
AMACS tower trays



AMACS Process Tower Internals



AMACS Process Tower Internals is a worldwide supplier of phase contacting and separation equipment, components and packaged systems. This equipment is used in a full range of process and pollution control applications. AMACS offers mesh, vane and candle type mist eliminators that effectively remove droplets down to less than a micron in size. AMACS also supplies a variety of random, structured and grid style packing, packing supports and column internal hardware. For liquid/liquid separations, AMACS manufactures different types of mesh, corrugated plate pack and cylindrical coalescers.

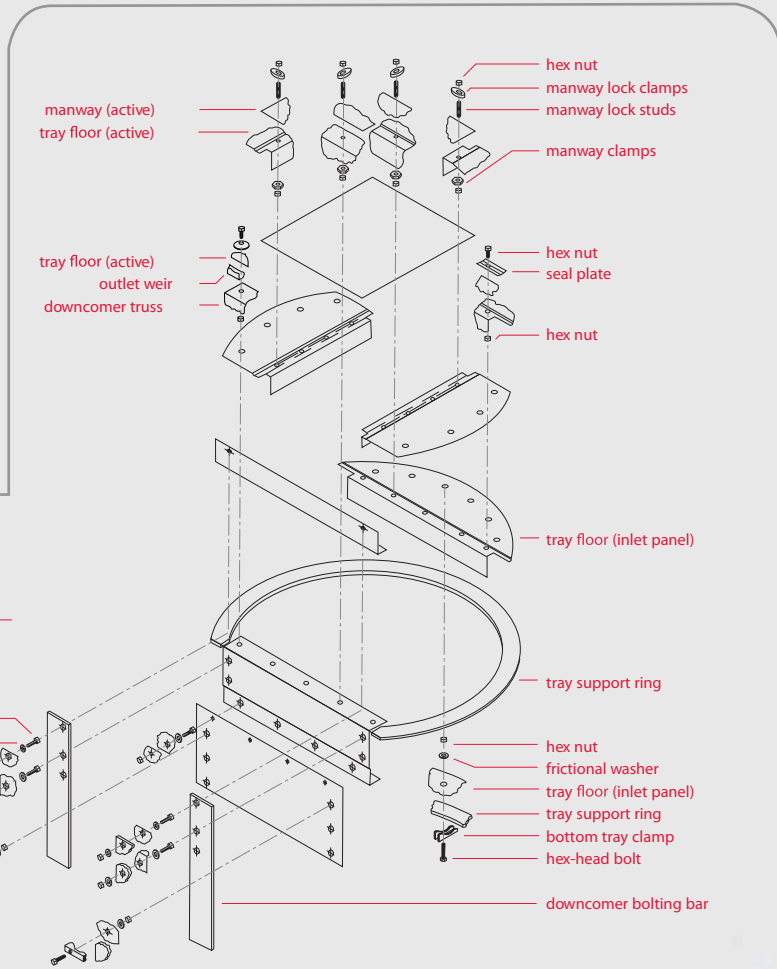
Trays and hardware are all part of AMACS commitment to providing customers with a full range of tower components and internals. All tray product designs have been proven over decades of use in the field. Most AMACS products can also be manufactured to custom specifications and/or performance requirements. AMACS separation specialists are on hand to assist customers in the design, sizing and selection of components and hardware.



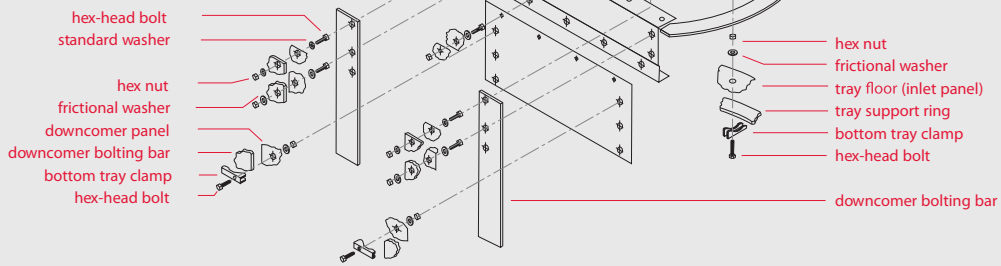
tower trays

materials of construction

AMACS offers trays in a wide variety of materials including all steels and most alloy materials. For availability of special alloys, please consult with your AMACS separation specialist.



