



Series 60 Heatless Desiccant Air Dryers

Kemp's Series 60 heatless desiccant dryers provide a continuous supply of dry compressed air by automatically cycling the flow of air through two desiccant beds. While one bed is adsorbing moisture from inlet air, the other bed is being regenerated by a portion of the dried air with -40°F or -100°F (optional) pressure dew points. Particulate free to an absolute rating of $0.9\ \mu\text{m}$ and a residual oil content of <0.001 ppmw. The system incorporates the prefilter and afterfilter as standard equipment. Series 60 Dryers operate on a standard 10-minute NEMA cycle.

Standard Features

- High efficiency coalescing prefilter
- Particulate removal afterfilter
- Purge Air Mufflers with spare cores
- NEMA Type 4 enclosure
- ASME code vessels
- Pressure relief valves
- Desiccant fill & drain ports
- Adjustable purge air control
- Solid state timer
- Tower indicating and power on lights
- Panel mounted vessel pressure gauges (2)
- Panel mounted purge flow indicator

Available Options

- Series 60 EMS energy management system
- Failure to switch alarm and light with remote alarm contacts
- High humidity alarm and light with remote alarm contacts
- Panel mounted Moisture Indicator – Visual color change
- Panel mounted inlet and outlet pressure gauges
- -100°F Pressure dew point
- Filter packages with block and bypass valves

Simple Controls

- Solid state timer provides reliable and precise control of the dryer
- Lighted schematic indicates which tower is drying
- Power-on light

High Efficiency Prefilters

- Coalescing media potted into end caps to prevent liquid carryover
- Pleated element design with 6 times more surface area
- Maximum remaining oil aerosol content of 0.001 ppmw
- Maximum particle passed: 0.6 micron absolute
- Easy element change-out (no special tools required, no tie rods, nuts or bolts), and the Snap-Lock holds the element in place leaving both hands free to reattach the bowl
- Improved pressure drop indicator with color and numeric indexing and lens-enhanced visibility – just a glance shows when it is time to change the filter element
- Compatible with all common lubricants
- Silicone-free
- Low pressure drop





Series 60 Heatless Desiccant Air Dryers

Operating Conditions for high efficiency prefilters

Maximum operating temperature: 150°F
Maximum recommended filtration temperature: 120°F
Minimum inlet filtration temperature: 34°F

Rating Conditions for high efficiency prefilters

Initial Pressure Drop: 1.5 psid
Wetted Pressure Drop: 2.5 psid
Recommended Filter Element Change-out: 7-10 psid
Filtration Efficiency:
Absolute filtration rating: 0.6-micron maximum particle passed
Maximum remaining oil aerosol content of 0.001 ppmw

Particulate removal Afterfilters

- Maximum particle passed: 0.9 micron absolute
- Element construction eliminates release of fibers into air stream
- Incorporates pleated design with 6 times the surface area to achieve maximum effective element life
- Bonded media prevents channeling and particulate unloading
- Easy element change-out (no special tools required, no tie rods, nuts or bolts), and the Snap-Lock holds the element in place leaving both hands free to reattach the bowl.
- Improved differential pressure indicator with color and numeric indexing, and lens-enhanced visibility – just a glance shows when it is time to change the filter element
- Compatible with all common lubricants
- Silicone-free
- Low pressure drop

Operating Conditions for Particulate removal Afterfilter

Maximum operating temperature: 150°F
Maximum recommended filtration temperature: 120°F
Minimum inlet filtration temperature: 34°F

Rating Conditions for Particulate removal Afterfilter

Initial Pressure Drop: 1 psid
Wetted Pressure Drop: N/A
Recommended Filter Element Change-out: 5 psid
Filtration Efficiency: Absolute filtration rating: 0.9 micron maximum particle passed



Series 60 Heatless Desiccant Air Dryers

Operating Conditions

- Standard inlet operating conditions: 100 psig 100°F, 100% relative humidity
- Inlet air temperature: 40°F - 120°F
- Ambient air temperature: 40°F - 120°F
- Outlet air: -40°F pressure dew point @ standard inlet operating conditions
- Purge rate: 15% @ standard inlet operating conditions

