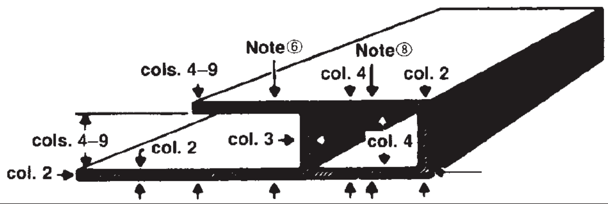
Extruded Wire, Rod, Bar and Profiles

TABLE 11.2 Cross-Sectional Dimension Tolerances—Profiles ①

EXCEPT FOR T3510, T4510, T6510, T73510, T76510 AND T8510 TEMPERS ⑦



SPECIFIED DIMENSION in.	TOLERANCE ② ③—in. plus and minus															
	METAL DIMENSIONS				SPACE DIMENSIONS											
	ALLOWABLE DEVIATION FROM SPECIFIED DIMENSION WHERE 75 PERCENT OR MORE OF THE DIMENSION IS METAL ⑨ ⑩				ALLOWABLE DEVIATION FROM SPECIFIED DIMENSION WHERE MORE THAN 25 PERCENT OF THE DIMENSION IS SPACE ⑥ ⑧											
	All Except Those Covered by Column 3		Wall Thickness ④ Completely ⑤ Enclosing Space 0.11 sq. in. and Over (Eccentricity)		At Dimensioned Points 0.250–0.624 inches from Base of Leg		At Dimensioned Points 0.625–1.249 inches from Base of Leg		At Dimensioned Points 1.250–2.499 inches from Base of Leg		At Dimensioned Points 2.500–3.999 inches from Base of Leg		At Dimensioned Points 4.000–5.999 inches from Base of Leg		At Dimensioned Points 6.000–8.000 inches from Base of Leg	
Col. 1	Col. 2		Col. 3		Col. 4		Col. 5		Col. 6		Col. 7		Col. 8		Col. 9	
	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys	Standard Tolerance, All Except 5XXX Alloys ⑪	Precision Tolerance, All Except 5XXX Alloys
CIRCUMSCRIBING CIRCLE SIZES LESS THAN 10 INCHES IN DIAMETER																
Up thru 0.124	0.006	0.004	±10% of specified dimension; ±.060 max. ±.010 min.	±10% of specified dimension; ±.060 max. ±.010 min.	0.010	0.007	0.012	0.008	. .	. .	. .	. .	. .	. .	. .	. .
0.125–0.249	0.007	0.005			0.012	0.008	0.014	0.009	0.016	0.011	. .	. .	. .	. .	. .	. .
0.250–0.499	0.008	0.005			0.014	0.009	0.016	0.011	0.018	0.012	0.020	0.013	. .	. .	. .	. .
0.500–0.749	0.009	0.006			0.016	0.011	0.018	0.012	0.020	0.013	0.022	0.015	. .	. .	. .	. .
0.750–0.999	0.010	0.007			0.018	0.012	0.020	0.013	0.022	0.015	0.025	0.017	0.030	0.020	. .	. .
1.000–1.499	0.012	0.008			0.021	0.014	0.023	0.015	0.026	0.017	0.030	0.020	0.035	0.023	. .	. .
1.500–1.999	0.014	0.009			0.024	0.016	0.026	0.017	0.031	0.020	0.036	0.024	0.042	0.028	0.050	0.033
2.000–3.999	0.024	0.016			0.034	0.022	0.038	0.025	0.048	0.032	0.057	0.038	0.068	0.045	0.080	0.053
4.000–5.999	0.034	0.022			0.044	0.029	0.050	0.033	0.064	0.042	0.078	0.051	0.094	0.062	0.110	0.073
6.000–7.999	0.044	0.029			0.054	0.036	0.062	0.041	0.082	0.054	0.099	0.065	0.120	0.079	0.140	0.092
8.000–9.999	0.054	0.036			0.064	0.042	0.074	0.049	0.100	0.066	0.120	0.079	0.145	0.096	0.170	0.112
CIRCUMSCRIBING CIRCLE SIZES 10 INCHES IN DIAMETER AND OVER																
Up thru 0.124	0.014	0.009	±15% of specified dimension; ±.090 max. ±.015 min.	±15% of specified dimension; ±.090 max. ±.015 min.	0.018	0.012	0.020	0.013	. .	. .	. .	. .	. .	. .	. .	. .
0.125–0.249	0.015	0.010			0.019	0.013	0.022	0.015	0.028	0.018	. .	. .	. .	. .	. .	. .
0.250–0.499	0.016	0.011			0.020	0.013	0.024	0.016	0.030	0.020	0.050	0.033	. .	. .	. .	. .
0.500–0.749	0.017	0.011			0.022	0.015	0.027	0.018	0.040	0.026	0.060	0.040	. .	. .	. .	. .
0.750–0.999	0.018	0.012			0.023	0.015	0.030	0.020	0.050	0.033	0.070	0.046	0.090	0.059	. .	. .
1.000–1.499	0.019	0.013			0.024	0.016	0.034	0.022	0.060	0.040	0.080	0.053	0.100	0.066	. .	. .
1.500–1.999	0.024	0.016			0.034	0.022	0.044	0.029	0.070	0.046	0.090	0.059	0.110	0.073	0.170	0.112
2.000–3.999	0.034	0.022			0.044	0.029	0.054	0.036	0.080	0.053	0.100	0.066	0.120	0.079	0.180	0.119
4.000–5.999	0.044	0.029			0.054	0.036	0.064	0.042	0.090	0.059	0.110	0.073	0.130	0.086	0.190	0.125
6.000–7.999	0.054	0.036			0.064	0.042	0.074	0.049	0.100	0.066	0.120	0.079	0.140	0.092	0.200	0.132
8.000–9.999	0.064	0.042			0.074	0.049	0.084	0.055	0.110	0.073	0.130	0.086	0.150	0.099	0.210	0.139
10.000–11.999	0.074	0.049			0.084	0.055	0.094	0.062	0.120	0.079	0.140	0.092	0.160	0.106	0.220	0.145
12.000–13.999	0.084	0.055			0.094	0.062	0.104	0.069	0.130	0.086	0.150	0.099	0.170	0.112	0.230	0.152
14.000–15.999	0.094	0.062			0.104	0.069	0.114	0.075	0.140	0.092	0.160	0.106	0.180	0.119	0.240	0.158
16.000–17.999	0.104	0.069			0.114	0.075	0.124	0.082	0.150	0.099	0.170	0.112	0.190	0.125	0.250	0.165
18.000–19.999	0.114	0.075			0.124	0.082	0.134	0.088	0.160	0.106	1.800	1.188	0.200	0.132	0.260	0.172
20.000–21.999	0.124	0.082			0.134	0.088	0.144	0.095	0.170	0.112	0.190	0.125	0.210	0.139	0.270	0.178
22.000–24.000	0.134	0.088			0.144	0.095	0.154	0.102	0.180	0.119	0.200	0.132	0.220	0.145	0.280	0.185

Footnotes for Tables 11.2 Through 11.4:

Q These Standard and Precision Tolerances are applicable to the average profile. The extrusion conditions required to produce the wide variety of alloy-temper and profile combinations require close review between customer and producer to determine critical characteristics and tolerance capability. Agressive profile characteristics may require wider than standard tolerance and closer than precision tolerance may be feasible for other characteristics.

W The tolerance applicable to a dimension composed of two or more component dimensions is the sum of the tolerances of the component dimensions if all of the component dimensions are indicated.

E When a dimension tolerance is specified other than as an equal bilateral tolerance, the value of the standard tolerance is that which applies to the mean of the maximum and minimum dimensions permissible under the tolerance for the dimension under consideration.

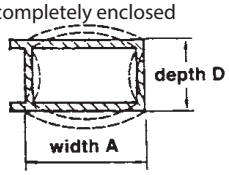
R Where dimensions specified are outside and inside, rather than wall thickness itself, the allowable deviation (eccentricity) given in Column 3 applies to mean wall thickness. (Mean wall thickness is the average of two wall thickness measurements taken at opposite sides of the void.)

T In the case of Class 1 Hollow Profiles the standard wall thickness tolerance for extruded round tube is applicable. (A Class 1 Hollow Profile is one whose void is round and one inch or more in diameter and whose weight is equally distributed on opposite sides of two or more equally spaced axes.)

Y At points less than 0.250 inch from base of leg the tolerances in Col. 2 are applicable.

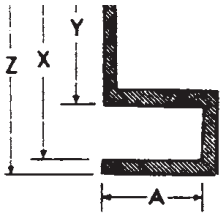
U Tolerances for extruded profiles in T3510, T4510, T6510, T73510, T76510 and T8510 tempers shall be as agreed upon between purchaser and vendor at the time the contract or order is entered.

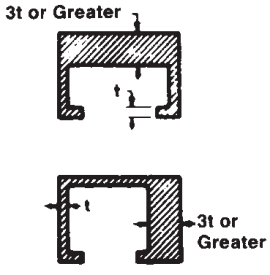
I The following tolerances apply where the space is completely enclosed (hollow profiles); For the width (A), the balance is the value shown in Col. 4 for the depth dimension (D). For the depth (D), the tolerance is the value shown in Col. 4 for the width dimension (A). In no case is the tolerance for either width or depth less than the metal dimensions (Col. 2) at the corners.



Example—Alloy 6061 hollow profile having 1 × 3 rectangular outside dimensions; width tolerance is ±0.021 inch and depth tolerance ±.034 inch. (Tolerances at corners, Col. 2, metal dimensions, are ±0.024 inch for the width and ±0.012 inch for the depth.) Note that the Col. 4 tolerance of 0.021 inch must be adjusted to 0.024 inch so that it is not less than the Col. 2 tolerance.

"X" and "Z" of the example (right), even when "Y" is 75 percent or more of "X." For the tolerance applicable to dimensions "X" and "Z," use Col. 4, 5, 6, 7, 8 or 9, dependent on distance "A."



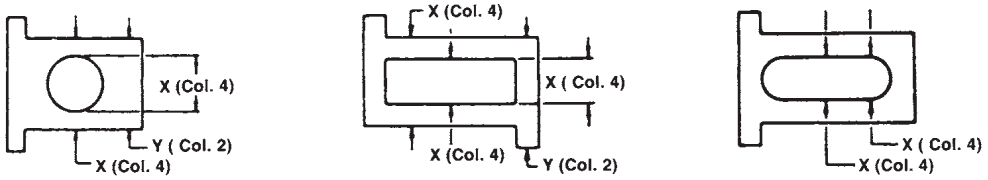


P The wall thickness tolerance for hollow or semihollow profiles shall be as agreed upon between purchaser and vendor at the time the contract or order is entered when the nominal thickness of one wall is three times or greater than that of the opposite wall.

{ For those 5xxx alloys with a magnesium content of greater than or equal to 4.0% nominal, tolerances are 150% of those values shown in the standard tolerance columns.

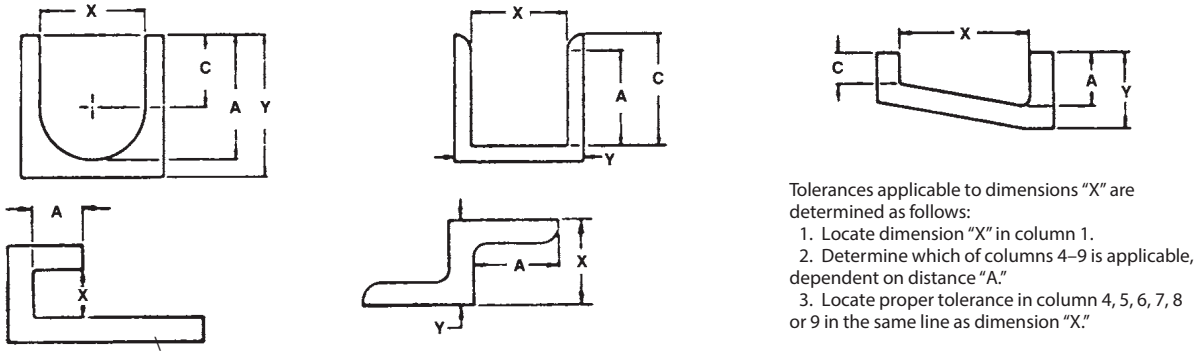
Examples Illustrating Use of Table 11.2, preceding page:

Closed-Space Dimensions



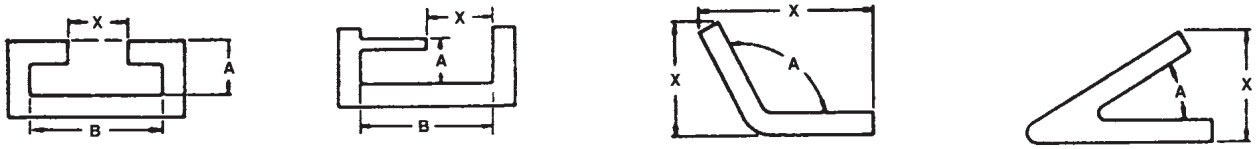
All dimensions designated "Y" are classed as "metal dimensions," and tolerances are determined from column 2.
Dimensions designated "X" are classed as "space dimensions through an enclosed void," and the tolerances applicable are determined from column 4 unless 75 percent or more of the dimension is metal, in which case column 2 applies.

Open-Space Dimensions



Tolerances applicable to dimensions "X" are determined as follows:
1. Locate dimension "X" in column 1.
2. Determine which of columns 4–9 is applicable, dependent on distance "A."
3. Locate proper tolerance in column 4, 5, 6, 7, 8 or 9 in the same line as dimension "X."

Dimensions "Y" are "metal dimensions"; tolerances are determined from column 2.
Distances "C" are shown merely to indicate incorrect values for determining which of columns 4–9 apply.



