

**Circuit Safety System** 

Notice and recommendations concerning the installation and use of the go-kart safety barriers TECPRO



www.tecprobarriers.com



**Circuit Safety System** 

We exist from over 10 years and now TECPRO protections are recommended by the most of major brands of karts, they are approved by the FIA, CIK and many other motor sport federations. We are also in Formula 1 and we equip the circuits of Monza, Barcelona, Valencia, Paul Ricard, Monaco, Singapore, Abu Dhabi, Macao and Silverstone.

Besides the efficiency and aesthetics, the TECPRO barriers installation is quick and requires little maintenance. But a bad use and maintenance of the TECPRO system may reduce its effectiveness.

Please find enclosed a booklet which will help you to install your TECPRO barriers on your track.

We still recommend to call upon the skills of a TECPRO Technician, who will help and train you to install, use and maintain this system.

TEC PRO INTERNATIONAL CEO

Rafaël GALIANA

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# **TECPRO Notice**

## **PRODUCT PRESENTATION:**

TECPRO is a system of molded hollow polyethylene blocks, connected to each other with double nylon straps. The TECPRO system is the one which takes the least space. This system allows a better shock damping, reduced equipment breakages and accidents, without boomerang effect, while having an anti-embedding effect.

Block : Dimensions 100x50x40 cm (more often advocated)



Strap : Polyester strap 50mm 6T (often delivery in roll of 100m)

![](_page_3_Picture_6.jpeg)

Ratchet : standard ratchet of 50mn 6T

![](_page_3_Picture_8.jpeg)

## **Assembly recommendations :**

Blocks must necessarily be linked together by two straps (top and bottom) and stretched by ratchets (recommended above).

#### 1) Lines and Technical blocks preparation:

Equipment: 2 broom sticks or similar (electrician plastic pipes...) + 1 roll of large tape + 1 cutter (or a knife) + 1 jigsaw

# We recommend making lines of 15-21 blocks in order to place tension system (ratchets), maximum at 20 meters (for a better tension)

a) <u>Strap preparation</u>: In order to establish the barriers' lines, we will have to cut lengths of webbing on the rolls delivered (100m roll).

The length of your line of blocks will determine the length of your straps.

To find the length to cut your belt, there are two possibilities:

- By positioning the blocks :

To measure the strap, just fit the blocks one after another until reaching the desired length (11 / 15 / 17 blocks ...). Then place the strap length of the line protruding from the strap approximately 80 cm to 1m (max) at each ends of the line (this will subsequently attach lines together with ratchets). Then cut, you have the template to your lines.

- By calculation :

You can also cut your straps by a simple calculation,

(Number of blocks x 0.92) + 1,8 = strap length (in meters)

Example for a line de 15 blocks, (15 x 0.92) +1,8 = 15,6 m

The length of the line will depend on where it will serve. In places "sensitive" (turn, 2 ways' separation,...) it is recommended to make lines of 15 blocks. Otherwise the lines may contain more blocks (with a maximum of 21 blocks).

#### b) Making lines:

It needs 2 straps per blocks' line.

On one end of the two straps, tie a knot or put a ratchet (in the 2 cases leave at least 50cm after the node or the ratchet).

![](_page_5_Picture_3.jpeg)

On the other end of straps, tape each strap on a broom stick (or similar), then slide block after block with the stick (a stick for the top holes and one for down), without crossing the straps.

![](_page_5_Picture_5.jpeg)

#### c) <u>Prepare the technical blocks</u>:

Between two junctions of line we will need an open block (called "technical unit") in order to pass the strap ends of the two straps, connect them together (top ends with top ends and down with down) with the ratchet and tighten them.

To do this, remove of your stock as many "future" technical blocks than line made (30 lines = 30 technical blocks; 60 lines = 60 technical blocks). These blocks will serve as "technical units" (preferably to the same color).

Open tops of technical blocks with the jigsaw (see schematic assembly + pictures attached)

#### 2) Establishment of the lines on the track layout and tension inside:

a) Put in place the lines :

Place the lines all along the track layout, leaving a small space between them (for the technical units).

b) Put in place the technical blocks: (all the 20 meters maximum)

Once the lines are in place on the track, put the technical blocks between them and the straps inside to join them, pull on the straps to compact the blocks. (See schematic assembly attached)

#### c) Install the ratchet and put the tension inside the lines:

Place the ratchets (2 ratchets per technical block). Take the two bottom straps and a ratchet set, do the same with the two top straps. You have to click, to tight the lines (see enclosure pictures).

IMPORTANT: Do not leave lines without ratchet or defeats. For proper functionality of the TECPRO system, lines must be stretched properly with attachment points (especially when a line defines two carriageways). For rental circuits, the surround of the go- karts permits to run in both directions.

#### 3) Fixing points:

Being connected together by the strap tension, the TECPRO system can stop a go-kart at high speed (examples on some events like the "Monaco Kart Cup", where the Tecpro lines are only interconnected without any fixation, these last stop a go-kart at high speed (+ 100km per h).

![](_page_6_Picture_7.jpeg)

On indoor tracks with little space, it suffices to have or to place some fixing points (posts, pillars, wall, plates ...) in some locations to prevent excessive movement of the lines after a too big crash, and leaving the system work properly. This avoids double lines.

