Constant Airflow Regulators & Registers

aldes

The **Simple** Solution

The model CAR-II Constant Airflow Regulator is a modulating orifice that automatically regulates airflows in duct systems to constant levels. The passive control element responds to duct pressure, and requires no electric sensors, pneumatic sensors or controls.

The CAR-II compensates for changes in duct pressure caused by thermal stack effect, building pressure, dust-clogged filters, etc. The CAR-II also provides a low-cost solution to balancing forced-air systems for heating, air conditioning and ventilation, eliminating the need for on-site balancing. The CAR-II will regulate airflow in supply, return, or exhaust duct systems.

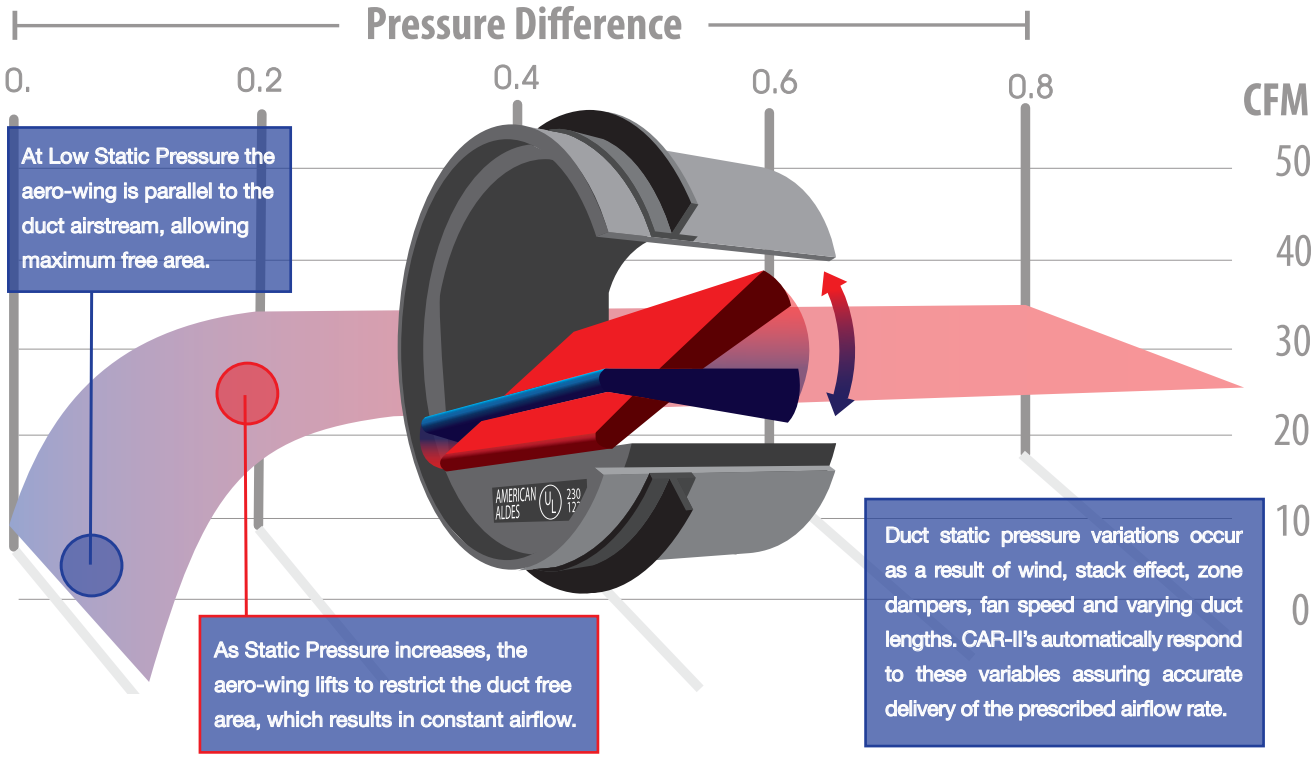
The active control element of the CAR-II is a unique aerofoil. Using the Bernoulli's Principle, the aero-wing damper lifts in response to increasing static pressure. This operation regulates the free-area opening through the control, resulting in maintenance of the velocity and specific airflow set points. Each CAR-II is designed and produced for control of air in temperatures ranging from -25° to 140° F (-32° to 60° C).

