FläktGroup SEMCO

SPECIALIZED HEALTHY AIR SOLUTIONS

AURORA IQSA

ACTIVE CHILLED BEAM

TECHNICAL GUIDE

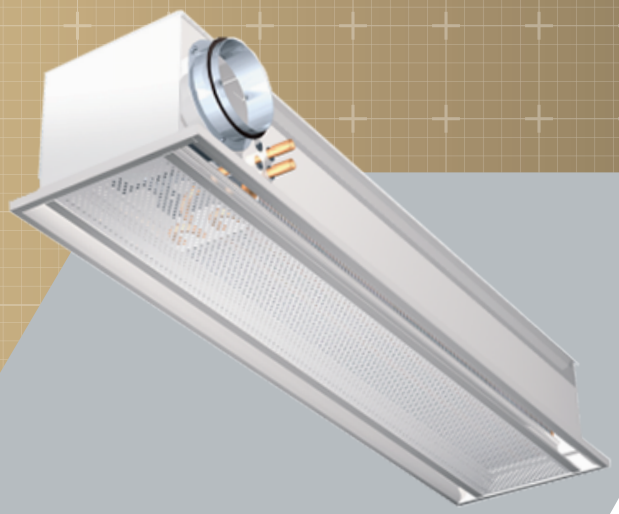


TABLE OF CONTENTS

Introduction 1
Key Features 1
Options 1
Quick Selection 1
Dimensions and Weights 1
Specifications 2
Energy Control 3
Aurora IQSA Air Flow Calculation 4
Slot Settings vs. Flow (CFM) 5
Technical Cooling Data 6
Technical Heating Data 7
Technical Sound Data 8
Dimensions and Weights 9
Selection Tool 10
Cable Suspension 11
Drywall Flange Kits 12
Accessories 13
Product and Accessory Codes 14

INTRODUCTION

The Aurora IQSA, is an active chilled beam suited for heating, cooling and ventilation. Engineered to mix ambient and supply air, to provide high cooling capacities in combination with comfort and low air velocities.

Zone temperatures can easily be maintained or adapted to meet changing zone conditions with the adjustment of the discharge nozzles.

The Aurora IQSA is a ceiling mounted chilled beam, which was dimensionally designed to perfectly fit into 12" ceiling grids. Due to its covered top or side, duct connections may be used, making the Aurora IQSA extremely flexible.

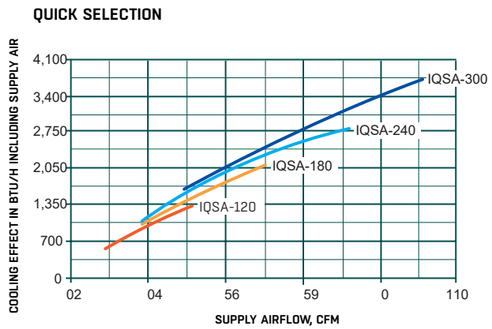
KEY FEATURES

- 1' wide, 4'-10' long in 2' steps
- Ventilation, heating and cooling
- Adjustable induction — energy control
- Easy installation —cable hanging or fastening brackets
- Ceiling mount — suited for a standard narrow 1' x 2' ceiling space
- Energy efficient, saving money on operating and life-cycle costs
- Perforated bottom panel is segmented for easy access, for cleaning and maintenance

OPTIONS

- Custom paint options
- Controls

QUICK SELECTION



The diagram shows the total cooling effect per foot at a total air pressure drop of 0.3" wc, water flow of 0.5 GPM, supply air temperature at 60°F and mean water temperature at 60.6°F.

DIMENSIONS AND WEIGHTS

OVERALL LENGTH (OAL)		
MODEL	NOMINAL	ACTUAL
IQSA - 120	4'	47.2"
IQSA - 180	6'	70.9"
IQSA - 240	8'	94.5"
IQSA - 300	10'	118.1"

WEIGHT			
MODEL	NOMINAL LENGTH	DRY (LBS)	WET (LBS)
IQSA - 120	4'	31	32
IQSA - 180	6'	46	48
IQSA - 240	8'	62	65
IQSA - 300	10'	77	81

FIGURE 1. Aurora IQSA dimensions and weight

SPECIFICATIONS

All specifications are subject of alteration without further notice.

GENERAL

Chilled beam to be an integrated system for ventilation and cooling, and, optionally, heating. The beams shall consist of a steel housing encasing the integral sensible cooling coils and a plenum feeding a series of adjustable induction slots, and a face including a grille and discharge slots. Chilled beam to be active with primary ventilation introduced through side or top duct connection. Duct connection shall be located at the same end of the beam as the coil connections. Chilled beam shall be designed to be installed within a 24” wide ceiling tile grid. Beam to have adjustable air flow, cooling effect, and flow pattern.

QUALITY ASSURANCE

Hydronic cooling capacities shall be established by testing accordance with European standard EN-14518.

CASING

Casing shall be manufactured of minimum 22 gauge galvanized steel. The steel shall be painted on both sides with FläktGroup SEMCO plaster white.

Bottom of chilled beam shall be removable for maintenance.

Beam face shall consist of a room air induction section of perforated steel with 50+% free area, flanked by two linear supply slots. The entire visible face section shall be finished in white paint or a color specified by the architect.

Each beam shall be provided with a pressure tap that may be used to measure the pressure differential between the primary air plenum and the room. An airflow calibration chart which relates this pressure differential reading with the primary airflow rate shall also be provided by the beam manufacturer.

