HAZ Parapet Bracket Type BA - Design Principles

Facing panel as precast concrete
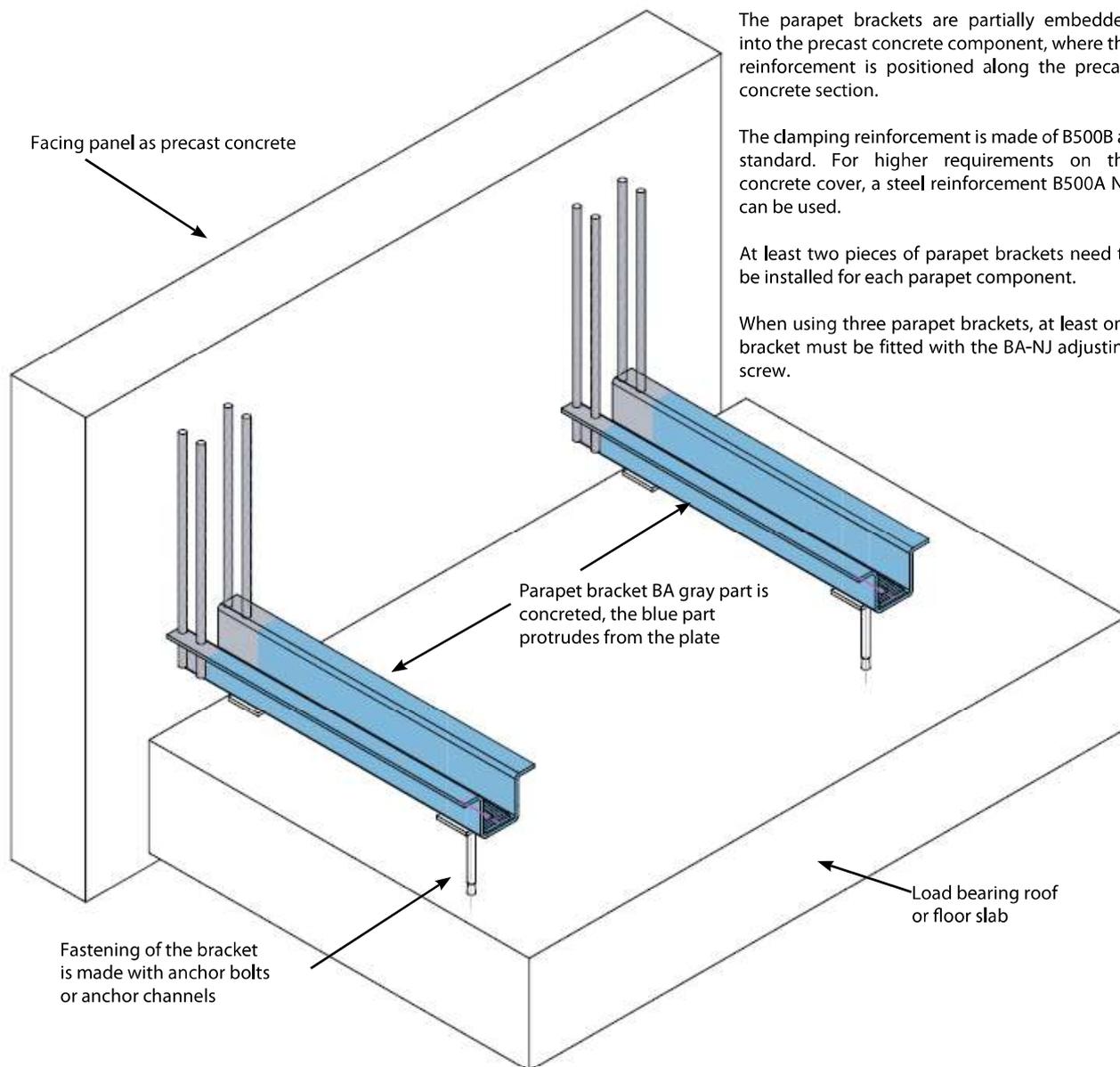
The parapet brackets are partially embedded into the precast concrete component, where the reinforcement is positioned along the precast concrete section.

