

Edy Skifahrer aus Holz



Edy Skifahrer aus Holz

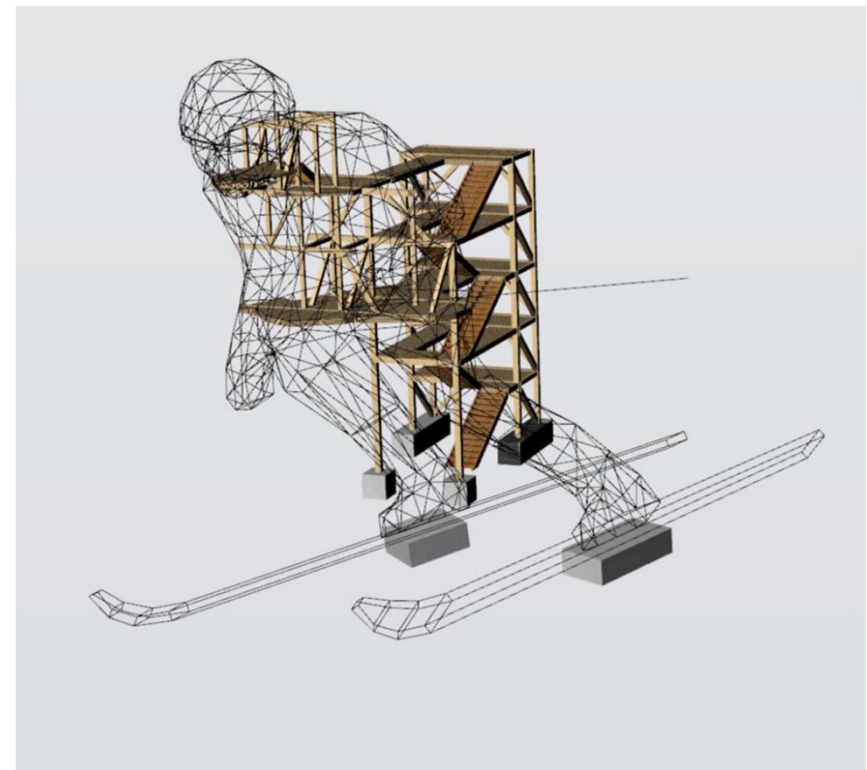


SCHWEIZERISCHER
VERBAND FÜR
GEPRÜFTE
QUALITÄTSHÄUSER

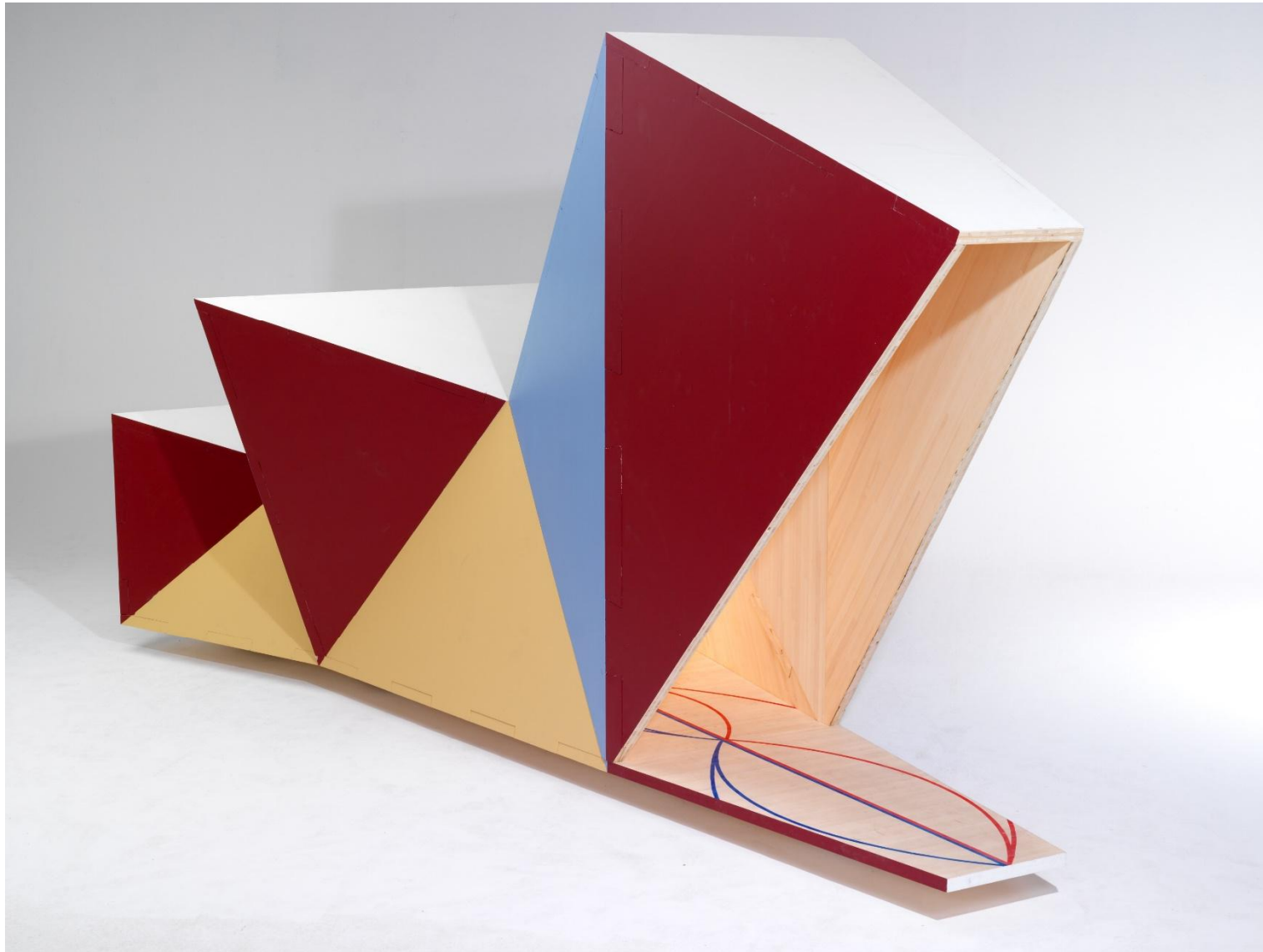


Edy Skifahrer aus Holz

- Wieso arbeiten wir an einem solchen Projekt
- Wer macht was und wann
- Hintergrund Informationen
- Fazit



