

PROCESS DESIGN, ENGINEERING & MANUFACTURING

The Mass Transfer Product in Distillation,
Absorbation & Extraction Technology

KUBER
PRECISION TECHNOLOGY





COMPANY PROFILE

KUBER Precision Technologies was founded in 2003 with the intent of delivering highest quality of products and services at competitive prices and family oriented commitment to customer service and satisfaction.

We believe in earning trust of customers by spending enough time to understand their requirements, work closely with customer, delivering high quality solutions and services. Through constant dedication to these principles for nearly 1.5 decades, Kuber Precision Technologies has earned a glowing reputation as a specialist in the field of mass transfer and separation technology.

Headquartered in Pune, Kuber Precision Technologies has the unique location advantage to attract employees of high caliber and strong work ethic, and at the same time utilize the vast wealth of resources the city of Pune has to offer.

Kuber Precision Technologies is a reliable partner in offering innovative and sustainable product solutions for performance in critical operations and adds value and strengthens the competitive position of our customers. We hold key positions in variety of industries including Chemical, Pharmaceutical, Oil & Gas and Petrochemicals, Water treatment, food & beverage by delivering high quality solutions, products and services through experienced and qualified engineers.

We offer a complete range of state-of-the-art product solutions including Structured Packing, Random Packing, Distillation Trays, Liquid distributors & redistributors, Liquid collectors, Liquid feed systems, Gas feed systems, Packing supports, Bed limiters, Mist eliminators, High performance separator internals, Static mixers and process equipments for Chemical and Oil & Gas industry .

Our dedicated manufacturing site located in the busy Bhosari MIDC area and is equipped with the latest facilities and machinery to produce a variety of state of the art products. Our manufacturing location has certified quality management systems in place conforming to the requirements of ISO 9001:2008 standard. As Kuber Precision Technologies moves forward, we continue to strive along the path that has proven successful for our company. At the same time, we will continue to adapt to the ever-changing landscape of the industries we serve.

Thank you for taking the time to get to know us, and as always, we look forward to serving you in the future.

VISION & STRATEGIC PRIORITIES

- ◆ **To become a leading Company in providing Reliable, Economically viable and superior in Quality products through innovative design and manufacturing**
- ◆ **To continuously upgrade the quality of our products and services**
- ◆ **We do our best to be a trusted associate and success partner to our customers.**





DISTILLATION TRAYS

The **Distillation Trays** provided by us are used for separation applications. We provide different types of conventional Distillation Trays that are suitable for any column size. This tray can be conveniently installed & has lower requirements for regular maintenance. We use different types of metallic material that pass through punching & bending processes to fabricate these trays. We have specifically designed a quality assortment of Column Internals, which find extensive applications in the hydrocarbon processing, chemical, desalination industries, petrochemical, and gas-liquid absorption units. Our range of internal products consists of Floating Valve Tray, Bubble Cap Tray, Fixed Valve Tray, Grid tray and sieve tray to fulfill the application requirements of diverse industries.

Working with you, our process engineers will assist you in proper tray selection to best satisfy your specific requirements. In addition, Our team is available for expert and efficient installation, at your request.

Whatever your application, **Kuber Precision Technology** has the random packing in the size and material - distillation trays to provide optimum performance. Most sizes of trays, in all common materials, are available for shipment at competitive prices.

SIEVE TRAY ((KPT TRAY-1))

Sieve Tray is type of cross flow tray. Sieve trays are simply metal plates with holes in them. The vapour passes up through perforations in the plate, the liquid is retained on the tray by vapour flow. The arrangement, number and size of the holes are the design parameters..

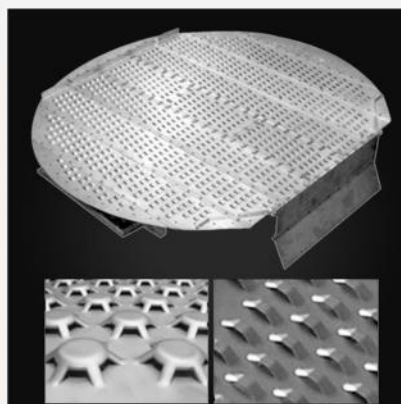
Material of Construction	Stainless steels, 904L, 254SMO, Duplex, SS410S, Titanium, Hastelloy or any metal/alloy according to customer request
Key Characteristics	Sieve tray is in low cost. Not flexible for wide range of turndown ratio. High capacity and efficiency, low pressure drop, ease of cleaning, and low capital cost.
Available Size	Sieve Trays are available up to 6m Diameter



