

Select Cyclor System



AirCycler® g2-k



WhisperGreenSelect
VENTILATION UNIT

AirCycler® g2-k Introduction



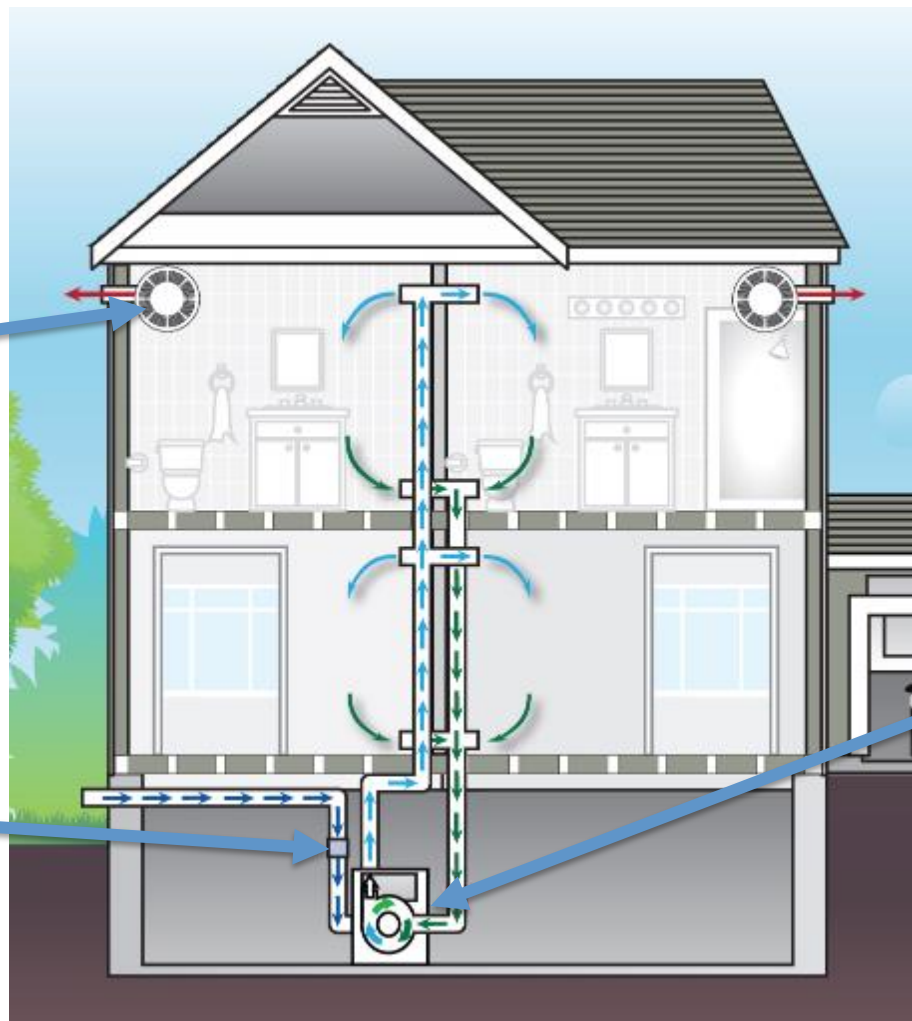
How Do Builders Meet ASHRAE Requirements for Whole-House Ventilation?

Exhaust-Only Strategy

Typical Solution:
Multispeed Bathroom Exhaust Fan or **Single Speed Fan with ASHRAE Control (SmartExhaust™)**

Supply-Only Strategy

Typical Solution:
Supply Duct attached to Central HVAC/AHU return



Balanced Strategy

Typical Solution:
H/ERV attached to HVAC/AHU Return Plenum

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EXHAUST-ONLY VENTILATION STRATEGY Pros/Cons

Pros

- Low purchase cost
- Low installation cost
- Low energy consumption
- Exhausts air from point source of pollution (ex., bathroom moisture)
- Meets ASHRAE 62.2 whole house ventilation requirement

Cons

- No known source of make-up air
- Poor distribution



Supply-Only Ventilation Strategy: Supply Ducts Attached to Central HVAC/AHU Return

Mechanism-of-Action

1. Thermostat calls for heating or cooling.



Mechanism-of-Action

2. Controller opens Damper to supply fresh air to supply duct and starts timing.



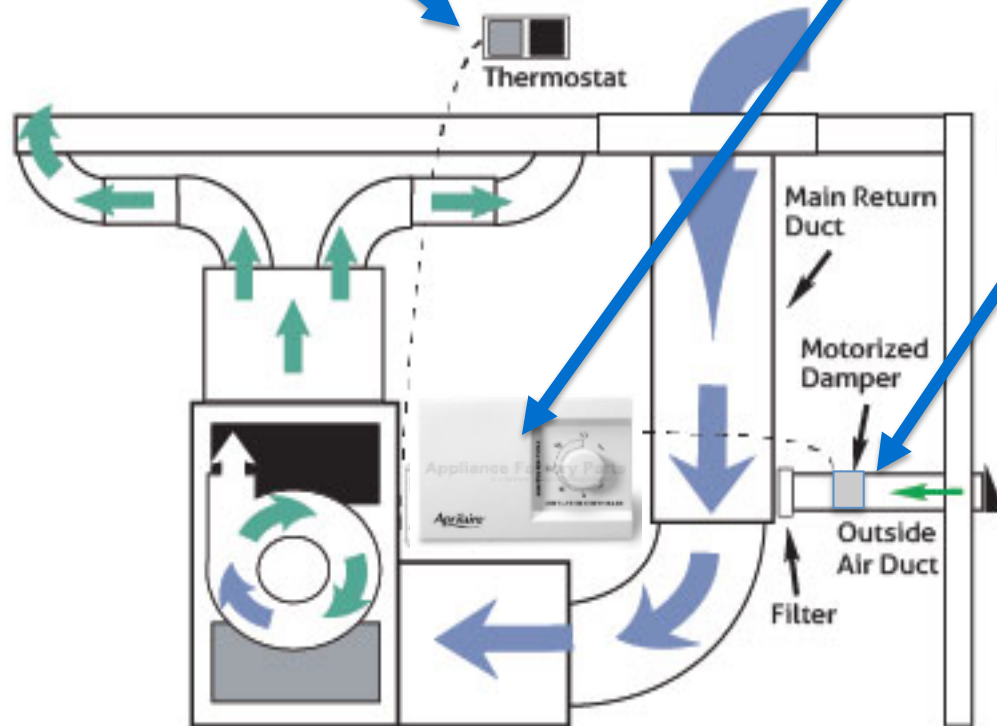
Mechanism-of-Action

3. Supply Damper opens; negative pressure in the return plenum brings in fresh air from outside. Fresh air is distributed by AHU fan through existing ducting.



