Grating Selection Process

Selection Process

A number of basic decisions must be made before a grating system can be specified. UNIVERSAL has developed a simple process to guide you in the process:

1. Select Material and Finish
2. Select the grating Load

For many applications, however, you may also have to take the following into account:

• Weight of the installation, which affects the cost of the support structure and the ease of installation.

• Corrosion resistance of the material is one of the most important selection criteria. grating materials may not respond the same way in different environments. Chemicals or combinations of chemicals have corrosion effects on some materials that can be compounded by temperature or even the speed at which the corrosive elements contact the gratings. For example, some grades of stainless steel may be resistant to salt water at high flow rates (perfect for heat exchangers), while exhibiting some corrosion pitting in standing salt water. Only the designer can quantify the various elements that affect the corrosion resistance of the grating system in a specific application. While UNIVERSAL can provide guidance, the designer is responsible for the final selection. For more information, see “Corrosion” section.

• Galvanizing can cause corrosion even if the grating material is resistant to its chemical environment.If there is a hazard of galvanizing corrosion, it may be possible to isolate the grating system from other metals instead of using a more expensive type of grating that would resist corrosion in a given application.

• Melting point and flammability rating are primarily concerns for non-metallic grating. Local building codes may restrict the use of a given product if certain performance levels are not met. Check with the appropriate inspection authorities before specifying the product.

• Relative cost varies dramatically, including material costs that float with the commodity index. For example,steel, zinc prices may vary significantly according to daily changes in the market.

• Thermal expansion must also be taken into account on a long grating run, especially in areas where temperature variation is extreme.

Selection Steps

1.Select Material and Finish

The most suitable material and finish for your application will depend on cost, the potential for Corrosion, and the load capecity required.UNIVERSAL offers gratings fabricated from steel,stainless steel and aluminum along with corrosion-resistant finishes,including zinc, PVC and Epoxy Painting .

2 Select the Grating Load Capacity (loading)

The standard classes of gratings, as related to their maximum design loads and to the associated design support spacing based on a simple beam span requirement, shall be designated in accordance with Table 1. Please note the load ratings in Table 1 are those most commonly used. Other load ratings are acceptable.

Bearing Bar Size in mm		SPAN														
		300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400
25×3	U	11000	4880	2740	1760	1230	900	680								
	D	0.6	1.4	2.6	3.9	5.9	7.9	10.0								
	C	1660	1100	820	660	550	470	410								
	D	0.5	1.1	2.0	3.1	4.3	6.1	8.0								
25×5	U	18300	8100	4560	2920	2020	1490	1150	850							
	D	0.6	1.4	2.5	3.9	5.6	7.5	10.0	12.7							
	C	2740	1820	1370	1100	910	780	690	570							
	D	0.5	1.1	2.0	3.1	4.3	6.1	8.0	10.5							
30×3	U	15800	7100	3950	2520	1750	1290	990	780	680	600					
	D	0.5	1.1	2.1	3.2	4.3	5.4	6.5	7.2	8.3	12.9					
	C	2370	1580	1180	950	790	670	590	520	410	400					
	D	0.4	0.9	1.6	2.6	3.7	5.0	6.6	8.3	9.4	10.3					
30×5	U	22800	11700	6580	4210	2920	2150	1610	1300	1050	860					
	D	0.5	1.1	2.1	3.2	4.3	5.4	6.5	7.2	10.8	12.9					
	C	3950	2630	1970	1580	1310	1130	980	870	780	710					
	D	0.4	0.9	1.6	2.6	3.7	5.0	6.6	8.3	9.4	13.5					
35×3	U	21500	9570	5320	3440	2390	1760	1340	1060	860	710					
	D	0.4	1.0	1.8	2.8	3.9	5.2	7.1	9.0	11.1	13.5					
	C	3220	2150	1610	1290	1070	920	800	710	640	580					
	D	0.3	0.8	1.4	2.3	3.2	4.3	5.7	7.2	8.6	10.8					
35×5	U	35800	1590	8900	5700	3980	2920	2240	1770	1430	1180	990	840			
	D	0.4	1.0	1.8	2.8	3.9	5.2	7.1	9.0	11.1	13.5	16.6	19.6			
	C	5380	3580	2680	2150	1790	1530	1340	1190	1070	980	890	820			
	D	0.3	0.8	1.4	2.3	3.2	4.3	5.7	7.2	8.6	10.8	13.1	15.7			
40×3	U	28100	12500	7100	4490	3100	2280	1740	1380	1120	920	770	660			
	D	0.3	0.8	1.5	2.4	3.5	4.8	6.2	7.9	9.7	11.8	13.8	16.4			
	C	4200	2800	2110	1690	1400	1200	1050	930	840	760	700	640			
	D	0.3	0.7	1.2	2.1	2.8	3.9	4.9	6.3	7.7	9.4	11.2	13.0			
40×5	U	47200	20800	11700	7500	5200	3820	2920	2310	1860	1650	1230	1100	950	830	
	D	0.3	0.8	1.5	2.4	3.5	4.8	6.2	7.9	9.7	11.8	13.8	16.4	19.5	20.6	
	C	7000	4680	3510	2800	2330	2010	1750	1560	1400	1270	1170	1080	1000	930	
	D	0.3	0.7	1.2	2.1	2.8	3.9	4.9	6.3	7.7	9.4	11.2	13.0	15.1	17.3	
50×3	U	59200	26300	14800	9500	6500	4830	3700	2920	2360	1950	1640	1400	1210	1050	960
	D	0.3	0.8	1.3	2.2	3.1	4.2	5.6	7.0	8.6	10.5	12.4	14.6	16.9	19.9	22.1
	C	8900	5900	4490	3550	2960	2530	2220	1970	1760	1610	1480	1370	1270	1180	1110
	D	0.2	0.6	1.0	1.7	2.5	3.4	4.4	5.6	6.9	8.3	9.9	11.7	13.5	15.5	17.7
50×5	U	73100	32500	18300	11700	8100	5900	4570	3610	2920	2410	2030	1730	1490	1300	1140
	D	0.3	0.7	1.2	2.0	2.8	3.8	5.0	6.3	7.8	9.4	11.2	13.2	15.2	17.5	19.9
	C	10900	7500	5500	4380	3660	3130	2740	2430	2190	1990	1830	1690	1560	1460	13.7
	D	0.2	0.6	1.0	1.5	2.2	3.1	4.0	5.0	6.2	7.5	9.0	10.5	12.1	14.0	15.9