Dryer Sizing Chart

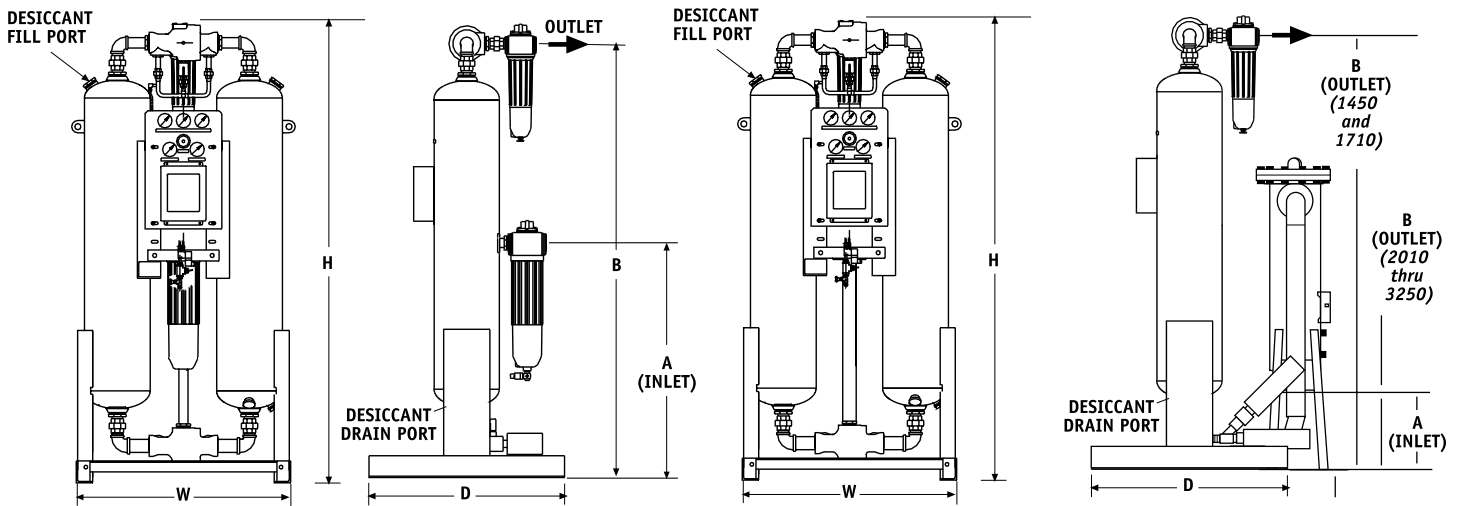
Model	Inlet Air Pressure (psig)										
	30	40	50	60	70	80	90	100	110	125	150
	Average Inlet Air Flow (scfm)										
55PS	21	26	31	36	41	45	50	55	60	67	79
100PS	39	48	56	65	74	83	91	100	109	122	144
160PS	62	76	90	104	118	132	146	160	174	195	230
200PS	78	95	113	130	148	165	183	200	217	244	287
275PS	107	131	155	179	203	227	251	275	299	335	395
350PS	136	167	197	228	258	289	319	350	381	426	503
475PS	185	227	268	309	351	392	434	475	516	579	682
600PS	234	286	338	391	443	495	548	600	652	731	862
800PS	312	382	451	521	591	661	730	800	870	974	1,149
1000PS	390	477	564	651	738	826	913	1,000	1,087	1,218	1,436
1200PS	468	572	677	782	886	991	1,095	1,200	1,305	1,462	1,723
1450PS	565	691	818	944	1,071	1,197	1,324	1,450	1,576	1,766	2,082
1710PS	666	815	965	1,114	1,263	1,412	1,561	1,710	1,859	2,083	2,455
2010PS	783	959	1,134	1,309	1,484	1,660	1,835	2,010	2,185	2,448	2,886
2250PS	877	1,073	1,269	1,465	1,662	1,858	2,054	2,250	2,446	2,740	3,231
2600PS	1,013	1,240	1,467	1,693	1,920	2,147	2,373	2,600	2,827	3,167	3,733
3250PS	1,267	1,550	1,833	2,117	2,400	2,683	2,967	3,250	3,533	3,958	4,667
4435PS	1,729	2,115	2,501	2,889	3,275	3,661	4,049	4,435	4,821	5,401	6,369
5820PS	2,269	2,776	3,282	3,791	4,298	4,805	5,313	5,820	6,327	7,088	8,358
Purge Flow %	38.5	31.5	26.6	23.0	20.3	18.2	16.4	15.0	13.8	12.3	10.4

Temperature Correction Factor (Maintain -40°F dew point)	
Inlet Temperature (°F)	
Temp	Correction
105	0.883
110	0.758
115	0.632
120	0.519

Outlet Dew Point	
Inlet Temperature (°F)	
100	-40°F
105	-35°F
110	-30°F
115	-25°F
120	-20°F



