

Compressed Air Purification Equipment

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Professional Air Compressor Solution Provider

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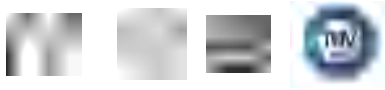
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Stability|Energy Saving|Efficiency|Silent|

Sowing Seeds In The Good Soil

Dream Compressor

Create the first brand of energy-saving air compressor



Stability
Engery Saving

QUALIFICATION & HONOR



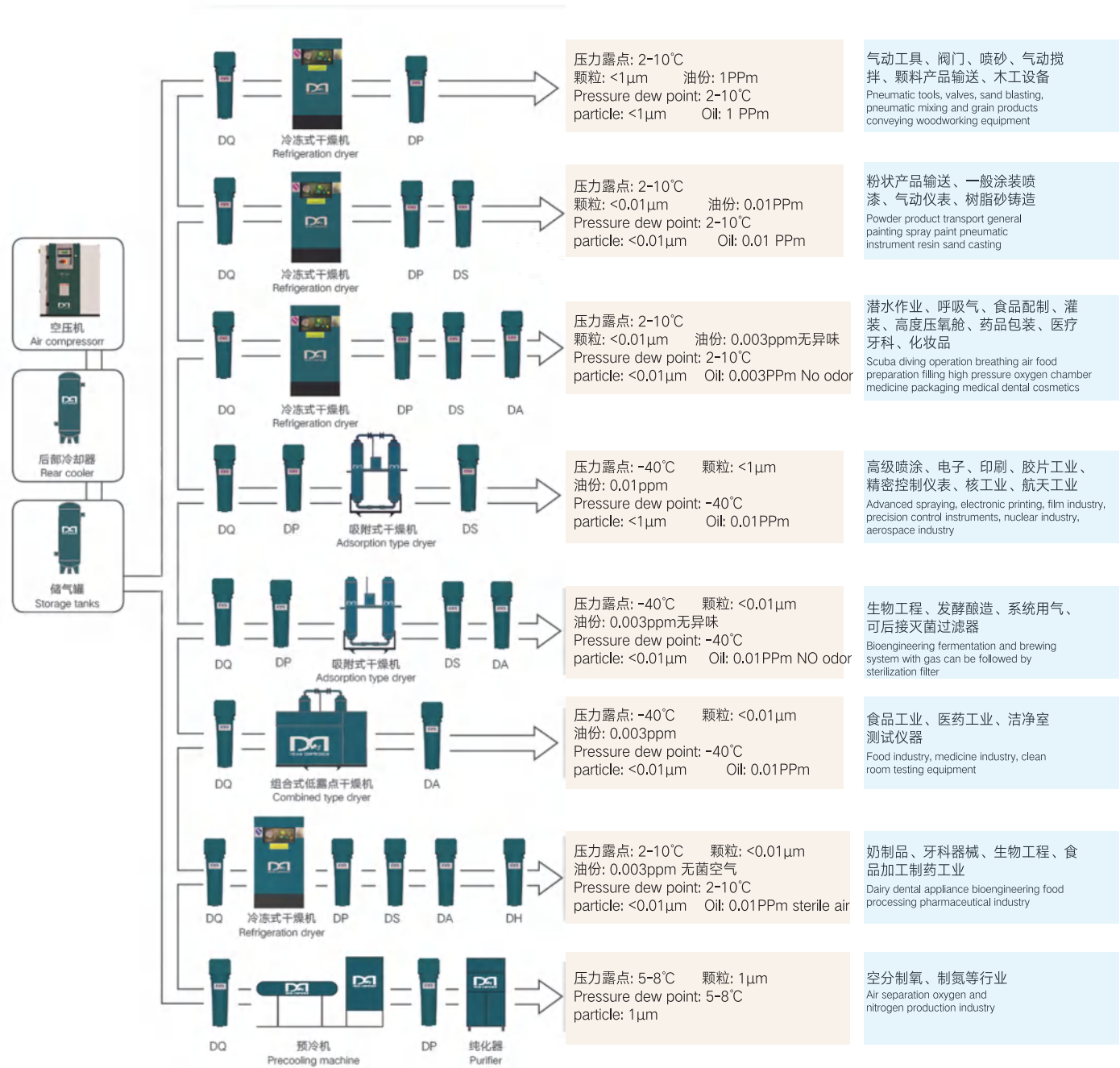
About Us

For more than a decade, Dream (Shanghai) Compressor Co., Ltd has been striving to become one of the leading manufacturers of compressed air solutions in China. The dream is located in Xingta industrial zone, Shanghai Jinshan district with 25,000 square meter factory coverage, is specialized in designing, manufacturing and sales of air compressors and air treatment systems with an annual capacity of 10, 000 units. Through years of efforts, its products have won wide recognition and acclaim from the domestic and oversea markets for high performance and reliability, durability and customer care. The company fully complies with international standards in its production and management and has acquired (Quality Assurance) certificates of ISO9001, CE Certificate for European Market, UL & ASME certificate for United States market and Class0 certificate from TUV for our oil-free screw compressors. as well as a variety of other certificates in terms of environmental protection, safety, and electrical engineering.

Our product lines covering the following areas:

- Oil-injected rotary screw compressors (Fixed speed and variable speed; high, normal and low pressure)
- Portable screw air compressors (Diesel-powered and electric motor powered)
- Oil-free air compressors (dry type, water-lubricated type)
- High-pressure piston air compressors (Oil-injected and oil-free)
- Air treatment equipment (Air dryers, air filters and air storage tank)

COMPRESSION ALR CONFLGURATION CHART



Dream Compressor series air dryers work under rated conditions, the inlet temperature is 38 °C, the inlet pressure is 7kg / cm, the relative humidity is 100%, and the maximum load 100%, the outlet dew point will be guaranteed to reach the original setting value with Continuous operation. To correctly select a freeze dryer, we must consider the actual flow rate, pressure, temperature, ambient temperature and required pressure dew point temperature of compressed air at the same time.

When the "pressure dew point" of compressed air is below zero, the air dryer is the first choice for compressed air treatment.

Note:

- The above configuration is for measurement only. The specific configuration can be adjusted according to the actual situation.
- The air dryer is generally installed after the rear cooler or air tank to avoid the impact of the pulsed airflow of the overloaded machine.
- In order to reduce the Contamination of the heat exchanger in the unit, the front of the dryer should be equipped with a front main inline filter.
- A bypass valve should be installed in the inlet and outlet of the dryer
- There should be less than 1m around the air dryer for ventilation and heat dissipation and maintenance.

