



Precast Column and Wall Shoes, and Other Connection Systems

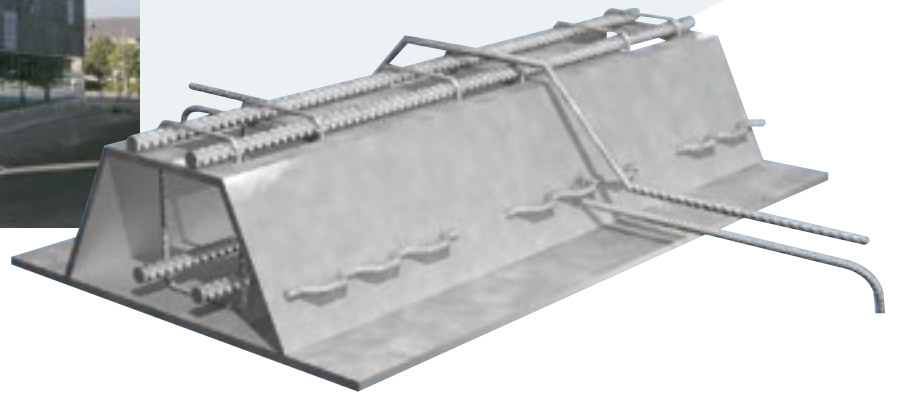
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Anstar Products

Quality Products from Finland

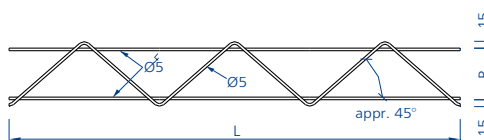
Range includes column shoes, wall shoes, foundation bolts, composite structures steel to concrete connections, precast panel suspension system and lattice reinforcement for sandwich panels product.



Diagonal Ties and Lifting Anchors

AD diagonal ties

DIMENSIONS	
Standard products [Code B-L]	Recommended insulation thickness
	[mm]
AD 150-2400 (2700)	90
AD 180-2400 (2700)	120
AD 200-2400 (2700)	140
AD 220-2400 (2700)	160
AD 240-2400 (2700)	180
AD 260-2400 (2700)	200
AD 280-2400 (2700)	220
AD 300-2400 (2700)	240
AD 320-2400 (2700)	260
AD 360-2400 (2700)	300

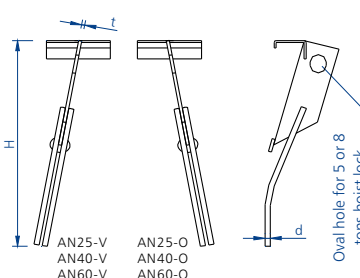


	Diagonal	External bar	Internal bar
AD	1.4301	1.4301	B500 K
ADR	1.4301	1.4301	1.4301

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AN lifting anchors

TYPE	DIMENSIONS				CAPACITIES	
	t	d	H	weight	Allowed lifting angle 0-20°	Allowed lifting angle 0-30°
	[mm]	[mm]	[mm]	[kg]	Concrete K20	Concrete K25
AN25-V, AN25-O	8	12	1000	3.9	25 kN	25 kN
AN40-V, AN40-O	12	16	1100	6.1	40 kN	40 kN
AN60-V, AN60-O	16	20	1450	12.0	60 kN	60 kN



Rebars	A500HW
Profile	S235JR+AR
Steelplate	S355J2+N

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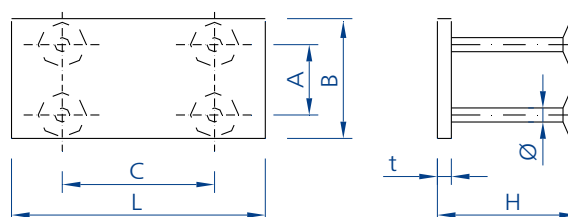
Fastening Plates

SBKL fastening plates

CODE L/B	DIMENSIONS						CAPACITIES				
	H	t	A	C	∅	weight	N _u	V _u	M _{uL}	M _{uB}	T _u
	[mm]						[kg]	[kN]			
SBKL 50/100	68	8	0	60	12	0.5	7.7	9.8	0.38	0.30	0.49
SBKL 100/100	68	8	60	60	12	1.0	13.7	19.3	0.68	0.68	1.38
SBKL 100/150	70	10	60	90	12	1.5	18.4	19.3	1.20	0.91	1.76
SBKL 100/200	162	12	60	120	12	2.5	37.2	19.3	2.98	1.86	2.15
SBKL 150/150	162	12	90	90	12	2.7	39.6	22.6	2.57	2.57	2.10
SBKL 200/200	162	12	120	120	16	5.0	82.8	43.5	6.62	6.62	4.92

SBKL 200/300 and SBKL 300/300 are delivered as AKL-fastening plates, see page 4.

	Plate	Anchors
SBKL	S235JR+AR	S235JR+AR
SBKLR	1.4301	S235JR+AR
SBKLRr	1.4301	1.4301
SBKLRH	1.4401	S235JR+AR



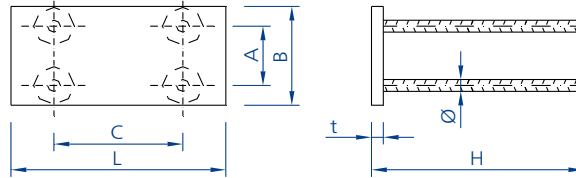
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Fastening Plates

KL fastening plates

CODE L/B	DIMENSIONS						CAPACITIES				
	H	t	A	C	∅	weight	N _u	V _u	M _{uL}	M _{uB}	T _u
	[mm]						[kg]	[kN]		[kNm]	
KL 50/100	218	8	0	60	12	0.7	7.7	9.8	0.38	0.30	0.49
KL 100/100	218	8	60	60	12	1.4	13.7	19.3	0.68	0.68	1.38
KL 100/150	220	10	60	90	12	2.0	18.4	19.3	1.20	0.91	1.76

	Plate	Anchors
KL	S235JR+AR	A500HW
KLR	1.4301	A500HW
KLH	1.4401	A500HW

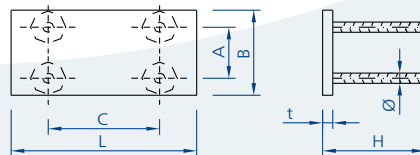


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AKL fastening plates

CODE L/B	DIMENSIONS						CAPACITIES				
	t	∅	C	A	H	weight	N _u	V _u	M _{uL}	M _{uB}	T _u
	[mm]						[kg]	[kN]		[kNm]	
AKL 150/150	11	12	90	90	161	2.7	99.7	38.9	8.4	8.4	3.0
AKL 200/100	11	12	120	60	161	2.5	94.2	38.0	11.3	5.6	3.2
AKL 200/200	12	16	120	120	162	5.0	201.0	73.0	20.0	20.0	7.3
AKL 300/100	15	16	180	60	165	4.7	177.0	71.5	30.1	9.3	8.1
AKL 300/200	13	16	180	120	163	7.5	215.0	74.2	30.1	20.1	9.3
AKL 300/300	12	16	180	180	162	9.8	231.0	77.0	30.1	30.1	10.9

	Plate	Anchors
AKL	S355J2+N	A500HW
AKLR	1.4301	A500HW
AKLH	1.4401	A500HW



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AKLP and AKLJ long fastening plates

CODE B/L	DIMENSIONS					CAPACITIES		
	t	∅	A	H	weight	N _u	V _{uL}	V _{uB}
	[mm]					[kg/m]	[kN]	
AKLP 100/L	12	16	60	115	10.8	79.4	23.4	37.4
AKLP 150/L	12	16	90	115	15.5	93.6	27.6	37.4
AKLP 200/L	12	16	100	115	20.2	97.1	28.6	37.4
AKLP 300/L	12	16	200	115	29.6	116.5	34.4	37.4
AKLP 400/L	12	16	200	115	39.0	116.5	34.4	37.4
AKLJ 300/L	20	20	200	220	53.9	182.0	53.7	58.4
AKLJ 400/L	24	20	300	220	82.0	195.0	57.6	58.4
AKLJ 500/L	24	20	200	220	104.0	287.0	84.9	87.6
AKLJ 600/L	25	20	250	220	128.0	296.0	87.6	87.6

