Ceiling Dampers

Determining maximum areas

Q: While reviewing plans for a 180 sq. ft. room containing a 2 hour floor-ceiling assembly, the UL design (L502) indicated that the total area of a duct opening in the suspended ceiling cannot exceed 198 sq. in., and the aggregate duct openings cannot exceed 99 sq. in. per 100 sq. ft. of ceiling area. What size damper can be used in this application?

A: Good question. In looking at design L502 in the UL Fire Resistance Directory, or in the Online Certifications Directory, it indicates:

Ceiling Damper* — (Optional) — *Max nominal area shall be 198 sq. in. Max rectangular size shall be 12 in. wide by 16-½ in. long. Max height of damper shall be 8-3/4 in. Aggregate damper openings shall not exceed 99 sq. in. per 100 sq. ft. of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille shall be installed in accordance with installation instructions.*

Based on these restrictions, the maximum damper size is the lesser of 198 sq. in. (the maximum single damper size) or the maximum aggregate damper size for the area, which can be calculated as:

Max aggregate damper size = (99 sq. in. x 180 sq. ft. / 100 sq. ft.) = 178.2 sq. in.

In this case, based on the aggregate size restriction, a max. 178.2 sq. in. damper can be provided. As noted in the design it cannot exceed 12 in. in width or 16-½ in. in length.