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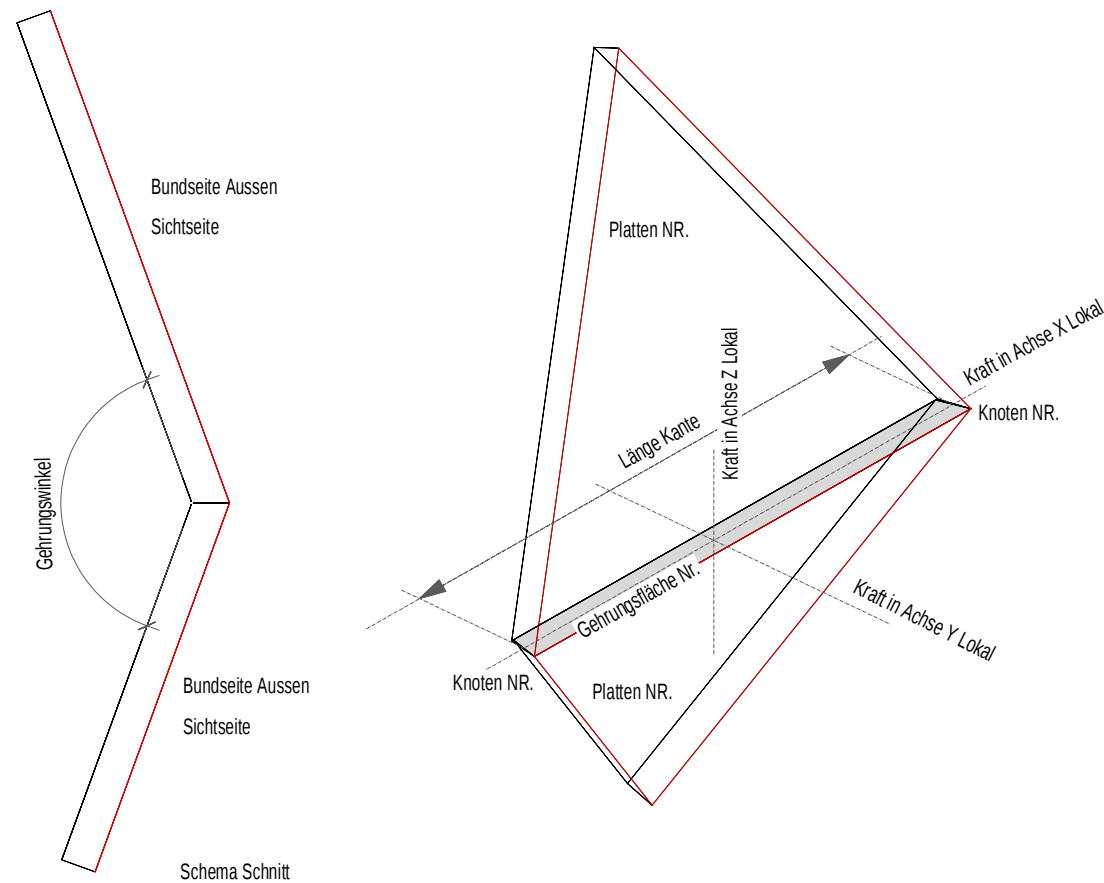


Edy Skifahrer aus Holz

- Wer macht was..... ... ab dem 12. Oktober 2016
- Bauherr OK Ski WM St. Moritz
- Auftragserteilung Aroma
- Motivator Hermann Blumer
- Geometrie Design to Production
- Statik-Modell Samuel Blumer
- Plattenzuschnitt BUZ / HWZ
- Holzbauer Andri Freund
- IHT Schnittstellen und Details

