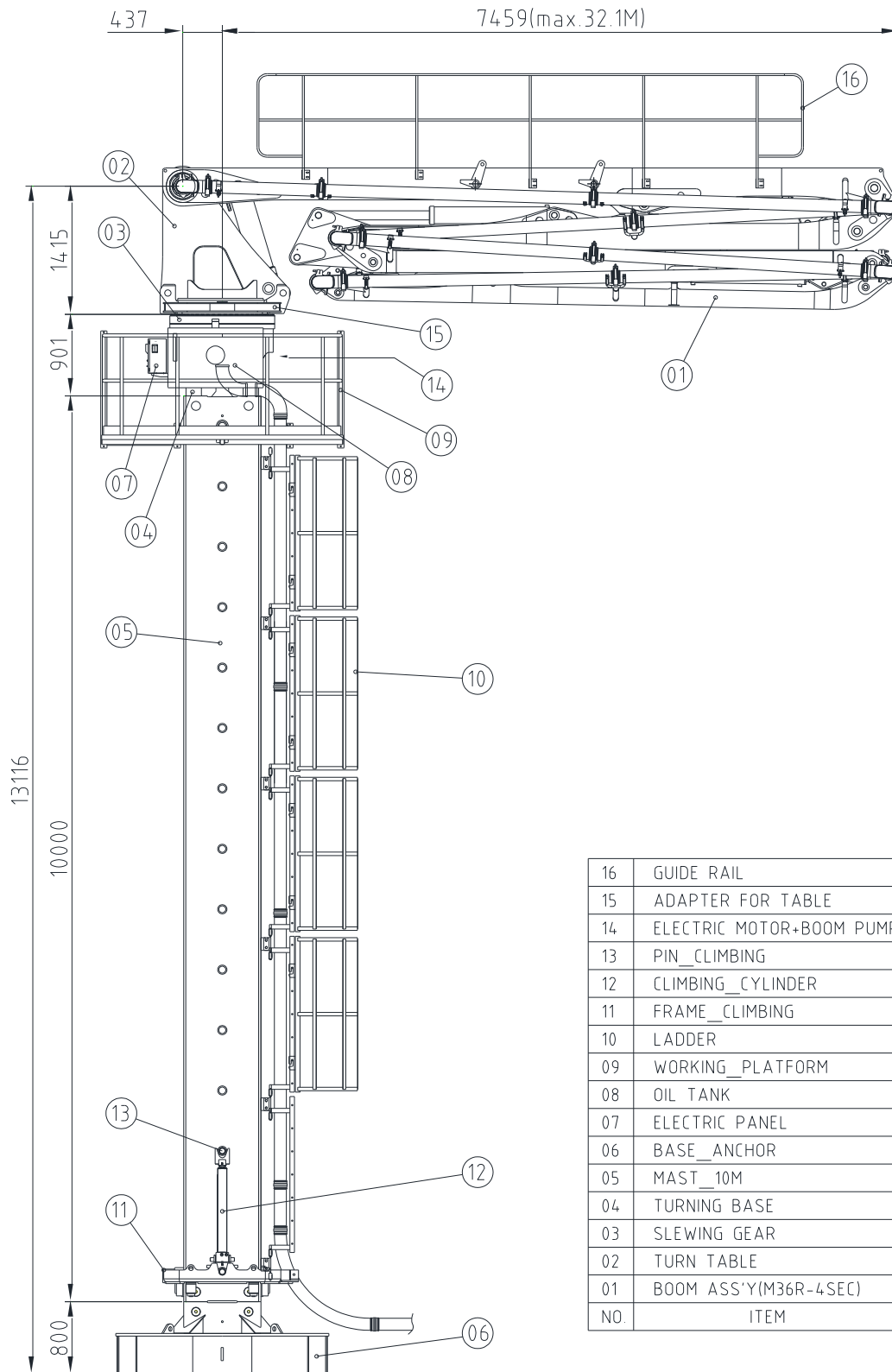


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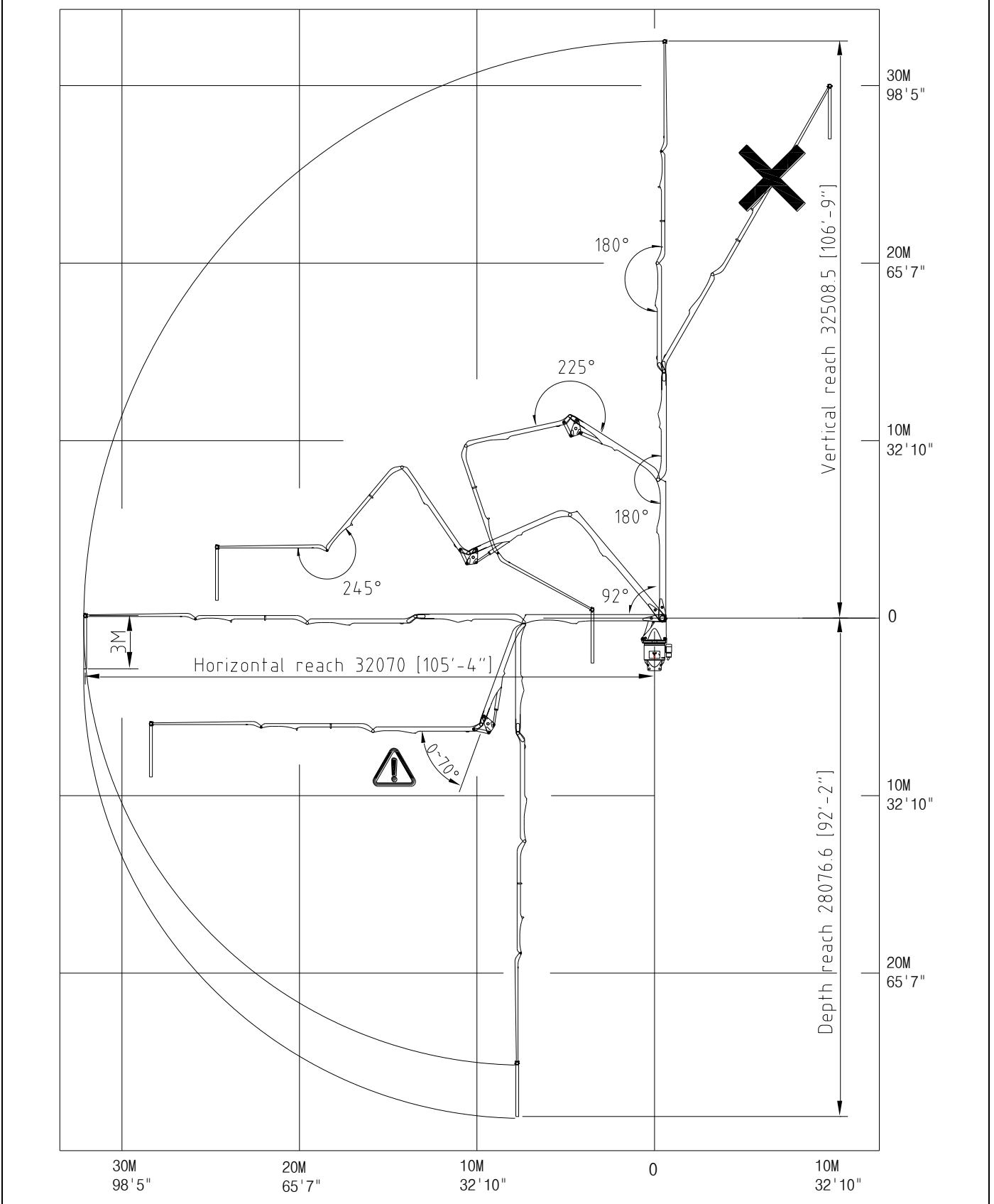
Placing Boom System _ Layout