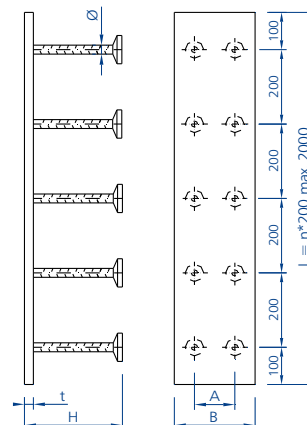


	Plate	Anchors
AKLP/AKLJ	S355J2+N	A500HW
AKLPR/AKLJR	1.4301	A500HW
AKLPH/AKLJH	1.4401	A500HW

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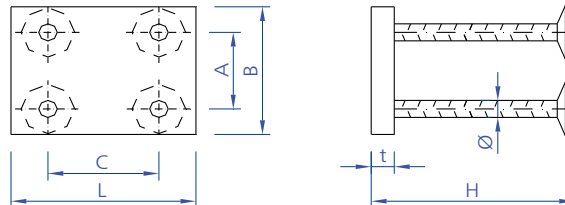
Fastening Plates

JAL heavy fastening plates

CODE L/B	DIMENSIONS						CAPACITIES				
	t	Ø	C	A	H	weight	N _u	V _u	M _{uL}	M _{uB}	T _u
	[mm]						[kg]	[kN]		[kNm]	
JAL 150/150	25	16	90	90	220	6.0	177	69.2	15.1	15.1	5.4
JAL 200/150	25	20	120	90	220	8.5	295	110.0	31.4	23.6	10.0
JAL 250/150	25	20	190	90	220	10.0	316	114.0	49.7	23.6	14.1
JAL 250/200	25	20	190	120	220	12.4	339	116.0	49.7	31.4	15.1
JAL 250/250	25	20	190	190	220	14.9	369	121.0	49.7	49.7	18.0
JAL 300/200	25	25	200	120	280	16.8	533	182.0	81.8	49.1	24.5
JAL 300/300	25	25	200	200	280	22.9	584	190.0	81.8	81.8	29.7
JAL 400/400	30	25	300	300	280	42.7	646	196.0	123.0	123.0	44.5
JAL 500/300	30	25	140	200	280	46.0	687	374.0	190.0	108.0	62.3
JAL 500/500	30	25	400	400	280	63.9	682	200.0	164.0	164.0	59.4
JAL 600/600	30	25	500	500	280	89.8	705	202.0	205.0	205.0	74.2
JAL 800/500	30	25	175	400	280	106.0	912	490.0	358.0	265.0	131.0
JAL 800/800	30	25	350	350	280	162.0	1050	404.0	430.0	430.0	156.0
JAL 1000/600	30	25	180	500	280	156.0	1050	595.0	515.0	374.0	192.0
JAL 1000/1000	30	25	450	450	280	244.0	1240	408.0	550.0	550.0	200.0

	Plate	Anchors
JAL	S355J2+N	A500HW
JALR	1.4301	A500HW
JALH	1.4401	A500HW

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Standard Steel Anchors

AVT 15 – 17

TYPE	DIMENSIONS						CAPACITIES
	L	H	B	t	Ø	weight	V _u
	[mm]						[kg]
AVT 15	460	95	450	8	10	2.5	35.2
AVT 16	550	105	475	10	12	3.9	51.5
AVT 17	740	125	560	12	16	7.1	89.1

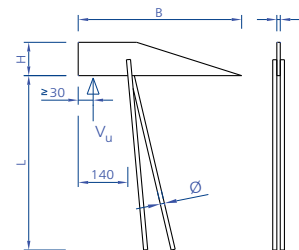
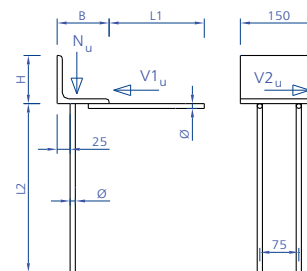


	Plate	Anchors
AVT	S355J2+N	A500HW
AVTr	1.4301	A500HW

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AVT 25 – 27

TYPE	DIMENSIONS						CAPACITIES		
	H	B	L1	L2	Ø	weight	N _u	V _{1u}	V _{2u}
	[mm]						[kg]	[kN]	
AVT 25	80	80	235	270	8	1.9	92.2	17.9	10.7
AVT 26	100	100	315	350	10	3.4	115.2	30.5	10.7
AVT 27	120	120	385	430	12	5.0	198.9	43.6	10.7



	Angle Bar	Plate (AVT 27)	Anchors
AVT	S235JR+AR	S355J2+N	A500HW
AVTr	1.4301	1.4301	A500HW

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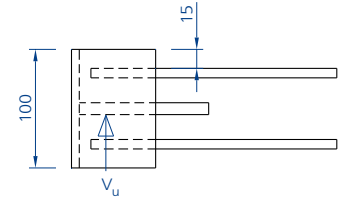
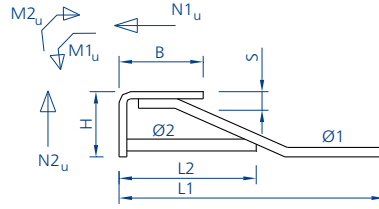
Standard Steel Anchors

AVT 23 and 24

TYPE	DIMENSIONS								CAPACITIES				
	H	B	S	L1	Ø1	L2	Ø2	weight	N_{1u}	M_{1u}	N_{2u}	M_{2u}	V_u
	[mm]								[kg]	[kN]	[kNm]	[kN]	[kNm]
AVT 23	55	65	15	205	8	100	10	0.8	15.7	0.57	4.3	0.29	10.7
AVT 24	80	85	20	305	10	120	12	1.3	26.6	0.85	6.6	0.69	11.6

	Plate	Anchors
AVT	S355K2C	A500HW
AVTR	1.4301	A500HW
AVTRr	1.4301	1.4301

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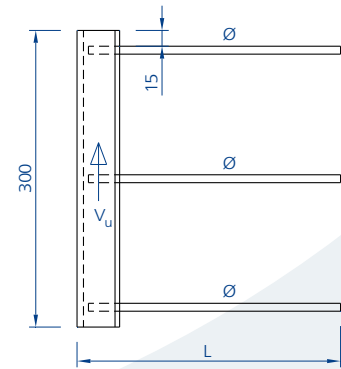
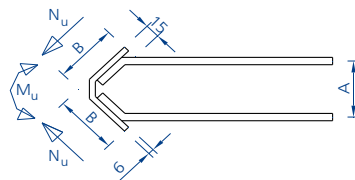


AVT 32 and 33

TYPE	DIMENSIONS					CAPACITIES		
	B	A	L	Ø	weight	N_u	M_u	V_u
	[mm]					[kg]	[kN]	[kNm]
AVT 32	65	60	245	8	2.3	28.1	2.0	21.5
AVT 33	80	80	305	10	3.3	43.5	2.5	33.6

	Plate	Anchors
AVT	S355K2C	A500HW
AVTR	1.4301	A500HW
AVTRr	1.4301	1.4301

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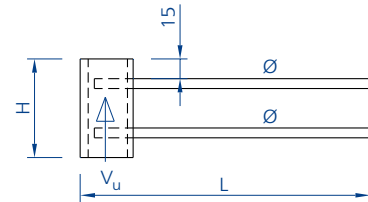
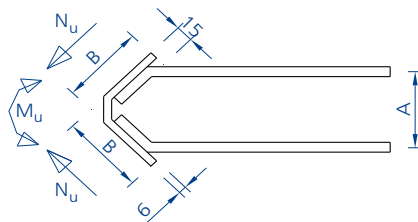


