DIVISION 23

SECTION 23 09 23

CONTROL DAMPERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide control dampers specified herein, shown on the Drawings, needed for a complete and proper installation. Dampers provided as part of factory-fabricated equipment are specified as part of the equipment assembly in their respective Sections, as applicable.

1.02 RELATED SECTIONS

A. Division 23 Sections:

1. Section 01 51 23 - Temporary Heating
2. Section 23 05 00 – Common Work Results For HVAC
3. Section 23 05 13 - Common Motor Requirements For HVAC Equipment
4. Section 23 05 23 - General Duty Valves For HVAC Piping
5. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment
6. Section 23 05 53 - Identification for HVAC Piping and Equipment
7. Section 23 05 93 - Testing, Adjusting and Balancing for HVAC
8. Section 23 07 00 - HVAC Insulation
9. Section 23 09 13 - Instrumentation and Control for HVAC
10. Section 23 09 14 - Natural Gas and CO Gas Leak Detection Equipment
11. Section 23 09 23 - Control Dampers
12. Section 23 09 24 - Steam Flow Meters
13. Section 23 22 13 - Steam and Condensate Heating Piping
14. Section 23 25 19 - Water Treatment for Steam System Feedwater
15. Section 23 31 13 - Metal Ducts
16. Section 23 33 00 - Air Duct Accessories
17. Section 23 34 16 - Boiler Room Combustion Air Makeup And Ventilation System
18. Section 23 51 00 - Chimney Liner
19. Section 23 51 16 - Prefabricated Breechings and Accessories
20. Section 23 51 23 - Gas Vents
21. Section 23 52 39 - Firetube Boilers
22. Section 23 53 12 - Vacuum Condensate Pumps
23. Section 23 53 13 - Boiler Feedwater Pumps

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data and shop fabricated drawings. Submit charts indicating free area for flow through damper. Submit lab testing results indicating pressure drop through the dampers.

B. Shop Drawings:

1. Submit manufacturer's assembly-type shop drawings for each type of damper showing interfacing requirements with ductwork, method of fastening or support, and methods of assembly of components. Submit UL Listing with the Shop Drawings.
2. Submit AMCA 500D prototype leakage test certification for outside air intake and exhaust air discharge dampers.

C. Maintenance Data

1. Maintenance Manuals

1.04 QUALITY ASSURANCE

A. Codes and Standards

1. SMACNA Compliance: Comply with applicable portions of SMACNA: HVAC Duct Construction Standards, Metal and Flexible, 2005 Edition or later.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide factory fabricated control dampers from one of the following manufacturers:
(Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition)

1. Air Balance, Inc.
2. Penn Ventilator Co.
3. Ruskin Mfg.
4. Imperial Dampers & Louver Co., Inc.
5. Nailor Industries Inc.
6. Prefco Products, Inc.
7. Arlan Damper Corp.
8. Greenheck Fan Corp.
9. Pottorff, Div. of PCI Industries.

2.02 ADHESIVES AND SEALANTS FOR FABRICATION OF DAMPERS

A. All adhesives and sealants used on the fabrication of dampers shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 4.0, Indoor Environmental Quality Section, Credit for Low Emitting Materials. Those limits correspond to the SCAQMD Rule #1168, and its most recent Rule Amendment date of October 6, 2017.

2.03 MULTI-BLADE DAMPERS AND CONTROLS (FIELD PROVIDED DAMPERS)

A. General

1. Electric motor operated dampers that are duct mounted and used adjacent to wall louvers shall be Class I motorized opposed blade low leakage type with a maximum leakage rate of 4 CFM per square foot at 1.0” w.c. differential pressure across the damper when tested in accordance with AMCA 500D, and in accordance with Section C403.2.4.4.2 of the 2020 NYCECC.

2. Openings in walls for outside air intake louvers and exhaust or relief louvers together with the stationary louvers and screens, shall be provided by General Contractor as specified under the Architectural Division.

B. Construction of Multiblade Dampers (Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition).

1. Frames: Frames shall be braced for rigid reinforcement. Frames shall be provided with bolt holes for mounting and with stationary stops on the four sides to prevent air leakage. Outside air intake damper frames shall be provided with drilled lugs on two sides in a lower corner, so that motor mounting bracket can be securely bolted to frame.

2. Blades: Damper blades shall be not wider than 9", shall have formed interlocking edges, and shall have a 1/2" deep "V" pressed in the center to stiffen the blades. Blade axles, axle clamps and blade connecting lugs shall be of non-ferrous metal. Blades shall be linked firmly together so that all blades work in unison. The lower blade shall be provided with a linkage connection lug for motor operation of the damper. Open position of the blades shall be limited to 90-degrees. Outside Air Intake (OAI) dampers shall have parallel blades with two-position motor operators. Damper blades for outside air intake shall be constructed of not lighter than No. 14 gage aluminum.

3. Bearings: Bearings on blade pivot points shall be fitted with stainless steel or non-ferrous metal sleeve (or ferrule type) pressed into damper frame. Bearings shall be accurately sized to fit blade axles, and shall provide smooth operation.

4. Linkage: Linkage or tie rod to interconnect blades shall be 1/4" diameter (minimum) galvanized steel or non-ferrous metal and shall be secured to the blade lugs by means of cotter pins and washers.

C. Painting: Black iron damper frames and blades shall be given one coat of finish black paint over a prime coat. Galvanized steel damper blades and frames shall not be primed or painted. Painting shall be done at the shop.

D. Control for Multi-blade Dampers: Refer to the Temperature Control System Sections for control of the multi-blade dampers. Dampers shall be automatically controlled by means of damper motor actuators as specified below.

2.04 DAMPER MOTOR ACTUATORS

A. Damper motor actuators shall be provided by Temperature Control Contractor (TCC). The TCC shall coordinate with Mechanical Contractor (MC) and General Contractor (GC)).

1. Manufacturers:

a. Belimo Aircontrols (USA) Inc. (or approved equal).

b. Siemens Building Technologies, Inc. – Talon Controls (or approved equal).

B. Operation: When motor is energized, damper shall open; when non-energized, damper shall close.

C. Motor Actuators (Electronic) shall be as specified in Section 23 09 13, entitled "Instrumentation and Control for HVAC."

D. Install automatic dampers as indicated on the Drawings and as specified herein and under Section 23 09 13.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install damper in accordance with damper manufacturer's installation instructions and all applicable Codes.

B. Coordinate with other work, including ductwork, as necessary to interface installation of damper properly with other work.

C. Provide a neoprene gasket, 1/4" thick, full width of flange, wherever a galvanized duct connects to aluminum outside air intake.

3.02 FIELD QUALITY CONTROL

A. Operate damper to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty components, as required to obtain proper operation.

3.03 ADJUSTING AND CLEANING

A. Adjusting: Adjust damper for proper settings and adjust for proper action.

B. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

END OF SECTION