The round CAR-II is constructed of a UL94V-0 ABS plastic, and is UL 2043 safety classified and labeled for flame and smoke generation. The assembly is sized to fit inside standard rigid round ducting, as well as fittings such as take-offs, tees, etc. A lip or flex-type ring seal gasket around the circumference ensures a tight, no-leak fit.

The CAR-II airflow regulators control airflow accurately to within 10% of rated flow (15% for units 50 CFM or less) throughout the target operating pressure range of 0.2 to 0.8 in. w.g. (50 to 200 Pa). Low Pressure Constant Airflow Regulators (CAR-II-LP) operate at 0.1 to 0.42 in w.g. (25-100 Pa). High Pressure Constant Airflow Regulators (CAR-II-HP) operate at 0.6 to 2.4 in. w.g. (150-600 Pa).

Each CAR-II is factory tested and calibrated to the rated set point before shipping. On-site field adjustment of airflow set points can be made on some models (CAR-IIA). Each diameter of CAR-II regulator is available in multiple factory-calibrated set points.

HOW THE CAR-II WORKS



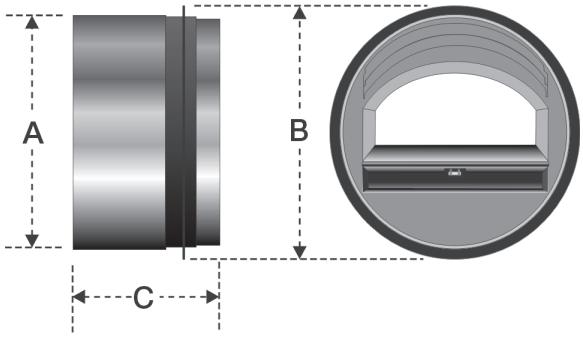
MAINTENANCE

The CAR-II needs no maintenance when used in normal conditions. There is no risk of dust deposit or obstruction because the CAR-II has no airways subject to clogging. If the intended application includes air heavily loaded with grease or dust, a fitting with an access panel or door, such as that used for fire dampers, should be provided.

WARRANTY

Guaranteed for 5 years, from date of shipment, against all defects in material or workmanship, provided that the material has been installed and used under normal conditions. This warranty is limited to the repair or replacement of the material.

