

KDF Series

Single Tower Desiccant Compressed Air Dryer

Models: 1, 2, 3, 4

INSTRUCTION MANUAL

GENERAL SAFETY INFORMATION

⚠ CAUTION

1. PRESSURIZED DEVICES:

This equipment is a pressure containing device.

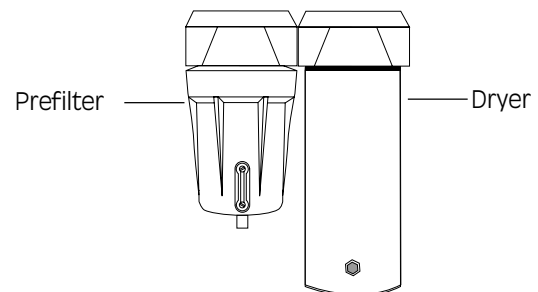
- Do not exceed maximum operating pressure as shown on equipment serial number tag.
- Make sure equipment is depressurized before working on or disassembling it for servicing.

2. BREATHING AIR:

- Air treated by this equipment may not be suitable for breathing without further purification. Refer to OSHA standard 1910.134 for the requirements for breathing quality air.

1.0 GENERAL DESCRIPTION

Silica gel desiccant dryers are designed to lower the dew point of compressed air. They consist of a filter housing filled with silica gel desiccant through which air passes. As the air passes across the silica gel desiccant, moisture is adsorbed into the pores of the silica gel, reducing the moisture content (dew point) of the outlet air. Once the silica gel desiccant reaches a level of saturation that causes the outlet dew point to rise above an acceptable level, the silica gel desiccant can be either replaced or regenerated by baking in an oven.



2.0 INSTALLATION

A. Location:

The dryer should normally be placed upstream of a reducing valve (regulator). For longest service life, all liquid moisture in the air line must be removed prior to the dryer inlet.

B. Flow Direction:

▲ CAUTION Check that the unit is piped so that flow is in the proper direction as indicated by the arrows on the dryer head.

C. Silica gel desiccant:

Silica gel desiccant is shipped in a separate container. Before operating dryer, follow the steps to fill dryer with initial charge of silica gel desiccant:

1. Push up and rotate the bowl 1/8th of a turn counter-clockwise to remove the bowl from the head.
2. Fill bowl with new silica gel desiccant supplied with unit, being careful not to get any desiccant down transfer tube.
Model KDF1 requires 1 lb of silica gel desiccant.
Model KDF2 requires 2 lbs of silica gel desiccant.
Model KDF3 requires 4 lbs of silica gel desiccant.
Model KDF4 requires 6 lbs of silica gel desiccant.

NOTE: Dry (good) silica gel desiccant is translucent white with blue beads interspersed. If the silica gel desiccant is pink or no blue beads are present then the silica gel desiccant must be replaced or regenerated.

C. Silica Gel Desiccant Life:

Table 1 shows the theoretical life of the unit at the stated operating conditions. Life of the silica gel desiccant will vary depending on inlet flow, pressure and temperature. Check with your local representative if additional operational information is required.

D. Sight Glass – Moisture Indicator:

The silica gel desiccant is to be changed or regenerated when the moisture indicator changes from blue (good) to white (silica gel desiccant saturated).

E. Regeneration of silica gel desiccant:

To regenerate the silica gel desiccant, bake the desiccant for 4 hours at 250°F (121°C). Successfully regenerated silica gel desiccant will be translucent white with blue beads interspersed.

F. Determining outlet dew point. With completely dry silica gel desiccant, dryer outlet dew point is a function of inlet temperature. While the silica gel desiccant is adsorbing moisture a relatively constant dew point is maintained until the desiccant bed nears saturation. At this point the dew point begins to rise rapidly. Table 2 shows the relationship of the inlet temperature to outlet dew point with dry silica gel desiccant.

