FOCUSED ON
COMPRESSED AIR TREATMENT

Cycling Refrigerated Air Dryers | Smart Cycle Plus & Magnum Series

Parker

ENGINEERING YOUR SUCCESS.

FOCUSED ON
CYCLING REFRIGERATED AIR DRYERS

Smart Cycle Plus & Magnum Series

The importance of compressed air as a utility and energy source for modern industrial processes is widely known. Often, the need to provide quality treatment for this air is overlooked.

In fact, the air entering the system contains condensate which, when cooled, will turn into liquid water, causing extensive damage not only to the compressed air network, but also to the finished product.

These costly contamination problems can be avoided by installing a Smart Cycle Plus or Magnum Cycling Refrigerated Air Dryer package complete with Parker filtration.

A refrigerated dryer is typically selected to achieve its design performance at the user's most extreme working conditions. (ie. a warm summer day with the air compressor operating at maximum load).

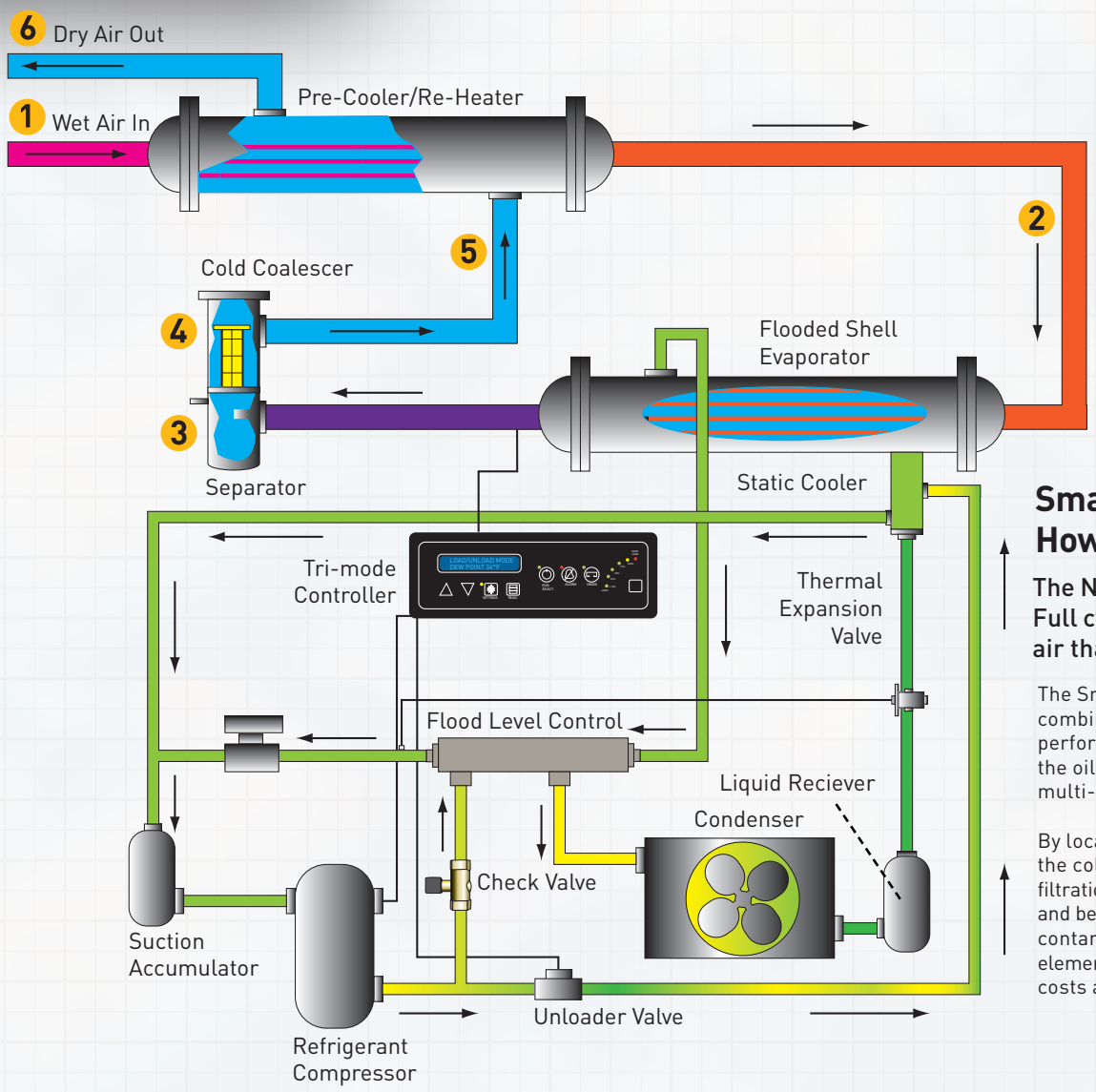
This maximum condition, however, is very rarely achieved in everyday conditions. First, the air compressor load will vary significantly during a working day and will rarely be at full load, thereby significantly reducing the load on the dryer itself.

