



# Precast Column and Wall Shoes, and Other Connection Systems

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# Anstar Products

## Quality Products from Finland

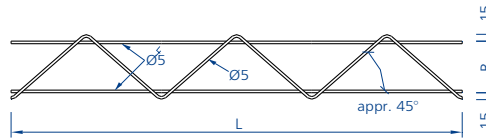
Range includes column shoes, wall shoes, foundation bolts, composite structures steel to concrete connections, precast panel suspension system and lattice reinforcement for sandwich panels product.



# Diagonal Ties and Lifting Anchors

## AD diagonal ties

| DIMENSIONS                      |                                  |
|---------------------------------|----------------------------------|
| Standard products<br>[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                              |

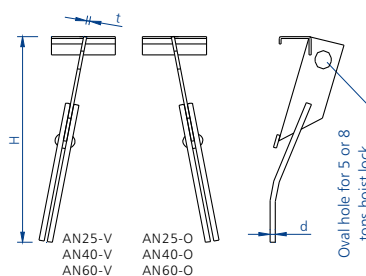


|     | Diagonal | External bar | Internal bar |
|-----|----------|--------------|--------------|
| AD  | 1.4301   | 1.4301       | B500 K       |
| ADR | 1.4301   | 1.4301       | 1.4301       |

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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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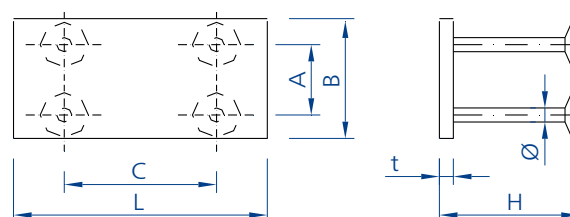
# Fastening Plates

## SBKL fastening plates

| CODE L/B     | DIMENSIONS |    |     |     |    |        | CAPACITIES     |                |                 |                 |                |
|--------------|------------|----|-----|-----|----|--------|----------------|----------------|-----------------|-----------------|----------------|
|              | H          | t  | A   | C   | ∅  | weight | N <sub>u</sub> | V <sub>u</sub> | M <sub>uL</sub> | M <sub>uB</sub> | T <sub>u</sub> |
|              | [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 |



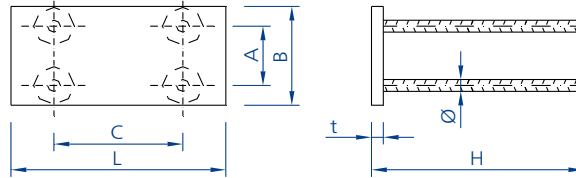
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# Fastening Plates

## KL fastening plates

| CODE L/B   | DIMENSIONS |    |    |    |    |        | CAPACITIES     |                |                 |                 |                |
|------------|------------|----|----|----|----|--------|----------------|----------------|-----------------|-----------------|----------------|
|            | H          | t  | A  | C  | ∅  | weight | N <sub>u</sub> | V <sub>u</sub> | M <sub>uL</sub> | M <sub>uB</sub> | T <sub>u</sub> |
|            | [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  |

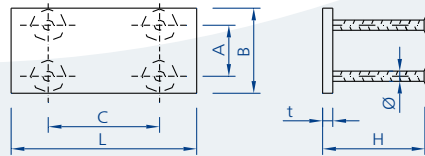


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## AKL fastening plates

| CODE L/B    | DIMENSIONS |    |     |     |     |        | CAPACITIES     |                |                 |                 |                |
|-------------|------------|----|-----|-----|-----|--------|----------------|----------------|-----------------|-----------------|----------------|
|             | t          | ∅  | C   | A   | H   | weight | N <sub>u</sub> | V <sub>u</sub> | M <sub>uL</sub> | M <sub>uB</sub> | T <sub>u</sub> |
|             | [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           |

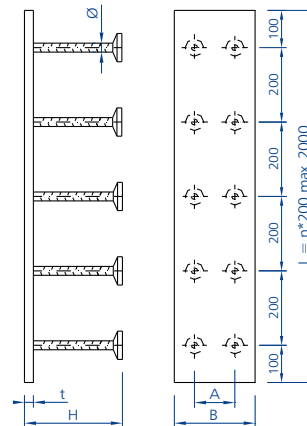
|      | Plate    | Anchors |
|------|----------|---------|
| AKL  | S355J2+N | A500HW  |
| AKLR | 1.4301   | A500HW  |
| AKLH | 1.4401   | A500HW  |



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## AKLP and AKLJ long fastening plates

| CODE B/L   | DIMENSIONS |    |     |     |        | CAPACITIES     |                 |                 |
|------------|------------|----|-----|-----|--------|----------------|-----------------|-----------------|
|            | t          | ∅  | A   | H   | weight | N <sub>u</sub> | V <sub>uL</sub> | V <sub>uB</sub> |
|            | [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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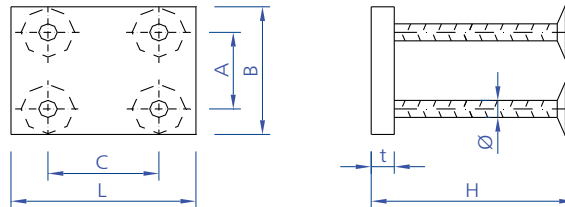
# Fastening Plates