DIMENSIONS

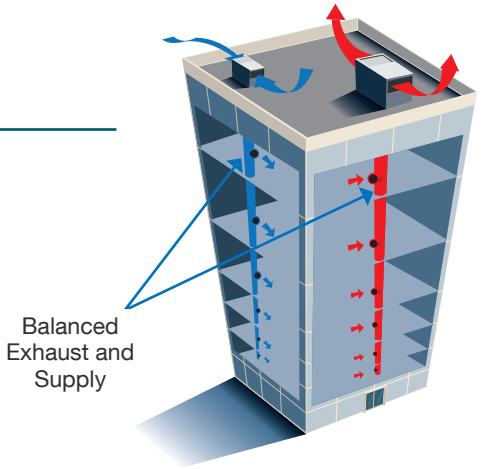


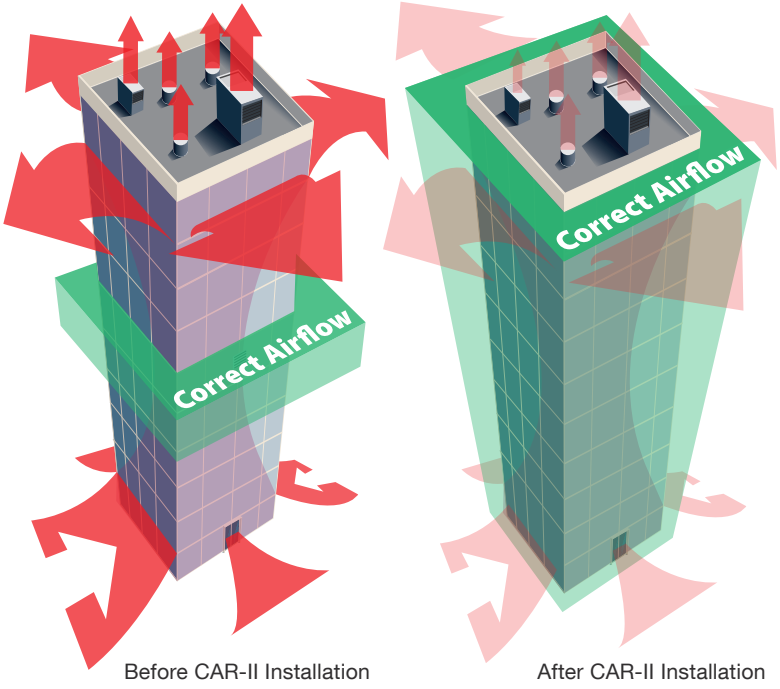
DUCT	CAR-II	A	B	C
4″	4″	3.8″	4.1″	2.3″
5″	5″	4.8″	5.1″	3.5″
6″	6″	5.8″	6.1″	3.5″
8″	8″	7.6″	8.1″	3.5″
10″	10″	9.7″	10.1″	3.7″

Applications

Automatic Airflow Balancing

Supply and return/exhaust airflow for each area is automatically balanced by installing the CAR-II in the branch ducts or terminal device locations. CAR-II's are commonly used in heat and energy recovery systems to ensure maximum efficiency.





Before CAR-II Installation

After CAR-II Installation

Correcting Stack Effect

Stack effect occurs when air is heated and reises in the shaft forcing more air in the lower floors and out the top floors. This results in pressure variation to vertically ducted central ventilation systems, causing over-ventilation at some levels that wastes energy, and under-ventilation at other levels which prevents proper contaminant removal. These pressure imbalances can also cause cross-contamination or force unwanted air from one compartment to the next. Cross-contamination is often the cause of many poor indoor air quality problems.

Installing a CAR-II at each grille or diffuser location eliminates stack effect on the ventilation system.

Indoor Air Quality

Building codes and standards for energy efficient building practices have specific requirements for outside airflow control and exhaust ventilation. The CAR-II is the easiest way to ensure precise airflow control and code compliance without expensive and time consuming field adjustment and measurement.

ENERGY STAR INDOOR AIR PACKAGE

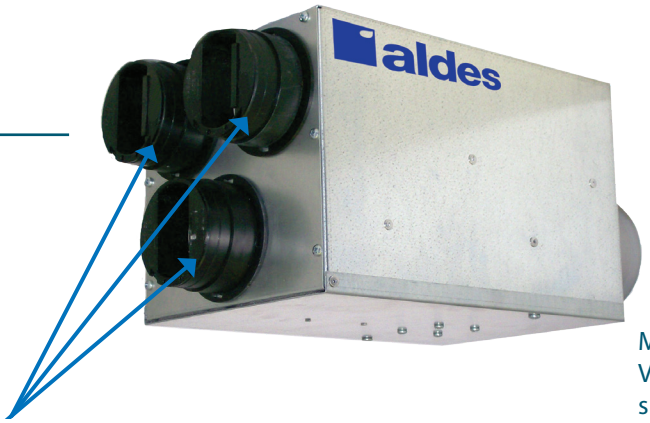
LEED FOR HOMES

CBSC CALGreen

ASHRAE

Fan Control

CAR-II's are used in a variety of different exhaust, supply, and balanced fan systems to match fan airflow to specific applications. This eliminates the need for separate speed controls or manual adjustment. All of the ALDES Ventergy® Series fans include CAR-II devices for precise airflow control and delivery.