Tolerances applicable to dimensions "X" are determined as follows:
1. Locate distance "B" in column 1.
2. Determine which of columns 4–9 is applicable, dependent on distance "A."
3. Locate proper tolerance in column 4, 5, 6, 7, 8 or 9 in the same line as value chosen in column 1.

Tolerances applicable to dimensions "X" are not determined from Table 11.2; tolerances are determined by standard tolerances applicable to angles "A."

Our Mission

Our mission is to meet and exceed your expectations.

Excellence

We take pride in doing our best in everything we do.

Integrity

We are honest and ethical in every decision we make.

Respect

We treat each other with respect and dignity, recognizing that innovation springs from unique perspectives.

Non-Ferrous
EXTRUSIONS

Non-Ferrous EXTRUSIONS

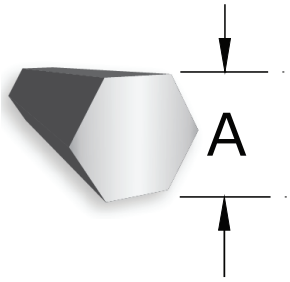
TABLE OF CONTENTS

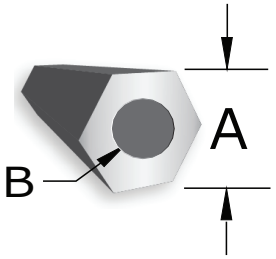
(S) = SEE PRINT

(*) = DIE HAS BEEN SCRAPPED, AVAILABLE UPON REQUEST

HEX RODS

	DIE #	A	WT/FT
(*)	NF1795	0.312	0.101
	NF1319	0.375	0.146
	NF7177	0.438	0.199
	10179	0.563	0.329
	11005	0.687	0.491
	NF3808	1.000	1.039
	NF7011	1.187	1.465
	NF3791	1.250	1.624
	NF7858	1.500	2.339



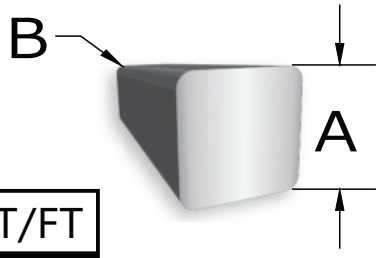


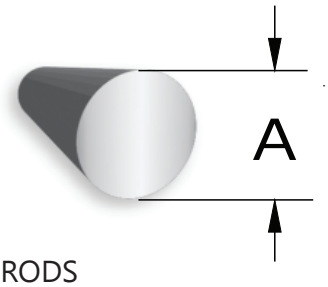
HOLLOW HEX

DIE #	A	B	WT/FT
NF6576	0.875	0.400	0.644
NF6577	0.875	0.565	0.494

SQ. BARS w/RADIUS CORNERS

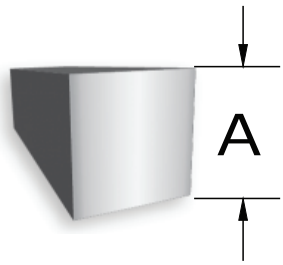
DIE #	A	B	WT/FT
11008	0.312	0.030	0.116
11009	0.317	0.030	0.120
NF6771	0.625	0.062	0.466





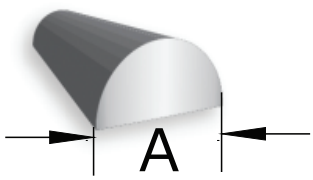
SQUARE BARS

	DIE #	A	WT/FT
	NF1330	0.240	0.070
	NF1643	0.250	0.075
(*)	NF1332	0.310	0.115
	NF2094	0.375	0.169
	NF1820	0.500	0.300
	NF1809	0.750	0.676
	NF1825	1.000	1.200
	NF1024	1.125	1.519
	NF1823	1.250	1.876
	NF5189	1.500	2.700
	NF7856	1.750	3.676
	NF6973	2.000	4.798
	NF6545	2.250	6.074



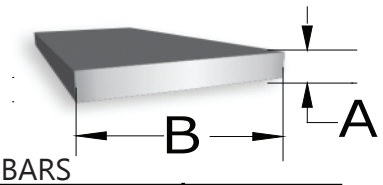
HALF ROUNDS

DIE #	A	WT/FT
NF6261	0.375	0.066
NF6260	0.500	0.118
NF4775	1.000	0.210



ROUND RODS

	DIE #	A	WT/FT
	NF5085	0.225	0.048
	NF6651	0.237	0.053
	NF0353	0.250	0.059
	NF0238	0.312	0.091
	NF0239	0.375	0.132
	NF0235	0.500	0.235
(*)	NF1793	0.595	0.334
	NF1781	0.625	0.368
	NF1779	0.750	0.530
	NF2736	0.875	0.721
	NF1780	1.000	0.942
	NF6429	1.125	1.193
	NF2067	1.250	1.472
	NF7947	1.375	1.782
	NF4303	1.500	2.120
	NF3742	1.625	2.489
	NF3741	1.750	2.886
	NF7855	1.875	3.313
	NF3740	2.000	3.770
	NF6884	2.250	4.771
	NF8154	2.375	5.316
	NF6893	2.500	5.890
	NF7928	3.000	8.483



RECTANGULAR BARS

	DIE #	A	B	WT/FT
(*)	NF0708	0.062	0.156	0.012
(*)	NF2285	0.250	0.312	0.094
(*)	NF0304	0.187	0.375	0.084
(*)	NF1814	0.312	0.437	0.164
(*)	NF0116	0.145	0.485	0.084
	NF0216	0.125	0.500	0.075
	NF1344	0.156	0.500	0.094
	NF3033	0.188	0.500	0.113
	NF2677	0.250	0.500	0.150
	NF7121	0.375	0.500	0.224
	NF4839	0.380	0.580	0.264
(*)	NF1864	0.170	0.600	0.122
	NF0545	0.125	0.625	0.094
	NF6490	0.188	0.625	0.140
	NF7015	0.250	0.625	0.187
	NF5184	0.375	0.625	0.281
	NF7860	0.500	0.625	0.376
(*)	NF4016	0.315	0.688	0.260
(*)	NF4017	0.165	0.748	0.148
	NF0330	0.062	0.750	0.056
	NF3919	0.090	0.750	0.082
	NF1451	0.125	0.750	0.113
	NF0709	0.187	0.750	0.168
(*)	NF1777	0.250	0.750	0.226
	NF2078	0.375	0.750	0.337
	NF6689	0.438	0.750	0.394
	NF1762	0.500	0.750	0.450
	NF4470	0.625	0.750	0.563
(*)	NF1611	0.193	0.875	0.203
	NF2879	0.375	0.875	0.394
(*)	NF0524	0.172	0.970	0.200
	NF0735	0.062	1.000	0.074
	NF0104	0.125	1.000	0.150
	60343	0.125	1.000	0.150
	10037	0.187	1.000	0.224
(*)	NF0328	0.187	1.000	0.224
	NF1243	0.250	1.000	0.300
	NF1526	0.375	1.000	0.450
	NF1778	0.500	1.000	0.600

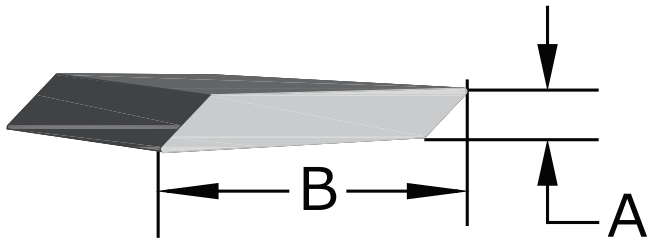
	DIE #	A	B	WT/FT
	NF6921	0.625	1.000	0.748
	NF4773	0.750	1.000	0.900
	NF4851	0.063	1.125	0.084
	NF0382	0.125	1.250	0.187
	NF5510	0.180	1.125	0.245
	NF8177	0.100	1.250	0.150
	NF7837	0.125	1.250	0.187
	NF1367	0.187	1.250	0.281
	NF0290	0.250	1.250	0.376
	NF6788	0.312	1.250	0.468
	NF2079	0.375	1.250	0.563
	NF4231	0.750	1.250	1.126
	NF8593	1.000	1.250	1.500
(*)	NF3139	0.500	1.375	0.825
	NF1482	0.090	1.500	0.161
	NF1754	0.125	1.500	0.226
	NF1366	0.187	1.500	0.377
	NF1612	0.250	1.500	0.450
	NF1707	0.375	1.500	0.676
	NF0480	0.500	1.500	0.900
	NF4853	0.750	1.500	1.350
	NF1810	1.000	1.500	1.800
	NF6914	1.250	1.500	2.248
	NF1829	0.250	1.625	0.488
	NF3996	0.500	1.625	0.975
	NF5351	0.125	1.665	0.250
	NF5305	0.700	1.700	1.428
	NF5213	1.510	1.730	3.134
	NF1416	0.187	1.750	0.392
	NF7862	0.750	1.750	1.576
	NF6683	1.000	1.750	2.100
	NF4181	0.130	1.930	0.301
(*)	NF5693	0.060	2.000	0.144
	NF0412	0.125	2.000	0.300
	NF0161	0.187	2.000	0.449
	NF1433	0.250	2.000	0.600

Non Ferrous EXTRUSIONS

RECTANGULAR BARS

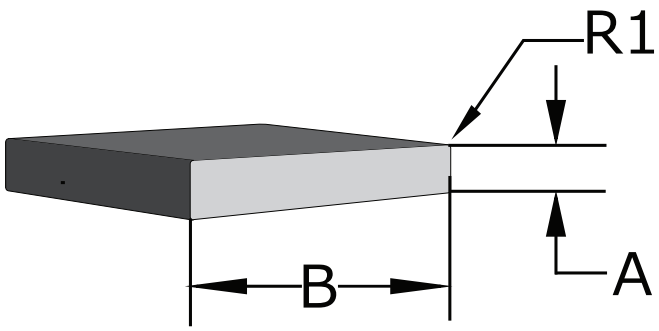
	DIE #	A	B	WT/FT
	NF7041	0.312	2.000	0.750
	NF1708	0.375	2.000	0.900
	NF1801	0.500	2.000	1.200
	NF4564	0.750	2.000	1.800
	NF5138	1.000	2.000	2.400
	NF6972	1.250	2.000	2.998
	NF5101	1.500	2.000	3.600
	NF6973	2.000	2.000	4.798
	NF7161	2.500	2.000	6.000
	NF5376	0.120	2.140	0.308
	NF3500	1.750	2.170	4.556
(*)	NF7769	0.125	2.250	0.337
	NF1652	0.188	2.250	0.508
	NF1473	0.250	2.250	0.675
(*)	NF5212	1.190	2.360	3.370
	NF0558	0.062	2.500	0.186
	NF1717	0.125	2.500	0.376
	NF1500	0.187	2.500	0.561
	NF4550	0.250	2.500	0.750
	NF2784	0.375	2.500	1.126
	NF3512	0.500	2.500	1.500
	NF7048	1.000	2.500	3.000
	NF7010	1.250	2.500	3.749
	NF4244	0.188	2.750	0.620
(*)	NF7122	1.750	2.750	5.774
	NF1739	0.063	2.830	0.214
	NF6754	0.085	3.000	0.306
	NF4055	0.125	3.000	0.450
	NF4362	0.188	3.000	0.677
	NF2443	0.250	3.000	0.900
	NF8501	0.313	3.000	1.127
	NF3614	0.375	3.000	1.350
	NF4994	0.500	3.000	1.800
	NF6141	0.625	3.000	2.250
	NF8738	0.625	5.000	3.750
	NF6851	0.750	3.000	2.700
	NF6915	1.000	3.000	3.600
	NF4928	1.340	3.000	4.824
	NF7049	1.500	3.000	5.400
	NF0144	0.125	3.500	0.525

	DIE #	A	B	WT/FT
	NF7334	0.187	3.500	0.769
	NF1830	0.250	3.500	1.050
	NF0806	0.375	3.500	1.576
	NF6936	0.500	3.500	2.100
	NF6163	0.625	3.500	2.625
	NF5017	1.800	3.500	7.560
(*)	NF1364	0.050	3.875	0.233
(*)	NF0500	0.125	4.000	0.600
	NF2245	0.188	4.000	0.902
	NF1680	0.250	4.000	1.200
	NF8196	0.3125	4.000	2.450
	NF3553	0.375	4.000	1.800
	NF3820	0.500	4.000	2.400
	NF5136	0.750	4.000	3.600
	NF6015	1.000	4.000	4.800
	NF7861	1.250	4.000	6.000
	NF6913	1.500	4.000	7.198
	NF3555	0.250	4.500	1.350
	NF4029	0.375	4.500	2.025
	NF5417	0.500	4.500	2.700
	NF8079	1.750	4.500	9.450
	10181	2.750	4.500	14.850
	NF1434	0.125	4.750	0.713
	NF3570	0.250	5.000	1.500
	NF3552	0.375	5.000	2.250
	NF6132	0.500	5.000	3.000
	NF8738	0.625	5.000	3.750
	NF8047	0.750	5.000	4.500
(*)	NF1831	0.250	5.375	1.613
	NF4451	0.125	6.000	0.900
	NF3252	0.188	6.000	1.354
	NF3554	0.250	6.000	1.800
	NF3737	0.375	6.000	2.700
	NF5135	0.500	6.000	3.600
	NF6140	0.625	6.000	4.500
	NF7123	0.750	6.000	5.400
	NF7050	0.250	7.000	2.100
	10180	0.375	7.000	3.150
	NF8134	0.375	8.000	3.600
	NF8132	0.500	8.000	4.800



