INSTRUCTION MANUAL

TACRION

REINFORCED and accessories

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ARX Security recommends that a full Risk Assessment and RAMS are carried out prior to use and that PPE such as suitable gloves, hig visibility clothing and protective footwear are used during installation and recovery of this product.

TABLE OF CONTENTS

GENERAL

TACRION is a soft net made of a polymeric material measuring 2.5 m × 35 m. It is intended for users that require a mobile, compact and quickly deployable fence to guide, stop or protect crowds or individuals in different situations. TACRION can be supplemented with various optional Accessories to serve other purposes, for example a *counter observation cover, information signs*, etc.

Compared to low fences, the extra height of TACRION provides added protection for security staff against violent persons and thrown projectiles. The soft material enables security staff to defend themselves by interacting through the net. The extra height and the possibility to affect individuals through the net means that TACRION needs less people to protect the barrier compared to traditional fencing.

TACRION requires anchor points for deployment. Depending on the situation and the breaking force that must be ensured, vehicles, containers, mounts on house facades, Hesco Bastions, posts, trees and other objects can be used as anchor points.

Installation must always be carried out according to the instructions in the Instruction Manual.

A basic TACRION deployment kit consists of three bags and a set of support posts. A fourth bag with various attachments is optionally available.

Unit 1: Bag with net, Unit 2: Telescopic support posts, Unit 3: Bag with wire pulley 1, Unit 4: Bag with wire pulley 2, Unit 5: Attachment kit

DATA

General

Deployed height:	Approx. 2.4 - 2.5 m
Maximum deployed length:	35 m
Total weight:	185 kg
Mesh size:	~ 60 mm
Breaking force/mesh:	> 2.5 kN
Overall breaking force:	> 50 kN
Colour:	Green
Fire resistance:	Complies with DIN 4102-1 B1 and B2
Useful life time in storage:	10 years

Unit 1 - Net

Total weight:	95 kg
Size:	110 cm × 90 cm × 70 cm
Carrying system:	Bag with six carrying handles

Included parts	Quantity
Net	1
Bag	1

Unit 2 - Telescopic support posts

Weight:	38 kg
Size:	150 cm × 20 cm × 15 cm
Carrying system:	Two carrying straps

Included parts	Quantity
Support posts	4
Carrying straps	2

DATA

Unit 3 and 4 – Wire pulleys

Weight per unit:	26 kg
Size/bag:	67 cm × 38 cm × 16 cm
Carrying system:	Bag with two carrying handles

Included parts per unit	Quantity
Wire pulley and telescoping rod	1
Tight-end ratchet, including twelve carabiner hooks (supplied with Unit 4)	1
Manual (supplied with Unit 3)	1
Bag	1

Unit 5 – Attachment kit (optional)

Weight per unit:	Approx. 20 kg
Size/bag:	70 cm × 40 cm × 20 cm
Carrying system:	Bag with two carrying handles

Included parts per unit	Quantity
Lifting straps with steel wire [1], 0.5 m	4
Lifting strap with steel wire, 2.75 m	2
Wheel chocks for vehicles [2]	2
Rachet strap, 3 m	4
Bag	1

1. Universal roundsling for fitting primarily on containers and upper anchor points on vehicles
2. Double as lower anchor points behind the wheels for deployment between vehicles in combination with 2,75 m Lifting Strap

DESIGN AND FUNCTION

TACRION is a fence that is intended to be pulled taut horizontally between four anchor points: two points for the lower wire and two points for the upper wire. The anchor points should be maximum 35 m from each other, and should be aligned horizontally.

Unit 1 contents:
One net with two wires and hooks on one side for mounting on two anchor points. The other side of the net should be secured using the wire pulleys, which should be connected to the two remaining anchor points and then to the wires in the net.

Unit 2 contents:
Four telescoping support posts to be set along the net between the upper and lower wires to stabilise the net and reduce the force on the anchor points.

Unit 3 and 4 contents/unit:
One wire pulley with pulling clamp for pulling the wire in the net taut. TACRION Instruction manual (only Unit 3)

Unit 5:
Four steel wire lifting straps each 0.5 m long for universal attachment, in particular to the corner castings on containers and top anchor points on vehicles.