Unit Stress - 1650 Kg/Sq m.
U- Unifromly distributed load in kg/sq.m.
C-Concelrated load in kg/meter width at mid-span.
D-Deflection in Millimeters.

Spans to left of heavy line produce a deflection of 6 mm or less under a uniform load of 500 kg/sq.m. This dellection is recommended as per BS 4592-1970

BEARING BAR SIZE										
Mesh Size	25x3	25x5	30x3	30x5	35x3	35x5	40x3	40x5	50x3	50x5
41x100	18.10	28.69	21.28	33.99	24.45	39.29	27.63	44.59	33.99	55.19
35x100	21.04	33.60	24.81	39.88	28.58	46.16	32.34	52.44	39.88	65.00
33x100	21.63	34.58	25.51	41.06	29.40	47.53	33.29	54.01	41.06	66.96
30x100	23.40	37.53	27.63	44.59	31.87	51.66	36.11	58.72	44.59	72.85
21x100	32.82	53.23	38.94	63.43	45.06	73.64	51.18	83.84	63.43	104.25
41x75	18.98	29.57	22.16	34.87	25.33	40.17	28.51	45.47	34.87	56.07
35x75	21.92	34.48	25.69	40.76	29.46	47.04	33.22	53.32	40.76	65.88
33x75	22.51	35.46	26.39	41.94	30.28	48.41	34.17	54.89	41.94	67.84
30x75	24.28	38.41	28.51	45.47	32.75	52.54	36.99	59.60	45.47	73.73
21x75	33.70	54.11	39.82	64.31	45.94	74.52	52.06	84.72	64.31	105.13
41x50	20.30	30.89	23.48	36.19	26.65	41.49	29.83	46.79	36.19	57.39
35x50	23.24	35.80	27.01	42.08	30.78	48.36	34.54	54.64	42.08	67.20
33x50	23.83	36.78	27.71	43.26	31.60	49.73	35.49	56.21	43.26	69.16
30x50	25.60	39.73	29.83	46.79	34.07	53.86	38.31	60.92	46.79	75.05
21x50	35.02	55.43	41.14	65.63	47.26	75.84	53.38	86.04	65.63	106.45
41x38	21.84	32.43	25.02	37.73	28.19	43.03	31.37	48.33	37.73	58.93
35x38	24.78	37.34	28.55	43.62	32.32	49.90	36.08	56.18	43.62	68.74
33x38	25.37	38.32	29.25	44.80	33.14	51.27	37.03	57.75	44.80	70.70
30x38	27.14	41.27	31.37	48.33	35.61	55.40	39.85	62.46	48.33	76.59
21x38	36.56	56.97	42.68	67.17	48.80	77.38	54.92	87.58	67.17	107.99

The above weight are considering cross bar size of square twisted 6 mm across.

For other types of gratings, multiply the above figures with the following factor :

Type	RFVC 100/50	RFC 100/50	RFP 100/50
Load Factor	1.5	1.3	1.2