

# SOLVER

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# SOLVER

## COMPRESSED AIR DRYING SYSTEM



[www.ghsvina.com](http://www.ghsvina.com)

## ENERGY EFFICIENT INDUSTRY LEADER

### Importance of compressed air drying system

In high-tech industry, compressed air is very precious power source and this is an important air-pressure equipment that can expect quality and cost reduction.

### Compressed air drying system

When inhaling and compressing air, a great deal of distillate, moisture and impurities are created due to the condition of the inhalation side and these hazardous articles cause enormous troubles on various types of air-pressure system, so air drying system suitable for uses must be built

### Harmfulness of distillate, moisture and impurities in compressed air

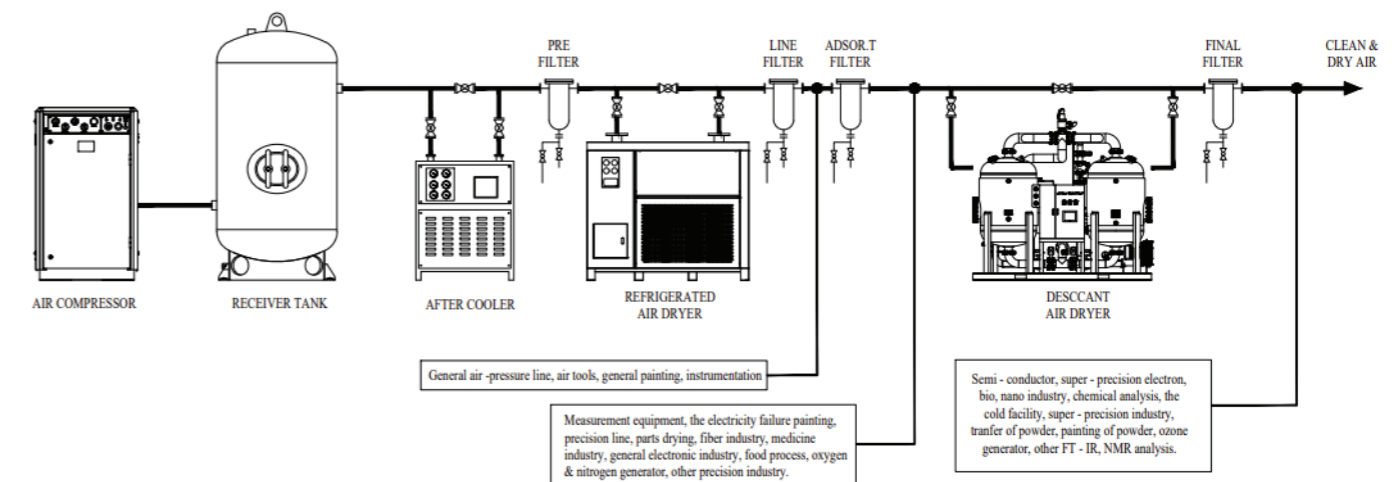
- Leakage and damage by air-line's corrosion
- Decrease of productivity by increase of inferior goods
- Increase of maintenance expenses for air-pressure system
- Efficiency deterioration and to cause trouble of air-pressure equipment
- Increase of maintenance expenses for high price air-pressure equipment
- A great deal of condensed water in summer & winter-sowing's cause in winter
- Specifically distillate cause deterioration of adsorption capacity and become a
- major reason of dew-point's increase with blocking adsorption pore

## GENERAL INTRODUCTION

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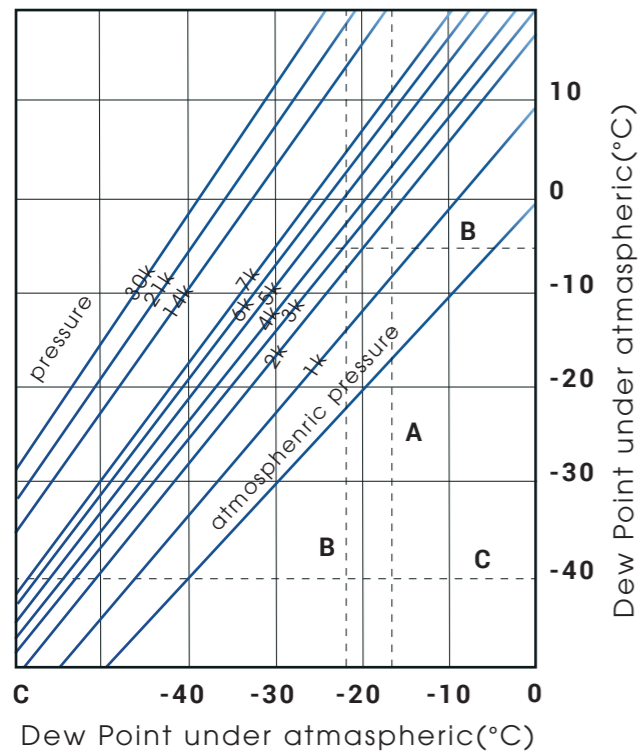
We have been building the nation's top level of technology and production capacity in compressed air drying & nitrogen generator system manufacture and are authorized in the country and also world market with trust for quality and prompt support control.

## BLOCK DIAGRAM AND USE OF COMPRESSED AIR SYSTEM



- When ask compressed air drying system report items below, it will be a precious date to design more efficiently
- From and capacity of a air compressor
- Minimum pressure on the spot
- Main use of compressed air
- Installation - space and plant size
- Diameter size of main pipe
- Please tell us about main problem of present drying system

## PRESURE & DEW POINT TABLE



### Structure and Feature

Dew points of the atmospheric pressure when the dew points under the pressure are changed

**1, What is the atmospheric dew point when the pressure is 7kg/cm<sup>2</sup> and the dew point is 10°C under the pressure**

Find the dew point of 10°C on the right side of the table and you can find the intersecting point of the horizontal line A from the dew point of 10°C and the pressure line 7k and then you can obtain the atmospheric point of -17°C if you descend from the intersecting point of the vertical line A.

