CDHM Series

HEATLESS DESICCANT AIR DRYERS
3 – 50 SCFM

- Lightweight Modules
- Self-Sufficient Design
- "T" Type Connection
- Durable
- Replaceable Membrane Bundle

CHAMPION®

Desiccant Air Treatment Technology

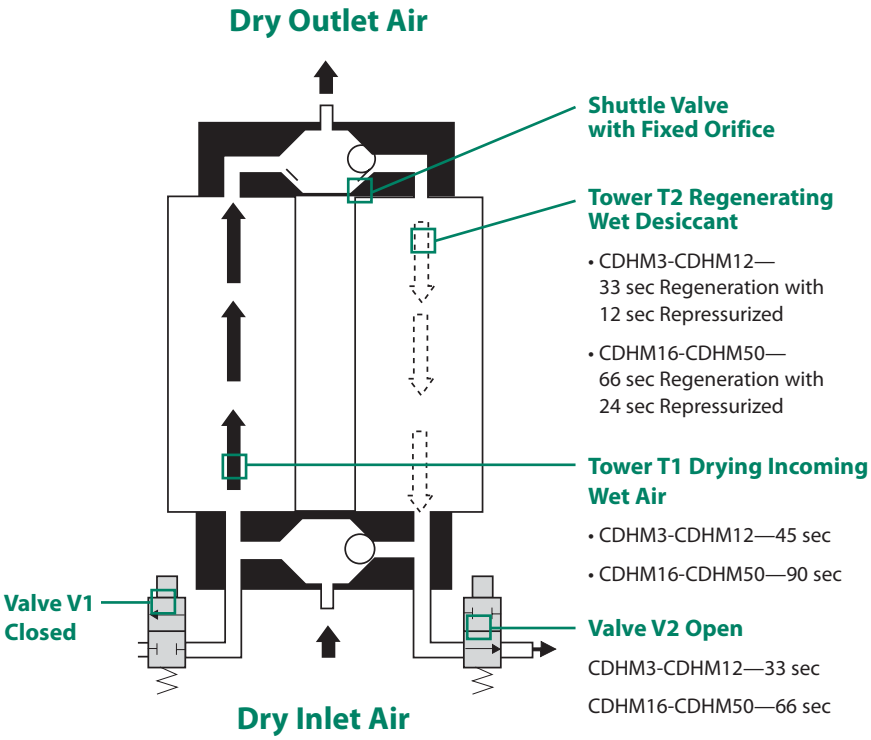
DRYER OPERATION

The CDHM Series Air Dryers use the proven "Pressure Swing Adsorption" (PSA) method for drying wet compressed air. This requires having two identical towers containing hygroscopic desiccant.

Incoming wet air enters the dryer through a shuttle valve where it is directed to the bottom of the tower containing dry desiccant. The desiccant in this tower removes *99.7+%* of the water vapor from the air when operated at catalog conditions. The dried air leaving the top of the tower is directed to the outlet through a second shuttle valve. In this outlet shuttle valve a built-in orifice allows a portion of the dried air to flow into the other tower being regenerated. The orifice reduces the high pressure air down close to atmospheric pressure which lowers the dew point of the dried air even further.

The tower being regenerated/ purged of moisture is connected to an energized solenoid valve for a controlled period of time. The electrical signal to the solenoid is monitored by an LED light on the solid state timer. After the desiccant is regenerated, the timer shuts off the power to the solenoid valve. Air continues to flow through the orifice to repressurize the regenerated tower to line pressure. The middle light on the timer indicates the repressurization function.

Next, the timer opens the valve on the tower containing the wet desiccant. This shifts the shuttle valve balls, and the tower with the wet desiccant is regenerated while the other tower continues to dry the air. Examining the flow schematic to the right demonstrates the air dryer process operation.



ORDERING INFORMATION

CDHM ☐ — ☐ ☐ ☐

Flow SCFM
- 3
- 6
- 9
- 12
- 16
- 25
- 35
- 50

Voltage
- 1 = 115/1/50/60
- 2 = 230/1/50/60

Performance
- 1 = **Standard Conditions** - Purge orifice drilled for 100 psi, 100° F, -40° PDP.
- 2 = **Non-Standard Conditions** - Need to specify the following for sizing fixed purge orifice: *Inlet Pressure, Inlet Temperature, Inlet SCFM, Outlet Dew Point.*

Options
- E = Electronic Humidity Alarm with Shut-off Valve
- X = Explosion-Proof Control Box (cannot be ordered with Option E)

Experience Energy Savings

WITH CHAMPION'S UNIQUE START/STOP PURGE CONTROL

NEMA 4 Control Box

CDHM SERIES STANDARD DESIGN FEATURES

- Solid state timer with led display for visual monitoring and built in timer memory.
- Low air velocity through the desiccant for more efficient drying.
- Large internal air passages to reduce pressure drop.
- Nema 4 components (protects against water spray and dust).
- Minimal threaded connections, for fewer leak points than competitive units.
- Components are all easily serviced and field replaceable. (No special tools.)
- 3-Year limited warranty (parts only — excluding contaminated desiccant and solenoid wear parts).
- Repressurization before tower switch-over causes less shocking of the desiccant and no pressure drop at switch over.
- No plug mufflers. (Will not rupture or reduce dryer efficiency.)
- 6-Ft. Electric power cord.