| | |
|-----|--------------------------|
| 16 | GUIDE RAIL |
| 15 | ADAPTER FOR TABLE |
| 14 | ELECTRIC MOTOR+BOOM PUMP |
| 13 | PIN_CLIMBING |
| 12 | CLIMBING_CYLINDER |
| 11 | FRAME_CLIMBING |
| 10 | LADDER |
| 09 | WORKING_PLATFORM |
| 08 | OIL TANK |
| 07 | ELECTRIC PANEL |
| 06 | BASE_ANCHOR |
| 05 | MAST_10M |
| 04 | TURNING BASE |
| 03 | SLEWING GEAR |
| 02 | TURN TABLE |
| 01 | BOOM ASS'Y(M36R-4SEC) |
| NO. | ITEM |

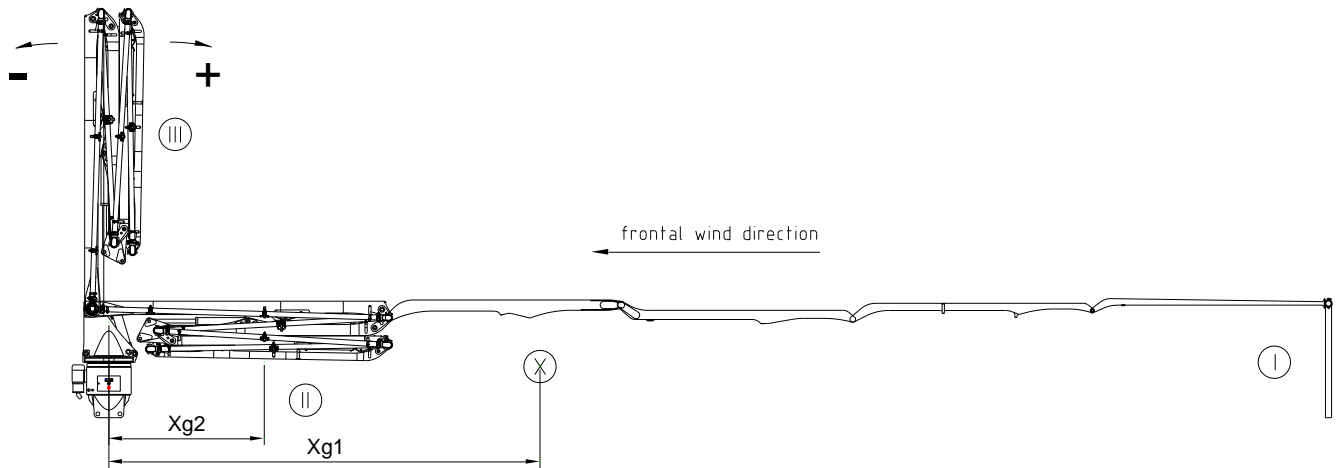
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Placing Boom System Working _ Working diagram



KB-M33Z5S

Placing Boom System Technical data



MOMENT [KNm]

| Position of boom | Moment(boom side) → + |
|-----------------------------------|-----------------------|
| I with concrete in pipe-line | → 780 KNm |
| II without concrete in pipe-line | → 275 KNm |
| III without concrete in pipe-line | → - 3 KNm |

Total weight [kg]– boom, table, base(with oil), motor, pump, (+concrete)

| | | | |
|--------------|----------|------------------|----------|
| In operation | 7,960 kg | Out of operation | 7,000 kg |
|--------------|----------|------------------|----------|

Wind-exposed areas [m²]

| Position of boom | Wind-exposed area | Center of gravity distance | remark |
|------------------|-----------------------------|----------------------------|--|
| I | 16 m ² boom-side | Xg1 = 10 m | Wind surface perpendicular to frontal wind |
| II | 16 m ² boom-side | Xg2 = 3.9 m | |
| I/II | 4.5 m ² | Ys = 0.5 m | Exposed area in frontal wind |
| III | 15 m ² | Ys = 5.0 m | |