**2, What is the atmospheric point when the pressure is 7kg/cm<sup>2</sup> and the dew point under the pressure is 4°C?**

If you follow B-B line according to the according to the above method, you can find the dew point of -22°C on the table.

**3, What is the atmospheric point when the pressure is 7kg/cm<sup>2</sup> and the dew point under the pressure is 4°C?**

If you follow C-C line according to the above method, you can find the dew point of -57°C on the table.

**Change of the dew point under the pressure in case of decompression When the dried air in the pressure of 7kg/cm<sup>2</sup> and dew point of 4°C**

**If decompressed down to the pressure of 3kg/cm<sup>2</sup>, what is the change of the dew point under the pressure?**

Find 4°C on the right side and the intersecting point of the horizontal line B from it and the pressure line of 7k and then descend from the intersecting point following the horizontal line of B and you can obtain the intersecting point with the pressure line 3k and then move to the right side to get the dew point of -5°C. Saturated vapor table (Relative humidity 100%)

Saturated Vapor Table (Relative Humidity: 100%)

60°C	129.72	39°C	48.595	18°C	15.366	-2°C	4.1352	-23°C	0.6670	-44°C	0.0763
59°C	124.12	38°C	46.193	17°C	14.475	-3°C	3.8167	-24°C	0.6067	-45°C	0.0682
58°C	118.89	37°C	43.893	16°C	13.628	-4°C	3.5199	-25°C	0.5514	-46°C	0.0608
57°C	113.77	36°C	41.691	15°C	12.827	-5°C	3.2444	-26°C	0.5008	-47°C	0.0542
56°C	108.83	35°C	39.583	14°C	12.065	-6°C	2.9888	-27°C	0.4544	-48°C	0.0482
55°C	104.08	34°C	37.651	13°C	11.343	-7°C	2.7516	-28°C	0.4120	-49°C	0.0429
54°C	99.492	33°C	35.641	12°C	10.659	-8°C	2.5314	-29°C	0.3733	-50°C	0.0381
53°C	95.084	32°C	33.799	11°C	10.011	-9°C	2.3267	-30°C	0.3379	-51°C	0.0338
52°C	90.836	31°C	32.039	10°C	9.3977	-10°C	2.1379	-31°C	0.3056	-52°C	0.0299
51°C	86.755	30°C	30.358	9°C	8.8171	-11°C	1.9632	-32°C	0.2762	-53°C	0.0265
50°C	82.823	29°C	28.756	8°C	8.2686	-12°C	1.8014	-33°C	0.2493	-54°C	0.0234
49°C	79.042	28°C	27.221	7°C	7.7494	-13°C	1.6517	-34°C	0.2249	-55°C	0.0207
48°C	75.414	27°C	25.760	6°C	7.2589	-14°C	1.5133	-35°C	0.2027	-56°C	0.0183
47°C	71.925	26°C	24.366	5°C	6.7958	-15°C	1.3856	-36°C	0.1826	-57°C	0.0161
46°C	68.570	25°C	23.038	4°C	6.3588	-16°C	1.2679	-37°C	0.1642	-58°C	0.0142
45°C	65.350	24°C	21.773	3°C	5.9466	-17°C	1.1596	-38°C	0.1476	-59°C	0.0125
44°C	62.259	23°C	20.568	2°C	5.5579	-18°C	1.0595	-39°C	0.1326	-60°C	0.0109
43°C	59.293	22°C	19.421	1.7°C	5.4458	-19°C	0.9673	-40°C	0.1189		
42°C	56.448	21°C	18.359	1°C	5.1917	-20°C	0.8821	-41°C	0.1066		
41°C	53.718	20°C	17.291	0°C	4.8467	-21°C	0.8044	-42°C	0.0954		
40°C	51.102	19°C	15.562	-1°C	4.4777	-22°C	0.7328	-43°C	0.0854		

## REFRIGERATED AIR DRYERS



### Structure and Features

Double Pass Flooded Refrigerating Method  
Heat exchanger of GHR Pneumatech with long head exchanging time and quality refrigerant will increase refrigerating effect.

### Hot Gas By Pass Valve

The product has the protective device of refrigerant automatically operated by the loading change for the consistent dew point.

### Hi-Temp Lamp

Owing to the dam lamp, the operator can check the operating conditions at anytime

### Evaporator

Feature of the evaporator of the double circuits will maintain the pressure dew point of 1.7C-10°C and lengthen the contacting time between air and refrigerant in the evaporator so that the efficiency can be maximized. As copper pipe continues the pressure loss of 0.15-0.25kg/cm<sup>2</sup> and the tube prop is made of wedding materials.

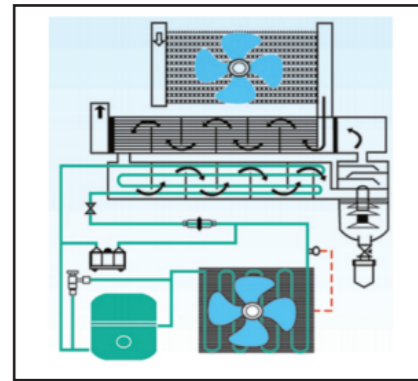
### Step Centrifugal Separator

As all of the refrigerated and compressed air the heat exchanger pass through the compressed air.

