TO: BLRB Architects
404 SW Columbia St
Bend, OR 97702

PROJECT NAME: Pilot Butte Middle School Renovation - Buildings A, E & F

We hereby submit for consideration, the following product instead of specified item for above project:

Section: 23 30 00	Paragraph: 2.4
Specified Item Titus	VAV Terminal Units
•	Price SDV5
•	

Attach complete dimensional information and technical data including laboratory tests, if applicable.

Include complete information on changes to Drawings and/or specifications, which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to provide equal quality, performance, and appearance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance. Differences in quality of materials and construction shall be indicated.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

- 1. The proposed substitutions do not affect dimensions shown on drawings.
- 2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
- 3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
- 4. Maintenance and service parts will be locally available for the proposed substitution.
- 5. The proposed substitution will have no affect on applicable codes.
- 6. The manufacturer's guarantee or warranties of proposed product is equivalent to; or exceeds that of the specified product.
- 7. Proposed substituted item will match all sizes, profiles, specifications and colors of item originally specified.

List of names and location of three similar projects on which product was used, date of installation, and Architect's name and phone number.

Project No. 1: <u>Umpqua CC Snyder Hall, Mahlum Architects 503-224-4032</u>
Project No. 2: <u>Meier & Frank Redevelopment, BORA Architects 503-226-1575</u>
Project No. 3: <u>Oregon Surgical Institute, Anderson Dabrowski Architects</u>
503-239-7377

CERTIFICATION OF EQUAL		FOR USE BY A	RCHITECT:	
PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE	x		Accepted as Noted Received Too Late	
UNDERSIGNED ATTESTS THAT FUNCTION AND QUALITY ARE EQUAL TO OR SUPERIOR TO SPECIFIED ITEMS.	By: Date: Remarks			
Submitted By: Ty Kennedy				_
Signature: Ty Kennedy				_
Title: Engineering Sales				_
Firm: Johnson Air Products				
Address: 2220 SE 9th Avenue Portland, OR 97214				_
Telephone: 971-244-5290				
Date : 3/2/18				_
Above signature must be by person having authority to legally bind his firm to the above terms.	0			
				_

END OF SECTION



All-In-One Detailed Submittal Schedule Terminals

#	To	Qty	Model	Tag	Size 1	Max Primary (CFM)	Min Primary (CFM)	Heat Min (CFM)	Terminal Liner	Coil	Sequence	Aux/Fan/Mix (CFM)	Accessories 1	Accessories 2	Accessories 3
1	T	1	SDV5	VAV-E1.1	10	1200	240	0	FG50	Water	2000	1200	PS	ATT5	
Desc:	FG5	0 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			
2		1	SDV5	VAV-E1.2	5	250	60	0	FG50	Water	2000	125	PS	ATT5	
Desc:	FG5	0 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			
3		1	SDV5	VAV-E1.3	6	450	125	0	FG50	Water	2000	125	PS	ATT5	
Desc:	FG5	0 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			
5		1	SDV5	VAV-E1.5	14	2150	430	0	FG50	Water	2000	1075	PS	ATT5	
Desc:	FG5	50 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			
4		1	SDV5	VAV-E1.4	5	300	60	0	FG50	Water	2000	150	PS	ATT5	
Desc:	FG5	50 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			
6		1	SDV5	VAV-E2.1	12	1700	340	0	FG50	Water	2000	1700	PS	ATT5	
Desc:	FG5	0 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			
7		1	SDV5	VAV-E2.2	9	1025	205	0	FG50	Water	2000	512	PS	ATT5	
Desc:	FG5	0 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			
8		1	SDV5	VAV-E2.3	10	1200	240	0	FG50	Water	2000	1200	HSG12	PS	
Desc:	FG5	0 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers HSG12 - Size 12 (asing for Inlet size 9-2	10 PS - I	Protective Shro	ud			
9	_	1	SDV5			1050	210	0	FG50	Water	2000	525	HSG12	PS	ATT5
Desc:	lesc: FGS0 - 1/2" Thick Fiberglass Liner (Standard) 2000 - VAV - Field Installed Controls Supplied by Others HSG12 - Size 12 Casing for Inlet size 9-10 PS - Protective Shroud ATTS - 5 Foot Attenuator Integral(Coil at the end)														
10	_	1	SDV5			610	122	0	FG50	Water	2000	305	PS	ATT5	
Desc:	ses: FG50 - 1/2" Thick Fiberglass Liner (Standard) 2000 - VAV - Field Installed Controls Supplied by Others PS - Protective Shroud ATT5 - 5 Foot Attenuator Integral(Coil at the end)														
11		1	SDV5	VAV-E2.6	7	600	120	0	FG50	Water	2000	300	PS	ATT5	
Desc:	FG5	0 - 1/2	2" Thick Fi	iberglass Line	er (Standar	d) 2000 - VAV - Field Insta	lled Controls Supplied by Ot	hers PS - Protective Sh	roud ATT5 - 5 Foot	Attenuat	or Integral(Coil	at the end)			



