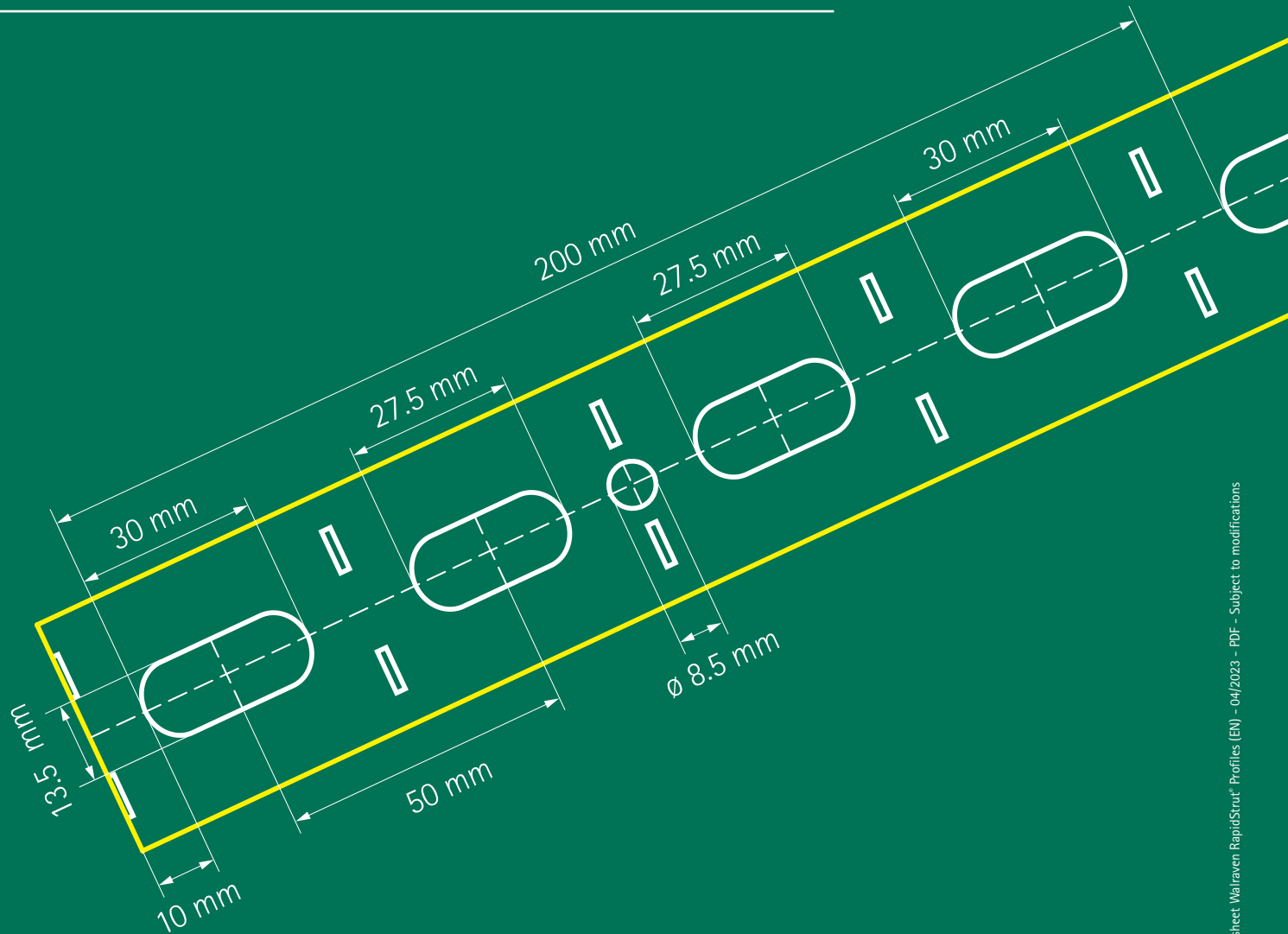


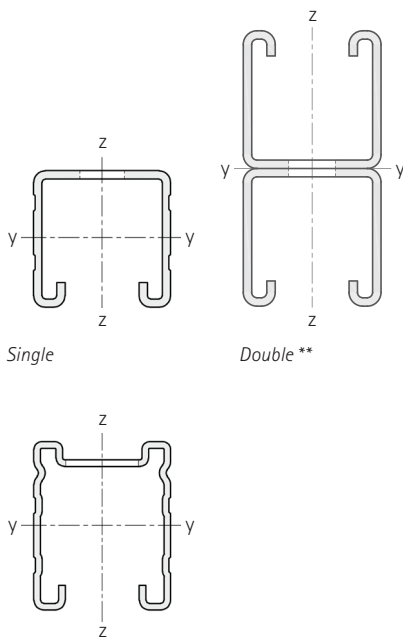
## Rail section properties and load tables



