths of the panel in that direction. A Minimum of 3 supports are required for 2 adjacent panels.

Figures 2 & 3 define the roof zones per ASCE 7-16 Figure 29.4-1 and are referenced in the attached Tables for Interior and Edge Conditions. Figure 4 defines the array edge factors used for wind uplift. The Edge Condition tables should be applied to the north and south rows and to the spans that occur within 1.5 panel lengths of the east and west edges as defined in Figure 4.

The following notations should be applied to Figures 2 through 4.

d1: Horizontal distance orthogonal to the panel edge to an adjacent panel or building edge.

d2: Horizontal distance orthogonal from the edge of one panel to the nearest edge in the next row.

h: Mean Roof Height.

WL=Width of a Building on its longest side.

Ws=Width of a Building on its shortest side.

Lp: Panel Length.

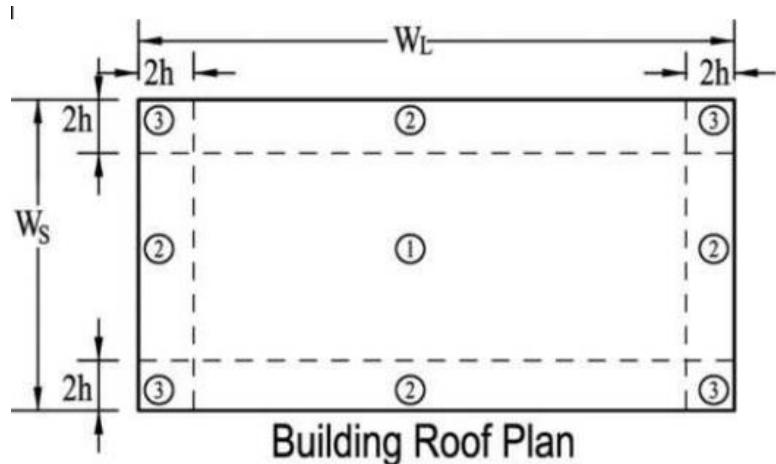


Figure 2. ASCE 7-16 Figure 29.4-7 shows the Building Roof Plan defining the roof zones.

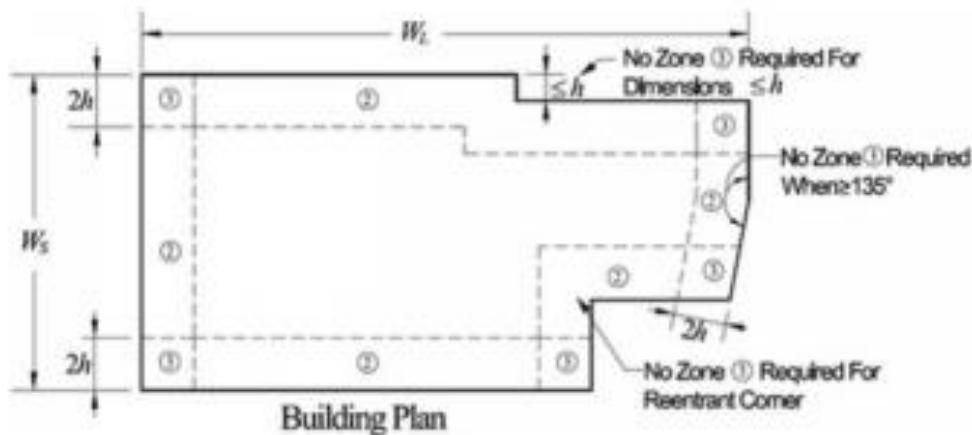


Figure 3. ASCE 7-16 Figure C29.4-1 shows a sketch of Building with Irregular Plan Dimensions

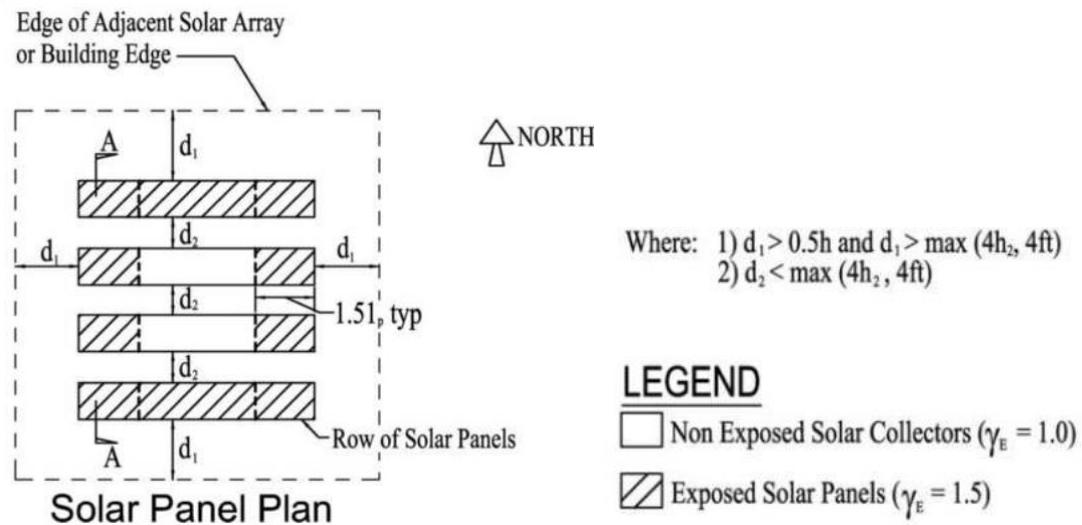


Figure 4. ASCE 7-16 Figure 29.4-7 Array Edge Factors
INSTALLATION & CONFIGURATION NOTES

The following guidelines apply to all installations using the K2 CrossRail Tilt Up System product line:

- Refer to Tilt Up Kit allowable geometry and installation guidelines by K2 Systems, LLC,
- All fasteners and connective hardware shall be installed per manufacturer specifications,
- The support rails shall be placed no further from the center of the L-Foot or Rear leg than 6", see dimension D' on Figure 1,
- This analysis is limited to installations south of any roof ridge, if present. On pitched roofs the northern most row of panels should be located between 3' and 12' from the ridge,
- Span tables assume (2) two independent horizontal support rails per panel. Rails shall be located no further than 8" from cut end of diagonal member (refer to Figure 1),
- High edge of panel not to exceed 30" from roof surface,
- Maximum end cantilever of horizontal support rail shall not exceed one-third (1/3) of allowable span in the roof wind pressure zone,
- Rails shall be continuous over a minimum of two (2) supports unless using an approved K2 Structural Splice,
- Installations over roof overhangs or within 12" of any roof edge is not advised,
- Observe all local jurisdictional requirements regarding roof setback requirements.

SUMMARY

This assessment has provided design validation for code compliant installations of the K2 CrossRail Tilt Up System in the state noted in the stamp below. Local jurisdictions shall be consulted for the proper code requirements. For the configurations and design loadings noted previously, the attached span tables represent maximum span lengths based on allowable stresses and deflection criteria. For all other configurations, refer to K2 Systems, LLC for engineering support.

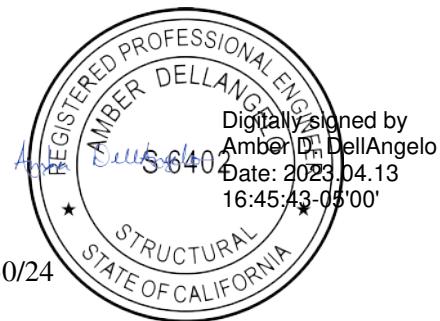
This report does not provide analysis of any existing structures to support the loading imposed by the K2 CrossRail Tilt Up System, as may be required by the local authority having jurisdiction.

If you have any further questions regarding this matter, please feel free to contact our office.

Sincerely,
Larson Engineering, Inc.

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CAW:ng

Attachments: Tables as indicated above



K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.1 Max Length L (inches) for Multi Span only Interior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	83	63	44	31	24	0	0	0	65	57	41	31	24	0	0	0	56	52	39	30	24	0	0	0
		85	66	46	32	25	0	0	0	66	58	42	32	25	0	0	0	57	53	41	32	0	0	0	0
		164	127	88	62	48	39	33	28	128	113	82	62	48	39	33	28	110	102	79	61	48	39	33	28
		80	188	151	111	80	61	50	42	36	147	129	99	80	61	50	42	36	127	117	91	75	61	50	42
100	44-X	71	59	42	31	24	0	0	0	55	51	38	30	24	0	0	0	47	46	36	29	0	0	0	0
		73	61	43	32	25	0	0	0	56	52	40	31	0	0	0	0	48	47	37	30	0	0	0	0
		140	118	84	62	48	39	33	28	109	101	77	60	48	39	33	28	93	90	72	58	48	39	33	28
		80	161	137	103	80	61	50	42	36	125	115	90	74	61	50	42	36	107	103	83	69	59	50	42
110	44-X	62	55	40	31	24	0	0	0	47	46	36	28	0	0	0	0	40	39	33	0	0	0	0	0
		63	56	41	32	25	0	0	0	48	47	37	30	0	0	0	0	41	40	34	0	0	0	0	0
		121	108	80	62	48	39	33	28	93	90	72	57	47	39	33	28	79	77	65	55	45	39	33	28
		80	139	125	96	78	61	50	42	36	107	103	83	69	59	50	42	36	91	88	75	64	55	49	42
120	44-X	54	50	37	29	24	0	0	0	41	40	33	27	0	0	0	0	34	34	30	0	0	0	0	0
		55	51	39	31	0	0	0	0	41	40	34	0	0	0	0	0	35	34	31	0	0	0	0	0
		106	99	75	59	48	39	33	28	80	78	66	54	45	39	33	28	68	66	59	51	43	37	33	28
		80	121	113	89	73	61	50	42	36	92	90	76	64	56	49	42	36	78	76	68	59	51	46	41
130	44-X	47	46	35	28	0	0	0	0	35	35	31	0	0	0	0	0	0	0	0	0	0	0	0	0
		48	46	37	29	0	0	0	0	36	35	31	0	0	0	0	0	0	0	0	0	0	0	0	0
		92	90	71	56	47	39	33	28	70	68	60	51	43	37	33	28	59	58	54	47	41	36	32	28
		80	106	103	83	69	59	50	42	36	80	78	69	59	52	46	42	36	68	66	62	54	48	43	39
140	44-X	41	40	33	27	0	0	0	0	31	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		42	41	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		82	79	67	54	45	39	33	28	61	60	55	48	41	36	32	28	52	51	49	43	39	34	30	27
		80	94	91	77	65	56	49	42	36	70	69	63	55	49	44	39	36	59	58	56	50	44	40	37
150	44-X	37	36	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		37	37	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		72	71	62	51	43	37	33	28	54	53	51	44	39	34	30	27	45	45	44	40	36	33	29	26
		80	83	81	71	61	53	47	42	36	62	61	58	51	46	41	37	34	52	51	50	46	41	38	34
160	44-X	33	32	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		33	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		65	63	57	49	41	36	32	28	48	47	46	41	37	33	29	26	40	40	39	37	33	31	28	25
		80	74	73	66	57	50	45	40	36	55	54	53	47	43	39	35	33	46	46	45	42	38	35	32
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		58	57	53	46	40	35	31	28	43	42	41	38	35	31	28	26	36	36	35	34	31	29	27	0
		80	60	59	57	50	45	40	37	34	44	44	43	41	37	34	32	29	37	37	36	36	33	31	29
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		39	38	37	35	33	31	30	28	33	33	32	32	30	29	28	27	30	30	29	29	27	27	26	26
		52	51	50	44	38	33	30	27	39	38	37	36	32	30	27	0	32	32	31	31	29	27	0	0
		80	60	59	57	50	45	40	37	34	44	44	43	41	37	34	32	29	37	37	36	33	31	29	27