Series 60 Heatless Desiccant Air Dryers



Dimensional Table

Model	Inlet Capacity (scfm)	Shipping Weight (lbs)	W (in)	D (in)	H (in)	A (in)	B (in)	Desiccant Per Chamber (lbs)	Pressure Drop (psid)	Prefilter Model	Inlet Connection (in. NPT)	Afterfilter Model	Outlet Connection (in. NPT)
55PS	55	122	33	27	71	36 1/16	64 7/16	31	3.0	OM95-50-PF	3/4	OM95-50-AF	1/2
100PS	100	262	35	31	73	36 3/4	66 3/8	60	1.2	OM95-100-PF	1	OM95-100-AF	3/4
160PS	160	267	36	31	74	38 5/16	67 9/16	95	3.2	OM95-275-PF	1 1/4	OM95-150-AF	1
200PS	200	569	42	38	89	40 1/16	82 1/4	120	1.4	OM95-275-PF	1 1/2	OM95-275-AF	1
275PS	275	733	42	38	86	43 1/16	79 5/8	165	3.0	OM95-275-PF	2	OM95-275-AF	1 1/4
350PS	350	931	46	48	87	43 1/4	79 3/8	210	1.1	OM95-400-PF	2	OM95-400-AF	1 1/4
475PS	475	1,189	48	48	90	48 1/8	82 3/16	285	1.8	OM95-600-PF	2 1/2	OM95-400-AF	1 1/2
600PS	600	1,473	51	54	94	56 1/8	86 11/16	366	2.7	OM95-600-PF	2 1/2	OM95-600-AF	2
800PS	800	2,134	72	51	113	67 3/16	103 3/4	475	1.3	OM95-800-PF	3	OM95-800-AF	2 1/2
1000PS	1,000	2,414	73	58	114	68	105 5/16	600	2.1	OM95-1000-PF	3	OM95-1000-AF	2 1/2
1200PS	1,200	2,875	75	61	115	68 1/8	106 1/2	725	2.1	OM95-1200-PF	3	OM95-1000-AF	2 1/2
1450PS	1,450	3,722	84	69	116	20	107 1/4	880	3.9	OM95-1600-PF	3 FLG	OM95-1200-AF	3
1710PS	1,710	4,417	84	70	117	20	108 1/2	1,025	4.8	OM95-2000-PF	4 FLG	OM95-1600-AF	3
2010PS	2,010	5,834	88	83	132	20	20	1,200	5.0	OM95-2000-PF	4 FLG	OM95-2000-AF	4 FLG
2250PS	2,250	6,605	90	83	133	20	20	1,366	5.0	OM95-2400-PF	4 FLG	OM95-2000-AF	4 FLG
2600PS	2,600	7,689	91	88	136	21	20	1,567	5.0	OM95-3000-PF	4 FLG	OM95-2400-AF	4 FLG
3250PS	3,250	9,010	95	90	140	21	21	1,975	5.0	OM95-4000-PF	4 FLG	OM95-3000-AF	4 FLG
4435PS	4,435	13,700	127	102	136	21	21	2,495	5.0	OM95-5000-PF	6 FLG	OM95-4000-AF	4 FLG
5820PS	5,820	14,700	138	96	146	21	21	3,205	5.0	OM95-6000-PF	6 FLG	OM95-5000-AF	6 FLG

Performance data obtained and presented in accordance with CAGI standard No. ADF 200. "Dual Stage Regenerative Desiccant Compressed Air Dryers – Methods for Testing and Rating" of 100°F inlet air temperature, 100 psig inlet air pressure, 100°F pressure dew point and 80°F ambient air temperature. Maximum pressure drop across dryer (without filters) is 5 psig. Pressure dew point at standard rating conditions is -40°F. ISO 8573.1 standards rating comply with class 2-2-1 at -40°F dew point, and 2-1-1 at -100°F dew point (option).