## Technical Data Walraven RapidStrut® Profiles

# System Walraven RapidStrut®

## Table of rail section properties



51 | M - Walraven RapidStrut® DS 5

Type	Weight (kg/m)	Yield strength $f_{max}$ (N/mm <sup>2</sup> )	Moment of inertia (cm <sup>4</sup> )		Section modulus (cm <sup>3</sup> )	
			$I_y$	$I_z$	$W_y$	$W_z$
21   L	1.127	188.3 *	0.924	3.849	0.792	1.864
21   M	1.448	188.3 *	1.116	4.801	0.950	2.325
21   H	1.741	188.3 *	1.261	5.587	1.065	2.706
41   L	1.604	183.8 *	4.756	6.275	2.186	3.038
41   M	2.098	188.3 *	5.920	7.906	2.701	3.829
41   H	2.526	188.3 *	6.893	9.299	3.120	4.503
51   M	2.380	188.3 *	9.873	9.719	3.640	4.706
62   H	3.341	188.3 *	19.494	13.199	5.984	6.392
82   H	4.123	187.0 *	40.247	16.968	9.437	8.217
41 x 21D - 2.5	3.560	152.6	5.700	10.760	2.770	5.210
41 x 41D - 2.5	4.900	152.6	36.790	18.560	8.910	8.990
41 x 62D - 2.5	6.660	152.6	111.210	26.370	17.940	12.770

See rail load tables with calculated load values.

At the specified load values, the permissible steel stress  $f_{max}$  and a maximum deformation ratio of  $L/200$  are not exceeded. Moment of inertia and moment of resistance were calculated with averaged hole pattern and tothing.

\* The maximum permissible steel stress  $f_{max}$  was determined due to the increased yield point as a result of cold Forming according to DIN EN 1993-1-3:2010-12, Section 3.2.2.

On the impact side a safety factor  $\gamma_{a10}$  of 1.4 was taken and on the material side a safety factor  $\gamma_M$  of 1.1.

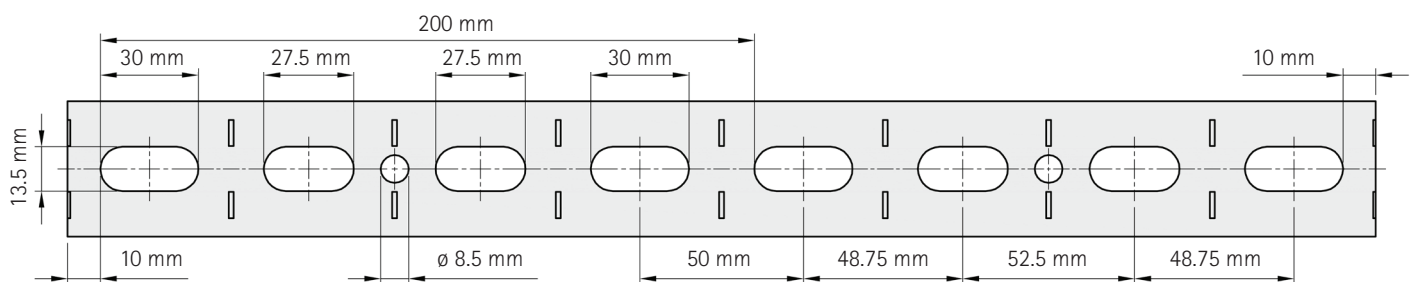
The overall safety factor  $\gamma_{ges}$  is therefore 1.54.

\*\* The hole pattern for all profile double rails is 30 x 14 mm with a hole spacing of 50 mm.

