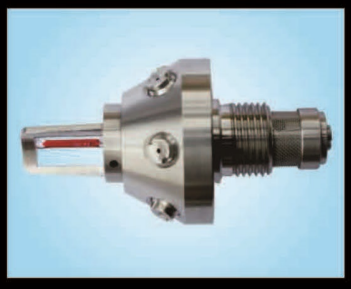
CYCO®

Dongguan Changyuan Spraying Technology Co., Ltd.


High Pressure Firefighting Water Mist

Initial customer needs and end with customer satisfaction

Best quality On time delivery Mutual benefit Good reputation

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Contents

Company Profile

Company profile

After more than ten years of development, Dongguan Changyuan Spraying Technology Co., Ltd. has become a high-tech enterprise integrating R&D, production and sales. We specialize in the manufacture of various types of spray products for industrial application. The variety is up to several thousand for more than 5,000 customers. We are one of the largest spray nozzle manufacturers in China now. The management have maintained good cooperative relationship with technical experts from Taiwan and Japan etc. We have dozens of fully automatic CNC lathes imported from Japan with an accuracy of less than 2 microns, multiple five-axis machining centers with a orifice precision of 0.1mm, high-voltage test benches and other precision droplet testing instruments. The advanced equipment better ensures the quality improvement. The nozzles can be made of engineering polypropylene, ceramics, alloys, imported 303, 304 or 316 stainless steel according to the actual working environment. Our engineers and technicians have very rich experience who can provide fast technical support according to customer's specific requirement. More than 90% of our metal materials are imported to ensure the stable quality for customers.

We provide fast sampling, short delivery time, and have multiple cargo vehicles to provide customers with fast and excellent service. We have offices in Shanghai, Tianjin, Xi'an, Chongqing, Qingdao, Wuhan, Ningbo and Changsha which are directly managed by the headquarter, and can provide better service for our customers.

We have passed the ISO9001 and ISO14001 product quality and environmental certification. Headquartered in Dongguan, Guangdong, we are a general taxpayer with standardized management and strict system to meet the various needs of customers.

All the above offices are directly managed by CYCO headquarter to facilitate the timely provision of service to customers.

Advanced Equipment and Quality Assurance

We have dozens of fully automatic CNC lathes with a precision of less than 2 microns, multiple five spindle lathe with a hole diameter of 0.1mm, high-voltage test benches and other precision droplet testing instruments. The advanced equipment better ensures the quality improvement. The nozzles can be made of engineering PP(polypropylene), ceramics, alloys, imported 303, 304 or 316 stainless steel according to the actual working environment.

Advanced Testing Equipment

We have the most advanced and accurate testing equipment in this industry. As long as we can think of it, we will definitely find a way to improve it. For all kinds of nozzles, we have strict requirement on supplier of materials (metal bars and plastic material). We strictly control from nozzle production to packaging, transportation and storage. All finished products are 100% inspected to ensure accurate data for our customers.

Firefighting Water Mist Nozzle Application

The water mist nozzle uses a special swirling structure to atomize water into particles at a relatively high pressure. Generally the average size of the droplet of water mist is less than 100 μm, the specific surface area and distribution density are high, and the vaporization and cooling effects and the oxygen barrier are more effective. The high pressure water mist system uses easy-to-use and low-cost water as the fire extinguishing medium. It is highly efficient, environmentally friendly, non-toxic, and uses less water. It has minimal impact on the water stain of the protected object. With the elimination of halogenated fire extinguishing technology, high pressure water mist system technology has shown a very superior feature as a new alternative technology and is a revolutionary new green technology. With the continuous deepening and promotion of domestic water mist fire suppression systems in many fields, Changyuan has developed a series of products and formed corresponding standards.

General Application

The water mist fire suppression system is suitable for fire fighting, fire suppression, fire control, temperature control and dust reduction for the following fires:

A:Combustible solid fires in places such as bookstores, archives, and cultural relics;

B:Flammable liquid fires in hydraulic stations, oil-immersed power transformer rooms, lubricating oil warehouses, turbine oil warehouses, diesel generator rooms, oil-fired boiler rooms, direct fuel-fired engine rooms, oil switch cabinets, etc.;

C:Flammable gas injection fires in steam turbine rooms, gas direct combustion engine rooms, etc.;

D:Electrical equipment fires in power distribution rooms, computer rooms, data processing equipment rooms, communication equipment rooms, central control rooms, large cable rooms, cable tunnels, corridors, traffic tunnels, etc.