The overall height of the beam shall not exceed 8½ inches with side duct connection, 10 inches with top duct connection.

COILS

Coils shall be manufactured of minimum ½” seamless smooth copper tubes .016” tube thickness with 0.0075” aluminum fins. Fins shall be spaced at a maximum of 9 fins per inch.

Coils shall have a working pressure of at least 300 PSI, factory tested for leakage at a minimum pressure of 360 PSI.

DUCT CONNECTION

A five (5) inch supply air duct connection for the IQSA primary supply air duct is factory installed onto the beam and can be located on the coil connection side or the top.

INDUCTION SLOTS

The chilled beam shall be complete with energy control and be regulated by means of variable geometry slots and shall provide either uni- or bi- directional supply.

Slots will be adjustable without the need for tools or removal of the beam from its installation.

Slots will permit 0-100% airflow from each side of the beam with the opposing side providing the converse percentage. Slots will be shipped from the factory full open.

Air measurement tubes shall be included, along with rated nameplate calculations for test and balance of primary airflow after installation.

CONTROLS

Automatic Temperature Controls shall be provided by others.

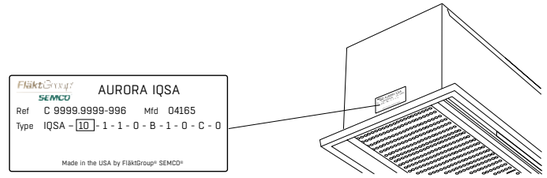
Chilled beams can be supplied with condensate sensor.

INSTALLATION

Chilled beams shall be supported by adjustable hanging brackets supported from threaded rod (by others) or, with manufacturer’s optional rigid mounting kit (**FIGURE 5**), by cable hanging systems (by others) (**FIGURE 6**).

ENERGY CONTROL

Mounted on the rails of the chilled beam, the patented energy control feature, can adjust the variable nozzle settings on the Aurora IQSA. Energy control can create a symmetrical or asymmetrical flow of air leaving the beam. The energy control feature is automatically aligned with the indicators on each side of the beam, providing a wide range of airflow setting options for immediate and future requirements. Slot adjustment requires only a screwdriver to push the rails to the desired position.



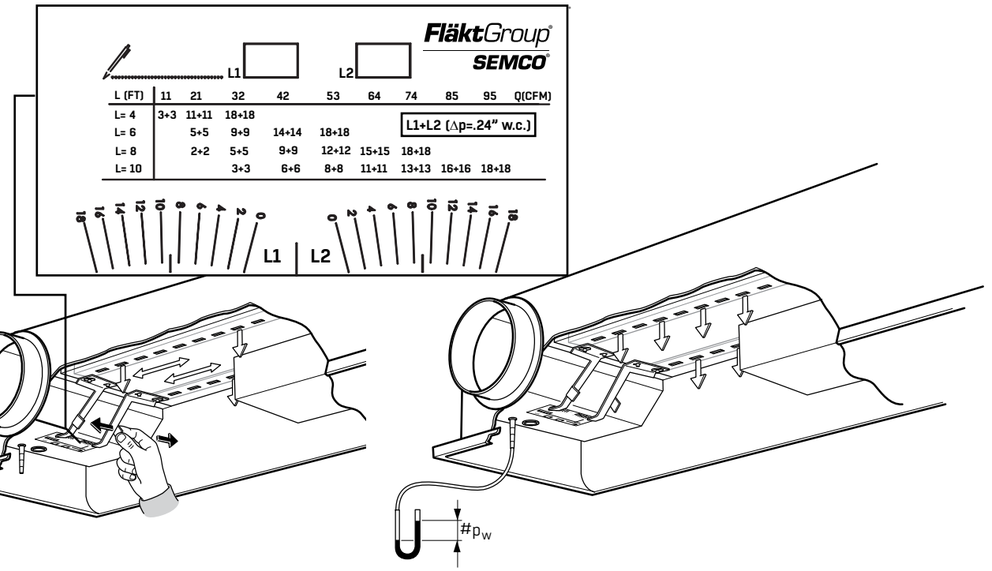


FIGURE 2. Aurora IQSA nozzle adjustment and pressure check

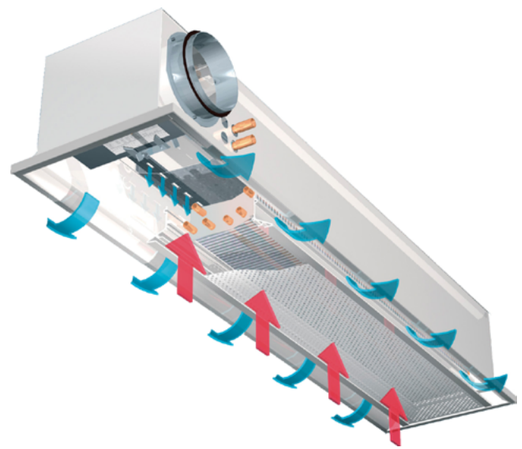
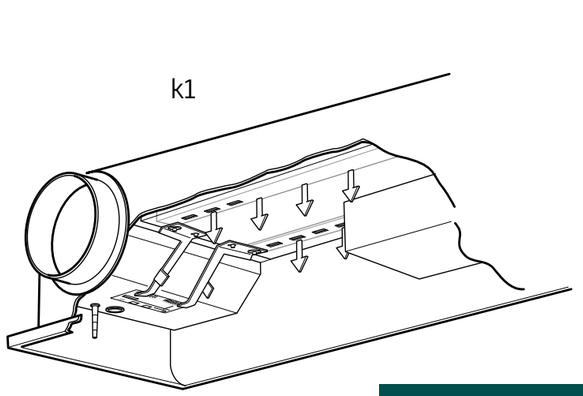
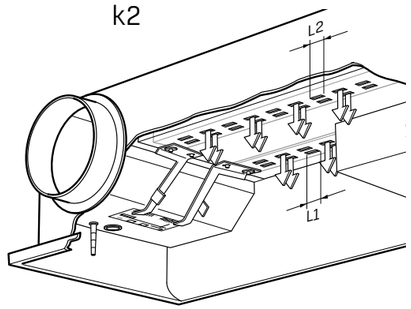


