Biteman Global Office

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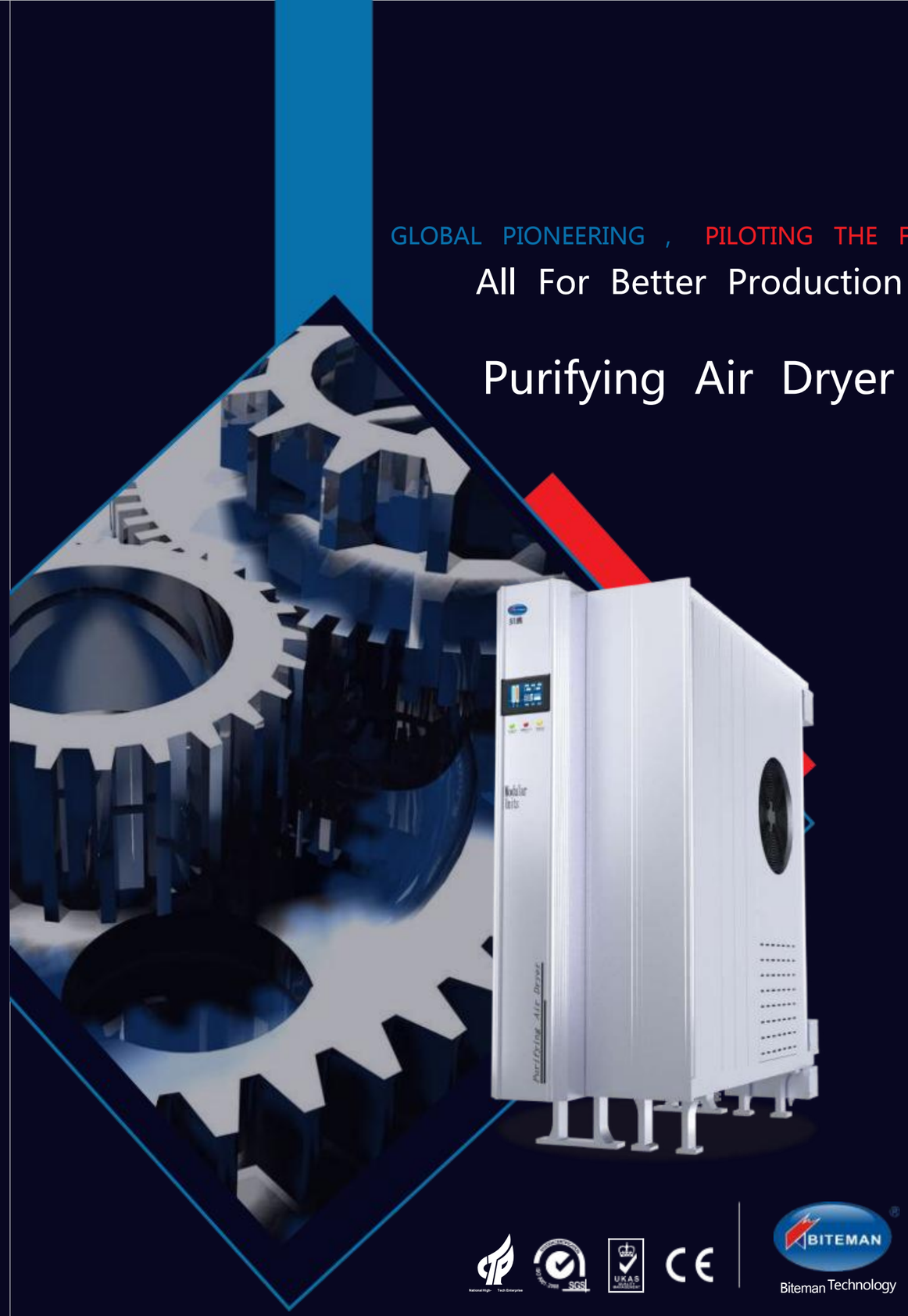
GLOBAL PIONEERING , PILOTING THE FUTURE

All For Better Production

Purifying Air Dryer



Biteman Technology

ENTERPRISE
INTRODUCTION

Registered capital 1 0 . 5 million

purpose:

All For Better Production

Culture:

Honesty , Enterprising ,
Innovation , Motherland

O n J une 2006 , S henzhen B iteman Technology company was founded as a N ational H igh -tech E nterprise specializing in research and development , production and sales of compressed air purification equipment . headquartered in X ixiang , Bao'an D istrict , S henzhen , B iteman successfully generates Modular and Modular- units desiccant air dryer, high precision compressed air filter and other products , which has won 100 domestic and international patents , filling the domestic gap in the technology and becoming a small number of equipment manufacturers with many independent intellectual property rights and patented technologies in the global transformation field .