E:Cooking fires (such as animal and vegetable oils) in cooking appliances;

The water mist fire suppression system shall not be used to save the following fires:

There is a fire that reacts with water and causes a burning explosion or a large amount of harmful substances;

There is a fire that can cause a violent boiling flammable liquid in contact with water;

There is a fire that can produce flammable gases when exposed to water.

Ship

Archives/library

Cable tunnel

Ancient architecture

Computer room

Industrial oil depot

Subway

Transformer

Military equipment

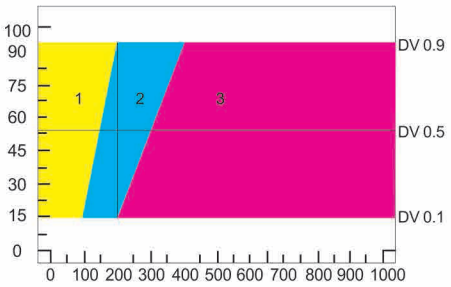
High Pressure Firefighting Water Mist Nozzle

Definition of Water Mist

"Water mist" is a concept relative to "water spray". The so-called fine water mist is water particles generated by high-pressure water spray using a special nozzle. In NFPA 750, the definition of water mist is that the water particle diameter Dv0.99 of the thickest part of the water mist is not more than 1000 μm measured at a plane of 1 m from the nozzle under the minimum design working pressure.

According to the size of the droplet in the water mist, the water mist is divided into 3 levels. As shown in the right figure, the first level water mist is the left part of the line of Dv0.1=100μ and Dv0.9=200μ. The finest water mist.

The second-stage fine water mist is a portion between the boundary of the first-stage fine water mist and the line of Dv0.1=200μ and Dv0.9=400μ. This fine mist can be produced by a high pressure nozzle, a dual flow nozzle or a number of impact nozzles. Due to the presence of large droplet, the level 2 fine water mist is more likely to generate a larger flow rate than the level 1 fine water mist.



Water mist droplet diameter distribution

The third stage fine water mist is a portion where Dv0.9 is greater than 400 μ, or the right side of the second water mist boundary line is between Dv0.99 and 1000 μ. Such fine water mist is mainly produced by medium pressure, small hole shower heads, various impact nozzles and the like.

Studies have shown that it is necessary to extinguish Class B fire by water mist particles less than 400μ, while larger particles are effective for Class A fires because the fuel is wetted. Because of this, the definition of water mist includes Dv0.99 of 1000μ. The water mist defined in NFPA 750 contains both a water spray system as defined in NFPA 15 and a water mist generated by a conventional spray system under high pressure. In general, fine water mist refers to a water mist having a Dv 0.9 of less than 400 μ.

Advantage of water Mist Fire Suppression

Efficient: Water mist has proven its superior fire-suppression performance in Class A and Class B fire laboratory tests and actual fires. The mist is diffused and unaffected by obstacles: the ultra-fine mist of rolling can be caught in the space of the obstacle and extinguish the flame.

Non-hazardous: Water mist is completely harmless to people and the environment, and it is the most green and safe way to extinguish fire.

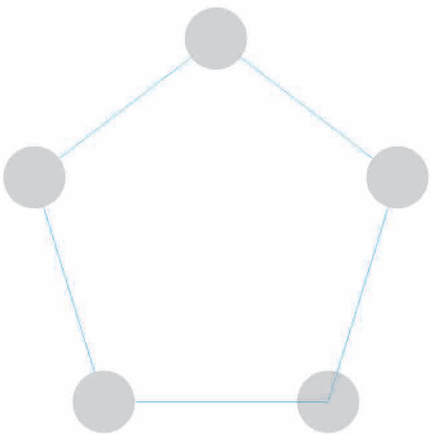
Low conductivity: Ultra-fine water mist has low conductivity and can be used in most electrical equipment.

Cleaning: The water mist uses only a small amount of water, which causes almost no damage, but simply cleans it up.

Small water loss: Compared with the water system, the water consumption is small and the droplets are fine, which will not have much impact on the protected object.

Extinguishing continuity: Different from gas fire extinguishing, the pump type water mist system can be continuously sprayed or restarted when the fire is not completely extinguished, and the fire is completely extinguished.

