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*Appendix no. 2*

*List of elements of*

*modular spiral stairs CARLA*

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Revision 1.0, July 2020

## Table of changes

No.	NAME	DEPT	DATE OF CHANGE	SCOPE OF CHANGE	REMARKS
1					
2					
3					
4					
5					
6					
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8					
9					
10					
11					
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13					
14					
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## 1. Components

The basic components of CARLA stairs are landings and a stairway with railings. The stairs are available with a maximum height of 6000mm and a radius of 900, 1000, 1100mm. The structure of the CARLA modular stairs system provides for the right and left versions of the stairs and the installation of the upper landing in two configurations shown below. The stair system allows step height adjustment in the range from 160mm to 200mm, the step height is determined at the ordering stage.

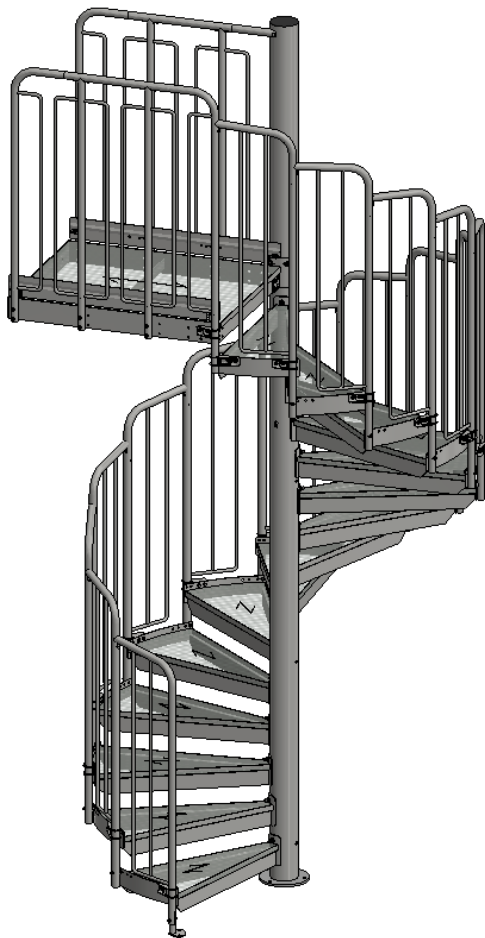


Figure 1. Landing with straight exit

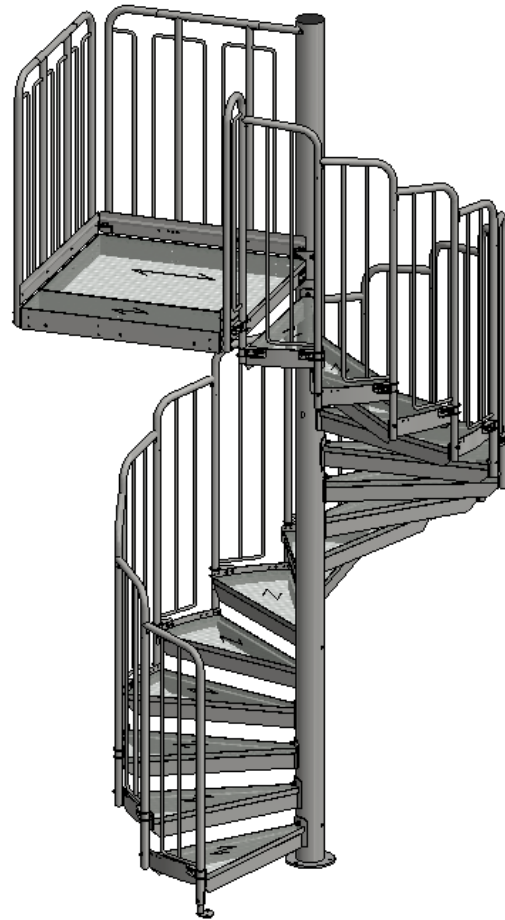


Figure 2. Landing with side exit

## 2. Lists of elements of modular spiral stairs CARLA

Table 1. Lists of elements of modular spiral stairs CARLA with straight exit

No.	Name	Index	Weight	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37		
1	Center pipe	CR-S	*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
2	First railpost foot	CR-A1	3,764	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
3	Landing console right/left	CR-A4/A5	2,817	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
R900	4	Landing kickplate R900	1,168	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
	5	Main landing R900	26,444	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	6	Landing handgrip R900	1,011	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	7	Supplementary landing handgrip	0,294	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	8	Starting railpost R900	CR-R1a	3,764	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	9	Railpost R900	CR-R2a	3,999	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
	10	Step R900	W-S-SP-900-KR-34x38	7,653	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
	11	Railpost clamp	CR-A2	3,999	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
	12	Last railpost clamp	CR-A3	0,274	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	R1000	4	Landing kickplate R900	1,285	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		5	Main landing R1000	32,543	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		6	Landing handgrip R1000	1,189	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7		Supplementary landing handgrip	0,294	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8		Starting railpost R1000	CR-R1b	3,798	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9		Railpost R1000	CR-R2b	4,004	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
10		Step R1000	W-S-SP-1000-KR-34x38	8,596	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
11	Railpost clamp	CR-A2	3,999	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38		
R1100	4	Landing kickplate R1100	1,402	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	5	Main landing R1100	37,369	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	6	Landing handgrip R1100	1,367	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	7	Supplementary landing handgrip	0,294	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



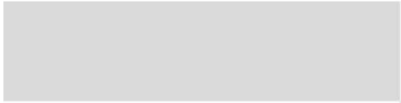


E	Curved washer 8	M-Z-P-F-8-A2	0,013	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
F	Saddle washer	M-Z-P-1-RO33,7	0,028	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
G	Washer stalowa 12	M-D-P001	0,010	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
H	Central pipe cap 127	M-PVC-ZW-127	0,001	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
I	Nut M10	M-Z-N-SZ-10-ZO	0,003	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
J	Self-locking nut M12	M-Z-N-SZ-12-SH-ZO	0,274	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
K	Nut M6	M-Z-N-SZ-6-8-ZN	0,000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
L	Plastic washer 12	M-Z-P-T-12	0,001	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
M	Washer 10	M-Z-P-Z-10-ZO	0,000	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
N	Washer 12	M-Z-P-Z-12-ZO	0,018	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
O	Washer 6	M-Z-P-Z-6-ZN	0,003	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	Hammer bolt M12	M-Z-S-ML-12x36-ZO	0,002	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
R	Bolt M10 x 30	M-Z-S-SZ-10x30-8-ZO	0,028	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
S	Bolt M8 x 30	M-Z-S-SZ-8x30-8-ZO	1,168	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
T	Bolt M8 x 45	M-Z-S-SZ-8x45-8-ZO	3,014	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
W	Carriage bolt M6 x 25	M-Z-S-ZM-6x25-ZN	0,011	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

