

# EURO SLOT



Vessels  
Internals





EUROSLOT is a specialist in metallic filtration media, continuing to improve current technology and innovation by applying totally new "high-tech" surfaces to the solid/liquid and solid/gas separation; from welded 'V' wire screening through to LASER beam drilled sieves.

EUROSLOT have progressed to become the recognised partner of process licensor, engineering consultants, engineering contractors and major vessel manufacturers in the design, manufacture and on site assistance for vessel internals.



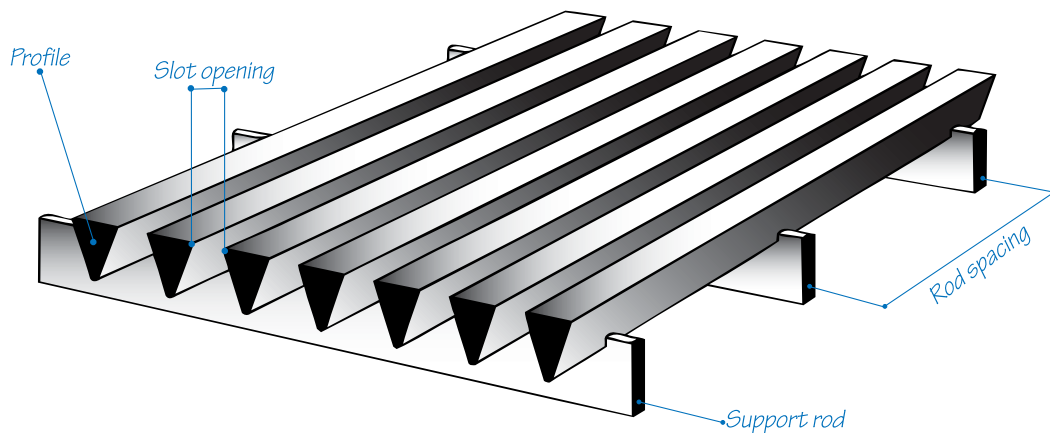
Refining and petrochemical designers request highly specified vessel internals, able to withstand and operate in extreme conditions of:

- temperature
- differential pressure
- high flow rate

The V profile separation media, which is a "continuous slot opening surface", is specifically designed for those very severe conditions.

The advantages in using EUROSLOT V-shape media include:

- High mechanical resistance
- Self supporting structure
- Absolute rate of separation
- Slot opening from 50 microns
- High open area
- Non clogging surface
- Low maintenance cost
- Minimal operational cost



Our program includes:

Support grids .....	page 4
Radial flow reactors .....	page 8
Collector and distributor headers with laterals .....	page 10
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# SUPPORT GRID



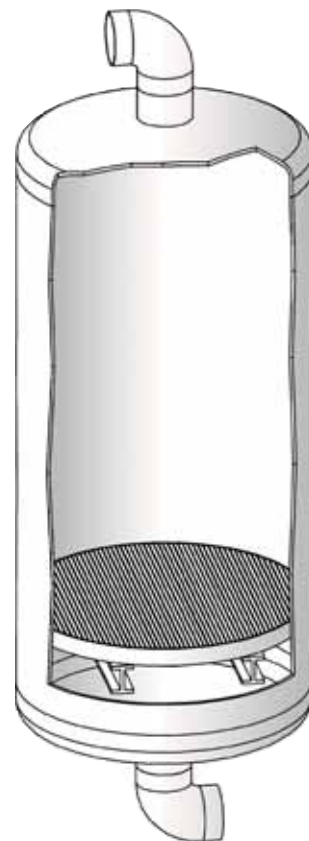
## PRINCIPLE

The support grid is a self-supporting filtration structure which retains the reactive media.

The EUROSLOT V wire welded support grid benefits in:

- A non plugging surface
- Being self supporting
- Accurate separation
- High open area

The EUROSLOT support grid is manufactured to meet international standards and can resist high pressures, temperatures and stresses.



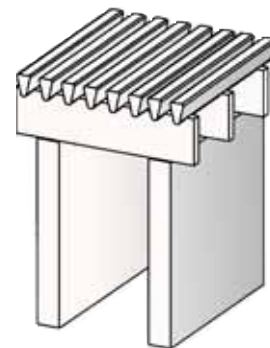
## APPLICATIONS

Catalytic reaction  
Molecular sieve bed support  
Ion exchange  
Isomer separation  
Sand filters  
Malting floors  
False bottoms



