

VEPE-ICEPRO LTD  
**TECHNICAL  
DOCUMENTATION**

ICE HOCKEY DASHER BOARDS  
**F-SERIES**

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## 1 GENERAL

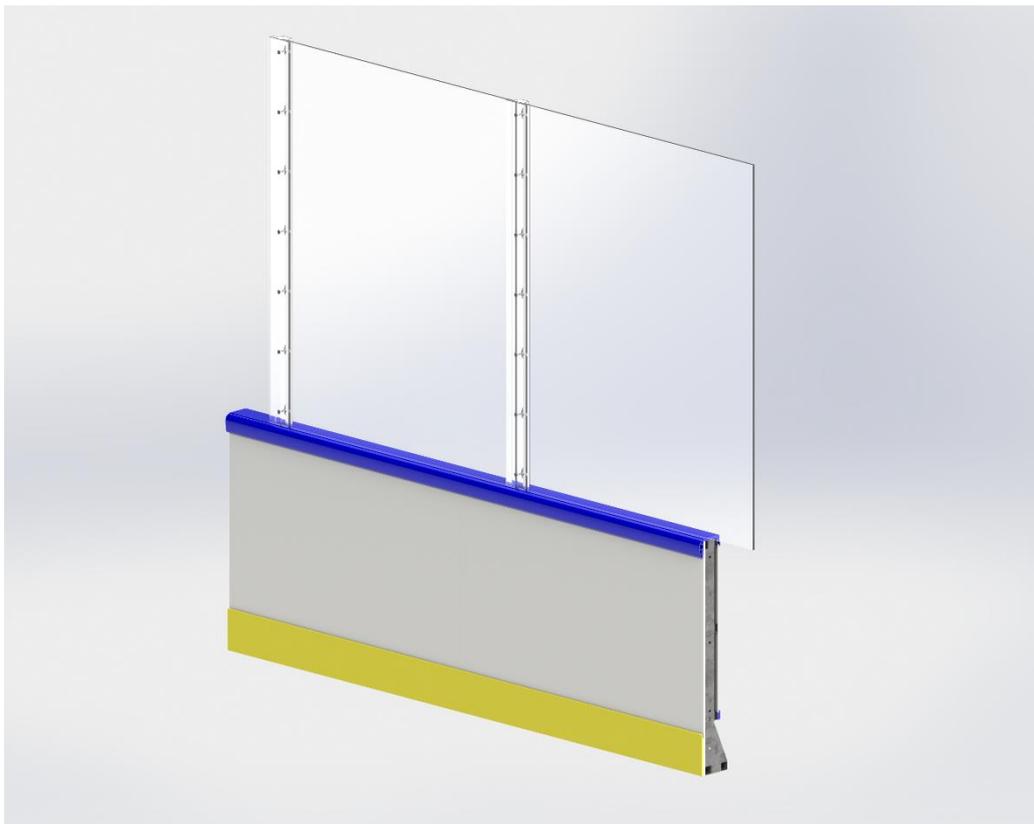
Vepe-Icepro F-Series is a modern flexible ice hockey dasher board. Double-frame structure of the upper part of the board element supports protective shields with the most flexible polycarbonate (PC) posts for competitive use or with more stable aluminum post for training use.

The double-frame structure of the lower part allows the best fastening of elements to anchors in concrete slab. The special steel profile structure in the ends enables a better flexibility and safety of the boards in a collision.

F-Series dasher boards are designed, manufactured, and sold by Vepe-Icepro. All production is made according to EN 1090-1:2009+A1:2011. Dasher board models are developed and optimized using FEM analysis, and the performance has been verified through tests in laboratory conditions as well as in real conditions.

### Vepe-Icepro F-Series standard measurements:

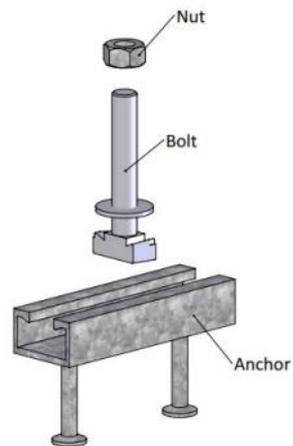
- Standard rink sizes: 26-30m x 56-60m
- Curve Radius (standard): R8.5m
- Curve Radius (optional extra): R7.0m / R7.5m / R8.0m
- Height from concrete slab: 1.1m



## 2 ANCHORING

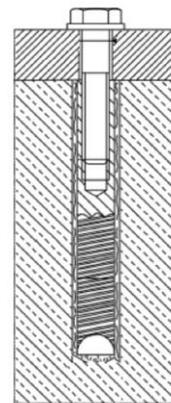
### For new arenas

Standard anchoring for new arenas is made with anchor channels cast in concrete slab. This enables strong fixing and easy installation. Anchor bolt always goes through the double frame structure of the board.