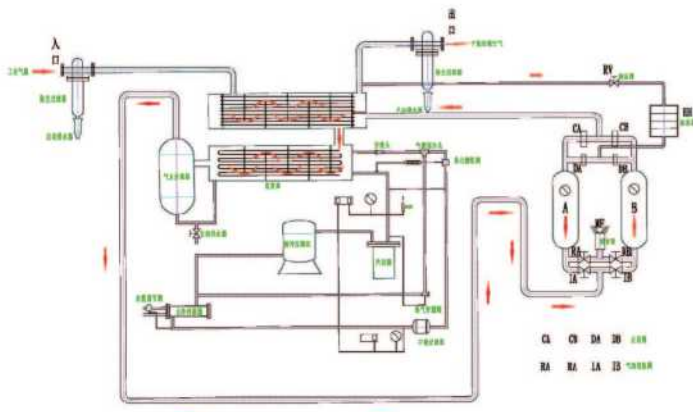
CATALOGUE OF AIR TREATMENT EQUIPMENT

- 01 DM-XZH series intelligent combined air dryer
- 02 DM-GZA series high temperature refrigerated air dryer(air-cooled)
- 03 DM-GZW series high temperature refrigerated air dryer(water-cooled)
- 04 DM-XSF series Micro-heat regeneration adsorption air dryer
- 05 DM-XWF series heatless regeneration adsorption air dryer
- 06 Compressed air precision filter
- 07 YR series compression heat desiccant compressed air dryer
- 08 GFR series blower purge desiccant compressed air dryer
- 09 FYS series waste oil collector
- 10 YF series oil water separtor
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DM-XZH SERIES INTELLIGENT COMBINED AIR DRYER

WORKING PRINCIPLE

The DM-XZH series intelligent combined air dryer is composed of a refrigeration dryer and an adsorption (heatless or heat) dryer through a reasonable pipeline connection and adsorption towers. Refrigerated dryer has extremely strong water removal ability, low energy consumption in operation, no air consumption, combined with the characteristics of adsorption dryer to achieve lower dew point, maximize the advantages of both. Before the compressed air enters the adsorption dryer, it is pre-treated with a refrigerated air dryer to allow a large amount of water to be removed in the refrigerated air dryer first, and then enter the adsorption dryer for deep drying, which can reach a very low pressure The dew point can be as low as -70 ° C. It utilizes the powerful water removal capacity of the refrigerated air dryer to greatly reduce the water inlet load of the drying tower. The water entering the adsorption tower after refrigerated air drying is about 20% of the ordinary air dryer. Under other conditions unchanged, use Dry air with a low dew point that absorbs water vapor can also be reduced by the same amount. That is, the air rolume of regeneration air is about 1/5 of the ordinary adsorption dryer, which indeed creates conditions for reducing the energy consumption of regeneration, especially the energy consumption of regeneration air, so as to achieve the best economic operating point and high quality low dew point product air .



WORKING CONDITION
AND TECHNICAL DATA

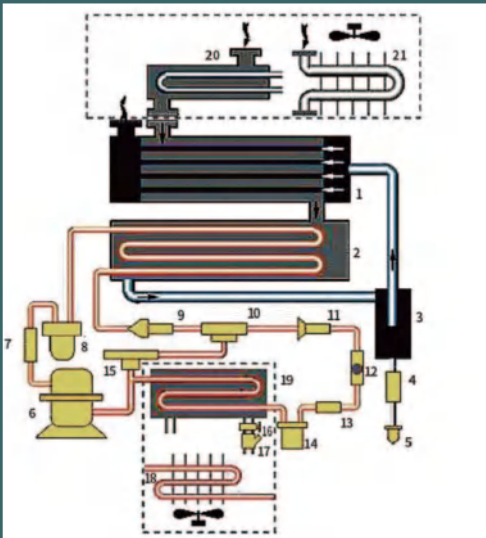
- Inlet pressure : 0.6-1.0Mpa
- Outlet air pressure dew point : -40~70°C
- Pressure drop : ≤0.05Mpa
- Cooling water temperature : ≤32°C
- Inlet temperature : ≤45°C
- Purge air : 3-5%

WORKING PRINCIPLE

The compressed air first enters the pre-cooler (20 or 21) for preliminary cooling. After flowing into the regenerator (1), it exchanges heat with the returned product air to further cool the compressed air. And discharge the condensed water out of the machine. After that, the compressed air flows into the evaporation. The device (2) performs heat exchange with the refrigerant to further reduce the temperature of the compressed air and reach the dew point temperature that meets the requirements.

After the compressed air is gradually cooled by the precoolers (21 or 20), regenerator (1) and evaporator (2), the water vapor in the air condenses into liquid water droplets, which are separated by the function of the air-liquid separator (3). Liquid water.

The dry cooling air passing through the separator (1) and is heated up when leaving the dryer to reduce the relative humidity of the air.



BENEFITS OF REFRIGERATED COMPRESSED AIR DRYER

1. *Advanced Technology*

This model fully introduces the mature technology of HANKISON from the United States, and combines the characteristics of the actual working conditions in China on this basis, and adopts scientific and effective design to make it more efficient and stable operation. The cold dryer is advanced technology, reliable operation, low dew point and stable. It conforms to the "general compressed air dryer" and "general compressed air dryer controller".

2. *Heat exchange is countercurrent*

Due to the use of high-efficiency threaded tubes or smooth tubes, the heat transfer coefficient is high, and the heat exchange method of backflow and heat recovery is more energy-saving and stable than the common backflow method.

3. *Thorough air-liquid separation*

Due to the self-developed air-liquid separator, the separation efficiency is higher and more thorough than other types of separators, and the separation efficiency is more than 99.

4. *smooth drainage*

Due to the use of independent technology, the condensate of the freeze dryer is fully separated and discharged out of the machine through the reliable drain valve, which greatly reduces the failure of the dryer during operation and improves the quality of the air source, making the cold dryer run stably and orderly under different working conditions.

5. *Classification of application*

In order to make the refrigerated dryer use in different working conditions, so that it can operate efficiently, stably and energy-savingly, the refrigerated dryers are divided into high-temperature air-cooled type, high-temperature water-cooled type, Normal temperature air-cooled type and normal temperature water-cooled type.

WOKING CONDITION AND TECHNICAL DATA

DM-GZA series high temperature refrigerated air dryer(air-cooled)

Inlet temperature : $\leq 80^{\circ}\text{C}$
Cooling method : Air-cooled
Inlet pressure : 0.6-1.0Mpa
Pressure drop : $\leq 0.03\text{Mpa}$
Dew point : $2-10^{\circ}\text{C}$
Refrigerant : R22(Environmental protection refrigerant optional)
Ambient temp : $\leq 38^{\circ}\text{C}$



DM-GZW series high temperature refrigerated air dryer(water-cooled)

Inlet temperature : $\leq 80^{\circ}\text{C}$
Cooling method : Water-cooled
Inlet pressure : 0.6-1.0Mpa
Pressure drop : $\leq 0.03\text{Mpa}$
Dew point : $2-10^{\circ}\text{C}$
Cooling water inlet temperature: $\leq 32^{\circ}\text{C}$
Refrigerant : R22(Environmental protection refrigerant optional)
Cooling water inlet pressure : 0.2-0.4Mpa

ADVANTAGE OF DESICCANT DRYER



- A.

With stable outlet pressure and dew point
- B.

Unique layering technology
- C.

Advanced shunt design
- D.

Reliable valve action and advanced imported electrical
1. Use unique adsorbent beads with a diameter of 3.0mm, a larger active surface area, higher adsorption capacity and crush resistance, and a longer service life.

2. 30% extra adsorbent to compensate the natural aging of the adsorbent, thus ensuring a stable pressure dew point.

3. The excellent design of the adsorption jaw refers to the height-to-diameter ratio of the HANKISON products in the United States, which not only considers the transportation, but also ensures that the contact time is not less than 5.2 seconds.
- According to the adsorption characteristics of activated alumina and molecular sieve, the company's self-developed stratification technology allows the air to be initially dried by alumina. After reducing the water content of the air, the molecular sieve is used for deep drying to achieve a lower dew point air quality.

Due to the fact that the existing diffusers in China basically have channel flow phenomenon, the company uses a good performance shunt selected by the German ZANDER dryer in its design, so that the compressed air can evenly contact the adsorbent, thoroughly The phenomenon of gully flow was eliminated.
1. The new model uses imported butterfly valves with excellent performance and reliable operation, and the service life is more than 1 million times, which makes the model more beautiful and reliable.

