



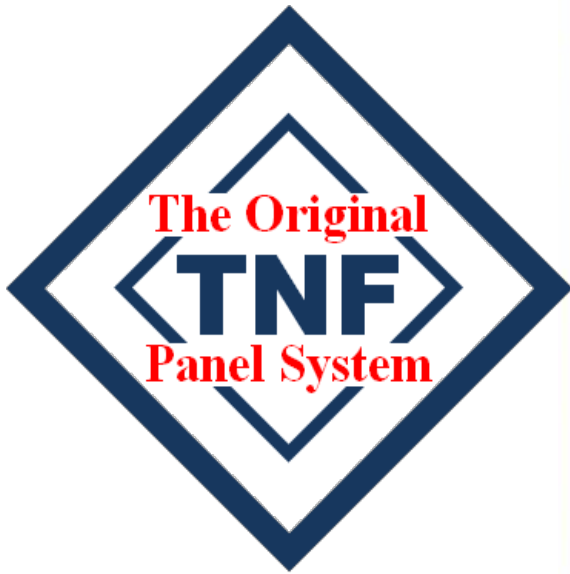
# Interiors

by **INEXA**

Craftsmen to the world's finest ships

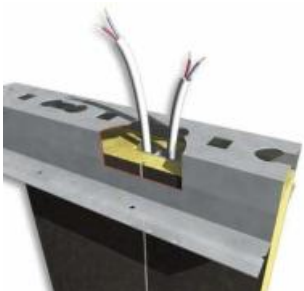
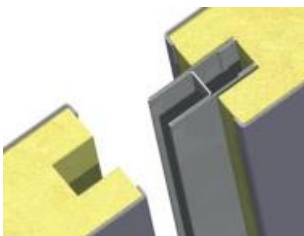
**TNF**

Partition and Lining



The **TNF 2S** Wall System offers total flexibility and the shortest installation times in the market for panels in standard thickness of 25, 50 and 100 mm, widths up to 1100 mm and lengths up to 2500 mm. In addition to **TNF Standard**, Modular and Tailor-made Panels, we also offer High Noise Reduction, Removable, Access, Wet, Light Weight, Reinforced and other panels as well as **TNF Inspection Doors**. The brilliant **TNF 320 H-profile**, used in all **TNF** panel joints, has a stiff beam structure and makes the strongest joint in the market. As an added value,

the **TNF H-profile** can be used as reinforcement for installments on the walls, and in all 50 and 100 mm panels as a channel for electrical cables. The **TNF 2S** system is delivered with decorative surfaces in painted version, PVC, stainless or **TNF Magic®**. The innovative **TNF Magic®** is an upgraded surface, complementary to the traditional PVC. **TNF Magic®** surpasses technical standards and has been successfully used in hundreds of ships and offshore units. **TNF Magic®** is safer and more durable and stylish than PVC.



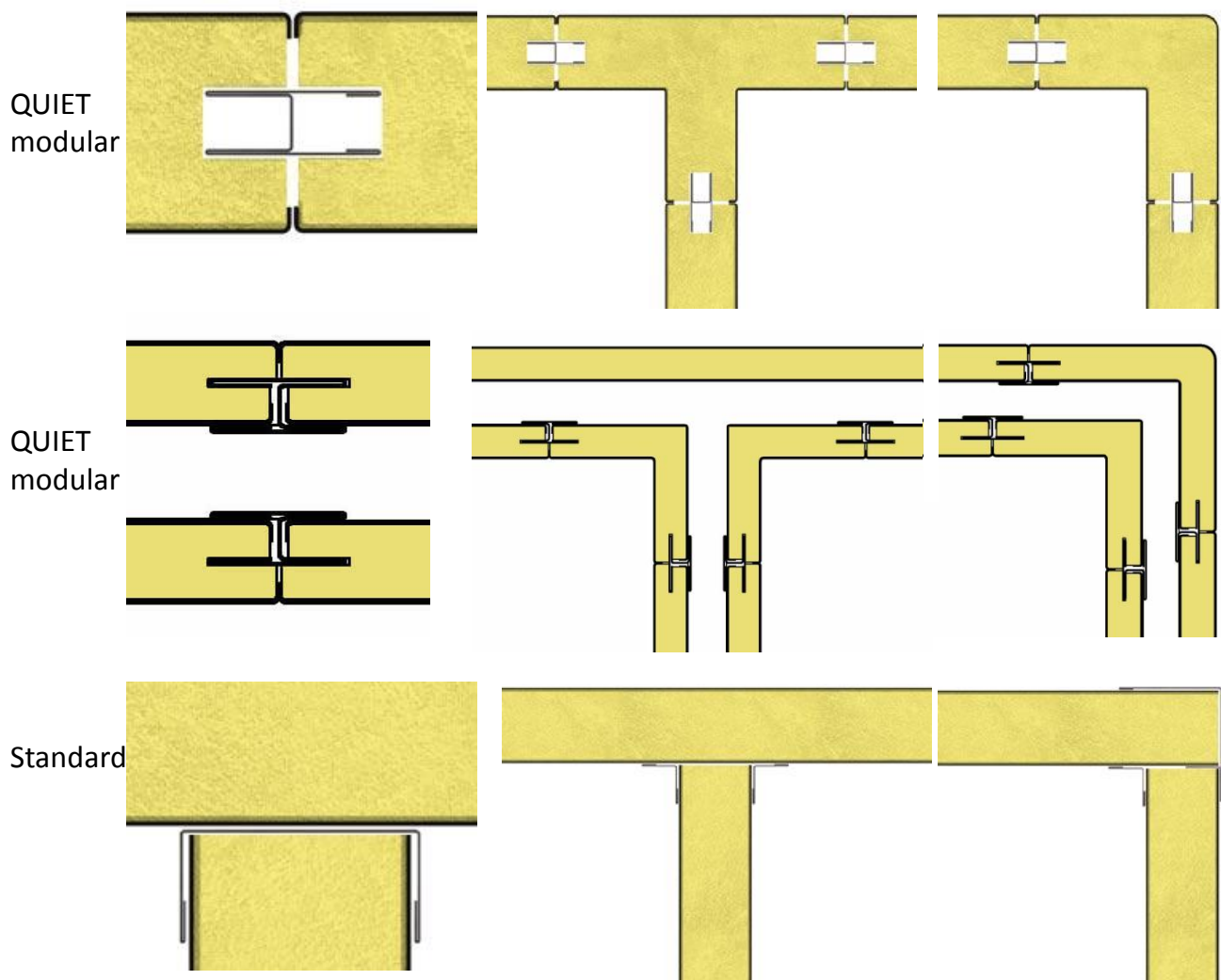
# Two different systems (joints)

## Panel surfaces

- PVC foil coated galvanized steel.
- TNF MAGIC surface - non-toxic and halogen free.
- STAINLESS STEEL grade ANSI 304, brushed 180-220.

The decorative surfaces are classified as low flame spread material according to Solas, and have a layer of protection foil.

However, TNF MAGIC is the preferred surface because of its safety features.