## JAL heavy fastening plates

| CODE L/B      | DIMENSIONS |    |     |     |     |        | CAPACITIES     |                |                 |                 |                |
|---------------|------------|----|-----|-----|-----|--------|----------------|----------------|-----------------|-----------------|----------------|
|               | t          | ∅  | C   | A   | H   | weight | N <sub>u</sub> | V <sub>u</sub> | M <sub>uL</sub> | M <sub>uB</sub> | T <sub>u</sub> |
|               | [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  |

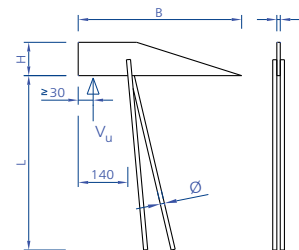
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## Standard Steel Anchors

### AVT 15 – 17

| TYPE   | DIMENSIONS |     |     |    |    |        | CAPACITIES     |
|--------|------------|-----|-----|----|----|--------|----------------|
|        | L          | H   | B   | t  | ∅  | weight | V <sub>u</sub> |
|        | [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           |

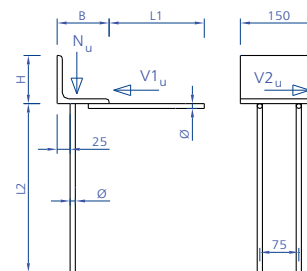


|      | Plate    | Anchors |
|------|----------|---------|
| AVT  | S355J2+N | A500HW  |
| AVTr | 1.4301   | A500HW  |

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### AVT 25 – 27

| TYPE   | DIMENSIONS |     |     |     |    |        | CAPACITIES     |                 |                 |
|--------|------------|-----|-----|-----|----|--------|----------------|-----------------|-----------------|
|        | H          | B   | L1  | L2  | ∅  | weight | N <sub>u</sub> | V <sub>1u</sub> | V <sub>2u</sub> |
|        | [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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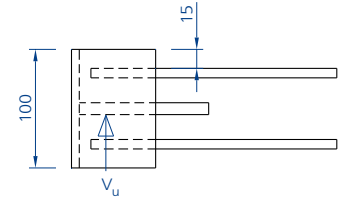
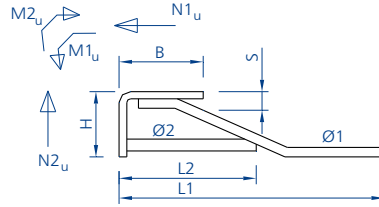
# Standard Steel Anchors

## 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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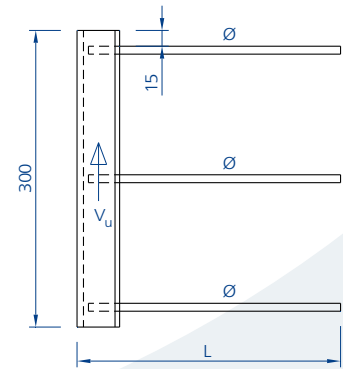
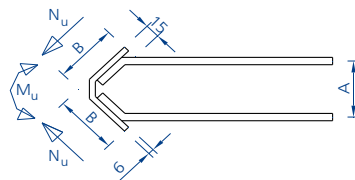


## AVT 32 and 33

| 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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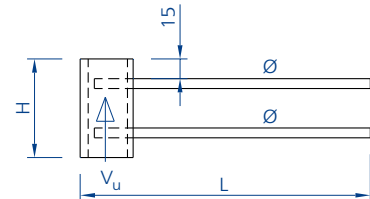
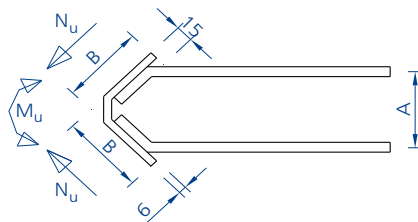


## AVT 34 – 37

| 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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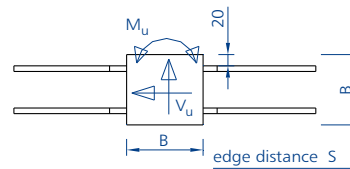
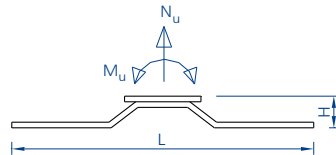