Mechanism-of-Action

4. If there is not enough heating or cooling calls to meet ventilation needs, the controller will force on the AHU fan and open the supply damper for a set period based on ASHRAE Requirements





SUPPLY-ONLY VENTILATION STRATEGY Pros/Cons

Pros

- Known source of make-up air
- Good distribution using already existing HVAC ducting
- Meets ASHRAE 62.2 whole house ventilation requirement

Cons

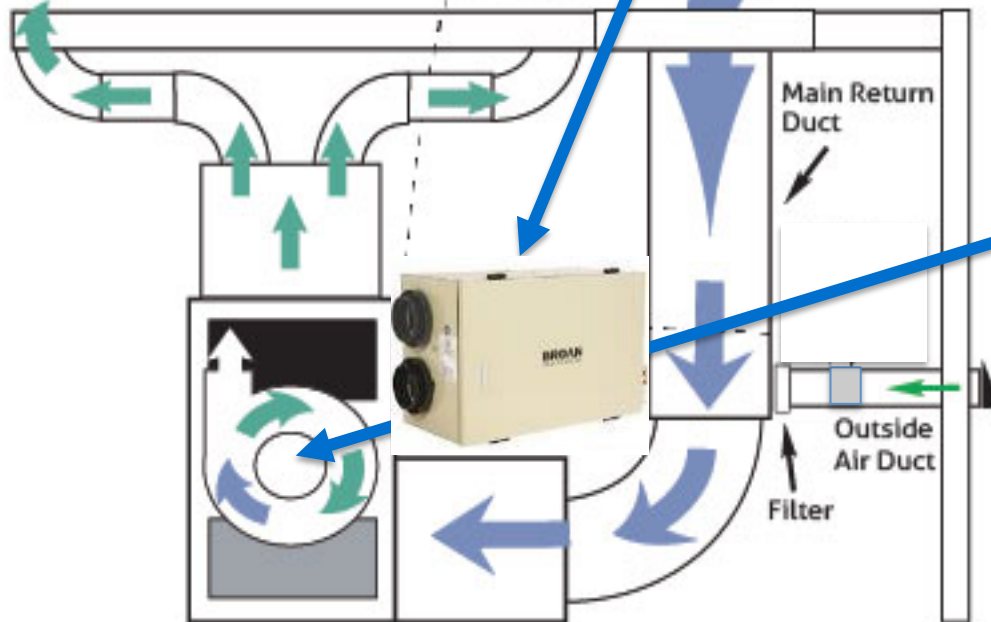
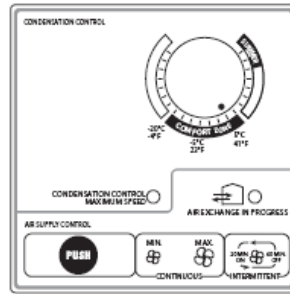
- Not balanced
- Comfort complaints of unconditioned air
- Complaints of noisy operation AHU fan
- Requires AHU fan to be running (at high energy/watts) to meet ASHRAE 62.2 – leads to HERS “Ventilation Penalty”



Balanced Ventilation Strategy: H/ERV Attached to Central HVAC/AHU Return

Mechanism-of-Action

1. Thermostat calls for heating or cooling.



Mechanism-of-Action

2. H/ERV control, which is connected to AHU, operates to bring in fresh air from outside; exchange heat (sensible energy), moisture (latent energy) and exhausts inside air.

Mechanism-of-Action

3. In order to distribute air throughout the home the AHU fan needs to be running; otherwise the H/ERV cannot force air through the AHU Coils

Mechanism-of-Action

4. If ventilation needs are not met H/ERV Controller will over-ride Thermostat and turn on both H/ERV and AHU to distribute fresh air



BALANCED H/ERV VENTILATION STRATEGY

Pros/Cons

Pros

- Heat (sensible) and moisture (latent) energy recovery
- Known source of make-up air
- Good distribution using already existing HVAC ducting
- Meets ASHRAE 62.2 whole house ventilation requirement
- Balanced ventilation limits negative or positive pressures within the house
- Can utilize H/ERV to duct to AHU for relative low installation cost
- Can duct H/ERV separately throughout home for fresh air distribution
- Can duct HRV exhaust from bathrooms to eliminate installation of bath fan

Cons

- Requires AHU Blower to be running (at high energy/watts) to meet ASHRAE 62.2 which can influence overall energy efficiency of H/ERV
- H/ERV energy consumption can be significant
- H/ERV needs to be installed in area $\geq 50^{\circ}\text{F}$
- H/ERV initial costs tend to be expensive
- Ducting H/ERV separately is difficult for retrofit
- Ducting H/ERV separately adds to labor costs



AirCycler® g2-k Introduction

The AirCycler® g2-k Hybrid Supply-Exhaust Whole House Ventilation System combines the benefits of *exhaust* and *supply* ventilation into one system.



Combined with the WhisperGreen Select, The Select Cycler System is the second-most cost effective solution to achieve whole-house mechanical ventilation for ASHRAE 62.2 compliance



AirCycler® g2-k Introduction



Supply Damper,
AirCycler® g2 Controller,
FanConnect™ Switch



RangeRelief Range Hood
Pressure Relief Control Switch



TempGuard™ Hot & Cold
Temperature Sensors

- ❑ The **AirCycler® g2-k Hybrid Supply-Exhaust Whole House Ventilation System** includes the AirCycler® g2 Controller, FanConnect™ Switch and Motorized Supply Damper.
- ❑ The **AirCycler® g2 Controller** monitors the thermostat for heating/cooling calls, controls the supply damper, and can monitor and control the WhisperGreen vent fan via two-way communication with the FanConnect™ Switch.
- ❑ Upon setup, the AirCycler® g2 Controller will use a **patented algorithm** to automatically calculate the ventilation flow or time necessary to meet ASHRAE 62.2 and operate the system accordingly.
- ❑ The **supply damper** is a high performance, power open/power close motorized damper. It is powered open by the AirCycler® g2 controller as needed to meet ventilation requirements, and closed when ventilation is complete.
- ❑ The **FanConnect™ Fan/Light Switch** is a simple switch serving as a communicator between the AirCycler® g2 and WhisperGreen. It operates the fan, light (optional), and can be programmed to provide a delay timer function*.
- ❑ Via the **FanConnect™**, the AirCycler® g2 monitors daily use of WhisperGreen vent fan and counts that time toward hourly ventilation requirements.

Other Features:

- ❑ Optional **RangeRelief** range hood pressure relief control switch solves depressurization issues by opening the damper and allowing make up air to enter as soon as the range hood is turned on.
- ❑ Optional **TempGuard™** hot and cold temperature sensors disable the fresh air damper in extreme temperatures.

*When in Hybrid operation

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How Does It Work?

The AirCycler® g2-k System is integrated with the home's HVAC system. When the home's AHU fan (blower) is turned on by the thermostat to provide heating or cooling, the **AirCycler® g2 controller** opens the **supply damper** to let in a measured amount of fresh air. The fresh air is filtered by the return plenum filter and is then distributed uniformly throughout the home through the existing ductwork. Once the ventilation requirements are met, the damper is closed to prevent over-ventilation.

The AirCycler® g2 operates in two modes:

- When in **Hybrid Operation**, if normal heating and cooling cycles don't run long enough to meet required ventilation, the controller will power on the **WhisperGreen Select™** vent fan and open the supply damper, via the **FanConnect™ Switch**, to provide supplemental ventilation.
- During **Balanced Operation**, the controller opens the supply damper AND activates the WhisperGreen Select fan *at the same time, every time*, making the Select Cycler System the **lowest cost balanced ventilation solution available**.