Space without sealing: Unlike gas fire extinguishing, water mist does not require a tightly sealed space, while local applications can tolerate relative openness.



Three Elements of Fire

Oxygen, heat and combustibles. Eliminate any of them to achieve the purpose of fire fighting.

Water Mist Suppression Mechanism

In the past decade, the water mist system was mainly used at sea, but at the same time it has also proved to be suitable for land. This system has replaced traditional water sprinkler systems, gas fire extinguishing systems, etc., and has achieved excellent results. Because the fine water mist has the characteristics of small particles, uniform and uniform spatial distribution, and long residence time in space, the following effects will occur when the high momentum of the fog particles is sprayed rapidly around the fire field:

Efficient heat absorption - quickly reduce the temperature of the fire, endothermic cooling to extinguish the fire.

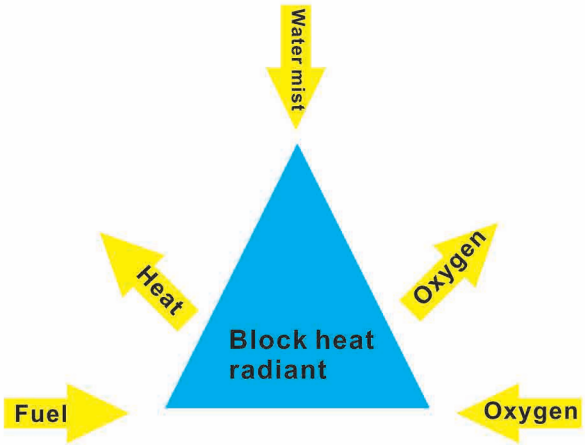
The high-momentum-intensive fine mist particles are rapidly vaporized after being heated, and the secondary process absorbs a large amount of heat from the surface of the combustion object and the fire area. It is the heat absorption capacity of hundreds of thousands of times of ordinary water spray, which prompts the surface temperature of the combustion object to rapidly drop and cool. Flame retardant in a short time.

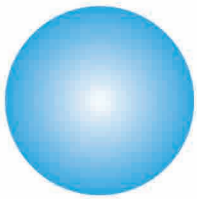
Quick suffocation---fast oxygen suffocation

The high-momentum-intensive fine mist particles are heated and vaporized to form a water vapor envelope of 1680 times the original volume. The rapidly expanding water vapor is filled with a water mist-covered fire field, which can maximize the air in the fire field and make the surrounding material around the burning material. The oxygen content is rapidly reduced below the oxygen content required for the ignition point.

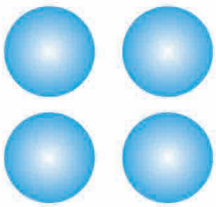
Block radiant heat - suppress fire spread

After the high-pressure water mist is sprayed into the fire, the formed water vapor quickly envelops the burning materials, flames and smoke, which has excellent barrier ability against the radiant heat of the flame, and can suppress the radiant heat to ignite other surrounding objects and damage surroundings, to reach the result of protecting lives and preventing the spread of fire.

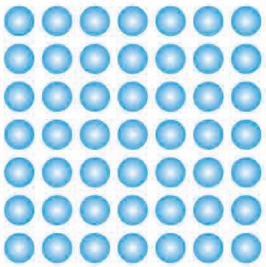




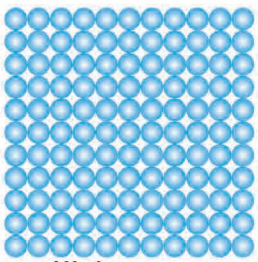
Ordinary water sprinkler / fog
$Dv_{0.5}$=1000-5000 μm



Ordinary low pressure water mist
$Dv_{0.5}$=200-1000 μm



Ordinary high pressure water mist
$Dv_{0.5}$=100-200 μm

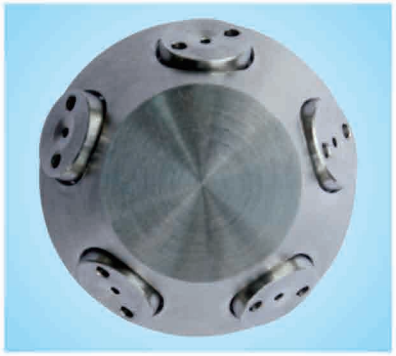


High pressure water mist
$Dv_{0.5}$<100 μm

JOB Heat-sensitive Glass Bubbles

Response type	Model	Length	RTI response time index		Strength Average breaking load		Temperature Other temperature grades available						Quality Certification
		(mm)	$(mm)^{\frac{1}{2}}$	$(fts)^{\frac{1}{2}}$	kN	lbs	57°C 135°F Orange	68°C 155°F Red	79°C 175°F Yellow	93°C 200°F Green	141°C 286°F Blue	260°C 500°F Black	Call us for details
Super fast response	F2	16	19	34	2.0	440							UL special application, water mist

