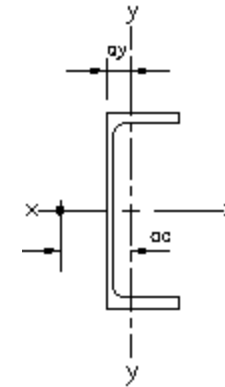


## PARALLEL FLANGE CHANNELS

To BSEN 10279:2000

Dimensions and Properties



Designation									About x-x			About y-y					
	h x b	m	t <sub>w</sub>	t <sub>f</sub>	r <sub>1</sub>	h <sub>w</sub>	A	a <sub>c</sub>	a <sub>y</sub>	I	Z <sub>e</sub>	r	I	Z <sub>e</sub>	r	J	C <sub>w</sub>
	mm x mm	kg/m	mm	mm	mm	mm	10 <sup>3</sup> mm <sup>2</sup>	mm	mm	10 <sup>6</sup> mm <sup>4</sup>	10 <sup>3</sup> mm <sup>3</sup>	mm	10 <sup>6</sup> mm <sup>4</sup>	10 <sup>3</sup> mm <sup>3</sup>	mm	10 <sup>3</sup> mm <sup>4</sup>	10 <sup>9</sup> mm <sup>6</sup>
* 200 x 75	23.4	6.0	12.5	12	151	2.99	50.8	24.8	19.63	196.0	81.1	1.70	33.8	23.9	111	10.7	
* 200 x 90	29.7	7.0	14.0	12	148	3.79	63.6	31.2	25.23	252.0	81.6	3.14	53.8	28.8	183	19.7	
* 230 x 75	25.7	6.5	12.5	12	181	3.27	47.4	23.0	27.48	239.0	91.7	1.81	34.8	23.5	118	15.3	
230 x 90	32.2	7.5	14.0	12	178	4.10	60.0	29.2	35.18	306.0	92.7	3.34	55.0	28.6	193	27.9	
260 x 75	27.6	7.0	12.0	12	212	3.51	43.6	21.0	36.19	278.0	101	1.85	34.4	23.0	117	20.3	
260 x 90	34.8	8.0	14.0	12	208	4.44	56.5	27.4	47.29	364.0	103	3.53	56.3	28.2	206	37.9	
300 x 90	41.4	9.0	15.5	12	245	5.27	53.3	26.0	72.18	481.0	117	4.04	63.1	27.7	288	58.1	
300 x 100	45.5	9.0	16.5	15	237	5.80	63.8	30.5	82.29	549.0	119	5.68	81.7	31.3	368	81.3	

Note: I = Second Moment of Area

Z<sub>e</sub> = Elastic Modulus

r = Radius of Gyration

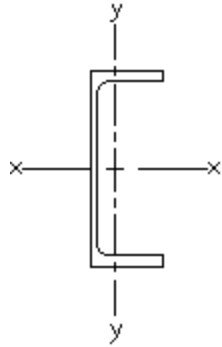
a<sub>c</sub> = Distance to shear centre from y-y axis

J = Torsional Constant

C<sub>w</sub> = Warping Constant

a<sub>y</sub> = Centre of Gravity

\* = Not yet Producing (2001/07/05)



### PARALLEL FLANGE CHANNELS

Table 5.5:  
Values of  $M_{cr}$  from Clause 13.6 of SABS 0162:  
Part 1, with  $\omega_2=1,0$

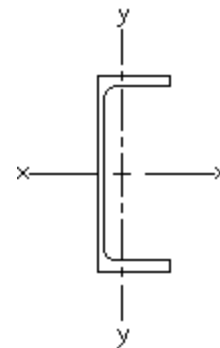
Designation	Grade 300W													
	Unbraced length L of compression flange (m)													
mm x mm	1	1,25	1,5	1,75	2	2,25	2,5	2,75	3	3,25	3,5	4	4,5	5
200 x 75	316	218	164	130	108	91.8	80.0	70.9	63.7	57.9	53.0	45.5	39.9	35.5
200 x 90	573	393	294	233	192	163	142	126	113	102	93.5	80.0	70.0	62.3
230 x 75	375	255	189	149	122	103	89.2	78.6	70.3	63.6	58.0	49.5	43.2	38.4
230 x 90	679	460	340	266	217	183	158	139	124	112	102	86.8	75.7	67.1
260 x 75	423	285	209	162	132	110	94.9	83.1	73.9	66.5	60.5	51.3	44.5	39.4
260 x 90	795	533	390	303	245	205	176	154	137	123	112	94.6	82.0	72.5
300 x 90	1045	698	509	394	318	266	227	198	176	158	143	121	105	92.4
300 x 100	1455	970	705	544	438	365	311	271	240	215	195	164	142	125