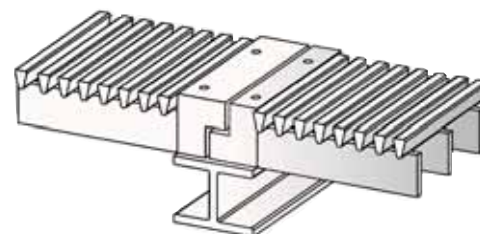
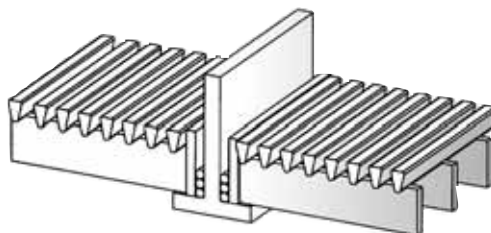
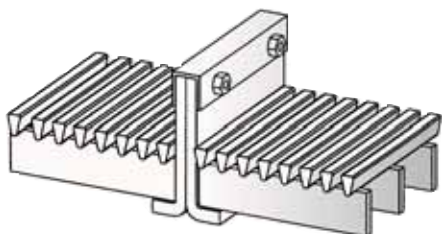
## DESIGN

Each component of the structure is designed to resist temperature and pressure and which may include additional beams supplied by either ourselves or others.



## ARRANGEMENTS

A support grid could be made out of parallel or pie shaped segments, each element just resting on the beams or bolted to or welded to the next one. The joining bars could be flush or project above the screening surface.



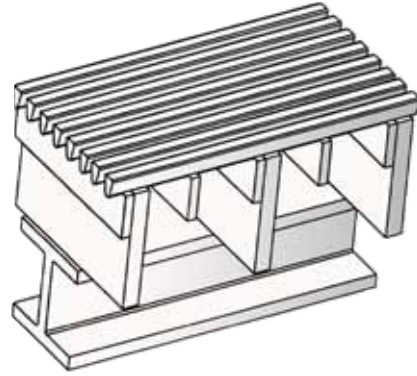
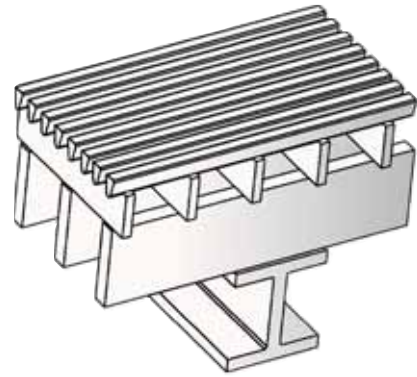


## BEAMS

The design of the reinforcing supports and the beams will be arrived at after analysis of technical and economic considerations.

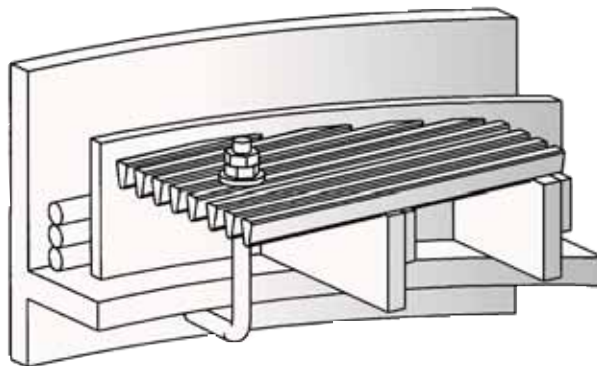
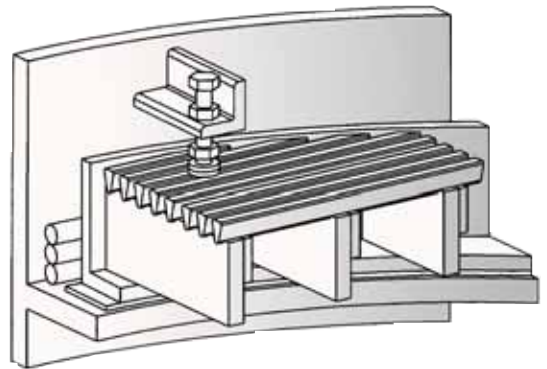
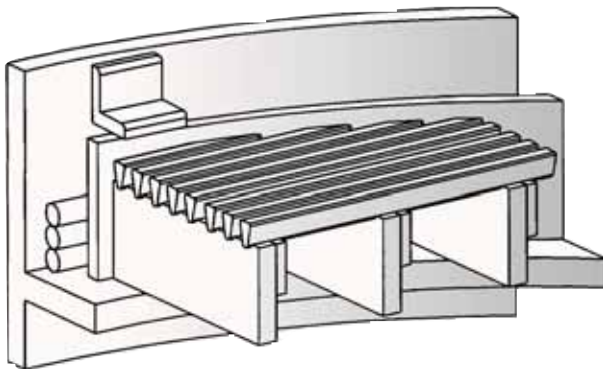
The design may require attention to deflection of:

- wires
- supports rods (type SBS)
- beams supplied by ourselves or others.