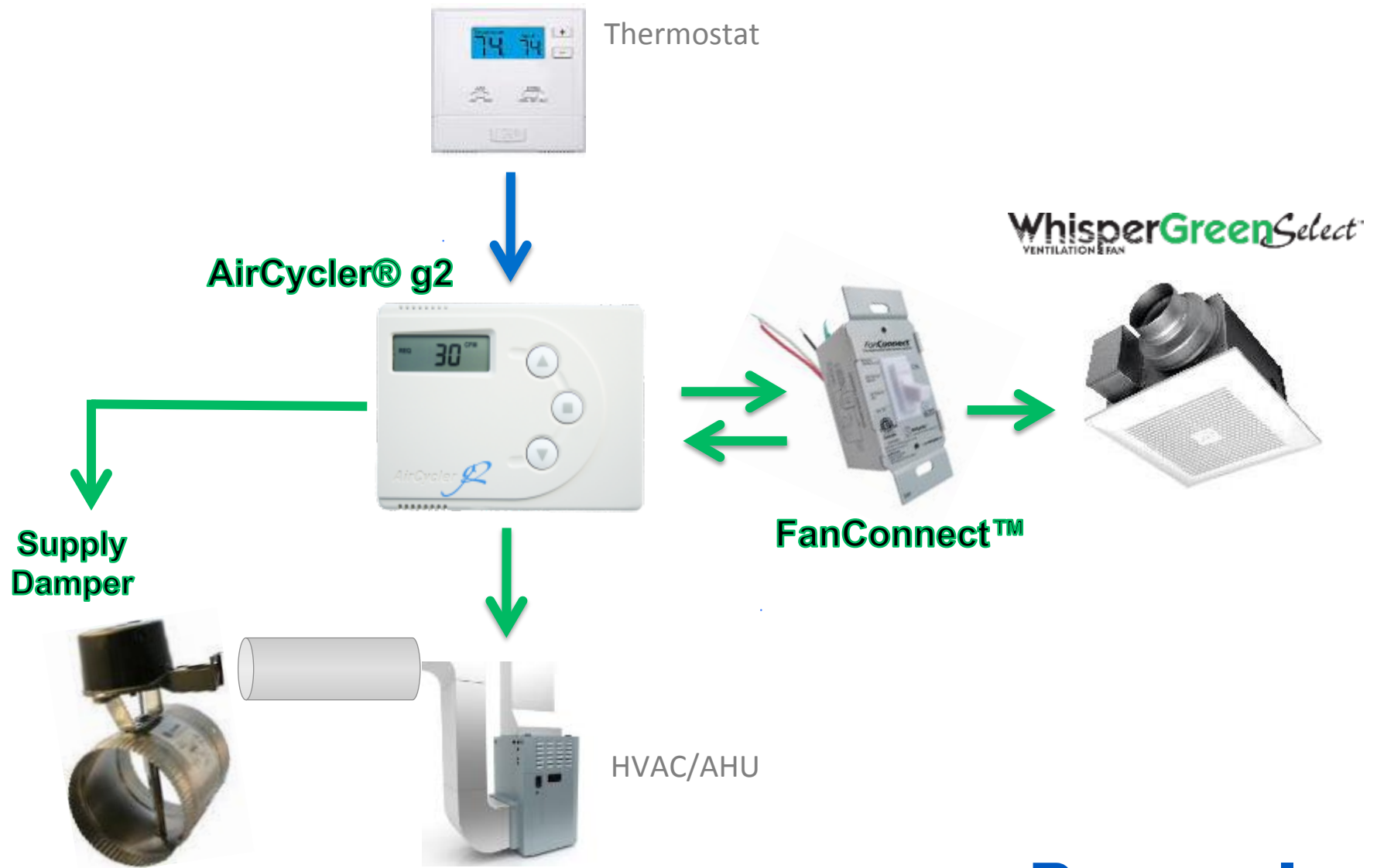
AirCycler® g2-k



WhisperGreen Select™
VENTILATION FAN



AirCycler® g2-k System + WhisperGreen



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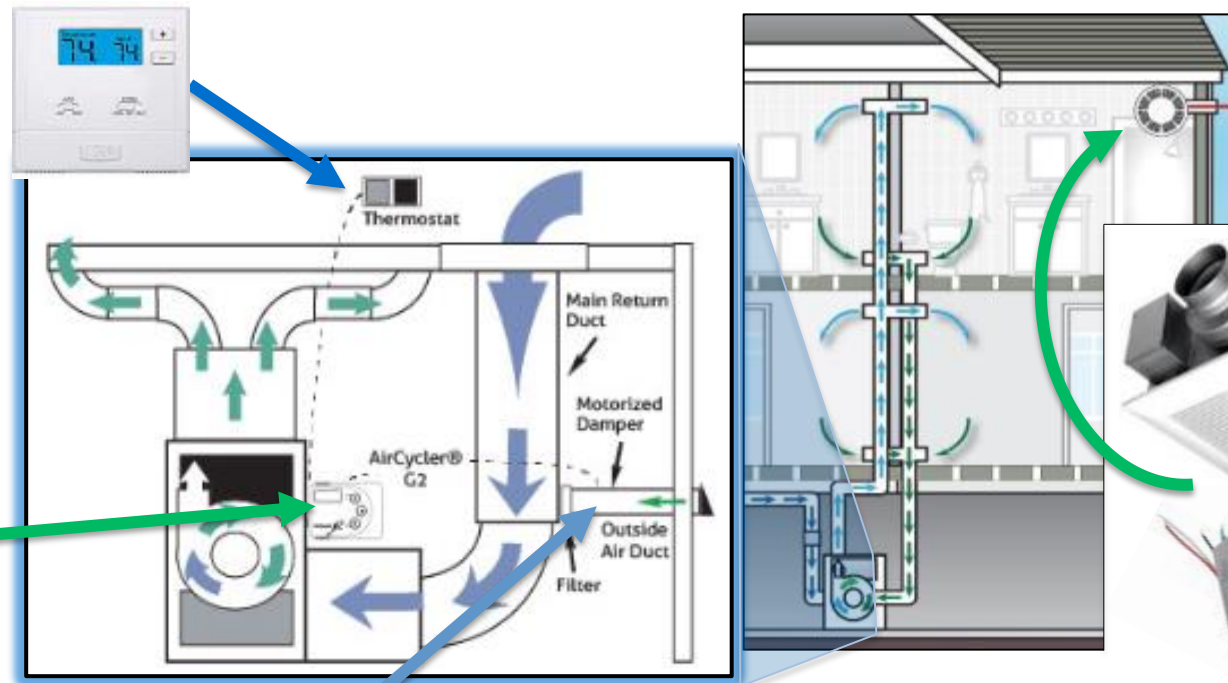
Select Cyclor System 'Hybrid' Operation

1. Thermostat calls for heating or cooling.

2. AirCycler g2 controller opens damper to provide fresh air. Starts counting time/flow.



3. Supply Damper opens; negative pressure in the return plenum brings in Fresh Air from outside to HVAC/AHU. Fresh air is distributed by AHU fan through existing ducting.



4. If there is not enough heating or cooling to meet ventilation requirements, the AirCycler controller will activate the bathroom fan via the FanConnect™ Switch **AND** open Supply Damper for a set period to meet requirements.

