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**PART 1        GENERAL**

**1.1            SUMMARY**

.1        Section Includes:

- .1        Balancing dampers for mechanical forced air ventilation and air conditioning systems.

**1.2            RELATED SECTIONS:**

- .1        Section 01 33 00 – Submittal Procedures.
- .2        Section 01 45 00 – Quality Control.
- .3        Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .4        Section 01 78 00 – Closeout Submittals.

**1.3            REFERENCES**

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

**1.4            SUBMITTALS**

.1        Product Data:

- .1        Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 – Submittal Procedures. Include product characteristics, performance criteria, and limitations.
  - .1        Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 – Submittal Procedures.
  - .2        Indicate the following:
    - .1        Specifications.
- .2        Quality assurance submittals: submit following in accordance with Section 01 33 00 – Submittal Procedures.
  - .1        Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .2        Instructions: Submit manufacturer's installation instructions.

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**1.5 DELIVERY, STORAGE, AND HANDLING**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle in accordance with Section 01 61 00 – Common Product Requirements.
- .2 Waste Management and Disposal:
  - .1 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

**PART 2 PRODUCTS**

**2.1 GENERAL**

- .1 Manufacture to SMACNA standards.

**2.2 SINGLE BLADE DAMPERS**

- .1 Fabricate from same material as duct, 0.8 mm up to 450 mm wide, 1.6 mm maximum up to 1200 mm wide, V-groove stiffened.
- .2 Size and configuration to recommendations of SMACNA, except maximum height 100 mm.
- .3 Locking quadrant with shaft extension to accommodate insulation thickness.
- .4 Inside and outside nylon or bronze end bearings.
- .5 Channel frame of same material as adjacent duct, complete with angle stop.

**2.3 MULTI-BLADED DAMPERS**

- .1 Factory manufactured of material compatible with duct.
- .2 Opposed blade: configuration, metal thickness and construction to recommendations of SMACNA.
- .3 Maximum blade height: 100 mm.
- .4 Bearings: pin in bronze bushings or self-lubricating nylon.
- .5 Linkage: shaft extension with locking quadrant.
- .6 Channel frame of same material as adjacent duct, complete with angle stop.
- .7 Maximum leakage: 2 % at 500 Pa.

**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 datasheet.

**3.2            INSTALLATION**

- .1      Install where indicated and on all branch connection to diffusers and grilles.
- .2      Install in accordance with recommendations of SMACNA and in accordance with manufacturer's instructions.
- .3      For supply, return and exhaust systems, locate balancing dampers in each branch duct.
- .4      Runouts to registers and diffusers: located as close as possible to main ducts.
- .5      All dampers to be vibration free.
- .6      Ensure damper operators are observable and accessible.

**3.3            CLEANING**

- .1      Proceed in accordance with Section 01 74 11 - Cleaning.
- .2      Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**