



EXHAUST PURGE REGENERATIVE COMPRESSED AIR DRYER



AN ENERGY SAVER



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An Energy Saver

The SAHARA Exhaust Purge Dryers are simple and efficient. They are the safest and most trouble-free of any heat reactivated regenerative-type dryer.

The SAHARA Exhaust Purge Dryer is a twin tower dryer that delivers dry air with a -40°F pressure dewpoint; a dewpoint lower than that required by the Instrument Society of America. Its conservative design was developed for optimal energy savings with roughly twice the amount of desiccant required to dry air at full design waterload. This assures you of years of superior performance before desiccant aging makes desiccant replacement necessary. Additionally, the optional Dewpoint Demand System optimizes the dryer's energy-saving design, thereby significantly reducing operating costs.

Theory of Operation

Wet compressed air enters the top of the dryer and is directed to the drying tower by one of two solenoid actuated, non-lubricated switching valves. At the outlet of the dryer, 7% of the dry air is directed into an electric heater and heated to 375°F . This hot, dry "purge air" becomes "super dry" as it expands to atmospheric pressure in the regenerating tower where it removes moisture from the saturated desiccant.

After 3 hours of heating, the heater is turned off and the dry purge air is now used to cool the desiccant. After 1 hour of cooling, the regenerating tower is slowly pressurized and the valves are switched so that wet inlet air flows through the dried desiccant. Because we use a full 7% purge rate during our 1 hour cooling cycle, and bypass the heater during cooling, we reduce the temperature and dewpoint spike that occurs with competitive low purge flow, heat-activated dryers.

In models equipped with the Dewpoint Demand System, a dewpoint meter senses desiccant saturation, overrides the timer, and extends the drying cycle.

Safety and Reliability

The SAHARA Exhaust Purge Dryer design stresses safety and reliability. By using an external heater, the SAHARA EP dryers eliminate the problems associated with internal heat-activated dryers. The externally mounted heater is not in contact with the desiccant, which increases desiccant life. In addition, the inconel-sheathed heater is derated to 14 watts per square inch, virtually eliminating the possibility of heater burnout. The heater is controlled by a dual set point indicating temperature controller. Additional protection is provided by a separate thermostat located in the cold zone of the heater.

By using these backup systems, SAHARA eliminates the possibility of heater burnout and, more importantly, safeguards against a catastrophic heater fire.

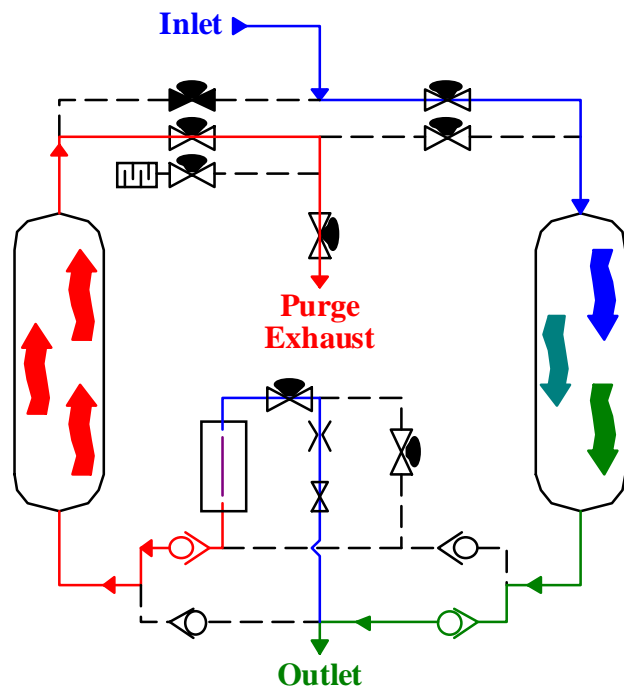


Illustration: Model EP Flow Schematic

Quality Components

Switching Valves

- ◆ Reliable 2-way
- ◆ Non-lubricated
- ◆ Rated bubble-tight shutoff
- ◆ Fire safe
- ◆ 2" & smaller are diaphragm actuated globe valves with valve position indicator
- ◆ 3" and larger are high performance butterfly valves with stainless steel internals and reinforced teflon seat