Comment : lateral thrust due to wind is calculated according to DIN 1055

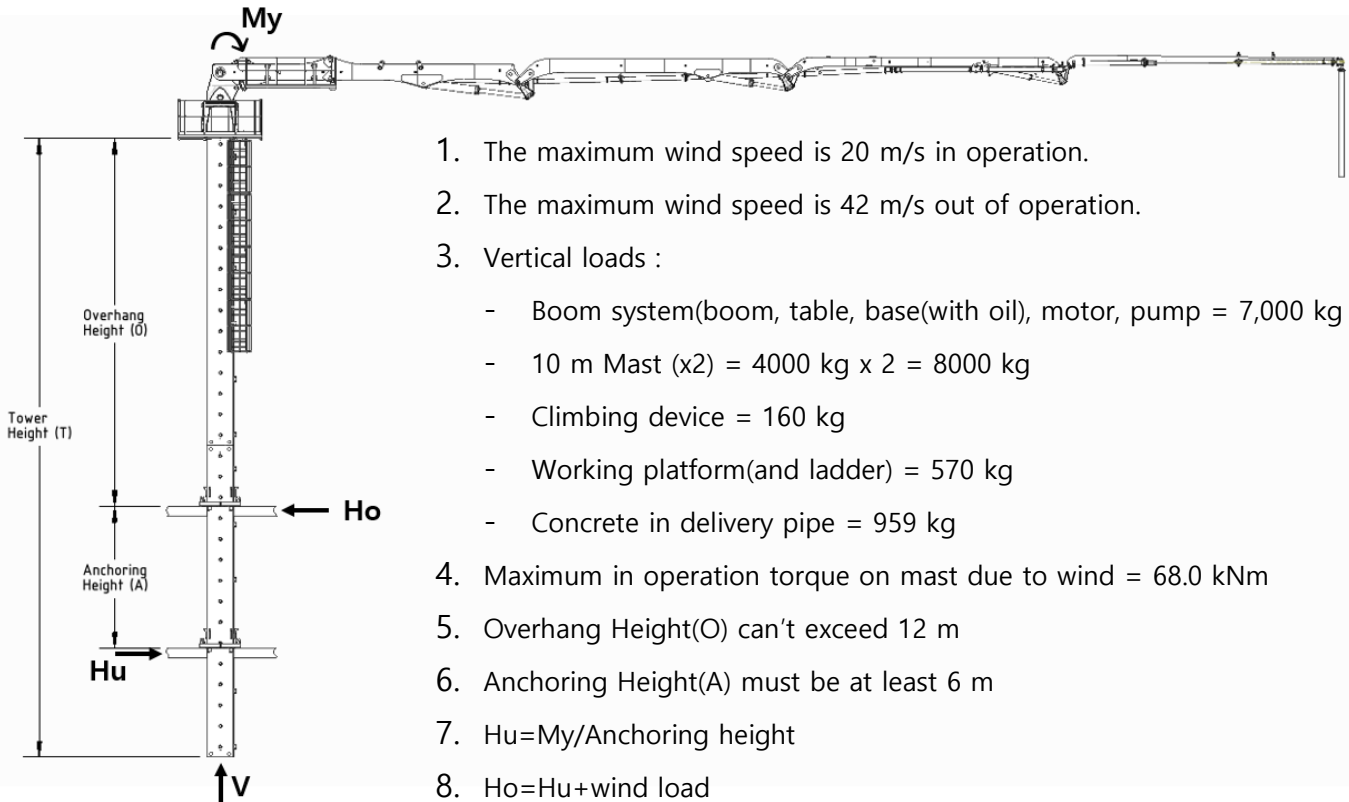
| Absolute altitude [m] | 0~8 | 8~20 | 20~100 | Above 100 |
|-----------------------|-----|------|--------|-----------|
| W [N/m ²] | 800 | 1280 | 1760 | 2080 |

$$F = W \times A$$

| | | |
|----------------|--------------------------------|-----------------------|
| F : wind force | W : lateral thrust due to wind | A : wind surface area |
|----------------|--------------------------------|-----------------------|

KB-M33Z5S

Placing Boom System Technical data (Floor type)



1. The maximum wind speed is 20 m/s in operation.
2. The maximum wind speed is 42 m/s out of operation.
3. Vertical loads :
 - Boom system(boom, table, base(with oil), motor, pump = 7,000 kg
 - 10 m Mast (x2) = 4000 kg x 2 = 8000 kg
 - Climbing device = 160 kg
 - Working platform(and ladder) = 570 kg
 - Concrete in delivery pipe = 959 kg
4. Maximum in operation torque on mast due to wind = 68.0 kNm
5. Overhang Height(O) can't exceed 12 m
6. Anchoring Height(A) must be at least 6 m
7. $H_u = M_y / \text{Anchoring height}$
8. $H_o = H_u + \text{wind load}$

Maximum Anchoring load in operation

| | | | | | | | | | | | |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Anchoring Height [m] | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| H_o [kN] | 188 | 169 | 155 | 144 | 135 | 128 | 122 | 117 | 113 | 109 | 106 |

Maximum Anchoring load out of operation

| | | | | | | | | | | | |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Overhang Height [m] | 6 | 6.5 | 7 | 7.5 | 8 | 8.5 | 9 | 9.5 | 10 | 11 | 12 |
| H_o [kN] | 144 | 151 | 157 | 164 | 170 | 177 | 184 | 191 | 198 | 212 | 227 |

Maximum Vertical load in operation

| | | | | | | | | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Tower Height [m] | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| V [kN] | 117.2 | 133.4 | 129.1 | 148.5 | 152.8 | 160.4 | 176.5 | 172.2 |

Maximum Vertical load out of operation

| | | | | | | | | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Tower Height [m] | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| V [kN] | 106.8 | 123.0 | 118.7 | 138.1 | 142.4 | 150.0 | 166.2 | 161.9 |