2. Except for heatless adsorption dryers, our adsorption dryers use PLC controller as standard configuration, which makes the performance more stable and reliable, and stronger anti-interference performance. The PLC controller of the adsorption dryer independently developed by our company won the national technical patent.

ADVANTAGE OF DESICCANT DRYER

This product is based on the absorption of the technology of HANKISON in the United States and ZANDER adsorption dryer in Germany. It adopts reliable and effective design and manufacture according to the actual operating conditions in the country, so that users can get more satisfied and more reliable operation of the dryer. The dream adsorption type Due to the advantages of advanced design, reliable operation and stable dew point, the dryer has obtained a number of national technical patents and meets the standards of □General Compressed Air Adsorption Dryer□ and [Compressed Air Adsorption Dryer Controller].

DREAM PLC controller features (optional)

1. It is convenient to configure and network the running status of the equipment and establish remote control;

2. Has convenient communication functions (serial communication, RS232 communication, 485 communication);

3. The analog signal processing is stable and the failure rate is low;

4. Stable electrical system performance;

5. Local / remote selection function;

6. With user password management function;

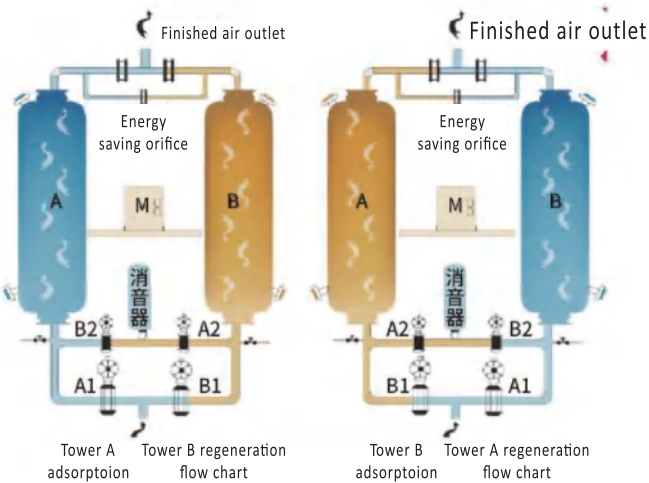
7. Can be easily extended I / O points;

8. Easy after-sales service maintenance;

DM-XWF SERIES HEATLESS REGENERATION
ADSORPTION AIR DRYER

WORKING PRINCIPLE

The heatless purge desiccant air dryer uses "pressure swing adsorption" to achieve the drying effect. Since the capacity of air to contain water vapor is inversely proportional to the pressure, part of its dried air (called regeneration air) is decompressed and expanded to atmospheric pressure. This pressure change makes the expanded air drier and then allows it to flow through the unconnected airflow. The desiccant layer (both drying towers that have absorbed enough water vapor), the dried regeneration air absorbs the moisture in the desiccant and takes it out of the dryer to achieve the purpose of dehumidification.



WORKING CONDITION AND TECHNICAL DATA

- Purge air:≤12~15%

Working pressure:0.6-1.0Mpa

Inlet oil content:<0.1mg/m³

Out let air pressure dew point:-20°C~-70°C

Desiccant:Activated alumina Molecular sieve

Working periods:T=4~20min

Inlet temperature:0°C~45°C

Power:220V/50Hz

DM-XSF SERIES MICRO-HEAT REGENERATION ADSORPTION AIR DRYER

PRODUCT INTRODUCTION

The DM-XSF series Micro-heat regeneration adsorption air dryer is an energy-saving product designed and developed by our company and reaching the current domestic level. This series of products has the advantages of thermal regeneration and non-thermal regeneration. It adopts micro-heating for the regeneration air, thereby reducing the consumption of regeneration air and achieving the purpose of energy saving. It avoids the shortcomings of short switching time of heatless regenerative dryer. It is an economical energy-saving adsorption dryer in the purification industry. It is widely used in metallurgy, power, electronics, food, chemical, petroleum, pharmaceutical, tobacco, instrumentation, Automatic control and other industries.

WORKING PRINCIPLE

This series of dryers combine the advantages of pressure swing adsorption and temperature swing adsorption. Adsorption (work) at normal temperature and high water vapor partial pressure: analysis (regeneration) at higher temperature and low water vapor partial pressure. Both the water adsorbed by the adsorbent during the adsorption process can be completely removed by the combined action of the thermal diffusion of the high-quality regeneration air (heated by dry air) and the high pressure difference during the regeneration process.



STANDARD INSTRUMENTATION

- 1.Left and right tower pressure gauges.
- 2.Temperature sensor.
- 3.The standard configuration contros the air filter and regulator.
- 4.Using intelligent PLC controller.

WORKING CONDITION AND TECHNICAL DATA

Purge air:≤4-6%
Working pressure:0.6-1.0Mpa
Inlet oil content:<0.1mg/m³
Out let air pressure dew point:-40°C~70°C
Desiccant:Activated alumina Molecular sieve
Working periods:T=60-240min(adjustable)
Inlet air temperature:0°C-45°C

YR SERIES COMPRESSION HEAT REGENERATIVE ADSORPTION DRYERS

PRODUCT FEATURES

YR series compression heat regenerative adsorption dryer utilizes the waste heat of oil-free air compressor to heat and regenerate the adsorbent; make full use of the waste heat in the compressed air system. Without the use of heating devices, it can also achieve the effect of heating the dryer, fully demonstrate its energy-saving and high-efficiency features, and the dew point of the finished air can reach -40 ° C. Using self-developed PLC controller, it is more stable and reliable than single chip microcomputer. The control valve adopts high-quality butterfly valve, which ensures more than 1 million times of fault-free switching. The advanced shunt design makes the compressed air evenly contact with the adsorbent, completely eliminating the phenomenon of channel flow.

SPECIFIC LAYERING TECHNIQUES

The stratified technology developed by our company allows the air to be preliminarily dried through alumina first, and then to reduce the water content in the air, and then to be deeply dried by molecular sieve to achieve low dew point air quality.



WORKING PRINCIPLE

The high-temperature air excluded by the air compressor has two properties of high heat and high unsaturation. The waste heat series products effectively use this original compressed air to heat and regenerate the adsorbent, which saves the need for the micro-heat absorption dryer series. Electric heating consumes the air consumption at this stage. After the heating and regeneration, the original compressed air directly enters the water cooler to cool and then enters the adsorption tower to adsorb to obtain the dried air. We take 1.5% of the air to the heated adsorbent. Cold blowing is regenerated, after cold blowing, the two towers are switched, and the cycle works repeatedly.

WORKING CONDITION AND TECHNICAL DATA

Power : 220V/50Hz
Working pressure : 0.6-1.0Mpa
Pressure drop : ≤0.04Mpa
Inlet temperature : 110°C-140°C
Cooling water inlet pressure : 0.2-0.4Mpa
Cooling water inlet temperature : ≤32°C
Dew point : -12.2°C~-40°C
Purge air : ≤1%

GFR SERIES BLADE ADSORPTLON AIR DRY



WORKING CONDITION AND
TECHNICAL DATA

Purge Air : $\leq 1\text{-}3\%$
Inlet pressured : $0.6\text{-}1.0\text{Mpa}$
Inlet oil content : $\leq 0.1\text{mg/m}^3$
Dew point : $-20^{\circ}\text{C}\sim -40^{\circ}\text{C}$
Working periods : 8hours
Inlet temperature : $0^{\circ}\text{C}\text{-}45^{\circ}\text{C}$
Power : 380V/50HZ

PRODUCT INTRODUCTION

A. PLC control

The controller adopts the PLC controller independently developed by our company, which makes the equip-ment run more stable, more reliable, and stronger anti-interference ability.

