



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: 21220004.002

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 43.2 inches x 80 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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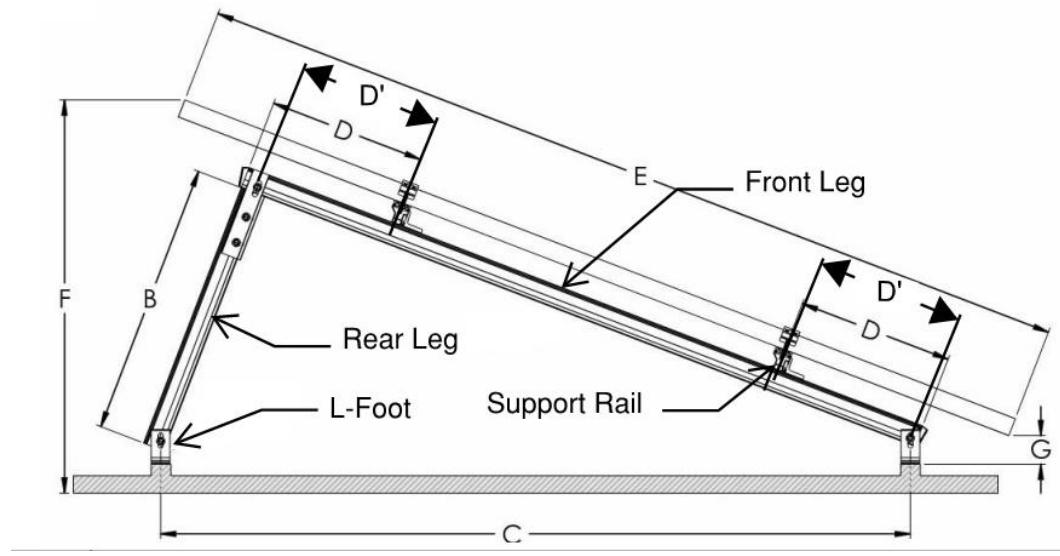


Figure 1 Typical Configuration (refer to K2 CrossRail Tilt Up System Assembly Instructions)

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)

P _f , flat snow (psf)	10	20	30	40	50	60	70
P _g , 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 Pressure Zones: 1, 2 &	Ce: 1.0	Design Category: A-E
Roof Slope: 0° to 7 ° Panel Slope: 7° to 25° (from ground)	3	Ct: 1.0 Cs: Varies	Ss:<=2.0 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.

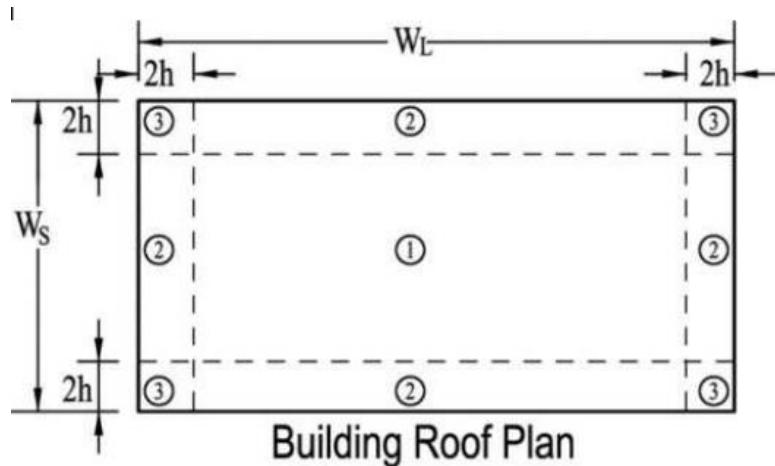


Figure 2. ASCE 7-16 Figure 29.4-7 shows the Building Roof Plan defining the roof zones.

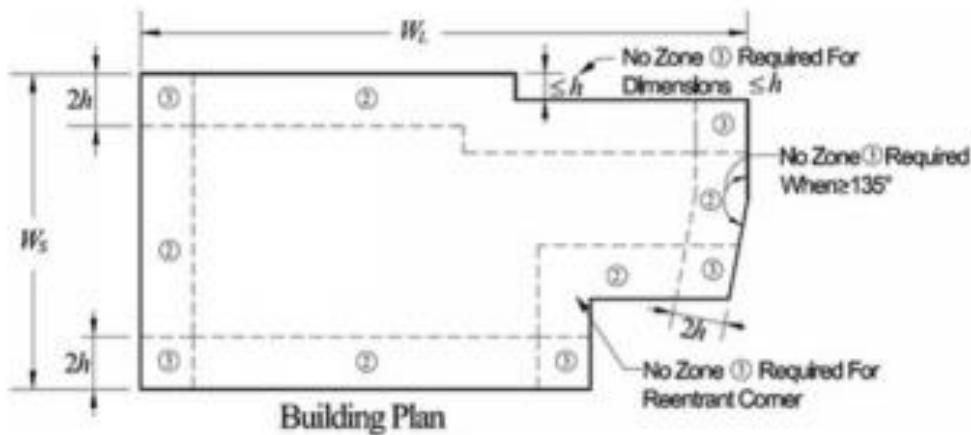


Figure 3. ASCE 7-16 Figure C29.4-1 shows a sketch of Building with Irregular Plan Dimensions

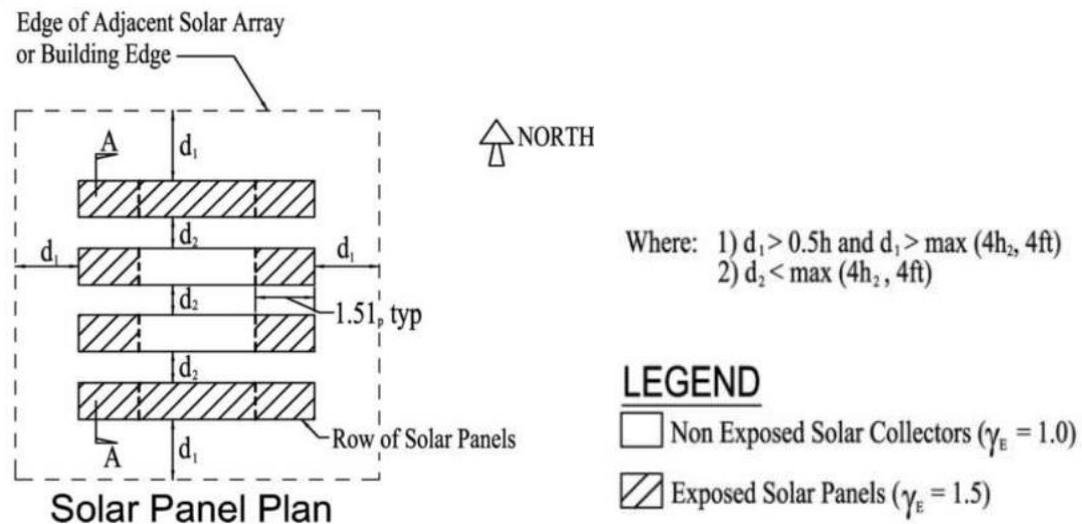


Figure 4. ASCE 7-16 Figure 29.4-7 Array Edge Factors
INSTALLATION & CONFIGURATION NOTES

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 43.2"x 80" 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	70
90	44-X	70	56	41	29	22	0	0	0	55	48	37	29	0	0	0	0	48	44	34	28	0	0	0	0	0
	48-X	73	58	41	29	22	0	0	0	58	50	38	29	0	0	0	0	50	45	35	29	0	0	0	0	0
	48-XL	146	116	80	56	43	35	29	25	115	100	74	56	43	35	30	25	99	90	70	56	43	35	29	25	25
	80	179	143	104	74	57	46	39	33	140	122	93	74	57	46	39	33	121	111	86	71	57	46	39	33	33
	44-X	60	51	38	29	0	0	0	0	47	43	34	28	0	0	0	0	40	39	31	0	0	0	0	0	0
	48-X	63	53	39	29	0	0	0	0	49	45	35	28	0	0	0	0	42	40	32	0	0	0	0	0	0
100	48-XL	125	106	76	56	43	35	29	25	97	89	70	54	43	35	30	25	83	80	64	53	43	35	29	25	25
	80	153	130	97	74	57	46	39	33	119	109	85	70	57	46	39	33	102	98	78	65	56	46	39	33	33
	44-X	52	46	36	28	0	0	0	0	40	39	31	0	0	0	0	0	34	33	28	0	0	0	0	0	0
	48-X	54	48	37	29	0	0	0	0	42	40	32	0	0	0	0	0	36	35	29	0	0	0	0	0	0
110	48-XL	108	96	72	56	43	35	29	25	83	80	64	52	43	35	30	25	71	69	58	49	41	35	29	25	25
	80	133	118	90	73	57	46	39	33	102	98	78	65	56	46	39	33	87	84	71	60	52	46	39	33	33
	44-X	45	42	33	27	0	0	0	0	35	34	28	0	0	0	0	0	29	29	0	0	0	0	0	0	0
120	48-X	47	44	34	28	0	0	0	0	36	35	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	94	87	68	53	43	35	29	25	72	70	59	49	41	35	30	25	61	59	53	45	39	34	29	25	25
	80	115	107	84	69	57	46	39	33	88	86	72	61	52	46	39	33	75	73	65	55	48	43	39	33	33
	44-X	40	38	31	0	0	0	0	0	30	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	48-X	41	40	32	0	0	0	0	0	31	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	83	80	64	51	42	35	29	25	62	61	54	46	39	34	30	25	53	52	48	42	37	32	29	25	25
	80	101	98	78	65	56	46	39	33	77	75	66	56	49	44	39	33	65	63	59	51	45	40	37	33	33
	44-X	35	34	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	48-X	37	36	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	73	71	59	49	41	35	29	25	55	54	49	43	37	32	29	25	46	45	44	38	34	31	28	25	25
	80	89	87	72	61	53	46	39	33	67	66	60	52	46	41	37	33	57	56	54	47	42	38	35	32	32
	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
150	48-X	32	32	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	65	63	55	47	39	34	29	25	48	48	45	40	35	31	28	25	41	40	39	35	32	29	26	0	
	80	79	77	67	57	50	44	39	33	59	58	55	48	43	39	35	32	50	49	48	43	39	35	33	30	
	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
160	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
	48-XL	58	57	51	44	38	33	29	25	43	42	41	37	33	30	27	0	36	36	35	33	30	27	0	0	
	80	71	69	62	54	47	42	38	33	53	52	51	45	40	37	33	31	44	44	43	40	36	33	31	28	
	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
170	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
	48-XL	52	51	47	41	36	32	28	25	39	38	37	34	31	28	0	0	32	32	31	30	28	0	0	0	
	80	57	56	54	47	42	38	35	32	42	42	41	39	35	32	30	28	36	35	35	34	32	29	27	0	
	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
180	48-X	39	38	37	35	33	31	30	28	33	33	32	30	29	28	27	30	30	30	29	29	27	27	26	0	
	48-XL	47	46	44	39	34	30	27	24	35	34	32	29	26	0	0	29	29	28	28	0	0	0	0	0	
	80	57	56	54	47	42	38	35	32	42	42	41	39	35	32	30	28	36	35	35	34	32	29	27	0	