AVT 34 – 37

TYPE	DIMENSIONS						CAPACITIES		
	H	B	A	L	Ø	weight	N_u	V_{1u}	V_{2u}
	[mm]						[kg]	[kN]	
AVT 34	150	65	60	245	8	1.3	16.9	1.2	10.7
AVT 35	150	80	80	305	10	1.8	26.2	1.2	16.8
AVT 36	80	65	60	245	8	0.9	11.5	0.6	10.7
AVT 37	100	80	80	305	10	1.4	21.4	0.8	16.8

	Plate	Anchors
AVT	S355K2C	A500HW
AVTR	1.4301	A500HW
AVTRr	1.4301	1.4301

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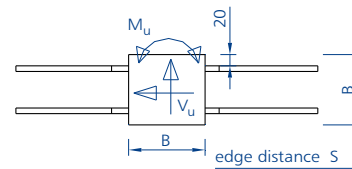
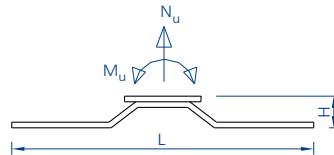


Standard Steel Anchors

AVT 38, 41 and 42

TYPE	DIMENSIONS					CAPACITIES			
	B	H	L	S	weight	N_u	M_u	V_u	
	[mm]					[kg]	[kN]	[kNm]	[kN]
AVT 38	100	45	575	120	1.1	14.8	1.11	14.8	
AVT 41	150	65	690	200	2.7	33.9	2.61	26.1	
AVT 42	200	85	870	320	5.5	64.9	5.01	40.7	

	Plate	Anchors
AVT	S355J2+N	A500HW
AVTR	1.4301	A500HW
AVTRr	1.4301	1.4301



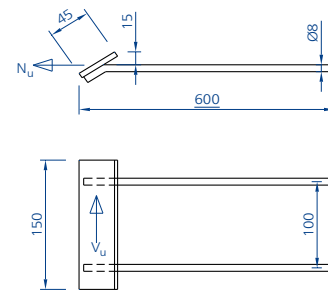
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AVT 39

TYPE	weight	CAPACITIES			
		N_u		V_u	
		K45-1	K30-2	K45-1	K30-2
AVT 39	0.8	17.6	12.1	13.8	10.7

	Plate	Anchors
AVT	S355J2+N	A500HW
AVTR	1.4301	A500HW

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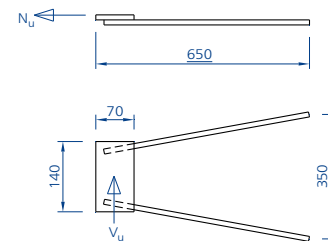


AVT 44

TYPE	weight	CAPACITIES			
		N_u		V_u	
		K45-1	K30-2	K45-1	K30-2
AVT 44	1.4	49.9	45.8	18.3	16.8

	Plate	Anchors
AVT	S355J2+N	A500HW
AVTR	1.4301	A500HW

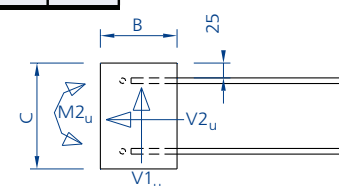
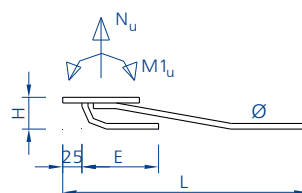
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AVT 43, 45 – 47

TYPE	DIMENSIONS							CAPACITIES				
	B	C	E	H	L	\emptyset	weight	V_{1u}	V_{2u}	N_u	M_{1u}	M_{2u}
	[mm]							[kg]	[kN]			[kNm]
AVT 43	100	150	100	45	320	8	1.3	29.3	4.7	5.6	0.29	0.56
AVT 45	100	100	100	45	320	8	1.0	22.8	3.9	5.6	0.28	0.28
AVT 46	150	150	170	65	430	10	2.5	45.1	4.7	16.0	1.04	1.15
AVT 47	200	200	210	85	545	12	5.1	70.9	5.1	28.0	2.29	2.70

	Plate	Anchors
AVT	S355J2+N	A500HW
AVTR	1.4301	A500HW
AVTRr	1.4301	1.4301



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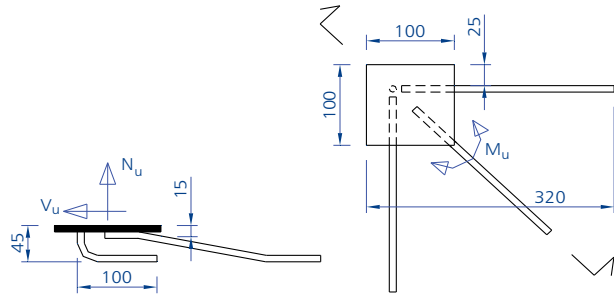
Standard Steel Anchors

AVT 48

TYPE	WEIGHT [kg]	CAPACITIES		
		V_u [kN]	N_u [kN]	M_u [kNm]
AVT 48	1.0	14.5	5.2	0.28

	Plate	Anchors
AVT	S355J2+N	A500HW
AVTR	1.4301	A500HW

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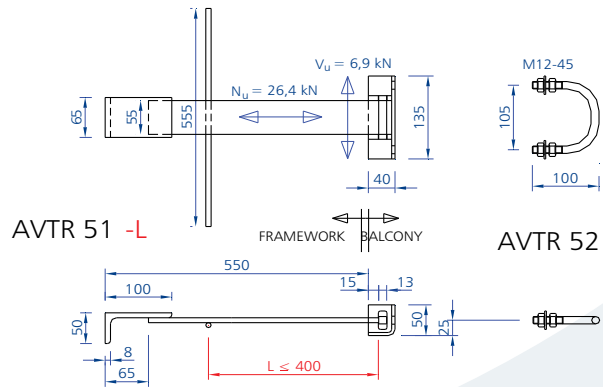


AVTR 51 and 52 balcony slab joint

TYPE	WEIGHT [kg]
AVTR 51	2.9
AVTR 52	0.3

Plate, square bar and U-loop	1.4301
Nuts M12 and washers	1.4301
Angle ba	S235JR+AR
Anchor ba	A500HW

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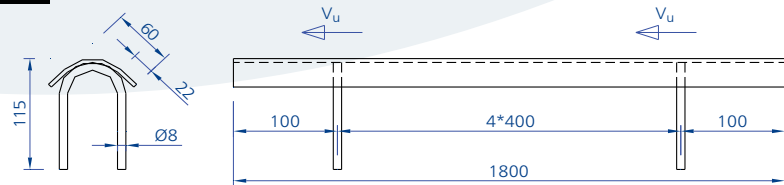


AVT 57 corner protector

TYPE	WEIGHT [kg]	CAPACITIES
		V_u [kN]
AVT 57	6.3	5.3

	Plate	Anchors
AVT	S235JR+AR	A500HW
AVTR	1.4301	A500HW

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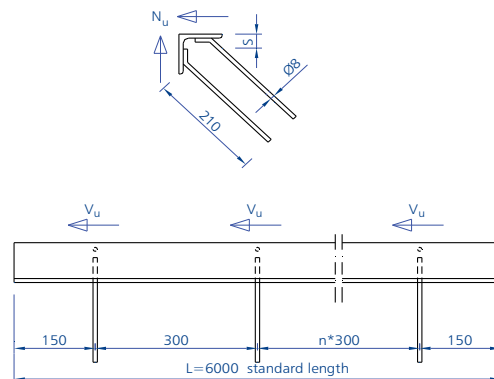


ASKT fastening angle bar

TYPE	DIMENSIONS			CAPACITIES	
	angle size	S [mm]	weight [kg]	N_u [kN]	V_u [kN]
ASKT 50	50x50x5	15	26.6	7.7	10.7
ASKT 80	80x80x8	25	62.0	7.7	10.7
ASKT 100x50	100x50x8	15	58.0	7.7	10.7
ASKT 100	100x100x10	25	94.6	7.7	10.7