Note: The Length is based on use of at least two spans. Cantilevered ends may be used that are no greater than 1/3 of the backspan.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.1A Max Length L (inches) for Multi Span only Exterior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	80	63	44	31	24	0	0	0	62	55	41	31	24	0	0	0	54	50	39	30	24	0	0	0
	48-X	83	66	45	32	25	0	0	0	65	57	42	32	25	0	0	0	56	52	40	32	0	0	0	0
	48-XL	161	127	88	62	48	39	33	28	126	111	82	62	48	39	33	28	109	100	78	61	48	39	33	28
	80	172	138	101	80	66	54	45	39	134	118	90	73	61	53	45	39	116	106	83	68	58	50	44	39
100	44-X	68	58	42	31	24	0	0	0	53	49	38	30	24	0	0	0	45	44	35	29	0	0	0	0
	48-X	72	61	43	32	25	0	0	0	55	51	40	31	0	0	0	0	47	46	37	30	0	0	0	0
	48-XL	138	117	84	62	48	39	33	28	107	99	77	60	48	39	33	28	91	88	71	58	47	39	33	28
	80	147	125	94	75	63	54	45	39	114	105	82	68	57	50	44	39	97	94	75	63	54	47	42	38
110	44-X	59	53	40	31	24	0	0	0	45	44	35	28	0	0	0	0	38	37	32	0	0	0	0	0
	48-X	62	55	41	32	25	0	0	0	47	46	37	29	0	0	0	0	40	39	33	0	0	0	0	0
	48-XL	119	107	79	61	48	39	33	28	91	88	71	57	47	39	33	28	78	76	64	54	45	39	33	28
	80	127	114	87	71	60	52	45	39	97	94	75	63	54	47	42	38	83	81	68	58	50	44	40	36
120	44-X	51	48	37	29	24	0	0	0	39	38	32	27	0	0	0	0	33	32	29	0	0	0	0	0
	48-X	54	50	39	30	0	0	0	0	41	40	34	0	0	0	0	0	35	34	30	0	0	0	0	0
	48-XL	104	97	75	59	48	39	33	28	79	77	65	54	45	39	33	28	67	65	58	50	43	37	33	28
	80	110	103	81	67	57	49	44	39	84	82	69	58	51	45	40	36	71	69	62	53	47	42	38	34
130	44-X	45	44	35	28	0	0	0	0	34	33	29	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	48	46	37	29	0	0	0	0	36	35	31	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	91	88	71	56	47	39	33	28	68	67	59	51	43	37	33	28	58	57	53	46	41	36	31	28
	80	97	94	75	63	54	47	42	38	73	71	63	54	47	42	38	34	62	60	56	49	43	39	35	32
140	44-X	41	40	33	27	0	0	0	0	31	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	42	40	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	80	78	66	54	45	38	33	28	60	59	54	47	41	36	31	28	51	50	48	42	38	34	30	27
	80	85	83	70	59	51	45	40	36	64	63	58	50	44	40	36	33	54	53	51	45	40	37	33	31
150	44-X	35	34	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	37	36	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	71	69	61	51	43	37	33	28	53	52	50	44	39	34	30	27	45	44	43	39	35	32	29	26
	80	76	74	65	55	48	43	38	35	56	55	53	47	41	37	34	31	48	47	46	42	38	34	31	29
160	44-X	31	31	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	33	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	64	62	56	49	41	36	32	28	47	46	45	41	36	33	29	26	40	39	38	36	33	30	28	25
	80	68	66	60	52	46	41	37	34	50	49	48	43	39	35	32	30	42	42	41	38	35	32	29	27
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	57	56	52	46	40	35	31	28	42	42	41	38	34	31	28	25	35	35	34	33	31	28	26	0
	80	55	54	52	46	41	37	34	31	40	40	39	37	34	31	29	27	34	33	33	32	30	28	26	24
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	51	51	49	43	38	33	30	27	38	37	37	35	32	29	27	0	32	31	31	30	28	26	0	0
	80	55	54	52	46	41	37	34	31	40	40	39	37	34	31	29	27	34	33	33	32	30	28	26	24

Note: The Length is based on use of at least two spans. Cantilevered ends may be used that are no greater than 1/3 of the backspan.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.2 Maximum Downward Force (lbs) Multi Span Only Interior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	146	155	159	160	160	0	0	0	147	156	159	160	160	0	0	0	147	150	159	160	160	0	0	0
		149	162	165	166	166	0	0	0	149	159	166	166	166	0	0	0	150	153	166	166	0	0	0	0
		287	312	319	320	321	321	321	321	289	308	320	320	321	321	322	321	290	296	320	321	321	321	321	321
		80	330	371	402	409	409	409	409	332	354	385	409	409	411	409	333	340	372	393	409	409	409	409	409
100	44-X	146	156	159	160	160	0	0	0	147	153	160	159	160	0	0	0	147	150	160	160	0	0	0	0
		149	162	166	166	166	0	0	0	150	156	166	166	0	0	0	150	153	163	167	0	0	0	0	
		288	314	320	320	321	321	321	321	290	301	321	320	321	321	322	321	291	295	316	322	320	321	321	321
		80	331	364	394	409	409	409	409	333	346	376	396	409	409	411	409	334	339	362	383	398	409	409	409
110	44-X	147	157	159	159	160	0	0	0	147	150	160	159	0	0	0	148	145	156	0	0	0	0	0	0
		150	161	166	165	166	0	0	0	150	153	166	166	0	0	0	151	147	159	0	0	0	0	0	0
		289	179	212	238	263	292	318	343	198	193	225	250	272	293	319	343	216	211	230	258	279	299	318	343
		80	332	357	387	405	409	409	409	334	339	368	387	402	409	411	409	335	327	354	374	389	402	409	409
120	44-X	147	155	160	159	160	0	0	0	148	145	159	160	0	0	0	148	145	153	0	0	0	0	0	0
		150	158	166	166	0	0	0	0	151	148	162	0	0	0	0	151	148	156	0	0	0	0	0	0
		290	305	321	320	321	321	321	321	291	286	314	321	320	322	321	292	285	301	318	321	320	321	321	
		80	333	351	379	398	409	409	409	335	328	360	380	394	405	411	409	335	328	346	365	380	392	404	409
130	44-X	147	152	160	159	0	0	0	0	148	145	156	0	0	0	0	0	0	0	0	0	0	0	0	0
		150	156	166	166	0	0	0	0	151	148	159	0	0	0	0	0	0	0	0	0	0	0	0	0
		291	300	321	320	320	321	321	321	292	285	308	321	321	320	321	321	292	287	295	311	321	320	321	321
		80	334	345	373	392	405	409	409	335	328	353	372	386	398	408	409	336	329	339	358	372	384	394	403
140	44-X	148	146	160	0	0	0	0	0	148	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		151	149	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		291	288	319	321	320	320	321	321	292	286	302	318	321	320	320	321	293	288	295	305	318	321	320	320
		80	334	331	367	385	399	408	409	336	329	347	365	379	391	400	409	336	331	339	350	365	377	386	394
150	44-X	148	145	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		151	147	163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	285	314	321	321	320	321	321	293	287	297	313	321	321	320	320	293	289	288	299	312	321	321	320
		80	335	327	361	379	393	403	409	336	330	342	359	373	384	393	401	337	332	331	344	358	369	379	387
160	44-X	148	145	157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		151	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	286	310	322	321	320	320	321	293	288	292	308	319	321	321	320	293	289	284	295	306	316	321	321
		80	335	328	356	374	387	398	406	409	337	331	335	353	367	378	387	395	337	333	326	339	352	363	372
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	287	306	321	321	320	320	320	293	289	285	303	314	322	321	321	294	290	285	295	301	311	319	0
		80	336	330	351	369	382	393	401	408	337	332	348	361	372	381	389	337	333	327	339	346	357	366	374
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	288	302	317	322	321	320	320	293	290	284	299	310	319	321	0	294	291	286	291	296	306	0	0
		80	336	330	347	364	377	387	396	403	337	333	326	343	356	367	376	383	338	334	329	334	341	351	360

Note: The Reactions shown in the tables above account for reactions associated with the exterior support of a multi span condition. See Max length for Multi Span Only for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.2A Maximum Downward Force (lbs) Multi Span Only Exterior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3											
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)											
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70		
90	44-X	140	155	159	160	160	0	0	0	140	150	159	160	160	0	0	0	141	144	158	160	160	0	0	0	0		
	48-X	146	161	165	165	165	0	0	0	147	157	165	165	165	0	0	0	147	151	165	166	0	0	0	0	0		
	48-XL	282	311	318	319	320	320	320	320	284	303	319	319	320	320	321	320	285	291	319	320	320	320	320	320	320		
	80	300	338	366	410	441	441	441	441	302	322	351	373	408	434	443	441	303	310	339	358	387	414	435	441	441		
100	44-X	140	154	159	160	160	0	0	0	141	146	159	159	160	0	0	0	141	144	154	160	0	0	0	0	0		
	48-X	147	161	165	165	165	0	0	0	147	153	165	165	165	0	0	0	148	150	161	166	0	0	0	0	0		
	48-XL	283	311	319	319	320	320	320	320	285	296	320	319	320	320	321	320	286	290	310	321	319	320	320	320	320		
	80	301	331	359	387	421	441	441	441	303	315	343	361	384	412	433	441	304	309	330	349	362	390	412	430	430		
110	44-X	141	151	159	159	160	0	0	0	141	144	156	159	0	0	0	0	142	139	150	0	0	0	0	0	0	0	
	48-X	147	158	165	165	165	0	0	0	148	150	163	165	0	0	0	0	148	145	157	0	0	0	0	0	0	0	
	48-XL	284	305	319	319	320	320	320	320	286	290	315	319	320	320	321	320	286	280	303	320	319	320	320	320	320		
	80	302	325	352	369	401	427	441	441	304	309	335	353	366	390	412	430	305	298	322	341	354	366	390	409	409		
120	44-X	141	148	160	159	160	0	0	0	142	139	153	160	0	0	0	0	142	139	146	0	0	0	0	0	0	0	
	48-X	148	155	166	165	0	0	0	0	148	145	160	0	0	0	0	0	149	145	153	0	0	0	0	0	0	0	
	48-XL	285	300	320	319	320	320	320	320	286	281	308	320	319	319	321	320	287	281	296	313	319	319	320	320	320		
	80	303	319	346	363	380	408	429	441	305	299	328	346	359	369	392	411	305	299	315	333	346	357	368	388	388		
130	44-X	141	146	158	159	0	0	0	0	142	139	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	48-X	148	153	165	165	0	0	0	0	149	145	157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	48-XL	286	295	319	319	319	320	320	320	287	280	302	319	319	320	320	320	287	282	290	306	319	319	320	320	320		
	80	304	314	340	357	369	389	412	429	305	298	322	339	352	362	372	392	306	300	309	326	339	350	359	368	368		
140	44-X	142	140	155	160	0	0	0	0	142	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	48-X	148	147	163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	286	283	314	320	319	319	320	320	287	282	297	313	320	319	320	320	288	283	290	300	312	320	319	319	319		
	80	305	301	334	351	363	373	394	413	306	300	316	333	346	356	364	373	306	301	309	319	332	343	352	359	359		
150	44-X	142	139	153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	148	145	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	287	280	309	320	319	319	320	320	288	283	292	307	319	320	319	320	288	284	283	294	306	316	320	319	319		
	80	305	298	329	346	358	368	377	397	306	301	311	327	340	350	358	365	307	302	302	313	326	337	345	353	353		
160	44-X	142	139	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	149	146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	287	281	305	320	320	319	319	320	288	284	287	303	314	320	320	319	289	285	279	290	301	311	319	320	320		
	80	306	299	324	341	353	363	370	381	307	302	306	322	334	344	353	360	307	303	297	309	320	331	339	347	347		
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	288	282	301	315	320	320	319	319	288	284	280	298	309	319	320	320	289	285	280	290	296	305	314	0	0		
	80	306	300	320	336	348	358	366	372	307	303	298	317	329	339	347	354	307	304	298	309	315	325	334	341	341		
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	288	283	297	311	321	320	319	319	289	285	279	294	305	314	320	0	289	286	281	286	291	301	0	0	0		
	80	306	301	316	331	343	353	361	368	307	303	297	313	324	334	342	349	308	304	299	304	310	320	328	336	336		