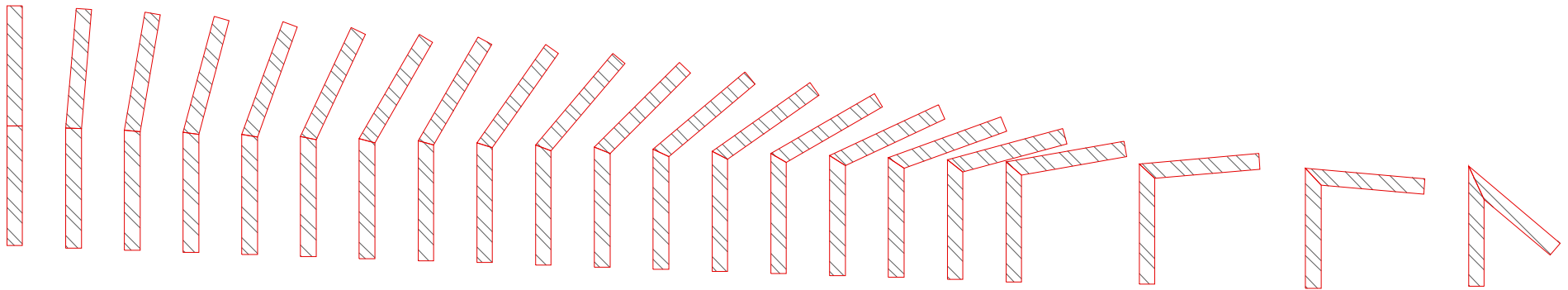
Edy Skifahrer aus Holz

- Geometrien Platten Varianten



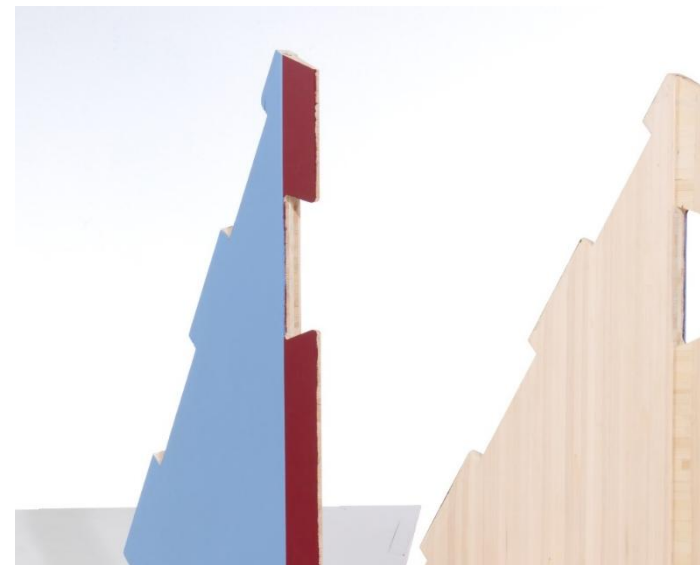
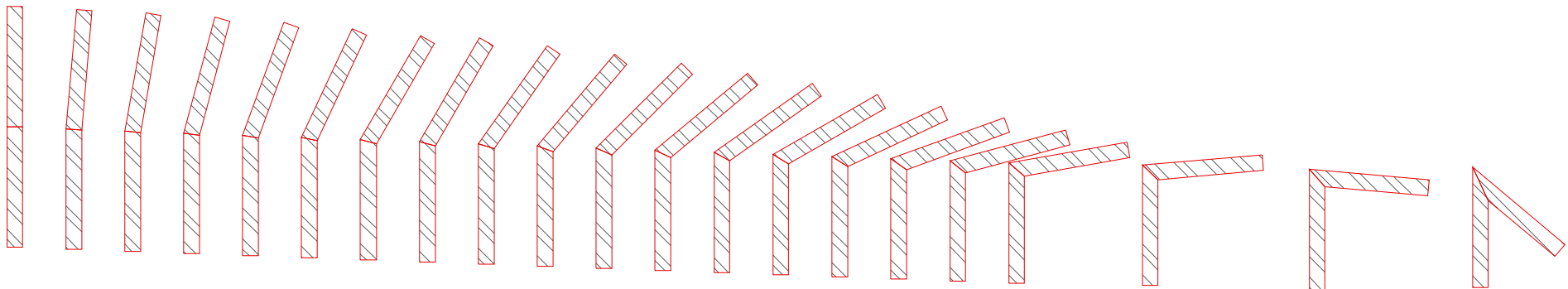
Edy Skifahrer aus Holz

- Geometrien Platten Varianten



Edy Skifahrer aus Holz

- Geometrien Platten Varianten



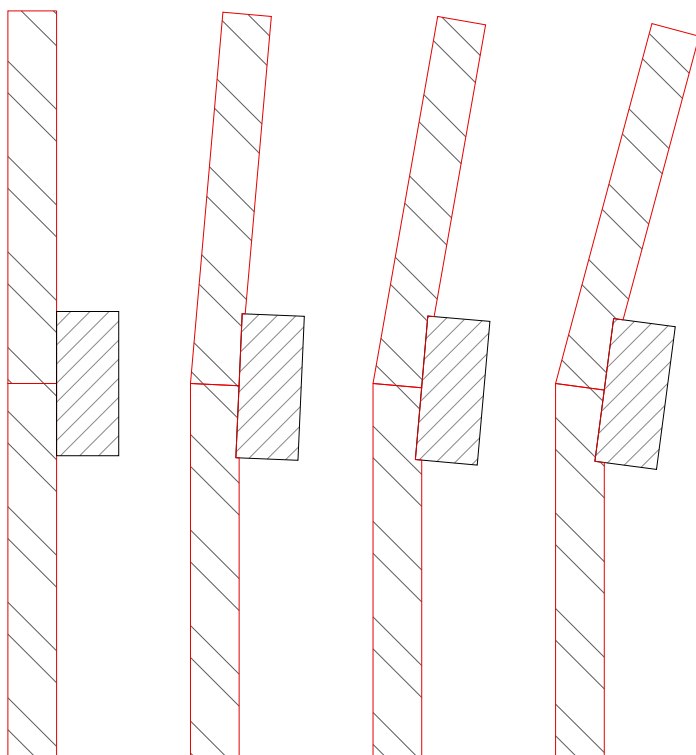
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0°

2.5°

5.0°

7.5°



Typ 1: 0° - 9°

VGQ

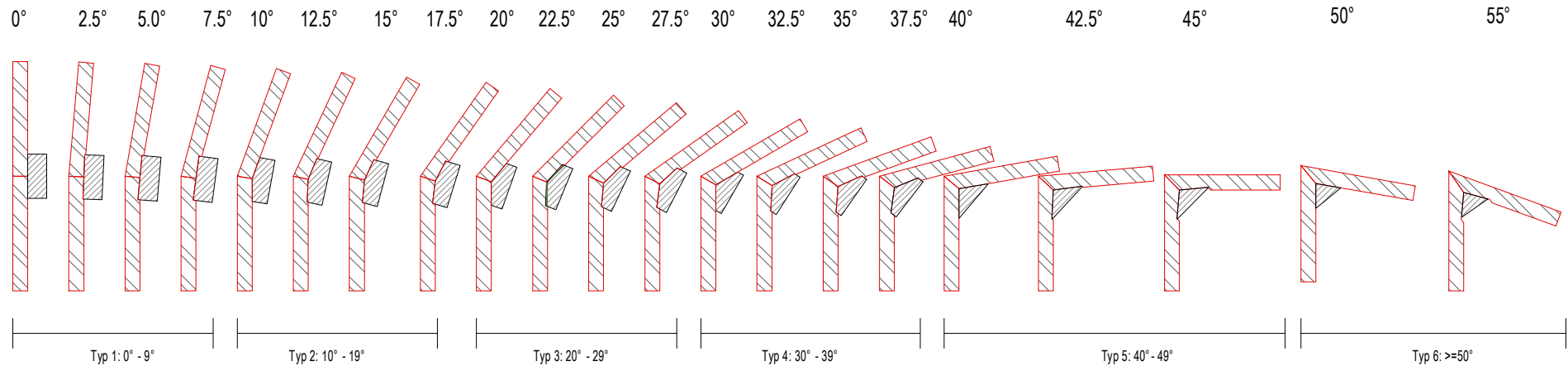


SCHWEIZERISCHER
VERBAND FÜR
GEPRÜFTE
QUALITÄTSHÄUSER

IHT

Ingenieurholzbau
Holzbautechnik

Edy Skifahrer aus Holz



Typ 1:

