HEAVY DUTY - METRIC

Vehicular Loads

Vehicular load tables are designed in accordance with the 16th Edition of the American Association of State Highway and Transportation Officials (AASHTO) for H-10 through H-25 loads with deflection limited to the lesser of .125 inches (3.175 mm) or L/400 to a maximum simple span of 8'- 0" (2,438mm). Automobile and forklift loads are similarly evaluated with loads calculated and distributed in accordance with the criteria shown below. If the load conditions of your application are not adequately addressed in the criteria presented, please contact Vulcraft for assistance in determining the proper grating for your application.

Vehicular Load Table Criteria	H-25[5]	H-20/ HL-93[6]	H-15	H-10[2]	Passenger Vehicles	5 Ton Forklifts[3]	3 Ton Forklifts[3]	1 Ton Forklifts[3]
Truck/ Vehicle Weight (kN)					28	64	44	19
Load Capacity (kN)					16	44	27	9
Axle Load (kN)	178	142	107	71				
Impact Factor	30%	30%	30%	30%	30%	30%	30%	30%
Total Load (kN)	231	185	139	93	21	58	35	12
% of Load on Drive Axel					60%	85%	85%	85%
Wheel Load (kN)	116	93	69	46	10	29	17	6
A-Length of distribution perpendicular to axle or parallel to main bars (mm)	635	508	381	254	229	279	178	102
C-Width of distribution parallel to axle or perpendicular to main bars (mm)	635	508	381	254	229	279	178	102

Notes:
1. For continuous spans, use continuity factor = .80.
2. This distribution results in larger grating sizes for lighter trucks on shorter spans.
3. The fork lift wheel loads and load distribution patterns depicted above, generally, and only partially, represent the broad range of rubber-tired lift trucks available. For those applications falling outside of these examples, please contact Vulcraft.
4. Wheeled vehicles with urethane tires should NEVER be used in conjunction with open grid bar grating.
5. HS20 is the same as H20 and HS15 is the same as H15. The "S" stands for semi-trailer.
6. The "HL-93" notation shown with "H-20" represents AASHTO's truck loading standard post-1993. Since, 1993, H-10, H-20, etc. have been retired in lieu of the "HL-93" loading which represents all trucks.

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Vehicular Loads

Note: All loads based on Smooth surface

30HW102

Bearing Bar Size	S_x mm³/m	I_x mm⁴/m	Unit Wt. kPa	Maximum Clear Span Between Supports (mm)							
				H-25	H-20 / HL-93	H-15	H-10	Auto Traffic	5-Ton Forklift	3-Ton Forklift	1-Ton Forklift
32 x 6	35,960	571.69E+3	58.59	435	374	314	259	442	250	208	258
38 x 6	51,610	983.22E+3	69.14	486	426	369	318	586	299	261	349
38 x 10	76,610	1.46E+6	100.76	571	513	458	413	822	378	347	498
51 x 6	91,760	2.33E+6	90.41	618	561	508	466	954	422	395	580
64 x 6	143,370	4.55E+6	111.68	786	733	686	657	1,326*	581	567	878
76 x 6	206,450	7.87E+6	132.95	993	944	905	890	1,589*	776	777	1,242
76 x 10	306,450	11.68E+6	197.65	1,330	1,289	1,262	1,271	1,818*	1,094	1,121	1,557*
102 x 6	367,020	18.64E+6	175.48	1,518	1,480	1,460	1,483	2,116*	1,270	1,312	1,812*
102 x 10	544,800	27.68E+6	260.79	1,752*	1,752*	1,762*	1,793*	2,421*	1,689*	1,730*	2,075*
127 x 10	851,250	54.05E+6	323.93	2,174*	2,179*	2,196*	2,239*	3,024*	2,109*	2,161*	2,593*
152 x 10	1,225,800	93.41E+6	387.07	2,599*	2,608*	2,631*	2,685*	3,629*	2,528*	2,592*	3,111*

* Indicates that value was controlled by L/400 ≤ ⅛" deflection limit.

Note: All loads based on Smooth surface

24HW102

Bearing Bar Size	S_x mm³/m	I_x mm⁴/m	Unit Wt. kPa	Maximum Clear Span Between Supports (mm)							
				H-25	H-20 / HL-93	H-15	H-10	Auto Traffic	5-Ton Forklift	3-Ton Forklift	1-Ton Forklift
32 x 6	44,940	714.61E+3	71.91	463	403	343	288	512	275	233	293
38 x 6	64,520	1.23E+6	85.09	528	468	411	359	687	334	296	400
38 x 10	95,770	1.82E+6	124.44	633	575	521	475	974	431	399	575
51 x 6	114,700	2.91E+6	111.68	691	634	582	540	1,133	485	457	672
64 x 6	179,210	5.69E+6	138.26	901	848	802	772	1,706	679	664	1,021
76 x 6	258,060	9.83E+6	164.85	1,158	1,109	1,071	1,056	2,133*	917	917	1,448
76 x 10	383,060	14.59E+6	245.01	1,578	1,537	1,511	1,521	2,441*	1,305	1,330	2,067*
102 x 6	458,780	23.31E+6	218.02	1,812	1,775	1,755	1,779	2,842*	1,521	1,560	2,408*
102 x 10	681,000	34.59E+6	323.93	2,353*	2,357*	2,371*	2,409*	3,252*	2,212	2,296	2,756*
127 x 10	1,064,070	67.57E+6	402.86	2,929*	2,938*	2,960*	3,010*	4,089*	2,837*	2,894*	3,444*
152 x 10	1,532,260	116.76E+6	481.78	3,508*	3,521*	3,549*	3,610*	4,876*	3,402*	3,472*	4,133*

* Indicates that value was controlled by L/400 ≤ ⅛" deflection limit.

