

## Table of springer/purlin weakening-compensation to offset the pin cutouts

Value of the *reduced* moment of inertia  $I_x$  of a springer/purlin joint, according to the breadth of the springer/purlin, (**b springer/purlin**), the height of the springer/purlin (**h springer/purlin**), the height of the pins (**h pins**) and the presence of pins on only one or on both sides.

This *reduced* moment of inertia  $I_x$  replaces the moment of inertia  $I_x$  of a springer or a rectangular purlin whose value is:  $b \cdot h^3 / 12$  (mm<sup>4</sup>).

The table is for calculating simple beams (preponderant warp) and comprises heights h or breadths b to be added to compensate for the loss of inertia resulting from the cutting of the pins.

*These values are indicative. They do not commit the manufacturer and do not relieve the user from making his own calculations.*

(Pin depth 28mm)				Pins on one side			Pins on both sides		
				Reduced $I_x$ (mm <sup>4</sup> )	compensation on h or b		Reduced $I_x$ (mm <sup>4</sup> )	compensation on h or b	
b springer/purlin (mm)	h springer/purlin (mm)	h pins (mm)	$I_x$ (mm <sup>4</sup> )		h to be added (mm)	b to be added (mm)		h to be added (mm)	b to be added (mm)
180	420	300	1.111E+09	1.014E+09	15	16	9.47E+08	25	33
180	400	300	9.600E+08	8.73E+08	15	17	7.79E+08	30	35
180	380	300	8.231E+08	7.44E+08	15	18	6.61E+08	30	36
180	360	300	6.998E+08	6.28E+08	15	19	5.53E+08	30	38
180	400	290	9.600E+08	8.75E+08	15	16	7.83E+08	30	33
180	380	290	8.231E+08	7.48E+08	15	17	6.66E+08	30	35
180	360	290	6.998E+08	6.32E+08	15	18	5.59E+08	30	37
180	400	280	9.600E+08	8.77E+08	15	16	7.85E+08	30	33
180	380	280	8.231E+08	7.50E+08	15	17	6.70E+08	30	35
180	360	280	6.998E+08	6.34E+08	15	18	5.64E+08	30	37
180	340	280	5.896E+08	5.30E+08	15	19	4.68E+08	30	38
180	380	270	8.231E+08	7.51E+08	15	17	6.73E+08	30	33
180	360	270	6.998E+08	6.37E+08	15	18	5.68E+08	30	35
180	340	270	5.896E+08	5.33E+08	15	19	4.73E+08	30	37
180	360	260	6.998E+08	6.38E+08	12	16	5.71E+08	27	33
180	340	260	5.896E+08	5.35E+08	12	17	4.77E+08	27	35
180	320	260	4.915E+08	4.43E+08	12	18	3.92E+08	27	37
180	340	250	5.896E+08	5.37E+08	12	16	4.80E+10	27	33
180	320	250	4.915E+08	4.45E+08	12	17	3.96E+08	27	35
180	300	250	4.050E+08	3.64E+08	12	19	3.20E+08	27	38
180	320	240	4.915E+08	4.47E+08	10	17	3.99E+08	25	33
180	300	240	4.050E+08	3.66E+08	10	18	3.24E+08	25	36
180	300	230	4.050E+08	3.68E+08	10	17	3.28E+08	23	34
180	280	230	3.293E+08	2.96E+08	10	18	2.62E+08	23	37
180	300	220	4.050E+08	3.69E+08	10	17	3.30E+08	23	34
180	280	220	3.293E+08	2.98E+08	10	17	2.65E+08	23	37
180	300	210	4.050E+08	3.70E+08	10	16	3.31E+08	23	34
180	280	210	3.293E+08	3.00E+08	10	17	2.67E+08	23	36
180	260	210	2.636E+08	2.38E+08	10	18	2.11E+08	23	38
180	300	200	4.050E+08	3.700E+08	10	15	3.323E+08	20	32
180	280	200	3.293E+08	3.005E+08	10	16	2.689E+08	20	33
180	260	200	2.636E+08	2.392E+08	10	17	2.131E+08	20	34
180	240	200	2.074E+08	1.861E+08	10	19	1.662E+08	20	35
160	280	190	2.927E+08	2.645E+08	10	16	2.324E+08	22	32
160	260	190	2.343E+08	2.109E+08	10	17	1.843E+08	22	33
160	240	190	1.843E+08	1.645E+08	10	18	1.433E+08	22	34
160	228	190	1.580E+08	1.398E+08	10	19	1.210E+08	22	35

(Pin depth 28mm)				Pins on one side			Pins on both sides		
				compensation on h or b		compensation on h or b			
b springer /purlin (mm)	h springer /purlin (mm)	h pins (mm)	Ix (mm <sup>4</sup> )	Reduced Ix (mm <sup>4</sup> )	h to be added (mm)	b to be added (mm)	Reduced Ix (mm <sup>4</sup> )	h to be added (mm)	b to be added (mm)
160	260	180	2.343E+08	2.099E+08	10	17	1.858E+08	21	33
160	240	180	1.843E+08	1.630E+08	10	18	1.448E+08	21	34
160	220	180	1.420E+08	1.260E+08	10	19	1.091E+08	21	35
140	240	170	1.613E+08	1.430E+08	10	17	1.221E+08	22	33
140	220	170	1.242E+08	1.092E+08	10	18	9.269E+07	22	34
140	204	170	9.905E+07	8.593E+08	10	19	7.199E+07	22	35
140	220	160	1.242E+08	1.100E+08	9	17	9.374E+07	22	35
140	200	160	9.333E+07	8.164E+07	9	18	6.895E+07	22	36
140	192	160	8.258E+07	7.164E+07	9	19	6.002E+07	22	37
140	220	150	1.242E+08	1.104E+08	9	16	9.433E+07	22	35
140	200	150	9.333E+07	8.237E+08	9	17	7.008E+07	22	36
140	180	150	6.804E+07	5.903E+07	9	18	4.946E+07	22	37
120	200	140	8.000E+07	6.938E+07	9	16	5.672E+07	24	35
120	180	140	5.832E+07	5.000E+07	9	17	4.059E+07	24	36
120	168	140	4.742E+07	4.006E+07	9	18	3.210E+07	24	37
120	180	130	5.832E+07	5.046E+07	9	16	4.120E+07	22	35
120	160	130	4.096E+07	3.482E+07	9	17	2.807E+07	22	36
120	180	120	5.832E+07	5.071E+07	9	16	4.148E+07	22	35
120	160	120	4.096E+07	3.530E+07	9	17	2.876E+07	22	36
120	144	120	2.986E+07	2.528E+07	9	18	2.021E+07	22	37
120	160	110	4.096E+07	3.556E+07	8	16	2.908E+07	18	35
120	140	110	2.744E+07	2.349E+07	8	17	1.904E+07	18	36
120	140	100	2.744E+07	2.376E+07	8	16	1.941E+07	17	36
120	120	100	1.728E+07	1.460E+07	8	17	1.170E+07	17	37
120	120	90	1.728E+07	1.489E+07	7	17	1.213E+07	15	37
120	108	90	1.260E+07	1.064E+07	7	18	8.527E+06	15	38
<i>Additional notes on columns</i>									
<i>Springer/purlin width</i>	<i>Springer/purlin Height</i>	<i>Pin height</i>	<i>Springer/purlin moment of inertia without pins.</i>	<i>Reduced moment of inertia (with pins on only one side)</i>	<i>Height to be added</i>	<i>Width to be added</i>	<i>Reduced moment of inertia (with pins on both sides)</i>	<i>Height to be added</i>	<i>Width to be added</i>