- Steico LVL X Platte 69x160mm
- Schraubenabstand 100mm
- Gehrungswinkel -10° - 9°
- Kantenlänge 706.9m (54%)

Typ 2:

- Steico LVL X Platte 69x160mm
- Schraubenabstand 100mm
- Gehrungswinkel 10° - 19°
- Kantenlänge 270.3m (21%)

Typ 3:

- Steico LVL X Platte 69x160mm
- Schraubenabstand 100mm
- Gehrungswinkel 20° - 29°
- Kantenlänge 139.5m (11%)

Typ 4:

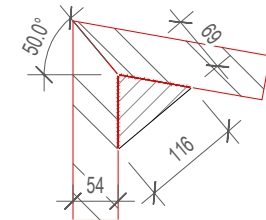
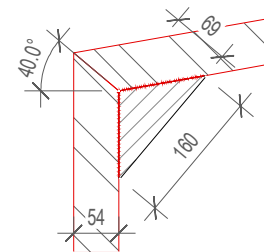
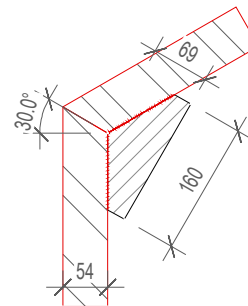
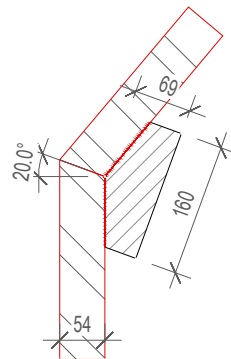
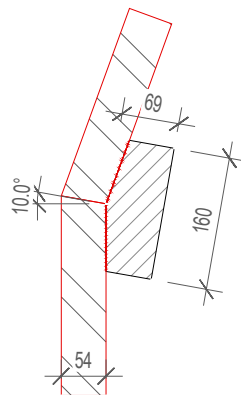
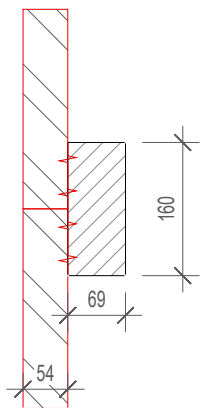
- Steico LVL X Platte 69x160mm
- Schraubenabstand 100mm
- Gehrungswinkel 30° - 39°
- Kantenlänge 72.7m (6%)

Typ 5:

- Steico LVL X Platte 69x160mm
- Schraubenabstand 150mm
- Gehrungswinkel 40° - 49°
- Kantenlänge 4.6m (0%)

Typ 6:

- Steico LVL X Platte 69x160mm
- Schraubenabstand 150mm
- Gehrungswinkel >=50°
- Kantenlänge 4.0m (0%)