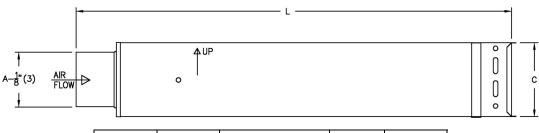
Performance Notes

Date Printed: 2/28/2018

- 1. Dashes (--) indicate NC values less than 20.
- 2. Sound power levels are given in decibels (dB).
- 3. Dashes (--) indicate sound power levels below 36-29-26-22-19-17 for each octave band; values below these sound power levels are considered below significance per AHRI 880.
- 4. Minimum operating pressure is the minimum static pressure required to operate the terminal unit assembly at maximum primary flow with a wide open damper.
- 5. Airflow is given in cubic feet per minute (cfm).
- 6. Air pressure drop is given in inches water gauge (in. w.g.), and water pressure drop is given in feet of water gauge (ft. w.g.).
- 7. Water coil performance is rated and certified in accordance with the latest edition of AHRI Standard 410.

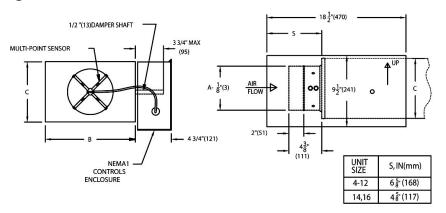


SDV5 Single Duct w/ Hot Water Coil and 5ft Integral Attenuator



Unit Size	Max Airflow	Ou	tlet	Inlet	Length (L)
Unit Size	Wax Airiiow	В	С	Α	1-2 Rows
10	1800	14	12 1/2	10	84 1/8

Digital Controls



- Controls are supplied by controls contractor and field installed
- Controls Enclosure will be supplied as illustrated on right hand side unless specified otherwise
- PS NEMA 1 Controls Enclosure, listed to UL50
- Multi-point Primary Airflow Sensor supplied by Price

Notes

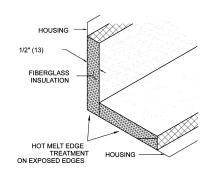
- 22 Ga. zinc coated steel housing. Mechanically sealed and gasketed, leak resistant construction
- Rectangular discharge opening with slip and drive cleat duct connection
- Integral Attenuator



Liner FG50

Internal Insulation – Fiberglass ½" (13mm) thick, min. 1.5 lb/cu.ft density, meets requirements of NFPA90A and UL 181.

R-Value = 2.1



PROJECT: ENGINEER:

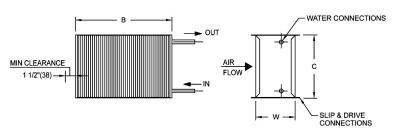
DESCRIPTION: Single Duct - DDC By Others

SUBMITTAL NO: 258148-L CUSTOMER:



High Capacity Water Coil 2L

2 Row Left Hand Connection



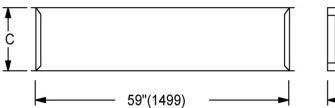
Inlet	В	С	Coil Con	nection ø	V	٧
Size	ь	٠	1 Row	2-4 Rows	1-2 Rows	3-4 Rows
9,10	14	12 1/2	1/2	7/8	5	7 1/4

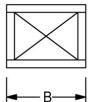
Water Coil Notes

- Fabricated from 22 Ga. galvanized steel mechanically sealed, leak resistant construction
- Configuration of coil connection varies with size & circuitry of
- Performance rated and certified in accordance with the current edition of AHRI standard 410
- HC High capacity coils supplied with 12 fins per inch
- Hot water coils have copper tubes and aluminum fins with O.D. sweat connections
- Refer to submitted terminal unit schedule for air volumes and reheat coil capacities
- Method of venting reheat coil is to be provided by installing contractor
- Hand of water coil connections is determined when viewed from air inlet side

