

濕式洗滌塔

Wet Scrubber



元 鈺 企 業 有 限 公 司
YUAN SHEN ENTERPRISE CO., LTD.

公司 / 324桃園市平鎮區中豐路25號
No.25 Chung Feng Rd., Ping-Chen, City Taoyuan,
324 Taiwan R.O.C.

Tel : 886-3-4922512 (代表號) Fax : 886-3-4914966
<http://www.dexter.com.tw>

工廠 / 324桃園市平鎮區陸橋南路159巷15號
No.15, Lane 159, Lu-Chiao S.Rd., Ping-Chen,
City Taoyuan, 324 Taiwan R.O.C.
Tel : 886-3-4824858 (代表號) Fax : 886-3-4824271
E-mail : yslai@ms14.hinet.net

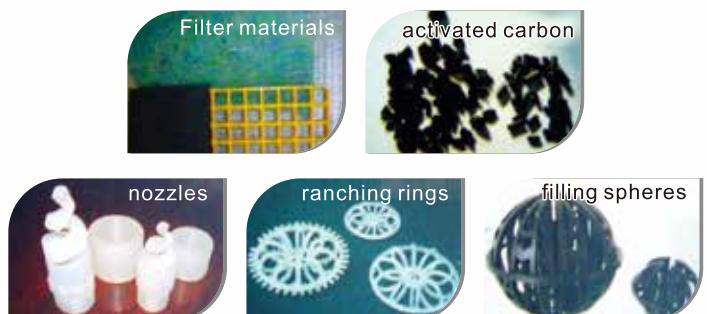


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Design Concept

The scrubber is a kind of spray washer which transports air to its body (effective space) through fans and leads to a proper pump distribution. It can bring the liquid in its body into good contact with the gas to transfer the contaminants including inertia and turbulence from the gas to the liquid. There are two ways of purification to separate contaminants and purify the gas: by matter transporting or by chemical reaction. Purification by chemical reaction, through adding chemicals in wash buffer, aims to neutralize the acid or the alkalinity and to make combination reaction with pollutants so that the pollutants can precipitate in the circulating water.

The bottom of the scrubber is a sink for circulating water, and there is an air inlet above the sink. On the top of the scrubber there is an entrance of wash buffer, which connects with the nozzle. A few of inert solid, called the filler of scrubber, exists in the scrubber. The filler provides a large amount of contact area for the liquid and the gas. In order to produce a good contact between the liquid and the gas and to enable molecules in the gases be absorbed by the wash buffer flowing into the scrubber, exhaust gases enter into the filler through the entrance on the right side, and a mist of water is sprayed into the interval of the filler and flow to a reverse direction. Then, purified gases get out of scrubber through the demist layer, enter into fans, and are discharged by chimney. Moreover, the downward liquid flow into the sink on the bottom of scrubber with the molecules acquired form the gases. It will be sent into wastewater treatment system when the solute reached to a certain concentration.



Choose appropriate filter materials in accordance with the wash results of different gases

The Common Used Types of Waste Gas Treatment

Waste Gas	Molecular Formula	Wash Buffers
Hydrogen Chloride	HCl	H ₂ O NaOH
Hydrogen Fluoride	HF	H ₂ O NaOH
Ammonia	NH ₃	H ₂ O H ₂ SO ₄
Cyanic Acid	HCN	NaOH
Sulfur Dioxide	SO ₂	NaOH
Chlorine	CL ₂	NaOH
Hydrogen Sulfide	H ₂ S	NaOH
Sulfuric Acid	H ₂ SO ₄	H ₂ O
Chromic Acid	CrO ₃	H ₂ O
Sodium Hydroxide	NaOH	H ₂ O
Nitric Acid	H ₃ NO ₃	H ₂ O

*The table is built based on 100PPV of gases' concentrations.



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Scope of Application

Scrubbers are suitable for the production or surface treatment of various kinds of industrial productions, such as electronic components produced through wet processing, productions of hardware and electroplates factories supporting chemical industry or laboratories, steel plates, steel tube and pipes, steel wire rod, and production produced through acid pickling. It have an excellent effect on eliminating harmful gases generated in the process of industrial production, including sulfuric acid, nitric acid, hydrogen chloride, hydrogen fluoride, chromic acid, sulfur oxide, nitrogen oxide, carbon oxide, and cyanic acid.



Application Materials

There are some kinds of application materials according to the components and temperature of sources of pollution : glass fiber reinforced plastics (FRP), polyvinyl chloride (PVC), polypropylene (PP), galvanized steel sheet, stainless steel SUS-304, stainless steel SUS-316, etc.