Note: The Reactions shown in the tables above account for reactions associated with the exterior support of a multi span condition. See Max length for Multi Span Only for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.3 Maximum Horizontal Force (lbs) Multi span only Interior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	50	38	26	19	14	0	0	0	54	48	34	26	20	0	0	0	63	52	39	31	24	0	0	0
	48-X	51	39	27	19	15	0	0	0	55	49	35	27	21	0	0	0	64	53	41	32	19	0	0	0
	48-XL	98	76	53	37	29	23	20	17	107	94	68	52	40	32	27	24	124	102	79	62	48	39	33	28
	80	113	90	66	48	37	30	25	22	123	108	82	66	51	41	35	30	142	118	92	75	62	50	42	36
100	44-X	53	44	31	23	18	0	0	0	57	52	39	31	25	0	0	0	66	57	45	36	22	0	0	0
	48-X	54	45	32	24	18	0	0	0	58	53	41	32	19	0	0	0	68	58	46	37	23	0	0	0
	48-XL	104	59	51	45	40	36	33	31	77	75	67	60	54	50	46	92	86	84	78	71	64	60	56	52
	80	119	101	76	59	45	37	31	27	128	119	93	76	63	51	43	37	150	128	103	86	74	62	52	45
110	44-X	57	53	40	31	25	0	0	0	60	59	49	40	26	0	0	0	72	67	54	39	32	0	0	0
	48-X	56	50	37	28	22	0	0	0	60	58	46	37	23	0	0	0	71	63	51	36	28	0	0	0
	48-XL	108	97	71	55	43	35	29	25	115	112	90	71	59	48	41	35	137	122	98	82	68	58	49	42
	80	124	111	86	70	55	44	37	32	132	128	103	86	74	62	52	45	157	140	113	96	83	73	63	54
120	44-X	59	57	44	35	0	0	0	0	61	60	53	37	0	0	0	74	72	56	44	0	0	0	0	
	48-X	58	54	41	32	0	0	0	0	61	60	50	34	0	0	0	73	68	55	41	0	0	0	0	
	48-XL	112	105	80	63	51	41	35	30	118	115	97	80	67	57	49	42	141	132	106	91	77	67	58	50
	80	129	120	95	78	65	53	44	38	136	132	112	95	82	72	62	53	162	152	122	105	92	82	74	64
130	44-X	59	57	44	35	0	0	0	0	61	60	53	37	0	0	0	74	72	56	44	0	0	0	0	
	48-X	60	58	46	36	0	0	0	0	63	61	54	38	0	0	0	75	73	58	46	0	0	0	0	
	48-XL	115	112	89	70	58	49	41	35	121	118	105	89	75	65	57	49	145	141	113	98	86	75	66	59
	80	133	129	103	86	74	62	52	45	139	136	120	103	90	80	72	63	167	162	130	113	100	90	81	75
140	44-X	60	58	48	39	0	0	0	0	63	61	50	40	0	0	0	76	74	61	49	0	0	0	0	
	48-X	61	60	50	0	0	0	0	0	64	62	52	0	0	0	0	0	77	75	63	0	0	0	0	
	48-XL	118	115	96	78	65	56	47	41	123	121	111	97	83	72	64	57	149	145	122	105	94	83	74	66
	80	136	132	111	94	81	71	60	52	141	138	128	111	98	88	79	73	171	166	140	121	108	98	89	82
150	44-X	61	60	52	0	0	0	0	0	64	62	54	0	0	0	0	0	77	75	66	0	0	0	0	
	48-X	62	61	53	0	0	0	0	0	65	63	56	0	0	0	0	0	78	77	67	0	0	0	0	
	48-XL	120	117	103	85	72	62	54	47	125	123	117	103	91	79	70	63	152	148	130	111	100	91	81	73
	80	138	135	118	101	88	78	69	60	144	141	135	118	105	95	86	79	174	170	149	128	115	105	96	89
160	44-X	62	61	55	0	0	0	0	0	65	63	57	0	0	0	0	0	78	77	69	0	0	0	0	
	48-X	63	62	0	0	0	0	0	0	66	65	0	0	0	0	0	0	80	78	0	0	0	0	0	
	48-XL	122	120	109	93	78	68	60	53	127	125	121	109	97	86	77	70	154	151	137	117	106	97	89	80
	80	140	137	125	108	95	85	76	68	146	143	139	125	112	102	93	86	177	173	157	136	122	112	103	
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	48-XL	124	121	114	99	85	74	66	59	129	127	123	114	103	93	84	76	156	153	144	125	111	103	95	74
	80	142	139	131	114	101	91	82	75	148	145	141	131	118	108	99	92	179	176	165	144	128	118	109	102
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	48-XL	125	123	119	104	91	80	71	64	131	128	124	119	108	99	90	67	158	155	150	132	116	108	90	81
	80	144	141	136	120	107	97	88	81	150	147	143	136	124	114	105	98	181	178	172	151	135	124	115	108

Note: The Reactions shown in the tables above account for reactions associated with the exterior support of a multi span condition. See Max length for Multi Span Only for corresponding span length.

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.3A Maximum Horizontal Force (lbs) Multi span only Exterior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	48	48	38	26	19	14	0	0	0	52	46	34	26	20	0	0	0	60	50	39	31	24	0	0	0
		48-X	50	39	27	19	15	0	0	0	54	48	35	27	21	0	0	0	63	52	41	32	19	0	0	0
		48-XL	96	76	53	37	29	23	20	17	105	92	68	52	40	32	27	23	122	101	79	61	48	39	33	28
		80	103	82	60	48	39	32	27	23	112	98	75	61	51	44	38	32	129	107	84	69	58	50	45	39
	44-X	50	43	31	23	18	0	0	0	0	54	50	39	31	25	0	0	0	64	54	44	36	22	0	0	0
		48-X	53	45	32	24	18	0	0	0	57	53	41	32	19	0	0	0	67	57	46	37	23	0	0	0
		48-XL	102	87	62	46	35	29	24	21	110	102	79	61	49	40	34	29	129	110	88	72	59	48	40	35
		80	109	92	69	56	46	40	33	29	117	108	85	70	59	51	45	40	137	117	94	78	67	59	52	47
	44-X	55	51	40	31	25	0	0	0	0	58	56	47	40	26	0	0	0	69	64	52	39	32	0	0	0
		48-X	55	49	37	28	22	0	0	0	59	57	46	37	23	0	0	0	70	62	50	36	28	0	0	0
		48-XL	107	95	71	55	43	35	29	25	113	110	88	71	58	48	41	35	134	120	97	82	68	58	49	42
		80	113	101	78	64	54	46	40	35	121	117	94	78	67	59	52	47	143	128	103	87	76	67	60	54
	44-X	56	54	44	35	0	0	0	0	0	59	57	51	37	0	0	0	0	71	69	55	44	0	0	0	0
		48-X	57	53	41	32	0	0	0	0	60	59	50	34	0	0	0	0	72	67	54	41	0	0	0	0
		48-XL	110	103	80	62	51	41	35	30	116	113	96	80	67	57	48	42	139	130	104	90	77	66	58	50
		80	117	110	86	71	60	53	47	41	124	121	102	86	75	66	59	53	148	138	111	95	84	74	67	61
	44-X	56	54	44	35	0	0	0	0	0	59	57	51	37	0	0	0	0	71	69	55	44	0	0	0	0
		48-X	59	57	46	36	0	0	0	0	62	60	53	38	0	0	0	0	74	72	58	46	0	0	0	0
		48-XL	113	110	88	70	58	48	41	35	119	116	103	88	75	64	57	49	143	139	111	97	86	75	66	59
		80	121	117	94	78	67	59	52	47	127	124	110	94	82	73	66	60	152	148	118	103	91	82	74	68
	44-X	57	56	47	39	0	0	0	0	0	60	59	49	40	0	0	0	0	72	70	59	49	0	0	0	0
		48-X	60	59	49	0	0	0	0	0	63	61	51	0	0	0	0	0	76	74	62	0	0	0	0	0
		48-XL	116	113	95	78	65	56	47	41	121	119	109	95	83	72	63	57	146	142	120	103	92	83	74	66
		80	124	120	101	85	74	65	58	53	129	126	116	101	89	80	72	66	156	152	127	110	98	89	81	75
	44-X	58	57	50	0	0	0	0	0	61	60	52	0	0	0	0	0	74	72	63	0	0	0	0	0	
		48-X	61	60	52	0	0	0	0	0	64	62	55	0	0	0	0	0	77	75	66	0	0	0	0	0
		48-XL	118	115	101	85	72	62	54	47	123	120	115	101	90	79	70	63	149	146	127	109	99	90	81	73
		80	126	123	108	92	80	71	64	58	131	128	123	108	96	86	79	72	159	155	136	116	105	95	88	81
	44-X	62	61	55	0	0	0	0	0	65	63	57	0	0	0	0	0	78	77	69	0	0	0	0	0	
		48-X	62	61	0	0	0	0	0	65	64	0	0	0	0	0	0	0	78	77	0	0	0	0	0	0
		48-XL	120	118	107	92	78	68	60	53	125	123	119	107	96	86	77	69	151	148	135	116	104	95	88	80
		80	128	125	114	98	86	77	70	63	133	131	127	114	102	93	85	78	161	158	143	124	111	102	94	87
	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		48-XL	122	119	112	98	85	74	65	59	127	125	121	112	101	92	83	75	153	150	141	123	110	101	93	74
		80	130	127	119	104	92	83	75	69	135	133	129	119	108	98	90	84	163	160	150	131	117	107	100	93
	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		48-XL	123	121	117	103	91	80	71	64	128	126	122	117	106	98	90	67	155	152	147	129	115	106	90	81
		80	131	129	124	109	98	88	80	74	137	134	130	124	113	104	96	89	165	162	157	138	123	113	105	98

Note: The Reactions shown in the tables above account for reactions associated with the exterior support of a multi span condition. See Max length for Multi Span Only for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.4 Max Uplift Force (lbs) Multi span only Interior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	-83	-63	-44	-31	-24	0	0	0	-98	-86	-61	-47	-36	0	0	0	-105	-97	-73	-57	-45	0	0	0	
		-85	-66	-46	-32	-25	0	0	0	-100	-88	-64	-49	-37	0	0	0	-107	-99	-76	-60	0	0	0	0	
		-164	-128	-88	-63	-48	-39	-33	-28	-193	-169	-123	-94	-72	-59	-49	-42	-207	-191	-147	-115	-90	-73	-61	-53	
		-80	-189	-152	-111	-80	-61	-50	-42	-36	-222	-195	-149	-120	-92	-75	-63	-54	-238	-219	-171	-140	-115	-93	-78	-68
	48-X	-93	-77	-54	-41	-31	0	0	0	-106	-98	-74	-57	-46	0	0	0	-112	-109	-87	-69	0	0	0	0	
		-95	-80	-57	-42	-32	0	0	0	-108	-100	-77	-60	0	0	0	0	-115	-111	-89	-72	0	0	0	0	
		-183	-154	-109	-81	-62	-51	-43	-37	-209	-193	-148	-115	-92	-75	-63	-54	-221	-214	-172	-138	-113	-93	-78	-67	
		80	-210	-179	-135	-104	-80	-65	-54	-47	-240	-222	-174	-143	-118	-95	-81	-74	-254	-246	-197	-165	-141	-118	-99	-86
100	44-X	-101	-90	-65	-50	-39	0	0	0	-112	-109	-86	-68	0	0	0	0	-118	-115	-98	0	0	0	0	0	
		-103	-92	-67	-52	-41	0	0	0	-115	-111	-89	-70	0	0	0	0	-120	-117	-100	0	0	0	0	0	
		-198	-178	-130	-101	-78	-64	-54	-46	-221	-214	-172	-136	-112	-93	-78	-65	-232	-226	-192	-161	-134	-114	-96	-83	
		80	-228	-204	-157	-128	-100	-81	-68	-59	-254	-246	-197	-165	-141	-118	-100	-84	-267	-260	-221	-187	-162	-143	-123	-106
	48-X	-107	-100	-75	-59	-48	0	0	0	-117	-114	-97	-78	0	0	0	0	-122	-120	-107	0	0	0	0	0	
		-109	-102	-78	-61	0	0	0	0	-120	-117	-99	0	0	0	0	0	-125	-122	-109	0	0	0	0	0	
		-211	-197	-151	-118	-96	-78	-65	-57	-231	-225	-191	-157	-131	-112	-95	-85	-241	-236	-211	-181	-154	-133	-116	-100	
		80	-242	-227	-178	-147	-122	-99	-84	-72	-266	-259	-219	-185	-161	-142	-121	-111	-277	-271	-242	-208	-182	-162	-146	-128
110	44-X	-112	-109	-85	-67	0	0	0	0	-122	-119	-105	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-115	-111	-88	-70	0	0	0	0	-124	-121	-108	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-222	-215	-171	-135	-112	-93	-78	-68	-240	-234	-208	-177	-148	-128	-113	-99	-248	-244	-227	-198	-174	-151	-133	-119	
		80	-254	-247	-198	-165	-142	-119	-100	-86	-275	-269	-239	-205	-179	-159	-143	-128	-285	-280	-261	-227	-201	-181	-164	-150
	48-X	-117	-114	-94	-76	0	0	0	0	-125	-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-119	-116	-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-230	-224	-188	-152	-127	-109	-92	-80	-247	-242	-223	-194	-166	-144	-127	-106	-254	-250	-242	-213	-191	-169	-150	-135	
		80	-264	-258	-216	-183	-158	-139	-118	-102	-283	-278	-256	-222	-196	-176	-159	-132	-292	-287	-278	-245	-219	-198	-181	-166
120	44-X	-121	-118	-103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-123	-120	-105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-238	-232	-203	-169	-142	-122	-107	-93	-252	-248	-237	-208	-183	-160	-142	-123	-259	-255	-250	-227	-205	-186	-166	-150	
		80	-273	-267	-233	-199	-174	-154	-137	-118	-290	-285	-273	-239	-213	-192	-175	-157	-298	-287	-261	-235	-214	-196	-181	
	48-X	-124	-121	-110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-126	-124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-244	-239	-217	-185	-157	-136	-120	-107	-257	-253	-247	-221	-199	-176	-157	-134	-263	-260	-255	-240	-218	-200	-182	-165	
		80	-280	-274	-249	-215	-189	-169	-152	-136	-295	-291	-284	-254	-228	-207	-189	-160	-302	-298	-293	-276	-250	-229	-212	-196
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-249	-244	-229	-200	-171	-149	-132	-119	-261	-257	-252	-234	-211	-191	-171	-156	-267	-264	-259	-252	-230	-212	-196	0	
		80	-286	-281	-263	-229	-203	-183	-166	-152	-300	-296	-290	-268	-243	-221	-204	-182	-306	-303	-297	-289	-264	-244	-226	-210
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-254	-249	-241	-212	-185	-162	-145	-130	-265	-261	-256	-245	-223	-204	-186	0	-270	-267	-263	-258	-241	-223	0	0	
		80	-291	-286	-276	-243	-217	-196	-179	-164	-304	-300	-294	-281	-256	-235	-208	-163	-310	-306	-302	-297	-277	-257	-239	-224

