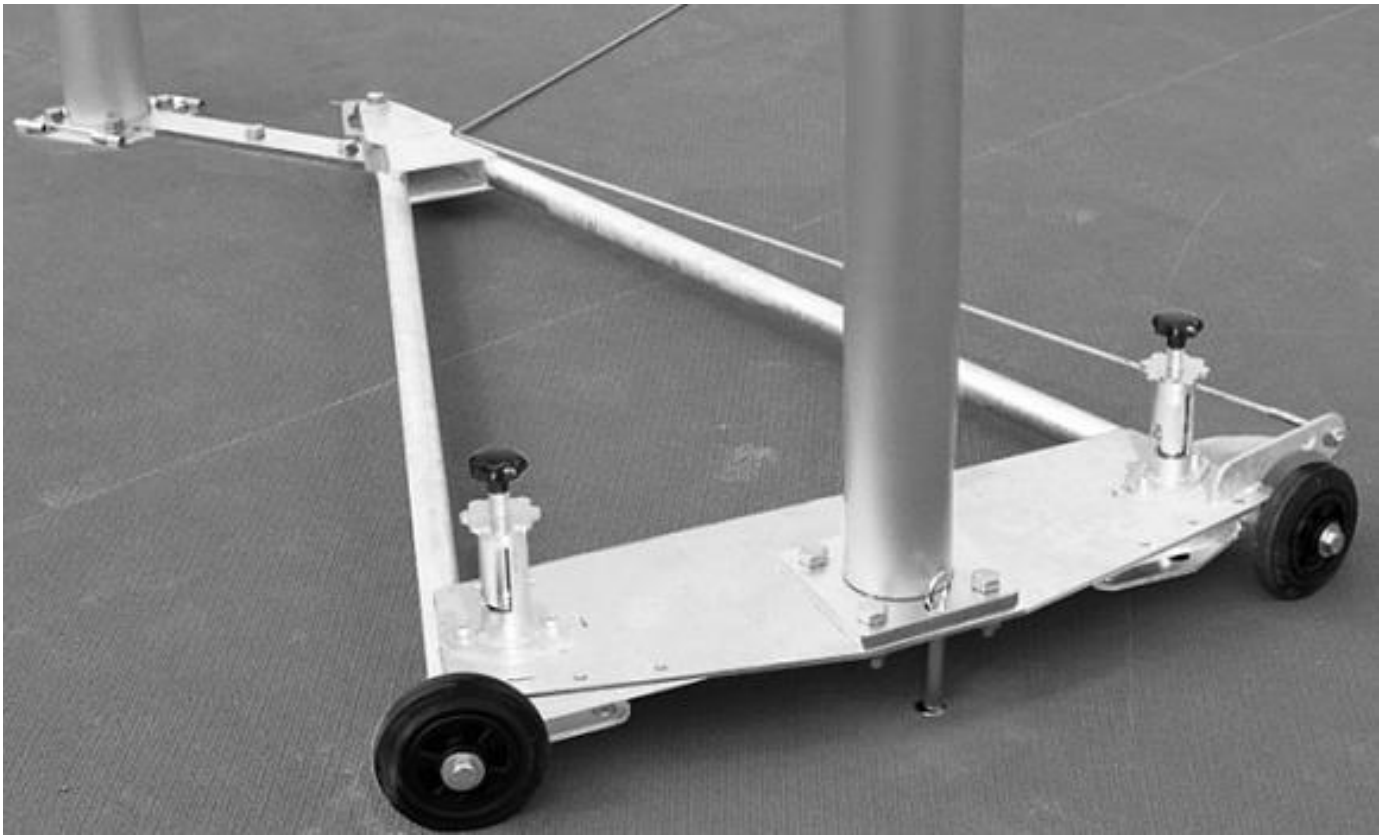
ASSEMBLY MANUAL

Training safety cage for discus and hammer throwing
KLM-7/9-A [KLM-5/7-A]
and ground anchor set K1-0027/24



File: 2025-03-12
PRODUCT SUPPORT
Pawel Ciechanowski
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Thank you for purchasing POLANIK cage type KLM-7/9-A [KLM-5/7-A]

Safe assembly and use

- Before you start to assemble and use the cage please read this manual carefully. Polanik shall not be liable for any cage damages which are the result of the failure to follow this manual.
- Unauthorized copying of this manual, in whole or in part, is prohibited.
- The contents of this manual are subject to change without notice.
- Attention! The sports equipment produced by Polanik is designed for athletics training and use in sports competitions only. Please pay special attention especially when using throwing implements and other throwing equipment, misuse of athletics equipment and implements can cause serious injury or in extreme cases even death. That is why training and use during sports events have to be always supervised by authorized sports personnel. In no event shall Polanik be liable for any special, incidental, indirect or consequential damages in connection with the purchase or use of POLANIK products or costs over the original cost of the product.
- Specific warranty terms:

1. The use of the throwing cage is to be done in the properly marked and secured sports facility designed for that purpose and under supervision of qualified coaches, and according the rules of World Athletics, respective national athletics federation and local safety regulations. Failure to follow the above restrictions results in loss of the warranty rights.
2. The throwing cage is designed to protect the spectators against the improperly released hammer (discus) which misses the cage mouth. The execution of that task brings a risk of damages to the cage elements (for example the pillars), as a crumple zone of an automobile is damaged to absorb energy from the impact during an accident to save passengers. The damages caused by the proper cage operation, which is stopping improperly thrown hammers (discuses) from flying outside the cage and absorbing the impact energy in order to protect the thrower inside the throwing circle, are recognized as a normal wear of the product and are excluded from the warranty. The damages can be removed in course of payable repair or replacement of the cage elements.
3. The use of the non-genuine spare parts (not produced by Polanik) results in loss of the warranty rights and the termination of the WA certificate validity.

Obligatory safety rules:

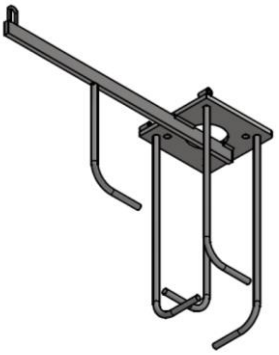
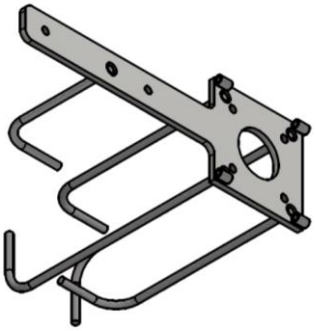
Lift the net only if you intend to use the cage!
Do not use the cage during strong winds or thunder storms!
During idle periods:

- the net must be absolutely lowered,
- the cage gates closed and blocked with blocking pins (item 16),
- and fastening catches (item 13) tightened.

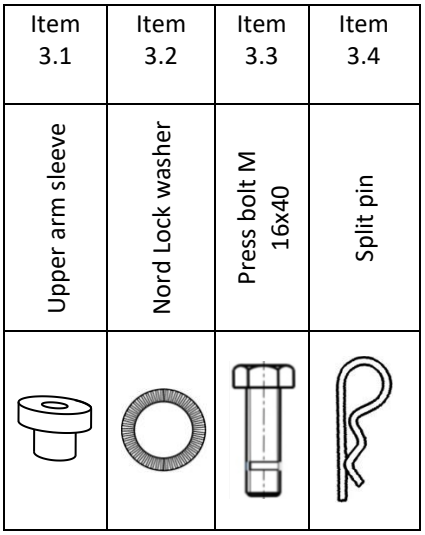
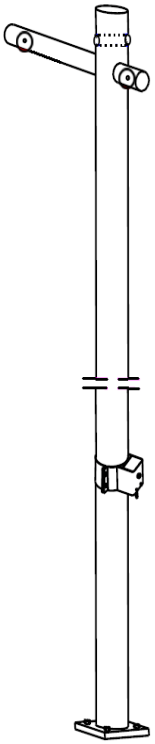
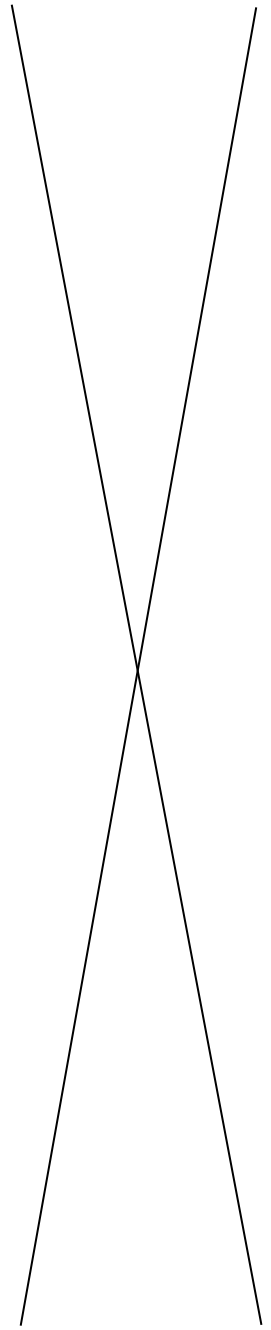
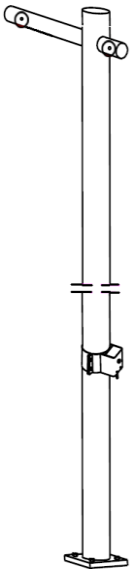
Before each use inspect visually the cage technical condition, specially all connections of pillars with embedded anchors and top connections of movable panels, in case of spotting any loose elements or screws, do not use the cage and inform immediately authorized staff of the facility.

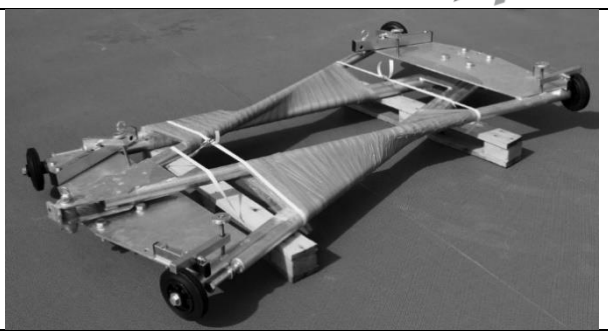
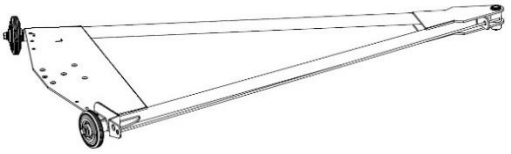
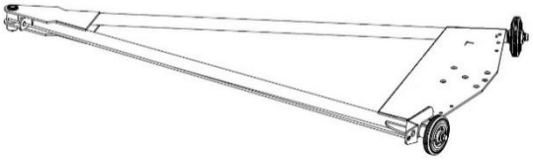
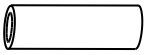
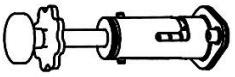
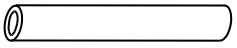
Cage manufacturer: POLANIK
Catalogue no.: KLM-7/9-A [KLM-5/7-A]
Safety net manufacturer: as indicated on tag attached to net
Netting mesh size: 45 x 45 [mm]
Mesh cord diameter: 5 [mm]
Net complies to: EN 1263-1