standard tray component assembly



hex-head bolt manway lock clamp manway stud seal plate frictional washer bottom tray clamp



tray type selection

When selecting between AMACS sieve, valve, bubblecap, dualflow and baffle type trays, it is important that all performance considerations are taken into account including:

- Pressure drop
- Turndown
- Capacity
- Efficiency

In addition to the list of performance factors, you should also take into account fouling and other characteristics specific to the process. The key, of course, is to balance the various tray types and other tower components so that the process is optimized, safe and reliable over the long haul.

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sieve or perforated trays

Sieve trays are made from a flat perforated plate which allows the passage of vapor through the liquid. They are the most economical tray option when low turndown is required. They have better anti-fouling characteristics and lower pressure drop than valve or bubble cap trays. Perforations are typically 1/2" diameter, but AMACS can provide designs with smaller hole size.

valve trays

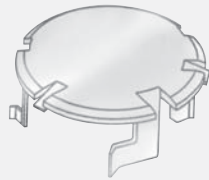
AMACS valve trays have better turndown and slightly higher efficiency than sieve trays. AMACS offers different valve selections including fixed valves, floating valves and combination valves. Valve trays cost more than sieve trays, but are more economical than bubble cap trays.





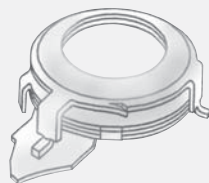
tower trays

AMACS valve types



one piece valve

This is the most commonly used valve. This design features integral legs for tray decks up to 1/4" thickness. Anti-stick dimples are standard. Other options include heavy/light valve combination, flush designs and non-rotating tabs in the tray deck.



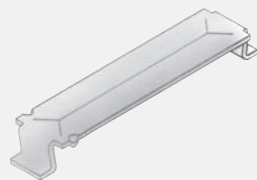
3 piece valve

This valve consists of a light weight orifice plate, a valve, and a restraining cage. This design is recommended for higher turndowns.



fixed valve

This valve is integral with the tray deck. This is the preferred option for fouling conditions. However, it provides lower turndown and less efficiency than floating valves.

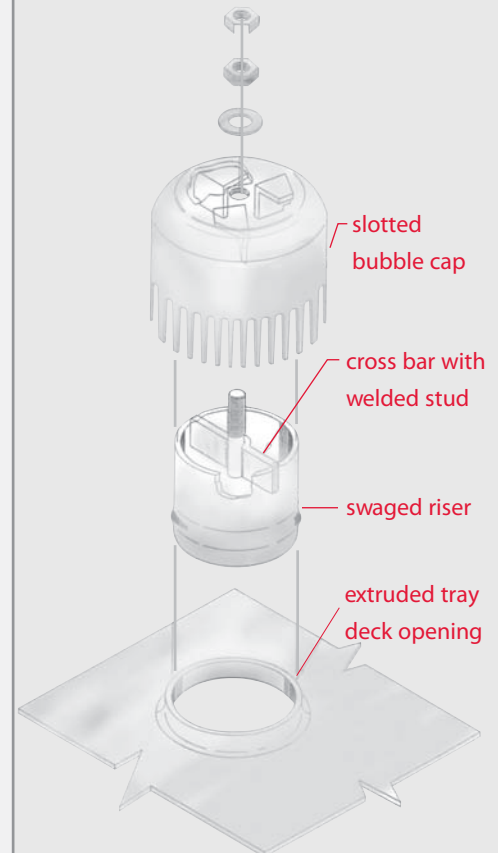


one piece rectangular valve

AMACS offers rectangular valves, caged valves, and also venturi type openings to provide lower pressure drop.

bubble cap trays

Bubble cap trays are best suited for applications with low liquid flows and/or high turndown ratios. In terms of capacity, however, they are slightly lower than valve or sieve trays. They are also the most expensive tray option.