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 43.2"x 80" 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	70
90	44-X	68	54	39	27	21	0	0	0	53	46	35	27	0	0	0	0	46	42	33	27	0	0	0	0	0
	48-X	72	58	40	28	22	0	0	0	57	50	37	28	0	0	0	0	49	45	35	28	0	0	0	0	0
	48-XL	141	112	79	56	43	35	29	25	111	97	73	56	43	35	29	25	95	87	68	55	43	35	29	25	25
	80	172	137	100	77	59	48	40	35	135	117	89	72	59	48	40	35	116	106	83	68	57	48	40	35	35
	44-X	58	49	37	27	0	0	0	0	45	42	32	26	0	0	0	0	39	37	30	0	0	0	0	0	0
	48-X	62	52	38	28	0	0	0	0	48	44	35	27	0	0	0	0	41	40	32	0	0	0	0	0	0
100	48-XL	121	102	75	56	43	35	29	25	94	86	67	54	43	35	29	25	80	77	62	51	43	35	29	25	25
	80	147	124	93	75	59	48	40	35	114	105	82	67	57	48	40	35	98	94	75	62	54	47	40	35	35
	44-X	50	45	34	27	0	0	0	0	39	37	30	0	0	0	0	0	33	32	27	0	0	0	0	0	0
	48-X	54	48	36	28	0	0	0	0	41	40	32	0	0	0	0	0	35	34	29	0	0	0	0	0	0
110	48-XL	105	93	71	55	43	35	29	25	80	77	62	51	42	35	29	25	68	67	56	47	41	35	29	25	25
	80	127	113	87	70	59	48	40	35	98	94	75	62	53	47	40	35	83	81	68	58	50	44	39	35	35
	44-X	44	41	32	26	0	0	0	0	33	32	27	0	0	0	0	0	28	28	0	0	0	0	0	0	0
120	48-X	47	43	34	27	0	0	0	0	36	35	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	91	85	66	53	43	35	29	25	69	67	57	48	41	35	29	25	59	58	51	44	38	34	29	25	25
	80	111	103	81	66	56	48	40	35	84	82	69	58	50	44	40	35	71	70	62	53	46	41	37	34	34
	44-X	38	37	30	0	0	0	0	0	29	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	48-X	41	40	32	0	0	0	0	0	31	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	80	77	62	51	42	35	29	25	60	59	52	44	39	33	29	25	51	50	46	40	36	32	28	25	25
	80	97	94	75	62	53	47	40	35	73	72	63	54	47	42	38	34	62	61	56	49	43	39	35	32	32
	44-X	35	34	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	48-X	36	35	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	70	69	57	48	40	35	29	25	53	52	48	41	36	32	28	25	45	44	42	37	33	30	27	25	25
	80	86	83	69	58	51	45	40	35	64	63	58	50	44	39	36	33	54	53	51	45	40	36	33	30	30
	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
150	48-X	32	31	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	63	61	53	45	39	34	29	25	47	46	44	38	34	31	27	25	39	39	38	34	31	28	26	0	
	80	76	74	64	55	48	42	38	35	57	56	53	46	41	37	34	31	48	47	46	42	37	34	31	29	
	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
160	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
	48-XL	56	55	49	42	37	32	29	25	42	41	40	36	32	29	26	0	35	34	34	32	29	26	0	0	
	80	68	66	60	52	45	40	36	33	51	50	49	43	39	35	32	29	42	42	41	38	35	32	29	27	
	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
170	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
	48-XL	50	49	46	40	35	31	28	25	37	37	36	33	30	27	0	0	31	31	30	29	27	0	0	0	
	80	55	54	52	45	41	37	33	31	41	40	39	37	34	31	29	27	34	34	33	33	30	28	26	0	
	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
180	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
	48-XL	45	44	43	37	33	30	27	24	34	33	32	31	28	26	0	0	28	28	27	27	0	0	0	0	
	80	55	54	52	45	41	37	33	31	41	40	39	37	34	31	29	27	34	34	33	33	30	28	26	0	

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 43.2"x 80" 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	70
90	44-X	117	132	141	141	141	0	0	0	117	126	137	141	0	0	0	0	118	121	132	140	0	0	0	0	0
	48-X	122	137	144	144	144	0	0	0	122	131	143	144	0	0	0	0	123	126	138	144	0	0	0	0	0
	48-XL	242	271	277	278	278	279	279	279	243	261	278	278	279	280	279	279	244	251	274	279	278	279	279	279	279
	80	296	335	362	365	366	366	366	366	298	319	348	365	366	367	366	366	299	307	336	355	366	366	366	366	366
	44-X	117	129	140	141	0	0	0	0	118	123	134	141	0	0	0	0	118	120	129	0	0	0	0	0	0
	48-X	122	134	144	144	0	0	0	0	123	128	139	144	0	0	0	0	123	125	134	0	0	0	0	0	0
100	48-XL	243	268	278	278	279	279	279	279	244	255	277	278	310	279	280	279	245	249	267	279	278	279	279	279	279
	80	298	328	355	365	366	366	366	366	299	312	340	357	406	366	367	366	300	305	327	346	360	366	366	366	366
	44-X	118	127	137	141	0	0	0	0	118	120	131	0	0	0	0	0	118	116	126	0	0	0	0	0	0
	48-X	122	132	143	144	0	0	0	0	123	125	136	0	0	0	0	0	123	121	131	0	0	0	0	0	0
	48-XL	244	179	212	238	263	292	318	343	198	193	225	250	272	293	319	343	216	211	230	258	279	299	318	343	343
	80	299	322	349	364	366	366	366	366	300	306	332	350	400	366	367	366	301	296	319	338	351	365	366	366	366
110	44-X	118	124	135	141	0	0	0	0	118	117	128	0	0	0	0	0	119	116	0	0	0	0	0	0	0
	48-X	123	130	140	144	0	0	0	0	123	122	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	244	258	279	278	278	279	279	279	246	242	266	279	294	279	280	279	246	241	255	269	278	278	279	279	279
	80	300	316	342	359	366	366	366	366	301	297	325	343	376	366	367	366	302	295	312	330	343	354	366	366	366
	44-X	118	122	132	0	0	0	0	0	119	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	123	128	138	0	0	0	0	0	124	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	48-XL	245	254	274	278	278	279	279	279	246	240	260	274	281	278	280	279	247	242	250	264	274	278	278	279	279
	80	300	311	336	353	365	366	366	366	302	295	319	336	352	359	367	366	302	296	306	323	336	347	355	366	366
	44-X	118	118	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	123	123	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	246	244	270	279	278	278	279	279	246	241	256	269	279	278	278	279	247	243	249	258	269	278	278	278	278
	80	301	299	331	348	360	365	366	366	302	296	313	330	343	353	361	366	303	297	305	317	330	340	349	356	356
130	44-X	119	116	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	124	121	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	246	240	266	279	278	278	279	279	247	242	252	265	275	279	278	278	247	243	245	254	264	272	278	0	0
	80	301	294	326	342	354	364	366	366	302	297	308	324	337	347	355	362	303	298	300	311	323	334	342	350	350
	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
	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
140	48-XL	246	241	262	275	279	278	278	279	247	242	252	265	275	279	278	278	247	243	249	258	269	278	278	278	278
	80	302	295	321	337	349	359	365	366	303	298	304	319	331	341	350	357	303	299	303	305	318	328	336	344	344
	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
	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
	48-XL	247	242	259	271	279	278	278	278	247	244	242	257	266	274	0	0	248	245	249	255	0	0	0	0	0
	80	302	296	317	332	344	354	362	365	303	299	296	314	326	336	344	351	304	300	294	305	312	322	331	338	338
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
	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
	48-XL	246	240	266	279	278	278	279	279	247	242	252	265	275	279	278	278	247	243	245	254	264	272	278	0	0
	80	301	294	326	342	354	364	366	366	302	297	308	324	337	347	355	362	303	298	300	311	323	334	342	350	350
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
	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
	48-XL	246	241	262	275	279	278	278	279	247	243	248	260	270	279	278	0	248	244	239	249	259	268	0	0	0
	80	302	295	321	337	349	359	365	366	303	298	304	319	331	341	350	357	303	299	303	305	318	328	336	344	344
	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
	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
170	48-XL	247	242	259	271	279	278	278	278	247	244	242	257	266	274	0	0	248	245	249	255	0	0	0	0	0
	80	302	296	317	332	344	354	362	365	303	299	296	314	326	336	344	351	304	300	294	305	312	322	331	338	338
	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
	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
180	48-XL</td																									



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" 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	113	127	134	135	135	0	0	0	113	121	132	135	0	0	0	0	114	117	128	135	0	0	0	0	0
	48-X	120	135	139	140	140	0	0	0	121	129	139	140	0	0	0	0	121	124	136	140	0	0	0	0	0
	48-XL	234	264	275	276	276	276	276	276	235	252	274	276	276	277	276	276	236	242	265	277	276	276	276	276	276
	80	284	321	347	379	379	379	379	379	286	306	333	357	379	379	381	379	287	295	322	340	369	379	379	379	379
	44-X	113	124	134	135	0	0	0	0	114	119	129	134	0	0	0	0	114	116	124	0	0	0	0	0	0
	48-X	121	133	139	140	0	0	0	0	121	126	138	139	0	0	0	0	122	124	133	0	0	0	0	0	0
100	48-XL	235	259	275	276	276	276	276	276	236	246	268	276	307	276	277	276	237	241	258	273	276	276	276	276	276
	80	285	314	340	369	379	379	379	379	287	299	325	342	408	379	381	379	288	292	314	331	345	372	379	379	379
	44-X	113	122	132	134	0	0	0	0	114	116	126	0	0	0	0	0	114	112	121	0	0	0	0	0	0
	48-X	121	130	139	139	0	0	0	0	122	124	135	0	0	0	0	0	122	120	129	0	0	0	0	0	0
	48-XL	236	254	275	275	276	276	276	276	237	241	262	276	304	276	277	276	237	233	252	266	276	276	276	276	276
	80	286	308	334	350	379	379	379	379	288	293	318	335	384	372	381	379	288	284	306	324	336	350	372	379	379
110	44-X	114	120	130	134	0	0	0	0	114	113	124	0	0	0	0	0	115	112	0	0	0	0	0	0	0
	48-X	121	128	139	139	0	0	0	0	122	120	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	236	254	275	275	276	276	276	276	237	241	262	270	291	276	277	276	238	233	246	260	271	276	276	276	276
	80	286	303	328	344	363	379	379	379	288	284	312	328	360	352	374	379	289	283	299	316	329	339	352	370	370
	44-X	114	118	128	0	0	0	0	0	115	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	122	126	136	0	0	0	0	0	122	119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	48-XL	237	245	265	276	275	276	276	276	238	232	252	265	278	276	277	276	238	234	241	255	265	274	276	276	276
	80	288	298	322	339	350	371	379	379	289	282	306	322	337	344	355	374	290	284	293	310	322	332	341	351	351
	44-X	114	114	126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	122	121	134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	237	236	261	274	276	276	276	276	238	233	247	260	270	276	276	276	239	235	241	250	260	268	275	276	276
	80	288	287	317	333	345	354	376	379	289	284	300	316	328	338	346	356	290	285	292	303	316	326	334	341	341
140	44-X	114	112	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	122	119	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	238	232	257	270	276	276	276	276	239	234	243	256	266	274	276	276	239	235	236	245	255	263	270	0	0
	80	289	282	312	328	340	349	360	379	290	285	296	311	323	332	340	347	290	286	287	298	310	320	328	335	335
	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
	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
160	48-XL	238	233	253	266	276	276	276	276	239	235	240	252	261	269	276	0	239	236	231	241	251	259	0	0	0
	80	289	283	308	323	335	344	351	364	290	285	291	306	318	327	335	342	291	287	281	293	304	314	322	330	330
	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
	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
	48-XL	238	234	250	262	272	276	276	276	239	236	234	248	257	265	0	0	239	237	232	241	246	0	0	0	0
	80	290	284	304	319	330	339	347	353	290	286	284	301	313	322	330	337	291	287	282	292	299	309	317	324	324
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
	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
	48-XL	238	234	247	259	268	276	276	276	239	236	232	245	254	261	0	0	240	237	233	238	0	0	0	0	0
	80	290	285	300	314	326	335	342	349	291	287	281	297	308	317	325	332	291	288	283	290	295	304	312	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
	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
	48-XL	239	234	247	259	268	276	276	276	239	236	232	245	254	261	0	0	240	237	233	238	0	0	0	0	0
	80	290	285	300	314	326	335	342	349	291	287	281	297	308	317	325	332	291	288	283	290	295	304	312	0	0

