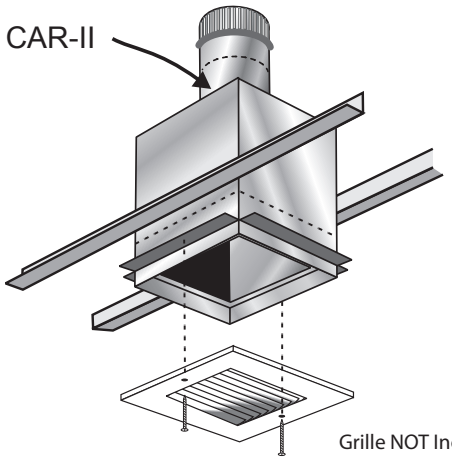
AIRFLOW & ZONE CONTROLS

CERB-CFB-II

Ceiling Radiation Damper Box with Adjustable CAR-II and Back Take-Off Collar

PRODUCT SPECIFICATIONS & TECHNICAL DATA



Grille NOT Included

GENERAL

CERB-CFB-II Automatic Ceiling Radiation Damper Register for exhaust and return air applications are designed for installation in fire-resistant membrane assemblies. Each CERB-CFB-II includes an automatic, self-regulating constant airflow regulator (CAR-II), a UL 555C classified ceiling radiation damper, and heavy-gauge angle mounting brackets. Optional flush-mount steel grilles are also available. The damper is approved by UL for use in floor/ceiling or roof/ceiling assemblies with up to 3-hour fire resistance rating where air handling openings are permitted.

The passive control element in each CERB-CFB-II compensates for changes in duct pressure caused by duct system design or installation, thermal stack effect, building pressure, dust-clogged filters, etc. The register box and CAR-II combination provides a low-cost solution to balancing ventilation and exhaust systems, essentially eliminating the need for on-site balancing. Automatic flow regulation is achieved without the use of electric or pneumatic sensors or controls.

The active control element of the CAR-II is a unique aerofoil. Using Bernoulli's Principle, the aero-wing damper lifts in response to increasing static pressure. This operation regulates the free-area opening through the control, maintaining 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.)

CONSTRUCTION

The CERB-CFB-II plenum box is constructed of heavy-gauge galvanized steel with an extended duct collar that allows attachment of flexible or rigid duct without interfering with the control element operation. The round CAR-II is constructed of a UL94V-0 ABS plastic, and it is UL2043 safety classified and labeled for flame and smoke generation. It is also mounted in its own sleeve with gasket seal to prevent unwanted air leakage. The separate regulator sub-assembly can be removed from the face of the register for inspection.

The damper is constructed of 22-gauge roll-formed frame and blades. The standard fusible link is UL listed for 212°F (100°C). Optional 165°F (74°C) link is also available. Each model 45-LTD ceiling radiation damper is UL 555C Classified (R15858), California State Fire Marshal (No. 3225-1417:101), City of New York Board of Standards and Appeals (No. 460-88-SA), and it meets NFPA 90A requirements.

PERFORMANCE

The CAR-II controls 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). Each CAR-II is factory tested and calibrated to the rated set point before shipping. Each CAR-II register is available in multiple factory-calibrated set points (see performance curves).

MAINTENANCE

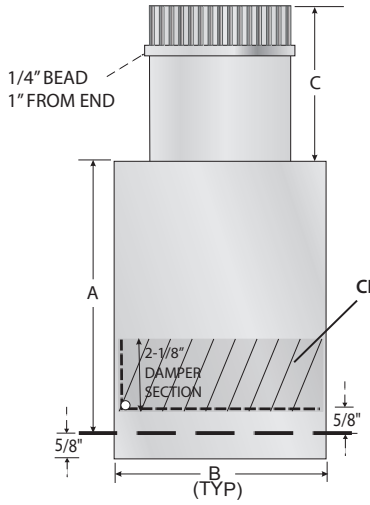
The CAR-II needs no maintenance when used in normal conditions. There is no risk of dust deposit or obstruction because the CAR-II has no airways subject to clogging. If the intended application includes air heavily loaded with grease or dust, a fitting with an access panel or door, such as that used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

