

Part 1 General

1.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- .1 Refer to Division 01 for requirements pertaining to product options and substitutions.

1.2 SHEET METAL THICKNESS

- .1 Sheet metal thickness in this section is stated in "preferred metric units".

1.3 SHOP DRAWINGS AND SUBMITTALS

- .1 Comply with requirements of Section 01 33 10.

1.4 STANDARDS

- .1 Accessories to NFPA 90A, Air Conditioning and Ventilation Systems.
- .2 Fabrication to SMACNA Duct Manuals.

Part 2 Products

2.1 FLEX CONNECTORS TO EQUIPMENT

- .1 Flexible connector fabricated from neoprene coated glass fabric, factory fabricated, minimum density 1.22 kg/m², tightly crimped into metal edging strip.
- .2 Fire retardant flexible connector fabricated from fire retardant, airtight fibreglass reinforced heavy cloth as listed by ULC S109.
- .3 Fastening: attach to ducting and equipment by screws or bolts at 150 mm intervals and seal with high velocity duct sealer.

2.2 DUCT ACCESS DOORS

- .1 Equipment Access Doors: construct access doors of galvanized steel, rigid and close fitting with sheet metal frame. Insulate with glass fibre insulation to same thickness as duct insulation and finish inside surface with sheet metal to form a sandwich type assembly. Hold door in frame with a minimum of two sash locks. Insulate door only on insulated duct systems.
- .2 Plenum Access Doors: construct plenum access doors to same assembly defined in Article 2.3.1. Provide two hinges and two compression latches with inside and outside handles. Where plenum access doors are larger than 600 mm x 1200 mm, provide three hinges and three compression latches with inside and outside handles.
- .3 Rated Access Doors: rate access doors to the same rating as the fire rated assembly in which the door is installed. Provide ULC labelled doors.

2.3 TURNING VANES

- .1 Standard Construction: full radius arc, single blade vanes.
- .2 Acoustic Vanes: small arc airfoil vanes with fibrous glass packing, perforated 0.8 mm thick galvanized steel on inner arc.

2.4 FIRE DAMPERS

- .1 Construction: galvanized or prime coated mild steel, ULC rated for 1-1/2 hour when tested in accordance with CAN4 S112-M82, adjustable linkage, with sleeves and breakaway duct connections.
- .2 Fusible Link: rated at 74°C to ULC S505.
- .3 Actuation: weighted to close and lock in closed position when released.
- .4 Framing: 40 mm x 30 mm x 3 mm angle iron on full perimeter of frame on both sides of membrane being pierced.

2.5 BALANCING DAMPERS

- .1 Single Blade Butterfly Dampers: thickness to SMACNA Standards with locking quadrant.
- .2 Multi-leaf Opposed Blade Dampers: design to SMACNA detail with locking quadrant.

2.6 BACKDRAFT DAMPERS

- .1 Construction: automatic gravity operated, multi-leaf, aluminum or steel construction, counterweighted or spring assisted as required, maximum blade width 150 mm flexible vinyl sealing edges.

2.7 FIRE STOP FLAPS

- .1 Curtain Type: galvanized or prime coated mild steel, ULC listed and labelled, constructed to CAN4 S112.2. Ceiling firestop flap assemblies, with frame, spring loaded curtain dampers, fusible link rated at 74°C and upper and lower transition pans.
- .2 Butterfly Type: galvanized steel with 1.6 mm thick non-asbestos cloth on unexposed side, ULC listed and labelled, constructed to CAN4 S112.2. Ceiling Firestop Flap Assemblies, corrosion resistant pins and linings, fusible link rated at 74°C.

2.8 FIRE RESISTANT THERMAL BLANKETS

- .1 Construction: ULC labelled thermal blanket constructed of non-asbestos material with glass fibre cloth covering both sides.

2.9 FLEXIBLE DUCT

- .1 Construction: vinyl sleeve interlocked by metal helix.

- .2 Bend Radius: bending radius of 1 x diameter.
- .3 Ratings: temperature rating of -6°C to 121°C; maximum operating pressure of 3000 Pa.
- .4 Fastening: 25 mm x 1 mm thick galvanized steel drawband and seal with high velocity duct sealer.
- .5 Insulation: 25 mm thick fibrous glass insulated cover with reinforced foil jacket, factory fabricated. Not applicable where air temperature in duct is greater than 15°C.

Part 3 Execution

3.1 FLEX CONNECTORS TO EQUIPMENT

- .1 Allow 50 mm movement for flexible connectors on low pressure fans and equipment subject to forced vibration; 100 mm for medium and high pressure fans.
- .2 Install with just sufficient slack to prevent vibration transmission.
- .3 Provide fire retardant flexible connectors on kitchen exhaust systems.

3.2 DUCT ACCESS DOORS

- .1 Provide 100 mm x 100 mm equipment access doors for inspection at balancing dampers and turning vanes.
- .2 Provide 400 mm x 500 mm equipment access doors for servicing:
 - .1 fire dampers
 - .2 automatic dampers
 - .3 duct coils (access door required both sides of coil)
 - .4 return air terminal boxes (at inlet)
 - .5 where required for cleaning, servicing or inspection of duct systems.

3.3 PLENUM ACCESS DOORS

- .1 Provide 600 mm x 1200 mm plenum access doors in plenums where total body entry is required to service mixing dampers, coils, filters, humidifiers and fans. Install 150 mm above floor. Arrange door swing so that fan static holds door in closed position.

3.4 TURNING VANES

- .1 Install full radius turning vanes in duct elbows where center line radius is less than 1.25 times width of duct.
- .2 Install acoustic turning vanes in acoustic lined ductwork where center line radius is less than 1.25 times width of duct.

3.5 FIRE DAMPERS

- .1 Provide fire dampers where duct penetrates fire rated membranes. Install to NFPA 90A and SMACNA Standard "Fire Damper Guide for Air Handling Systems".
- .2 Recess curtain type fire damper so that free area of connecting ductwork is not reduced.
- .3 Provide curtain type fire dampers in duct systems with pressure greater than 250 Pa.
- .4 Provide multi-blade, offset butterfly or recessed curtain blade fire dampers on duct systems with pressure less than 250 Pa.

3.6 BALANCING DAMPERS

- .1 Install balancing dampers at all branch ducts on low pressure supply, return and exhaust air distribution ductwork and where indicated on drawings.
- .2 Provide single blade dampers for duct sizes to 240 mm x 760 mm. Provide multi-blade opposed blade dampers with maximum blade size at 150 mm x 1800 mm.

3.7 BACKDRAFT DAMPERS

- .1 Provide gravity backdraft dampers on all exhaust air outlets to outdoor and exhaust fans where motorized dampers are not indicated, and where shown on drawings.

3.8 FIRE STOP FLAPS AND THERMAL BLANKETS

- .1 Install fire stop flaps on all ceiling grilles and diffusers located in rated ceiling assemblies.
- .2 Provide fire resistant thermal blanket in conjunction with fire stop flaps on ceiling diffusers in fire rated ceiling assemblies to complete the rating from ceiling to fire stop flap.
- .3 Install to SMACNA Standard.

3.9 FLEXIBLE DUCT

- .1 Install maximum 500 mm length of flexible duct between ceiling diffuser and sheet metal duct.

END OF SECTION