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



K2 Systems, LLC
PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" Landscape Orientation

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

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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 Standard size 43.2"x 80" 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	38	30	22	15	12	0	0	0	42	36	28	21	12	0	0	0	48	40	31	25	15	0	0	0	0	
		41	32	23	16	12	0	0	0	44	39	29	22	13	0	0	0	51	42	33	26	15	0	0	0	0	
		48-XL	79	63	45	31	24	20	16	14	86	75	57	44	33	27	23	20	100	82	64	52	40	33	28	24	24
		80	96	77	56	43	33	27	23	19	105	92	70	56	46	37	31	27	121	100	78	64	54	45	38	33	33
	48-X	40	34	26	19	0	0	0	0	44	40	31	25	0	0	0	0	51	43	35	24	0	0	0	0	0	
		43	36	26	20	0	0	0	0	46	43	33	26	0	0	0	0	54	46	37	25	0	0	0	0	0	
100	48-XL	84	71	52	39	30	24	20	18	90	83	65	52	41	33	28	24	106	90	72	60	50	40	34	29	29	
		80	102	86	65	52	41	33	28	24	110	101	79	65	55	46	39	33	128	109	87	73	62	54	47	40	40
		44-X	44	41	32	26	0	0	0	46	45	38	27	0	0	0	0	55	51	40	32	0	0	0	0	0	
		45	40	30	23	0	0	0	0	48	46	37	24	0	0	0	0	57	50	41	30	0	0	0	0	0	
	48-XL	88	78	60	46	36	29	25	21	94	90	72	60	49	41	34	29	111	98	79	67	58	49	41	36	36	
		80	107	95	73	59	49	40	34	29	114	110	87	73	62	55	47	40	134	119	96	81	70	62	55	49	49
110	44-X	45	44	35	0	0	0	0	0	47	46	36	0	0	0	0	0	57	55	44	0	0	0	0	0	0	0
		47	43	34	27	0	0	0	0	49	48	40	28	0	0	0	0	59	55	43	34	0	0	0	0	0	
		48-XL	91	85	66	53	43	35	29	25	96	94	78	66	56	48	41	35	114	106	85	73	64	56	49	42	42
		80	111	103	81	66	56	48	40	35	117	114	95	80	70	61	55	48	139	129	104	89	78	69	62	57	57
	48-X	45	44	35	0	0	0	0	0	47	46	36	0	0	0	0	0	57	55	44	0	0	0	0	0	0	0
		48-XL	94	90	72	60	49	41	34	30	98	96	84	72	63	55	48	41	118	114	91	79	70	63	56	50	50
120	48-XL	80	114	110	88	73	63	55	47	41	119	117	103	88	77	68	61	56	143	138	111	96	85	76	69	63	63
		44-X	46	45	37	0	0	0	0	48	47	39	0	0	0	0	0	58	56	47	0	0	0	0	0	0	0
		49	48	40	0	0	0	0	0	50	49	39	0	0	0	0	0	60	58	47	0	0	0	0	0	0	0
		80	116	113	94	80	69	61	54	47	121	119	109	94	83	74	67	61	146	143	119	103	92	83	75	69	69
	48-XL	47	46	0	0	0	0	0	0	49	48	40	0	0	0	0	0	59	58	0	0	0	0	0	0	0	0
		50	49	0	0	0	0	0	0	52	51	0	0	0	0	0	0	63	62	0	0	0	0	0	0	0	0
140	48-XL	98	95	83	71	61	52	46	39	102	100	95	83	74	66	59	53	123	120	104	90	81	73	67	50	50	
		80	119	116	101	86	75	66	60	54	124	121	115	101	89	81	73	67	149	146	127	109	98	89	82	75	75
		44-X	47	46	0	0	0	0	0	49	48	40	0	0	0	0	0	59	58	0	0	0	0	0	0	0	0
		48-X	50	49	0	0	0	0	0	52	51	0	0	0	0	0	0	63	62	0	0	0	0	0	0	0	0
	48-XL	80	121	118	106	92	81	72	65	59	126	123	120	106	95	86	79	73	152	148	134	115	104	95	87	81	81
		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
160	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		101	99	92	80	71	63	56	50	105	103	100	92	83	76	58	52	127	124	116	101	90	79	70	63	63	
		80	122	120	112	97	86	77	70	64	127	125	121	112	101	92	84	78	154	151	140	122	109	100	93	87	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	0
	48-X	102	100	96	84	75	68	60	54	106	104	101	96	87	80	63	57	128	126	121	106	94	85	76	68	68	
		80	124	122	117	102	91	82	75	69	129	126	123	117	106	97	90	83	155	153	147	129	115	105	98	86	86

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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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	-66	-53	-38	-27	-21	0	0	0	-78	-68	-51	-40	0	0	0	0	-83	-76	-59	-49	0	0	0	0	
		-69	-55	-39	-27	-21	0	0	0	-81	-70	-54	-41	0	0	0	0	-87	-80	-62	-50	0	0	0	0	
		-137	-108	-75	-53	-40	-33	-28	-24	-161	-140	-104	-79	-61	-49	-42	-36	-173	-158	-123	-97	-76	-61	-52	-45	
		80	-168	-133	-98	-69	-53	-43	-36	-31	-197	-172	-131	-104	-80	-65	-55	-47	-212	-194	-151	-124	-99	-81	-68	-59
		-74	-62	-47	-35	0	0	0	0	-84	-77	-60	-50	0	0	0	0	-89	-86	-69	0	0	0	0	0	
100	48-X	-77	-65	-48	-36	0	0	0	0	-88	-81	-63	-51	0	0	0	0	-93	-90	-71	0	0	0	0	0	
		-153	-129	-93	-69	-53	-43	-36	-31	-174	-160	-125	-98	-78	-63	-53	-42	-185	-178	-142	-117	-96	-78	-66	-57	
		80	-187	-158	-119	-90	-69	-56	-47	-41	-214	-197	-153	-126	-102	-83	-70	-159	-227	-218	-174	-145	-124	-102	-86	
		-80	-71	-55	-43	0	0	0	0	-89	-86	-69	0	0	0	0	0	-94	-91	-77	0	0	0	0	0	
		-83	-74	-57	-44	0	0	0	0	-93	-90	-72	0	0	0	0	0	-98	-95	-80	0	0	0	0	0	
110	48-XL	-166	-147	-111	-85	-66	-54	-45	-39	-185	-178	-142	-116	-95	-78	-66	-52	-195	-190	-160	-135	-113	-96	-81	-70	
		80	-203	-181	-139	-112	-87	-70	-59	-51	-227	-219	-175	-145	-124	-103	-87	-199	-239	-232	-196	-165	-143	-126	-106	
		-85	-79	-62	-51	0	0	0	0	-94	-91	-76	0	0	0	0	0	-98	-95	0	0	0	0	0	0	
		-89	-82	-65	-52	0	0	0	0	-97	-95	-79	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-177	-164	-128	-100	-81	-66	-55	-48	-194	-189	-158	-133	-111	-95	-80	-68	-185	-202	-198	-175	-150	-131	-113	-98	
120	48-XL	80	-216	-201	-158	-130	-106	-86	-73	-63	-238	-231	-194	-164	-142	-124	-105	-243	-248	-242	-215	-184	-161	-143	-111	
		-90	-86	-69	0	0	0	0	0	-97	-95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-93	-90	-72	0	0	0	0	0	-101	-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-186	-179	-143	-115	-95	-79	-66	-57	-201	-196	-173	-148	-126	-109	-95	-82	-209	-204	-189	-165	-145	-128	-113	-100	
		80	-227	-219	-175	-146	-125	-103	-87	-75	-246	-241	-212	-181	-158	-140	-125	-290	-256	-251	-232	-202	-178	-160	-145	
130	44-X	-93	-91	-76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-97	-94	-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-193	-188	-157	-130	-108	-93	-78	-67	-207	-203	-186	-161	-141	-123	-108	-260	-214	-210	-202	-178	-158	-143	-127	-114	
		80	-237	-230	-192	-162	-140	-122	-103	-88	-254	-249	-228	-197	-174	-155	-141	-341	-262	-257	-248	-218	-194	-175	-160	-147
		-96	-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
140	48-XL	-100	-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-199	-195	-169	-144	-121	-104	-91	-78	-212	-208	-198	-173	-154	-136	-121	-294	-218	-215	-210	-190	-170	-155	-141	0	
		80	-244	-238	-207	-177	-154	-136	-119	-103	-260	-255	-242	-212	-189	-170	-154	-384	-267	-263	-257	-232	-209	-190	-174	-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	
		-205	-200	-181	-156	-134	-116	-102	-90	-216	-213	-208	-184	-165	-150	-134	0	-221	-218	-214	-200	-182	-166	0	0	
160	48-XL	80	-251	-245	-221	-191	-167	-149	-134	-118	-265	-261	-254	-226	-202	-183	-168	-419	-271	-268	-262	-246	-223	-203	-187	-174
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-209	-205	-191	-166	-146	-127	-113	-101	-220	-216	-212	-195	-176	-160	0	-224	-222	-218	-210	-192	0	0	0	0	
		80	-256	-251	-234	-204	-180	-162	-147	-133	-269	-265	-260	-239	-215	-196	-180	-453	-275	-272	-267	-258	-235	-216	-200	-186
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
170	48-XL	80	-261	-257	-246	-216	-193	-174	-158	-145	-273	-269	-264	-250	-227	-208	-523	-486	-478	-475	-471	-466	-447	-428	-412	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		-213	-209	-201	-176	-157	-139	-123	-111	-223	-220	-215	-204	-186	-170	0	0	-227	-224	-221	-217	0	0	0	0	
		80	-261	-257	-246	-216	-193	-174	-158	-145	-273	-269	-264	-250	-227	-208	-523	-486	-478	-475	-471	-466	-447	-428	-412	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
180	48-XL	80	-261	-257	-246	-216	-193	-174	-158	-145	-273	-269	-264	-250	-227	-208	-523	-486	-478	-475	-471	-466	-447	-428	-412	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