### Technical data

### Thermal insulation

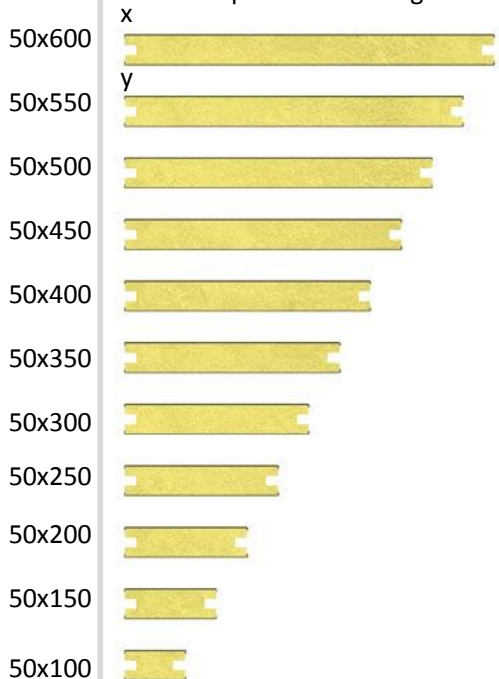
$\lambda = 0,044 \text{ W/m } ^\circ\text{C}$

	Panel type	Standard	High noise	Conduit	Lining
Fire rating		B15 & B30	B15	B15	B15
Noise reduction		33 dB	44 dB	33 dB	32 dB
Panel height	Standard	800-3100 mm	2000-2800 mm	2000-3100 mm	800-3100 mm
	Max. height	5000 mm	3100 mm	3100 mm	5000 mm
Panel thickness		50 mm	50 mm	50 mm	25 mm
Weight	Panel weight	16,4 kg/m <sup>2</sup>	19,2 kg/m <sup>2</sup>	16,4 kg/m <sup>2</sup>	12,4 kg/m <sup>2</sup>
	System weight	18,9 kg/m <sup>2</sup>	21,7 kg/m <sup>2</sup>	18,9 kg/m <sup>2</sup>	14,7 kg/m <sup>2</sup>

# System 2S Steel panels – Modular range

## 2SA – standard panels

For B15 partition & lining



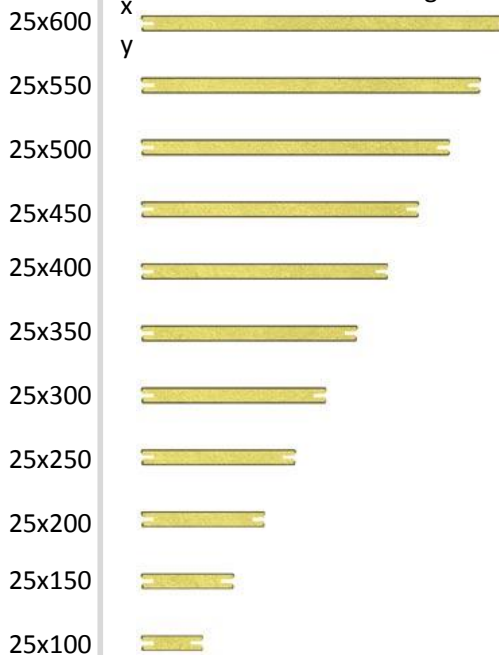
## 2SB – connecting panels

For cross sections and straight joints of 50 to 25 mm walls



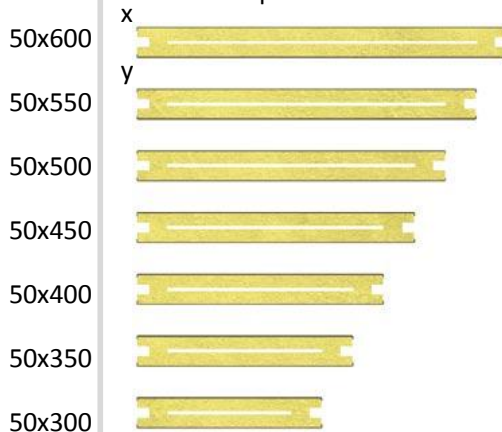
## 2SF – lining panels

For B0 and B15 class lining



## 2SM – high noise reduction panels

For B15 class partition



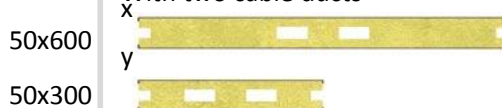
## 2SP – conduit single panels

With one cable duct



## 2SQ – conduit twin panels

With two cable ducts

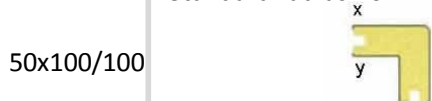


## 2ST – access panel



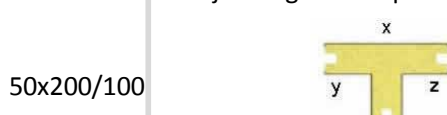
## 2SD – corner panel

Standard radius 10



## 2SE – Tee panel

For jointing 50 mm panels



## 2SG – corner panel

For jointing 25 mm panels

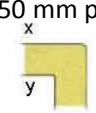
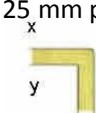
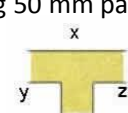
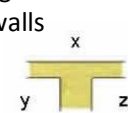


## 2SH – Tee panel



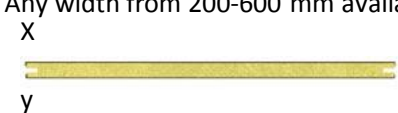







For jointing 25 mm and 50 mm partition walls



# System 2S Steel panels

<p>50x75/75</p>	<p><b>2SU – open end corner</b> For jointing 50 mm panels</p> 	<p>25x75/75</p>	<p><b>2SV – open end corner</b> For jointing 25 mm panels</p> 
<p>50x150/75</p>	<p><b>2SW – open end tee</b> For jointing 50 mm panels</p> 	<p>25/50x75/75</p>	<p><b>2SJ – open end tee</b> For jointing 25 mm and 50 mm partition walls</p> 