### For existing arenas

Existing anchors may be used in most cases due to agile fixing system of the boards. In case the existing anchors are not enough, the new anchors are drilled into concrete. Anchor bolt always goes through the double frame structure of the board.



### Ice dam

Ice dam makes it possible to dismount and re-install boards without need to melt the ice.

Ice dam frame is made of steel and it is fastened to anchors in concrete slab. Ice dam is coated with kick list on the ice side just like the boards. There is a black HDPE cover on top of the ice dam. In ice dam there are fastening points for the boards

Standard height for the ice dam is 60mm. It fits perfectly with Vepe-Icepro ice covering system so that the arena floor is flat and safety whenever the boards are dismantled and another type of event takes place.

Anchor bolt always goes through the double frame structure of the ice dam.



**Technical drawings**

Project-specific anchor layout is always included in Vepe-Icepro dasher board delivery. Drawings are available in PDF and DWG formats. Ask for BIM model!

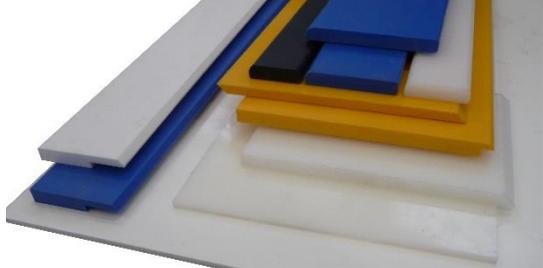
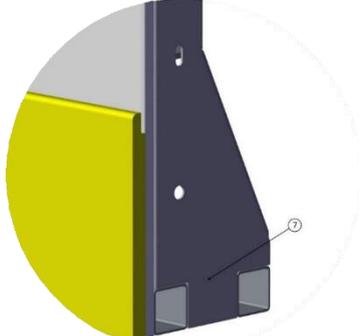
X = the length depends on the mounting thickness

The bolt always comes with a nut and it isn't suitable for a normal nut  
The bolts strength category is 4.6

	Material: Hot dip galvanized steel Anchor weight: ca 0.7 kg	Anchor JTA 50-30
<b>CONFIDENTIAL</b> This drawing is property of Vepe Ice Pro Finland and it is published in open form. It is not to be used without an explicit permission from Vepe Ice Pro Finland in writing.	Drawing number <b>24550 -- 01</b>	Revision <b>A</b>
		01.08.2015

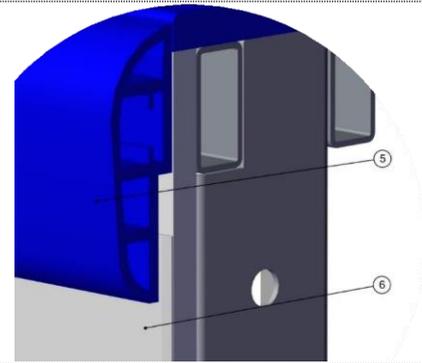
		1:10 Installation of anchors
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		01.08.2015

### 3 ELEMENTS

<p><b>Dimensions of the board element</b></p>	<p>Height 1,1m from concrete slab, ca. 1,07 m from ice level. Standard element length 3m</p>	
<p><b>Frame, material and finish</b></p>	<p>Double-frame structure of the lower part. Single-frame structure in the middle enables better flexibility of the boards in a collision. Steel EN 10149-2, hot dip galvanization EN ISO 1461</p>	
<p><b>Thermal barrier</b></p>	<p>F Series element ends are equipped with thermal barriers to prevent condense water running to ice side</p>	
<p><b>Materials</b></p>	<p>Kick lists and board lists are made of the same material as the boards ensuring consistent extension/shrinking and impact resistance.</p>	
<p><b>Puck board</b></p>	<p>10mm UV protected white HD polyethylene (HDPE)</p>	
<p><b>Kick plate</b></p>	<p>8mm UV protected yellow HD polyethylene (HDPE) without ad panel OR 12mm UV protected yellow HD polyethylene (HDPE) with ad panel</p>	
<p><b>Top sill</b></p>	<p>UV protected blue HD polyethylene (HDPE) Protective shield integrated into the top sill (hold in the groove)</p>	
<p><b>Cap rail</b></p>	<p>No cap rail as standard when no ad panel Soft cap rail as standard when ad panel and as optional when no ad panel (hard cap rail as optional)</p>	