T hrough ten years of efforts and innovation , a series of leading core technology systems have been formed, Among them, a number of patented technologies such as multi - modules convection adsorption and regeneration technology, adsorption core independent removable replacement technology, B uffer intake heat transfer cooling technology, and integrated drainage technology have been developed successfully.

Over the years , B iteman modular core desiccant air dryer and its excellent processing results have won the recognition of many customers . At present , the I nstitute of E ngineering T hermophysics of the C hinese academy of Sciences , the School of Mechanical and E lectrical E ngineering of S henzhen U niversity, the I nstitute of Standardization of the S henzhen Technical S upervision B ureau and other relevant academic units and experts have established a good cooperative relationship .

B iteman purifying air dryer has created a precedent for a one-stop solution to problem of compressed air quality and provided a technical guarantee to solve the technical problem of compressed air quality. It will make a great contribution to the development of compressed air purification technology in the world .

ENTERPRISE DEVELOPMENT

HISTORY

Focus on the field of compressed air purification for more than ten years

Eight generations of p roduct upgrades

2006
Found in Shenzhen

2007
The 1st generation- modular desiccant dryer launched

2008
The 2nd generation- modular desiccant dryer launched , using four valves control

2009
The 3rd generation- modular desiccant dryer launched

2011
The 5th generation- the first modular core desiccant dryer launched , successfully applied to PCT&US patent , and be the high-tech enterprise of China

2012
The central drainage launched , ISO9001:2008 certificated

2013
The 6th generation- modular core desiccant dryer launched . Using the three valves control

2014
Winning the title of "Top 100 Small and Medium- sized Enterprises of Independent Innovation" in Shenzhen

2015
Be the setter of modular desiccant dryer industry standard

2016
10th anniversary , the 7th generation/ smart system date digital display launched

2017
Successfully developed bi- axial cylinder

2018
Successfully developed bi- axial cylinder

2019
The eight generation- Biteman purifying air dryer launched

2020
In 2020 , the Biteman Iot system is officially launched

2021
In 2021 , enter Shenzhen Industrial museum again , And invited to participate in CCTV Great Country Ingenuity

Compressed air is one of the important elements in modern industry , which is not only the power energy , but also the process gas source .

Application




- Electronics
- Automotive & Spray
- Power Plant
- Pharmaceuticals

The main contaminant in compressed air :

▲ WATER

- Water is the most hazardous and difficult substance to treat in compressed air :

For example: Under the condition of ambient temperature of 35℃ , the relative humidity of 90% , 0 .7Mpa and amount of 100m3/min , the water inhaled in the compressed air for 24 hours per day is : 100*90%*39 .6*60*24=5132 . 16KG

- Different drying effects result in different water content of the system for 24 hours :

100*2 .9*60*24=417 .6KG (PDP 20℃) 100*0 .029*60*24=4 . 176KG (PDP-40℃)

▲ OIL

- In air compression , oil is used to lubricate , cool and seal the screw head . Oil and gas are separated by oil and gas separator . Different models and maintenance determine the oil content of the back end .
- The oil in the compressed air is mainly treated by the filter . Due to the poor fluidity of the oil , the oil intercepted by the filter element cannot flow to the bottom of the filter quickly , and it is easy to be taken away by the compressed air again .

▲ PARTICLE

- The atmosphere contains particles , pipe rust , oil oxidation of high temperature after the formation of carbon dust
- The filter element is mainly used for interception and filtration . The blocking efficiency and dust content will form a certain pressure drop . In addition ,a large number of microorganisms are easy to breed in a humid environment , so the filter element should be replaced regularly .