B. Principle

Adsorption and drying process: The compressed air containing water flows through the adsorption tower equipped with high-performance adsorbent. The moisture in the atmospheric air is absorbed and dried by the adsorbent and flows to the terminal for the air use.

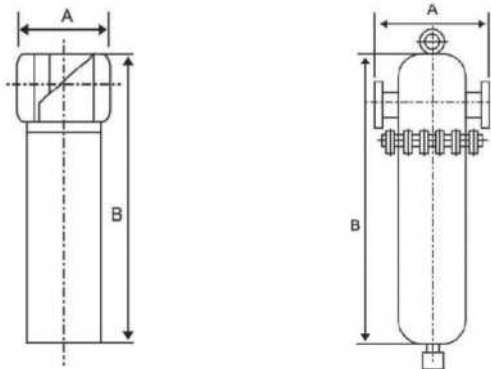
C. Advantages

1. Low regenerative air volume: the air blown from the outside air by high-pressure blower is used as purge air, only 1% of the compressed air of the dry product is used for cooling, and the air consumption is 1/15 of the heatless regenerative adsorption dryer. 1/6 of the micro-heat regeneration dryer.
2. High-pressure blower with high reliability, long service life and low noise.
3. Adopt high-performance PLC as the controller host, with strong anti-interference ability to ensure the stable operation of the device, and can monitor the running status of the device locally or remotely (can provide customers with a communication interface)
4. According to the adsorption characteristics of alumina and molecular sieve, the stratification technology developed by the company itself allows the air to be preliminarily dried through alumina to reduce the moisture content of the air and then be deeply dried by molecular sieve to achieve low dew point air quality.

SELECTION TABLE OF COMPRESSED AIR FILTER

FILTER FEATURES

According to ISO09001, suitable for use with various air compressors and compressed air dryers, high quality die-cast aluminum housing, novel appearance, exquisite design, internal space, and exterior are precision sprayed with high quality epoxy Plastic anti-corrosion treatment, super long life, flange interface filter is made of high-quality steel shell, manufactured according to national standards, and the surface is treated with high-quality plastic anti-corrosion treatment.



Alternative parts:



WORKING CONDITION AND TECHNICAL DATA

- 1.DQ level air water/separation filter 3um 5ppm
- 2.DP level main pipe/dust filter 1um 1ppm
- 3.DS high-efficiency degreasing filter 0.01um 0.01ppm
- 4.DA level ultra-efficient oil removal/micro oil filter 0.01um 0.001ppm
- 5.DH level activated carbon/oil removal steam filter 0.01um 0.003ppm



1. Separation filter (DQ)

Suitable for filtering out large amounts of liquid and 3 micron-sized condensate (maximum residual oil content of 5ppm w / w) ◆ Two-stage filtration ◆ Level 1-Two stainless steel orifice tubes for 10 micron mechanical separation ◆ Level 2 deep fiber The media filters out 3 micron solid and liquid particles



2. Main line filter (DP)

Suitable for filtering out a large amount of liquid and agglomerates with a size of 1 micron (1.0ppm w / w maximum residual oil content) ◆ Inner / outer filter elements are corrosion-resistant ◆ Two-stage filtration ◆ Layer 1 fiber media and media filters are alternately laminated, Filter out larger particles ◆ Level 2 multilayer epoxy resin bonded mixed fiber media, coalesce oil mist and filter out solid particles



3. High efficiency oil removal filter (DS)

Suitable for coalescing fine water vapor and oil mist, can filter out condensate as small as 0.01 microns (0.01ppm w / w maximum residual oil content) ◆ Inner / outer filter elements are corrosion-resistant ◆ Two-stage filtration ◆ First-stage multilayer Fibre media and media filter screen to filter out larger particles, pre-filtering before the air enters the second level filtration ◆ Level 2-multi-layer adhesive mixed fiber media, filter out small aggregates ◆ External coating film closed type Foam sleeve



4. Ultra-efficient oil removal filter (DA)

Suitable for coalescing fine water vapor and oil mist, can filter out condensate as small as 0.01 microns (0.001ppm w / w maximum residual oil content) ◆ Inner / outer filter elements are corrosion-resistant ◆ Two-stage filtration ◆ First-level coating film Closed-type foam sleeve, pre-filtering and air flow dispersion ◆ The second-stage multi-layer matrix mixed fiber medium, filter out very fine condensate ◆ External coated film closed-type foam sleeve



5. Oil removal steam filter (DH)

It is suitable for filtering the oil vapor and hydrocarbon vapor that can usually be absorbed by activated carbon, it can filter out solid particles as small as 0.01 micron (0.003ppm w / w maximum residual oil content) ◆ The first level of ultra-fine activated carbon powder stabilization layer can filter out most of the oil vapor ◆ The second level multi-layer fiber media, bonded micro-fine filtration activated carbon powder, can filter out residual oil vapor ◆ multi-layer fine media, Prevent migration of contaminants ◆ Closed foam sleeve coated with outer film to prevent fiber migration ◆ Under rated operating conditions, the design life can reach 1000 hours

Mechanism of filtration

Diffusion deposition: Due to Brownian motion, the movement trajectory of each fine particle is inconsistent with the flow direction of compressed air. As the particle size decreases, the intensity of Brownian motion increases, and the probability of collision between fine particles and fibers is greater, and the diffusion deposition effect is stronger ,

Direct interception: This mechanism is related to the size of the particles. When the gap between the fibers is smaller than the diameter of the particles, the particles are intercepted

Inertial deposition: When compressed air passes through the fiber, the streamline will bend. Due to the effect of inertia, the particles in the compressed air will be thrown onto the fiber without following the curved streamline and deposited there. Obviously this inertial effect will vary with the particle size Increase with the increase of compressed air flow rate,

Gravity deposition: all kinds of particles have a certain settling velocity due to the action of gravity, so the movement trajectory of particles deviates from the streamline of compressed air. This deviation can make the particles hit the fiber.

Electrostatic deposition: Both particles and fibers may be charged, so particles can be deposited on the fibers due to the effect or induced force between the charges

Van der Waals deposition: When the distance between particles and fibers is very small, the intermolecular force of Van der Waals can cause the deposition of particles due to the simultaneous action of the above several filtration mechanisms, which can make the filtration efficiency of the fiber filter reach more than 99%.

Features of the filter core

Breathable: The filter core adopts imported hydrophobic and oleophobic fiber media filter material, and at the same time, it adopts a skeleton with good permeability and high strength to reduce the resistance caused by filtration.

High efficiency: The filter core adopts the fine opening sponge of American technology, which can effectively prevent the oil and water from being carried away by the high-speed air flow, so that the filtered small oil droplets gather at the lower end of the filter core sponge and are discharged to the bottom of the filter container.

Airtight: The junction of the filter core and the filter shell adopts a reliable sealing ring to ensure that the "air flow is continuous" and prevent impurities from directly entering the downstream without passing through the filter core.

Anti-corrosion: The filter core adopts anti-corrosion reinforced nylon end cap and anti-corrosion filter skeleton, which can be used in harsh working conditions

STAINLESS STEEL COMPRESSED AIR FILTER

Sterilization / steam filter

In the industries of food, biochemistry, beverages, beer, medicine, electronics, etc., compressed air, air for fermentation air injection are generally made of stainless steel, and the cleanliness of the air is very high.