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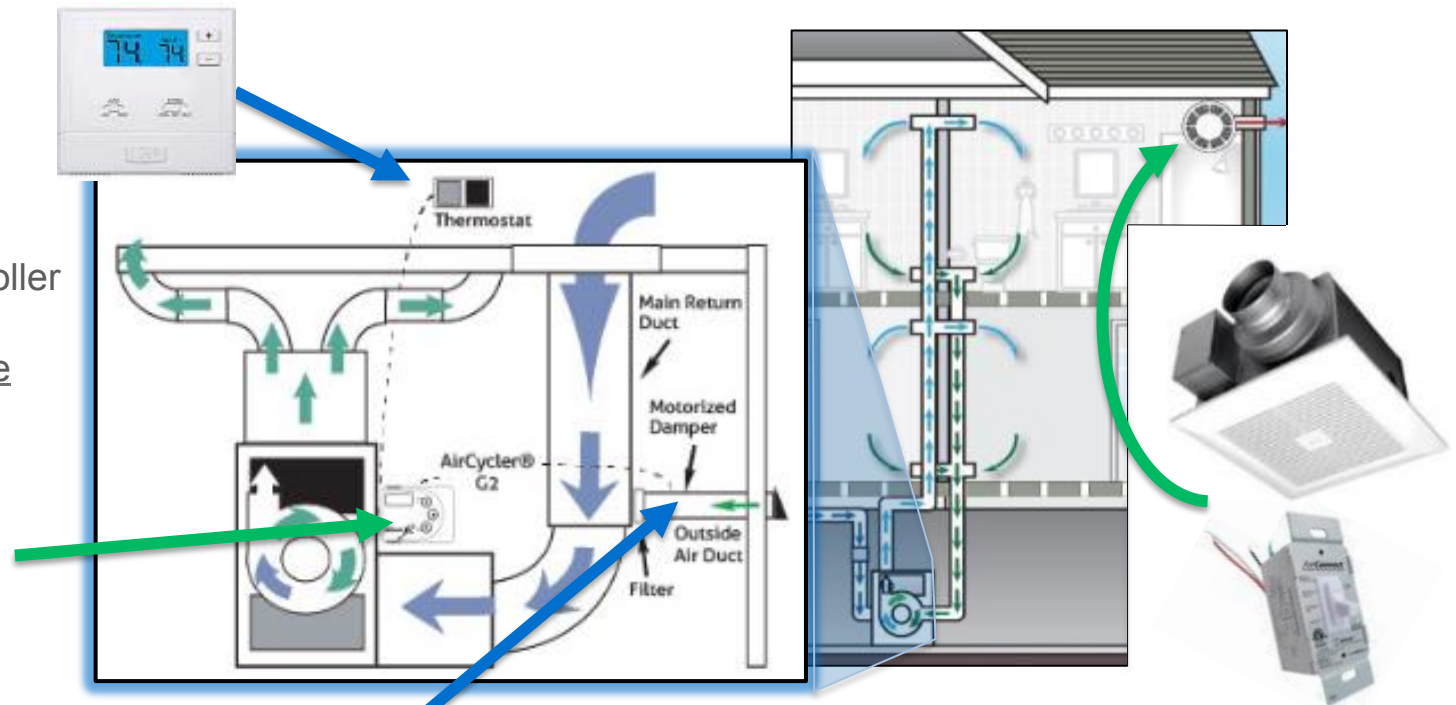
Select Cyclor System 'Balanced' Operation

1. Thermostat calls for heating or cooling.

2. The AirCycler g2 controller opens the fresh air supply damper **AND** activates the WhisperGreen.



3. Supply Damper opens; negative pressure in the return plenum brings in Fresh Air from outside to HVAC/AHU. Fresh air is distributed by AHU fan through existing ducting.



4. If there is not enough heating or cooling to meet ventilation needs, the AirCycler controller will activate the bathroom fan via the FanConnect™ Switch, bring on the AHU fan, **AND** open Supply Duct for a set period to meet ventilation needs

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Select Cyclor System 'HYBRID' or 'BALANCED' VENTILATION STRATEGY Pros/Cons

Pros

- Known source of make-up air
- Good distribution using already existing HVAC ducting
- Exhausts air from point source of pollution (ex., bathroom moisture)
- Requires no supplemental AHU operation*
- Eliminates homeowner complaints of unconditioned air entering the home*
- Minimizes homeowner complaints of noisy operation*
- Meets ASHRAE 62.2 whole house ventilation requirement
- Lowest Supply Strategy HERS Index*
- Lowest Balanced Strategy HERS Index

*Hybrid mode

Cons

- Additional installation time required



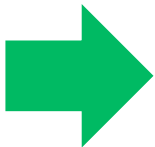
AirCycler® g2 Theory of Operation - Hybrid

Building codes require 30 CFM of continuous ventilation or 1,800 CF per hour.

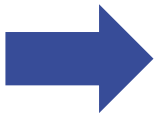
The following examples illustrate how AirCycler® g2-k operation meets these ventilation requirements, based on the following conditions:



Based on one hour of ventilation



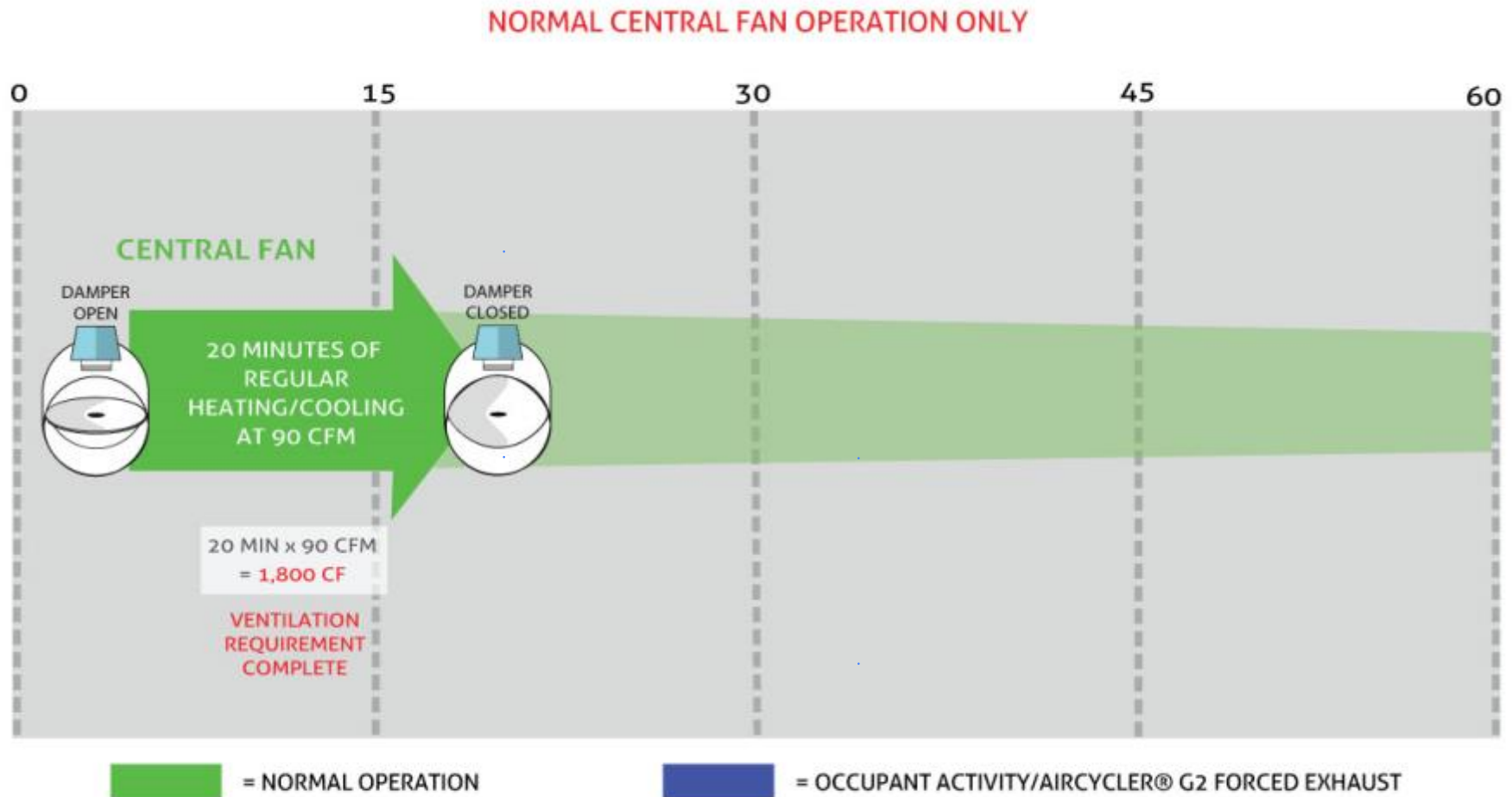
90 CFM measured from 6" fresh air damper