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Schematic Diagram of Horizontal Scrubbers

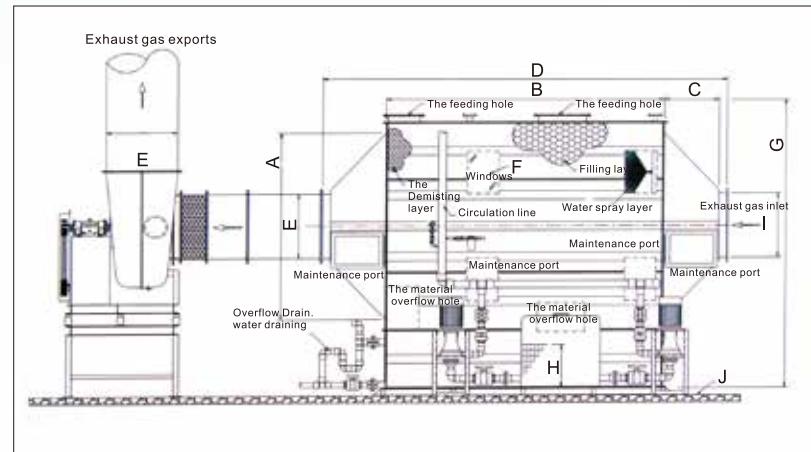


Table of Specifications and Dimensions of Horizontal Scrubbers

type	The Maximum of Ventilation Flow m ³ /min	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)	H(mm)	I(mm)	J(mm)
YSW-60	45	600	3600	150	4100	300		2100		300	6000X2800
YSW-80	80	800	3600	225	4250	350		2100		350	6200X2800
YSW-100	120	1000	3600	275	4350	450		2100		450	6500X3000
YSW-120	180	1200	3600	300	4400	600		2400		600	6600X3000
YSW-140	240	1400	3600	400	4600	600		2700		600	7000X3000
YSW-160	320	1600	3600	425	4650	750		2900		750	7200X3100
YSW-180	400	1800	3600	525	4850	750		2900		750	7200X3300
YSW-200	500	2000	3600	550	4900	900	600	3200		900	7500X3500
YSW-220	600	2200	3600	650	5100	900	X 400	3700	600	900	8200X3700
YSW-240	700	2400	3600	700	5200	1000		3700		1000	8500X3900
YSW-260	820	2600	3600	800	5400	1000		3700		1000	9000X4100
YSW-280	950	2800	3600	800	5400	1200		3900		1200	9500X4300
YSW-300	1100	3000	3600	900	5600	1200		4200		1200	10000X4500
YSW-320	1250	3200	3600	925	5650	1350		4200		1350	11000X4700
YSW-340	1400	3400	3600	1025	5850	1350		4200		1350	12000X4900
YSW-360	1600	3600	3600	1050	5900	1500		4700		1500	13000X5100
YSW-380	1800	3800	3600	1000	6000	1800		4900		1800	13000X5300

*The size of devices can be designed according to the available space; the maximum of ventilation flow can be more than 5000 CMM.



Schematic Diagram of Vertical Scrubbers

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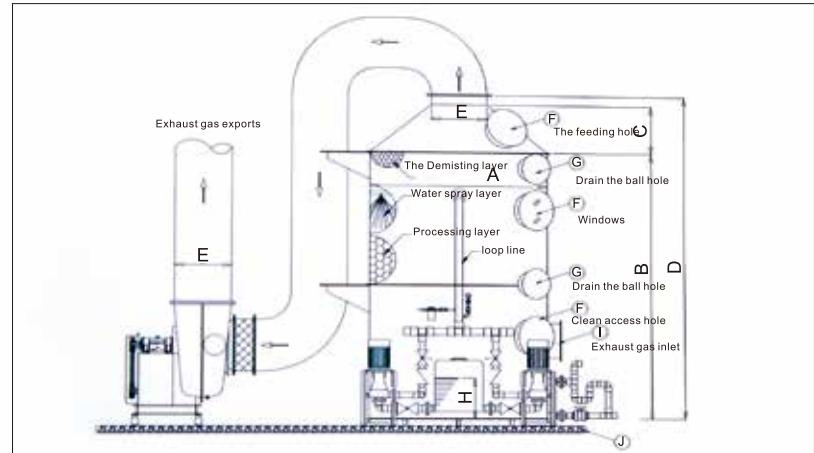


