

**PART 1 GENERAL**

**1.1 SUMMARY**

- .1 Section Includes:
  - .1 Materials and installation for duct accessories including flexible connections, access doors, vanes and collars.

**1.2 RELATED SECTIONS**

- .1 Section 23 31 13.01 Metal Duct - Low Pressure to 500 Pa

**1.3 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1 Material Safety Data Sheets (MSDS).
- .2 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).
  - .1 SMACNA - HVAC Duct Construction Standards - Metal and Flexible.

**1.4 SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Product Data:
    - .1 Submit manufacturer's printed product literature, specifications and data sheet. Indicate the following:
      - .1 Flexible connections.
      - .2 Duct access doors.
      - .3 Turning vanes.
      - .4 Instrument test ports.
    - .2 Submit WHMIS MSDS in accordance with this Section. Indicate VOC's for adhesive and solvents during application and curing.
  - .3 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
    - .1 Certification of ratings: catalogue or published ratings to be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.
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- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Instructions: submit manufacturer's installation instructions.
- .6 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**1.5 QUALITY ASSURANCE**

- .1 Pre-Installation Meetings:
  - .1 Convene pre-installation meeting three weeks prior to beginning work of this Section in accordance with Construction Progress Schedules - Bar (GANTT) Chart specified in D14.
    - .1 Verify project requirements.
    - .2 Review installation and substrate conditions.
    - .3 Co-ordination with other building subtrades.
    - .4 Review manufacturer's installation instructions and warranty requirements.

**1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling in accordance.
  - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
  - .3 Divert unused metal materials from landfill to metal recycling facility.

**PART 2 PRODUCTS**

**2.1 GENERAL**

- .1 Manufacture in accordance with SMACNA - HVAC Duct Construction Standards.

**2.2 FLEXIBLE CONNECTIONS**

- .1 Frame: stainless steel metal frame 6 mm thick with fabric clenched by means of double locked seams.
  - .2 Material:
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- .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.
- .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 handle type operators.
  - .4 Doors over 1000 mm: piano hinge and two handle type operators operable from both sides.
  - .5 Hold open devices.

**2.4 TURNING VANES**

- .1 Factory or shop fabricated double thickness, 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 SPIN-IN COLLARS**

- .1 Conical galvanized sheet metal spin-in collars with lockable butterfly damper.
- .2 Sheet metal thickness to co-responding round duct standards.

**2.7 VAV BOX**

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- .1 Performance shall be ARI certified.
  - .2 The assembly casing shall be constructed of 22 gauge zinc-coated steel, internally lined with half-inch thick, fiberglass insulation which complies with UL-181, ASTM C 1071 and NFPA-90A. Any cut edges of fiberglass exposed to the airstream shall be coated with NFPA-90A approved sealant.
  - .3 The airflow sensor shall be of a cross configuration located at the inlet of the assembly. The sensor shall have twelve total pressure sensing ports and a center averaging chamber designed to accurately average the flow across the inlet of the assembly. Sensor shall provide accuracy within 5% with a 90° sheet metal elbow directly at the inlet of the assembly.
  - .4 Approved Product: E. H. Price SEV size 12 or approved equal in accordance with B6.

**2.8 RE-HEAT COIL**

- .1 Capacity: 44 MBH (13 kW), at EWT (Glycol/Water) of 185 °F (85 °C), LWT 165 °F, (74 °C), air temp rise 22 °F (12.2 °C).
- .2 Construction:
  - .1 Casings: 1.5 mm thick galvanized sheet steel.
    - .1 Supports of galvanized steel channel.
    - .2 Blank-off plates. Insulated sandwich construction.
  - .2 Hot water coils: cleanable fins.
    - .1 Tubes: copper brass steel.
    - .2 Fins: copper aluminum plate spiral wound.
    - .3 Headers: cast iron, steel or cast brass.
    - .4 Pressure tests: 1.7 MPa.
- .3 Approved Manufacturer: McQuay or approved equal in accordance with B6.

**PART 3 EXECUTION**

**3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.
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### 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: 100 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 1200 x 600 mm for person size entry.
      - .2 450 x 450 mm for servicing entry.
      - .3 300 x 200 mm for viewing.
      - .4 As indicated.
  - .3 Locations:
    - .1 Fire and smoke dampers.
    - .2 Control dampers.
    - .3 Devices requiring maintenance.
    - .4 Required by code.
    - .5 Reheat coils.
    - .6 Elsewhere as indicated.
  - .4 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.
    - .2 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:
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- .1 At outside air intakes.
- .2 In mixed air applications in locations as approved by Contract Administrator.
- .3 At inlet and outlet of coils.
- .4 Downstream of junctions of two converging air streams of different temperatures and as indicated.
- .5 Turning vanes:
  - .1 Install in accordance with recommendations of SMACNA and as indicated.

**3.3 CLEANING**

- .1 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

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