FIXED VALVE TRAY ((KPT TRAY-2))

Valve is a fixed unit punched out of trays at a fixed particular distance. The main advantage of the fixed valve trays is that the high horizontal vapour velocity issuing through the narrow certain area promotes high radial mixing with the cross flow liquids and deflects entrainment sideways before being swept upward. This ensures a high rate of mass transfer. High vapour velocity eliminates the depositions of solids or fouling. Since it has no moving parts, it is suitable for corrosive media.

Material of Construction	Stainless steels, 904L, 254SMO, Duplex, SS410S, Titanium, Hastelloy or any metal/alloy according to customer request
Key Characteristics	Fixed valve tray used for wider turndown ratio and better resistance to fouling compared to sieve tray.
Available Size	Fixed Valve Trays are available up to 6m diameter.

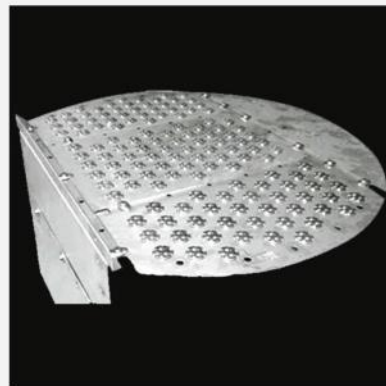




DISTILLATION TRAYS

FLOATING VALVE TRAY (KPT TRAY-3)

Float valves are very efficient to operate when flow rates are changing. The legs are provided to maintain the opening of the valve to avoid weeping and to get better mass transfer even at low flow conditions. For some special cases, light and heavy valves are also used. Tray opening area for the floating valve tray automatically changes according to vapor flow rate. It has a wide turnaround ratio. This tray is versatile- can be used for almost all services.



Material of Construction	Stainless steels, 904L, 254SMO, Duplex, SS410S, Titanium, Hastelloy or any metal/alloy according to customer request.
Available Size	Floating Valve Trays are available up to 6m Diameter

BUBBLE CAP TRAY (KPT TRAY-4)

Bubble cap trays are the oldest type of trays in use. These trays are called as a “liquid sealed” trays, in which the vapour passes up through the short pipes called risers covered by a cap with serrated edge or slots. At all vapour flow rates a predetermined liquid level will be maintained on trays. Gives advantage to operate wide range of liquid flow rates.



Material of Construction	Stainless steels, 904L, 254SMO, Duplex, SS410S, Titanium, Hastelloy, Copper or any metal/alloy according to customer request.
Key Characteristics	Bubble cap tray used for low liquid loads. Very wide turndown ratio.
Available Size	Bubble Cap Trays are available up to upto 6m with 50-100 mm caps..

STRUCTURED PACKING

Structured Packing is one of our core abilities. Over 15 years of experience in development, design, and production of this type of packing makes us your best partner in on the optimum solution for your application.

The **Kuber Structured Packing** is a result of years of experience and development in the field of thermal fractionation using packings for mass transfer. This is a universal packing type suitable for a wide variety of applications and provides lower pressure drop per theoretical stage and increased capacity compared to trays and conventional random packing. Structured packing are constructed from corrugated & textured thin-gauge metal sheets or woven wire mesh to give preformed shape, provide high surface area with High void fraction to promote efficient vapour -liquid contacting in mass transfer operations.

This is an open honeycomb structure with inclined flow channels giving a relatively high surface area but with very low resistance to gas flow. This structure ensures uniform wetting under low as well as high liquid loading.



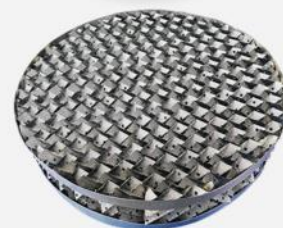
STRUCTURED PACKING

KUBPAK SERIES STRUCTURED PACKING (KUBPAK)

KUBPAK Structured packing is an efficient and economical product used in the industry today. KUBPAK has all the desirable characteristics like predictable throughput, low pressure drop, good efficiency and flexibility; which plays vital role in separations.

