AIR 2 O | NATURE'S AIR CONDITIONER

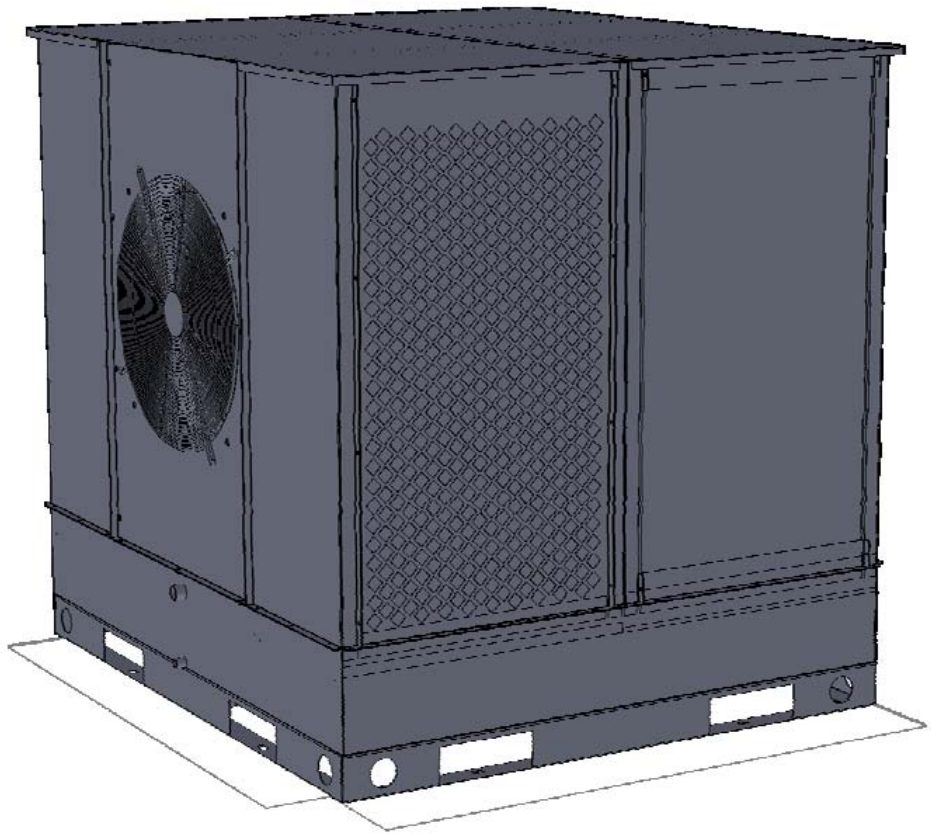
TECHNICAL GUIDE

Model # CRS-2500 220v 1PH, 50/60 HZ

Description

CRS-2500 *IDEC* coolers are designed for outdoor installation. Only utility and duct connections are required at the point of installation.

Field-installed Thermostat is required (Single phase only)



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Features and Benefits:

- **Advanced technology** achieves 120%+ wet bulb depression effectiveness.
- **Lower Installation Cost** - Installation time and costs are reduced by easy power and control wiring connections. The small base dimension means less space is required on the ground or roof
- **Utility Connections Made Easy** - Electric utility knockouts are provided through the side of the unit. Utility connections can be made quickly and with a minimum amount of field labor. An electrical disconnect switch must be installed (not included).
- **Control interface** uses any Universal Thermostat with a "O" terminal. Auxiliary functionality is included.
- **Low Operating Sound Level** - The cross directional air flow carries the normal operating noise down and away from the surroundings. The rigid filter panel effectively isolates motor sound.
- **Mist Eliminator-** prevents water carry over
- **Water sump** – Stainless steel non-corrosive pan
- Factory wired and tested prior to shipment.
- **Durable Finish** – 18 Gauge galvanized steel (G90) cabinet powder coated with a neutral color.
- Primary air adds moderate humidity compared to a single stage cooler and it is not as dry as a conventional air conditioner.
- Provides excellent ventilation and may be used in a similar manner as a whole house fan when conditions permit (optional outdoor thermostat required see Bypass 1 in wiring diagram).
- Automatic daily dry out cycle
- Automatic water refresh cycle to prevent TDS build up

Specifications:

GENERAL Units shall be factory assembled, single packaged designed for outdoor installation. The units shall be factory wired, piped and tested prior to shipment. All wiring shall be color coded.