Hazards of poor compressed air :

- Lead to equipment and tools failure , shorten service life , increase maintenance cost
- Lower production efficiency , defective rate increasing
- Erode pipe system , cause air leakage , increase energy consumption

TECHNOLOGICAL SUPERIORITY

P roduct advantages

- Integrated freeze drying system, adsorption drying system, oil-water separation system, high-efficiency precision filtration system, can effectively remove the oil, moisture and particulate impurities in the compressed air, the pressure dew point can be as low as -80℃, not only effectively solve the problem of deep dewatering of compressed air, but also reduce the installation cost of compressed air and comprehensive energy consumption.

Technical advantages

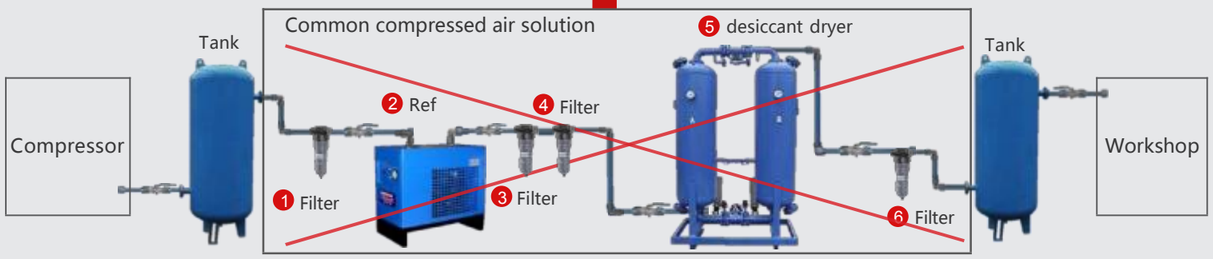
One-stop solution to compressed air

- Reduce equipment footprint
- Save acquisition cost
- Reduce leakage risk
- Reduce construction cost

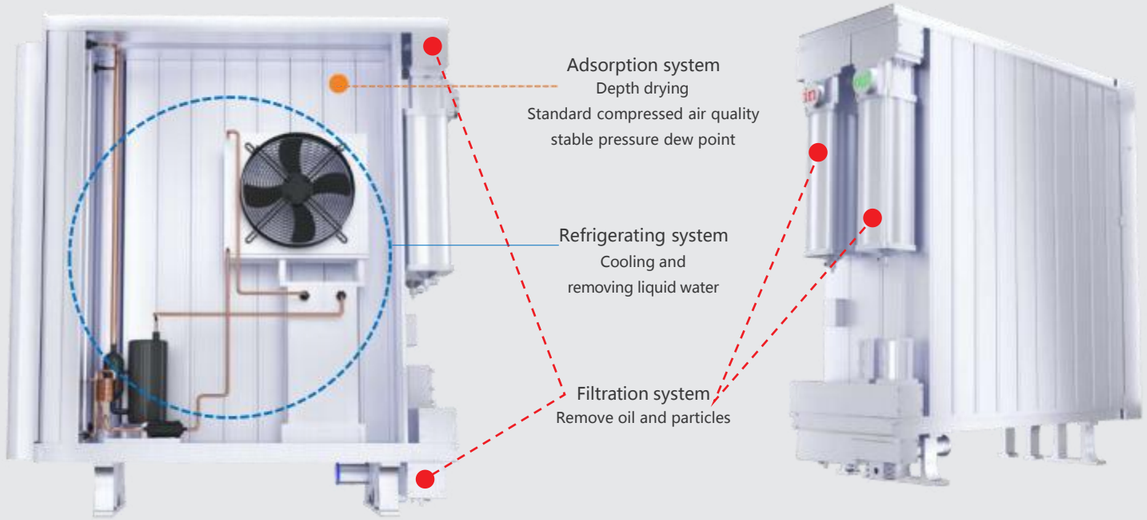
One high two low three optimization

- Efficiency drying and purification
- Low construction &energy consumption cost
- Data of operation parameters
- Device Iot visualization
- Maintenance standardization