### Automatic Drain Timer

The opening and cycle time of the drain valve can be adjusted for the outflow of the condensed water and operating lamps are installed for the operator to confirm the operating condition

## AIR COOLED HIGH TEMPERATURE REFRIGERATED DRYER



Air-cooled high temperature dryer working flow chart

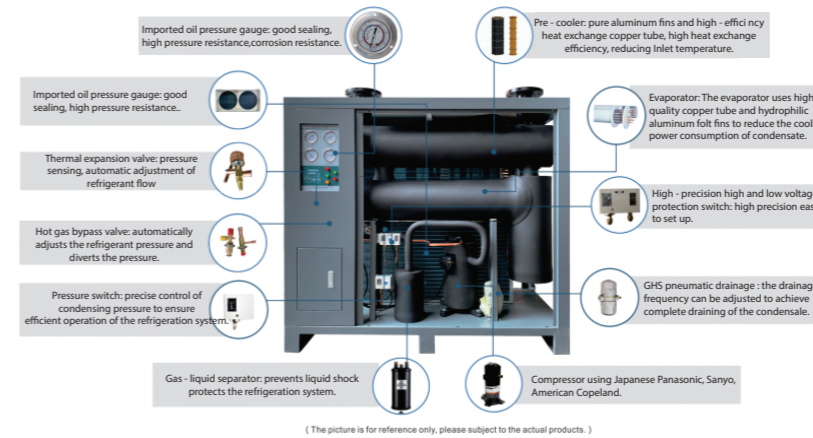
IAT	≤ 60°C
Cooling	Air Cooled
Ambient Temp	2-45°C
Pressure Dew Point	2-10°C
Working Pressure	0,6-1.0MPa

Working conditions

### Features

- Strictly in accordance with ISO9001, GB150 standard, ISO7183 refrigerated dryer standard, QS, pressure vessel inspection standard for design, manufacturing and testing to ensure safe and reliable product.
- The head exchanger and the air-cooled condenser are independently produced, and adopt the hydrophilic aluminum foil to make the heat exchanger efficiency is high
- No foundation installation, can be installed at any reasonable ambient temperature. The outer rotor fan is used, which has a large air volume and long service life
- Refrigeration parts and control components adopt international quality brands to improve service life
- The design of the equipment structure is reasonable
- High-efficiency gas-water separation device working with the excellent automatic drain valve to continuously and steadily discharge the condensed water out of the machine
- The cooling system is equipped with an automatic pressure switch to automatically control the fan power supply to achieve maximum power saving effect, saving more than 30%
- Good drainage system design, no blockage, with filter net which can be cleaned regularly
- The unique refrigeration system design, low temperature and no ice, good refrigerant filtration system, no ice blocking phenomenon, effectively remove compressed air moisture.

## HIGH CAPACITY REFRIGERATED AIR DRYERS



According to the general compressed air dryer selection guide, the design of the dryer is based on the following pressure 7bar, ambient temperature 38 °C . For different working pressure and temperatures, the following correction factors should be considered.

Table 1: Compressed air inlet air temperature correction factor table (C1)

Inlet air temperature (°C)	32	35	38	40	42	45	50	55	60
Correction factor	1.53	1.39	1.25	1.20	1.06	1.00	0.83	0.68	0.58

Table 2: Intake pressure correction factor (C2)

Inlet pressure MPa	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Correction factor	0.76	0.86	0.93	1.00	1.04	1.07	1.12

Table 3: Pressure Dew Point Correction Factor (C3)

Pressure Dew Point (°C)	3	7	10
Correction Factor	0.70	0.85	1.00

Table 4: Ambient temperature correction factor (C4)

Ambient temperature (°C)	25	30	35	38	40	45
correction factor	1.10	1.06	1.03	1.00	1.96	0.71

The air flow rate under different working conditions can be calculated by multiplying the nominal flow rate in the specification parameter table by the correction factor and the actual dryer air flow rate nominal flow rate X (C1XC2XC3XC4).

Air-cooled high temperature refrigerated dryer specification table

MODEL	AIR CAPACITY (Nm <sup>3</sup> /min)	REFROCKRATION COMPRESSOR POWER(CW)	POWER SUPPLY (V/h2)	INLET OUTLET	DIMENSSIONS (mm)			MATCHER AIR COMPRESSOR POWER(R/KW)	WEIGHT (KG)
					LENGTH	WIDTH	HEIGHT		
GHR-010AH	1.0	0.58	220	G3/4"	730	420	770	5.5	56
GHR-015AH	1.5	0.59	220	G1"	730	420	770	7.5	61
GHR-020AH	2.0	0.59	220	G1"	730	420	770	11	61
GHR-026AH	2.6	0.75	220	G1"	730	420	880	15	68
GHR-038AH	3.8	0.88	220	G1-1/2"	780	540	1.010	22	102
GHR-069AH	6.9	1.24	220	G1-1/2"	1.000	540	1.010	37	138
GHR-110AH	11.0	1.73	220	G2"	1.240	650	1.140	55	205
GHR-140AH	14.0	2.6	380	G2-1/2"	1.240	650	1.140	75	215
GHR-180AH	18.0	2.8	380	G2-1/2"	1.400	700	1.260	90	283
GHR-220AH	22.0	3.0	380	DN80	1.450	700	1.340	110	324
GHR-280AH	28.0	3.75	380	DN80	1.450	700	1.340	150	358
GHR-320AH	22.0	4.66	380	DN80	1.550	750	1.400	160	408
GHR-380AH	28.0	6.49	380	DN100	1.900	950	1.620	200	585
GHR-460AH	46.0	8.85	380	DN100	1.900	950	1.620	250	630
GHR-550AH	55.0	9.98	380	DN125	2.100	1.000	1.790	315	815
GHR-670AH	67.0	10.5	380	DN150	2.100	1.400	2.000	355	1.106
GHR-750AH	75.0	11.25	380	DN150	2.100	1.450	2.150	400	1.223
GHR-850AH	85.0	13.5	380	DN150	2.100	1.450	2.250	450	1.685

\* GHR-000AH Inlet temperature 60 °C

\* GHR-000AL Inlet temperature 38 °C



## HEATLESS DESICCANT AIR DRYER

### GSD - Series

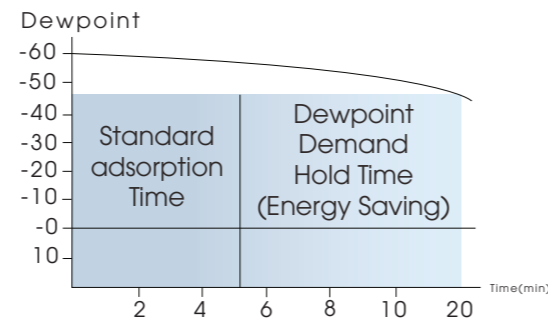
GSD - Series AIR DRYER is the most suitable for small capacity of compressed air dryer and use a part of dried air as regenerating source without using heat source during regenerating. Very simple structure, small space for installation and no separate electric control make easy to maintain and control.