Table of Specifications and Dimensions of Vertical Scrubbers

type	The Maximum of Ventilation Flow m ³ /min	Ø A(mm)	B(mm)	C(mm)	D(mm)	Ø E(mm)	Ø F(mm)	Ø G(mm)	H(mm)	I(mm)	J(mm)
YSL-60	35	600	3250	200	3550	200				Ø 200	4200X2800
YSL-80	60	800	3300	250	3650	300				Ø 300	4500X3000
YSL-100	90	1000	3375	325	3700	350				Ø 350	4500X3200
YSL-130	175	1300	3575	425	4100	450				Ø 450	5000X3500
YSL-160	260	1600	3700	500	4300	600				Ø 600	5500X3700
YSL-180	310	1800	3775	525	4300	750				Ø 750	6100X3900
YSL-200	400	2000	3785	625	4430	750				Ø 750	6300X4100
YSL-220	500	2200	4000	650	4750	900				Ø 900	6800X4300
YSL-240	600	2400	4100	750	4750	900	500	350	600	Ø 900	7000X4500
YSL-260	700	2600	4150	800	4900	1000				Ø 1000	7300X4500
YSL-280	800	2800	4200	900	4900	1000				1300X700	7500X4500
YSL-310	1000	3100	4300	950	5600	1200				1700X700	8500X4800
YSL-340	1200	3400	4400	1100	5600	1200				1700X900	8500X4800
YSL-400	1650	4000	4500	1250	5850	1500				2000X1000	9500X5400
YSL-450	2100	4500	4600	1350	6050	1800				2000X1300	11000X6000
YSL-500	2600	5000	4600	1450	6150	2100				2300X1300	12000X6500

*The size of devices can be designed according to the available space; the maximum of ventilation flow can be more than 5000 CMM.



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Water Curtain Type Spray Booths (TYPE-YWP)

Trapping Principle:

Gases with flying paint particles are attracted by fans and get through vortex chamber with high speed. Paint particles will be separated from gases by centrifugal force and then be mixed and collected by the water curtain. The water is blocked by baffles in case of discharge. The water with paint particle will be collected at the cubes in front of the sink.

Purposes:

1. Prevent the air pollutions resulting from paint spraying.
2. Avoid pollutions in the workplace resulting from paint spraying and improve work efficiency.
3. Retain sufficient moisture to prevent disasters originating from solute with high volatility.

Characteristics:

1. We adopt double filtration to improve the filtering effect.
2. The water curtain and fans are openable so that it is easy to maintain, clean, and monitor them.
3. The exhaust fan is airtight, and the life span without maintenances is quite long.
4. The water used to gather particles is supported automatically to avoid the negative effect on trapping caused by the low water level.
5. The modular design of devices make disassemble and assemble it easy.
6. If there are more than one spray booths, they can be managed by the central system and exhaust in parallel. Moreover, a activated carbon tower can be added in series In the back-end.

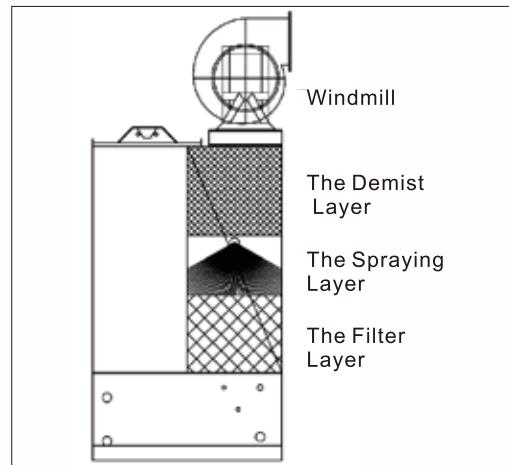
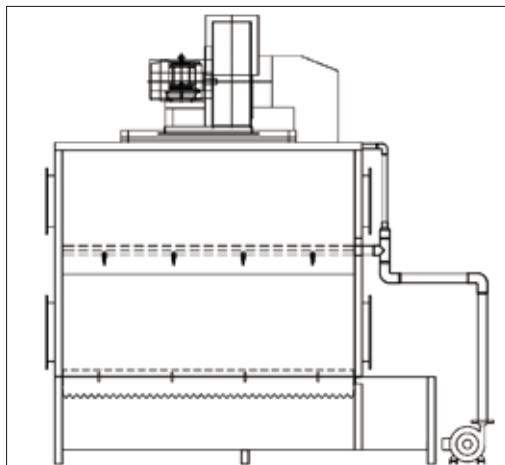


Table of Specifications and Dimensions of Water Curtain Type Spray Booth

Type	Horsepower	Air Volume (CMM)	Size (m/m)				Motor Capacity
			Length	Width	Height	Total Height	
YWP-1	3HP	80	1200	1100	2000	2800	1HP
YWP-2	5HP	125	1800	1100	2000	2900	1HP
YWP-3	7.5HP	200	2400	1500	2000	2900	2HP
YWP-4	10HP	260	3000	1500	2000	2900	2HP
YWP-5	15HP	300	3600	2000	2000	3100	3HP
YWP-6	20HP	350	4500	2000	2000	3200	5HP

※1. Two kinds of materials: stainless steel (SUS) and galvanized steel (SS-41).

※2. Special sizes are allowed according to the demands of guests.