3.0 OPERATION

A. Paint Gun Arrangements with the Dryer Systems

Model	Rated Flow	Spray Gun Type	Number of Guns
KDF1	5	Detail or small pressure feed	1
KDF2	10	Pressure or gravity feed	1
KDF3	20	HVLP	1
KDF4	30	HVLP	2

B. Maximum scfm (m³/hr) at various operating pressures

Model	Pressure psig (bar)						
	20 (1.4)	40 (2.8)	60 (4.1)	80 (5.5)	100 (6.9)	150 (10.3)	200 (13.8)
KDF1	1.5 (2.6)	2.4 (4.1)	3.3 (5.5)	4.1 (7.0)	5.0 (8.5)	7.2 (12.2)	9.4 (15.9)
KDF2	3.0 (5.1)	4.8 (8.1)	6.5 (11.1)	8.3 (14.0)	10.0 (17.0)	14.4 (24.4)	18.7 (31.8)
KDF3	6.1 (10.3)	9.5 (16.2)	13.0 (22.1)	16.5 (28.1)	20.0 (34.0)	28.7 (48.8)	37.4 (63.6)
KDF4	9.1 (15.4)	14.3 (24.3)	19.5 (33.2)	24.8 (42.1)	30.0 (51.0)	43.1 (73.2)	56.2 (95.4)

TABLE 1

Inlet Pressure = 100 psig (7 bar)

Rated Life at Stated Flow = 500 minutes (8 hrs 20 min)

Inlet Temperature = 70°F (21°C)

Relative Humidity = 100%

Model	Rated scf (m ³)
KDF1	2,500 (71)
KDF2	5,000 (142)
KDF3	10,000 (283)
KDF4	15,000 (425)

TABLE 2

Outlet dew point* with dry silica gel desiccant

Inlet Temp. °F (°C)	35 (1.7)	40 (4.4)	50 (10.0)	60 (15.6)	70 (21.1)	80 (26.7)	90 (32.2)	100 (37.8)	110 (43.3)	120 (48.9)
Outlet A.D.P.* °F (°C)	-60 (-51.1)	-55 (-48.3)	-50 (-45.6)	-45 (-42.8)	-40 (-40.0)	-35 (-37.2)	-30 (-34.4)	-25 (-31.7)	-20 (-28.9)	-15 (-26.1)

* Atmospheric Dew Point

4.0 MAINTENANCE

NOTE: If prefilter unit present, check system at least once per day to ensure proper drainage.

Changing silica gel desiccant:

1. Isolate dryer from system by opening by-pass valve (if one is installed) and closing inlet and outlet valves.
2. **⚠ CAUTION** Depressurize dryer before servicing. Loosen bottom plug after unit has been isolated to depressurize the dryer. Re-tighten once depressurized.
3. Push up and rotate the bowl 1/8th of a turn to remove the bowl from the head.
4. Dump old silica gel desiccant out of bowl. (Saturated Silica Gel Desiccant will appear pink in color)
5. Refill bowl with new or regenerated silica gel desiccant being careful not to get any desiccant down transfer tube.

Model KDF1 requires 1 lb of replacement silica gel desiccant.

Model KDF2 requires 2 lbs of replacement silica gel desiccant.

Model KDF3 requires 4 lbs of replacement silica gel desiccant.

Model KDF4 requires 6 lbs of replacement silica gel desiccant.

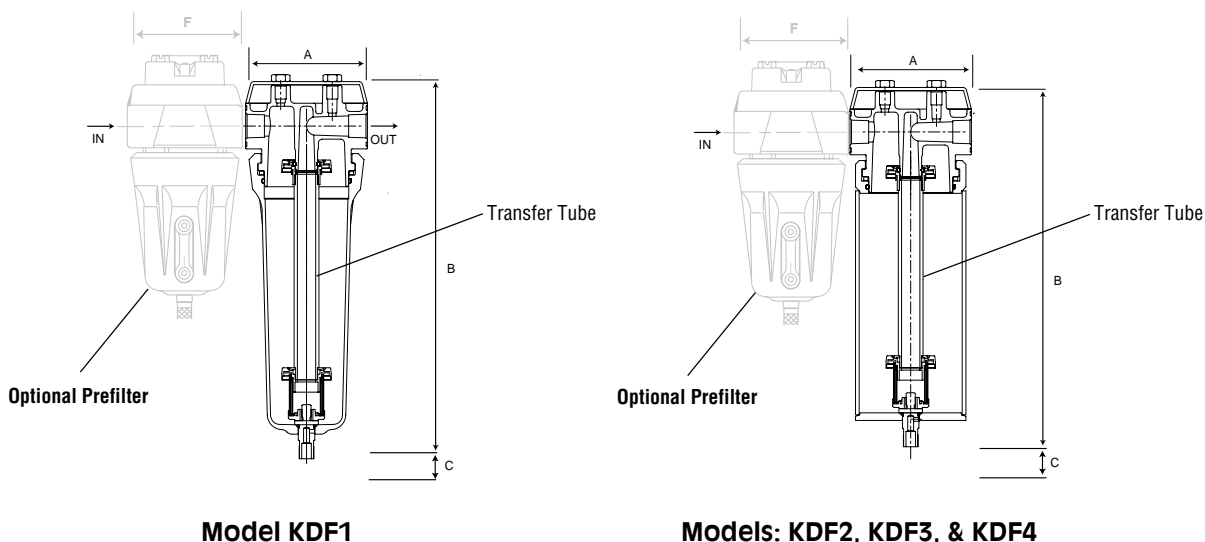
NOTE: Silica gel desiccant beads are non-toxic and non-flammable.