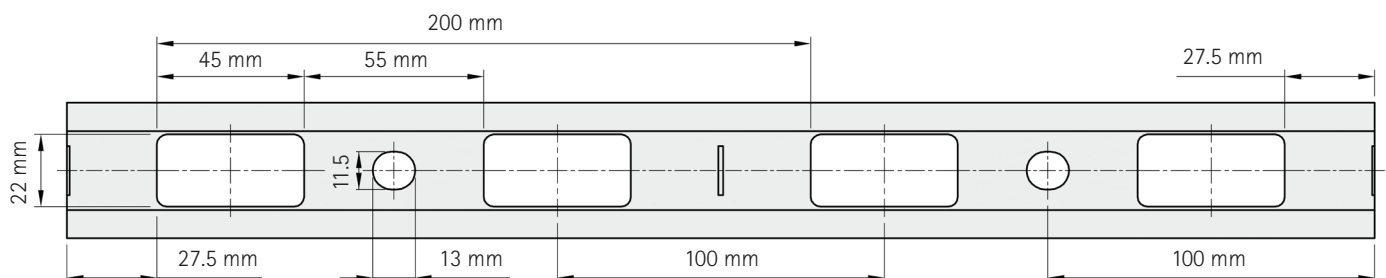
## Perforation pattern of rails

Distance between rail end and first hole is always equal.

### Walraven RapidStrut® - L (1.5 mm) / M (2.0 mm) / H (2.5 mm)



### Walraven RapidStrut® DS 5 - M (2.0 mm)



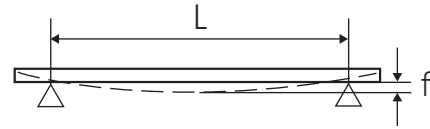
## Calculation method

The published safe working loads are calculated with perforated (slotted) rail.

Loads are calculated taking into consideration a maximum deflection (f) of L/200 (according to RAL-GZ 655/B) (see picture 1).

1 N (Newton) = 0.102 kg

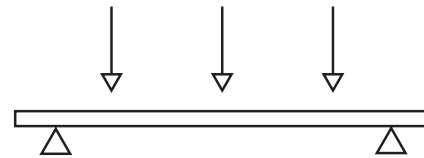
1 kg = 9.8 N (Newton)



Picture 1: Calculation of loads, f = maximal deflection, L = length

## Fixing of rails to walls or ceilings

The strength of the anchoring of the rail has not been taken into consideration. The installer must verify that the bolts and wall plugs used are suitable for the maximum permitted loading of the rail.



Picture 2: Static load at free bending support

## Reading the rail loading tables

The stated values are only valid for the fixing rail. The maximum safe load of all other construction parts have to be verified. The stated maximum safe load is calculated for a static load at free bending support (see picture 2).

Where the segment is marked with a hyphen, the stated length cannot be safely loaded.

## Special conditions

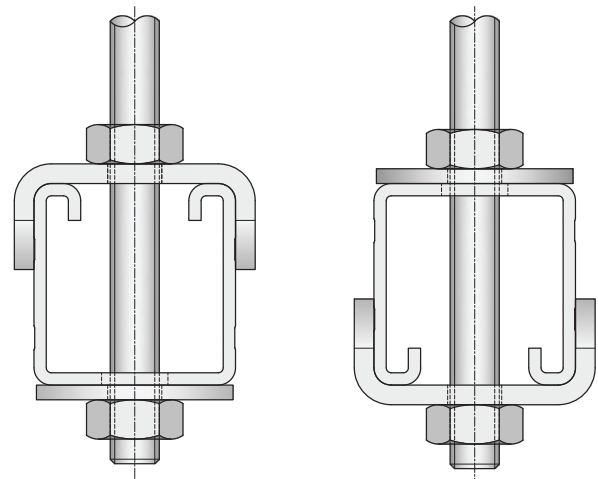
In case of doubt or for special conditions not stated in the loading tables, please do not hesitate to contact our technical department for their advice.