Purifying air dryer



Purifying Dryer Working Principles

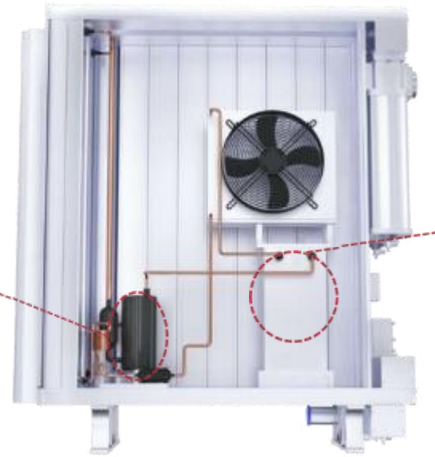


comprehensive energy consumption saving

The energy consumption of refrigeration system is low , as the air flow structure of the mould core adsorption drying system makes the equipment discharged in regeneration Pressure relief stage to form a huge instantaneous discharge airflow , greatly speed up the absorption of water resolution rate , Biteman special points Sub-screen (adsorbent) super adsorption and analytical capacity , so that the adsorbent can be completed only a few regeneration air purging , comprehensive energy consumption is less than 5% .

Low power consumption

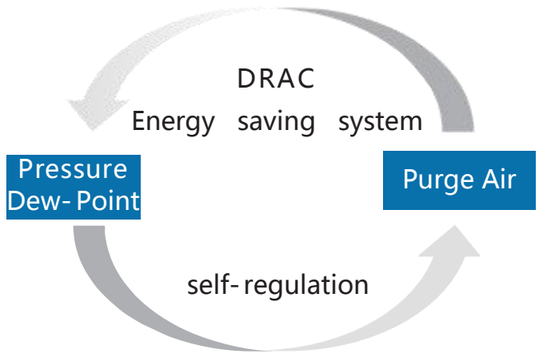
The refrigeration system will cooler the intake air temperature below 35℃ ,the power it' s much smaller than the refrigerated air dryer .



Adopt two-stage refrigeration system to increaseSpeed and stable operation . profit use secondary condensate , secondary refrigeration and tertiary supplementCondensed intelligent circuit function , increasedthe amount of condensate and the amount of heat recovery expand the refrigeration capacity .

Lower Gas Consumption

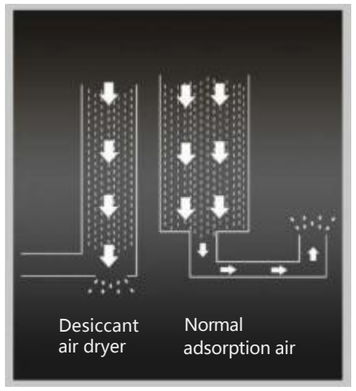
Dew-point automatic control and energy saving system



Instantaneous emission desorption rate

As high as 80% above

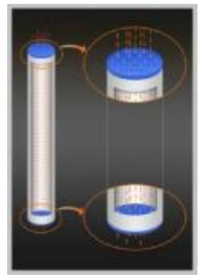
only **1%~2%** gas consumption



Effective Stable Drying

Provide customers with clean , dry , compressed air that meets industry quality standards , and has the ability to continuously stabilize the pressure dew point of -40 to 70 degrees .

The independent mold core is automatically filled evenly, tightly and with good consistency



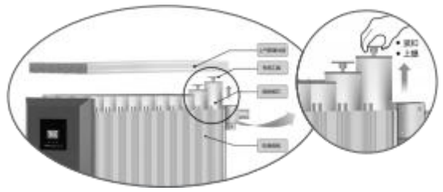
Sieve-type dispersed convection design air uniformly passes through the adsorbent

Stable And Reliable Quality

IOT real-time monitoring , equipment operation parameters, historical data reports , can be timely found and solved , avoid production accidents , ensure the safety of production system .

Convenient Maintenance

All mold cores are professionally produced according to unified standards , no need to be filled on site , which avoid adsorbent snowstorm filled in factory . Make equipment maintenance easier and convenient .



DRAWINGS PARTS OF

PURIFYING AIR DRYER

Control System
The equipment control part which sends an electrical signal to realize the automatic operation of the equipment .

Desiccant Cartridge
The absorbent cartridges are groups of small cylindrical containers compacted filled with adsorbent for deep drying .