RECOMMENDED OPTIONS, SHIPPED LOOSE

Model Number	Dryer/ Filter 3-Valve By-Pass	Filter Kit	High Humidity Alarm Panel	Moisture Indicator	Tower Pressure Gauges	Floor Stand Kit
CDHM3	CBPIPE	CDF-12	CHHUMAL	CMIND	CTPRESS	CFSTAND
CDHM6	CBPIPE	CDF-12	CHHUMAL	CMIND	CTPRESS	CFSTAND
CDHM9	CBPIPE	CDF-12	CHHUMAL	CMIND	CTPRESS	CFSTAND
CDHM12	CBPIPE	CDF-12	CHHUMAL	CMIND	CTPRESS	CFSTAND
CDHM16	CBPIPE1	CDF-25	CHHUMAL	CMIND1	CTPRESS1	CFSTAND1
CDHM25	CBPIPE1	CDF-25	CHHUMAL	CMIND1	CTPRESS1	CFSTAND1
CDHM35	CBPIPE1	CDF-50	CHHUMAL	CMIND1	CTPRESS1	CFSTAND1
CDHM50	CBPIPE1	CDF-50	CHHUMAL	CMIND1	CTPRESS1	CFSTAND1

Notes: All options listed in chart are shipped loose to be installed by customer. Dryer/Filter 3-Valve By-pass Piping kit does not include filters. Filter Kit includes 5 micron and 0.01 micron prefilters and a 1.0 micron afterfilter. High Humidity Alarm Panel includes a local alarm light and dry contacts.

SPECIFICATIONS

Voltage.....115/1/50/60 or 230/1/50/60
Maximum Inlet Temperature..... 120° F
Minimum Ambient Temperature.....32° F
Maximum Inlet Pressure.....150 psig
Inlet Filtration Recommended..5 micron and .01 micron (Coalescing)
Outlet Filtration Recommended ..... 1 micron (Particulate)

UNIQUE ENERGY SAVING DESIGN

Can start and stop dryer with a compressor or point-of-use equipment to eliminate purge loss when off.

SOLID STATE MEMORY

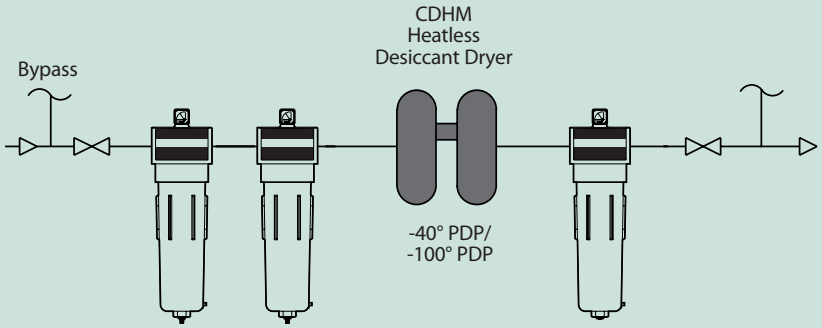
Starts dryer where it left off in drying cycle to prevent wet air downstream.

DIMENSIONS

Model	Dimensions (inches)				*In SCFM	Out SCFM	Diff. Pressure	Wt (lbs)	In/Out (NPT)
	H	D	W	P					
CDHM3	12.0	6.5	5.0	9.3	3.0	2.2	2.0	8.0	⅜"
CDHM6	17.0	6.5	5.0	13.0	6.0	4.4	2.5	9.0	⅜"
CDHM9	16.0	6.5	5.0	12.1	9.0	6.6	2.75	10.0	⅜"
CDHM12	19.0	6.5	5.0	14.9	12.0	8.8	3.0	11.0	⅜"
CDHM16	28.0	9.0	6.2	20.7	16.0	12.6	2.0	29.0	½"
CDHM25	36.0	9.0	6.2	29.5	25.0	19.6	2.5	34.0	½"
CDHM35	41.0	10.0	6.6	33.4	35.0	27.3	2.75	49.0	½"
CDHM50	41.0	10.0	6.6	33.4	50.0	39.2	3.0	65.0	½"

*Standard flows (SCFM) at 100 psig and 100° F inlet with -40° F pressure dew point. Consult Factory for -100° F dew point and performance at other inlet pressures (50-150 psi).

TYPICAL COMPRESSED AIR SYSTEMS



Filter Kit Option

Prefilter 5 micron prefiltration to refrigerated dryer; higher efficiency, coalescing point-of-use.

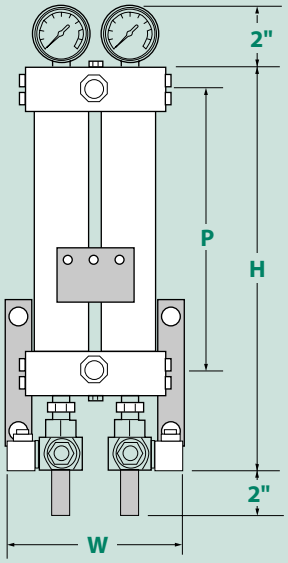
Prefilter 0.01 micron high efficiency coalescing oil removal after refrigerated dryer; upstream of desiccant dryers.

Afterfilter 1 micron reverse flow; Afterfilter to heatless desiccant dryer.

Ask your Champion distributor about utilizing condensate management systems.

APPROXIMATE CFM RATINGS PER COMPRESSOR HP

Compressor HP	Reciprocating Compressor Pressure			Rotary Screw Compressor Pressure			
	125	175	250	100	125	150	175
1½	6	5	—	—	—	—	—
2	8	9.5	—	—	—	—	—
3	11	10	8	—	—	—	—
5	19	17	14	—	19	16	—
7½	25-30	24-26	19-21	32	27	22	—
10	37	35	28	42	37	30	27
15	50-59	49-54	43-46	63	55	48	39
20	92	77	64	86	76	69	57
25	102	90	77	108	93	80	70
30	102	101	90	130	112	100	85
40	—	—	—	180	159	136	115
50	—	—	—	220	192	175	150



Shown with optional tower pressure gauges

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Due to Champion's continuing product development program, specifications and materials are subject to change without notice or obligation.