# Standard Steel Anchors

## 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  |



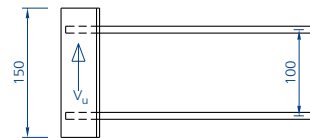
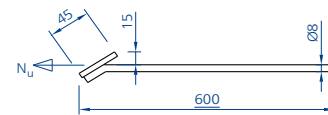
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## AVT 39

| 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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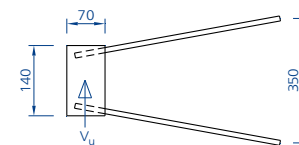
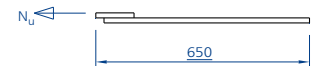


## AVT 44

| 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  |

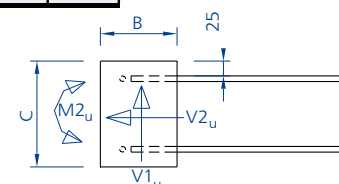
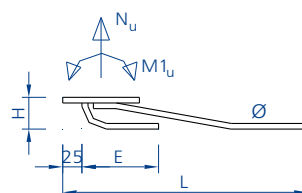
Concrete Association of Finland certificate 270



## 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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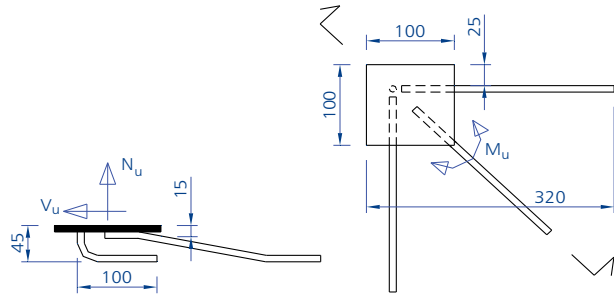
# Standard Steel Anchors

## AVT 48

| TYPE   | WEIGHT<br>[kg] | CAPACITIES    |               |                |
|--------|----------------|---------------|---------------|----------------|
|        |                | $V_u$<br>[kN] | $N_u$<br>[kN] | $M_u$<br>[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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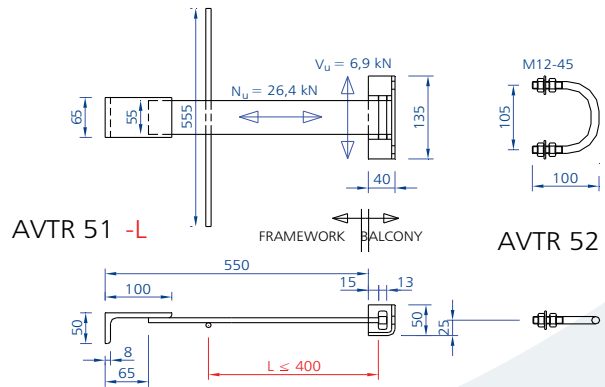


## AVTR 51 and 52 balcony slab joint

| TYPE    | WEIGHT<br>[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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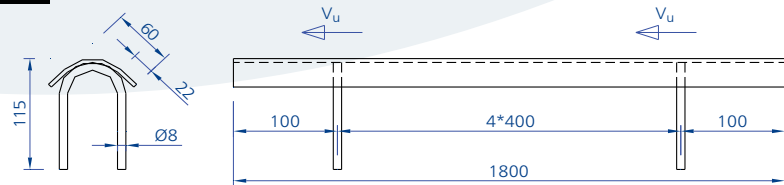


## AVT 57 corner protector

| TYPE   | WEIGHT<br>[kg] | CAPACITIES    |
|--------|----------------|---------------|
|        |                | $V_u$<br>[kN] |
| AVT 57 | 6.3            | 5.3           |

|      | Plate     | Anchors |
|------|-----------|---------|
| AVT  | S235JR+AR | A500HW  |
| AVTR | 1.4301    | A500HW  |

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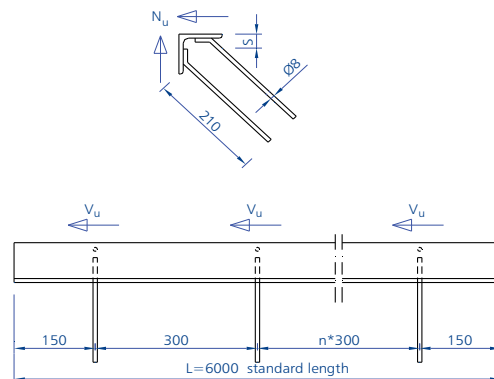


## ASKT fastening angle bar

| TYPE        | DIMENSIONS<br>angle size | S<br>[mm] | weight<br>[kg] | CAPACITIES    |               |
|-------------|--------------------------|-----------|----------------|---------------|---------------|
|             |                          |           |                | $N_u$<br>[kN] | $V_u$<br>[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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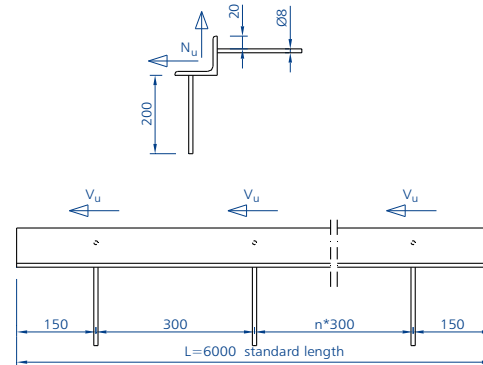
# Standard Steel Anchors