Condenser
Cooling the refrigerant to improve cooling efficiency

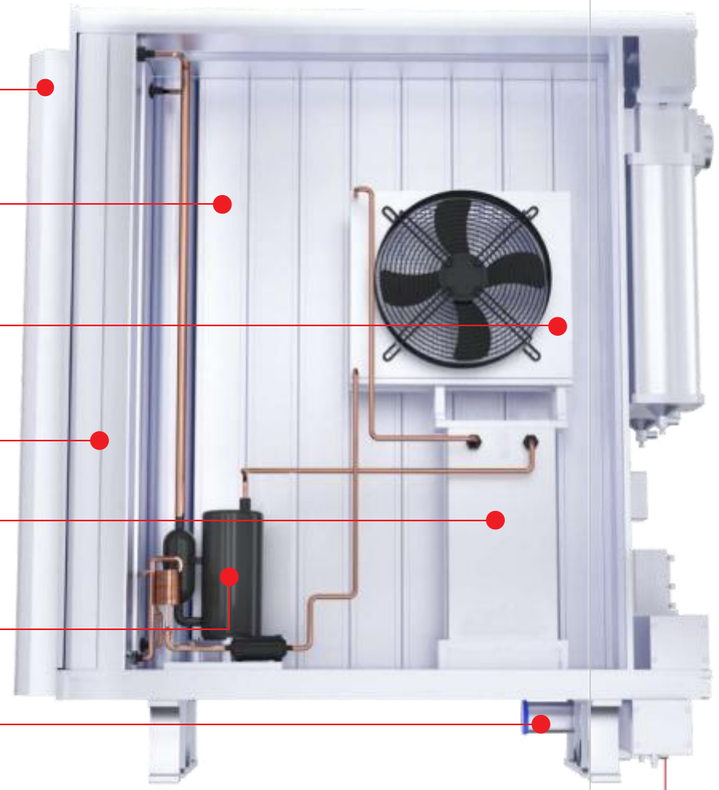
Evaporator
Cool down the compressed air by exchanging heat with the refrigerant

Two- stage refrigeration tank
Adopt two- stage refrigeration system increase speed , energy saving , and stable

Refrigerant compressor
Provide continuous cooling capacity

Silencer
Reduce the noise of the regeneration flow discharge

Central Drainage Valve
Integrated filters and dryers itself drain valve into one and timed discharge



Oil- water separator
Removes liquid water and oil from compressed air

Inlet Filter
Initial filtration of incoming air with a filtration accuracy of 0 . 1 μ

Outlet Filter
Filter the dried air with an accuracy of 0 .01 μ

Biaxial Cylinder
Control the absorption group and regeneration group switch cycle

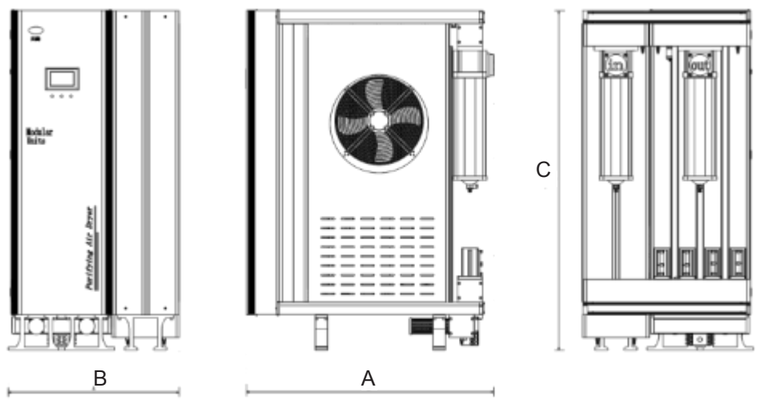
Water Container
Collect liquid water , oil , and discharge into waste pipe

PRODUCT
FUNCTION

- Pressure dew point -40℃ ~ -70℃
- Touch screen real- time display
- Reminder of replacement of consumables
- Real-time monitoring of IOT on PC & mobile