60 CFM measured from bathroom exhaust fan



AirCycler® g2 Theory of Operation - Hybrid Example 1

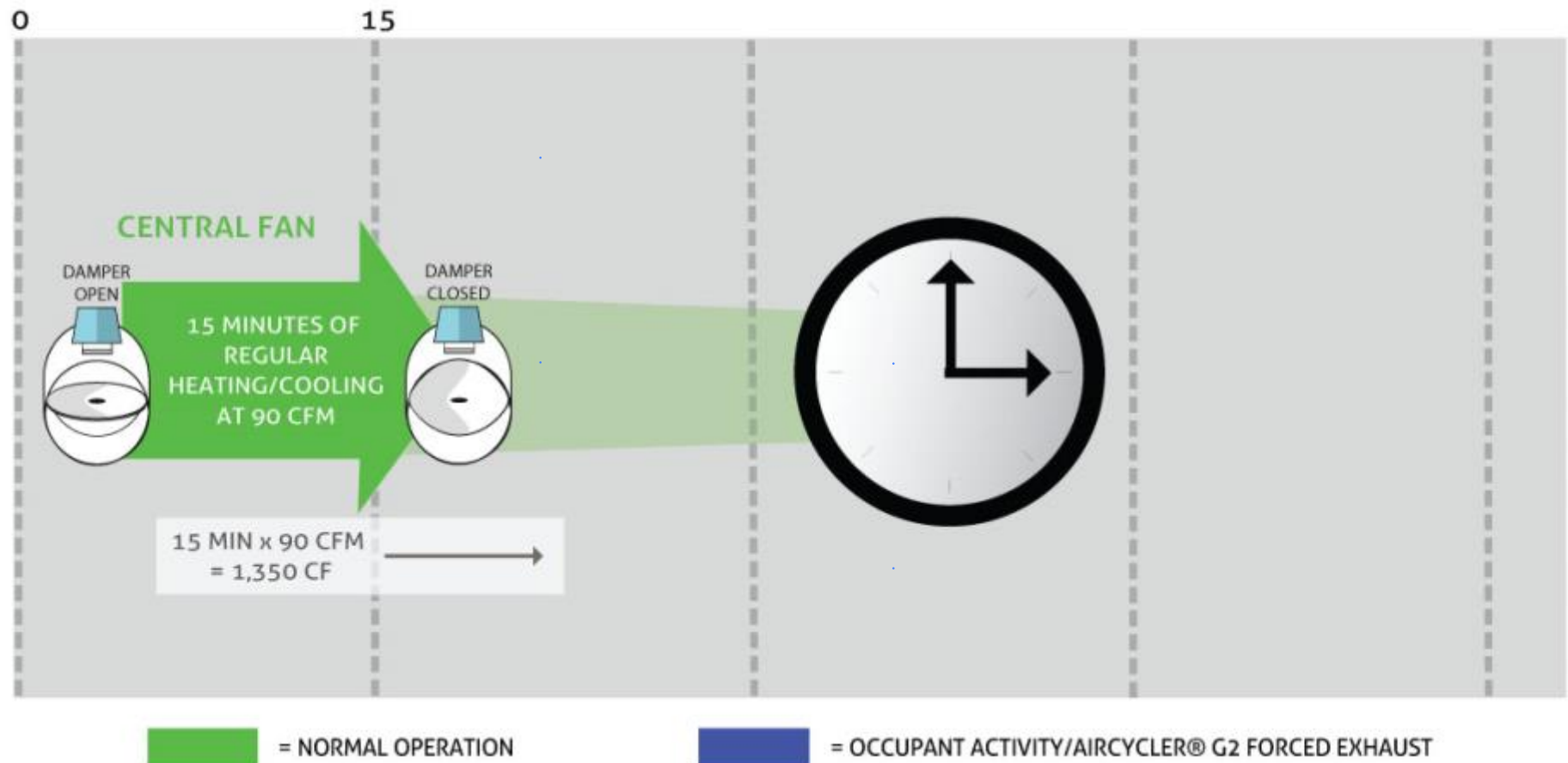


Enough ventilation took place during normal heating/cooling cycles to meet ventilation requirements for the hour.
No need for additional ventilation forced by AirCycler® g2.