Two wheel chocks that serve as the lower anchor points at each wheel/side combined with the 2,75 m lifting strap when anchoring TACRION to vehicles.

Tight-end with ratchet strap and carabiners, enabling temporary pass-through at the same side as the pulleys are mounted.

NOTE: – Vehicles used as anchor points must have a minimum weight of 5 tonnes.

ANCHOR POINTS

This chapter describes the various anchor points that can be used. In addition to these examples, there are numerous other objects that can be used to anchor the net, however, each anchor point must be able to support TACRION's total breaking force of 50 kN or the expected load that can be assumed. Those responsible must assess the load-bearing capacity of the anchor points.

NOTE: All upper anchor points should be max. 2.5 metres above ground, while the lower anchor points should be approx. 5 cm above ground

Lifting strap

Vehicles – wheel chock, 0.5 m lifting strap and 2,75 m lifting strap

Use the wheel chock and 2,75 m lifting strap. Arrange the lower anchor point by placing 1 wheel chock behind one of the wheels on each vehicle, and then pull one 2,75 m lifting strap around the wheel and wheel chock to form an anchor loop that points towards the corresponding lower anchor point on the opposite side. Arrange the upper anchor point on each vehicle by using 1 lifting strap (0.5 m long), slipping it through one of the anchor points on the roof of the vehicle so that the loop points towards the corresponding upper anchor point on the opposite side

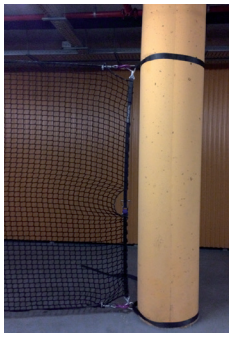


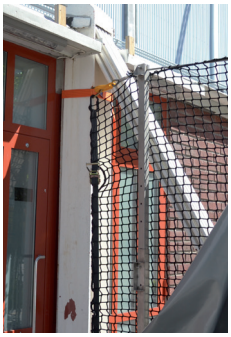


ANCHOR POINTS

Ratchet Strap

Columns, trees, poles, beams and other objects – 3 m ratchet strap





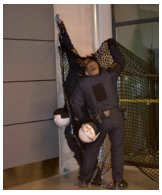

Prepare the lower anchor point by placing the ratchet strap around the object and make sure the fastening loop points towards the corresponding lower anchor point on the other side. Insert the strap end through the ratchet and tension. Arrange the upper anchor point by performing the same procedure as for the lower anchor point

Container – 0.5 m lifting strap

Prepare the upper anchor point by pulling the 0.5 m lifting strap through the upper corner casting on the container (front or rear). The fastening loop should point towards the corresponding anchor point on the opposite side. Repeat the process for the lower corner casting.


Walls – anchor bolts

Secure the anchor bolt in concrete or natural stone foundations according to the instructions in the section ANCHOR POINTS and MACHINERY.

ANCHOR POINTS and MACHINERY

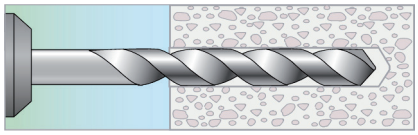
Operating instructions for the hammer drill are included with the tool.

Anchor bolt with lifting eyelet

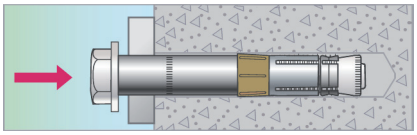
The SUPERPLUS M16/30/220 BLS anchor bolt is designed for anchoring in concrete and natural stone. It complies with Class 3 Safety applications. SUPER PLUS is an excellent anchor point for dynamic loads, offering high load ratings even in cracked concrete, for example under slabs and beams. The lifting eyelet is secured to the anchor bolt using a torque wrench.

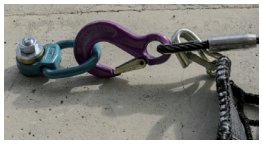
TIP – Following completed deployment, the lifting eyelet could be removed for later reuse.