The clamping reinforcement is made of B500B as standard. For higher requirements on the concrete cover, a steel reinforcement B500A NR can be used.

At least two pieces of parapet brackets need to be installed for each parapet component.

When using three parapet brackets, at least one bracket must be fitted with the BA-NJ adjusting screw.

Parapet bracket BA gray part is concreted, the blue part protrudes from the plate

Load bearing roof or floor slab

Fastening of the bracket is made with anchor bolts or anchor channels

HAZ Parapet Bracket Type BA-NJ

NJ = Standard version with adjusting screw
NO = Standard version without adjustment
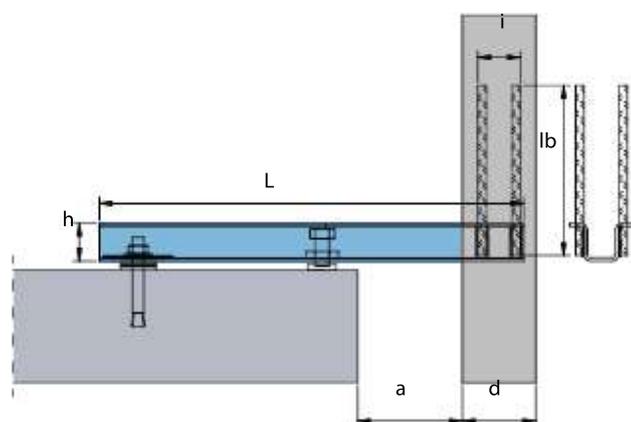
HAZ Parapet Bracket Type BA-AJ

AJ = Attic design with adjusting screw
AO = Attic execution without adjustment
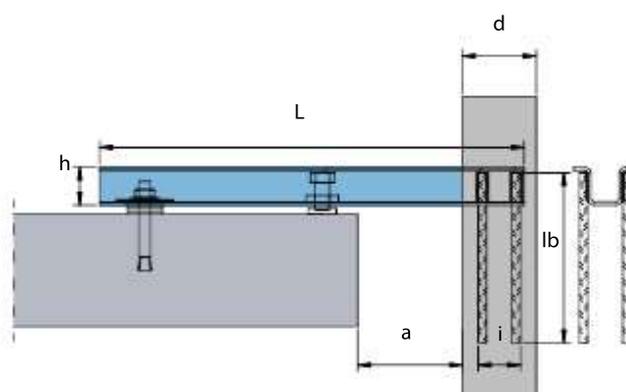
HAZ BA Parapet Bracket Technical Details & Dimensioning

Dimensioning of the parapet brackets BA (see also HAZ calculation program PA)