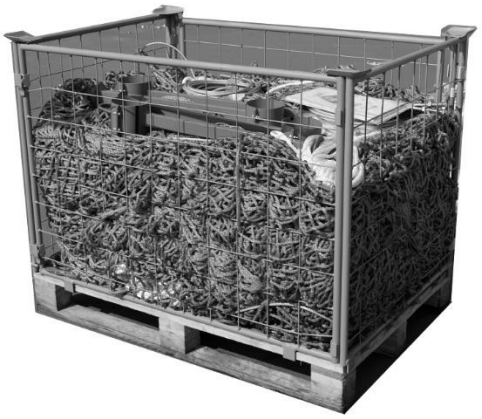
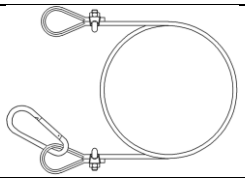
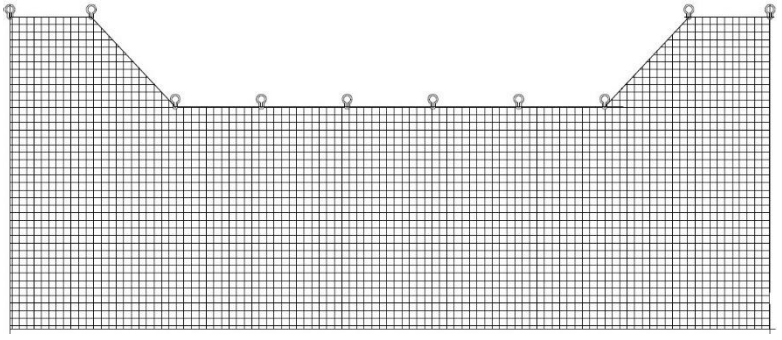
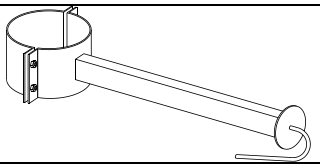
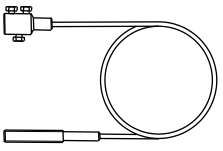
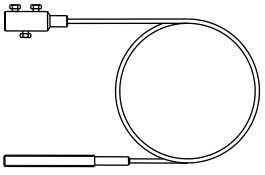
I. Part list (part sets)

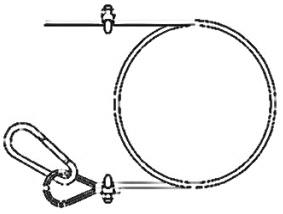
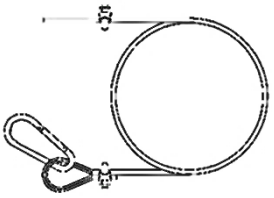
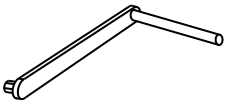
Ground anchor set K1-0027/24 (available separately)			
Item	Part/set description	Q-ty Pcs.	Part/set sketch
1	Standard anchor (6 pcs) + screw M 20x50 (24 pcs) + washer 20 (24 pcs)	8	
2	Extreme pillar anchor (with flat bar – 2 pcs) + screw M 20x50 (12 pcs) + washer 20 (12 pcs)	2	

Cage pillars packed separately in foil sleeves	*values of KLM-5/7-A are given in square brackets

Item	3	4	5	6
Desc.	Extreme pillar ~9 m [~7 m]* dia. 150 mm	Gate pillar ~9 m [~7 m]* dia. 120 mm		Rear pillar ~7 m [~5 m]* dia. 120 mm
Q-ty Pcs.	2	2	***Not applicable***	6
Sketch				

Gate cars with accessories packed on pallet			
Item	Part/set description	Q-ty Pcs.	Part/set sketch
7	Gate car right hand side (looking from inside cage)	1	
8	Gate car left hand side (looking from inside cage)	1	
9	Car sleeve ⌀ 20 / ⌀ 30	2	
10	Washer ⌀20/⌀40 x 3	2	
11	Car axle screw M 20x120	2	
12	Upper gate arm with safety wire	2	Item 12.1: Crown nut  Item 12.2: Split pin 
13	Fastening catch	4	
14	Anchoring plate	4	
15	Blocking sleeve	4	
16	Blocking pin	2	

Net with rim white rope with accessories packed in steel container on pallet			
Item	Part/set description	Q-ty Pcs.	Part/set sketch
17	Net with rim rope	1	Item 17.1 Edge steel cable ~8,8 m [~6,8]* (threaded through the net meshes) 2 pcs  
18	Side cable arm + screw M 8x25 (16 pcs) + nut M 8 (16 pcs) + washer 8 (16 pcs)	4	
19	Gate car net tension cable ~2 m + nut M 16 (1 pc) + washer 16 (1 pc)	2	
20	Bottom net tension cable ~21,7 m + nut M 16 (1 pc) + washer 16 (1 pc)	1	

21	Vertical rope with carabiner ~10 m [~8 m]*	4	
22	Vertical rope with carabiner ~8 m [~6 m]*	6	
23	Net hook	100	
24	Hinge axle - ∅11 x 350	1	
25	Metric wrench 30/24 for mounting upper gate arm item 7	1	
26	Crank	2	

II. Placing anchors and pouring concrete paths

Assembly works order:

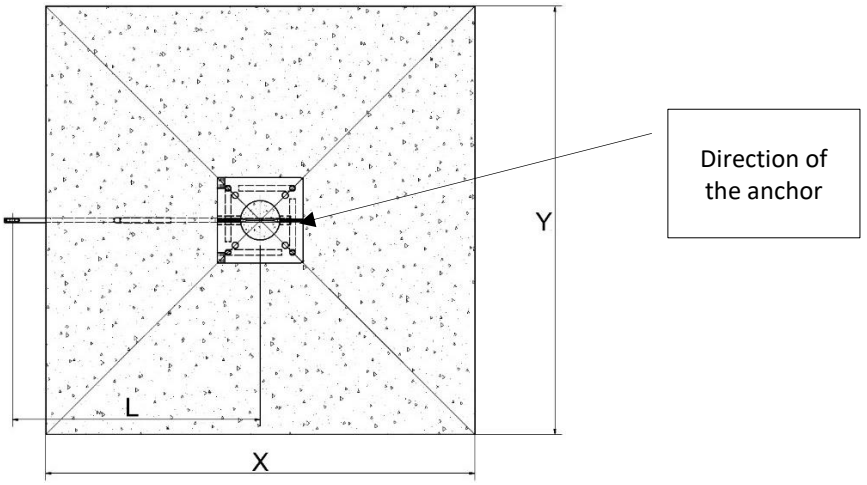
a) marking anchors and concrete paths by geodesist
b) digging holes for foundation blocks (120 x120 x 100 [cm]) and for paths (curve R175 40 cm wide and 40 cm deep),
c) sand bedding in holes,
d) placing anchors in holes,
e) pouring B20 (or higher) concrete into holes with anchors,
f) pouring B20 (or higher) concrete into holes for paths.

Anchors for rear and middle pillars should have hinges facing throwing circle. Anchors for extreme pillars, which have 2 pairs of hinges should be mounted in a way that the flat feet is inside the cage. Anchors should be concreted in a way that the top Surface is completely level. That will make the pillar straight and level as well. Each anchor should be concreted in a proper direction (see picture 1 a,1 b, 2 and 3). On the top of each anchor, there is a drawing that shows proper direction. While pouring concrete, make sure that all bolts are tightened all the way in the anchor, and the rest of the bolt threads (under the anchor) are covered with a rubber cover. Concrete cannot be in the threads because mounting pillars would be impossible.

WARNING! The anchors should be placed in the concrete of the class B20 quality or higher. Each time the anchor is put into the foundation the concrete should be mixed, so that it covers tightly the ribbed bars and there are no air chambers inside. During the concrete setting the foundations should be moistened (in the first week twice a day, in the second week once a day). You ought to wait minimum 2 weeks before you proceed with the installation of the pillars.

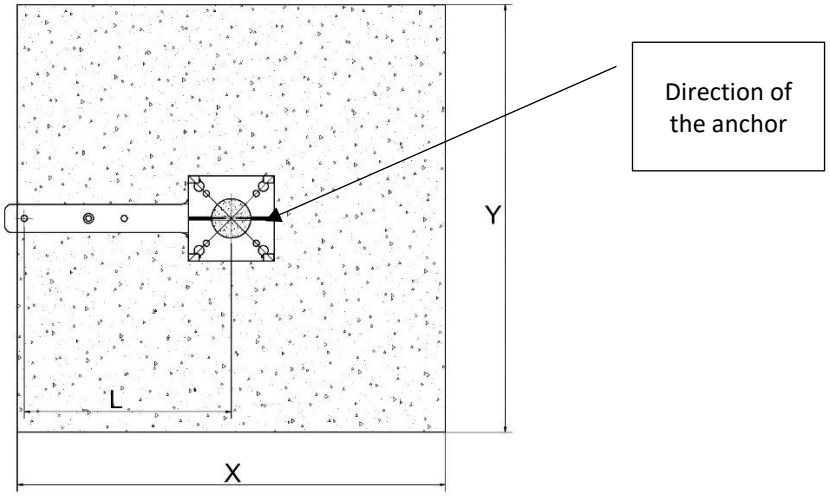
Pic. 1 a

Anchor, arm length L=69 cm, placed in a concrete foundation of the following dimensions: X = 120 cm, Y= 120 cm and depth of 100 cm.



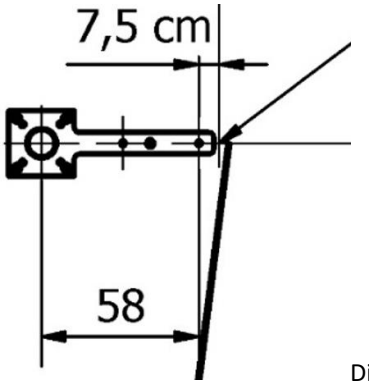
Pic. 1 b

Extreme pillar anchor, arm length L = 58 cm, placed in a concrete foundation of the following dimensions: X = 120 cm, Y = 120 cm and depth of 100 cm.

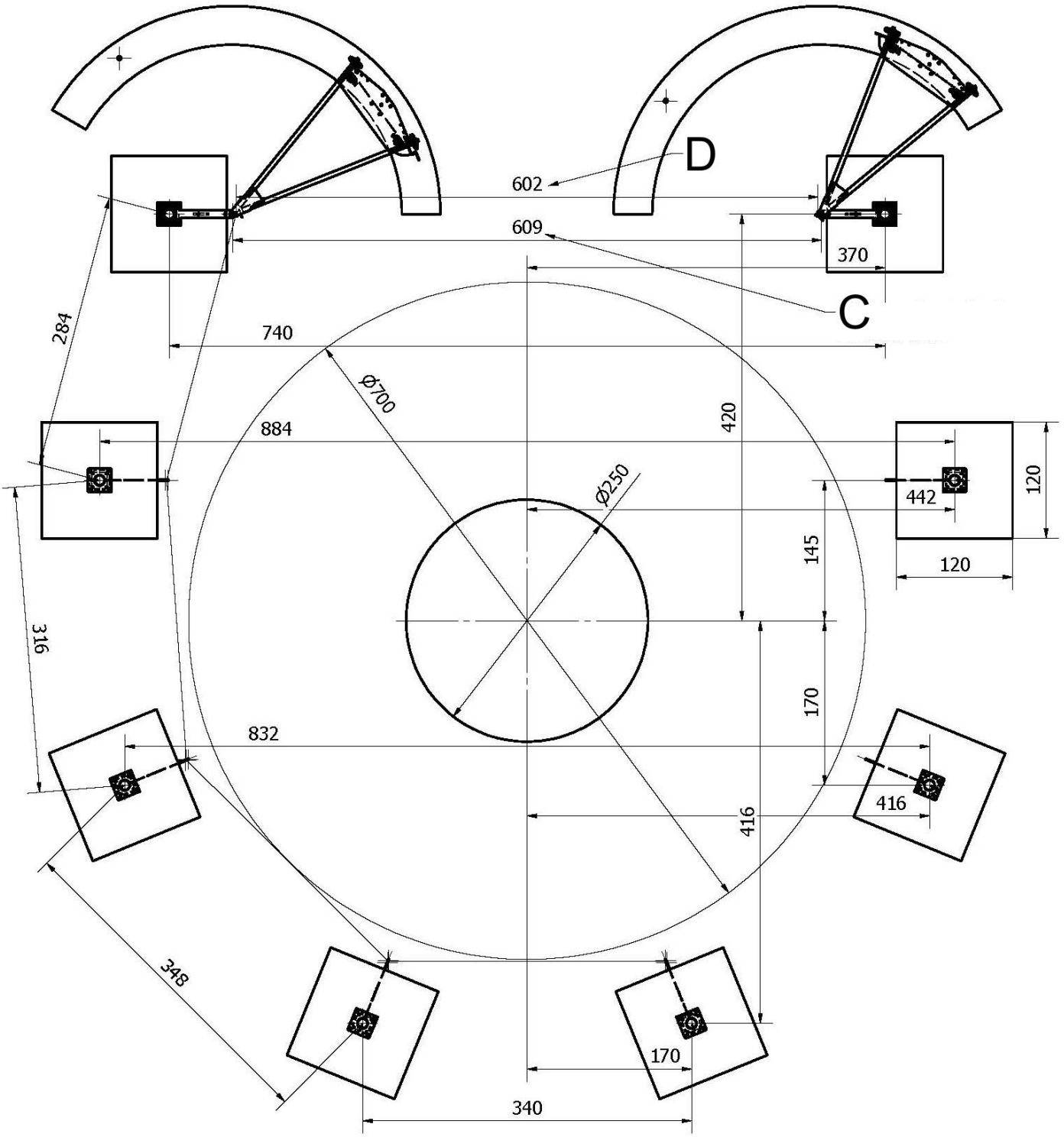


Pic. 2
Plan of concrete blocks for cage anchors
A –„0” point, centre of throwing circle
B – point that marks the axis of gate car turn and arch axis of concrete paths for gate car wheels
C – spacing between gate cars axis
D – clearance of cage gate
E – centre point of the foundation and anchor
F – the line of anchor’s direction