**Soft cap rail**

Soft cap rail is a safety profile on the upper part of the board element, in the edge of puck board and top sill. It is made of elastic rounded rubber mixture. Soft cap rail suppresses impacts to head and upper body. Soft cap rail has an integrated groove for advertisement panel installation.



**Line markings**

Lines are integrated in the kick list. HDPE blue/red.

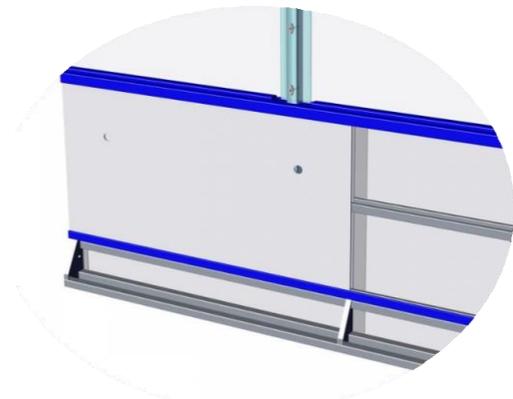


**Advertisement panels (optional extra)**

4 mm clear polycarbonate (PC) sheet installed in a groove under cap rail and in kick list. Fastened to board element with 2 flush hexagon socket head cap screws. Fastening materials are made of stainless steel.

**Rear panels (optional extra)**

HDPE 8mm / PP Foam 6mm, color: white. Protects the frame from materials that do not belong there. Completes nice look to the boards.



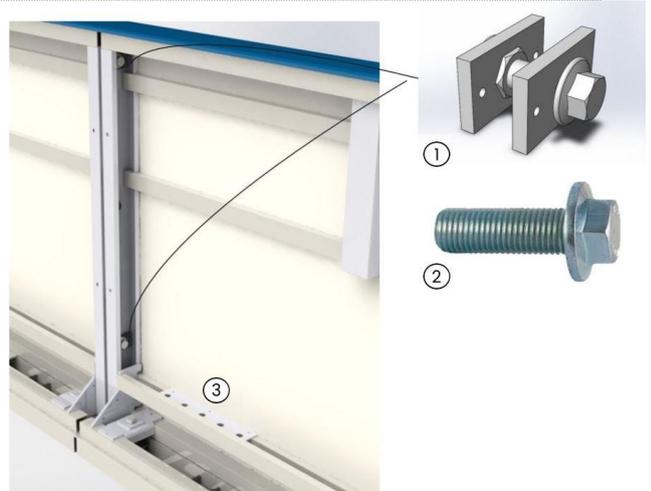
## Fastening

F-Series board elements are equipped with Fast2Fix quick fastening system as standard.

- 1) Reinforcement plate+ counterpart pre-installed to the frame.
- 2) Bolt tightened into the counterpart.
- 3) Bolt rack inside section frame.

Dasher board elements are fastened to each other with two fast2fix bolts. Fast2fix system is also used to fasten dasher board to the ice dam system. Fast2fix system speeds up rink installation and reduces the number of tools during installation.

Fast2fix built-in quick release system allows fast installation and dismantling. Designed especially for new multipurpose arenas where the rink is dismantled several times a year. When dismantling the rink, we have taken note of the retention of the fastening parts. Storage for bolts inside the section frame to keep the fastening components in order for next use.