Furthermore, average temperatures are well below the maximum inlet and ambient temperatures for which the system has been sized. Reduced temperatures at colder moments during the day and overall temperature reductions during the mid-season and winter add a further reduction to the load on the dryer.

Smart Cycle Plus and Magnum perfectly and continuously adapt to the actual operating conditions, ensuring dewpoint control together with the lowest operating costs. Over and above this extreme flexibility of use, Smart Cycle Plus and Magnum's advanced technical solutions offer reliability, efficiency, and energy savings, making it the ideal solution for all industrial users.

SCP & MSC Series

- Energy savings
- Optimum dewpoint levels for highest system performance
- Lowest operating costs
- Continuously and automatically adjusts to actual working parameters
- High reliability, easy to use and maintain
- Integral level actuated energy saving drain
- Low pressure drop design
- Microprocessor based energy management controller
- Flood level control protects refrigerant circuit
- Tube & shell heat exchanger



Warm Wet Air
Partially Cooled Air
Cold Wet Air
Dry Purified Air
Liquid Refrigerant
Cold Refrigerant Gas
Hot Refrigerant Gas

Smart Cycle Plus - How it Works

The Next Generation - Full cycling mode results in dryer air than conventional dryers

The Smart Cycle Plus configuration combines the advantages of superior performance and energy savings with the oil removal efficiency of a built-in, multi-stage separator/cold coalescer.

By locating the coalescing filter at the coldest point in the air system, filtration efficiency is greatly enhanced, and because of a pre-separation of bulk contaminants prior to entering the elements, pressure drop and operating costs are dramatically reduced.

parker.com/igfg

Smart Cycle Plus

Features

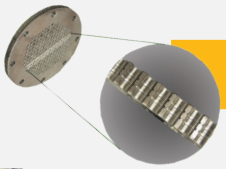
- Best in class dewpoint performance
- Tri mode operation allows dryer to operate in cycling, non-cycling, or auto mode.
- Unlimited cycling due to unloaded "soft start"
- Multi-stage separation and filtration
- Level actuated drain
- Diagnostic readouts indicate need for service
- Drain light
- Alarm light
- Displays in English or Metric
- Dewpoint adjustment and readout
- Serial port with MODBUS
- Digital readout air in temperature
- Digital readout ambient or water in temperature
- High inlet temperature warning
- High ambient or water in temperature warning
- Superheat temperature readout
- Optional control center
- Load capacity meter

Benefits

- Energy savings
- Lower dewpoint temperature achieved with Smart Cycle Plus results in cleaner operation
- Longer lasting components
- Upstream malfunction that results in more severe inlet conditions can be readily handled without resulting in downstream problems
- Lower operating costs, with no sacrifice in performance
- Dryer runs only as needed
- Environmentally friendly refrigerant
- Tube and shell heat exchanger with grooved tube sheets provide greatest mechanical strength and lowest pressure drop
- Patented flood level control protects refrigeration circuit