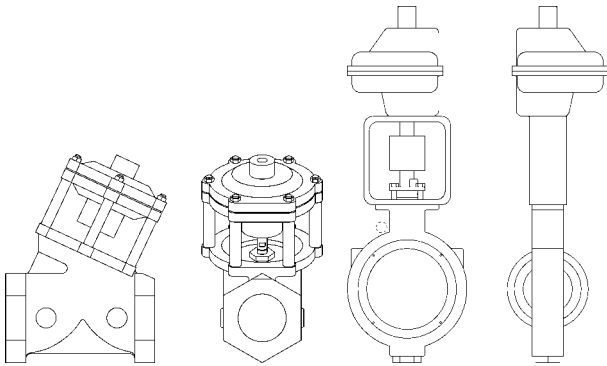


Illustration: Globe Valve & Butterfly Valve

Electrical

- ◆ Standard electrical construction is NEMA 1
- ◆ Other NEMA classes are available
- ◆ UL approved industrial control panels are available

Electric Heater

- ◆ Electric heaters are derated to a maximum of 14 watts per square inch density for longer life
- ◆ Construction material in inconel
- ◆ Power: 460 V / 60 Hz / 3 Phase
- ◆ Heating elements are not in direct contact with the desiccant
- ◆ Bypassed during cooling cycle (Model EP-490 and larger)

Steam Heater (Optional)

- ◆ TEMA rated
- ◆ Bypassed during cooling cycle to minimize fatigue failures
- ◆ Fixed or removable tube bundles available
- ◆ Copper, admiralty, stainless available

Integral Components Included

- ◆ Controls for automatic operation
- ◆ Copper tubing and tubing holders on all pilot air and instrument air lines
- ◆ Separate pilot air filter with pressure gauge and block valve to protect dryer control system
- ◆ Separate controlled blowdown to start regeneration with safety interlock
- ◆ Pressure switch controls purge exhaust valve; prevents heater from being energized until tower is depressurized; prevents catastrophic air loss in the event of valve failure (Model EP-490 and larger)
- ◆ Heater over-temperature alarm light
- ◆ Depressurization mufflers
- ◆ Dual set point indicating temperature controller which regulates heater, dual set point provides safety backup, indicates regeneration temperature
- ◆ Thermostat located in cold zone which provides safety backup in case of low flow
- ◆ Stainless steel desiccant retainers
- ◆ Desiccant fill and drain ports
- ◆ Full one hour cooling cycle to reduce temperature spikes at tower switchover
- ◆ On/Off switch
- ◆ Tower pressure and temperature gauges
- ◆ Heater outlet temperature gauge
- ◆ Heater enabled light

Standard Features

Controlled Blowdown (Model EP-490 and larger)

After switchover, a small blowdown valve opens to slowly and quietly depressurize the chamber to be regenerated. This prevents shocking or fluidization of the desiccant, which can produce unwanted dusting. This blowdown is monitored by a pressure switch in the control system. The large purge exhaust valve will not be opened until the set point of the pressure switch (10 psi) is reached. In addition to preventing desiccant damage, this interlock protects your entire air system, by preventing the purge exhaust valve from opening under pressure. This means that if a check valve or inlet switching valve has failed to close correctly, your entire air system will not be blown to atmosphere.

Reduced Noise Level

By utilizing a muffler on the blowdown, noise levels are kept to a minimum. Our dryer complies with OSHA standards regarding noise tolerance at <85 dBA.

Standard Features (Cont'd.)

Indicating Temperature Controller

Incoloy-sheathed heaters are derated and are directly monitored for over-temperature protection through an independent set of heater temperature controllers, as well as an additional protective thermostat located in the cold zone of the heater for low flow protection. This complete redundancy virtually eliminates the possibility of heater burn-out, or worse, heater fires.

Low Pressure Drop

Excess pressure drop costs money. We design our complete system to keep pressure drop low. We have calculated pressure drop on these dryers at <3 PSID.

Ease of Maintenance

We provide you with a unique feature on our dryer that can make a big difference in your maintenance people's time down the road. When necessary, instead of welding both towers to the structural steel base, we weld one and BOLT the other tower. Valve maintenance is made much simpler by being able to remove one tower.