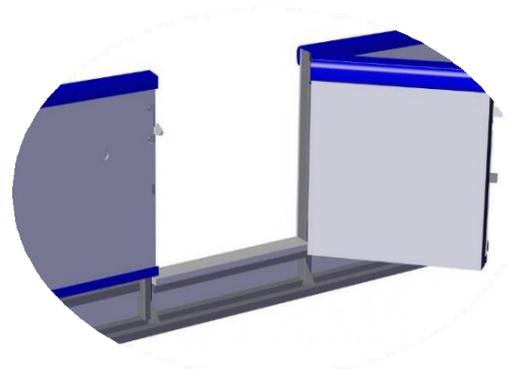
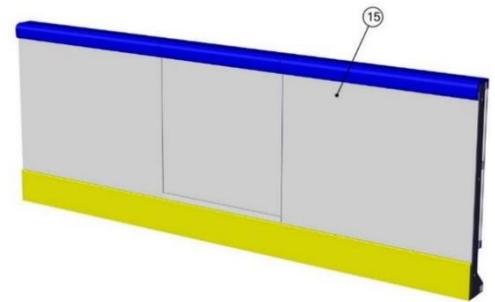
## 4 GATES

**Player gates** 4 pcs. (standard)

Width 80cm (standard)  
Width 100cm (optional extra)

Threshold 210mm (standard)  
Threshold 50 / 310mm (optional extra)

Strengthened frame structure  
Adjustable hinges  
Robust self-locking latch



**Penalty gates** 2 pcs. (standard)

Width 80cm (standard)  
Width 100cm (optional extra)

Threshold 210mm (standard)  
Threshold 50 / 310mm (optional extra)

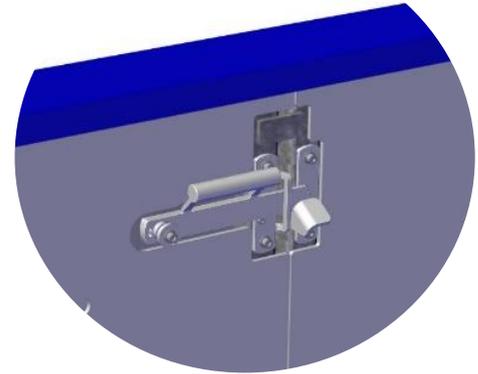
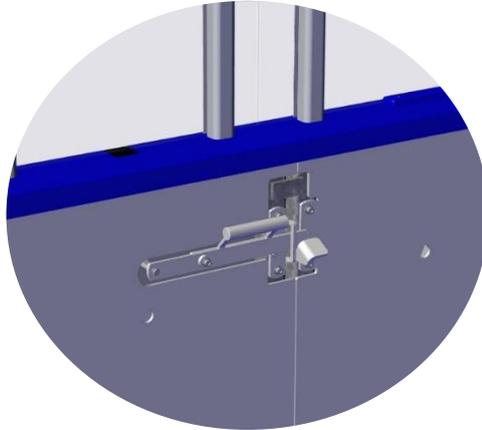
Push button device to open gate from ice side  
Strengthened frame structure  
Adjustable hinges  
Robust self-locking latch

**Extra gates** Width 80 / 100 / 120cm  
Threshold 50 / 210 / 310mm

Push button device to open gate from ice side  
Strengthened frame structure  
Adjustable hinges  
Robust self-locking latch

**Locking: player and penalty gates**

Reliable self-locking latches. Gates with public protection have a push button with which the gate can be opened from the ice side. There is no hole in the public protection at the vicinity of the bottom.



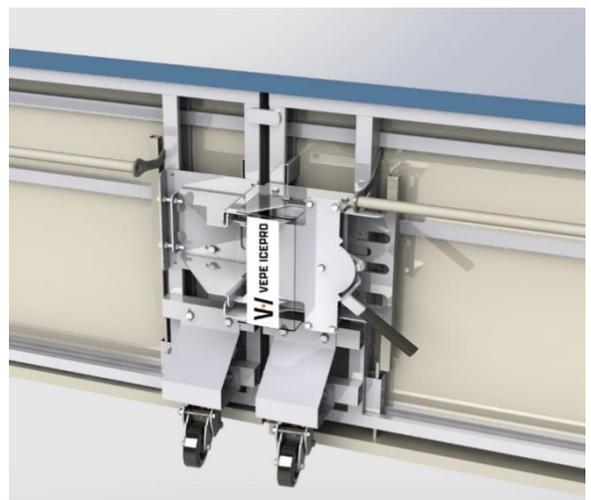
**Service gates**

Width 3,5m (standard), 1 pc.  
Strengthened frame structure  
Adjustable hinges  
Adjustable kick list (hem) at the lower end  
Adjustable diagonal supports on both sides to guarantee the best stability  
Nose wheels to support gate leaves when opening



**Locking: service gates**

Service gate has a reliable locking mechanism with which the gate can be opened and closed fast and reliably with one hand grip.