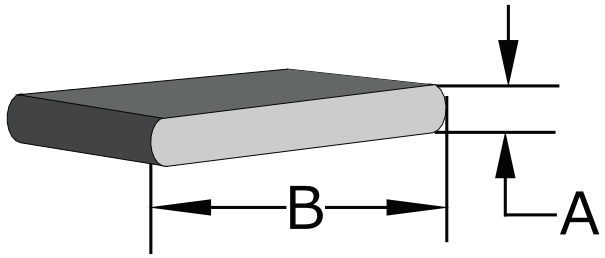
RECTANGULAR BARS (WITH BEVEL)

DIE #	A	B	BEVEL	WT/FT
61057	0.250	5.000	45°	1.433



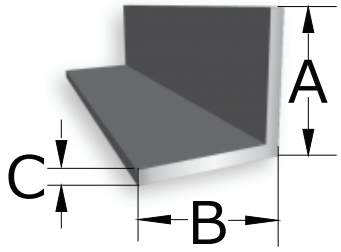
RECTANGULAR BARS (RADIUS CORNERS)

DIE #	A	B	R1	WT/FT
60223	0.312	1.650	0.031	0.616
60366	0.250	2.000	0.062	0.595
61349	0.250	7.500	0.030	2.249



RECTANGULAR BARS (FULL RADIUS)

DIE #	A	B	WT/FT
61200	0.250	0.875	0.246
61050	0.250	1.000	0.284
61268	0.250	2.000	0.584
61269	0.250	2.500	0.734
61188	0.250	4.000	1.184
61201	0.500	4.000	2.335
61298	0.250	5.000	1.484
61270	0.500	6.000	3.535



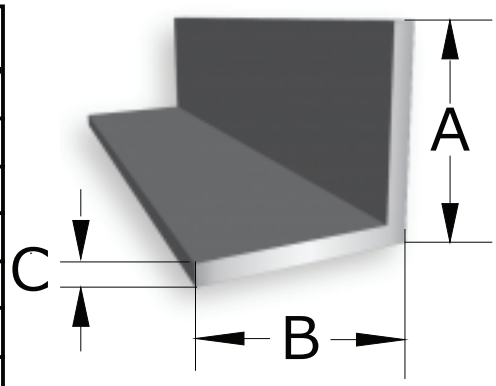
ANGLES

	DIE #	A	B	C	WT/FT
	NF2063	0.165	0.900	0.040	0.049
(*)	NF0405	0.187	0.250	0.062	0.028
(*)	NF0764	0.250	0.500	0.062	0.051
(*)	NF4867	0.250	0.500	0.093	0.073
(*)	NF2812	0.374	1.496	0.063	0.137
(*)	NF1789	0.375	0.750	0.090	0.112
	NF0275	0.500	0.500	0.050	0.056
(*)	NF1790	0.500	0.500	0.125	0.131
(*)	NF1298	0.500	0.500	0.155	0.157
(*)	NF3501	0.500	0.500	0.250	0.226
	NF3420	0.500	0.750	0.049	0.071
	NF1553	0.500	0.750	0.062	0.089
	NF2614	0.500	0.910	0.094	0.149
	NF7149	0.500	1.000	0.125	0.206
(*)	NF1465	0.500	1.125	0.125	0.226
	NF6930	0.500	1.25	0.125	0.244
(*)	NF0716	0.500	2.250	0.050	0.162
(*)	NF0713	0.500	2.250	0.068	0.218
	NF6681	0.625	0.625	0.125	0.169
	NF0188	0.625	1.000	0.055	0.103
(*)	NF0463	0.625	2.500	0.050	0.185
	NF5655	0.750	0.750	0.050	0.086
	NF2528	0.750	0.750	0.062	0.107
(*)	NF0270	0.750	0.750	0.078	0.133
(*)	NF1758	0.750	0.750	0.094	0.158
	NF2529	0.750	0.750	0.125	0.206
	60191	0.750	1.000	0.062	0.126
(*)	NF0810	0.750	1.000	0.065	0.132
	NF5869	0.750	1.000	0.125	0.244
(*)	NF1784	0.750	1.250	0.125	0.281
(*)	NF1747	0.750	2.000	0.125	0.394
(*)	NF2024	0.750	2.000	0.125	0.394
	NF8428	0.750	3.125	0.125	0.563

	DIE #	A	B	C	WT/FT
	NF6268	0.752	3.000	0.126	0.548
	NF5223	0.875	0.875	0.125	0.244
	NF0157	1.000	1.000	0.060	0.139
	NF0348	1.000	1.000	0.060	0.139
	NF1351	1.000	1.000	0.125	0.280
	NF6744	1.000	1.000	0.188	0.408
	60325	1.000	1.500	0.065	0.189
	60326	1.000	1.500	0.078	0.255
	NF1697	1.000	1.500	0.125	0.356
	NF0722	1.000	2.500	0.062	0.256
	NF0535	1.000	2.000	0.125	0.431
	NF4359	1.000	3.000	0.188	0.860
(*)	NF0788	1.125	1.500	0.062	0.191
	NF6102	1.250	1.250	0.050	0.146
	NF0720	1.250	1.250	0.068	0.198
	NF1242	1.250	1.250	0.120	0.343
	NF7067	1.250	1.250	0.125	0.356
	NF6892	1.250	1.250	0.188	0.522
	NF6772	1.250	1.250	0.250	0.674
	NF5022	1.250	1.500	0.188	0.578
(*)	NF5873	1.250	3.500	0.125	0.694
	NF0906	1.375	1.375	0.060	0.194
	60346	1.500	1.500	0.062	0.218
	NF0230	1.500	1.500	0.125	0.431
	NF3529	1.500	1.500	0.188	0.635
	NF7009	1.500	1.500	0.250	0.825
	NF6885	1.500	1.750	0.060	0.229
	NF2608	1.500	2.000	0.112	0.455
(*)	NF1966	1.500	2.750	0.125	0.619
	NF1254	1.500	4.000	0.062	0.404
(*)	NF1546	1.500	7.000	0.125	1.256
	NF1204	1.750	1.750	0.188	0.748
	NF7433	1.750	1.750	0.125	0.495
	NF4363	1.750	2.250	0.188	0.860
	NF7071	2.000	1.500	0.125	0.506
	NF6711	2.000	1.500	0.250	0.974
	NF6765	2.000	2.000	0.620	0.293
	NF3664	2.000	2.000	0.105	0.491

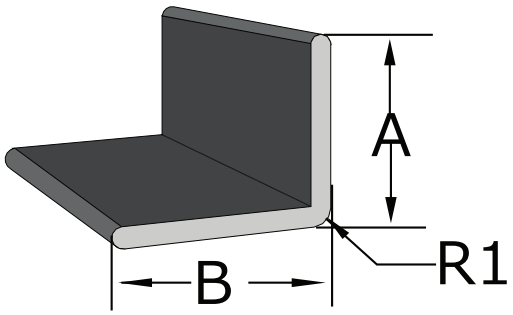
ANGLES

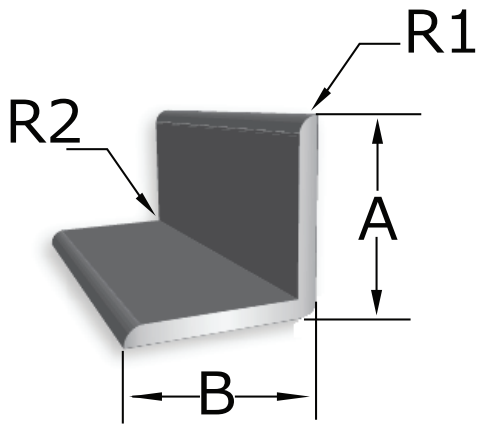
DIE #	A	B	C	WT/FT
NF5008	2.000	2.000	0.125	0.581
(*) NF0241	2.000	2.000	0.156	0.720
NF3762	2.000	2.000	0.188	0.860
NF0771	2.000	2.000	0.250	1.124
NF5824	2.000	2.250	0.125	0.619
NF6685	2.000	2.500	0.188	0.973
NF2186	2.000	3.000	0.125	0.731
NF4208	2.000	3.000	0.250	1.425
NF7148	2.000	4.000	0.187	1.304
NF5825	2.250	2.875	0.125	0.750
NF7109	2.500	1.500	0.125	0.581
NF3799	2.500	2.500	0.187	1.080
NF3051	2.500	2.500	0.250	1.426
NF6679	2.500	2.500	0.375	2.081
NF0779	2.750	2.750	0.250	1.576
NF2077	3.000	3.000	0.125	0.881



ANGLES w/FULL RADIUS

DIE #	A	B	C	R1	WT/FT
61112	2.000	4.500	0.250	0.250	1.531

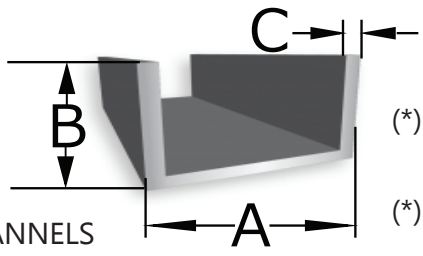




ANGLES w/RADIUS

DIE #	A	B	C	R1	R2	WT/FT
10197	1.750	1.750	0.188	0.125	0.188	0.748

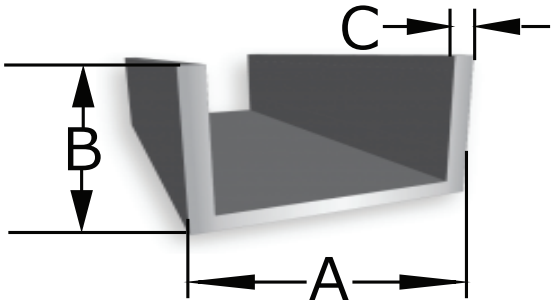
ARCHITECTURAL CHANNELS



ARCHITECTURAL CHANNELS

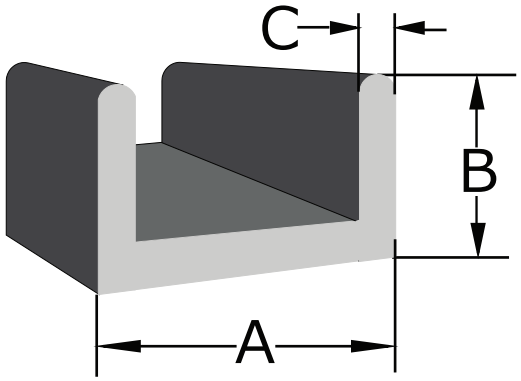
	DIE #	A	B	C	WT/FT
	NF3092	0.375	0.500	0.125	0.162
	NF3746	0.437	1.000	0.062	0.172
	NF4186	0.466	0.938	0.063	0.158
	NF3745	0.490	0.470	0.089	0.133
	NF4112	0.500	0.313	0.060	0.072
	NF6510	0.500	0.500	0.062	0.102
	NF3300	0.500	0.750	0.093	0.203
(*)	NF1915	0.537	0.425	0.050	0.077
	NF4193	0.625	1.000	0.125	0.356
(*)	NF1983	0.630	0.630	0.060	0.127
	NF5204	0.750	0.375	0.125	0.187
	NF7003	0.750	0.500	0.125	0.226
	NF1300	0.750	0.750	0.062	0.160
	NF2716	0.750	0.750	0.125	0.300
	NF5517	0.750	1.500	0.125	0.526
(*)	NF1753	0.751	0.751	0.094	0.233
	NF6155	0.812	0.781	0.062	0.168
	NF3920	0.875	0.395	0.050	0.094
	NF2633	0.906	0.750	0.062	0.169
(*)	NF0491	0.925	0.825	0.125	0.349
	NF3774	0.960	0.380	0.045	0.088
	NF4396	0.963	1.500	0.094	0.426
	NF2258	1.000	0.500	0.125	0.263
	NF2282	1.000	1.000	0.125	0.413
	NF3032	1.000	1.375	0.092	0.426
	NF6653	1.000	2.125	0.125	1.050
	NF3077	1.062	1.250	0.125	0.497
(*)	NF5025	1.100	0.196	0.050	0.084
(*)	NF1558	1.125	0.750	0.062	0.186
(*)	NF0388	1.125	1.125	0.070	0.271
	NF7119	1.250	1.250	0.125	0.524
(*)	NF3681	1.125	1.750	0.125	0.656
	NF5508	1.125	4.500	0.125	1.481

	DIE #	A	B	C	WT/FT
(*)	NF0725	1.175	0.875	0.065	0.281
	NF1163	1.250	0.750	0.100	0.306
(*)	NF5026	1.475	0.211	0.050	0.108
	NF6929	1.500	0.500	0.125	0.337
(S)	60367	1.500	0.625	0.070	0.223
	NF5205	1.500	0.875	0.125	0.450
	NF1237	1.500	1.000	0.120	0.469
	NF2086	1.500	1.500	0.125	0.637
	NF3761	1.500	1.500	0.188	0.930
	NF5878	1.500	2.125	0.375	2.250
	10169	1.580	0.790	0.040	0.148
	NF3030	1.750	0.750	0.040	0.152
	NF6574	1.750	0.750	0.125	0.450
	10015	1.750	1.000	0.125	0.524
	NF7976	1.750	1.750	0.125	0.750
	NF1608	1.825	1.000	0.250	0.997
	NF5650	2.000	0.750	0.125	0.487
	60344	2.000	1.000	0.062	0.288
	NF1236	2.000	1.000	0.125	0.563
	NF6443	2.000	2.000	0.125	0.863
	60060	2.000	2.000	0.188	1.268
	NF6444	2.000	2.000	0.250	1.650
	NF4877	2.100	1.500	(S)	1.296
	NF4461	2.184	1.000	0.092	0.442
	NF6633	2.196	1.250	0.083	0.392
	NF4206	2.210	2.000	0.105	0.756
(*)	NF3192	2.250	0.625	0.125	0.487
	NF1994	2.250	1.500	0.250	1.428
	NF6133	2.250	1.750	0.125	0.825
	NF6109	2.250	1.750	0.188	1.212
	NF6830	2.500	1.000	0.125	0.637
	NF7781	2.500	1.500	0.125	0.787
	NF2246	2.500	2.000	0.188	1.350
(*)	NF1207	2.600	0.875	0.250	1.156
	NF6684	2.625	2.250	0.125	1.031
(S)	NF7001	2.638	0.354	0.236	0.823
	60645	2.750	1.500	0.062	0.417
	NF4878	2.750	1.500	(S)	1.440



