



The art of cooling >



# Cooling systems

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## English

NRF was established in 1927 and is a leading European manufacturer of Automotive, Industrial, Railway and Marine heat transfer products. NRF's manufacturing and distribution companies are located in all major Western European countries and guarantee fast delivery in greater Europe. The large variety of heat transfer solutions, multiple fin systems and OE matching quality in Copper and Aluminium make that NRF radiators are well perceived worldwide. The combination of flexible manufacturing methods, craftsmanship,

enthusiasm and passion result in continuous quality.

The employees of NRF are dedicated to meet their customers' special requirements with technology, innovation, customer service and quick turnaround time. "24-hour" delivery time is the norm for NRF's manufacturing.

This core systems catalogue gives a good overview of the variety of cooling systems that NRF has available for specialists who work daily with repairs of heat transfer systems.



## Spanish

NRF se estableció en 1927 y es un fabricante europeo líder en productos de transferencia térmica para los sectores de automoción, industria, ferroviario y naval. Las fábricas y los centros de distribución de NRF se encuentran en todos los principales países de Europa y garantizan la entrega rápida en todo el continente.

La gran variedad de soluciones térmicas, los múltiples sistemas de aleta plana y rizada, así como la calidad original O.E., tanto en cobre como en aluminio, hacen que los radiadores NRF tengan muy buen reconocimiento en todo el mundo. La combinación de métodos flexibles de fabricación con un personal altamente cualificado, entusiasta

y apasionado dan como resultado una calidad consistente.

Los trabajadores de NRF se esfuerzan en satisfacer las necesidades especiales de sus clientes con la tecnología e innovación adecuadas, así como un servicio al cliente y un tiempo de respuesta rápidos. "24 horas" como plazo de entrega es la norma para los fabricados de NRF.

Este catálogo de paneles da una buena visión general de la gran variedad de sistemas de refrigeración que NRF pone a disposición de los especialistas que trabajan a diario con las reparaciones de los sistemas de transmisión térmica.



## German

NRF wurde 1927 gegründet und ist ein führender europäischer Hersteller von Kühlern und Wärmetauschern für Fahrzeuge, Industrie, Schienenverkehr und Schifffahrt. NRF Produktionsstätten und Niederlassungen für den Vertrieb sind über alle größeren Länder Westeuropas verteilt und garantieren innerhalb dieser Länder eine schnelle Lieferung.

Mit der großen Auswahl an Kühlsystemen und der OE Qualität bei Kupfer und Aluminium Produkten, hat sich NRF weltweit einen Namen erworben. Die Kombination von flexiblen Herstellungsverfahren, Handwerkskunst, Begeisterung und Leidenschaft führen zu einer kontinuierlich hohen Qualität.

Die NRF Mitarbeiter sind darauf geschult, die speziellen Anforderungen ihrer Kunden mit Erfahrung, Innovation, Kundendienst und schnellen Durchlaufzeiten zu deren vollster Zufriedenheit zu erfüllen. "24-Stunden" Lieferzeit ist die Norm für NRF Sonderanfertigungen.

Dieser Katalog über Kühlernetze gibt Ihnen einen Überblick über die Vielfalt der Kühlsysteme, die NRF den Spezialisten anbietet, die täglich mit Reparaturen von Kühlern und Wärmetauschern zu tun haben.



## Italian

NRF fu fondata nel 1927 ed è leader dei produttori europei nello scambio termico per l'industria automobilistica, ferroviaria e navale. Gli stabilimenti NRF e le società di distribuzione sono situate nei più importanti Paesi Europei e garantiscono una consegna veloce in tutta Europa.

L'ampio assortimento termico, i diversi sistemi di alettature e la corrispondenza qualitativa con gli OE sia in rame che in alluminio rendono i radiatori NRF riconoscibili a livello mondiale. La combinazione di metodi di produzione flessibili,

artigianalità entusiasmo e passione hanno come risultato una qualità continua.

Gli impiegati della NRF sono dediti all'andare incontro alle speciali richieste della loro clientela con tecnologia, innovazione, servizio clienti e tempi d'esecuzione rapidi.

Il Catalogo Masse dà visione della varietà dei sistemi di raffreddamento di cui la NRF dispone per gli specialisti del settore che quotidianamente hanno a che fare con la riparazione di impianti termici.



## Polish

Firma NRF powstała w 1927 roku i jest wiodącym europejskim producentem wymienników ciepła na rynek motoryzacyjny, przemysłowy, do zastosowań w transporcie kolejowym oraz morskim. Przedstawicielstwa handlowe oraz fabryki NRF znajdują się w największych państwach Europy Zachodniej i zapewniają szybką dostawę na prawie całym obszarze Europy.

Różnorodność rozwiązań jakie oferuje firma, szeroki wybór systemów rdzeni oraz wysoka jakość odpowiadająca wymaganiom OE – zarówno dla produktów miedzianych jak i aluminiowych – sprawia, że produkty NRF doceniane są na całym świecie. Jakość NRF jest rezultatem odpowiednio

dopasowanych procesów produkcyjnych, doświadczenia i najwyższego rzemiosła pracowników oraz ich entuzjazmu i pasji.

Pracownicy NRF starają się sprostać specjalnym wymaganiom Klientów pod względem stosowanych technologii, innowacyjności oraz obsługi w trakcie całego procesu projektowania i produkcji. Jedną z norm jest 24-godzinny czas produkcji dla większości referencji.

Niniejszy katalog prezentuje pełen przegląd systemów rdzeni jakie NRF oferuje Klientom, którzy na codzień zajmują się serwisem i naprawami układów chłodzenia.



## French

NRF a été créé en 1927, et est un des leaders européen dans la fabrication de produits d'échangeurs de chaleur pour automobiles, industries, ferroviaires et maritimes. Les unités de fabrication et de distribution de NRF sont situées dans tous les grands pays d'Europe occidentale et garantissent une livraison rapide dans la grande Europe.

La grande variété de solutions de transfert de chaleur, les multiples systèmes d'ailettes en cuivre et en aluminium, la qualité OE ou équivalente, font que les radiateurs de NRF sont appréciés dans le monde entier. La combinaison de la flexibilité des procédés de fabrication, de l'artisanat, de

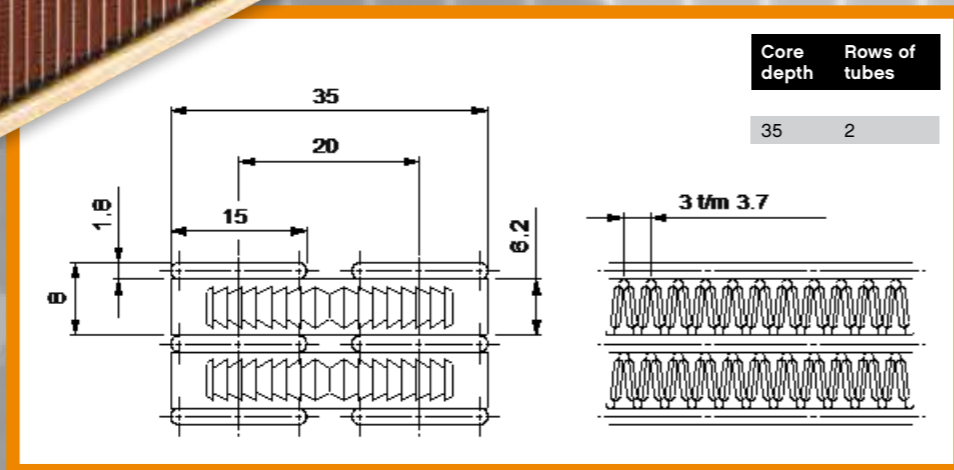
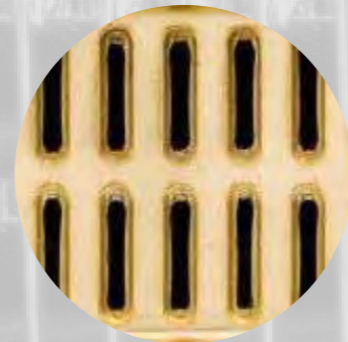
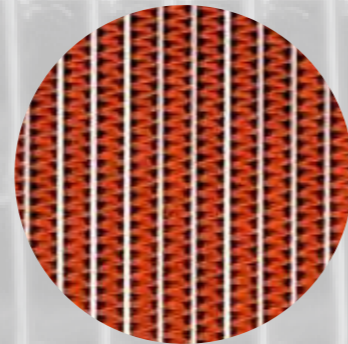
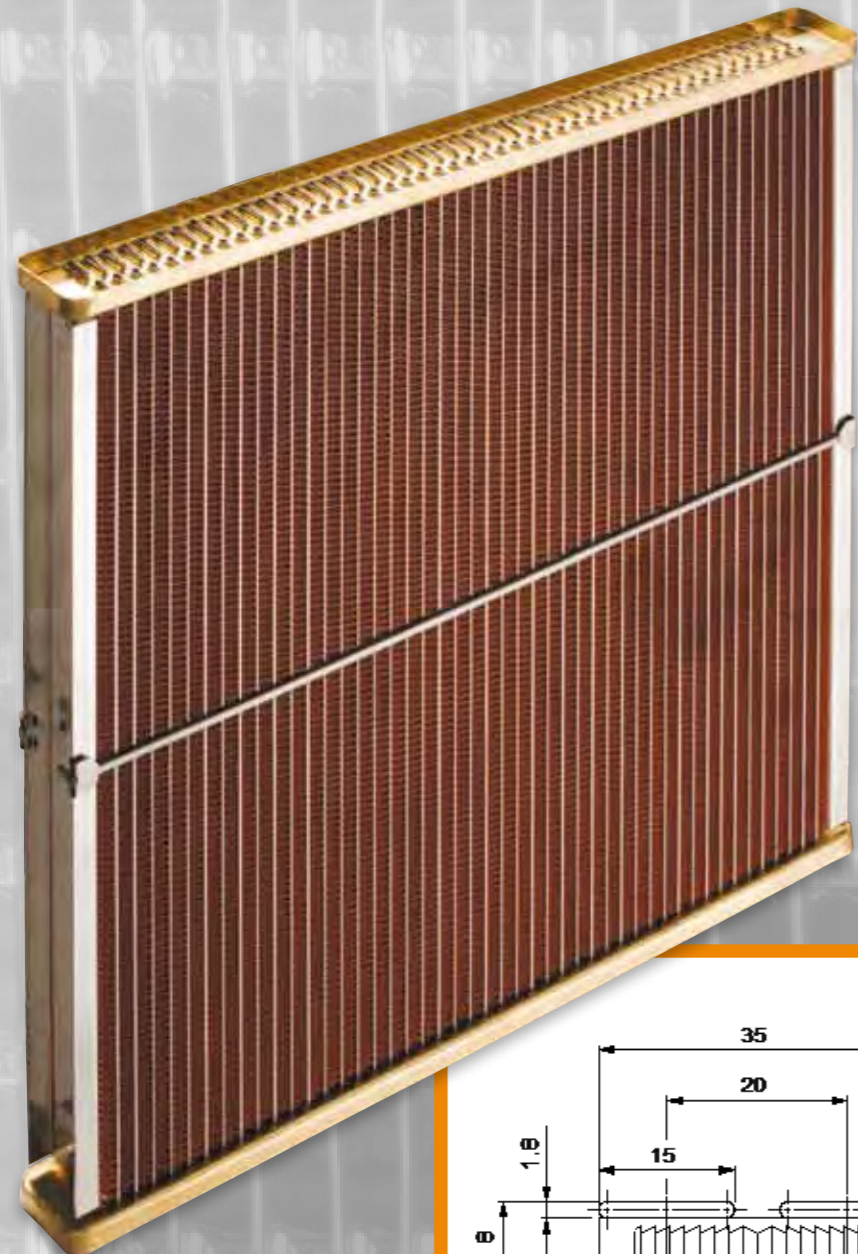
l'enthousiasme et la passion, offre une qualité constante.