Attenuator ATT5

5 Foot Attenuator Integral





Unit Size	В	С
10	1/1	12 1/2

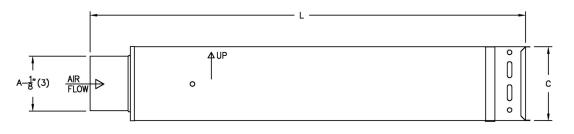
PROJECT: **ENGINEER:**

DESCRIPTION: Single Duct - DDC By Others

SUBMITTAL NO: 258148-L **CUSTOMER:**

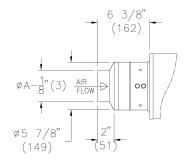


SDV5 Single Duct w/ Hot Water Coil and 5ft Integral Attenuator



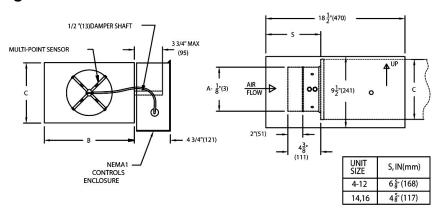
Unit Size	Max Airflow	Ou	tlet	Inlet	Length (L)
Unit Size	Wax Airiiow	В	С	Α	1-2 Rows
5	500	12	8	5	86 1/8

Inlet Diameter Reducer Detail



Size 4 and 5 have a 6" diameter duct with inlet reducer as shown

Digital Controls



- Controls are supplied by controls contractor and field installed
- Controls Enclosure will be supplied as illustrated on right hand side unless specified otherwise
- PS NEMA 1 Controls Enclosure, listed to UL50
- Multi-point Primary Airflow Sensor supplied by Price

Notes

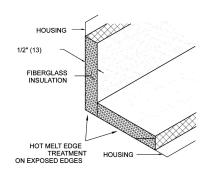
- 22 Ga. zinc coated steel housing. Mechanically sealed and gasketed, leak resistant construction
- Rectangular discharge opening with slip and drive cleat duct connection
- Integral Attenuator



Liner FG50

CUSTOMER:

Internal Insulation – Fiberglass ½" (13mm) thick, min. 1.5 lb/cu.ft density, meets requirements of NFPA90A and UL 181. R-Value = 2.1



PROJECT: ENGINEER:

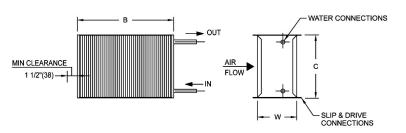
DESCRIPTION: Single Duct - DDC By Others

SUBMITTAL NO: 258148-L SUBMITTAL DATE: 2/28/2018



High Capacity Water Coil 2L

2 Row Left Hand Connection



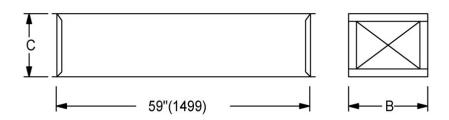
Inlet	В	_	Coil Con	nection ø	٧	V
Size	-	С	1 Row	2-4 Rows	1-2 Rows	3-4 Rows
4,5,6	12	8	1/2	7/8	5	7 1/4

Water Coil Notes

- Fabricated from 22 Ga. galvanized steel mechanically sealed, leak resistant construction
- Configuration of coil connection varies with size & circuitry of coil.
- Performance rated and certified in accordance with the current edition of AHRI standard 410
- HC High capacity coils supplied with 12 fins per inch
- Hot water coils have copper tubes and aluminum fins with O.D. sweat connections
- Refer to submitted terminal unit schedule for air volumes and reheat coil capacities
- Method of venting reheat coil is to be provided by installing contractor
- Hand of water coil connections is determined when viewed from air inlet side

Attenuator ATT5

5 Foot Attenuator Integral



Unit Size	В	С
5	12	8

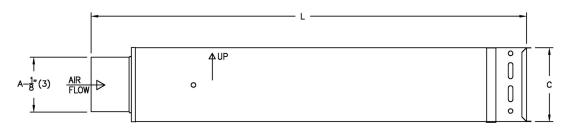
PROJECT: ENGINEER:

DESCRIPTION: Single Duct - DDC By Others

SUBMITTAL NO: 258148-L CUSTOMER:

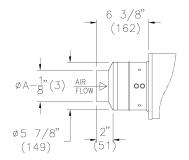


Single Duct w/ Hot Water Coil and 5ft Integral Attenuator SDV5



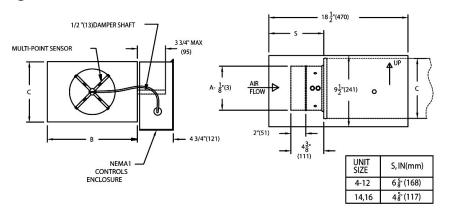
Unit Size	Max Airflow	Ou	tlet	Inlet	Leng	th (L)
Unit Size Wax Airiow		В	С	Α	1-2 Rows	3-4 Rows
5	500	12	8	5	86 1/8	88 3/8
6	550	12	8	6	84 1/8	86 3/8

Inlet Diameter Reducer Detail



Size 4 and 5 have a 6" diameter duct with inlet reducer as shown

Digital Controls



- · Controls are supplied by controls contractor and field installed
- Controls Enclosure will be supplied as illustrated on right hand side unless specified otherwise
- PS NEMA 1 Controls Enclosure, listed to UL50
- Multi-point Primary Airflow Sensor supplied by Price

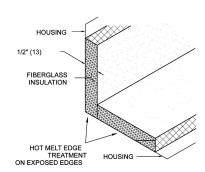
Notes

- 22 Ga. zinc coated steel housing. Mechanically sealed and gasketed, leak resistant construction
- Rectangular discharge opening with slip and drive cleat duct connection
- Integral Attenuator



Liner FG50

Internal Insulation - Fiberglass 1/2" (13mm) thick, min. 1.5 lb/cu.ft density, meets requirements of NFPA90A and UL 181. R-Value = 2.1



PROJECT: **ENGINEER:**

DESCRIPTION: Single Duct - DDC By Others

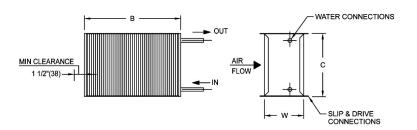
SUBMITTAL NO: 258148-L

SUBMITTAL DATE: 2/28/2018

CUSTOMER:



Water Coil 4L,3L



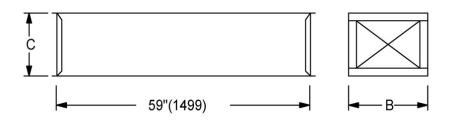
Inlet	В	_	Coil Con	nection ø	V	٧
Size	В	C	1 Row	2-4 Rows	1-2 Rows	3-4 Rows
4,5,6	12	8	1/2	7/8	5	7 1/4

Water Coil Notes

- Fabricated from 22 Ga. galvanized steel mechanically sealed, leak resistant construction
- Configuration of coil connection varies with size & circuitry of coil
- Performance rated and certified in accordance with the current edition of AHRI standard 410
- · Standard coils supplied with 10 fins per inch
- Hand of water coil connections is determined when viewed from air inlet side
- Hot water coils have copper tubes and aluminum fins with O.D. sweat connections
- Refer to submitted terminal unit schedule for air volumes and reheat coil capacities
- Method of venting reheat coil is to be provided by installing contractor
- It is not recommended to reverse 3 & 4 row coils. indicate handing while ordering

Attenuator ATT5

5 Foot Attenuator Integral



Unit Size	В	C
5	12	8
6	12	8

PROJECT: ENGINEER:

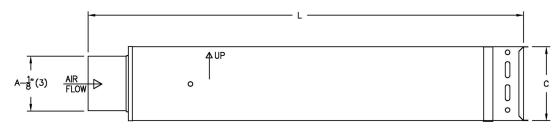
DESCRIPTION: Single Duct - DDC By Others

SUBMITTAL NO: 258148-L CUSTOMER:



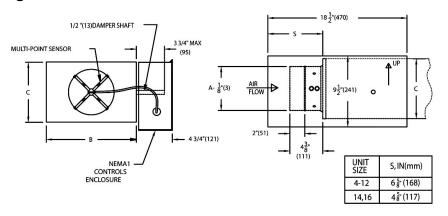
Item Tag: VAV-E1.5, VAV-E2.1, VAV-E2.2, VAV-E2.5, VAV-E2.6

SDV5 Single Duct w/ Hot Water Coil and 5ft Integral Attenuator



Unit Size	Max Airflow	Outlet		Inlet	Length (L)	
Utilit Size	Wax Alliow	В	С	Α	1-2 Rows	3-4 Rows
7	800	12	10	7	84 1/8	86 3/8
9	1400	14	12 1/2	9	84 1/8	86 3/8
12	2600	16	15	12	84 1/8	86 3/8
14	3700	20	17 1/2	14	87 5/8	89 7/8