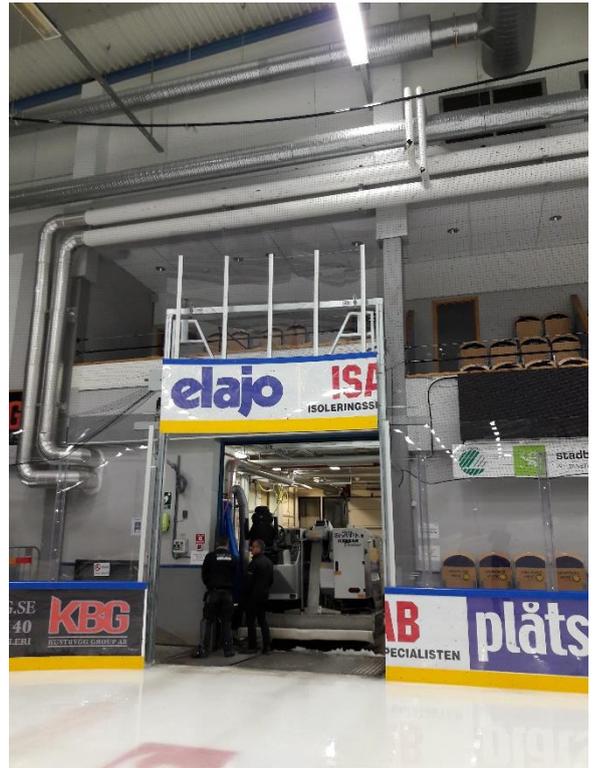
**Additional information**

Number of gates can be increased as needed. Location of these extra gates (player/public entrance and service gate) can be determined based on needs of end customer.

**Lift gate**  
(optional extra)

Standard service gate may be replaced by a lift gate, which is suitable for the tightest places because it needs very little space at the back side of the boards.

Liftgate can be either straight or in a curve. Standard width is 3,5m.



## 5 PROTECTIVE SHIELDING

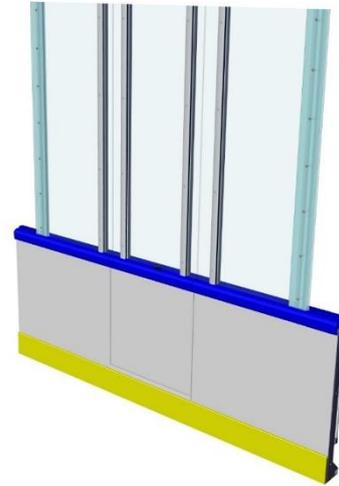
<b>Height</b>	H=1,5m / H=1,8m / H=2,0m / H=2,4m	<i>According to the IIHF Official Rulebook: Height of public protection in short ends and curves 2,4 m, height of public protection in sides 1,8 m</i>
<b>Material</b>	Polycarbonate (PC) 8 / 10 / 12mm Acrylic (PMMA) 12 / 15mm	
<b>Hard coating (HC) (optional extra)</b>	Hard coated PMMA and PC have a better scratch resistance and good optical qualities when compared to non-coated. Hard coated sheets are also easier to keep clean.	
<b>Termination points</b>	Curved acrylic 12mm / R500mm	<i>Where the public protection deviates from the boards at the vicinity of player boxes, there are curved, flexible player protections made from PMMA.</i>
<b>Lower end of the shielding</b>	Protective shield integrated into the top sill (hold in the groove).	



## 6 POSTS

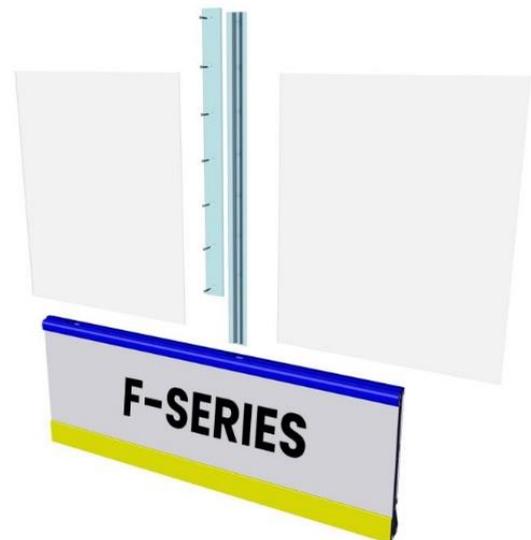
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**Aluminum post** Gates are always equipped with aluminum posts which keep the protective shielding straight and provide the best safety for players.