Cyclone Spray Scrubbers YCT

Cyclone Spray Scrubbers



Yuan Shen

Principle:

The centrifugal force gives rise to the stir and mix of the gas and water buffer, as well as the adhesion and adsorption of pollutants to purify the gas.

Purposes:

The adsorption of harmful gases, the elimination of dusts, and the cooling and cleaning of waste gases.

Advantages:

the utilization of Centrifugal force contact principle of airflow; a sturdy and durable body; excellent effects on eliminating dusts; low pressure loss (about 150 mmAq).

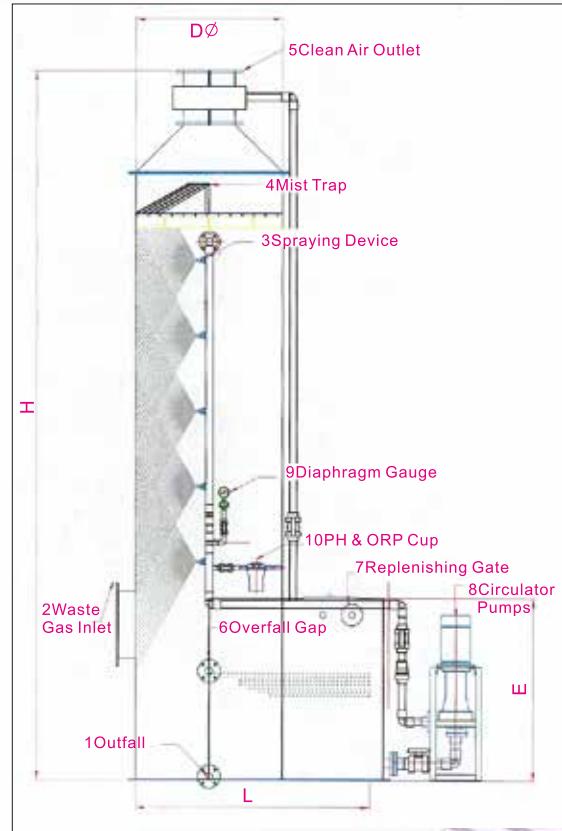


Table of Specifications and Dimensions of Centrifugal Scrubbers

Type	Air Volume (CMM)	Size				Water Storage Capacity(L)	Circulator Pumps Capacity (HP)
		H	D	L	E		
YCT-050	50	2900	577	1200	900	500	1
YCT-075	75	3300	707	1300	900	700	2
YCT-100	100	4000	817	1400	1200	1100	2
YCT-125	125	4400	913	1500	1200	1300	3
YCT-150	150	4700	1000	1600	1200	1500	3
YCT-175	175	5000	1080	1700	1200	1700	3
YCT-200	200	5200	1155	1800	1200	2000	3
YCT-225	225	5500	1225	1800	1200	2100	3
YCT-250	250	5700	1291	1900	1200	2300	3
YCT-275	275	5900	1354	2000	1200	2600	5
YCT-300	300	6100	1414	2000	1200	2700	5
YCT-325	325	6300	1472	2100	1200	2900	7.5
YCT-350	350	6500	1528	2100	1200	3000	7.5
YCT-375	375	6700	1581	2200	1200	3300	7.5
YCT-400	400	6800	1633	2200	1200	3400	7.5
YCT-425	425	7000	1683	2300	1200	3600	7.5
YCT-450	450	7200	1732	2300	1200	3700	10
YCT-475	475	7400	1780	2400	1200	4000	10
YCT-500	500	7600	1826	2400	1200	4100	10

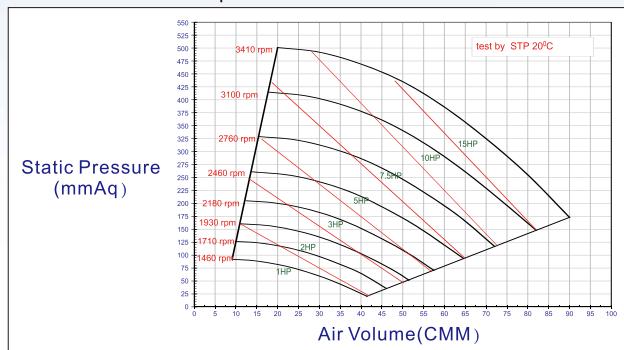
*1. Three kinds of materials: stainless steel (SUS), galvanized steel (SS-41), and PP.

*2. Special sizes are allowed according to the demands of guests.