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 43.2"x 80" 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
90	44-X	-64	-51	-36	-25	-20	0	0	0	-75	-65	-50	-38	0	0	0	0	-81	-74	-57	-47	0	0	0	0
	48-X	-68	-54	-37	-26	-20	0	0	0	-80	-70	-52	-40	0	0	0	0	-86	-79	-61	-49	0	0	0	0
	48-XL	-132	-105	-74	-52	-40	-33	-27	-24	-156	-136	-103	-78	-60	-49	-41	-35	-167	-153	-119	-97	-75	-61	-51	-44
	80	-161	-128	-94	-72	-55	-45	-38	-32	-189	-165	-125	-101	-82	-67	-57	-49	-203	-186	-145	-119	-100	-84	-70	-61
	44-X	-71	-60	-45	-33	0	0	0	0	-81	-75	-58	-47	0	0	0	0	-86	-83	-66	0	0	0	0	0
100	48-X	-76	-64	-46	-34	0	0	0	0	-87	-80	-62	-49	0	0	0	0	-92	-88	-71	0	0	0	0	0
	48-XL	-148	-125	-92	-68	-52	-42	-36	-31	-169	-155	-121	-97	-77	-62	-53	-42	-179	-172	-138	-115	-95	-77	-65	-56
	80	-179	-152	-114	-91	-72	-58	-49	-42	-205	-188	-147	-121	-102	-86	-72	-65	-217	-209	-167	-139	-119	-104	-89	-77
	44-X	-77	-69	-53	-41	0	0	0	0	-86	-83	-66	0	0	0	0	0	-91	-88	-74	0	0	0	0	0
	48-X	-82	-73	-55	-43	0	0	0	0	-92	-89	-71	0	0	0	0	0	-97	-94	-79	0	0	0	0	0
110	48-XL	-160	-142	-109	-85	-66	-53	-45	-39	-179	-172	-138	-115	-95	-78	-65	-50	-150	-188	-183	-154	-130	-113	-96	-80
	80	-195	-173	-133	-108	-90	-73	-61	-53	-217	-209	-167	-139	-119	-104	-90	-70	-207	-229	-223	-187	-158	-137	-121	-108
	44-X	-82	-76	-60	-48	0	0	0	0	-90	-88	-74	0	0	0	0	0	-94	-92	0	0	0	0	0	0
	48-X	-88	-81	-64	-50	0	0	0	0	-96	-94	-79	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-171	-159	-124	-99	-80	-65	-55	-47	-188	-183	-153	-129	-110	-94	-79	-63	-183	-196	-191	-170	-145	-127	-112	-97
120	80	-207	-193	-151	-124	-105	-89	-75	-65	-228	-222	-186	-157	-136	-120	-107	-92	-252	-238	-232	-206	-177	-155	-137	-124
	44-X	-86	-83	-67	0	0	0	0	0	-94	-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	-92	-89	-71	0	0	0	0	0	-100	-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-179	-173	-138	-114	-94	-78	-66	-57	-194	-190	-167	-143	-125	-108	-95	-82	-219	-198	-183	-159	-141	-126	-112	-100
	80	-218	-210	-168	-140	-120	-105	-90	-78	-236	-231	-203	-174	-152	-135	-121	-107	-245	-240	-223	-193	-171	-153	-139	-127
130	44-X	-90	-87	-73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	-96	-93	-78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-187	-182	-151	-128	-107	-92	-77	-67	-200	-196	-180	-156	-137	-122	-107	-92	-258	-207	-203	-195	-172	-153	-138	-126
	80	-227	-221	-184	-155	-134	-118	-105	-92	-243	-238	-218	-189	-167	-149	-135	-122	-332	-251	-247	-237	-209	-186	-168	-153
	44-X	-93	-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	48-X	-99	-97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-193	-188	-163	-139	-120	-103	-90	-78	-205	-201	-191	-167	-149	-134	-120	-107	-211	-207	-203	-183	-165	-150	-137	0
	80	-234	-229	-199	-169	-148	-131	-117	-107	-249	-244	-232	-203	-181	-163	-148	-132	-252	-246	-223	-200	-182	-167	-154	0
	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
160	48-XL	-198	-194	-175	-150	-132	-115	-101	-89	-209	-206	-201	-178	-160	-145	-132	0	-214	-211	-207	-194	-176	-161	0	0
	80	-240	-235	-212	-183	-160	-143	-129	-118	-254	-250	-244	-216	-194	-176	-161	-141	-401	-260	-256	-251	-235	-213	-195	-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	-202	-198	-185	-161	-142	-126	-112	-100	-212	-209	-205	-188	-170	-155	0	-217	-214	-210	-203	-185	0	0	0	
170	80	-246	-241	-225	-195	-173	-155	-141	-129	-258	-254	-249	-229	-206	-188	-173	-143	-264	-260	-256	-247	-225	-207	-192	-179
	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	-206	-202	-194	-170	-152	-137	-122	-110	-215	-212	-208	-197	-179	-164	0	-219	-217	-213	-210	0	0	0	0	
	80	-250	-246	-236	-207	-185	-166	-152	-139	-261	-258	-253	-240	-218	-200	-188	-173	-466	-267	-264	-259	-255	-236	-219	-203
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	-206	-202	-194	-170	-152	-137	-122	-110	-215	-212	-208	-197	-179	-164	0	-219	-217	-213	-210	0	0	0	0	
	80	-250	-246	-236	-207	-185	-166	-152	-139	-261	-258	-253	-240	-218	-200	-188	-173	-466	-267	-264	-259	-255	-236	-219	-203

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



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" 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	55	48	37	28	0	0	0	0	42	40	32	0	0	0	0	0	36	35	29	0	0	0	0	0	0
		58	50	38	29	0	0	0	0	44	42	33	0	0	0	0	0	38	37	30	0	0	0	0	0	0
		120	104	77	59	45	37	31	27	92	87	69	55	45	37	31	27	79	76	63	53	44	37	31	27	
		80	131	114	87	70	59	51	44	38	101	96	76	63	53	47	41	37	86	84	69	58	50	44	39	35
		46	43	33	27	0	0	0	0	35	34	29	0	0	0	0	0	30	29	0	0	0	0	0	0	0
100	48-X	49	45	35	28	0	0	0	0	37	36	30	0	0	0	0	0	32	31	0	0	0	0	0	0	0
		101	93	72	56	45	37	31	27	77	75	62	52	43	37	31	27	65	64	56	48	42	36	31	27	
		80	111	102	80	65	56	48	43	38	84	82	68	57	50	44	39	35	72	70	62	53	46	41	37	33
		40	38	31	0	0	0	0	0	30	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		42	40	32	0	0	0	0	0	32	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	48-XL	87	84	67	54	44	37	31	27	65	64	56	48	41	35	31	27	55	54	50	44	39	34	30	27	
		80	95	91	73	61	52	46	41	37	72	70	62	53	46	41	37	33	61	59	55	48	42	38	34	31
		34	33	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		36	35	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		75	73	61	51	42	36	31	27	56	55	51	44	39	34	30	27	47	46	45	40	35	32	29	0	
120	80	82	80	67	57	49	43	39	35	61	60	56	48	43	38	35	32	52	51	49	43	39	35	32	29	
		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
		31	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		65	64	56	48	40	35	31	27	49	48	46	40	36	32	29	26	41	40	39	36	33	30	0	0	
		71	70	61	52	46	41	37	33	53	52	50	44	39	36	32	30	45	44	43	39	36	32	30	28	
130	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		57	56	51	44	39	34	30	27	42	42	41	37	33	30	27	0	36	35	34	33	30	0	0	0	
		62	61	56	49	43	38	35	32	46	46	45	40	36	33	30	28	39	38	36	33	30	28	26	26	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		50	50	47	41	37	32	29	26	37	37	36	34	31	28	0	0	31	31	30	30	0	0	0	0	0
140	80	55	54	52	45	40	36	33	30	41	40	37	34	31	28	26	34	34	33	33	30	28	26	26	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		45	44	43	38	34	31	27	0	33	33	32	31	29	0	0	0	0	0	0	0	0	0	0	0	0
		49	48	47	42	38	34	31	29	36	36	35	34	31	29	27	25	30	30	30	29	28	26	26	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	48-XL	40	39	36	32	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	49	48	47	42	38	34	31	29	36	36	35	34	31	29	27	25	30	30	30	29	28	26	26	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		44	43	42	39	35	32	30	27	32	32	31	29	27	25	0	27	27	26	26	26	26	26	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	48-XL	80	44	43	42	39	35	32	30	27	32	32	31	29	27	25	0	27	27	26	26	26	26	0	0	
		0	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	35	33	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		39	39	38	36	33	30	28	26	29	29	28	28	27	25	0	0	0	0	0	0	0	0	0	0	0
		80	39	39	38	36	33	30	28	26	29	29	28	28	27	25	0	0	0	0	0	0	0	0	0	0
180	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	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



K2 Systems, LLC
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Standard size 43.2"x 80" 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	53	46	35	28	0	0	0	0	41	39	31	0	0	0	0	0	35	34	28	0	0	0	0	0	0	
		57	50	38	29	0	0	0	0	44	42	33	0	0	0	0	0	37	36	30	0	0	0	0	0	0	
		114	99	76	59	46	37	31	27	88	83	66	55	46	37	31	27	75	73	60	50	44	37	31	27	27	
		80	135	118	90	73	61	50	42	36	104	99	78	65	55	48	42	36	89	86	71	60	52	45	41	36	
	48-X	45	41	32	26	0	0	0	0	34	33	28	0	0	0	0	0	29	28	0	0	0	0	0	0	0	0
		48	44	35	28	0	0	0	0	37	36	30	0	0	0	0	0	31	31	0	0	0	0	0	0	0	0
100	48-XL	96	89	69	57	46	37	31	27	73	71	59	50	43	37	31	27	62	61	54	46	40	36	31	27	27	
		80	114	106	82	68	57	50	42	36	87	85	70	59	51	45	40	36	74	72	64	54	48	42	38	35	35
		44-X	38	37	30	0	0	0	0	29	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		48-X	41	40	32	0	0	0	0	31	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	82	80	64	53	45	37	31	27	62	61	54	46	40	36	31	27	53	52	48	42	37	33	30	27	27	
		80	98	94	75	63	54	47	42	36	74	72	64	54	48	42	38	34	63	61	57	49	44	39	35	32	32
110	44-X	33	32	27	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	29	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	71	69	58	49	43	37	31	27	53	52	48	42	37	33	30	27	45	44	43	38	34	31	28	0	0
		80	84	82	69	58	51	45	40	36	63	62	57	50	44	39	36	33	53	53	51	45	40	36	33	30	30
	48-X	29	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		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
120	48-XL	62	61	53	46	40	35	31	27	46	45	44	38	34	31	28	26	39	38	38	34	31	28	0	0	0	
		80	74	72	63	54	47	42	38	34	55	54	52	46	41	37	33	31	46	46	45	41	37	34	31	28	28
		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
		80	64	63	58	50	44	40	36	33	48	47	46	42	38	34	31	29	40	40	39	37	34	31	29	27	
	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	
		80	57	56	53	47	42	37	34	31	42	42	41	38	35	32	29	27	35	35	34	34	31	29	27	0	
130	48-XL	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
		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
		48-XL	54	53	49	42	37	33	30	27	40	40	39	35	32	29	26	0	34	33	33	31	28	0	0	0	
		80	64	63	58	50	44	40	36	33	48	47	46	42	38	34	31	29	40	40	39	37	34	31	29	27	
	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	
		80	57	56	53	47	42	37	34	31	42	42	41	38	35	32	29	27	35	35	34	34	31	29	27	0	
140	48-XL	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
		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
		48-XL	54	53	49	42	37	33	30	27	40	40	39	35	32	29	26	0	34	33	33	31	28	0	0	0	
		80	64	63	58	50	44	40	36	33	48	47	46	42	38	34	31	29	40	40	39	37	34	31	29	27	
	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	
		80	57	56	53	47	42	37	34	31	42	42	41	38	35	32	29	27	35	35	34	34	31	29	27	0	
150	48-XL	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
		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
		48-XL	48	47	45	39	35	32	29	26	36	35	34	32	29	27	0	0	30	29	29	28	0	0	0	0	0
		80	57	56	53	47	42	37	34	31	42	42	41	38	35	32	29	27	35	35	34	34	31	29	27	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	
		80	51	50	49	43	39	35	32	30	37	37	36	35	32	30	28	26	31	31	30	29	27	0	0	0	
160	48-XL	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
		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
		48-XL	43	42	41	37	33	30	27	0	32	31	30	27	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	51	50	49	43	39	35	32	30	37	37	36	35	32	30	28	26	31	31	30	29	27	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	
		80	45	44	40	36	33	31	28	33	33	32	30	28	26	0	28	28	27	27	26	0	0	0	0	0	
170	48-XL	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
		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
		48-XL	38	38	37	34	31	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	45	44	40	36	33	31	28	33	33	32	30	28	26	0	28	28	27	27	26	0	0	0	0	0	
	48-X																										