Note: The Reactions shown in the tables above account for reactions associated with the exterior support of a multi span condition. See Max length for Multi Span Only for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 1.4A Max Uplift Force (lbs) Multi span only Exterior Conditions

Exp B	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	-80	-63	-44	-31	-24	0	0	0	-94	-82	-61	-47	-36	0	0	0	-101	-93	-73	-57	-45	0	0	0	
		-84	-66	-46	-32	-25	0	0	0	-98	-86	-64	-48	-37	0	0	0	-105	-97	-76	-59	0	0	0	0	
		-162	-127	-88	-62	-48	-39	-33	-28	-190	-167	-123	-94	-72	-58	-49	-42	-204	-188	-147	-115	-90	-73	-61	-53	
		80	-172	-138	-101	-80	-66	-54	-45	-39	-202	-177	-135	-109	-92	-79	-68	-58	-217	-200	-156	-128	-109	-94	-83	-73
100	44-X	-89	-76	-54	-41	-31	0	0	0	-102	-94	-74	-57	-46	0	0	0	-108	-104	-84	-69	0	0	0	0	
		-93	-79	-56	-42	-32	0	0	0	-106	-98	-76	-60	0	0	0	0	-113	-109	-87	-71	0	0	0	0	
		-180	-153	-109	-81	-62	-51	-43	-37	-205	-190	-148	-115	-92	-75	-63	-53	-217	-211	-169	-138	-113	-92	-78	-67	
		80	-192	-163	-123	-98	-82	-70	-59	-51	-218	-202	-158	-130	-111	-96	-85	-78	-231	-224	-180	-150	-129	-113	-100	-90
110	44-X	-97	-86	-65	-50	-39	0	0	0	-108	-104	-84	-68	0	0	0	0	-113	-110	-94	0	0	0	0	0	
		-101	-90	-67	-52	-40	0	0	0	-113	-109	-87	-70	0	0	0	0	-118	-115	-98	0	0	0	0	0	
		-195	-175	-130	-100	-78	-63	-53	-46	-218	-211	-169	-136	-112	-92	-78	-72	-152	-228	-223	-189	-160	-133	-114	-96	-83
		80	-208	-186	-143	-116	-98	-85	-74	-64	-232	-224	-180	-150	-129	-113	-100	-94	-243	-237	-201	-170	-148	-131	-117	-106
120	44-X	-103	-96	-75	-59	-48	0	0	0	-113	-110	-93	-78	0	0	0	0	-117	-115	-103	0	0	0	0	0	
		-107	-100	-78	-61	0	0	0	0	-118	-115	-97	0	0	0	0	0	-123	-120	-107	0	0	0	0	0	
		-208	-194	-150	-118	-96	-78	-65	-56	-228	-222	-187	-156	-130	-112	-95	-85	-237	-232	-207	-178	-153	-132	-116	-100	
		80	-221	-206	-162	-134	-114	-99	-88	-78	-242	-236	-199	-169	-146	-129	-116	-106	-252	-247	-221	-190	-166	-148	-133	-121
130	44-X	-108	-105	-84	-67	0	0	0	0	-117	-114	-101	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-113	-109	-88	-70	0	0	0	0	-122	-119	-106	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-218	-211	-169	-135	-112	-93	-78	-67	-236	-230	-204	-175	-148	-128	-112	-102	-221	-244	-240	-224	-195	-172	-150	-133	-119
		80	-232	-225	-180	-150	-129	-113	-101	-91	-251	-245	-217	-186	-163	-145	-131	-120	-260	-255	-238	-207	-183	-165	-149	-137
140	44-X	-112	-109	-92	-76	0	0	0	0	-120	-118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-117	-114	-96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-226	-220	-185	-152	-126	-109	-92	-79	-243	-238	-219	-190	-166	-144	-127	-127	-259	-250	-246	-238	-210	-187	-168	-149	-134
		80	-241	-235	-197	-166	-144	-127	-114	-103	-258	-253	-234	-203	-179	-160	-145	-130	-266	-262	-254	-223	-199	-180	-164	-151
150	44-X	-116	-113	-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-121	-118	-103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-234	-228	-200	-168	-141	-122	-107	-92	-248	-244	-233	-205	-182	-160	-142	-142	-292	-255	-251	-246	-224	-201	-183	-166	-150
		80	-249	-243	-213	-182	-158	-141	-126	-115	-264	-259	-248	-218	-194	-175	-159	-134	-271	-267	-261	-238	-214	-195	-179	-165
160	44-X	-119	-116	-105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-124	-122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-240	-235	-213	-184	-156	-135	-120	-106	-253	-249	-243	-218	-195	-175	-156	-132	-259	-255	-250	-236	-214	-196	-181	-165	
		80	-255	-250	-227	-196	-172	-154	-139	-127	-269	-265	-259	-232	-208	-189	-173	-136	-276	-272	-267	-251	-228	-209	-193	-179
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-245	-240	-225	-196	-171	-149	-132	-118	-257	-253	-248	-230	-208	-189	-171	-155	-262	-259	-255	-248	-226	-208	-193	0	
		80	-261	-256	-240	-209	-185	-166	-151	-138	-273	-269	-264	-244	-221	-202	-185	-139	-279	-276	-271	-264	-241	-222	-206	-192
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-249	-245	-237	-208	-185	-162	-144	-130	-260	-257	-252	-241	-219	-201	-182	-165	-265	-262	-258	-254	-237	-220	0	0	0
		80	-266	-261	-252	-221	-198	-179	-163	-150	-277	-273	-268	-256	-233	-214	-194	-145	-242	-282	-279	-275	-270	-253	-234	-218

Note: The Reactions shown in the tables above account for reactions associated with the exterior support of a multi span condition. See Max length for Multi Span Only for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.1 Max Length L (inches) for Multi span only Interior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	65	57	42	32	25	0	0	0	50	47	38	30	0	0	0	0	42	41	34	29	0	0	0	0	
		66	58	43	33	25	0	0	0	51	48	38	31	0	0	0	0	43	42	35	30	0	0	0	0	
		128	112	86	66	51	41	35	30	98	93	74	62	51	41	35	30	83	81	68	57	49	41	35	30	
		80	137	120	92	74	62	54	47	41	105	100	80	66	57	49	44	39	90	87	73	61	53	47	42	38
100	44-X	55	51	39	31	25	0	0	0	42	41	34	28	0	0	0	0	35	35	31	0	0	0	0	0	0
		56	52	40	31	0	0	0	0	42	41	35	0	0	0	0	0	36	35	31	0	0	0	0	0	0
		108	100	78	63	51	41	35	30	82	80	67	56	48	41	35	30	70	68	60	52	45	40	35	30	
		80	116	107	84	69	59	51	45	40	88	86	72	61	52	46	41	37	75	73	65	55	49	43	39	35
110	44-X	47	45	36	29	0	0	0	0	35	34	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		48	46	37	30	0	0	0	0	36	35	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		92	90	72	60	49	41	35	30	69	68	60	52	45	39	35	30	59	58	54	47	41	37	33	30	
		80	99	96	77	64	55	48	43	39	75	73	65	55	48	43	39	35	63	62	58	50	44	40	36	33
120	44-X	40	39	33	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		41	40	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	78	66	56	47	41	35	30	60	58	54	47	42	37	33	30	50	49	48	43	38	34	31	29	
		80	85	83	70	60	52	46	41	37	64	63	58	51	45	40	36	33	54	53	52	46	41	37	34	31
130	44-X	35	34	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		36	35	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		69	68	60	52	45	39	34	30	52	51	49	43	39	35	32	29	43	43	42	39	35	32	29	27	
		80	74	73	64	55	48	43	39	35	55	54	53	46	41	37	34	31	46	46	45	41	37	34	31	29
140	44-X	31	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		61	60	55	48	42	37	33	30	45	44	43	40	36	32	30	27	38	37	37	35	32	29	27	0	
		80	65	64	59	51	45	41	37	34	48	48	47	42	38	35	32	30	41	40	39	38	34	32	29	27
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		54	53	51	44	39	36	32	29	40	39	38	36	33	30	28	0	33	33	32	32	29	27	0	0	
		80	58	57	54	48	42	38	35	32	42	42	41	39	35	32	30	28	36	35	35	34	32	29	27	25
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		48	47	46	41	37	34	31	28	35	35	34	33	31	28	0	0	29	29	29	28	27	0	0	0	
		80	51	50	49	44	40	36	33	30	38	37	36	33	30	28	26	32	31	31	30	29	27	25	24	
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		43	42	41	38	35	32	29	27	31	31	31	30	28	0	0	0	0	0	0	0	0	0	0	0	0
		80	46	45	44	41	37	34	31	29	34	33	33	32	30	28	26	25	28	28	27	27	25	24	0	0
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		38	38	37	36	32	30	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	41	41	40	38	35	32	29	27	30	30	29	29	28	26	25	23	25	25	25	24	24	0	0	0

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.1A Max Length L (inches) for Multi span only Exterior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	62	55	40	31	24	0	0	0	48	45	36	29	0	0	0	0	41	40	33	28	0	0	0	0	
		64	56	41	32	24	0	0	0	49	47	37	29	0	0	0	0	42	41	34	28	0	0	0	0	
		123	108	82	63	49	39	33	29	95	90	72	59	48	39	33	29	81	79	65	55	47	39	33	29	
		80	134	117	90	73	61	53	46	40	102	98	78	65	55	48	43	38	87	85	71	60	52	45	41	37
100	44-X	53	49	38	30	24	0	0	0	40	39	33	27	0	0	0	0	34	33	29	0	0	0	0	0	0
		54	50	39	30	0	0	0	0	41	40	33	0	0	0	0	0	35	34	30	0	0	0	0	0	0
		104	97	76	60	49	39	33	29	79	77	65	55	46	39	33	29	67	66	58	50	44	38	33	29	
		80	113	105	82	68	57	50	44	39	86	84	70	59	51	45	40	36	73	71	63	54	47	42	38	34
110	44-X	45	44	35	28	0	0	0	0	34	33	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		46	45	36	29	0	0	0	0	35	34	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		89	87	69	57	47	39	33	29	67	66	58	50	44	38	33	29	57	56	52	45	40	36	32	29	
		80	97	94	75	63	54	47	42	38	73	71	63	54	47	42	38	34	61	60	56	49	43	39	35	32
120	44-X	39	38	32	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		40	39	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		77	75	63	54	45	39	33	29	58	56	53	46	40	36	32	28	49	48	47	41	37	33	30	27	
		80	83	81	69	58	50	45	40	36	62	61	57	49	44	39	36	33	53	52	50	44	40	36	33	30
130	44-X	34	33	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		35	34	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		67	65	58	50	43	37	33	29	50	49	47	42	37	34	30	27	42	41	40	37	34	31	28	26	
		80	72	71	63	54	47	42	38	34	54	53	51	45	40	37	33	31	45	45	44	40	37	33	31	28
140	44-X	30	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		59	58	53	46	41	36	32	28	44	43	42	38	35	31	29	26	37	36	35	34	31	28	26	0	
		80	64	62	58	50	44	40	36	33	47	46	45	41	37	34	31	29	40	39	38	37	34	31	28	26
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		52	51	49	43	38	34	30	27	38	38	37	35	32	29	27	0	32	32	31	31	28	26	0	0	
		80	56	55	53	46	41	37	34	31	41	41	40	38	35	32	29	27	35	34	34	33	31	28	27	25
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		46	45	44	40	36	32	29	26	34	34	33	32	30	27	0	0	28	28	28	27	26	0	0	0	
		80	50	49	48	43	39	35	32	30	37	36	35	32	29	27	26	31	30	30	30	28	26	25	23	
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		41	41	40	37	33	30	28	25	30	30	30	29	27	0	0	0	0	0	0	0	0	0	0	0	0
		80	45	44	43	40	36	33	30	28	33	32	32	31	30	27	26	24	27	27	27	26	24	23	20	0
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		37	37	36	34	31	29	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	40	40	39	37	34	31	29	27	29	29	29	28	28	26	24	23	25	24	24	24	24	0	0	0

