COOL refrigeration air dryers

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Chicago Pneumatic

COOL REFRIGERATION AIR DRYERS

The drying process

Refrigeration dryers use a refrigerant gas in order to cool the compressed air. As a result the water from the air condenses and can be removed. With this technique we can reach in the COOL range a pressure dew point of 7 °C. As a result, the refrigeration technology is by far the most used dryer technology, complying for more than 95 % of industrial applications. Refrigerant dryers are commonly used with pneumatic applications and in the general industry (e.g. engineering, steel, paper, tannery, garage).

Main benefits

- Remove the water pollution from your network
- Refrigeration dryer is a simple, low maintenance technology
- Extremely easy to install
- Very compact equipment fits in a minimum space
- Low maintenance requirement
- Compatible with any compressor technology
- Very low energy consumption
- Check your air quality with the dew point indicator
- Higher final product quality
- Increase your overall productivity

Risks to avoid

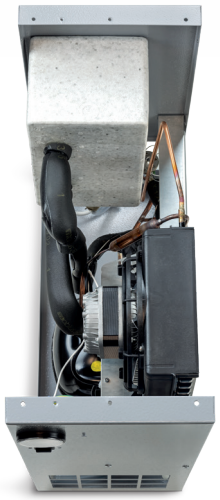
Humid, unclean compressed air can cause:

- Corrosion, pollution, leakage and rust of the air net (pipes) and the downstream equipment/tools
- Costly interruptions of the production
- A decreased efficiency of the equipment/tools used
- Reduction of the life span of all equipment involved
- Risk of water contamination in the air network, with potential freezing in winter time
- Increased maintenance costs
- Lower quality of the final product and potential risk of product recalls

Compact & efficient

The COOL range offers reliable components in a simple vertical lay-out:

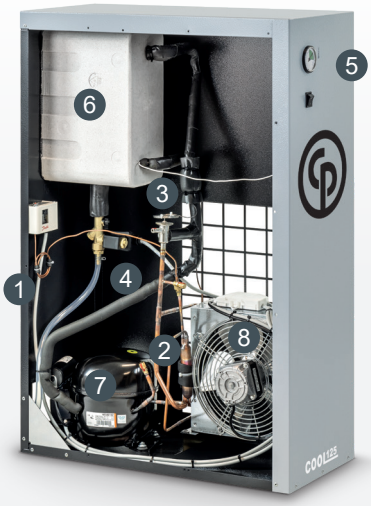
- Simple to install and easy to operate
- Easy access for quick servicing resulting in low maintenance costs
- Efficient cooling system
- Flexible transportation
- Small footprint
- Stable dew point



Applications

- Pneumatic tools and equipment
- Pneumatic control systems
- Painting application
- Packaging
- Injection molding
- Car shop
- Tire inflation

Components



1. **Capillary tube** in order to considerably reduce the pressure and temperature of the refrigerant, improving the cooling process.
2. **Refrigerant filter** in order to protect the capillary from some possible dirty particles.
3. **Hot gas by-pass valve**:
   - Injects hot gas from compressor discharge into suction / liquid separator
   - Keeps refrigeration capacity in all load conditions
   - Maintains constant pressure in the evaporator, avoiding freezing
4. **Timer drain** ensures a proper drain of the condensate.
5. **Control panel**: PDP indicator (green zone) & main on-off switch.
6. **Air/Air** and **Air/Refrigerant Heat Exchanger** with high thermal exchange and low load losses. Integrated water separator allows a highly efficient water-air separation.
7. **Refrigerant compressor** driven by an electric motor, cooled using refrigerant fluid and protected against thermal overload.
8. **Refrigerant condenser** air-cooled and with a large exchange surface for high thermal exchange.

Technical table

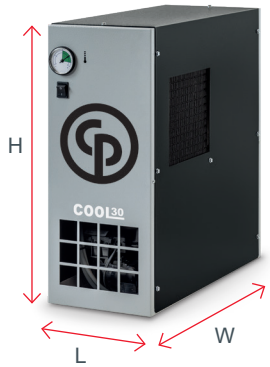
Type	Air Treatment Capacity [1]			R410A - 50Hz		R513A - 50Hz		R513A - 60Hz		Inlet / Outlet connections	Dimensions (mm)	Weight up to
				Power consumption [1]	Voltage	Power consumption [1]	Voltage	Power consumption [1]	Voltage			
	l/min.	m³/h	cfm	W	V/Ph/Hz	W	V/Ph/Hz	W	V/Ph/Hz	gas/DN	L x W x H	kg
COOL 10	350	21	12,4	–	–	130	230/1/50	140	230/1/60	1/2 F	233 x 550 x 561	22
COOL 20	600	36	21,2	–	–	135	230/1/50	144	230/1/60	1/2 F	233 x 550 x 561	22
COOL 30	850	51	30	–	–	167	230/1/50	147	230/1/60	1/2 F	233 x 550 x 561	25
COOL 40	1200	72	42,4	–	–	286	230/1/50	202	230/1/60	1/2 F	233 x 550 x 561	25
COOL 60	1800	108	63,6	–	–	372	230/1/50	297	230/1/60	1/2 F	233 x 550 x 561	27
COOL 80	2150	129	76	–	–	337	230/1/50	393	230/1/60	3/4 F	233 x 550 x 561	32
COOL 100	3000	180	106	–	–	419	230/1/50	459	230/1/60	1" F	233 x 559 x 561	31
COOL 125	3600	216	127	–	–	675	230/1/50	730	230/1/60	1" F	310 x 706 x 994	47
COOL 150	4100	246	145	–	–	735	230/1/50	756	230/1/60	1" 1/2 F	310 x 706 x 994	54
COOL 180	5200	312	184	702	230/1/50	623	230/1/50	751	230/1/60	1" 1/2 F	310 x 706 x 994	66
COOL 225	6500	390	230	746	230/1/50	645	230/1/50	778	230/1/60	1" 1/2 F	310 x 706 x 994	65
COOL 270	7700	462	272	954	230/1/50	794	230/1/50	957	230/1/60	1" 1/2 F	310 x 706 x 994	69

Reference conditions[1]

- **Operating pressure:** 7 bar (100 psi)
- **Inlet temperature:** 35 °C
- **Room temperature:** 25 °C
- **Pressure dewpoint:** 7 °C

Limit conditions:

- **Working pressure:**
  16 bar COOL 10-125 / 14 bar COOL 150-270
- **Inlet temperature:** 50 °C
- **Min/Max room temperature:** +5 °C; +40 °C



Correction factor for conditions differing from the project K = A x B x C

Room temperature	°C	**25**	30	35	40
	A	**1,00**	0,92	0,84	0,80

Inlet temperature	°C	30	**35**	40	45	50
	B	1,24	**1,00**	0,82	0,69	0,54

Operating pressure	bar	5	6	**7**	8	9	10	11	12	13	14	15	16
	C	0,90	0,96	**1,00**	1,03	1,06	1,08	1,10	1,12	1,13	1,15	1,16	1,17

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