Parameter

Model		Pipe size	Volume flow(m³ / min) @0 .7~0 .8MPa	Normal size (mm) A	B	C	Normal item wgt (kg)	BTHG size(mm) A	B	C	BTHG wgt (kg)	Compressor power	power (kW)
Normal item	BTGJH0 8 5 - A	DN50	8.5	827	580	1688	380	833	580	1688	396	2HP/220V	1.8
BTHG series	BTHGJH0 8 5 - A												
Normal item	BTGJH1 0 6 - A	DN50	10 .6	935	580	1688	415	940	580	1688	435	2 .5HP/220V	2.0
BTHG series	BTHGJH1 0 6 - A												
Normal item	BTGJH1 4 6 - A	DN50	14 .6	1 152	580	1688	485	1 173	580	1688	513	3HP/220V	2.3
BTHG series	BTHGJH1 4 6 - A												
Normal item	BTGJH1 6 5 - A	DN50	16 .5	1260	580	1688	535	1289	580	1688	567	3HP/220V	2.3
BTHG series	BTHGJH1 6 5 - A												
Normal item	BTGJH2 0 6 - A	DN80	20 .6	1488	580	1688	590	1532	580	1688	630	3HP/220V	2.3
BTHG series	BTHGJH2 0 6 - A												
Normal item	BTGJH2 4 8 - A	DN80	24 .8	1705	580	1688	640	1746	580	1688	688	3HP/220V	2.3
BTHG series	BTHGJH2 4 8 - A												
Normal item	BTGJH2 9 5 - A	DN80	29 .5	1 163	822	1688	780	1 185	822	1688	836	4HP/220V	3.2
BTHG series	BTHGJH2 9 5 - A												
Normal item	BTGJH3 3 6 - A	DN80	33 .6	1272	822	1688	835	1301	822	1688	899	4HP/380V	3.2
BTHG series	BTHGJH3 3 6 - A												
Normal item	BTGJH3 8 5 - A	DN80	38 .5	1380	822	1688	890	1417	822	1688	962	4HP/380V	3.2
BTHG series	BTHGJH3 8 5 - A												
Normal item	BTGJH4 2 5 - A	DN80	42 .5	1488	822	1688	945	1533	822	1688	1025	4HP/380V	3.2
BTHG series	BTHGJH4 2 5 - A												
Normal item	BTGJH4 6 5 - A	DN 100	46 .5	1580	822	1688	1020	1632	822	1688	1 108	5HP/380V	3.9
BTHG series	BTHGJH4 6 5 - A												
Normal item	BTGJH5 1 6 - A	DN 100	51 .6	1688	822	1688	1080	1748	822	1688	1 176	5HP/380V	3.9
BTHG series	BTHGJH5 1 6 - A												
Normal item	BTGJH5 6 8 - A	DN 100	56 .8	1797	822	1688	1 130	1864	822	1688	1234	5HP/380V	3.9
BTHG series	BTHGJH5 6 8 - A												



Standard Working Condition: Working Pressure: 0 .7Mpa ≤P ≤0 .8Mpa ;Intel temperature:40℃ ≤ T≤50℃
Working pressure: 0 .4Mpa≤P <1Mpa , Intel temperature:2℃≤T≤60℃(For selection beyond 50℃, please refer to the selection parameter table)
Technical parameter: pressure dewpoint≤ -40℃ ,Comprehensive energy consumption≤3% , Pressure drop ≤ 0 .03Mpa , Noise Level ≤ 75dB
Standard electrical: 220/380V 50 Hz
Standard configuration: PDP display and control , Biteman control system , IOT system
Special configuration: DCS remote control function , Biteman flowmeter , smart meter . The working pressure of the high- pressure model is 1 MPa≤P≤1 .6MPa , and the processing flow is 59~ 120m³/min . The model can be customized .

SELECTION

The flow rate of air compressor is the basis of model selection, but with the decrease of pressure or the increase of exhaust temperature, the saturated water content entering the dryer will be increased . Therefore, it is necessary to adjust the model selection according to the actual application conditions to ensure that the system configuration is reasonable and the operation is stable and reliable .

Inlet Temperature Correction- CX

Inlet Temperature	℃	30	35	40	45	50	55	60
	CX	1.20	1.10	1.00	1.00	1 .00	0 .90	0.80

Pressure Correction - PX (workshop pressure)

Pressure	MPa	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
	PX	0 .60	0 .75	0 .85	1 .00	1 .02	1 .05	1.10	1.15	1.20

Pressure Dewpoint Correction- CF

Pressure Dewpoint	℃	-20	-40	-50	-60	-70
	CF	1 .10	1 .00	0 .70	0 .60	0 .50

Correcteddryerflowrate= Compressorflowrate/ (CX* PX* CF)

For example :Compressorflowrate is 20m³ / min ,then Inlet temperature is60°C , operating Pressure is 0 . 6Mpa , andthe requiredPressureDewpointis-40°Ctd, sothecorrecteddryer flowrate=20m³/min/(0 .8*0 .85*1)=29 .41m³/min . As the above dryer sizing table, the correct dryer for this application, shouldbetterbeselectedamodelwithanearer flowrateof29 . 41 m³ / min, thatisaBTGJH2 9 5 - A .