High Pressure Water Mist Nozzle Open Type



Design Features

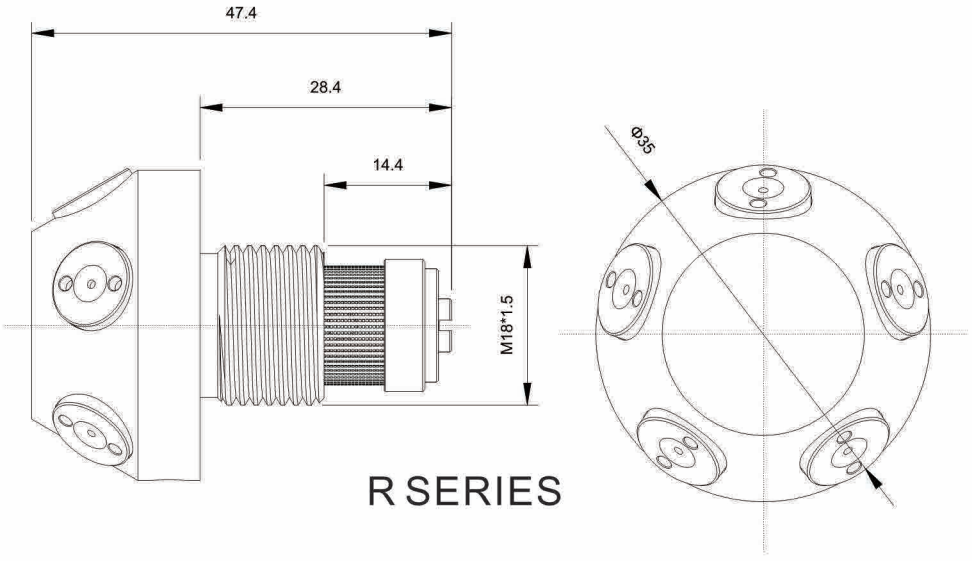
- All stainless steel, corrosion resistant.
- The fine water droplets having an average particle size of less than 100 μm are produced, the jet momentum is strong, the flame penetration force is strong, and the fire extinguishing efficiency is high.
- The suspension in the air has a long residence time.
- A variety of vortex technology for different environments and locations.
- The stainless steel filter is used to make the nozzle not easy to block.

General Application

- Tunnel
- Medicine
- Archives
- Library
- Petrochemical industry
- Aerospace
- Military equipment
- Fire brigade and forest police
- Electric power
- Subway
- Coal industry
- Ship
- Electronic industry
- Food processing industry
- Food processing industry
- Large traffic vehicle

High pressure firefighting water mist nozzle

Product Size



R SERIES

Performance Parameter

S/N	Model	Kfactor (K)	Working pressure (MPa)	Total flow rate (L/min)	Maximum installation spacing (m)	Maximum installation height (m)
1	XSWT0.5/10	0.5	10	5.0	2.5	3
2	XSWT0.7/10	0.7	10	7.0	2.5	3
3	XSWT0.9/10	0.9	10	9.0	3	3
4	XSWT1.0/10	1.0	10	10.0	3	3
5	XSWT1.2/10	1.2	10	12.0	3	4
6	XSWT1.5/10	1.5	10	15.0	3.5	4
7	XSWT1.7/10	1.7	10	17.0	4	4
8	XSWT2.0/10	2.0	10	20.0	4	5

Ordering Information

XSWT 1.0/10
1.0-K factor (K)
10MPa 10-minimum working pressure 10MPa
Please contact our sales engineer for details.