## FIXING DEVICES

The support grids can be attached to the supporting structure by bolts fixed to the grid or part of the vessel itself.







▲ Pie shape, 16 segments.



▲ Support grid in 3 segments.



▲ Petrochemical support grid, high pressure "UOP process"



▲ Molecular sieve bed support grid, 700 microns.  
horizontal bed.  
Width : 3500 mm Length : 17000 mm



▲ Catalyst support grid. diameter: 5950 mm

# OUTER BASKET - SCALLOP - CENTER PIPE



## PRINCIPLE

The efficiency of many processes can be improved, when compared to support grids for instance, by the use of a radial flow configuration.

The efficiency of this construction is determined by the quality of its design.



## APPLICATIONS

The most common applications are:

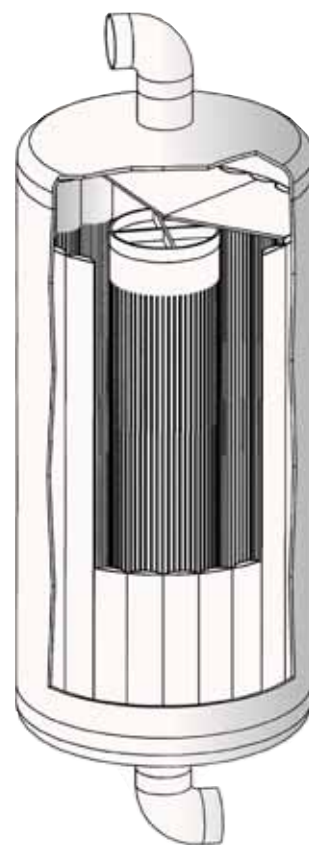
- Ammonia Reactors
- Catalytic Crackers ( IFP, UOP)



## DESIGN

The EUROSLOT product in particular benefits in:

- Near perfect distribution
- Non clogging surface
- Minimal pressure drop
- Smooth surface eliminating possibility of turbulence
- Unobstructed catalyst movement
- No attrition
- High mechanical strength
- Flexibility in configuration - allowing single or multiple elements to be bolted or welded in situ.



## CENTER PIPE

The screen is re-rolled onto a perforated pipe to enhance mechanical strength and provide ideal flow distribution.



## OUTER BASKET

The outer basket can function as both flow distributor and a filter.



## SCALLOP

The outer basket can be arranged as a series of half cylinders set against the vessel wall and held in place by rings together with the weight of catalyst.





Regenerator baskets ▲



Scallop ▲



Styrene baskets ▲

# HEADER AND LATERALS



## PRINCIPLE

A collector and distributor assembly utilising a header pipe or a hub to which several filtering tubes are attached to enable excellent collection or distribution, of a gas or a liquid, within a media without dead zones, wall effects or channelling, in order to maximise efficiency.



## APPLICATIONS

Header and laterals are mainly used for:

- industrial softeners and demineralisers
- ion exchange for food processing
- chemical and pharmaceutical catalytic exchanges
- petrochemical processes such as sand and clay filters, MEROX, MTBE etc...



## DESIGN

*Assembly :*

The purpose of the top, or bottom, distributor and collector assembly is to collect or distribute a uniform flow within the media, and especially designed for intermediate collection or distribution in mixed-bed process.

The efficiency of such a design can be applied to back washing or regeneration. The assembly can be designed as a hub with 'spokes' or with parallel laterals to be located in the most efficient arrangement whatever the vessel shape.