Standard Options

Sahara Dewpoint Demand System

Sahara's option for increased energy savings reduces operating costs by sensing the dewpoint of the outgoing compressed air, automatically reducing energy consumption to the minimum amount required. A direct-reading dewpoint indicator is also available, allowing you to monitor the exact outlet dewpoint more conveniently.

Indicating Lights

Includes Right Tower Online and Left Tower Online.

Fail-to-Shift Alarm Light

Indication that malfunction has occurred preventing towers from shifting at proper time or dewpoint sequence.

Moisture Indicator

Visual indication of outlet air moisture content by means of color change media.

NEMA 4, 7, or 12 Electrical Construction

Coalescing Prefilter

For optimum performance of a Regenerative Dryer application, we recommend a prefilter upstream of the dryer to protect the desiccant bed from contamination by oil, entrained water, or other contaminants. For this duty, we offer a Sahara High Efficiency (HEF) Oil Coalescing Prefilter. This unit is constructed of carbon steel to ASME standards and is designed to filter oil to 1 PPM and dirt particles to 0.3 micron with a 100 PSIG differential collapse pressure.

Particulate Afterfilter

We recommend an afterfilter downstream of the dryer to eliminate the possibility of desiccant dust carryover into the air system. For this duty, we offer a Sahara Particulate (AF) Afterfilter. This unit is constructed of carbon steel to ASME standards and the cartridges are designed to filter particles to 1.0 micron.

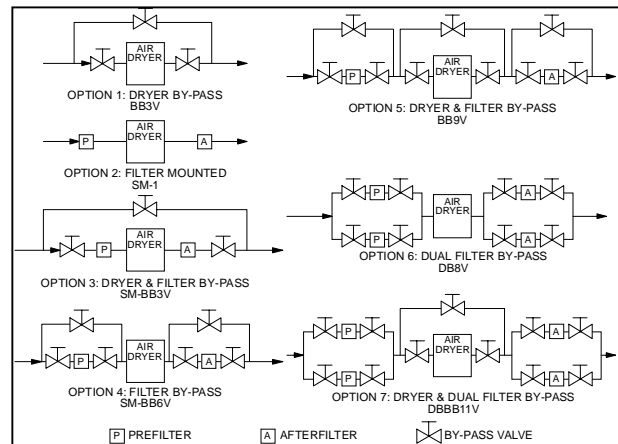
Drain Trap

We recommend utilizing a drain trap on each coalescing prefilter.

Filter Mounting

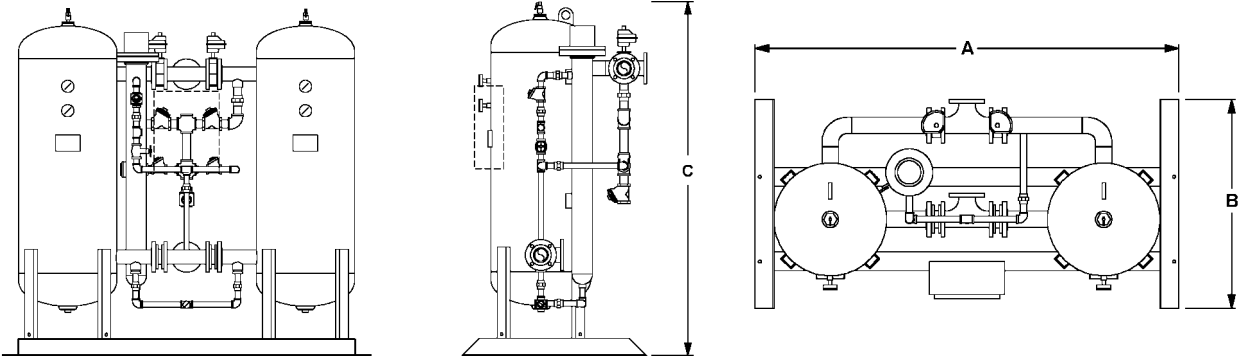
Filters may be mounted on dryer skid for ease of installation.

