**DRS Specifications**

**1. Description and physical characteristics**

1.1. The high induction swirl airflow diffuser shall be made of 20 ga. galvannealed steel. The round or square front plates shall be equipped with bent blades.

1.2. The blades shall extend to the outlet of the diffuser and shall guarantee a horizontal airflow on 360 degree even in a freely suspended diffuser.

1.3. The front plate of the diffuser shall be adapted for use in standard suspended ceilings or gypsum ceilings.

1.4. The diffuser shall be powder coated with a polyester TGIC-free paint, providing a smooth, easy-to-clean, chip and fade resistant finish. The architect or client shall choose a standard colour from the RAL colour chart.

**2. Performance**

2.1. The performance shall be guarantee by using performance curves or simulation software for critical areas. These shall indicate the pressure drop, acoustic power it generates as well as showing a cross-sectional view illustrating the critical airflow path in cooling, isothermal and heating modes.

2.2. Parameters of guaranteed comfort

2.2.1 The performance statistics of the diffuser shall reflect a maximum air speed of 0.15 m/s (30 ft/m) in occupied zone at 1.3m (4 ft) from the floor. The performance guarantee shall be demonstrated in plan view with circles showing the path of the air stream.

 2.2.2 The diffuser shall ensure a maximum variant in temperature difference of -1°C between the air jet and the area occupied in 4 ft (1.3 m) from the floor. To achieve this, the ratio of temperature differential shall perform at minimum of ΔTxy / ΔT0 ≤ 0.1 (for an initial differential at

∆T0 = -10˚C).

 2.2.3. In cooling, the diffuser shall guarantee in variable volume (VAV) a critical distance (Xcrit) of at least that which is indicated in the following table :

**Diffuser inlet** : 6 in.

 Maximum air flow : 80-150 cfm

 Minimum air flow: 20-40 cfm

 X critic : 1ft.-7 in. (0,5 m)

**Diffuser inlet** : 8 in.

 Maximum air flow : 151-280 cfm

 Minimum air flow : 41-90 cfm

 X critic : 1 ft.--11 in. (0,6 m)

**Diffuser inlet**: 10 in.

 Maximum air flow : 281-400 cfm

 Minimum air flow : 91-140 cfm

 X critic : 2 ft.--3 in. (0,7 m)

**Diffuser inlet**: 12 in.

 Maximum air flow : 401-600 cfm

 Minimum air flow : 141-200 cfm

 X critic : 2 ft.--7 in. (0,8 m)

**3. Spigot or plenum**

3.1 The DRS shall be delivered with a spigot made and tagged by the manufacturer. The spigot shall be made of aluminium and includes a perforated plate for stabilizing air flow. The spigot shall be sized to meet the required air flow.

3.2 The diffuser shall be delivered with a plenum made and tagged by the manufacturer. The plenum shall be made of 24 gauge galvanized steel and includes a perforated plate stabilizing the air flow. It shall be hung by 4 points included which respect seismic norms. The inlet collar shall be centered on the side or on the top of the plenum, and it shall be sized to meet the required air flow. The interior joints of the plenum shall be sealed with COV emission free silicon.

3.3 The diffuser front plate shall be attached to the spigot or plenum by a central screw.

3.4 When required, the plenum shall be supplied with a damper adjustable through the front plate, in order to adjust the volume of air. This damper shall be available in two options:

 3.4.1 Radial damper: Key with circular pivoting blades on a flexible metallic cable which is adjustable through the front plate of the diffuser allowing for air flow adjustment of 0% to 100%.

 3.4.2 Axial damper: Perforated swiveling flap from

0 to 90 degrees with a blocking system allowing for air flow adjustment of 25% to 100%.

**4. Balancing**

4.1 The equalization of the DRS diffusers shall be executed by a ventilation equalizing technician with a recognized professional certification.

4.2 The technician shall take into account the factor of correction of the volume of air using a balometer (factor FCB)

**5 - Quality required : NAD Klima, DRS model**