*Laterals:*

The smallest diameter is 21 mm

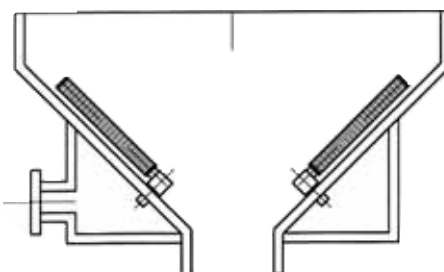
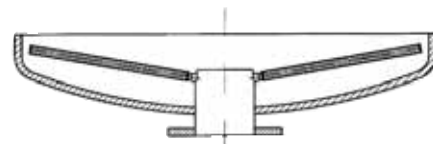
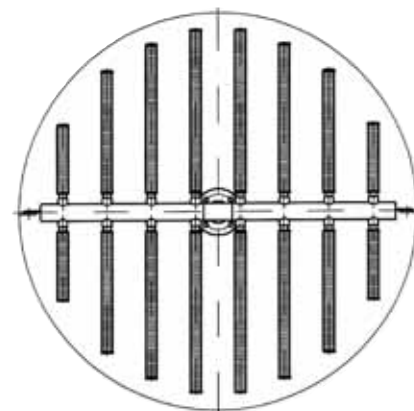
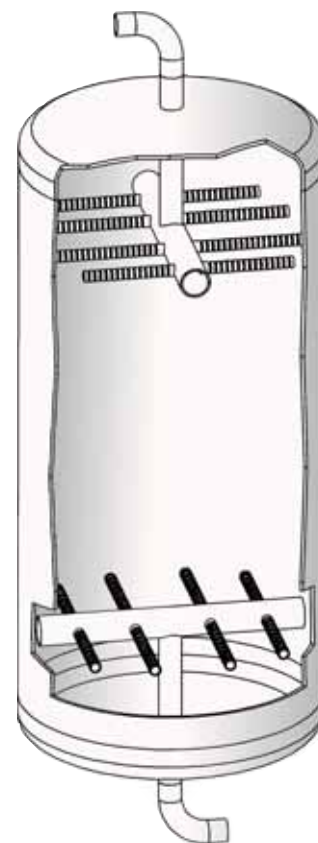
The finest slot opening is 30 microns

Each lateral consists of either a single wedge wire screen or screen jacket with an internal perforated pipe to control distribution and to add mechanical strength where required.

*Materials :*

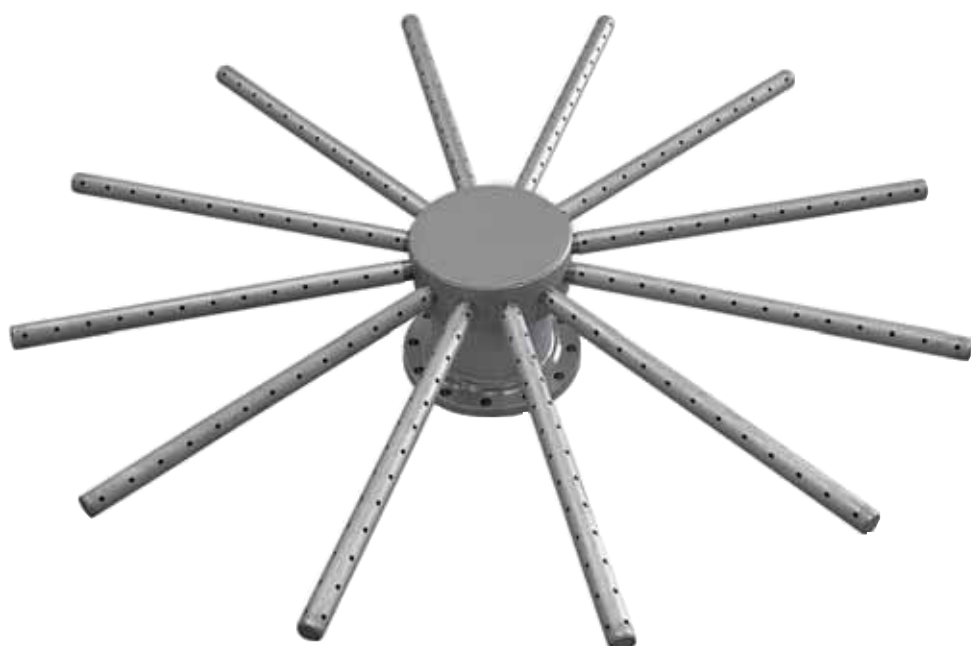
- 304/1.4301
- 316L/1.4401
- 904L/1.4539/URANUS B6
- HASTELLOY C276
- INCONEL 600 and 800 series
- TITANIUM T40
- Duplex and superduplex alloys/1.4429
- Others by special arrangement

We keep more than 40 tons of exotic materials in stock, so please do not hesitate to contact us so that we may together design the best solution whether for compromise or total efficiency.





Collector with parallel laterals.▲



▲ Collector with hub "spokes"



Detail «Threadolet» assembly



▲ Collector for conical shape bottom.



▲ Collector with parallel laterals and elbow.



# OUTLET BASKET - SCALE TRAP

## OUTLET BASKET



### PRINCIPLE

To retain the media (catalyst, zeolite...) inside the vessel and to maximise the outlet flow, the best solution is to install a V wire basket.