Tabulated values of  $M_{cr}$  apply to all grades of steel

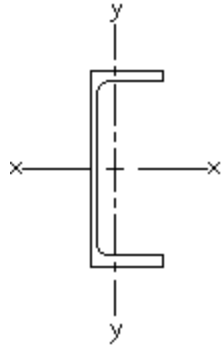
Tabulated values of  $M_p$  and  $M_y$  apply to Grade 300W steel sections

## PARALLEL FLANGE CHANNELS

Table 5.5:  
Values of  $M_{cr}$  from Clause 13.6 of SABS 0162:  
Part 1, with  $\omega_2=1,0$



Designation	$M_{cr}$ (kN.m)								Grade 300W					
									Class 1 & 2 sections in bending			Class 3 & 4 sections in bending		
mm x mm	5,5	6	6,5	7	7,5	8	8,5	9	$0,67M_p$	$0,9M_p$	$M_p$	$0,67M_y$	$0,9M_y$	$M_y$
200 x 75	32.0	29.2							--	--	--	39.4	52.9	58.8
200 x 90	56.1	51.1							--	--	--	50.7	68.0	75.6
230 x 75	34.5	31.4							--	--	--	48.0	64.5	71.7
230 x 90	60.3	54.8							--	--	--	61.5	82.6	91.8
260 x 75	35.3	32.0							--	--	--	55.9	75.1	83.4
260 x 90	65.0	58.9	53.9	49.7	46.2				--	--	--	73.2	98.3	109
300 x 90	82.7	75.0	68.5	63.2	58.6	54.7			--	--	--	96.7	130	144
300 x 100	112	101	92.3	85.1	78.9	73.5	68.9	64.8	--	--	--	110	148	165



### PARALLEL FLANGE CHANNELS

Table 5.5:  
Values of  $M_{cr}$  from Clause 13.6 of SABS 0162:  
Part 1, with  $\omega_2=1,0$

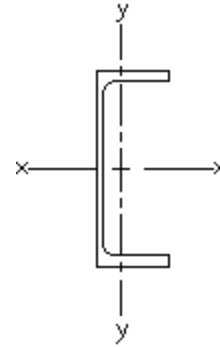
Designation	Grade 350W													
	Unbraced length L of compression flange (m)													
mm x mm	1	1,25	1,5	1,75	2	2,25	2,5	2,75	3	3,25	3,5	4	4,5	5
200 x 75	316	218	164	130	108	91.8	80.0	70.9	63.7	57.9	53.0	45.5	39.9	35.5
200 x 90	573	393	294	233	192	163	142	126	113	102	93.5	80.0	70.0	62.3
230 x 75	375	255	189	149	122	103	89.2	78.6	70.3	63.6	58.0	49.5	43.2	38.4
230 x 90	679	460	340	266	217	183	158	139	124	112	102	86.8	75.7	67.1
260 x 75	423	285	209	162	132	110	94.9	83.1	73.9	66.5	60.5	51.3	44.5	39.4
260 x 90	795	533	390	303	245	205	176	154	137	123	112	94.6	82.0	72.5
300 x 90	1045	698	509	394	318	266	227	198	176	158	143	121	105	92.4
300 x 100	1455	970	705	544	438	365	311	271	240	215	195	164	142	125

Tabulated values of  $M_{cr}$  apply to all grades of steel

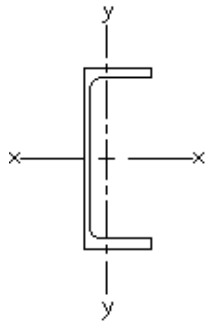
Tabulated values of  $M_p$  and  $M_y$  apply to Grade 350W steel sections