## Hanging of rails from the ceiling

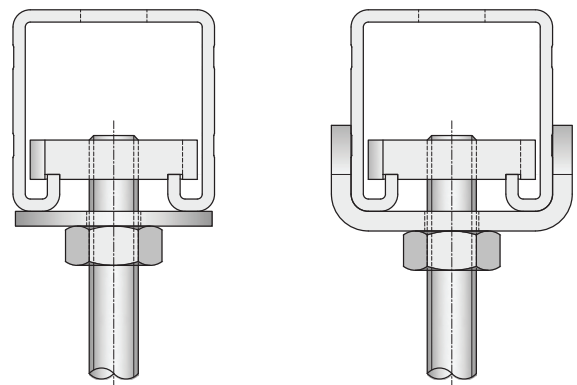
When hanging rails from the ceiling we recommend the use of U-formed washers on the open side of the rail (see picture 3).

## Methods of loading

Where loads are suspended beneath rails (e.g. hanging pipes), the load must not exceed the relevant safe load of the slide nut. To increase rigidity of the installation we recommend the use of a U-formed washer (see picture 4).

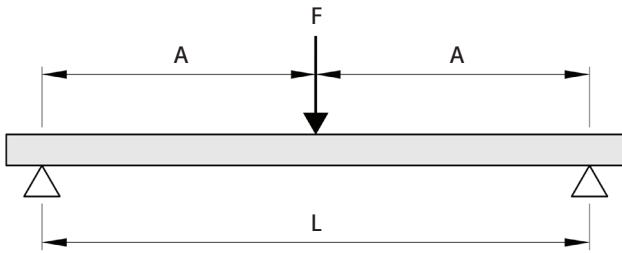


Picture 3: Use of Walraven Strut Washer – U-shaped on the open side of the rail



Picture 4: Increase rigidity for loads beneath the rail by using U-shaped washers (right picture) instead of standard flat washers (left picture)

## Walraven RapidStrut® Fixing rail: suspension on 1 point



*L = length, A = equal distances, F = load point*

L (mm)	Single									Double		
	21   L	21   M	21   H	41   L	41   M	41   H	51   M	62   H	82   H	41 x 21D	41 x 41D	41 x 62D
250	2,384	2,860	3,206	6,425	8,135	9,397	10,964	18,025	28,232	6,748	21,736	43,793
300	1,986	2,383	2,671	5,353	6,778	7,830	9,135	15,019	23,525	5,622	18,111	36,491
350	1,702	2,042	2,289	4,588	5,809	6,710	7,829	12,872	20,162	4,817	15,521	31,275
400	1,489	1,786	2,002	4,013	5,082	5,870	6,849	11,262	17,640	4,213	13,579	27,362
450	1,323	1,586	1,778	3,567	4,516	5,216	6,087	10,009	15,678	3,744	12,068	24,319
500	1,190	1,427	1,600	3,209	4,063	4,694	5,477	9,006	14,108	3,367	10,859	21,884
600	990	1,188	1,331	2,673	3,384	3,909	4,562	7,502	11,753	2,803	9,044	18,231
700	848	1,017	1,140	2,289	2,899	3,348	3,908	6,427	10,070	2,399	7,748	15,620
800	721	871	984	2,002	2,534	2,927	3,417	5,621	8,808	2,096	6,775	13,661
900	568	686	775	1,778	2,251	2,600	3,035	4,993	7,825	1,860	6,017	12,137
1,000	458	553	624	1,598	2,024	2,337	2,730	4,491	7,039	1,670	5,411	10,917
1,200	315	379	428	1,329	1,683	1,943	2,270	3,736	5,858	1,385	4,500	9,086
1,400	227	274	309	1,136	1,438	1,661	1,942	3,196	5,014	1,181	3,848	7,775
1,600	170	205	231	920	1,144	1,332	1,694	2,790	4,379	1,027	3,358	6,791
1,800	131	157	176	722	897	1,044	1,502	2,474	3,885	847	2,976	6,024
2,000	102	122	137	579	720	837	1,214	2,220	3,489	674	2,669	5,409
2,250	76	91	101	451	560	651	950	1,894	3,091	518	2,361	4,793
2,500	57	67	75	358	445	517	759	1,520	2,773	404	2,114	4,298
2,750	42	49	54	289	359	416	617	1,242	2,511	319	1,910	3,892
3,000	30	35	38	236	292	339	509	1,030	2,178	253	1,739	3,552
3,250	21	24	25	194	240	278	423	863	1,838	200	1,594	3,263
3,500	13	14	14	161	198	229	355	730	1,567	158	1,407	3,014
3,750	-	-	-	133	163	188	299	621	1,347	122	1,205	2,797
4,000	-	-	-	110	135	155	252	532	1,166	92	1,038	2,606
4,250	-	-	-	90	110	126	213	456	1,015	66	898	2,437
4,500	-	-	-	74	89	101	180	393	887	43	780	2,286
4,750	-	-	-	59	71	80	151	338	778	23	678	2,150
5,000	-	-	-	46	55	61	126	290	684	-	591	2,026
5,250	-	-	-	35	40	44	103	248	603	-	514	1,819
5,500	-	-	-	25	27	29	84	212	531	-	447	1,628
5,750	-	-	-	15	16	16	66	179	468	-	387	1,460
6,000	-	-	-	-	-	-	50	150	411	-	334	1,311