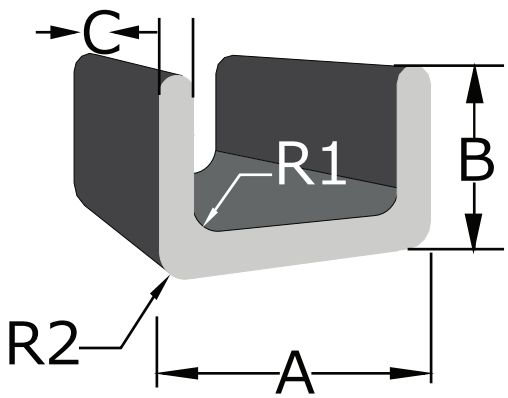
ARCHITECTURAL CHANNELS

	DIE #	A	B	C	WT/FT
	NF3773	2.825	0.750	0.045	0.228
(*)	NF1604	3.000	0.500	0.062	0.282
	NF7209	3.000	0.500	0.125	0.563
	NF1555	3.000	1.000	0.125	0.713
	NF1715	3.000	2.000	0.125	1.031
	61214	3.000	2.000	0.130	1.019
	NF3403	3.015	1.500	0.062	0.472
	NF7000	3.740	1.850	0.276	2.266
	NF0908	3.750	0.875	0.070	0.450
	NF6115	3.750	1.875	0.063	0.140
	NF3836	3.750	2.125	0.250	2.250
	NF6860	3.800	3.500	0.070	0.977
	NF6349	3.813	1.500	0.082	0.654
	NF6799	3.820	1.725	0.055	0.505
	NF5119	3.938	1.844	0.094	0.839
	NF0800	4.000	0.750	0.125	0.787
	NF0907	4.000	0.875	0.062	0.419
	NF8461	4.000	1.000	0.110	0.763
	NF1846	4.000	2.000	0.090	0.845
	NF2142	4.000	2.000	0.105	0.982
	NF5002	4.000	4.000	0.375	5.063
	NF4054	4.184	1.000	0.092	0.662
	NF6629	4.196	1.750	0.083	0.750
	NF4573	4.210	2.000	0.105	0.982
(S)	NF6909	4.304	1.750	0.500	3.701
(*)	NF1854	4.530	1.590	0.090	0.813
(*)	NF6859	4.900	3.500	0.070	0.986
	NF4460	6.184	1.000	0.092	0.883
	NF6373	6.184	2.000	0.092	1.104
	NF6631	6.196	1.750	0.083	0.954



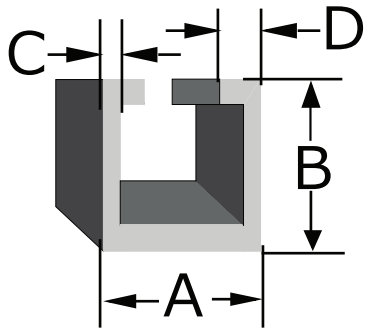
CHANNELS w/FULL RADIUS

	DIE #	A	B	C	WT/FT
(S)	60158	0.674	0.697	0.072	0.157
	60224	1.440	1.625	0.125	0.661



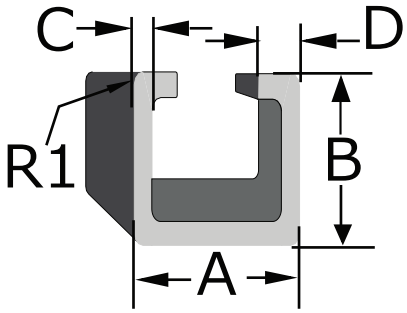
CHANNELS w/FULL RADIUS & CORNERS

	DIE #	A	B	C	R1	R2	WT/FT
	60254	1.020	0.540	0.060	0.020	0.040	0.118
	60216	1.126	0.500	0.063	0.010	0.062	0.147
(S)	60208	1.126	1.000/0.500	0.063	0.010	0.062	0.194
	61341	1.250	3.000	0.125	0.125	0.171	1.196
	60314	1.280	0.500	0.125	0.062	0.125	0.294
	NF8188	1.374	0.625	0.063	0.031	0.093	0.193
(S)	10161	1.400	1.375	0.125	0.125	0.250	0.560
(S)	61243	1.438	1.750	0.125	0.125	0.250	0.679
	60237	1.624	0.812	0.062	0.015	0.031	0.230
	60214	1.749	0.999	0.187	0.187	0.187	0.747
(S)	61235	1.870	0.750	0.060	0.015	0.060	0.367
(S)	61246	3.020	1.000/0.625	0.080	0.108/0.010	0.188/0.031	0.422



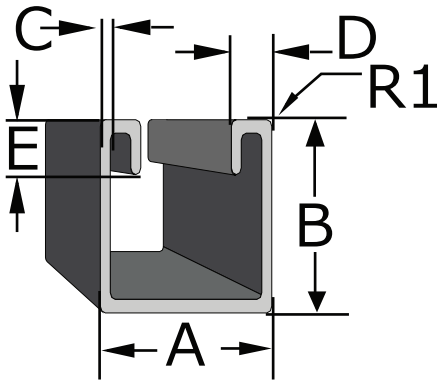
"C " CHANNELS w/SQ. CORNERS

DIE #	A	B	C	D	WT/FT
60220	1.000	0.625	0.125	0.230	0.325
60252	2.500	2.000	0.180	1.000	1.680



"C " CHANNELS w/RADIUS CORNERS

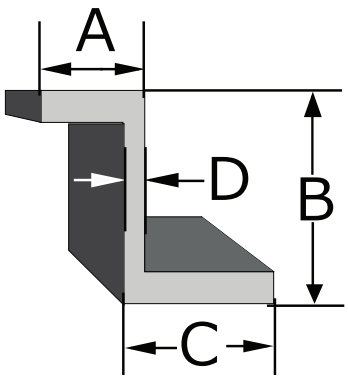
DIE #	A	B	C	D	R1	WT/FT
60215	1.500	1.000	0.050	0.375	0.125	0.231
60217	1.749	1.749	0.187	0.500	0.187	1.224
61136	2.500	1.000	0.125	0.750	0.250	0.817



"C " CHANNELS w/RETUEN LEGS

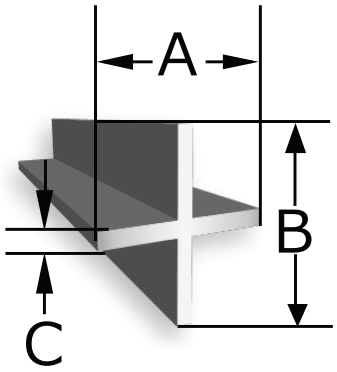
DIE #	A	B	C	D	E	R1	WT/FT
60175	1.629	0.810	0.080	0.375	0.281	0.125	0.369

" Z " & CROSS EXTRUSIONS



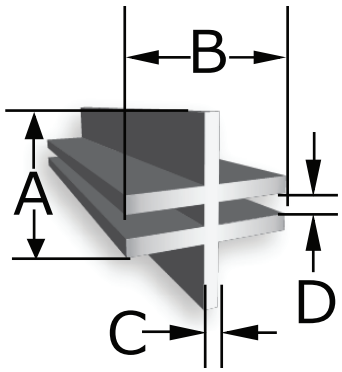
" Z " EXTRUSIONS (r) = RADIUS CORNERS

	DIE #	A	B	C	D	WT/FT
	NF1759	0.483	0.320	0.392	0.090	0.110
	NF0168	0.500	0.475	0.500	0.055	0.090
	NF3779	0.500	0.563	0.625	0.125	0.216
(r)	NF5625	0.625	0.250	1.000	0.125	0.232
	NF0738	0.625	1.000	0.625	0.062	0.158
	NF0495	0.650	0.870	0.312	0.150	0.269
	NF5209	0.750	0.625	0.750	0.125	0.281
	NF2305	0.750	0.875	0.750	0.125	0.319
	NF2264	0.750	0.375	2.000	0.125	0.431
(r)	NF5676	0.754	3.250	0.754	0.073	0.395
	NF5620	1.000	0.438	1.188	0.188	0.491
	NF3167	1.000	1.000	1.000	0.125	0.413
	NF7332	1.000	1.000	1.000	0.312	0.769
	NF5654	1.375	2.500	2.375	0.375	2.020
	NF5446	1.500	0.250	1.000	0.125	0.375



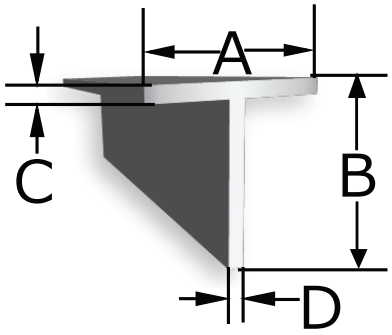
CROSS SHAPE EXTRUSION

DIE #	A	B	C	WT/FT
NF5679	1.625	1.625	0.125	0.468



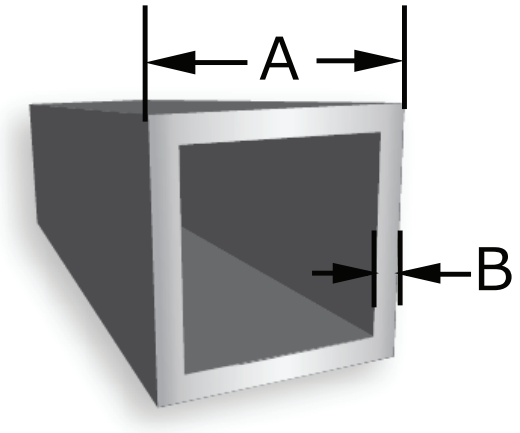
DOUBLE " T " SIGN EXTRUSION

DIE #	A	B	C	D	WT/FT
NF6870	1.500	1.750	0.125	0.281	0.584
NF6871	1.500	2.750	0.125	0.300	0.824



" T " EXTRUSION (o) = OFFSET

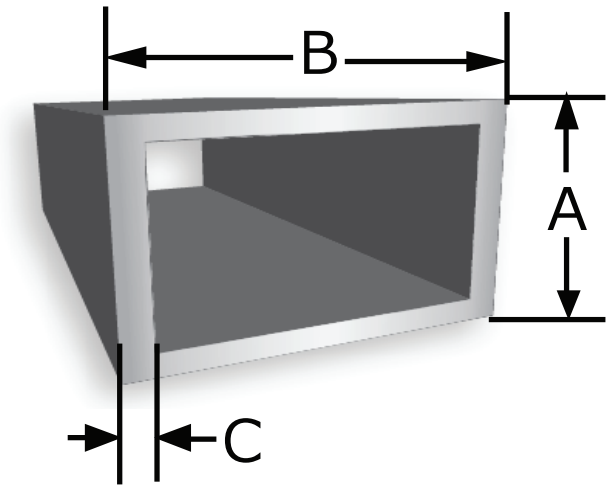
DIE #	A	B	C	D	WT/FT
NF2193	0.290	0.900	0.040	0.040	0.055
NF1349	0.750	0.500	0.040	0.040	0.058
NF4962	0.750	1.500	0.125	0.125	0.319
NF8059	1.000	2.000	0.188	0.188	0.632
NF4089	1.500	1.500	0.125	0.125	0.431
NF2127	1.500	1.000	0.188	0.188	0.522
NF8500	1.500	1.500	0.188	0.188	0.635
NF7166	1.500	3.000	0.187	0.187	0.971
NF4232	1.625	0.875	0.125	0.125	0.356
NF0381	1.750	1.500	0.188	0.188	0.691
NF1878	1.750	3.750	0.125	0.125	0.806
NF4071	1.875	1.000	0.125	0.125	0.413
NF2343	2.000	0.750	0.125	0.125	0.394
NF6447	2.000	2.000	0.188	0.188	0.860
NF8456	2.000	2.000	0.125	0.125	0.581
NF6436	2.000	2.000	0.250	0.250	1.125
NF6720	2.000	3.000	0.250	0.250	1.424
NF8031	2.000	3.000	0.375	0.375	2.081
NF6719	2.000	4.000	0.250	0.250	1.724
NF7020	2.000	5.000	0.250	0.250	2.024
NF7169	2.000	5.000	0.375	0.375	2.981
NF7167	2.000	6.000	0.250	0.250	2.326
NF8037	2.000	6.000	0.375	0.625	3.431
NF5911	2.360	1.000	0.125	0.100	0.557
NF1817	3.000	1.750	0.500	0.500	2.550
NF6235	3.000	1.188	0.188	0.188	0.900
NF5910	3.360	1.000	0.125	0.100	0.707
(o) NF6606	3.437	1.187	0.188	0.188	0.988
NF4869	4.000	2.000	0.188	0.313	1.579
NF5909	4.360	1.000	0.125	0.100	0.857
NF4585	4.500	4.000	0.630	0.625	5.971