## 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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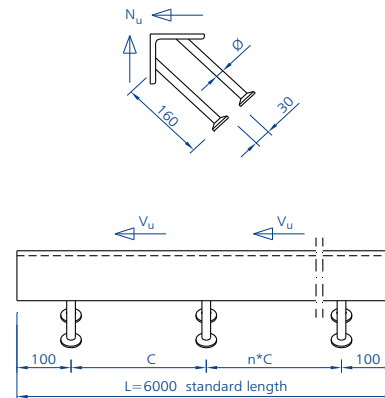


## AKKT

| 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

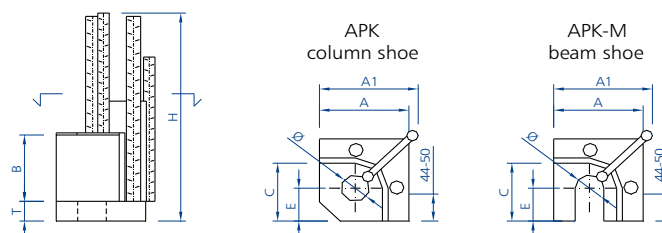
## APK

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

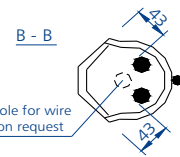
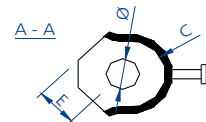
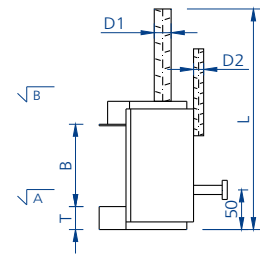


# Column Shoes

## 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 <sub>t,Rd</sub> | V <sub>c,Rd</sub> |                |
|        |            |     |    |      |    |    |    |    |        | 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<br>174,5    | 16,6<br>13,2      | ATP24<br>ALP22 |
| AK30S2 | 120        | 88  | 50 | 1820 | 20 | 16 | 40 | 30 | 14.8   | 222,1<br>264,4    | 27,2<br>17,2      | ATP30<br>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.

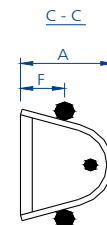
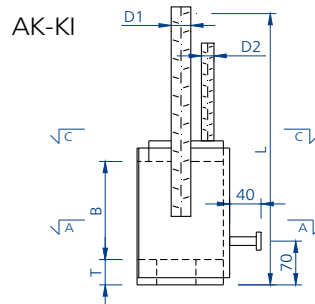
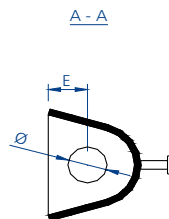
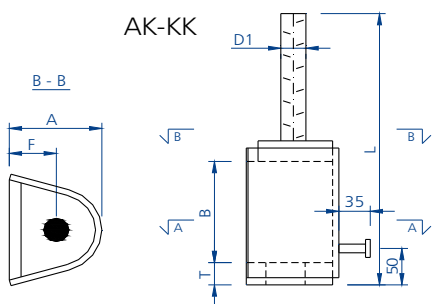
|                     |              |
|---------------------|--------------|
| Baseplate, nuthouse | S355J2+N     |
| Rebars              | A500HW       |
| Rebar ø40           | NFA 35016-NS |

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 <sub>t,Rd</sub> | V <sub>c,Rd</sub> |                |
|        |            |     |       |      |    |    |    |    |        | 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<br>174,5    | 16,6<br>13,2      | ATP24<br>ALP22 |
| AK30KK | 112        | 120 | 50/60 | 1520 | 32 | -  | 40 | 30 | 15.0   | 222,1<br>264,4    | 27,2<br>17,2      | ATP30<br>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]       | C32/40 (K40-1) |             |  |
|       |            |      |     |    |    |    |    |        |            | [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 |

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

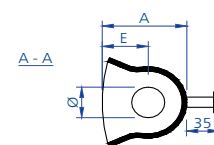
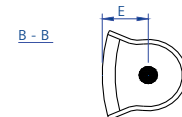
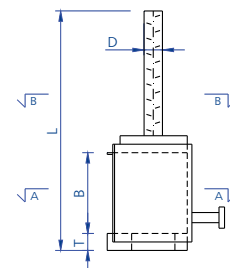
| TYYPPI       | DIMENSIONS |    |    |    |    |     |            | CAPACITIES     |      |  |
|--------------|------------|----|----|----|----|-----|------------|----------------|------|--|
|              | B          | E  | D  | T  | M  | K   | $N_{t,Rd}$ | $V_{c,Rd}$     |      |  |
|              | [mm]       |    |    |    |    |     |            | C32/40 (K40-1) |      |  |
|              |            |    |    |    |    |     |            |                | [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)