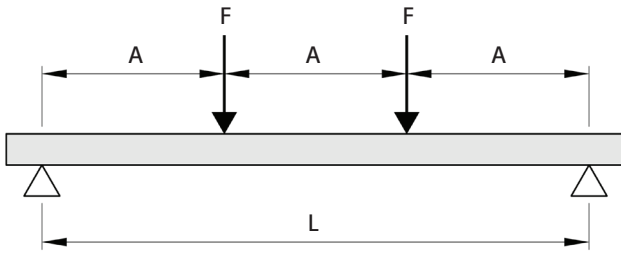
Max. allowed load in N.

The stated values are only valid for the fixing rail.

The maximum safe load of all other construction parts have to be verified.

For large spans and high rail flanks (> = 62 mm), depending on the load, appropriate measures against occurring torsional forces may have to be taken.

## Walraven RapidStrut® Fixing rail: 2 equal loads



L (mm)	Single									Double		
	21   L	21   M	21   H	41   L	41   M	41   H	51   M	62   H	82   H	41 x 21D	41 x 41D	41 x 62D
250	1,788	2,145	2,405	4,819	6,101	7,048	8,223	13,519	21,174	5,062	16,302	32,845
300	1,490	1,787	2,003	4,015	5,084	5,872	6,852	11,265	17,644	4,217	13,583	27,369
350	1,277	1,531	1,717	3,441	4,357	5,033	5,872	9,654	15,122	3,613	11,641	23,457
400	1,117	1,339	1,501	3,010	3,811	4,403	5,137	8,447	13,230	3,160	10,185	20,523
450	992	1,190	1,334	2,675	3,387	3,913	4,566	7,507	11,759	2,808	9,051	18,240
500	893	1,071	1,200	2,407	3,048	3,521	4,108	6,755	10,582	2,526	8,145	16,414
600	743	891	999	2,005	2,539	2,932	3,422	5,627	8,816	2,103	6,784	13,674
700	554	670	756	1,717	2,175	2,512	2,932	4,821	7,554	1,800	5,812	11,717
800	423	511	577	1,502	1,901	2,196	2,564	4,216	6,607	1,573	5,082	10,248
900	333	402	454	1,334	1,689	1,951	2,277	3,746	5,870	1,396	4,515	9,105
1,000	269	324	366	1,199	1,519	1,754	2,048	3,369	5,281	1,254	4,060	8,191
1,200	184	223	251	970	1,207	1,405	1,704	2,804	4,395	1,041	3,377	6,817
1,400	133	161	181	709	882	1,027	1,457	2,399	3,762	842	2,889	5,835
1,600	100	120	135	540	672	781	1,127	2,095	3,287	637	2,522	5,098
1,800	77	92	103	423	526	612	886	1,758	2,917	497	2,235	4,523
2,000	60	72	80	340	422	491	713	1,417	2,620	395	2,006	4,062
2,250	44	53	59	264	328	382	557	1,112	2,318	304	1,775	3,601
2,500	33	39	44	210	261	303	445	892	1,867	237	1,590	3,230
2,750	24	29	32	170	210	244	362	729	1,533	187	1,390	2,926
3,000	18	21	22	139	171	199	298	604	1,278	148	1,155	2,672
3,250	12	14	14	114	141	163	248	506	1,078	117	972	2,456
3,500	-	-	-	94	116	134	208	428	920	92	826	2,270
3,750	-	-	-	78	96	110	175	365	791	71	707	2,108
4,000	-	-	-	64	79	91	148	312	684	54	609	1,960
4,250	-	-	-	53	64	74	125	268	596	38	527	1,719
4,500	-	-	-	43	52	59	105	230	521	25	457	1,516
4,750	-	-	-	34	41	47	88	198	457	13	398	1,344
5,000	-	-	-	27	32	36	73	170	402	-	347	1,196
5,250	-	-	-	20	23	26	60	146	354	-	302	1,067
5,500	-	-	-	14	16	17	49	124	311	-	262	955
5,750	-	-	-	-	-	-	39	105	274	-	227	857
6,000	-	-	-	-	-	-	29	88	241	-	196	770