1. Drill a minimum 200 mm deep hole using a 25 mm drill bit.

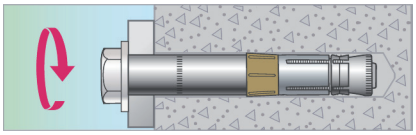


2. Slip the lifting eyelet onto the anchor bolt sleeve at the marking. Then press/tap the anchor bolt into the drilled hole.





3. Tighten the bolt to 180 Nm using a torque wrench. The torque wrench needs to be set to the correct torque. A click sounds when this torque is reached. The anchors are now ready for use.



Name	Min. concrete thickness, mm	Min. concrete thickness for transverse loads, etc.	Tension load[3] Concrete C20/25kN	Tension load, concrete C50/60kN	Transverse load, concrete C20/25kN	Transverse load, concrete C50/60kN
BLS M16	300	338	38.9	60.3	74.7	74.7

3. All load values related to tension loads and transverse loads apply for anchoring without any regards for edge and/or relative spacing. For applications where edge and/or relative spacing could be an issue, please contact Technical Support at CRD Protection.

OPERATION

Recommended personnel are 6 persons (minimum 2 persons).

TIP – To reduce the deployment/dismantling time, several of the procedures can be performed simultaneously.

Preparations

a. Locate two objects and prepare a total of four anchor points, one low point and one high point, on each side/object.
NOTE – The two lower anchor points should be approx. 5 cm above ground and the two upper points approx. 2.4–2.5 m above ground.

Assembly

a. (2-6 persons) Place all carrying units at the anchor points where the pulleys will be placed.
TIP – To simplify deployment, right-handed persons are recommended to place the wire pulleys on the right side of the perimeter protected by the personnel.

b. (2 persons) Open Unit 1 and grab one hook each, then walk towards the anchor points on the opposite side. The net will automatically be pulled out of the bag.
NOTE – To prevent excessive wear, do not drag the net along the ground. Additional staff is recommended to help hold the net above ground.

c. (1-2 persons) Attach the two hooks at the end of each wire to the upper anchor point, and the other hook to the lower anchor point.

d. (1-2 persons) Walk along the net and straighten out both wires of the net to make sure the wires are correctly connected to the upper and lower wire pulley.

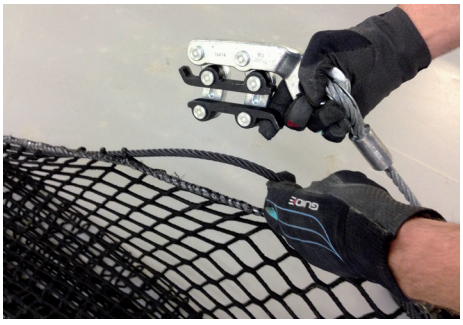
Wire pulley installation

e. *(2 persons) Open Unit 3 and 4 and take out the wire pulleys. Two persons should hook up the upper wire pulley, and one person hooks up the lower pulley to the anchor points. Only one person should be responsible for tightening both wire pulleys.*

NOTE – The upper wire pulley should have approximately 3 m of wire pulled out to ensure the pulling clamp will engage correctly with the wire of the net. If the wire in the upper wire pulley is too short, the entire procedure will need to be repeated, including taking down the net, and re-attach the pulling clamp. Use protective eyewear when using the wire pulleys.

f. *(1-2 persons) One person should pull the upper wire of the net towards the upper wire pulley to stretch the net. The other person should then place the pulling clamp of the upper wire pulley at an appropriate point on the upper wire of the net.*

NOTE – To prevent the net from becoming entagled in the pulling clamp during attachment make sure the wire is completely exposed. When the pulling clamp is in postion tension the upper wire pulley first.



g. (1 person) Set the telescoping rod for the upper wire pulley in the stay closest to the anchor point.

1. When the rod has been inserted in the stay, turn it one half turn to the locked position.

2. (right-handed persons) Hold the yellow handle of the wire pulley with the left hand for improved stability, and use the right hand to tension the wire in the wire pulley by moving the rod back and forth.