Note: All loads based on Smooth surface

48HW102

Bearing Bar Size	S_x mm³/m	I_x mm⁴/m	Unit Wt. kPa	Maximum Clear Span Between Supports (mm)							
				H-25	H-20 / HL-93	H-15	H-10	Auto Traffic	5-Ton Forklift	3-Ton Forklift	1-Ton Forklift
32 x 6	22,470	357.30E+3	38.62	396	335	275	220	348	217	176	211
38 x 6	32,260	614.51E+3	45.22	430	370	313	262	451	251	214	282
38 x 10	47,880	912.17E+3	65.24	486	428	374	329	619	307	277	397
51 x 6	57,350	1.46E+6	58.51	517	461	408	366	712	338	312	461
64 x 6	89,610	2.84E+6	71.80	630	577	530	501	1,048	449	437	692
76 x 6	129,030	4.92E+6	85.09	767	719	680	665	1,420*	585	591	974
76 x 10	191,530	7.30E+6	126.62	992	951	924	935	1,625*	808	842	1,430*
102 x 6	229,390	11.65E+6	111.68	1,117	1,080	1,060	1,084	1,892*	932	981	1,665*
102 x 10	340,500	17.30E+6	166.08	1,517	1,493	1,495	1,563	2,163*	1,328	1,427	1,905*
127 x 10	532,030	33.78E+6	205.55	1,906*	1,915*	1,938*	1,994*	2,702*	1,874*	1,946*	2,381*
152 x 10	766,130	58.38E+6	245.01	2,276*	2,290*	2,322*	2,392*	3,242*	2,247*	2,334*	2,857*

* Indicates that value was controlled by L/400 ≤ ⅛" deflection limit.

HEAVY DUTY - METRIC

Vehicular Loads

Note: All loads based on Smooth surface

60HW102

Bearing Bar Size	S_x mm³/m	I_x mm⁴/m	Unit Wt. kPa	Maximum Clear Span Between Supports (mm)							
				H-25	H-20 / HL-93	H-15	H-10	Auto Traffic	5-Ton Forklift	3-Ton Forklift	1-Ton Forklift
32 x 6	17,980	285.84E+3	31.96	381	320	261	206	312	205	164	193
38 x 6	25,810	491.61E+3	37.24	409	349	292	241	399	233	197	255
38 x 10	38,310	729.74E+3	53.41	455	397	343	297	542	280	250	357
51 x 6	45,880	1.17E+6	47.87	481	424	371	329	621	306	280	414
64 x 6	71,680	2.28E+6	58.51	572	519	472	442	906	400	388	618
76 x 6	103,230	3.93E+6	69.14	684	635	596	581	1,255	514	520	868
76 x 10	153,230	5.84E+6	102.94	868	826	799	808	1,538*	701	735	1,276
102 x 6	183,510	9.32E+6	90.41	970	932	912	935	1,790*	805	855	1,503
102 x 10	272,400	13.84E+6	134.51	1,296	1,271	1,272	1,338	2,048*	1,138	1,238	1,829*
127 x 10	425,630	27.03E+6	166.08	1,785*	1,795*	1,823*	1,885*	2,558*	1,699	1,849*	2,287*
152 x 10	612,900	46.70E+6	197.65	2,130*	2,147*	2,183*	2,260*	3,069*	2,120*	2,218*	2,743*

* Indicates that value was controlled by L/400 ≤ ⅛" deflection limit.

Grating Frames

Vulcraft's structural fabrication services can be leveraged to further aid you in getting a superior solution for covering your concrete opening by also obtaining an Embed Frame with your grating. A steel embed frame can improve the quality and lifespan of your project by:

- Shielding the concrete at the opening edges from cracking and chipping,
- Providing an edge for the opening when forming the concrete pour,
- Providing uniform elevation for the opening to minimize potential for uneven surfaces,
- And providing a smooth an uniform bearing surface for the grating, allowing for easier attachment and better performance over it's lifetime.

Frames are available in normal rectangular configurations only and will be supplied as a fully-assembled, four-sided unit in sizes up to those that can safely be transported via normal flatbed carriers. Sizes or configurations other than this should be discussed with Vulcraft. Embed frames can be supplied mill finished, painted, or hot-dipped galvanized. To order, please include a detail similar to the following with the Clear Opening Width and Span clearly defined as well as the desired quantities and finish.