FIGURE 3. The Aurora IQSA air flow distribution

AURORA IQSA AIR FLOW CALCULATION

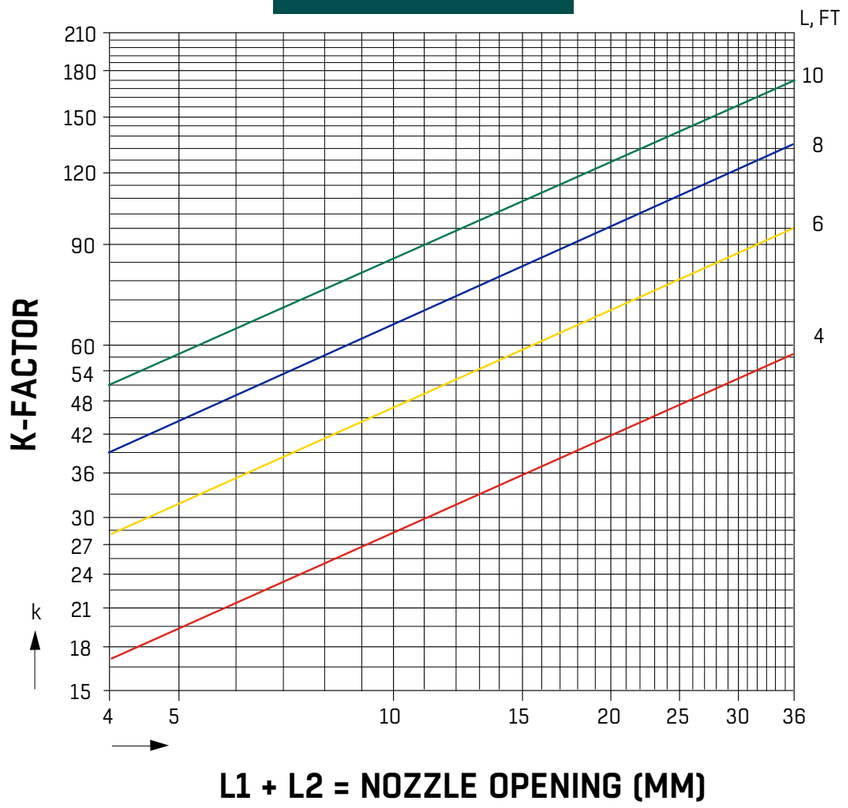
Approximate airflow through each beam can be configured using the equation below.





k2 = k1 x 2

$$q(CFM) = k\sqrt{p(in.\ w.c.)}$$



SLOT SETTINGS VS. FLOW (CFM)

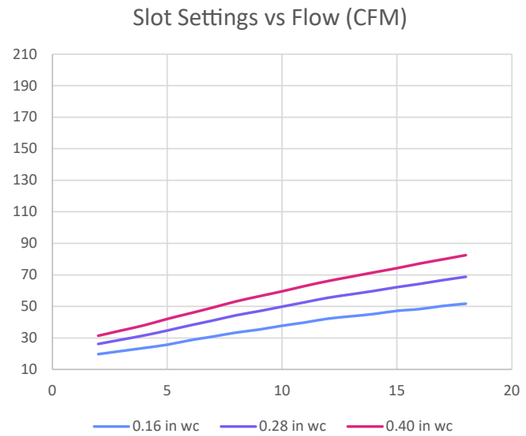


FIGURE 7. 4' Aurora IQSA — Slot Settings vs, Flow (CFM)

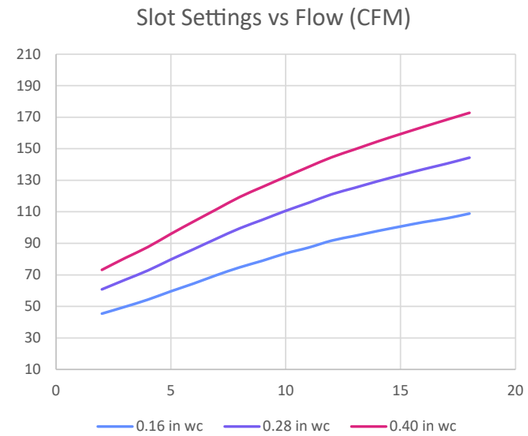


FIGURE 9. 8' Aurora IQSA — Slot Settings vs. Flow (CFM)