6. It is recommended that the transfer tube assembly be cleaned with soap and water with each silica gel desiccant change. However, this is not necessary as long as pressure drop across dryer remains within acceptable limits.
7. Reassemble bowl to head making sure that o-ring in the bowl is in place and lightly lubricated.
8. Repressurize, by **slowly** opening inlet valve, then opening outlet valve, and finally closing by-pass valve. (If installed)

5.0 SPECIFICATIONS

DIMENSIONS & WEIGHTS				
Model Number	KDF1	KDF2	KDF3	KDF4
Nominal Air Flow scfm (m ³ /min) @ 100 psig (7 bar)	5 (0.14)	10 (0.28)	20 (0.57)	30 (0.85)
In/Out Connection (NPTF)	1/4"	1/4"	1/2"	1/2"
Bowl Type	Aluminum			
A in (mm)	4.13 (105)	4.13 (105)	4.13 (105)	4.13 (105)
B in (mm)	12.62 (321)	12.03 (305)	20.25 (514)	28.08 (714)
C in (mm)	3.0 (76)	3.0 (76)	3.0 (76)	3.0 (76)
F in (mm) (optional prefilter)	4.13 (105)	4.13 (105)	4.13 (105)	4.13 (105)
Weight, Unit lb (kg)	13.0 (5.9)	15.0 (6.8)	19.5 (8.9)	22.5 (10.2)
Weight, Unit lb (kg) (with prefilter)	4.14 (1.88)	4.14 (1.88)	4.14 (1.88)	8.1 (3.67)
Weight, Silica Gel Desiccant Refill lb (kg)	1.0 (0.45)	2.0 (0.9)	4.0 (1.8)	6.0 (2.7)
Max. Operating Pressure psig (bar)	200 (14)	200 (14)	200 (14)	200 (14)
Max. Operating Temperature	125°F (52°C)	125°F (52°C)	125°F (52°C)	125°F (52°C)
Silica Gel Desiccant Replacement P/N	KSG1	KSG2	KSG3	KSG4

NOTE: Dimensions and weights are for reference only. Request certified drawings for construction purposes.



WARRANTY

The manufacturer warrants the products manufactured by it, when properly installed, operated, applied, and maintained in accordance with procedures and recommendations outlined in manufacturer's instruction manuals, to be free from defects in material and workmanship for a period of one (1) year from the date of shipment to the buyer by the manufacturer or manufacturer's authorized distributor, or eighteen months from the date of shipment from the factory, whichever occurs first, provided such defect is discovered and brought to the manufacturer's attention within the aforesaid warranty period.

The manufacturer will repair or replace any product or part determined to be defective by the manufacturer within the warranty period, provided such defect occurred in normal service and not as a result of misuse, abuse, neglect or accident. Normal maintenance items requiring routine replacement are not warranted. The warranty covers parts and labor for the warranty period. Repair or replacement shall be made at the factory or the installation site, at the sole option of the manufacturer. Any service performed on the product by anyone other than the manufacturer must first be authorized by the manufacturer.

Unauthorized service voids the warranty and any resulting charge or subsequent claim will not be paid.

Products repaired or replaced under warranty shall be warranted for the unexpired portion of the warranty applying to the original product.

The foregoing is the exclusive remedy of any buyer of the manufacturer's product. The maximum damages liability of the manufacturer is the original purchase price of the product or part.

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**AUTHORIZATION FROM THE SERVICE DEPARTMENT IS NECESSARY
BEFORE MATERIAL IS RETURNED TO THE FACTORY OR IN-WARRANTY REPAIRS ARE MADE.**



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