Maximum loads in operation

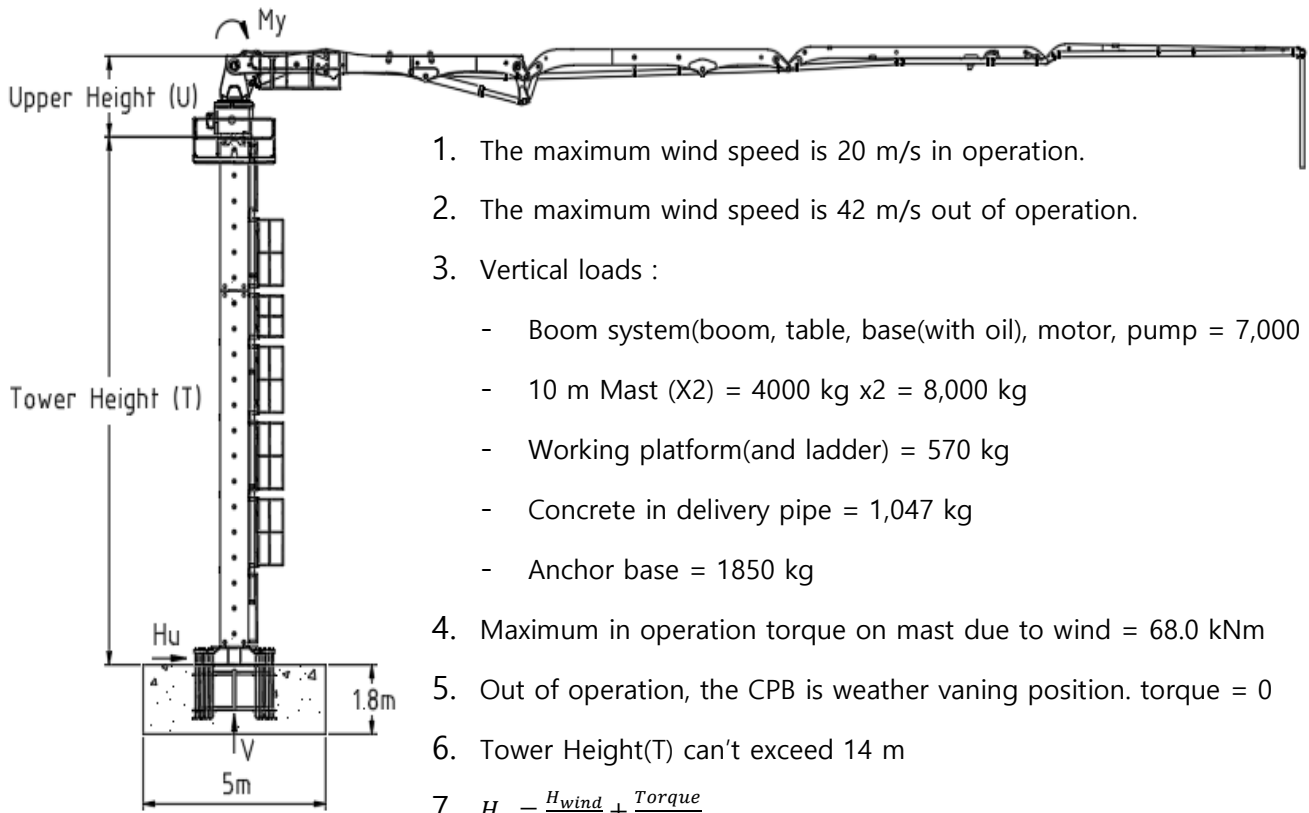
| | | | | | | | | | | | | |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Overhang Height [m] | 6 | 6.5 | 7 | 7.5 | 8 | 8.5 | 9 | 9.5 | 10 | 10.5 | 11 | 12 |
| Overturn Moment [kNm] | 801.6 | 804.2 | 806.9 | 809.7 | 812.6 | 815.7 | 818.9 | 822.2 | 825.6 | 829.2 | 832.9 | 840.7 |

Maximum loads out of operation

| | | | | | | | | | | | | |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|----|------|-----|-----|
| Overhang Height [m] | 6 | 6.5 | 7 | 7.5 | 8 | 8.5 | 9 | 9.5 | 10 | 10.5 | 11 | 12 |
| Overturn Moment [kNm] | 510 | 540 | 571 | 602 | 634 | 666 | 699 | 733 | 76 | 803 | 839 | 912 |

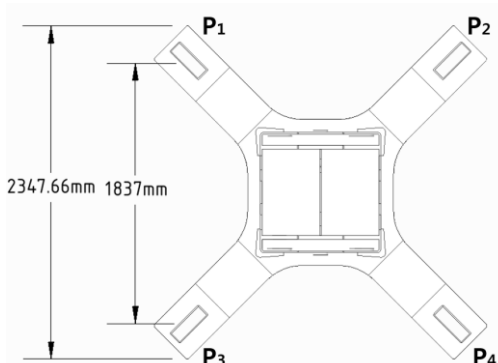
KB-M33Z5S

Placing Boom System Technical data (Anchor type)



1. The maximum wind speed is 20 m/s in operation.
2. The maximum wind speed is 42 m/s out of operation.
3. Vertical loads :
 - Boom system(boom, table, base(with oil), motor, pump) = 7,000 kg
 - 10 m Mast (X2) = 4000 kg x2 = 8,000 kg
 - Working platform(and ladder) = 570 kg
 - Concrete in delivery pipe = 1,047 kg
 - Anchor base = 1850 kg
4. Maximum in operation torque on mast due to wind = 68.0 kNm
5. Out of operation, the CPB is weather vaning position. torque = 0
6. Tower Height(T) can't exceed 14 m
7. $H_u = \frac{H_{wind}}{2} + \frac{Torque}{d}$

| Maximum loads in operation | Tower Height [m] | | | | | |
|--------------------------------|------------------|-------|-------|-------|-------|--------|
| | 4 | 6 | 8 | 10 | 12 | 14 |
| Total vertical load [kN] | 132.5 | 141.6 | 159.2 | 156.4 | 177.3 | 183.0 |
| Overturn Moment [kNm] | 792.7 | 801.6 | 812.6 | 825.6 | 840.7 | 857.8 |
| Horizontal load [kN] | 38.0 | 38.5 | 39.1 | 39.6 | 40.1 | 40.6 |
| Maximum loads Out of operation | Tower Height [m] | | | | | |
| | 4 | 6 | 8 | 10 | 12 | 14 |
| Total vertical load [kN] | 120.9 | 129.3 | 146.3 | 142.8 | 163.1 | 168.2 |
| Overturn Moment [kNm] | 380.9 | 493.7 | 617.1 | 751.1 | 895.7 | 1051.0 |
| Horizontal load [kN] | 12.5 | 15.1 | 17.8 | 20.4 | 23.1 | 25.7 |