Table 3. Lists of elements of modular spiral stairs CARLA with side exit

No.	Name	Index	Weight	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
1	Center pipe	CR-S	*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	First railpost foot	CR-A1	3,764	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	Landing console right/left	CR-A4/A5	2,817	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R900	4	Landing kickplate R900	CR-K1	0,202	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	17	Landing kickplate no. 2 R900	CR-K4	0,215	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	5	Main landing R900	CR-M1a	26,444	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	18	Landing extension R900	CR-M2a	13,185	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	6	Landing handgrip R900	CR-PP1a	0,124	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	7	Supplementary landing handgrip	CR-PP2	0,280	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	8	Starting railpost R900	CR-R1a	0,484	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	9	Railpost R900	CR-R2a	0,506	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
	10	Step R900	W-S-SP-900-KR-34x38	0,838	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
	11	Railpost clamp	CR-A2	0,507	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
	12	Landing first railpost	CR-A3	0,029	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R1000	4	Landing kickplate R1000	CR-K2	0,223	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	17	Landing kickplate no. 2 R1000	CR-K5	0,235	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	5	Main landing R1000	CR-M1b	32,543	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	18	Landing extension R1000	CR-M2b	14,793	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	6	Landing handgrip R1000	CR-PP1b	0,132	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	7	Supplementary landing handgrip	CR-PP2	0,280	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	8	Starting railpost R1000	CR-R1b	0,487	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	9	Railpost R1000	CR-R2b	0,507	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
10	Step R1000	W-S-SP-1000-KR-34x38	0,95	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
11	Railpost clamp	CR-A2	0,507	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
R1100	4	Landing kickplate R1100	CR-K3	0,243	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	17	Landing kickplate no. 2 R1100	CR-K6	0,256	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	5	Main landing R1100	CR-M1c	37,369	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	18	Landing extension R1100	CR-M2c	15,916	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1





6	Landing handgrip R1100	CR-PP1c	0,151	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
7	Supplementary landing handgrip	CR-PP2	0,280	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
8	Starting railpost R1100	CR-R1c	0,486	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
9	Railpost R1100	CR-R2c	0,507	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
10	Step R1100	W-S-SP-1100-KR-34x38	1,04	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
11	Railpost clamp	CR-A2	0,507	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
19	Landing kickplate	CR-K7	0,038	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
13	Landing first railpost	CR-R3	0,839	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
14	Landing railpost	CR-R4	0,072	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
15	Landing last railpost	CR-R5	2,590	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20	Supplementary landing railing	CR-R6	0,608	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
16	Central pipe foot	M-D-A-1A	0,041	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

\* The weight of the column depends on the ordered variant of the stairs

Table 4. Lists of fasteners of modular spiral stairs CARLA with side exit

No.	Name	Index	Weight	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37		
R900	A	Nut M8	M-Z-N-SZ-8-8-ZO	0,003	18	21	24	27	40	43	46	49	52	55	58	61	64	67	70	73	76	79	82	85	88	91	94	97	100	103	106	109	112	115	118	121	124	127	130	133	
	B	Washer 8	M-Z-P-Z-8-ZO	0,002	41	46	51	56	61	66	71	76	81	86	91	96	101	106	111	116	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	
	C	Bolt M8 x 55	M-Z-S-SZ-8x55-8-ZO	0,001	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
	D	Curved washer 8	M-Z-P-F-8-A2	0,001	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
	E	Saddle washer	M-Z-P-1-RO33,7	0,002	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
	F	Self-drilling screw 4,2x16	M-Z-W-SW-GR-4,2x16-ZN	0,000	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	
R1000	B	Nut M8	M-Z-N-SZ-8-8-ZO	0,002	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	129	134	139	144	149	154	159	164	169	174	179	184	189	194	199	204	209	214	219	224	
	C	Washer 8	M-Z-S-SZ-8x55-8-ZO	0,001	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
	D	Bolt M8 x 55	M-Z-S-SZ-8x55-8-ZO	0,001	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
	E	Curved washer 8	M-Z-P-F-8-A2	0,002	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
	F	Saddle washer	M-Z-P-1-RO33,7	0,000	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	
	F	Self-drilling screw 4,2x16	M-Z-W-SW-GR-4,2x16-ZN	0,003																																					
R1100	A	Nut M8	M-Z-N-SZ-8-8-ZO	0,053	32	35	38	1	44	47	50	53	56	59	62	65	68	71	74	77	82	85	88	91	94	97	100	103	106	109	112	115	118	121	124	127	130	133	136	139	
	B	Washer 8	M-Z-P-Z-8-ZO	0,024	49	54	59	64	69	74	79	84	89	94	99	104	109	114	119	124	129	134	139	144	149	154	159	164	169	174	179	184	189	194	199	204	209	214	219	224	
	C	Bolt M8 x 55	M-Z-S-SZ-8x55-8-ZO	0,004	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
	D	Curved washer 8	M-Z-P-F-8-A2	0,013	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	
	E	Saddle washer	M-Z-P-1-RO33,7	0,028	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
	F	Self-drilling screw 4,2x16	M-Z-W-SW-GR-4,2x16-ZN	0,002	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	
	G	Hammebr bolt steel washer 12	M-D-P001	0,010	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
	H	Central pipe cap 127	M-PVC-ZW-127	0,001	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	I	Nut M10	M-Z-N-SZ-10-ZO	0,003	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	J	Self-locking nut M12	M-Z-N-SZ-12-SH-ZO	0,274	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
	K	Nut M6	M-Z-N-SZ-6-8-ZN	0,000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	L	Plastic washer 12	M-Z-P-T-12	0,001	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
	M	Washer 10	M-Z-P-Z-10-ZO	0,000	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

N	Washer 12	M-Z-P-Z-12-ZO	0,018	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
O	Washer 6	M-Z-P-Z-6-ZN	0,003	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
P	Hammer bolt M12	M-Z-S-ML-12x36-ZO	0,002	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
R	Bolt M10 x 30	M-Z-S-SZ-10x30-8-ZO	0,028	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
S	Bolt M8 x 30	M-Z-S-SZ-8x30-8-ZO	1,168	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	
T	Bolt M8 x 45	M-Z-S-SZ-8x45-8-ZO	0,024	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
W	Carriage bolt M6 x 25	M-Z-S-ZM-6x25-ZN	0,011	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

Table 5. List of elements of grating cage

No.	Name	Index	Weight	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
R900, R1000	21	Door leaf D1a	CR-D1a	48,2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	22	Door frame RDa	CR-RDa	17,315	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	24	Door head GDa	CR-GDa	4,707	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	25	Grating of cage 1a	CR-G1a	12,836	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	26	Grating of cage 2a	CR-G2a	11,805	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	27	Grating of cage 3a	CR-G3a	10,774	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	28	Grating of cage 4a	CR-G4a	9,743	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	29	Grating of cage 5a	CR-G5a	8,712	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	30	Grating of cage 6a	CR-G6a	7,681	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	31	Grating of cage 7a	CR-G7a	6,65	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	32	Grating of cage 8a	CR-G8a	5,619	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	33	Grating of cage 9a	CR-G9a	4,588	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	34	Grating of cage 10a	CR-G10a	3,557	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	35	Grating of cage 11a	CR-G11a	2,526	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	36	Grating of cage 12a	CR-G12a	1,495	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	R1100	21	Door leaf D1a	CR-D1a	48,2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22		Door frame RDa	CR-RDa	17,315	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24		Door head GDa	CR-GDa	4,707	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25		Grating of cage 1a	CR-G1a	12,836	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26		Grating of cage 2a	CR-G2a	11,805	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27		Grating of cage 3a	CR-G3a	10,774	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28		Grating of cage 4a	CR-G4a	9,743	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
29		Grating of cage 5a	CR-G5a	8,712	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30		Grating of cage 6a	CR-G6a	7,681	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
31		Grating of cage 7a	CR-G7a	6,65	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
32		Grating of cage 8a	CR-G8a	5,619	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33		Grating of cage 9a	CR-G9a	4,588	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
34		Grating of cage 10a	CR-G10a	3,557	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35		Grating of cage 11a	CR-G11a	2,526	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36		Grating of cage 12a	CR-G12a	1,495	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
37		Door frame foot A6	CR-A6	0,373	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	Suplementary gratings	CR-GU1	5,904	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
38	Braket for grating L1	CR-L1	0,757	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
39	Braket for grating L2	CR-L2	0,489	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
40	Upper braket for grating L4	CR-L4	0,397	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
41	Door frame connecter A8	CR-A8	1,328	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
42	Grating clamp 34x38; G11 + M10x50 + nut M10 + washer 10	M-KR-UK-G11-34x38	0,097	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
43	Door hinge	M-D-Z-3	0,069	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Table 6. List of fasteners for grating cage