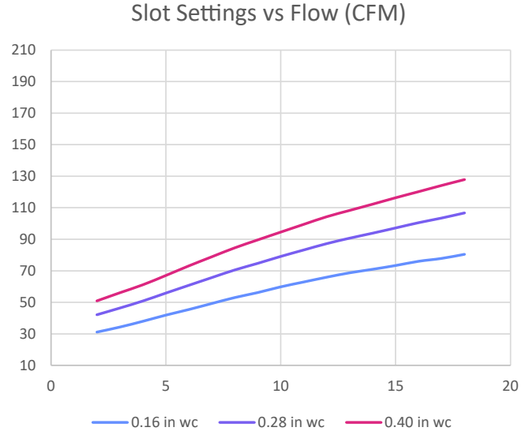


FIGURE 8. 6' Aurora IQSA — Slot Settings vs. Flow (CFM)

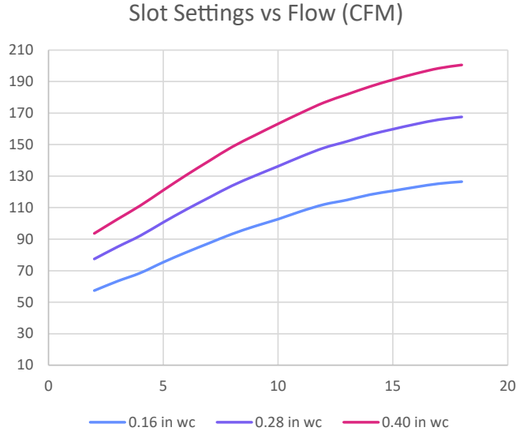


FIGURE 10. 10' Aurora IQSA — Slot Settings vs. Flow (CFM)

TECHNICAL COOLING DATA

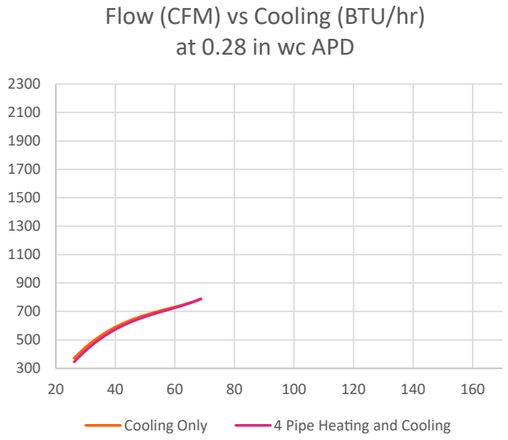


FIGURE 11. 4' Aurora IQSA — Flow (CFM) vs Cooling (BTU/HR)

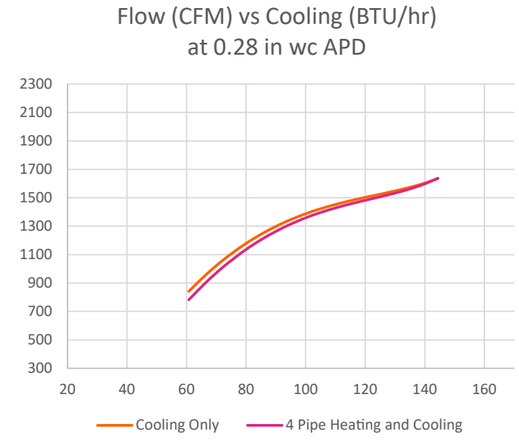


FIGURE 13. 8' Aurora IQSA — Flow (CFM) vs Cooling (BTU/HR)

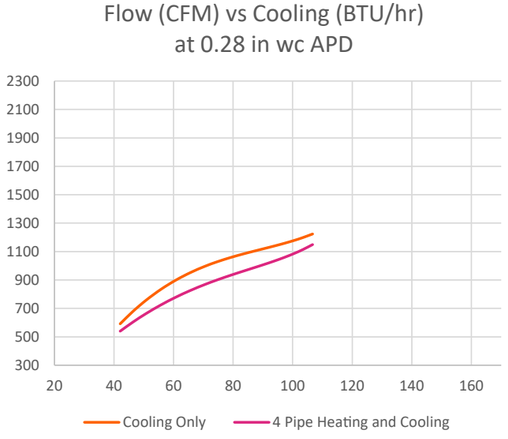


FIGURE 12. 6' Aurora IQSA — Flow (CFM) vs Cooling (BTU/HR)

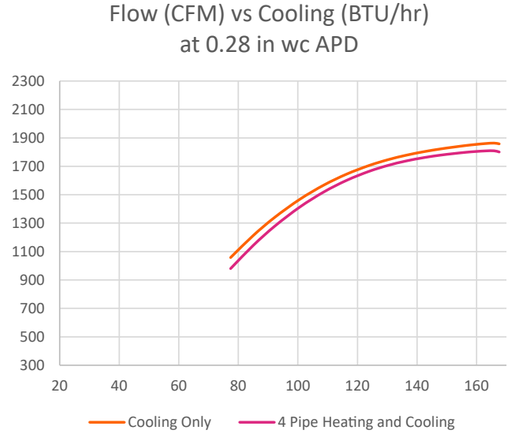


FIGURE 14. 10' Aurora IQSA — Flow (CFM) vs Cooling (BTU/HR)

TECHNICAL HEATING DATA

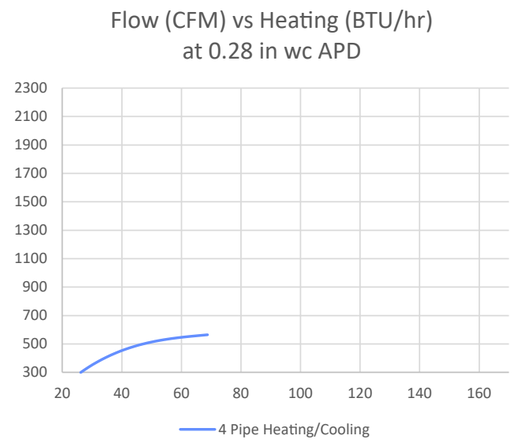


FIGURE 15. 4' Aurora IQSA — Flow (CFM) vs Heating (BTU/HR)

