

SECTION 23 94 00 - REGISTERS AND DIFFUSERS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide labor, materials, equipment and services required for the complete installation designed in Contract Documents.

1.2 SUBMITTALS

- A. Registers/Grilles/Diffusers. Submit room schedule listing size, throw, direction of throw, accessories, finish, material type and color chart.

1.3 GENERAL REQUIREMENTS

- A. Each manufacturer shall check noise level ratings for registers and diffusers to insure that the sizes selected will not produce noise to exceed 30 db, "A" scale, measured at occupant level; notify Owner's Representative of problems prior to shop drawing submittal.
- B. Pressure drop, air flow and noise criteria selection are based on design equipment. Manufacturers not submitting design equipment must provide written certification in the front of submittal that equipment submitted has been checked against and performs equal to the design equipment.

1.4 REQUIREMENTS FOR REGISTERS

- A. General:
 - 1. A register is defined as a grille plus a volume damper.
 - 2. Registers shall be installed "sight-proof" where possible, i.e., high wall register with horizontal blades inclined up, or along a wall with blades facing the wall.
 - 3. Borders and frames shall be of same material as register face unless specified otherwise.
- B. Mounting Frames:
 - 1. Provide with screw holes in register face punched and countersunk at factory, and mounting frame drilled and tapped to suit. Sponge rubber gasket between frame and wall or ceiling for all surface mounted frames.
 - 2. Frame shall be overlap type and shall be suitable for type of ceiling where register is to be installed.
- C. Finishes:
 - 1. Baked enamel (of colors as selected from the manufacturer's standard color chart) as scheduled.

- D. Design Equipment: Krueger unless otherwise noted.
- E. Acceptable Makes: Anemostat, Carnes, Krueger, Titus, Price.

1.5 REQUIREMENTS FOR DIFFUSERS

- A. General:
 - 1. Provide four way blow unless otherwise noted.
 - 2. Where manufacturer's size recommendations require duct sizes or connections differing from design Contractor shall provide at no change in Contract price.
 - 3. Suitable for recessed mounting unless otherwise indicated.
 - 4. Provide square to round neck transitions as required.
 - 5. Provide sponge rubber gasket for all surface mounted frames.
- B. Finishes:
 - 1. Baked enamel (of colors as selected from the manufacturer's standard color chart), as scheduled.
 - 2. Frame style shall be suitable for type of ceiling in which diffuser is to be installed.
- C. Design Equipment: Krueger unless otherwise noted
- D. Acceptable Makes: Anemostat, Carnes, Krueger, Titus, Price.

PART 2 - PRODUCTS

2.1 REGISTER TYPES

- A. Type A - (exhaust and return registers):
 - 1. Steel construction with 22 gauge frame and blades, with horizontal bars on a 3/4 in. spacing set at 35° fixed deflection.
 - 2. Key operated opposed blade damper.
 - 3. 1-1/4 in. wide flange.
 - 4. The blades shall be parallel to long dimension.
 - 5. Model: Titus 320RL
- B. Type A - (Aluminum exhaust and return registers):
 - 1. Aluminum construction with 0.040-0.050" thick frame and blades, with horizontal bars on a 3/4 in. spacing set at 35° fixed deflection.

2. Key operated opposed blade damper.
 3. 1-1/4 in. wide flange.
 4. The blades shall be parallel to long dimension.
 5. Model: Titus 350FL
- C. Type A - (Aluminum exhaust and return registers):
1. Aluminum construction with 0.040-0.050" thick frame and blades, with horizontal bars on a 3/4 in. spacing set at 35° fixed deflection.
 2. Key operated opposed blade damper.
 3. 1-1/4 in. wide flange.
 4. The blades shall be parallel to long dimension.
 5. Provide filter rack and MERV-13 filter
 6. Model: Titus 350FLF
- D. Type C - (linear return):
1. Multiple 1 in. slots and lengths as specified.
 2. Border types shall be suitable for ceiling.
 3. Extruded aluminum frames.
 4. Provide optional accessories to achieve continuous slots as required.
 5. Provide uninsulated plenum in ducted return applications.
 6. Design Make: Titus MLR-39

2.2 DIFFUSER TYPES

- A. Type 1 - (smooth face type):
1. Steel construction with 22 gauge back pan and 18 gauge face panel with rolled edges that finishes flush with ceiling system.
 2. Round neck - minimum 1-1/4 in. collar for duct connection.
 3. Frame suitable for ceiling type.
 4. With optional directional air flow pattern controllers that are concealed behind the face or in the neck.
 5. Face panel shall be removed and securely held in place to the back pan without noise or vibration.
 6. Horizontal air flow pattern.
 7. With equalizing grid.
 8. Panel size: 24" x 24".
 9. Model: Titus OMNI.
- B. Type 2 - (supply air register):
1. Steel 20 gauge frame construction with double deflection capability and the front blades shall be parallel to the long dimension. Solid extruded aluminum air foil blades mounted in friction pivots for individual blade adjustment, spaced on 3/4 in. centers.
 2. Key operated opposed blade damper which shall assure even air distribution of air across the grille face as well as volume control.
 3. 1-1/4 in. wide flange with sponge rubber gasket.

4. Model: Titus 272 RL
- C. Type 2 - (Aluminum supply air register):
1. Extruded Aluminum 0.040-0.050" frame construction with double deflection capability and the front blades shall be parallel to the long dimension. Solid extruded aluminum air foil blades mounted in friction pivots for individual blade adjustment, spaced on 3/4 in. centers.
 2. Key operated opposed blade damper which shall assure even air distribution of air across the grille face as well as volume control.
 3. 1-1/4 in. wide flange with sponge rubber gasket.
 4. Model: Titus 272 FL
- D. Type 3 - (linear diffuser):
1. Adjustable 180° pattern controllers to change both direction and volume at discharge air.
 2. Multiple 2 in. slots and lengths as specified.
 3. Border types shall be suitable for ceiling.
 4. Extruded aluminum frames with black 16 gauge steel pattern controllers.
 5. Provide optional accessories to achieve continuous slots as required.
 6. Provide insulated plenum.
 7. Design Make: Titus ML-39

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install equipment in strict accordance with manufacturer's instructions. Rough-in or install per reflected ceiling plan or in locations instructed by Owner's Representative.
- B. Provide approved air extractors behind all duct mounted supply registers in exposed ductwork.
- C. When the final connection to an exhaust or return grille is made, a 12 in. minimum height plenum box must be supplied to all grilles. Plenum dimensions shall match grille size.

END OF SECTION