Series 60 Heatless Desiccant Air Dryers

Pressure Drop Correction Factors

% Std. Flow	Inlet Air Pressure (psig)											
	60	70	75	80	90	100	110	120	125	130	140	150
20%	0.07	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03
40%	0.28	0.24	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.12	0.11	0.10
50%	0.43	0.37	0.34	0.32	0.28	0.25	0.23	0.21	0.20	0.19	0.17	0.16
60%	0.65	0.56	0.52	0.48	0.43	0.38	0.34	0.31	0.30	0.29	0.26	0.24
80%	1.10	0.94	0.87	0.81	0.72	0.64	0.58	0.52	0.50	0.48	0.44	0.40
90%	1.39	1.19	1.10	1.03	0.91	0.81	0.73	0.66	0.63	0.61	0.56	0.51
100%	1.72	1.47	1.36	1.27	1.12	1.00	0.90	0.82	0.78	0.75	0.69	0.63
120%	2.48	2.12	1.96	1.83	1.61	1.44	1.30	1.18	1.12	1.08	0.99	0.91
140%	3.37	2.88	2.67	2.49	2.20	1.96	1.76	1.61	1.53	1.47	1.35	1.23
150%	3.87	3.31	3.06	2.86	2.52	2.25	2.03	1.85	1.76	1.69	1.55	1.42
160%	4.40	3.76	3.48	3.25	2.87	2.56	2.30	2.10	2.00	1.92	1.77	1.61
180%	5.57	4.76	4.41	4.11	3.63	3.24	2.92	2.66	2.53	2.43	2.24	2.04
200%	6.88	5.88	5.44	5.08	4.48	4.00	3.60	3.28	3.12	3.00	2.76	2.52

Instructions:

Multiply the dryer pressure drop (refer to dimensional table) at design conditions (100 psig, 100°F & 100% RH) by the correction factors from Pressure Drop Correction Factors chart above.

Example: 1000PS = 2.1 psig at design conditions, Customer operating at 900 scfm, 125 psig and 110°F Inlet Air Temp.
900 scfm / 1,000 scfm = 90%

Go to 90% of rated flow row (located on left column) and locate the 125 psig column. The correction factor shown is 0.63
Multiply factor (0.63) by pressure drop (2.1 psig) at design conditions and you will obtain the approximate pressure drop at your rated conditions: (0.63 x 2.1 psig) = 1.3 psig pressure drop

Note: The pressure drop is approximate and is not guaranteed.



Series 60 Heatless Desiccant Air Dryers

How the Shuttle Valve Works (Series 60)

Shuttle Valve

- Are designed and manufactured by Flair
- Are virtually maintenance free, having only one moving part
- Are actuated by the difference in air pressure on each end of the shuttle
- The Series 60 air flow schematic shows the location of the inlet shuttle valve

Cycle Status

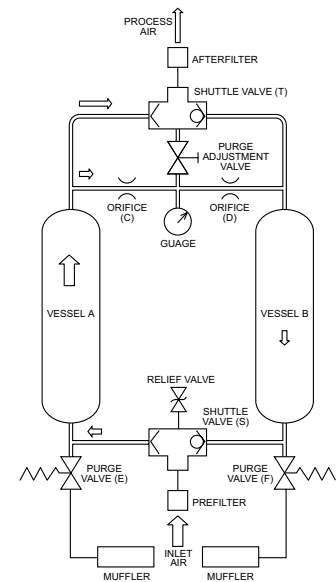
- Purge valve E closed and vessel A on stream
- Purge valve F open and vessel B regenerating

Shuttle Valve Operation

- Pressure exerted on the left face of the shuttle line is line pressure (inlet air)
- Pressure exerted on the right face of the shuttle is atmospheric pressure (0 psig). The Series 60 shuttle remains in this position for 4 min. 15 seconds.

Basic Operation

- Wet compressed air enters at dryer inlet exerting pressure on the left face of the shuttle, which directs air to onstream vessel.
- Pressure exerted on the right face of the shuttle is atmospheric pressure (0 psig). The Series 60 shuttle remains in this position for 4 minutes 15 seconds
- Timer deactivates purge valve F. With valve F closed, inlet air at line pressure gradually repressurizes vessel B for 45 seconds
- Timer activates purge valve E. With valve E open, vessel A depressurizes for 15 seconds or less.
- Dry air exits on stream vessel and divides into two streams: process air and purge air.
- Line pressure is now exerted on the right face of the shuttle, and atmospheric is exerted on the left face.
- The difference in pressure pushes the shuttle to the left; inlet air is directed to vessel B, which is then on stream.





Series 60 Heatless Desiccant Air Dryers

- Heat of adsorption stored in vessel A during previous cycle desorbs moisture from desiccant.
- Purge air passes through orifice in vessel interconnecting piping and expands to atmospheric pressure.
- Expanded purge air, flows through off stream vessel, picking up desorbed moisture.
- Moist purge air is exhausted to atmosphere through muffler.
- Purge exhaust valve closes; off stream vessel reaches pressure of inlet air.
- Sequence is repeated every 5 minutes