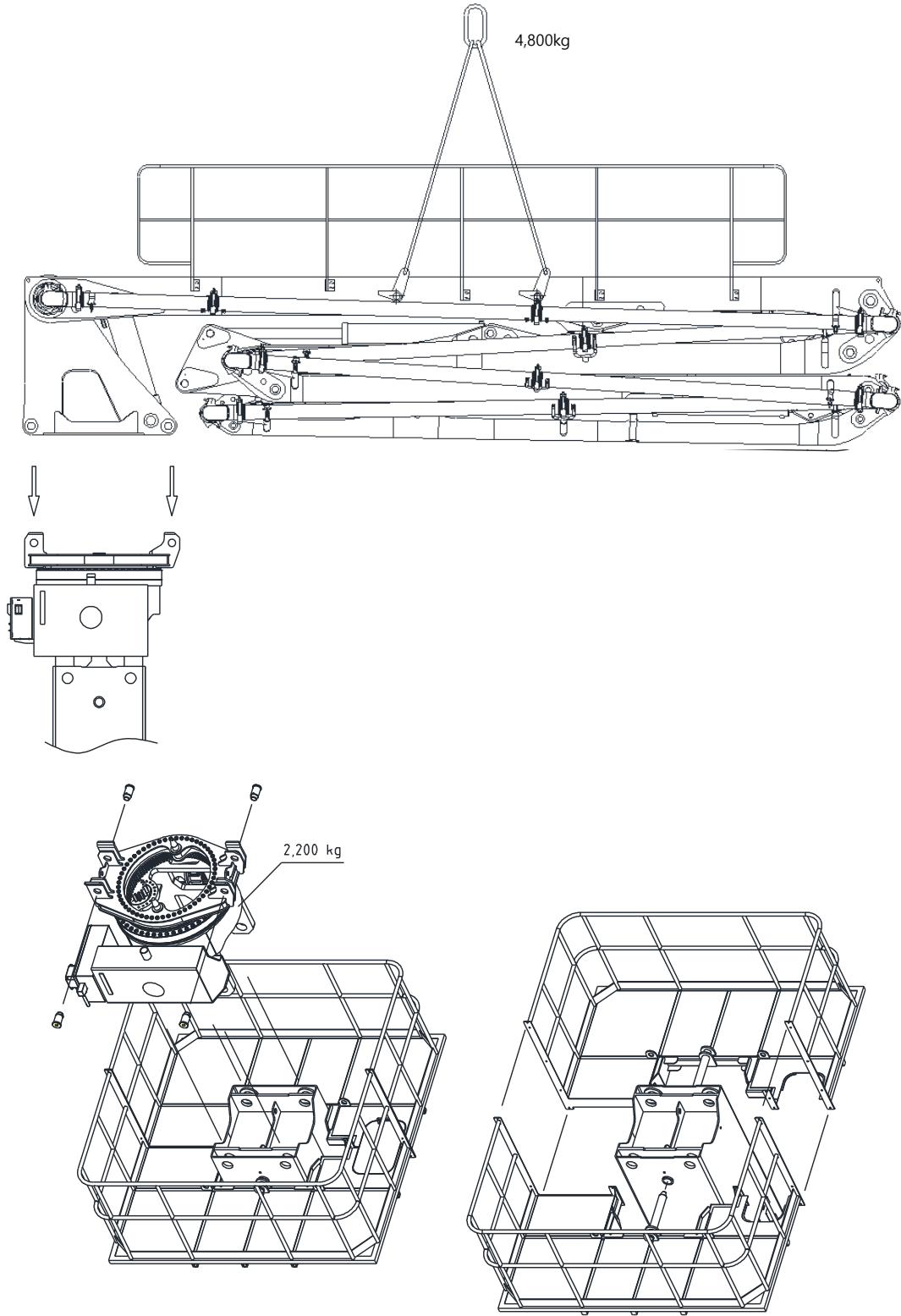


| | Corner loads at max load condition | | | |
|---------------|------------------------------------|-------|-------|-------|
| | P1 | P2 | P3 | P4 |
| Max Load [kN] | -422.1 | -57.3 | 112.7 | 490.4 |

- Negative loads are tension load.