AirCycler® g2 Theory of Operation - Hybrid Example 2

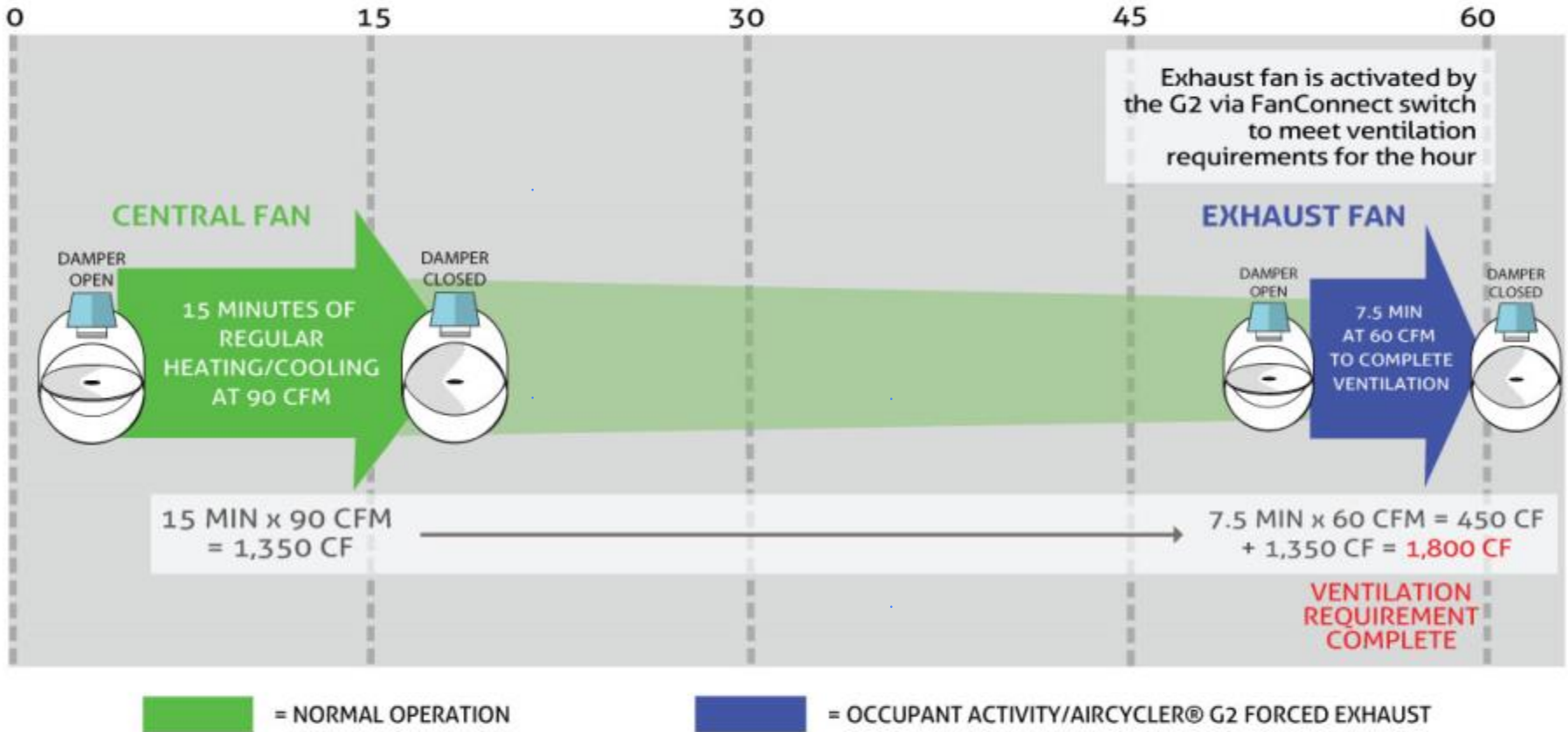
NORMAL CENTRAL FAN OPERATION + AIRCYCLER® G2 FORCED EXHAUST





AirCycler® g2 Theory of Operation - Hybrid Example 2

NORMAL CENTRAL FAN OPERATION + AIRCYCLER® G2 FORCED EXHAUST

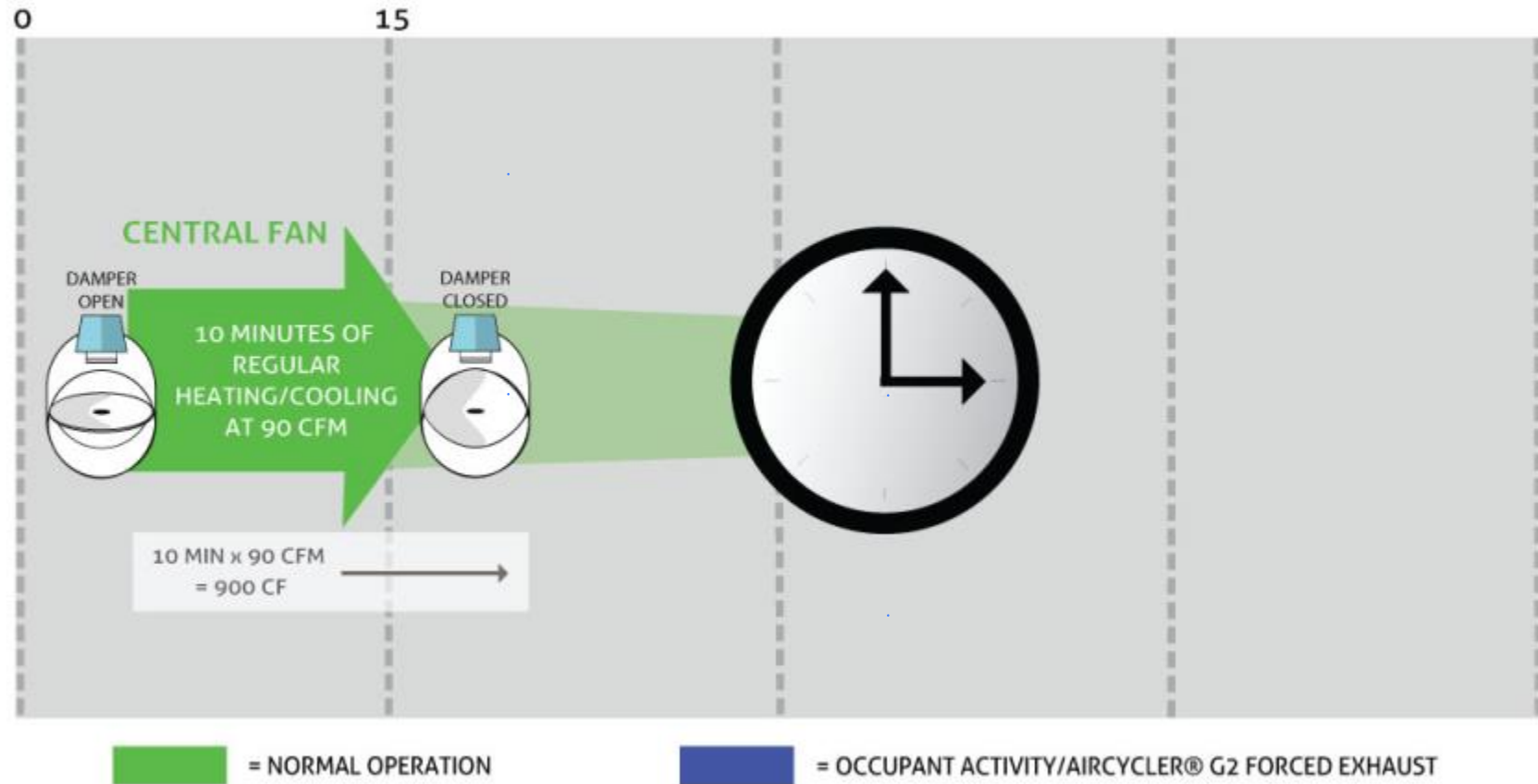


After regular heating/cooling cycles, ventilation requirements for the hour were not met. At the end of the hour the AirCycler® g2 forced on the bathroom exhaust fan, via the FanConnect™ switch, to reach required ventilation.