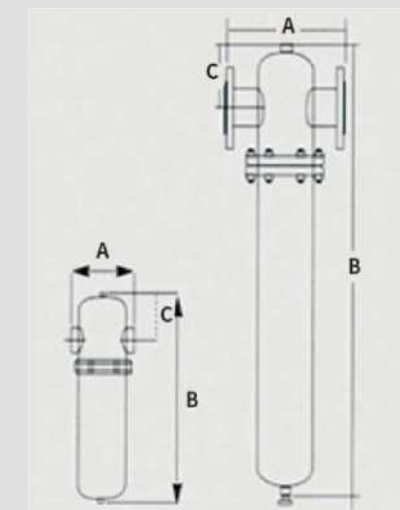


Housing: Designed according to industry standards, refined high-quality 304 or 316 stainless steel sanitary housing, internal and external high-precision mechanical polishing, standard design pressure 10bar

Filter core: It adopts the fiber folding filter element with excellent performance, has a large filtering area, and also uses the international double O-ring seal to make the sealing effect more reliable

Sterilization filter element: using steam-resistant PTFE folding / polytetrafluoroethylene hydrophobic filter element, which can filter bacteria, viruses, bacteriophages, and the filtration accuracy is 0.01um

Sterilization method: once a week, sterilize with clean steam $\leq 130^{\circ}\text{C}$, each sterilization time is 30 minutes, can remove bacteria and various bacteriophages 100%. The sterilization cycle can be determined according to the actual use. If the fermentation production is stable, regular sterilization can be adopted. The sterilization cycle can be set to one week, one month, and two months. If the steam pressure is less than or equal to 0.02Mpa, the valve must be opened and closed slowly; the sterilized steam must be saturated steam, and the sterilization process needs special care.



FILTRATION GRADE

DQ grade level water/separation filter 3um 5ppm

DP class main pipe/dust filter 1um 1ppm

DS high-efficiency degreasing filter 0.01um 5ppm

DA level ultra-efficient oil removal/micro oil filter
0.01um 0.01ppm

DH level activated carbon/oil removal steam filter

0.01um 0.03ppm

Sterilization filter 0.22um

Steam filter 1um

FYS series waste oil collector

Applications

As long as there is a place where compressed air is used, there will be discharge of oil-water mixed condensate. The amount of condensate produced in a set of compressed air system is related to the processing capacity, working conditions and installation conditions of the air compressor. The discharge volume can range from 10 to 10,000 liters per month. For example, an air compressor with a treatment of 5Nm³ / min, an exhaust pressure of 7Kg / cm², working for 8 hours a day, an ambient temperature of 21 ℃, 1.03bar, and 70% humid-ity can produce 30.4 liters of condensate per day.



Working principle and instructions

The series waste oil collector is equipped with a condensate inlet, which can collect the condensate discharged from the air compressor, air storage tank, dryer and filter. The condensate enters the expansion and separation chamber, where compressed air is released and rapidly expands to atmospheric pressure. The oil and water drop downwards and separate from the air due to gravity. The separated air is discharged through the activated carbon filter to remove oil mist and odors. The condensate is further separated in the sedimentation chamber. Due to the different specific gravity of oil and water, the oil floats on the top and the water sinks below. The oil is collected and flows into the oil tank through the oil drain pipe. The water passes through an activated carbon filter and can be directly discharged into the sewer after filtration. The activated carbon filter is a fine plastic mesh with activated carbon, which can filter larger oil droplets: filter the remaining micro oil droplets. The oil content of the water condensate filtered by the activated carbon filter will be less than 10ppm, which fully meets the national environmental protection requirements.

FYS SERIES WASTE OIL COLLECTOR

Model	Volume	Hight(mm)	Diameter	Weight(kg)	Connection
FYS-1	0.1	1774	450	136	—
FYS-3	0.3	2130	600	177	—
FYS-5	0.5	2400	700	206	—
FYS-6	0.6	2530	800	226	—
FYS-10	1	2730	900	352	—
FYS-20	2	3030	1200	528	—
FYS-30	3	3602	1300	742	—
FYS 40	4	3640	1500	770	—

Generation of waste oil collector

The Environmental Protection Law stipulates that oil condensate must be separated from the mixed condensate and properly treated before the water condensate can be discharged into the sewer, meeting the national requirements for environmental protection.

As long as the type of waste oil collector is suitable and installed correctly, the floating oil condensate in the condensate can be reliably removed and collected by the oil collection tank. The residual oil content of the separated water condensate is less than 10ppm, which meets the discharge standards.

Instruction

- 1 Condensate can be imported into a standard 1/2 "interface under the action of pressure or gravity, used in compressors, dryers, filters and other condensate lines.
- 2 The air expansion chamber equipped with activated carbon filter is used to discharge air, used to reduce pressure and reduce the flow rate of inlet air and condensate, making the chamber a precipitation chamber with a calm liquid surface, and activated carbon filter core to remove exhaust air The oil content.
- 3 Precipitation and settling chamber ---- The oil floats on the top layer of the condensate settling chamber and is mechanically separated.
- 4 oil drain
- 5 Filtration-activated carbon filter: This filter filters out all remaining micro-oil droplets and guarantees the performance of the separator.
- 6 Drainage-The residual oil content of the purified water condensate can be directly discharged into the sewer when it is less than 10ppm.

Process principle

COMPRESSED AIR

The compressed air oil-water separator is a new type of compressed air oil-water separator developed by our company by absorbing and digesting the advanced technology of foreign compressed air oil-water separators and integrating the essence of advanced structures. Steel welded tank structure. Generally used pressure 1.0Mpa, YF series compressed air oil-water separator also adopts the mechanisms of direct interception, inertial collision, Brownian diffusion and condensation, which can effectively remove dust, water and oil mist in compressed air. The product has a large water output, a large amount of oil removal, and a wide range of application conditions.

WORKING CONDITION AND TECHNICAL DATA

- Inlet pressure : 0.4~1.0Mpa
- Inlet temperature : 5~65℃
- Initial pressure drop : ≤0.005Mpa
- Filtration aperture : 5um
- Water removal rate : ≥99%
- Outlet air oil content : ≤10ppm



(MODEL, SIZE&TECHNICAL DATA)

Model	Air Capacity (Nm ³ /min)	Air piping diameter	dimensionsmm			Weight(kg)
			Length	Width	Hight	
DM-1FS	1.2	ZG1"	245	133	530	24
DM- 2FS	2.4	ZG1"	245	133	530	27
DM-3FS	3.8	ZG1"	245	133	530	27
DM- 6FS	6.5	ZG1.5"	245	159	571	48
DM- 10FS	10.7	ZG2"	335	159	1035	71
DM- 15FS	15	DN80	365	159	1139	75
DM- 20FS	20	DN80	390	273	1139	90
DM- 30FS	35	DN80	440	273	1180	106
DM-40FS	45	DN100	500	325	1230	136
DM- 50FS	50	DN125	565	377	1250	150

GR SERIES COMPRESSED AIR EFFICIENT OIL REMOVER

GR series products use ultra-fine fibers as the main material, and adopt three-stage purification of centrifugal separation, pre-filtration and fine filtration, which can more thoroughly remove oil, water and dust from compressed air, and can obtain ultra-clean dry compressed air with filtration accuracy up to 0.01um, the residual oil amount is less than 0.1mg / m³.