3. Stop when the upper wire of the net has cleared the ground and the middle part of the deployed net has reached approx. 1,8 m

4. Repeat step g) for the lower wire pulley and tension this wire until it is completely straight.

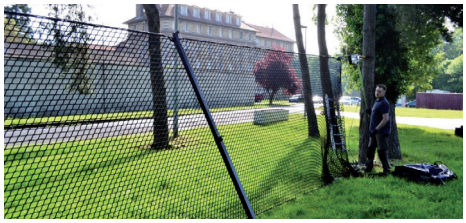
Support post installation

h. (1-4 persons) Place all the support posts along the net on the ground to judge the distance between the support posts before installing them.
NOTE – For example, the posts for a deployed 30 m TACRION net should be spaced at 6 m intervals to better distribute the force of a crowd.

1. Pull out the centre pin and adjust the support posts to the desired length. The support posts are telescopic and can be adjusted to a length of 2–2.5 m. Lock the height by reinserting the pin.

   TIP –The recommended height is approx. 2.4-2.5 m, if the ground is not level, some posts can be adjusted to become shorter.

2. Pull out the pin from the top of the support post, insert the upper wire and then reinsert the pin.



3. Tighten the upper wire pulley further to facilitate mounting of the support posts in the lower wire and prevent the support posts from swaying.

4. (2 persons) Set each support post in the lower wire. One person should lift up the support post vertically, while the other person uncovers the lower wire and places it in the groove and then reinserts the pin.

5. Readjust each support post by pushing them by hand until all of them are perfectly vertical.
NOTE – The upper and lower wire should rest horizontally in the grooves of the support post to facilitate reinsertion and locking of the pin. If a support post is sloping, the wire will cover the hole and it will not be possible to reinsert the pin. Only the wire should be set in the groove of the support post. If the net is locked in the groove, there is a risk that the net could rip when it is subjected to loads.

i. *(1 person) Using the wire pulleys, readjust the wire tension until the net feels stable. A force of 400-600 kg/wire is recommended.*

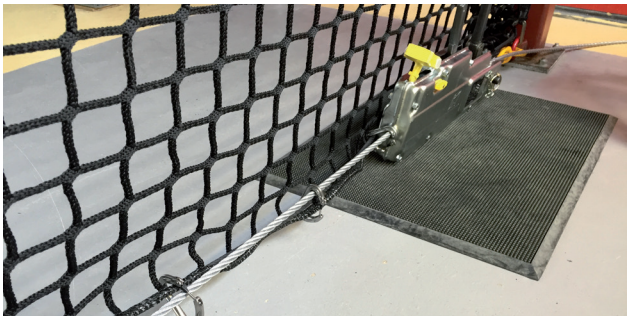
TIP – The upper and lower wire should not be over-tightened since this will cause an undue load on the anchor points. Both wires should only be tightened so much until the support posts stand vertical and do not lean in any direction after the net is subjected to a load by 1 or 2 persons.

NOTE – Always monitor the anchor points when the wire pulleys are tightened to make sure the points are properly anchored and do not break/move.

j. (1 person) Lock the short side of the net without wire pulleys by tensioning the black strap with the blue ratchet fitted on the net.
TIP – When the net is deployed, the ratchet can easily be released and used to open up a small passage.

Tight-End installation

k. (2 persons) Install the upper part of the net along the upper wire pulley towards the anchor point using 6 carabiner hooks. Do the same for the lower wire with the other 6 carabiner hooks. Slip the short black strap with the tensioner and carabiner hook through the desired number of mesh-holes in the net,and then hook the carabiner hook onto the upper anchor point (the blue ratchet should be freely suspended at approximately 30 cm). Then hook the other longer strap to the lower anchor point, and slip the strap through the desired number of mesh-holes in the net up towards the blue ratchet. Thread the strap through the ratchet, and tighten it to lock the short side of the net until it is in the same position as in picture j.