Performance curves of Yuan Sheng Fans

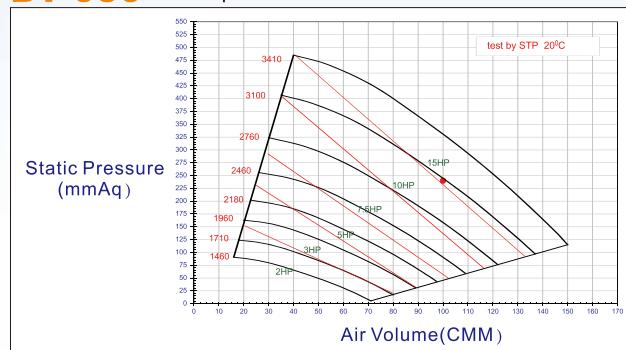
BT-025

Pipe Diameter of inlet and outlet: Ø350mm



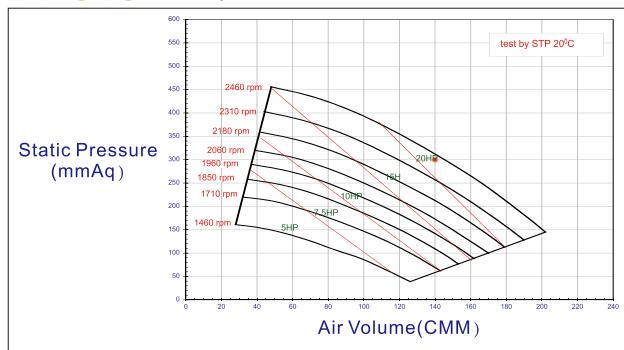
BT-030

Pipe Diameter of inlet and outlet: Ø450mm



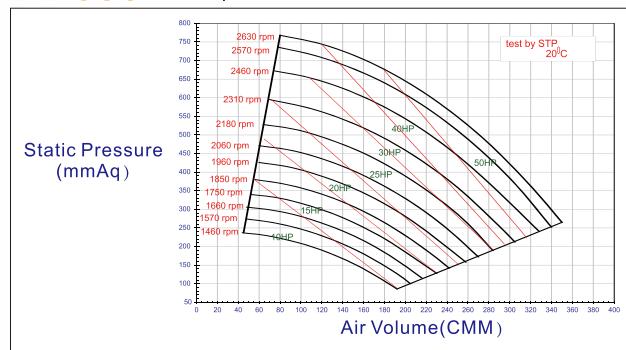
BT-040

Pipe Diameter of inlet and outlet: Ø600mm



BT-050

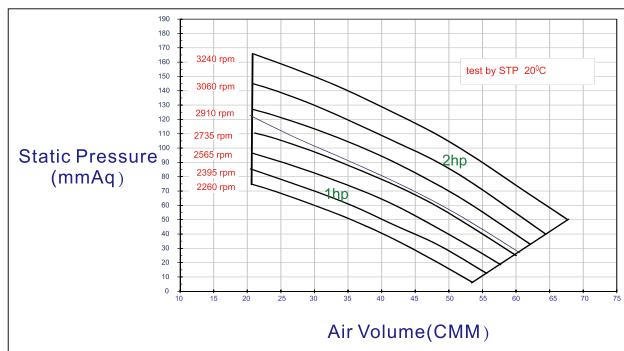
Pipe Diameter of inlet and outlet: Ø750mm