SQ. TUBES w SQ. CORNERS. (M)=MAX RUN OUT

	DIE #	A	B	WT/FT
	NF4959	0.500	0.050	0.108
	NF7932	0.500	0.065	0.136
	NF2926	0.500	0.120	0.218
	NF1633	0.625	0.125	0.300
	NF2038	0.750	0.062	0.205
	NF5207	0.750	0.125	0.374
	NF1964	1.000	0.062	0.280
	60264	1.000	0.075	0.333
	NF2711	1.000	0.083	0.365
	NF1972	1.000	0.125	0.525
	NF4580	1.125	0.109	0.530
	NF1889	1.250	0.062	0.354
	NF6853	1.250	0.125	0.674
(mod)	NF1888(S)	1.250	0.125	0.676
	NF7129	1.500	0.040	0.281
	NF2935	1.500	0.050	0.348
	NF0103	1.500	0.062	0.429
	NF1973	1.500	0.125	0.821
	NF2848	1.750	0.055	0.448

	DIE #	A	B	WT/FT
	NF3613	1.750	0.090	0.718
	NF5217	1.750	0.125	0.974
	NF5491	2.000	0.090	0.825
	NF1976	2.000	0.125	1.125
	NF6717	2.000	0.188	1.636
	NF6770	2.000	0.250	2.100
(M)	NF1858	2.000	0.500	3.600
	NF2989	2.063	0.125	1.163
	NF7859	2.500	0.125	1.424
	NF7159	2.500	0.187	2.076
	NF7868	2.500	0.250	2.700
	10089	3.000	0.090	1.258
	NF2014	3.000	0.125	1.725
	NF7008	3.000	0.188	2.538
	NF3815	3.000	0.250	3.300
	NF6944	4.000	0.125	2.323 @36'
	NF6378	4.000	0.250	4.500 @24'
	NF7182	4.000	0.375	6.526

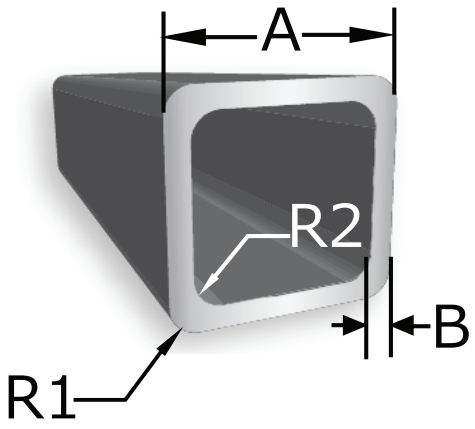


RECTANGULAR TUBES

DIE #	A	B	C	WT/FT
NF4378	0.750	1.500	0.063	0.322
NF5144	0.750	2.500	(S)	1.238
NF1562	0.930	1.020	0.065	0.286
NF4361	1.000	1.375	0.073	0.390
10075	1.000	1.500	0.050	0.288
NF4562	1.000	1.500	0.125	0.675
NF4360	1.000	2.000	0.073	0.500
NF2555	1.000	2.000	0.094	0.634
NF4740	1.000	2.000	0.094	0.635
NF2011	1.000	2.000	0.125	0.824
NF4979	1.000	2.000	0.250	1.500
NF8245	1.000	2.500	0.125	0.974
NF2647	1.000	3.000	0.125	1.126
NF8244	1.000	3.500	0.125	1.274
NF3226	1.000	3.515	0.188	1.868
NF7391	1.000	4.000	0.125	1.392
NF5122	1.000	1.750	0.075	0.468
NF7152	1.500	2.000	0.062	0.503
NF4048	1.500	2.000	0.125	0.974
NF6891	1.500	3.000	0.125	1.276
NF2665	1.500	3.000	0.188	1.861
NF7213	1.500	4.000	0.125	1.576

DIE #	A	B	C	WT/FT
NF1322	1.625	2.625	0.070	0.691
NF3455	1.750	3.000	0.060	0.667
NF5247	1.750	3.000	0.100	1.092
NF7101	1.750	3.000	0.125	1.350
NF2996	1.750	4.000	0.090	1.204
NF7102	1.750	4.000	0.125	1.650
NF3134	1.750	4.500	0.115	1.662
NF4238	1.990	3.990	0.080	1.117
NF5310	2.000	2.500	0.125	1.276
NF1945	2.000	3.000	0.125	1.425
NF6753	2.000	3.000	0.250	2.700
NF3081	2.000	4.000	0.125	1.724
NF5274	2.000	4.000	0.188	2.523
NF7919	2.000	4.000	0.250	3.300
NF4838	2.000	4.500	0.115	1.730
NF6130	2.000	5.000	0.125	2.026
NF6500	2.000	6.000	0.125	2.326
NF3492	3.000	4.000	0.125	2.025
NF6810	3.000	4.000	0.188	2.981
10165	3.000	6.000	0.125	2.624
10193	3.000	6.000	0.187	3.872
10164	3.000	6.000	0.250	5.099

SQ. TUBES W/RADIUS



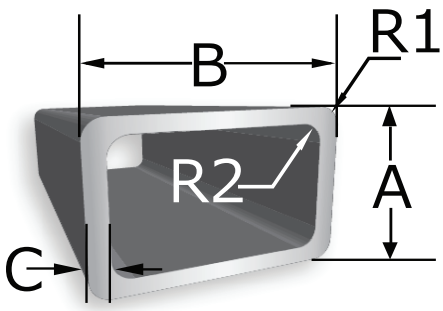
SQ. TUBE w/RADIUS

DIE #	A	B	R.1	R.2	WT/FT
NF6863	0.625	0.125	0.062	0.015	0.298
NF6395	0.740	0.049	0.047	0.015	0.161
NF6396	0.740	0.062	0.047	0.015	0.200
NF6150	0.750	0.049	0.031	0.020	0.165
NF2222	0.750	0.062	0.031	0.020	0.204
61056	0.750	0.065	0.062	0.010	0.210
NF2980	0.750	0.065	0.031	0.020	0.214
NF4739	0.750	0.090	0.020	0.015	0.285
NF2557	0.750	0.125	0.090	0.020	0.365
60069	1.000	0.040	0.156	0.116	0.174
60206	1.000	0.040	0.140	0.100	0.175
10156	1.000	0.045	0.064	0.062	0.206
60311	1.000	0.050	0.015	0.060	0.231
NF5821	1.000	0.060	0.125	0.093	0.259
60312	1.000	0.062	0.082	0.140	0.266
NF1931	1.000	0.062	0.093	0.041	0.271
NF4337	1.000	0.067	0.125	0.058	0.288
NF6346	1.000	0.080	0.040	0.032	0.353
NF2519	1.000	0.083	0.093	0.045	0.355
61350	1.000	0.095	0.010	0.030	0.414
61038	1.000	0.100	0.062	0.010	0.428
60382	1.000	0.125	0.010	0.062	0.529
NF2202	1.000	0.125	0.125	0.062	0.510
10203	1.000	0.125	0.188	0.062	0.493
NF3324	1.000	0.110	0.160	0.074	0.449
NF3325	1.000	0.110	0.160	0.219	0.493
61109	1.004	0.062	0.200	0.140	0.260

SQ. TUBE w/RADIUS

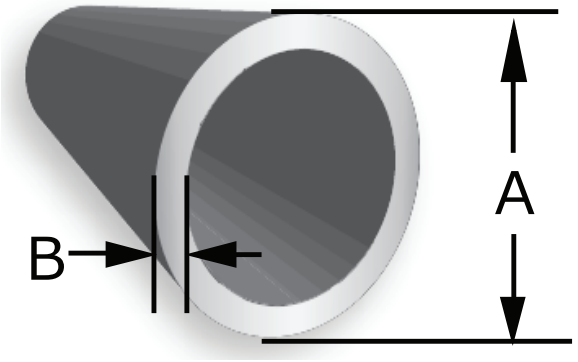
	DIE #	A	B	R.1	R.2	WT/FT
	NF6199	1.026	0.075	0.093	0.041	0.277
	61138	1.100	0.065	0.070	0.015	0.319
	60321	1.125	0.065	0.156	0.091	0.314
	60002	1.193	0.059	0.157	0.098	0.290
	61054	1.210	0.090	0.275	0.150	0.429
	60221	1.250	0.062	0.168	0.123	0.340
	61052	1.250	0.065	0.140	0.075	0.355
	NF6897	1.250	0.093	0.125	0.020	0.500
	60222	1.250	0.094	0.062	0.015	0.518
	60383	1.250	0.115	0.010	0.062	0.614
	NF2725	1.250	0.125	0.090	0.020	0.665
	NF8006	1.250	0.188	0.125	0.010	0.942
(S)	10013	1.375	0.062	0.140	0.078	0.376
(S)	10014	1.500	0.062	0.140	0.078	0.414
	61162	1.500	0.062	0.015	0.032	0.429
	NF7308	1.500	0.062	0.190	0.125	0.397
	NF5314	1.500	0.125	0.125	0.063	0.814
	10067	1.500	0.125	0.140	0.031	0.805
	NF6316	1.500	0.188	0.125	0.020	1.169
	NF2735	1.862	0.080	0.046	0.020	0.670
	NF2734	2.000	0.063	0.109	0.046	0.570
	NF2230	2.000	0.125	0.125	0.062	1.102
	NF7223	2.000	0.125	0.250	0.125	1.052
	NF2962	2.000	0.188	0.188	0.188	1.673
	NF6713	2.000	0.188	0.438	0.250	1.501
	NF6737	2.000	0.250	0.375	0.125	1.970
	NF6400	2.500	0.083	0.125	0.063	0.952
	NF6813	2.500	0.188	0.125	0.015	2.071
	NF7822	2.500	0.250	0.282	0.094	2.628
	NF6623	3.000	0.188	0.156	0.125	2.528
	NF6649	3.000	0.250	0.312	0.063	3.203
	NF7420	3.250	0.250	0.188	0.250	3.545
	NF6864	4.000	0.188	0.437	0.249	3.307@24'
	NF7922	4.000	0.250	0.250	0.031	4.436
	NF3846	4.000	0.375	0.188	0.250	6.553 @10'

REC. TUBES W/RADIUS



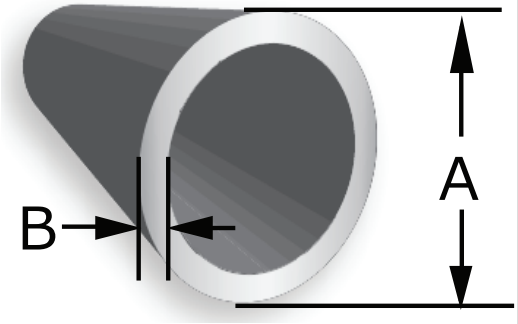
REC. TUBE w/RADIUS

	DIE #	A	B	C	R1	R2	WT/FT
	60370	0.292	0.750	0.035	0.030	0.010	0.080
	60212	0.500	0.750	0.065	0.062	0.010	0.170
	61010	0.508	0.674	0.050	0.081	0.031	0.124
	61008	0.528	1.304	0.050	0.066	0.016	0.171
	60371	0.550	3.188	0.080	0.060	0.020	0.684
	NF4977	0.750	1.500	0.125	0.125	0.125	0.584
	61301	0.970	4.344	0.200	0.050	0.010	2.349
	61329	0.982	2.000	0.056	0.165	0.109	0.371
	60003	0.982	2.527	0.056	0.165	0.109	0.440
	60018	0.998	2.543	0.064	0.165	0.109	0.505
	NF4531	1.000	1.375	0.073	0.093	0.047	0.384
	NF6077	1.000	1.375	0.094	0.063	0.015	0.488
	61137	1.000	1.375	0.100	0.100	0.100	0.511
	NF4532	1.000	2.000	0.073	0.093	0.047	0.494
	NF3322	1.000	2.000	0.125	0.125	0.062	0.814
	61100	1.000	2.500	0.065	0.125	0.063	0.498
(S)	61053	1.000	3.000	0.065	0.140	0.060	0.744
	NF8573	1.000	3.000	0.125	0.250	0.125	1.076
(S)	61134	1.375	2.500	0.110	0.250/0.125	0.140/0.015	0.890
(S)	61135	1.375	5.000	0.156/0.125	0.250/0.125	0.125	1.892
	61011	1.475	2.200	0.157	0.141	0.015	1.246
	61242	1.500	2.000	0.125	0.031	0.031	0.974
	NF7131	1.500	3.000	0.125	0.375	0.235	1.187
	NF6513	1.578	2.359	0.312	0.125	0.010	2.467
	NF3428	2.000	3.000	0.125	0.125	0.062	1.426
	61292	2.000	3.000	0.125	0.250	0.125	1.430
	NF2954	2.000	3.000	0.188	0.188	0.188	2.096
	10133	2.000	3.000	0.188	0.260	0.260	2.086
	NF7222	2.000	4.000	0.125	0.250	0.125	1.639
	NF6822	2.000	4.000	0.188	0.125	0.015	2.522
	NF6981	2.000	4.000	0.250	0.250	0.010	3.235
	10132	2.000	4.000	0.250	0.250	0.250	3.298
	NF7132	1.500	6.000	0.096	0.125	0.030	1.669
	61029	2.000	5.000	0.125	0.125	0.063	2.013
	61288	2.000	6.000	0.250	0.094	0.094	4.500
	NF5210	2.040	5.040	0.125	0.125	0.030	2.034
	NF3709	2.500	3.800	0.100	0.250	0.250	1.512
	10131	3.000	4.000	0.250	0.250	0.250	3.898
	NF8032	3.000	6.000	0.250	0.375	0.125	4.970



