

# TECH TALK

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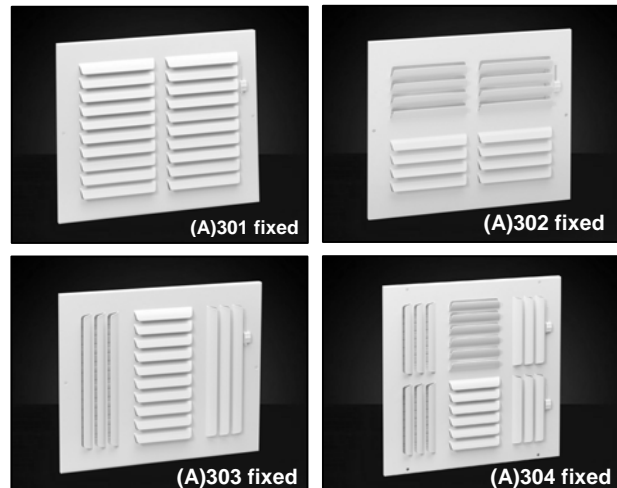
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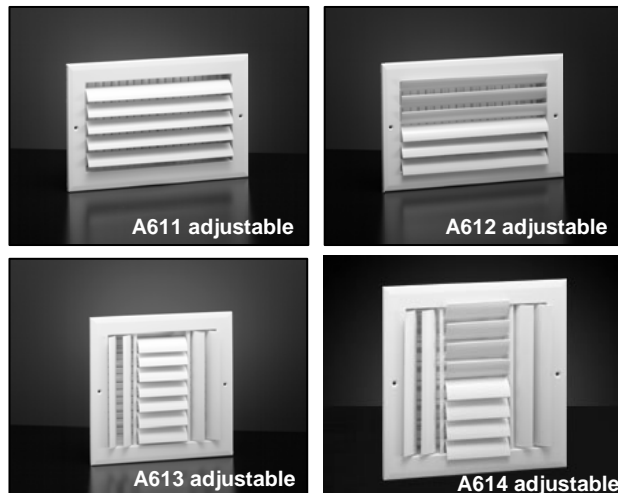
## Curved-Blade Register Discussion

by Dave Fetters

Hart & Cooley's product offering includes both fixed and adjustable curved-blade registers used for high sidewall and ceiling applications. The fixed curved-blade series is the (A)300 one-piece, stamped-face register in one-, two-, three-, and four-way deflections with either steel or aluminum faces. Adjustable curved-blade registers come in two different series—the residential A600 series made with a stamped aluminum face and roll-formed aluminum blades and the commercial C series made entirely with extruded aluminum.



The reference to *residential* or *commercial* is mostly in name only. We see either product used in either application. Commercial product is usually distinguished by more options and a much larger size offering.



All three series offer all four deflections. The C series, made from extruded aluminum, is the premium product because of its considerable strength advantage over the roll-formed product. In addition, the C series is offered as a grille (no damper) and as a register with either a multi-shutter or

opposed-blade damper in 2-inch increments from 6 x 6 to 36 x 36—a much larger matrix of sizes and options than the A600 series. These are some of the reasons why the C series costs more than the A600 series—added features.

The performance data of the A600 and C series product lines are very similar, providing that the blades are set to the same opening dimension. The 300 series is not included in this discussion since the blades are fixed. A significant advantage of *adjustable* curved-blade registers is the ability to open or close the blades to suit the room comfort requirements. Consequently, performance depends on how far the blades are open with respect to how much air is available at the face. With this in mind, consider a narrow blade opening for a ceiling-mounted register. A small gap between blades constricts the airflow, which usually increases the velocity and resistance (for a set CFM, reducing the area increases the velocity if the fan can work against the added resistance). The result is an air pattern that is tight to the ceiling surface at a somewhat increased velocity that will maximize the throw. This is a great cooling pattern.

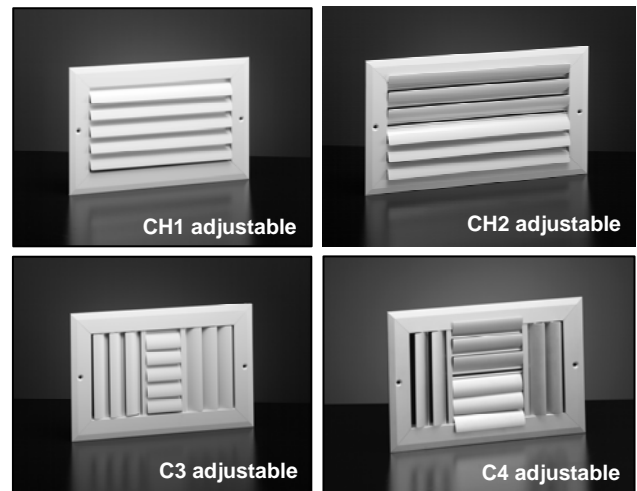
At the extreme opposite blade setting with all the blades open to the maximum, the air is no longer deflected into discreet directions along the ceiling, but allowed to blow straight downward or outward. This is the best way to introduce warm air from the ceiling into the occupied space with this type product. Since conditioned air above ambient temperature is so buoyant, it needs to be blown downward from ceiling outlets to provide good air mixing and to avoid stagnation near the floor.

Although the capability is there to have both heating and cooling air patterns from the same supply register, most homeowners either

don't understand the concepts of air pattern adjustments or they don't bother. My guess is the former in most cases because they have never been shown the advantages of adjusting air deflection to suit the seasonal demands.

Since the blade setting has so much impact on performance, we have chosen a blade setting for general purpose cooling. The gap is specified at 13/32 of an inch for our data gathering purposes (it happened to be the width of the scale in my pocket at the time!). We show this dimensioned gap for the C series in our catalog. We did not choose to generate data at other blade settings due to resource constraints. This has proven to be acceptable based on my feedback.

You may direct your questions, comments, or suggestions for future articles to me at any time. See our web site at [www.hartandcooley.com](http://www.hartandcooley.com) for contact information.



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