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dual flow trays

Dual flow trays are sieve trays that do not have downcomers. The term dual flow comes from the counter current flow of the vapor and liquid through the perforations. Typical perforation sizes range between 1/2" and 1" in diameter.

Dual flow trays best suit systems containing a moderate to high solids content or polymerizable compounds. High open area dual flow trays have a higher capacity and lower pressure drop than comparably spaced fractionation trays. However, their primary drawback is their narrow operating range. Most often, they are efficient when used in smaller tower diameters. Dual flow trays are also sensitive to levelness and may be subject to gross liquid and vapor flow partitioning through the deck if not level.



dual flow tray

baffle trays

Because of their open design, baffle trays are used in applications requiring high capacity, fouling resistance and low pressure drop. Vapor-liquid contacting takes place when the vapor passes through a curtain of liquid falling between trays, or through rivulets of liquid flowing through tray deck perforations. Tray decks may be level or slightly inclined and typically occupy 40-60% of the tower cross-sectional area. "Disk and donut" trays have circular baffles and are a popular variant of this design.

Baffle trays are well suited for heat transfer applications including heavy oil refining and petrochemical oil refining and petrochemical heat transfer services with high solids or petroleum coke content.



high strength trays

For applications with potentially damaging uplift surges, AMACS can equip trays with special heavy-duty features. These include special fasteners, increased tray thickness or additional support beams. Depending upon specific operating criteria, design adjustments can be made to take into account parameters such as corrosion, temperature, vibration and pressure surges. Contact your AMACS specialist for design assistance.



additional tray design options

For special customer requirements and/or performance, AMACS Process Tower Internals offers numerous tray performance-enhancing features. Some of the most common features offered by AMACS include:

Cartridge Trays– Suitable for small diameter body flanges. Can provide up to 5 trays per cartridge. Different sealing options are available.

Anti-Jump Downcomer Baffles– To prevent liquids flowing across the tray from jumping over the downcomer onto the opposing flow path. Anti-Jump Downcomer Baffles are standard for multi-pass trays with center and off-center downcomers.

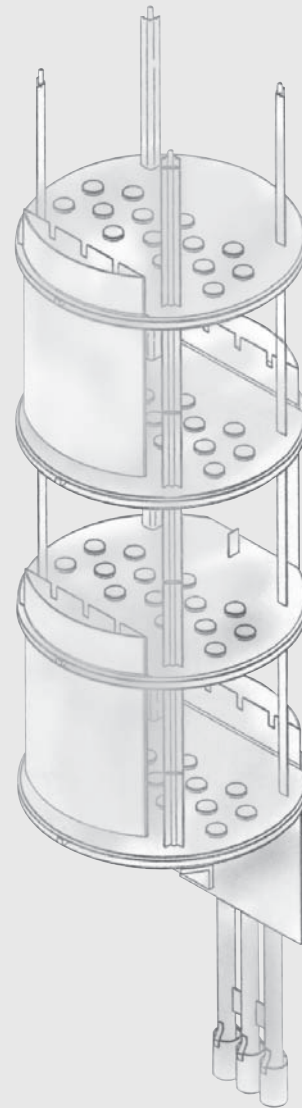
Picket-Fence Weirs– These are used to decrease the effective weir height. This is for low liquid flows, and using this option will help increase the effective liquid height and prevent blowing.



Splash Baffles– For low liquid rate services, Splash Baffles serve to maximize the liquid retention time on the trays. They can be used in place of, or in conjunction with, picket fence weirs. Splash baffles are located adjacent and parallel to the outlet weir. They clear the tray deck and outlet by 1/2" to 1" forcing the exiting liquid to flow under the baffle before it flows over the top of the outlet weir.