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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	117	127	138	140	0	0	0	0	0	118	121	132	0	0	0	0	0	118	118	127	0	0	0	0	0
	48-X	124	134	143	143	0	0	0	0	0	124	128	139	0	0	0	0	0	125	124	133	0	0	0	0	0
	48-XL	256	277	291	292	292	292	292	292	292	257	264	287	291	292	292	293	292	258	257	276	292	291	292	292	292
	80	280	303	329	348	380	403	414	414	414	281	289	314	330	345	371	391	407	282	281	302	319	332	350	371	388
	44-X	118	125	135	140	0	0	0	0	0	118	117	128	0	0	0	0	0	119	116	0	0	0	0	0	0
	48-X	124	131	142	142	0	0	0	0	0	125	124	135	0	0	0	0	0	125	122	0	0	0	0	0	0
100	48-XL	257	272	292	291	292	292	292	292	292	258	256	280	292	408	292	293	292	258	252	269	284	291	291	292	292
	80	281	297	322	338	358	383	402	414	414	282	280	306	322	469	347	369	386	283	276	294	311	323	333	347	366
	44-X	118	122	132	0	0	0	0	0	0	119	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	124	129	139	0	0	0	0	0	0	125	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	257	266	288	292	291	292	292	292	292	258	252	273	288	387	291	293	292	259	254	262	277	288	291	291	292
	80	282	292	315	331	342	363	383	400	400	283	276	299	315	434	336	347	365	283	278	287	303	315	325	333	343
110	44-X	118	117	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	125	123	137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	258	254	283	292	291	291	292	292	292	259	254	268	282	367	292	291	292	259	255	261	270	281	290	291	0
	80	282	278	309	325	336	345	365	382	382	283	278	293	308	402	330	337	345	284	279	286	296	308	318	326	333
	44-X	119	116	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	125	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	48-XL	258	253	278	292	292	291	291	292	292	259	255	263	276	340	292	292	291	260	256	254	264	275	284	0	0
	80	283	276	304	319	330	339	347	365	365	284	279	287	302	372	323	331	337	284	280	278	289	301	311	319	326
	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
	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
	48-XL	259	254	273	287	292	292	291	291	291	260	256	256	271	314	290	292	0	260	257	252	261	270	0	0	0
	80	283	277	299	314	325	334	341	348	348	284	280	280	297	344	317	325	331	284	281	275	286	295	304	312	319
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
	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
	48-XL	259	253	278	292	292	291	291	292	292	259	255	263	276	340	292	292	291	260	256	254	264	275	284	0	0
	80	283	276	304	319	330	339	347	365	365	284	279	287	302	372	323	331	337	284	280	278	289	301	311	319	326
	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
	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
140	48-XL	259	254	273	287	292	292	291	291	291	260	256	256	271	314	290	292	0	260	257	252	261	270	0	0	0
	80	283	277	299	314	325	334	341	348	348	284	280	280	297	344	317	325	331	284	281	275	286	295	304	312	319
	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
	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
	48-XL	259	255	269	282	292	292	291	291	291	260	256	251	267	291	285	0	0	260	257	253	261	0	0	0	0
	80	284	278	294	309	320	329	336	342	342	284	281	275	292	318	312	319	326	285	281	277	285	289	299	306	0
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
	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
	48-XL	259	255	269	282	292	292	291	291	291	260	256	251	267	291	285	0	0	260	257	253	261	0	0	0	0
	80	284	278	294	309	320	329	336	342	342	284	281	275	292	318	312	319	326	285	281	277	285	289	299	306	0
	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
	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
160	48-XL	260	255	263	278	288	292	292	0	0	260	257	252	262	272	0	0	0	0	0	0	0	0	0	0	0
	80	284	279	288	304	315	324	331	337	0	285	281	276	287	298	306	314	321	285	282	278	277	286	293	0	0
	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
	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
	48-XL	260	256	254	274	284	292	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	284	280	278	300	310	319	326	333	0	285	282	277	281	293	302	309	0	285	283	279	275	286	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
	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
	48-XL	260	257	252	270	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	284	28																							



K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 43.2" x 80" **Landscape Orientation**

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

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 43.2"x 80" 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
90	44-X	43	38	29	22	0	0	0	0	46	44	35	23	0	0	0	0	54	47	38	28	0	0	0	0
	48-X	45	40	30	23	0	0	0	0	49	46	37	24	0	0	0	0	57	50	40	29	0	0	0	0
	48-XL	94	82	61	46	36	29	24	21	101	95	76	60	49	40	34	29	118	103	83	70	58	48	41	35
	80	103	90	69	55	46	40	35	30	110	104	83	68	58	51	45	41	129	113	91	77	66	58	52	47
	44-X	45	42	33	26	0	0	0	0	48	46	39	27	0	0	0	0	57	52	41	33	0	0	0	0
	48-X	48	44	34	27	0	0	0	0	50	49	41	28	0	0	0	0	60	55	43	34	0	0	0	0
100	48-XL	98	91	70	55	44	36	30	26	104	101	84	70	58	50	42	36	124	114	92	78	68	58	50	43
	80	108	99	78	64	54	47	41	37	114	111	92	77	67	59	53	48	135	125	100	86	75	67	60	54
	44-X	47	45	36	0	0	0	0	0	49	48	38	0	0	0	0	0	59	57	45	0	0	0	0	0
	48-X	49	47	38	0	0	0	0	0	52	50	39	0	0	0	0	0	62	60	48	0	0	0	0	0
	48-XL	102	98	79	63	52	43	36	31	107	104	92	79	67	58	51	43	128	124	99	86	76	67	59	53
	80	111	108	86	72	61	54	48	43	117	114	100	86	75	67	60	54	140	135	109	94	83	75	68	62
110	44-X	48	47	39	0	0	0	0	0	50	49	41	0	0	0	0	0	60	59	49	0	0	0	0	0
	48-X	51	49	41	0	0	0	0	0	53	51	43	0	0	0	0	0	64	62	52	0	0	0	0	0
	48-XL	105	102	86	71	59	51	43	37	109	107	99	86	75	65	58	52	131	128	108	93	83	75	67	47
	80	114	111	94	79	69	60	54	49	119	117	108	94	83	74	67	61	144	140	118	102	91	82	75	69
	44-X	49	48	0	0	0	0	0	0	51	50	0	0	0	0	0	0	62	60	0	0	0	0	0	0
	48-X	52	50	0	0	0	0	0	0	54	52	0	0	0	0	0	0	65	63	0	0	0	0	0	0
120	48-XL	107	104	92	79	67	57	51	44	111	109	105	92	82	73	65	59	134	131	116	99	90	82	64	55
	80	117	114	101	86	75	67	60	55	122	119	115	101	90	81	74	68	147	144	127	109	98	89	82	76
	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	109	107	98	85	74	64	57	51	113	111	108	98	88	80	72	53	137	134	123	107	96	80	71	64
	80	119	117	107	93	82	73	66	60	124	121	118	107	96	88	80	74	150	147	135	117	105	96	89	82
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
	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	107	104	92	79	67	57	51	44	111	109	105	92	82	73	65	59	134	131	116	99	90	82	64	55
	80	117	114	101	86	75	67	60	55	122	119	115	101	90	81	74	68	147	144	127	109	98	89	82	76
	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
140	48-XL	109	107	98	85	74	64	57	51	113	111	108	98	88	80	72	53	137	134	123	107	96	80	71	64
	80	119	117	107	93	82	73	66	60	124	121	118	107	96	88	80	74	150	147	135	117	105	96	89	82
	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	110	108	103	90	80	70	62	56	115	113	110	103	94	86	65	58	139	136	130	114	101	88	79	71
	80	121	118	113	99	88	79	72	66	126	123	120	113	102	94	86	80	152	149	142	124	111	102	95	83
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
	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	110	108	103	90	80	70	62	56	115	113	110	103	94	86	65	58	139	136	130	114	101	88	79	71
	80	121	118	113	99	88	79	72	66	126	123	120	113	102	94	86	80	152	149	142	124	111	102	95	83
	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
160	48-XL	112	110	107	95	86	77	68	0	116	114	112	108	99	80	71	0	140	138	135	120	108	96	86	0
	80	122	120	117	104	94	85	78	72	127	125	122	118	108	99	92	86	153	151	147	131	118	108	98	90
	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	113	111	109	100	90	83	0	0	117	116	113	104	94	86	0	0	142	140	137	126	114	104	0	0
	80	123	122	119	110	99	90	83	77	128	126	124	121	113	105	97	80	155	153	150	138	124	113	104	96
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	113	111	109	100	90	83	0	0	117	116	113	104	94	86	0	0	142	140	137	126	114	104	0	0
	80	123	122	119	110	99	90	83	77	128	126	124	121	113	105	97	80	155	153	150	138	124	113	104	96
	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
180	48-XL	114	112	110	105	9																			



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" 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	70	
90	44-X	42	36	28	22	0	0	0	0	45	42	33	23	0	0	0	0	52	46	37	27	0	0	0	0	0	
		45	39	30	23	0	0	0	0	48	45	36	24	0	0	0	0	56	49	40	29	0	0	0	0	0	
		90	78	60	47	36	29	25	21	96	91	72	60	50	40	34	29	113	98	79	67	58	49	41	35		
		80	106	93	71	57	48	40	33	29	114	108	85	71	60	53	46	40	134	117	94	79	68	60	54	48	
		100	44	40	31	26	0	0	0	0	46	45	37	27	0	0	0	0	55	51	39	32	0	0	0	0	0
100	48-X	44	48	44	34	27	0	0	0	0	50	49	41	28	0	0	0	0	60	55	43	34	0	0	0	0	0
		48-XL	94	86	68	55	44	36	30	26	99	96	80	67	58	50	42	36	118	109	87	75	65	58	51	44	
		80	111	103	80	66	56	48	41	35	118	114	95	80	69	61	54	49	140	129	104	89	77	69	62	56	
		44-X	45	44	35	0	0	0	0	0	47	46	36	0	0	0	0	57	55	44	0	0	0	0	0	0	
		48-X	49	47	37	0	0	0	0	0	51	50	39	0	0	0	0	61	59	47	0	0	0	0	0	0	
110	48-XL	97	94	75	62	53	44	37	32	102	99	87	75	65	58	51	44	122	118	94	82	73	65	59	53		
		80	115	111	89	74	63	55	49	43	121	118	104	89	78	69	62	56	145	140	112	97	86	77	70	64	
		44-X	46	45	38	0	0	0	0	0	48	47	39	0	0	0	0	58	57	48	0	0	0	0	0	0	
		48-X	50	49	41	0	0	0	0	0	52	51	42	0	0	0	0	63	61	51	0	0	0	0	0	0	
		48-XL	100	97	82	69	60	51	44	38	104	102	94	81	72	64	58	52	125	122	102	89	79	72	65	47	
120	80	118	115	97	82	71	62	56	51	123	121	111	97	85	76	69	63	149	145	122	105	94	85	78	71		
		44-X	47	46	0	0	0	0	0	49	48	0	0	0	0	0	0	60	58	0	0	0	0	0	0	0	
		48-X	51	50	0	0	0	0	0	53	52	0	0	0	0	0	0	64	63	0	0	0	0	0	0	0	
		48-XL	102	99	88	75	66	58	51	44	106	104	100	88	78	71	64	59	128	125	110	95	85	78	64	55	
		80	121	118	104	89	78	69	62	57	126	123	118	104	93	84	76	70	152	148	131	112	101	92	85	78	
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	
		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	104	101	93	81	71	64	57	51	108	106	103	93	84	76	70	53	130	128	117	102	91	80	72	64	
		80	123	120	111	96	85	76	68	63	128	125	122	111	100	90	83	77	155	151	139	121	108	99	92	85	
		105	103	98	86	77	69	63	57	109	107	104	98	89	82	65	59	132	130	124	108	96	87	79	71		
150	80	125	122	117	102	91	82	74	68	130	127	124	117	106	97	89	83	157	154	147	128	114	105	98	86		
		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	106	105	102	91	82	74	68	0	111	109	106	103	94	77	70	0	134	131	128	114	102	93	85	0	
		80	126	124	121	108	97	88	80	74	131	129	126	122	111	103	95	89	159	156	152	136	122	111	101	93	
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	
		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	106	105	102	91	82	74	68	0	111	109	106	103	94	77	70	0	134	131	128	114	102	93	85	0	
		80	126	124	121	108	97	88	80	74	131	129	126	122	111	103	95	89	159	156	152	136	122	111	101	93	
		107	106	104	95	86	79	0	0	112	110	108	99	90	82	0	0	135	133	130	120	108	99	0	0		
170	80	127	126	123	113	102	93	86	79	133	131	128	125	117	108	101	82	160	158	155	142	129	117	108	100		
		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	108	107	105	100	91	0	0	0	113	111	109	104	94	0	0	0	136	134	132	125	114	0	0	0	
		80	128	127	124	118	107	99	91	84	134	132	129	126	122	113	95	88	162	159	156	149	135	124	114	106	