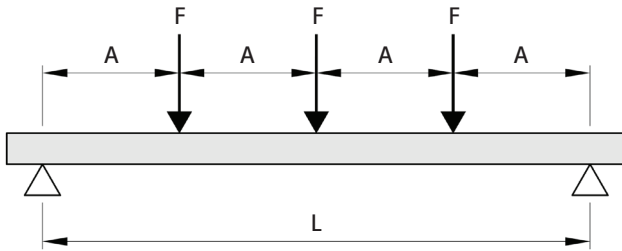
Max. allowed load in N. per suspension point (F).

The stated values are only valid for the fixing rail.

The maximum safe load of all other construction parts have to be verified.

For large spans and high rail flanks (> = 62 mm), depending on the load, appropriate measures against occurring torsional forces may have to be taken.

## Walraven RapidStrut® Fixing rail: 3 equal loads



L (mm)	Single									Double		
	21   L	21   M	21   H	41   L	41   M	41   H	51   M	62   H	82   H	41 x 21D	41 x 41D	41 x 62D
250	1,192	1,430	1,603	3,212	4,067	4,698	5,482	9,012	14,116	3,374	10,868	21,896
300	993	1,191	1,335	2,676	3,389	3,915	4,567	7,509	11,762	2,811	9,055	18,245
350	851	1,021	1,144	2,294	2,904	3,355	3,914	6,436	10,081	2,408	7,760	15,637
400	744	893	1,001	2,006	2,541	2,935	3,424	5,631	8,820	2,106	6,789	13,681
450	661	793	889	1,783	2,258	2,608	3,043	5,004	7,839	1,872	6,034	12,159
500	595	713	800	1,604	2,031	2,347	2,738	4,503	7,054	1,683	5,429	10,942
600	495	594	665	1,336	1,692	1,954	2,281	3,751	5,876	1,401	4,522	9,115
700	398	480	543	1,144	1,449	1,674	1,954	3,213	5,035	1,199	3,874	7,810
800	303	367	414	1,001	1,267	1,463	1,708	2,810	4,404	1,048	3,387	6,830
900	239	289	326	889	1,125	1,300	1,517	2,496	3,912	930	3,008	6,068
1,000	193	233	263	799	1,012	1,168	1,365	2,245	3,519	835	2,705	5,458
1,200	132	159	180	664	841	971	1,135	1,868	2,929	692	2,250	4,543
1,400	95	115	130	509	633	737	971	1,598	2,507	590	1,924	3,887
1,600	71	86	97	387	482	560	808	1,395	2,189	457	1,679	3,395
1,800	55	66	74	304	378	439	635	1,237	1,942	356	1,488	3,012
2,000	43	51	57	244	303	352	511	1,016	1,744	283	1,334	2,704
2,250	32	38	42	190	235	274	400	797	1,545	218	1,180	2,396
2,500	24	28	31	151	187	217	319	640	1,339	170	1,057	2,149
2,750	17	21	23	122	151	175	260	523	1,100	134	955	1,946
3,000	13	15	16	99	123	142	214	433	917	106	829	1,776
3,250	-	10	10	82	101	117	178	363	774	84	697	1,631
3,500	-	-	-	67	83	96	149	307	659	66	592	1,507
3,750	-	-	-	56	69	79	125	261	567	51	507	1,398
4,000	-	-	-	46	56	65	106	224	491	38	437	1,303
4,250	-	-	-	38	46	53	89	192	427	27	378	1,218
4,500	-	-	-	31	37	42	75	165	373	18	328	1,088
4,750	-	-	-	25	29	33	63	142	327	-	285	964
5,000	-	-	-	19	23	25	53	122	288	-	248	858
5,250	-	-	-	14	17	18	43	104	253	-	216	765
5,500	-	-	-	10	11	12	35	89	223	-	188	685
5,750	-	-	-	-	-	-	28	75	197	-	163	614
6,000	-	-	-	-	-	-	21	63	173	-	140	552