ROUND TUBES/PIPES

DIE #	A	B	WT/FT	PIPE SIZE
NF4211	0.500	0.045	0.077	
NF4761	0.500	0.045	0.077	
60195	0.500	0.050	0.085	
NF4951	0.500	0.060	0.100	
NF2477	0.500	0.125	0.175	
NF2132	0.532	0.045	0.084	
NF2236	0.540	0.088	0.150	1/4" SCH.40
NF3781	0.585	0.045	0.092	
60196	0.625	0.050	0.108	
NF2948	0.625	0.062	0.129	
NF3607	0.675	0.091	0.192	3/8" SCH.40
NF3813	0.750	0.050	0.132	
60219	0.750	0.065	0.168	
NF7342	0.750	0.125	0.287	
NF2440	0.840	0.109	0.300	1/2" SCH.40
NF6569	0.840	0.139	0.379	1/2" SCH.80
NF4547	0.875	0.049	0.152	
NF5121	0.875	0.058	0.179	
60087	0.875	0.065	0.199	
NF2763	0.937	0.070	0.229	
NF3895	0.980	0.250	0.688	
NF7241	1.000	0.055	0.192	
NF2073	1.000	0.062	0.218	
NF7240	1.000	0.065	0.224	
60218	1.000	0.082	0.284	
NF2493	1.000	0.118	0.394	
NF7857	1.000	0.125	0.412	

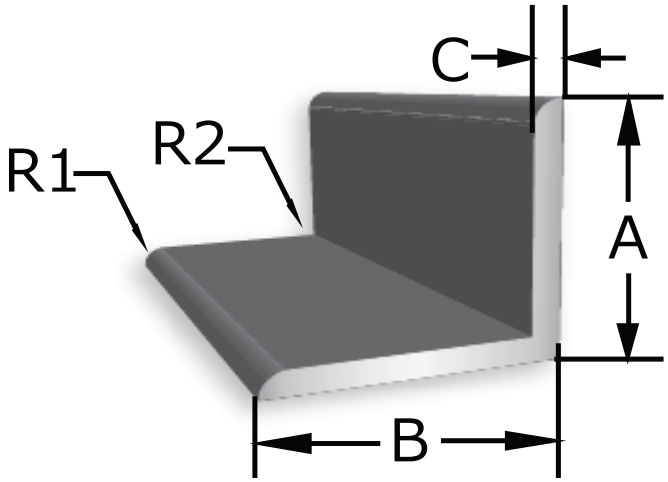


DIE #	A	B	WT/FT	PIPE SIZE
NF3318	1.000	0.240	0.688	
NF4063	1.000	0.250	0.707	
NF2237	1.050	0.113	0.398	3/4" SCH.40
NF7680	1.050	0.154	0.521	3/4" SCH.80
61036	1.105	0.080	0.310	
NF3894	1.230	0.085	0.464	
NF4062	1.230	0.105	0.445	
NF2342	1.250	0.055	0.247	
NF3900	1.250	0.060	0.269	
61163	1.250	0.062	0.277	
NF4162	1.250	0.065	0.290	
NF3023	1.315	0.133	0.593	1" SCH. 40
NF3548	1.315	0.179	0.767	1" SCH. 80
NF6575	1.380	0.284	1.172	
NF3893	1.480	0.110	0.568	
61161	1.500	0.062	0.338	
NF7258	1.500	0.065	0.344	
NF4298	1.500	0.085	0.454	
NF2129	1.500	0.125	0.648	
NF5683	1.500	0.250	1.171	
NF4111	1.625	0.453	2.002	
NF2251	1.660	0.140	0.805	1-1/4" SCH.40
NF6782	1.660	0.191	1.057	1-1/4" SCH.80
NF3901	1.687	0.060	0.367	
NF4859	1.750	0.125	0.766	
NF3044	1.875	0.281	1.688	
NF3280	1.875	0.312	1.841	
NF3587	1.900	0.109	0.736	1-1/2" SCH.10
NF2040	1.900	0.145	0.959	1-1/2" SCH.40
NF6161	1.900	0.200	1.281	1-1/2" SCH.80
NF5185	1.900	0.277	1.697	
NF5051	1.969	0.197	1.316	
NF3278	2.000	0.125	0.884	
NF8071	2.000	0.250	1.650	
NF3902	2.124	0.060	0.467	
NF7980	2.250	0.125	1.000	
NF7125	2.250	0.188	1.458	
NF8113	2.250	0.250	1.885	

ROUND TUBES/PIPES

DIE #	A	B	WT/FT	PIPE SIZE
NF6781	2.373	0.217	1.764	2" SCH.80
NF8025	2.375	0.109	0.931	2" SCH.10
NF3549	2.375	0.154	1.289	2" SCH.40
NF7982	2.500	0.250	2.120	
NF8095	2.500	0.500	3.770	
NF4266	2.555	0.216	1.904	
NF3903	2.561	0.070	0.658	
NF3875	2.750	0.156	1.526	
NF4452	2.875	0.206	2.072	2-1/2" SCH.40
NF3860	2.875	0.276	2.705	2-1/2' 'SCH.80
NF3864	2.875	0.406	3.779	
NF3904	3.000	0.070	0.774	
NF3100	3.000	0.125	1.355	
NF6374	3.350	0.425	4.686	
NF7782	3.500	0.188	2.341	
11004	3.500	0.189	2.674	
NF8026	3.500	0.120	1.529	3" SCH. 10
NF6836	3.500	0.216	2.674	3" SCH. 40
NF5035	3.500	0.250	3.062	
NF7012	3.500	0.300	3.619	3" SCH. 80
NF8094	3.500	0.500	5.654	
NF7907	3.500	1.000	9.425	
NF3101	4.000	0.125	1.825	
NF3772	4.000	0.226	3.215	3-1/2" SCH.40
NF7981	4.000	0.250	3.534	
NF6866	4.500	0.237	3.809	4" SCH. 40
NF7925	4.500	0.337	5.288	4" SCH. 80
NF6716	5.000	0.125	2.297	
NF4593	5.000	0.250	4.447	
NF7952	5.563	0.258	5.166	5" SCH. 40
10124	6.000	0.125	2.768	
NF8673	6.625	0.280	6.698	6" SCH. 40
NF8674	6.625	0.432	10.086	6" SCH. 80

STRUCTURAL ANGLES



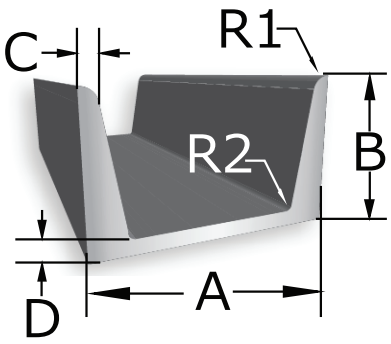
STRUCTURAL ANGLES

DIE #	A	B	C	R1	R2	WT/FT
NF6874	0.750	0.750	0.125	0.094	0.125	0.205
NF2492	1.000	1.000	0.125	0.094	0.125	0.282
NF3550	1.000	1.000	0.188	0.094	0.125	0.408
NF3220	1.000	1.000	0.250	0.094	0.094	0.524
NF5867	1.250	1.250	0.188	0.188	0.250	0.524
NF4442	1.250	1.250	0.250	0.125	0.094	0.670
NF6392	1.250	1.500	0.188	0.125	0.188	0.577
NF2016	1.500	1.500	0.125	0.125	0.188	0.432
NF2022	1.500	1.500	0.188	0.125	0.188	0.636
NF2430	1.500	1.500	0.250	0.188	0.125	0.826
NF2545	1.500	2.000	0.188	0.125	0.188	0.744
NF5387	1.500	3.000	0.125	0.125	0.188	0.658
NF4059	1.500	5.000	0.125	0.125	0.188	0.958
NF1203	1.750	1.750	0.188	0.125	0.188	0.752
NF7836	1.750	1.750	0.250	0.125	0.188	0.976
NF7880	2.000	1.500	0.250	0.125	0.188	0.976
NF2506	2.000	2.000	0.125	0.250	0.125	0.589
NF2247	2.000	2.000	0.188	0.188	0.188	0.850
NF2444	2.000	2.000	0.250	0.125	0.250	1.133
NF6736	2.000	2.000	0.375	0.250	0.250	1.615
NF2526	2.000	2.500	0.188	0.125	0.250	0.980
NF7823	2.000	2.500	0.250	0.125	0.250	1.283
NF1628	2.000	3.000	0.188	0.188	0.250	1.069
NF2226	2.000	3.000	0.250	0.188	0.312	1.432
NF2225	2.000	3.000	0.312	0.188	0.312	1.762
NF7853	2.000	3.000	0.375	0.188	0.312	2.088

STRUCTURAL ANGLES

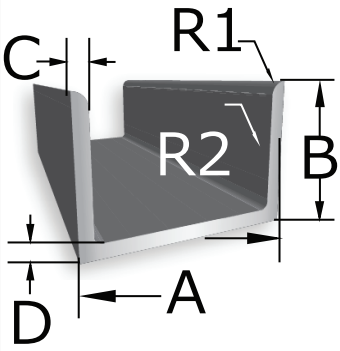
STRUCTURAL ANGLES

DIE #	A	B	C	R1	R2	WT/FT
NF3288	2.000	4.000	0.188	0.188	0.188	1.309
NF2509	2.000	4.000	0.250	0.250	0.375	1.724
NF8060	2.000	6.000	0.188	0.187	0.500	1.805
NF2354	2.250	2.500	0.250	0.125	0.250	1.355
NF3780	2.500	2.500	0.188	0.125	0.250	1.092
NF2523	2.500	2.500	0.250	0.125	0.250	1.433
NF2346	2.500	2.500	0.375	0.125	0.250	2.089
NF3783	2.500	3.500	0.250	0.250	0.312	1.717
NF3472	3.000	3.000	0.188	0.250	0.312	1.309
NF2544	3.000	3.000	0.250	0.250	0.312	1.706
NF6945	3.000	3.000	0.375	0.250	0.312	2.524
NF7535	3.000	3.000	0.500	0.250	0.313	3.210
NF3775	3.000	4.000	0.375	0.250	0.375	2.986
NF3776	3.000	4.000	0.500	0.250	0.375	3.904
NF7975	3.000	5.000	0.250	0.250	0.380	2.330
NF7854	3.000	5.000	0.375	0.312	0.375	3.418
NF7879	3.500	3.500	0.250	0.250	0.375	2.029
NF8634	3.500	5.000	0.313	0.313	0.438	3.070
NF8615	3.500	5.000	0.375	0.313	0.438	3.655
NF6835	4.000	3.000	0.250	0.250	0.375	2.029
NF7277	4.000	4.000	0.250	0.250	0.375	2.275
NF7278	4.000	4.000	0.375	0.250	0.375	3.357
NF7924	4.000	4.000	0.500	0.250	0.375	4.504
NF8135	4.000	6.000	0.250	0.250	0.500	2.957
10190	4.000	6.000	0.375	0.375	0.500	4.323
NF7953	4.000	6.000	0.500	0.375	0.500	5.692
NF8035	5.000	5.000	0.500	0.375	0.500	5.692



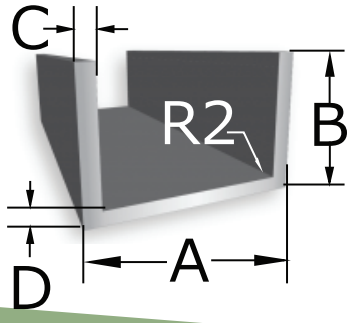
STRUCTURAL CHANNELS-AMERICAN STANDARD
(SR)= STRCT. CHANNEL w/SLOPE RATIO 1/6

	DIE #	A	B	C	D	R1	R2	WT/FT
	NF7930	3.000	1.250	(S)	0.358	0.100	0.270	2.310
(SR)	NF1629	3.000	1.410	(S)	0.170	0.100	0.270	1.531
(SR)	NF7059	3.000	1.498	(S)	0.258	0.100	0.270	1.799
(SR)	NF7037	3.000	1.596	(S)	0.356	0.110	0.280	2.106
	NF7318	3.000	1.750	(S)	0.437	0.312	0.250	3.230
(SR)	NF7060	4.000	1.580	(S)	0.180	0.110	0.280	1.837
(SR)	NF7061	4.000	1.647	(S)	0.247	0.110	0.280	2.159
(SR)	NF7160	4.000	1.720	(S)	0.320	0.110	0.280	2.502
(SR)	NF7062	5.000	1.750	(S)	0.190	0.110	0.290	2.212
	NF6999	6.000	1.945	(S)	0.225	0.120	0.300	3.018
	NF7322	6.000	1.920	(S)	0.200	0.120	0.300	2.774
	NF7961	6.000	2.034	(S)	0.314	0.120	0.300	3.678
	NF8070	6.000	2.157	(S)	0.437	0.120	0.300	4.582
	NF7927	8.000	2.290	(S)	0.250	0.138	0.320	4.480
	NF8691	8.000	2.527	0.220	0.487	0.320	0.320	6.691
	NF8692	10.000	2.600	0.240	0.240	0.140	0.340	5.194
	NF8693	12.000	2.960	0.280	0.300	0.170	0.380	7.338



SPECIAL CHANNELS

DIE #	A	B	C	D	R1	R2	WT/FT
NF4917	2.020	0.875	0.125	0.125	0.125	0.012	0.521
NF3806	3.000	1.410	0.170	0.170	0.100	0.270	1.151
NF5229	4.528	2.320	0.462	0.475	0.010	0.250	4.658

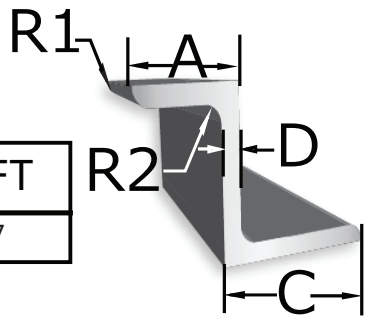


ALUMINUM ASSOCIATION CHANNELS

DIE #	A	B	C	D	R1	R2	WT/FT
NF8687	4.000	2.500	0.250	0.250		0.250	2.582
NF7979	5.000	2.750	0.320	0.190		0.300	3.152
NF7884	6.000	2.500	0.290	0.170	(S)	0.300	2.892
NF8048	6.000	3.250	0.350	0.210		0.300	4.112