UNIT CABINET Unit cabinet shall be constructed of 18 gauge galvanized (G90) steel with powder coated finish. Cabinet panels shall be "large" size, easily removable for servicing and maintenance. The wet section shall be constructed from 304 stainless steel.

BLOWER ASSEMBLY Fan shall be a direct drive, constant torque 1hp motor. The fan wheel shall be of the non-overloading backward inclined centrifugal type. Wheels shall be statically and dynamically balanced to operate smoothly throughout the entire range of operation. Airflow design shall be constant air volume. Bearings shall be sealed and permanently lubricated for longer life and no maintenance. Fan assembly shall be accessible via removable service panel.

POWER CONTROLS shall be mounted in a control box, allowing easy access for trouble shooting and maintenance without affecting the normal system operation.

MECHANICAL ACCESS Unit shall have large, easily removable panels, covering electrical controls and mechanical areas, allowing easy access for any necessary maintenance or servicing.

PUMPS shall be mounted, piped and tested prior to shipment and include water level protection.

ELECTRICAL REQUIREMENTS All unit power wiring shall enter unit cabinet at a single factory provided location. Separate openings shall be provided for the control wiring.

NOTE: We do not recommend the use of any chemicals on our pads. Following the guidelines in our "Cooling Pad Checklist" should help to control most problems. If you still have problems, you may consider using an Ammonium Chloride based product like EVAP100, Greenshield, Sani-Clean, or Bearcat. DO NOT USE CHLORINE, BROMINE, CLOROX, OR PRODUCTS BASED THESE CHEMICALS.

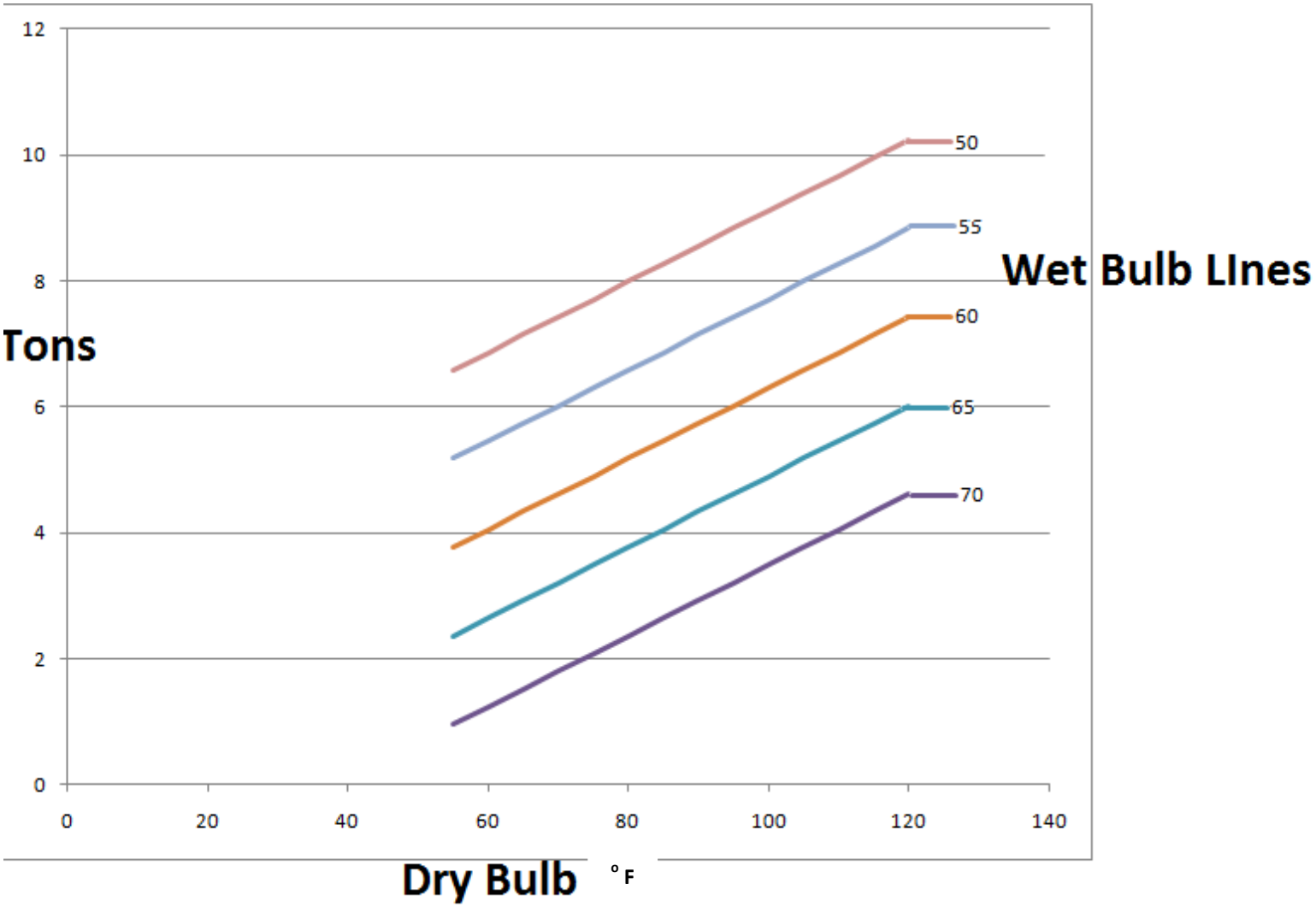
Physical Data:

Capacity: Refer to capacity chart using design conditions
EER, COP: Refer to capacity chart using design condition
Nominal CFM: 2500 CFM, 4250 m^3/h @ 0.5" wc external static pressure

DATA	CRS-2500
DIMENSIONS	
Length	47.25" 1200 mm
Width	42.50" 1080 mm
Height	46.50" 1182 mm
WEIGHT	
Operating	900 lb 425 KG
Dry	500 lb 235 KG
CONNECTIONS	
Water Inlet	¾" Male NPT
Drain	¾" Male NPT
PRIMARY BLOWER	
Quantity	1
KW/ HP	0.80 KW/ 1 HP
Speeds	1
Type	Centrifugal Plug Fan Direct Drive
Wheel Size	450 mm
Power	220V 1Ph 50/60HZ
PUMPS	
Quantity	3 Submerged, 1 Self Priming
hp	Submerged 1/30 HP and 1/15 HP & Self Priming 1/3 HP
Power	220V 1Ph 50/60 HZ
Direct Media	
Type	Rigid Cooling Media
Dimensions	23.5" x 30" x 6"
Secondary Fan	
Type	Axial
KW/hp	0.37 KW / ½ HP
Blade Size	18" 450mm
Secondary Media	
Type	Rigid Cooling Media
Dimensions	23.5" x 30" x 12"
Heat exchanger	
Type	Tube and Fin Water Coil