The following sizes are available in X and Y type:

KUBPAK 125 X, KUBPAK 125 Y, KUBPAK 210 X, KUBPAK 210 Y, KUBPAK 250 X, KUBPAK 250 Y, KUBPAK 350 X, KUBPAK 350 Y, KUBPAK 500 X, KUBPAK 500 Y, KUBPAK 750 X, KUBPAK 750 Y.

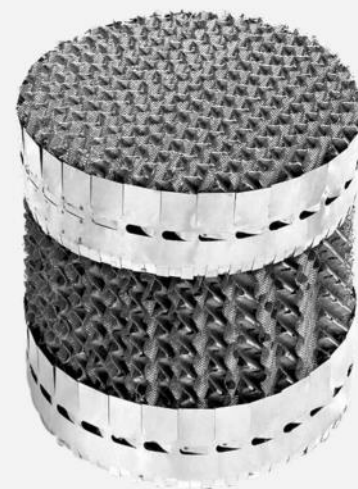


Material of Construction	Stainless Steel, Nickel Based Alloys, Hastelloy, Titanium, Tantalum, Monel
Application	Standard application, Moderate Vacuum to High pressure, Low to high liquid loading
Key Characteristics	F-factor : 1.2 to 3.5 Surface Area : 125 to 750 m ² /m ³ NTSM: 1 to 4.4

HIGH CAPACITY VANTAGE STRUCTURED PACKING (KUBPAK- HC)

High capacity structured packing belonging to the ULTRA Series, has a unique texture to provide an excellent liquid spread. KPT's ULTRA series structured packing regulates the gas passage and minimizes localized liquid hold-up. High Capacity structured packing has been used in columns to increase capacity, reduce pressure drop for new construction and for replacing standard sheet metal structured packings, conventional random packings, and trays.

Packing Types	KUB-HC 2.5L / KUB-HC 3.5L / KUB-HC 4.5L / KUB-HC 6.2L / KUB-HC 7.5L / KUB-HC 10.0L
Surface Area (m²/m³)	250 / 300 / 350 / 420 / 500 / 750
Application	Very Low pressure drop and heat sensitive systems, High liquid & vapour loading.
Material of Construction	Stainless Steel, Nickel Based Alloys, Hastelloy, Titanium, Tantalum, Monel
Key Characteristics	Available in both sheet metal and wire mesh, Eliminates abrupt change in flow direction, Eliminates premature build up of liquid, Provides up to 50 % higher capacity at the same NTSM compared to conventional structured packing, Significantly lower pressure drop compared to conventional packing.





STRUCTURED PACKING

WIRE MESH STRUCTURED PACKING (KUB - WM)

Wire mesh packing has been successfully employed in the industry for more than 10 years allowing difficult separation tasks to be accomplished. They are generally used in small to medium diameter columns for separation requiring maximum number of theoretical stages in minimum column height.

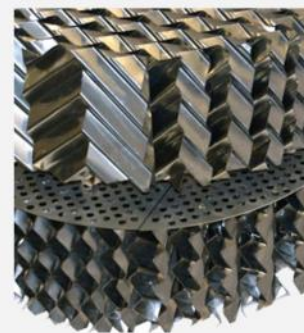
Packing Types	KUB-WM 5.0M / KUB-WM 7.5L
Surface Area (m²/m³)	500 / 750
Key Characteristics	Excellent wetting Characteristics, Large number of theoretical stages, Low overall height, Capillary effect of special wire mesh, High fractionation efficiency and capacity, Large number of theoretical stages. F-factor : 1.5 to 2.2 Surface Area : 500 to 750 m ² /m ³ NTSM : 6 to 8.5
Application	High vacuum to low pressure drop requirement. Fatty alcohols, Processing of specialty chemicals, Monomers from plastics, Pharmaceuticals, Fine Chemicals, Isomer mixture separation.



LIQUID -LIQUID EXTRACTION PACKING (KUBPAK- -EXTRACT)

KPT also offers specially designed packing combination made from sheet metal for liquid-liquid extraction systems.

Series	KUBPAK-Extract 200 KUBPAK-Extract 250 KUBPAK-Extract 350
Material of Construction (MOC)	Stainless steel or any metal/alloy according to customer request.



