

Introduction to CAD Index:

Introduction:

One of the things I do is to organize “*standard data*” into a *spreadsheet* that makes it simple to find, evaluate, and incorporate “*standard component items*” into my designs. This document is intended to give an overview of the creation and use of such an “*Index*.” The exact form, layout, and supporting information supplied will depend upon the intended use and audience for such an “*Index*.”

Generalized Examples:

	A	B	C	D	E	F	G	H	I	J
1	AISC Standard Channel Index/Selector (Return to Index)									
2	Misc Channel Designation/Select:	Height:	Flange:	Web:		ly-Centroid (in^4):	Ix-Centroid (in^4):	Zy-Centroid (in^3):	Zx-Centroid (in^3):	Jz-Centroid (in^4):
3										
4	AISC C3 X 4.1 lb/ft	3.0000	1.4100	.1700		.187	1.632	.190	1.088	1.819
5	AISC C3 X 5.0 lb/ft	3.0000	1.4980	.2580		.230	1.803	.214	1.202	2.033
6	AISC C3 X 6.0 lb/ft	3.0000	1.5960	.3560		.270	1.964	.232	1.309	2.234
7										
8	AISC C4 X 5.4 lb/ft	4.0000	1.5840	.1900		.286	3.651	.248	1.826	3.937
9	AISC C4 X 7.3 lb/ft	4.0000	1.7210	.3210		.411	4.515	.323	2.258	4.926
10										
11	AISC C5 X 6.7 lb/ft	5.0000	1.7500	.1900		.464	7.489	.365	2.996	7.953
12	AISC C5 X 9.0 lb/ft	5.0000	1.8850	.3250		.616	8.895	.437	3.558	9.511
13										
14	AISC C6 X 8.2 lb/ft	6.0000	1.9200	.2000		.689	13.269	.490	4.423	13.958
15	AISC C6 X 10.5 lb/ft	6.0000	2.0340	.3140		.815	14.852	.527	4.951	15.667
16	AISC C6 X 13.0 lb/ft	6.0000	2.1570	.4370		.930	16.557	.557	5.519	17.487
17										
18	AISC C7 X 9.8 lb/ft	7.0000	2.0900	.2100		.983	21.737	.637	6.211	22.720
19	AISC C7 X 12.3 lb/ft	7.0000	2.1940	.3140		1.138	24.064	.679	6.875	25.202
20	AISC C7 X 14.8 lb/ft	7.0000	2.2990	.4190		1.269	26.406	.711	7.545	27.675
21										
22	AISC C8 X 11.5 lb/ft	8.0000	2.2600	.2200		1.363	33.606	.813	8.402	34.969
23	AISC C8 X 13.8 lb/ft	8.0000	2.3430	.3030		1.528	36.410	.855	9.103	37.938
24	AISC C8 X 18.8 lb/ft	8.0000	2.5270	.4870		1.934	43.733	.983	10.933	45.667
25										
26	AISC C9 X 13.4 lb/ft	9.0000	2.4330	.2330		1.758	48.169	.960	10.704	49.927
27	AISC C9 X 15.0 lb/ft	9.0000	2.4850	.2850		1.882	50.685	.988	11.263	52.567
28	AISC C9 X 20.0 lb/ft	9.0000	2.6480	.4480		2.328	60.115	1.122	13.359	62.443
29										
30	AISC C10 X 15.3 lb/ft	10.0000	2.6000	.2400		2.315	68.400	1.181	13.680	70.715
31	AISC C10 X 20.0 lb/ft	10.0000	2.7390	.3790		2.699	77.686	1.259	15.537	80.385
32	AISC C10 X 25.0 lb/ft	10.0000	2.8860	.5260		3.364	91.641	1.484	18.328	95.005
33	AISC C10 X 30.0 lb/ft	10.0000	3.0330	.6730		3.726	101.454	1.554	20.291	105.180
34										
35	AISC C12 X 20.7 lb/ft	12.0000	2.9420	.2820		4.030	132.646	1.809	22.108	136.676
36	AISC C12 X 25.0 lb/ft	12.0000	3.0470	.3870		4.489	144.951	1.893	24.159	149.440
37	AISC C12 X 30.0 lb/ft	12.0000	3.1700	.5100		4.941	159.338	1.970	26.556	164.279
38										
39	AISC C15 X 33.9 lb/ft	15.0000	3.4000	.4000		8.359	319.683	3.215	42.624	328.042
40	AISC C15 X 40.0 lb/ft	15.0000	3.5200	.5200		9.214	347.811	3.359	46.375	357.025
41	AISC C15 X 50.0 lb/ft	15.0000	3.7160	.7160		11.172	405.470	3.835	54.063	416.642
42										