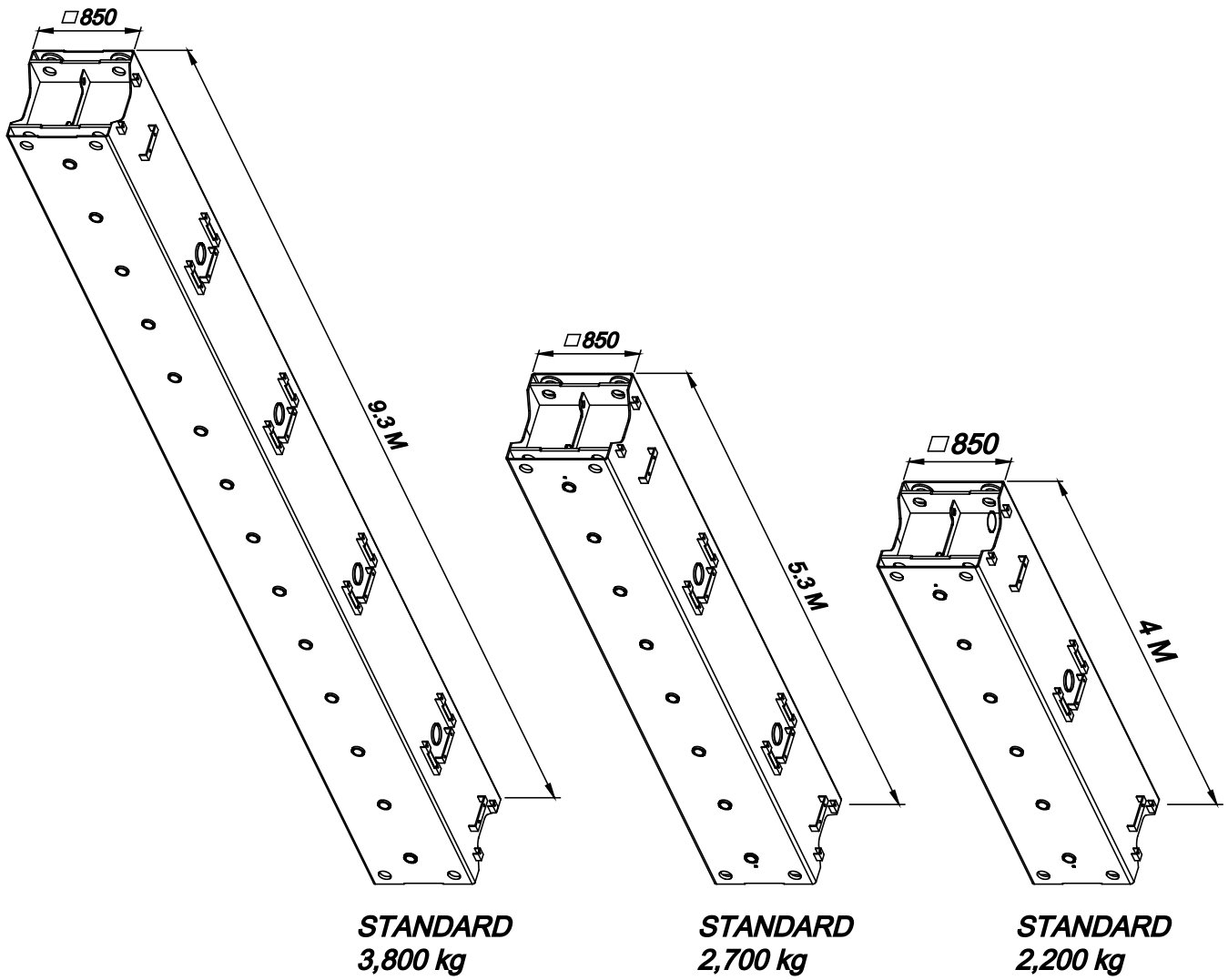
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PLACING BOOM SYSTEM ----- [BOOM ASS'Y & UPPER PARTS]



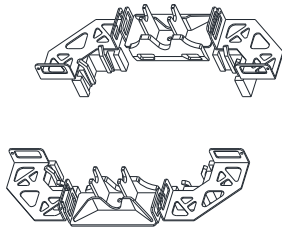
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PLACING BOOM SYSTEM ----- [MAST]

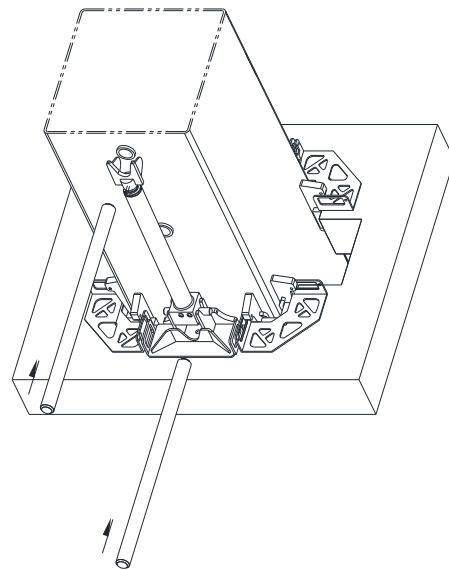
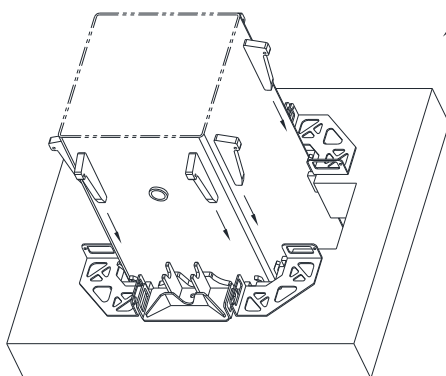
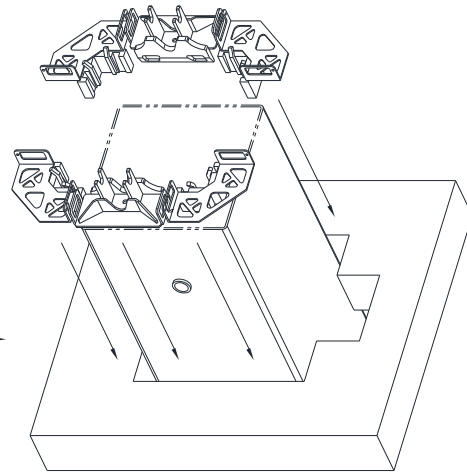
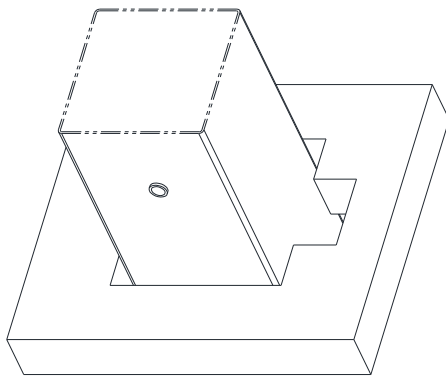
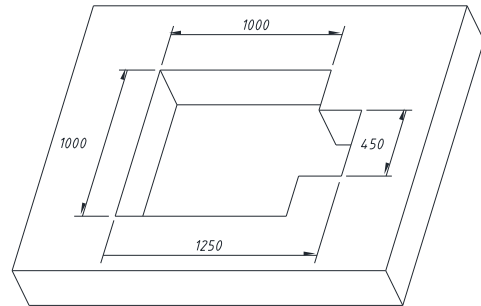