LAB STRUCTURED PACKING (KUB - LAB)

KPT also offers specially designed Lab packing for R&D trails and pilot unit distillation. These are very efficient packing with very low pressure drop 0.1 to 0.4 mbar/stage, suits low liquid load 0.05 m³/m²h, higher surface area and NTSM.

Series	KUBPAK-Lab 10, KUBPAK-Lab 20
Material of Construction	Stainless steel or any Metal/Alloy according to customer request.
Key Characteristics	NTSM : 20-40 Diameter : 25 - 100 mm
Application	Can be used for High vacuum to 2 mbar



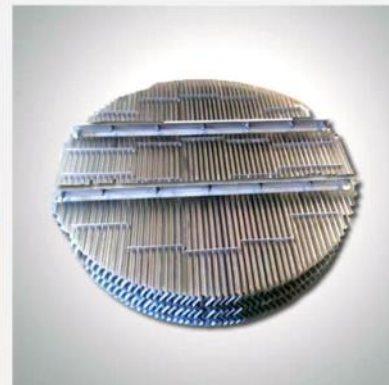


STRUCTURED PACKING

GRID STRUCTURED PACKING (KUB - G)

The KPT Grid Packing is an adaptation of the conventional structured packing which uses a smooth metal packing surface to eliminate areas on the packing where fouling can begin. These packing's are developed for severe services susceptible to fouling, coking, erosion and applications involving high solid content.

The Grid packing has robust mechanical structure, fabricated in modules for easy installation and cleaning. The Grid Packing offers minimum pressure drop and high capacity.



Packing Types	KUB-G40L / KUB-G64L / KUB-G64M / KUB-G90M
Surface Area (m2/m3)	40 / 64 / 64 / 90
Material of construction	Stainless steel, Duplex Stainless Steel, Nickel Based Alloys.
Key Characteristics	High capacity and low-pressure drop, High coking & fouling resistance, Corrosion and erosion resistance, Excellent mechanical strength, Reduced installation & removal time.
Application	Fouling systems, corrosive environment, where frequent cleaning & replacement needed. Ethylene primary fractionators, Atmospheric column over Flash section, Ethylene Water Quench Tower, Vacuum Tower Wash section, Flue Gas scrubber.

RANDOM PACKING

Random Packings have been traditionally used for absorption, stripping and fractionation operations in gas, refinery and chemical plants with well-known benefits. They provide a cheaper alternative to increase a tower's capacity and efficiency.

Kuber's leading application working knowledge offers you an optimum solution for your most critical and demanding applications.

Random packings are an inexpensive alternative to increase a tower's capacity and efficiency. With Kuber, designed random packings, capacity increase can be achieved without compromising on efficiency. Kuber Precision Technology process engineers can help you improve performance in new and existing towers. This is expertise you can rely on for solutions to your specific needs.

Based on application, Kuber Precision Technology has the random packing in the size and material - metal, plastic, or ceramic - for your specific needs. Most sizes of Packing's, in all common materials, are available at competitive prices. Prompt delivery is ensured to cause minimum downtime at the customer end.





RANDOM PACKING

KUBPAK RASCHIG RING

KPT also offers specially designed Lab packing for R&D trails and pilot unit distillation. These are very efficient packing with very low pressure drop 0.1 to 0.4 mbar/stage, suits low liquid load 0.05 m³/m²h, higher surface area and NTSM.

METAL RASCHIG RING

Size	10 to 80 mm
Bulk Density	130 - 540 Kg/m ³
Surface Area	71-430 m ² /m ³
NTSM	1.5 to 2
Thickness	0.3 to 1 mm

PLASTIC RASCHIG RING

Size	25 to 50 mm
Bulk Density	86 - 92 Kg/m ³
Surface Area	95-205 m ² /m ³
NTSM	2.0 to 2.5
MOC	PP, PVDF, PTFE & PFA

CERAMIC RASCHIG RING

Size	15 to 75 mm
Bulk Density	500 - 710 Kg/m ³
Surface Area	70-330 m ² /m ³
NTSM	1.4 to 1.7





RANDOM PACKING

KUBPAK PALL RING

Pall rings were developed by BASF AG around 1940s based on the Raschig ring. They are still widely used in the industry owing to their good capacity characteristics at low-pressure drops. Metal Pall Rings are available in various construction such as Stainless Steel, Carbon Steel, Aluminium & Copper.