Indeed, a long line separating two lanes, which is fixed or held at each end, will work 100% without a major displacement thereof.

#### It is therefore advisable to have a fixation point any 25m when one line defines two carriageways.

![](_page_7_Picture_1.jpeg)

![](_page_7_Picture_2.jpeg)

A line can be held by different ways, such as existing fixing points (posts, pillars, walls ...), or by creating fixing points (plates, large tires ...).

a) <u>Existing posts/pillars :</u>

![](_page_7_Picture_5.jpeg)

There are three ways to have a point of attachment to existing pillars: or by passing ahead (2), or through the poles (3), or ending on it (1), especially for pins.

- Line passing ahead a pillar :

We will then attach the line to the pillar using two pieces of webbing. Before stretching the line, move the two blocks that are facing the pole, tie a piece of webbing on each strap that passes through the blocks, compact the line and tight. Then, take the two pieces of webbing coming out of the line and attach to the pillar.

![](_page_8_Picture_2.jpeg)

- Line passing through the pole (pillar inside the block) :

This method is used mainly for lack of space (because it is always advisable to cross the line ahead the pillar), we will cut the block to get in the pole, or embed a portion of the block on a pillar, a wall ... Simply attach, to the pole, the two straps of the end of the blocks' line. Once the line is stretched by the ratchets, the post will serve as an excellent fixing point.

![](_page_8_Picture_5.jpeg)

To increase the protection of the pillar, it is advisable to put foam in the open block and put a black band (HDPE) against the block.

- Line ending on the pillar:

Often used when wants to turn around a pole (like a pin), or when the distance between two poles can bring in a line without cutting a block.

Simply attach the two straps to the pole of the end of the blocks' line. Once the line is stretched by the ratchets, the pillar will serve as a fixing point.

![](_page_9_Picture_0.jpeg)

If you turn around the pillar, you have to add the black band around it.

![](_page_9_Picture_2.jpeg)

If another line starts after the pillar, it needs to put a black band at the two blocks around the pillar with putting behind the black band, some foam or a tire.

![](_page_9_Picture_4.jpeg)

IMPORTANT: In all cases, the TECPRO barrier does not protect the pillar on its height. It will therefore add protection above the TECPRO block (foam).

![](_page_10_Picture_0.jpeg)

### b) <u>The plate</u>

Without existing fixing point, we can use plates (plate with a welded loop) as anchor point.

![](_page_10_Picture_3.jpeg)

The plaque should be large enough, solid and should be secured to the ground to support a certain amount of draft.

For this, we recommend various points:

It must be resistant metal (iron) and must be made by a professional (especially to ensure a good welding). Make a hole in the four corners of the plate (depending on size plugs used).

![](_page_11_Picture_2.jpeg)

Recommended dimensions of the plate: Lentgh200 Width200 x Height x 8min Recommended dimensions of the loop: Lentgh130 Height30 x Diameter x 10min

- The plugs:

Preferably use chemical anchors:

![](_page_11_Picture_6.jpeg)

You can also use dowels of anchoring or steel plugs for metric screws or threaded rod (minimum dimension 80 x 10 mm)

![](_page_11_Picture_8.jpeg)

#### c) <u>The Pipe :</u>

Another possibility is to put a pipe, the installation is a little more restricting because it requires a core drilling into the ground (but resists at any event).

![](_page_12_Picture_2.jpeg)

The pipe is composed by 2 parts, the female part (whose will be inserted in the ground + a fixation plate), and a male part (whose go in the female part). This piece must be made and installed by a professional.

The tube should not exceed the height of the block (less than 50 cm).

To fix the line on the tube, either you cut the block to have the tube inside the block, either ending (or beginning) on him. You will use the tube like for an existing pole (refer to section posts / pillar existing above).

In all cases, the post should be protected. If it is in the block, put some foam (or old go-kart tire), if it is outside the block, put a PVC pipe.

![](_page_12_Picture_7.jpeg)

d) <u>The tire :</u>

The tire solution is interresting to maintain a turn, a chicane, or a loop. It permits to retain the line and so to serve of fixing point.

This requires using larger and heavier tires (truck's tire or tractor's tire).

![](_page_13_Picture_3.jpeg)

#### e) The Stake :

The stake will be mainly used for outdoor tracks. This system allows to fully penetrate deeply into the ground without having to protect it.

![](_page_13_Picture_6.jpeg)

### **THE MAINTENANCE:**

To do not reduce the effectiveness of the TECPRO protection system, it must be a minimum of maintenance:

- Check the status of the barriers: damaged block all must be changed.
- Check the straps' tension: a line that is not stretched, reduces the effectiveness of the protection system and can lead premature breakage of the material (block, kart).
- Verification of attachment points: we must verify that all the fixing points that we have put are in good working order, and watch that the straps are correctly fastened.

It is in these conditions that the TECPRO safety system will ensure a greater security, as we demonstrate in every international event that uses the TECPRO Barriers.

# <u>Enclosure</u>

# **Technical block and strap tension**

![](_page_15_Picture_2.jpeg)

![](_page_15_Picture_3.jpeg)

![](_page_15_Picture_4.jpeg)

![](_page_16_Picture_0.jpeg)

![](_page_16_Picture_1.jpeg)

![](_page_16_Picture_2.jpeg)

![](_page_17_Picture_0.jpeg)