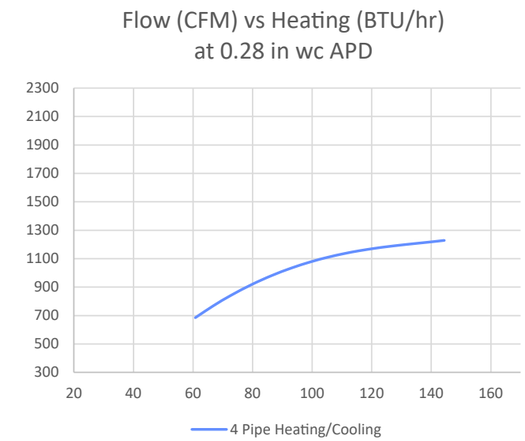


FIGURE 17. 8' Aurora IQSA — Flow (CFM) vs Heating (BTU/HR)

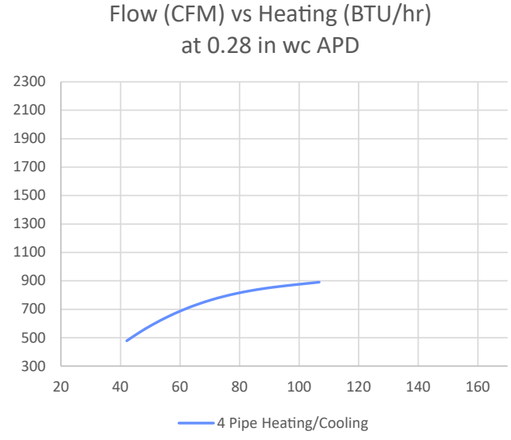


FIGURE 16. 6' Aurora IQSA — Flow (CFM) vs Heating (BTU/HR)

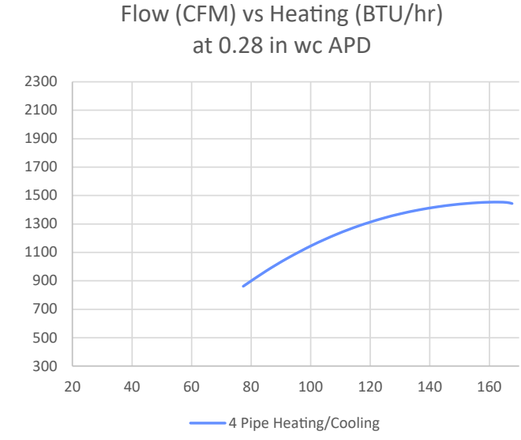


FIGURE 18. 10' Aurora IQSA — Flow (CFM) vs Heating (BTU/HR)

TECHNICAL SOUND DATA

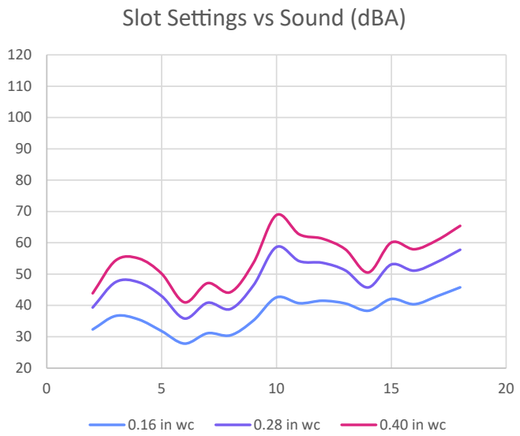


FIGURE 19. 4' Aurora IQSA — Slot Setting vs. Sound (dBA)

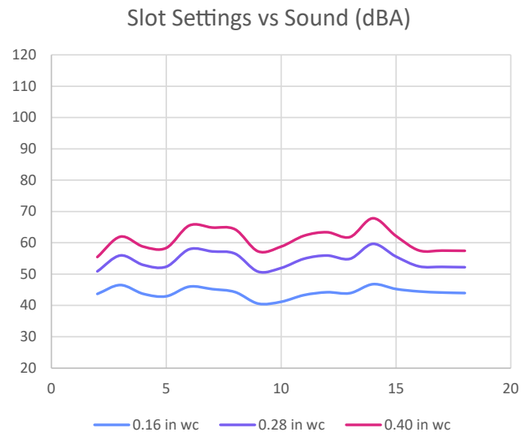


FIGURE 21. 8' Aurora IQSA — Slot Setting vs. Sound (dBA)

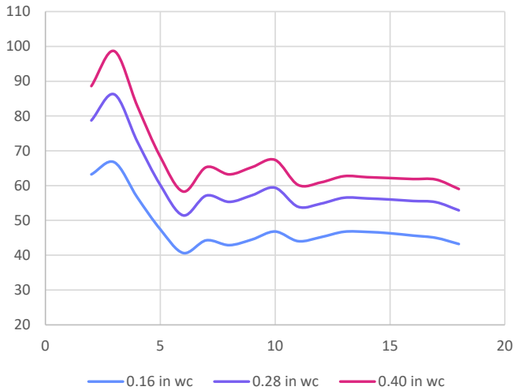


FIGURE 20. 6' Aurora IQSA — Slot Setting vs. Sound (dBA)