	Angle Bar	Anchors
ASKT	S235JR+AR	A500HW
ASKTR	1.4301	A500HW

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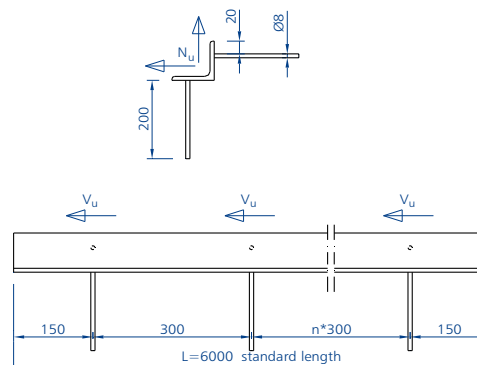
Standard Steel Anchors

AUKT fastening angle bar

TYPE	DIMENSIONS		CAPACITIES	
	angle size	weight [kg]	N_u	V_u
AUKT 50	50x50x5	26.6	1.0	10.7
AUKT 80	80x80x8	62.0	1.0	10.7
AUKT 100x50	100x50x8	58.0	1.0	10.7
AUKT 100	100x100x10	94.6	1.0	10.7

	Angle bar	Anchors
AUKT	S235JR+AR	A500HW
AUKTR	1.4301	A500HW

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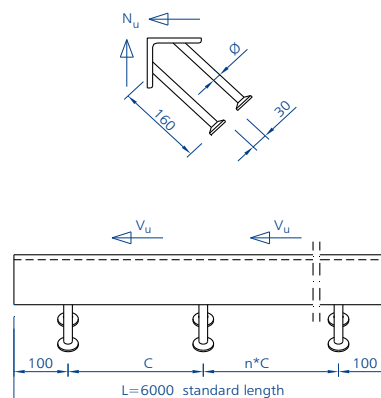


AKKT

TYPE	DIMENSIONS		CAPACITIES	
	Angle size	weight [kg/m]	N_u	V_u
AKKT 50	50x5	5.3	14.1	16.3
AKKT 80	80x8	11.2	15.1	17.3
AKKT 100	100x10	18.0	25.0	28.7

	Angle bar	Anchors
AKKT	S235JR+AR	A500HW

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Column Shoes

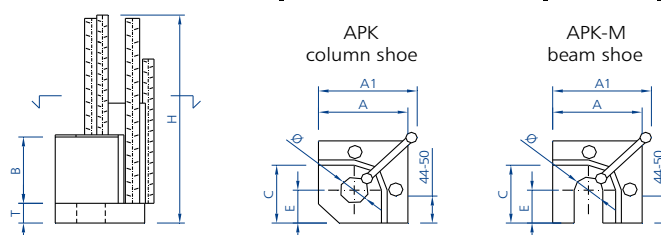
APK

Capacities due to BY50 and EC2 SFS-EN 1992-1-1:2005 (+NA2007)

TYPE	DIMENSIONS									CAPACITIES		ANCHOR BOLT
	A	A1	E	H	D1	D2	Ø	T	weight	$N_{t,Rd}$	$V_{c,Rd}$	
	[mm]									C32/40 (K40-1) [kN]		
APK16	95	110	50	850	10	10	25	12	3.0	62.2	6.8	ATP16
APK20	100	120	50	1045	12	12	30	18	5.1	97.0	10.7	ATP20
APK24	110	130	50	1025	16	16	35	25	8.9	174.5	13.2	ALP22
APK30	125	140	50	1360	20	20	40	30	15.6	264.4	17.2	ALP27
APK33	150	180	50	1540	25	20	50	40	26.4	365.0	27.2	AET36
APK36	150	180	50	1680	25	25	50	40	30.6	470.6	35.5	ALP36
APK39	160	180	60	1830	25	20	54	40	34.2	562.2	41.8	ALP39
APK45	175	230	60	2050	32	25	60	50	54.0	752.2	55.6	ALP45
APK52	190	280	60	2230	32	25	70	70	78.2	1012.6	74.3	ALP52
APK60	240	305	70	2255	32	25	75	70	118.2	1340.0	99.7	ALP60

Baseplate	S355J2+N
Anchors	A500HW
Nuthouse	S355J2+N

Concrete Association of Finland certificate BY-272 and EC-3

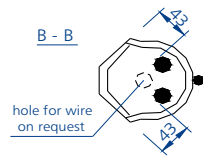
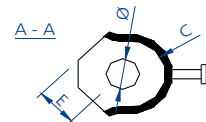
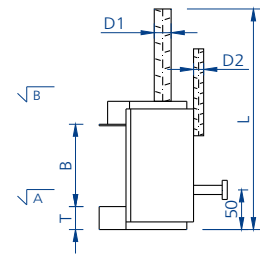


Column Shoes

AK – S2

Capacities due to EC2 SFS-EN 1992-1-1:2005 (+NA2007)

TYPE	DIMENSIONS									CAPACITIES		ANCHOR BOLT
	B	C	E	L	D1	D2	ø	T	weight	N _{t,Rd}	V _{c,Rd}	
										C32/40 (K40-1)		
[mm]									[kg]	[kN]		
AK16S2	75	66	50	650	12	12	25	15	3.3	62.2	6.8	ATP16
AK20S2	80	70	50	1115	12	12	30	18	4.5	97.0	10.7	ATP20
AK24S2	95	74	50	1475	16	12	35	25	8.7	139,7 174,5	16,6 13,2	ATP24 ALP22
AK30S2	120	88	50	1820	20	16	40	30	14.8	222,1 264,4	27,2 17,2	ATP30 ALP27
AK36S2	130	100	50	1910	25	16	50	35	22.6	349.5	36.8	AET36
AK39S2	140	116	60	2300	25	20	54	40	30.3	386.5	43.2	ATP39
AK45S2	150	120	60	2325	32	25	60	50	45.9	546.0	41.9	AET45



AK-S column shoes with one anchor rebar are available on request.

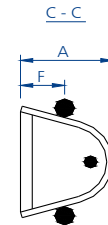
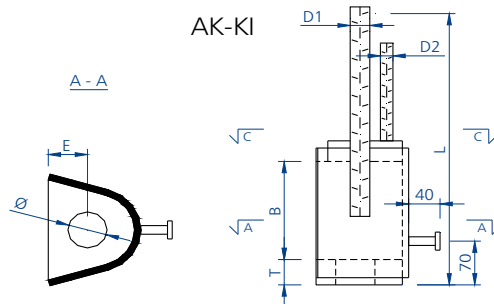
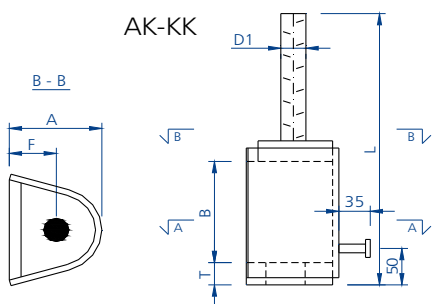
Baseplate, nuthouse	S355J2+N
Rebars	A500HW
Rebar ø40	NFA 35016-NS

Concrete Association of Finland certificate 184

AK-KK and AK-KI

Capacities due to BY50 and EC2 SFS-EN 1992-1-1:2005 (+NA2007)

TYPE	DIMENSIONS									CAPACITIES		ANCHOR BOLT
	A	B	E/F	L	D1	D2	ø	T	weight	N _{t,Rd}	V _{c,Rd}	
										C32/40 (K40-1)		
[mm]									[kg]	[kN]		
AK20KK	90	80	50/53	905	20	-	30	18	4.4	97.0	10.7	ATP20
AK24KK	98	95	50/55	1290	25	-	35	25	8.2	139,7 174,5	16,6 13,2	ATP24 ALP22
AK30KK	112	120	50/60	1520	32	-	40	30	15.0	222,1 264,4	27,2 17,2	ATP30 ALP27
AK36KK	118	130	50/60	1840	32	-	50	35	19.0	349.5	36.8	AET36
AK39KK	129	140	60/65	2420	40	-	54	40	34.7	386.5	43.2	ATP39
AK45KK	137	150	60/65	3065	40	-	60	50	45.5	546.0	41.9	AET45
AK36KI	120	130	50/56	1635	25	20	50	35	22.5	470.6	35.5	ALP36
AK39KI	127	140	60/56	1650	25	25	54	40	27.4	562.2	41.8	ALP39
AK45KI	137	150	60/60	2080	32	20	60	50	43.4	752.2	55.6	ALP45
AK52KI	146	160	60/60	2115	32	32	70	60	64.4	1012.6	74.3	ALP52