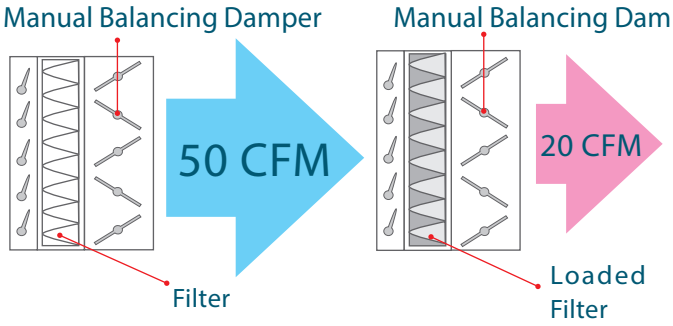


Multi-Port Ventilator shown

Airflow Controlled by CAR-II's

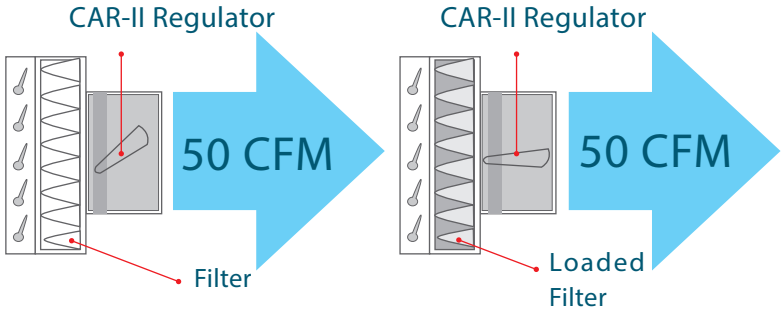
Automatic Correction

Without CAR-II Regulator



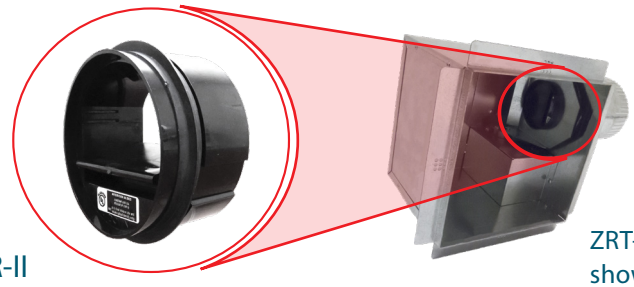
Installation challenges and user interaction can result in "field" modifications to intended system designs. CAR-II's will automatically adjust to compensate for changes in duct length, duct leakage, proper filter selection, filter loading, and damper settings, to always deliver the proper designed airflow rate.

With CAR-II Regulator



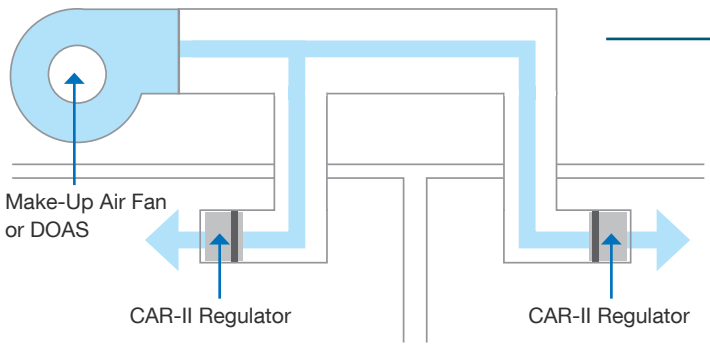
Zoning

Motorized dampered zoning systems have wide variations in airflow delivery rates and duct pressure. The pressure-independent CAR-II keeps airflow rates constant on demand.



ZRT-2 shown

Airflow Controlled by CAR-II



Outside Air Control

CAR-II's are used to control the amount of outside air brought into a building when installed in dedicated outdoor air systems (DOAS), make-up air fan systems, and AHU outside air plenums. This guarantees a delivered airflow rate and prevents over-ventilation in windy conditions.