Note: equipment selection should fully meet the requirements of the worst working conditions, to ensure safety and reliability, consider the standby machine , when necessary, to avoid the impact of maintenance, failure and other equipment on production gas and shutdown loss .

COMPRESSED AIR
QUALITY STANDARDS

Industrial standard JB/T 5967-2007 defines classification for compressed air quality , which is based on the residue of the three main pollutants in the compressed air system - dust , oil and water

Grade	The highest pressure dew point (℃)	Maximum Oil Content (mg/m3)	PARTICLE		
			Maximum size/ μ m	Maximum concentration mg/m3	
1	-70	0.01	0.1	0.1	Remark: The particle concentration is in the condition of absolute pressure 100kpa , the temperature is 20℃ , and the relative vapor pressure is 0 .6 . Common pneumatic component require air quality quality grade
2	-40	0.1	1	1	
3	-20	1	5	5	
4	3	5	15	8	
5	7	25	45	10	
6	10	/	/	/	

Common pneumatic component name

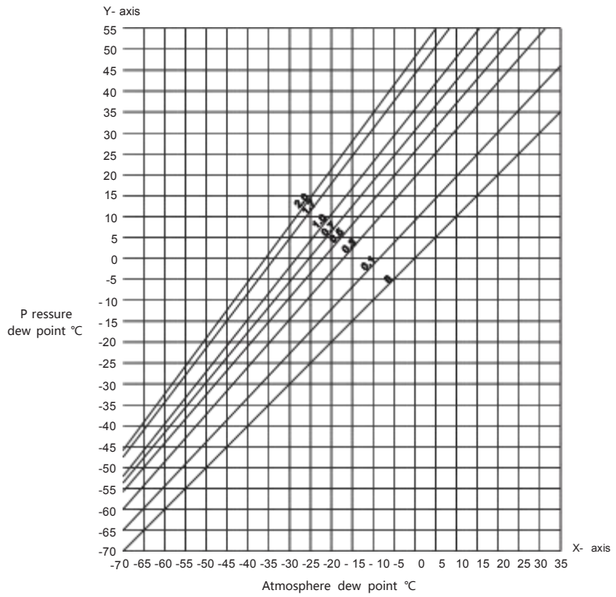
Common pneumatic component name			Air medium quality grade		
			Particle	Moisture	Oil
Cylinders			≤4	≤3	≤5
Heavy duty air motor			≤4	6~1	≤5
Light pneumatic motor			≤3	3~1	≤3
fluidicelements			≤2	2~1	≤2
Pneumatic logic component			≤4	≤6	≤4
Pneumatic component logic	sleeve valve	clearan - ceseal	3~2	3~2	4~3
		elasti - cseal	5~4	3~2	4~3
	shut- off		≤3	≤3	≤5
Pneumatic flow & pressure control valve			≤4	≤3	≤4

Quality grade of air medium for general pneumatic systems

Common pneumatic component name	Air medium quality grade		
	Particle	Moisture	Oil
General workshop	≤4	≤6	≤5
Mechanical parts blowing	≤5	≤6	≤5
Foundry machinery	≤4	≤3	≤5
Welding machinery	≤4	≤3	≤5
General machine tool	≤4	≤3	≤5
General packaging machinery	≤4	≤3	3~2
sandblasting	__	≤6	≤3
mining machine	≤4	≤3	≤5
Air loom	≤2	≤3	≤4
Precision machinery manufacturing	≤2	≤2	≤4
Spray paint	≤3	3~2	1
Food and beverage processing	≤2	≤3	1
General electronic device	≤2	≤2	≤4
Photographic film manufacturing	1	1	1