Performance curves of Yuan Sheng Fans

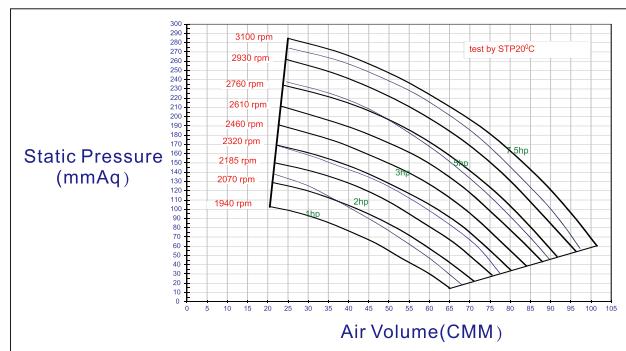
YT-020

Pipe Diameter of inlet and outlet: Ø300mm



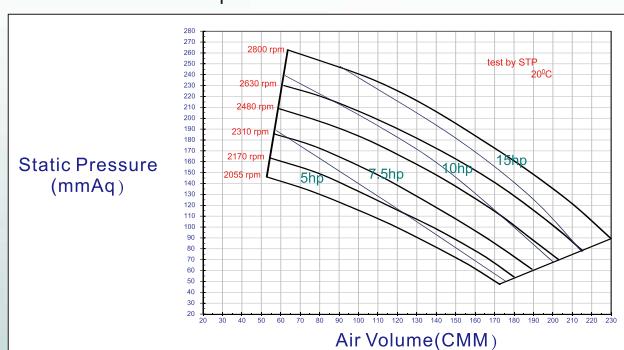
YT-025

Pipe Diameter of inlet and outlet: Ø350mm



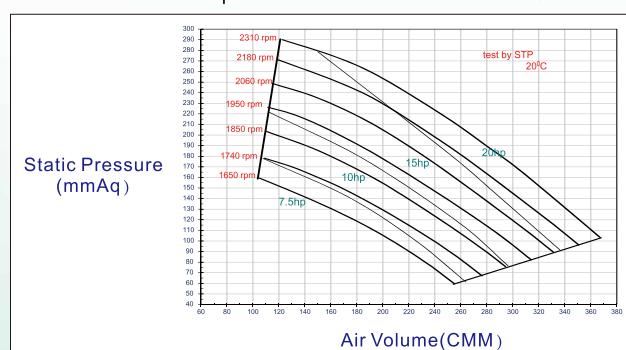
YT-030

Pipe Diameter of inlet and outlet: Ø450mm



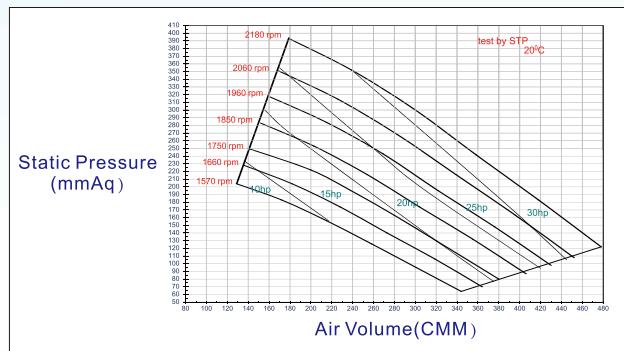
YT-040

Pipe Diameter of inlet and outlet: Ø600mm



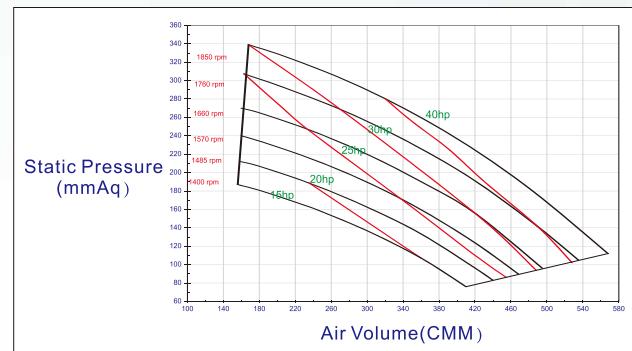
YT-045

Pipe Diameter of inlet and outlet: $\varnothing 650\text{mm}$



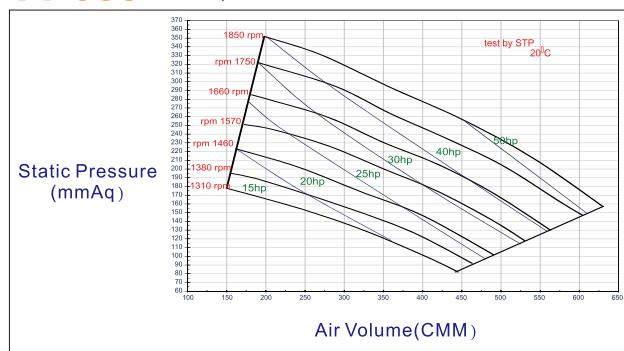
YT-050

Pipe Diameter of inlet and outlet: $\varnothing 750\text{mm}$



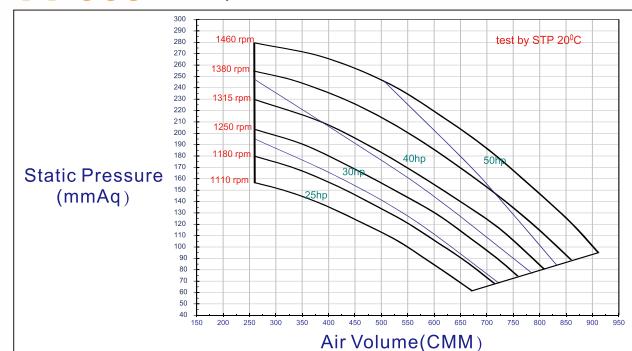
YT-055

Pipe Diameter of inlet and outlet: $\varnothing 800\text{mm}$



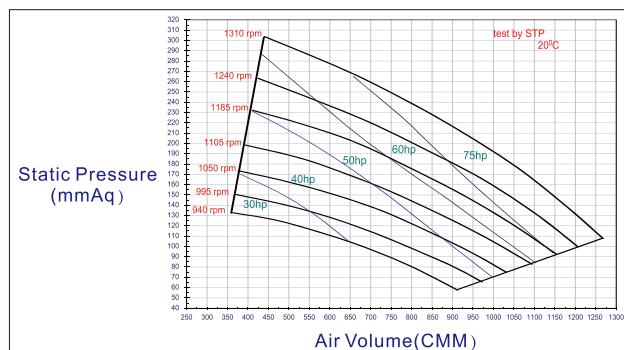
YT-060

Pipe Diameter of inlet and outlet: $\varnothing 900\text{mm}$



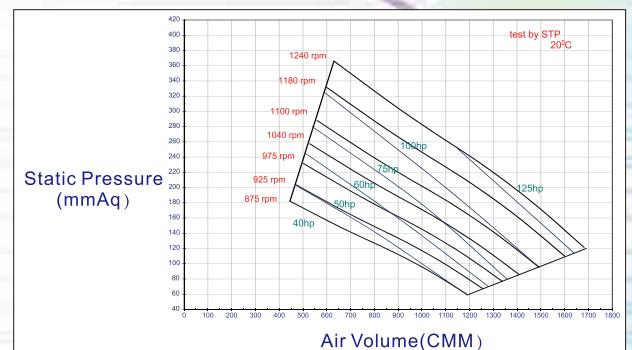
YT-070

Pipe Diameter of inlet and outlet: $\varnothing 1000\text{mm}$



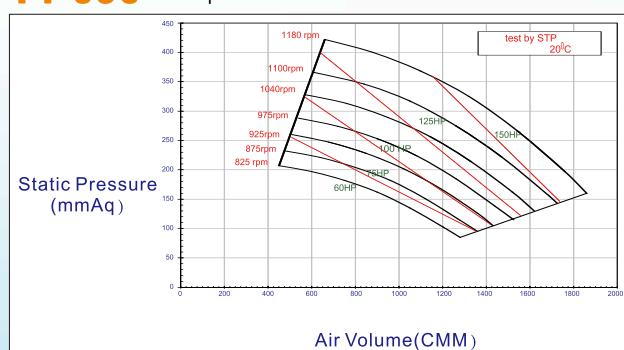
YT-080

Pipe Diameter of inlet and outlet: $\varnothing 1200\text{mm}$



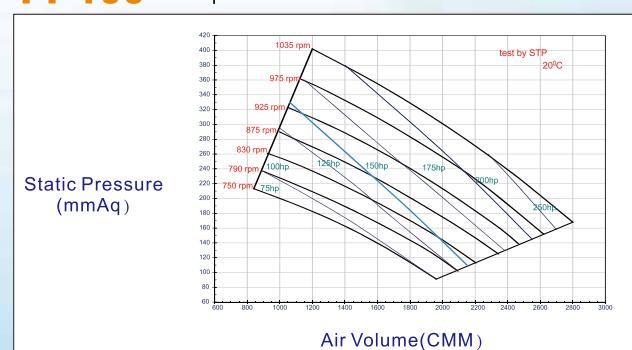
YT-090

Pipe Diameter of inlet and outlet: $\varnothing 1350\text{mm}$



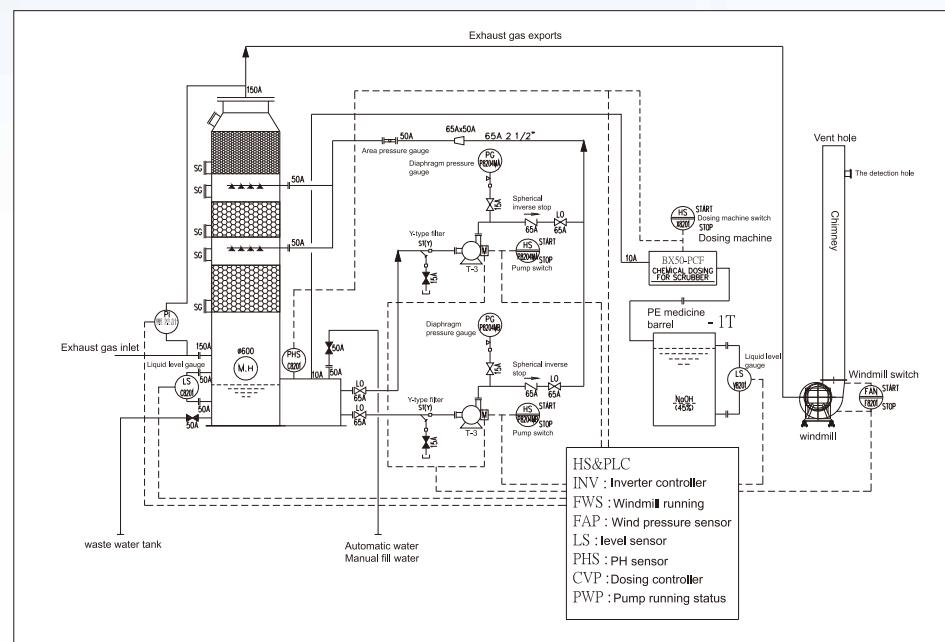
YT-100

Pipe Diameter of inlet and outlet: $\varnothing 1500\text{mm}$