Configurations*

MODEL NAME (without grilles)	TYPICAL APPLICATION		USE		STATIC PRESSURE OPERATING RANGE	DUCT TYPE		FIRE DAMPER INCLUDED
	New	Retrofit	Exhaust	Supply		Round	Square/ Rectangular	
CAR-II	X	X	X	X	STANDARD PRESSURE 0.2 to 0.80 in. w.g.	X		
CAR-IIA	X	X	X	X		X		
CAR-SE-II	X	X	X				X	
CAR-SS-II	X	X		X			X	
CAR-FEA-II	X	X	X				X	X
CAR-FSA-II	X	X		X			X	X
CERB-WS-II	X	X	X				X	
CERB-WB-II	X	X	X				X	
CERB-CS-II	X	X	X				X	
CERB-CFS-II	X	X	X				X	X
CERB-CFB-II	X	X	X				X	X
CSRB-WS-II	X	X		X			X	
CSRB-WB-II	X	X		X			X	
CSRB-CS-II	X	X		X			X	
CSRB-CFS-II	X	X		X			X	X
CSRB-CFB-II	X	X		X			X	X
CAR-II-LP	X	X	X	X	LOW PRESSURE 0.10 to 0.42 in. w.g.	X		
CAR-LP-SE-II	X	X	X				X	
CAR-LP-SS-II	X	X		X			X	
CAR-II-HP	X	X	X	X	HIGH PRESSURE 0.60 to 2.40 in. w.g.	X		
CAR-HP-SE-II	X	X	X				X	
CAR-HP-SS-II	X	X		X			X	

MODEL NAME (with grilles)	TYPICAL APPLICATION		USE		STATIC PRESSURE OPERATING RANGE	DUCT TYPE		FIRE DAMPER INCLUDED
	New	Retrofit	Exhaust	Supply		Round	Square/ Rectangular	
CER-S-II	X	X	X		STANDARD PRESSURE 0.2 to 0.80 in. w.g.		X	
CER-R-II	X	X	X			X		
CER-FEA-II	X	X	X				X	X
CSR-S-II	X	X		X			X	
CSR-R-II	X	X		X		X		
CSR-FSA-II	X	X		X		X	X	X
CER-LP-S-II	X	X	X		LOW PRESSURE 0.10 to 0.42 in. w.g.		X	
CER-LP-R-II	X	X	X			X		
CER-LP-FEA-II	X	X	X				X	X
CSR-LP-S-II	X	X		X			X	
CSR-LP-R-II	X	X		X		X		
CSR-LP-FSA-II	X	X		X		X	X	X
CER-S-IIR		X	X		STANDARD PRESSURE 0.2 to 0.80 in. w.g.		X	
CER-FEA-IIR		X	X				X	X
CSR-S-IIR		X		X			X	
CSR-FSA-IIR		X		X		X	X	X
CER-LP-S-IIR		X	X		LOW PRESSURE 0.10 to 0.42 in. w.g.		X	
CER-LP-FEA-IIR		X	X				X	X
CSR-LP-S-IIR		X		X			X	
CSR-LP-FSA-IIR		X		X		X	X	X