### Structure and Features of GSD - Series

- Guarantee definite and fast dew point
- Full-automatic unmanned operation and easy digital operation
- Apply reliable operating valve and secure about dust leakage and reposition
- Cost reduction of operation by dew point operation (PPD-2)

### Typical Design Condition

- Entrance air pressure 7.0kg/cm<sup>2</sup>(SID)
- 10-50kg/m<sup>2</sup>(OPN)
- Entrance air temperature. max 40°C
- Exit guaranteed dew point - 40°C(SID), -75°C(OPN)
- Operating cycle. 10min/cycle



### Drying and Operation Principle of GSD Series

Compressed air heated in air compressor passes through adsorption tower adsorbent is filled within regulated velocity and contact time through 3-Way Shuttle Valve (2-Way Valve in case of high-capacity) that is the entrance valve of air dryer and provides compressed air of required dew point (generally -40°C = 75°C)

Drying and regenerating cycle are progressed by guaranteed dew point for 2-5 minutes, when one adsorption tower (A) is on progress of drying the other adsorption tower (B) passes a part of the exit side dried air through reducing valve and orifice and regenerates completely by discharging water adsorbed in previous cycle to the air

Merit of GSD-Series air dryer is that control and regenerated air can be controlled on the spot to reduce regenerated air by condition of entrance draft side compressed air as it can and it is to maximize effect or energy reduction with dew point control operation optionally together. Furthermore it is designed to prevent momentary pressure drop in advance by closing the valve when it is lower than regulated pressure, as senses the exit side pressure condition at all times.

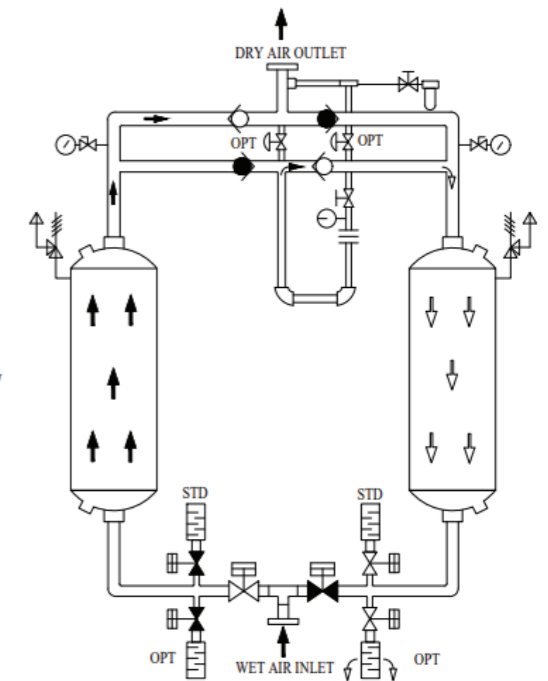
### Compensation factor of the entrance pressure

Inlet Pressure (kg/cm <sup>2</sup> )	4.2	5.6	6.3	7.0	8.4	9.1	9.9	10.5	11.3	12.7	14.0	15.8	17.6	19.3	21.0
Conversion factor	0.65	0.83	0.91	1.0	1.16	1.26	1.33	1.43	1.52	1.65	2.88	1.08	2.27	2.50	2.70

## DESICCANT AIR DRYER

### GSD - Series Flow Schematic

- CLOSE
- OPEN
- DRYING FLOW
- ↺ REGENERATION FLOW



### Specifications

MODEL	CAPACITY (Nm <sup>3</sup> /Hr)	CONNECTION	DIMENSION(mm)			DESICCANT (Kg/2towers)	WEIGHT (Kgs)
			L	W	H		
GSD - 25	25	15A PT	533	600	1.820	10	85
GSD - 50	50	15A PT	644	600	1.690	21	105
GSD - 85	85	20A PT	692	600	1.820	36	160
GSD - 160	160	25A PT	815	600	1.770	58	210
GSD - 180	180	25A PT	815	600	2.100	74	260
GSD - 215	215	25A PT	920	600	1.790	90	290
GSD - 260	260	25A PT	920	600	2.050	110	350
GSD - 370	370	40A PT	1,064	800	1.980	140	400
GSD - 495	495	40A PT	1.163	800	1.950	190	550
GSD - 660	660	50A PT	1.376	800	2.125	270	680
GSD - 870	870	50A PT	1.150	1.200	2.252	360	830
GSD - 1050	1.050	65A FLG	1.525	1.400	2.327	430	950
GSD - 1380	1.380	80A FLG	1.525	1.400	2.395	560	1.150
GSD - 1680	1.680	80A FLG	1.485	1.400	2.420	670	1.455
GSD - 1920	1.920	80A FLG	1.625	1.400	2.455	780	1.700
GSD - 2280	2.280	100A FLG	2.100	860	2.650	920	2.000
GSD - 2940	2.940	100A FLG	2.060	929	2.675	1.180	2.420
GSD - 3685	3.685	100A FLG	2.400	1.016	2.832	1.500	3.000
GSD - 4250	4.250	100A FLG	2.600	1.116	2.752	1.720	3.300
GSD - 5400	5.400	150A FLG	3.200	1.300	2.740	2.200	4.500
GSD - 6000	6.000	150A FLG	3.400	1.400	2.720	2.480	5.500
GSD - 6600	6.000	150A FLG	3.500	1.600	2.740	2.800	6.000