METAL PALL RING

Size	10 to 75 mm
Bulk Density	140 - 520 Kg/m ³
Surface Area	120-500 m ² /m ³
NTSM	1.8 to 2.2
Thickness	0.3 to 0.6 mm



PLASTIC PALL RING

Size	16 to 90 mm
Bulk Density	43 - 95 Kg/m ³
Surface Area	985-340 m ² /m ³
NTSM	1.8 to 2.5
MOC	PP, PVDF, PTFE & PFA



CERAMIC PALL RING

Size	25 to 50 mm
Bulk Density	535 - 640 Kg/m ³
Surface Area	120-220 m ² /m ³
NTSM	1.4 to 1.8





RANDOM PACKING

KUBPAK SADDLE RING

Metal Saddle Rings are a type of random tower packing suitable for high-capacity and high-performance applications.

METAL SADDLE RING

Size	15 to 70 mm
Bulk Density	90 - 350 Kg/m ³
Surface Area	60-285 m ² /m ³
NTSM	2.2 to 2.5
Thickness	0.3 to 0.6 mm



PLASTIC SADDLE RING

Plastic Saddle Ring is also called super saddle ring, plastic super intalox saddle. Its shape is similar to the saddle. This product is improved on the basis of a plastic intalox saddle. It changes the latter's smooth edge into the corrugated edge. This design enlarges the voids among the random packing and improves the gas-liquid distribution in the packed layers.

Size	25 to 75 mm
Bulk Density	48 - 83 Kg/m ³
Surface Area	89-210 m ² /m ³
NTSM	2 to 2.5
MOC	PP, PVDF, PTFE & PFA



CERAMIC SADDLE RING

Ceramic saddles are one of the most frequently used random packings, especially for corrosive applications. Their smooth surface imparts a high chemical resistance and provides a high degree of stability. Saddles are low-cost packings generally used in acid gas scrubbers, dryer towers, tail gas scrubbers, etc.

Size	13 to 75 mm
Bulk Density	545 - 725 Kg/m ³
Surface Area	91-625 m ² /m ³
NTSM	1.8 to 2.6





RANDOM PACKING

CASCADE MINI RING (C-RING)

Cascade Mini Ring is a kind of random packing made of Carbon Steel or Stainless Steel. Cascade Mini Ring is commonly a cylinder with several windows open on the surface and a trumpet-shaped expanded opening at one end. This kind of Random Packing has higher mass transfer efficiency and better separation effect than the Metal Intalox Saddle and Metal Raschig Ring.

Size	10 to 50 mm
Bulk Density	150 - 270 Kg/m ³
Surface Area	50-250 m ² /m ³
NTSM	2.2 to 2.5
Thickness	0.3 to 0.6 mm



NUTTER RING

Nutter ring is a high-performance metal packing ring which is perfect for industrial purposes. The Nutter ring packing has great features over other packing rings like metal Pall Ring and Cascade Mini Ring that make it one of the best metal packings rings available on the market today.

Some of the features included Low-Pressure drop, high operation elasticity, large flux, and high mass transfer efficiency. The Nutter ring offers ultimate surface utilization which enables for shorter packed beds and is widely applied to absorption tower, washing tower, and drying tower.





COLUMN INTERNALS

Kuber Precision Technology has a dedicated mass transfer team which designs, manufactures and supplies column packings and associated column internals for critical applications. In any column system, packings can give an optimum performance only when complemented with appropriately designed tower distributors, collectors, supports and other column internals for optimum liquid - vapour distribution to the packed beds.

We develop these internals by making use of finest grade raw materials and state of art techniques. Matchless performance, low maintenance, robust construction, dimensional precision and compact design are the attributes of our offered internals.

We have specifically designed a quality variety of Column Internals, which find extensive applications in hydrocarbon processing, chemical, desalination industries, and petrochemical and gas-liquid absorption units.