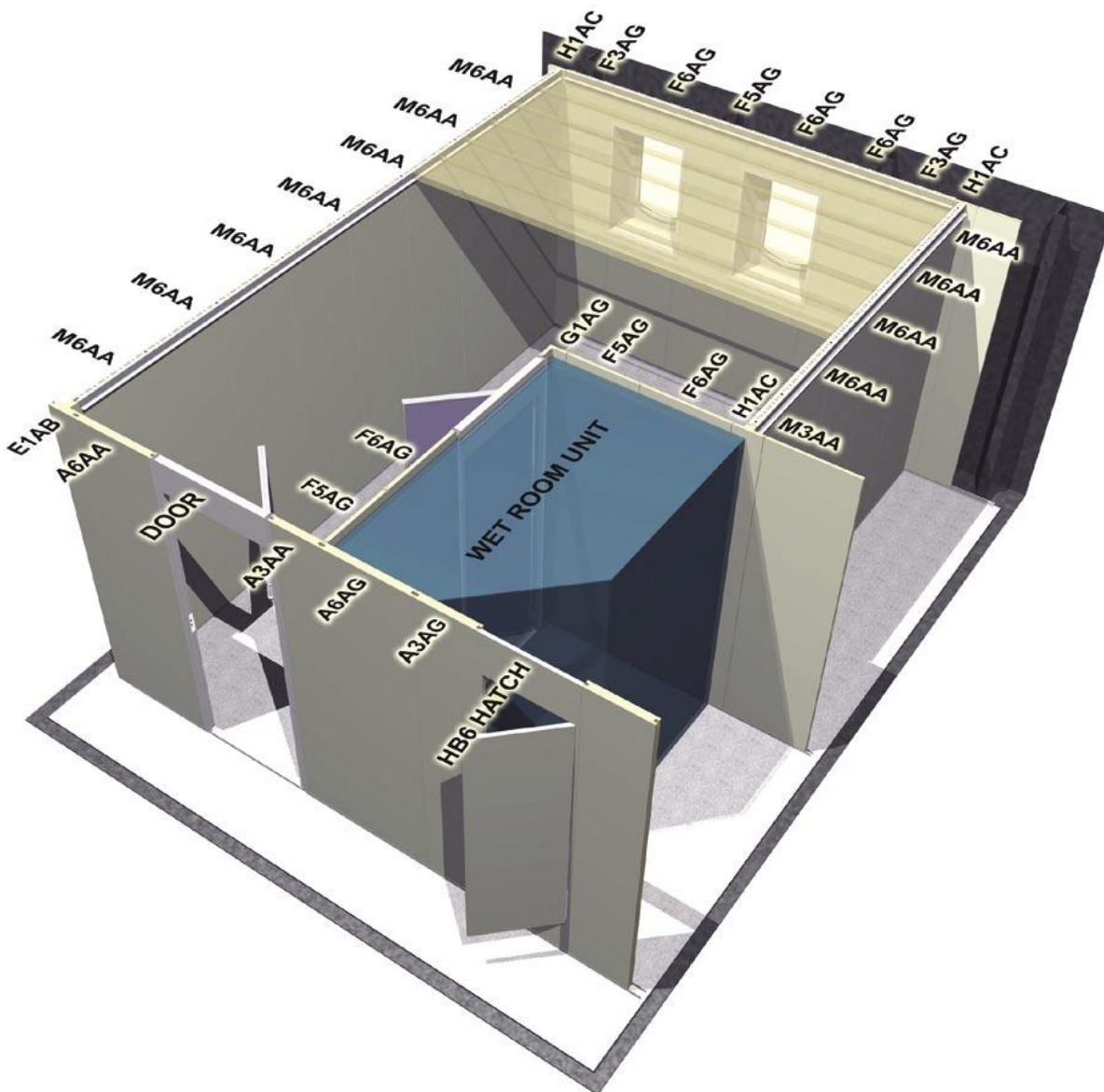
# System 2S Steel panels – Tailor-made

<p>1 mm increments</p>	<p><b>2SA – standard modular</b> Any width from 200-600 mm available</p> 	<p>custom built</p>	<p><b>2SA – curved panel</b> Any width from 400-600 mm available</p> 
<p>1 mm increments</p>	<p><b>2SF – lining</b> Any width from 200-600 mm available</p> 	<p>custom built</p>	<p><b>2SF – curved panel</b> Any width from 400-600 mm available</p> 
<p>1 mm increments</p>	<p><b>2SM – high noise reduction</b> Any width from 200-600 mm available</p> 	<p>100x600</p>	<p><b>2SL – A-60 panel</b> 600 mm width panel</p> 
		<p>50x600</p>	<p><b>2SR – reinforced panel</b> With 3 mm steel inlay</p> 
		<p>25x600</p>	<p>With U-profile</p> 
		<p>50x600</p>	
		<p>25x600</p>	

# The TNF modular layout and planning

This drawing is an example of a typical modular cabin layout. The design is based on the use of as many 600 mm wide panels as possible.

All the panels have an identification code to facilitate the location of each panel and the installation. INEXA offers assistance with detailed installation drawings and MTO (material take out), as well as supervision to yards using the TNF modular system for the first time



## Panel codes

For logical identification, the panels are marked with a 4 or 5 digit code:

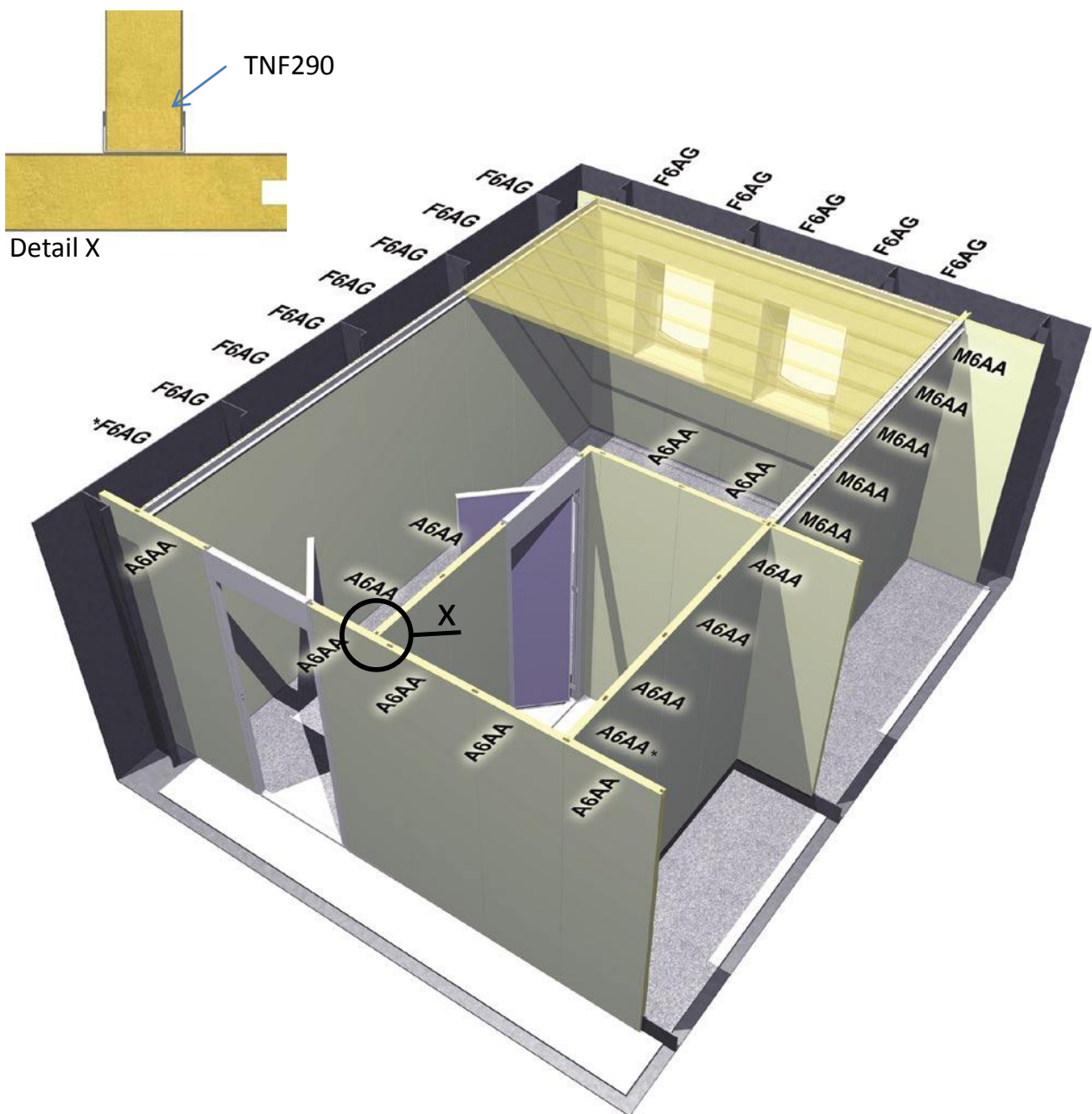
- Type of panel — A
- Width of panel — 6
- Height of panel — A
- Color combination — D

The drawings are marked with the panel codes.