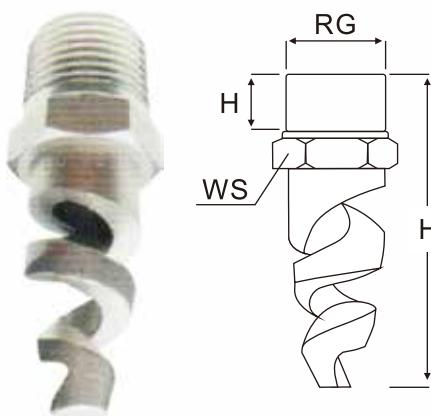




The Control Flow Chart of Scrubbers



Correlated Information of Spiral Nozzles



Materials for nozzles: ceramics, polypropylene (PP), and stainless steel (SUS)

Spraying Angle: 120 degrees

Thread: 1/2 inch

Typical Application

Cleaning: scrubbers for waste gas, stack desulfurization system

Cooling: cooling for high-temperature gas, cooling for industrial productions

Others: spraying solution for fire control or chemical uses

The spiral, solid, and conical nozzles are equipment with special and spiral spraying structure instead of classical spoiler. The liquid is sprayed and spread to the expected spraying degree by impacting spiral blades. This special mechanism sharply increase the size for particles to get through so as to allow the inlet diameter almost equal to the outlet diameter. It not only can effectively preclude nozzle clogging, but also enlarge the volume of spraying with the same size of screw thread. Our spiral nozzles is your optimal choice when spraying suspension liquid with solid particles, solutions with poor cleanliness, and recycled spraying water.



Cross Section of spraying water



Spraying Angle	Thread RG (inch)	Nozzle Diameter (mm)	Minimum of Available Diameter	The Volume of Spraying (L/min) with Different Operating Pressure (kgcm ²)			