[cm]



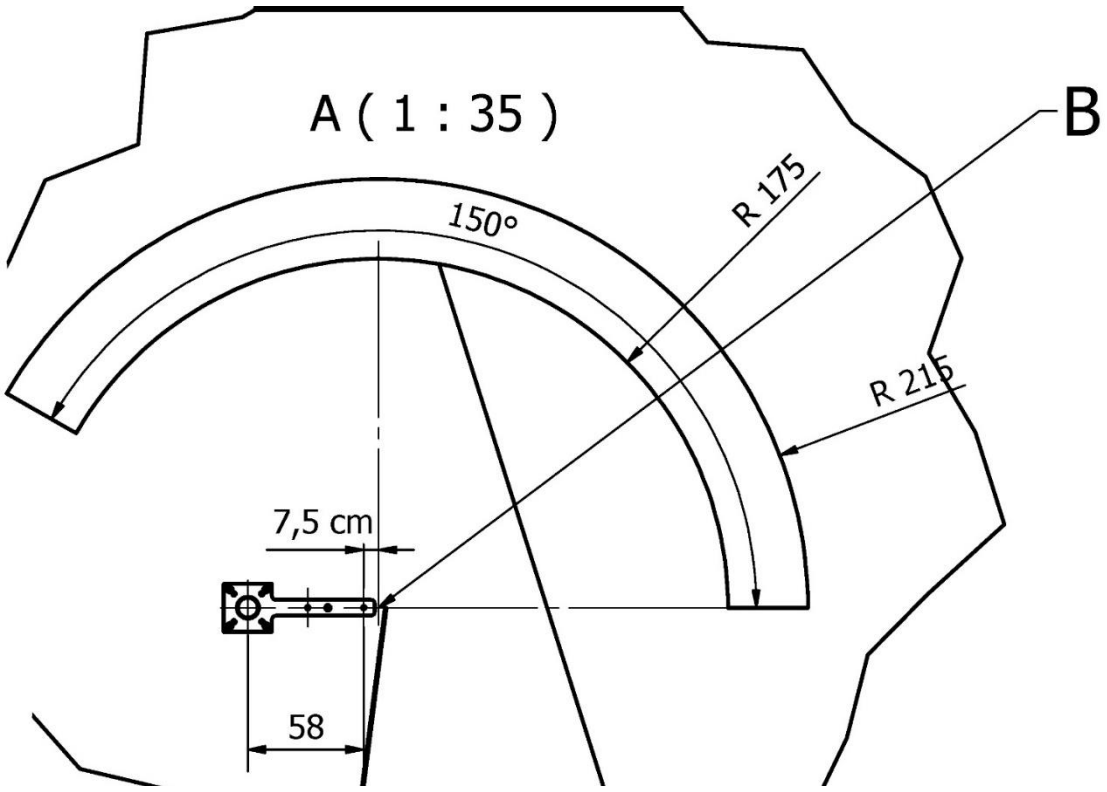
Dimensions [cm]



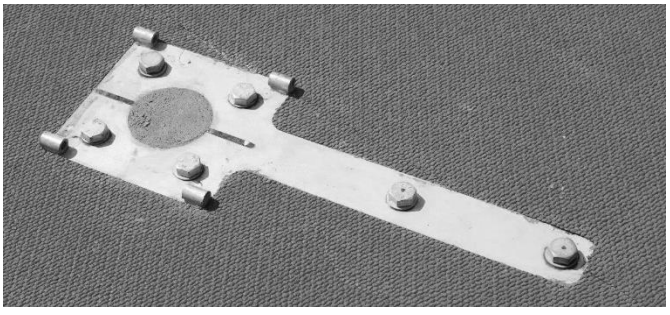
Pic. 3

Extreme pillar anchor

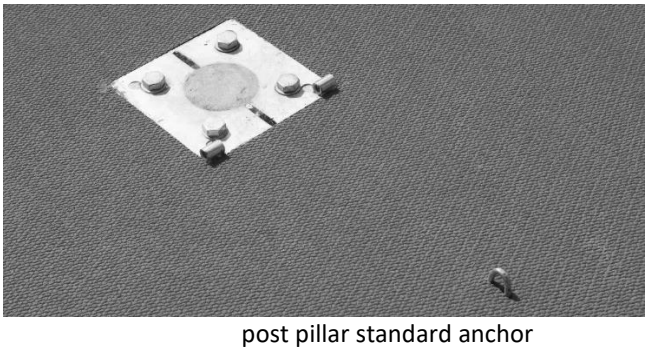
B – point that marks the axis of gate car turn and arch axis of concrete paths for gate car wheels [cm]



Correctly embedded anchors:



extreme cage pillar anchor

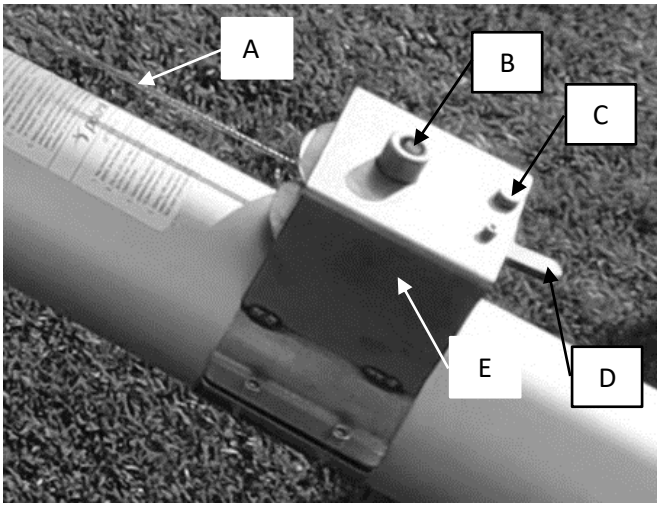


post pillar standard anchor

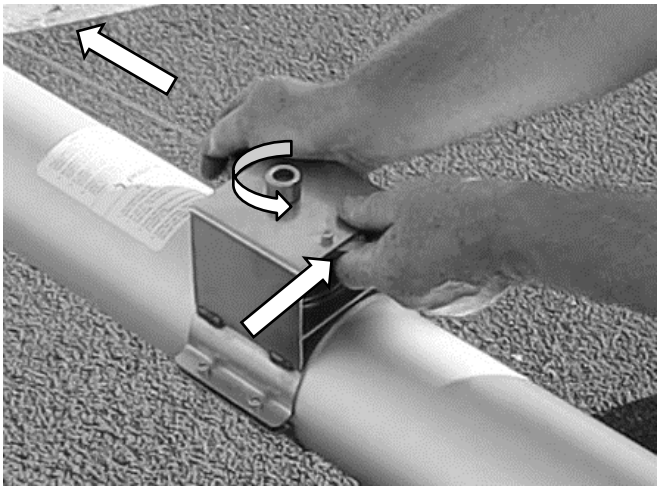
III. Preparing pillars for installation

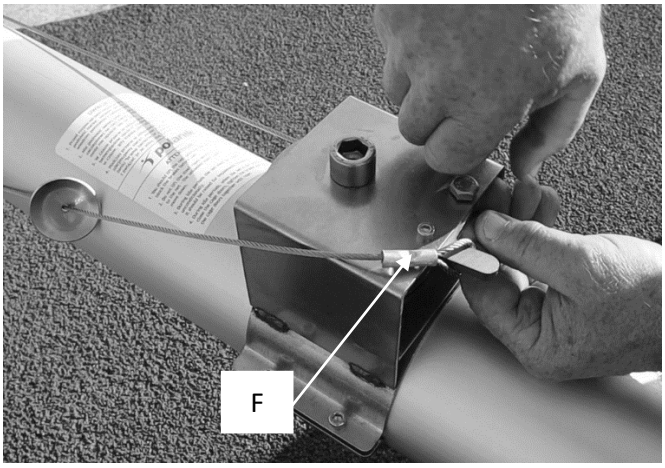
Delivered pillars need to be prepared in the following way:

- unpack delivered pillars (item 3-6),
- remove blocking screw - M 8x16 (C) from ratchet mechanism (E),
- press lever (D) to right hand side,
- unwind stainless steel line (A) until its loop (F) is at the level of rachet mechanism (E),
- and fasten the loop (F) temporarily to ratchet lever (D),
- secure rachet mechanism with blocking screw (C).



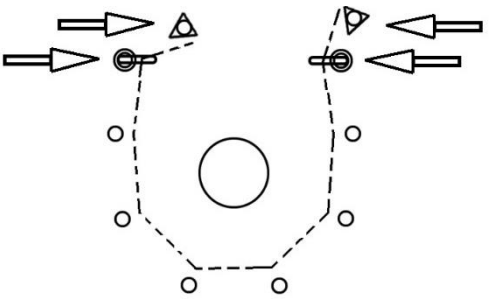
A – stainless steel line
B – shaft socket for crank
C – blocking screw
D – lever
E – rachet mechanism
F – loop of stainless steel line





IV. Cage movable panels installation

Each movable panel is formed by: one extreme pillar  (item 3), one gate pillar  (item 4), one gate car (item 7 or 8), upper gate arm with safety wire (item 12) and two side cable arms (item 18).



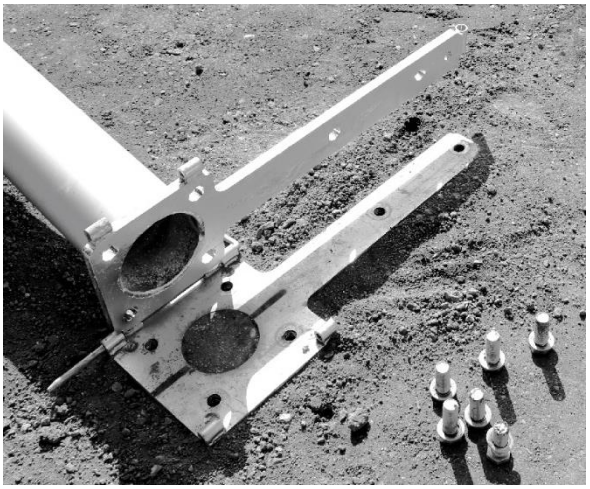
First the movable panels are assembled on the ground as shown below, and then lifted to upright position. Two pallets (not included) can be used to support the panels during assembly.

Left hand side movable gate panel (view from inside the cage)

Right hand side movable gate panel (view from inside the cage)

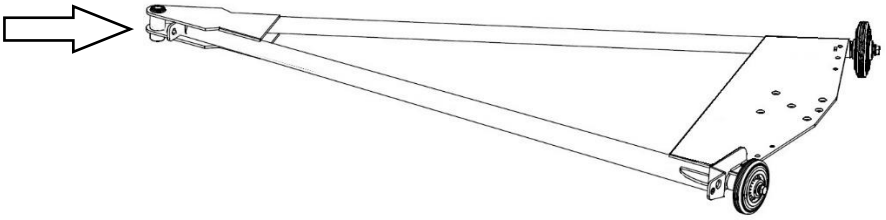
Step 1

Remove screws from the extreme anchor plate (item 2), right hand side or left hand side – order does not matter. Then connect the foot of extreme pillar (item 3) with the extreme anchor using hinge axle (item 24), and the other end of the pillar rests on the support (approx.. 80 cm high, not included in the set), a pallet can be put vertically for that purpose.