Digital Controls



- Controls are supplied by controls contractor and field installed
- Controls Enclosure will be supplied as illustrated on right hand side unless specified otherwise
- PS NEMA 1 Controls Enclosure, listed to UL50
- Multi-point Primary Airflow Sensor supplied by Price

Notes

- 22 Ga. zinc coated steel housing. Mechanically sealed and gasketed, leak resistant construction
- Rectangular discharge opening with slip and drive cleat duct connection
- Integral Attenuator



Liner FG50

Internal Insulation – Fiberglass $\frac{1}{2}$ " (13mm) thick, min. 1.5 lb/cu.ft density, meets requirements of NFPA90A and UL 181. R-Value = 2.1

HOUSING

HOUSING

1/2" (13)

FIBERGLASS INSULATION

PROJECT: SUBMITTAL NO: 258148-L SUBMITTAL DATE: 2/28/2018 ENGINEER: CUSTOMER:

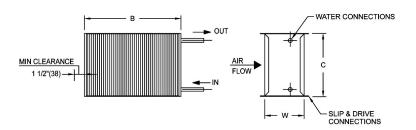
DESCRIPTION: Single Duct - DDC By Others

HOT MELT EDGE TREATMENT ON EXPOSED EDGES



Item Tag: VAV-E1.5, VAV-E2.1, VAV-E2.2, VAV-E2.5, VAV-E2.6

Water Coil 1R,3L



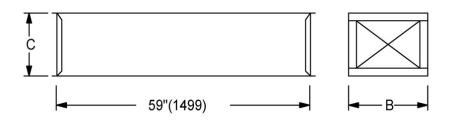
Inlet	В	С	Coil Con	nection ø	W		
Size	ь	٠	1 Row	2-4 Rows	1-2 Rows	3-4 Rows	
7,8	12	10	1/2	7/8	5	7 1/4	
9,10	14	12 1/2	7/8	7/8	5	7 1/4	
12	16	15	7/8	7/8	5	7 1/4	
14	20	17 1/2	7/8	7/8	5	7 1/4	

Water Coil Notes

- · Fabricated from 22 Ga. galvanized steel mechanically sealed, leak resistant construction
- Configuration of coil connection varies with size & circuitry of coil.
- Performance rated and certified in accordance with the current edition of AHRI standard 410
- Standard coils supplied with 10 fins per inch
- Hand of water coil connections is determined when viewed from air inlet side
- Hot water coils have copper tubes and aluminum fins with O.D. sweat connections
- Refer to submitted terminal unit schedule for air volumes and reheat coil capacities
- Method of venting reheat coil is to be provided by installing contractor
- It is not recommended to reverse 3 & 4 row coils, indicate handing while ordering

Attenuator ATT5

5 Foot Attenuator Integral



Unit Size	В	С
7	12	10
9	14	12 1/2
12	16	15
14	20	17 1/2

PROJECT: **ENGINEER:**

DESCRIPTION: Single Duct - DDC By Others

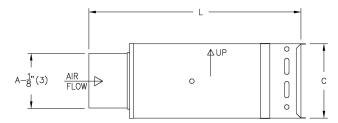
SDV5//I/2000/14,12,9,7/FLD/CFM//1R,3L/0.0////////FG50//PS/ATT5//////////////////

SUBMITTAL NO: 258148-L **SUBMITTAL DATE: 2/28/2018**

CUSTOMER:

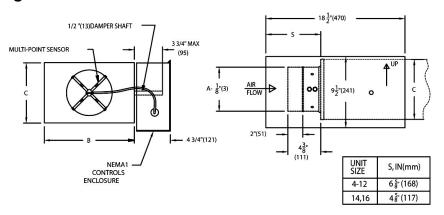


SDV5 Single Duct w/ Hot Water Coil



Inlot Sizo	Casing Size	Max CFM	Ou	tlet	Inlet	Leng	th (L)
illiet Size			В	С	Α	1-2 Rows	3-4 Rows
10	12	1800	16	15	10	25 1/8	27 3/8

Digital Controls



- Controls are supplied by controls contractor and field installed
- Controls Enclosure will be supplied as illustrated on right hand side unless specified otherwise
- PS NEMA 1 Controls Enclosure, listed to UL50
- Multi-point Primary Airflow Sensor supplied by Price

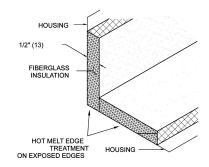
Notes

- 22 Ga. zinc coated steel housing. Mechanically sealed and gasketed, leak resistant construction
- Rectangular discharge opening with slip and drive cleat duct connection
- HSG Oversized casing selected. All accessories will match oversize casing