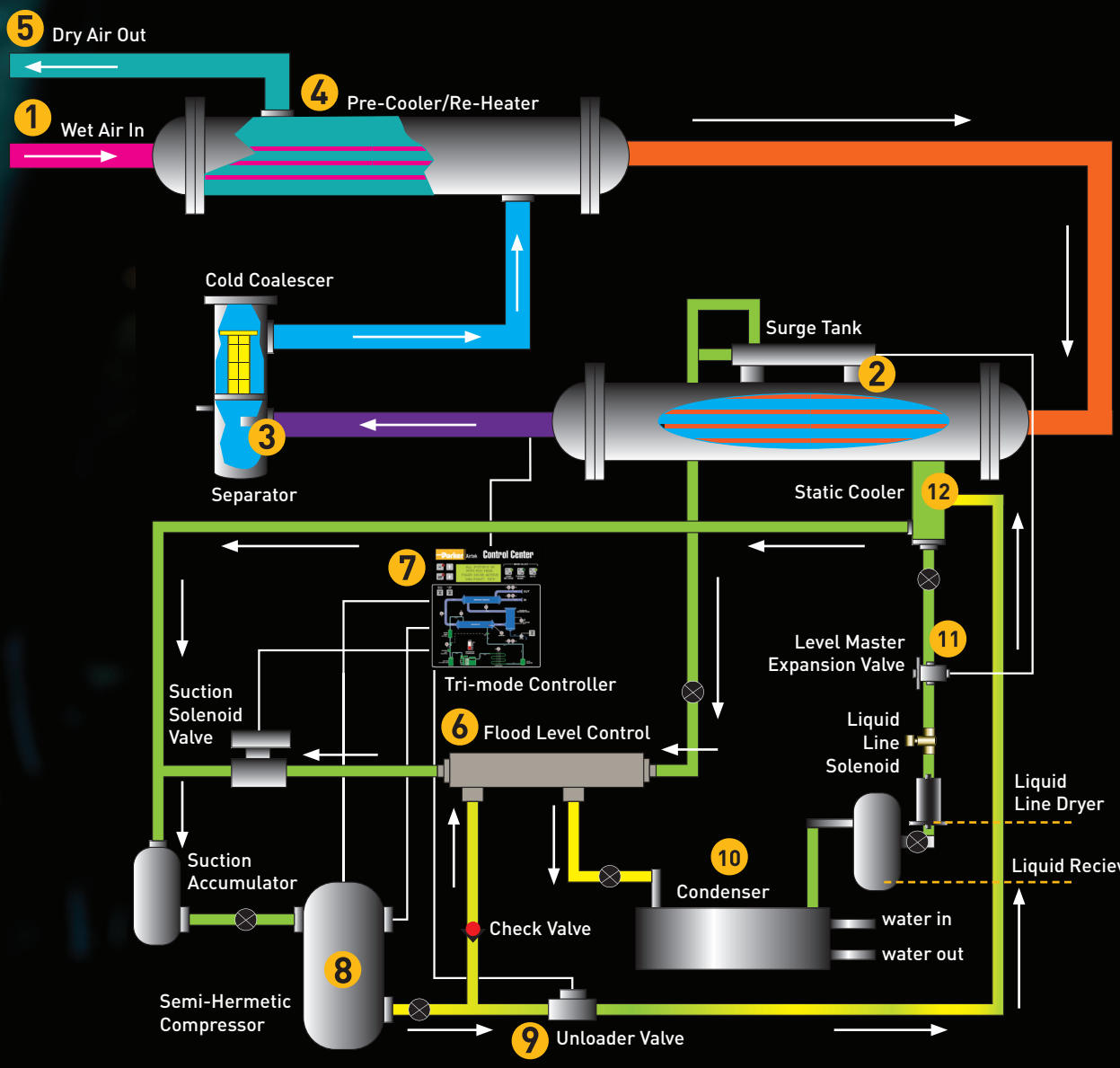
Package Includes:

Control Panel



Tube and Shell Heat Exchanger

Grooved Tubesheets



Magnum Series - How it Works

Parker's demand control with cylinder head unloading reduces energy consumption and maintains a true and constant dewpoint by turning the refrigeration compressor on or off in direct response to the actual dewpoint temperature of the compressed air.