Les employés de NRF s'appliquent à répondre aux attentes de leurs clients grâce à la technologie, l'innovation, un service client et un temps d'exécution rapide. "24 heures" de délai de livraison est la norme pour la fabrication de NRF.

Ce catalogue des systèmes de faisceaux donne un bon aperçu de la variété des systèmes de refroidissement dont NRF dispose pour les spécialistes qui travaillent quotidiennement dans la réparation des systèmes d'échangeurs de chaleur.

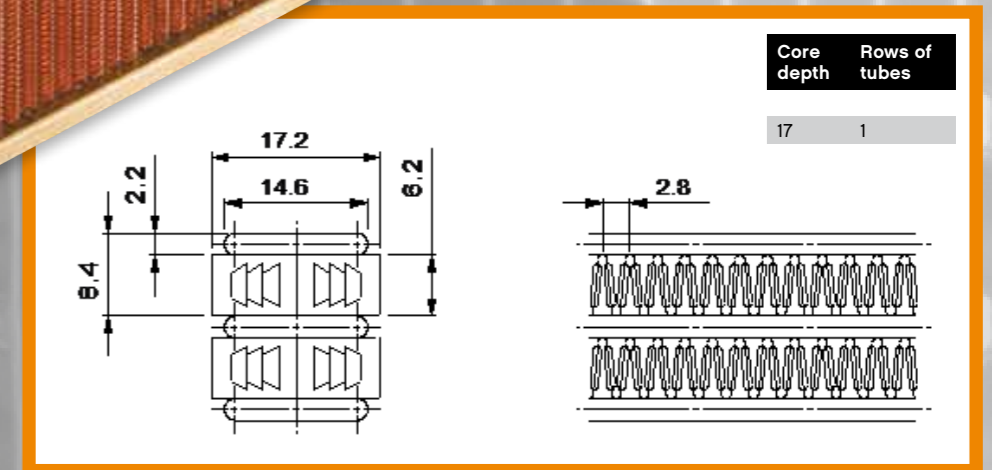
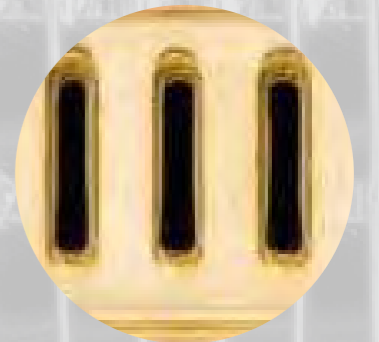
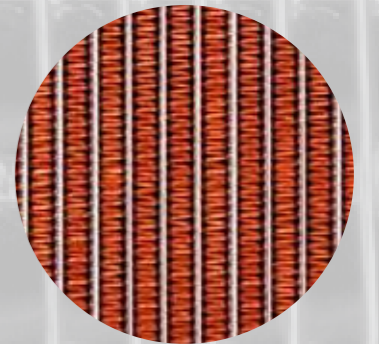
# S80

Applications:



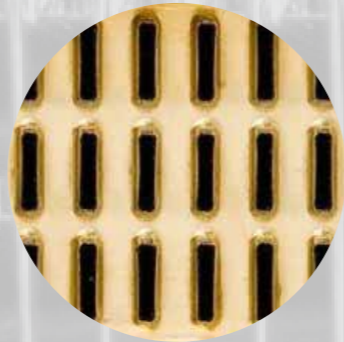
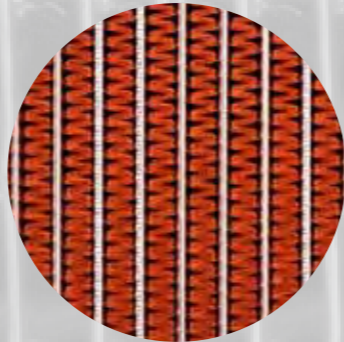
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Applications:

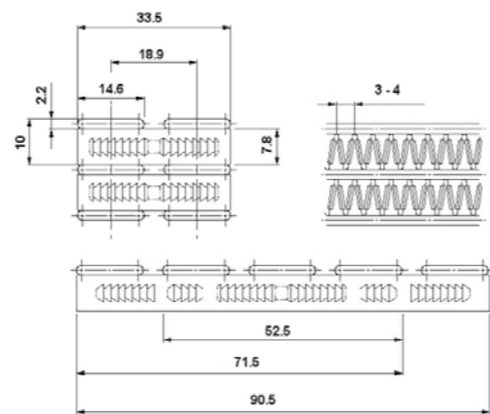


# S100 + Express

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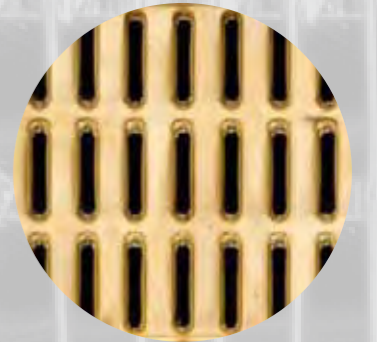
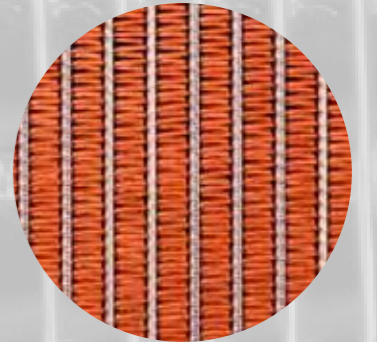


Core depth	Rows of tubes
34	2
53	3
72	4
91	5

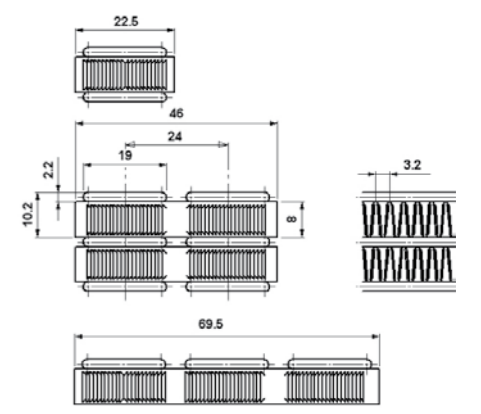


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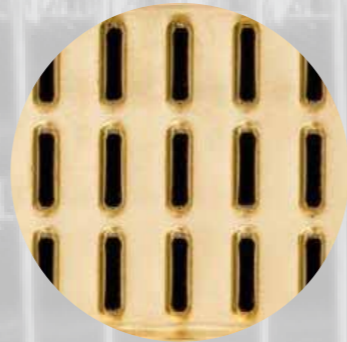
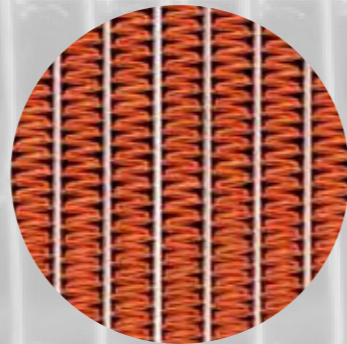


Core depth	Rows of tubes
22,5	1
46	2
69,5	3

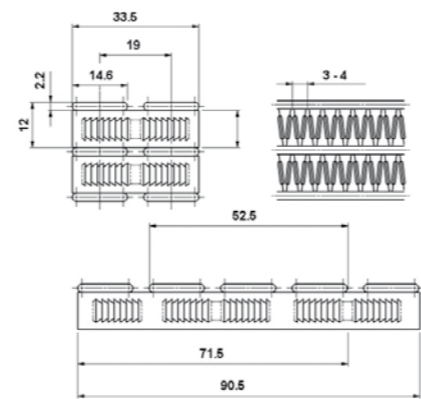


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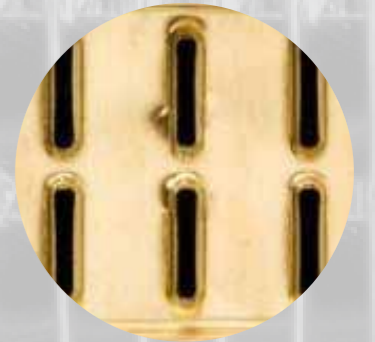
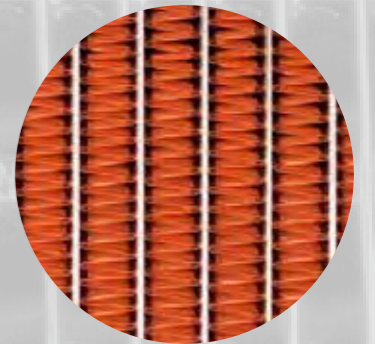