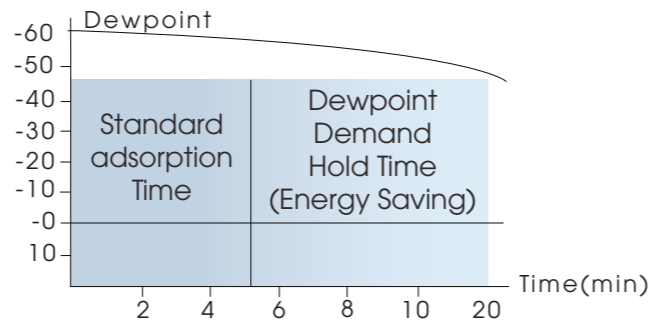
## HEATER EXTERNAL PURGE AIR DRYER

### GHP - Series

GHP - Series AIR DRYER is the most efficient drying form to dry medium or large size capacity of compressed air. Regenerated air through electric heater during regenerating regenerates adsorbent completely and provides stable and compressed air of drier low dew point, if expects epoch-making energy reduction by applying various options.

### Structure and Features of GHP - Series

- Guarantee reliable and stable dew point (-40°C - -95°C)
- The newest digital operation taking into account of manager's convenience (option)
- Apply moving valve that has superior durability and thermal resistance
- Cost reduction of operation by dew point operation (PPD-2) (option)
- Epoch-making cost reduction by PPR-System (option)



### Typical Design Condition

- Entrance air pressure: 7.0 kg/cm<sup>2</sup> (SID) 10-50 kg/m<sup>2</sup> (OPN)
- Entrance air temperature: max 40°C
- Exit guaranteed dew point: -40°C (SID) -75°C (OPN)
- Operating cycle: 8 hrs/cycle

### Drying and Operation Principle

Compressed air heated in air compressor passes through adsorption tower adsorbent is filled within regulated velocity and contact time through 3-Way Shuttle Valve (2-Way Valve in case of high-capacity) that is the entrance valve of air dryer and provides compressed air of required dew point (generally -40°C = -75°C)

The standard of drying and regenerating cycle are progressed for 8 hours, when one adsorption tower (A) is on progress of drying the other adsorption tower (B) decompresses a part of the exit side dried air through reducing valve and office. And heats this and then regenerates completely removing water of adsorbent adsorbed previous cycle

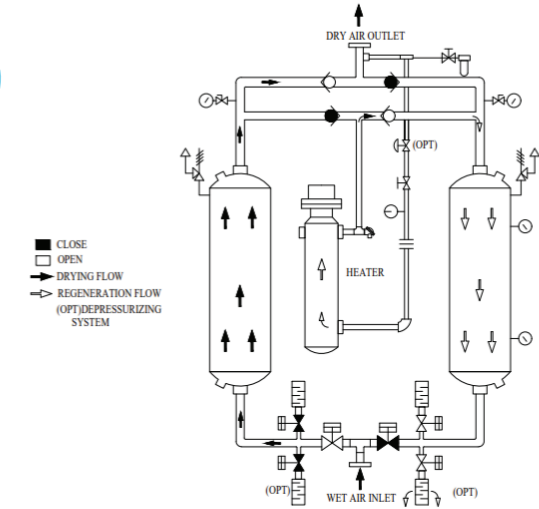
Merit of GHP-Series air dryer is that control system can be installed optionally to reduce regenerated air by condition of the entrance in draft side compressed air as it can and it is applied world because it can expect efficient energy reduction

### Compensation factor of the entrance pressure

Inlet Pressure (kg/cm <sup>2</sup> )	4.2	5.6	6.3	7.0	8.4	9.1	9.9	10.5	11.3	12.7	14.0	15.8	17.6	19.3	21.0
Conversion factor	0.65	0.83	0.91	1.0	1.16	1.26	1.33	1.43	1.52	1.65	1.88	1.08	2.27	2.50	2.70

## DESICCANT AIR DRYER

### GHP - Series Flow schematic



### Specifications

MODEL	CAPACITY (Nm <sup>3</sup> /Hr)	CONNECTION	DIMENSION (mm)			DESICCANT (Kg/2towers)	WEIGHT (Kgs)
			L	W	H		
GHP - 100	100	20A PT	1.200	850	2.030	45	200
GHP - 160	160	25A PT	1.400	850	1.772	80	310
GHP - 190	190	25A PT	1.400	850	1.880	90	330
GHP - 250	250	25A PT	1.400	850	2.080	110	365
GHP - 285	285	25A PT	1.400	850	2.210	120	375
GHP - 350	350	40A PT	1.500	950	1.900	150	420
GHP - 450	450	40A PT	1.500	950	1.906	190	540
GHP - 520	520	50A PT	1.600	1.000	1.814	220	630
GHP - 600	600	50A PT	1.600	1.100	2.030	260	705
GHP - 700	700	50A PT	1.650	1.100	2.230	300	900
GHP - 680	860	50A PT	1.700	1.200	2.214	360	910
GHP - 1040	1.040	65A FLG	1.900	1.300	2.384	380	1.050
GHP - 1300	1.300	65A FLG	1.950	1.300	2.422	450	1.240
GHP - 1560	1.560	80A FLG	2.100	1.300	2.470	680	1.300
GHP - 1900	1.900	80A FLG	2.200	1.400	2.510	830	1.550
GHP - 2250	2.250	80A FLG	2.200	1.450	2.550	990	1.720
GHP - 2720	2.720	100A FLG	2.400	1.550	2.680	1.190	2.200
GHP - 3060	3.060	100A FLG	2.500	1.600	2.680	1.340	2.400
GHP - 3600	3.600	100A FLG	2.600	1.700	2.835	2.580	2.890
GHP - 4420	4.420	100A FLG	2.700	1.850	2.850	2.940	3.290
GHP - 5370	5.370	150A FLG	3.250	1.900	2.730	2.340	3.840
GHP - 6000	6.000	150A FLG	3.400	2.100	2.710	2.620	4.620
GHP - 6800	6.800	150A FLG	3.600	2.100	2.730	2.368	5.080
GHP - 7650	7.650	150A FLG	3.700	2.100	2.770	2.688	5.080
GHP - 8400	8.400	150A FLG	3.800	2.100	2.810	2.928	5.950
GHP - 9000	9.000	150A FLG	3.800	2.150	2.900	3.152	6.300
GHP - 10200	10.200	200A FLG	4.200	2.300	3.085	3.536	7.100
GHP - 10200	12.000	200A FLG	4.500	2.500	3.214	4.600	14.000
GHP - 15000	15.000	250A FLG	4.640	2.690	3.535	6.400	15.800