Concrete Association of Finland certificate 184

Column Shoes

AK-P column shoe for round columns

TYPE	DIMENSIONS								CAPACITIES		ANCHOR BOLT
	A	L	B	E	D	∅	T	weight	$N_{t,Rd}$	$V_{c,Rd}$	
	[mm]								[kg]	[kN]	
AK20P	100	1040	80	50	20	30	15	4.3	97.0	10.7	ATP20
AK24P	105	1295	95	50	20	36	20	5.5	136.5	10.6	AET24
AK30P	116	1620	120	50	25	40	25	10.3	213.0	16.4	AET30
AK36P	139	2060	130	50	32	50	35	20.6	349.5	26.8	AET36
AK39P	168	2440	140	60	40	56	40	34.3	386.5	43.2	ATP39
AK45P	182	3065	150	60	40	63	50	44.9	546.0	41.9	AET45

Baseplate, nuthouse	S355J2+N
Rebars	A500HW
Rebar ∅40	NFA 35016-NS

Concrete Association of Finland certificate 184

AK K/P-J-L for storey high columns

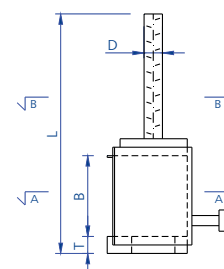
TYYPPI	DIMENSIONS						CAPACITIES	
	B	E	D	T	M	K	$N_{t,Rd}$	$V_{c,Rd}$
	[mm]						[kN]	
AK20 K/P-J-L	80	50	20	15	20	120	97.0	10.7
AK24 K/P-J-L	95	50	20	20	24	130	136.5	10.6
AK30 K/P-J-L	120	50	25	25	30	150	213.0	16.4
AK36 K/P-J-L	130	50	32	35	39	170	349.5	26.8
AK39 K/P-J-L	140	60	40	40	39	190	386.5	43.2
AK45 K/P-J-L	150	60	40	50	48	210	546.0	41.9

Capacities due to EC2 SFS-EN 1992-1-1:2005 (+NA2007)

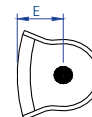
Baseplate, nuthouse	S355J2+N
Rebars	A500HW
Rebar ∅40	NFA 35016-NS

Concrete Association of Finland certificate 184

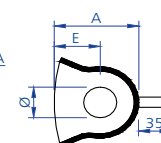
AK-P



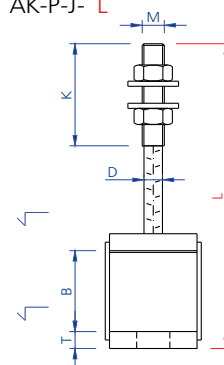
B - B



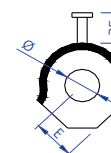
A - A



AK-P-J- L



AK-K-J- L



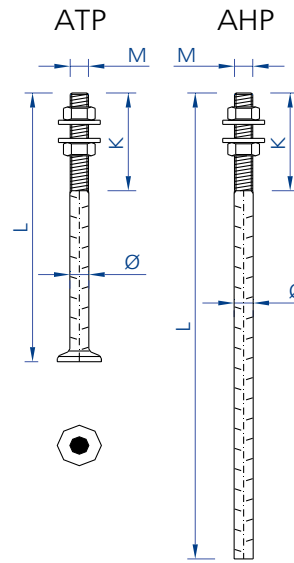
Anchor Bolts

ATP and AHP foundation bolts

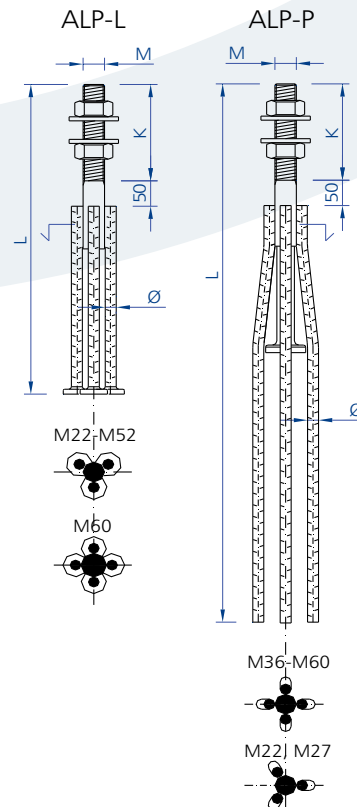
TYPE	DIMENSIONS					CAPACITIES	
	L	K	M	ø	weight	$N_{t,Rd}$	$V_{c,Rd}$
	[mm]					[kg]	[kN]
ATP16	280	100	M16	16	0.7	62.2	6.8
ATP20	350	120	M20	20	1.2	97.0	10.7
ATP24	430	140	M24	25	2.2	139.7	16.6
ATP30	500	170	M30	32	4.3	222.1	27.2
ATP39	700	190	M39	40	10.0	386.5	43.2
AHP16	800	100	M16	16	1.5	62.2	7.6
AHP20	1000	120	M20	20	2.7	97.0	11.8
AHP24	1200	140	M24	25	4.8	139.7	18.2
AHP30	1500	170	M30	32	10.2	222.1	29.8
AHP39	2000	190	M39	40	21.6	386.5	47.1

Capacities due to BY50 and EC2 SFS-EN 1992-1-1:2005 (+NA2007)

EXTRA LONG BOLTS	TYPE	LENGTH
	AHP 20	L = 1500
		L = 2000
		L = 2500
	AHP 24	L = 1500
		L = 2000
		L = 2500
	AHP 30	L = 2000
		L = 2500
		L = 3000



Rebars	A500HW
Rebar ø40	NFA 35016-NS
Nuts	strength m8
Washers	S235J2+AR



Rebars	A500HW
Thread part	ImacroM
Nuts	strength m10
Washers	S235J2+AR

ALP anchor bolts

Capacities due to BY50 and EC2 SFS-EN 1992-1-1:2005 (+NA2007)

TYPE	DIMENSIONS					CAPACITIES	
	L	K	M	ø	weight	$N_{t,Rd}$	$V_{c,Rd}$
	[mm]					[kg]	[kN]
ALP22L	490	140	M22	3x16	2.6	174.5	13.2
ALP27L	620	170	M27	3x20	5.0	264.4	17.2
ALP30L	650	170	M30	3x20	5.7	323.1	24.6
ALP36L	740	180	M36	3x25	10.0	470.6	35.5
ALP39L	860	190	M39	3x25	12.6	562.2	41.8
ALP45L	970	210	M45	3x32	22.5	752.2	55.6
ALP52L	1130	240	M52	3x32	27.2	1012.6	74.3
ALP60L	1290	270	M60	4x32	39.6	1340.0	99.7

ALP22P	1070	140	M22	3x12	3.6	174.5	13.2
ALP27P	1150	170	M27	3x16	6.7	264.4	17.2
ALP30P	1370	170	M30	3x16	8.0	323.1	24.6
ALP36P	1390	180	M36	4x16	11.8	470.6	35.5
ALP39P	1490	190	M39	4x20	17.7	562.2	41.8
ALP45P	1710	210	M45	4x20	23.6	752.2	55.6
ALP52P	1880	240	M52	4x25	36.3	1012.6	74.3
ALP60P	2430	270	M60	4x32	70.0	1340.0	99.7