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PLACING BOOM SYSTEM ----- [FRAME _ CLIMBING, CLIMBING_CYLINDER]

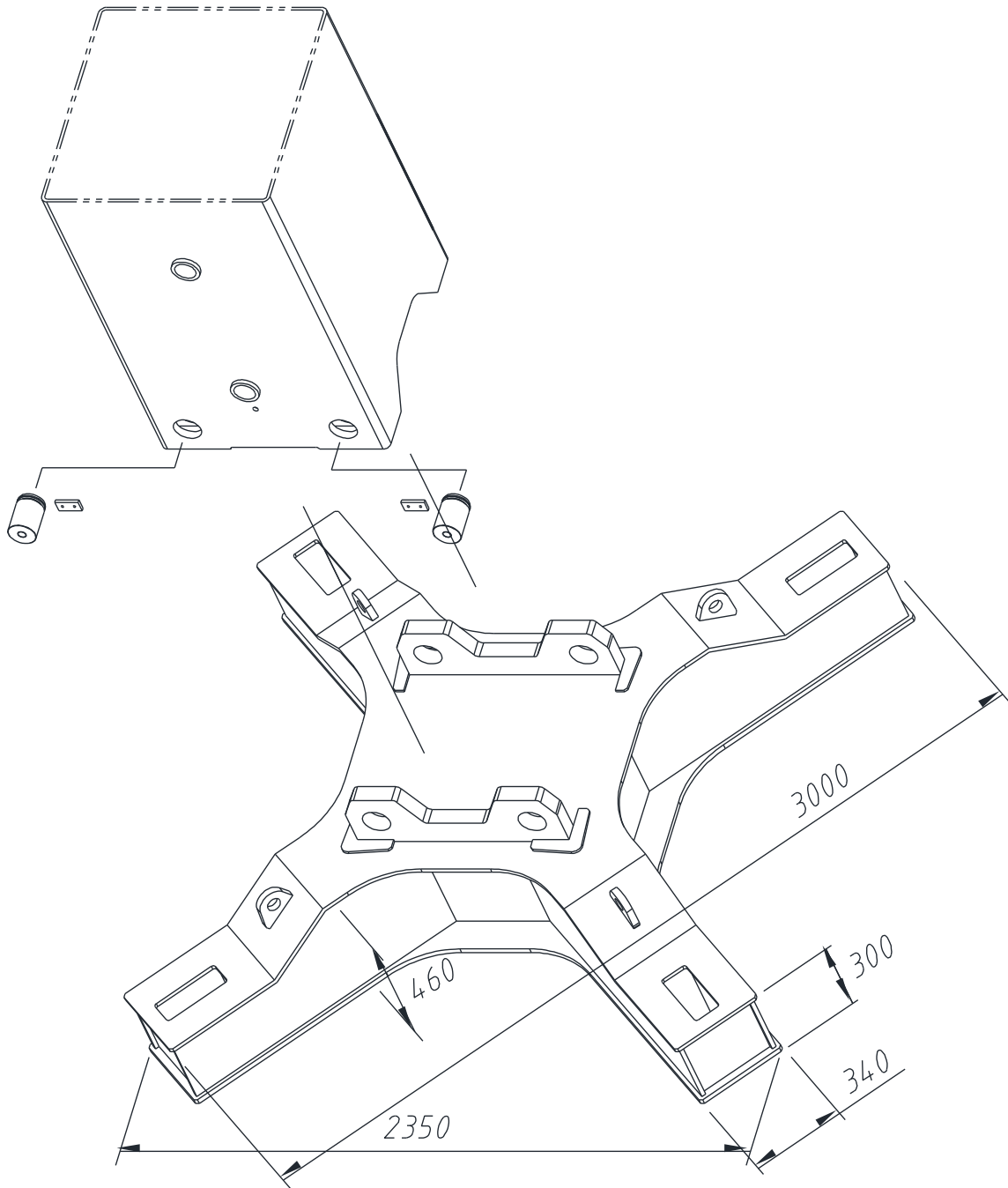


WEDGE BLOCK
CLIMBING SHOE
TOTAL : 160 kg



KB-M33Z5S

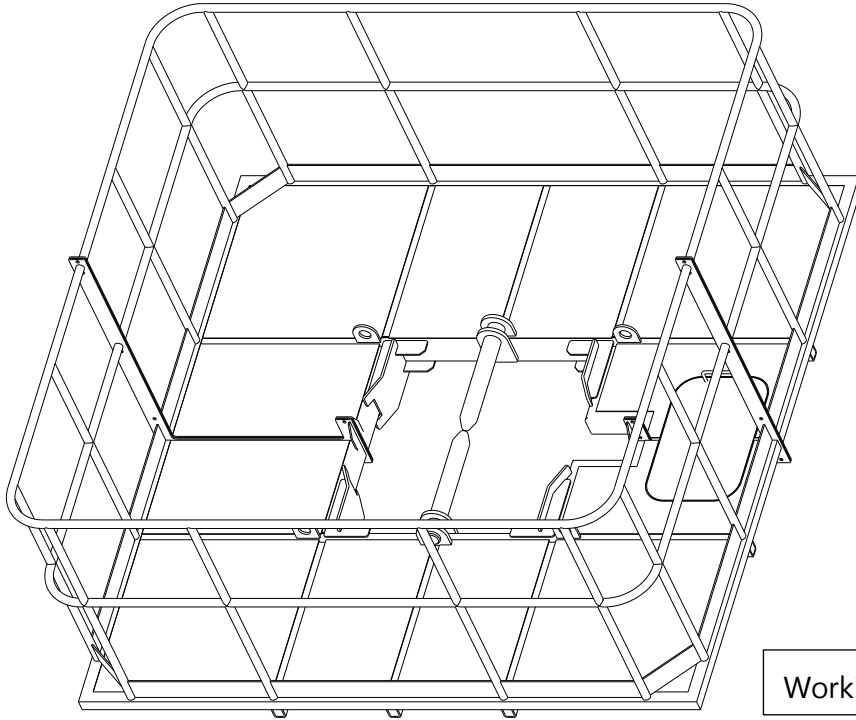
PLACING BOOM SYSTEM ----- [BASE_ANCHOR]