AirCycler® g2 Theory of Operation - Hybrid Example 3

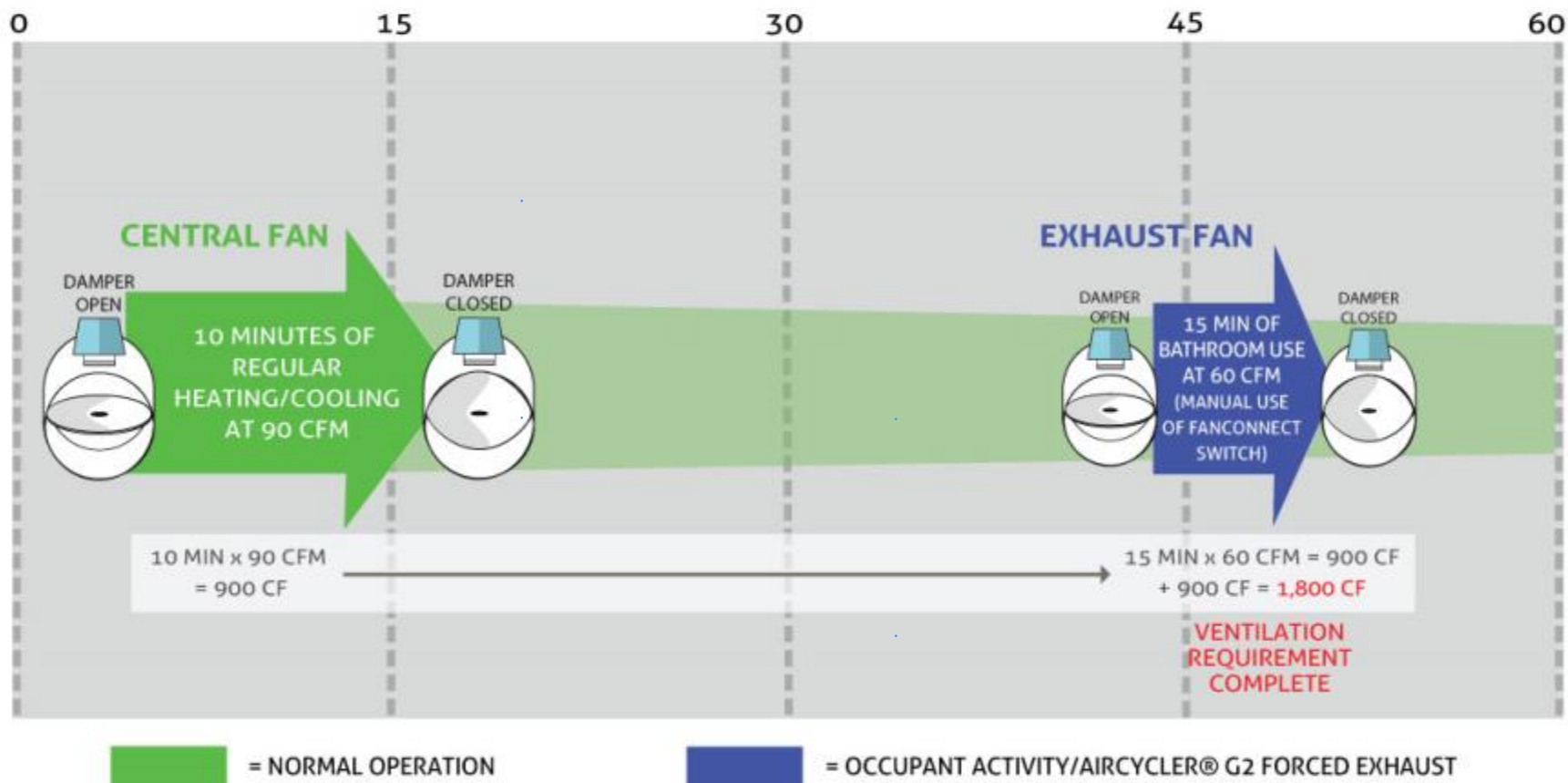
NORMAL CENTRAL FAN OPERATION + OCCUPANT EXHAUST USE





AirCycler® g2 Theory of Operation - Hybrid Example 3

NORMAL CENTRAL FAN OPERATION + OCCUPANT EXHAUST USE



After regular heating/cooling cycles and manual occupant use of bathroom exhaust fan, ventilation requirements for the hour were met. No need for additional ventilation forced by AirCycler® g2.



System Ad-Ons

RangeRelief Pressure Switch

Solves Rangehood Depressurization Issues

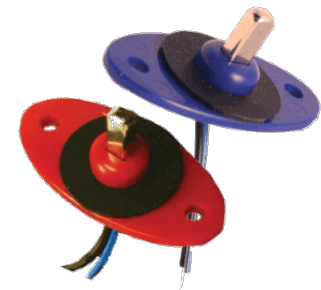
Works with Select Cyclor System to provide automatic rangehood pressure relief. By simply installing the RangeRelief™ Pressure Switch with the already existing motorized damper, RangeRelief will open the supply damper, allowing make up air to enter as soon as the rangehood is turned on.



TempGuard™ Hot/Cold Temperature Sensors

Disables Fresh Air Supply Damper in Extreme Temperatures

With extreme outside temperatures, natural ventilation can increase causing homes to require less controlled mechanical ventilation. Using the TempGuard™ Temperature Sensor, mechanical ventilation can be automatically disabled when temperatures reach extreme hot or cold.



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The Select Cycler System with RangeRelief