Concrete Association of Finland certificate BY-289 and EC-2

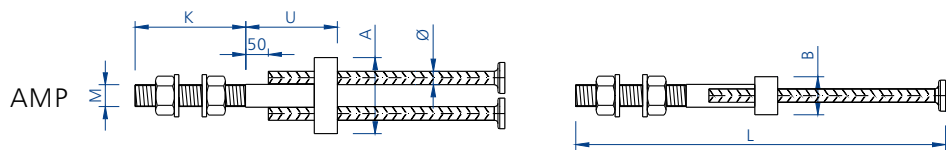
Anchor Bolts

AMP anchor bolts

TYPE	DIMENSIONS								CAPACITIES	
	L	K	M	A	B	∅	U	weight	N _{t,Rd}	V _{c,Rd}
	[mm]								[kg]	C25/30 (K30-2)
AMP36	670	180	M36	160	80	25	137	10.5	470.6	35.5
AMP39	680	190	M39	180	90	32	140	13.8	562.2	41.8
AMP45	800	210	M45	200	100	32	165	20.7	752.2	55.6
AMP52	930	240	M52	230	115	32	190	38.3	1012.6	74.3
AMP60	1490	270	M60	270	130	40	270	72.8	1340.0	99.7

Capacities due to BY50 and EC2 SFS-EN 1992-1-1:2005 (+NA2007)

Rebars	A500HW
Threaded part	ImacroM
Nuts	strength m10
Washers	S235J2+AR



Concrete Association of Finland certificate BY-289 and EC-2

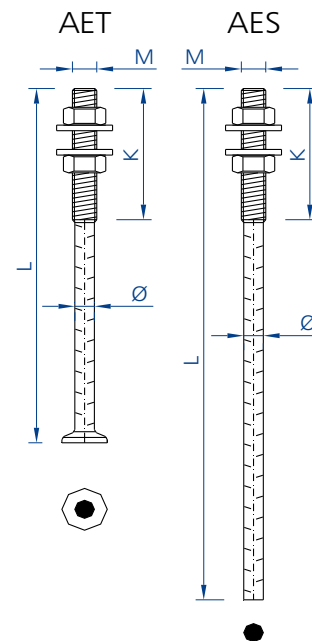
AET and AES full capacity bolts

TYPE	DIMENSIONS					CAPACITIES	
	L	K	M	∅	weight	N _{t,Rd}	V _{c,Rd}
	[mm]					[kg]	C25/30 (K30-2)
AET24	430	135	M24	20	1.7	136.5	10.6
AET30	500	150	M30	25	3.3	213.0	16.4
AET45	760	210	M48	40	13.4	546.0	43.2
AES24	1275	135	M24	20	3.7	136.5	10.7
AES30	1435	150	M30	25	6.6	213.0	16.4
AES36	1910	170	M39	32	13.1	349.5	26.8
AES45	2315	210	M48	40	26.0	546.0	43.2

Capacities due to BY50 and EC2 SFS-EN 1992-1-1:2005 (+NA2007)

Rebars	A500HW
Rebar ∅40	NFA 35016-NS
Nuts	strength m8
Washers	S235J2+AR

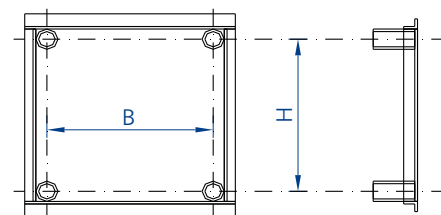
Concrete Association of Finland certificate BY-290 and EC-4



AAK assembly frame

TYPE
AAK 16, 20, 22
AAK 24, 27, 30, 36
AAK 39, 45, 52, 60

Rectangular assembly frames for 4 bolts max cc 500/500



Wall Shoes

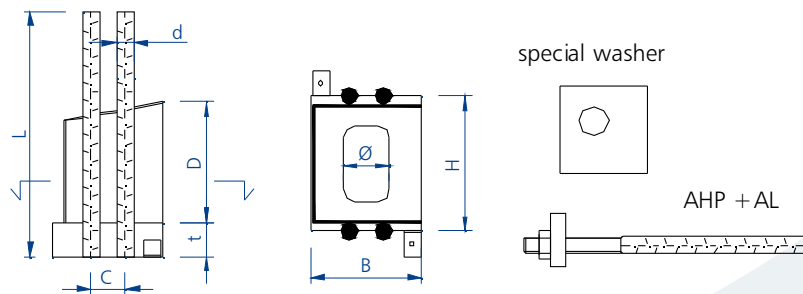
ASL

TYPE	DIMENSIONS									CAPACITY		BOLTS (Including a nut and a special washer)
	B	H	t	D	∅	d	L	C	Weight	F _u	TYPE	
	[mm]									[kg]		[kN]
ASL 16	80	120	30	115	41*76	10	600	20	3.6	63.8	AHP 16 + AL	
ASL 20	90	130	30	120	45*80	12	800	24	5.5	99.2	AHP 20 + AL	
ASL 24	110	145	35	135	49*85	16	1000	32	10.5	143.8	AHP 24 + AL	
ASL 30	130	160	40	140	55*90	20	1300	40	19.0	229.7	AHP 30 + AL	
ASL 36	150	175	55	160	61*96	25	1600	50	34.9	469.5	ALP 36/P + AL	
ASL 39	160	205	60	170	64*99	25	1800	75	42.0	565.0	ALP 39/P + AL	
ASL 45	180	220	70	180	70*105	32	1900	96	67.9	752.8	ALP 45/P + AL	
ASL 52	200	260	80	200	77*105	32	2400	96	90.7	1005.0	ALP 52/P + AL	

Bolts available also on special lengths.

Baseplate	S355J2+N
Washers and nuthouses	S235JRG2
Anchors	A500HW

Concrete Association of Finland certificate 277



Reinforcement Joints

ARJ

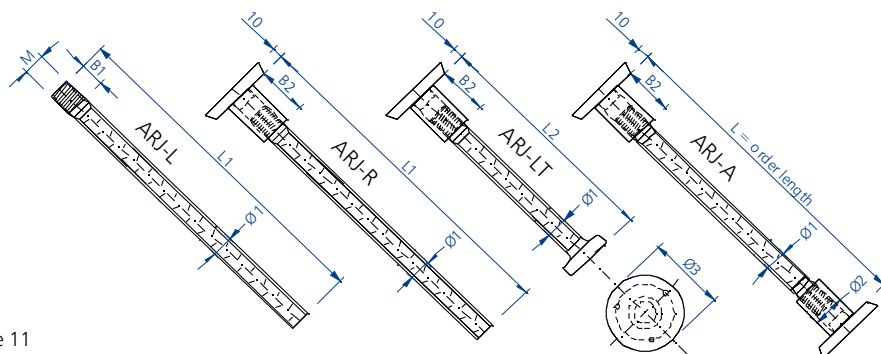
Threaded joint for full rebar capacity!

TYPE	DIMENSIONS								CAPACITIES		COLOUR
	∅1	M	L1	L2	B1	B2	∅2	∅3	F _u		
	[mm]								K40-1	K30-2	
									[kN]		
ARJ16	16	20	1200	220	23	46	28	60	91.2	83.7	yellow
ARJ20	20	24	1500	290	27	54	35	60	142.5	130.8	blue
ARJ25	25	30	1700	360	32	64	40	80	222.4	204.1	black
ARJ32	32	38	2400	500	40	80	55	80	365.0	335.0	grey

ARJ40 on request.

Rebar	A500HW
Sleeves	MoC 210M or ImacroM

Ask tender for rebar tension rods.