### APPLICATIONS

- Solid/gas separation
- Catalytic processes



### DESIGN

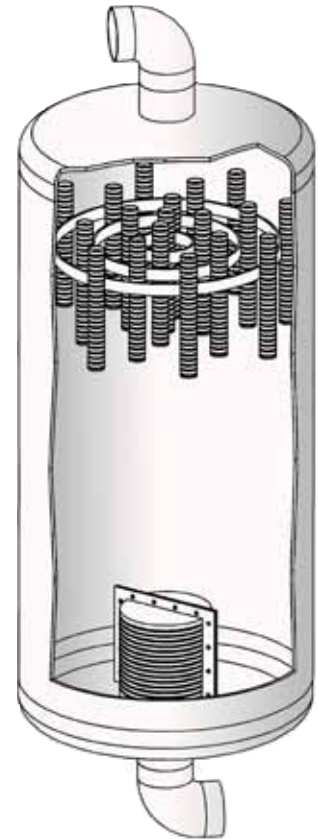
Whichever the direction of flow, up or down, a Euroslot outlet basket will offer a very high resistance to collapse even under the most severe conditions of temperature and pressure. The use of a V-wire welded structure will allow an absolute filtration rating from 100 microns and a very high open area and will minimise the head loss; that means less plugging or clogging during the process when compared to the conventional combination of wire mesh and perforated plate.

Two main types:

- Bottom basket with external radial wire for down flow processes.

- Top basket with axial external wire for up flow processes.

The basket could consist of various bolted elements to allow installation and dismantling through a manhole. The most common alloys are 300 series stainless steels: 304, 316L, 321.



## SCALE TRAP



### PRINCIPLE

A set of distributor baskets or "scale traps" have a threefold function:

- to trap scale coming from installation and service thus avoiding bed contamination.
- to increase the bed inter-surface contact with the gas or liquid.
- to avoid surface coking.



### APPLICATIONS

- Hydrogenation process



### DESIGN

A set consisting of several concentric rings of baskets are located at the top of the reactor.

The baskets are individually fixed to the ring and the usual basket dimensions are from 120mm to 200mm in diameter and 500mm to 900 mm in height. The slot openings could vary from 0.8mm to 1.5mm (dependant upon particle size).

The most common alloys are 300 series stainless steels: 304, 316L, 321.



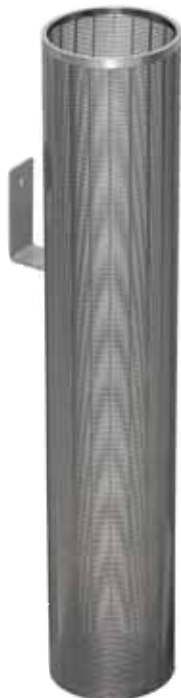
◀ High pressure outlet basket, radial external wire



▲ High pressure outlet basket, axial external wire.



▲ Outlet basket, with wire mesh assembly.



Scale trap baskets ▲

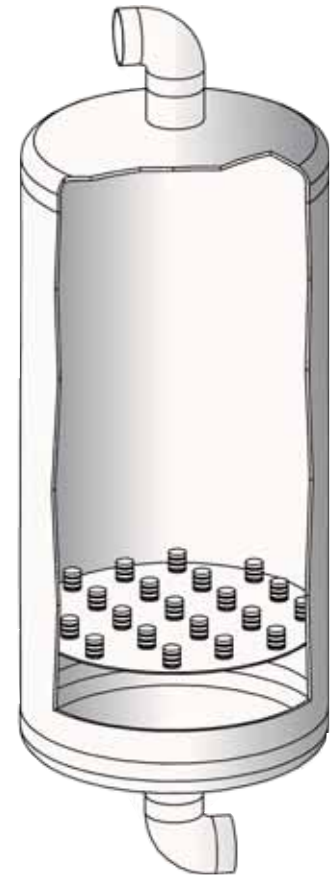
# NOZZLE PLATE



## PRINCIPLE

Euroslot nozzles are used in liquid/solid or gas/solid separation (sand, catalyst, resins, zeolite etc). The design of each nozzle and the exact quantity will be proposed in order to obtain a perfect distribution or collection of flow.

Our nozzles are an excellent technical and economical solution in bringing together a fully welded, strong and highly corrosion resistant structure and with a non-plugging surface.



## APPLICATIONS

Many processes utilise a nozzle plate.