Temporary pass-through – three options

l. Option 1 – (1-2 persons) Both short sides of the net have a Tight-End. To allow people to pass through, release the blue ratchet on either short side to create a passage.

m. Option 2 – To create a larger passage, the carabiners on the side with the wire pulleys can be unhooked from the wires.

n. Option 3 – (1 person) Temporary lowering of TACRION. Place the rod for the upper wire pulley in the stay at the front of the pulley and move it back and forth until the net has been lowered to the ground. Repeat this for the lower wire pulley

NOTE - To enable lowering of TACRION, the Tight-end on the side with the wire pulleys must first be removed.

NOTE – The lower wire pulley must always be released first to allow vehicles and persons to pass.

o. *(2-5 persons) Redeploy the net by first tightening the lower wire pulley, then the upper wire pulley until the TACRION net is in the correct deployed position.*
NOTE – Following temporary lowering of the net, the support posts should always be readjusted when the net is redeployed. One person should readjust the support posts by pushing them laterally until all posts are perfectly vertical.

Dismantling

p. *(1-2 persons) If the Tight-end has been installed on the short side where the wire pulleys are placed, first release the blue ratchet and then unhook the carabiners from the upper and lower wire. Put the strap with the ratchet and the carabiners into Unit 4.*

q. (1-4 person) First unhook each support post from the lower wire and pull out each support post until they are slanting against the net. Then unhook the support posts from the upper wire.

r. (1 person) Place the rod in the front stay of the upper wire pulley and lower the net until the pulling clamp can be released by hand.

s. (Repeat step r) for the lower wire pulley.

t. (1-4 persons) Take out the wire from the top of the support post, and retract all support posts to the transport position. Then place them in pairs on the carrying straps. Tighten the straps around the posts.

u. (1 person) Release the blue ratchet at the opposite short side of the net.

v. (1 person) Unhook the upper and lower hook from the anchor points.

w. (2-6 persons) Take hold of the upper and lower wire of the net at 5 m intervals. Lift the net off the ground to prevent undue wear. Two persons should then hold the bag while a third person packs the net into the bag.

TIP – To make the bag as compact as possible, distribute the net evenly in the bag. No special folding is required, however. Roll up the bag's top and press out residual air to make the unit as compact as possible.

MAINTENANCE

Before use

a. Check the wire pulleys for proper operation by checking whether the wire can travel unhindered forwards and backwards.

b. Check the upper and lower wire of the net for damage/ruptures.

c. Make sure the object that will hold the anchor points can withstand the expected load of the net.

After use

a. Check that all components are in place and that they are clean and intact.

b. Wash and clean the gear when necessary. The net and the other components should be washed with lukewarm water and natural soap.

c. Allow the net and the other components to dry completely before putting them away for extended storage (more than 24 hours). The best way to dry the net is to hang it up at room temperature. Alternatively, the net can also be dried in a dry air drier.

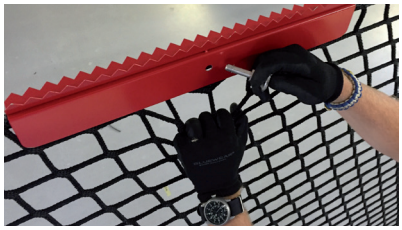
TROUBLESHOOTING

ISSUE	POSSIBLE CAUSE	CORRECTIVE ACTION
The wire pulley fails to tension the wire in the pulley	The latch for manual release of the wire is engaged	Reset the latch by hand by turning the yellow button on the right side of the rod while at the same time pushing the yellow lever forwards until a click is heard. See picture 9 in the Tirfor manual.
The wire pulley fails to tension the wire in the pulley	Broken shear pin	Use the repair kit. Use a hammer to insert a new shear pin next to the stay. See picture 20 in the Tirfor manual.
The pin of a support post does not engage in the locked position	Dirt in the support post hole	Blow or shake out the dirt from the hole
Damaged net (cut meshing)	Knife	Use the repair kit. Mend the cut using cable ties to pull together the neighbouring mesh wires. One cable tie per loop. Once attached, use cutters to cut off the ends of the cable ties
Damaged net (burnt)	Fire	Use the repair kit. Cut off damaged mesh wires using cutters. Replace with spare net. Use cable ties to attach the meshing. One cable tie per loop. Once attached, use the cutters to cut off the ends of the cable ties.