The panel codes identify the panels from design to installation, consequently the design drawings are used as installation drawings also.

# The TNF quiet standard layout and planning

This drawing is an example of a typical cabin layout for a standard panel system. The design is based on the use of 600 mm wide panels. All the panels are marked with an identification code to facilitate the location of each panel and the installation. Panels located at corners, Tee joints and doors normally have to be cut at site to fit. The type of corners or profile(s) selected for assembling the corner and Tee joints are marked on the drawings. This facilitates the specification of the profiles.



The drawing shows a wet room unit made with TNF modular wet room panels.

For technical requirements, logistics and panel codes, please look at the previous page.

# Material Take Out (MTO)

## TNF Panels

The specification of wall panels must include the following information:

- Types of panel  
use the panel designation 2SA, 2SF, etc.
- Dimensions of panels  
panel width  
panel heights
- Color combinations  
decorative/decorative  
decorative/galvanized
- Number of panels per panel code

To determine the panel height, please refer to the drawing “Heights of components”.

## TNF Profiles

The specification of profiles must include the following information:

- Lengths of all vertical profiles, jointing profile TNF 320 as well as visible, decorative profiles
- Colors of visible corner and Tee joint profiles
- Quantity of each profile

To determine the lengths of the vertical profiles, please refer to the drawing “Heights of components”.

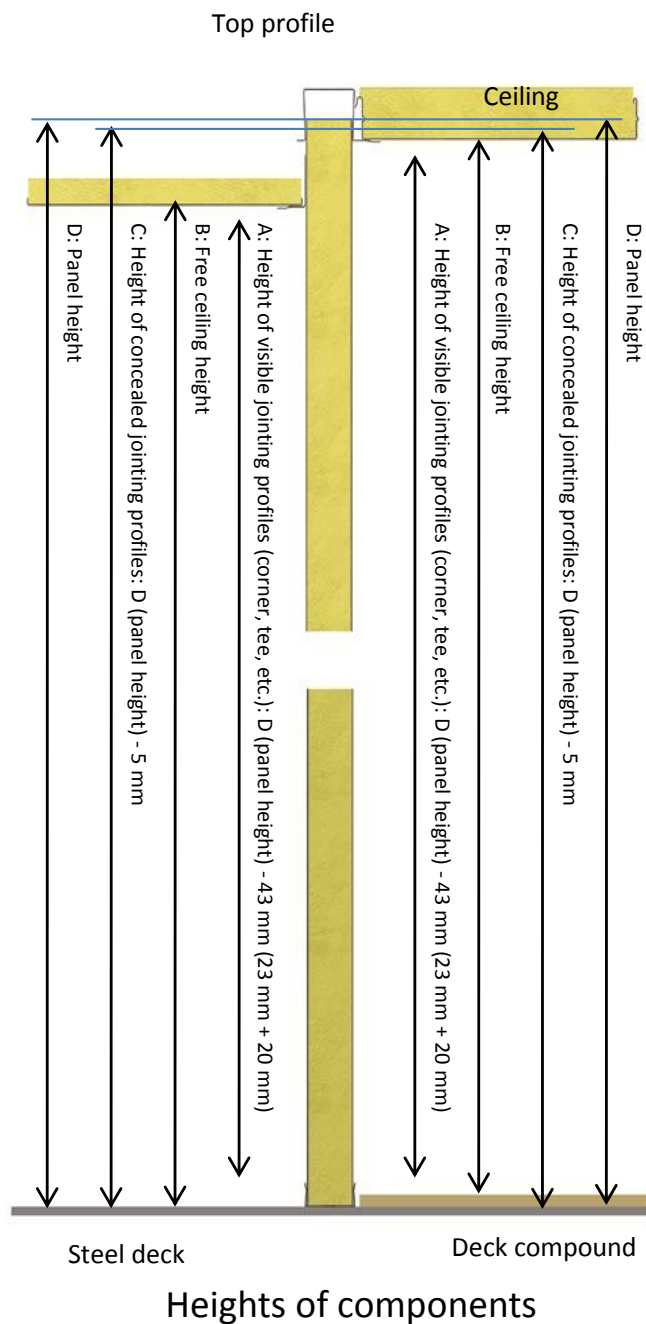
## Top and bottom profiles

To determine the number of top and bottom profiles required, add up total linear meters of walls (50 mm partitions and 25 mm lining separately) and divide by 3.9 m (length of top and bottom profiles).

The range of top profiles includes

- Profiles with 31 mm flange(s) suitable for self-supporting ceilings. (TNF C55 and C65 ceilings)
- Profiles with no flange(s)

In addition, top profiles with one flange (lining) and two flanges must be specified separately.



## Spare panels and profiles

The quantities of panels and profiles calculated from the drawings should be increased to allow for damage, which may occur during installation.

It is not necessary to include spare panels for every single panel item. One panel item can serve as spare for other panel items, which are shorter and/or have only one decorative surface. Number of spare panels to be included should be based on past experience of the customer.



# Installation procedure

When installing the **TNF standard panel system**, the following procedure applies:

## Vertical installation - Fastening of panels

### Bottom profile

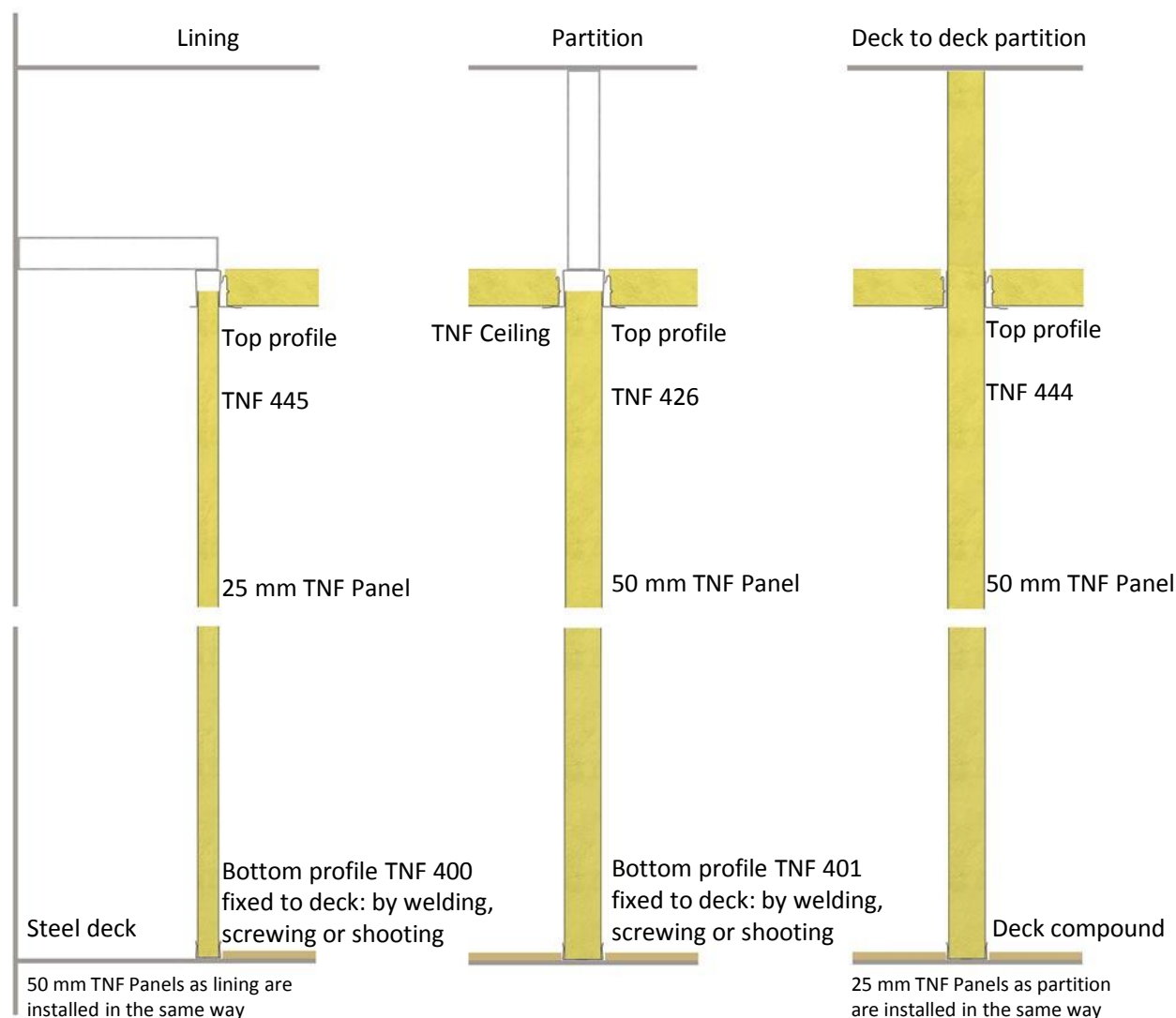
Place the bottom profiles correctly on the deck in accordance with the dimensions of cabins, corridors, etc. and appropriately to the ship side, steel bulkheads etc. The profiles are then fixed to the deck or floating floor by welding, by screws or shooting.

### Top profiles, alt. 1

The top profiles are installed before the panels. The top profiles are positioned vertically above the bottom profiles at a distance that allows correct ceiling height. The top profiles include prestamped holes to allow cable entry for concealed wiring.

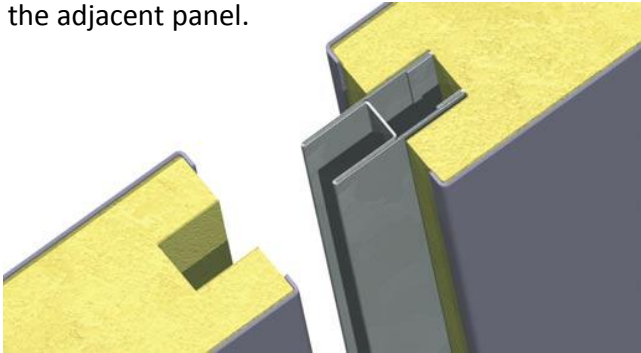
### Top profiles, alt. 2

When the TNF wall panels are installed, the top profiles are placed directly on top of the panels. The profiles are assembled with splice TNF 409. It is not necessary to fasten the top profiles to the steel deck or the ship's side. Proper rigidity and stability are contained in the system. The top profiles include pre-stamped holes to allow cable entry for concealed wiring.



## TNF panels

The panels are installed in the top and bottom profiles according to the procedure shown on the drawing "Procedure for installation of panels". Install the H-shaped profile and slide the panel to the adjacent panel.



jointing of two panels

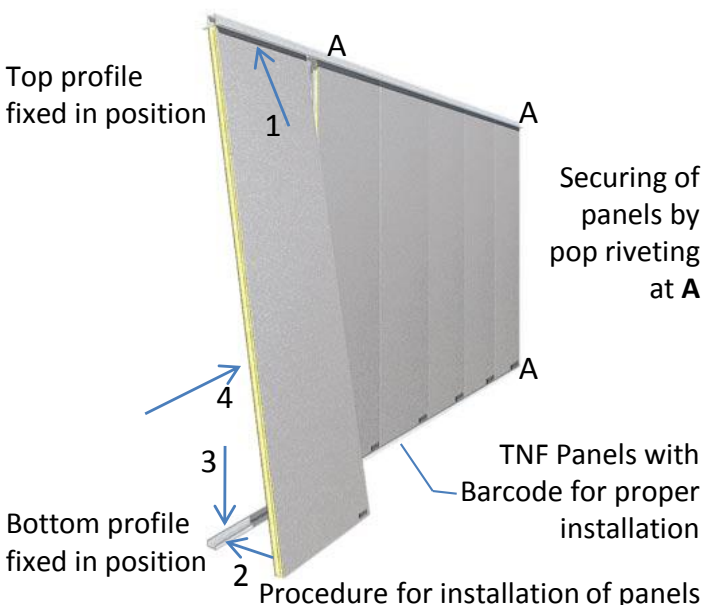
When installing a standard TNF panel system, it is advisable to start the installation of panels at a corner and end at a door.

The arrows on the cabin layout drawing show the direction for the installation of the panels.

All the panels marked with an \* have to be cut at site to fit.

It is recommended that some of the panels are fastened (approx. 20%) with 4 mm pop rivets to the top and bottom profiles. To ensure uniform joints, make sure that the panels are pushed tightly together before pop riveting.

At corners and Tee joints the panels are cut to fit and jointed by visible decorative profiles. Or by the use of open-end corner and Tee panels.



## Protection film

The protection film on the surface must be loosened at the panel edges before sliding the panels into position. The barcode labels on the panels must be on the same side of the wall and have the same location. See procedure for installation of panels.