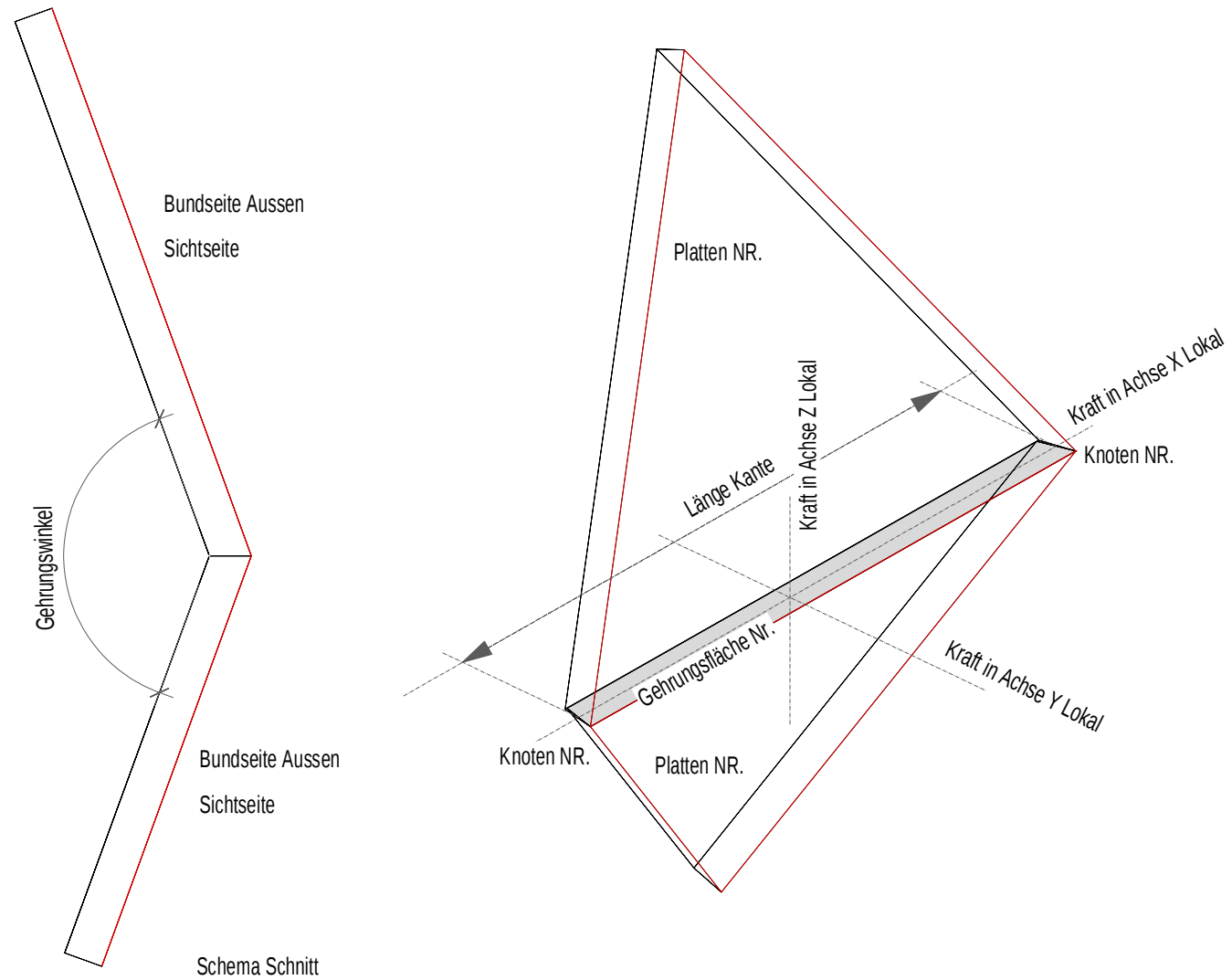
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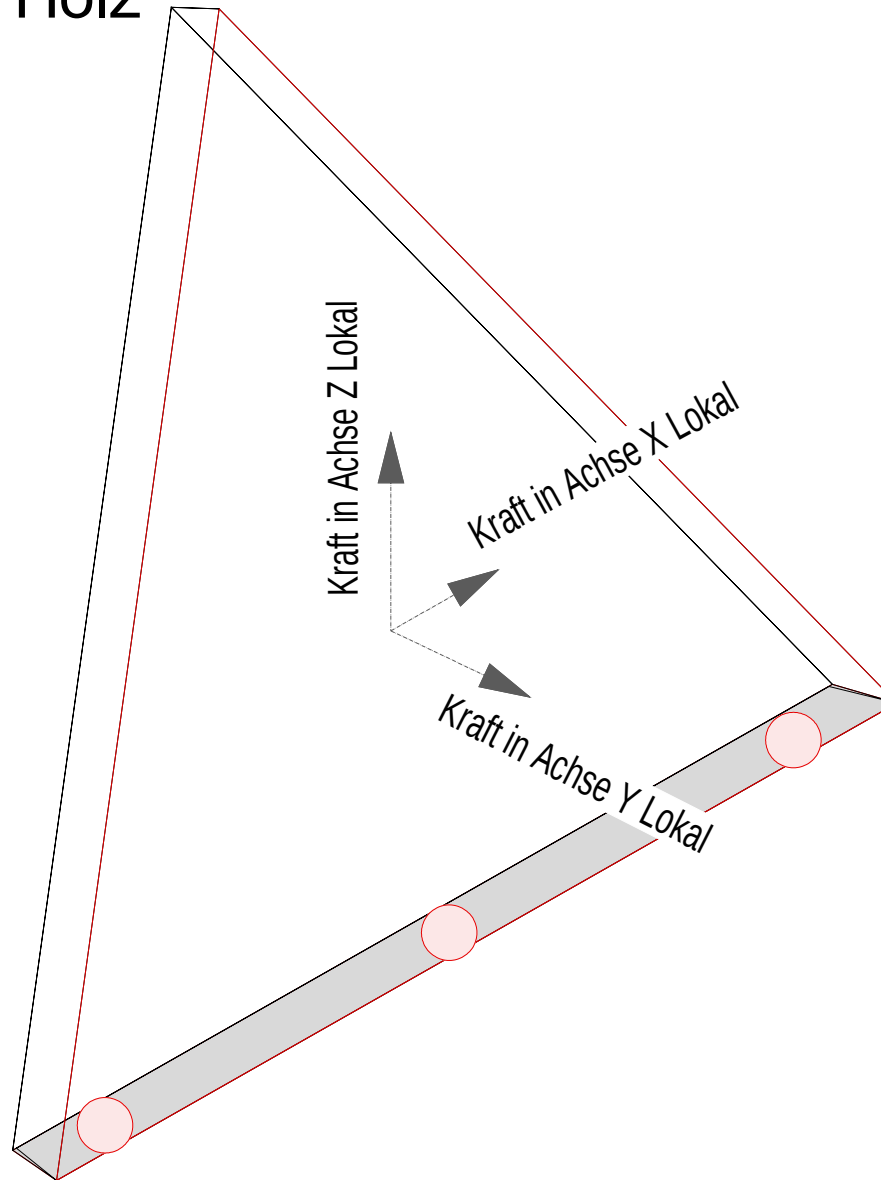
Edy Skifahrer aus Holz



