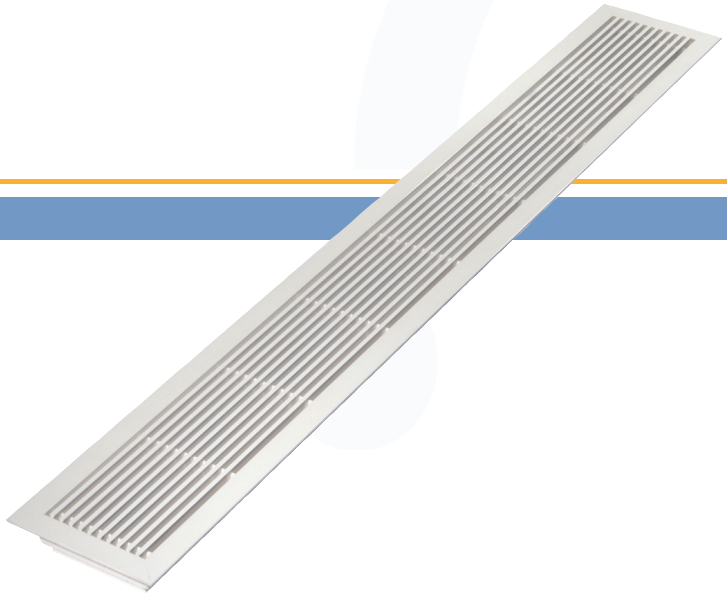
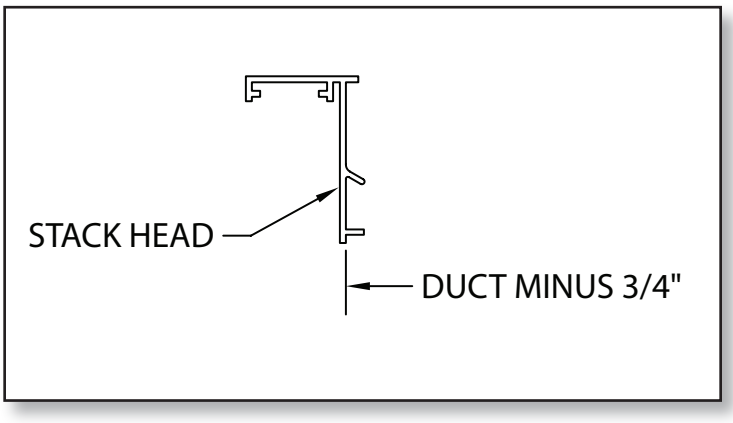
CT Linear Bar Grille Sizing



A common subject we deal with here in application engineering involves the sizing of model CT linear bar grilles. Whether the question is, "How long a unit should I order if I want the outside dimensions to be…" or, "My customer needs to know how big to cut the hole." Although the catalog and submittals do provide dimensions, we thought this might be a good opportunity to expound on the subject. It is helpful to refer to CT border and frame details on Titus catalog page F42 in conjunction with this article.

All grilles are undersized from the nominal duct dimensions in order to fit ductwork and the linear units are no exception. The stack head is the part of the grille that is installed into the wall opening and associated ductwork or plenum. We start our sizing from the inside of the stack head because this is the business part of the unit through which the air passes and performance data is consistent regardless of the border width.



The inside of the linear bar grille stack head is undersized from the nominal, or duct dimension by $^{3}/_{4}$". The floor frames, type 5 and 6 are the exception at $^{3}/_{8}$". The under-size dimension represented in our marketing literature is D-$^{3}/_{4}$, or Duct minus $^{3}/_{4}$. If a dimension specified as 12, the inside of the stack head will be 11-$^{3}/_{4}$"; this applies to both the length and the width of the unit. The outside or overall dimension is the 11-$^{3}/_{4}$ plus two border widths (plus two mounting frame widths for the combination frames that use both a border and a frame.)