## Modular panel installation

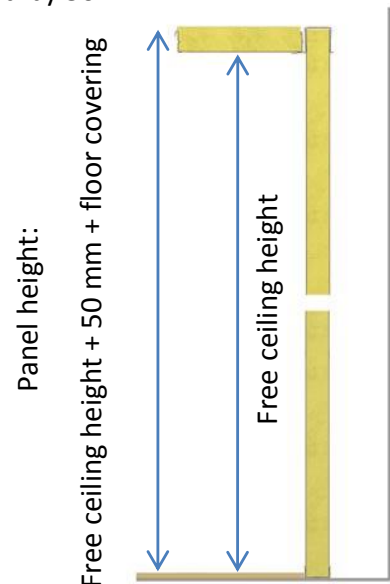
The TNF wall panels can be installed in accordance with the installation drawings marked with the panel codes. It is recommended to start with a corner or a Tee panel, and to end up at a door or window box opening. The fine tolerances ensure that the panels always fit into the bottom profile frame.

## Top profile installation

When the TNF wall panels are installed, the top profiles are placed directly on top of the panels. The profiles are assembled with splice TNF 409. It is not necessary to fasten the top profiles to the steel deck or the ship's side. Proper rigidity and stability are contained in the system. The top profiles include pre-stamped holes to allow cable entry for concealed wiring.

## Determining panel height

The fig. shows an easy way to calculate panel heights with different types of ceilings. If the top profiles are suspended, the panel height can be reduced by 30 mm.



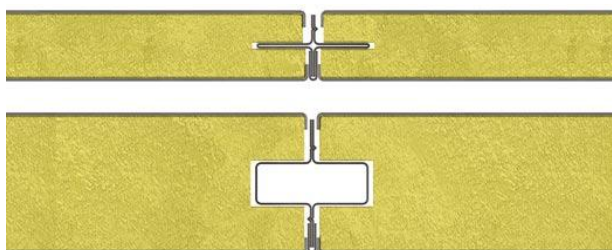
# Detachable Panels

The TNF 2S standard panel system includes special jointing profiles that allow panels already installed to be removed. The detachable panel construction should be used only for occasional access. For frequent access it is recommendable to use TNF HB6 inspection door. One removable panel per wall is sufficient. With one panel removed, the adjacent panels can subsequently be removed. Detachable profiles are available for 25 mm lining panels and for 50 mm panels used as lining as well as partition walls.

## Profiles for detachable panels

The profiles that allow the panels to be removed are supplied as units ready to be installed exactly as the standard profile TNF 320.

Panel width including profiles: 606 mm.



## Profile assortment

For 25 mm lining panels TNF 340

For 50 mm lining panels TNF 334

For 50 mm partition wall TNF 333

The visible cover clips have the same color as the panels.

## Dismounting procedure

For lining the profiles have cover clips on one side.

For partition wall the profiles have cover clips on both sides.

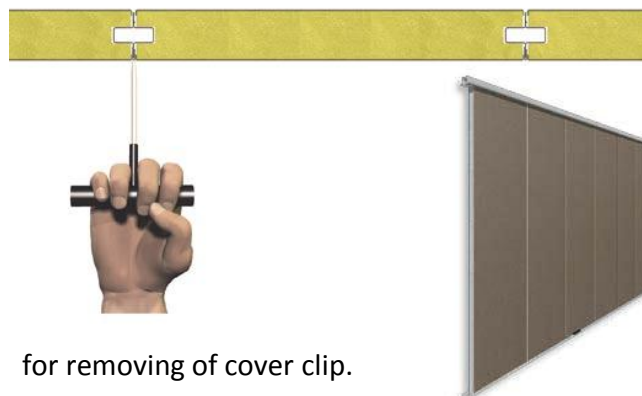
To remove a panel already installed, use the following procedure:

1. Remove the cover clips.
2. Lift the panel upwards into the top profile.
3. Slide the lower end of the TNF panel over the bottom profile edge and remove the panel.

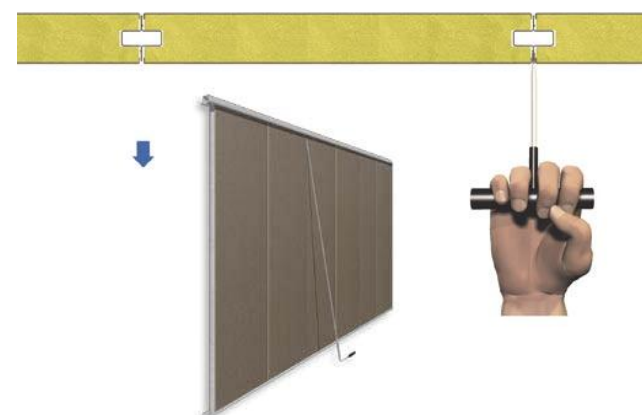
## Reinstallation

Reverse the procedure to reinstall the panel.

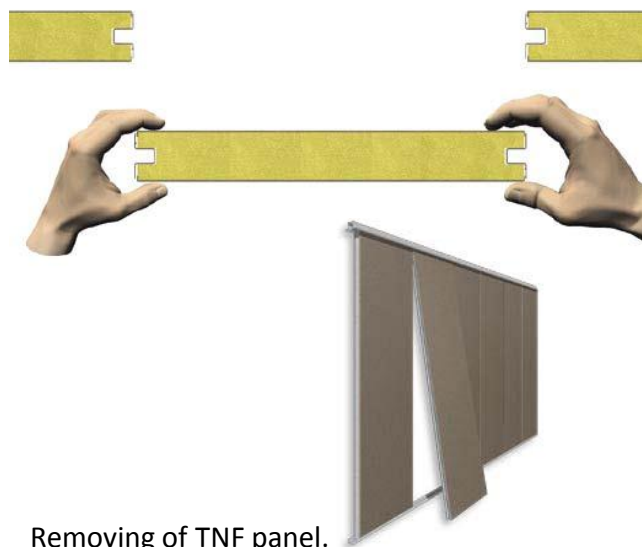
## Dismounting hook



for removing of cover clip.



Removing of cover clips.



Removing of TNF panel.

# Panels for Special Applications

In addition to the standard panels, the TNF panel assortment includes panel types designed to fulfill special applications. These panels have the same outer dimensions as the standard panels and form an integrated part of the TNF panel system.

## 1 hour fire rated panel

TNF 2SL is a 100 mm thick panel that has passed a 1 hour fire test as an A-60 wall.



TNF 2SL

## Access panels

The access panel TNF 2ST is used as lining panel and has a special joint construction, which allows easy removal of the panel. It is suitable for locations, where frequent access is foreseen.

When installed, the access panel TNF 2ST must be fastened to the jointing profile by screws for every 300 mm.



TNF 2ST

## Conduit panels – concealed wiring

The 50 mm TNF panels are designed for the TNF 2SP concealed wiring. The panel joints with the H-shaped profile provide space for the electric wires.