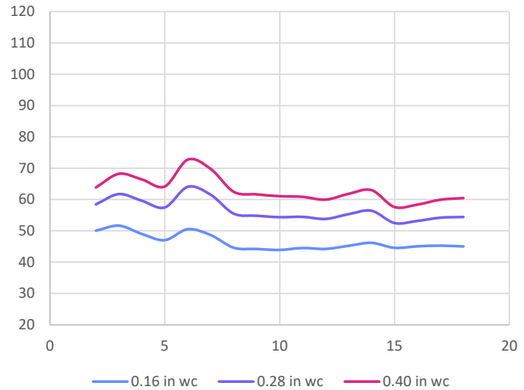
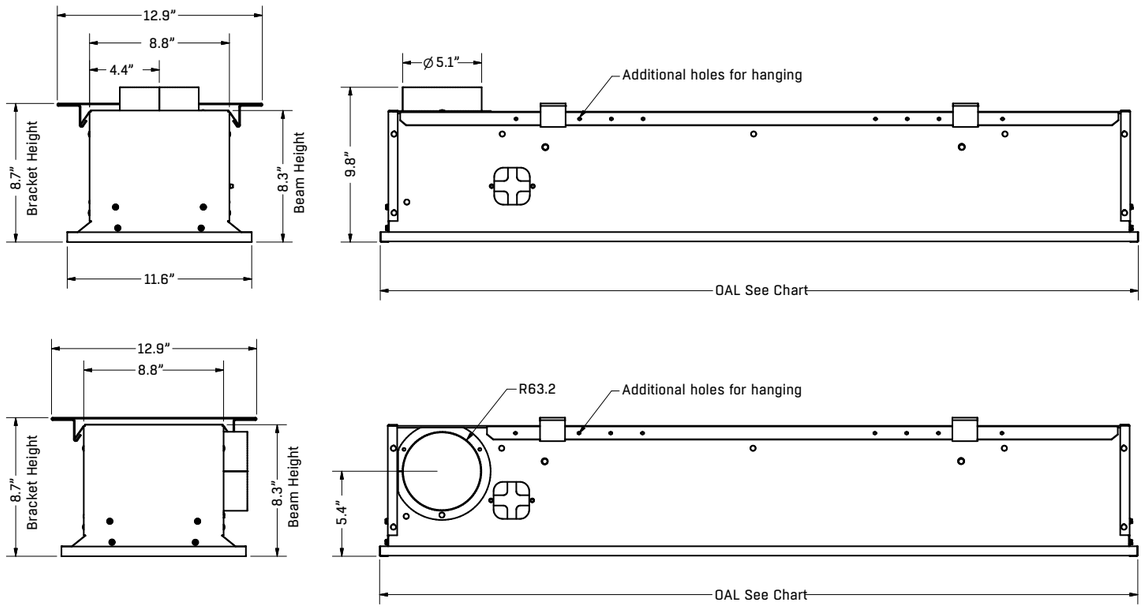


FIGURE 22. 10' Aurora IQSA — Slot Setting vs. Sound (dBA)