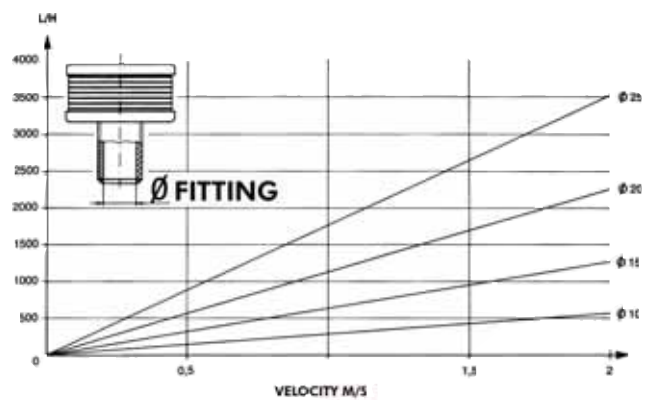
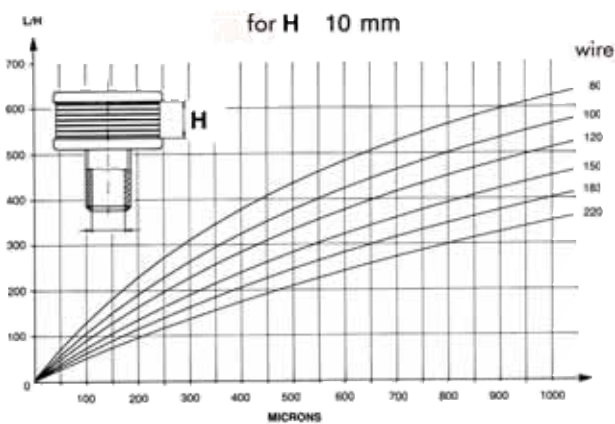
- Catalytic processes
- Ion exchange processes
- Sand filters
- Activated carbon processes



## DESIGN

Nominal diameter is 50 mm.

The height of a nozzle and the internal diameter of the fitting can be approximated using the following graphs.



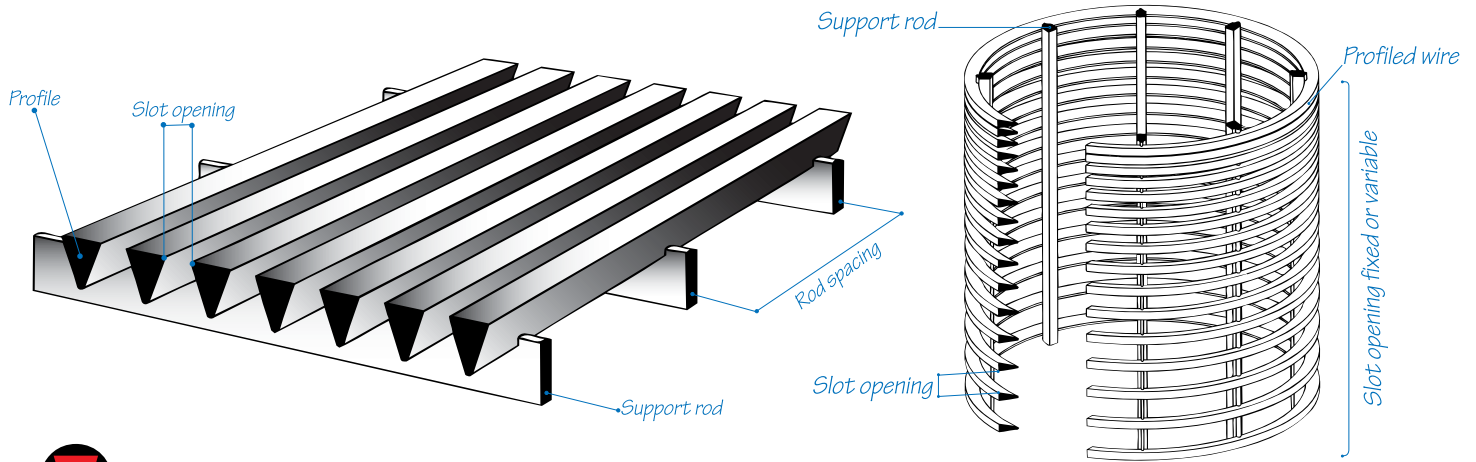
*Slot entrance velocity nominally 0.2m/s (to be optimised dependant upon the filter media)*

By optimising the ratio between the head loss of each component (open area and fitting) we can determine the optimum quantity of nozzles to ensure a perfect distribution or collection without channelling, wall effects, or dead zones.