WORKING CONDITION AND TECHNICAL DATA

- Inlet pressure : 0.4~1.0Mpa
- Inlet temperature : 5~65℃
- Initial pressure drop : ≤0.007Mpa
- Filtration aperture : 5um
- Water removal rate : ≥99%
- Outlet air oil content : ≤0.01ppm



(MODEL, SIZE&TECHNICAL DATA)

Model	DM-1CU	DM-2CU	DM-3CU	DM-6CU	DM- 10CU	DM-15CU	DM- 20CU	DM-30CU	DM-40CU	DM- 50CU
Air Capacity(Nm /min)	1.5	2.4	3.8	6.5	11	15	20	30	45	55
Air piping diameter	ZG1"	ZG1"	ZG1"	ZG1 1/2"	ZG2"	DN80	DN80	DN80	DN100	DN125
Overall dimensions	Length(mm)	195	270	270	300	360	425	425	565	730
	Width(mm)	89	133	133	159	159	159	159	273	426
	Hight(mm)	545	660	660	1210	1555	1555	1555	1795	1750

DHL SERIES WATER-COOLING
REAR-COOLER



PRODUCT INTRODUCTION

This series of rear cooler is an auxiliary equipment for air compressor, which can cool the compressed air produced by the compressor; make most of the water in the air steamed and condensed and then discharged out of the machine to suit the use conditions of downstream drying equipment. The water-cooled rear cooler uses water as the cooling medium, and its work is basically not affected by the ambient temperature. It has the characteristics of small size, high cooling efficiency, and easy use. It is suitable for high temperature, high humidity, and heavy dust environments.

WORKING CONDITION AND TECHNICAL DATA

Inlet pressure : 0.4~1.0Mpa
Inlet temperature : ≤140°C
Outlet temperature : ≤45°C
Cooling water inlet temperature : ≤32°C
Cooling water inlet pressure : 0.2~0.4mpa

(MODEL, SIZE&TECHNICAL DATA)

Model/Project	Air Capacity (Nm3/min)	Cooling water circulation(Nm3/min)	Air piping diameter	Cooling water pipe diameter	External dimension (mm)		Weight(kg)
					Diameter	Height	
DMAL- 1W	1	0.5	ZG 3/4"	ZG 1/2"	208	1303	110
DMAL-3W	3	1	ZG1"	ZG 1/2"	259	1325	140
DMAL-6W	6	1.5	ZG2"	ZG1"	259	1625	248
DMAL- 10W	10	3	ZG2"	DN65	419	1655	380
DMAL -13W	15	4.5	ZG2"	DN65	445	1963	380
DMAL -20W	20	6	ZG2"	DN80	473	1981	450
DMAL -30W	30	9	ZG2"	DN100	525	2007	780
DMAL-40W	40	12	ZG2"	DN125	677	2106	880
DMAL -60W	60	18	ZG2"	DN125	677	2292	1280
DMAL -80W	80	24	ZG2"	DN125	677	2472	1580
DMAL- 100W	100	30	ZG3"	DN150	778	2931	1900

Technical Specifications

HIGH TEPERATURE AIR-COOLED

Model		DM-1GZA	DM-2GZA	DM-4GZA	DM-6GZA	DM-8GZA	DM-10GZA	DM-13GZA	DM-16GZA	DM-20GZA	DM-25GZA	DM-30GZA	DM-45GZA	DM-55GZA	DM-65GZA
Air capacity (Nm3/min)		1.5	2.6	4	6.5	8.5	11	13.8	17	23	27	35	45	55	65
Power supply (V/Hz)		220/50	220/50	220/50	220/50	220/50	220/50	220/50	380/ 50	380/ 50	380/50	380/50	380/50	380/50	380/50
Compressor power (HP)		0.85	1	1.25	1.75	2	3	3.5	4	5	6	8	10	12	15
Air piping diameter		ZG1"	ZG1"	ZG1.5"	ZG1.5"	ZG2"	ZG2"	ZG2"	DN65	DN80	DN80	DN80	DN100	DN125	DN125
Weight		60	80	105	136	165	195	255	300	385	400	550	630	680	720
Overall dimensions	Length(mm)	750	800	800	950	1060	1180	1180	1240	1420	1650	1650	1850	1980	1980
	Width(mm)	400	450	475	500	560	630	670	670	790	820	820	920	930	930
	Hight(mm)	700	730	800	880	983	1092	1092	1188	1340	1370	1370	1550	1816	1816

LOW DEW POINT COMBINED COMPRESSOR AIR DRYER

Model		DM-1XZH	DM-2XZH	DM-3XZH	DM-6XZH	DM-10XZH	DM-16XZH	DM-20XZH	DM-30XZH	DM-40XZH	DM-50XZH	DM-60XZH	DM-80XZH
Air capacity (Nm3/min)		1.5	2.6	3.8	6.5	11	17	23	33	45	55	65	85
Power supply (V/Hz)		220/50或380/50						380/50					
Compressor power (HP)		0.65	0.75	1.25	1.5	3.6	4.5	5.0	7.5	10.5	12.5	15	20
Cooling water flow (Nm3/min)		风冷					3	3.5	6	7.4	8	10	12
Air piping diameter		ZG1"	ZG1"	ZG1"	DN50	DN65	DN80	DN80	DN100	DN125	DN125	DN125	DN150
Weight		295	350	485	655	750	950	1220	1460	1980	2500	2950	3550
Overall dimensions	Length(mm)	980	980	1200	1200	1460	1800	1750	2050	2420	2520	2550	2650
	Width(mm)	750	800	1000	1000	1180	1320	1800	1650	1830	1900	1900	2400
	Hight(mm)	1455	1655	1535	1995	2065	2205	2150	2450	2706	2750	2780	2800

HIGH TEMPERATURE WATER-COOLED REFRIGERATED AIR DRYER

Model		DM-16GZW	DM-25GZW	DM-30GZW	DM-45GZW	DM-55GZW	DM- 65GZW	DM-85GZW	DM-100GZW	DM-150GZW	DM-200GZW
Air capacity (Nm3/min)		17	27	35	45	55	65	85	110	160	210
Power supply (V/Hz)		380/50	380/50	380/50	380/ 50	380/50	380/ 50	380/ 50	380/50	380/50	380/ 50
Compressor power (HP)		4	6	8	10	12	15	20	25	37	50
Cooling water flow (Nm3/min)		3.7	6	7.4	9	11	12.5	14.5	16.5	21.5	36
Air piping diameter		DN65	DN80	DN80	DN100	DN125	DN125	DN125	DN150	DN200	DN200
Weight		360	550	640	730	830	1020	1600	2400	2750	3600
Overall dimensions	Length(mm)	1240	1420	1650	1850	1980	1980	2480	2480	2650	3450
	Width(mm)	670	800	820	920	920	920	1350	1440	1550	1725
	Hight(mm)	1180	1345	1370	1500	1816	1816	2070	2070	2193	2380

EXTERNALLY HEATED PURGE DESICCANT AIR DRYER

Model		DM-1XSF	DM-2XSF	DM-3XSF	DM-6XSF	DM-8XSF	DM-10XSF	DM-13XSF	DM-18XSF	DM-20XSF	DM-25XSF	DM-30XSF	DM-40XSF	DM-50XSF	DM-60XSF	DM-80XSF	DM-100XSF
Air capacity (Nm3/min)		1.5	2.6	3.8	6.5	8.5	11	13.8	18	23	28	35	45	55	65	85	110
Heater power		1.2	1.5	2.1	3	4	4.5	5	5.5	6	8	10	12	15	18	24	30
Air piping diameter		ZG1"	ZG1"	ZG1.5"	ZG1.5"	ZG2"	ZG2"	ZG2"	DN65	DN65	DN80	DN80	DN100	DN100	DN100	DN125	DN150
Weight		145	195	285	420	550	650	750	760	930	990	1380	1620	1950	2320	2880	4230
Overall dimensions	Length(mm)	750	750	1000	1000	1100	1150	1200	1515	1680	1600	1700	2135	2185	2200	2700	3000
	Width(mm)	400	400	500	450	500	500	550	600	700	700	750	850	900	950	1100	1700
	Hight(mm)	1440	1640	1518	1950	1910	2050	2100	2525	2330	2610	2635	2720	2780	2805	2925	2973