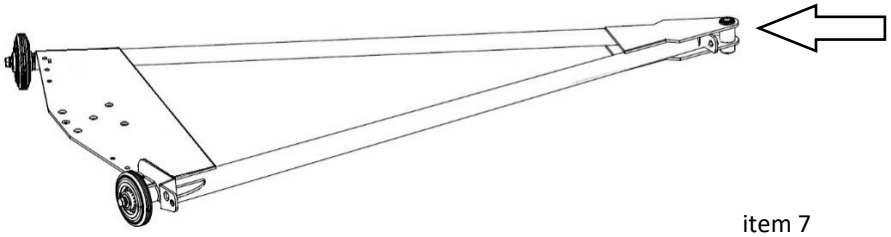


Step 2

Connect corresponding gate car, left hand side (item 8) or right hand side (item 7) looking from inside the cage, see below:

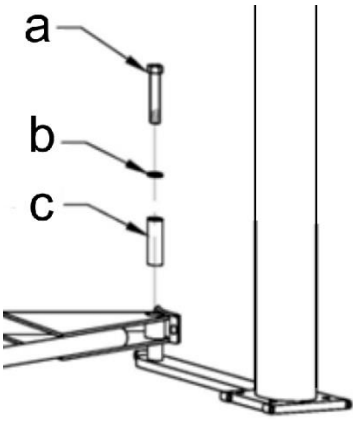


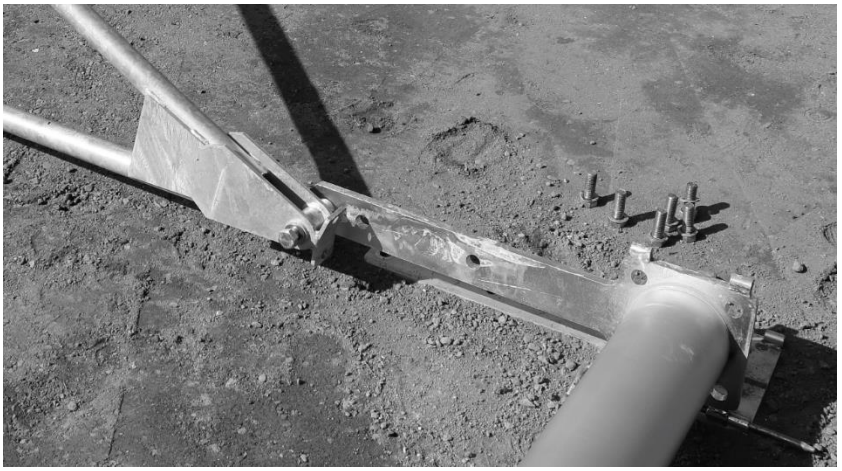
item 8



item 7

using car axle screw M 20 x 120 (a), car sleeve ∅ 20/ ∅ 30 (c) and washer ∅ 20/ ∅ 40 x 3 (b). The sleeve (c) must be greased before installation.





a – item 11 b – item 10 c – item 9

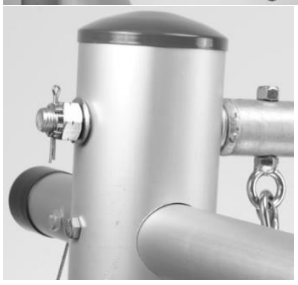
Step 3

Screw gate pillar (item 4) to gate car using screws, washers and nuts attached to the car. The gate pillar arm should be lined with the arm of the car. The other end of the pillar rests on the support (approx.. 120 cm high, not included in the set), a pallet can be put vertically for that purpose.

Step 4

Connect extreme pillar (item 3) with upper gate arm (item 12):

Attention! The connection between extreme pillar (item 3) and gate pillar (item 4) by means of upper gate arm (item 12) plays a key role in the safety of the cage construction.



slide the threaded end of upper gate arm in the sleeve of the gate pillar, install crown nut (item 12.1) , tighten it with wrench (item 25) until you feel the resistance,

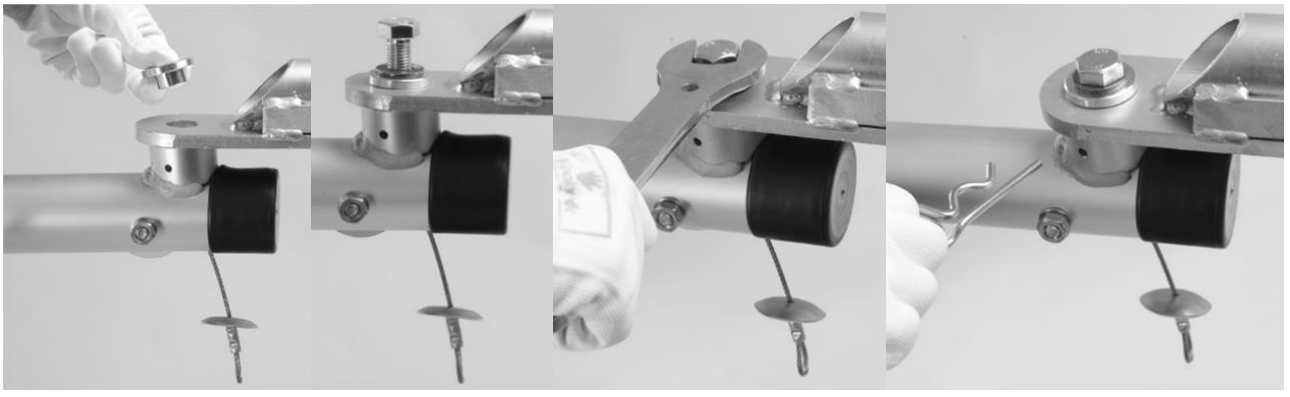
slide in split pin (item 12.2) in the threaded rod of upper gate arm, next bend the split pin ends to block it in the rod, use the safety wire with carabiner to fasten the pillar to the arm.

Step 5

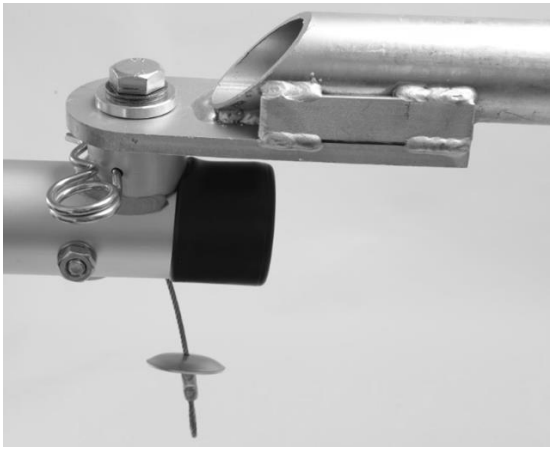
Connect gate pillar (item 4) with upper gate arm (item12)

Attention! The connection between gate pillar (item 4) and upper gate arm (item 12) plays a key role in the safety of the cage construction.

Press bolt (item 3.3) should be screwed into the pillar arm through sleeve (item 3.1) and Nord-Lock blocking washer (item 3.2), and properly tightened (until resistance is felt) using wrench (item 25). Next instal split pin (item 3.4) to secure press bolt.

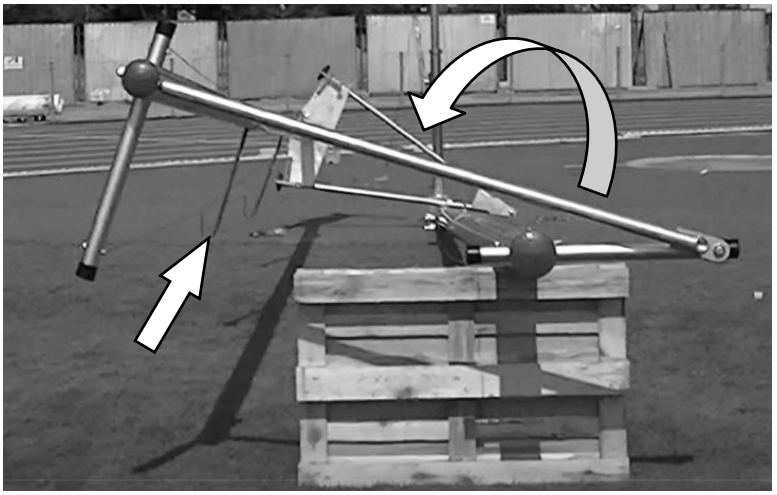


Correctly assembled connection is presented below:



Step 6

Rotate gate car together with gate pillar around the axis of the movable gate panel, until gate car rests on extreme pillar. During that operation extreme pillar is resting on the ground. The wheels of gate car and whole gate pillar are being hold at the height of 2 m approx. Now side cable arms (item 18) are to be installed, two for each gate pillar. The arms (item 18) are mounted at approx. 3 m and 6 m measured from ground. The mounting points are labelled with blue belts on gate pillars. At this stage you can also install cage pillar shields (OS290, OS296) and soft pads (OM-150), which are available as optional accessories. Please see the instruction manual of the shields for further information.



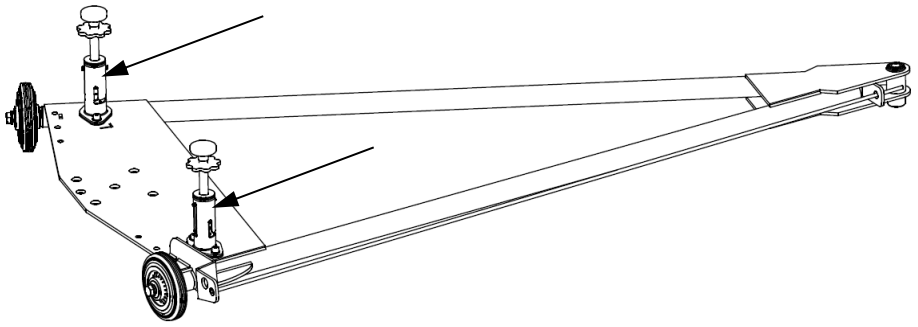
Step 7

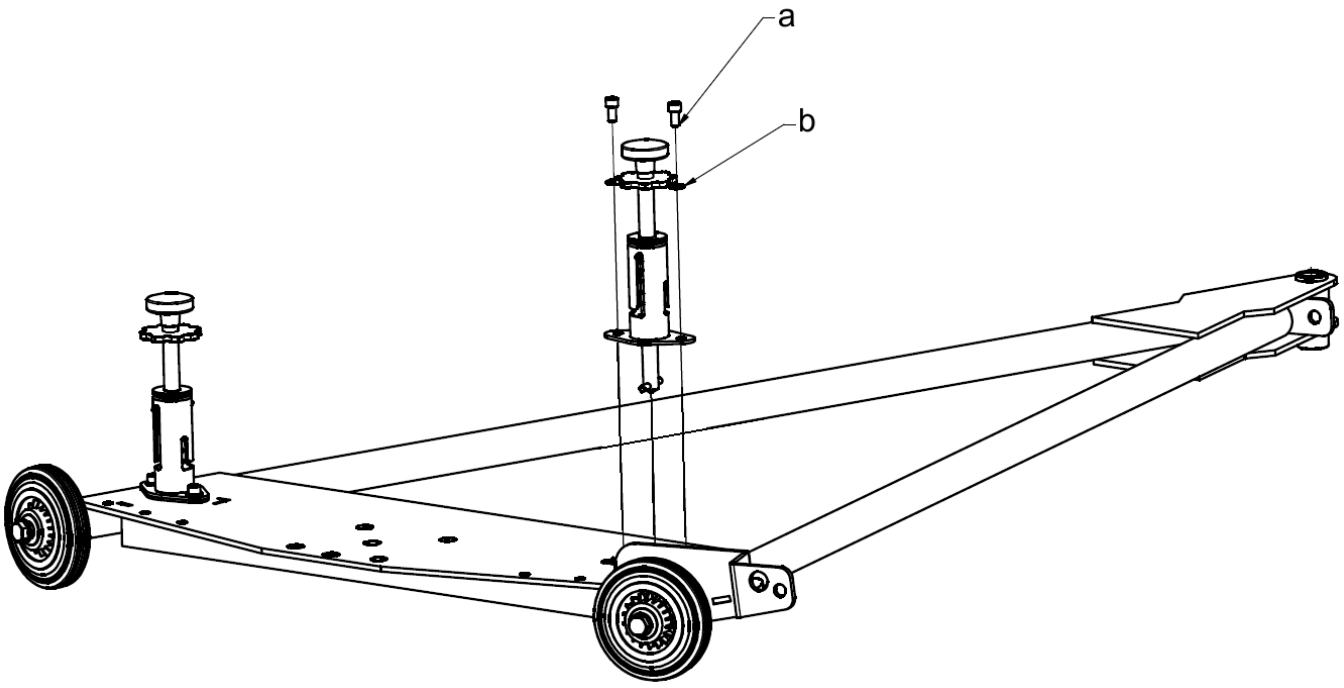
We recommend using Polanik cage gate lift CGL16-3 at that stage (see below the image), it is available separately. Please see the gate lift instruction manual for further information on lifting procedures. To lift the gate movable panel without the cage gate lift 6-8 men are required.