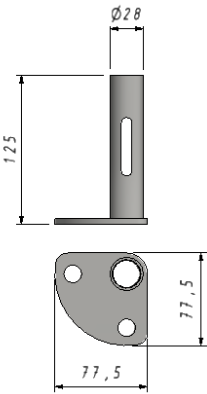
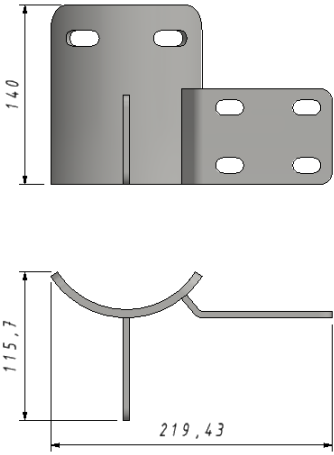
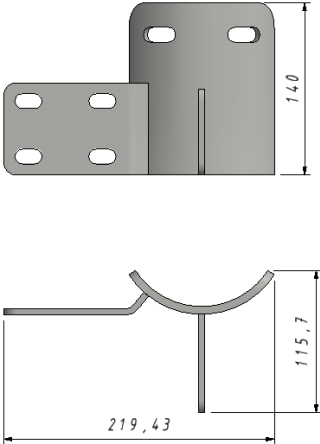
Nr.	Nazwa	Index	Mass	14-37
L	Plastic washer 12	M-Z-P-T-12	0,001	2
J	Self locking nut M12	M-Z-N-SZ-12-SH-ZO	0,004	2
P	Hammer bolt M12	M-Z-S-ML-12x36-ZO	0,023	2
N	Washer 12	M-Z-P-Z-12-ZO	0,018	2
A	Nut M8	M-Z-N-SZ-8-8-ZO	0,006	4
I	Nut M10	M-Z-N-SZ-10-8-ZO	0,006	3
M	Washer 10	M-Z-P-Z-10-ZO	0,004	5
B	Washer 8	M-Z-P-Z-8-ZO	0,002	10
S	Bolt M8 x 30	M-Z-S-SZ-8x30-8-ZO	0,018	6
AA	Carriage bolt M10 x 60	M-Z-S-ZM-10x60-ZN	0,05	3
AB	Carriage bolt M8 x 55	M-Z-S-ZM-10x55-ZN	0,03	4

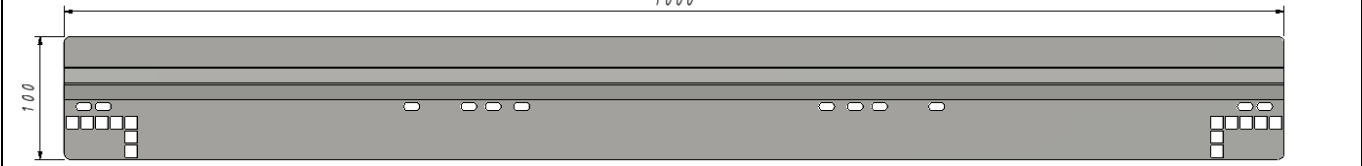
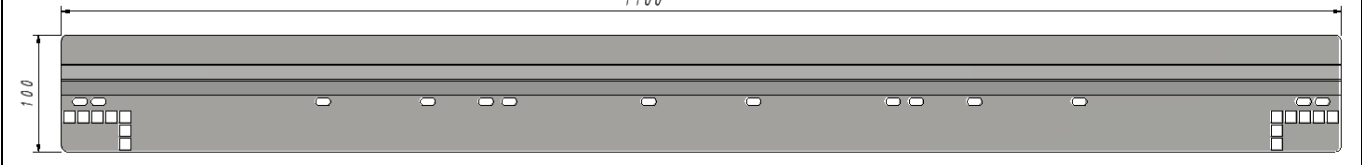
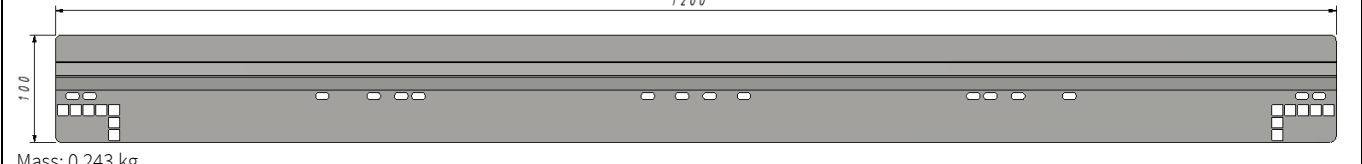
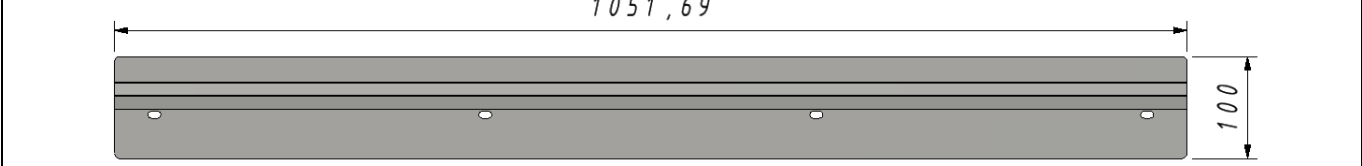
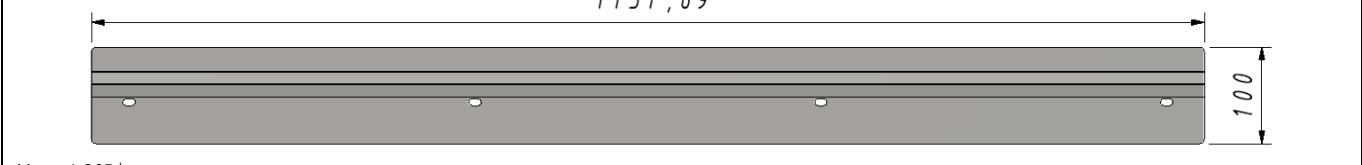
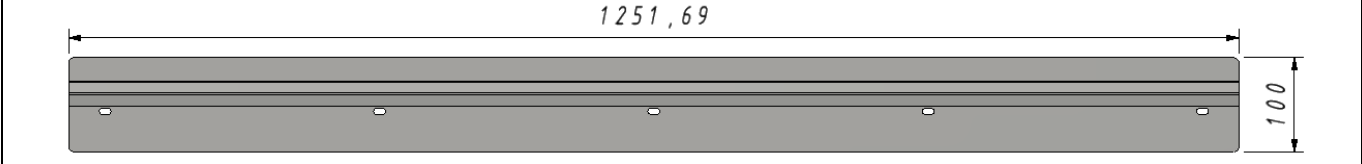
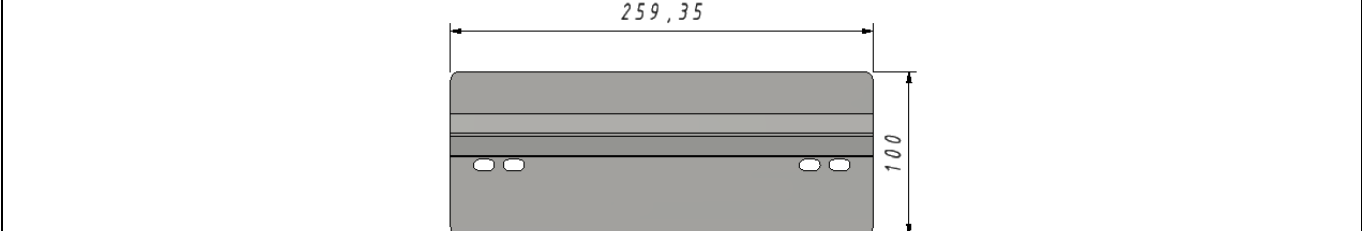
Table 6. List of elements of inner handgrip