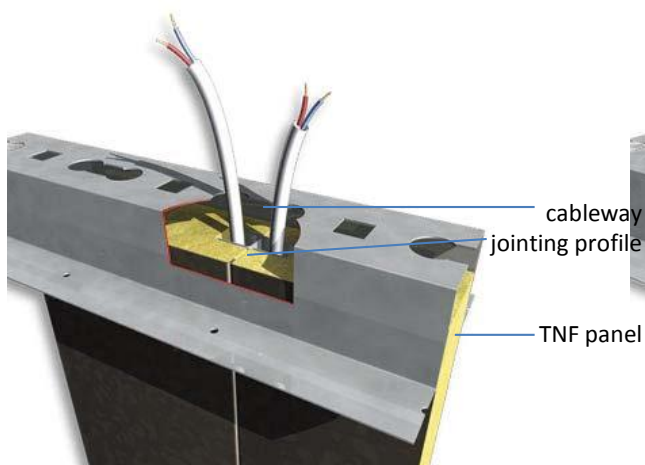


TNF 2SP

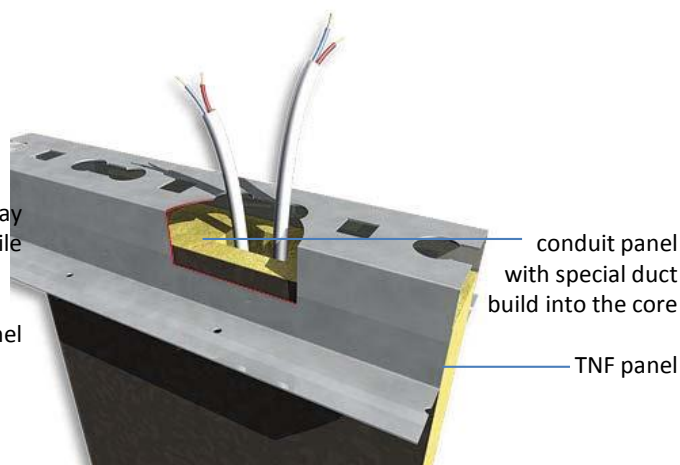
The conduit panels TNF 2SP and TNF 2SQ have one and two ducts, respectively, built into the Rockwool core. The ducts serve as conduit for multiple concealed wiring.



TNF 2SQ



Concealed wiring – standard cableway

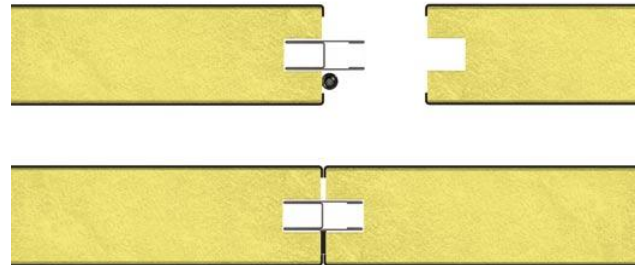
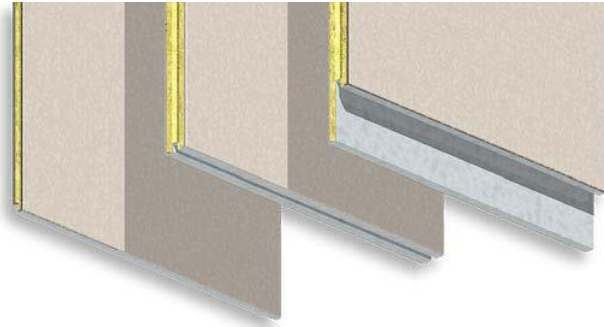


Concealed wiring – conduit cableway

# Wet Room Panels

The TNF wall panels are available with a special bottom construction designed for wet room conditions. The wet room panels are suitable for laundries, galleys, toilet/shower units, and other areas where wet conditions prevail.

The special bottom design, which allows the panels to be installed on steel comings, prevent the water from penetrating into the construction.



The basic range of wet room panels include:

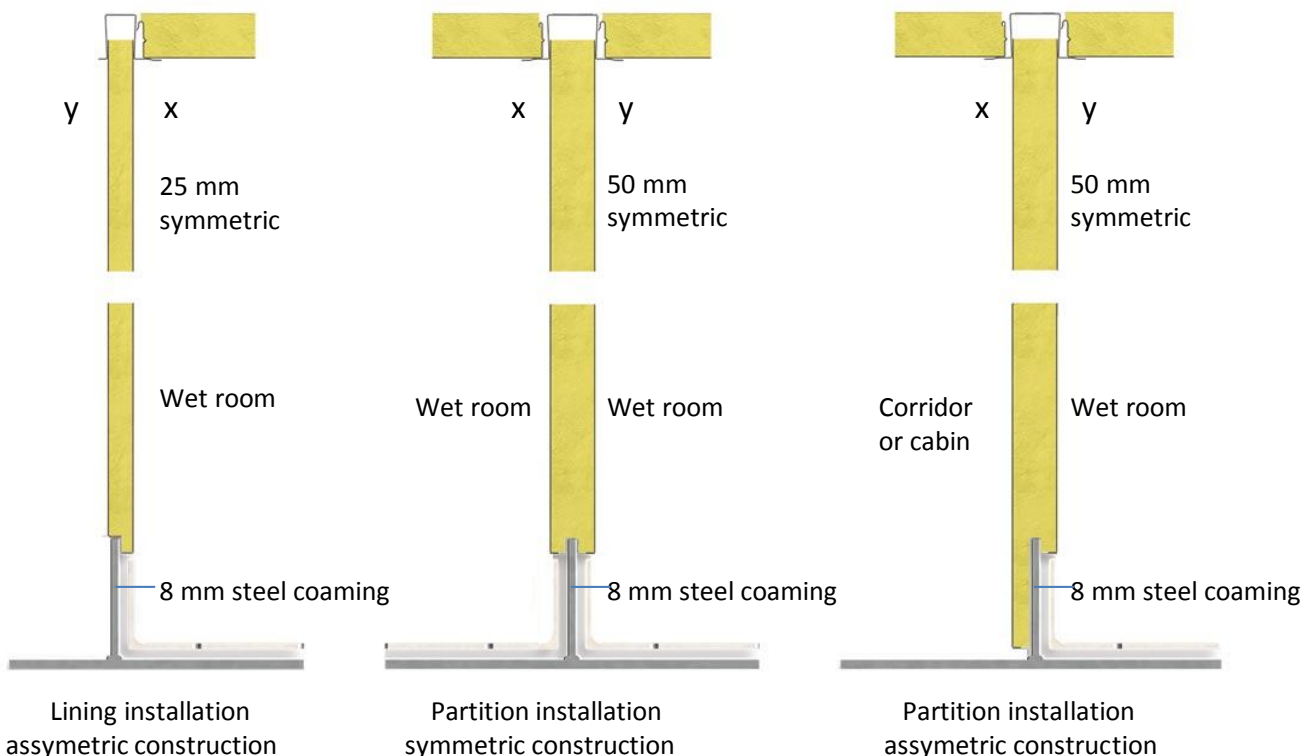
- 25 mm lining panels with symmetrical construction.
- 50 mm panels, symmetric as well as asymmetric construction for lining and partition walls.

Special panels including corner and Tee panels are also available with wet room bottom construction, asymmetric and symmetric.