When the gate movable panel is raised, screw extreme pillar (item 3) to its anchor (item 2), see below.

Step 8

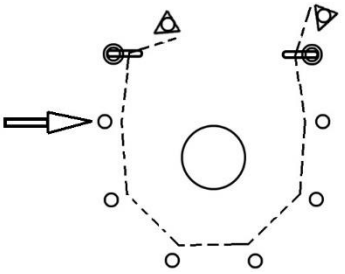
Install two fastening catches (item13) in each gate car (item 7 and 8) using included screws (a) and washers (b).

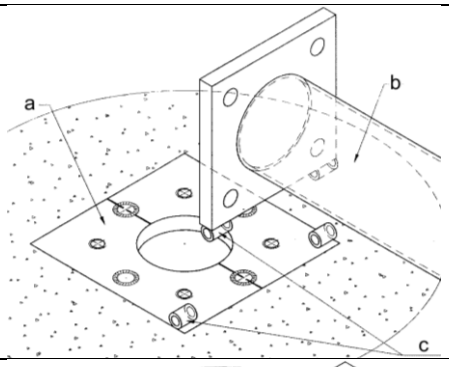
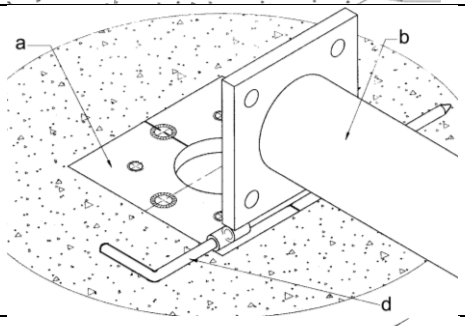
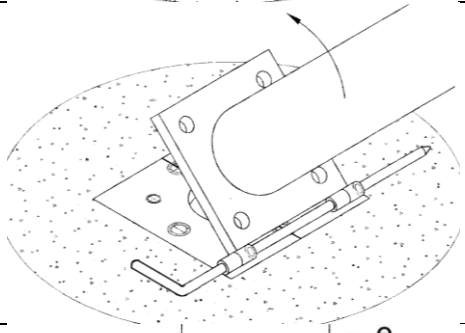
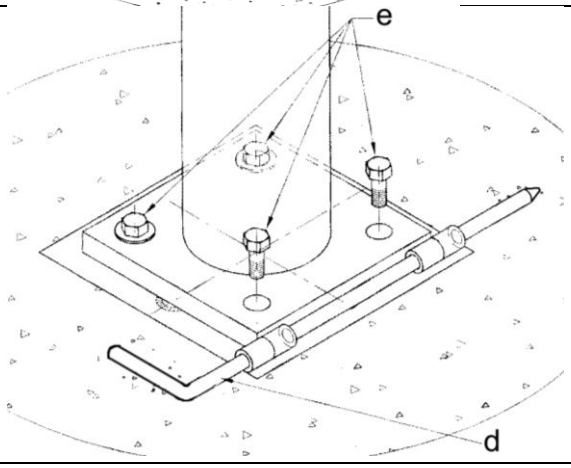




V. Central and rear pillars installation

Rear pillars (item 6) O are mounted according to the below scheme.

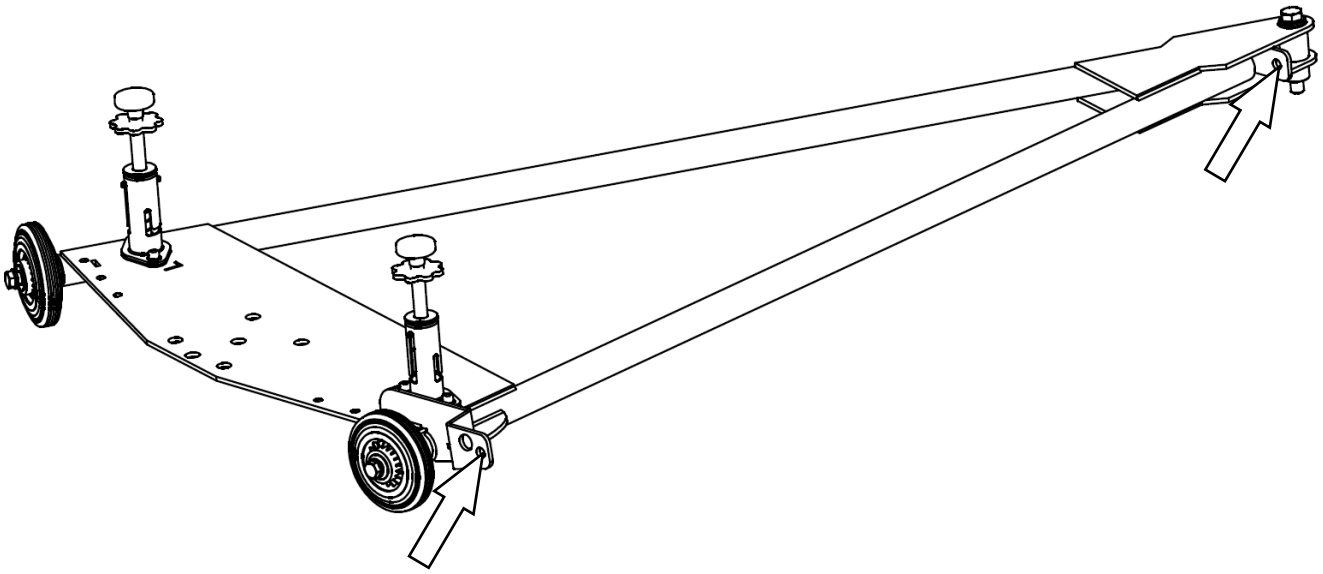


	Stage one Position pillar foot in anchor hinges. a – anchor b – cage pillar c – hinges
	Stage two Slide hinge axle (item 24) into the anchor and pillar foot hinges. a – anchor b – cage pillar d – hinge axle (item 24)
	Stage three Lift cage pillar to vertical position.
	Stage four While one person is supporting the pillar in upright position, the other person is screwing it to the anchor in the following sequence: screw down two screws (M 20 x 50) opposite the anchor hinges, then screw down two remaining screws (M 20 x 50) next to the anchor hinges, next remove hinge axle (item 24). d – hinge axle e – screws

VI. Net hoisting

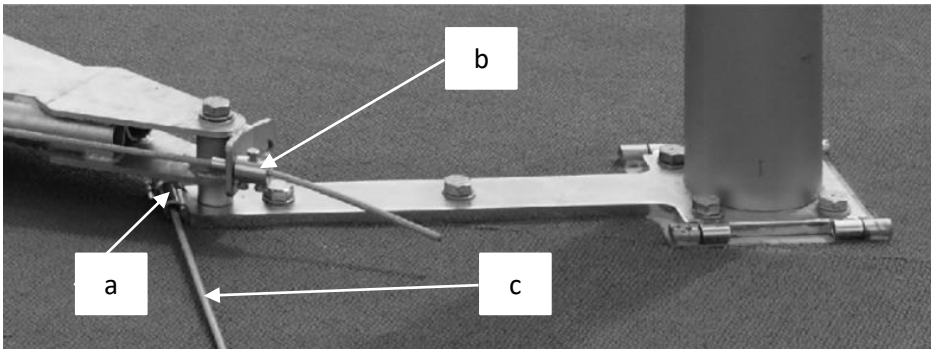
Step 1

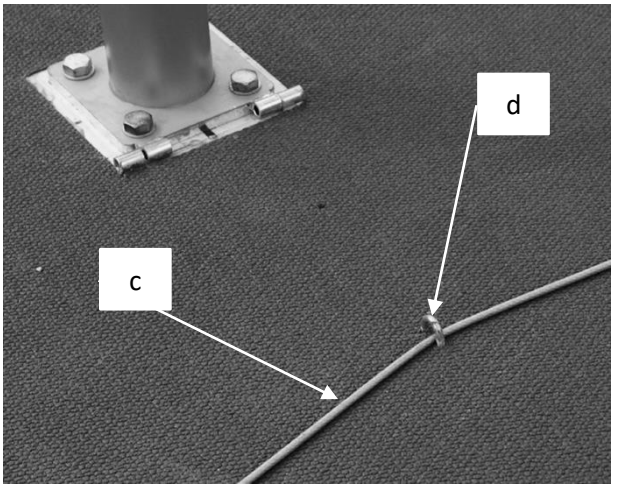
Gate car net tension cable (item 19) ought to be threaded through the eyelets in each gate car (item 7 and 8):



Bottom net tension cable (item 20) ought to be threaded through the eyelet of the extreme pillar foot and standard anchors:

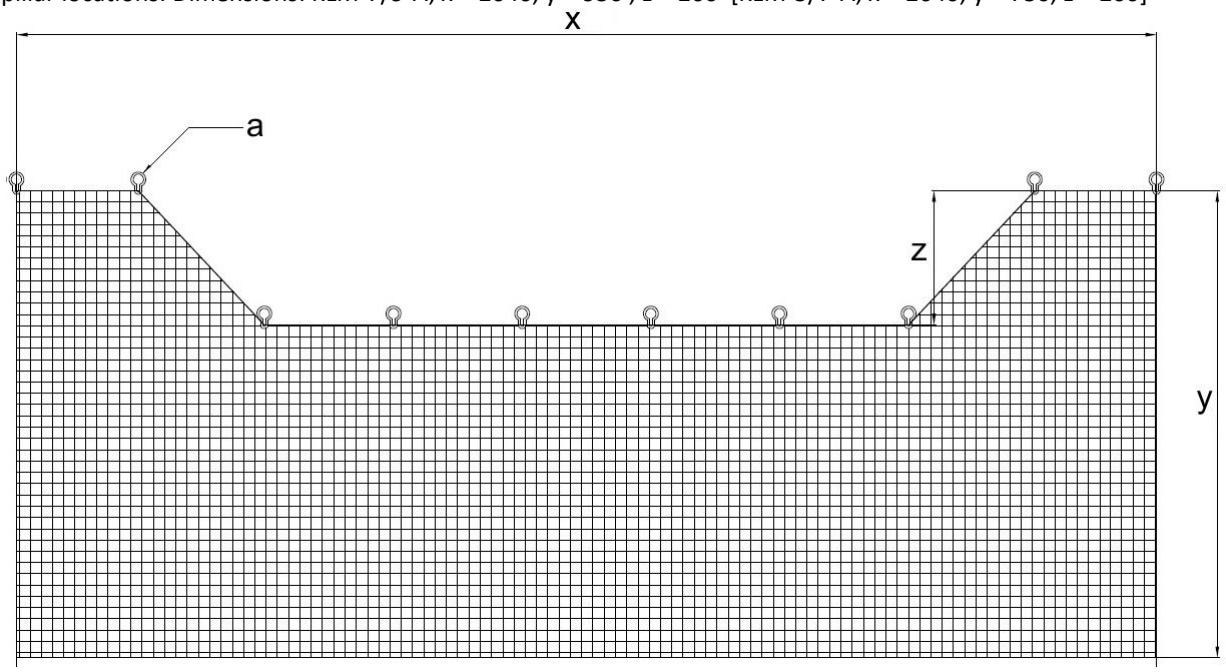
a – eyelet of extreme pillar foot
b – gate car net tension cable (item 19)
c – bottom net tension cable (item 20)
d – eyelet of standard anchor





Step 2

Place the net (item 17) on the ground, inside the cage, so that carabiners (a) mounted on the net edge correspond to pillar locations. Dimensions: KLM-7/9-A; x = 2640, y = 950 , z = 200 [KLM-5/7-A; x = 2640, y = 750, z = 200]