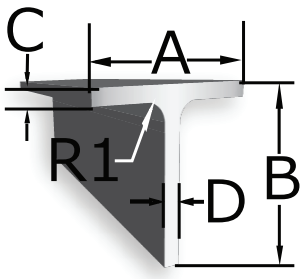
STRUCTURAL "Z"

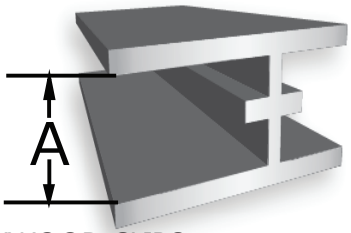
DIE #	A	B	C	D	R1	R2	WT/FT
NF2167	1.750	4.000	1.750	0.188	0.188	0.188	1.607



STRUCTURAL "T"

DIE #	A	B	C	D	R	WT/FT
NF6436	2.000	2.000	0.250	0.250	0.093	1.125



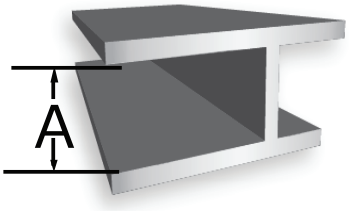


PLYWOOD CLIPS

DIE #	A	WT/FT
NF1026	0.437	0.150
NF1025	0.468	0.152
NF0796	0.500	0.155
NF0809	0.625	0.162
NF1317	0.593	0.150
NF1363	0.750	0.148
NF6166	0.750	0.187

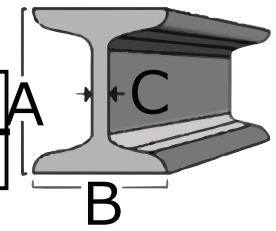
PLYWOOD "H" MOLDING

DIE #	A	WT/FT
NF0472	0.375	0.115
NF4364	0.375	0.269
NF0406	0.438	0.110
NF6114	0.500	0.118



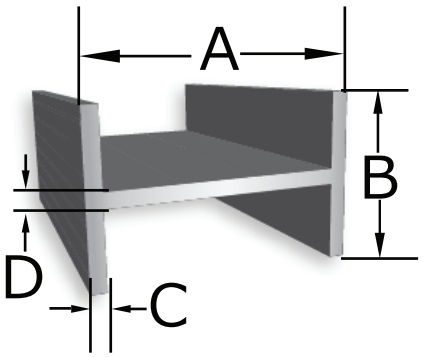
"I" BEAMS
(AMERICAN STD., SEE DRAWING)

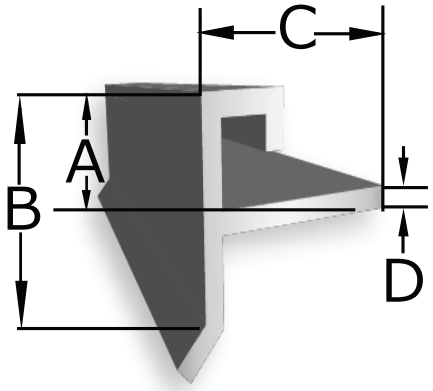
DIE #	A	B	C	WT/FT
NF7939	6.000	3.330	0.230	4.162



"I" BEAMS (FOR BOAT TRAILER BEAMS USE 6061-T6.)

DIE #	A	B	C	D	WT/FT
61031	1.500	0.750	0.060	0.085	0.252
60235	1.600	1.050	0.050	0.500	0.215
NF8027	3.000	2.500	0.260	0.150	2.029
NF7484	3.500	3.000	0.260	0.175	2.470
61139	4.000	2.250	0.130	0.090	1.121
NF8243	4.000	3.000	0.290	0.170	2.862
NF6982	4.015	2.250	0.250	0.188	2.131
NF6640	4.500	2.938	0.260	0.175	2.699
NF6330	4.697	3.583	0.100	0.100	1.369
10159	5.000	3.000	0.210	0.210	2.680
NF6641	5.500	3.500	0.280	0.175	3.532





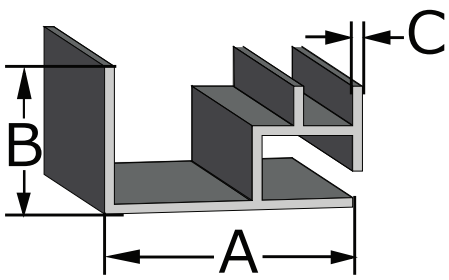
CONCRETE " T " BARS,(d) RAIN DRIP, (g)GROOVES ON DIM. B

	DIE #	A	B	C	D	WT/FT
	NF0155	1.000	2.425	2.000	0.050	0.310
(d)	NF1383	1.465	3.000	1.830	0.070	0.478
(d)	NF4087	1.500	2.500	2.000	0.050	0.338
(d)	NF5428	1.500	2.625	4.000	0.050	0.458
(d)	NF7108	1.500	2.750	3.000	0.050	0.406
(g)(d)	NF1409	1.500	2.750	3.000	0.070	0.544
	NF0167	1.500	2.925	2.050	0.050	0.322
	NF1407	1.500	3.000	3.000	0.070	0.539
(d)	NF5514	1.500	3.000	2.000	0.050	0.371
(d)	NF6506	1.500	3.000	3.000	0.050	0.454
	NF6620	1.500	3.000	4.000	0.062	0.553
(d)	NF6283	1.500	3.000	4.000	0.062	0.593
	NF6153	1.500	3.500	2.000	0.050	0.351
(d)	NF6154	1.500	3.870	2.000	0.050	0.394
(d)	NF5697	1.500	3.870	2.500	0.050	0.421
(d)	NF1391	1.500	4.000	1.070	0.070	0.499
(d)	NF1420	1.500	4.500	1.570	0.070	0.587
(d)	NF6357	1.500	5.000	3.500	0.085	1.024
(d)	NF4391	2.000	2.625	4.000	0.050	0.458
	NF1514	2.000	2.625	4.000	0.050	0.426
(d)	NF1371	2.000	3.000	1.800	0.050	0.347
(d)	NF4824	2.000	3.056	3.000	0.065	0.565
(d)	NF7106	2.000	3.100	3.000	0.065	0.565
	NF1853	2.000	3.375	2.000	0.062	0.442
(d)	NF4388	2.000	3.375	3.000	0.070	0.637
(d)	NF5304	2.000	3.875	2.500	0.050	0.434
(d)	NF4594	2.000	5.597	2.000	0.070	0.718
(d)	NF6281	2.000	2.489	2.750	0.0625	0.533
(d)	NF5317	2.500	3.500	2.000	0.070	0.511
	NF3916	2.500	3.935	2.000	0.060	0.466
(d)	NF4789	2.500	3.935	2.000	0.060	0.500
(d)	NF4945	2.500	4.000	2.000	0.075	0.604
(d)	NF6282	2.500	4.000	4.000	0.078	0.863
(d)	NF6384	2.500	4.500	4.000	0.070	0.809
(d)	NF5640	2.500	5.000	2.000	0.060	0.577
(d)	NF6158	2.500	6.500	3.000	0.093	1.140
(d)	NF1959	2.850	3.500	2.000	0.080	0.620
(d)	NF4132	3.000	5.000	2.000	0.062	0.599
(d)	NF7107	3.000	5.000	3.000	0.080	0.948
(d)	NF4575	3.500	4.000	3.500	0.080	0.826
(d)	NF6271	3.500	5.375	2.500	0.080	0.856
(d)	NF6270	4.000	5.875	2.500	0.080	0.904

CONCRETE "T" BARS

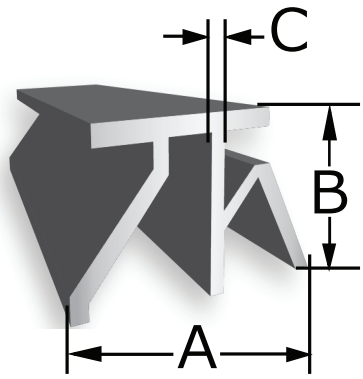
SKYLIGHT SELF-FLASHING

DIE #	A	B	C	WT/FT
NF1358	2.125	2.750	0.070	0.917
NF6101	3.500	3.000	0.058	0.664



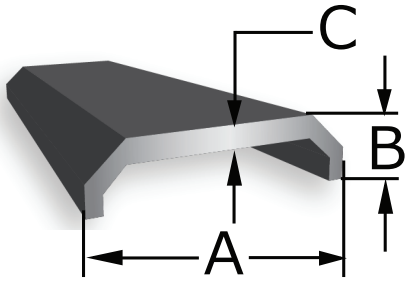
THRESHOLD-CARPET

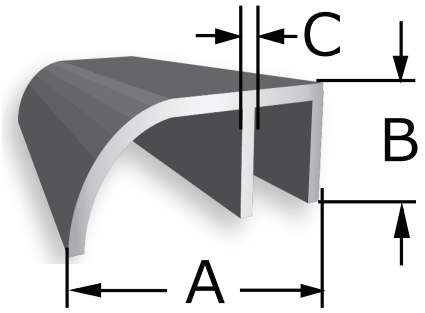
DIE #	A	B	C	WT/FT
NF6530	3.375	0.500	0.070	0.325
NF7018	3.882	1.233	0.075	0.589
NF1162	4.000	1.250	0.062	0.518
NF0107	4.000	1.626	0.062	0.682



THRESHOLD-SADDLE (COMMERCIAL & RESIDENTIAL)

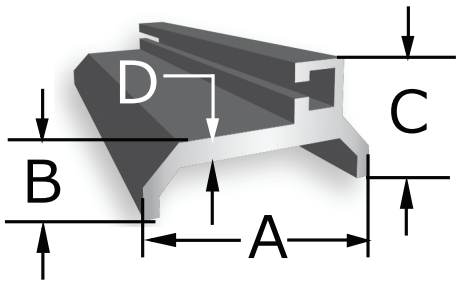
DIE #	A	B	C	WT/FT
NF3149	3.000	0.500	0.125	0.606
NF6751	4.000	0.250	0.125	0.583
NF0294	4.000	0.500	0.109	0.620
NF6255	4.000	0.500	0.188	0.784
NF5739	4.000	0.525	0.050	0.385
NF6397	5.000	0.250	0.100	0.624
NF5725	5.000	0.500	0.050	0.527
NF5743	5.000	0.500	0.050	0.555
NF5726	5.000	0.500	0.100	0.725
NF4874	6.000	0.500	0.080	0.713
NF6408	7.000	0.500	0.188	1.378





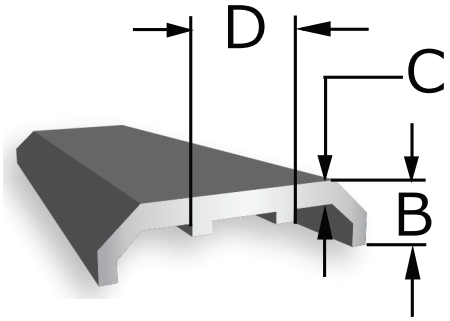
THRESHOLD-BUMP

DIE #	A	B	C	WT/FT
NF1205	1.785	1.250	0.062	0.425
NF0754	2.750	0.625	0.055	0.270
NF3149	3.000	0.500	0.125	0.606
NF6078	4.500	0.500	0.187	0.904



THRESHOLD-PANIC

DIE #	A	B	C	D	WT/FT
NF0903	3.690	0.625	0.950	0.125	0.749
NF3056	4.000	0.500	0.925	0.125	0.780
NF3314	5.000	0.250	0.500	0.125	0.806
NF5744	5.000	0.250	0.500	0.125	0.815
NF3050	5.000	0.375	0.625	0.125	0.860
NF6868	5.000	0.405	0.850	0.140	0.962



THRESHOLD w/LEGS

DIE #	A	B	C	D	WT/FT
NF6756	6.000	0.250	0.125	2.500	0.886

REPLACEMENT SECTIONS

MUTIN

DIE#NF0181
WT./FT.= 0.164

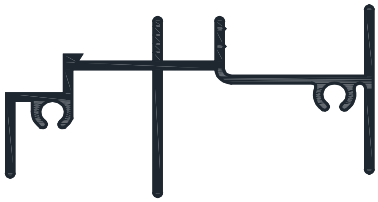
MAIN FRAME, HEADER W/FIN

DIE#NF1017
WT./FT.= 0.361

HEAD

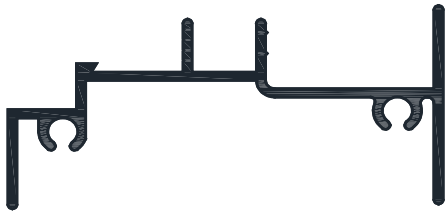
DIE#NF1110
WT./FT.= 0.244

MAIN FRAME, JAMB W/FIN



DIE#NF1019
WT./FT.= 0.418

JAMB

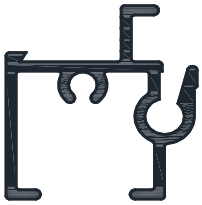


DIE#NF1112
WT./FT.= 0.418

SILL

DIE#NF1111
WT./FT.= 0.286

FIXED MEETING RAIL

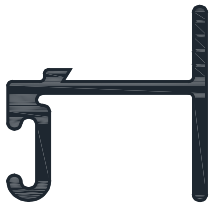


DIE#NF1114
WT./FT.= 0.228

INT. METTING RAIL

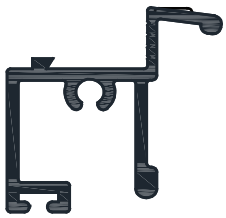
DIE#NF1113
WT./FT.= 0.332

SASH STILE



DIE#NF1116
WT./FT.= 0.143

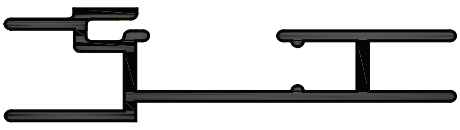
LIFT RAIL #1



DIE#NF1115
WT./FT.= 0.283

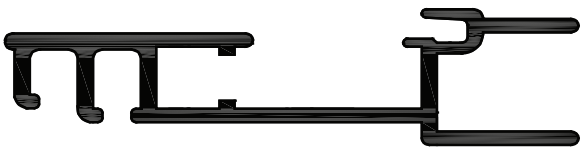
SCREEN WINDOW

GLASS LIFT W/POCKET



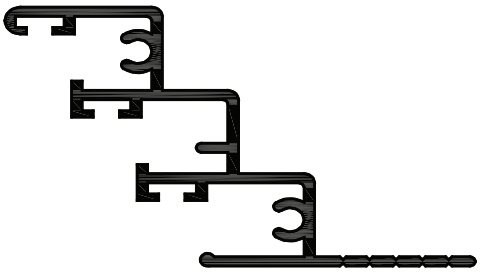
DIE#NF1156 WT./FT.= 0.230

SCREEN LIFT W/POCKET



DIE#NF0745 WT./FT.= 0.263

MAIN FRAME JAMB,HEAD & SILL

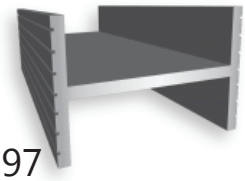
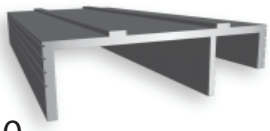
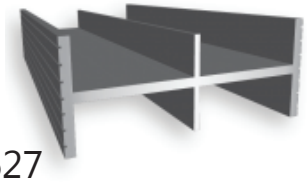


