

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 23 05 13: Motors, Drives and Guards for Mechanical Systems.

1.2 REFERENCES

- .1 AMCA 99-2010, Standards Handbook.
- .2 ANSI/AMCA 210-07, Laboratory Methods of Testing Fans for Rating.
- .3 AMCA 300-14, Reverberant Room Method for Sound Testing of Fans.
- .4 AMCA 301-146, Methods for Calculating Fan Sound Ratings from Laboratory Test Data.
- .5 CGSB 1.181-99, Ready Mixed Organic Zinc-Rich Coating.
- .6 NEMA ICS 7.1-06 Safety Standard for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems.
- .7 American Bearing Manufacturers Association (ABMA).

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submittals:
 - .1 Submit shop drawings and product data sheets including performance data, fan curves, and sound power levels.
 - .2 Fan manufacturer to furnish a certificate of guarantee stating that the fan, mixing plenum, outlet nozzle, and all related accessories specified herein have been pre-tested at the factory and that the curves supplied in 1.2.1 have been de-rated for any and all system effects created by the accessories.
- .3 Provide:
 - .1 Fan performance curves showing point of operation, BHP and efficiency.
 - .2 Sound rating data at point of operation.
 - .3 Dimensional data.
 - .4 Installation procedures.

- .4 Indicate:
 - .1 Motors, sheaves, bearings, shaft details.
 - .2 Minimum performance achievable with variable speed controllers and variable inlet vanes as appropriate, dimensions, installation procedure.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Procedures.

1.5 EXTRA MATERIALS

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Procedures.
 - .1 Spare parts to include:
 - .1 Matched sets of belts.
 - .2 Furnish list of individual manufacturer's recommended spare parts for equipment such as bearings and seals, and addresses of suppliers, together with list of specialized tools necessary for adjusting, repairing or replacing, for placement into operating manual.

1.6 MANUFACTURED ITEMS

- .1 Catalogued or published ratings to be those obtained from tests carried out by manufacturer or from independent testing agency signifying adherence to codes and standards in force.

1.7 WARRANTY

- .1 Provide extended warranty for parts and labour for five (5) years following project substantial completion.

PART 2 - PRODUCTS

2.1 FANS GENERAL

- .1 Accessories and hardware: matched sets of V-belt drives, adjustable slide rail motor bases, belt guards, coupling guards, fan inlet and/or outlet safety screens as indicated and as specified in Section 23 05 13 - Motors, Drives and Guards, inlet or outlet dampers and vanes as indicated.
- .2 Factory primed before assembly in colour standard to manufacturer.

- .3 Scroll casing drains: as indicated.
- .4 Bearing lubrication systems plus extension lubrication tubes where bearings are not easily accessible.

2.2 CENTRIFUGAL FANS

- .1 Fan wheels:
 - .1 Welded steel or aluminum construction.
 - .2 Maximum operation speed of centrifugal fans not more than 40% of first critical speed.
 - .3 Air foil or backward inclined blades, as indicated.
 - .4 Bearings: air handling quality, heavy duty, split pillow block, flange mounted grease lubricated ball or roller self-aligning type with oil retaining, dust excluding seals and a certified minimum rated life to ABMA L10 of 100,000 hours. Shaft seals on laboratory fume hood and biological safety cabinet exhaust fans:
 - .5 Single disc or stuffing box seals.
- .2 Housings:
 - .1 Volute with inlet cones: fabricated steel for wheels 300mm or greater, cast iron, or steel, for smaller wheels, braced, and with welded supports.
 - .2 For horizontally and vertically split housings provide flanges on each section for bolting together, with gaskets of non-oxidizing nonflammable material.
 - .3 Provide bolted latched airtight access doors with handles.
 - .4 Spark resistant construction Type B minimum where indicated.

2.3 EXTRACTION ARM

- .1 1500mm long arms 100mm diameter, 2000mm x 100mm spiral flex duct with heavy duty joints. Provide magnetic adapter at end of flex duct to hold in position on steel surface. Units are to retract back to a home position.
- .2 Blower: wall mounted, 141 L/s @ 500Pa, on/off switch.
- .3 Electrical: 208 volt, 1 phase, 60 Hz.

PART 3 - EXECUTION

3.1 FAN INSTALLATION

- .1 Install fans as indicated, complete with resilient mountings specified in Section 23 05 48 - Vibration Isolation and Seismic Control, flexible electrical leads and flexible connections in accordance with Section 23 33 00 - Duct Accessories.
- .2 Provide sheaves and belts required for final balance.
- .3 Bearings and extension tubes to be easily accessible.
- .4 Access doors and access panels to be easily accessible.
- .5 Do installation in strict accordance with manufacturers recommendations.
- .6 Grease fan bearing prior to operation.

END OF SECTION