WATER CONTENT
ANALYSIS TABLE

Dew point (℃)	Moisture content (g/m ³)	Pressure dew point (℃)	Moisture content (g/m ³)	Pressure dew point (℃)	Moisture content (g/m ³)	Pressure dew point (℃)	Moisture content (g/m ³)	Pressure dew point (℃)	Moisture content (g/m ³)
64	153.8	39	48.7	14	12.1	-11	2.19	-36	0.260
63	147.3	38	46.3	13	11.4	-12	2.03	-37	0.236
62	141.2	37	44	12	10.7	-13	1.88	-38	0.214
61	135.3	36	41.8	11	10.0	-14	1.74	-39	0.194
60	130.3	35	39.6	10	9.3	-15	1.61	-40	0.176
59	124.7	34	37.6	9	8.8	-16	1.48	-41	0.159
58	119.4	33	35.7	8	8.3	-17	1.37	-42	0.144
57	114.2	32	33.8	7	7.8	-18	1.26	-43	0.130
56	109.2	31	32.1	6	7.3	-19	1.17	-44	0.117
55	104.4	30	30.4	5	6.8	-20	1.07	-45	0.106
54	99.8	29	28.8	4	6.4	-21	0.99	-46	0.095
53	95.4	28	27.2	3	5.9	-22	0.91	-47	0.085
52	91.1	27	25.8	2	5.6	-23	0.84	-48	0.077
51	87.0	26	24.4	1	5.2	-24	0.77	-49	0.069
50	83.1	25	23.1	0	4.8	-25	0.70	-50	0.062
49	79.3	24	21.8	-1	4.5	-26	0.65	-51.1	0.054
48	75.6	23	20.6	-2	4.2	-27	0.59	-53.9	0.040
47	72.3	22	19.4	-3	3.9	-28	0.54	-56.7	0.029
46	68.7	21	18.3	-4	3.7	-29	0.50	-59.4	0.021
45	65.5	20	17.3	-5	3.4	-30	0.45	-62.2	0.014
44	62.4	19	16.3	-6	3.2	-31	0.41	-65.0	0.011
43	59.4	18	15.4	-7	2.9	-32	0.38	-67.8	0.008
42	56.6	17	14.5	-8	2.7	-33	0.34	-70.6	0.005
41	53.8	16	13.6	-9	2.5	-34	0.31	-73.3	0.003
40	51.2	15	12.8	-10	2.4	-35	0.29	--	--

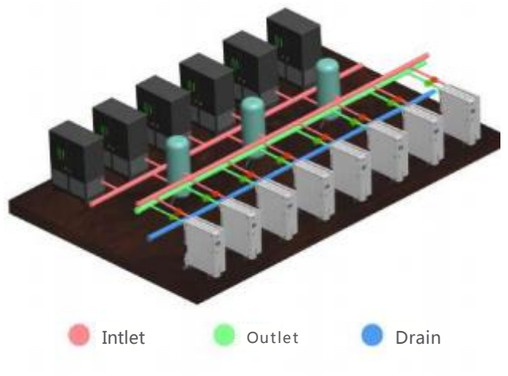


What is the moisture content in the compressed air at 0 .7Mpa when PDP is 2℃ .

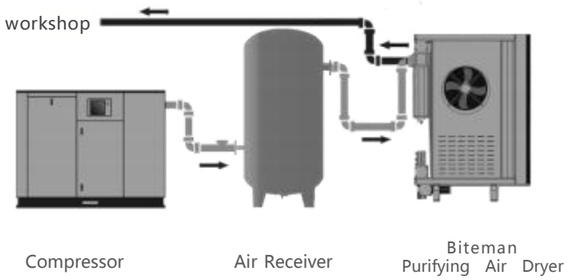
Steps:

1 . Find the corresponding line (L)-- 0 .7MPa;
2 . From the Y axis , base 2 . draw a horizontal line intersecting the line L;
3 . Find the corresponding reading on the X- axis- 2 3 (Atmosphere pressure dew point);
4 . Find the corresponding water content in the above table-- 0 .84g/m ³ .

INSTALLATION
DIAGRAM



Large flow main pipe installation



Small flow single- machine installation

COOPERATION
CASES

▲ Electric power

▲ Gas car paint

▲ Lithium battery

▲ New material

▲ Medicine

▲ Home appliance

▲ Rubber tire

▲ Electronic semiconductor

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BAK 比克电池 · REENERGY · 郑煤机集团 · Coretronic 苏州璨宇光学 · OPLINK a molex company 光联通讯 · Haojiang 豪江摩托车

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QUALIFICATION
HONOR

- National high-tech enterprise in the dryer industry
- Modular adsorption dryer industry standard setter
- Obtain the United States , European invention patent enterprises
- The world's exclusive realization in the adsorption material replacement enterprise
- Compressed air drying & purification quality continues to reach the national standard of domestic equipment