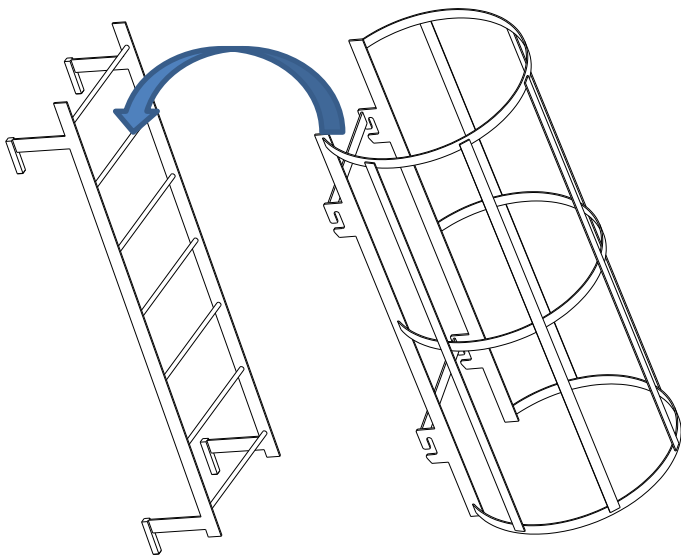
BASE ANCHOR
1,850 kg

KB-M33Z5S

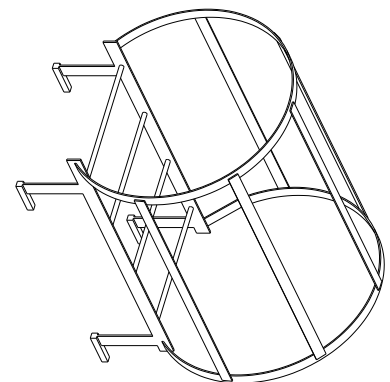
PLACING BOOM SYSTEM ----- [WORKING PLATFORM & LADDER]



Working platform : 570 KG

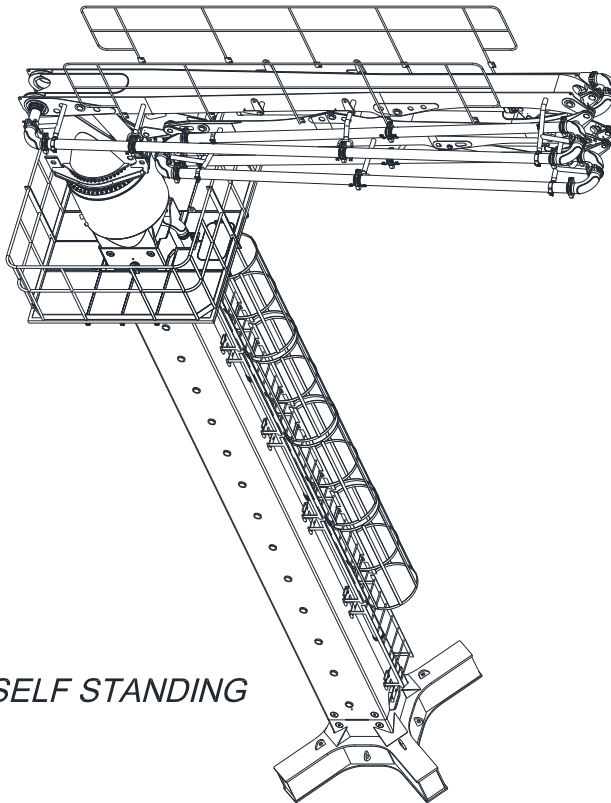


Ladder(STD) : 20kg+30kg = 50kg

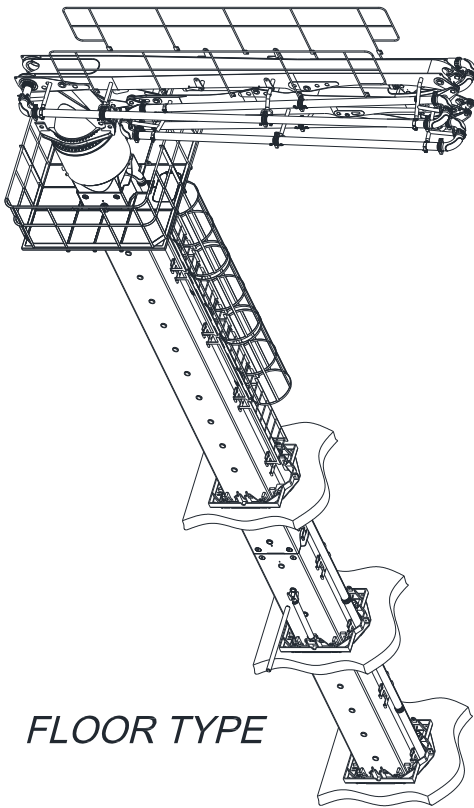


Ladder(OPT): 25kg

KB-M33Z5S TYPE



SELF STANDING



FLOOR TYPE