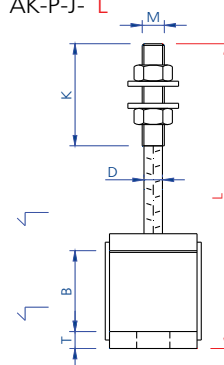
|                     |              |
|---------------------|--------------|
| Baseplate, nuthouse | S355J2+N     |
| Rebars              | A500HW       |
| Rebar ∅40           | NFA 35016-NS |

Concrete Association of Finland certificate 184

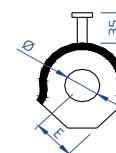
AK-P



AK-P-J- L



AK-K-J- L



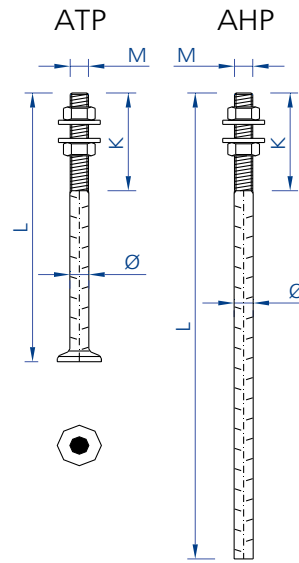
# Anchor Bolts

## ATP and AHP foundation bolts

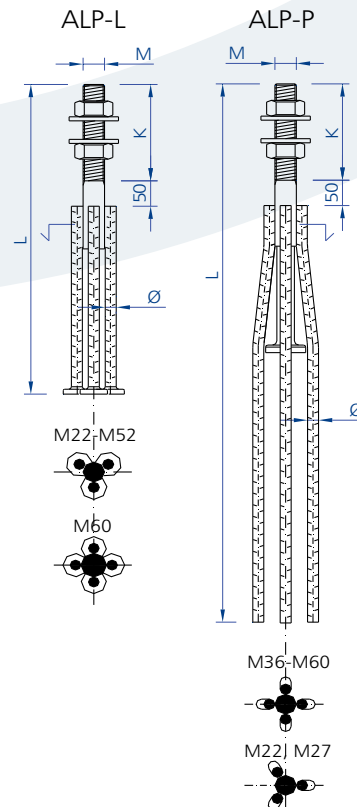
| TYPE  | DIMENSIONS |     |     |    |        | CAPACITIES |            |
|-------|------------|-----|-----|----|--------|------------|------------|
|       | L          | K   | M   | ø  | weight | $N_{t,Rd}$ | $V_{c,Rd}$ |
|       | [mm]       |     |     |    |        | [kg]       | [kN]       |
| 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

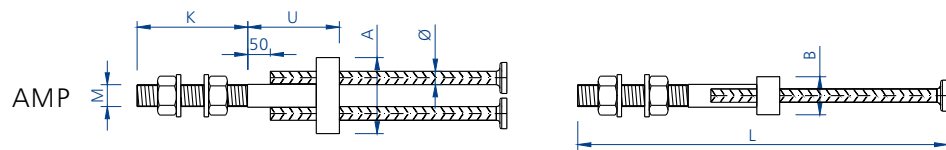
# Anchor Bolts

## AMP anchor bolts

| TYPE  | DIMENSIONS |     |     |     |     |    |     | CAPACITIES |                   |                   |
|-------|------------|-----|-----|-----|-----|----|-----|------------|-------------------|-------------------|
|       | L          | K   | M   | A   | B   | ∅  | U   | weight     | N <sub>t,Rd</sub> | V <sub>c,Rd</sub> |
|       | [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

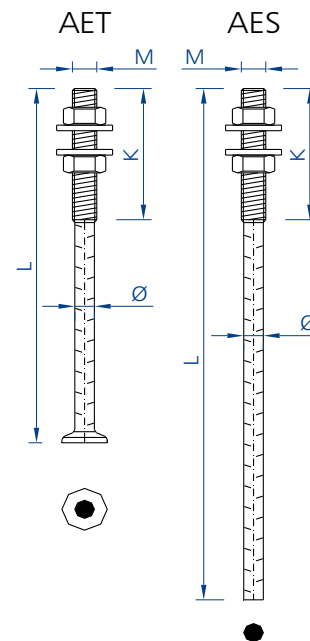
## AET and AES full capacity bolts

| TYPE  | DIMENSIONS |     |     |    |        | CAPACITIES        |                   |
|-------|------------|-----|-----|----|--------|-------------------|-------------------|
|       | L          | K   | M   | ∅  | weight | N <sub>t,Rd</sub> | V <sub>c,Rd</sub> |
|       | [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    |