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 43.2"x 80" 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	70	
90	44-X	-78	-68	-52	-40	0	0	0	0	-88	-83	-66	0	0	0	0	0	-92	-90	-74	0	0	0	0	0	0	
		-82	-72	-54	-41	0	0	0	0	-92	-87	-69	0	0	0	0	0	-97	-95	-78	0	0	0	0	0	0	
		-170	-148	-109	-84	-64	-52	-44	-38	-191	-181	-143	-115	-94	-76	-64	-55	-201	-196	-161	-136	-112	-94	-79	-68		
		80	-186	-162	-123	-100	-84	-72	-62	-54	-209	-198	-157	-130	-111	-97	-86	-77	-220	-214	-177	-149	-128	-113	-101	-91	
		-84	-78	-61	-49	0	0	0	0	-93	-90	-75	0	0	0	0	0	-97	-95	0	0	0	0	0	0	0	0
100	48-X	-82	-82	-64	-50	0	0	0	0	-98	-95	-79	0	0	0	0	0	-102	-100	0	0	0	0	0	0	0	0
		-184	-169	-131	-102	-82	-67	-56	-48	-202	-197	-164	-136	-113	-96	-81	-78	-211	-206	-181	-155	-134	-115	-100	-86		
		80	-201	-185	-145	-119	-101	-87	-77	-69	-221	-215	-179	-151	-130	-115	-102	-248	-231	-226	-199	-170	-148	-132	-119	-108	
		-90	-86	-69	0	0	0	0	0	-97	-95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-94	-91	-73	0	0	0	0	0	-102	-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	48-XL	-195	-188	-150	-121	-100	-83	-70	-60	-211	-206	-182	-155	-132	-114	-100	-232	-219	-215	-199	-173	-153	-134	-119	-106		
		80	-213	-206	-165	-137	-118	-103	-91	-82	-231	-226	-199	-170	-149	-132	-119	-291	-240	-235	-218	-189	-167	-150	-136	-124	
		-94	-91	-77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-99	-96	-81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-204	-199	-167	-139	-116	-99	-84	-73	-219	-214	-198	-172	-151	-131	-116	-281	-225	-221	-215	-189	-169	-153	-136	0		
120	48-XL	80	-223	-218	-183	-154	-134	-118	-105	-95	-239	-234	-216	-188	-166	-148	-134	-332	-247	-242	-235	-207	-185	-167	-152	-140	
		-97	-95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-102	-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-212	-207	-182	-156	-132	-114	-100	-87	-224	-220	-212	-186	-166	-148	-132	-321	-230	-227	-222	-203	-184	-167	0	0	0	
		80	-232	-226	-199	-171	-149	-133	-119	-108	-245	-241	-232	-204	-182	-164	-150	-372	-252	-248	-243	-223	-201	-183	-168	-155	
130	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-218	-213	-196	-170	-147	-128	-113	-101	-229	-226	-221	-200	-180	-163	-147	0	-234	-231	-227	-216	-197	0	0	0	0	0
		80	-238	-233	-214	-186	-164	-147	-133	-121	-251	-247	-241	-219	-197	-179	-164	-411	-256	-253	-248	-237	-215	-198	-183	-170	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-223	-219	-209	-183	-162	-142	-126	-114	-233	-230	-225	-212	-192	-176	0	0	-238	-235	-231	-227	0	0	0	0	0	0
		80	-244	-239	-228	-200	-178	-160	-146	-134	-255	-251	-246	-232	-210	-193	-178	-448	-260	-257	-253	-249	-229	-211	-196	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-227	-224	-218	-194	-174	-156	-139	0	-236	-233	-229	-223	-204	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-249	-245	-239	-213	-191	-173	-158	-146	-259	-255	-251	-244	-223	-205	-190	-483	-263	-260	-257	-253	-241	-224	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-231	-228	-223	-205	-185	-169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-253	-249	-244	-225	-203	-185	-170	-157	-262	-259	-255	-251	-234	-217	-202	0	-266	-263	-260	-256	-252	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-234	-231	-226	-215	-196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	-256	-253	-248	-235	-214	-196	-181	-168	-264	-262	-258	-254	-245	-228	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



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
 Standard size 43.2"x 80" 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	-75	-66	-50	-39	0	0	0	0	-85	-80	-64	0	0	0	0	0	-89	-87	-72	0	0	0	0	0	0	
		-81	-71	-54	-41	0	0	0	0	-91	-86	-68	0	0	0	0	0	-96	-93	-77	0	0	0	0	0	0	
		-162	-141	-107	-84	-65	-52	-44	-38	-182	-172	-137	-113	-94	-77	-65	-56	-192	-186	-154	-129	-112	-95	-80	-69	-69	
		80	-192	-168	-128	-103	-86	-71	-60	-52	-216	-205	-162	-134	-115	-100	-88	-76	-227	-221	-183	-153	-132	-116	-104	-93	
		-81	-75	-59	-48	0	0	0	0	-90	-87	-72	0	0	0	0	0	-94	-91	0	0	0	0	0	0	0	0
100	48-X	-88	-81	-63	-50	0	0	0	0	-96	-94	-78	0	0	0	0	0	-101	-98	0	0	0	0	0	0	0	0
		-175	-161	-126	-103	-83	-67	-56	-49	-193	-187	-156	-131	-113	-97	-82	-189	-201	-197	-173	-148	-129	-115	-100	-87	-87	
		80	-208	-192	-150	-123	-104	-90	-77	-66	-229	-223	-185	-156	-135	-118	-106	-257	-239	-233	-205	-176	-153	-136	-122	-111	
		-86	-83	-67	0	0	0	0	0	-94	-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-93	-90	-72	0	0	0	0	0	-101	-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	48-XL	-186	-179	-143	-119	-101	-83	-70	-61	-201	-197	-173	-148	-129	-115	-101	-234	-209	-205	-190	-165	-146	-131	-118	-106	-106	
		80	-220	-213	-170	-142	-121	-106	-94	-82	-239	-233	-205	-176	-153	-136	-123	-300	-248	-243	-225	-196	-173	-155	-140	-128	-128
		-90	-88	-74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-97	-95	-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-194	-189	-159	-134	-116	-100	-85	-73	-208	-204	-188	-163	-144	-129	-117	-283	-215	-211	-204	-180	-161	-145	-133	0	0	
120	48-XL	80	-231	-225	-189	-160	-138	-122	-109	-99	-247	-242	-224	-194	-171	-153	-139	-343	-255	-250	-243	-214	-191	-173	-157	-145	-145
		-94	-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-101	-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-202	-197	-174	-149	-130	-115	-101	-87	-214	-210	-202	-178	-158	-143	-130	-324	-219	-216	-211	-194	-175	-159	0	0	0	
		80	-239	-234	-206	-176	-154	-137	-123	-112	-254	-249	-240	-211	-188	-170	-155	-385	-260	-257	-251	-230	-207	-189	-174	-160	-160
130	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-207	-203	-187	-162	-143	-128	-114	-102	-218	-215	-210	-190	-171	-156	-143	0	-223	-220	-216	-206	-188	0	0	0	0	0
		80	-246	-241	-222	-192	-169	-152	-137	-125	-259	-255	-249	-226	-203	-185	-169	-425	-265	-262	-257	-245	-223	-204	-189	-175	-175
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-212	-208	-199	-174	-155	-139	-127	-114	-222	-219	-215	-202	-183	-168	0	0	-226	-224	-220	-216	0	0	0	0	0	0
		80	-252	-247	-236	-206	-184	-165	-150	-138	-263	-260	-255	-240	-217	-199	-183	-463	-269	-266	-261	-257	-236	-218	-203	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-216	-213	-208	-185	-166	-150	-138	0	-225	-222	-218	-212	-194	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-257	-253	-247	-220	-197	-179	-163	-150	-267	-264	-259	-252	-230	-212	-197	-499	-272	-269	-265	-261	-249	-231	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-220	-217	-212	-195	-177	-161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-261	-257	-252	-232	-210	-191	-176	-162	-270	-267	-263	-259	-242	-224	-209	0	-275	-272	-268	-265	-260	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-223	-220	-216	-205	-186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	-265	-261	-256	-243	-221	-203	-187	-174	-273	-270	-266	-263	-253	-236	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 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 43.2"x 80" 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	51	46	36	28	0	0	0	0	39	38	31	0	0	0	0	0	33	32	0	0	0	0	0	0	0
	48-X	52	47	37	28	0	0	0	0	39	38	31	0	0	0	0	0	34	33	0	0	0	0	0	0	0
	48-XL	100	91	71	58	47	38	32	28	76	74	61	51	44	38	32	28	65	63	55	47	41	36	32	28	
	80	116	106	82	67	57	49	43	37	89	86	71	59	51	45	40	36	75	74	64	54	47	42	38	34	
	44-X	43	41	33	0	0	0	0	0	32	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	43	42	33	0	0	0	0	0	33	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	48-XL	84	81	64	53	46	38	32	28	64	62	54	46	40	36	32	28	54	53	49	42	37	33	30	28	
	80	98	94	75	62	53	47	41	37	74	72	63	54	47	42	37	34	63	61	57	49	43	39	35	32	
	44-X	36	35	30	0	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	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	48-XL	71	70	58	49	43	38	32	28	54	53	49	42	37	33	30	27	45	44	43	38	34	31	28	0	
	80	83	81	68	57	50	44	39	35	62	61	56	49	43	39	35	32	53	52	50	44	39	36	32	30	
	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
	48-X	32	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	48-XL	61	60	53	45	40	35	32	28	46	45	44	38	34	31	28	26	39	38	37	34	31	28	0	0	
	80	72	70	62	53	46	41	37	34	53	53	51	45	40	36	33	30	45	44	43	40	36	33	30	28	
	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
	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
130	48-XL	53	52	48	42	37	33	30	27	40	39	38	35	31	29	26	0	33	33	32	31	28	0	0	0	
	80	62	61	56	49	43	39	35	32	46	45	44	41	37	33	30	28	39	38	38	36	33	30	28	26	
	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
	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
140	48-XL	47	46	44	39	34	31	28	26	35	34	33	32	29	26	0	29	29	28	28	0	0	0	0	0	
	80	54	53	51	45	40	36	33	30	40	40	39	37	34	31	28	26	34	33	33	32	30	28	26	0	
	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
	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
150	48-XL	41	41	40	36	32	29	27	0	30	30	30	29	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	48	47	46	42	37	34	31	29	35	35	34	31	29	26	25	30	29	29	28	27	25	0	0	0	
	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
	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
160	48-XL	37	36	35	33	30	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	43	42	41	38	35	32	29	27	31	31	31	30	28	26	0	0	0	0	0	0	0	0	0	0	
	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
	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
170	48-XL	33	32	31	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	38	38	37	36	32	30	28	26	28	28	27	27	26	0	0	0	0	0	0	0	0	0	0	0	0
	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
	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
180	48-XL	29	29	29	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	34	34	33	33	30	28	26	0	0	0	0	0	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