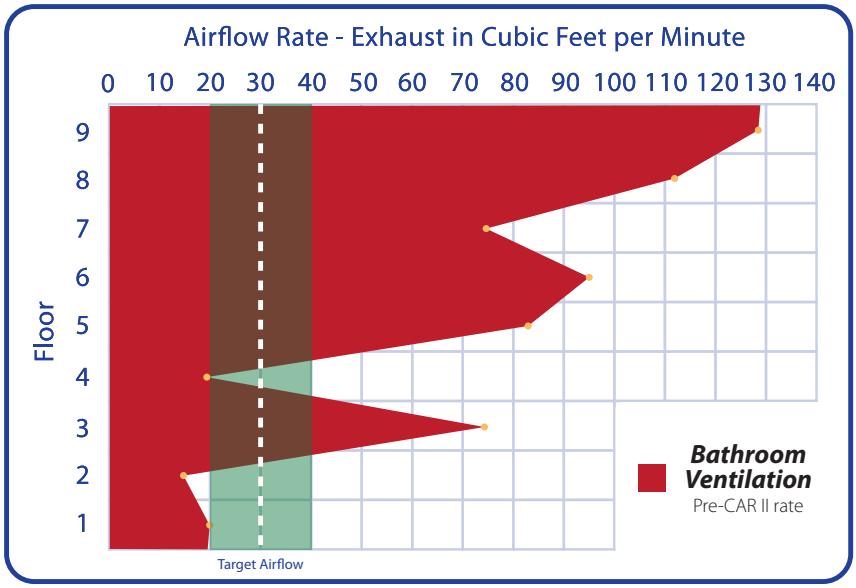
**Custom configurations are always available, contact your sales representative about your unique needs.*

Case Study

In October 2008, the NAHB Research Center published a case studey that showed conclusively how installing ALDES Constant Airflow Regulators improves airflow balance in multi-story buildings with central exhaust ventilation systems. This improvement provides many benefits, among them: “consistent airflow to... lower stories,” “{preventing] overventilation to upper units.”, “without seasonal maintenance or electrical supply to the CAR regulator. Most importantly, the study finds that the CAR-II provides “considerable operating cost savings,” and “over 27% energy savings”.

Airflow data for each floor from Partnership for Advancing Technology in Housing’s Final Report on the Evaluation of Constant Airflow Regularos (CAR) in Multi-Family, Multi-Story Central Ventilation Systems, (October 2008). Provided by the NAHB Research Center.

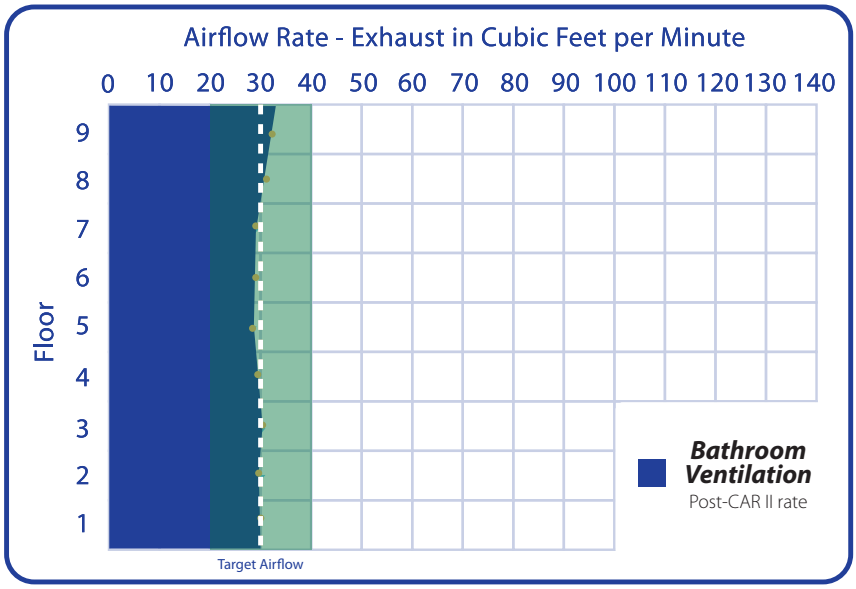
Over 27% energy savings



Before

Bathrooms in the building were over-ventilated by ~150% in over 60% of all apartments. This represents a serious waster of energy in addition to inflated operations costs.

Bathrooms were underventilated in just over 30% of all apartments, posing a serious Indoor Air Quality issue.



After

When the NAHB Reserach Center visited the site to follow up, they calculated the installation of ALDES CAR-II’s generated an energy savings of over 27%.

www.aldes.us

To find out more about **Constant Airflow Regulators** and other related products visit **www.aldes.us/airflow-zone-control**

or find us on

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