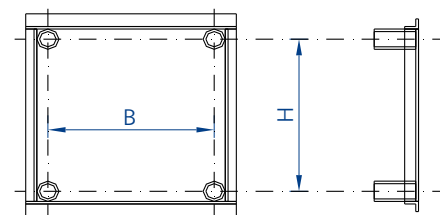
Concrete Association of Finland certificate BY-290 and EC-4



## 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

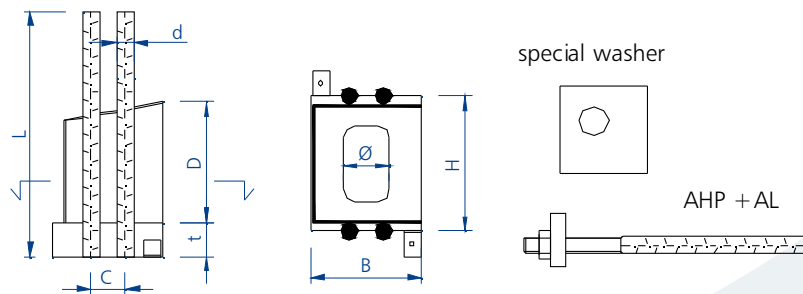
## ASL

| TYPE   | DIMENSIONS |     |    |     |        |    |      |    |        | CAPACITY       |               | BOLTS (Including a nut and a special washer) |
|--------|------------|-----|----|-----|--------|----|------|----|--------|----------------|---------------|--|
|        | B          | H   | t  | D   | Ø      | d  | L    | C  | Weight | F <sub>u</sub> | 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

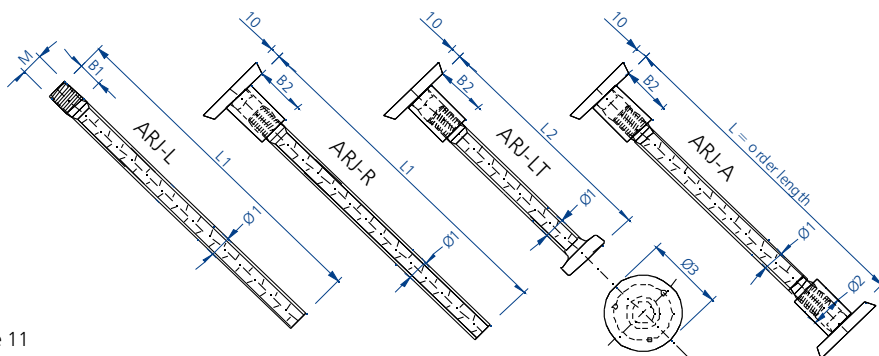
Threaded joint for full rebar capacity!

| TYPE  | DIMENSIONS |    |      |     |    |    |    |    | CAPACITIES     |       | COLOUR |
|-------|------------|----|------|-----|----|----|----|----|----------------|-------|--------|
|       | Ø1         | M  | L1   | L2  | B1 | B2 | Ø2 | Ø3 | F <sub>u</sub> |       |        |
|       | [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<br>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   |

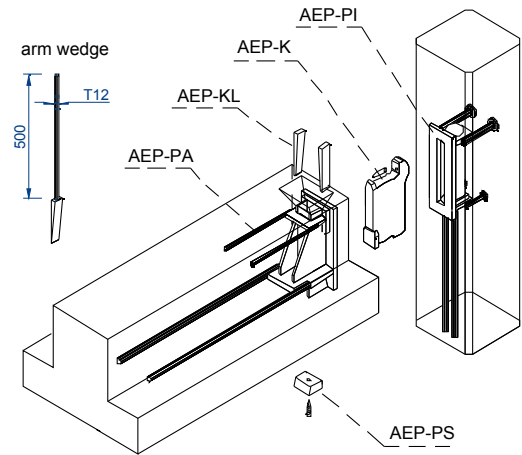
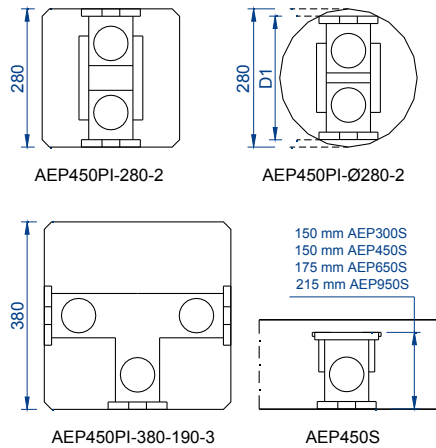
Wedge with assembly arm AEP-KL-500

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 |

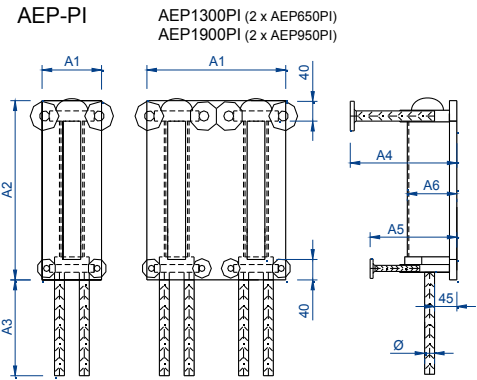
Concrete Association of Finland certificate 227



| TYPE      | DIMENSIONS |     |     |     |     |     |      | weight<br>[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           |