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" 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	49	44	34	27	0	0	0	0	37	36	30	0	0	0	0	0	31	31	0	0	0	0	0	0	0
	48-X	50	46	35	28	0	0	0	0	38	37	30	0	0	0	0	0	32	32	0	0	0	0	0	0	0
	48-XL	100	91	71	56	45	36	30	26	76	74	61	51	43	36	31	26	65	63	55	47	41	36	30	26	
	80	114	105	82	67	57	49	43	39	87	84	70	59	51	45	40	36	74	72	63	54	47	42	38	34	
	44-X	41	39	31	0	0	0	0	0	31	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	42	40	32	0	0	0	0	0	32	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	48-XL	84	81	64	53	44	36	30	26	64	62	54	46	40	35	31	26	54	53	49	42	37	33	30	26	
	80	96	93	74	62	53	46	41	37	72	71	62	53	47	41	37	34	61	60	56	48	43	38	35	32	
	44-X	35	34	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	36	35	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	48-XL	71	70	58	49	42	36	30	26	54	53	49	42	37	33	29	26	45	44	43	38	34	31	28	0	
	80	82	80	67	57	49	44	39	35	61	60	56	48	43	38	35	32	52	51	49	44	39	35	32	30	
	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
	48-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
120	48-XL	61	60	53	45	40	34	30	26	46	45	44	38	34	31	28	25	39	38	37	34	31	28	0	0	
	80	70	69	61	52	46	41	37	33	52	51	50	44	39	35	32	30	44	43	42	39	35	32	30	28	
	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
	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
130	48-XL	53	52	48	42	37	33	29	26	40	39	38	35	31	29	26	0	33	33	32	31	28	0	0	0	
	80	61	60	56	48	43	38	35	32	45	44	43	40	36	33	30	28	38	37	37	35	32	30	28	26	
	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
	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
140	48-XL	47	46	44	39	34	31	28	25	35	34	33	32	29	26	0	29	29	28	28	0	0	0	0	0	
	80	53	52	51	44	40	36	33	30	39	39	38	36	33	30	28	26	33	33	32	32	29	27	25	24	
	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
	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
150	48-XL	41	41	40	36	32	29	27	0	30	30	30	29	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	47	46	45	41	37	34	31	28	35	34	33	30	28	26	24	29	29	28	28	27	25	24	22	0	
	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
	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
160	48-XL	37	36	35	33	30	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	42	41	40	38	34	31	29	27	31	30	30	29	28	26	24	23	26	25	25	25	24	23	0	0	
	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
	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
170	48-XL	33	32	31	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	37	37	36	35	32	29	27	25	27	27	27	26	26	24	23	0	0	0	0	0	0	0	0	0	
	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
	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
180	48-XL	29	29	29	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	33	33	33	32	30	28	26	24	24	24	24	23	22	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 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 43.2"x 80" Landscape Orientation

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

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



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" 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	124	132	143	142	0	0	0	0	0	125	125	136	0	0	0	0	0	125	122	0	0	0	0	0	0
	48-X	122	130	141	143	0	0	0	0	0	123	123	134	0	0	0	0	0	123	120	0	0	0	0	0	0
	48-XL	244	260	281	287	287	287	287	287	287	245	246	268	282	287	287	289	287	246	240	257	272	283	286	287	287
	80	296	314	340	357	379	405	426	441	297	296	323	340	353	368	390	408	298	291	310	328	341	351	368	387	
	44-X	119	124	134	0	0	0	0	0	0	120	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	123	127	138	0	0	0	0	0	0	123	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	48-XL	245	254	275	287	286	287	287	287	287	246	240	261	275	440	287	289	287	247	242	250	264	275	284	287	287
	80	297	307	332	349	361	382	404	421	298	291	315	332	455	354	365	384	298	293	302	319	332	342	351	361	
	44-X	119	118	131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	123	121	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	246	243	269	283	287	286	287	287	287	247	242	255	269	405	287	287	287	247	243	249	258	268	277	284	0
	80	297	292	325	342	354	363	382	400	298	293	308	324	418	346	354	361	299	294	301	311	323	334	342	349	
110	44-X	120	117	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	123	120	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	246	243	269	283	287	286	287	287	287	247	242	255	269	405	287	287	287	247	243	249	258	268	277	284	0
	80	297	292	325	342	354	363	382	400	298	293	308	324	418	346	354	361	299	294	301	311	323	334	342	349	
	44-X	120	117	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	123	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	48-XL	246	241	264	277	287	287	286	287	247	243	250	263	372	281	287	287	247	244	242	252	262	270	0	0	0
	80	298	291	319	335	347	356	364	380	299	294	302	317	384	339	347	354	299	295	291	303	316	326	334	342	
	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
	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
	48-XL	247	242	259	272	282	287	287	286	247	244	243	258	342	275	282	0	248	245	240	249	256	0	0	0	0
	80	298	293	313	329	341	350	358	364	299	295	293	311	352	332	340	347	300	296	291	301	309	319	327	334	
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
	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
	48-XL	247	242	259	272	282	287	287	286	247	244	243	258	342	275	282	0	248	245	240	249	256	0	0	0	0
	80	298	293	313	329	341	350	358	364	299	295	293	311	352	332	340	347	300	296	291	301	309	319	327	334	
	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
	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
140	48-XL	247	243	255	268	277	285	287	287	248	244	240	253	314	270	0	0	248	245	241	247	0	0	0	0	
	80	299	294	308	323	335	344	352	359	300	296	290	305	323	326	334	341	300	297	292	297	303	312	320	327	
	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
	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
	48-XL	247	243	248	263	273	280	287	0	248	245	241	249	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	299	295	298	318	329	339	346	353	300	297	292	300	311	320	328	335	300	297	293	289	301	306	314	321	
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
	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
	48-XL	247	243	248	263	273	280	287	0	248	245	241	249	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	299	295	298	318	329	339	346	353	300	297	292	300	311	320	328	335	300	297	293	289	301	306	314	321	
	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
	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
160	48-XL	247	244	239	259	269	276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	300	295	290	313	324	333	341	348	300	297	293	292	306	315	322	329	300	298	294	291	298	301	0	0	
	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
	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
	48-XL	248	245	240	256	265	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	300	296	291	309	320	329	336	343	300	298	294	290	301	310	317	0	0	0	0	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
	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
	48-XL	248	245	241	251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	80	300	297	292	302	315	324	332	338	301	298	295	291	295	0	0	0	0	0	0	0	0	0	0	0	0
180	44-X	0																								



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" 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	70	
90	44-X	47	43	33	26	0	0	0	0	50	49	40	27	0	0	0	0	59	54	42	33	0	0	0	0		
		48	44	34	27	0	0	0	0	51	50	41	28	0	0	0	0	60	55	43	33	0	0	0	0		
		48-XL	93	85	66	54	44	36	30	26	98	96	78	66	57	50	42	36	117	107	86	73	64	56	50	44	
		80	108	99	77	63	53	46	40	35	115	111	91	77	66	58	52	47	136	124	100	85	74	66	59	54	
	48-XL	44-X	49	47	38	0	0	0	0	51	50	39	0	0	0	0	0	0	62	59	47	0	0	0	0	0	
		100	50	48	38	0	0	0	0	53	51	40	0	0	0	0	0	0	63	60	48	0	0	0	0	0	
100	44-X	48-X	97	93	74	62	53	44	37	32	101	99	87	74	65	57	51	44	121	117	94	81	72	64	58	53	
		48-XL	80	112	108	86	72	61	54	48	43	118	115	101	86	75	67	60	54	141	136	109	95	83	75	68	62
		48-X	51	49	41	0	0	0	0	53	51	43	0	0	0	0	0	0	64	62	52	0	0	0	0	0	
		48-XL	52	50	42	0	0	0	0	54	52	44	0	0	0	0	0	0	65	63	53	0	0	0	0	0	
	48-XL	100	97	81	69	59	52	45	39	104	102	94	81	72	64	58	53	125	122	102	89	79	71	65	49		
		80	116	113	95	80	69	61	55	49	121	118	109	95	84	75	68	62	146	142	119	103	92	83	76	70	
110	44-X	48-X	52	51	0	0	0	0	0	54	53	0	0	0	0	0	0	65	64	0	0	0	0	0	0		
		48-XL	53	52	0	0	0	0	0	55	54	0	0	0	0	0	0	66	65	0	0	0	0	0	0		
		48-XL	102	100	88	75	66	59	53	46	106	104	100	88	78	71	65	59	128	125	111	95	86	78	66	58	
		80	119	116	102	88	77	68	61	56	123	121	116	102	91	82	75	69	149	146	129	111	100	91	84	77	
	48-XL	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		
		130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
120	44-X	48-X	104	102	94	82	72	64	58	53	108	106	103	94	85	77	71	56	130	128	118	103	92	81	73	67	
		48-XL	80	121	118	109	95	84	75	68	62	126	123	120	109	99	90	82	76	152	149	138	119	107	98	91	84
		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	105	103	99	87	78	70	64	59	110	108	105	99	90	83	66	61	132	130	125	110	98	88	80	74	
	48-XL	80	123	120	116	102	90	82	74	68	128	125	122	116	105	96	89	83	154	151	145	128	114	105	97	86	
		150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
140	44-X	48-X	107	105	103	92	83	75	69	0	111	109	107	104	86	78	72	0	134	132	129	116	104	95	87	0	
		48-XL	80	124	122	119	108	97	88	80	74	129	127	124	121	111	102	95	89	156	154	150	135	122	111	101	93
		48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		160	80	125	124	121	113	102	94	86	80	130	129	126	123	116	108	90	83	158	155	152	142	129	118	108	100
	48-XL	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		
		170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
180	44-X	48-X	109	108	106	105	0	0	0	0	114	113	111	109	0	0	0	0	138	136	134	132	0	0	0	0	
		48-XL	80	127	126	124	122	113	104	97	0	133	131	129	127	117	108	101	0	160	158	156	153	142	131	122	0
		48-XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		180	80	127	126	124	122	113	104	97	0	133	131	129	127	117	108	101	0	160	158	156	153	142	131	122	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



