

N₂, O₂, H₂,
Ar., CH₄, Co.,
Co₂, PSA

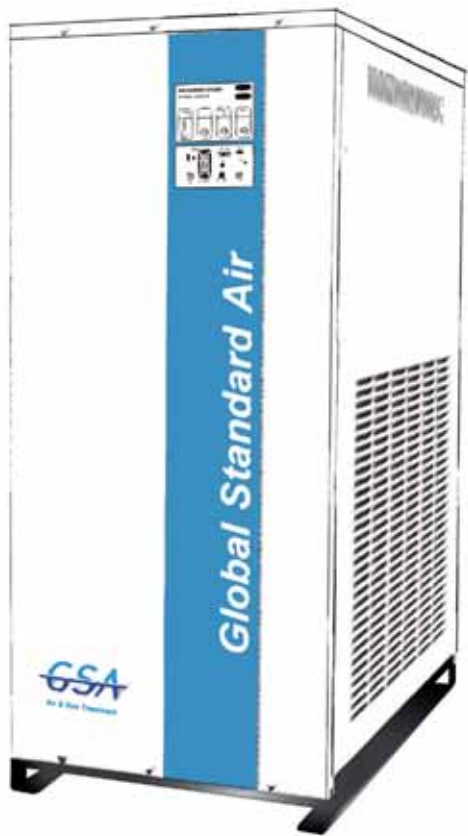
Water Chiller

Drain Valve

Air Filter

Aftercooler

Refrigerated
/ Dessicant /
Membrane



Refrigerated Air Dryers

Top-Quality / Eco-Friendly

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Why refrigerated air dryer?

A 50HP screw compressor (37 kW) which delivers about 6 m³/min. free air at 7 bar, 25°C ambient temperature and 70% relative humidity, introduces 6 lt./hour of vaporized water into the compressed air system. After compression about 75 % of such vapor condenses in water droplets that, if not properly removed, will enter the compressed air pipe line. By means of after-coolers, separators and condensate drains it is already possible to eliminate up to 70~80 % of the condensate liquids but, only with a refrigerated air dryer, it will be possible to eliminate an additional amount of humidity to guarantee a clean air suitable for most of the pneumatic applications.

Providing clean, dry, compressed air is especially important in applications where moisture or contamination can cause system corrosion, damage to air-powered tools or degradation of products or processes touched by the compressed air.

Refrigerated dryers from GSA offer multiple design features to ensure a constant dew point at all load levels and will deliver a continuous dry air performance that satisfies ISO 7183 industry standards.



Corrosion ▲



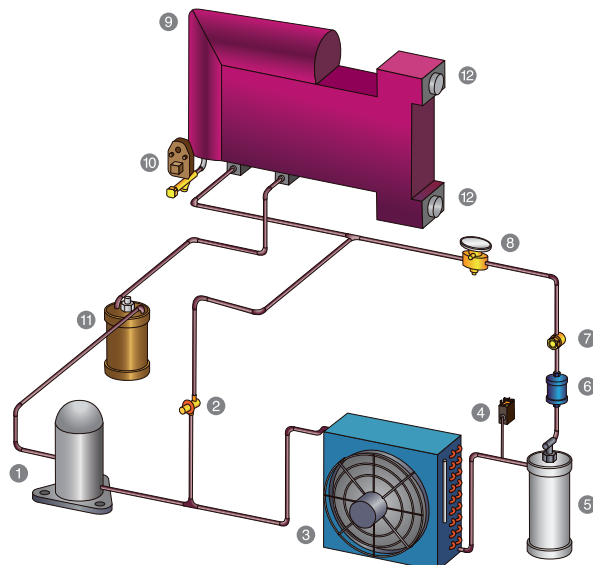
Condensate ▲

Dryer operation

GSA dryers use a two-stage heat exchanger system to maintain consistent dew points. Freeze ups are prevented and optimum performance is maintained by integrating the highest quality components and refrigeration controls into our system. The system reduces the temperature of the compressed air to approx. +35°F (1.4°C) forcing entered moisture to condense.

The mixture of condensed liquids and cold air then flows into the cold point moisture separator where the liquids are collected and removed by an electronic condensate drain. The drain ensures maximum moisture removal. Once liquids have been removed, the cold dry compressed air returns through the cold side of the first stage heat exchanger where it is reheated by the warm incoming air. Pipe sweating is avoided and air volume is increased by reheating.

The compressed air is now considered treated and ready for delivery to downstream products.



Function Diagram

- 1 Refrigerant Compressor
- 2 Hot Gas Bypass Valve
- 3 Condenser
- 4 Fan Control Switch
- 5 Liquid Receiver
- 6 Filter Dryer
- 7 Moisture Indicator
- 8 Expansion Valve
- 9 Heat Exchanger (Aluminum Block)
- 10 Drain Valve
- 11 Liquid Separator / Accumulator
- 12 Air Inlet / Outlet



Air Dryer - HYD Model



- 1 Control Panel (PCB)**
- Dryer start / stop.
 - Ref. system monitoring.

- 2 Control Box**
- Main wiring.
 - Electric parts.

- 3 Hot Gas Bypass Valve**
- Capacity control of ref. system.
 - Ref. system balance.

- 4 Refrigerant Compressor**
- Compress the gasified refrigerant.
 - Keeps the refrigerant moving in a loop.

- 5 Filter Dryer**
- Adsorb moisture.
 - Provide filtration.

- 6 Aluminum Heat Exchanger**
- Air to air heat exchange.
 - Air to ref. heat exchange.

- 7 Transformer**
- Step down or up the system voltage.
 - Option.

