A. CODE REFERENCE
1. The "authority having jurisdiction" should be referenced to determine what local ordinance or code shall apply in the use of flexible "Air Ducts" and "Air Connections.
2. Air Ducts, identified by a rectangular shape listing mark, have no installed length limitation. Air Connections, identified by a round shape listing mark, shall not be installed in lengths greater than 14 feet.

B. GENERAL
1. The routing and length of flexible duct, the number and degree of each bend, and the amount of sag allowed between support joints will have serious effects on system performance due to the increased resistance such installations introduce. Use the minimum length of flexible duct to make connections. It is not recommended that excess lengths of ducts be installed to allow for possible future relocation of air terminal devices.
2. The product is for indoor use only. Do not install product where exposure to sunlight can occur. Prolonged exposure to sunlight may cause degradation of vapor barrier.
3. Do not install near hot equipment (e.g., furnaces, boilers, steam pipes, etc.) or inside walls, partitions or enclosures of a vertical shaft with a 1 hour or more fire resistive rating.
4. Support the duct between a metal connection and a bend by allowing the duct to extend straight for a few inches before making the bend. This will avoid possible damage of the flexible duct by the edge of the sheet metal collar.

C. INSTALLATION
1. Install duct fully extended, do not install in the compressed state or use excess lengths. This will noticeably increase friction losses.
2. Avoid bending ducts across sharp corners or incidental contact with metal fixtures, pipes or conduits. Radius at center line shall not be less than one duct diameter.
3. Do not install near hot equipment (e.g., furnaces, boilers, steam pipes, etc.) that is above the recommended flexible duct use temperature.

D. CONNECTING, JOINING AND SPLICING FLEXIBLE DUCT
1. All connections, joints and options shall be made in accordance with the manufacturer's installation instructions.
2. A) All fasteners and non-metallic fasteners (plastic clamps) used for field installation of flexible ducts shall be listed and labeled to Standard UL 1918 – Closure Systems for use with Flexible Air Ducts and Air Connections. Non-metallic fasteners are limited to 6 inches w.g. maximum positive pressure.
3. Sheet metal collars to which the flexible ducts are attached shall be a minimum of two inches in length and shall be beaded.
4. Sheet metal clamps used for joining two sections of flexible duct shall be a minimum of 4 inches in length and shall be beaded on both ends.

E. SUPPORTING FLEXIBLE DUCT
1. Flexible duct shall be supported at manufacturer's recommended intervals, but not greater than four feet. Maximum permissible sag is 1/3 inch per foot of spacing between supports.
2. A connection to rigid ducting or equipment shall be considered a support joint. Long horizontal run of sharp bends shall have additional supports placed before and after the bend approximately one duct diameter distance from the center line of the bend.

F. INSTALLATION RESTRICTIONS AND USE LIMITATIONS
There are specific restrictions and limitations related to the use of flexible duct. Some are due to NFPA Standards, model codes and various state/local codes. Others are due to end use performance where the product was not designed for that specific use. Some, but not all include, are as follows:
1. Cannot be used for vertical tram serving more than two stories in height when in compliance to NFPA 860 or 868 is required.
2. Cannot be used in systems with entering air temperature higher than 250°F [121°C]
3. Must be installed in accordance with conditions of listing.
4. When installed in a fire-rated basement ceiling, ducts shall conform with the design of the tested fire-resistance assembly.
5. Should not be installed in areas of operation of electric, fossil fuel or solar energy collection heat sources to meet listed equipment specifications.
6. Air connections (does not apply to air ducts) shall not be installed in lengths greater than 14 feet (3.4 m) for any given run; shall not pass through any wall, partition or enclosure of a vertical shaft with a 1 hour or more fire resistive rating; shall not pass through floors.
7. Should not penetrate walls where fire dampers are required.
8. Should not be used outdoors unless specifically designed to withstand exposure to direct sunlight and the weathering elements.
9. Should not be used for conveying, heating and clothes drying unless approved and recommended by the appliance manufacturer.
10. Should not be installed in concrete, buried below grade or in contact with the ground.

WARNING
• Do not use on oval collars formed for medium or high pressure.
• Do not exceed published pressure or temperature limits.
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• Do not exceed published pressure or temperature limits.

APPLICATION
1. Knife or Scissors/Wire Cutter: Use knife or scissors to cut duct wall. Use wire cutters to cut spiral wire helix.
2. Duct Tape: Use only tapes that have been listed and labeled to Standard UL 181B and marked "UL181F X".
3. Metal Clamp/Screw Driver: Use for low, medium or high pressure systems up to 10 inch w.g.
4. Mastic: Use mastic that has been listed and marked "UL181B-M".
5. Vertically installed duct shall be stabilized by support straps at a maximum of 6 feet on center.

NOTE: Factory-made air ducts may not be used for vertical runs in air duct systems serving more than two stories.

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