$V_{z,d} = g_G*G + g_G*V$

$N_d = g_Q*H + g_Q*W$

$M_{y,d} = g_G*G*(d/2+a+50)$

$\qquad + g_G*V*(d/2+a+50+a1)$

$\qquad + g_Q*H*h1$

$\qquad + g_Q*W*e_w$

$Z_d = M_{y,d} / y$

$\qquad y = z-a-50-60$

$\qquad z = L-te$

$D_d = Z_d + V_{z,d}$

$f = M_y*ab*(Li+a/2)/(3*E*ly)$

$\qquad ab = d/2+a+50 \text{ (mm)}$

$\qquad Li = z-60+d/2$

$\qquad E = 200.000 \text{ (N/mm}^2)$
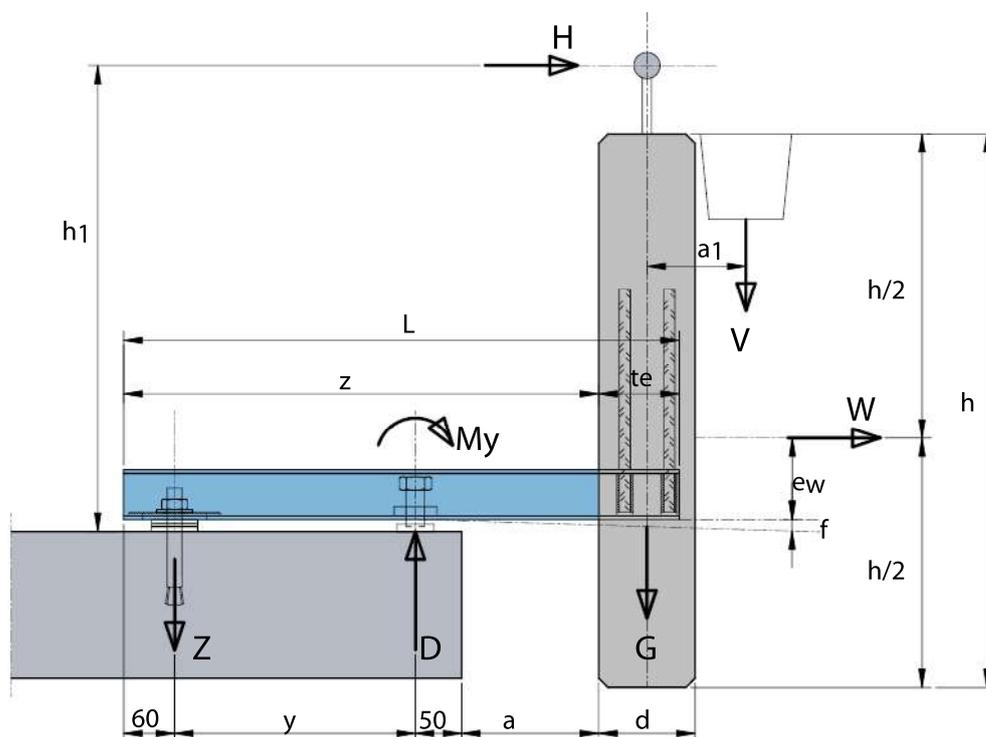
Load actions, safety factors

Load actions:
G= Dead Load
V = Vertical loads (exp. tray,balustrade)
H = Horizontal loads (dynamic load +/-)
W = Windload
f = deflection

Partial safety factors:

g_G= 1,35 (Static load)
g_Q= 1,50 (dynamic load, wind)

Dimensioning:

$M_{yd} / M_{y,Rd} + N_d / N_{Rd} + V_d / V_R < 1,0$

To choose thet correct anchoring type please download the product calculation software from website www.hazmetal.com

Cross sections

Pos	Dim	BA1	BA2	BA3	BA4	BA5	BA6
A	cm²	4,45	5,00	7,35	9,43	11,96	14,36
$W_{y,pl}$	mm³	6,59	8,18	13,35	21,52	28,25	40,74
ly	mm⁴	11,79	16,12	29,23	58,79	80,44	139,16

Material properties

Pos	Dim	BA1	BA2	BA3	BA4	BA5	BA6
f_{yk}	N/mm²	400	400	400	400	400	400
$f_{yk}/(3^{0,5})$	N/mm²	230	230	230	230	230	230
gM	-	1,1	1,1	1,1	1,1	1,1	1,1

Load capacity

Pos	Dim	BA1	BA2	BA3	BA4	BA5	BA6
N_{Rd}	kN	161	181	267	342	434	522
$M_{y,Rd}$	kNcm	220	273	445	717	950	1358
VRd	kN	40	45	63	83	104	131