No.	Name	Index	Weight	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
44	Handgrip bracket A9	CR-A6	0,053	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
45	Inner handgrip 1	CR-PW1a CR-PW1b CR-PW1c	1.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46	Inner handgrip 2	CR-PW2a CR-PW2b CR-PW2c	1.5	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17
47	Inner handgrip 3	CR-PW3a CR-PW3b CR-PW3c	1.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CB	Plastic distance PS25x5,0x8,2/29-32	M-Z-P-1-RO33,7	0,004	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
F	Self-drilling pan head screw 4,2x16-ZN	N-Z-W-SW-GR-4,2x16-ZN	0,002	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
DB	Self-drilling pan head screw 4,8x25-ZN	N-Z-W-SW-GR-4,8x25-ZN	0,035	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
EB	Plasting cap 33,7	M-PVC-ZZ-33,7	0,018	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

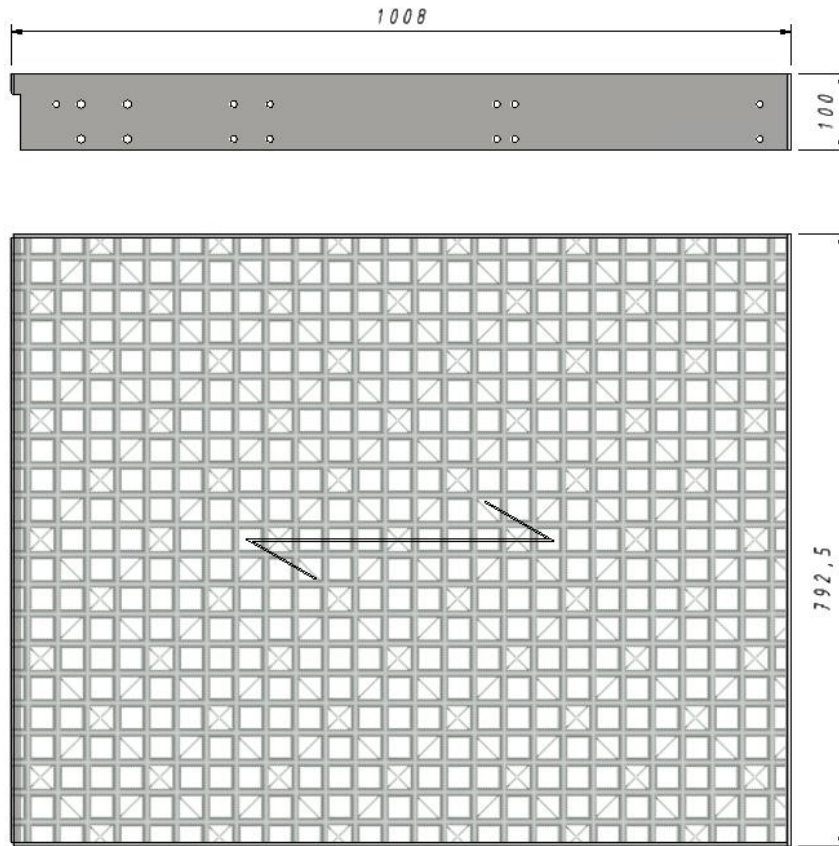
### 3. Graphical presentation of list of CARLA system elements

Table 5. List of elements

<p>SL/SP</p> 	
<p>CR-A1</p>  <p>Mass: 3,764 kg</p>	
<p>CR-A4</p>  <p>Mass: 2,816 kg</p>	<p>CR-A5</p>  <p>Mass: 2,816 kg</p>

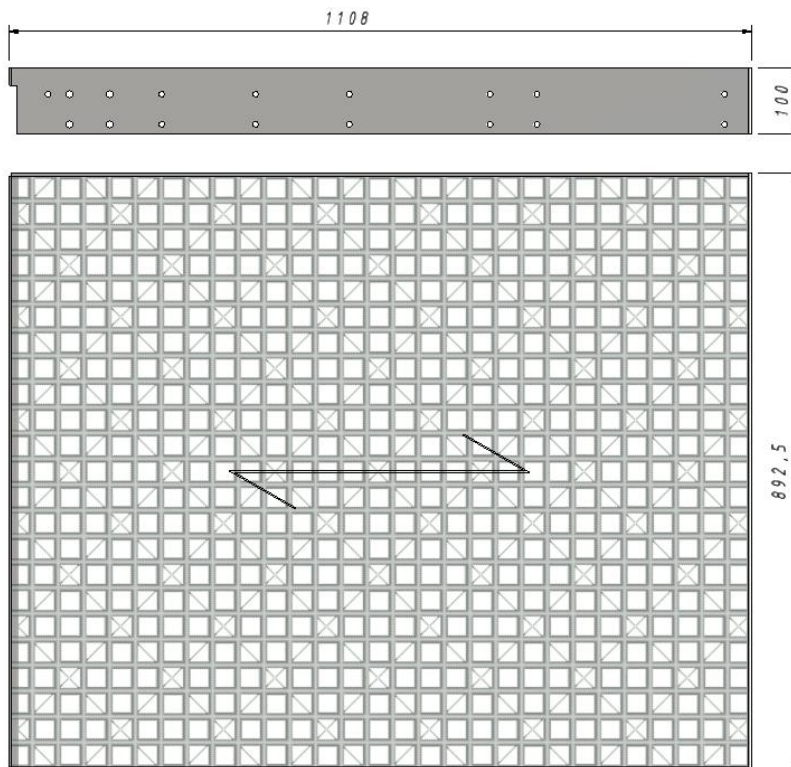
<p>CR-K1</p>  <p>Mass: 0,202 kg</p>
<p>CR-K2</p>  <p>Mass: 0,223 kg</p>
<p>CR-K3</p>  <p>Mass: 0,243 kg</p>
<p>CR-K4</p>  <p>Mass: 1,246 kg</p>
<p>CR-K5</p>  <p>Mass: 1,365 kg</p>
<p>CR-K6</p>  <p>Mass: 1,483 kg</p>
<p>CR-K7</p>  <p>Mass: 0,304 kg</p>