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.2 Maximum Downward Force (lbs) Multi Span Only Interior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3												
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)												
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70			
90	44-X	147	159	166	166	166	0	0	0	0	147	151	164	166	0	0	0	0	148	146	158	167	0	0	0	0			
		149	162	169	169	169	0	0	0	0	150	154	167	169	0	0	0	0	151	149	161	170	0	0	0	0			
		289	313	339	339	339	340	340	340	290	297	323	339	340	341	340	291	288	310	328	339	340	340	340	340				
		80	310	335	363	382	418	444	464	465	311	318	346	364	378	407	429	447	312	309	333	352	366	383	407	426			
100	44-X	147	155	166	166	166	0	0	0	0	148	146	160	166	0	0	0	0	148	145	153	0	0	0	0	0	0		
		150	158	169	169	0	0	0	0	0	151	149	163	0	0	0	0	0	151	148	156	0	0	0	0	0	0		
		290	306	331	339	339	340	340	340	291	287	315	332	407	340	341	340	292	285	302	319	332	339	340	340	340			
		80	311	328	355	373	393	421	442	459	312	308	337	355	443	381	405	424	313	306	324	342	356	367	381	401			
110	44-X	147	152	165	166	0	0	0	0	0	148	145	156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		150	156	168	169	0	0	0	0	0	151	148	159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		291	300	325	339	339	340	340	340	292	285	308	324	382	339	339	340	292	287	295	311	324	334	339	340	340	340		
		80	312	322	348	365	378	398	421	440	313	306	330	347	410	371	380	401	313	307	316	334	347	358	367	376	376	376	
120	44-X	148	145	162	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		151	148	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		291	285	318	334	339	338	340	340	292	287	301	317	353	339	339	338	293	288	295	304	316	327	335	339	339	339		
		80	312	306	341	359	371	381	400	420	313	307	323	340	379	363	372	379	314	309	316	326	339	350	359	367	367	367	
130	44-X	148	145	159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		151	148	162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	285	313	328	340	339	338	340	293	288	296	311	327	332	339	339	293	289	285	297	309	319	328	335	335	335		
		80	313	306	335	352	365	375	383	400	314	309	317	333	350	356	365	372	314	310	306	319	332	342	351	359	359	359	
140	44-X	148	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	286	308	323	334	339	339	338	293	289	288	305	317	326	334	339	294	290	284	295	303	313	321	0	0	0		
		80	313	307	330	346	359	368	377	383	314	310	308	327	339	350	358	365	315	311	305	316	325	335	344	352	352	352	
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	287	303	318	329	338	339	339	293	290	284	300	311	320	328	0	294	291	286	292	298	307	0	0	0	0		
		80	314	308	325	341	353	363	371	378	315	310	304	322	333	343	352	359	315	312	306	314	319	329	338	345	345	345	
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	288	295	313	324	333	340	339	294	290	285	295	306	315	0	0	294	291	287	285	295	0	0	0	0	0		
		80	314	309	317	335	347	357	365	372	315	311	306	317	328	338	346	353	315	312	308	305	316	323	332	339	339	339	
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	289	285	309	319	328	336	340	294	291	286	289	301	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	314	310	305	331	342	352	360	367	315	312	307	309	323	332	341	348	315	313	309	305	316	318	326	0	0	0	
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		294	290	284	305	315	324	331	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	315	311	305	327	338	347	355	362	315	312	308	304	319	328	336	343	316	313	309	306	308	0	0	0	0	0	

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.2A Maximum Downward Force (lbs) Multi Span Only Exterior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	140	152	159	159	160	0	0	0	141	144	157	159	0	0	0	0	142	140	151	160	0	0	0	0	
		144	156	163	163	163	0	0	0	145	149	162	163	0	0	0	0	146	144	155	163	0	0	0	0	
		279	302	324	325	325	325	325	325	281	287	312	324	324	325	326	325	281	279	300	317	324	325	325	325	
		80	302	327	355	373	408	433	452	454	304	311	338	356	369	397	419	437	305	302	325	343	357	374	398	416
100	44-X	141	149	160	159	160	0	0	0	142	140	153	160	0	0	0	0	142	139	147	0	0	0	0	0	0
		145	153	163	162	0	0	0	0	146	144	158	0	0	0	0	0	146	143	151	0	0	0	0	0	0
		280	296	320	324	325	325	325	325	281	278	304	320	390	325	326	325	282	276	292	309	321	324	325	325	
		80	303	320	347	364	384	411	432	449	305	300	329	347	432	372	395	414	305	298	316	334	348	358	371	391
110	44-X	141	146	158	159	0	0	0	0	142	139	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		145	150	162	163	0	0	0	0	146	143	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		281	290	314	325	324	325	325	325	282	276	297	313	369	324	325	325	283	277	285	301	313	323	324	325	
		80	304	314	340	357	369	389	411	429	305	298	322	339	400	362	371	391	306	300	309	326	339	350	358	367
120	44-X	142	139	155	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		146	143	159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		282	276	308	323	324	324	325	325	283	277	291	306	342	325	324	324	283	278	285	294	306	316	324	324	
		80	305	299	333	350	362	372	391	410	306	300	315	332	370	355	363	370	307	301	309	318	331	342	351	358
130	44-X	142	139	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		146	143	157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		282	276	302	317	325	324	324	325	283	278	286	300	316	321	325	324	283	279	276	288	299	309	317	324	
		80	305	299	327	344	356	366	373	391	306	301	309	325	342	348	356	363	307	302	299	311	324	334	343	351
140	44-X	142	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		283	277	297	312	323	325	324	324	283	279	278	295	306	315	323	325	284	280	275	285	293	302	310	0	
		80	306	300	322	338	350	360	368	374	307	302	301	319	331	341	350	357	307	303	298	309	317	327	336	344
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		283	278	293	307	318	325	325	324	284	280	274	290	301	310	317	0	284	281	276	283	288	297	0	0	
		80	306	301	317	332	344	354	362	369	307	303	297	314	326	335	344	351	308	304	299	306	311	321	330	337
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		283	279	286	302	313	322	325	325	284	281	276	285	296	304	0	0	284	281	277	275	285	0	0	0	
		80	307	302	309	328	339	349	357	363	307	304	299	309	320	330	338	345	308	305	300	298	309	316	324	331
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		283	279	275	298	309	317	325	325	284	281	277	279	291	0	0	0	0	0	0	0	0	0	0	0	0
		80	307	303	298	323	334	344	352	358	308	304	300	302	315	325	332	339	308	305	301	297	309	310	318	0
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		284	280	275	294	305	313	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	307	303	298	319	330	339	347	354	308	305	301	296	311	320	328	334	308	306	302	299	301	0	0	0

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones



K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.3 Maximum Horizontal Force (lbs) Multi span only Interior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	54	48	35	27	21	0	0	0	58	55	44	35	22	0	0	0	68	60	48	41	26	0	0	0	0
		55	49	36	28	21	0	0	0	59	56	45	36	22	0	0	0	70	61	49	42	27	0	0	0	0
		107	94	72	55	42	34	29	25	114	109	87	72	59	48	41	35	135	118	95	80	69	58	49	42	42
		80	115	101	77	62	52	45	40	34	122	117	93	77	66	58	51	46	144	127	102	86	74	65	58	53
100	44-X	57	53	41	32	26	0	0	0	60	58	49	41	27	0	0	0	71	66	53	40	32	0	0	0	0
		58	54	41	32	0	0	0	0	61	59	50	34	0	0	0	0	73	68	54	41	0	0	0	0	0
		112	104	81	65	52	43	36	31	118	115	96	81	69	59	50	43	141	131	105	90	79	69	60	52	52
		80	120	111	87	72	61	53	47	42	126	123	103	87	75	66	59	54	151	140	112	96	84	75	67	61
110	44-X	59	57	46	36	0	0	0	0	61	60	53	38	0	0	0	0	74	72	57	46	0	0	0	0	0
		60	58	47	37	0	0	0	0	63	61	54	39	0	0	0	0	75	73	59	47	0	0	0	0	0
		115	112	90	75	62	52	43	37	121	118	105	90	79	69	60	52	145	141	113	99	87	78	70	63	63
		80	124	120	96	80	69	60	54	48	130	127	112	96	84	75	68	61	156	151	121	106	94	84	76	70
120	44-X	60	59	50	41	0	0	0	0	63	61	52	43	0	0	0	0	76	74	63	52	0	0	0	0	0
		61	60	51	0	0	0	0	0	64	62	53	0	0	0	0	0	77	75	64	0	0	0	0	0	
		118	115	98	83	70	60	52	45	124	121	113	98	87	78	69	62	149	146	123	106	95	86	79	72	
		80	127	124	105	89	77	68	61	55	133	130	121	105	93	83	75	69	160	156	132	114	102	92	84	78
130	44-X	61	60	53	0	0	0	0	0	64	63	56	0	0	0	0	0	77	76	67	0	0	0	0	0	
		63	61	54	0	0	0	0	0	65	64	57	0	0	0	0	0	79	77	69	0	0	0	0	0	
		121	118	105	90	79	68	60	52	126	123	119	105	94	85	77	69	153	149	132	114	102	93	86	80	
		80	130	127	113	97	85	75	68	62	135	132	128	113	101	91	83	76	164	160	142	122	110	100	92	85
140	44-X	62	61	0	0	0	0	0	0	65	64	0	0	0	0	0	0	79	77	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		123	121	112	97	86	76	67	60	128	126	122	112	101	92	84	77	155	152	141	122	109	100	93	76	
		80	132	129	120	104	92	82	74	68	138	135	131	120	108	98	90	83	166	163	151	131	117	107	99	92
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		125	123	118	103	92	83	74	67	130	128	124	118	107	98	90	70	157	155	148	130	116	106	93	84	
		80	134	131	126	111	98	89	81	74	140	137	133	126	115	105	97	90	169	166	159	139	124	114	106	99
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		126	124	121	109	98	89	81	73	132	130	127	123	113	104	84	76	159	157	153	137	123	112	102	92	
		80	135	133	130	117	105	95	87	80	141	139	136	132	121	111	103	96	171	168	164	147	132	120	112	106
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		127	126	123	114	103	94	87	80	133	131	128	125	118	98	90	83	161	158	155	144	130	119	109	100	
		80	137	135	132	122	111	101	93	86	143	141	138	134	126	117	109	102	172	170	166	154	140	127	118	109
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		129	127	124	119	108	99	92	0	134	132	130	124	113	104	96	0	162	160	157	150	137	125	116	0	
		80	138	136	133	128	116	107	99	92	144	142	139	135	131	122	115	108	174	171	168	161	146	134	124	116

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.3A Maximum Horizontal Force (lbs) Multi span only Exterior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	52	46	34	26	20	0	0	0	55	53	42	34	21	0	0	0	66	58	46	39	25	0	0	0
		53	47	34	27	20	0	0	0	57	55	43	34	21	0	0	0	67	59	48	40	26	0	0	0
		103	91	69	53	41	33	28	24	110	105	84	69	56	46	39	33	130	115	92	78	66	55	47	40
		80	112	98	75	61	51	44	39	33	119	114	91	75	64	56	50	45	141	124	100	84	73	64	57
100	44-X	54	50	39	31	25	0	0	0	57	56	47	39	26	0	0	0	68	64	51	39	31	0	0	0
		58	54	41	32	0	0	0	0	61	59	50	34	0	0	0	0	73	68	54	41	0	0	0	0
		108	100	78	62	50	41	34	30	114	111	93	79	66	57	48	41	136	126	101	87	76	66	58	50
		80	117	108	85	70	59	52	46	41	123	120	101	85	74	65	58	52	147	137	110	94	82	73	66
110	44-X	56	54	44	35	0	0	0	0	59	58	51	37	0	0	0	0	71	69	55	44	0	0	0	0
		58	56	45	36	0	0	0	0	61	59	52	37	0	0	0	0	73	71	57	45	0	0	0	0
		112	108	87	71	59	49	41	36	117	114	101	87	76	66	58	50	141	137	109	95	84	76	67	60
		80	121	117	94	78	67	59	52	47	127	124	110	94	82	73	66	60	152	148	119	103	91	82	74
120	44-X	58	56	48	40	0	0	0	0	60	59	50	41	0	0	0	0	73	71	60	50	0	0	0	0
		59	58	49	0	0	0	0	0	62	60	51	0	0	0	0	0	75	73	62	0	0	0	0	0
		115	112	95	80	67	58	49	43	119	117	109	95	84	74	66	59	144	141	119	103	92	83	76	69
		80	124	121	102	87	75	66	59	54	129	127	118	102	91	81	74	67	156	152	129	111	100	90	82
130	44-X	59	58	51	0	0	0	0	0	61	60	53	0	0	0	0	0	74	73	64	0	0	0	0	0
		61	59	53	0	0	0	0	0	63	62	55	0	0	0	0	0	76	75	66	0	0	0	0	0
		117	114	102	87	75	65	57	50	122	119	115	102	91	82	74	66	147	144	128	110	99	90	83	77
		80	127	124	110	94	83	73	66	60	132	129	125	110	98	89	81	74	160	156	139	119	107	98	90
140	44-X	60	59	0	0	0	0	0	0	62	61	0	0	0	0	0	0	75	74	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		119	117	108	94	83	72	64	57	124	122	118	108	97	89	81	74	150	147	136	118	105	97	90	72
		80	129	126	117	101	90	80	73	66	134	132	128	117	105	96	88	81	162	159	147	128	114	105	97
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		121	118	114	100	89	80	71	64	126	124	120	114	103	95	87	66	152	149	143	126	112	103	89	80
		80	131	128	123	108	96	87	79	72	136	134	130	123	112	102	95	88	165	162	155	136	121	111	104
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		122	120	117	105	95	86	77	70	127	125	122	119	109	100	81	73	154	151	148	133	119	108	98	88
		80	132	130	127	114	102	93	85	78	138	136	133	129	118	109	101	94	167	164	160	144	129	117	110
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		123	121	119	110	100	91	84	76	129	127	124	121	114	95	87	79	155	153	150	139	126	115	106	96
		80	133	132	129	119	108	99	91	84	139	137	134	131	123	114	107	100	168	166	162	151	136	124	115
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		124	123	120	115	105	96	89	0	130	128	126	120	109	100	93	0	157	155	152	145	132	121	112	0
		80	135	133	130	125	113	104	96	89	140	139	136	132	128	119	112	105	170	167	164	157	143	131	121