Bypass



*Bypass Options Legend: SM=Skid Mounted
BB=Block & Bypass
DB = Dual Block
XV = # of Valves*

Specifications & Dimensions



	A = Length (Inches)	B = Width (Inches)	C = Height (Inches)	Approx. Weight (Lbs.)	Conn. Size (Inches)	Purge Rate (SCFM)	Desiccant per Tower (Lbs.)	Heater Size (KW)	Avg. Power (KWH/24 Hrs.)
EP-7	28	8	24	186	¼	.5	4	.5	1
EP-14	28	8	26	197	¼	1	8	.5	1.7
EP-35	45	12	35	384	½	2.5	20	.5	4
EP-56	45	12	42	486	½	4	32	1	6.4
EP-70	58	25 ½	63	486	¾	4.9	40	1	7.8
EP-100	62	33 ½	63	621	1	7.0	60	1	12
EP-140	62	33 ½	63	675	1	9.8	80	2	15.5
EP-210	55	38	63	749	1 ½	14.7	120	2	23.1
EP-280	55	38	63	1097	1 ½	19.6	160	3	30.8
EP-350	66	45	75	1242	2	24.5	200	3	38.5
EP-420	66	45	75	1350	2	29.4	240	4	46.2
EP-490	69	44	74 ½	1566	2	35	280	4	54.9
EP-560	69	44	74 ½	1782	2	40	320	5	62.8
EP-630	82	46	77 ½	2052	3	45	360	5	70.6
EP-700	82	46	92 ½	2160	3	50	400	7.5	78.5
EP-770	90 ¼	46	96	2687	3	54	440	7.5	84.7
EP-840	90 ¼	46	96	2794	3	59	480	7.5	92.6
EP-980	90 ¼	46	85	3145	3	69	560	10	108
EP-1120	90 ¼	46	85	3375	3	78	640	10	122.3
EP-1260	90 ¼	46	85	3591	3	88	720	12	138
EP-1400	103 ½	50 ½	91 ¼	4360	3	98	800	12	153.7
EP-1540	103 ½	50 ½	97	4711	4	108	880	15	169.3
EP-1680	103 ½	50 ½	97	4927	4	118	960	15	185
EP-1820	103 ½	50 ½	97	5197	4	127	1040	15	199.1
EP-1960	103 ½	51 ½	91 ¼	5414	4	137	1120	24	214.8
EP-2100	116	62	109	5994	4	147	1200	24	230.4
EP-2380	116	62	109	6210	4	167	1360	24	261.8
EP-2520	135	48	109	6831	6	176	1400	24	275.9
EP-2660	135	48	109	7047	6	183	1520	24	286.8
EP-2800	135	48	109	7304	6	196	1600	24	307.2
EP-2940	135	48	109	7519	6	206	1680	24	322.9
EP-3080	135	48	109	7735	6	216	1760	30	338.5
EP-3220	135	48	109	8073	6	225	1840	30	352.6
EP-3360	135	48	109	8168	6	235	1920	30	368.3

Ratings are based on 100 PSIG, 100°F.

Other pressures available.

Larger sizes available.

Sahara reserves the right to change this information without notice.



Customer Satisfaction Is Our Commitment

"We have purchased 12 of your air dryers in the past three years. These dryers have worked well for us and have been very functional. They actually perform better than advertised. We routinely generate dry air in the range of -70 to -90 dewpoint which is better than most "bottled" dry air. When compared to other manufacturers the thing that sets your equipment apart from the rest is 'yours works'."

Field Project Manager, Power Company

"Our unit is about 15 years old. Two years ago it had leaky valves and wasn't drying too well. Consequently it got the first PM of it's life. At that time the valves were rebuilt and maybe one was replaced. Since that time it gets regular check-ups but has yet to fail us. Just give it another 13 years."

Utilities Engineer, Food Manufacturer



"This is to let you know that we have been pleased with the performance of our air dryer, Model EP-35. This model has performed well in sub-zero temperatures here in Wyoming. I perform routine maintenance on the system such as, desiccant and elements. I am happy with the system and hope to continue to enjoy a problem-free operation."

Maintenance Manager, Cement Company



SAHARA AIR DRYERS

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