TREATMENT OF LONGITUDINAL AND TRANSVERSE SEAMS WHEN INSTALLING K-FLEX DUCT LINER GRAY

The purpose of this technical bulletin is to address the treatment of longitudinal and transverse seams when K-Flex Duct Liner Gray is installed in rectangular duct work. The treatment of longitudinal joints is simple; liner is to be cut oversized and compression fit so that there are no gaps between adjacent sections of liner. The use of adhesive on longitudinal joints is optional. This information is reflected in the Duct Liner brochure and in the Installation Guidelines.

K-Flex Duct Liner Gray is available in roll widths of 44.5, 47, 48, 56.5, 59 and 60 inches. The 48 and 60 inch widths are for general purpose applications (fittings, custom transverse joint systems, equipment lining, etc.). The 47 and 59 inch widths are for use with "slip and drive" transverse joint systems. The 44.5 and 56.5 inch widths are for use with TDC transverse joint systems, which are flanged connections with the flanges formed on a coil line directly from the 48" or 60" wide coil of sheet metal. These duct liner widths are intended to fully cover the exposed internal *sheet metal* of the duct. These are industry standard liner widths; the same widths are used with fiberglass duct liners.

Slip and drive systems are typically for lower velocity air flows and when two sections of duct are butted together, the duct liner usually butts up to the liner in the adjoining section. TDC joint systems are typical of larger duct and / or higher velocities. The transverse joints on TDC systems usually incorporate a gasket to prevent duct leakage. The thickness of this gasket varies by specifier, and the thickness of the gasket can create a gap (typically 1/8 to 3/16") between the liner sections.

Historically, the majority of rectangular duct products consist of duct work formed on a fully automated coil line, and the vast majority of liner used is fiberglass of some type. On TDC systems, this gap is *always present* when the duct work is installed. Due to the fabrication process, it is not possible to extend the duct liner beyond the edges of the duct, and it is not practical to insulate these gaps on site. In fact, to do either may *increase* the risk of liner failure once the system is in operation. I am not aware of any history of condensation issues at the flanges of lined duct systems with TDC connections.

Because K-Flex Duct Liner Gray is installed manually, it is *possible* to extend the duct liner beyond the edges of the duct and theoretically provide a "compression fit" on the transverse joint. One manufacturer of elastomeric duct lining material actually recommends a 5mm overhang. We do not recommend this installation method for the following reasons:

1. Extending the duct liner beyond the edges of the duct work risks damage to the liner during fabrication, storage, shipping, on site storage and installation.
2. Further, unless you specifically account for the *exact* thickness of the gasket or sealant, you will either leave a gap (albeit a smaller gap) or more likely will leave too much overhang which, when compressed will form a Λ shaped ridge protruding into the airstream which will create turbulence and provide dirt collection points.
3. Long term, these irregularities may also lead to delamination of the liner.
4. From an installation cost standpoint, the overhang would require custom cutting for every piece of liner, which would increase labor time and material waste factors (e.g. using 60" width to cut down to 56.75" width instead of using the standard 56.5" width roll and simply cutting across the roll.

It is for these reasons that we feel that the best practice is to use the exact width of liner for the type of duct being fabricated. The gaps should not present any performance issues based on historical experience. The only exceptions to this recommendation would be in high humidity areas, e.g. a swimming pool / natatorium or in harsh chemical environments or clean rooms.

K-Flex USA also recommends against adhering of the liner on the transverse joints on both slip and drive and TDC joint systems. With a fully adhered liner, this is unnecessary, and in addition to the added installation cost and alignment difficulties, it could actually create problems if duct sections had to be dropped for inspection or maintenance as this would result in liner damage.

When installing K-Flex Duct Liner Gray, only leading edges that are directly exposed to the air stream require coating with adhesive (or metal nosing if the air velocity exceeds 4000 fpm). Unlike fiberglass, every cut edge does not have to be “buttererd” with adhesive or sealant. K-Flex Duct Liner Gray is closed-cell, non-fibrous and non-dusting.

Lastly, some specifiers have suggested the use of a tape to seal longitudinal seams. The tape would be an added cost, would provide no real benefit, and would be one more material exposed to the air stream that could possibly delaminate. We do *not* recommend the taping of longitudinal seams. The compression fitting of the liner for longitudinal seams provides an adequate seal for most applications (exceptions as noted above at the discretion of the specifier). If the owner or specifier desires additional seam integrity, one of our approved contact adhesives can be brush applied into these seams.