RangeRelief



AirCycler® g2



Thermostat



Supply Damper



HVAC/AHU



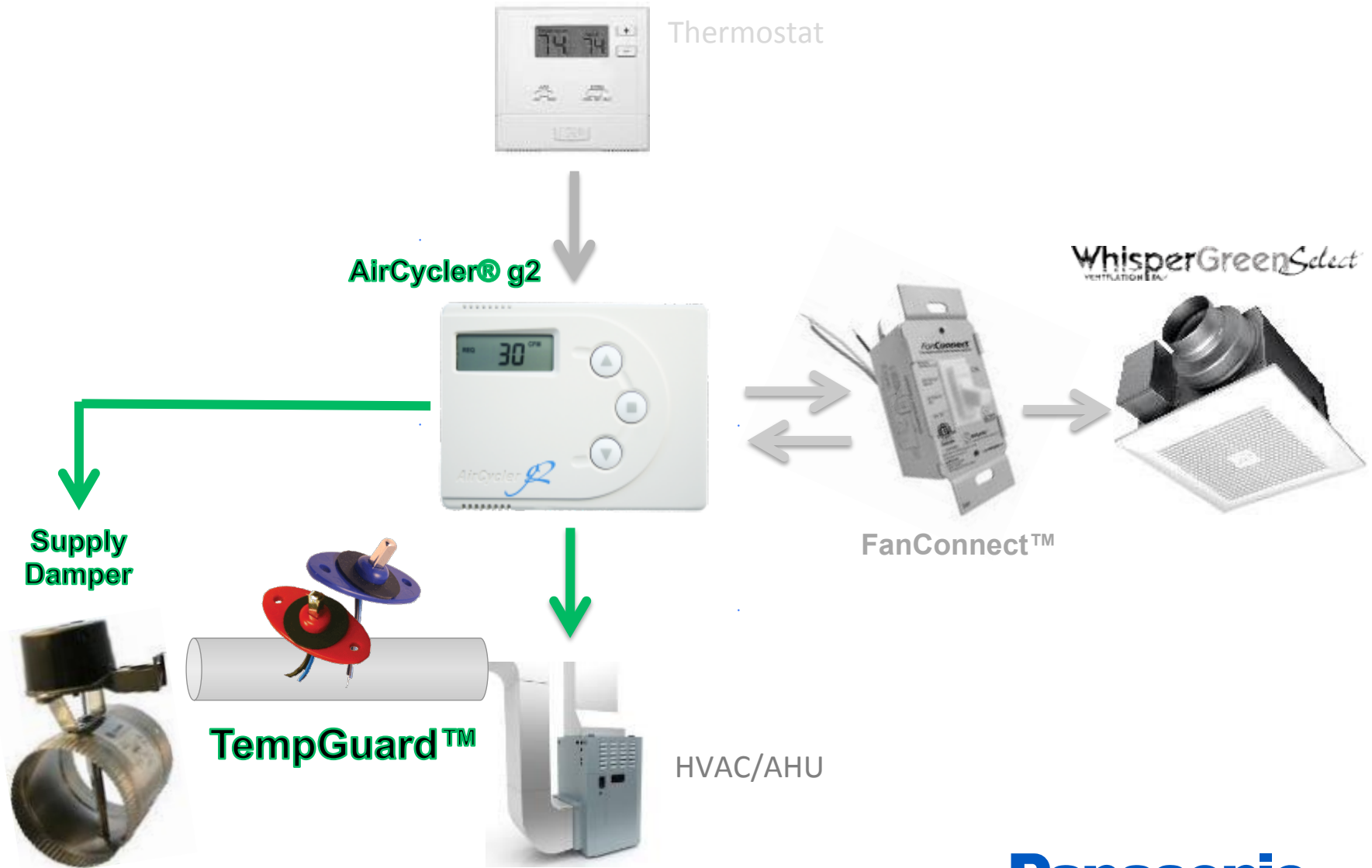
FanConnect™

WhisperGreen Select

Panasonic



The Select Cycler System with TempGuard™



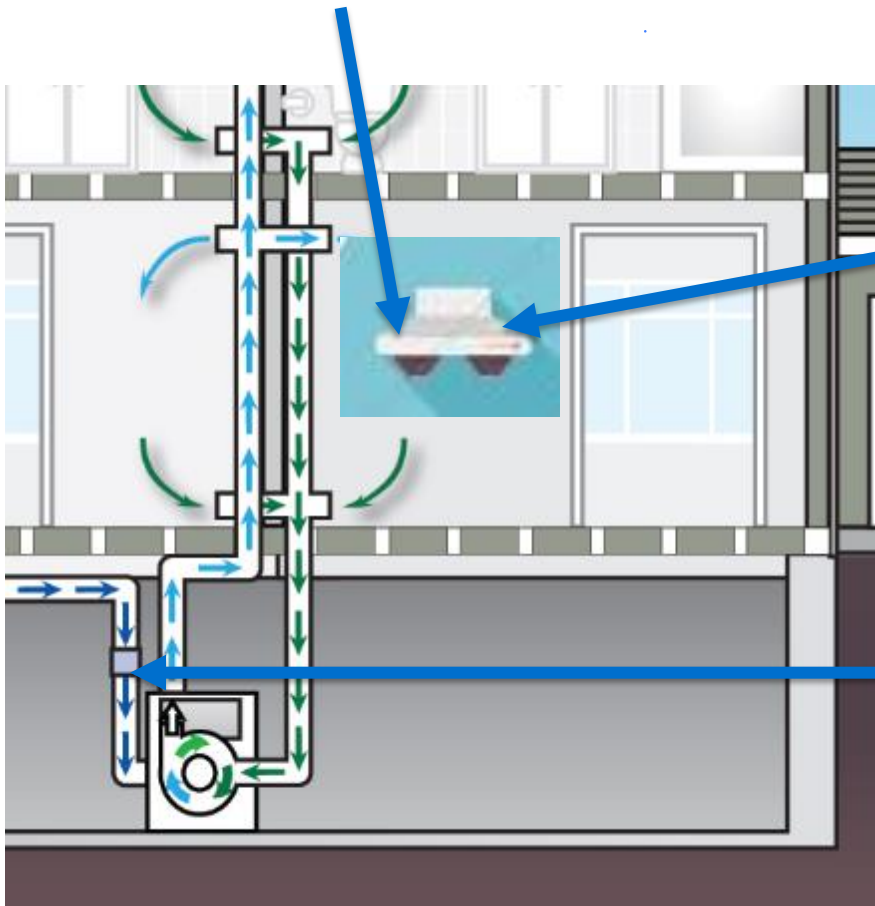
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RangeRelief Operation

1. Range Hood comes on creating positive pressure in rangehood exhaust duct



2. RangeRelief pressure switch senses positive pressure from pressure tap and closes, sending power to damper to open.



3. Supply Damper opens; negative air pressure in the house brings in fresh air from outside to HVAC/AHU return plenum



Competitive Benchmark – Range Relief

Model	Broan MD8TU	AirCycler RangeRelief
Initial Cost/Price	\$159	\$61
Image		
Kit includes Supply Duct	YES	NO
Universal Connection	YES	YES
Transformer Needed	YES	NO
Ease of Installation	Difficult to retrofit	Good, especially if already using Select Cyclor







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- The diagram illustrates the installation of the AirCycler G2 in a duct system. A thermostat is connected to the unit. The system includes a main return duct, a motorized damper, an outside air duct with a filter, and the AirCycler G2 unit. Arrows indicate the flow of air. Two callouts show the motorized damper and the AirCycler G2 unit.

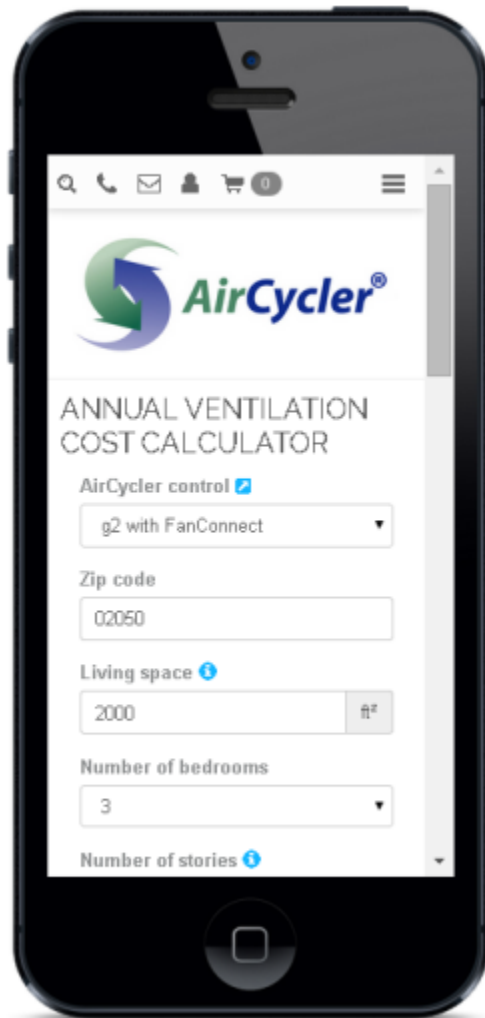


Competitive Benchmark – TempGuard™

Brand	Aprilaire	AirCycler
Model	8052	TempGuard
Initial Cost/Price	\$12.50	\$13.50
Image		
Purpose	Monitors Outside Air Temperature	Monitors Outside Air Temperature
Connection	Connects to Aprilaire Thermostat	Connects to Select AirCycler g2 Control
Mechanism-of-Action	Non-Programmable	Automatically overrides Supply Damper if too Hot or too Cold ✓
Compatibility	N/A	Can be wired to allow RangeRelief to open damper ✓



AirCycler® Annual Ventilation Cost Calculator



Get an estimated range of the annual energy cost to run the **Select Cycler System**

1. Select “g2 with FanConnect” (for hybrid) or “g2 with FanConnect in Balanced mode”
2. Provide basic information about home and heating system
3. Enter wattage and flow rate for WhisperGreen Select fan