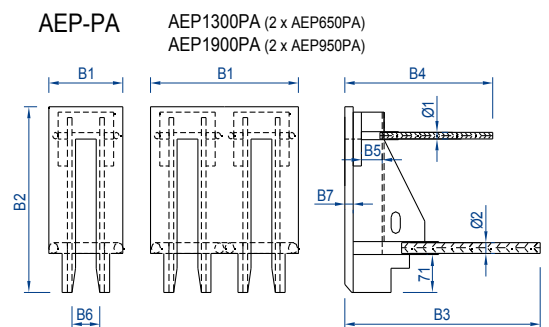
|         |                      |
|---------|----------------------|
| Plates  | Optim500ML, S355J2+N |
| Anchors | A500HW               |

NEW: Beam to beam connection. See manual.



| TYPE      | DIMENSIONS |     |      |    |    |    | weight<br>[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               |

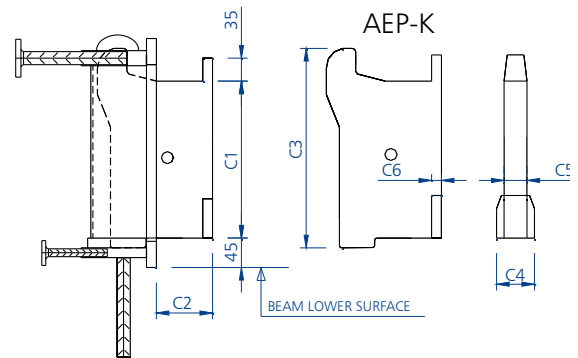


# Steel Brackets

## AEP bridge

| TYPE     | DIMENSIONS |     |     |    |    |    | weight<br>[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 |
|-------|------------|

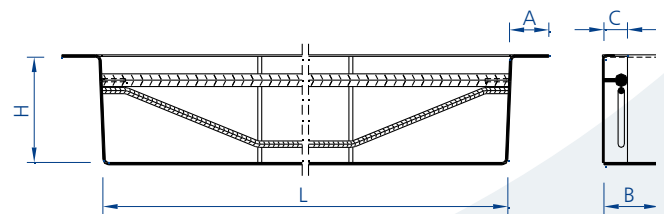


# Slab Hangers

## 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

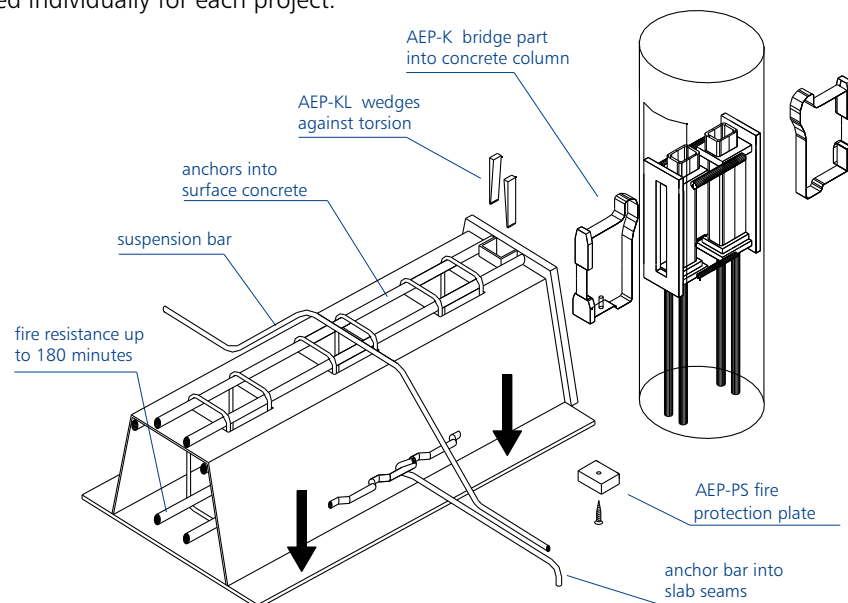
# Composite Beams

## 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

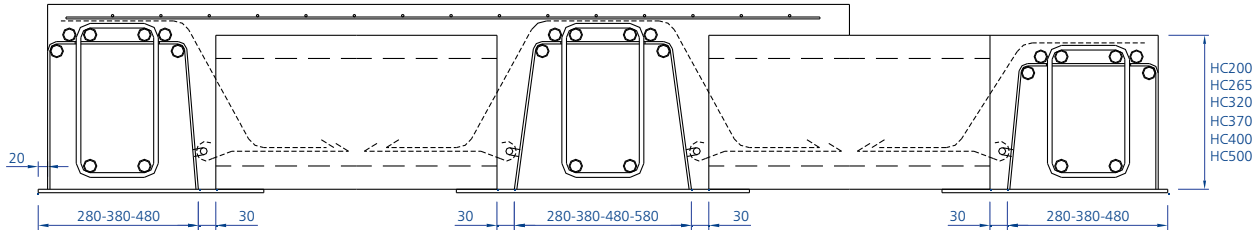
## LOWERED BEAMS WITHOUT SURFACE CONCRETE