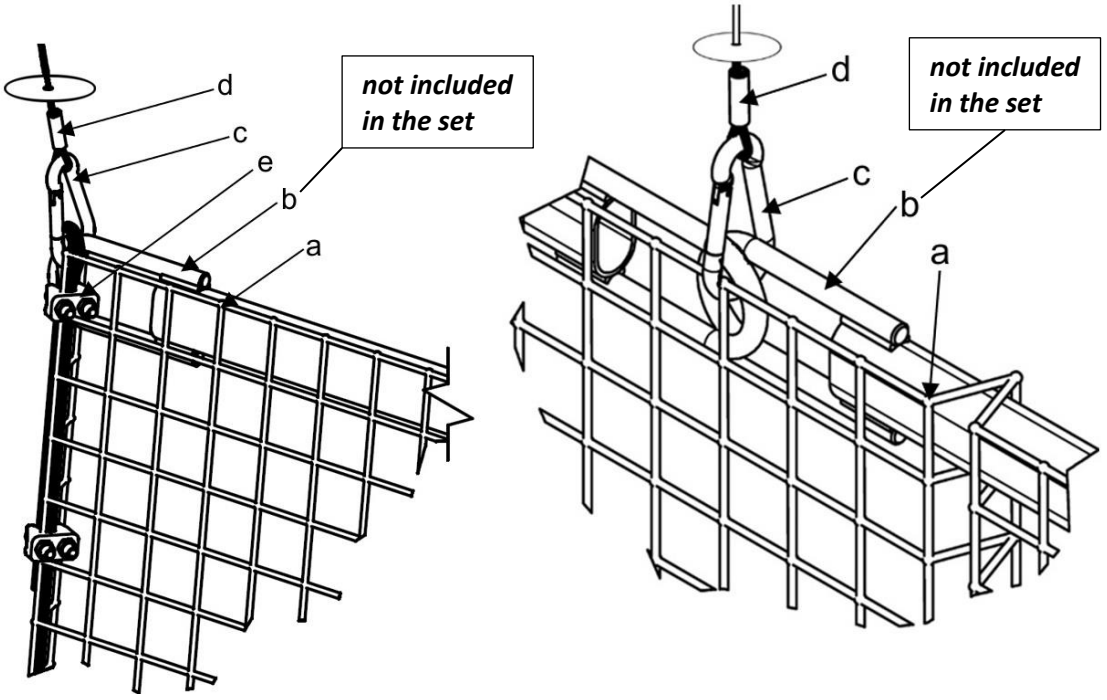


[cm]

Step 3

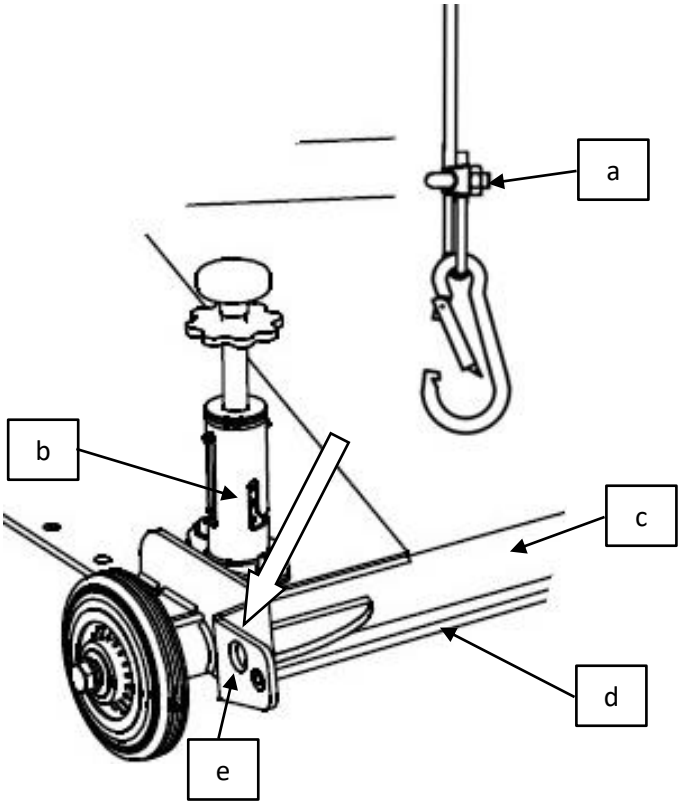
Attach the net to the steel rope of each pillar by means of carabiners, so that: edge steel cable (item 17.1) and net levelling connector (item 28) are connected together, net levelling connectors (item27) of the rest of the pillars are bond together.

a) net
b) net levelling connector is not included in the set
c) net carabiner
d) pillar steel rope
e) edge steel cable (item 17.1) weaved in net edge meshes



The bottom end of edge steel cable (item 17.1) should be attached to gate car (item 7 and 8), see below:

a) bottom end of edge steel cable (item 17.1)
b) fastening catch of gate car (item 13)
c) gate car (item 7)
d) gate car net tension cable (item19)
e) eyelet of gate car arm

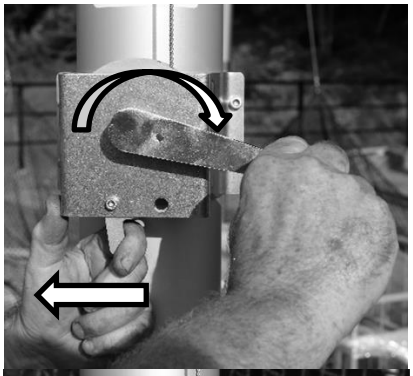


Step 4

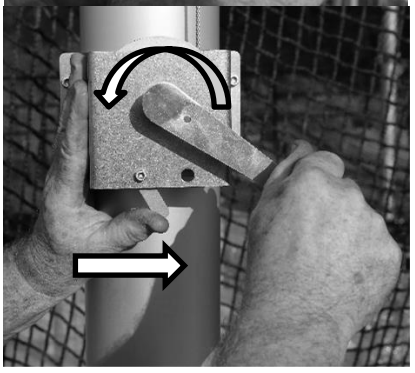
Lift the net successively by approx. 2 m at each pillar and continue lifting to the maximum height.
Do not lift the steel ropes of the pillars without the net – it may not be possible to lower them without the appropriate load.

How to operate the rachet mechanism

To lift the net:
- secure rachet lever with your left hand (pulling it towards left side) while turning the crank clockwise with your right hand
- operate the crank fluently with moderate pace



To lower the net:
- hold the crack with your right hand,
- push rachet lever towards right side with your left hand and hold it while turning the crank counterclockwise with your right hand
- operate the crank fluently with moderate pace
- before letting the crank go make sure the rachet is blocked by pulling the lever towards left side

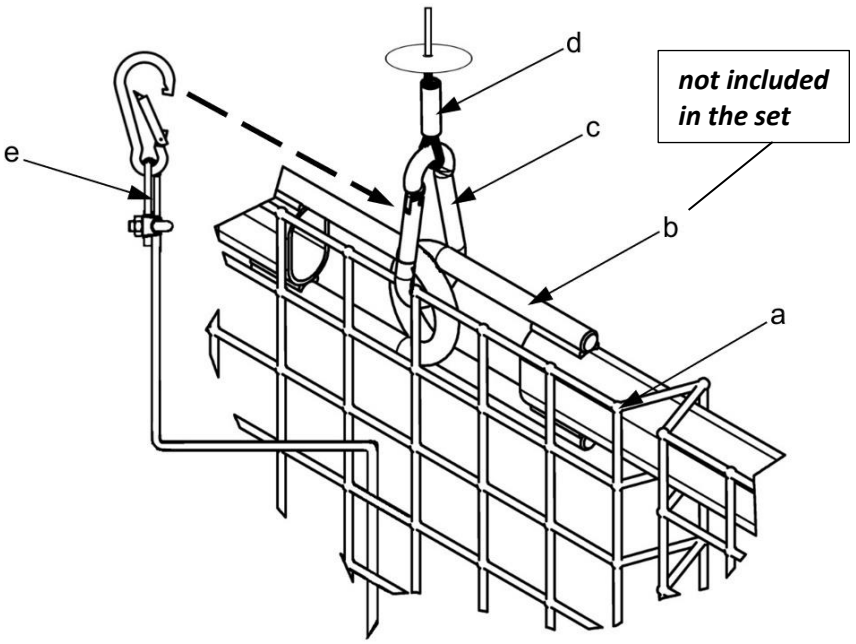


Check if the spacing of the carabiners and net levelling connectors is correct, the steel ropes of the pillars should be vertical, if they are at sharp angle and they pull the net towards one side or the other, the location of carabiners and net levelling connectors must be corrected.

Step 5

Lower the net, correct the location of carabiners and net levelling connectors if necessary. Install vertical rope with carabiner (item 21), length 11 m, at each extreme pillar and central pillar. Vertical rope with carabiner (item 22), length 8,5m must be installed at each rear pillar. The ropes are weaved in net meshes (every 0,5 m) and connected with each pillar steel rope.

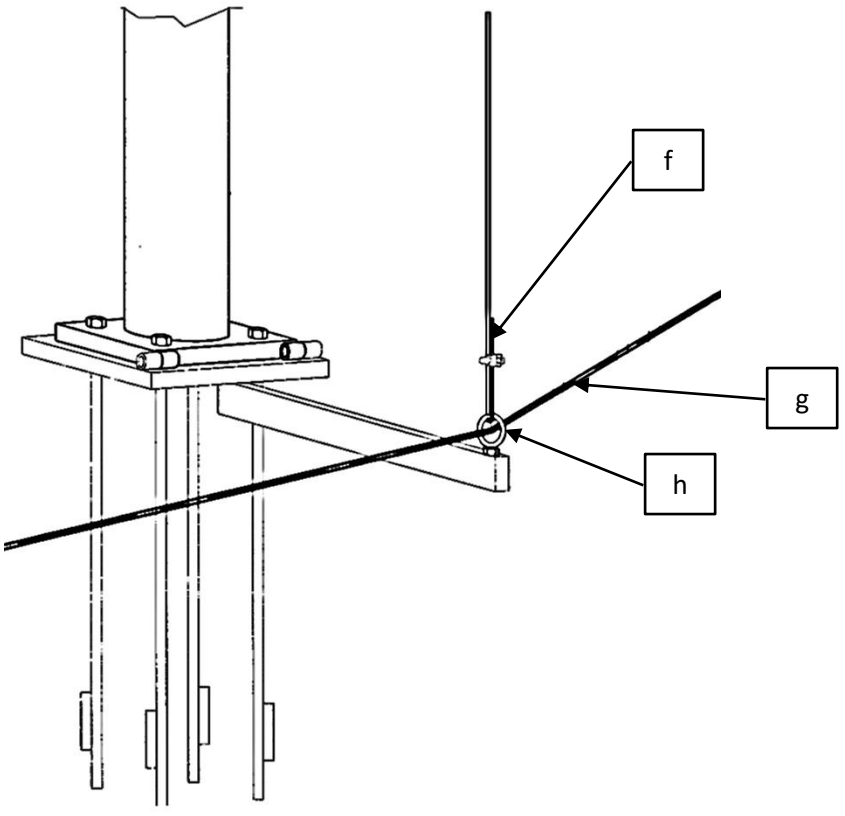
a) net
b) net levelling connector is not included in the set
c) net carabiner
d) cage pillar steel rope
e) vertical rope with carabiner (item 21 and 22) weaved in net meshes



Step 6

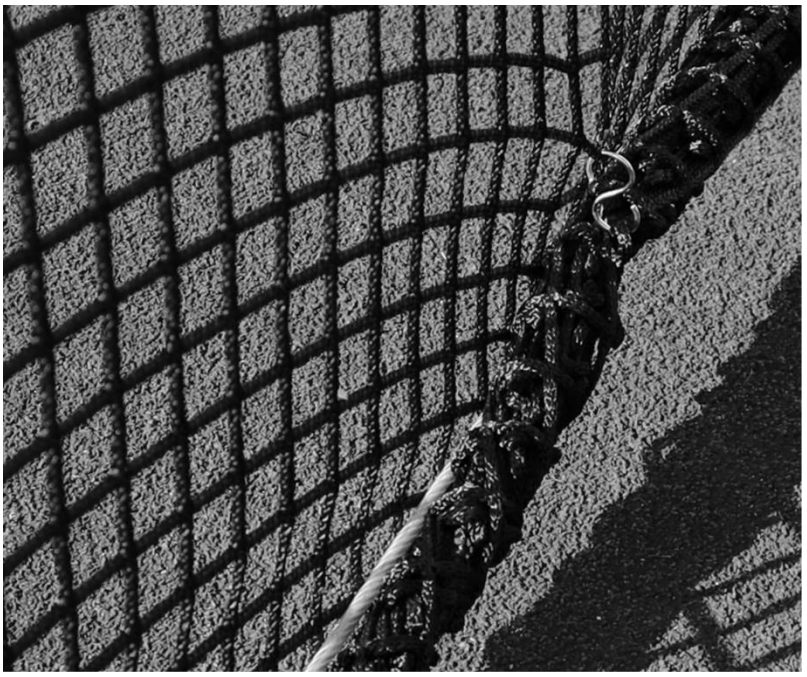
Lift the net successively by approx. 2 m at each pillar and continue lifting to the maximum height. The bottom end of vertical rope (item 21 and 22), which are weaved in net meshes, must be put through the eyelet of anchor arm and secured with steel clamp.