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.4 Max Uplift Force (lbs) Multi span only Interior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	-98	-86	-64	-49	-38	0	0	0	-110	-105	-84	-67	0	0	0	0	-116	-113	-94	-79	0	0	0	0
		-100	-88	-65	-50	-38	0	0	0	-112	-107	-85	-68	0	0	0	0	-118	-115	-96	-81	0	0	0	0
		-193	-170	-130	-100	-77	-62	-53	-45	-217	-207	-165	-136	-112	-91	-77	-66	-229	-223	-185	-156	-134	-113	-95	-82
		80	-207	-182	-139	-113	-95	-82	-72	-233	-222	-177	-147	-125	-110	-97	-87	-245	-239	-199	-167	-145	-127	-114	-103
100	44-X	-106	-99	-76	-60	-48	0	0	0	-117	-114	-95	-79	0	0	0	0	-122	-119	-105	0	0	0	0	0
		-108	-100	-78	-61	0	0	0	0	-119	-116	-97	0	0	0	0	0	-124	-121	-108	0	0	0	0	0
		-209	-194	-152	-122	-98	-80	-67	-58	-230	-224	-188	-158	-135	-115	-98	-190	-240	-234	-208	-178	-156	-137	-119	-103
		80	-224	-208	-163	-134	-114	-99	-87	-246	-240	-201	-170	-147	-129	-116	-237	-257	-251	-223	-191	-167	-149	-134	-122
110	44-X	-113	-109	-88	-70	0	0	0	0	-122	-119	-106	0	0	0	0	0	0	0	0	0	0	0	0	0
		-115	-111	-89	-71	0	0	0	0	-124	-121	-108	0	0	0	0	0	0	0	0	0	0	0	0	0
		-222	-215	-172	-143	-119	-99	-83	-72	-240	-234	-208	-178	-156	-136	-120	-235	-248	-244	-228	-198	-175	-157	-141	-126
		80	-238	-231	-185	-154	-133	-116	-103	-257	-251	-223	-191	-167	-149	-134	-277	-266	-261	-244	-212	-188	-169	-153	-140
120	44-X	-118	-115	-97	-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-120	-117	-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-232	-226	-191	-162	-138	-118	-101	-87	-248	-243	-226	-197	-174	-156	-138	-283	-255	-251	-245	-216	-194	-175	-160	-146
		80	-249	-242	-205	-174	-151	-133	-119	-266	-261	-242	-211	-186	-167	-152	-316	-274	-269	-263	-232	-207	-188	-172	-158
130	44-X	-122	-119	-106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-124	-122	-108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-240	-235	-208	-179	-156	-135	-119	-104	-254	-250	-242	-213	-191	-172	-157	-323	-261	-257	-252	-232	-210	-192	-176	-163
		80	-257	-252	-223	-192	-168	-149	-134	-273	-268	-260	-229	-204	-185	-168	-354	-280	-276	-270	-249	-225	-205	-189	-175
140	44-X	-125	-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-247	-242	-224	-194	-172	-152	-134	-120	-260	-256	-250	-228	-206	-187	-172	-363	-265	-262	-257	-247	-225	-207	-191	0
		80	-265	-259	-240	-208	-184	-165	-149	-136	-278	-274	-268	-245	-221	-201	-184	-390	-284	-281	-276	-265	-241	-222	-205
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-253	-248	-238	-209	-186	-168	-150	-135	-264	-260	-255	-242	-220	-186	0	-269	-266	-262	-257	-239	-221	0	0	0
		80	-271	-266	-255	-224	-199	-180	-164	-150	-283	-279	-274	-259	-236	-216	-199	-425	-288	-285	-281	-276	-256	-237	-220
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-257	-253	-247	-222	-199	-181	-165	-149	-267	-264	-260	-254	-233	-215	0	0	-272	-269	-265	-262	-251	0	0	0
		80	-276	-272	-265	-238	-214	-194	-178	-164	-287	-283	-278	-253	-230	-214	-458	-292	-289	-285	-281	-269	-250	-234	-220
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-261	-258	-252	-234	-212	-193	-178	-163	-271	-268	-263	-260	-245	0	0	0	0	0	0	0	0	0	0	0
		80	-280	-276	-271	-251	-227	-207	-191	-177	-290	-287	-283	-278	-262	-243	-227	-488	-294	-292	-288	-284	-281	-263	-247
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-265	-261	-257	-245	-223	-205	-189	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-284	-280	-275	-263	-239	-220	-203	-189	-293	-290	-286	-282	-274	-255	-550	-517	-297	-294	-291	-288	-284	0	0

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 2.4A Max Uplift Force (lbs) Multi span only Exterior Conditions

Exp C	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	-94	-83	-61	-47	-36	0	0	0	-106	-101	-80	-64	0	0	0	-111	-108	-90	-76	0	0	0	0	0	
		-97	-85	-62	-48	-37	0	0	0	-109	-104	-82	-65	0	0	0	-114	-111	-93	-78	0	0	0	0	0	
		-187	-164	-124	-96	-74	-60	-50	-43	-210	-200	-159	-131	-108	-87	-74	-63	-221	-215	-179	-151	-128	-108	-91	-78	
		80	-202	-178	-136	-110	-92	-80	-70	-61	-227	-217	-173	-143	-122	-107	-95	-85	-239	-233	-194	-163	-141	-124	-111	-100
100	44-X	-102	-94	-73	-57	-46	0	0	0	-112	-109	-91	-76	0	0	0	-117	-114	-101	0	0	0	0	0	0	0
		-105	-97	-75	-58	0	0	0	0	-115	-112	-94	0	0	0	0	-120	-117	-104	0	0	0	0	0	0	0
		-202	-188	-147	-117	-94	-76	-64	-55	-222	-216	-181	-153	-129	-110	-93	-182	-232	-227	-201	-172	-151	-131	-114	-99	
		80	-219	-203	-159	-131	-111	-97	-85	-77	-241	-234	-196	-166	-143	-126	-113	-232	-251	-245	-217	-186	-163	-145	-131	-119
110	44-X	-108	-105	-84	-67	0	0	0	0	-117	-114	-101	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-111	-108	-86	-69	0	0	0	0	-120	-117	-104	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-214	-208	-167	-137	-114	-95	-80	-69	-232	-227	-201	-172	-151	-130	-114	-225	-240	-236	-220	-192	-170	-152	-135	-121	
		80	-232	-225	-181	-151	-129	-113	-101	-91	-251	-245	-218	-187	-163	-145	-131	-271	-260	-255	-238	-207	-184	-165	-149	-137
120	44-X	-113	-110	-93	-77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-116	-113	-96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-224	-218	-185	-157	-132	-113	-97	-83	-240	-235	-219	-190	-168	-149	-132	-270	-247	-243	-237	-209	-187	-169	-155	-140	
		80	-243	-236	-200	-169	-147	-130	-116	-105	-259	-254	-237	-206	-182	-163	-148	-309	-267	-263	-256	-226	-203	-183	-167	-154
130	44-X	-117	-114	-101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-120	-117	-104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-232	-227	-201	-173	-149	-129	-114	-99	-246	-242	-234	-206	-184	-166	-150	-309	-252	-249	-243	-225	-203	-185	-170	-158	
		80	-251	-246	-218	-187	-164	-146	-131	-119	-266	-262	-254	-223	-199	-180	-164	-346	-273	-269	-263	-243	-220	-200	-184	-171
140	44-X	-120	-118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-239	-234	-216	-188	-166	-145	-129	-115	-251	-247	-242	-221	-199	-181	-166	-347	-256	-253	-249	-239	-218	-200	-185	0	
		80	-258	-253	-234	-203	-180	-161	-146	-133	-272	-268	-262	-239	-215	-196	-180	-381	-278	-274	-269	-258	-236	-216	-200	-186
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-244	-240	-230	-202	-180	-161	-143	-129	-255	-252	-247	-234	-213	-195	-180	0	-260	-257	-253	-249	-231	-213	0	0	0
		80	-264	-260	-249	-218	-195	-176	-160	-147	-276	-273	-267	-253	-230	-211	-195	-415	-282	-278	-274	-269	-250	-231	-215	-201
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-249	-245	-239	-215	-193	-175	-158	-143	-259	-256	-251	-246	-225	-207	0	0	-263	-260	-257	-253	-243	0	0	0	0
		80	-269	-265	-259	-232	-209	-189	-173	-160	-280	-277	-272	-266	-244	-225	-208	-447	-285	-282	-278	-274	-263	-244	-228	-214
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-253	-249	-244	-226	-205	-187	-172	-156	-262	-259	-255	-251	-236	0	0	0	0	0	0	0	0	0	0	0	0
		80	-274	-270	-264	-245	-222	-202	-186	-172	-283	-280	-276	-272	-256	-237	-221	-477	-287	-285	-281	-278	-274	-257	-241	0
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-256	-253	-248	-237	-216	-198	-183	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-277	-274	-269	-257	-234	-215	-198	-184	-286	-283	-279	-275	-267	-249	-537	-505	-490	-487	-484	-481	-478	0	0	0

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 3.1 Max Length L (inches) for Multi span only Interior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3										
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)										
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	61	
90	44-X	60	55	41	32	25	0	0	0	45	44	36	29	0	0	0	0	38	38	33	0	0	0	0	0	0	
		58	53	41	32	26	0	0	0	44	43	35	30	0	0	0	0	37	37	32	0	0	0	0	0	0	
		112	103	80	66	53	43	36	31	85	83	68	58	50	43	36	31	72	71	62	53	46	41	36	31		
		80	125	115	89	73	62	54	48	42	95	92	76	64	56	49	44	39	81	79	69	59	51	46	41	37	
100	44-X	50	48	38	30	0	0	0	0	38	37	33	0	0	0	0	0	32	31	0	0	0	0	0	0	0	0
		49	47	38	31	0	0	0	0	37	36	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		94	91	73	60	52	43	36	31	71	69	61	52	46	41	36	31	60	59	55	47	42	38	34	31		
		80	105	101	81	68	58	51	45	41	79	77	68	58	51	45	41	37	67	66	61	53	47	42	38	35	
110	44-X	43	42	35	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		41	40	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	78	66	56	48	42	36	31	60	59	55	47	42	38	34	31	50	50	48	43	38	35	32	29		
		80	89	87	74	62	54	48	43	39	67	66	61	53	47	42	38	35	56	55	54	48	43	39	35	32	
120	44-X	37	36	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		36	35	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		69	67	60	51	45	40	35	31	51	50	49	43	38	35	32	29	43	42	42	38	35	32	29	27		
		80	77	75	67	57	50	45	40	37	57	56	55	48	43	39	35	33	48	47	46	43	39	35	33	30	
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		60	58	54	47	42	37	34	31	44	44	43	39	35	32	30	27	37	37	36	35	32	29	27	0		
		80	67	65	61	53	47	42	38	35	49	49	48	44	39	36	33	31	41	41	40	39	35	33	30	28	
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		52	51	50	44	39	35	32	29	39	38	37	36	32	30	28	0	32	32	31	31	29	27	0	0	0	
		80	58	57	55	49	43	39	36	33	43	43	42	40	36	33	31	29	36	36	35	35	32	30	28	26	
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		46	45	44	40	36	33	30	28	34	33	32	30	28	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	51	51	50	45	40	37	34	31	38	37	36	33	31	29	27	32	31	31	30	28	26	24			
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		41	40	39	37	34	31	28	26	30	30	29	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	46	45	44	41	38	34	32	29	33	33	32	31	29	27	25	28	28	27	27	25	0	0	0	0	0
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		36	36	35	34	31	29	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	41	40	40	38	35	32	30	28	30	30	29	28	26	25	0	0	0	0	0	0	0	0	0	0	0
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		33	32	32	31	29	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	37	36	36	35	33	30	28	26	27	27	26	26	25	0	0	0	0	0	0	0	0	0	0	0	0