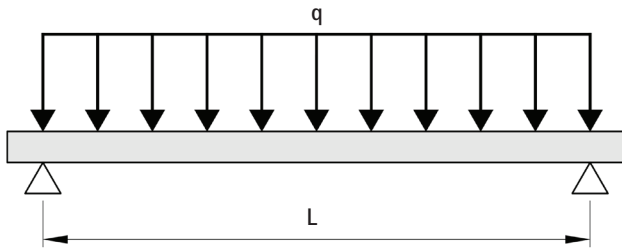
Max. allowed load in N. per suspension point (F).

The stated values are only valid for the fixing rail.

The maximum safe load of all other construction parts have to be verified.

For large spans and high rail flanks (> = 62 mm), depending on the load, appropriate measures against occurring torsional forces may have to be taken.

## Walraven RapidStrut® Fixing rail: uniformly distributed load



L (mm)	Single									Double		
	21   L	21   M	21   H	41   L	41   M	41   H	51   M	62   H	82   H	41 x 21D	41 x 41D	41 x 62D
250	4,769	5,721	6,413	12,850	16,271	18,794	21,928	36,051	56,464	13,497	43,472	87,586
300	3,973	4,766	5,342	10,707	13,557	15,660	18,271	30,039	47,050	11,245	36,222	72,982
350	3,405	4,084	4,578	9,176	11,618	13,420	15,659	25,745	40,325	9,635	31,043	62,550
400	2,978	3,572	4,004	8,027	10,164	11,740	13,699	22,524	35,280	8,427	27,158	54,725
450	2,646	3,173	3,557	7,134	9,033	10,433	12,175	20,018	31,356	7,488	24,136	48,638
500	2,380	2,855	3,200	6,419	8,127	9,388	10,955	18,013	28,217	6,735	21,718	43,768
600	1,981	2,376	2,663	5,346	6,769	7,818	9,125	15,005	23,506	5,606	18,089	36,462
700	1,512	1,826	2,063	4,579	5,798	6,697	7,817	12,855	20,141	4,799	15,496	31,241
800	1,155	1,394	1,575	4,004	5,069	5,855	6,835	11,242	17,616	4,192	13,550	27,323
900	909	1,098	1,240	3,556	4,502	5,200	6,071	9,987	15,651	3,720	12,035	24,275
1,000	733	885	999	3,197	4,048	4,675	5,460	8,982	14,078	3,341	10,822	21,835
1,200	504	607	685	2,644	3,290	3,830	4,541	7,473	11,717	2,771	9,001	18,172
1,400	364	439	494	1,934	2,406	2,801	3,884	6,393	10,028	2,295	7,697	15,551
1,600	273	328	369	1,472	1,831	2,131	3,072	5,581	8,759	1,738	6,717	13,583
1,800	209	252	283	1,155	1,436	1,670	2,415	4,792	7,770	1,355	5,952	12,049
2,000	164	196	220	927	1,152	1,340	1,943	3,864	6,978	1,078	5,339	10,819
2,250	122	145	162	722	896	1,042	1,520	3,031	6,183	829	4,723	9,586
2,500	91	108	120	574	712	827	1,215	2,433	5,091	647	4,228	8,596
2,750	68	79	87	463	574	666	988	1,988	4,180	511	3,789	7,784
3,000	49	57	61	378	468	543	814	1,648	3,484	405	3,150	7,104
3,250	34	39	40	311	385	445	677	1,381	2,941	321	2,651	6,526
3,500	22	23	23	258	317	367	568	1,168	2,507	252	2,252	6,028
3,750	11	10	-	213	262	302	478	994	2,156	195	1,928	5,595
4,000	-	-	-	176	216	248	404	851	1,866	147	1,661	5,213
4,250	-	-	-	145	176	202	341	731	1,624	105	1,437	4,687
4,500	-	-	-	118	143	162	288	628	1,420	69	1,248	4,134
4,750	-	-	-	95	113	128	241	541	1,246	37	1,086	3,664
5,000	-	-	-	74	88	98	201	464	1,095	-	945	3,260
5,250	-	-	-	56	65	71	166	398	965	-	823	2,910
5,500	-	-	-	40	44	47	134	339	850	-	716	2,605
5,750	-	-	-	25	26	25	106	287	749	-	620	2,336
6,000	-	-	-	12	-	-	81	240	658	-	535	2,099