f) bottom end of vertical rope (item 21 and 22), weaved in net meshes
g) bottom net tension cable (item 20)
h) eyelet of anchor arm



Step 7

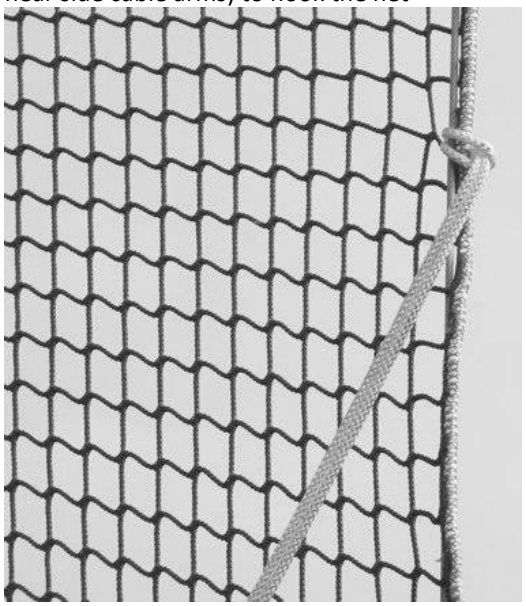
Put the bottom edge of the net under gate car cables (item 19) and bottom net tension cable (item 20), roll up the net, tighten it and fix to the net meshes with supplied hooks (item 23) on the whole circumference of the net.



Step 8

Next put the net front edges (with edge steel cable - item 17.1) into the hooks of side cable arms (item 18):

a) use auxiliary ropes (attached to the net edge near side cable arms) to hook the net



b) manoeuvre the net edge into the side arm hook (item 18),

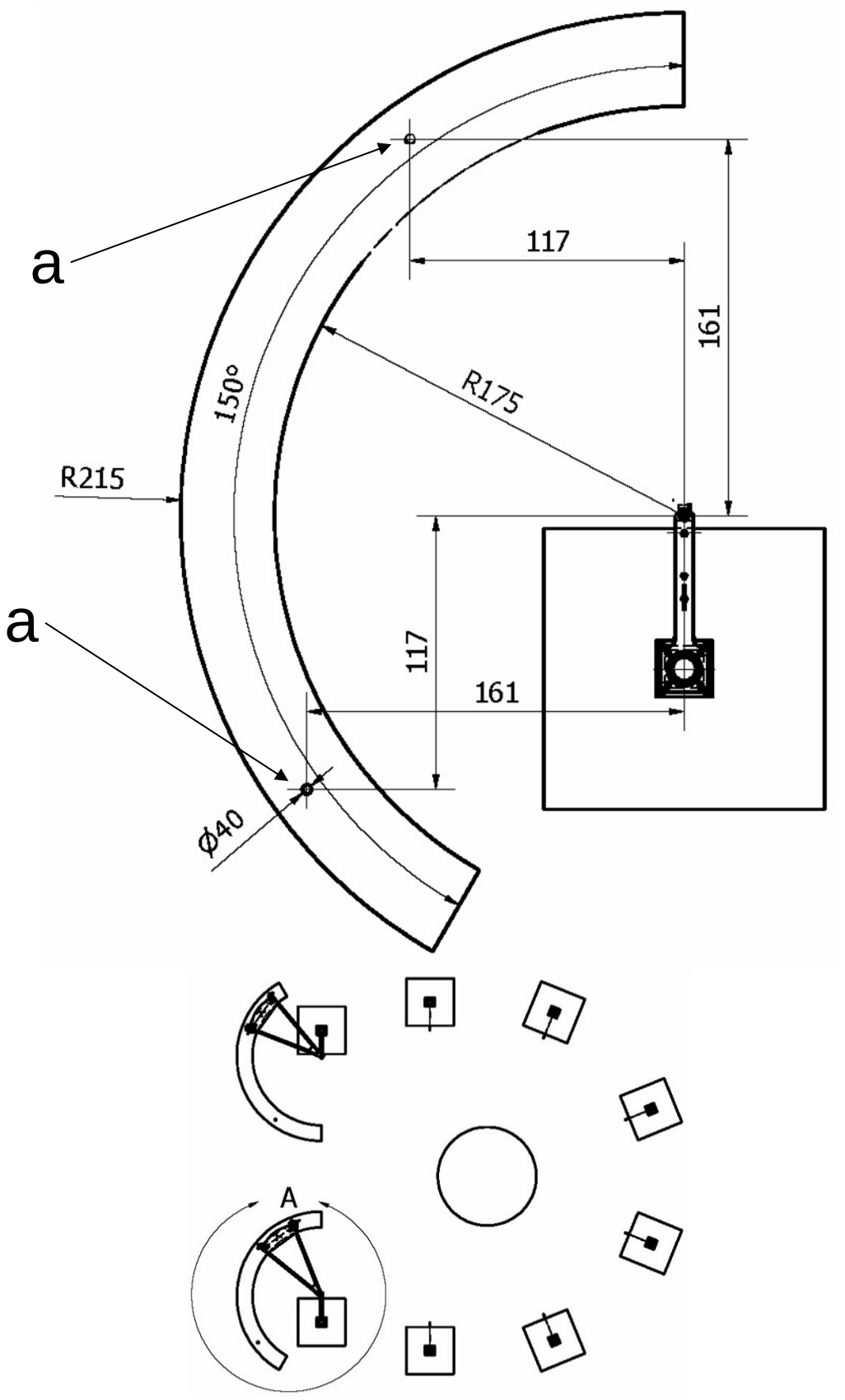
c) the net edge properly fastened to side cable arms.

VII. Final adjusting

Step 1

Mark out the mounting points (dia. 32 mm) of blocking sleeves (item 15) which determine the range of gate car movement (a) according to the below scheme.

Dimensions [cm]



Step 2

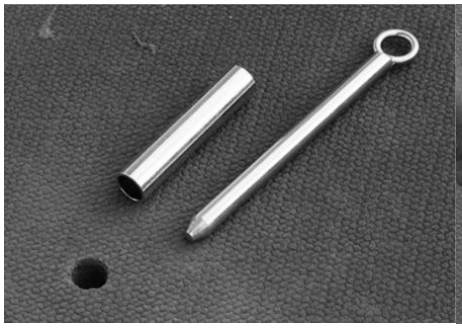
Before the holes for blocking sleeves (item 15) are drilled, position each gate car (item 7 and 8):

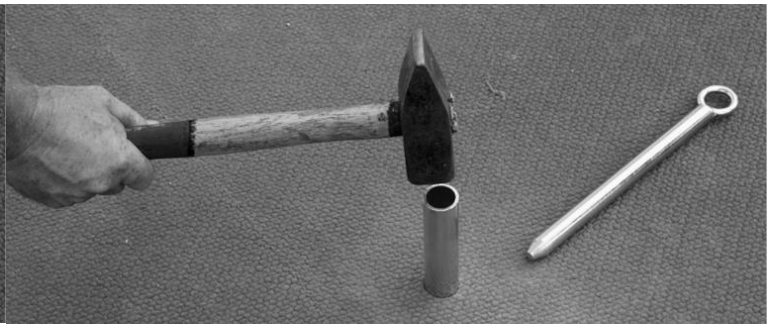
– gate closed, check the distance between the net edge and the cage axle, it should be 112 cm, while measuring make sure the net plane at gate car is at right angle to sector line
– gate open, check the distance between the net edge and the cage axle, it should be 361 cm, while measuring make sure the net plane at gate car is parallel to sector line

If the above distances differ from the mentioned values, correct positions of gate cars and mark out the mounting points once again.

Step 3

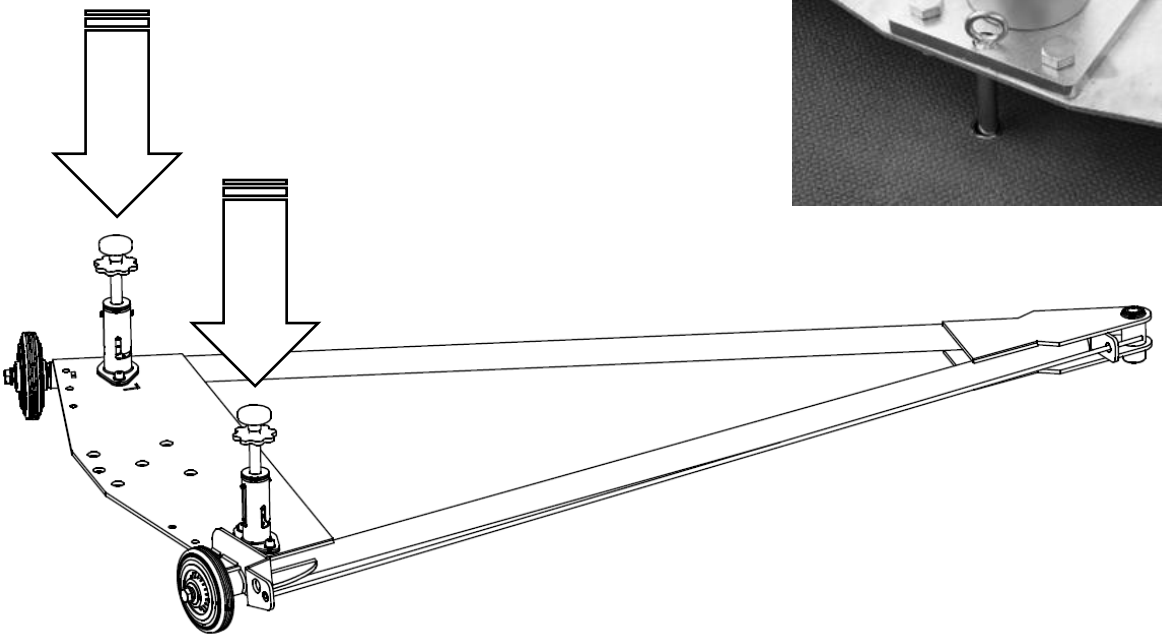
Drill the holes in the marked points, clear them with vacuum cleaner and then hammer the sleeves (item 15) into the holes.