Air Circuit

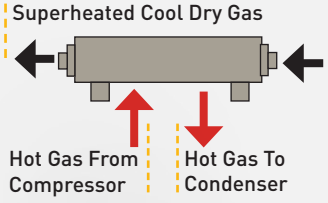
Saturated compressed air enters the tubes at the air to air heat exchanger **[1]** where it is precooled by the cold compressed air returning through the shell from the evaporator. After the compressed air has been precooled, it flows into the evaporator tubes **[2]** where the temperature is lowered to 39°F (3.89°C). The temperature reduction forces water and oil vapors to condense. The mixture of cold compressed air and condensed liquid flows into the mechanical moisture separator **[3]** where the liquids are removed by impingement and centrifugal action. The compressed air then flows from the first stage moisture separator up through the second stage 3 cold coalescing element where it's further purified. The purified compressed air returns through the shell side of the air to air heat exchanger **[4]** where its volume is increased through reheating. The processed compressed air then enters the main distribution system **[5]** as a dry, clean and efficient utility.

Patented Refrigeration Circuit

Parker's refrigeration system enables the use of a fully active flooded evaporator **[2]**. Compressed air flows through the submerged tubes in the flooded shell to ensure dewpoint integrity **[6]**. If any liquid refrigerant were present in the suction line, it would flash off to a vapor. A patented dewpoint temperature probe in the evaporator's air side tubing, reads the temperature and displays it on the control center panel **[7]**.

When the air temperature reaches its low set point, the compressor will either shut off, or unload, saving energy during periods of low load. When the dewpoint setting is reached, the compressor **[8]** will resume normal operation.

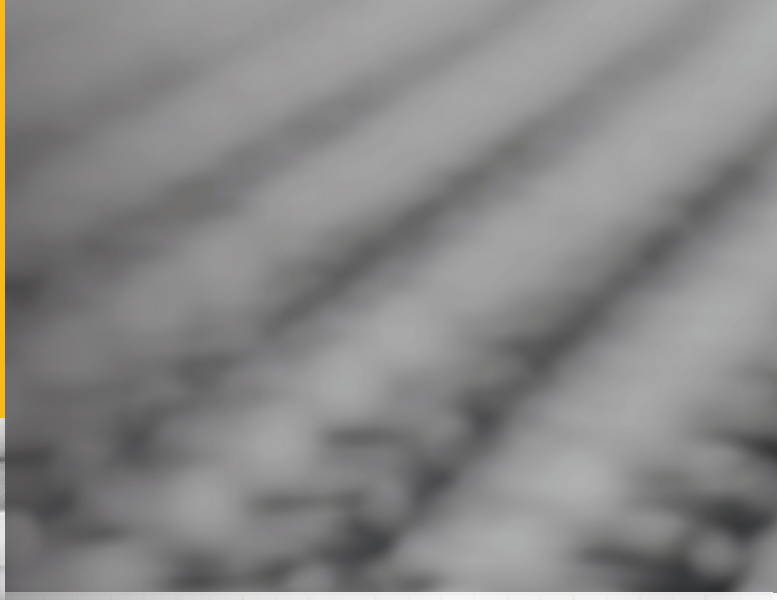
Patented Flood Level Control



Isolation Valve

When operating in the cycling mode, a virtually unlimited number of stops and starts is made possible by opening the unloader valve **[9]** prior to starting the compressor.

This allows an unloaded start each time the compressor comes on. When operating in the load/unload mode, the warm refrigerant gas bypasses the condenser **[10]** and expansion valve **[11]**, and flows through the static cooler **[12]**. This core of cold liquid refrigerant removes the heat from the discharge gas to prevent a high suction temperature as the gas returns to the inlet side of the compressor.



