



CHARLES D. BAKER  
GOVERNOR

KARYN E. POLITO  
LIEUTENANT GOVERNOR

JAY ASH  
SECRETARY OF HOUSING AND  
ECONOMIC DEVELOPMENT

Commonwealth of Massachusetts  
Division of Professional Licensure  
BOARD OF EXAMINERS OF SHEET METAL WORKERS  
1000 Washington Street • Boston • Massachusetts • 02118

JOHN C. CHAPMAN  
UNDERSECRETARY OF  
CONSUMER AFFAIRS AND  
BUSINESS REGULATION

MARK R. KMETZ  
DIRECTOR, DIVISION OF  
PROFESSIONAL LICENSURE

January 14, 2015

**Sheet Metal Board Code Advisory - Fire Dampers and Combination Fire/Smoke Dampers**

**Objective:** To provide clear installation instructions and requirements for the installation of standard fire dampers and combination fire/smoke dampers, so that they are installed with adequate access, retaining angles, and clearances for expansion. Adherence to these requirements will allow for proper operation upon activation.

**Summary:** Ducts with fire dampers and/or combination fire/smoke dampers are often installed incorrectly. Some installers do not provide adequate room for expansion, and the clearance space is sometimes filled with mineral wool, ceramic fiber, or fire-stopping caulks, which is technically unnecessary, potentially detrimental to the installation, and could result in voiding the UL listing of the damper. Where ducts **without** fire dampers penetrate walls and floors, it is likewise common for the annular space around the duct to be sealed or fire-caulked, which should not be done with fire dampers or combination fire/smoke dampers.

State Sheet Metal Inspectors have identified the following common incorrect damper installations:

- 1) Dampers installed without retaining angles;
- 2) Dampers installed with retaining angles attached to the duct and sealed to the wall with fire caulk that may limit expansion;
- 3) Dampers installed without any room for expansion; and
- 4) Dampers installed with additional material added to the expansion space.

In order to address these safety concerns, effectively IMMEDIATELY, all sheet metal licenses and inspectors should follow this advisory for the proper and safe installation of fire dampers and combination fire/smoke dampers. More specific instructions follow below.

If you have any questions, please contact the Board at 617-727-3022.



**Damper Installations: Smoke Dampers, Fire Dampers, and Ceiling Dampers.**

**(a) Smoke Dampers.** Smoke dampers shall comply with UL-555S-1999 standards for leakage-rated dampers and shall be labeled by an approved agency. Smoke damper shall be installed in a damper sleeve that penetrates the smoke barrier wall. The damper itself shall be located in the smoke barrier wall or within 24” of the smoke barrier wall.

**(b) Fire Dampers.** Fire dampers shall comply with UL-555-2006 standard for fire dampers and shall have been tested for closure under airflow conditions and shall be labeled for both maximum airflow permitted and direction of flow. When more than one damper is installed at a point in a single air path, the entire airflow shall be assumed to be passing through the smallest damper area. Fire dampers shall be labeled by an approved agency.

**(c) Ceiling Radiation Dampers.** Ceiling radiation dampers shall comply with UL-555C-2006 standard for ceiling radiation dampers and shall be installed in the fire-resistive ceiling element of floor-ceiling and roof-ceiling assemblies. Fire dampers not meeting the temperature limitation of ceiling radiation dampers shall not be used as a substitute. Ceiling radiation dampers shall be labeled by an approved agency.

**(d) Multiple Arrangements.** When size requires the use of multiple dampers, the installation shall be framed in an approved manner to ensure that the dampers remain in place.

**(e) Damper Sleeves.** Dampers shall be fastened to damper sleeve every 8-inches with ½-inch welds, ¼-inch nuts and bolts or # 10 sheet metal screws.

Damper Sleeves or sleeve extensions shall be provided as follows:

18 gauge – round ducts up to 12” diameter, rectangular duct up to 12” high and/or up to 16” wide

16 gauge – round ducts 13-24” diameter, rectangular duct 13-24” high and 17-36” wide

14 gauge – round ducts over 24” diameter, rectangular duct over 24” high and/or over 36” wide

**(f) Expansion Space.** Dampers within wall and floor openings shall have a minimum clearance of 1/8-inch per linear foot of damper. In no case shall the clearance be less than ¼-inch. The clearance space required for fire dampers and combination fire/smoke damper expansion shall not be filled with mineral wool, ceramic fiber or fire/smoke stopping caulks.

**Exception:** Only fire/smoke stopping materials and sealants specifically approved by the damper manufacturer are allowed. Documentary proof of manufacturer approval shall be provided to the inspector.

**(g) Retaining Angles.** Retaining angles shall be a minimum of 1 ½” x 1 ½” x 16 gauge. Angles must cover corners and shall overlap structure opening by 1-inch minimum. Retaining angles shall be fastened to the damper sleeve every 8-inches with ½-inch welds, ¼-inch nuts and bolts, or #10 sheet metal screws. Retaining angles shall not be sealed to walls or floors with fire/smoke stopping caulks.