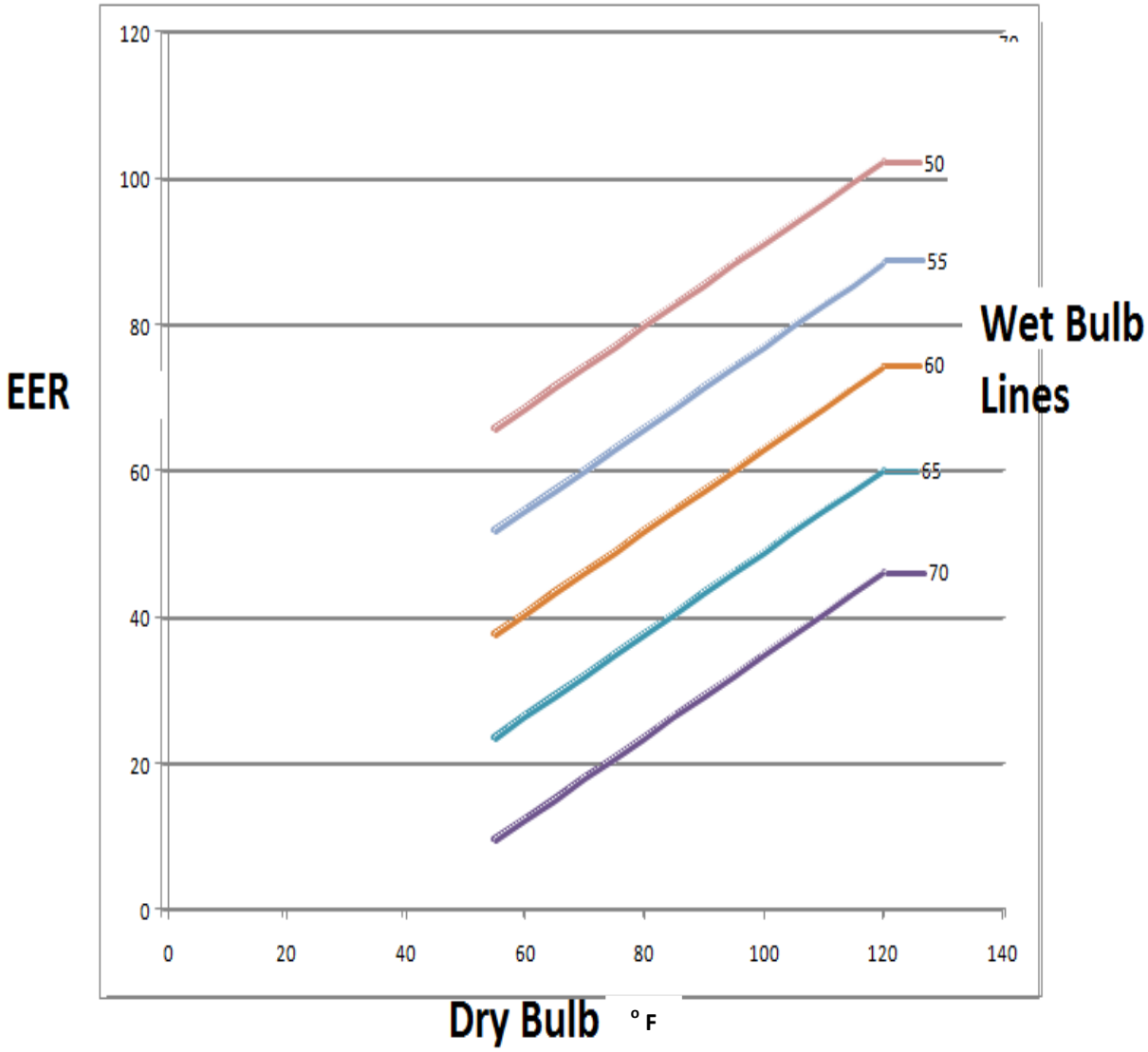
Capacity Chart

*** Capacity information calculated @ Sea Level 29.9 PSI & 78° F (25.5° C) Indoor Temp**