## HEATER EXTERNAL BLOWER AIR DRYER

### GHB - Series



### Structure and Features

#### Minimization of regenerated air consumption

Regarding the regenerated heated air and refrigerated air the blower intakes the air outside and only small quantity of the dried air is used according to the necessity and the operation is very economical

#### Continuation of optimal dew point temperature ( No Dew Point Spike )

As the refrigerating time is maintained in a regulated cycle after the heating process so that temporary dew point lowering phenomena can be prevented for the continuation of the optimal dew point.

#### Cooling (Cooling Cycle)

Though the traditional methods used to use the dried air totally, our product mainly uses the outside air owing to the characteristic of the desiccant and the operation can achieve considerable energy saving effect.

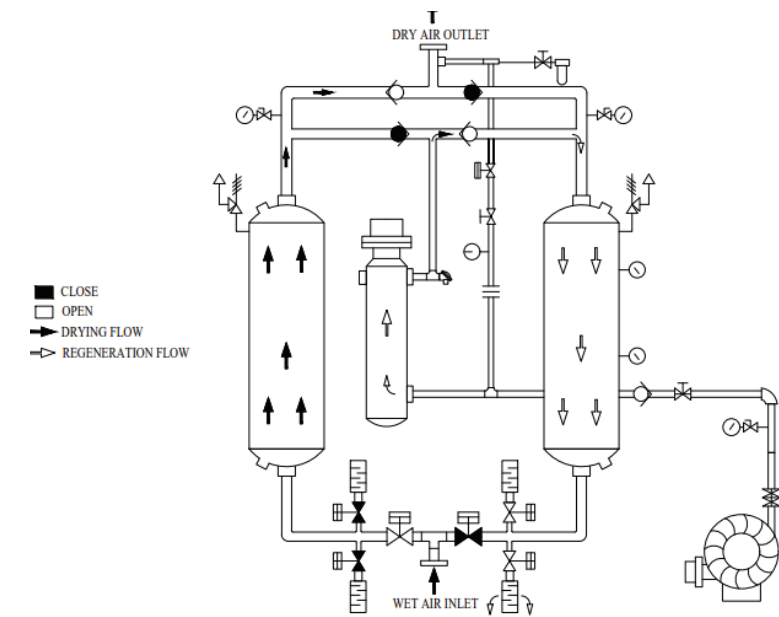
If steam can be supplied into the dryer (steam pressure is to be over 10kg/cm<sup>2</sup> the electric header may not be used for the heating owing to the steam heating and the energy can be saved considerably.

### General Specification

- Inlet Air Pressure:** 7kg/cm<sup>2</sup>(Std)
- Outlet Dew Point:** -40°C at atm (Std)
- Inlet Air Temperature:** Under 40°C (Std)
- Re-drive humidity:** 100%
- Operating time:** 8 hours Cycle (Std)
- Adsorption time:** 4hr
- Heating time:** 2.5 hours
- Cooling time:** 1.5 hours
- Regeneration Air:** Outside Air & Dried Air
- Regeneration:** Electric Heater (Std)  
Steam Heater (Option)
- Blower:** Roots Blower (Std)

## DESICCANT AIR DRYER

### GHB - Series Flow Schematic



### Specifications

MODEL	CAPACITY (Nm <sup>3</sup> /hr)	CONET (In/Out)	DIMENSION (mm)			ELECTRIC		STEAM HEATER (10.5kg/cm <sup>2</sup> )		DESICCANT (kg/2Towers)	WEIGHT (kg)
			H	L	M	HEATER(kw)	BLOWER(Hp)	CONSUMPTION (kg/hr)	CONNECTION		
GHB - 300	300	40A	2.200	1800	1200	5	2	3.9	15A	140	500
GHB - 400	400	50A	2.150	2.000	1.250	6	2	5.2	15A	190	650
GHB - 600	600	50A	2.400	2.200	1.300	9	3	7.8	15A	280	850
GHB - 900	900	50A	2.250	2.700	1.400	15	3	11.6	15A	420	1.100
GHB - 1000	1.000	65A	2.400	2.700	1.400	15	5	11.9	15A	480	1.350
GHB - 1300	1.300	65A	2.450	3.000	1.450	20	5	16.8	20A	610	1.550
GHB - 1560	1.560	80A	2.496	3.300	1.500	24	7,5	20.2	20A	730	1.800
GHB - 1900	1.900	80A	2.324	3.500	1.600	30	7,5	24.5	20A	900	2.100
GHB - 2250	2.250	80A	2.325	3.550	1.700	38	7,5	29.1	20A	1.080	2.500
GHB - 3100	3.100	100A	2.525	3.750	1.900	46	10	40.1	20A	1.440	3.300
GHB - 3600	3.600	100A	2.525	3.850	2.000	54	10	46.5	25A	1.700	3.800
GHB - 4500	4.500	125A	2.980	3.900	2.200	66	15	58.1	25A	2.100	4.500
GHB - 6000	6.000	150A	3.000	4.200	2.300	90	15	77.5	25A	2.800	5.500
GHB - 8000	8.000	200A	3.100	4.500	2.500	120	20	103.3	40A	3.720	7.000
GHB - 9000	9.000	200A	3.100	4.500	2.500	130	20	116.3	40A	4.200	7.500
GHB - 10000	10.000	200A	3.010	6.000	2.500	150	30	129.2	40A	4.600	11.500
GHB - 12000	12.000	200A	3.010	6.000	2.500	180	30	155	50A	5.600	12.500
GHB - 15000	15.000	250A	3.570	6.000	3.200	220	40	193.8	50A	6.970	13.500