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**PC-posts** Board element supports protective shields with the most flexible polycarbonate (PC) posts.



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**Height** Post height always according to protective shielding height

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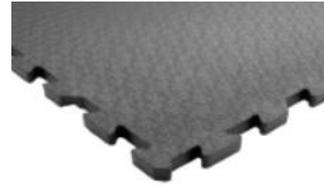
## 7 BOXES

<b>Size</b>	Standard setup according to IIHF Rulebook	Player boxes 1,5 x 10 m, 2 pcs Scorekeeper box 1,5 x 6,5 m, 1 pc Penalty boxes 1,5 x 4 m, 2 pcs
<b>Box floor</b>	Adaptable and robust grating structure made of steel	
<b>Walls</b>	<p>Behind and at both sides of player boxes.</p> <p>Behind and at both sides of scorekeeper box.</p> <p>Behind and at both sides of penalty boxes.</p>	
<b>Protective shielding</b>	All sides	
<b>Doors</b>	<p>At both sides of player boxes (total 4 pcs) as standard</p> <p>All other configurations as optional</p>	
<b>Furniture</b>	<p>Bench frame made of galvanized steel, coated with wooden lacquered planks, with back rest equipped with drink bottle holder for player boxes. Coach walkway made of galvanized steel, coated with plywood for player boxes. H=20cm, W=50cm. Bench frame made of galvanized steel, coated with wooden lacquered planks for penalty boxes. Table with 6 seats for scorekeeper box.</p>	

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**Rubber mats**

Mabomat module mat as standard, black  
ERGO P12 module mat as optional, black



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**Roof**  
(optional extra)

All boxes may be equipped with roof to provide more protection from spectators

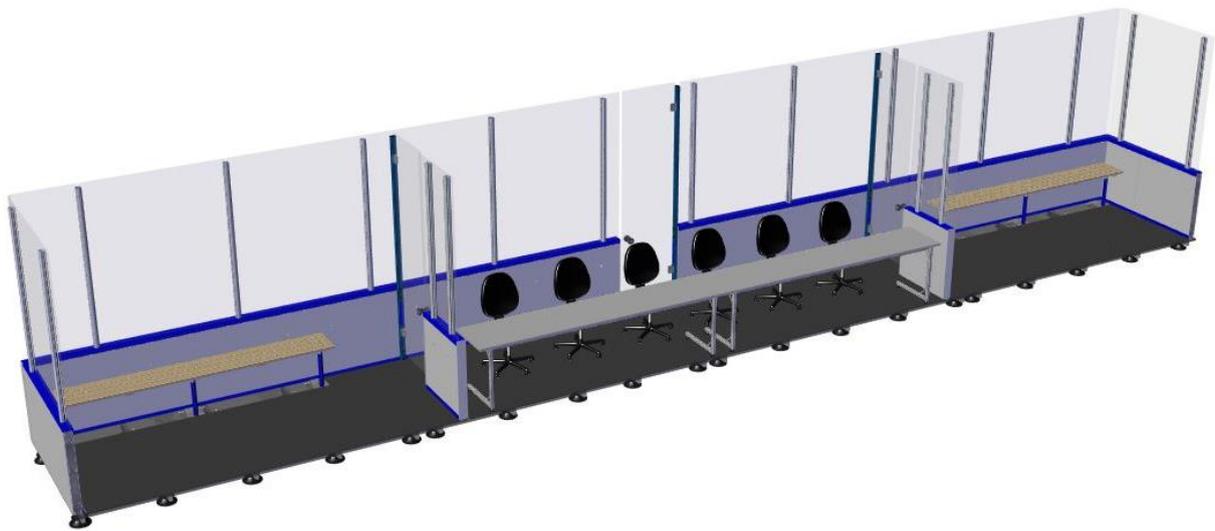
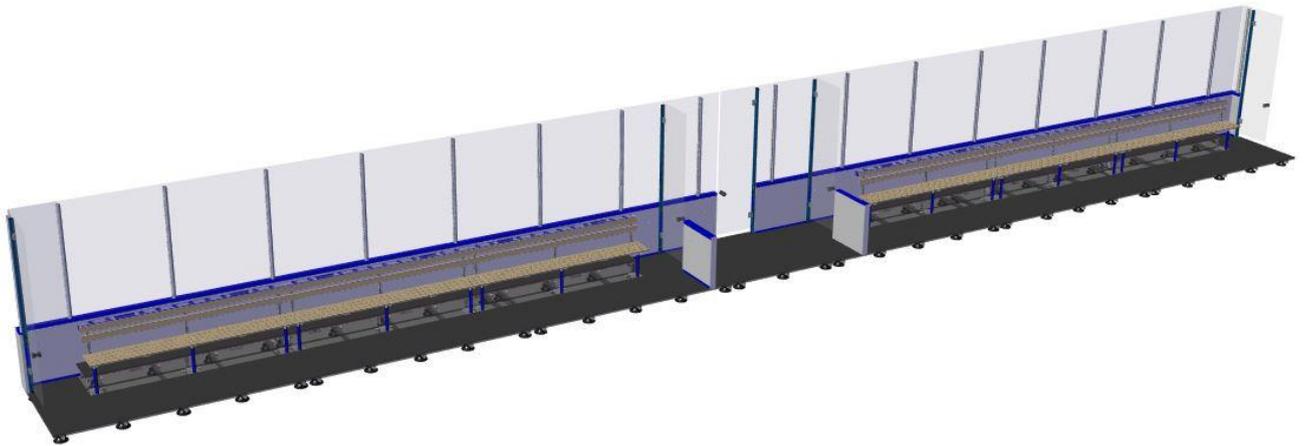