Core depth	Rows of tubes
34	2
53	3
72	4
91	5

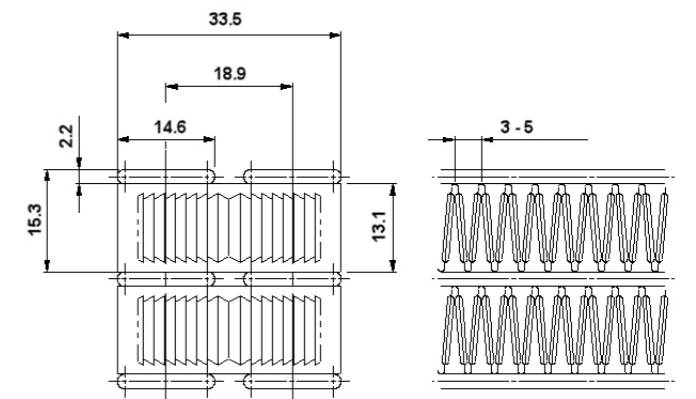


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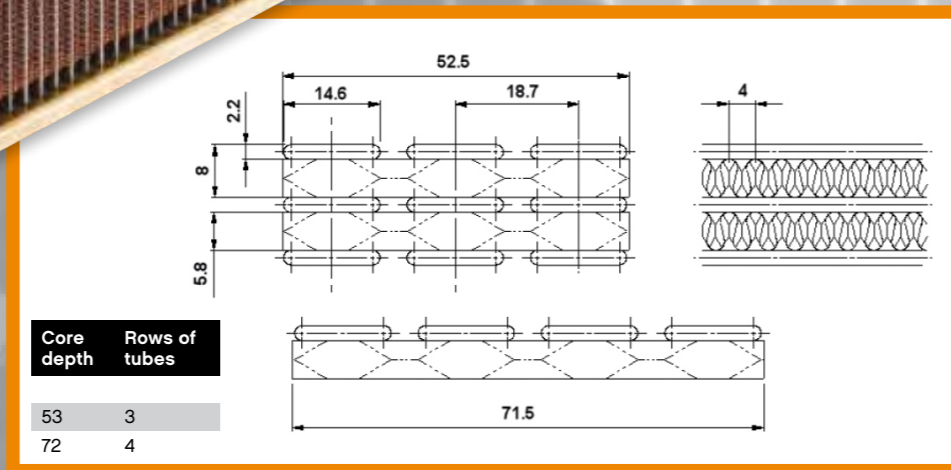
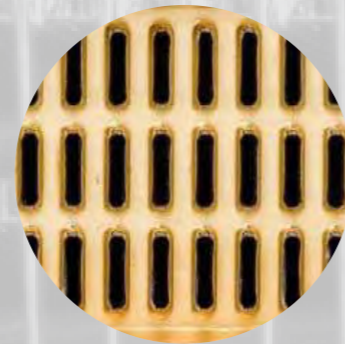
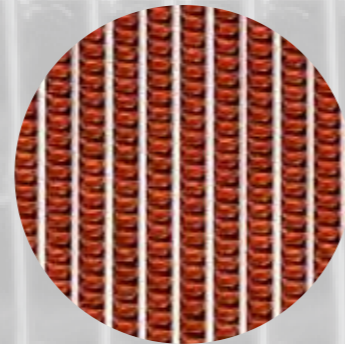
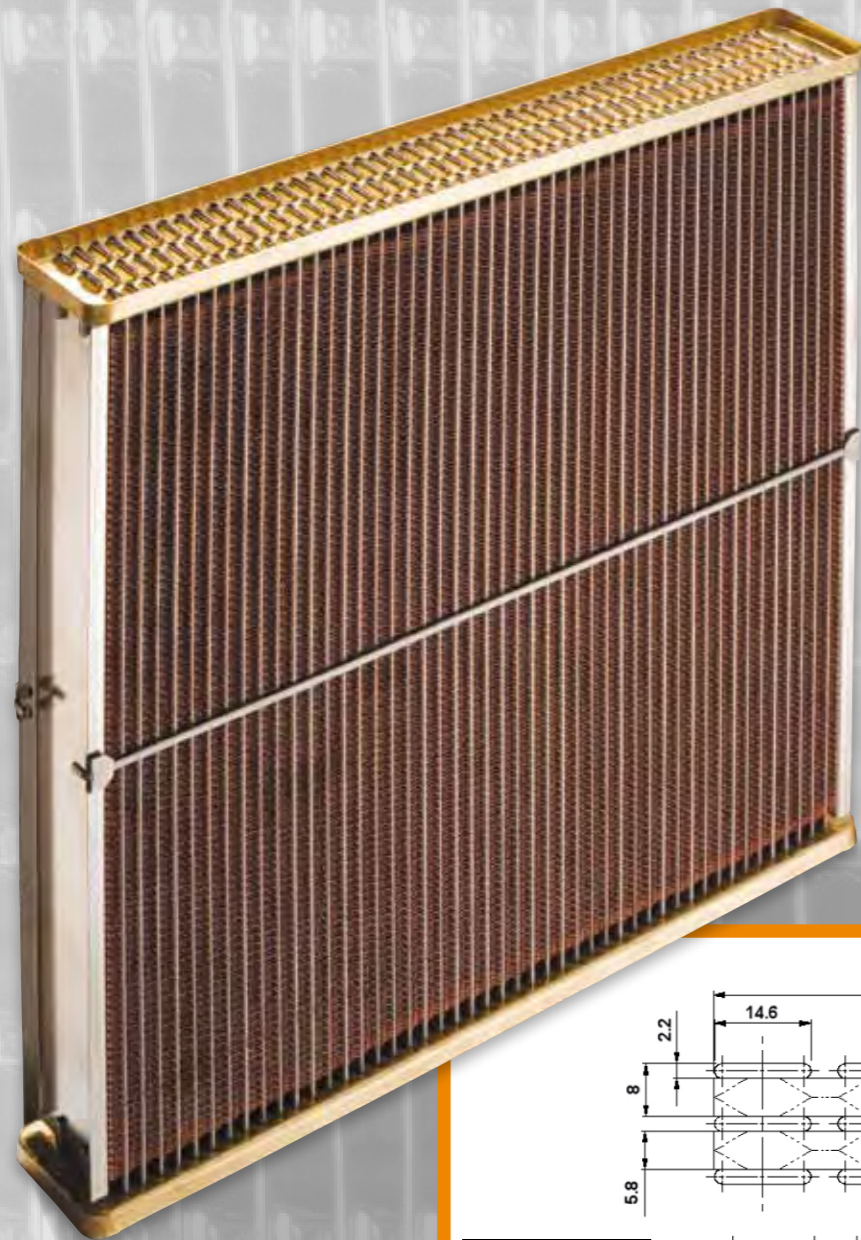


Core depth	Rows of tubes
34	2



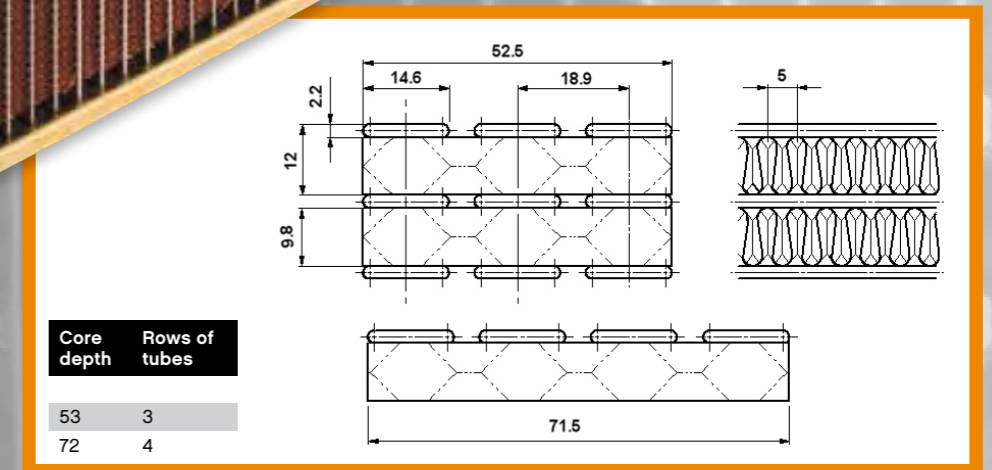
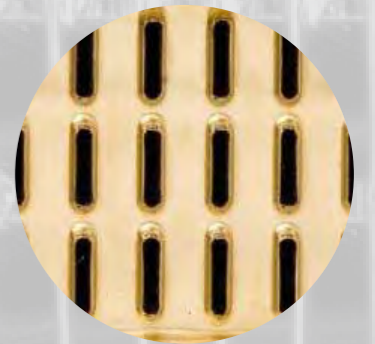
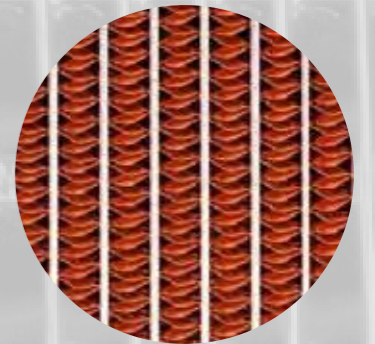
# WS80

Applications:



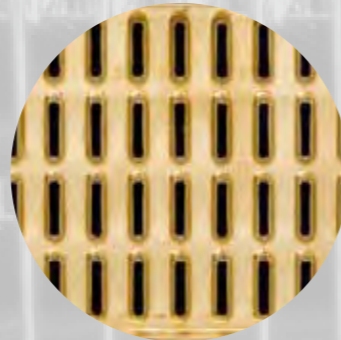
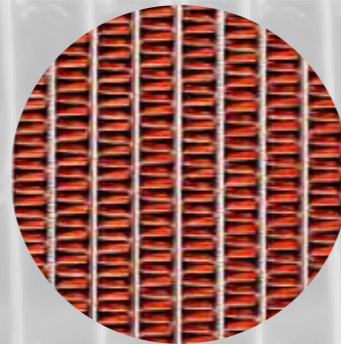
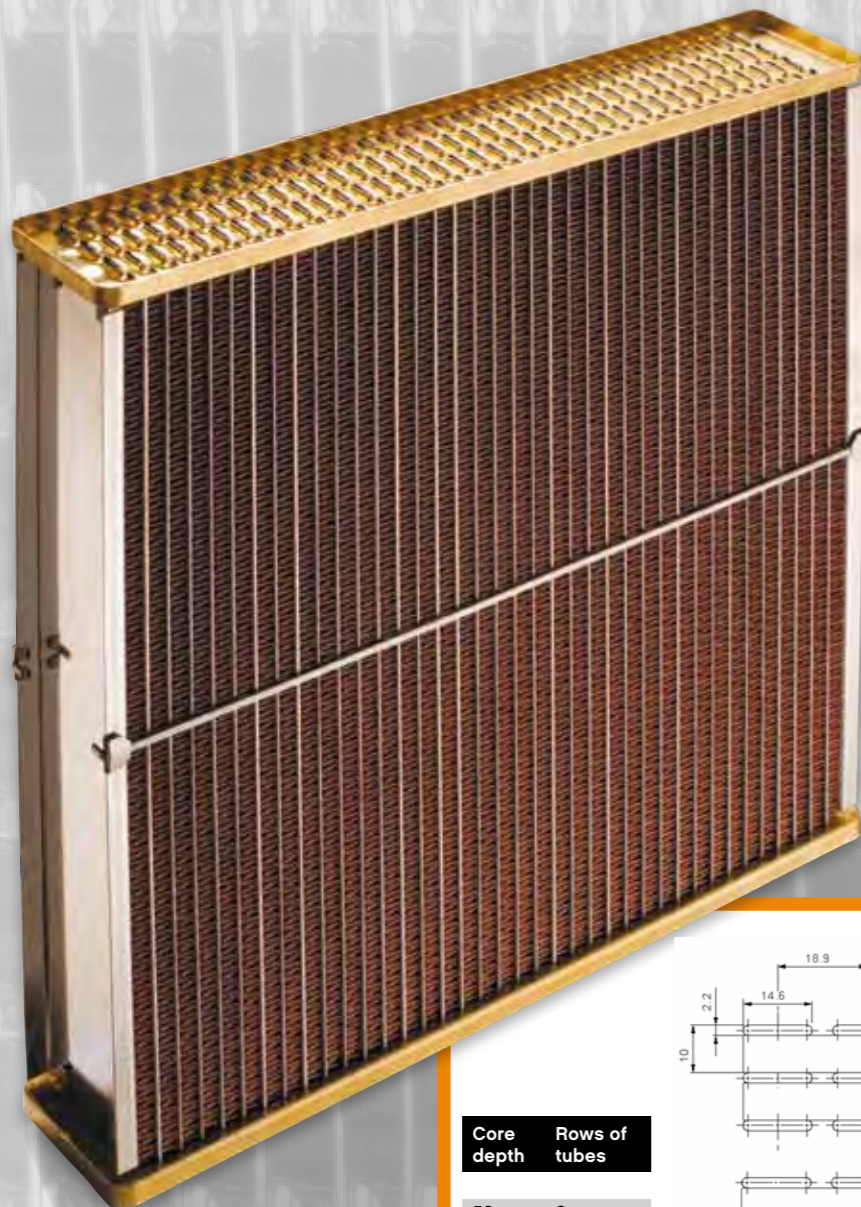
# WS120

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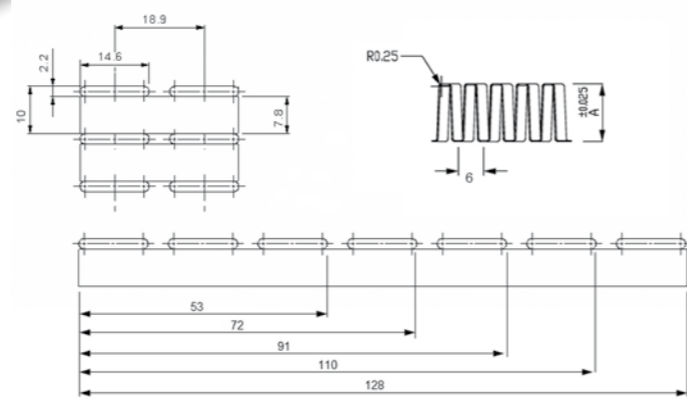


# SW100 + Express

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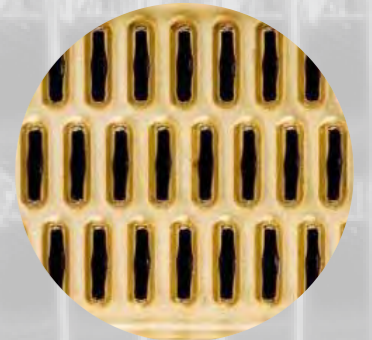
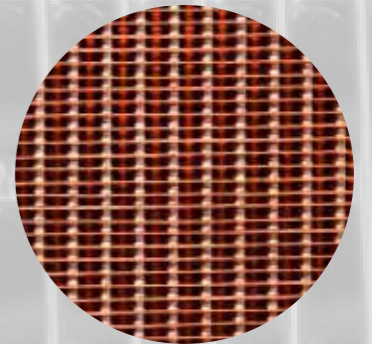
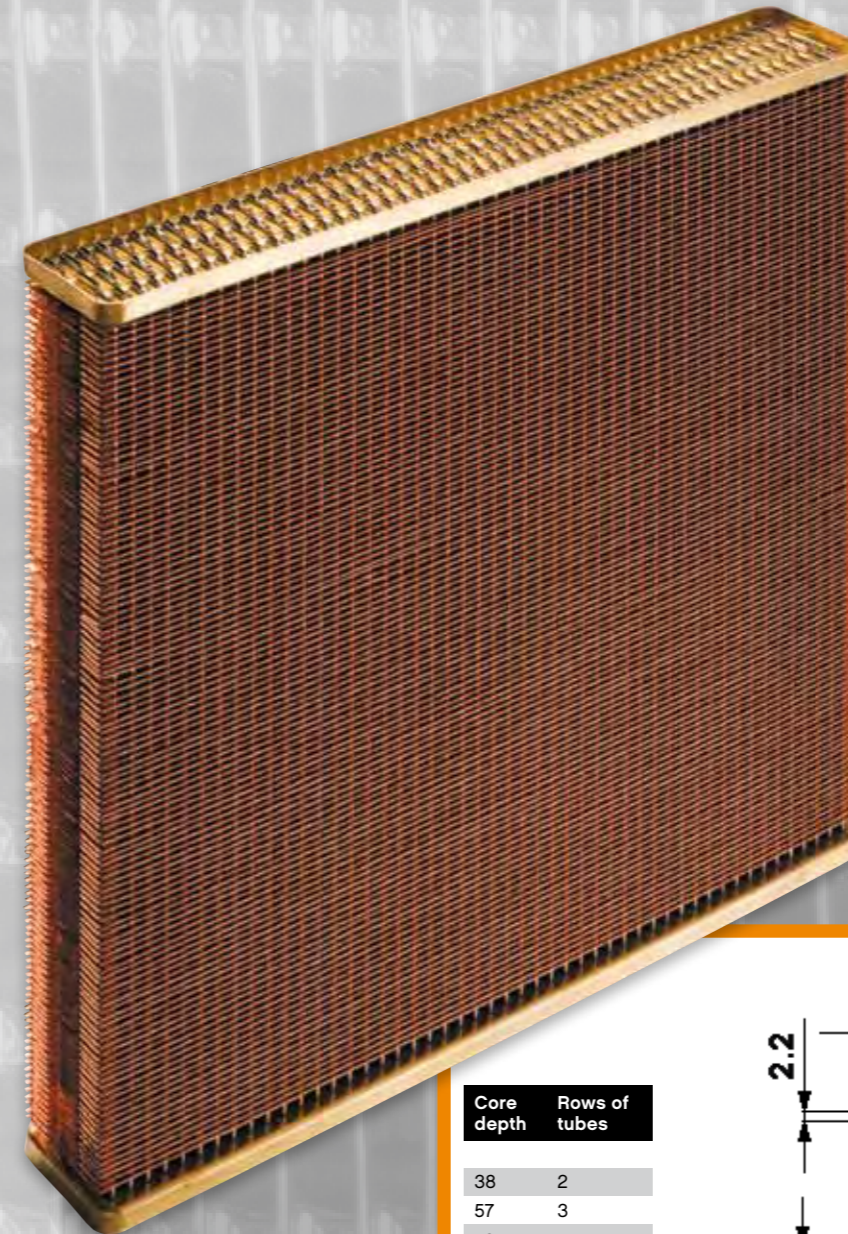


Core depth	Rows of tubes
53	3
72	4
91	5
110	6
128	7

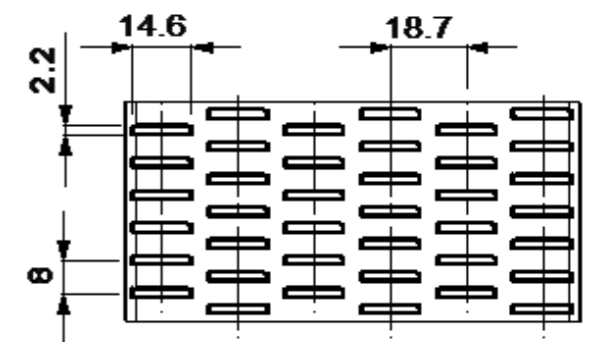


# PRS + Express

Applications:

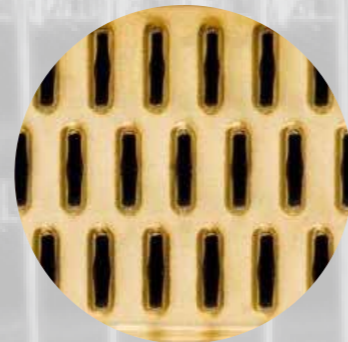
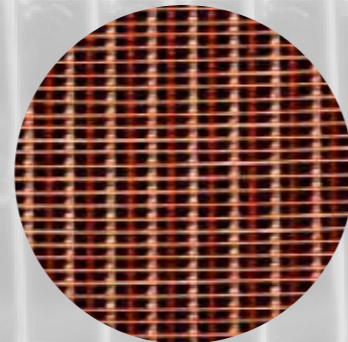