Beam steels are protected by seam concrete

EDGE BEAM  
e.g. A265-280R

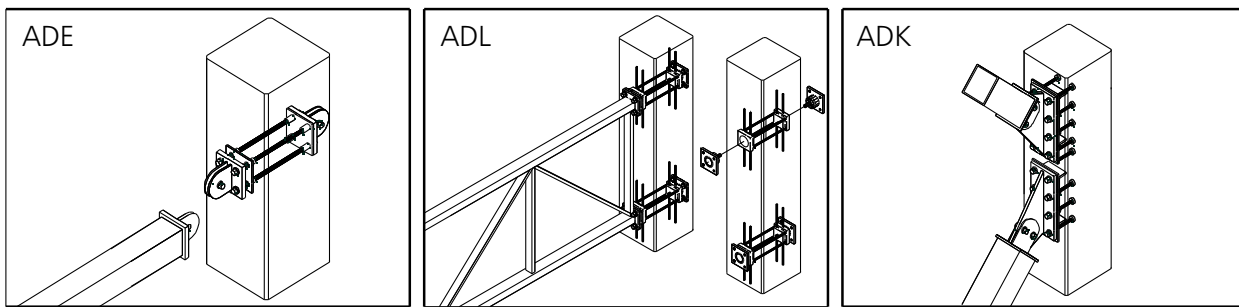
MIDDLE BEAM  
e.g. A265-280

EDGE BEAM  
e.g. A265-280Rm



Concrete Association of Finland certificate 216

# Bracing Connections



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

## Ask for tender!

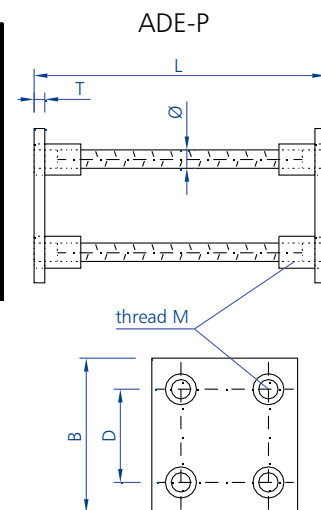
Concrete Association of Finland certificate 291

## ADE horizontal rod connection

| TYPE     | DIMENSIONS   |     |     |    |    |    |                       | CAPACITIES     |                |
|----------|--------------|-----|-----|----|----|----|-----------------------|----------------|----------------|
|          | L            | B   | D   | T  | M  | ∅  | weight<br>(L = 600mm) | F <sub>u</sub> | V <sub>u</sub> |
|          | [mm]         |     |     |    |    |    |                       | [kg]           | K40-1<br>[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 |

Concrete Association of Finland certificate 291



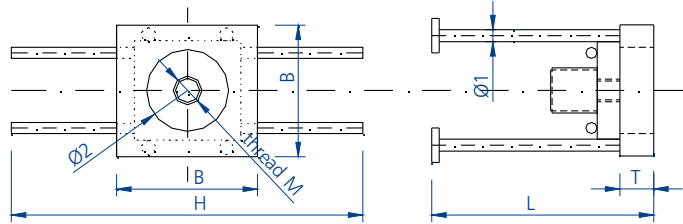
# Bracing Connections

## 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]       |     |     |    |    |    |     |        | [kN]             |       |                           |       |
| 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 |

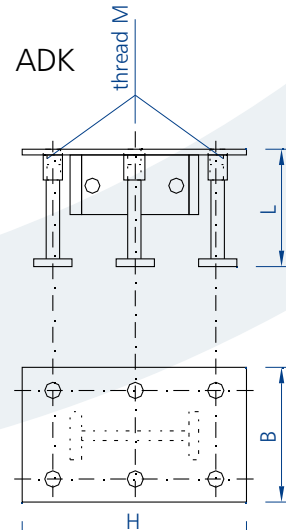
ADL-P1



## 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 |

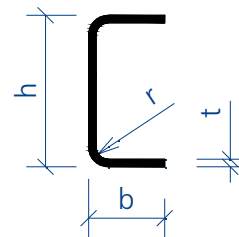
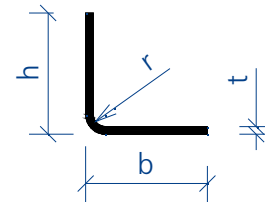
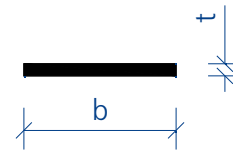


# Bracing Connections

## 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   |