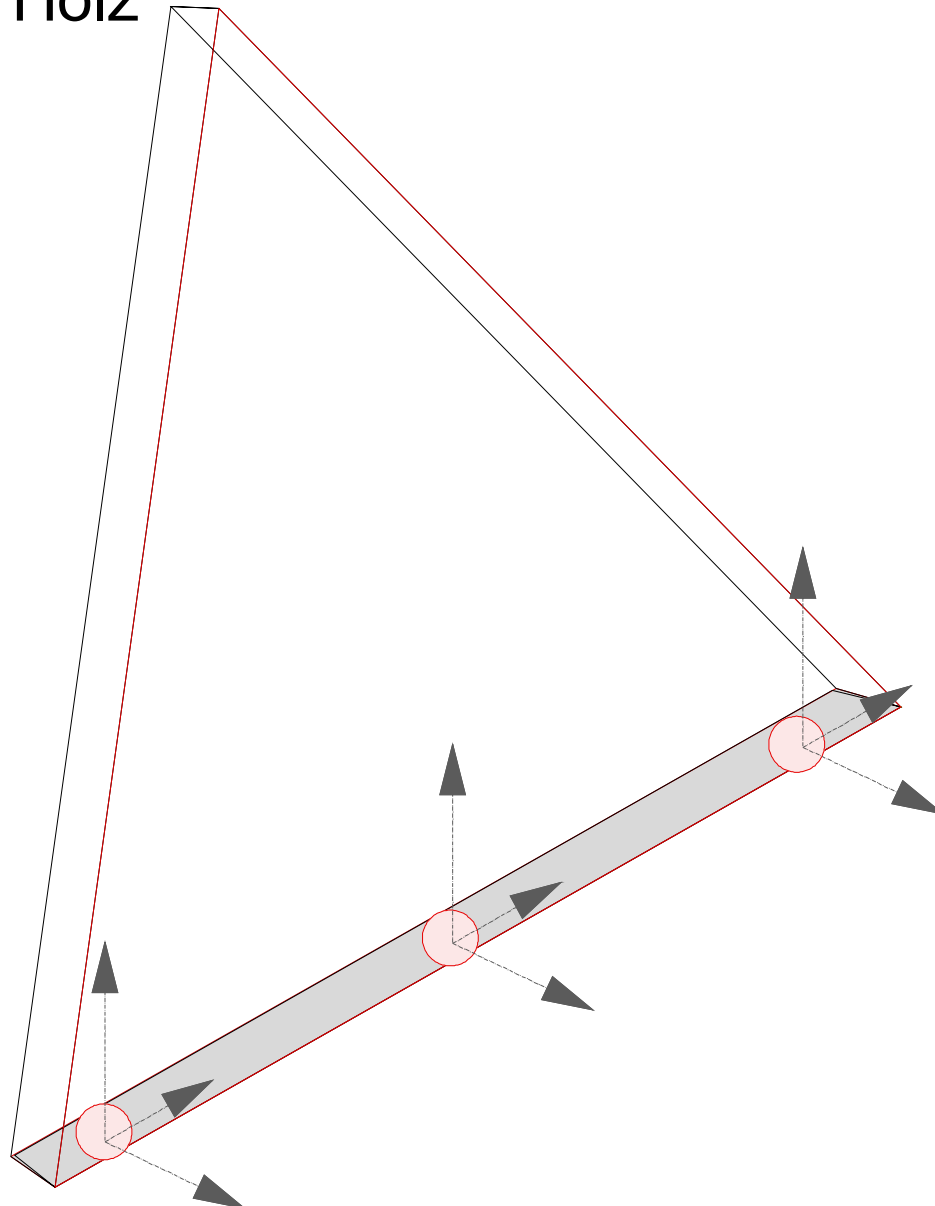
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	Name	Panel 1	Panel 2	RStab Nr.	Innenwinkel	Fräswinkel	Laenge
1	2xNone	2	None	10001			1.073,8
2	1xNone	1	None	10002			947,0
3	3xNone	3	None	10003			1.136,8
4	5xNone	5	None	10004			505,7
5	4x7	4	7	10005	101,5	-39,3	793,4
6	1x6	1	6	10006	174,4	-2,8	1.096,3
7	9xNone	9	None	10007			891,5
8	1x4	1	4	10008	178,4	-0,8	1.317,9
9	8x3	8	3	10009	169,9	-5,0	1.405,2
10	6x2	6	2	10010	176,7	-1,7	1.489,9
11	10x3	10	3	10011	156,7	-11,6	1.325,6
12	2x8	2	8	10012	184,7	2,4	1.522,1
13	11xNone	11	None	10013			780,8
14	12xNone	12	None	10014			1.157,9
15	9x7	9	7	10015	181,3	0,7	1.149,8
16	13xNone	13	None	10016			864,2
17	5x10	5	10	10017	181,8	0,9	1.393,2
18	14x4	14	4	10018	100,5	-39,7	809,2
19	15xNone	15	None	10019			750,2
20	24xNone	24	None	10020			1.168,3
21	25x5	25	5	10021	120,6	-29,7	1.363,3
22	26x11	26	11	10022	171,5	-4,3	956,1
23	27x12	27	12	10023	153,6	-13,2	2.114,1
24	11x13	11	13	10024	147,4	-16,3	705,8
25	16xNone	16	None	10025			585,1
26	6x17	6	17	10026	104,7	-37,6	738,1
27	14x7	14	7	10027	112,1	-34,0	743,1
28	21x8	21	8	10028	178,8	-0,6	1.259,5
29	19x9	19	9	10029	153,8	-13,1	784,7
30	12x15	12	15	10030	180,8	0,4	1.038,9

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[illegible]

LINIE	X	Y	Z	alpha	nx [kN/m	nxy [kN/r	vx [kN/m	nx [kN/m	nxy [kN/r	vx [kN/m
10001	4,620	-3,890	-1,098	325	1,368	2,351	0,432	-4,540	3,771	0,345
10001	4,853	-3,618	-1,083	325	7,607	-2,638	0,244	-12,286	7,206	0,252
10001	5,085	-3,346	-1,069	325	2,783	-0,087	0,473	-0,433	-0,149	0,430

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- Kräfte umrechnen in brauchbare Werte

LINIE ↓	WINKEL BETA ↓	MAXIMALWERT [kN/m]			MINIMALWERT [kN/m]			MITTELWERT MAXIMAL [kN/m]		
		nx.Max ↓	nxy.Max ↓	vx.Max ↓	nx.Min ↓	nxy.Min ↓	vx.Min ↓	nx.Mit.Ma ↓	nxy.Mit.Ma ↓	vx.Mit.Ma ↓
10001		69,397	68,276	3,093	-94,482	-25,319	0,587	37,628	15,571	1,376
10002		163,081	113,377	15,824	-255,087	-139,024	0,567	73,725	31,505	4,693
10003		52,333	28,678	4,706	-65,658	-33,533	0,368	22,356	6,096	1,771
10004		142,558	100,032	2,061	-103,760	-82,900	1,907	61,794	30,801	1,773
10005	78,5	157,394	103,134	1,952	-150,407	-89,415	0,180	77,986	40,750	1,011
10006	5,6	142,981	20,302	15,824	-162,470	-10,090	0,997	75,464	-27,246	3,112
10007		16,711	2,594	0,971	-29,721	-5,362	0,669	11,967	1,133	0,806
10008	1,6	123,998	49,640	3,393	-105,253	-56,905	0,327	50,731	23,212	1,329
10009	10,1	137,747	19,992	4,713	-82,708	-27,440	0,763	35,032	5,941	2,495
10010	3,3	132,942	63,156	3,000	-157,597	-53,206	1,068	63,529	29,484	1,460
10011	23,3	88,351	-10,545	4,713	-73,218	11,454	0,949	44,743	-32,874	2,249