Core depth	Rows of tubes
38	2
57	3
76	4
95	5
114	6
133	7
152	8

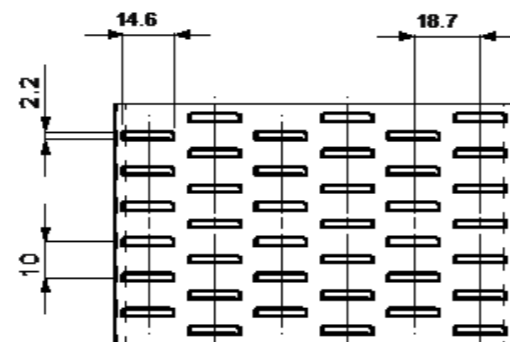


# PRO + Express

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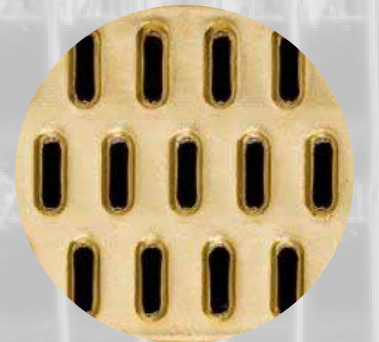
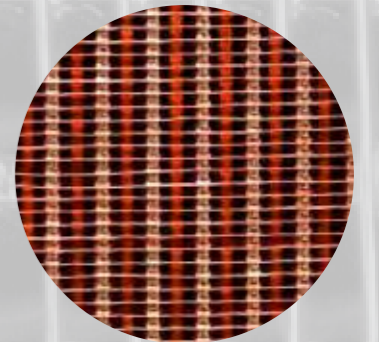
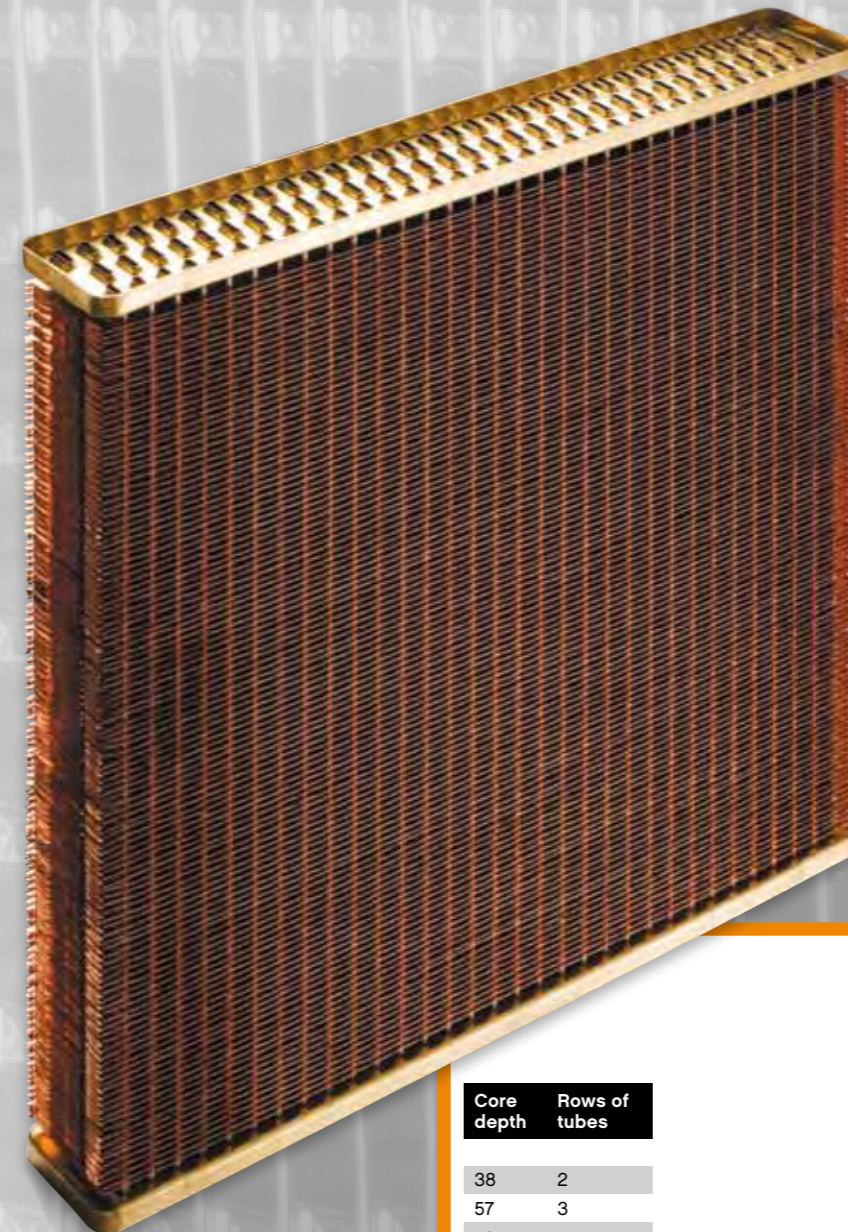


Core depth	Rows of tubes
38	2
57	3
76	4
95	5
114	6
133	7
152	8

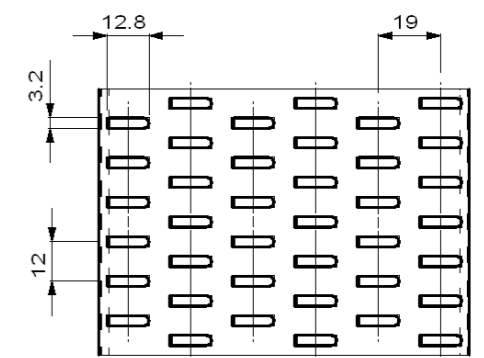


# PRB + Express

Applications:



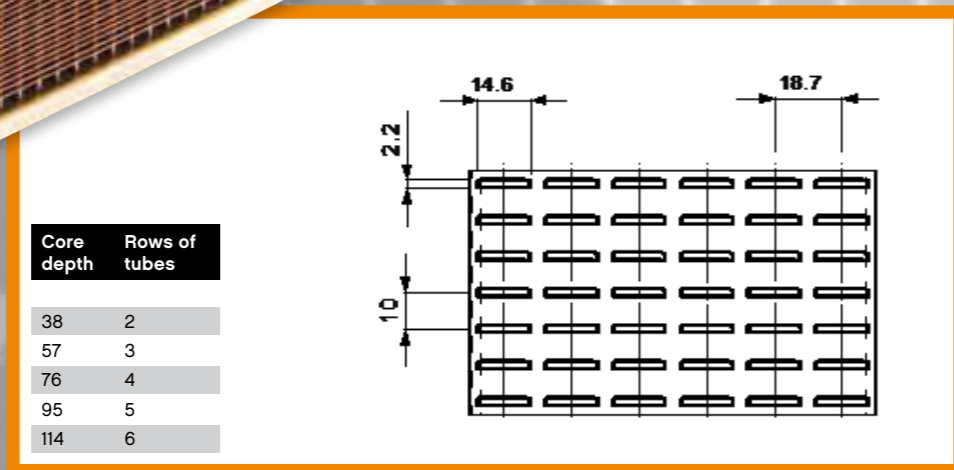
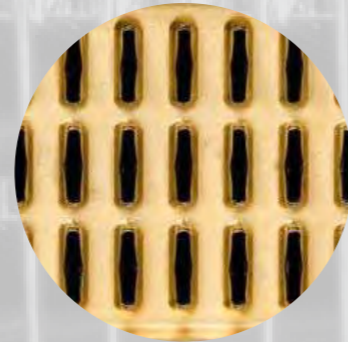
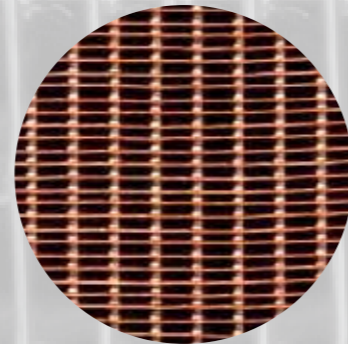
Core depth	Rows of tubes
38	2
57	3
76	4
95	5
114	6
133	7
152	8





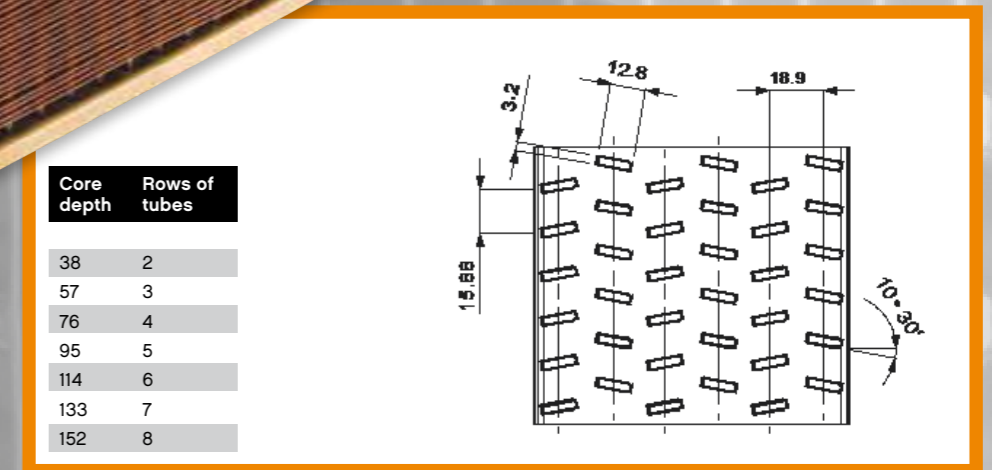
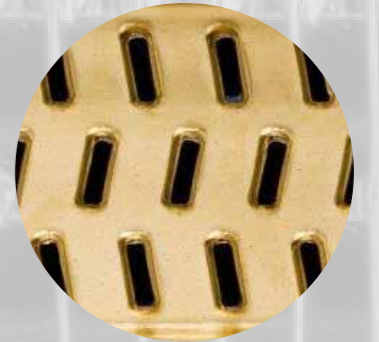
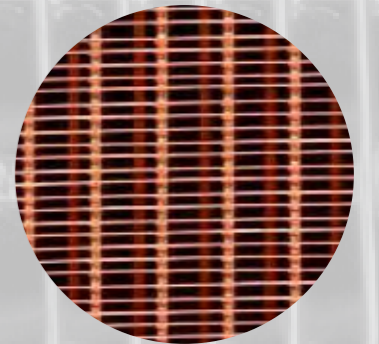
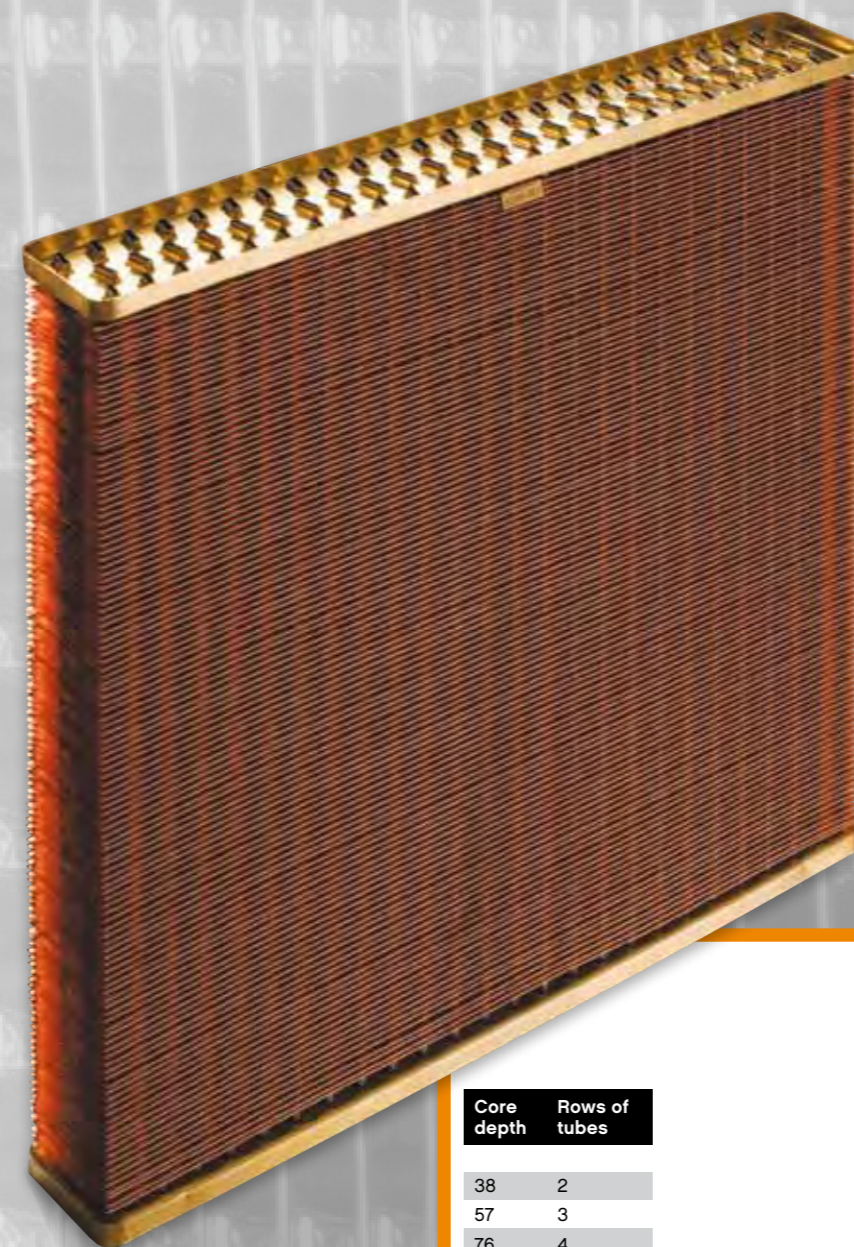
# PRR + Express