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.
See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 3.1A Max Length L (inches) for Multi span only Exterior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3										
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)										
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	61	
90	44-X	57	52	40	31	25	0	0	0	43	42	35	29	0	0	0	0	37	36	31	0	0	0	0	0	0	
		55	51	39	30	24	0	0	0	42	41	34	28	0	0	0	0	36	35	31	0	0	0	0	0	0	
		112	103	79	61	49	40	33	29	85	83	68	57	47	40	34	29	72	71	62	53	45	39	33	29	29	
		80	95	89	75	68	62	56	53	50	87	83	72	64	59	55	51	48	78	77	69	63	57	54	51	48	
100	44-X	48	46	37	29	0	0	0	0	36	35	31	0	0	0	0	0	30	30	0	0	0	0	0	0	0	0
		47	45	36	29	0	0	0	0	35	34	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		94	91	73	58	48	40	33	29	71	69	61	52	44	38	34	29	60	59	55	47	42	37	32	29	29	
		80	91	86	74	65	60	55	52	49	77	77	69	63	57	53	50	47	70	70	67	60	56	52	49	47	
110	44-X	41	40	33	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		40	39	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	78	66	55	46	39	33	29	60	59	55	47	42	36	32	29	50	50	48	43	38	35	31	28	28	
		80	85	80	71	65	58	55	50	48	71	71	67	60	56	52	49	47	65	65	63	59	54	50	47	45	
120	44-X	35	34	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		34	33	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		69	67	60	51	43	37	33	29	51	50	49	43	38	34	31	28	43	42	42	38	35	32	29	26		
		80	77	77	68	62	56	53	50	47	65	65	64	58	54	50	47	45	59	59	59	56	52	49	47	44	
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		60	58	54	47	41	36	32	28	44	44	43	39	35	32	29	26	37	37	36	35	32	29	27	0		
		80	71	71	67	60	56	52	49	47	60	60	57	52	50	46	44	54	54	54	54	51	47	45	44		
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		52	51	50	44	39	34	30	27	39	38	37	36	32	30	28	0	32	32	31	31	29	27	0	0		
		80	67	67	64	58	54	50	48	45	56	56	56	54	50	48	46	43	51	51	51	49	46	44	42		
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		46	45	44	40	36	33	29	26	34	33	33	32	30	28	0	0	0	0	0	0	0	0	0	0		
		80	62	62	62	57	53	50	46	44	53	53	53	52	50	46	44	43	48	48	48	48	47	45	42		
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		41	40	39	37	34	31	28	25	30	30	29	29	27	0	0	0	0	0	0	0	0	0	0	0		
		80	58	58	58	55	51	49	46	43	49	49	49	48	46	43	41	45	45	45	45	45	43	42	39		
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		36	36	35	34	31	29	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		80	55	55	55	53	51	47	45	43	46	46	46	46	44	43	40	42	42	42	42	42	42	40	39		
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		33	32	32	31	29	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		80	52	52	52	52	49	47	44	42	44	44	44	44	43	41	40	40	40	40	40	40	40	39	38		

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

Larson Engineering Inc

1488 Bond Street, Suite 100 Naperville, IL 60563-6503 - p (630) 357-0540 - www.larsonengr.com



K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 3.2 Maximum Downward Force (lbs) Multi Span Only Interior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	154	164	169	169	169	0	0	0	0	155	154	169	169	0	0	0	0	155	152	162	0	0	0	0	0
		150	159	172	172	173	0	0	0	0	151	150	164	173	0	0	0	0	151	147	157	0	0	0	0	0
		290	307	333	349	352	352	352	352	352	291	289	316	333	346	352	354	352	292	285	304	321	334	344	352	352
		80	324	344	372	390	415	444	466	482	325	324	354	373	386	403	427	447	326	318	340	359	373	385	403	424
100	44-X	155	160	170	169	0	0	0	0	0	155	152	164	0	0	0	0	0	156	153	0	0	0	0	0	0
		150	156	168	172	0	0	0	0	0	151	148	160	0	0	0	0	0	0	0	0	0	0	0	0	0
		290	301	325	342	351	352	352	352	352	292	285	308	325	446	347	354	352	292	287	296	312	325	335	343	352
		80	325	337	364	382	395	418	442	461	326	319	345	363	498	388	400	421	327	320	330	349	363	375	384	395
110	44-X	155	152	170	169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		151	148	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		291	286	319	335	346	351	352	352	352	292	287	301	317	409	339	347	351	293	288	295	304	317	327	335	342
		80	326	320	356	374	387	397	418	439	327	320	337	355	458	379	388	395	327	322	330	340	354	365	375	383
120	44-X	156	152	167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		151	148	162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	285	312	328	340	349	351	352	352	293	288	295	310	376	332	340	347	293	289	285	297	309	319	327	335
		80	326	319	349	367	380	390	399	416	327	322	330	347	420	371	380	388	328	323	319	332	346	357	366	374
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	287	307	322	334	343	350	351	351	293	289	287	304	345	325	333	340	294	290	285	295	302	312	320	0
		80	327	320	343	360	373	383	392	399	328	323	320	340	386	364	373	380	328	324	318	330	338	349	358	366
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	288	302	317	328	337	345	351	351	294	290	284	299	317	319	327	0	294	291	286	290	296	306	0	0
		80	327	322	338	354	367	377	385	393	328	324	318	334	354	357	366	373	329	325	320	325	331	342	351	359
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	289	292	311	323	332	339	346	346	294	290	286	294	304	313	0	0	0	0	0	0	0	0	0	0
		80	328	323	326	348	361	371	379	387	328	325	319	328	340	350	359	367	329	326	321	317	330	335	344	352
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	289	284	307	318	327	334	341	341	294	291	287	286	300	0	0	0	0	0	0	0	0	0	0	0
		80	328	324	317	343	355	365	374	381	329	325	321	320	335	345	353	360	329	326	322	318	326	330	0	0
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		294	290	285	303	313	322	329	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	328	324	318	339	350	360	368	375	329	326	322	317	330	339	347	0	0	0	0	0	0	0	0	0
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		294	291	286	295	309	317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	329	325	320	330	345	355	363	370	329	326	322	319	323	334	0	0	0	0	0	0	0	0	0	0

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 3.2A Maximum Downward Force (lbs) Multi Span Only Exterior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3									
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)									
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70
90	44-X	154	164	169	169	169	0	0	0	0	155	154	169	169	0	0	0	0	155	152	162	0	0	0	0	0
		144	153	163	162	163	0	0	0	0	144	144	157	163	0	0	0	0	145	141	151	0	0	0	0	0
		290	307	327	327	327	328	328	291	289	316	327	327	329	328	292	285	304	321	327	327	328	328	328	328	
		296	314	340	357	379	405	426	441	297	296	323	340	353	368	390	408	298	291	310	328	341	351	368	387	
100	44-X	147	153	165	166	0	0	0	0	148	145	157	0	0	0	0	0	0	148	145	0	0	0	0	0	0
		144	149	161	163	0	0	0	0	145	141	153	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		290	301	325	327	326	327	328	328	292	285	308	325	433	327	329	328	292	287	296	312	325	327	327	328	
		297	307	332	349	361	382	404	421	298	291	315	332	455	354	365	384	298	293	302	319	332	342	351	361	
110	44-X	148	145	162	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		144	142	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		291	286	319	328	327	326	328	328	292	287	301	317	407	327	327	326	293	288	295	304	317	327	327	327	
		297	292	325	342	354	363	382	400	298	293	308	324	418	346	354	361	299	294	301	311	323	334	342	349	
120	44-X	148	145	159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		145	142	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	285	312	328	328	327	326	328	293	288	295	310	376	328	327	327	293	289	285	297	309	319	327	327	
		298	291	319	335	347	356	364	380	299	294	302	317	384	339	347	354	299	295	291	303	316	326	334	342	
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		292	287	307	322	328	327	327	327	293	289	287	304	345	325	328	327	294	290	285	295	302	312	320	0	
		298	293	313	329	341	350	358	364	299	295	293	311	352	332	340	347	300	296	291	301	309	319	327	334	
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	288	302	317	328	328	327	327	294	290	284	299	317	319	327	0	294	291	286	290	296	306	0	0	
		299	294	308	323	335	344	352	359	300	296	290	305	323	326	334	341	300	297	292	297	303	312	320	327	
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	289	292	311	323	328	328	327	294	290	286	294	304	313	0	0	0	0	0	0	0	0	0	0	0
		295	298	318	329	339	346	353	353	300	297	292	300	311	320	328	335	300	297	293	289	301	306	314	321	
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		293	289	284	307	318	327	328	328	294	291	287	286	300	0	0	0	0	0	0	0	0	0	0	0	0
		300	295	290	313	324	333	341	348	300	297	293	292	306	315	322	329	300	298	294	291	298	301	0	0	
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		294	290	285	303	313	322	329	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		300	296	291	309	320	329	336	343	300	298	294	290	301	310	317	0	0	0	0	0	0	0	0	0	
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		294	291	286	295	309	317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		300	297	292	302	315	324	332	338	301	298	295	291	295	305	0	0	0	0	0	0	0	0	0	0	

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 3.3 Maximum Horizontal Force (lbs) Multi span only Interior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	59	54	40	31	25	0	0	0	62	61	50	40	26	0	0	0	74	68	55	40	32	0	0	0
		57	53	41	32	26	0	0	0	61	59	49	41	27	0	0	0	72	66	53	40	32	0	0	0
		111	102	79	65	52	42	36	31	117	114	94	79	68	59	50	43	140	128	103	88	77	68	60	52
		80	124	114	89	73	62	53	47	42	131	127	105	89	77	67	60	54	156	143	115	98	86	76	68
100	44-X	61	59	46	37	0	0	0	0	64	63	55	38	0	0	0	0	77	75	58	46	0	0	0	0
		60	58	46	37	0	0	0	0	62	61	54	39	0	0	0	0	75	72	58	47	0	0	0	0
		115	111	89	74	63	52	44	38	121	118	104	89	78	69	61	53	145	140	112	98	86	77	70	64
		80	129	124	99	83	71	62	55	50	135	132	116	99	87	77	69	63	162	157	125	109	96	86	78
110	44-X	63	61	52	42	0	0	0	0	66	64	54	44	0	0	0	0	80	78	66	53	0	0	0	0
		61	60	50	0	0	0	0	0	64	62	53	0	0	0	0	0	77	75	64	0	0	0	0	0
		118	115	98	83	72	62	53	46	124	121	112	98	86	77	70	64	149	145	123	106	95	86	78	72
		80	132	129	109	92	80	71	63	57	138	135	126	109	97	87	78	72	167	163	137	119	106	96	88
120	44-X	65	63	56	0	0	0	0	0	67	66	59	0	0	0	0	0	81	80	71	0	0	0	0	0
		63	61	55	0	0	0	0	0	65	64	57	0	0	0	0	0	79	77	69	0	0	0	0	0
		121	118	105	90	79	71	63	55	126	124	120	105	94	85	78	72	153	149	133	114	103	94	86	80
		80	135	132	118	101	89	79	71	65	141	138	134	118	105	95	87	80	171	167	149	128	115	105	97
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		123	121	112	98	86	78	70	63	129	126	123	113	102	93	85	79	155	152	142	123	110	101	94	80
		80	138	135	126	109	97	87	79	72	144	141	137	126	114	103	95	88	174	170	159	138	123	113	105
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		125	123	119	104	93	84	77	71	131	128	124	119	108	99	92	74	158	155	150	132	118	108	97	89
		80	140	138	133	117	104	94	86	79	146	143	139	133	121	111	103	95	176	173	167	147	131	121	112
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		127	125	122	111	100	91	83	77	132	130	127	124	114	106	87	80	160	157	154	139	126	114	105	97
		80	142	139	136	124	111	101	93	86	148	146	142	139	128	118	110	102	179	176	172	156	140	128	119
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		128	126	124	116	105	96	89	82	133	132	129	125	120	101	93	86	161	159	156	146	133	122	112	104
		80	143	141	138	130	118	108	99	92	149	147	144	140	134	124	116	109	180	178	174	164	149	136	125
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		129	127	125	121	111	102	94	0	135	133	131	127	116	106	99	0	163	161	158	153	140	129	119	0
		80	144	142	140	136	124	114	106	98	150	149	146	142	139	130	122	103	182	180	176	171	156	144	133
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		130	128	126	124	116	107	0	0	136	134	132	130	121	112	0	0	164	162	159	157	146	135	0	0
		80	145	144	141	139	129	120	111	104	152	150	147	145	141	136	116	109	183	181	178	175	163	151	140