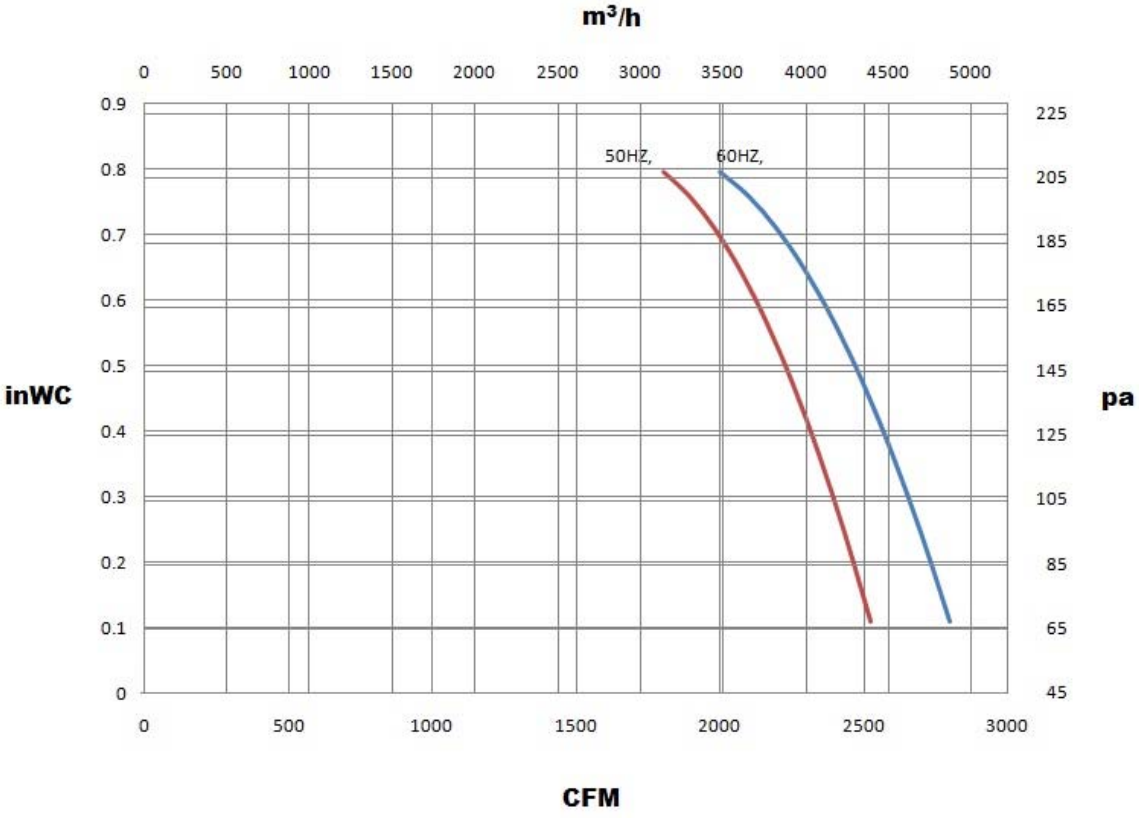


EER Chart

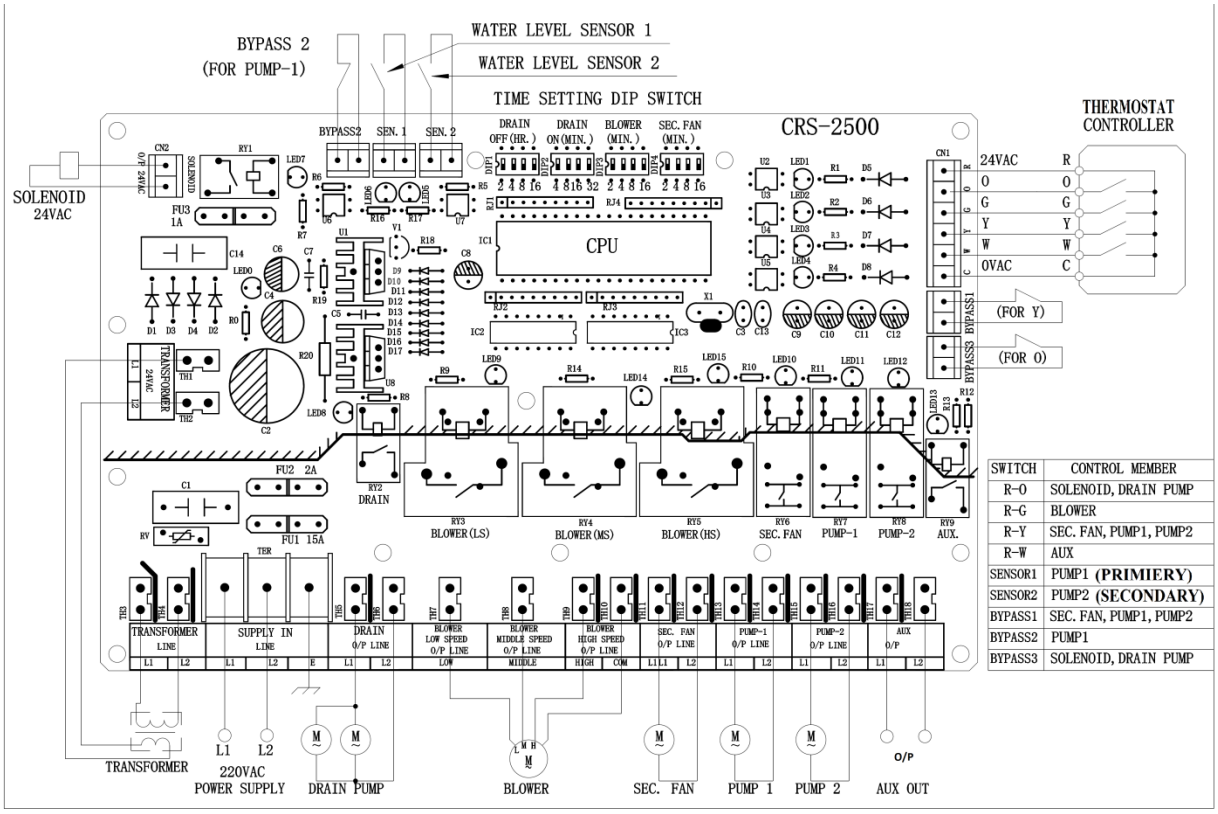
*** EER information calculated @ Sea Level 29.9 PSI & 78° F (25.5° C) Indoor Temp**