Applications:



# PRY + Express

Applications:





# Spain systems

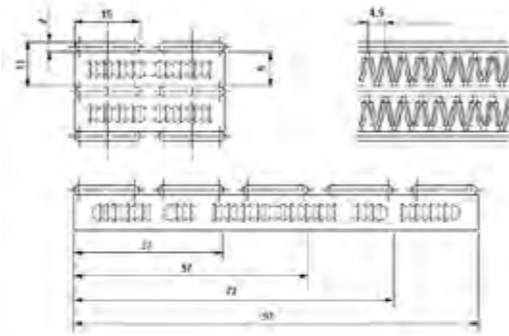
# 20-30AS94 / 43AS94 48AS98 / 56AS100

Applications:

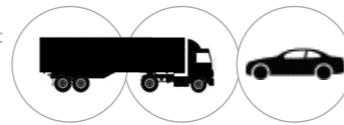


## P7000

Core depth	Rows of tubes
37	2
57	3
77	4
97	5

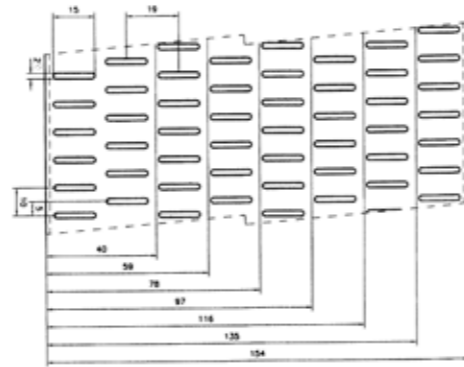


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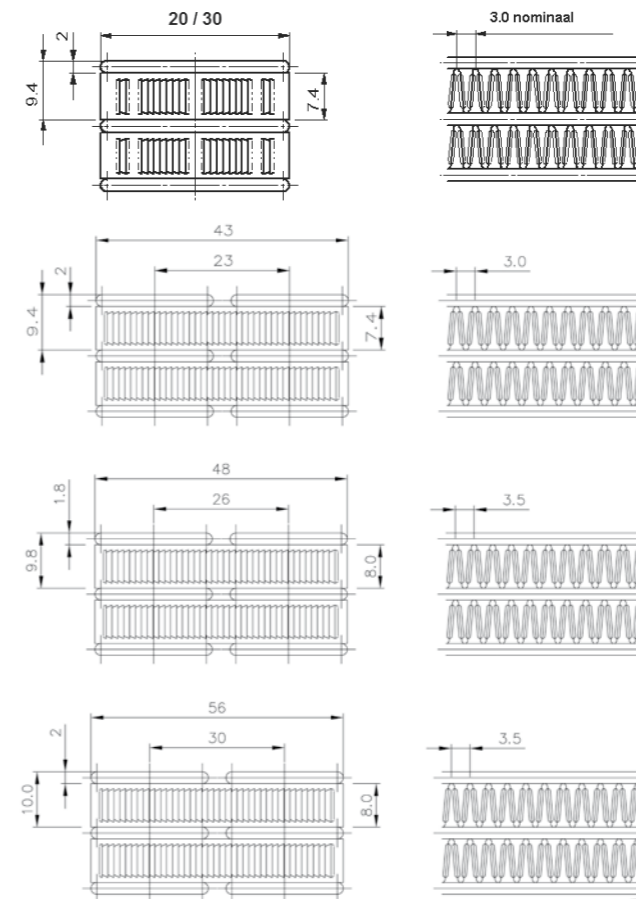


## PRM

Core depth	Rows of tubes
40	2
59	3
78	4
97	5
116	6
135	7
154	8



Applications:



### 20-30 AS94

Core depth 20 / 30  
Rows of tubes 1

Also:



### 43AS94

Core depth 43  
Rows of tubes 2

Also:



### 48AS98

Core depth 48  
Rows of tubes 2

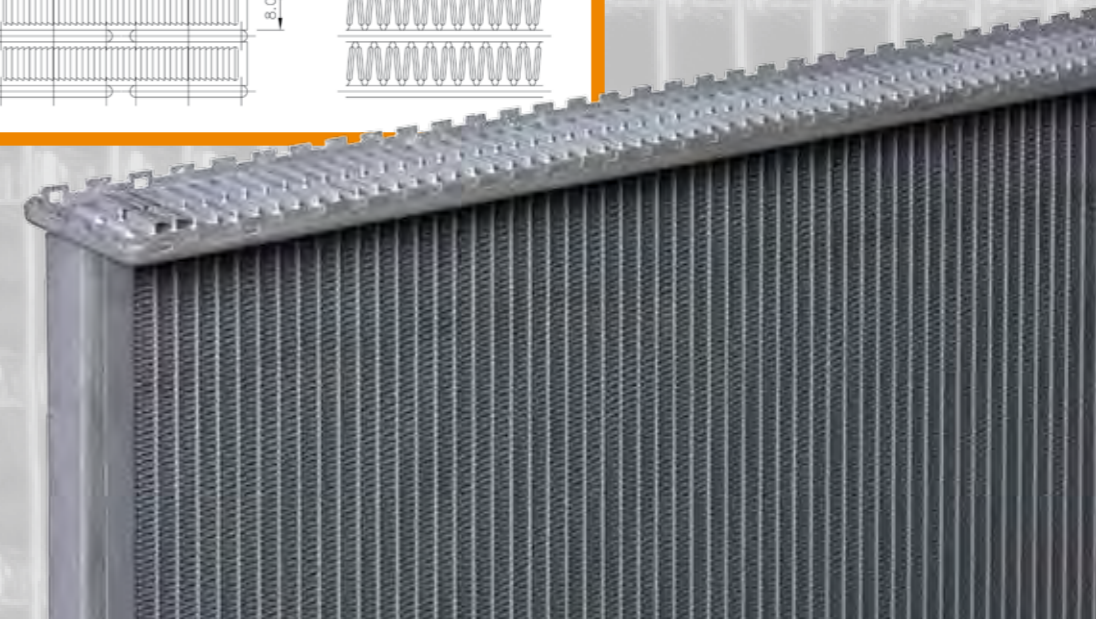
Also:



### 56AS100

Core depth 56  
Rows of tubes 2

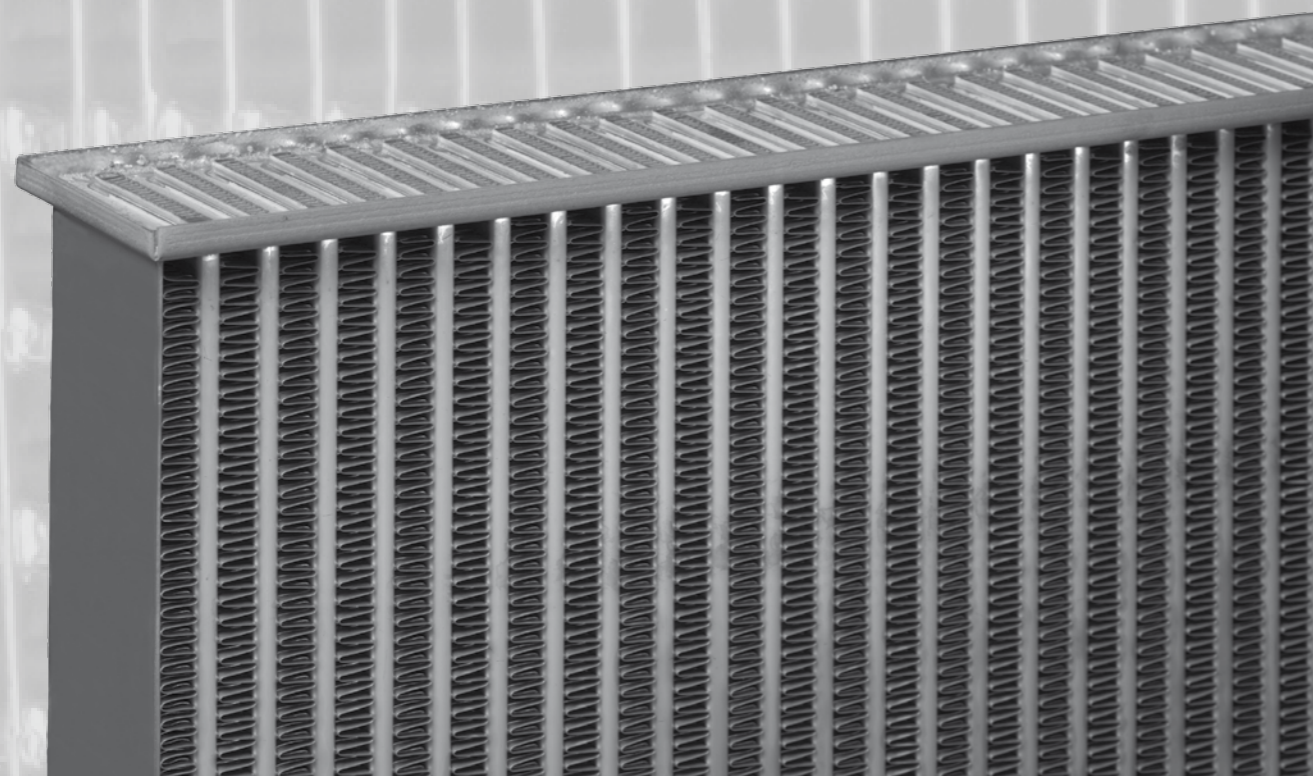
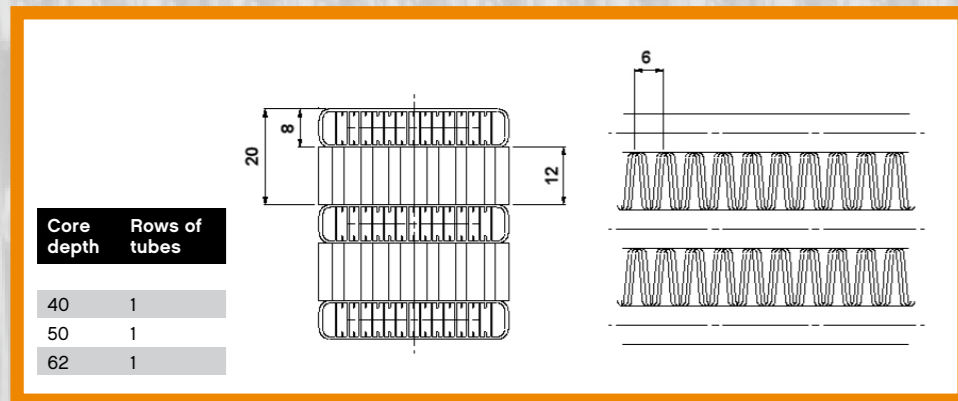
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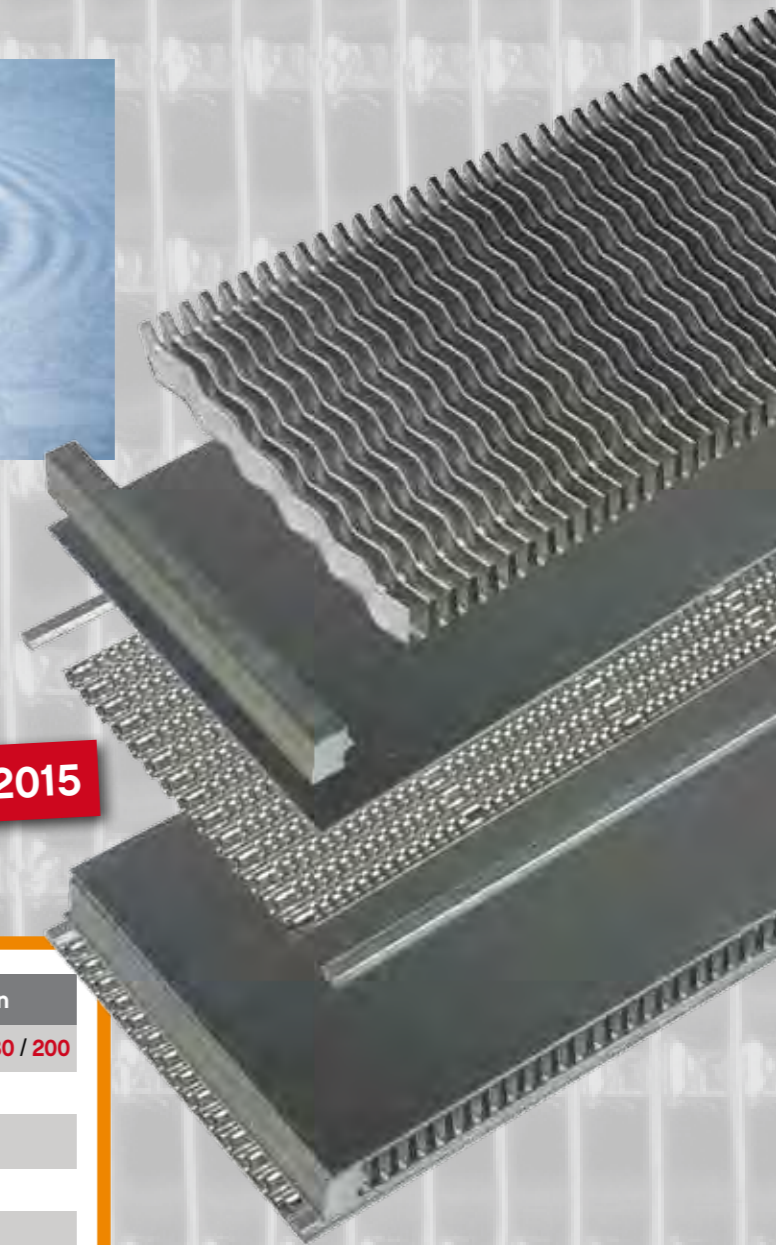
# AS200

Applications:



# BPS163 (oil)

Applications:

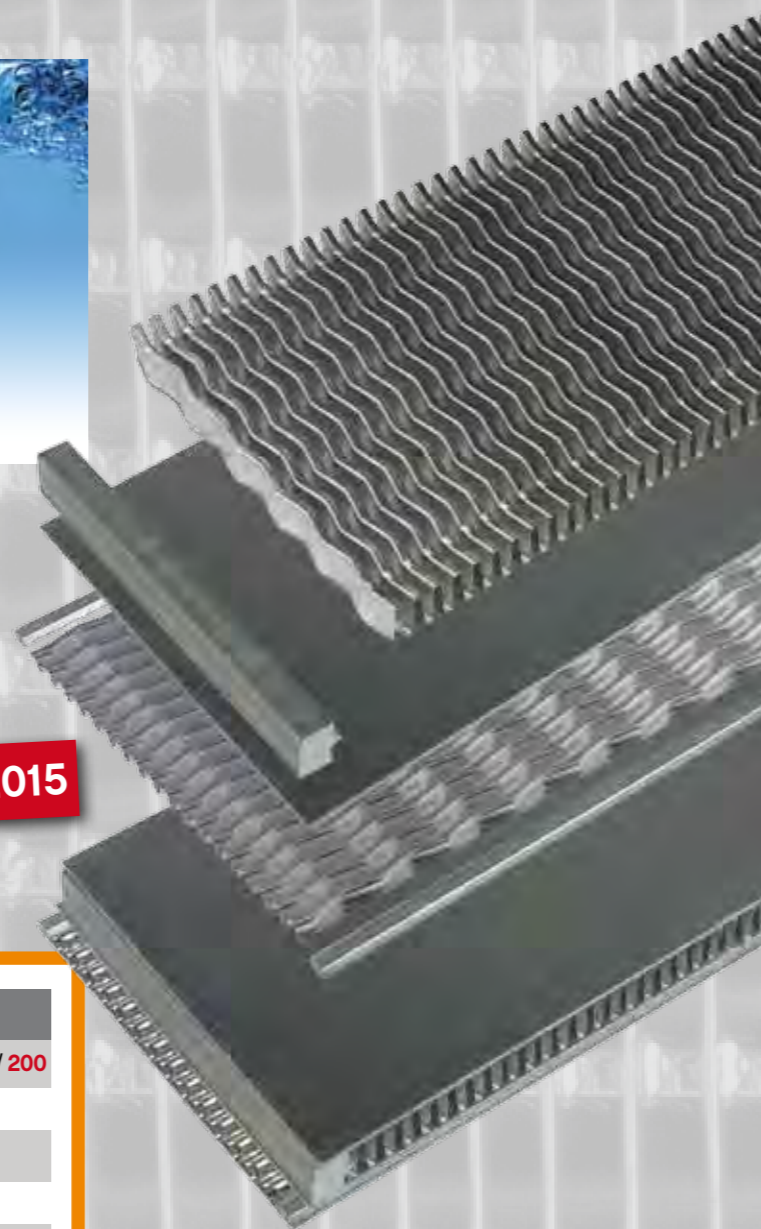


**180 / 200 available end 2015**

BPS163	Square Waved, non louvred fin
Core depths mm	40 / 50 / 62 / 97 / 114 / 140 / 160 / 180 / 200
Tube pitch	16,3 mm
Airfin height	12 mm
Tube thickness	4,3 mm
Turbulator height	3 mm
Max. working pressure	25 bar
Max. working temperature	160° C

# BPS163W (Water)

Applications:

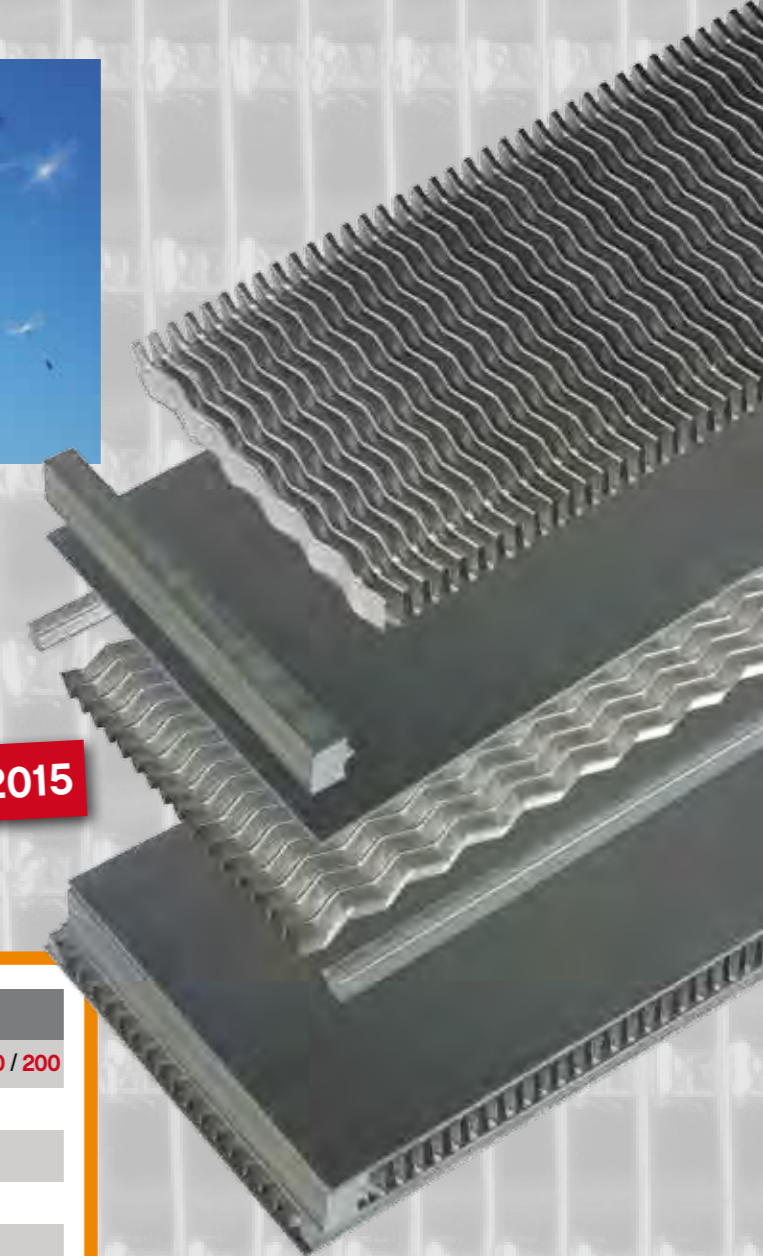


**180 / 200 available end 2015**

BPS163	Square Waved, non louvred fin
Core depths mm	40 / 50 / 62 / 97 / 114 / 140 / 160 / 180 / 200
Tube pitch	16,3 mm
Airfin height	12 mm
Tube thickness	4,3 mm
Turbulator height	3 mm
Max. working pressure	25 bar
Max. working temperature	160° C

# BPS193 (Air)

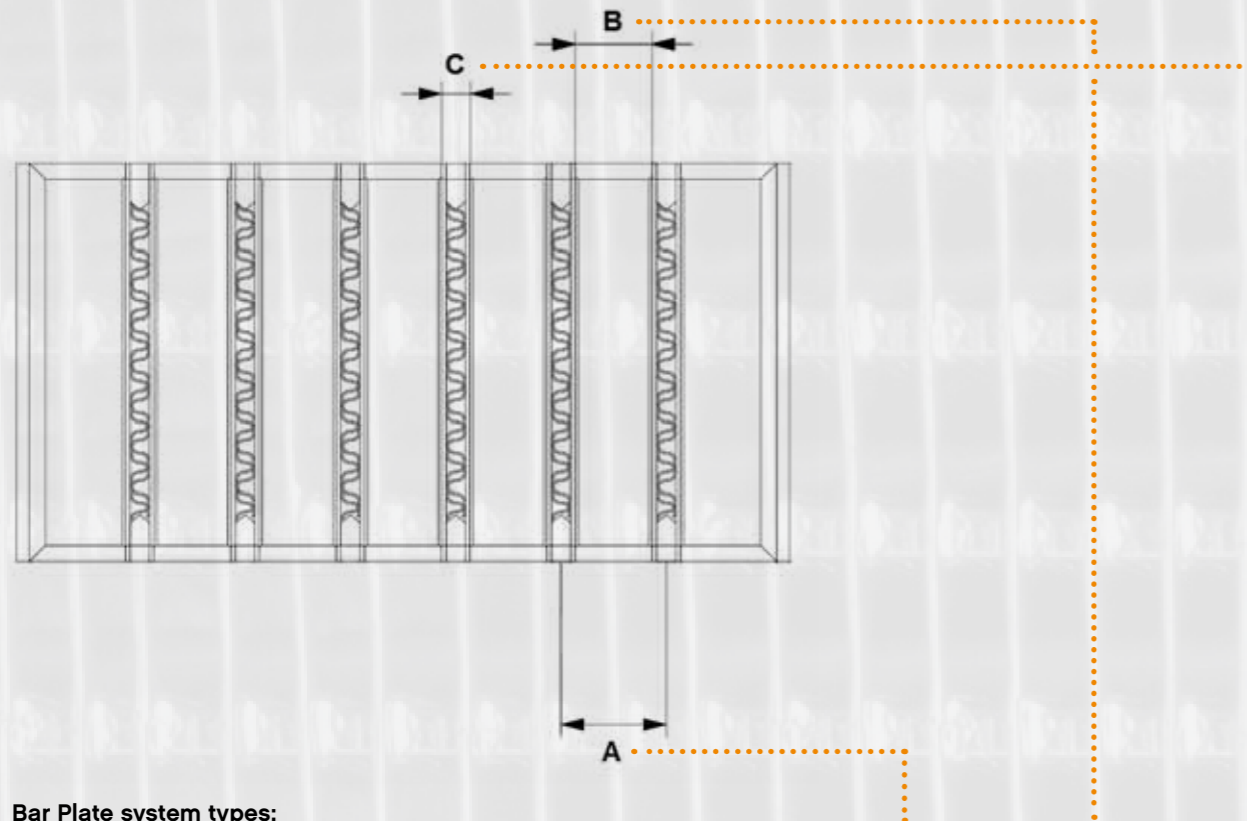
Applications:



**180 / 200 available end 2015**

BPS193	Square Waved, non louvred fin
Core depth mm	40 / 50 / 62 / 97 / 114 / 140 / 160 / 180 / 200
Tube pitch	19,3 mm
Airfin height	12 mm
Tube thickness	7,3 mm
Turbulator height	6 mm
Max. working pressure	16 bar
Max. working temperature	160° C

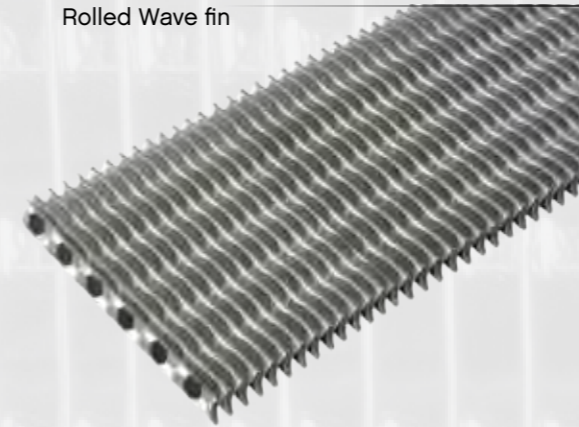
# Bar Plate (technical details)



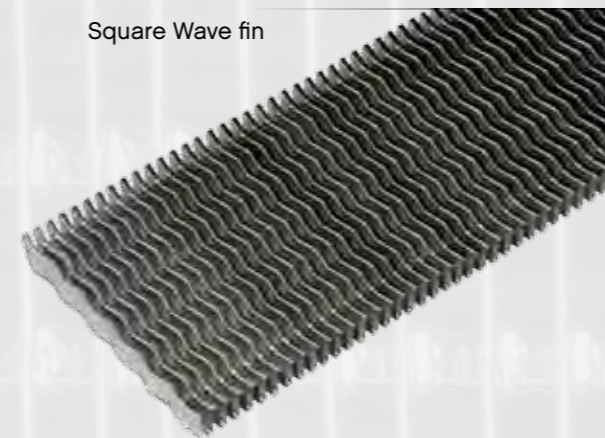
## Bar Plate system types:

Application System	Air Fin type	Turbulator type	(A) Tube Pitch	(B) Air Fin height	(C) Tube Thickness
Air BP 193	Rolled Waved	Wavy air	19,3mm	12mm	7,3mm
Air BPS 193	Square Wave	Wavy air	19,3mm	12mm	7,3mm
Air BPSH 193	Square Wave Hemmed	Wavy air	19,3mm	12mm	7,3mm
Air BPSH 153	Square Wave Hemmed	Wavy air	15,3mm	8mm	7,3mm
Oil BP 163	Rolled Waved	Oil offset	16,3mm	12mm	4,3mm
Oil BPS 163	Square Wave	Oil offset	16,3mm	12mm	4,3mm
Oil BPSH 163	Square Wave Hemmed	Oil offset	16,3mm	12mm	4,3mm
Oil BPSH 123	Square Wave Hemmed	Oil offset	12,3mm	8mm	4,3mm
Water BP 163 (W)	Rolled Waved	Wavy water	16,3mm	12mm	4,3mm
Water BPS 163 (W)	Square Wave	Wavy water	16,3mm	12mm	4,3mm
Water BPSH163 (W)	Square Wave Hemmed	Wavy water	16,3mm	12mm	4,3mm
Water BPSH 123 (W)	Square Wave Hemmed	Wavy water	12,3mm	8mm	4,3mm

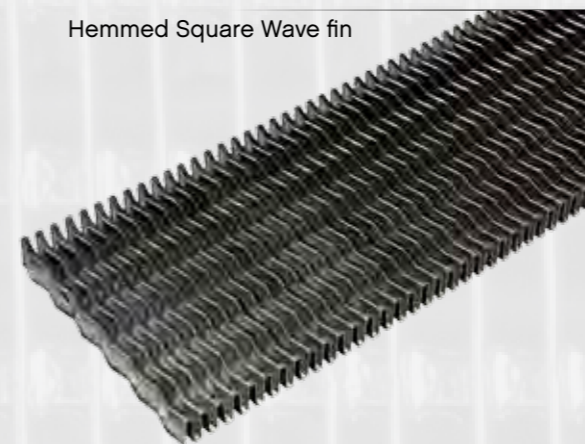
Air Fin types:  
Rolled Wave fin



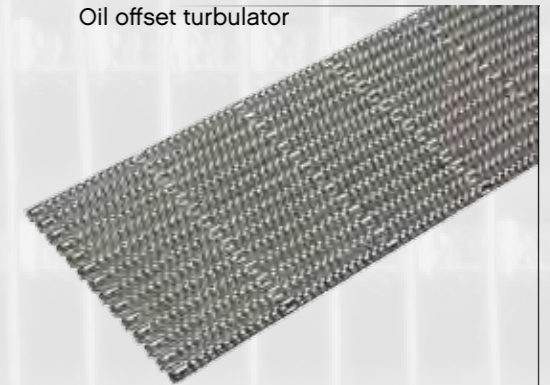
Square Wave fin



Hemmed Square Wave fin



Turbulator types:  
Oil offset turbulator



Wavy air turbulator



Wavy water turbulator

