



23 37 XX – High Performance Architectural Diffusers

RXO – Square Swirl Diffusers with Integrated Swirl Pattern and Plenums (RXO-S)

PART 1 – GENERAL

1.1 SUMMARY

- A. Square architectural swirl supply diffuser(s) with an integrated swirl pattern face (RXO-S), as scheduled.
- B. Provide manufacturer-supplied plenums for all RXO diffusers. Plenums shall be supplied by EffectiV and sized/configured for the scheduled diffuser model(s) and duct connection(s).
- C. Provide volume dampers and accessories only where scheduled (including air equalizer, acoustical liner, and thermal insulation).

1.2 SUBMITTALS

- A. Product Data: Manufacturer's data for diffuser and plenum, including published performance data for scheduled sizes and airflows: airflow range, pressure loss, throw, diffuser-generated NC, and induction ratio.
- B. Shop Drawings: Show scheduled model, face size, neck size, plenum model and connection type, damper type and location (when provided), air equalizer type (when provided), finish/color, and installation details. Indicate acoustical insulation and thermal insulation where specified or required for the application.
- C. Airflow Prediction Report (Required): Provide manufacturer-generated room airflow prediction report for each diffuser type and unique room condition using manufacturer performance data and recognized correction methods (ΔT correction factors, Coanda effects, buoyancy effects, jet interaction, and wall/floor/ceiling collision effects). Report shall include:
 - 1. 3D room layout with diffuser placement.
 - 2. Predicted airflow visualization views: plan (top), section (side), elevation (front).
 - 3. Throw distances for terminal velocities of 150, 100, 60, 50, 40, 30, and 20 fpm.
 - 4. Pressure loss at scheduled airflow.
 - 5. Diffuser-generated NC.
 - 6. Perceived NC: sound pressure at room center (5 ft height) from all sources combined across 63–8000 Hz octave bands; include resulting NC and key assumptions used.

D. Verified CFD Validation (When Indicated): Provide EffectiV Verified CFD validation and summary report for spaces indicated on drawings and/or when diffuser operation is outside manufacturer published selection limits (airflow, ΔT , mounting height, geometry).

1.3 SUBSTITUTIONS

A. Substitutions per Division 01.

B. Proposed equals shall provide a line-by-line compliance matrix including all submittals in Part 1, including the Airflow Prediction Report deliverables.

PART 2 – PRODUCTS

2.1 BASIS OF DESIGN

A. EffectiV RXO-S square swirl diffuser with integrated swirl pattern face.

2.2 DIMENSIONS AND SELECTION (AS SCHEDULED)

A. Face sizes and published airflow ranges:

1. RXO-S 16: 16 in x 16 in (400 x 400 mm), 88 to 241 cfm.
2. RXO-S 20: 20 in x 20 in (500 x 500 mm), 176 to 353 cfm.
3. RXO-S 24: 24 in x 24 in (605 x 605 mm), 294 to 476 cfm.
4. RXO-S400 24: 24 in x 24 in (605 x 605 mm), 88 to 241 cfm.
5. RXO-S500 24: 24 in x 24 in (605 x 605 mm), 176 to 353 cfm.

B. Neck sizes: as scheduled.

C. Mounting: T-bar lay-in or surface mount, as scheduled.

2.3 PERFORMANCE / APPLICATION LIMITS

A. Suitable for cooling/ventilation/heating applications; typical ceiling heights 8.5 to 13 ft (2.6 to 4.0 m) and temperature differential up to 22°F (12°C), unless otherwise indicated.

B. Diffuser shall allow approximately 60% flow variation while maintaining a stable air stream.

C. Select within manufacturer published performance data for scheduled neck size and airflow.

2.4 MATERIALS AND CONSTRUCTION

A. Construction: heavy-gauge galvanized steel face with stamped radial geometry forming an integrated swirl pattern.

B. Finish: factory powder coated (TGIC-free), white M9016 unless otherwise scheduled.

2.5 PLENUMS AND DAMPERS (PLENUMS REQUIRED; DAMPERS/ACCESSORIES AS SCHEDULED)

A. Plenums (required): Provide PERFAIR plenums by EffectiV for all RXO-S diffusers; attach diffuser face per manufacturer's method.

B. Plenum features: Plenums shall include earthquake (antisismic) tabs as standard.

C. Plenum selection (square), as scheduled:

1. PERFAIR-SS: Square plenum, side/angle connection (recommended for closed ceiling and false ceiling).
2. PERFAIR-SSS: Square plenum, side connection (open ceiling; visible duct from side).
3. PERFAIR-ST: Square plenum, top connection (open ceiling; visible duct from top).
4. PERFAIR-SCT: Square plenum, top connection (compact / alternate configuration), as scheduled.
5. PERFAIR-X: Square plenum, tight-space configuration, as scheduled.
6. PERFAIR-XS: Square plenum, side oval, for limited ceiling space.
7. PERFAIR-XSS: Square plenum, side rectangular, for limited ceiling space.

D. Air equalizer (optional): Provide integrated air equalizer where indicated.

E. Volume damper (optional): Provide where indicated:

1. Perforated damper.
2. MRT: Manually operated damper, cable inside plenum, adjustment through face.
3. MRT2: Manually operated damper, cable through wall with termination fixture.
4. EB: Battery-operated electro-balance damper with remote control, cable through face.
5. EB2: Battery-operated electro-balance damper with remote control, cable through wall with termination fixture.

F. Plenum insulation (optional): Provide acoustical liner and/or thermal insulation where indicated; indicate type and thickness on Shop Drawings.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install diffuser(s) and EffectiV plenum per manufacturer instructions.
- B. Coordinate access for balancing and for any damper/equalizer adjustment.

3.2 ADJUSTING

- A. Balance to scheduled airflow.