## ABOUT N2

Nitrogen, with the chemical formula  $N_2$ , is generally a colorless and odorless gas, and generally nitrogen is less dense than air. Nitrogen accounts for 78.08% (volume fraction) of the total atmosphere and is one of the main components of air. At standard atmospheric pressure, when nitrogen is cooled to  $-195.8^\circ C$ , it becomes a colorless liquid, and when cooled to  $-209.8^\circ C$ , liquid nitrogen becomes a snowy solid. Nitrogen is chemically inert and difficult to react with other substances at room temperature, so it is often used as preservatives. However, under high temperature and high energy conditions, it can undergo chemical changes with certain substances to prepare new substances useful to humans

## WORKINGPRINCIPLE OF PSA NITROGEN GENERATOR

Pressure Swing Adsorption (PSA) is a new type of gas adsorption separation technology, which uses carbon molecular sieve as an adsorbent (carbon molecular sieve is a kind of ink-colored particles made of coal powder as a raw material, which is specially processed, and its surface is distributed filled with countless micropores), using a two-bed PSA device to separate nitrogen-rich from the air, thereby obtaining nitrogen. The separation principle: In consideration of different diameters of oxygen and nitrogen molecules (nitrogen small and oxygen larger),

when compressed air passes through the adsorption bed, oxygen molecules directly enter the pores on the surface of the carbon molecular sieve and are adsorbed, and nitrogen molecules cannot enter the pores and are in the adsorption bed Enriched to form a certain purity of nitrogen. The capacity of carbon molecular sieve to absorb oxygen increases as its pressure rises and decreases with pressure decrease. The principle of adsorption when carbon molecular sieve is pressurized and desorption when depressurized is used in conjunction with the circulating work of AB tower to achieve the purpose of separation. Referred to as PSA nitrogen generator.

PSA nitrogen production advantages:

- (1) Fast gas production and stable purity.
- (2) It can work at room temperature and common pressure (0.8MPa), without heating during bed regeneration, saving energy and economy.
- (3) Simple operation and convenient maintenance.
- (4) Continuous cycle work can be fully automated.

## Main Specifications

Nitrogen flow	0.5~1000Nm <sup>3</sup> /h
Nitrogen purity	98~99.999%
Nitrogen pressure	0.1~0.6MPa(Adjustable)
Atmospheric dew point	-40 ~ -70

## Module Nitrogen Generator

Model	Flow(Nm3/Hr)				Dimensions(mm)			Weight (kg)	Air compressor power reference (KW)
	99.999%	99.99%	99.9%	99%	L (mm)	W (mm)	H (mm)		
GHN-07MZ	0.7	1.0	2.5	5	200	300	1.250	55	3KW
GHN-2MZ	2.0	3.0	10	15	350	500	1.780	90	4KW
GHN-5MZ	5.0	8.0	12	20	1.050	500	1.780	270	5.5KW
GHN-7MZ	7.0	10	15	23	1.210	500	1.780	330	7.5KW
GHN-10MZ	10	15	24	30	1.050	1.250	1.780	540	11KW
GHN-15MZ	15	20	30	55	1.650	1.250	1.780	660	15KW

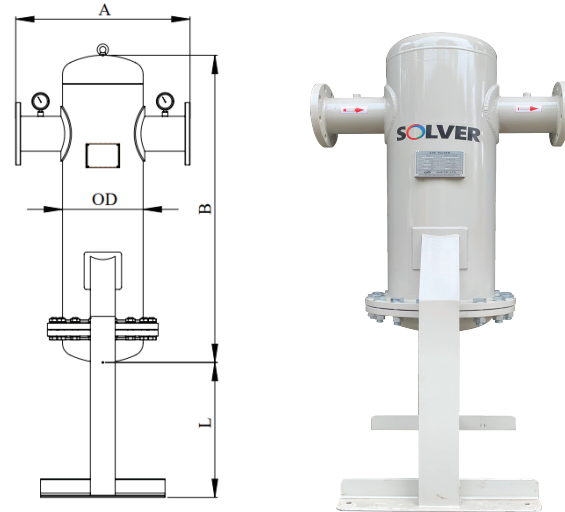
■ For above specification could be changed base on customer needs