HEATLESS PURGE DESICCANT AIR DRYER

Model/Project		DM-1XWF DM-2XWF DM-3XWP DM- 6XWF DM- 8XWF DM-10XWFDM-13XWF DM-15XWF DM-20XWF DM-25XWF DM-30XWF DM-40XWF DM-50XWF DM-60XWF DM-80XWF DM-100XWF DM-130XWF DM-150XWF DM- 180XWF DM- 200XWFDM-230XWF																				
Air capacity (Nm3/min)		1.5	2.6	3.8	6.5	8.5	11	13.8	16	23	28	35	45	55	65	85	110	140	160	190	210	240
Air piping diameter		ZG1"	ZG1"	ZG1.5"	ZG1.5"	ZG2"	ZG2"	ZG2"	DN65	DN65	DN80	DN80	DN 100	DN100	DN100	DN125	DN150	DN150	DN200	DN200	DN200	DN200
Weight		125	180	285	420	550	650	750	860	890	950	1320	1 550	1880	2250	2810	4150	4980	6250	6460	7280	8520
Overall dimensions	Length(mm)	750	750	1000	1000	1100	1150	1 200	1250	1 500	1600	1700	2000	2050	2285	2700	3000	3000	3020	3220	3700	3700
	Width(mm)	350	350	500	450	500	500	550	575	700	700	750	850	900	950	1100	1700	1700	1955	1955	2000	2000
	Hight(mm)	1440	1640	1518	1950	1910	2050	2100	2160	2230	2500	2525	2690	2720	2745	2835	2897	2950	3212	3270	3358	3770

GR SERIES COMPRESSED AIR EFFICIENT OIL REMOVER

Model/Project		DM-1CU	DM-2CU	DM-3CU	DM-6CU	DM-10CU	DM-1 5CU	DM-20CU	DM-30CU	DM-40CU	DM- 50CU
Air capacity (Nm3/min)		1. 5	2.4	3. 8	6.5	11	15	20	30	45	55
Air piping diameter		ZG1"	ZG1"	ZG1"	ZG1 1/2"	ZG2"	DN80	DN80	DN80	DN100	DN125
Overall dimensions	Length(mm)	195	270	270	300	360	425	425	425	565	730
	Width(mm)	89	133	133	159	159	159	1 59	273	426	529
	Hight(mm)	545	660	660	1210	1555	1555	1555	1795	1750	1750

YR SERIES COMPRESSION HEAT DESICCANT COMPRESSED AIR DRYERS

Model/Project		DM150YR	DM180YR	DM200YR	DM250YR	DM300YR	DM350YR	DM400YR	DM500YR	DM600YR	DM800YR	DM1000YR	DM1200YR	DM1500YR	DM2000YR	DM2500YR	DM3000YR	DM3500YR	DM4000YR
Air capacity (Nm3/min)		15	18	22	25	30	35	45	55	65	85	110	130	160	200	250	300	350	400
Weight		1000	1200	1650	1880	2000	2200	2350	2500	2800	3250	4350	5000	6500	7800	9700	12500	13100	13700
Power consumption		150	150	150	150	150	150	150	200	200	200	200	200	200	200	200	200	250	250
Import and export flange size		DN65	DN65	DN65	DN80	DN80	DN100	DN100	DN100	DN100	DN125	DN125	DN150	DN150	DN150	DN200	DN200	DN200	DN200
Dimensions (mm)	Length(mm)	2000	2000	2000	2300	2300	2300	2500	2500	2500	3000	3200	3500	3900	3900	4500	4800	4800	5100
	Width(mm)	1400	1500	1500	1800	1800	1800	1900	2000	2000	2000	2200	2200	2200	2200	2700	2800	2800	3000
	Hight(mm)	2350	2450	2550	2650	2680	2750	2750	2780	2800	2900	3200	3200	3200	3300	3400	3500	3600	3700
Cooling water circulation (Nm3/min)		6	7	8	10	12	13	15	18	19	23	31	35	45	58	75	88	100	120

GFR SERIES BLOWER PURGE DESICCANT COMPRESSED AIR DRYER

Model		DM150GFR	DM200GFR	DM250GFR	DM300GFR	DM400GFR	DM500GFR	DM650GFR	DM800GFR	DM1000GFR	DM1200GFR	DM1500GFR	DM1800GFR	DM2000GFR	DM2500GFR
Capacity (Nm3/min)		17	23	27	33	45	55	65	80	90	100	120	120	120	120
Blower(kw)		1.5	2.2	3.4	3.4	7.5	7.5	7.5	7.5	13	15	15	15	24	24
Heater rated output(kw)		12	14	16	19	28	32	39	45	53	58	70	80	100	120
Full lord(kw)		12	14	16	19	32	35	40	45	50	58	70	80	100	100
Weight		958	1115	1422	1852	2230	2430	2837	3685	4233	4660	5602	5602	5602	5602
Dimensions (mm)	Length(mm)	1655	1760	1800	1865	1980	2080	2150	2245	2340	2385	2460	2460	2460	2460
	Width(mm)	1670	1700	1780	1860	1930	1985	2105	2200	2320	2410	2520	2520	2520	2520
	Hight(mm)	1980	2010	2105	2120	2165	2200	2320	2380	3420	3525	3610	3610	3610	3610



YF SERIES OIL WATER SEPARTOR

Model/Project	Air Capacity (Nm3/min)	Air piping diameter	Sewage pipe diameter	Dimensions (mm)			Weight(kg)
				Length	Width	Hight	
DM-1FS	1.2	ZG1"	ZG1/2"	245	133	530	24
DM-2FS	2.4	ZG1"	ZG1/2"	245	133	530	27
DM-3FS	3.8	ZG1"	ZG1/2"	245	133	530	27
DM- 6FS	6.5	ZG1.5"	ZG1/2"	245	159	571	48
DM- 10FS	10.7	ZG2"	ZG1/2 "	335	159	1035	71
DM-15FS	15	DN80	ZG1/2"	365	159	1139	75
DM-20FS	20	DN80	ZG1/2"	390	273	1139	90
DM-30FS	35	DN80	ZG1/2"	440	273	1180	106
DM-40FS	45	DN100	ZG1/2"	500	325	1230	136
DM-50FS	50	DN125	ZG1/2"	565	377	1250	150

SELECTION TABLE OF COMPRESSED AIR FILTER

Model/Project	Air Capacity (Nm3/min)	Air piping diameter	Dimensions(mm)		Weight(kg)
			Diameter	Hight(mm)	
DQ/P/S/A/H-001	1.72	G1"	104	265	1.3
DQ/P/5/A/H-002	2.6	G1"	104	265	1.32
DQ/P/S/A/H-003	3.8	G11/2"	125	336	2.43
DQ/P/5/A/H-006	72	G11/2"	125	456	2.9
DQ/P/S/A/H-010	11	G2"	138	555	4.14
DQ/P/S/A/H-013	15	DN65	161	748	8
DQ/P/S/A/H-020	20	DN65	161	748	8.23
DQ/P/S/A/H-025	25	DN80	376	848	31.48
DQ/P/5/A/H-030	30	DN80	376	994	33.97
DQ/P/S/A/H-040	45	DN100	400	1060	67
DQ/P/S/A/H-050	55	DN125	450	1250	75
DQ/P/5/A/H-060	66	DN125	450	1250	90
DQ/P/S/A/H-080	88	DN125	450	1280	145
DQ/P/S/A/H 100	110	DN150	540	1350	150
DQ/P/S/A/H-130	132	DN150	612	1350	180
DQ/P/S/A/H- 150	154	DN200	612	1350	215
DQ/P/5/AH-180	180	DN200	662	1450	240
DQ/P/5/AH 200	200	DN200	662	1750	360