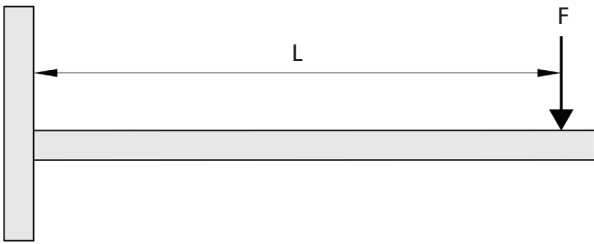
Max. allowed load in N.

The stated values are only valid for the fixing rail.

The maximum safe load of all other construction parts have to be verified.

For large spans and high rail flanks (> = 62 mm), depending on the load, appropriate measures against occurring torsional forces may have to be taken.

## Walraven RapidStrut® Cantilever arms: suspension on 1 point



$L$  = length,  $F$  = load point

L (mm)	Single				Double*
	21   M vertical	21   H	41   M	41   H	41 x 41D
100	815	1,068	3,329	3,329	2,711
150	542	711	2,218	2,218	1,805
200	406	532	1,663	1,662	1,352
250	324	425	1,329	1,329	1,079
300	269	353	1,107	1,106	897
350	230	302	947	947	767
400	201	263	828	827	668
450	178	233	735	734	592
500	159	208	660	659	530
550	144	171	599	598	480
600	131	143	548	547	437
650			505	504	401
700			468	467	370
750			436	434	343
800				406	320
850				381	298
900				349	279
950				311	262
1,000				280	247
1,050				252	
1,100				229	
1,150				208	
1,200				189	

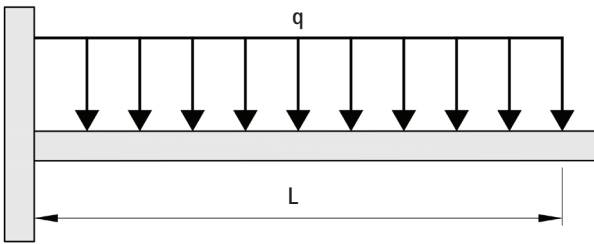
Max. allowed load in N.

The maximum safe load of all other construction parts have to be verified.

\* Discontinued Model ! New version with reinforced headplate and new connection profile available from approx. 09/2023 (loads three times higher)



## Walraven RapidStrut® Cantilever arms: uniformly distributed load



L (mm)	Single				Double*
	21   M vertical	21   H	41   M	41   H	41 x 41D
100	1,631	2,137	6,659	6,659	5,425
150	1,086	1,424	4,438	4,438	3,615
200	814	1,067	3,328	3,327	2,709
250	651	853	2,661	2,661	2,165
300	541	710	2,217	2,216	1,802
350	463	608	1,899	1,898	1,542
400	405	531	1,661	1,660	1,347
450	359	471	1,475	1,474	1,195
500	322	423	1,327	1,325	1,073
550	292	384	1,205	1,204	973
600	267	351	1,103	1,102	890
650			1,018	1,016	819
700			944	942	758
750			880	878	705
800				822	659
850				773	618
900				728	581
950				689	548
1,000				653	518
1,050				621	
1,100				591	
1,150				555	
1,200				506	

Max. allowed load in N.

The maximum safe load of all other construction parts have to be verified.

\* Discontinued Model ! New version with reinforced headplate and new connection profile available from approx. 09/2023 (loads three times higher).

## Find out how we can support you

Would you like to find out more about any of the solutions described in this Technical Data Sheet?  
Or would you like to discuss how we could help you find the best possible solution for your project?  
Get in touch today!

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\* The technical data are non-binding and do not reflect the warranted characteristics of the products. They are subject to change. Please consult our General Terms and Conditions. Additional information is available upon request. It is the designer's responsibility to select products suitable for the intended purpose and to ensure that performance data are not exceeded. The installation instructions should always be read and followed.