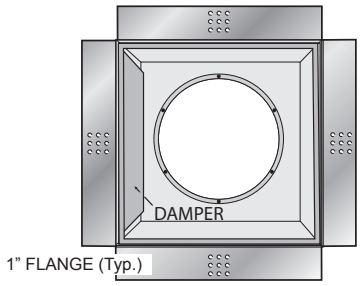
WARRANTY

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

CERB-CFB-II Dimensions

SIDE





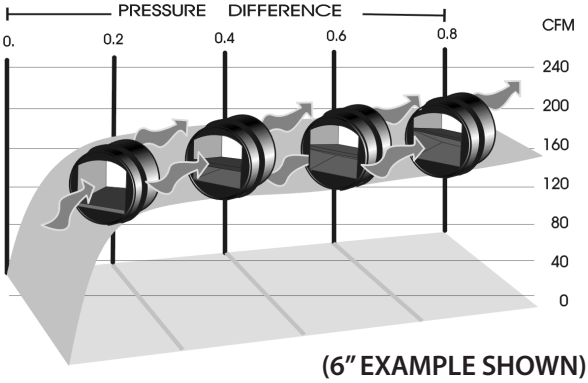
BOTTOM

PART NUMBER	ADJUSTABLE CAR-II CFM	DUCT COLLAR*	A	B	C
54 137A-345	35/45/50	4"	8"	5-7/8"	5-3/4"
54 137A-456	40/50/60	4"	8"	5-7/8"	5-3/4"
54 138A-456	40/50/60	5"	9"	7-7/8"	5-3/4"
54 138A-791	75/90/105	5"	9"	7-7/8"	5-3/4"
54 139A-791	75/90/105	6"	10"	9-7/8"	5-3/4"
54 139A-1111	125/140/160/175	6"	10"	9-7/8"	5-3/4"

*Nominal

How the CAR-II Works

Constant airflow is achieved by controlling the free area through the device. At minimum static pressure, the aero-wing is parallel to the air stream. As the static pressure increases, the aero-wing lifts, reducing the amount of free area through the regulator. At the same time, higher static pressure increases the air velocity resulting in CONSTANT AIRFLOW. This occurs regardless of pressure differences in the range of 0.2 to 0.8 in. w.g. (50 to 200 Pa). The air velocity in the duct is in the range of 60 to 700 ft/min. (0.3 to 3.5 m/s).

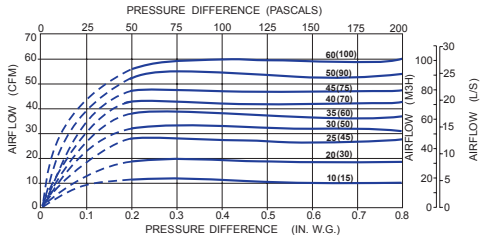


(6" EXAMPLE SHOWN)

CAR-II Airflow Performance Data

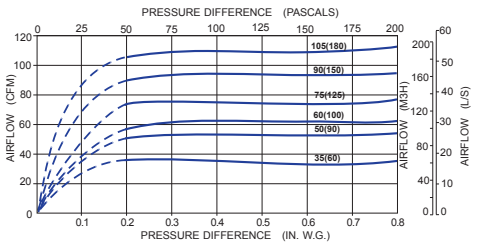
Performance charts reflect airflow measurements taken at 68°F (20°C) at 1 atmosphere pressure. The CAR-II is designed for system pressures between 0.2 and 0.8 in. w.g. Models are also available for applications with system pressures between 0.1 and 0.42 in. w.g (CAR-II-LP) and above 0.8 in. w.g. (CAR-II-HP).

4" DIAMETER (100 mm) REGULATING ELEMENT



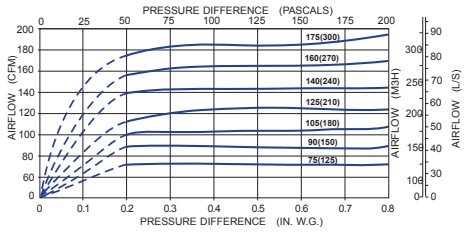
AIRFLOW
10 CFM (15 m³/h)
20 CFM (30 m³/h)
25 CFM (45 m³/h)
30 CFM (50 m³/h)
35 CFM (60 m³/h)
40 CFM (70 m³/h)
45 CFM (75 m³/h)
50 CFM (90 m³/h)
60 CFM (100 m³/h)

5" DIAMETER (125 mm) REGULATING ELEMENT



AIRFLOW
35 CFM (60 m³/h)
50 CFM (90 m³/h)
60 CFM (100 m³/h)
75 CFM (125 m³/h)
90 CFM (150 m³/h)
105 CFM (180 m³/h)

6" DIAMETER (150 mm) REGULATING ELEMENT



AIRFLOW
75 CFM (125 m³/h)
90 CFM (150 m³/h)
105 CFM (180 m³/h)
125 CFM (210 m³/h)
140 CFM (240 m³/h)
160 CFM (270 m³/h)
175 CFM (300 m³/h)

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