CR-M1a



Mass: 26,444 kg

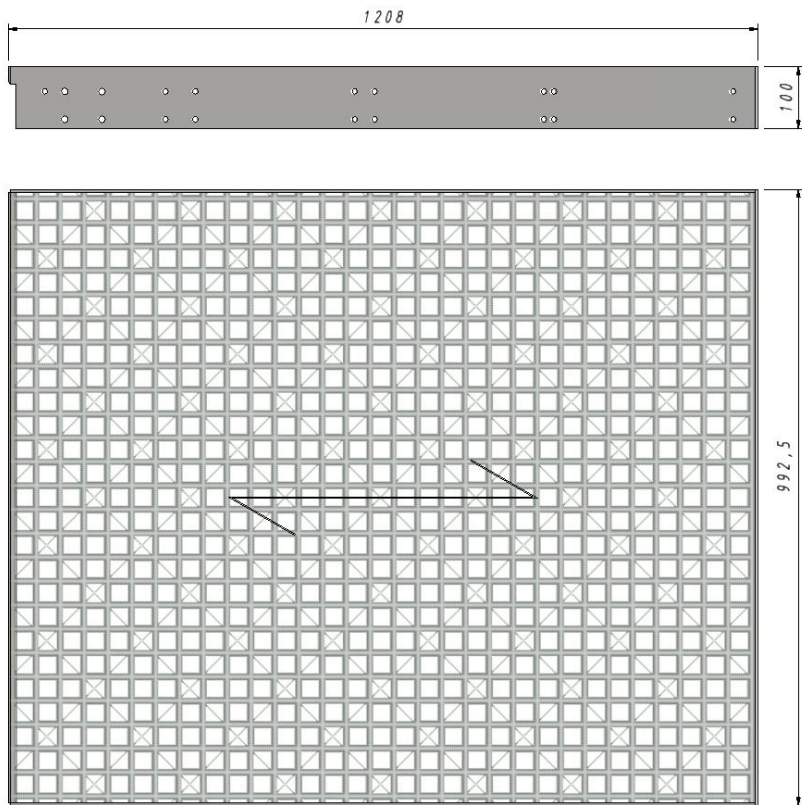
CR-M1b



Mass: 32,543 kg

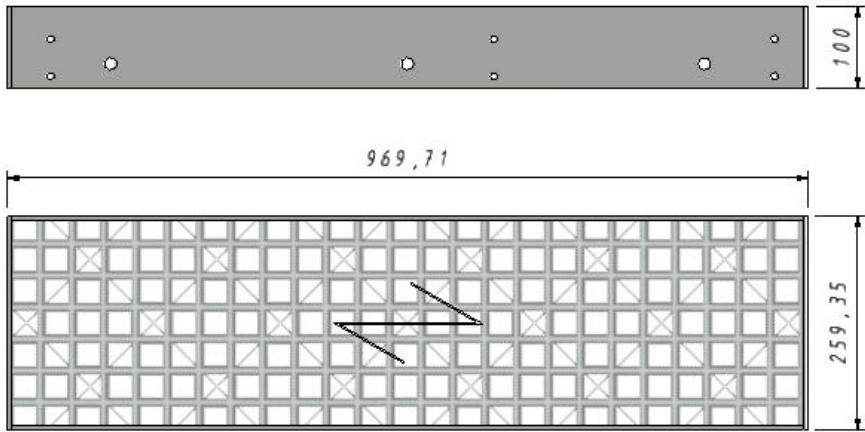


CR-M1c



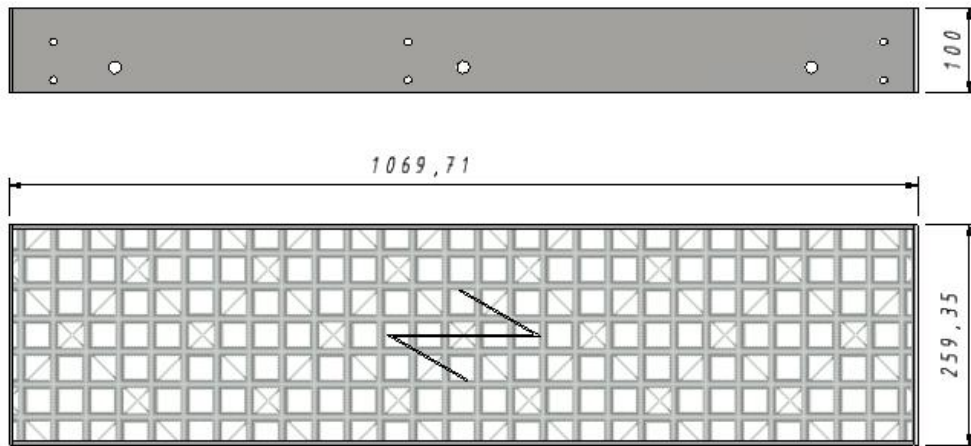
Mass: 37,369 kg

CR-M2a



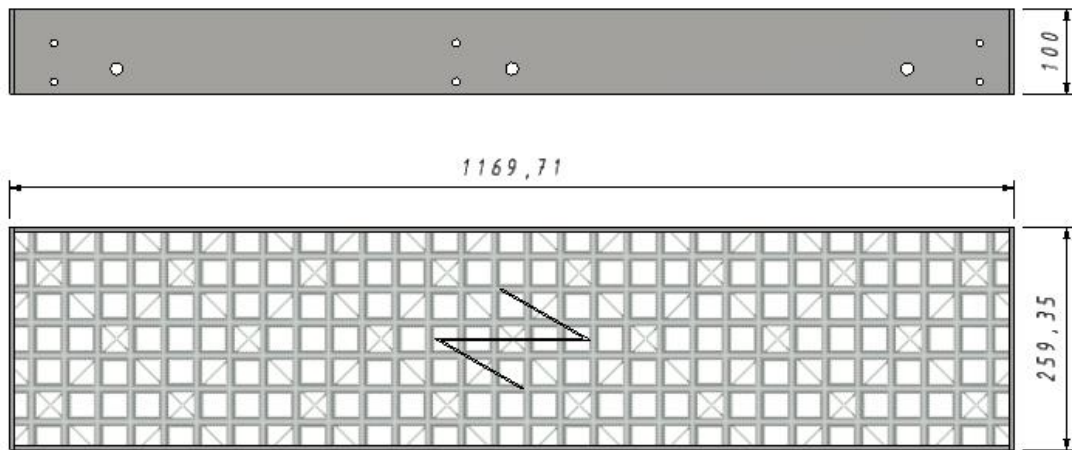
Mass: 13,185

CR-M2b



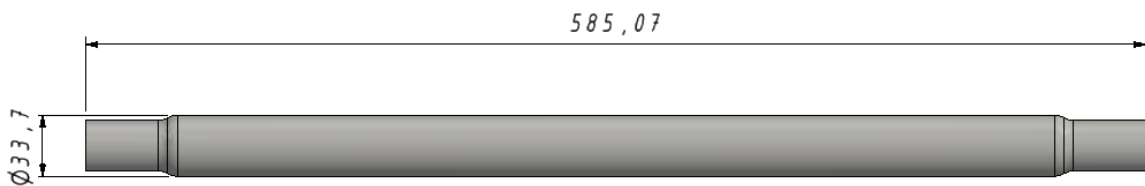
Mass: 14,793 kg

ASO-M2c



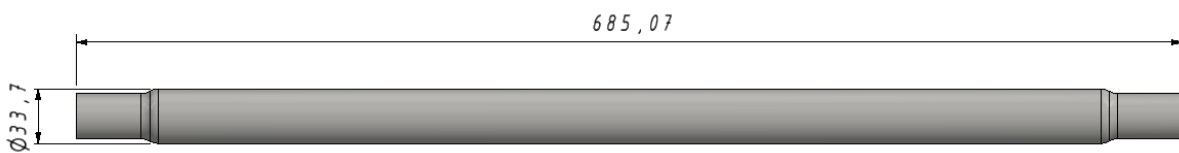
Mass: 15,916 kg

CR-PP1a



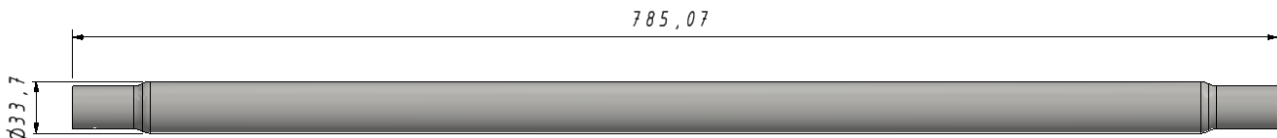
Mass: 0,889 kg

CR-PP1b

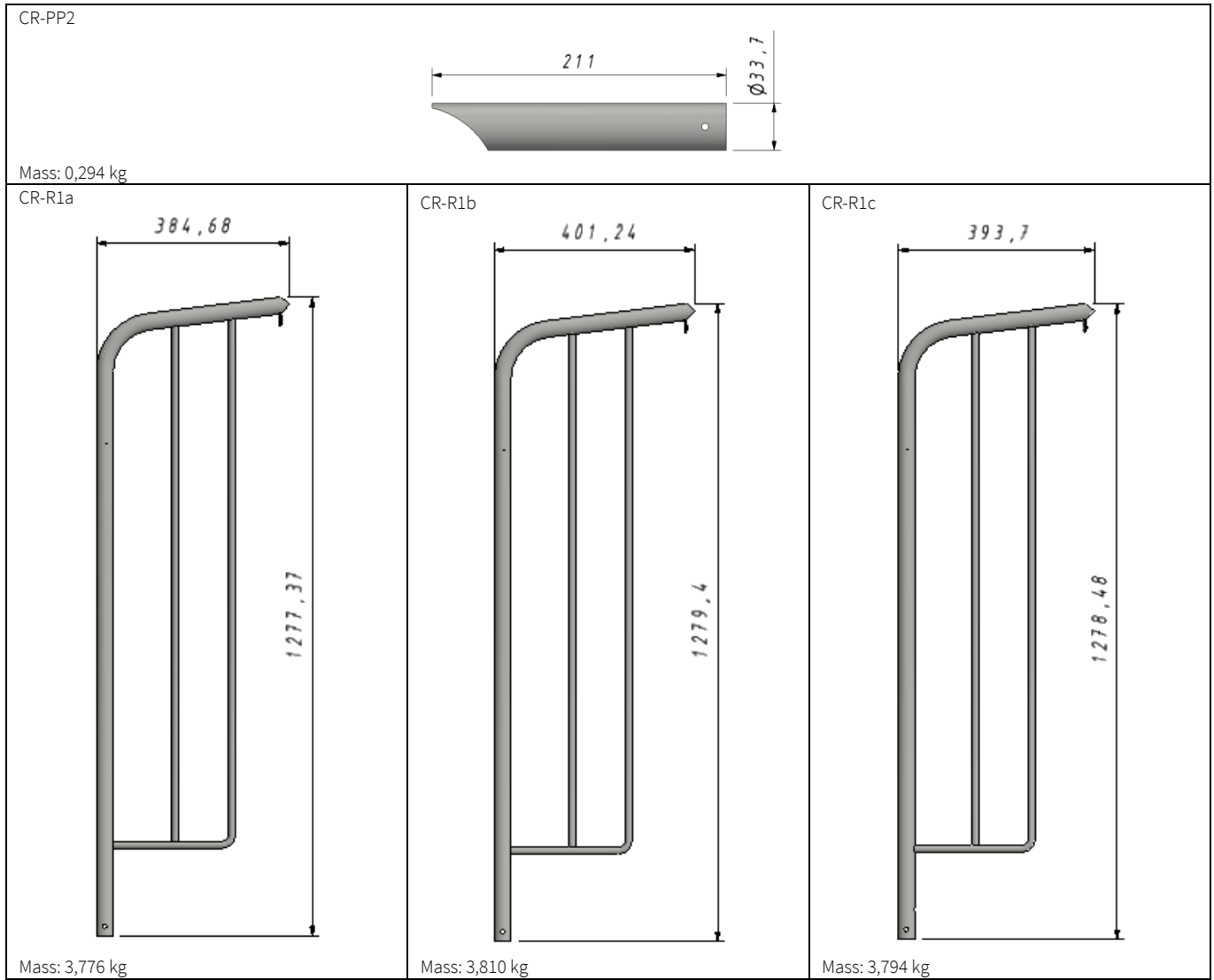


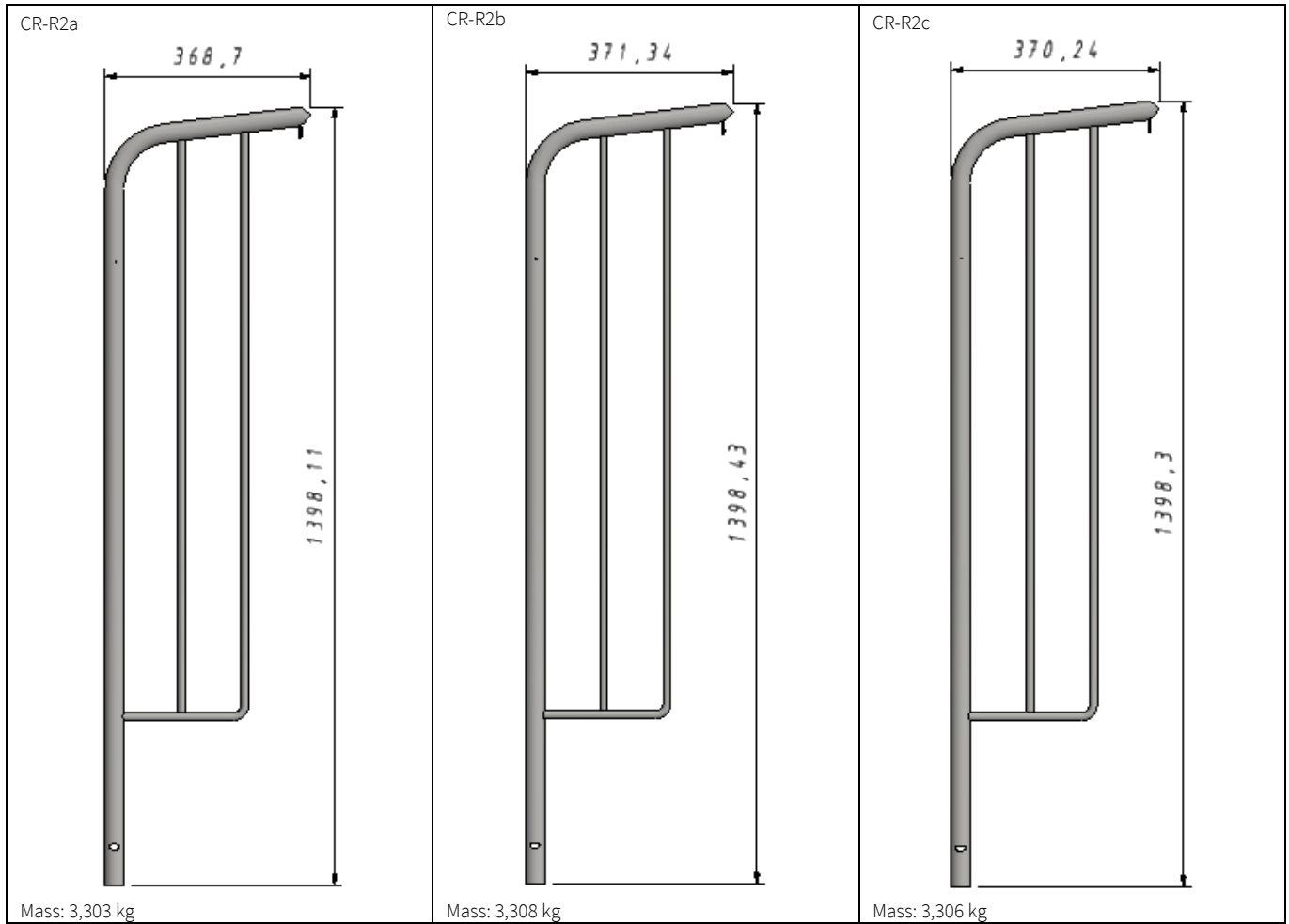