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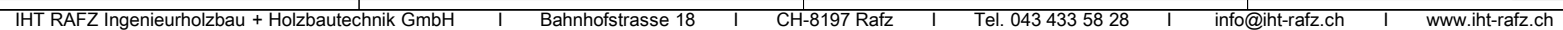
- Gut sortiert ist halb gewonnen

UNIE	nx	ny	nxy	vx	nx	ny	nxy	vx	α[°]	Fl. b[mm]	d Kt[mm]	Länge [mm]	Ausschnitt [m]	τ _{d,xp,kt} [n/mm²]	τ _{d,xsch,kt} [n/mm²]	σ _{d,xp,kt} [n/mm²]	σ _{d,xsch,kt} [n/mm²]	τ _{d,xp,kt} [n/mm²]	σ _{d,m,kt} [n/mm²]	M _{kt} [kN]	F _{1,schr}	i		
10048	53,319	8,617	24,797	6,445	-223,972	18,627	60,942	4,986	14,2	76,2	69,0	739,2	5,51	0,140	11%	0,883	31%	3,246	105%	7,62	155%	6,05	6,05	260%
10850	23,352		4,499	5,927	-145,281		-13,249	4,842	30,2	86,6	69,0	1012,7	0,36	0,129	10%	0,065	2%	2,106	68%	4,94	100%	3,92	3,92	168%
10429	140,541		17,081	4,190	-130,882		-5,293	3,433	13,2	76,2	69,0	635,3	4,19	0,091	7%	0,248	9%	1,897	62%	4,78	97%	3,53	3,53	152%
10015	146,494	22,560	43,969	1,129	-128,757	9,450	-36,983	1,342	-0,7	75,0	69,0	1149,8	-0,88	0,029	2%	0,637	23%	1,866	61%	4,38	89%	3,48	3,48	149%
10702	73,684		-5,137	3,167	-113,639		-0,382	5,078	11,4	76,2	69,0	509,0	1,84	0,110	9%	-0,006	0%	1,647	54%	3,87	79%	3,07	3,07	132%
10034	70,332	5,003	32,141	4,178	-106,189	4,064	24,134	6,953	11,2	76,2	69,0	559,3	1,61	0,151	12%	0,466	16%	1,539	50%	3,61	73%	2,87	2,87	123%
10388	110,337		28,478	3,255	-102,295		-3,228	0,895	17,3	76,2	69,0	413,0	9,71	0,071	6%	0,413	15%	1,483	48%	3,75	76%	2,76	2,76	119%
10821	35,131		-6,517	11,610	-100,209		-25,738	8,649	0,0	75,0	69,0	615,6	0,00	0,252	21%	-0,094	-3%	1,452	47%	3,41	69%	2,71	2,71	116%
10387	85,190		-53,736	5,274	-96,706		20,563	5,120	0,7	75,0	69,0	401,9	0,92	0,115	9%	0,298	11%	1,402	46%	3,29	67%	2,61	2,61	112%
10710	35,166		-22,939	5,055	-95,754		8,115	2,379	-25,1	79,8	39,9	912,6	-7,03	0,190	15%	0,118	4%	1,388	45%	9,75	198%	2,59	2,59	111%
10459	112,595		1,687	6,148	-93,186		12,623	6,224	-3,2	75,0	69,0	1017,6	-4,24	0,135	11%	0,183	6%	1,351	44%	3,83	78%	2,52	2,52	108%
10002	73,725	1,494	31,505	4,693	-92,014	-2,128	-37,718	3,080	0,0	75,0	69,0	947,0	0,00	0,102	8%	0,457	16%	1,334	43%	3,13	64%	2,48	2,48	107%
10881	101,937		16,192	24,195	-89,468		-23,737	5,765	15,8	76,2	69,0	1129,1	7,66	0,526	43%	0,235	8%	1,297	42%	3,47	70%	2,42	2,42	104%
10706	84,144		13,392	1,977	-87,275		-3,638	1,984	-0,6	75,0	69,0	630,9	-0,79	0,043	4%	0,194	7%	1,265	41%	2,97	60%	2,36	2,36	101%
10368	70,258	8,586	-28,320	3,444	-86,482	14,618	31,333	4,763	-10,7	76,2	54,9	874,1	-0,92	0,130	11%	0,454	16%	1,253	41%	4,65	94%	2,34	2,34	100%
10560	66,383		-14,184	2,711	-85,813		20,110	4,036	17,1	76,2	69,0	778,3	9,39	0,088	7%	0,291	10%	1,244	40%	2,92	59%	2,32	2,32	99%
10671	3,145		14,643	2,053	-84,984		-40,662	2,350	32,9	86,6	69,0	1761,8	4,43	0,051	4%	0,212	7%	1,232	40%	2,89	59%	2,29	2,29	98%
10098	88,693	31,199	-36,487	2,923	-83,156	9,487	32,215	2,473	9,0	75,0	69,0	1522,8	11,79	0,064	5%	0,467	16%	1,205	39%	2,83	58%	2,25	2,25	96%
10853	75,305		27,309	6,374	-82,954		19,489	4,419	-48,2	69,0	69,0	628,1	-9,87	0,139	11%	0,396	14%	1,202	39%	2,82	57%	2,24	2,24	96%
10025	5,441	0,570	-17,746	3,139	-82,705	4,062	-10,015	10,288	0,0	75,0	69,0	585,1	0,00	0,224	18%	-0,145	-5%	1,199	39%	2,81	57%	2,23	2,23	96%
10214	33,265	11,437	9,200	3,793	-80,805	4,543	1,227	2,140	-3,8	75,0	69,0	892,6	-4,94	0,082	7%	0,133	5%	1,171	38%	2,75	56%	2,18	2,18	94%
10042	83,357	-1,843	-10,029	4,281	-79,489	15,044	8,894	3,949	30,8	86,6	69,0	751,2	1,15	0,093	8%	0,129	5%	1,152	37%	2,70	55%	2,15	2,15	92%
10398	52,657		11,492	2,808	-76,885		1,995	3,418	0,0	75,0	69,0	854,6	0,00	0,074	6%	0,167	6%	1,114	36%	2,62	53%	2,08	2,08	89%
10532	-3,775		-16,286	4,816	-76,820		14,358	2,341	10,0	75,0	69,0	1064,6	12,98	0,105	9%	0,208	7%	1,113	36%	2,61	53%	2,07	2,07	89%
10006	75,464	-1,153	-27,246	3,112	-75,490	4,148	30,326	2,465	2,8	75,0	69,0	1096,3	3,64	0,068	5%	0,440	16%	1,094	36%	2,57	52%	2,04	2,04	87%
10948	12,976		12,654	1,192	-75,272		-8,529	1,613	24,2	79,8	69,0	1030,9	5,86	0,035	3%	0,183	6%	1,091	35%	2,56	52%	2,03	2,03	87%
10417	48,118		-6,441	1,197	-74,496		9,353	1,361	0,0	75,0	69,0	530,5	0,00	0,030	2%	0,136	5%	1,080	35%	2,53	52%	2,01	2,01	86%
10837	64,414		-10,007	2,890	-74,210		36,885	4,297	23,5	79,8	69,0	546,4	4,81	0,093	8%	0,535	19%	1,076	35%	2,53	51%	2,00	2,00	86%
10017	84,229	3,919	-6,212	2,844	-73,692	15,273	-2,553	2,175	-0,9	75,0	69,0	1393,2	-1,17	0,062	5%	-0,037	-1%	1,068	35%	2,51	51%	1,99	1,99	85%
10423	53,280		-0,581	1,813	-73,149		13,196	2,469	-6,7	75,0	69,0	641,0	-8,72	0,054	4%	0,191	7%	1,060	34%	2,49	51%	1,98	1,98	85%
10065	74,949	7,129	-19,974	3,598	-70,846	1,388	13,397	3,918	-8,2	75,0	69,0	1474,1	-10,69	0,085	7%	0,194	7%	1,027	33%	2,41	49%	1,91	1,91	82%
10589	78,240		6,692	1,704	-70,663		-7,151	1,646	-0,7	75,0	69,0	826,5	-0,97	0,037	3%	0,097	3%	1,024	33%	2,66	54%	1,91	1,91	82%
10777	42,965		20,215	5,805	-70,327		-5,714	3,387	3,0	75,0	69,0	1185,2	3,90	0,126	10%	0,293	10%	1,019	33%	2,39	49%	1,90	1,90	81%
10647	36,318		5,050	4,801	-70,122		-33,837	3,005	-6,9	75,0	69,0	1198,8	-8,95	0,104	8%	0,073	3%	1,016	33%	2,39	48%	1,89	1,89	81%
10005	77,986	-0,525	40,750	1,011	-70,109	-4,768	-32,086	0,843	39,3	86,6	69,0	793,4	13,95	0,022	2%	0,591	21%	1,016	33%	2,39	48%	1,89	1,89	81%
10021	76,424	-1,659	-49,844	2,385	-69,483	0,942	40,125	2,053	29,7	79,8	69,0	1363,3	13,44	0,052	4%	0,582	21%	1,007	33%	2,36	48%	1,88	1,88	81%