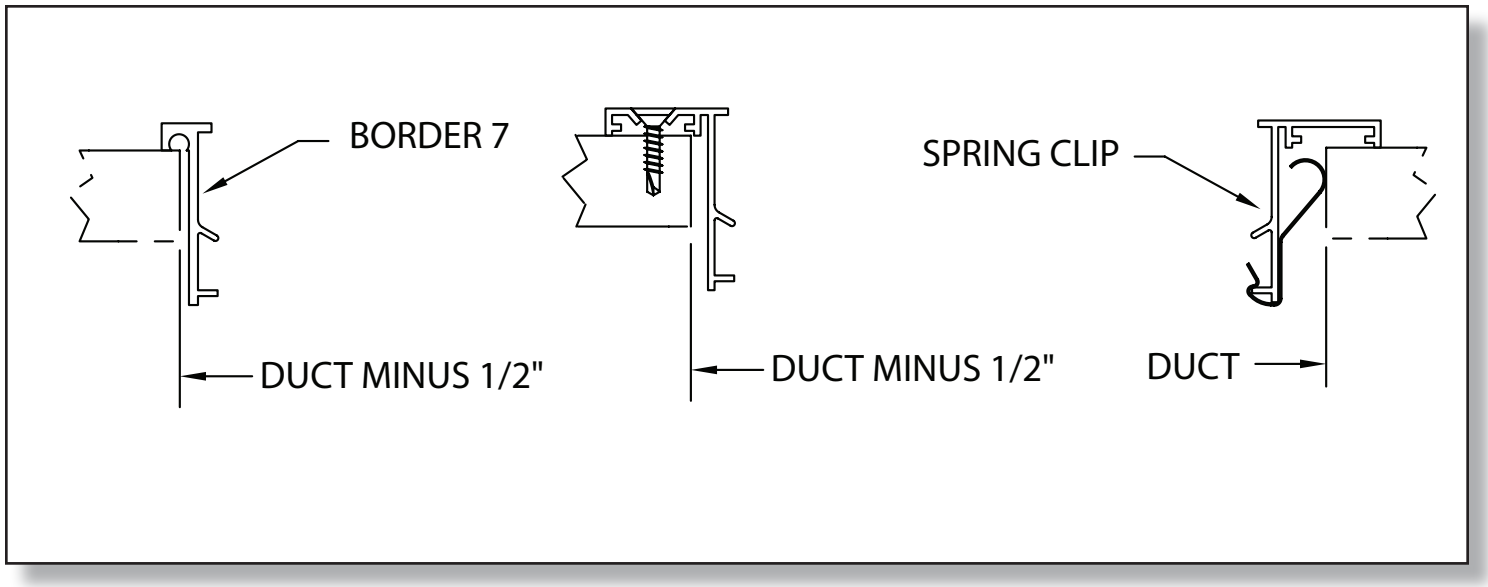
Cut dimensions for mounting the units can vary from the loose fit of the specified D dimension to a tight fit of D-$^{5}/_{8}$. The tighter fit is beneficial to the screw mounting option as it provides the most overlap or "meat" into which the screw is installed, particularly for sheet rock surfaces. The loose fit of a D cutout is flexible and should be used for combination frame & borders, spring clip mounting, concealed mounting options or to provide clearance for a plenum boot (by others) to be installed. Titus does not provide plenum boots for linear bar diffusers.

Floor frames (type 5, 6 and 15) and combination frames that utilize a mounting frame (types 1 through 4) are a little different in that the outside of the stack head or mounting frame correlates exactly to D. For these units the cutout should be slightly oversized at D+$^{1}/_{8}$ to provide clearance for the weld beads at the corners of the frames.

There are two particular notes I would like to make involving the narrow frame styles 7, 11 and 12. First, the type 11 and 12 frames offer a screw mounting option (A). When the A option is used, it is important to consider up-sizing the

grille or making sure that the tight cutout used is to provide a secure base for screw mounting. If the D dimension is used, the screw holes provided in the frames may coincide with the opening and installation becomes much more complicated. Concealed mounting is the preferable mounting option for these frames.

The type 7 frame does not offer the screw mounting option so a concealed fastening must be used. This frame style was originally designed for the type 4 combination frame but the narrow border width makes is attractive to those desiring the least amount of exposed grille for aesthetic purposes. You will note that because of its primary use as the core of a combination frame, the D dimension actually falls outside the overall (O) dimension. Therefore a unit size of 12 x 12 should not be installed in a 12 x 12 cutout, the tight fit cutout of D-$^1/_2$ should be used, or the unit oversized by $^1/_2$" if the D cutout will be used.



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