Mass: 1,046 kg

CR-PP1c

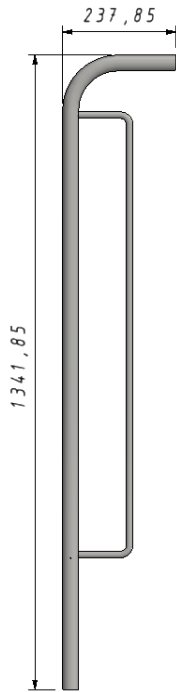


Mass: 1,202 kg





CR-R3



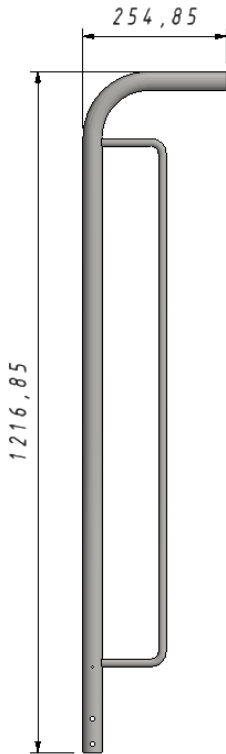
Mass: 2,713 kg

CR-R4



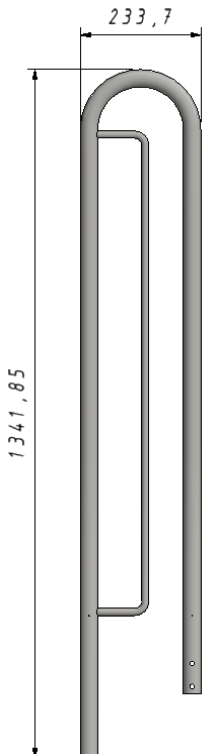
Mass: 2,587 kg

CR-R5



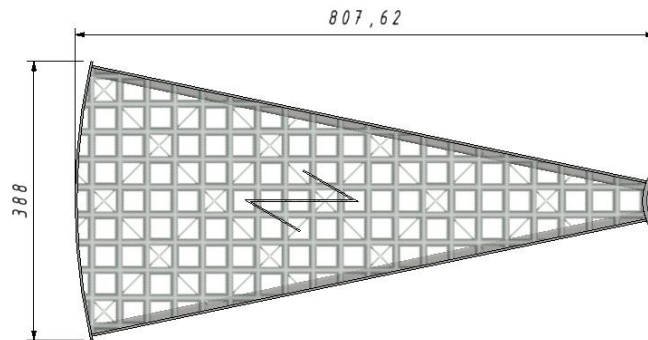
Mass: 2,540 kg

CR-R6



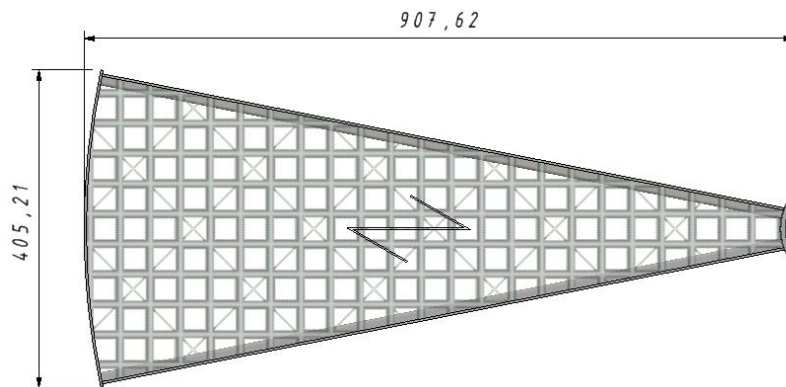
Mass: 4,486 kg

W-S-SP-900-KR-34x38



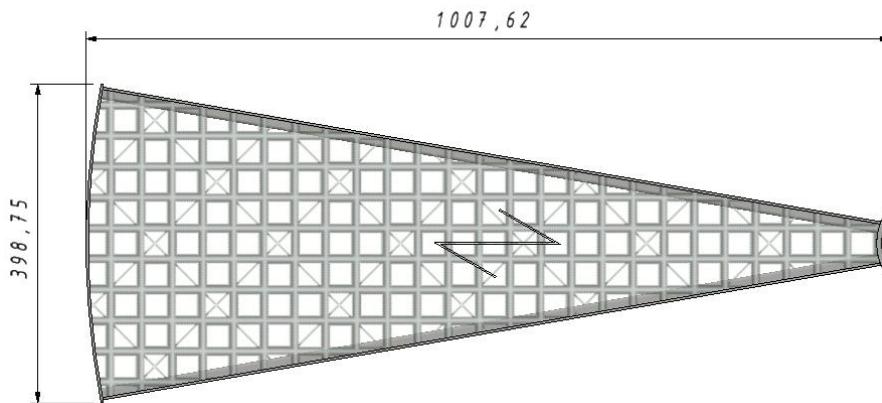
Mass: 7,653 kg

W-S-SP-1000-KR-34x38



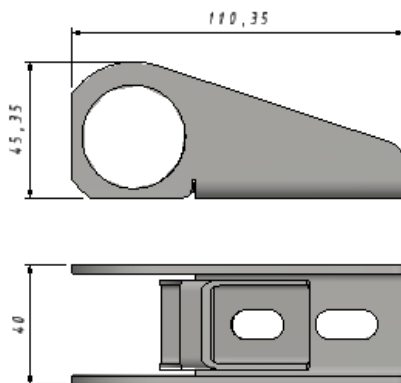
Mass: 8,596 kg

W-S-SP-1100-KR-34x38



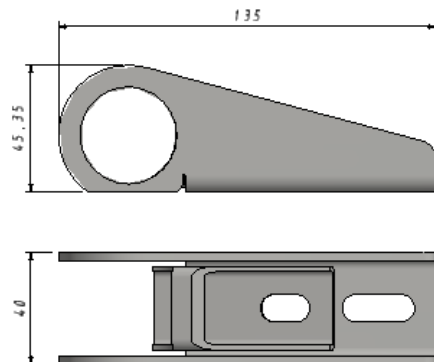
