

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 Canada Green Building Council (CaGBC)
    - .1 LEED Canada 2009 for Design and Construction, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.
  - .2 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
    - .1 SMACNA - HVAC Duct Construction Standards - Metal and Flexible, 2005.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Product Data:
    - .1 Submit manufacturer's instructions, printed product literature and data sheets for air duct accessories and include product characteristics, performance criteria, physical size, finish and limitations.
    - .2 Indicate:
      - .1 Flexible connections.
      - .2 Duct access doors.
      - .3 Turning vanes.
      - .4 Instrument test ports.
      - .5 Bench top extraction arms.
  - .3 Sustainable Design Submittals:
    - .1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.
    - .2 Construction Waste Management:
      - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
      - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.
    - .3 Recycled Content:
      - .1 Submit listing of recycled content products used, including details of required percentages or recycled content
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PART 2 - PRODUCTS

- 2.1 GENERAL .1 Manufacture in accordance with SMACNA - HVAC Duct Construction Standards.
- 2.2 FLEXIBLE CONNECTIONS .1 Frame: galvanized sheet metal frame 0.5 mm thick with fabric clenched by means of double locked seams.
- .2 Material:  
.1 Fire resistant, self extinguishing, neoprene coated glass fabric, temperature rated at minus 40 degrees C to plus 90 degrees C, density of 1.3 kg/m<sup>2</sup>.
- 2.3 ACCESS DOORS IN DUCTS .1 Non-Insulated Ducts: sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm thick complete with sheet metal angle frame.
- .2 Insulated Ducts: sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm thick complete with sheet metal angle frame and 25 mm thick rigid glass fibre insulation.
- .3 Gaskets: neoprene or foam rubber.
- .4 Hardware:  
.1 Up to 300 x 300 mm: two sash locks complete with safety chain.  
.2 301 to 450 mm: four sash locks complete with safety chain.  
.3 451 to 1000 mm: piano hinge and minimum two sash locks.  
.4 Doors over 1000 mm: piano hinge and two handles operable from both sides.  
.5 Hold open devices.  
.6 300 x 300 mm glass viewing panels.
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- 2.4 TURNING VANES .1 Factory or shop fabricated single thickness with trailing edge, to recommendations of SMACNA and as indicated.
- 2.5 INSTRUMENT TEST .1 1.6 mm thick steel zinc plated after manufacture.
- .2 Cam lock handles with neoprene expansion plug and handle chain.
- .3 28 mm minimum inside diameter. Length to suit insulation thickness.
- .4 Neoprene mounting gasket.
- 2.6 BENCH TOP  
EXTRACTION ARMS .1 Anodized aluminum tubing with polypropylene joints designed to provide 360 at movement and flexibility for user.
- .2 Arms to be complete with wall mount to permit entry of exhaust dust from ceiling.
- .3 Arm to be complete with locking elbows to ensure arms can be bixed in place to suit operator requirements.
- .4 Standard of Acceptance: Neederman Model FX100 with 100 mm dia. tubing.

PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for air duct accessories installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
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- 3.1 EXAMINATION .1 (Cont'd)  
(Cont'd)
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- 3.2 INSTALLATION .1 Flexible Connections:
- .1 Install in following locations:
- .1 Inlets and outlets to supply air units and fans.
- .2 Inlets and outlets of exhaust and return air fans.
- .3 As indicated.
- .2 Length of connection: 150 mm.
- .3 Minimum distance between metal parts when system in operation: 75 mm.
- .4 Install in accordance with recommendations of SMACNA.
- .5 When fan is running:
- .1 Ducting on sides of flexible connection to be in alignment.
- .2 Ensure slack material in flexible connection.
- .2 Access Doors and Viewing Panels:
- .1 Size:
- .1 600 x 600 mm for person size entry.
- .2 300 x 300 mm for servicing entry.
- .3 200 x 200 mm for viewing.
- .4 As indicated.
- .2 Locations:
- .1 Fire and smoke dampers.
- .2 Control dampers.
- .3 Devices requiring maintenance.
- .4 Required by code.
- .5 Reheat coils.
- .6 Elsewhere as indicated.
- .3 Instrument Test Ports:
- .1 General:
- .1 Install in accordance with recommendations of SMACNA and in accordance with manufacturer's instructions.
- .2 Locate to permit easy manipulation of instruments.
- .3 Install insulation port extensions as required.
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- 3.2 INSTALLATION      .3    Instrument Test Ports: (Cont'd)  
    (Cont'd)
- .4    Locations:
- .1    For traverse readings:
- .1    Ducted inlets to roof and wall  
                exhausters.
- .2    Inlets and outlets of other  
                fan systems.
- .3    Main and sub-main ducts.
- .4    And as indicated.
- .2    For temperature readings:
- .1    At outside air intakes.
- .2    In mixed air applications in  
                locations as approved by  
                Departmental Representative.
- .3    At inlet and outlet of coils.
- .4    Downstream of junctions of two  
                converging air streams of different  
                temperatures.
- .5    And as indicated.
- .4    Turning Vanes:
- .1    Install in accordance with  
            recommendations of SMACNA and as indicated.
- .5    Bench Top Extraction Arms:
- .1    Mount extraction arms as shown on  
            drawings. Connect ductwork as shown.
- 3.3 CLEANING      .1    Progress Cleaning: clean in accordance with  
                          Section 01 74 11 - Cleaning.
- .1    Leave Work area clean at end of each  
            day.
- .2    Final Cleaning: upon completion remove  
            surplus materials, rubbish, tools and  
            equipment in accordance with Section 01 74 11  
            - Cleaning.
- .3    Waste Management: separate waste materials  
            for reuse and recycling in accordance with  
            Section 01 74 21 - Construction/Demolition  
            Waste Management and Disposal and Section  
            01 35 21 - LEED Requirements.
- .1    Remove recycling containers and bins  
            from site and dispose of materials at  
            appropriate facility.