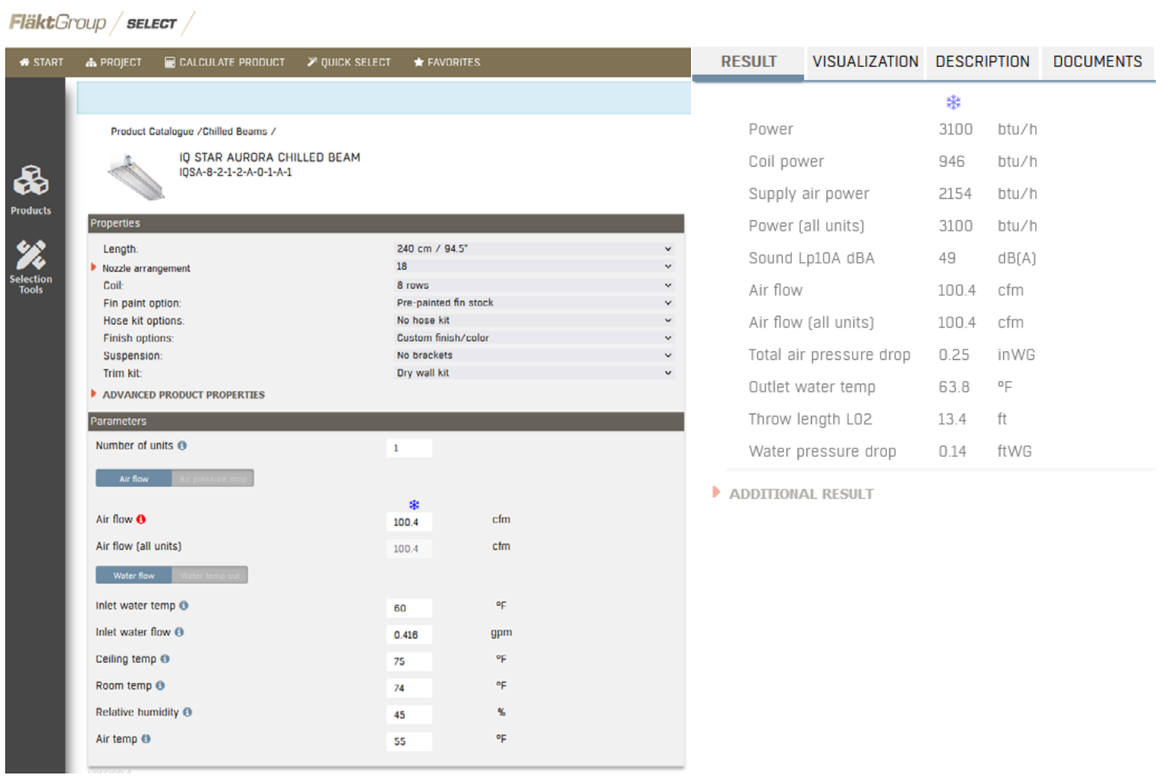
DIMENSIONS AND WEIGHTS



SIZE	LENGTH (IN)	WEIGHT (LBS.)
IQSA 4' — 120	47.2"	31
IQSA 6' — 180	70.9"	46
IQSA 8' — 240	94.5"	62
IQSA 10' — 300	118.1"	77

SELECTION TOOL

If you have different operating requirements than those shown on **PAGES 7-10**, please contact your local FläktGroup® SEMCO® sales representative or visit www.semcohvac.com for more information on the FläktGroup® SELECT selection tool.



CABLE SUSPENSION

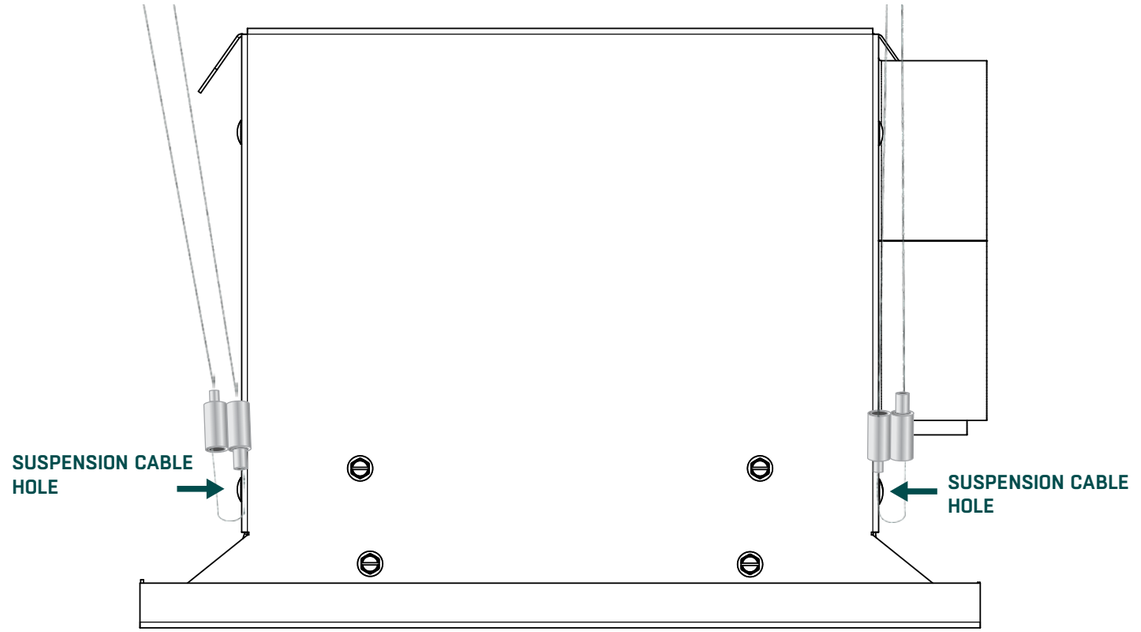


FIGURE 5. Aurora IQSA side view with suspension cables

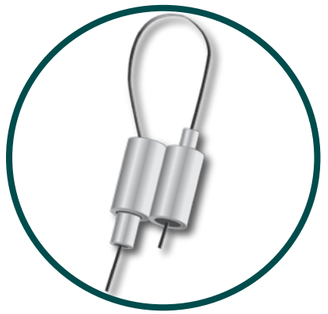
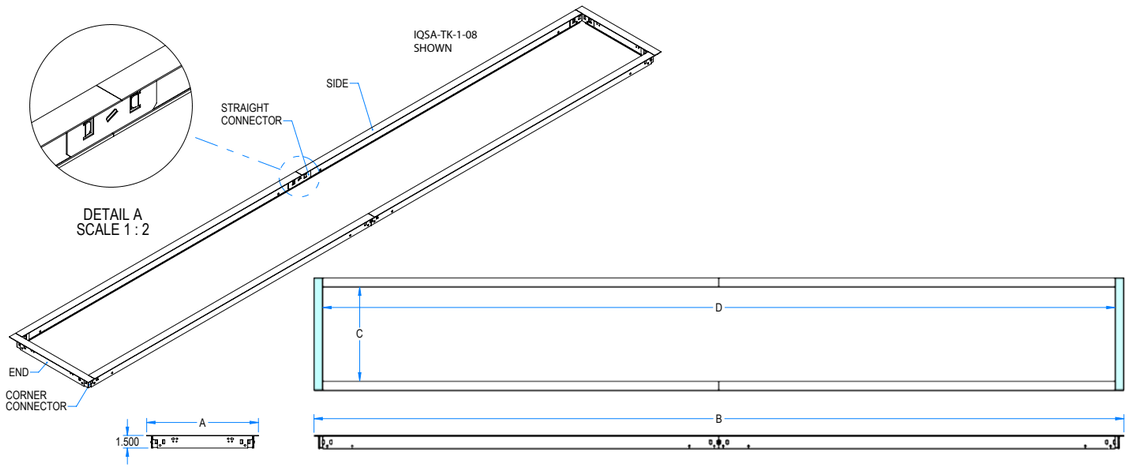


FIGURE 6. Close up of a suspension cable hanger

DRYWALL FLANGE KITS

Multiple side pieces are required to create 6, 8 and 10 foot lengths. Using straight connectors with 2', 3', or 4' side pieces. See **FIGURE 4** for exact part quantities for the length(s) required.



