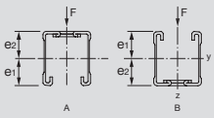
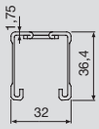
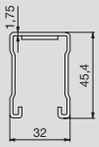
Technical data for channel profiles MM (zinced)

Definition of axes						
						
			MM-C-16	**MM-C-30**	**MM-C-36**	**MM-C-45**
Channel wall thickness	t	[mm]	1,0	1,0	1.75 / 1.0	1,75
Cross-sectional area	A	[mm²]	72,0	100,0	159,0	215,0
Channel weight		[g/m]	565,0	779,0	1287,0	1762,0
Delivered length		[m]	2	2	2/3	3/6
Material						
Permissible stress	δ_{perm}	[N/mm²]	188,0	188,0	188,0	188,0
E-Modul		[N/mm²]	190000	190000	190000	190000
Surface						
sendzimir galvanised			•	•	•	•
Cross-section values Y-axis						
Axis of gravity A [1]	e_1	[mm]	9,26	16,58	19,77	23,78
Axis of gravity B	e_2	[mm]	7,08	13,75	16,74	21,62
Moment of inertia	I_y	[cm⁴]	0,25	1,20	3,01	5,33
Rection modulus A	W_{y1}	[cm³]	0,27	0,73	1,52	2,24
Rection modulus B	W_{y2}	[cm³]	0,35	0,88	1,71	2,47
Radius of gyration	i_y	[cm]	0,59	1,10	1,38	1,57
Permissible moment [2]	M_y	[Nm]	50,8	137,2	285,8	421,7
Z-axis						
Moment of inertia	I_z	[cm⁴]	1,03	1,58	2,73	3,94
Rection modulus	W_z	[cm³]	0,69	1,05	1,71	2,46
Radius of gyration	i_z	[cm]	1,20	1,25	1,31	1,35

•The permissible stress σ_D / $\gamma_{G/Q}$ where γ = 1,4. σ_D results from the higher yield strength (point) resulting from cold forming as per EN 1993-1-3: 2010-12: $\sigma_D = f_{yk} / \gamma_M$ where γ_M = 1,1. According to that results a safety factor of γ=1,54 in comparison with the yield strength.

1) For the arithmetical bending dimensioning is the smaller value (W_{y1}, W_{y2}) decisive to ($W_{y1} = I_{y/e1}$ bzw. $W_{y2} = I_{y/e2}$).

2) $M_y = \delta_{zul}$ x min. (W_{y1}, W_{y2})

Technical data for brackets MM-B

		Type of load 1: Uniform	**Type of load 2: Single**	**Type of load 3**	**Type of load 4**	**Type of load 5**
		$F_1 = q \cdot i$	F_1 ½ ½	F_1	F_2 F_2 ⅓ ⅓ ⅓	F_3 F_3 F_3 ¼ ¼ ¼ ¼
Bracket	**L [mm]**	**F1 [N]**	**F1 [N]**	**F1 [N]**	**F2 [N]**	**F3 [N]**
		HST M10 or HUS-H 8x80/5/20/30	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**
MM-B-30/200	200	870	870	430	430	290
MM-B-30/300	300	580	580	290	290	190
MM-B-36/300	300	1230	1230	610	610	410
MM-B-36/450	450	810	810	400	400	270
MM-B-36/600	600	610	610	300	300	200

Technical data for brackets MM-B with angle brace (channel opening facing down)

		Type of load 1: Uniform	**Type of load 2: Single**	**Type of load 3**	**Type of load 4**	**Type of load 5**
		$F_1 = q \cdot i$	F_1 ½ ½	F_1	F_2 F_2 ⅓ ⅓ ⅓	F_3 F_3 F_3 ¼ ¼ ¼ ¼
Bracket	**L [mm]**	**F1 [N]**	**F1 [N]**	**F1 [N]**	**F2 [N]**	**F3 [N]**
		HST M10 or HUS-H 8x80/5/20/30	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**
MM-B-30/200	200	2990	2730	1490	1490	990
MM-B-30/300	300	1990	1990	990	990	660
MM-B-36/300	300	1990	1990	990	990	660
MM-B-36/450	450	1320	1320	660	660	440
MM-B-36/600	600	990	990	470	490	330

Technical data for brackets MM-B with angle brace (channel opening facing up)