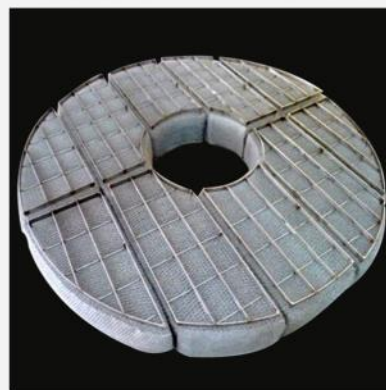
DEMISTER PADS (KPT TRAY-3)

Demister Pads are manufactured using best-grade raw materials and advanced technology, which ensures less time and power consumption while functioning. These products are designed and developed in line with the prevailing trend and standards of the industry.

Our range of products are widely used in various applications like Petroleum Industry, Chemicals industry, Metallurgy industry, Pharmaceuticals industry, and Automobile industry.

Our range of products are well known for its attributes like better functioning, superior quality and easy to use. These are extensively used in various applications and in various sizes, models as per the clients' requirements.

Mesh demister can be installed either horizontally or vertically. With horizontal gas flow through the demister, the capacity is 30 % greater than compared to vertical flow, thus the demister can be smaller.



LIQUID DISTRIBUTOR & REDISTRIBUTORS

Packings, whether random or structured, serve the basic purpose of providing close contact between liquid and vapor/gas in mass transfer operations. But for the effective and efficient performance of packings some more peripherals (i.e. internals) are needed. Kuber has been designing, manufacturing, and supplying efficient and economic internals to its customers.

CHANNEL TYPE DISTRIBUTOR & REDISTRIBUTOR (KPT LD-1/KPT RD-1)

Channel type distributor is one of the regularly used distributors. These are especially successful for structured packing.

Channel type distributor can be supplied from 200 to 2000 mm diameter. Diameter upto 800mm can be manufactured in single segment and can be manufactured with top trough upto 2 metres diameter in segmented pattern.

Key Characteristics : It's channelized design causes the liquid to distribute evenly & to cover the maximum cross sectional area of the packing. Also results in low pressure drop due to even distribution of vapour flow. The distributor can be supplied with bottom holes or with drip tubes. Drip tube can be applied where the fouling conditions are foreseen.

Liquid load can vary from 1 to 100 m³/m²h. Turndown ratio upto 3:1.





COLUMN INTERNALS

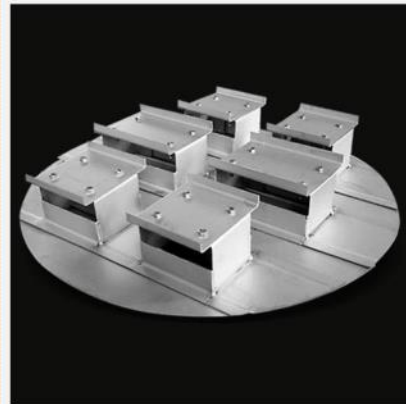
LIQUID DISTRIBUTOR & REDISTRIBUTORS

CHIMNEY TRAY COLLECTOR-DISTRIBUTOR (KPT CTD-2)

Chimney Collector trays are used to collect liquid from between packed beds or packed beds during tray transition. Liquid interception is required in various situations such as total or partial draw-off of liquid etc. Different types of collector trays are available to suit the vapor and liquid rates.

Key Characteristics : Chimney tray distributor is applicable for high liquid loads & higher diameter columns. Features of this distributor help it to work as a distributor as well as redistributors. Whenever collection & redistribution is required this distributor can be used. The design of the chimney is a very crucial part of the design which is based on liquid & vapor flow and pressure drop requirements.

For many cases without holes, these trays can be supplied as partial or 100% draw of liquid.



FEED PIPE DISTRIBUTOR (KPT FPD-4)

Pipe Type Distributor is one of the simplest designs. These distributors can be very efficient where the vapour flow is very high as the pipe type construction provides large volume for vapour flow.

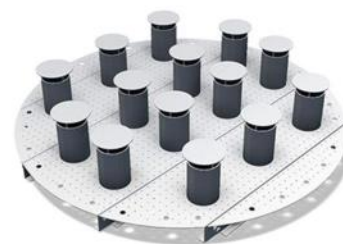
Key Characteristics : Pipe Type Distributors can handle to liquid loads upto 20 to 25 m³/m²h. These distributors can be applied from 500mm to above size. These can also be designed for smaller sizes but the installation becomes critical.

Manufacturing can be done as a single piece or arms could be flanged type to pass easily through manway.