# TECHNICAL DESCRIPTION



## PROFILE

Please choose your profile from the following programme

Reference	80	100	120	150	B150	183	180	220	224	300	330	560	510
Width mm	0,76	1,00	1,20	1,52	1,52	1,80	1,80	2,28	2,28	3,00	3,30	5,00	5,00
Height mm	1,30	2,00	2,30	2,50	6,3	3,70	4,50	3,55	4,50	4,62	6,35	6,00	10,00
Weight g/m	5	11	15	21	61	35	47	44	53	79	125	144	240



## SUPPORT

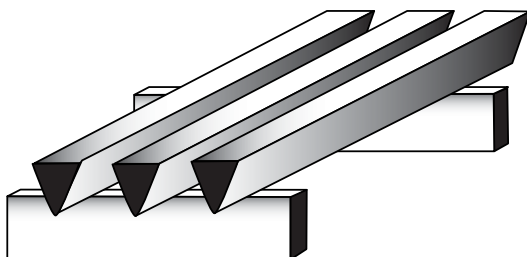
Most rod shapes can be used but please consult us as to your preferred specification

Reference	C20	C30	XJS	156	10x2	13x2	15x2	25x2	25x3	35x2	40x3
Width mm	2	3	2,3	3,8	2	2	2	2	3	2	3
Height mm	3	5	4,8	5,5	10	13	15	25	25	35	40
Weight g/m	40	100	74	112	160	210	240	390	580	550	960

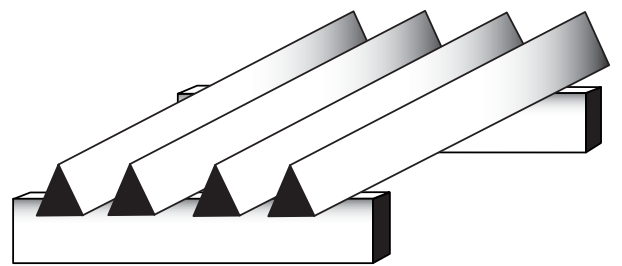


## CONSTRUCTION

Two constructions are possible :



Normal construction

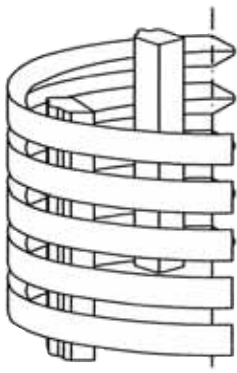


Inverted construction

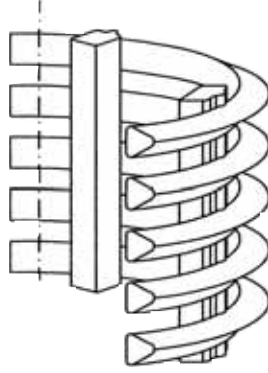


# CONFIGURATION

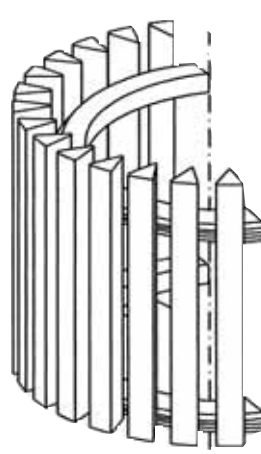
6 main configurations are possible :