Magnum Series

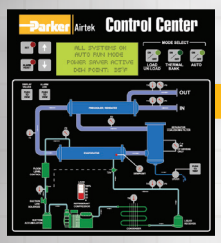
Features

- Thermal bank system
- Patented flood level control
- Patented dewpoint sensor
- Patented refrigeration circuit
- High efficiency tube and shell heat exchangers
- Grooved tube sheets
- Reliable demand drain
- Refrigerant oil separator

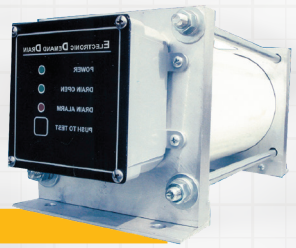
Benefits

- Energy savings
- Thermal Bank System delivers cleaner and drier compressed air
- Easily serviced main heat exchanger
- Precise timing and programming, no "freeze-up" conditions
- Improved performance (2X main evaporator surface area)
- Simple, reliable, and non-fouling
- Leak-proof joints
- Tri-mode operation
- Optional variable speed drive

Package Includes:

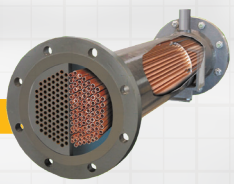


Control Panel



Demand Drain

Tube and Shell
Heat Exchanger with
Grooved Tubesheets



Technical Specifications (Smart Cycle & Magnum Series)

Performance Data

Model	Air Connections	Nominal Capacity (scfm)*	Dimension ins (mm)			Weight		Primary Voltages	Replacement Cold Coalescing Element (Qty)
			H	W	D	lbs	kg		
SCP1200	3" Flg	1250	65 (1651)	74 (1880)	41 (1041)	1850	839	460V/3Ph/60Hz	JE1600-C10
SCP1500	4" Flg	1600	72 (1829)	78 (1981)	48 (1219)	2200	998	460V/3Ph/60Hz	JE1600-C10
SCP2000	6" Flg	2050	76 (1930)	102 (2591)	54 (1372)	3000	1361	460V/3Ph/60Hz	(3) JE1000-C10
SCP2500	6" Flg	2500	76 (1372)	102 (2591)	54 (1372)	3370	1529	460V/3Ph/60Hz	(3) JE1000-C10
SCP3000	6" Flg	3000	85 (2159)	108 (2743)	66 (1676)	4015	1821	460V/3Ph/60Hz	JE3000-C10

Model	Air Connections	Nominal Capacity (scfm)*	Dimension ins (mm)			Weight		Primary Voltages	Replacement Cold Coalescing Element (Qty)
			H	W	D	lbs	kg		
MSC4000	8" Flg	4000	95 (2413)	108 (2743)	68 (1727)	5680	2576	460V/3Ph/60Hz	(2) JE-C1600-30
MSC5000	8" Flg	5000	95 (2413)	108 (2743)	68 (1727)	6415	2910	460V/3Ph/60Hz	(2) JE-C1600-30
MSC6000	8" Flg	6000	95 (2413)	146 (3708)	76 (1930)	7725	3504	460V/3Ph/60Hz	(3) JE-C1600-30
MSC8000	10" Flg	8000	95 (2413)	146 (3708)	76 (1930)	9610	4359	460V/3Ph/60Hz	(4) JE-C1600-30
MSC10000	10" Flg	10000	95 (2413)	161 (4089)	83 (2108)	11020	4999	460V/3Ph/60Hz	(3) JE-C2000-30
MSC12500	12" Flg	12500	111 (2819)	160 (4064)	94 (2388)	13250	6010	460V/3Ph/60Hz	(4) JE-C2000-30
MSC15000	12" Flg	15000	120 (3048)	150 (3810)	100 (2540)	14600	6623	460V/3Ph/60Hz	(3) JE-C3000-30

- Flow rates at the following climatic conditions- Ambient Temperature: 100°F (38°C), Inlet Temperature: 100°F (38°C), Inlet Pressure: 100 psi g (7 bar g)
- Air-cooled & water-cooled available (SCP1200-SCP3000)

Notes:

1. Cold coalescing element standard
2. Pressure dewpoint is based on CAGI ADF 100 Standard for rating and testing compressed air dryers. 100 psi g (7 bar g) inlet air pressure, 100°F (38°C) inlet air temperature, 100°F (38°C) ambient temperature.
3. Larger sizes available - consult factory
4. Dryer needs to be fully protected from nature's elements (i.e. rain, wind, snow, etc.)
5. Water cooled & remote air cooled versions available (MSC4000-MSC15000)

Technical Data

Models	Max Inlet Pressure		Max Inlet Temperature		Max Ambient Temperature		Min Ambient Temperature		Refrigerant	Dewpoint Temperatures	
	psi g	bar g	°F	°C	°F	°C	°F	°C			
SCP1200 - SCP1500	200	13.7	131	55	115	46	41	5	R404A	39º F	3.9º C
SCP2000 - SCP3000	150	10.3	131	55	115	46	41	5	R404A	39º F	3.9º C
MSC4000 - MSC6000	150	10.3	131	55	115	46	41	5	R404A	39º F	3.9º C

Correction Factors

To obtain dryer capacity at new conditions, multiply nominal capacity x C1 x C2 x C3.

Ambient Temperature (C1)								
	°F	80	90	95	100	105	110	115
	°C	27	32	35	38	41	43	46
	CF	1.12	1.08	1.05	1.00	0.95	0.90	0.84

Inlet Temperature (C2)											
	°F	80	85	90	95	100	105	110	115	120	130
	°C	27	29	32	35	38	41	43	46	49	54
	CF	1.22	1.22	1.22	1.10	1.00	0.92	0.83	0.76	0.69	0.56

Working Pressure (C3)												
	psi g	50	60	75	80	90	100	110	125	130	140	150
	bar g	3.5	4.1	5.2	5.5	6.2	6.9	7.6	8.6	9.0	9.7	10.3
	CFP	CF	CF	CF	CF	0.96	1.00	1.01	1.02	1.03	1.04	1.05

State of California ONLY

WARNING: Proposition 65

The products described herein can expose you to chemicals known to the State of California to cause cancer or reproductive harm.

For more information: www.P65Warnings.ca.gov

Worldwide Filtration Manufacturing Locations

North America

Compressed Air Treatment

Industrial Gas Filtration and Generation Division
Lancaster, NY
716 686 6400
www.parker.com/igfg

Haverhill, MA
978 858 0505
www.parker.com/igfg

Engine Filtration

Racor
Modesto, CA
209 521 7860
www.parker.com/racor

Holly Springs, MS
662 252 2656
www.parker.com/racor

Hydraulic Filtration

Hydraulic & Fuel Filtration
Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Laval, QC Canada
450 629 9594
www.parkerfarr.com

Velcon
Colorado Springs, CO
719 531 5855
www.velcon.com

Process Filtration

domnick hunter Process Filtration
SciLog
Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Water Purification

Village Marine, Sea Recovery, Horizon Reverse Osmosis
Carson, CA
310 637 3400
www.parker.com/watermakers

Europe

Compressed Air Treatment

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Gateshead, England
+44 (0) 191 402 9000
www.parker.com/dhfns

Parker Gas Separations
Etten-Leur, Netherlands
+31 76 508 5300
www.parker.com/dhfns

Hiross Zander
Essen, Germany
+49 2054 9340
www.parker.com/hzfd

Padova, Italy
+39 049 9712 111
www.parker.com/hzfd

Engine Filtration & Water Purification

Racor
Dewsbury, England
+44 (0) 1924 487 000
www.parker.com/rfde

Racor Research & Development
Stuttgart, Germany
+49 (0)711 7071 290-10

Hydraulic Filtration

Hydraulic Filter
Arnhem, Holland
+31 26 3760376
www.parker.com/hfde

Urjala, Finland
+358 20 753 2500

Condition Monitoring
Parker Kittiwake
West Sussex, England
+44 (0) 1903 731 470
www.kittiwake.com

Process Filtration

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WARNING: Proposition 65
The products described herein can expose you to chemicals known to the State of California to cause cancer or reproductive harm.
For more information: www.P65Warnings.ca.gov