Mass: 9,381 kg

CR-A2



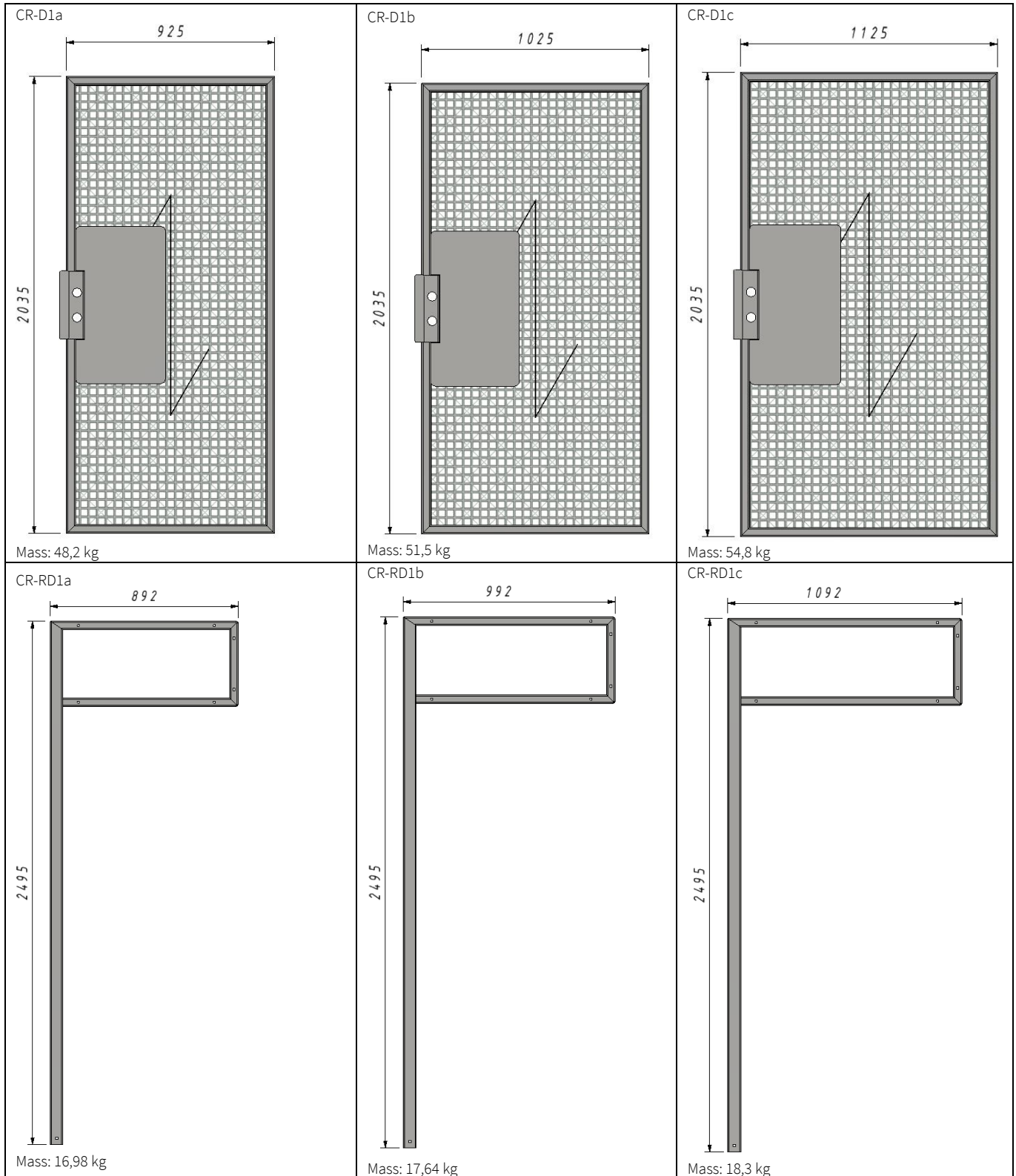
Mass: 0,215 kg

CR-A3



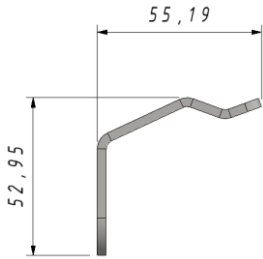
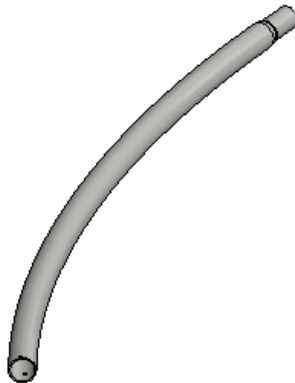
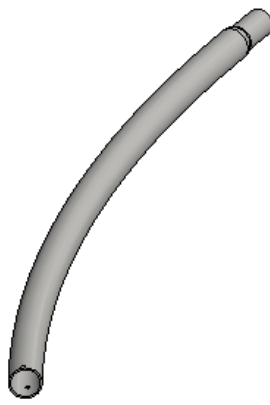
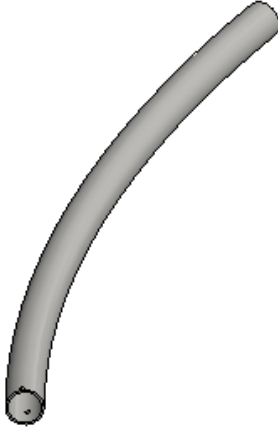
Mass: 0,274 kg





<p>CR-GD1a</p> <p>Mass: 4,43 kg</p>	<p>CR-GD1b</p> <p>Mass: 4,97 kg</p>	<p>CR-GD1c</p> <p>Mass: 5,52 kg</p>
<p>M-D-Z-3</p> <p>Mass: 0,54 kg</p>	<p>CR-A8</p> <p>Mass: 1,87 kg</p>	<p>CR-A6</p> <p>Mass: 0,37 kg</p>
<p>CR-L1</p> <p>Mass: 0,75 kg</p>	<p>CR-L2</p> <p>Mass: 0,49 kg</p>	<p>CR-L4</p> <p>Mass: 0,39 kg</p>
<p>CR-GU1</p> <p>Mass: 5,9kg</p>	<p>R900: CR-G_a - L=373,3 R1000, R1100: CR-G_b - L=368,7</p> <p>CR-G1: L=2490 CR-G2: L=2490-Hs CR-G3: L=2490-(2*Hs) CR-G4: L=2490-(3*Hs) CR-G5: L=2490-(4*Hs) CR-G6: L=2490-(5*Hs) CR-G7: L=2490-(6*Hs) CR-G8: L=2490-(7*Hs) CR-G9: L=2490-(8*Hs) CR-G10: L=2490-(9*Hs) CR-G11: L=2490-(10*Hs) CR-G12: L=2490-(11*Hs)</p> <p>M-KR-UK-G11-34x38</p> <p>Mass: 0,1kg</p>	



<p>CR-GU1</p>  <p>Mass: 0,05 kg</p>	<p>CR-PW1a/b/c</p>  <p>Mass: 1,4 kg</p>	<p>CR-PW2a/b/c</p>  <p>Mass: 1,2 kg</p>
<p>CR-PW3a/b/c</p>  <p>Mass: 1,1 kg</p>		