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

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Standard size 44.8"x 67.5" Landscape Orientation

Table 3.3A Maximum Horizontal Force (lbs) Multi span only Exterior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3								
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)								
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60
90	44-X	56	52	40	31	25	0	0	0	59	58	48	40	26	0	0	0	71	65	52	39	31	0	0	0
		55	50	39	30	24	0	0	0	58	57	47	39	25	0	0	0	69	64	51	38	30	0	0	0
		111	102	78	61	49	39	33	29	117	114	94	78	65	55	46	40	140	128	103	88	75	65	56	48
		80	113	104	81	66	56	49	43	39	120	116	96	81	70	62	55	50	143	131	105	90	78	70	63
100	44-X	58	56	45	36	0	0	0	0	61	60	53	38	0	0	0	0	74	71	57	45	0	0	0	0
		57	55	44	35	0	0	0	0	60	58	52	37	0	0	0	0	72	69	56	44	0	0	0	0
		115	111	89	71	59	49	41	35	121	118	104	89	75	65	57	49	145	140	112	98	86	75	67	59
		80	117	113	91	76	65	57	50	45	123	120	106	91	79	70	63	58	148	143	115	100	88	79	72
110	44-X	60	59	50	41	0	0	0	0	63	61	52	43	0	0	0	0	76	74	62	52	0	0	0	0
		59	57	48	0	0	0	0	0	61	60	50	0	0	0	0	0	74	72	61	0	0	0	0	0
		118	115	98	81	68	58	49	43	124	121	112	98	86	75	66	59	149	145	123	106	95	86	77	69
		80	121	118	100	84	73	64	58	52	126	123	115	100	88	79	72	65	152	148	126	108	97	88	80
120	44-X	61	60	54	0	0	0	0	0	64	63	56	0	0	0	0	0	78	76	67	0	0	0	0	0
		60	59	52	0	0	0	0	0	63	61	55	0	0	0	0	0	76	74	66	0	0	0	0	0
		121	118	105	90	76	66	58	51	126	124	120	105	94	84	75	67	153	149	133	114	103	94	86	78
		80	124	121	108	92	81	72	65	59	129	126	122	108	96	87	79	73	156	152	136	116	105	96	88
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		123	121	112	98	85	74	66	59	129	126	123	113	102	93	84	76	155	152	142	123	110	101	94	74
		80	126	123	115	100	88	79	72	66	131	129	125	115	104	94	87	80	159	156	145	126	112	103	96
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		125	123	119	104	93	82	73	66	131	128	124	119	108	99	92	69	158	155	150	132	118	108	92	83
		80	128	126	121	107	95	86	78	72	133	131	127	121	110	101	94	87	161	158	153	135	120	110	103
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		127	125	122	111	100	90	80	73	132	130	127	124	114	106	84	76	160	157	154	139	126	113	101	91
		80	129	127	125	113	102	92	85	78	135	133	130	127	117	108	100	94	163	161	157	142	128	117	109
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		128	126	124	116	105	96	87	79	133	132	129	125	120	101	91	83	161	159	156	146	133	122	110	100
		80	131	129	126	119	108	98	91	84	136	134	132	128	122	114	106	100	165	162	159	150	136	124	114
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		129	127	125	121	111	102	94	0	135	133	131	127	116	106	98	0	163	161	158	153	140	129	119	0
		80	132	130	128	124	113	104	96	90	137	136	133	129	127	119	112	94	166	164	161	156	143	131	122
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		130	128	126	124	116	107	0	0	136	134	132	130	121	112	0	0	164	162	159	157	146	135	0	0
		80	133	131	129	127	118	109	102	95	138	137	135	133	129	124	106	99	167	165	163	160	149	138	128

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 3.4 Max Uplift Force (lbs) Multi span only Interior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3										
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)										
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	
90	44-X	-110	-101	-75	-58	-47	0	0	0	-121	-118	-98	-78	0	0	0	0	-127	-124	-108	0	0	0	0	0	0	
		-107	-98	-76	-60	-48	0	0	0	-118	-115	-95	-80	0	0	0	0	-123	-120	-105	0	0	0	0	0	0	
		-206	-189	-148	-121	-97	-79	-66	-57	-227	-221	-183	-154	-133	-114	-97	-83	-238	-232	-203	-174	-152	-135	-118	-102	-123	
		80	-230	-212	-165	-135	-115	-99	-88	-78	-254	-247	-205	-172	-149	-131	-117	-105	-266	-260	-227	-194	-170	-150	-135	-123	
100	44-X	-117	-113	-89	-70	0	0	0	0	-127	-124	-110	0	0	0	0	0	-132	-129	0	0	0	0	0	0	0	0
		-114	-110	-88	-72	0	0	0	0	-124	-121	-106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-220	-213	-170	-142	-121	-100	-84	-73	-239	-233	-206	-176	-154	-137	-122	-128	-248	-243	-225	-196	-173	-155	-141	-128	-144	
		80	-246	-238	-190	-159	-136	-119	-106	-95	-267	-261	-230	-197	-172	-153	-137	-284	-277	-271	-252	-219	-194	-174	-157	-144	
110	44-X	-123	-120	-102	-82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-120	-117	-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-231	-226	-191	-161	-140	-122	-104	-90	-248	-243	-226	-196	-173	-155	-141	-129	-255	-251	-245	-216	-193	-175	-159	-147	-164	
		80	-259	-252	-213	-180	-156	-138	-124	-112	-277	-271	-252	-219	-194	-174	-157	-329	-285	-281	-273	-241	-216	-195	-178	-164	
120	44-X	-128	-125	-112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-125	-122	-108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-240	-235	-209	-180	-157	-140	-124	-109	-255	-250	-243	-214	-191	-173	-158	-132	-261	-257	-252	-233	-211	-192	-177	-164	-183	
		80	-269	-263	-234	-201	-176	-157	-141	-128	-285	-280	-272	-239	-214	-193	-177	-372	-292	-288	-282	-261	-236	-215	-198	-183	
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-248	-243	-226	-196	-174	-156	-141	-127	-260	-256	-251	-230	-208	-189	-174	-169	-266	-263	-258	-249	-227	-209	-193	0	0	
		80	-277	-272	-253	-220	-194	-174	-158	-144	-291	-287	-281	-258	-232	-212	-195	-412	-297	-294	-288	-278	-254	-233	-216	-201	
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-254	-249	-241	-212	-189	-171	-156	-143	-265	-261	-256	-245	-223	-205	-189	0	-270	-267	-263	-259	-242	-224	0	0	0	
		80	-284	-279	-269	-237	-211	-191	-174	-160	-296	-292	-287	-274	-249	-229	-211	-451	-302	-298	-294	-289	-270	-250	-233	-218	
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-259	-255	-249	-226	-203	-185	-170	-157	-269	-265	-261	-257	-237	-219	0	0	0	0	0	0	0	0	0	0	0	0
		80	-289	-285	-279	-253	-227	-207	-190	-175	-300	-297	-292	-287	-265	-244	-227	-488	-305	-302	-298	-294	-285	-265	-248	-234	
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-263	-259	-254	-239	-217	-198	-183	-169	-272	-269	-265	-261	-249	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-294	-290	-284	-267	-242	-222	-204	-189	-304	-301	-296	-292	-278	-259	-242	-522	-308	-306	-302	-298	-294	-279	0	0	
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-266	-263	-258	-250	-229	-211	-195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-298	-294	-289	-280	-256	-235	-218	-203	-307	-304	-300	-296	-291	-272	-255	0	0	0	0	0	0	0	0	0	
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-269	-266	-262	-258	-240	-222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-301	-298	-293	-288	-268	-248	-231	-216	-309	-307	-303	-299	-296	-284	0	0	0	0	0	0	0	0	0	0	

Note: The Forces shown in the tables above account for reactions associated with the interior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

See SEAOC PV-2 2012 for definition of Roof Zones

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K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 44.8"x 67.5" Landscape Orientation

Table 3.4A Max Uplift Force (lbs) Multi span only Exterior Conditions

Exp D	Ultimate Wind Speed, V (mph)	Rail Type	Roof Wind Pressure Zone 1							Roof Wind Pressure Zone 2							Roof Wind Pressure Zone 3										
			Roof Snow Load (psf)							Roof Snow Load (psf)							Roof Snow Load (psf)										
			0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	0	10	20	30	40	50	60	70	
90	44-X	-105	-96	-74	-57	-46	0	0	0	-115	-112	-93	-77	0	0	0	0	-121	-118	-103	0	0	0	0	0	0	
	48-X	-102	-94	-72	-56	-45	0	0	0	-113	-110	-91	-75	0	0	0	0	-118	-115	-101	0	0	0	0	0	0	
	48-XL	-206	-189	-145	-113	-90	-73	-62	-53	-227	-221	-183	-151	-126	-106	-90	-77	-238	-232	-203	-174	-149	-128	-110	-95	-95	
	80	-208	-195	-165	-148	-136	-123	-116	-109	-271	-259	-226	-200	-185	-173	-129	-151	-300	-294	-264	-242	-218	-205	-194	-184	-184	
100	44-X	-112	-108	-86	-69	0	0	0	0	-121	-118	-104	0	0	0	0	0	-126	-123	0	0	0	0	0	0	0	0
	48-X	-109	-106	-84	-67	0	0	0	0	-118	-116	-102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-220	-213	-170	-136	-112	-93	-78	-68	-239	-233	-206	-176	-149	-129	-113	-221	-248	-243	-225	-196	-173	-152	-134	-119	-119	
	80	-252	-238	-205	-180	-166	-151	-142	-135	-303	-303	-269	-247	-223	-209	-161	-184	-334	-334	-320	-288	-269	-246	-234	-223	-223	
110	44-X	-118	-115	-97	-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	-115	-112	-95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-231	-226	-191	-158	-132	-113	-97	-84	-248	-243	-226	-196	-173	-150	-133	-271	-255	-251	-245	-216	-193	-175	-156	-140	-140	
	80	-286	-272	-240	-219	-197	-184	-170	-161	-341	-341	-320	-288	-269	-247	-191	-223	-375	-375	-369	-344	-314	-289	-275	-263	-263	
120	44-X	-122	-119	-106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	-119	-117	-104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-240	-235	-209	-180	-152	-131	-116	-101	-255	-250	-243	-214	-191	-171	-152	-313	-261	-257	-252	-233	-211	-192	-177	-160	-160	
	80	-314	-312	-276	-254	-229	-215	-204	-190	-373	-373	-365	-330	-311	-285	-222	-260	-411	-411	-411	-392	-360	-343	-327	-305	-305	
130	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-248	-243	-226	-196	-171	-149	-132	-118	-260	-256	-251	-230	-208	-189	-171	-355	-266	-263	-258	-249	-227	-209	-193	0	0	
	80	-341	-341	-321	-289	-270	-247	-235	-224	-404	-404	-384	-352	-335	-324	-298	-446	-446	-446	-441	-419	-389	-372	-358	-358		
140	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-254	-249	-241	-212	-189	-166	-148	-133	-265	-261	-256	-245	-223	-205	-189	0	-270	-267	-263	-259	-242	-224	0	0	0	
	80	-375	-375	-359	-325	-305	-280	-267	-255	-444	-444	-444	-428	-395	-376	-295	-336	-489	-489	-489	-489	-467	-435	-418	-403	-403	
150	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-259	-255	-249	-226	-203	-183	-164	-148	-269	-265	-261	-257	-237	-219	0	0	0	0	0	0	0	0	0	0	0	
	80	-402	-402	-402	-371	-341	-323	-299	-287	-476	-476	-476	-471	-450	-419	-329	-387	-525	-525	-525	-525	-516	-496	-465	-449	-449	
160	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-263	-259	-254	-239	-217	-198	-179	-163	-272	-269	-265	-261	-249	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	-430	-430	-430	-409	-376	-358	-343	-319	-509	-509	-509	-494	-474	-364	-429	-560	-560	-560	-560	-560	-544	-526	-495	-495	-495	
170	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-266	-263	-258	-250	-229	-211	-195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	-457	-457	-457	-446	-424	-394	-378	-363	-541	-541	-541	-541	-539	-518	-410	-470	-595	-595	-595	-595	-593	-574	-558	-558	-558	
180	44-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-269	-266	-262	-258	-240	-222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	-485	-485	-485	-485	-462	-442	-413	-398	-573	-573	-573	-573	-563	-447	-528	-631	-631	-631	-631	-631	-631	-631	-623	-606	-606	

Note: The Forces shown in the tables above account for reactions associated with the exterior support of a multi-span condition. See Max length for Multi Span for corresponding span length.

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