## SPARE PARTS

### High Performance Air Filter

**GHF - Series**  
Stell Housing  
High pressure (10-15 bar)



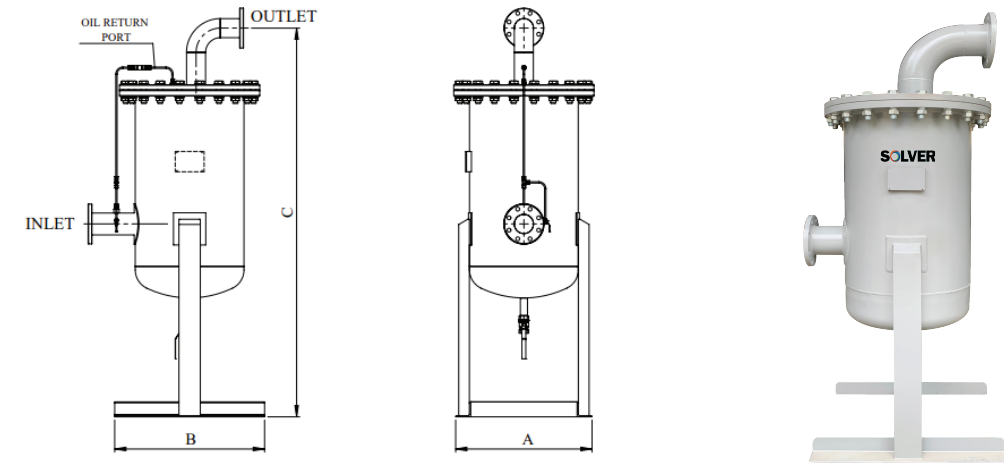
### Specifications

MODEL	Flow Rate @ 7bar(m2)					Elecment Q'ty	Port Size		Dimension			
	Main	Pre	Line	Coale scent	Adsor bent		mm	inch	A(mm)	B(mm)	C(mm)	OD(mm)
GHF - Series	40μ	5μ	1μ	0.01μ	0.01 ppm	ea	mm	inch	A(mm)	B(mm)	C(mm)	OD(mm)
GHF - 15A	2.2	1.8	1.2	1.0	1.0	1	15A	PT 1/4"	110.5	246		75
GHF - 20A	5.7	3.5	2.8	1.9	1.9	1	20A	PT 3/4"	110.5	309		75
GHF - 25A	8.0	5.7	5.0	3.4	3.4	1	25A	PT 1"	110.5	432		75
GHF - 40A	17	14	11	10	10	1	40A	PT 1/2"	144	700		114.3
GHF - 50A	29	25	22	14	14	1	50A	PT 2"	185	925		139.8
GHF - 65A	58	49	48	28	28	2	65A	FLG 2 1/2"	650	1.198	821	216.3
GHF - 80A	88	73	72	42	42	3	80A	FLG 3"	650	1.205	795	267.4
GHF - 100A	139	120	110	70	70	5	100A	FLG 4"	700	1.220	779	318.5
GHF - 125A	162	145	132	84	84	6	125A	FLG 5"	700	1.180	770	355.6
GHF - 150A	282	221	176	112	112	8	150A	FLG 6"	700	1.180	770	355.6
GHF - 200A	447	331	308	196	196	11	200A	FLG 8"	830	1.295	742	457.2
GHF - 250A	733	555	528	330	330	19	250A	FLG 10"	996	1.580	750	609
GHF - 300A	1.103	850	792	504	504	30	300A	FLG 12"	996	1.720	640A	711.2

## Oil - Water Separator

### GHS - Series

This product can remove a large of oil and moisture in compressed air



### Specifications

Model	Compressor	Capacity	Dimension			Connection
			A(mm)	B(mm)	C(mm)	
GHS - Series	HP	Nm <sup>2</sup> /hr	A(mm)	B(mm)	C(mm)	In / Out
GHS - 50	30-50	450	378	367	1.049	40A(S)
GHS - 75	75-100	900	430	420	1.106	50A(S)
GHS - 125	125-100	1.350	510	530	1.504	65A(F)
GHS - 200	200-240	2.160	510	530	1.504	80A(F)
GHS - 250	250-300	2.700	510	530	1.504	80A(F)
GHS - 350	300-450	4.050	600	600	1.800	100A(F)
GHS - 500	450-500	4.500	650	650	1.800	1.250A(F)
GHS - 600	500-600	5.400	650	650	1.800	150A(F)

■ For above specification could be changed base on customer needs

## SPARE PARTS

### Precision Filter Element

#### Funtion:

Filter - element is the important part for the compressed air filter, which can remove the liquid, oil mist, solid particles, oil vapor, hydrocarbons etc.

#### Excellent Filter Media:

The filter element is produced by conventional wrap style and pleated style according to different requirements, the conventional wrap filter is made of borosilicate glass fiber with automatic wrapping process, and the pleated filter is made of borosilicate glass fiber by deep folding process, which can reduce the speed of compressed air in the filtration medium, so

#### Features:

1. Multi - stage filtration, high filtration precision, optimal cost performance.
2. Excellent structure, small volume, corrosion resistance, long service life.
3. Large amount of dust may be allowed and low pressure loss can effectively reduce the cost.
4. Full range of products to meet different needs.

#### It is very important to replace the filter element timely

It is important to protect downstream equipment and processes, and the filter are fully protected only annually or before the differential pressure gauge/pressure gauge points to the red zone to replace the filter element earlier. Failure to replace the filter element in time will result in reduced product quality poor air quality, and increased operation cost.

Condensed dust removal and degreasing filter is guaranteed for one year under normal use. Use the filter element to bring you:

- + Always high quality compressed air.
- + Continuous protection of downstream equipment and processes.
- + Always low operating costs.
- + 12 months preformance guarantee.
- + Safe and secure.



### Specifications

Name	Filtering method	Solid particle removal ( including water and of mist )	Maximum oil content (21 °C)	Filtration efficiency	Initial dry pressure drop
Pre - Filter	Condensate	3µm	5mg/m3 5pppm	99.9%	≤0.007MPa
Main line filter element	Condensate	1µm	0.5mg/m3 0.5pppm	99.99%	≤0.007MPa
High efficiency degreasing filter	Condensate	0.01µm	0.01mg/m3 0.01pppm	99.999%	≤0.01MPa
Ultra efficiency degreasing filter	Condensate	0.01µm	0.001mg/m3 0.001pppm	99.999%	≤0.01MPa