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**Fully closed scorekeeper box**  
(optional extra)

Standard scorekeeper box may be replaced by fully closed option to provide the best possible protection for off-ice officials. The walls are also insulated in order to keep the box warm.





## 8 OPTIONAL EQUIPMENT

### Ice hockey goals

Competition and training goals with all necessary parts and accessories.



### Stick racks

Different stick racks to be fastened to the wall or if necessary removable, movable and provided with locks.



### Alternative mat models for boxes

Several different options for covering box floors. Mats and covers are very comparable in quality. The biggest differences lie in the material sizing, shaping and surface slipperiness.



### Storage racks

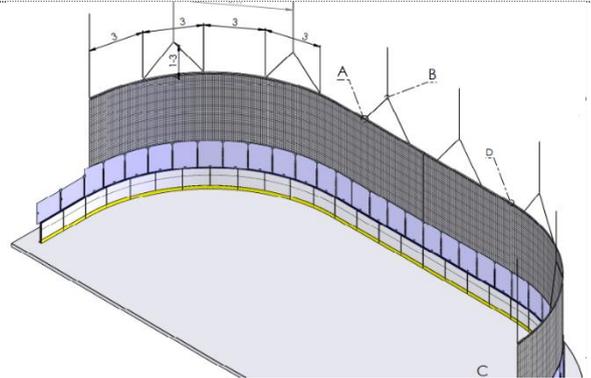
Storage racks for board elements, protective shielding and supporting posts.



### Kevlar® safety nets

Unnoticeable, durable safety net. #38/1,2mm, black. NHL tested and approved.

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- PP safety nets** Basic safety nets to the ends and curves as well as to sides.  
Material: polypropylene.  
Options:  
Mesh #42mm, thread 2mm, black  
Mesh #40mm, thread 2.3mm, black  
Mesh #40mm, thread 2.3mm white  
Mesh #30mm, thread 1.5mm, black  
Mesh #30mm, thread 1.5mm, white
- 
- Net holding bars** Steel bars with installation material for safety nets.



- 
- Net lifting hoists** Mechanical net lifting hoists to facilitate lifting, installing and dismantling of nets.
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## 9 STANDARDS AND CERTIFICATES

- Internal quality auditing certificate 0416-CPR-8823-02 Certificate for steel production EXC1 and EXC2/ EN 1090-1:2009+A1:2011
- Material acquired by company with ISO 9001 certificate
- Surface treatment by company with ISO 9001 and ISO 14001 certificates
- Hot-dip galvanizing according to SFS-EN ISO 1461
- Tested according to BFU test procedures considering board flexibility and player safety