High Pressure Water Mist Nozzle Closed Type

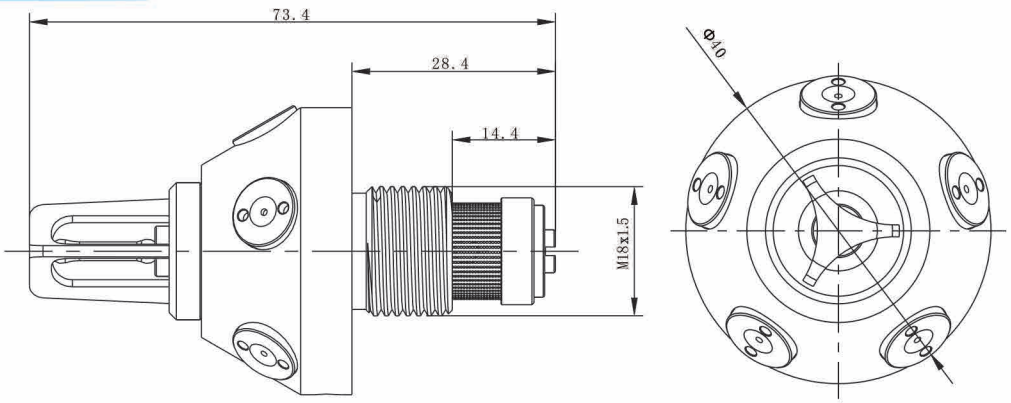
Design Features

- All stainless steel, finely machining.
- The fine water droplets having an average particle size of less than 100 μm are produced, and the droplets are densely and uniformly distributed in space, and the suspension residence time in the air is long.
- The unique vortex orifice technology overcomes the influence of extremely small droplets on air resistance.
- With different spray angles and models, 120-degree angle tips and finer mist-floating tips make the system more adaptable to different fire-fighting environments and objects.
- A variety of flow coefficient options for a variety of different environments and locations.
- The 304 stainless steel filter is used to make the nozzle not easy to block.
- Highly responsive glass bubbles that quickly sense ambient temperature in the event of a fire.
- With JOB glass bubbles made in Germany ▪

General application

- Tunnel
- Medicine
- Archives
- Library
- Petrochemical industry
- Aerospace
- Military equipment
- Fire brigade and forest police
- Electric power
- Subway
- Coal industry
- Ship
- Electronic industry
- Food processing industry
- Commercial civil construction
- Large traffic vehicle

Product Size



R SERIES

Performance Parameter

No	Model	Kfactor (K)	Working pressure (MPa)	Total flow rate (L/min)	Maximum installation spacing (m)	Maximum installation height (m)
1	XSWT0.5/10-68℃	0.5	10	5.0	2.5	3
2	XSWT0.7/10-68℃	0.7	10	7.0	2.5	3
3	XSWT0.9/10-68℃	0.9	10	9.0	3	3
4	XSWT1.0/10-68℃	1.0	10	10.0	3	3
5	XSWT1.2/10-68℃	1.2	10	12.0	3	4
6	XSWT1.5/10-68℃	1.5	10	15.0	3.5	4
7	XSWT1.7/10-68℃	1.7	10	17.0	4	4
8	XSWT2.0/10-68℃	2.0	10	20.0	4	5

Ordering Information

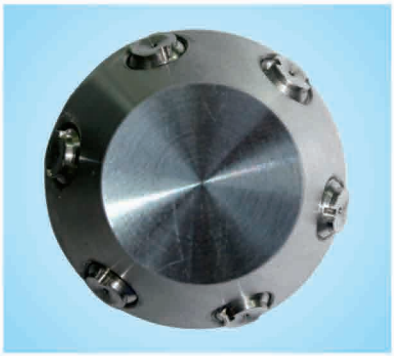
XSWT 1.0/10-68℃
1.0-K factor(K)
10MPa 10-minimum working pressure 10Mpa
68°C-nozzle with a nominal operating temperature of 68°C
Please contact our sales engineer for details.