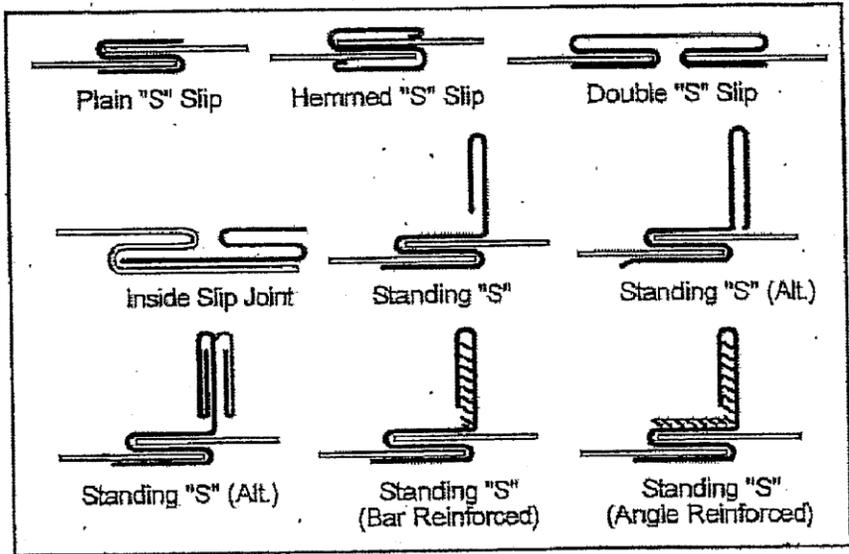
**Exception:** Only fire/smoke stopping materials and sealants specifically approved by the damper manufacturer are allowed. Documentary proof of manufacturer approval shall be provided to the inspector.

**(h) Access and Identification.** Dampers shall be provided with an approved means of access large enough to permit inspection and maintenance of the damper and its operating parts. The access shall not impair fire-resistive construction. Access shall not require the use of tools, keys, or special knowledge. Access points shall be permanently identified on the exterior by a label with letters not less than 1/2 inch in height reading: SMOKE DAMPER or FIRE DAMPER. Access doors in ducts shall be tight fitting and suitable for the required duct construction.

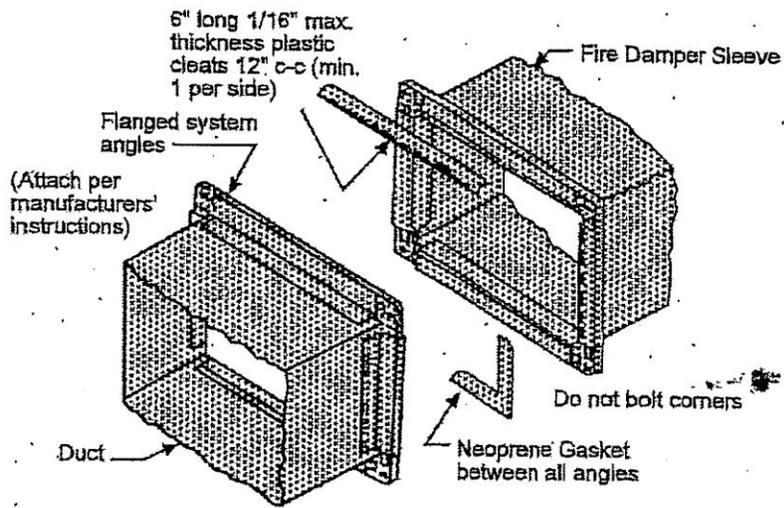
**(i) Freedom from Interference.** Dampers shall be installed in a manner to ensure positive closing or opening as required by function. Interior liners or insulation shall be held back from portions of a damper, its sleeve, or adjoining duct that would interfere with the damper’s proper operation. Exterior materials shall be installed so as to avoid interference with the operation or maintenance of external operating devices needed for proper function.

**(j) Breakaway Connections.** Duct connections to damper sleeves shall be installed to break free in the event of a fire without disturbing the integrity of the damper.

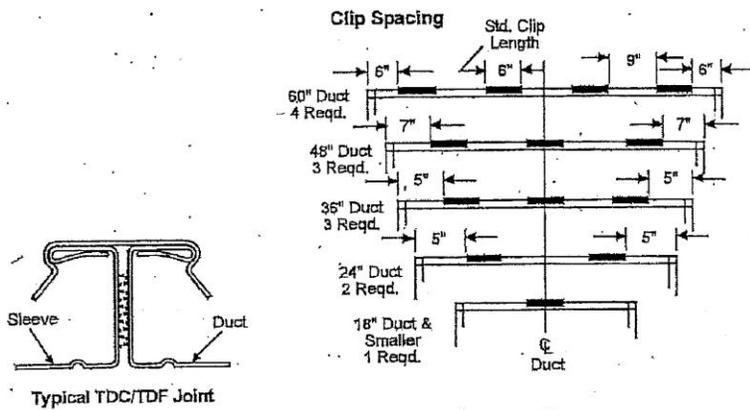
1. Standing “S” joints can be applied with a maximum of (2) # 10 sheet metal screws in each side and bottom connection.
2. Transverse joints can be applied at top and bottom connections with drive slip side connections in ducts up to 20-inches high.
3. Breakaway connections for round and oval duct up to 22” wide shall use (3) # 10 sheet metal screws.
4. Breakaway connections for round and oval duct 22” – 36” wide shall use (5) # 10 sheet metal screws.
5. Breakaway connections for round and oval duct larger than 36” wide shall use (8) # 10 sheet metal screws.
6. Manufactured flanged connections are approved as breakaway connections when installed without corners bolts as indicated in detail below.
7. TDF and TDC connections are approved as breakaway connections when installed without corners bolts as indicated in detail below.



**TRADITIONAL BREAKAWAY STYLE TRANSVERSE CONNECTIONS**



**MANUFACTURED FLANGED SYSTEM BREAKAWAY CONNECTIONS**



**PROPRIETARY FLANGED SYSTEM BREAKAWAY CONNECTIONS**