Swept-Back Weirs– To reduce the effective liquid height on the tray by lowering the volume of liquid per unit length flowing over the outlet weir. This option should be considered for high liquid flow rates. Swept-Back Weirs are used on side downcomers. They can also be used to balance weir loads between side and off-center downcomers in multi-pass tray designs.

Sloped Downcomers with Recessed Inlet Sumps– Suitable for heavy liquid loads that could otherwise cause downcomer flooding.



cartridge tray bundle

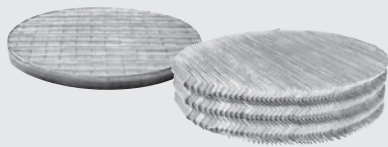
Call our
24 hour number
1-800-231-0077

AMACS stocks an extensive variety of tray hardware.

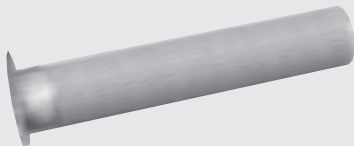
Other AMACS Products

When it comes to effective mass transfer, separations and pollution control, come to AMACS Process Tower Internals. With a full range of separation products, we offer individual components or turnkey systems built to your specifications and/or performance requirements.

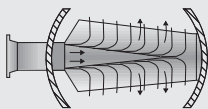
MESH and VANE MIST ELIMINATORS
from knitted mesh pads to vane mist eliminators. We also manufacture our patented Mist Fix® insertion mist eliminator for applications where vessel access is prohibitive.



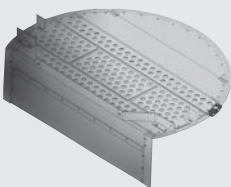
INSERTION MISTFIX® MIST ELIMINATOR



INLET DISTRIBUTORS
many designs available including diffuser plates and cyclonic type distributors.



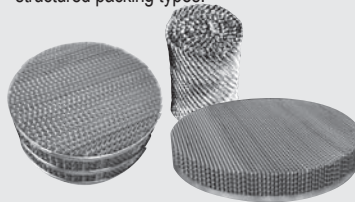
TRAYS
for gas/liquid contacting in distillation, absorption, and stripping applications - valve, sieve, bubble cap & special designs



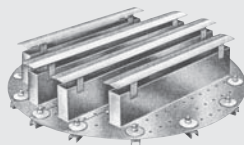
RANDOM PACKINGS
to facilitate mass transfer under a wide range of applications.



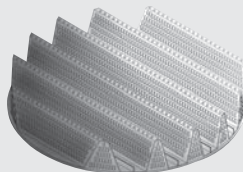
STRUCTURED PACKING
AMACS provides a variety of structured packing types.



LIQUID REDISTRIBUTORS
for effective collection and redistribution of liquids. AMACS offers variable options to meet a variety of performance requirements.



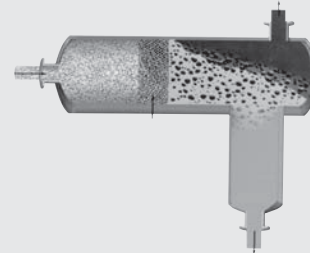
GAS INJECTION PACKING SUPPORT
supports packing and provides effective gas distribution with low pressure drop.



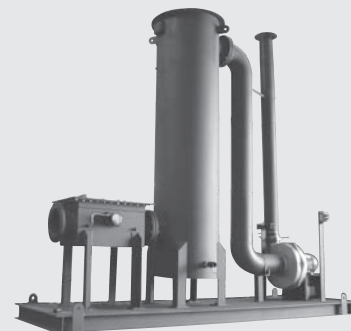
STRUCTURED GRID PACKING
for severe fouling applications



LIQUID/LIQUID COALESCERS
we manufacture a variety of mesh and plate internals as well as turnkey systems for liquids and oil/water separations.



TURNKEY POLLUTION CONTROL PACKAGES
for asphalt, oleum, plasticizers, metal working, compressor stations, marine bilge and a wide range of specialty indoor air cleaning and outdoor removal of visible plumes. We also manufacture turnkey systems for separating a wide variety of gas, liquid and solid regimes.



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