1. PART 1 – GENERAL

1.1 No object

2. PART 2 - PRODUCTS

2.1 Flexible connections

.1 Frame: galvanized sheet metal frame with fabric clenched by means of double locked seams.
.2 Material: neoprene
  .1 Fire resistant, self extinguishing, neoprene coated glass fabric, temperature rated between 40°C to 90°C, with a density of 1.3 kg/m².
  .2 Acceptable products: Duro-Dyne or Dyn-Air.

2.2 Access doors in ducts

.1 General
  .1 Non-insulated ducts
    .1 Sandwich construction of same material ad duct, non-insulated, one sheet metal thickness heavier, minimum 1.0mm thick complete with sheet metal angle frame.
  .2 Insulated ducts
    .1 Sandwich construction of same material as duct, insulated, although with 25mm thick rigid glass fiber insulation. The fiber shouldn't be exposed.
.2 Gaskets: neoprene or rubber mousse.
.3 Hardware:
  .1 For door measuring up to 300 x 300mm: 2 sash locks
  .2 For door measuring from 301 to 450 mm: 4 sash locks
  .3 For door measuring from 451 to 1 000mm: piano hinge and minimum 2 sash locks
.4 Acceptable products: Nailor, Cendrex, Trolec or approved equivalent

2.3 Turning vanes

.1 Factory or shop fabricated single or double thickness, to recommendations of SMACNA.

2.4 Air distribution dampers

.1 Dampers made of same material as the ventilation duct although with a standardized thickness sheet immediately greater than that of the air duct.
.2 Dampers made from only one sheet thickness.
.3 Dampers dimensions and configuration in accordance with the SMACNA.
.4 Dampers provided with a control rod with locking mechanism.
.5 Curve at the tip of the rod preventing this tip from entering into the ventilation duct.
.6 Pivot: piano hinge.

2.5 Balancing dampers with only one shutter

.1 Dampers made of same material as the ventilation duct and grooved to ensure a better rigidity.
.2 Dimension and configuration of the dampers in accordance with the SMACNA, except the maximum height which will be 250mm.
.3 Dampers equipped with locking devices.
.4 Dampers provided with interior and external angles bearings.
.5 Hardware for balancing shutters :
  .1 Round or rectangular shutters less than 10 in. – Duro-Dyne KS-7.
  .2 Round shutters of 11 in. with 20 in² - Duro-Dyne KSR-19.
  .3 Rectangular shutters of over 11 in. – Duro-Dyne KS-19.

2.6 Balancing dampers with multiple shutters

.1 Dampers made in factory with a compatible material of that of the ventilation duct.
.2 Opposite shutters: configuration in accordance to the SMACNA.
.3 Maximum height of the shutters: 100mm.
.4 Bearings: needle bearings within a bronze padding.
.5 Clutch control: shaft extension with locking device.
.6 Frame in angles, provided with butted angle.
.7 Hardware for balancing shutter:
  .1 Round or rectangular shutters less than 10 in. – Duro-Dyne KS-7.
  .2 Rectangular shutters of over 11 in. – Duro-Dyne KS-19.

2.7 Operation dampers with multiple shutters (or motorized dampers)

.1 Of the type with blades opposed on modulating shutters, or parallel blades on on/off shutters.
.2 Interrelated blade out of cast steel or extruded aluminum containing gaskets made out of extruded vinyl, stainless steel trimmings with spring, and a galvanized molded steel frame or from extruded aluminum.
.3 Bronze bearings, self-lubricating, adjusted by pressure.
.4 Clutch control: tie rods made from clad steel, brass pivots and clad steel supports, and containing a control rod out of plated steel.
.5 Positioner: being appropriate for the damper.
.6 Height of blades: 100mm maximum.
.7 Required quality: T.A. Morrison series 1000; but T.A. Morrison insulated series 9000 (for fresh air and exhaust air), or equivalent from Trolec or Penn.

2.8 Fire dampers

.1 Approved fire damper and carrying a UL or ULC label, and fulfilling the requirements of the Canadian Fire Commissioner (CIC).
.2 Fire dampers assembled on hinge on the higher part, with simple eccentric shutters, round or square, of the type with articulated or coupled blades, by rolling up or guillotine. Dimensions of the unit calculated so as not to restrict the section of the duct.
.3 Dampers actuated by fusible link, with counterweight allowing closing and locking in the closed position once the mechanism is activated, or with complete on control with control spring for the type with several shutters, or rolling up assembled in horizontal position in a vertical ventilation duct.
.4 The complete unit with steel frame and angles of 40 x 40 x 3mm on all it's circumference, on the two sides of the partition of the crossed fire wall.
.5 Required quality: Nailor Industry or equivalent from Controlled Air Manufacturing ltd., Ruskin (Kerr-Haut), E.H. Price.
Type A dampers (100% free area) for the duct having a maximum height of 300mm, of the type B for greater heights.

2.9 Fittings for testing instruments

.1 Requires quality: Duro-Dyne IP-2 model.

3. PART 3 – EXECUTION

3.1 Flexible connections

.1 Install in following locations:
  .1 Inlets of blowers.
  .2 Outlets of blowers.
  .3 Inlets and outlets of exhaust and return air fans.
.2 Length of connection: 150mm.
.3 Minimum distance between metal parts when system is in operation: 75mm.
.4 Install in accordance with SMACNA recommendations.

3.2 Tape and sealing material

.1 Apply the sealing material in accordance to the SMACNA recommendations and of that of the manufacturer.
.2 Bathe the tape in the sealing material, than apply at least one coating in accordance to the manufacturers recommendations.

3.3 Access doors

.1 Dimensions:
  .1 According to the indications listed in section 230500E.
.2 Location:
  .1 At the required locations in order to permit the access to the fire and smoke dampers.
  .2 At the required locations in order to permit the access to the air flow control.
  .3 At the required locations in order to permit the access to the necessary devices requiring a periodical maintenance.
  .4 At the required locations in accordance to the standards.

3.4 Fittings for instrument test ports

.1 General
  .1 For the flow readings, install in accordance with the SMACNA recommendations.
  .2 For the temperature readings, install in accordance with the SMACNA recommendations.
  .3 Install the fittings in accordance with manufacturer's instructions.
.2 Locations:
  .1 For air flow readings:
    .1 At ducted inlets to roof or wall exhausters.
    .2 At inlets or outlets of other fan systems.
    .3 At main and sub-main ducts.

3.5 Fire breakers

.1 Install in accordance with the SMACNA, NFPA recommendations.
.2 Fire dampers and shutters:
  .1 Install the fire dampers in accordance to the NFPA 90A-2002 standard and «SMACNA fire, Smoke and radiation damper installation guide for HVAC systems», 4th edition 1992.
  .2 Complete work without reducing the degree of fire resistance of the wall or partition firebreak.
  .3 If necessary, approve the achieved work prior to dissimulating parts of them.
  .4 Get approve a standard installation.
.3 Adjusting and balancing dampers:
  .1 Balancing dampers:
    .1 The contractor will have to supply and install all the necessary balancing registers in order to allow the calibration of the ventilation/air-conditioning systems, and this, even if these dampersall are not shown with the drawings.
    .2 Install dampers in accordance with SMACNA.
    .3 Caulk and seal joints between multiple registers with a UL approved transparent silicone based sealer.