				0.7	1.0	2.0	3.0
120°	1/2"	11.1	4.8	30	35	55	65

Boundary Dimension (mm)		
H	H1	WS
64	18	22

Spraying Angle	The Theoretical Coverage at Different Point (the distance from the nozzle to it)									
	5	10	15	20	25	30	40	50	60	70
120°	17.3	64.6	52	69.3	86.6	104	139	173	208	243



Introduction of Filling Parts

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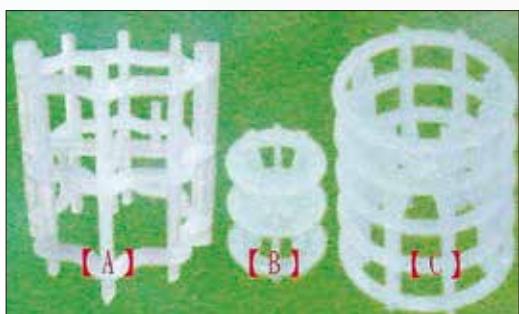
3" Spinous Plum Blossom



3" Plum Blossom



Girds

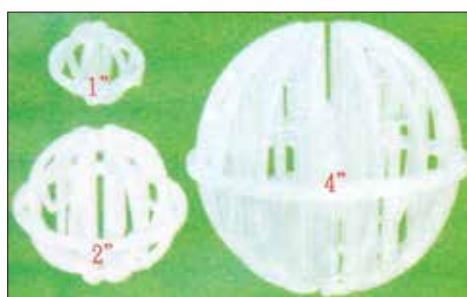


Size (mm)	78x29
Weight (kg/m³)	49
Specific Surface Area (m²/m³)	97
Porosity (%)	95
Filling Number (Pcs/m³)	6800

Size (mm)	75x28
Weight (kg/m³)	68
Specific Surface Area (m²/m³)	120
Porosity (%)	93
Filling Number (Pcs/m³)	7500

	A	B	C
Size (mm)	50x55	33x34	55x55
Weight (kg/m³)	41	107	51
Specific Surface Area (m²/m³)	100	205	126
Porosity (%)	95	88	94
Filling Number (Pcs/m³)	5000	22700	5000

Twin Planets



元 銓 風 機

YUAN SHEN FAN



元 銓 企 業 有 限 公 司
YUAN SHEN ENTERPRISE CO., LTD.

公司 / 324桃園市平鎮區中豐路25號
No.25 Chung Feng Rd., Ping-Chen, City Taoyuan,
324 Taiwan R.O.C.
Tel : 886-3-4922512 (代表號) Fax : 886-3-4914966
<http://www.dexter.com.tw>

工廠 / 324桃園市平鎮區陸橋南路159巷15號
No.15, Lane 159, Lu-Chiao S.Rd., Ping-Chen,
City Taoyuan, 324 Taiwan R.O.C
Tel : 886-3-4824858 (代表號) Fax : 886-3-4824271
E-mail : yslai@ms14.hinet.net