### PARALLEL FLANGE CHANNELS

Table 5.5:  
Values of  $M_{cr}$  from Clause 13.6 of SABS 0162:  
Part 1, with  $\omega_2=1,0$



Designation	$M_{cr}$ (kN.m)								Grade 350W					
									Class 1 & 2 sections in bending			Class 3 & 4 sections in bending		
mm x mm	5,5	6	6,5	7	7,5	8	8,5	9	$0,67M_p$	$0,9M_p$	$M_p$	$0,67M_y$	$0,9M_y$	$M_y$
200 x 75	32.0	29.2							--	--	--	46.0	61.7	68.6
200 x 90	56.1	51.1							--	--	--	59.1	79.4	88.2
230 x 75	34.5	31.4							--	--	--	56.0	75.3	83.7
230 x 90	60.3	54.8							--	--	--	71.8	96.4	107
260 x 75	35.3	32.0							--	--	--	65.2	87.6	97.3
260 x 90	65.0	58.9	53.9	49.7	46.2				--	--	--	85.4	115	127
300 x 90	82.7	75.0	68.5	63.2	58.6	54.7			--	--	--	113	152	168
300 x 100	112	101	92.3	85.1	78.9	73.5	68.9	64.8	--	--	--	129	173	192

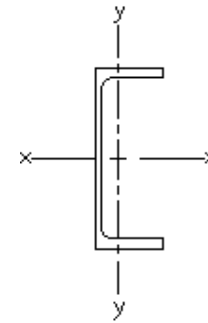


**PARALLEL FLANGE CHANNELS**

Factored web resistances of Parallel Flange Channels

Designation	tw	Grade 300W steel					
		Web yielding		Web Crippling		Web Shear $V_r$	
		$B_{r1}$	$B_{r2}$	$B_{r3}$	$B_{r4}$	Elastic	Plastic
mm x mm	mm	kN	kN/mm	kN	kN/mm	kN	kN
200 x 75	6	218	1.78	243	1.21	214	178
200 x 90	7	270	2.08	324	1.72	249	208
230 x 75	6.5	236	1.93	274	1.34	266	222
230 x 90	7.5	290	2.23	359	1.84	307	256
260 x 75	7	249	2.08	300	1.54	324	270
260 x 90	8	309	2.38	396	1.97	371	309
300 x 90	9	368	2.67	497	2.20	481	401
300 x 100	9	421	2.67	513	2.07	481	401

N = stiff bearing length, mm (shall not be less than k for end reactions).  
 Factored web resistance for interior loads is the lesser of  
 $B_r = B_{r1} + NB_{r2}$  (web yielding) and  $B_r = B_{r3} + NB_{r4}$  (web crippling).  
 Factored web resistance for end reactions is the lesser of  
 $B_r = 0,5B_{r1} + NB_{r2}$  (web yielding) and  $B_r = 0,5B_{r3} + NB_{r4}$  (web crippling).

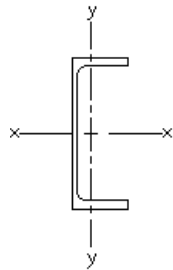


**PARALLEL FLANGE CHANNELS**

Factored web resistances of Parallel Flange Channels

Designation	tw	Grade 350W steel					
		Web yielding		Web Crippling		Web Shear $V_r$	
		$B_{r1}$	$B_{r2}$	$B_{r3}$	$B_{r4}$	Elastic	Plastic
mm x mm	mm	kN	kN/mm	kN	kN/mm	kN	kN
200 x 75	6	255	2.08	262	1.31	249	208
200 x 90	7	315	2.43	350	1.86	291	243
230 x 75	6.5	276	2.25	296	1.45	311	259
230 x 90	7.5	338	2.60	388	1.99	359	299
260 x 75	7	291	2.43	324	1.67	378	315
260 x 90	8	360	2.77	428	2.13	432	360
300 x 90	9	429	3.12	537	2.38	561	468
300 x 100	9	491	3.12	554	2.23	561	468

N = stiff bearing length, mm (shall not be less than k for end reactions).  
 Factored web resistance for interior loads is the lesser of  
 $B_r = B_{r1} + NB_{r2}$  (web yielding) and  $B_r = B_{r3} + NB_{r4}$  (web crippling).  
 Factored web resistance for end reactions is the lesser of  
 $B_r = 0,5B_{r1} + NB_{r2}$  (web yielding) and  $B_r = 0,5B_{r3} + NB_{r4}$  (web crippling).