	AURORA IQSA DRYWALL KIT: PARTS, QUANTITIES AND OVERALL DIMENSIONS			
	1' x 4'	1' x 6'	1' x 8'	1' x 10'
FLÄKTGROUP SEMCO KIT STRING	IQSA - TK-1-04	IQSA - TK-1-06	IQSA- TK-1-08	IQSA - TK-1-10
DIMENSION "A"	13.312"	13.312"	13.312"	13.312"
DIMENSION "B"	48.5"	72.5"	96.5"	120.5"
DIMENSION "C"	11.188"	11.188"	11.188"	11.188
DIMENSION "D"	46.375"	70.375"	94.375"	94.375"
1' END	2	2	2	2
2' SIDE	—	—	—	—
3' SIDE	—	4	—	2
4' SIDE	2	—	4	4
CORNER CONNECTOR QTY	4	4	4	4
STRAIGHT CONNECTOR QTY	—	2	2	4

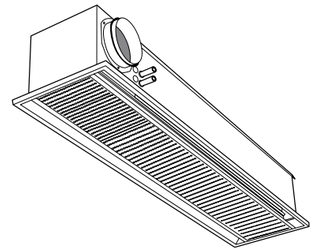
FIGURE 4. Drywall kit parts, quantities and overall dimensions

ACCESSORIES

INSTALLATION WITH FASTENING BRACKET

A suspension bracket facilitates the suspension of chilled beams from the ceiling. Each beam requires two brackets. The brackets may be ordered separately or with the Aurora IQSA chilled beam. The suspension brackets can be fitted directly to the ceiling or onto channel support bars. The chilled beam is installed by simply pressing it against the bracket until it clicks into place. No tools are needed. The chilled beam can then be adjusted lengthwise by sliding the bracket along the beam's fastening points. To adjust it sideways, slide the threaded bars along the grooves in the bracket.

IQSA HANGER



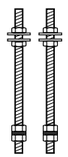


FIGURE 23. If there is a need for adjusting the installation height, suspension brackets and suspension rods can be ordered as well.

FIGURE 24. Suspension brackets

PURGING NIPPLE

The purging nipple is an optional accessory, that can be added in the selection tool.

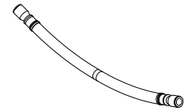


FIGURE 25. Flexible hose with a threaded connection

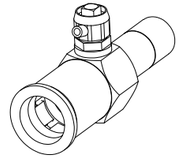


FIGURE 26. Purging nipple

PRODUCT AND ACCESSORY CODES

MAIN CODE

IQSA-a-b-c-d-e-f-g-h-i

NOMINAL LENGTH, FEET (a)

4 = 4 feet long

6 = 6 feet long

8 = 8 feet long

10 = 10 feet long

CONNECTION ALTERNATIVES (b)

1 = Air connection right, water connections right in air direction with purge nipples

2 = Air connection up , water connections right in air direction with purge nipples

COIL OPTIONS (c)

1 = Cooling only, 2-pipe

2 = Cooling and heating, 4-pipe

PAINT OPTIONS (d)

0 = FläktGroup SEMCO standard paint

1 = FläktGroup SEMCO standard paint with painted black interior

2 = Custom paint

3 = Custom paint with painted black exterior

COIL CONNECTION OPTIONS (e)

A = 0.5" sweat

B = 0.5" NPT male

C = Custom coil end fittings (special order)

SUSPENSION (f)

0 = No brackets

1 = Standard FläktGroup SEMCO brackets

TRIM KIT OPTIONS (g)

0 = No trim kit

1 = Drywall kit

HOSE KIT OPTIONS (h)

A = No hose kit

B = 24" hose with 0.5" NPT female (coil should be ordered with MNPT 0.5" fittings)

C = 24" hose with 0.5" NPT female & shut off valve (coil should be ordered with MNPT 0.5" fittings)

D = Custom hose and/or valve (special order)

FIN PAINT OPTIONS (i)

0 = Standard

1 = Pre-painted fin stock (black, slight derate)

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

FläktGroup SEMCO
SPECIALIZED HEALTHY AIR SOLUTIONS

EXCELLENCE IN SOLUTIONS

FläktGroup SEMCO delivers smart, energy-efficient, air-quality solutions to support every building application. We offer our customers innovative technologies, high-quality products and outstanding performance supported by more than fifty years of accumulated industry experience. The broadest offering on the market and a strong market presence in 65 countries worldwide guarantees that we are always by your side, ready to deliver: Excellence in Solutions.

FläktGroup SEMCO
Corporate Headquarters
1800 East Pointe Drive
Columbia, Missouri 65201 USA
573.443.1481
sales.semco@flaktgroup.com

To learn more about FläktGroup SEMCO offerings and to contact your nearest representative please visit

www.semcohvac.com