An Image of an AISC Standard Steel Channel Selection/Index Page

Please note that in addition to standard *Channel Height*, *Flange Width*, and *Web Thickness* values, data is also provided as to the *Moment of Inertia with respect to the Centroid*, *Section Modulus with respect to the Centroid*, and *Polar Moment of Inertia with respect to the Centroid* values that are often significant section criteria. Inclusion of these types of *values* add greatly to the utility of such a *Library's Index*.

A different kind of *Index* is laid out as:

SAE J429 Grade 8 UNC Bolts (Return to Index)

SAE J429 Grade 8 UNC Bolts (Return to Index)															
Thread:	.2500-20UNC-3A	.3125-18UNC-3A	.3750-16UNC-3A	.4375-14UNC-3A	.5000-13UNC-3A	.5625-12UNC-3A	.6250-11UNC-3A	.7500-10UNC-3A	.8750-9UNC-3A	1.0000-8UNC-3A	1.1250-7UNC-3A	1.2500-7UNC-3A	1.3750-6UNC-2A	1.5000-6UNC-3A	Thread:
Tensile Yield Load (lbs)	4,134	6,812	10,075	13,819	18,447	23,647	29,380	43,485	60,021	131,730	128,355	145,365	173,235	210,780	Tensile Yield Load (lbs)
Single Shear Load (lbs):	3,015	4,968	7,348	10,079	13,454	17,247	21,428	31,716	43,776	83,267	81,133	91,885	109,502	133,234	Single Shear Load (lbs):
Torque (lb-in)	207	426	756	1,209	1,845	2,660	3,673	6,523	10,504	26,346	28,880	36,341	47,640	63,234	Torque (lb-in)
Torque (lb-ft)	17	35	63	101	154	222	306	544	875	2,196	2,407	3,028	3,970	5,270	Torque (lb-ft)
Length:														Length:	
.250	ZZZ														250
.375	XXX	ZZZ	ZZZ												.375
.500	XXX	XXX	XXX	XXX	XXX										.500
.625	XXX	XXX	XXX	YYY	YYY	YYY	ZZZ								.625
.750	XXX	XXX	XXX	XXX	XXX	YYY	XXX	YYY							.750
.875	XXX	XXX	XXX	XXX	XXX	YYY	YYY	YYY	YYY						.875
1.000	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX					1.000
1.125	XXX	XXX	XXX	XXX	XXX	YYY	YYY	YYY	YYY	YYY	YYY				1.125
1.250	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	XXX	YYY	YYY			1.250
1.375	XXX	XXX	XXX	XXX	XXX	YYY	YYY	YYY	YYY	YYY	YYY	YYY	YYY		1.375
1.500	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	YYY	1.500
1.750	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	YYY	YYY	YYY	1.750
2.000	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	XXX	2.000
2.250	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	XXX	2.250
2.500	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	XXX	2.500
2.750	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2.750
3.000	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3.000
3.250	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	XXX	3.250
3.500	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3.500
3.750	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	YYY	XXX	3.750
4.000	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4.000

An Image of the Selection Index for SAE J429 Grade 8 UNC Bolts

Please note the values for *Tensile Yield Load*, *Single Shear Load*, and *Installation Torque* (in *lb-in*, and *lb-ft*) supplied for each *Size* value. The *Selection Identities* (XXX, YYY or ZZZ) suggest whether or not that particular *size* and *length* is: easy to find (XXX), requires “searching” to find (YYY) or is likely to require the purchase of an entire production run (ZZZ). [*Size X Length* identified by “red and empty” boxes are **not** included in the SAE J429 Specification.]

Please note the value in providing such information directly to the designer.