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	α[°]	n	Schub Platte		Schub Scheibe		Zug Platte		Druck Platte		Klebfläche		Moment Platte		Schrauben		Länge [m]	
Typ1	-10	541	27%	0	23%	0	61%	0	38%	0	69%	0	89%	0	149%	6	706,9	54%
Typ2	10	194	43%	0	31%	0	105%	1	37%	0	104%	1	155%	1	260%	6	270,3	21%
Typ3	20	99	25%	0	26%	0	35%	0	23%	0	40%	0	62%	0	87%	0	139,5	11%
Typ4	30	59	10%	0	21%	0	68%	0	22%	0	59%	0	100%	1	168%	1	72,7	6%
Typ5	40	3	5%	0	9%	0	10%	0	8%	0	11%	0	22%	0	23%	0	4,6	0%
Typ6	50	3	3%	0	1%	0	3%	0	1%	0	2%	0	4%	0	6%	0	4,0	0%
Typ7	-20	48	29%	0	19%	0	41%	0	20%	0	40%	0	94%	0	100%	1	66,1	5%
Typ8	-30	24	19%	0	20%	0	45%	0	18%	0	42%	0	198%	3	111%	1	23,48	2%
Typ9	-60	21	12%	0	19%	0	39%	0	30%	0	58%	0	78%	0	96%	0	27,54	2%



Edy Skifahrer aus Holz

Baugruppe	Bauuntergruppe	Name	Verb. Typ	Verstärkung Verbindung
BEIN	B1	001x004	Typ1	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	002x006	Typ1	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	010x003	Typ2	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	004x014	Typ4	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	014x018	Typ7	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	030x034	Typ4	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	041x021	Typ3	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	032x041	Typ7	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	057x050	Typ7	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	062x078	Typ7	Zusätzlich verschrauben, Achsabstand max 75mm
BEIN	B1	004x007	Typ4	Zusätzlich verschrauben, Achsabstand max 50mm
BEIN	B1	001x006	Typ1	Zusätzlich verschrauben, Achsabstand max 50mm
BEIN	B1	007x009	Typ7	Zusätzlich verschrauben, Achsabstand max 50mm
BEIN	B1	005x010	Typ7	Zusätzlich verschrauben, Achsabstand max 50mm
BEIN	B1	025x005	Typ3	Zusätzlich verschrauben, Achsabstand max 50mm
BEIN	B1	024x025	Typ1	Zusätzlich verschrauben, Achsabstand max 50mm

Edy Skifahrer aus Holz

- Einmessen und Kontrollmessungen