Sealing of panel joint

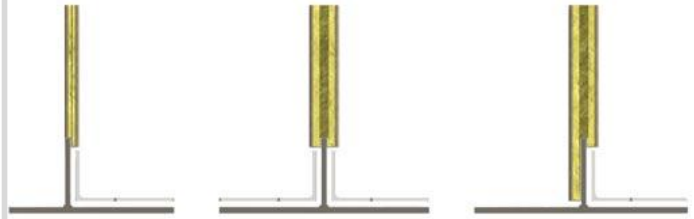
When installing TNF wet room panels, the panel joints must be sealed to prevent water from penetrating into the construction. The amount of sealer to be applied to the jointing profile must be sufficient to allow the sealer to appear on the surface of the panels, when they are tightly jointed.

Your sealer manufacturer should be consulted for selection of correct sealer.



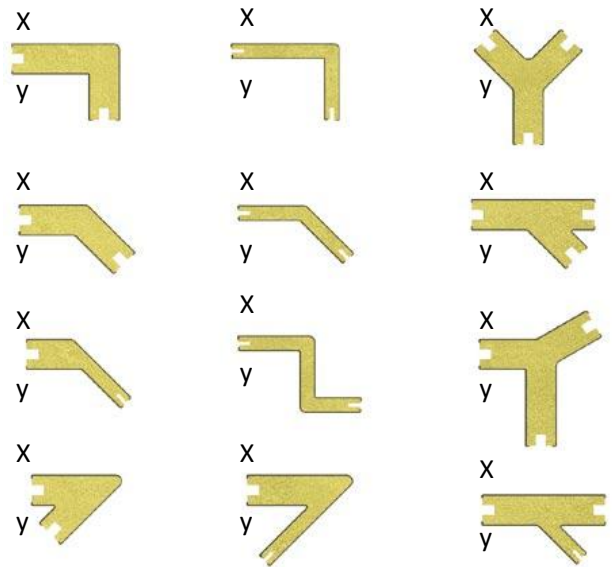
## Wet room panels

All types, except TNF 2SM and curved panels are available with the special wet room configuration. The panels have a bottom construction, which allows the panels to be installed on a steel coming.



## Jointing panels

To meet individual design requirements, the TNF TAILOR-MADE SYSTEM includes a range of specially shaped corner and tee panels.



## Fire class

The TNF 2S panel system complies with the latest IMO regulations SOLAS 1974 and is approved by all major classification societies and authorities. Including EC-MED certificate. Certificates are available on request.

## Panel side identification

The panels are coded x - y and x-y-z for proper identification of the panel sides. It is particular important to use the codes for panels type 2SB as well for corner, Tee panels and wet room panels.

## Surfaces alternative

All panels can be delivered with TNF Magic, PVC, painted, aluminium or stainless steel surfaces.

## Wide panels

Wall panels can also be delivered in 1100 mm width.

# TNF quality features

## Thermal insulation

Made with a core of mineral wool, the TNF panels in 50 mm thickness used as lining provide sufficient thermal insulation. Further insulation of the shipside may not be necessary.

## Noise reduction

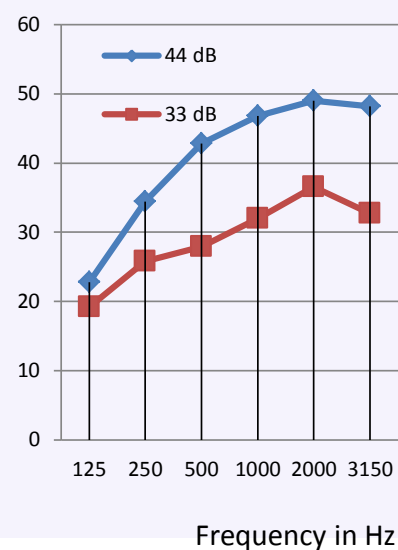
### Lining construction

K-value w/m<sup>2</sup> °C

Panel thickness	25 mm	50 mm
TNF panel without extra insulation	1,45	0,80
TNF panel + steel bulkhead without insulation	1,20	0,70
TNF panel + steel bulkhead + 50 mm insulation	0,40	

Freq. Hz	2SM R dB	2SA R dB
100	26,0	28,0
125	22,8	19,2
160	28,4	23,6
200	30,4	22,9
250	34,4	25,8
315	37,7	26,1
400	39,3	28,2
500	42,8	27,9
630	43,8	30,0
800	45,0	31,8
1000	46,8	32,0
1250	48,0	35,2
1600	48,7	36,0
2000	49,0	36,5
2500	48,7	36,0
3150	48,2	32,7
Rw	44dB	33dB

Sound reduction in dB



The figure shows the noise reduction values at different frequencies and the noise reduction curves for the two types of panels used for partition walls:

- TNF 2SA standard
- TNF 2SM high noise reduction

The difference in noise reduction between standard panels and high noise reduction panels is significant. More details on noise reduction with TNF products in the brochure "TNF high noise reduction".



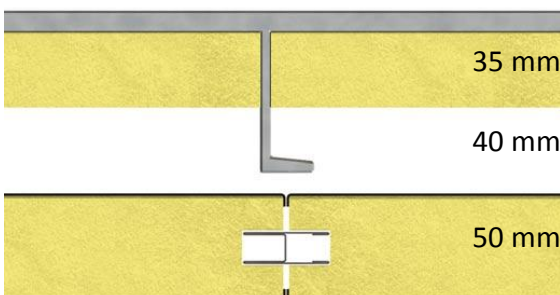
TNF 2SF 25 mm B15 approved



TNF 2SA 50 mm B15 and B30 approved



TNF 2SM 50 mm B15 approved



A60 construction achieved with TNF 2SA panel, 50 mm combined with steel bulkhead insulated with Firebatts

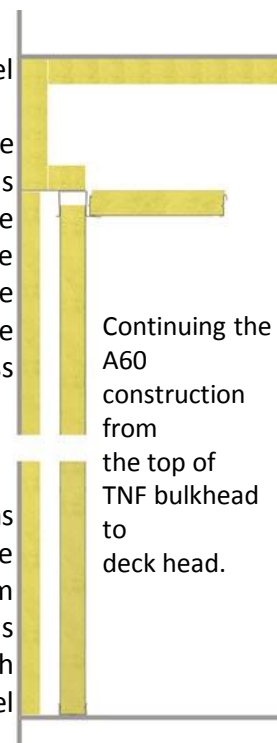
## Fire protection

### B-class constructions

The TNF 2S panel system complies with the latest IMO regulations SOLAS 1974. All the panels are B-15 fire rated. In addition, the TNF 2SA panels are approved as fire class B-30.

### A-class construction

A-class constructions (1 hour fire rating) are achieved with 50 mm TNF 2S panels combined with steel insulated bulkheads.



Continuing the A60 construction from the top of TNF bulkhead to deck head.

## Approvals

The TNF 2S panel system is approved by all major classification societies and authorities. Including EC-MED certificate. Certificates are available on request.

**TNF is the complete high quality accommodation system for all marine interiors. The TNF system includes wall and ceiling panels, doors, floors, wetunits, furniture and prefabricated cabins. TNF has been leading the development in marine interiors since 1973. The world famous TNF quality is demonstrated in the environment, which can be designed to provide the ideal conditions for all functions.**

# **TNF**

## **Interiors by INEXA**

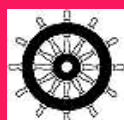
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