K2 Systems, LLC

PV Tilt Up Kit Solar PV Mount System

Standard size 43.2"x 80" 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	70		
90	44-X	45	41	32	26	0	0	0	0	48	47	38	27	0	0	0	0	57	52	40	32	0	0	0	0	0		
	48-X	47	42	33	26	0	0	0	0	49	48	39	27	0	0	0	0	58	53	41	33	0	0	0	0	0		
	48-XL	93	85	66	52	42	34	28	24	98	96	78	66	56	47	39	34	117	107	86	73	64	56	48	41	41		
	80	113	104	81	66	56	49	43	39	120	116	96	81	70	62	55	50	143	131	105	90	78	70	63	57	57		
	44-X	47	45	36	0	0	0	0	0	49	48	37	0	0	0	0	0	59	57	45	0	0	0	0	0	0	0	
100	48-X	48	46	37	0	0	0	0	0	51	50	39	0	0	0	0	0	61	58	47	0	0	0	0	0	0	0	
	48-XL	97	93	74	61	50	42	35	30	101	99	87	74	65	56	49	42	121	117	94	81	72	64	57	51	51	51	
	80	117	113	91	76	65	57	50	45	123	120	106	91	79	70	63	58	148	143	115	100	88	79	72	65	65	65	
	44-X	48	47	40	0	0	0	0	0	50	49	41	0	0	0	0	0	61	59	50	0	0	0	0	0	0	0	
	48-X	50	49	41	0	0	0	0	0	52	50	42	0	0	0	0	0	63	61	51	0	0	0	0	0	0	0	
110	48-XL	100	97	81	69	58	50	42	37	104	102	94	81	72	64	57	51	125	122	102	89	79	71	65	46	46	46	
	80	121	118	100	84	73	64	58	52	126	123	115	100	88	79	72	65	152	148	126	108	97	88	80	74	74	74	
	44-X	50	48	0	0	0	0	0	0	52	50	0	0	0	0	0	0	62	61	0	0	0	0	0	0	0	0	0
	48-X	51	50	0	0	0	0	0	0	53	52	0	0	0	0	0	0	64	63	0	0	0	0	0	0	0	0	0
	48-XL	102	100	88	75	66	57	50	44	106	104	100	88	78	71	64	58	128	125	111	95	86	78	63	55	55	55	
120	80	124	121	108	92	81	72	65	59	129	126	122	108	96	87	79	73	156	152	136	116	105	96	88	82	82	82	
	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	104	102	94	82	72	64	57	51	108	106	103	94	85	77	71	53	130	128	118	103	92	80	71	64	64	64	
	80	126	123	115	100	88	79	72	66	131	129	125	115	104	94	87	80	159	156	145	126	112	103	96	89	89	89	
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
	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	104	102	94	82	72	64	57	51	108	106	103	94	85	77	71	53	130	128	118	103	92	80	71	64	64	64	
	80	126	123	115	100	88	79	72	66	131	129	125	115	104	94	87	80	159	156	145	126	112	103	96	89	89	89	
	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
140	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	105	103	99	87	78	70	63	57	110	108	105	99	90	83	65	59	132	130	125	110	98	88	79	71	71	71	
	80	128	126	121	107	95	86	78	72	133	131	127	121	110	101	94	87	161	158	153	135	120	110	103	96	96	96	
	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
150	48-XL	107	105	103	92	83	75	69	0	111	109	107	104	86	78	72	0	134	132	129	116	104	95	87	0	0	0	
	80	129	127	125	113	102	92	85	78	135	133	130	127	117	108	100	94	163	161	157	142	128	117	109	102	102	102	
	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	108	106	104	97	88	80	0	0	112	111	108	101	92	84	0	0	135	134	131	122	111	101	0	0	0	0	0
160	80	131	129	126	119	108	98	91	84	136	134	132	128	122	114	106	100	165	162	159	150	136	124	114	106	106	106	
	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	109	107	105	101	93	0	0	0	113	112	110	106	96	0	0	0	137	135	132	128	116	0	0	0	0	0	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	113	113	113	
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	109	107	105	101	93	0	0	0	114	113	111	109	0	0	0	0	0	138	136	134	132	0	0	0	0	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	120	120	120	
	48-XL	109	108	106	105	0	0	0	0	114	113	111	109	0	0	0	0	0	138	136	134	132	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.

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 43.2"x 80" 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	-88	-80	-62	-48	0	0	0	0	-97	-94	-77	0	0	0	0	0	-101	-99	0	0	0	0	0	0	0
		-89	-81	-63	-49	0	0	0	0	-99	-96	-79	0	0	0	0	0	-103	-101	0	0	0	0	0	0	0
		-172	-157	-122	-100	-82	-66	-56	-48	-191	-185	-152	-128	-110	-96	-81	-70	-199	-195	-169	-144	-126	-111	-99	-86	
		80	-201	-183	-142	-116	-99	-85	-74	-64	-222	-216	-177	-148	-128	-112	-100	-90	-232	-227	-197	-168	-146	-130	-116	-106
	48-X	-94	-90	-72	0	0	0	0	0	-102	-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-96	-92	-73	0	0	0	0	0	-104	-101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	48-XL	-185	-177	-141	-117	-101	-84	-71	-61	-200	-196	-171	-146	-127	-113	-102	-237	-208	-204	-188	-163	-144	-129	-116	-106	
		80	-215	-206	-164	-137	-117	-102	-91	-82	-233	-228	-199	-170	-148	-132	-118	-289	-242	-237	-219	-190	-167	-150	-136	-124
		-99	-96	-81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		101	-98	-82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-XL	-194	-189	-159	-134	-116	-102	-88	-76	-208	-204	-188	-163	-144	-129	-117	-288	-214	-211	-204	-180	-160	-145	-132	0	0
		80	-226	-220	-185	-156	-135	-119	-106	-96	-242	-237	-219	-190	-167	-150	-136	-335	-250	-245	-237	-209	-187	-169	-154	-141
110	44-X	-102	-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-105	-102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-202	-197	-174	-149	-131	-116	-104	-92	-214	-210	-203	-178	-159	-144	-131	-326	-220	-216	-212	-195	-176	-160	0	0	0
		80	-235	-230	-203	-174	-152	-135	-122	-111	-249	-245	-236	-207	-185	-167	-152	-380	-256	-252	-246	-226	-204	-186	-171	-158
	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	0	0
120	48-XL	-208	-204	-188	-164	-144	-129	-117	-107	-219	-215	-211	-192	-173	-157	-144	0	-224	-221	-217	-208	-189	0	0	0	0
		80	-242	-237	-219	-190	-168	-151	-136	-125	-255	-251	-245	-224	-201	-183	-168	-422	-260	-257	-252	-242	-220	-202	-187	-174
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	44-X	-213	-210	-201	-177	-157	-142	-129	-119	-223	-220	-216	-204	-186	-170	0	0	-227	-225	-221	-217	0	0	0	0	0
		80	-248	-244	-234	-206	-183	-165	-151	-138	-259	-256	-251	-238	-216	-198	-183	-462	-264	-261	-257	-253	-235	-217	-202	0
140	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	0	0
		-218	-214	-209	-189	-169	-154	-141	0	-226	-223	-219	-215	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-253	-249	-244	-219	-197	-179	-164	-151	-263	-260	-255	-251	-230	-212	-197	-500	-268	-265	-261	-257	-248	-230	0	0
	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
160	48-XL	-221	-218	-214	-199	-181	-165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-257	-254	-249	-232	-210	-192	-177	-164	-266	-263	-259	-255	-242	-225	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	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	-224	-221	-217	-209	-191	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-261	-258	-253	-244	-222	-204	-189	-176	-269	-266	-263	-259	-253	0	0	0	0	0	0	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
	48-XL	-227	-224	-220	-217	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		80	-264	-261	-257	-253	-233	-216	-200	0	0	0	0	0	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



K2 Systems, LLC
 PV Tilt Up Kit Solar PV Mount System
Standard size 43.2"x 80" 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	-84	-77	-59	-47	0	0	0	0	-93	-90	-74	0	0	0	0	0	-97	-95	0	0	0	0	0	0	0
	48-X	-86	-79	-61	-48	0	0	0	0	-95	-93	-76	0	0	0	0	0	-100	-97	0	0	0	0	0	0	0
	48-XL	-172	-157	-122	-97	-77	-63	-53	-45	-191	-185	-152	-128	-108	-90	-76	-66	-199	-195	-169	-144	-126	-109	-94	-81	
	80	-210	-193	-151	-123	-105	-91	-80	-72	-232	-226	-187	-157	-136	-119	-107	-96	-243	-237	-208	-177	-155	-137	-124	-112	
	44-X	-90	-86	-69	0	0	0	0	0	-97	-95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	-92	-89	-71	0	0	0	0	0	-100	-98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	48-XL	-185	-177	-141	-117	-96	-79	-67	-58	-200	-196	-171	-146	-127	-110	-96	-223	-208	-204	-188	-163	-144	-129	-115	-102	
	80	-225	-217	-174	-145	-124	-109	-97	-87	-244	-238	-210	-180	-157	-140	-126	-260	-253	-248	-230	-200	-177	-159	-144	-131	
	44-X	-94	-92	-77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	48-X	-97	-95	-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	48-XL	-194	-189	-159	-134	-114	-97	-83	-71	-208	-204	-188	-163	-144	-129	-114	-275	-214	-211	-204	-180	-160	-145	-132	0	
	80	-236	-230	-195	-165	-143	-126	-113	-102	-253	-248	-230	-200	-177	-159	-144	-300	-261	-256	-250	-220	-197	-178	-163	-150	
	44-X	-98	-96	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	-101	-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	48-XL	-202	-197	-174	-149	-131	-113	-99	-86	-214	-210	-203	-178	-159	-144	-131	-319	-220	-216	-212	-195	-176	-160	0	0	
	80	-246	-240	-214	-183	-161	-143	-129	-117	-260	-256	-248	-219	-195	-177	-161	-339	-267	-263	-257	-238	-215	-197	-181	-167	
	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
	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
130	48-XL	-208	-204	-188	-164	-144	-128	-113	-102	-219	-215	-211	-192	-173	-157	-144	0	-224	-221	-217	-208	-189	0	0	0	
	80	-253	-248	-231	-201	-177	-159	-144	-132	-266	-262	-256	-235	-212	-193	-178	-377	-272	-268	-263	-254	-232	-213	-197	-184	
	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
	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
140	48-XL	-213	-210	-201	-177	-157	-142	-127	-115	-223	-220	-216	-204	-186	-170	0	0	-227	-225	-221	-217	0	0	0	0	
	80	-259	-255	-246	-216	-193	-174	-159	-146	-270	-267	-262	-250	-228	-209	-193	-412	-275	-272	-268	-264	-247	-228	-213	-199	
	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
	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
150	48-XL	-218	-214	-209	-189	-169	-154	-141	0	-226	-223	-219	-215	0	0	0	0	0	0	0	0	0	0	0	0	
	80	-264	-260	-254	-231	-208	-189	-173	-160	-274	-271	-267	-262	-242	-223	-207	-445	-279	-276	-272	-268	-260	-242	-227	-213	
	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
	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
160	48-XL	-221	-218	-214	-199	-181	-165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	80	-268	-265	-259	-244	-221	-202	-187	-173	-277	-275	-270	-267	-254	-236	-221	-477	-281	-279	-276	-272	-269	-255	0	0	
	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	
170	48-XL	-224	-221	-217	-209	-191	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	80	-272	-269	-264	-256	-234	-215	-199	-185	-280	-278	-274	-270	-266	-248	-233	0	0	0	0	0	0	0	0	0	
	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	
180	48-XL	-227	-224	-220	-217	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	80	-275	-272	-268	-263	-245	-227	-211	-197	-282	-280	-277	-273	-270	-259	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.
 See SEAOC PV-2 2012 for definition of Roof Zones