STAINLESS STEEL COMPRESSED AIR FILTER

Model	Capacity	Connection	Dimensions(mm)		Element
			Width(mm)	Hight(mm)	
BFS 1	1	DN15	180	340	1
BFS-2	2	DN20	180	340	1
BFS-3	3	DN25	180	340	1
BFS-6	6	DN40	200	470	1
BFS-8	8	DN40	200	470	1
BFS-10	11	DN50	240	600	1
BFS 15	15	DN50	240	720	1
BFS-18	18	DN65	240	850	1
BFS-23	23	DN80	280	980	1
BFS-27	27	DN80	400	760	2
BFS-35	35	DN100	400	760	2
BFS 40	40	DN100	400	760	2

The working conditions corresponding to the working conditions should deviate from the design working conditions of the sample book according to the actual conditions. When selecting the model, the correction coefficient should be selected according to the actual corresponding working conditions to make corresponding corrections to select the dryer with the appropriate processing capacity.

Correction of refrigerated air dryer selection

Inlet temperature correction factor								
Inlet temperature℃	Standard N type High temperature H type	25 50	30 55	35 60	40 65	41 70	42 75	45 80
Correction factor A		1.15	1.10	1.05	1.00	0.97	0.93	0.85

Inlet temperature correction factor							
Working pressure Mpa	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Correction factor B	0.8	0.88	0.92	1.00	1.05	1.12	1.25

Inlet temperature correction factor								
Ambient temperature℃	Air-cooled	25	30	32	35	35	38	40
Correction factor C		1.2	1.15	1.10	1.05	1.05	1.00	0.90
Cooling water temperature℃	Water-cooled	30	32	34				
Correction factor C		1.0	0.97	0.94				

Inlet temperature correction factor					
Dew point requirement℃	0	2	5	7	10
Correction factor D	0.90	1.00	1.10	1.15	1.20

The minimum processing capacity that the refrigerated dryer should meet in the selection = air intake ÷ (A×B×C×D), for example: air intake is 45m³/min, inlet temperature is 65℃, operating pressure is 1.0Mpa, environment The temperature is 40℃, the pressure dew point is 2℃, and the selected air-cooled high-temperature refrigeration dryer should meet the minimum processing capacity=45m³/min÷(1×1.25×0.90×1.00)≈40m³/min, then the treatment capacity should be selected corresponding refrigerated dryer not less than 40m³/min (the selection method of water-cooled dryer is the same)

Correction of adsorption air dryer selection

Inlet temperature correction factor						
Inlet temperature℃	25	30	35	40	45	50
Correction factor A	1.00	1.00	1.00	0.97	0.88	0.73

Working pressure Mpa	0.44	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3
Correction factor B	1.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75

Inlet temperature correction factor				
Ambient temperature℃	-20	-40	-60	-70
Correction factor C	1.10	1.00	0.85	0.77

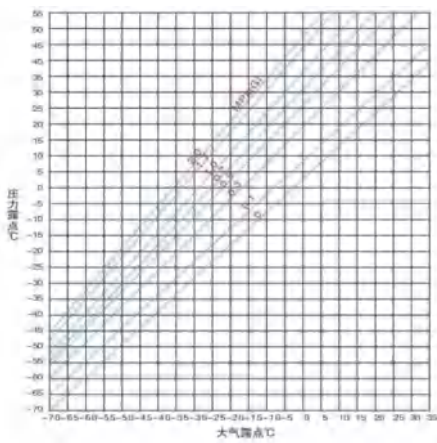
The minimum processing capacity that should be met in the selection of adsorption dryer = air intake ÷ (A×B×C), for example: air intake is 23m³/min, inlet temperature is 40℃, operating pressure is 0.6Mpa, and ambient temperature is -40℃, the pressure dew point is -40℃, so the minimum treatment capacity that the adsorption dryer should meet=23m³/min÷(0.97×0.88×1.00)≈27m³/min, the treatment capacity should be no less than 27m³/min. Refrigerated dryer (same selection method for water-cooled dryer)

Compressed air quality standards ISO8573.1 Quality Level

Level	The smallest solid particles	Residual oil content	Decompression under rated conditions		quality level	Maximum number of micrometers of solid contaminants in particle size	Maximum pressure dew point	The highest oil content oil mist and gas Ppmw/w[mg/m³]
	Micron	ppm	dry	wet	1	0.1	-70	0.008[0.01]
9	3	5	0.07	0.11	2	1	-40	0.08[0.1]
7	1	1	0.07	0.14	3	5	-20	0.8[1]
5	0.01	0.001	0.07	0.21	4	15	3	4[5]
3	0.01	0.001	0.14	0.42	5	40	7	21[25]
1	0.01	0.001	0.07	Not applicable	6		10	

Flowchart Configuration of Compress
Air Purifying System

Saturated humidity and atmospheric pressure dew point conversion method



Example: The inlet temperature of the air compressor is 30℃ (humidity 100%), it is compressed by 0.69Mpa, and then cooled by an air dryer to 10℃ (under pressure). How much water is removed?
The moisture content at 30℃ is 30.3g/m³.
Check the conversion chart of pressure dew point and atmospheric pressure dew point
At 0.69Mpa, the pressure dew point is 10℃, converted to atmospheric dew point as -17℃. The moisture content at -17℃ is 1.37g/m³, so 30.3-1.37=28.93g/m³, which means that 28.93g of moisture in 1m³ of air is removed.

Dew point(℃)	Moisture content(g/m3)	Dew point(℃)	Moisture content(g/m3)	Dew point(℃)	Moisture content(g/m3)	Dew point(℃)	Moisture content(g/m3)	Dew point(℃)	Moisture content(g/m3)
33	35.7	14	12.07	-5	3.407	-24	0.7678	-43	0.1298
32	33.8	13	11.35	-6	3.169	-25	0.7074	-44	0.1172
31	32.1	12	10.66	-7	2.946	-26	0.6463	-45	0.1055
30	30.3	11	10.01	-8	2.737	-27	0.5922	-46	0.09501
29	28.8	10	9.309	-9	2.541	-28	0.5422	-47	0.08544
28	27.2	9	8.819	-10	2.358	-29	0.496	-48	0.07675
27	25.8	8	8.27	-11	2.186	-30	0.4534	-49	0.06886
26	25.4	7	7.75	-12	2.206	-31	0.4141	-50	0.06171
25	23.1	6	7.26	-13	1.876	-32	0.3779	-51.1	0.054
24	21.8	5	6.797	-14	1.736	-33	0.3445	-53.9	0.04
23	20.6	4	6.36	-15	1.605	-34	0.3138	-56.7	0.029
22	19.4	3	5.947	-16	1.483	-35	0.2856	-59.4	0.021
21	18.3	2	5.559	-17	1.369	-36	0.2597	-62.2	0.014
20	17.3	1	5.192	-18	1.261	-37	0.2359	-65	0.011
19	16.3	0	4.847	-19	1.165	-38	0.2141	-67.8	0.008
18	15.4	-1	4.523	-20	1.074	-39	0.194	-70.6	0.005
17	14.5	-2	4.217	-21	0.9884	-40	0.1757	-73.3	0.003
16	13.6	-3	3.93	-22	0.9093	-41	0.159		
15	12.8	-4	3.66	-23	0.8359	-42	0.1438		