Installation accessories and profile cross section

Mounting accessories for models NJ and AJ
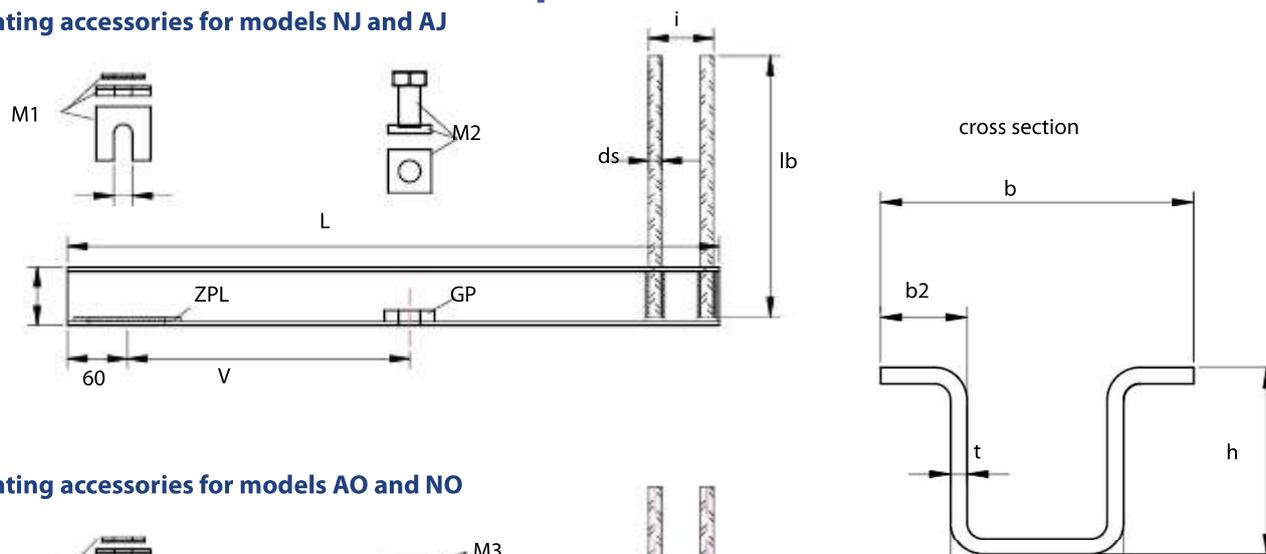
Mounting accessories for models AO and NO
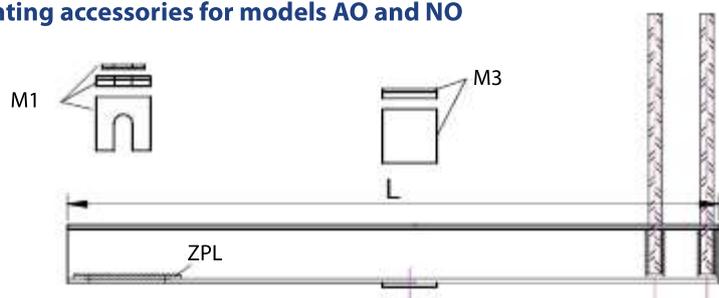
Dimensioning for HAZ BA Parapet Bracket

Part	Pos	BA1	BA2	BA3	BA4	BA5	BA6	Designation
Profile	b	74	84	94	122	122	144	Overall width
	b1	40	45	51	65	66	77	Bottom width
	h	44	48	54	66	70	83	Height
	b2	20	22,5	25,5	32,5	33	38,5	Bending width
	t	3	3	4	4	5	5	Thickness
	L			Variable				Length
	d1	13	17	17	17	21	21	Slot hole size
ZPL	a/b/t	111/30/4	111/35/4	111/35/4	111/35/4	111/45/5	111/45/5	Toothed plate for slot
GP	a/b/t	40/33/12	40/38/12	60/42/12	60/56/12	60/55/15	60/66/15	Locking nut
	M	M16	M16	M20	M24	M27	M27	Metric size
Rebar	ds	10	10	12	14	14	16	Rebar B500B
	lb	350	400	440	500	520	600	Rebar B500B
	i	40	40	50	60	70	75	Spacing i
M1	ZP	30/30/4	35/35/4	35/35/4	35/35/4	45/45/4	45/45/4	Toothed channel with slot
	UL3	35/35/3	35/35/3	50/50/3	50/50/3	50/50/3	60/60/3	2x U-Plate with open slot
	UL5	35/35/5	35/35/5	50/50/5	50/50/3	50/50/3	60/60/5	U-Plate with open slot
M2	JS	M16x60	M16x60	M20x60	M24x60	M27x80	M27x80	Adjustable screw
	FP	40/40/6	40/40/6	40/40/6	40/40/6	60/60/10	60/60/10	Base plate
M3	U3	35/35/3	35/35/3	50/50/3	50/50/3	50/50/3	60/60/3	2 pcs shims
	U5	35/35/5	35/35/5	50/50/5	50/50/3	50/50/3	60/60/5	Shims