High pressure firefighting water mist nozzle

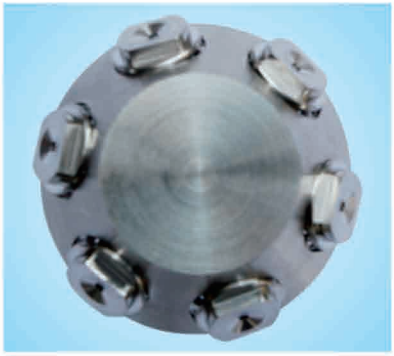
High Pressure Water Mist Nozzle Open Series

The following appearance are available

M SERIES

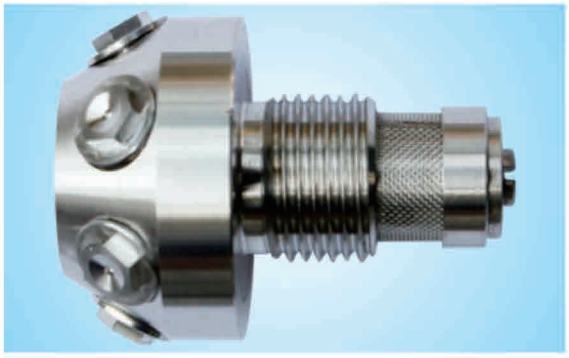


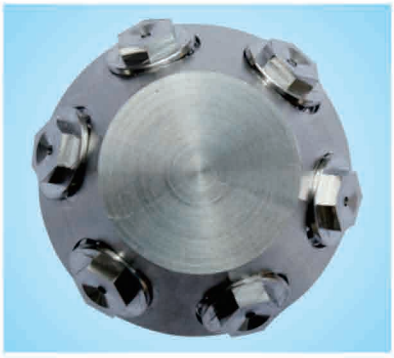
B SERIES



S SERIES

L SERIES





High Pressure Water Mist Nozzle Closed Series

The following appearance are available

MSERIES

B SERIES

S SERIES

L SERIES

High pressure firefighting water mist nozzle

Medium Pressure Water Mist Nozzle Open Type

Design Features

- Working pressure is 0.8Mpa-1.4Mpa.
- A fine mist with an average particle size of less than 200 μm is produced, the jet momentum is strong, the flame penetration force is strong, and the fire extinguishing efficiency is high.
- Unique eddy current technology and structural design to ensure the best fire extinguishing effect.
- It can be processed in brass (plated) or stainless steel.
- The stainless steel filter is used to make the nozzle not easy to block.

General application

- Tunnel
- Medicine
- Archives
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- Petrochemical industry
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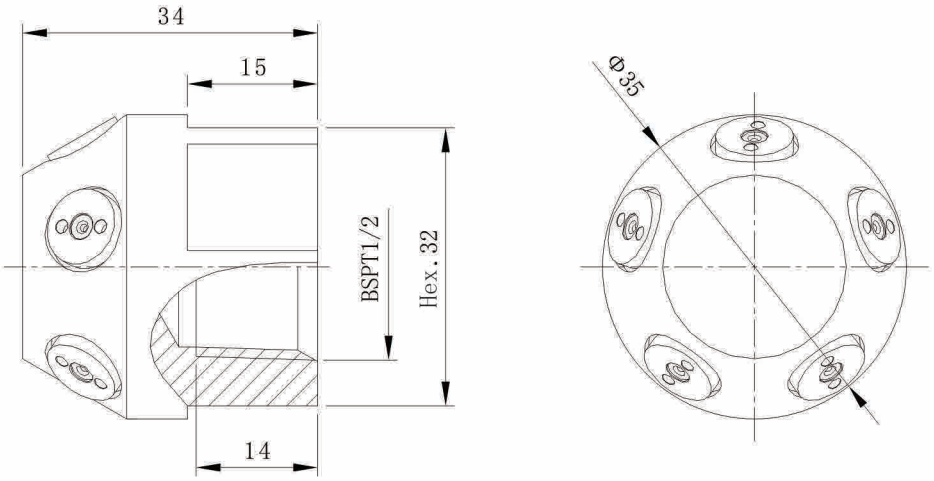
- Food processing industry
- Commercial civil construction
- Large traffic vehicle

Product Size



R SERIES

Performance Parameter

No	Model	Kfactor (K)	Working pressure (MPa)	Total flow rate (L/min)	Maximum installation spacing (m)	Maximum installation height (m)
1	XSWT2.5/1.2	2.5	1.2	8.7	3	3
2	XSWT3.0/1.2	3.0	1.2	10.4	3	3
3	XSWT3.5/1.2	3.5	1.2	12.1	3	3
4	XSWT4.0/1.2	4.0	1.2	12.9	3	3
3	XSWT4.5/1.2	4.5	1.2	15.6	3	3
4	XSWT5.0/1.2	5.0	1.2	17.3	3	3