- 8 Pressure Switch**
- HPS (High Press. Switch) or DPS (Dual Press. Switch)
 - Ref. system protector.

- 9 Fan Control Switch**
- Control the condenser fan motor.
 - Operated by ref. pressure.

- 10 Condenser**
- To liquefy the hot & high pressure ref. gas.
 - Combined with fan motor.

- 11 Expansion Valve**
- Removes pressure from the liquid refrigerant.
 - Change of state from liquid to vapor.

- 12 Electric drain valve**
- Discharging condensed water.
 - On/Off timer.

- Suction Accumulator**
- Protect the ref. compressor from liquid hammer.
 - Liquid refrigerant separation.
 - For bigger than HYD-130.

- Liquid Receiver**
- Storage tank for liquid refrigerant.
 - For bigger than HYD-130.



Environmentally friendly refrigerant on all models

- R-134A, R-407C, R-404A, R-410.
- No CFC's or HCFC's, EPA / SNAP Compliant.
- Zero ozone depletion potential.



Condenser

- High quality & efficient corrugatedfin type condenser.
- High efficient inner grooved copper tubes.



Electric drain valve

- Fully automatic & Manual test button.
- Manual drain bypass valve
- Seat material : Viton (Chemical Resistance)
- Suitable for all compressed air system up to any size.



Aluminum heat exchanger

- High efficiency heat exchanger.
- Condensate water separation system.
- Compact size & lightweight.
- Insensitive to corrosion.



Controller

- High quality PCB Control (Over HYD-30N)
- Power / Run / Stop / Fault LED lamp.
- Dew point indication.
- Remote control (option).
- Ref. system flow diagram & monitoring.



Refrigerant compressor

- High efficiency & quality ref. compressor.
- World top class brands.



Upgrade your compressed treatment system with GSA's aftercoolers, refrigerated air dryers, adsorption dryers, drains, filters, chillers and PSA system.

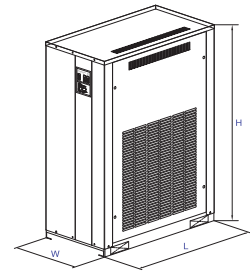


Technical Specifications

Model	Capacity		Max. Pre.	Power Consumption	Ref. Comp.	Air Conection	Power Supply	Dimension (W x L x H)	Weight
	Nm ³ /min	scfm							
H Y D	5N	0.51	18	0.47	1/4	G 1/2	220 / 1 / 60	360 x 470 x 715	35
	7N	0.79	27.9	0.47	1/4	G ½		360 x 470 x 715	35
	10N	1	35.3	0.67	1/3	G ½		360 x 470 x 715	36
	15N	1.53	54	0.67	1/3	G 1		430 x 510 x 710	42
	20N	2.6	91.8	0.67	1/3	G 1		430 x 510 x 710	42
	30N	3.9	138	1.1	3/4	G 1		360 x 660 x 865	66
	50N	6.7	237	1.53	1	G 1 ½	220 / 380 / 440 / 1 / 60	410 x 710 x 955	89
	75N	10.5	371	1.8	1 1/2	G 2		460 x 800 x 1045	120
	100N	14.2	501	2.2	2	G 2	220 / 380 / 440 / 3 / 60	460 x 860 x 1145	126
	150N	21	742	2.7	3	G 2 ½		565 x 1005 x 1330	172
	170N	24	848	2.7	4	FLG 2 1/2		680 x 1200 x 1350	230
	200N	30	1059	3.5	4	FLG 3		680 x 1200 x 1350	240
	250N	39	1377	4.6	5	FLG 3		770 x 1350 x 1370	260
	300N	47	1660	4.6	5	FLG 4		770 x 1350 x 1370	270
	400N	56	1978	9.7	10	FLG 4	1200 x 1500 x 1700	600	
	500N	66	2331	15	15	FLG 6	1200 x 1900 x 1700	940	
	600N	85	3002	15	15	FLG 6	1200 x 1900 x 1700	1100	

- * Notes
- > Refrigerant : R-134A, R-404A, R-407C or R-410
 - > Other electrical frequency is available.
 - > Upon request for above 16bar.
 - > Upon request for customer-engineered products.

The specifications can be changed without notice to improve the quality.



Conversion Factors

Ambient / Cooling water temperature	°C	25	30	32	35	40	50						
Factor	f ₁	1.00	0.95	0.90	0.87	0.82	0.70						
Inlet temperature	°C	30	35	40	45	50	55	60	65				
Factor	f ₂	1.22	1.00	0.83	0.69	0.58	0.49	0.46	0.43				
Operating pressure	bar	5	6	7	8	9	10	11	12	13	14	15	16
Factor	f ₃	0.89	0.94	1.00	1.04	1.06	1.09	1.10	1.12	1.14	1.15	1.16	1.18
Dew point	°C	1.4	3	5	7	10							
Factor	f ₄	1.00	1.08	1.20	1.22	1.26							
Frequency	Hz	50	60										
Factor	f ₅	0.85	1.00										

Example (Calculation of dryer flow rate under deviating conditions)

HYD-30N Volume flow (v)	m ³ /min	3.9	Factor	
Ambient temperature (f ₁)	°C	35	=	0.87
Inlet temperature (f ₂)	°C	40	=	0.82
Operating pressure (f ₃)	bar	12	=	1.12
Frequency (f ₅)	Hz	50	=	0.85

$$= V \times f_1 \times f_2 \times f_3 \times f_4 \times f_5 = 3.9 \times 0.90 \times 0.82 \times 1.12 \times 0.85 = 2.74 \text{ m}^3/\text{min}$$



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