DIE#NF0180 WT./FT.= 0.409

CANVAS AWNING

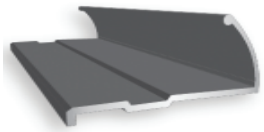
1" x 1-1/6" TUBE w/RADIUS  DIE#NF1931 STOCK LENGHT:24'	3/4" x 3/4" x 1/16" TUBE w/RADIUS  DIE#NF2222 STOCK LENGHT:24'
TRAILER MOLDING  DIE#NF1832 STOCK LENGHT:24'	LACE BAR  DIE#NF2236 STOCK LENGHT:24'

CARPORT

	3" CARPORT "C"CHANNEL  DIE#NF1218 STOCK LENGHT: 20' & 24'
3" CARPORT "I" BEAM  DIE#NF0297 STOCK LENGHT: 20' & 24'	3" CARPORT "E" CHANNEL  DIE#NF1320 STOCK LENGHT: 20' & 24'
GUTTER  DIE#NF6730 STOCK LENGHT: 20' & 24'	DOUBLE "I" BEAM  DIE#NF7627 STOCK LENGHT: 20' & 24'

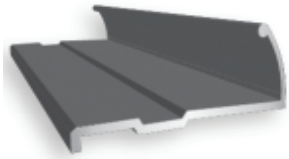
CARPET TRIM

5/8" CARPET TRIM



DIE# NF2583 WT/FT: 0.122

1/2" CARPET TRIM

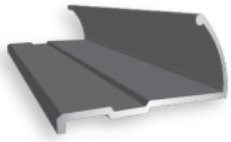


DIE# NF2219 WT/FT: 0.096

BLANK TAP DOWN CARPET TRIM

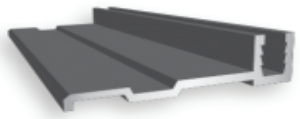
DIE# NF2525 WT/FT: 0.110

3/4" CARPET TRIM



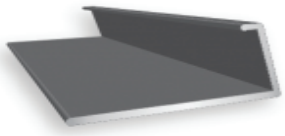
DIE# NF2218 WT/FT: 0.120

UNIVERSAL TRIM PIN TYPE



DIE# NF2220 WT/FT: 0.102

1/2" TRIM

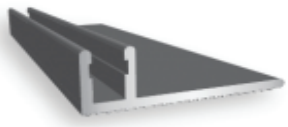


DIE# NF2179 WT/FT: 0.085

3/4" OVERLAP DOOR MOULDING FOR 5/32"

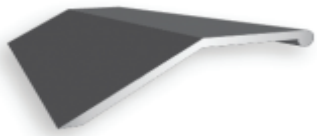
DIE# NF2605 WT/FT: 0.133

F-CLIP



DIE# NF2180 WT/FT: 0.091

1'-1/2" BINDER BAR

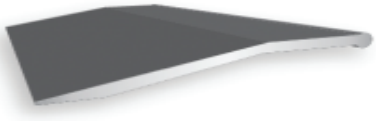


DIE# NF2420 WT/FT: 0.092

1" BINDER BAR

DIE# NF2421 WT/FT: 0.061

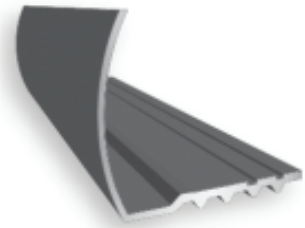
2" BINDER BAR



DIE# NF2512 WT/FT: 0.193

CARPET TRIM & NOSING

1-1/8" STAIR NOSING
APPLIED AFTER



DIE:NF2549 WT/FT: 0.096

CAP FOR 1/16" MATERIAL
APPLIED BEFORE

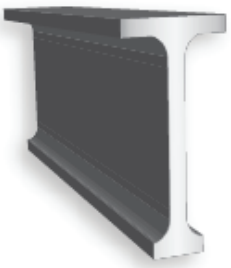
DIE:NF2584 WT/FT: 0.135

BULB "T"

2" x 1" x 1/2" x 0.188"
BULB "T"

DIE:NF7392 WT/FT: 1.239

3" x 1/4" BULB "T"

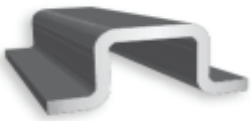


DIE:NF7393 WT/FT: 1.342

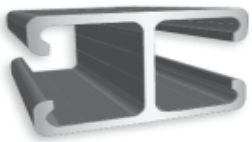
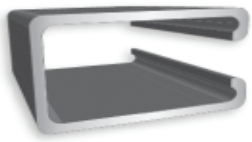
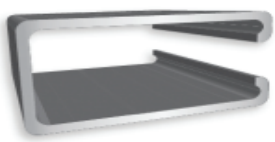
3"BULB "T"

DIE:NF7394 WT/FT: 0.685

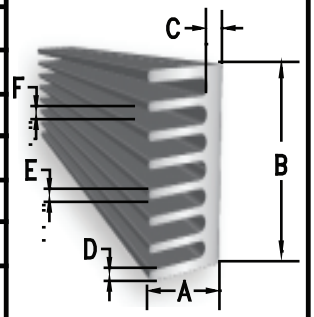
BOAT TRAILER EXTRUSIONS 6061-T6
(b)FABRICATION DRAWINGS AVAILABLE

CHANNEL BRACKET  (b) DIE# NF6678 WT/FT: 3.539	ANGLE BRACKET  (b) DIE# NF6642 WT/FT: 2.731	STEP EXTRUSION  DIE# NF6639 WT/FT: 1.474
"I" BEAM 3.5"x5.5"  DIE# NF6641 WT/FT: 3.532	"I" BEAM 2.938"x4.5"  DIE# NF6640 WT/FT: 2.699	2"x.188" SQ. TUBE w/RADIUS (MATES w/NF6678)  DIE# NF2962 WT/FT: 1.598
3"x.188"SQ.TUBE w/RADIUS  DIE# NF6623 WT/FT: 2.471	3"x.250" SQ.TUBE w/RADIUS  (b) DIE# NF6649 WT/FT: 3.203	HEAVY ANGLE 2.281"x1.750"x0.375"  (b) DIE# NF6643 WT/FT: 1.721
STRUCTURAL ANGLE 3"x3"x0.250"  DIE# NF2544 WT/FT: 1.679		

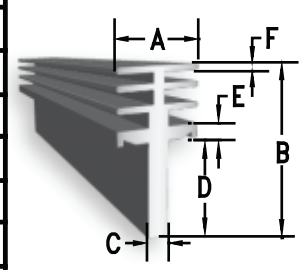
P-SERIES CHANNELS

P-1000 CHANNEL  DIE# NF1226 WT/FT: 0.742	P-1001 DOUBLE CHANNEL  DIE# NF1380 WT/FT: 1.390
P-4000 CHANNEL  DIE# NF1283 WT/FT: 0.445	P-5500 CHANNEL  DIE# NF1469 WT/FT: 0.950
P-5000 CHANNEL  DIE# NF1345 WT/FT: 1.104	

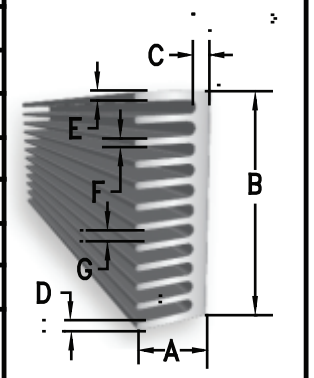
NF3165
A= 1.500
B= 2.500
C= 0.200
D= 0.185
E= 0.075
F= 0.240
G=
WT/FT= 1.931



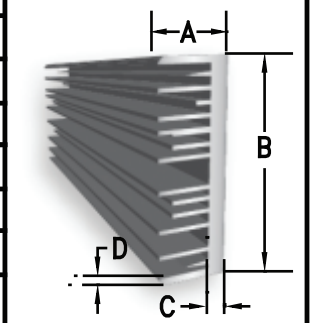
NF3185
A= 1.050
B= 1.890
C= 0.250
D=1.070
E= 0.156
F= 0.063
G=
WT/FT= 0.828



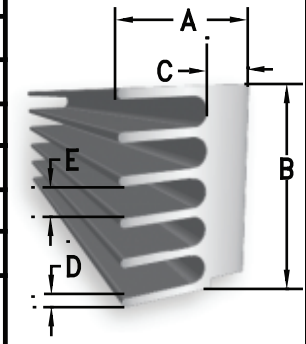
NF2637
A= 0.643
B= 1.846
C= 0.150
D= 0.075
E= 0.050
F= 0.060
G=0.110
WT/FT= 0.758



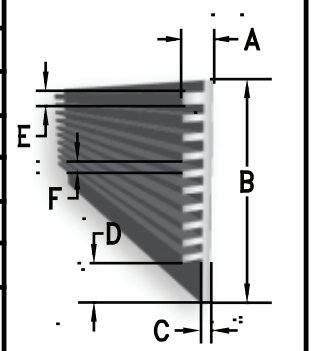
NF2644
A= 1.300
B= 4.000
C= 0.300
D= 0.100
E=
F=
G=
WT/FT= 2.389



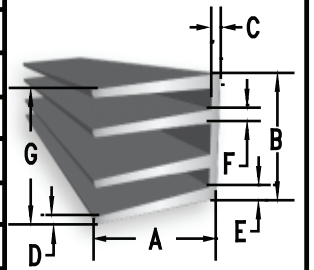
NF2733
A= 1.375
B= 1.900
C= 0.500
D= 0.080
E= 0.284
F=
G=
WT/FT= 1.661



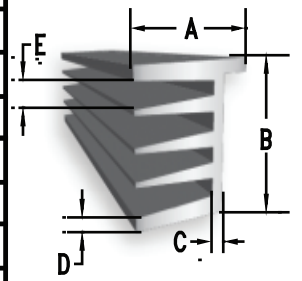
NF2760
A= 0.640
B= 4.450
C= 0.200
D= 1.013
E= 0.080
F= 0.233
G=
WT/FT= 1.517



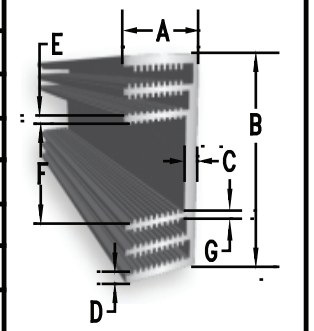
NF2795
A= 1.500
B= 1.180
C= 0.100
D= 0.060
E= 0.120
F= 0.1.00
G= 1.110
WT/FT= 0.707



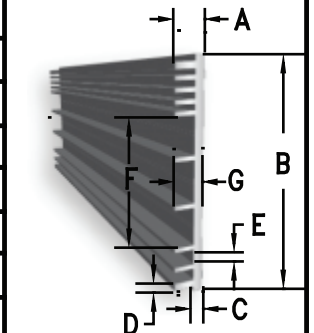
NF2809
A= 2.000
B= 2.000
C= 0.187
D= 0.167
E= 0.345
F=
G=
WT/FT= 1.991



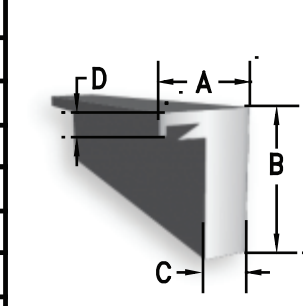
NF3063
A= 1.313
B= 2.875
C= 0.200
D= 0.078
E= 0.062
F= 1.317
G= 0.093
WT/FT= 1.312



NF3121
A= 0.500
B= 4.460
C= 0.100
D= 0.060
E= 0.150
F= 2.240
G= 0.445
WT/FT= 0.943



NF3147
A= 0.729
B= 1.100
C= 0.375
D= 0.098
E=
F=
G=
WT/FT= 0.560



NF3153
A= 0.630
B= 4.510
C= 0.100
D= 0.042
E= 0.075
F= 0.360
G=
WT/FT= 1.027