Primary Airflow Fan Curve:



WIRING DIAGRAM



Bypass Circuits:

Bypass 1 (Economizer mode)- Connect optional Outdoor thermostat to turn off pumps and secondary fan when outdoor conditions permit.

Bypass 2 (Indoor Humidity)- Attach optional Humidistat to operate primary air supply in INDIRECT only cooling when indoor humidity is above set point.

Bypass 3 (Freeze protection)- If unit is operational during freezing conditions, attach an outdoor thermostat here. Water inlet solenoid will close and the reservoir will drain if outdoor temperature reaches set point. External supply line requires its own freeze protection.

AUX (Heat)- 24 VAC connection for heater control.

Note: Both Primary and Secondary circulation pumps include water limit switch protection.

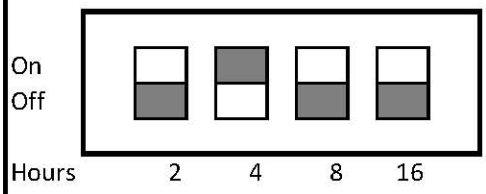
DIP SWITCHES

Maintain Water Quality (Prevent buildup of Total Dissolved Solids

DIP SWITCH 1

Water Reservoir Refresh Cycle

(Hours)

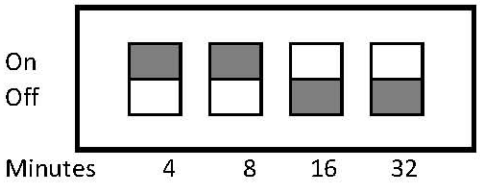


How often the sump refreshes
The harder the water the less hours.
Factory default is 4 hours as indicated above

DIP SWITCH 2

Water Reservoir Refresh Duration

(Minutes)



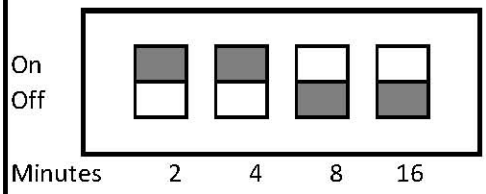
How long the pump and purge runs.
Factory default is 12 minutes as indicated above
Don't change this setting

Water quality is maintained by periodically draining and filling the reservoirs. The harder the water the shorter the cycle time. The softer your local water is the longer (hours) the refresh cycle can be. If you see white powder developing on the paper media, shorten the refresh cycle.
Add up the combination of On hours for total refresh cycle times. Possible cycles are 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28 and 30 hours (all dip switches up).

Media Dry Out Time

DIP SWITCH 3

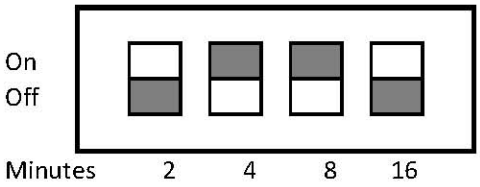
Primary Media Dry Out Duration



Factory default is 6 minutes as indicated above
Adjust setting so media dries out daily

DIP SWITCH 4

Secondary Media Dry Out



Factory default is 12 minutes as indicated above
Adjust setting so media dries out daily

Paper media should dry out completely at least one time each day. When indoor thermostat setting is reached, the water pump(s) turn off but the fan(s) run for a set period of time based on the dip switch settings. This allows the paper media to dry out. This prevents bacteria or algae growth on the pads. The drier the climate, the less time is needed to run fans to dry out. The more humid the climate the longer the fans need to run to dry out media.

CRITICAL DIMENSIONS