ACCESSORIES

Anti climb system

Use the units to prevent or impede persons from climbing over the TACRION.
Install a unit on the upper or lower wire by removing the pin and slipping the unit over the wire and then reinserting the pin.
TIP – To avoid the net obstructing the reinsertion of the pin, the user should pull the net to clear the hole.



Counter observation cover

The cover prevents people from looking into the protected area and can be manufactured with has multispectral properties (thermal infrared, near infrared and radar).

The cover should be secured to the upper and lower wires using the supplied carabiners. Place the cover on the outer side of the net, facing the enemy.

Fold together the cover before putting it back into the bag. Put down each section with the trim side facing up. Fold up the long sides one third at a time. Then pull the short side of the net to the other side and repeat until the package can fit into the bag.

Concertina barrier

The concertina barrier forms an additional barrier in front of the TACRION.
The concertina barrier is made up of telescoping concertina wire holders and the concertina wire itself. Pull out the concertina wire holders to a length of 2 m and lock them into place using 2 pins on the lower TACRION wire. Continue by pulling out the concertina wire and fix it with locking ties at the end of each concertina wire holder.

Stop sign

This sign informs of no access and is designed for mounting on the TACRION net using the supplied carabiners. The sign is readable from a distance of 50 m.

Prohibition sign

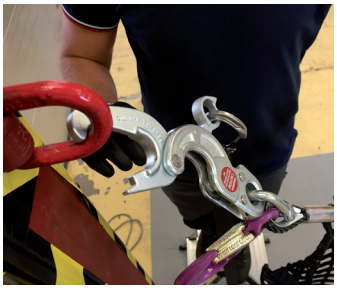
This sign informs of no access as well as prohibition of gripping the upper and lower TACRION wires. The sign can be attached to the TACRION net using the supplied carabiners. The sign is readable from a distance of 50 m.

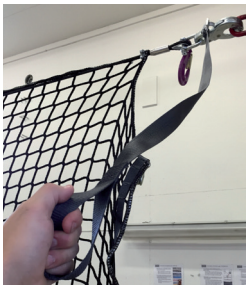
Quick release

The quick release attachment enables emergency dismantling of TACRION. Secure the quick release shackle between the anchor point and the eyelet of the TACRION wire. To open the quick release attachment, simply pull on the strap secured to the quick release opening ring. To lock the quick release attachment to the anchor point, keep the opening ring in the open position and push the two clamping portions together. In an emergency, the user can pull on the quick release strap to immediately lower the net. Be sure to pull the quick release strap straight out from the opening ring.

NOTE – Install the quick release strap beforehand if there is any chance that emergency dismantling or evacuation could be required.

WARNING – The quick release strap must always be used when employing the quick release attachment and for emergency dismantling of the TACRION. Users must remain aware of bystanders and not permit anyone to be in the area where the TACRION will fall down.





REPAIR KIT

The repair kit is supplied in a separate bag and is designed for quick repairs in the field. The following items are included in the bag:

Repair net	For temporary repair of scorched or cut netting	4 pcs
Cable ties	For fitting the repair net on TACRION; one cable tie per loop	2 pcs (100 ties/pack)
Support post pin	Spare pin to replace a lost or damaged support post pin	4 pcs
Carrying straps for support post	Replaces lost or damaged carrying straps for transporting the support posts	2 pcs
Shear pin	Replaces the shear pin in a wire pulley if it breaks e.g. as a result of excessive loads	4 pcs
Fitting loops	Replaces lost fitting loops that secure the net to the upper and lower wire	2 pcs
Carabiner	Replaces lost carabiners for the counter observation cover, Tight-end, signs or cutting protectors	2 pcs
Cutter	Use to remove a damaged net mesh and to cut cable ties	1 pc
Wrench	For use when replacing fitting loops	1 pc
Universal pliers	For use when replacing fitting loops	1 pc
Mandrel	For use when replacing shear pins	1 pc
Hammer	For use when replacing shear pins	1 pc

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