Concrete Association of Finland certificate 11

Steel Brackets

ASL

TYPE	CAPACITIES SHEAR, TORSION, TENSION			COLOUR
	$V_{c,Rd}$	T_{Rd}	$N_{ta,Rd}$	
	[kN]	[kNm]	[kN]	
AEP400	400	10	100	red
AEP600	600	20	110	grey
AEP800	800	30	120	yellow
AEP1100	1100	50	150	green
AEP1600	1600	30	240	black
AEP2200	2200	50	300	blue

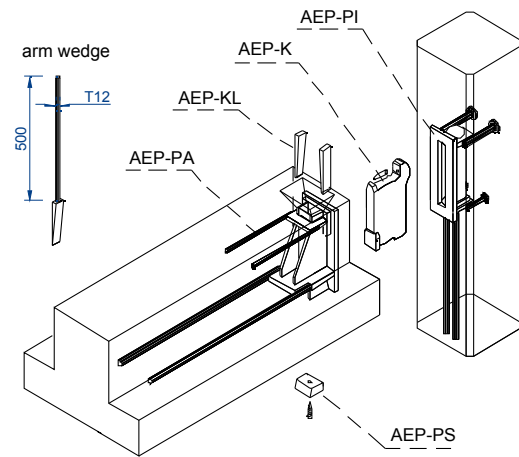
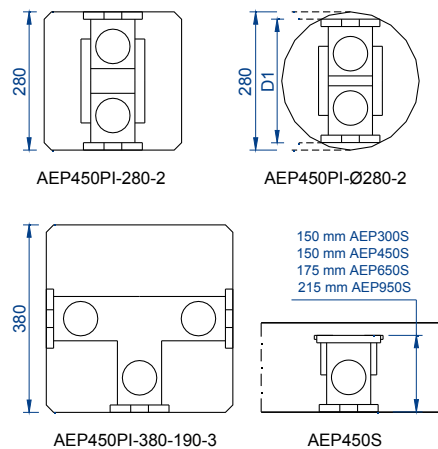
Wedge with assembly arm AEP-KL-500

Capacities due to EC2 SFS-EN 1992-1-1:2005 (+NA2007), concrete C40/50

AEP-S is column part for wall connections.

TYPE
AEP400-S
AEP600-S
AEP800-S
AEP1100-S

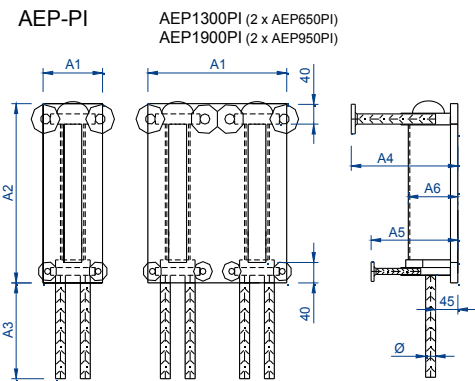
Concrete Association of Finland certificate 227



TYPE	DIMENSIONS							weight [kg]
	A1	A2	A3	A4	A5	A6	Ø	
	[mm]							
AEP400PI	120	240	585	210	170	85	1T20	7,9
AEP600PI	120	310	585	215	175	95	2T20	11,3
AEP800PI	120	350	740	240	175	100	2T25	16,4
AEP1100PI	150	390	910	250	180	125	2T32	29,2

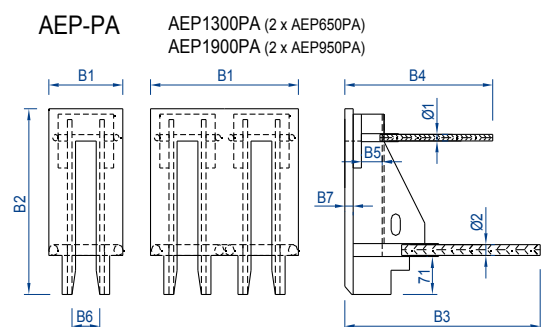
Plates	Optim500ML, S355J2+N
Anchors	A500HW

NEW: Beam to beam connection. See manual.



TYPE	DIMENSIONS						weight [kg]
	B1	B2	B3	B4	B5	Ø	
	[mm]						
AEP400PA	150	215	1025	45	10	20	12,7
AEP600PA	150	275	1035	45	15	20	18,8
AEP800PA	150	335	1240	50	20	25	29,2
AEP1100PA	190	380	1240	50	20	25	39,5

Plates	Optim500ML, S355J2+N
Anchors	A500HW

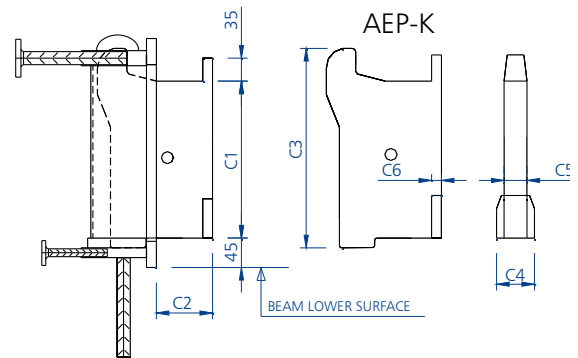


Steel Brackets

AEP bridge

TYPE	DIMENSIONS						weight [kg]
	C1	C2	C3	C4	C5	C6	
	[mm]						
AEP400K	125	70	195	56	35	15	5.6
AEP600K	180	80	260	56	35	15	8.6
AEP800K	230	100	305	56	35	20	12.7
AEP1100K	260	100	350	71	50	20	22.3

Plate	Optim500ML
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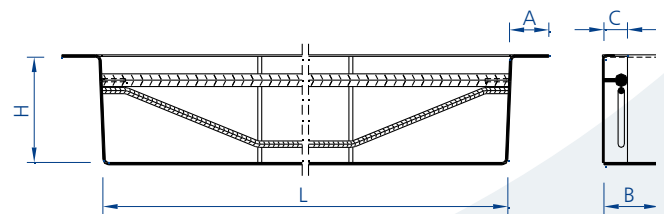


Slab Hangers

AOK slab hanger for hollow core slabs

TYPE	DIMENSIONS			
	A	B	C	H
	[mm]			
AOK200	100	140	68	200
AOK265	100	140	68	265
AOK320	100	140	70	320
AOK370	100	140	70	370
AOK400	100	150	80	400
AOK500	100	150	80	500

Plates	S355J2+N
Anchors	A500HW



Concrete Association of Finland certificate BY-283, EC-1

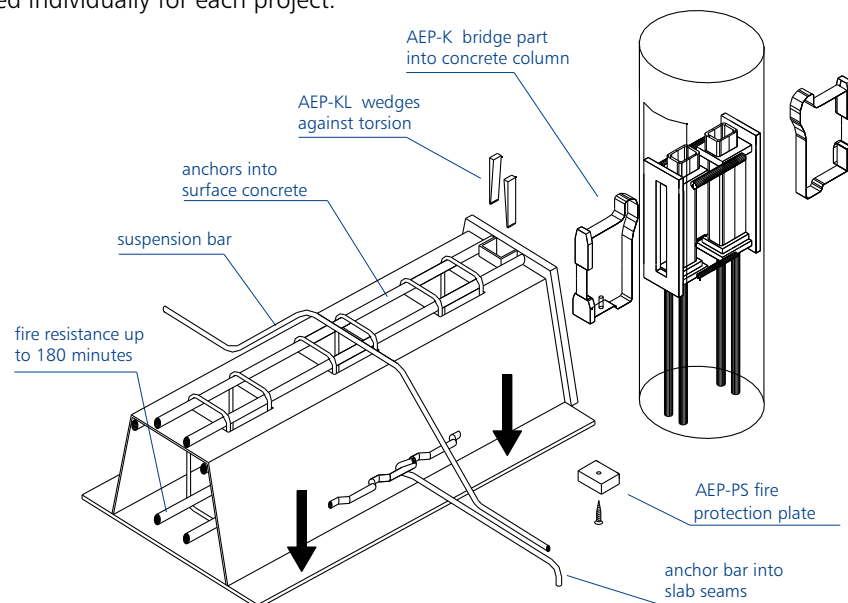
Composite Beams

A-BEAM

A-beam is composite steel/concrete beam system designed by Anstar Oy. Anstar's complete service includes strength calculations, manufacturing, concreting of the beam and carriage to site.

Beams are dimensioned and priced individually for each project.

Ask for tender!