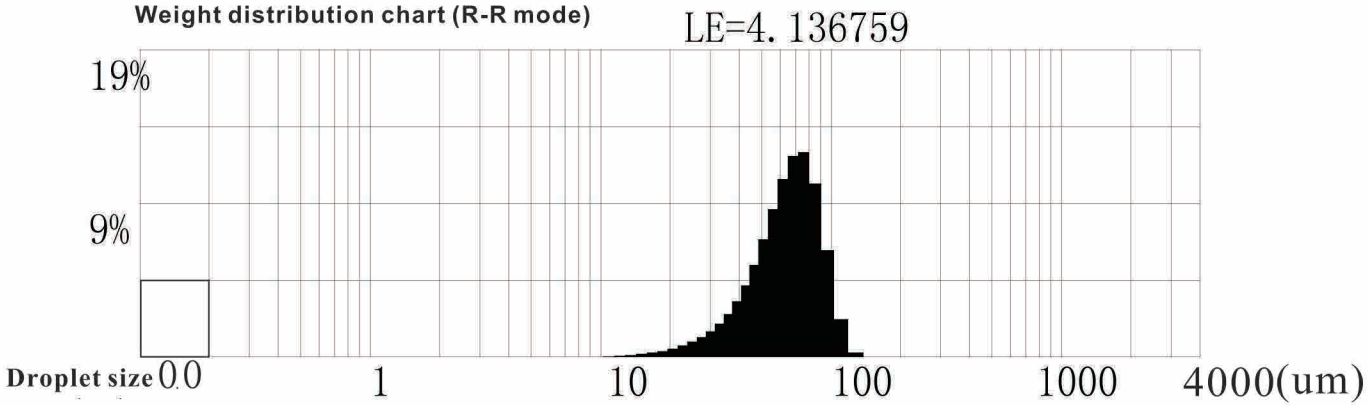
Ordering Information

XSWT 2.4/1.2
2.4-K factor (K)
1.2MPa 1.2-minimum working pressure 1.2MPa
Please contact our sales engineer for details.

Nozzle Droplet Distribution Characteristic Test Repor

Nozzle model no.	R series tips	water flow rate (l/min)	2.0
Water pressure (MPa)	10	Air flow rate (l/min)	
Air pressure (MPa)		Center distance (mm)	
Test height (mm)	1000	Date of inspection	2013.11.03/10:44:5
Test Equipment	LAS-III laser particle size tester		

Weight distribution chart (R-R mode)



Size range (um)		Weight%	Accumulated%
9.2	10.2	0.1	0.1
10.2	11.5	0.1	0.1
11.5	12.8	0.1	0.2
12.8	14.3	0.1	0.4
14.3	15.9	0.2	0.6
15.9	17.6	0.3	0.9
17.6	19.5	0.4	1.3
19.5	21.6	0.5	1.8
21.6	23.8	0.7	2.6
23.8	26.1	1.0	3.5
26.1	28.6	1.3	4.8

Size range (um)		Weight%	Accumulated%
28.6	31.3	1.6	6.5
31.3	34.2	2.1	8.6
34.3	37.3	2.8	11.3
37.3	40.6	3.6	14.9
40.6	44.4	4.6	19.5
44.4	48.5	5.9	25.4
48.5	53.2	7.5	32.9
53.2	58.6	9.4	42.3
58.6	64.8	11.3	53.6
64.8	72.0	12.8	66.4
72.0	80.4	13.0	79.4

Size range (um)		Weight%	Accumulated%
80.4	90.5	11.0	90.4
90.5	102.9	6.8	97.3
102.9	118.3	2.4	99.7
118.3	138.2	0.3	100.0
138.2	165.0	0.0	100.0
165.0	203.2	0.0	100.0
203.2	262.4	0.0	100.0
262.4	367.3	0.0	100.0
367.3	606.9	0.0	100.0
606.9	997.1	0.0	100.0
X=70.1 N=3.3 F=500			

D(V,0.5)=62.82um	D(V,0.1)=35.75um	D(V,0.9)=90.13um
SMD=54.54um	D43=63.15um	SPAN=0.87

Test conclusion

Tested by	Approved by	Issued by
Remarks	File name: R series small nozzle	

The testing equipment is developed by Institute of Modern Optical Instruments, Tianjin University