L-L EXTRACTION DISTRIBUTOR (KPT LLE-3)

These are used in packed L-L Extraction columns for continuous and dispersed phase, preventing emulsions at low surface tensions.



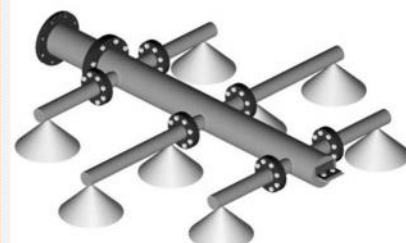
SPRAY NOZZLE TYPE DISTRIBUTOR (KPT SNTD-6)

Spray nozzle distributor with compact structure, is a popular type of distributor used in packing towers. Under the pressure, spray nozzle distributor can distribute liquid on the tower packing through nozzles. Spray nozzle distributor is being used more for the process of heat exchange and scouring.

Key Characteristics : The spray nozzle type distributor has cone spray nozzles instead of distribution holes for homogeneous distribution of liquid. This type has an advantage that liquids containing solid particles can be distributed without plugging problems to the nozzles. The Spray type nozzle distributor consists of a main header and laterals with downpipes and spray nozzles.

Distributor Liquid loading : 2 to 200 m³/m²h

Distributor Size : upto 6m





COLUMN INTERNALS

LIQUID DISTRIBUTOR & REDISTRIBUTORS

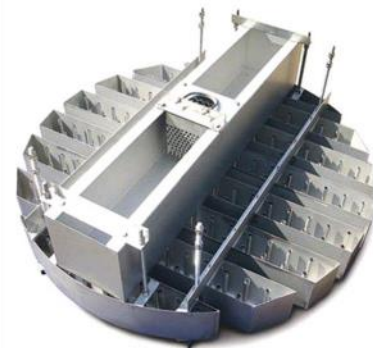
TROUGH TYPE DISTRIBUTOR (KPT TTD-7)

The liquid distributor LD has got troughs with lateral notches as discharge orifices. The troughs are fed by a parting box. This makes this type of distributor highly resistant to fouling and expands the scope of application. A trough type distributor consists of a pre-distribution trough or 'parting-box' mounted above a number of equally spaced, narrow troughs.

Key Characteristics : Trough type distributor construction can be used for very high liquid load & higher column diameter from 900 mm & above diameters. Both bottom holes & tube construction is possible in trough type distributor. Top trough distributor the liquid in bottom channels which distribute the liquid evenly on the surface of packing.

Can be used for both structured & random packing. Liquid loads may vary from 2m³/m²hr to 50 m³/m²hr.

The simplicity of this design helps to get good seating, better leveling & easiness of installation.



LIQUID COLLECTORS

Packings, whether random or structured, serve the basic purpose of providing intimate contact between liquid and vapor/gas in mass transfer operations. But for the effective and efficient performance of packings, some more internals is needed.

Kuber has been designing, manufacturing, and supplying efficient and economic internals to its customers.

LIQUID COLLECTORS

VANE TYPE COLLECTORS (KPT LC-1)

Also known as "Ring Type Collectors", these collectors have very low-pressure drop.

Key Characteristics ;

It requires a ring channel which is then welded to the column wall.

The pressure drops are low, lesser losses.



FLANGED TYPE COLLECTORS (KPT LLE-2)

This is suitable for comparatively smaller diameter columns where manholes are not practical and the column sections are flanged in construction.

Key Characteristics :

These Collectors are normally used in small diameter column.

These are designed to be installed between column flanges.





LIQUID COLLECTORS

CHIMNEY TRAY TYPE COLLECTORS (KPT LC-3)

Normally used for large diameter columns with high liquid throughput, it is available in both welded and bolted structures.

Key Characteristics :

Liquid collection from above bed and conduction to below distributor.

Has a lateral downcomer shaft.

Total or partial liquid draw-off is possible.



COLLECTORS WITH SUPPORT GRID (KPT LC-4)

This is a combination of packing support grid and vane type collector.

Key Characteristics:

These Collectors consists of inclined and overlapping lamellas.

These are designed to be installed between column flanges



KUBER

PRECISION TECHNOLOGY

believe in earning the trust of customers by spending enough time to understand their requirements, work closely with customers, delivering high-quality solutions and services.



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