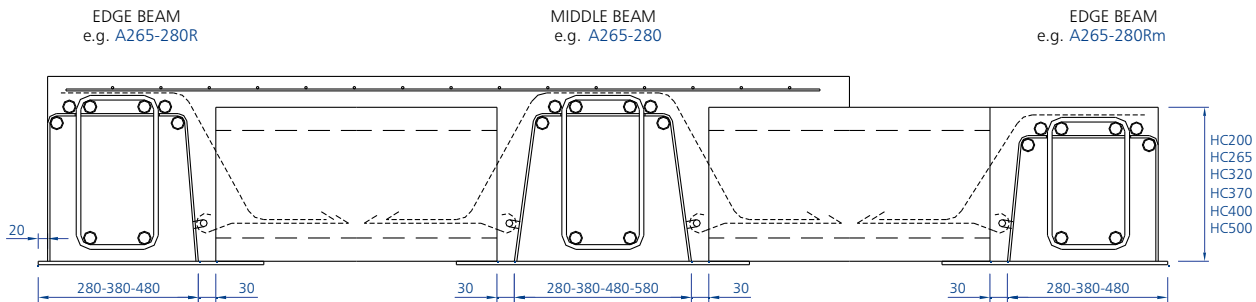
Composite Beams

STANDARD BEAMS WITH SURFACE CONCRETE

Reinforced surface concrete acts as composite structure with beam

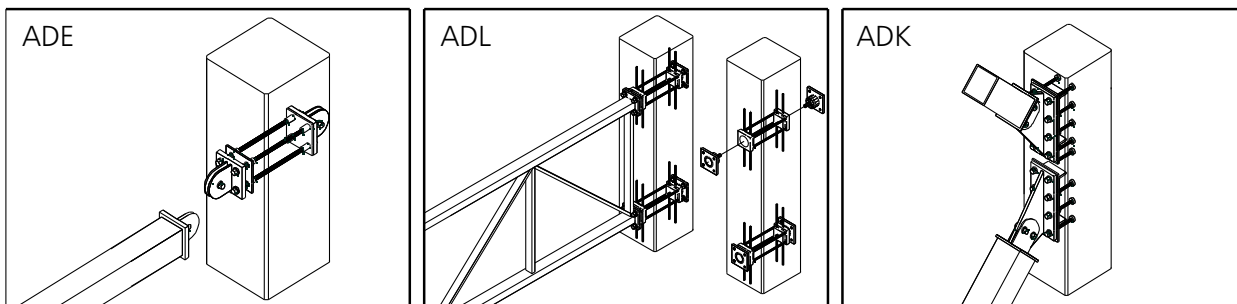
LOWERED BEAMS WITHOUT SURFACE CONCRETE

Beam steels are protected by seam concrete



Concrete Association of Finland certificate 216

Bracing Connections



Normal surface treatment: hot dip galvanising. Manufactured on request.

Ask for tender!

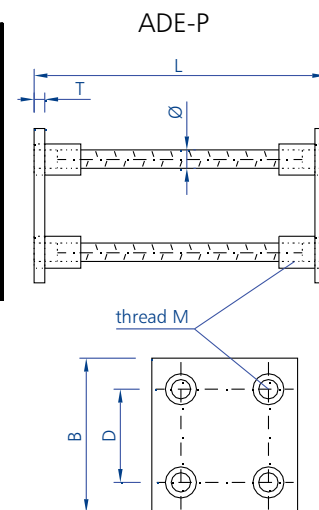
Concrete Association of Finland certificate 291

ADE horizontal rod connection

TYPE	DIMENSIONS							CAPACITIES	
	L	B	D	T	M	∅	weight (L = 600mm)	F _u	V _u
	[mm]							[kg]	K40-1 [kN]
ADE20P-L	column width	190	110	12	20	16	11,3	190	10
ADE24P-L	column width	200	120	12	20	16	11,7	260	10
ADE30P-L	column width	200	120	12	24	20	14,7	390	20
ADE36P-L	column width	250	150	12	30	25	22,5	550	30

Plates	S355J2+N
Anchors	A500HW
Sleeves	MoC 210M

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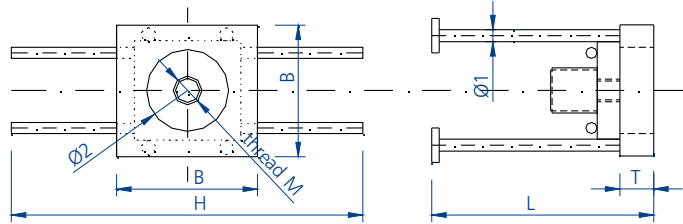
Bracing Connections

ADL truss connection

TYPE	DIMENSIONS								CAPACITIES						
									Truss connection		Horizontal rod connection				
	L	H	B	T	M	ø1	ø2	weight	K40-1	K40-1	K40-1	K40-1			
	[mm]								[kg]				F _u	V _u	F _u
ADL250P1	295	660	175	45	30	16	114	14,5	250	100	353,5	20			
ADL350P1	365	800	200	45	36	20	139	21,3	350	150	469,5	30			
ADL500P1	395	800	240	45	45	25	169	32,4	500	250	752,9	40			

Plates and tubes	S355J2+N
Anchors	A500HW
Sleeves	MoC 210M

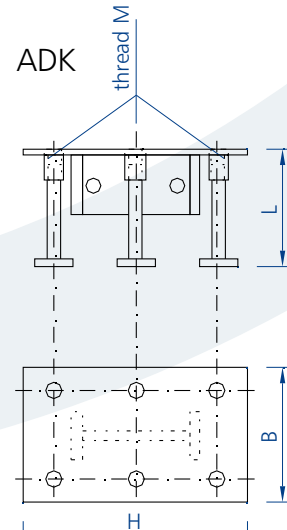
ADL-P1



ADK diagonal rod connection

TYPE	DIMENSIONS					Normal force of diagonal rod	Connection capacities			
							$\alpha = 60^\circ$		$\alpha = 0^\circ$	
	H	B	L	M	weight	F _{dv}	N _{u60}	V _{u60}	N _{u0}	V _{u0}
	[mm]					[kg]	K40-1			
ADK300	300	280	240	24	17,0	300	150	260	300	10
ADK500	440	280	240	24	26,6	500	250	433	500	10
ADK700	510	280	340	24	37,0	700	350	606	700	20
ADK900	550	320	440	30	57,8	900	450	779	900	20
ADK1100	600	320	440	30	67,5	1100	550	952	1100	30

Plates	S355J2+N
Anchors	A500HW
Sleeves	MoC 210M

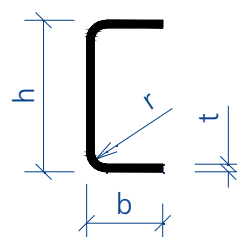
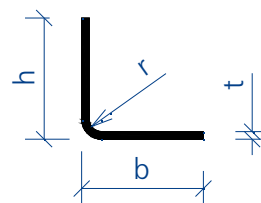
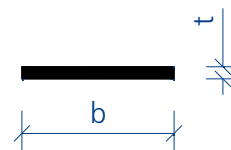


Bracing Connections

Cut and edged steel profiles

FLAT BAR	dimensions		weight
	b	t	kg/m
PL 50 x 5	50	5	1,96
PL 80 x 5	80	5	3,14
PL 100 x 5	100	5	3,93
PL 100 x 8	100	8	6,28
PL 100 x 10	100	10	7,85

stainless	1.4301
acid-proof	1.4401



ANGLE BAR	dimensions				weight
	b	h	t	r	kg/m
5	50	50	5	8	3,55
5	70	70	5	8	5,12
5	80	80	5	8	5,91
x 5	100	50	5	8	5,51
x 5	150	50	5	8	7,48

U-profile	dimensions				weight
	b	h	t	r	kg/m
50x70x50x	50	70	5	8	5,93
50x100x50	50	100	5	8	7,1
60x120x60	60	120	5	8	10,6
60x140x60	60	140	5	8	11,2
60x160x60	60	160	5	8	12,2