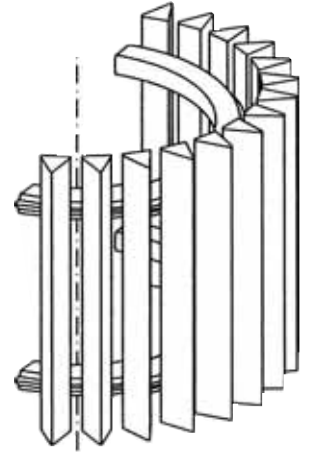
Normal radial external wire



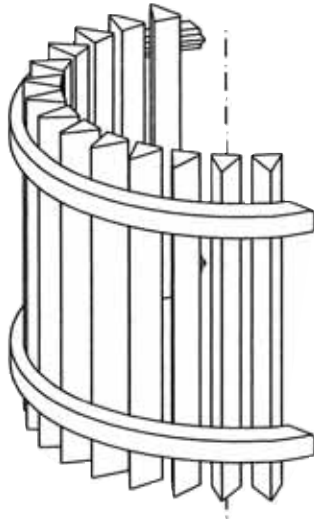
Inverted radial external wire



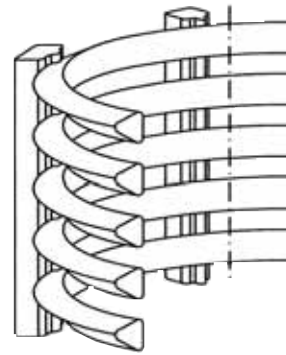
Normal axial external wire



Inverted axial external wire



Normal axial internal wire



Normal radial internal wire

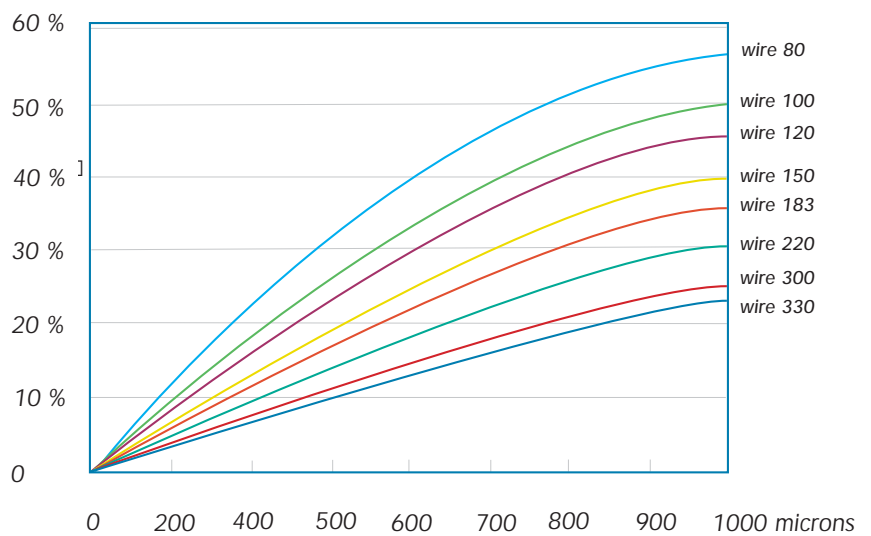


# Open area

The open area factor is :

$$C = \frac{\text{slot opening}}{\text{slot opening} + \text{wire width}}$$

Alternatively, refer to the graph showing individual profile against slot opening and open area.



# MATERIALS:

-304/1.4301 -316L/1.4401 -904L/1.4539/URANUS B6 -HASTELLOY C276

-INCONEL 600 and 800 series - TITANIUM T40 -Duplex and superduplex alloy/1.4429 -Etc....

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# EUROSLOT

# QUALITY ASSURANCE

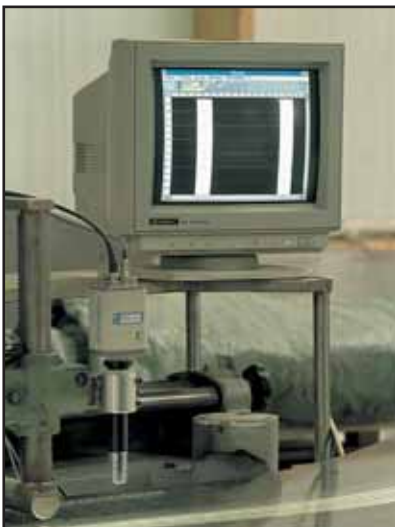
ISO 9001



For a good partnership between customer and supplier, CONFIDENCE is the key, and this is why EUROSLOT is certified ISO 9001; that means manufacture and delivery of your product on time and in compliance with your requirements.

Thanks to the size and efficiency of our organisation at EUROSLOT we maintain a flexible and fast service.

Contract review, WPS, control reports, chemical and mechanical certificates, PMI, dye penetrant testing, 3D control etc are all part of our program to ensure the high quality of our products and to keep your confidence.





## AFTER-SALES SERVICE • ON SITE ASSISTANCE



### ON SITE ASSISTANCE

**EUROSLOT** can provide a team of fully qualified welders, all very experienced, for site assistance all over the world.

After removing, dismantling and grinding away of burnt or damaged elements, our team can repair and weld in customised or stock elements.

Depending on the geographical location, our access time could be between 1 and 72 hours.



### TELEPHONE ASSISTANCE

At anytime our head office technical staff or our engineers/agents network could help you and provide assistance.



### WORLD-WIDE LINK

From everywhere in the world, through Internet connection, **EUROSLOT** is available to you for vision-conferences.

All technical and commercial documents can be transmitted via E-mail. Euroslot have at your disposal most major software tools.

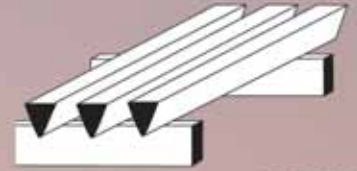
Through our Digital camera facilities, **EUROSLOT** can display on your screen your product during manufacturing for you to appreciate any technical details.

**F**or your total confidence, all our on-site welders are trained and licensed under the European Welding Federation (EW Specialist).





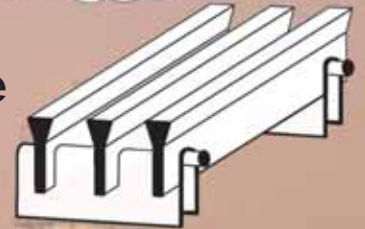
Welded wedge wire



Looped wedge wire



Clamped wedge wire



Punched plate



Drilled plate



Milled plate



Laser beam drilled plate



Woven wire mesh



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