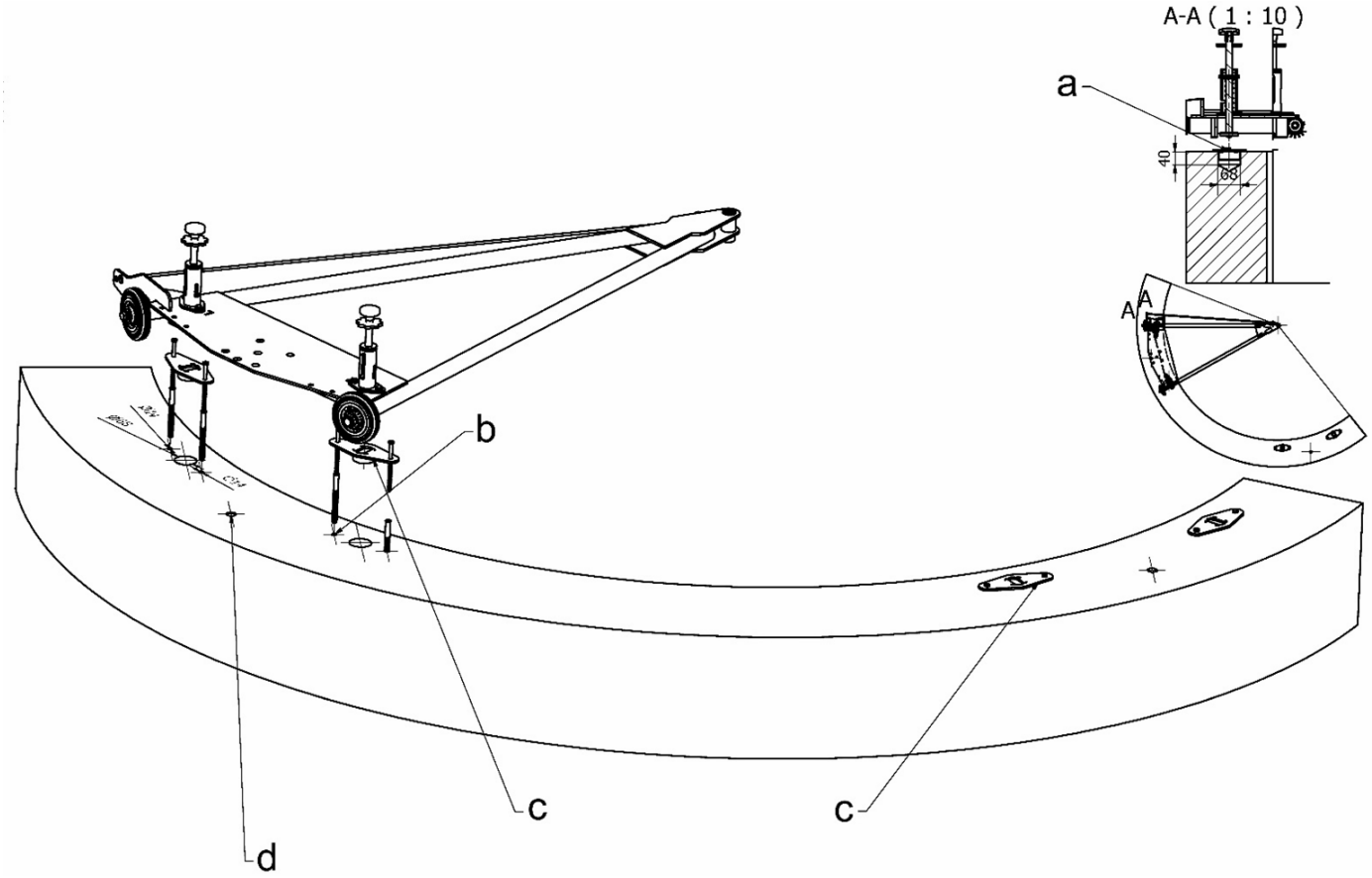
Step 4

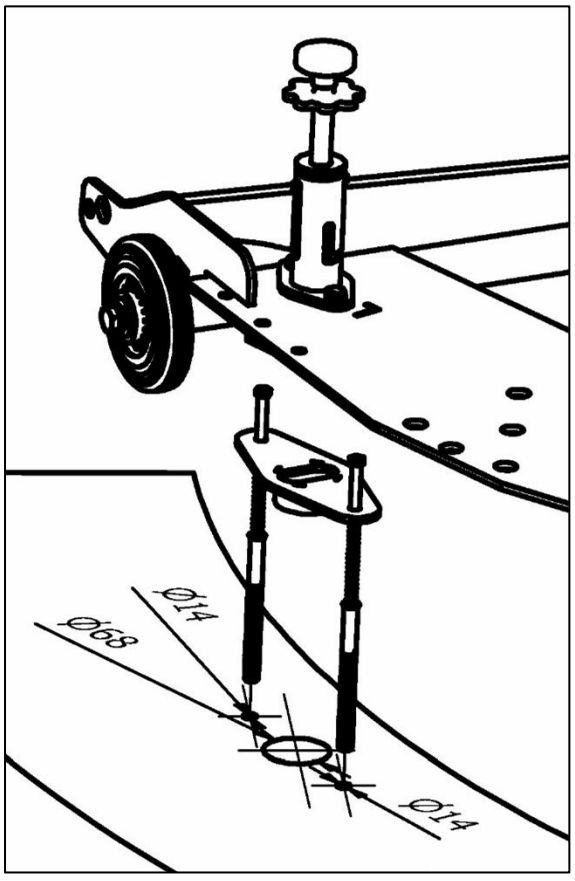
Block gate cars (item 7 and 8) using blocking pin (item 16) in the positions: gate closed and gate open, each time punch fastening catch (item 13) to mark out the points of mounting holes (dia. 68 mm) for anchoring plates (item 14).



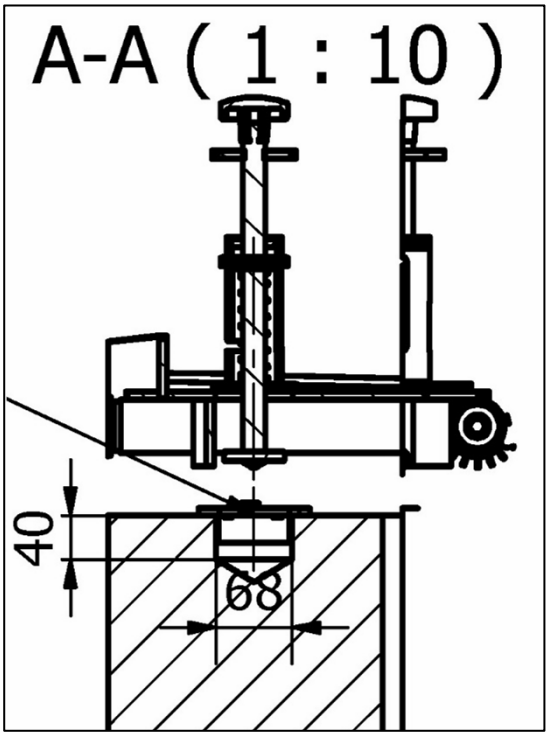
Step 5

Drill the holes (a) (dia. 68 mm) in the marked points, they should be 40 mm deep minimum. Place anchoring plates (c) (item 14) in the holes, position the plates in the holes according to the below drawing, mark out the points (b) for expansion anchors (dia. 14 mm and depth 180 mm), next clear them with vacuum cleaner. Fasten anchoring plates (c) with expansion anchors.





a) mounting hole dia.68 mm for anchoring plate
b) mounting hole dia. 14 mm and 180 mm deep for expansion anchor
c) anchoring plate
d) mounting hole dia. 32 mm for blocking sleeve (item 15)



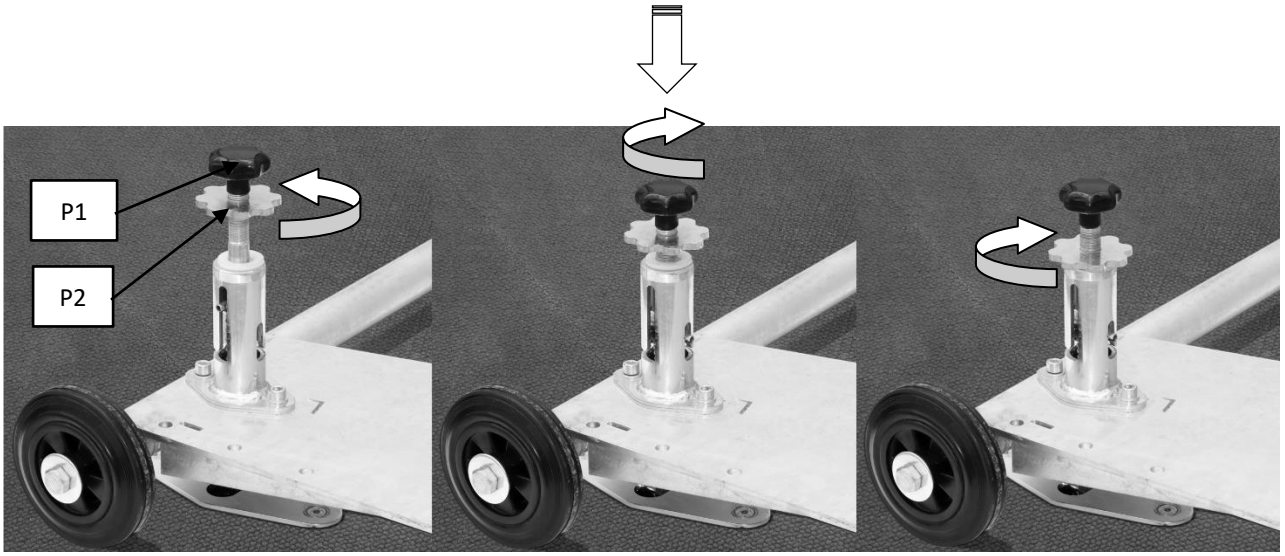
VIII. Cage operation and maintenance

As the producer we have done our best to make the cage guarantee maximum safety level, be easily operated and reliable in use. However the cage like any other pieces of sports equipment requires periodical inspections and must be used according to the instruction manual, the World Athletics rules and operated by authorized personnel.

Obligatory safety rules:

Lift the net only if you intend to use the cage!
Do not use the cage during strong winds or thunder storms!
During idle periods:

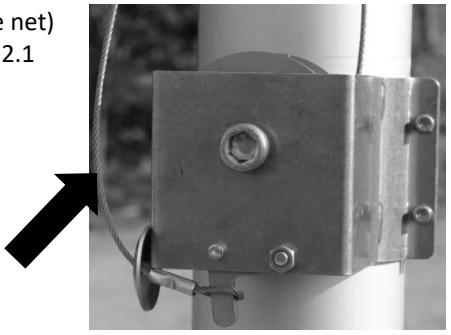
- the net must be absolutely lowered,
- the cage gate panels must be closed and blocked with blocking pins (item 16),
- fastening catches (item 13) of gate cars tightened: loosen handwheel (P2) turning it counterclockwise, next push down black handwheel (P1) and turn it clockwise until resistance is felt and the catch bolt is anchored in the plate, turn handwheel (P2) clockwise to tighten the catch,



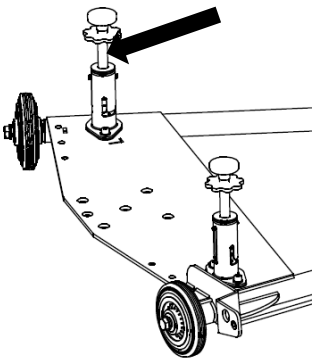
- if necessary gate pillars (item 4) can be tied together with rope dia. 16 mm minimum,
- remove cranks and store them in a safe place.

Obligatory maintenance procedures:

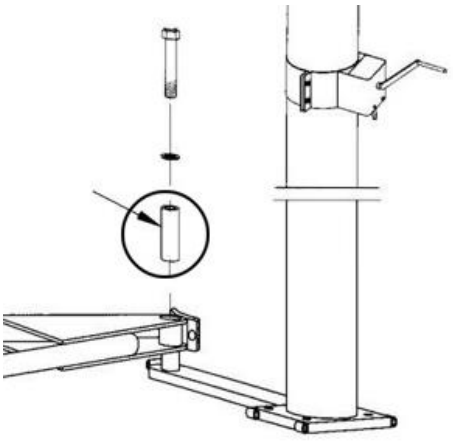
1.) Annually test the tensile strength of the net (use the mesh samples attached to the net) according to the WA guidelines (Technical guidelines, Throwing cages – July 2020, 6.3.2.1 Necessary Safety Precautions) in accordance with EN 1263-1.
2.) Before each athletics season:
a) clean the steel lines of the cage pillars and grease them with petroleum jelly,



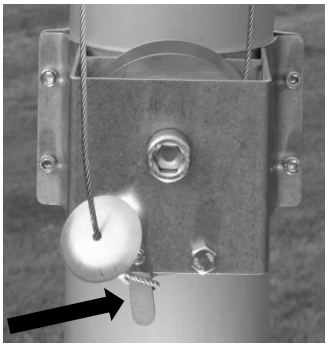
b) grease the press bolt of the gate car brakes with petroleum jelly,



c) grease the sleeves of the gate cars with bearing lubricant



3.) After each athletics season:
a) dismount the net provided it is dry and store it in a dry roofed place,
b) the steel lines should be always secured and strained when the net is taken off, it prevents the steel lines from hitting the anodized aluminium surfaces of the pillars,



c) it is strongly recommended to dismount also pillars and store them in a roofed and dry place.