

Engineer Bulletin

10 IMPORTANT POINTS TO CONSIDER BEFORE ACCEPTING A PRE-PUNCHED CONNECTOR SYSTEM

In 2009, there was a modified version of the “J” class 4-bolt slide-on flange marketed to commercial HVAC contractors. This altered version of the traditional 4-bolt style connector system has a large number of holes along the length of the legs of the profile to facilitate sheet metal screw fastening. Ductmate® Industries considered this concept years ago, but the number and range of drawbacks outweighed the perceived benefit of facilitating the fastening process. Therefore, the decision was made not to compromise the integrity of the Ductmate® flange system or the quality of HVAC systems. The following points should be carefully considered when weighing the perceived advantage of simplifying the use of a tek screw to attach a flange to the ductwork.

1. With the addition of so many holes in the flange profile, was the product retested to verify compliance with the functional criteria outlined by SMACNA, shaker tested for seismic applications, leak tested, etc
2. Additional holes on the inside leg of the flange could collect dirt, moisture and other contaminants inside the duct, which could be very difficult to clean properly, thus creating potential Indoor Air Quality issues. This may be especially true for duct in hospitals, schools, pharmaceutical and food processing systems. Cleaning ductwork is difficult and costly to begin with, so why open up the possibility of compounding the issue?
3. The large number of holes dramatically increases the surface area of unprotected base steel due to the displacement of the galvanized coating. If open holes are not touched up with galvanized paint, rust could form around the holes. Outside ductwork or humid areas could compound this issue.
4. Holes could decrease the screw engagement to the flange, especially the inner legs, as well as the lamination effect between the flange and duct wall. This, especially, is a concern on lighter gages. Additionally, due to prolonged system pressurization and vibration, how will the fastener engagement to the duct wall alone perform over time?
5. The additional void created, due to the oblong hole design, could promote leakage at each fastener.
6. Once the first cut is made, holes for fasteners may not be located properly at the ends of the flange. Proximity of fasteners to the ends of the flange and the perpendicular wall of a duct is critical to minimizing sheet and joint deflection.
7. Unless the frames are thoroughly clamped to the duct wall and screws are carefully inserted straight through the flange, any upward pressure on the pre-punched holes could prevent the flange from seating properly onto the duct wall. When this occurs, it has a direct effect on the seating of the corner pieces, which are critical in connecting the duct sections together. Both of these conditions can have a direct effect on the amount of system leakage.
8. If spot welding is required, the void left by the hole will blow through the flange and duct.
9. Holes may increase difficulty when duct and connectors require painting for corporate colors or PVC systems.
10. Holes give flange and duct a “Swiss Cheese” appearance along all four sides of the duct. This may not be the aesthetics a building owner would want in an exposed area.