		Type of load 1: Uniform	**Type of load 2: Single**	**Type of load 3**	**Type of load 4**	**Type of load 5**
		$F_1 = q \cdot i$	F_1 ½ ½	F_1	F_2 F_2 ⅓ ⅓ ⅓	F_3 F_3 F_3 ¼ ¼ ¼ ¼
Bracket	**L [mm]**	**F1 [N]**	**F1 [N]**	**F1 [N]**	**F2 [N]**	**F3 [N]**
		HST M10 or HUS-H 8x80/5/20/30	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**	**HST M10 or HUS-H 8x80/5/20/30**
MM-B-30/200	200	4590	2730	2290	2050	1360
MM-B-30/300	300	3060	3060	1360	1530	1020
MM-B-36/300	300	3060	3060	1530	1530	1020
MM-B-36/450	450	2030	2030	1010	1010	670
MM-B-36/600	600	1520	1520	470	760	500

- Load values are for grade ≥ C20/25 concrete.
- The bracket's own weight has been considered.
- The load's apply only if the bracket is fastened away from abuilding component edge (fastenings made at component edges must be designed separately).
- Separate verification must be provided that forces are transferred to the respective base material, i.e. steel and concrete.
- The application guidelines in anchor approvals must be observed. Loading values according to approval status October 2013.
- The deflection (deformation) of L/150 was observed in all cases, this being measured ath the point of load application.

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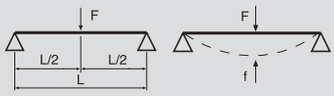
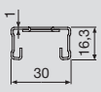
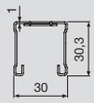
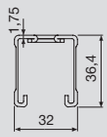
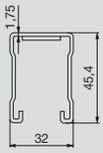
Technical data for channel profile MM (max. span width /deflection at single load)











	Max. span width L [cm] / deflection f [mm], max. L/200 at single load							
	MM-C-16		MM-C-30		MM-C-36		MM-C-45	
load F [kN]	**L**	**f**	**L**	**f**	**L**	**f**	**L**	**f**
0,25	67	3	146	7	226	11	294	15
0,50	40	1	104	5	164	8	216	11
0,75	27	<1	72	3	134	7	178	9
1,00	20	<1	54	1	114	5	155	8
1,25	16	<1	43	<1	91	3	134	6
1,50	13	<1	36	<1	76	2	112	4
1,75	11	<1	31	<1	65	2	96	3
2,00	-	-	27	<1	57	1	84	2
2,25	-	-	24	<1	51	1	75	2
2,50	-	-	-	-	46	<1	67	2
2,75	-	-	-	-	41	<1	61	1
3,00	-	-	-	-	38	<1	56	1
3,50	-	-	-	-	32	<1	48	<1
4,00	-	-	-	-	28	<1	42	<1
4,50	-	-	-	-	25	<1	37	<1
5,00	-	-	-	-	22	<1	34	<1

Selection example:

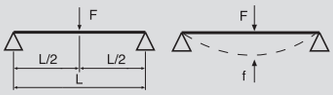
• 1,0 kN (≈ 100 kg) should be carried by a channel with a channel span width L = 100cm (single span sinply supported).

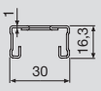
Solution:

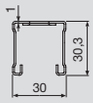
• Select the line with the load, F = 1,0 kN.

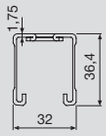
• The channels MM-C-36 to MM-C-45 can be used because the permissible span width (table value) is larger or equal to the required span width of L = 100cm.

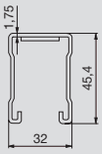
Technical data for channel profiles MM (max. load/ deflection at single load)











	Max. load F [kN] / deflection f [mm], max. L/200 at single load							
	MM-C-16		MM-C-30		MM-C-36		MM-C-45	
span width L [cm]	**F**	**f**	**F**	**f**	**F**	**f**	**F**	**f**
25	0,80	0,6	2,13	0,3	4,32	0,2	6,18	0,2
50	0,40	2,2	1,08	1,2	2,25	1,0	3,29	0,8
75	0,20	3,8	0,72	2,8	1,51	2,3	2,22	1,9
100	0,11	5,0	0,54	5,0	1,14	4,2	1,67	3,5
125	0,07	6,3	0,34	6,3	0,87	6,3	1,34	5,4
150	0,05	7,5	0,24	7,5	0,60	7,5	1,06	7,5
175	0,03	8,8	0,17	8,8	0,43	8,8	0,78	8,8
200	0,02	10,0	0,13	10,0	0,33	10,0	0,59	10,0
225	-	-	-	-	0,25	11,3	0,46	11,3
250	-	-	-	-	0,20	12,5	0,36	12,5
275	-	-	-	-	0,16	13,8	0,29	13,8
300	-	-	-	-	0,13	15,0	0,24	15,0