**PARALLEL FLANGE CHANNELS**

Table 5.4:

Factored moment resistances,  $M_r$ , of Channels as beams, with  $\omega_2=1,0$

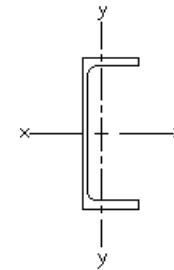
Designation	$L_u$	Grade 300W steel										
		$M_r$ (kN.m)										
		Unbraced length of compression flange (m)										
mm x mm	m	0	1	2	3	4	5	6	7	8	9	10
200 x 75	1.79	52.9	52.9	51.6	45.1	38.8	32.0	26.3				
200 x 90	2.26	68.0	68.0	68.0	63.5	57.5	51.7	45.8				
230 x 75	1.72	64.5	64.5	62.0	53.0	44.1	34.5	28.2				
230 x 90	2.14	82.6	82.6	82.6	75.3	66.9	58.6	49.3				
260 x 75	1.65	75.1	75.1	71.0	59.0	46.1	35.4	28.8				
260 x 90	2.06	98.3	98.3	98.3	87.8	76.5	65.2	53.0	44.8			
300 x 90	2.04	130	130	130	115	99.5	83.2	67.5	56.8	49.2		
300 x 100	2.30	148	148	148	138	123	108	91.0	76.5	66.2	58.3	

When maximum moment occurs at end(s) of unbraced length of compression flange,  $M_r$  must be calculated from clause 13.6 using  $M_{cr}$  from Table 5.5

$L_u$  = unbraced length up to which tabulated moments  $M_r$  for unbraced length  $L = 0$  are applicable.

Web resistances and deflection limitations must be checked.

Moment resistance values are tabulated for slenderness ratios less than or equal to 300, and span/depth ratios less than or equal to 30.



**PARALLEL FLANGE CHANNELS**

Table 5.4:

Factored moment resistances,  $M_r$ , of Channels as beams, with  $\omega_2=1,0$

Designation	$L_u$	Grade 350W steel										
		$M_r$ (kN.m)										
		Unbraced length of compression flange (m)										
mm x mm	m	0	1	2	3	4	5	6	7	8	9	10
200 x 75	1.61	61.7	61.7	58.3	49.6	40.9	32.0	26.3				
200 x 90	2.02	79.4	79.4	79.4	71.3	63.1	55.1	46.0				
230 x 75	1.55	75.3	75.3	69.9	57.7	44.6	34.5	28.2				
230 x 90	1.93	96.4	96.4	95.5	84.0	72.6	60.4	49.3				
260 x 75	1.50	87.6	87.6	79.9	63.6	46.1	35.4	28.8				
260 x 90	1.86	115	115	113	97.5	82.1	65.2	53.0	44.8			
300 x 90	1.85	152	152	148	128	106	83.2	67.5	56.8	49.2		
300 x 100	2.08	173	173	173	154	134	112	91.0	76.5	66.2	58.3	

When maximum moment occurs at end(s) of unbraced length of compression flange,  $M_r$  must be calculated from clause 13.6 using  $M_{cr}$  from Table 5.5

$L_u$  = unbraced length up to which tabulated moments  $M_r$  for unbraced length  $L = 0$  are applicable.

Web resistances and deflection limitations must be checked.

Moment resistance values are tabulated for slenderness ratios less than or equal to 300, and span/depth ratios less than or equal to 30.

**PARALLEL FLANGE CHANNELS**

PAINT AREAS



Designation	Mass	Per metre	Per ton	Two end faces
mm x mm	kg/m	m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>
200 x 75	23.4	0.678	28.96	0.006
200 x 90	29.7	0.736	24.77	0.008
230 x 75	25.7	0.737	28.67	0.007
230 x 90	32.2	0.795	24.68	0.008
260 x 75	27.6	0.796	28.83	0.007
260 x 90	34.8	0.854	24.53	0.009
300 x 90	41.4	0.932	22.5	0.011
300 x 100	45.4	0.969	21.3	0.012