Liner FG50

Internal Insulation – Fiberglass $\frac{1}{2}$ " (13mm) thick, min. 1.5 lb/cu.ft density, meets requirements of NFPA90A and UL 181. R-Value = 2.1

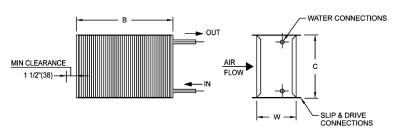


PROJECT: SUBMITTAL NO: 258148-L SUBMITTAL DATE: 2/28/2018 ENGINEER: CUSTOMER:

DESCRIPTION: Single Duct - DDC By Others

Water Coil 3L

3 Row Left Hand Connection



Inlet	Casing	В		nnection	w		
Size	Size			1 Row	2-4 Rows	1-2 Rows	3-4 Rows
9,10	12	16	15	7/8	7/8	5	7 1/4

^{*}Hand of water coil connections is determined when viewed from air inlet side. Right hand coil connection illustrated above.

Water Coil Notes

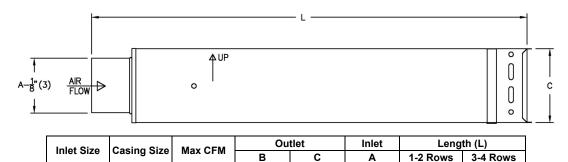
- Fabricated from 22 ga. galvanized steel mechanically sealed, leak resistant construction
- Configuration of coil connection varies with size & circuitry of coil
- Performance rated and certified in accordance with the current edition of AHRI standard 410
- Standard coils supplied with 10 fins per inch
- Hand of water coil connections is determined when viewed from air inlet side
- Hot water coils have copper tubes and aluminum fins with O.D. sweat connections
- Refer to submitted terminal unit schedule for air volumes and reheat coil capacities
- Method of venting reheat coil is to be provided by installing contractor
- It is not recommended to reverse 3 & 4 row coils. indicate handing while ordering

PROJECT: SUBMITTAL NO: 258148-L SUBMITTAL DATE: 2/28/2018 ENGINEER: CUSTOMER:

DESCRIPTION: Single Duct - DDC By Others



SDV5 Single Duct w/ Hot Water Coil and 5ft Integral Attenuator



15

10

84 1/8

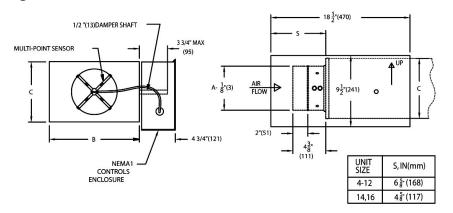
86 3/8

16

Digital Controls

10

12



1800

- Controls are supplied by controls contractor and field installed
- Controls Enclosure will be supplied as illustrated on right hand side unless specified otherwise
- PS NEMA 1 Controls Enclosure, listed to UL50
- Multi-point Primary Airflow Sensor supplied by Price

Notes

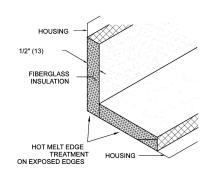
- 22 Ga. zinc coated steel housing. Mechanically sealed and gasketed, leak resistant construction
- Rectangular discharge opening with slip and drive cleat duct connection
- Integral Attenuator
- HSG Oversized casing selected. All accessories will match oversize casing



Liner FG50

Internal Insulation – Fiberglass ½" (13mm) thick, min. 1.5 lb/cu.ft density, meets requirements of NFPA90A and UL 181.

R-Value = 2.1



PROJECT: ENGINEER:

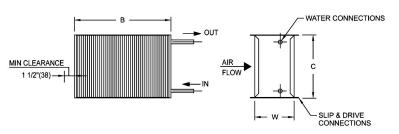
DESCRIPTION: Single Duct - DDC By Others

SUBMITTAL NO: 258148-L CUSTOMER:



Water Coil 3L

3 Row Left Hand Connection



Inlet	Casing Size	В	С	Coil Connection		w	
Size		В		1 Row	2-4 Rows	1-2 Rows	3-4 Rows
9,10	12	16	15	7/8	7/8	5	7 1/4

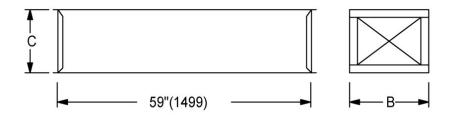
^{*}Hand of water coil connections is determined when viewed from air inlet side. Right hand coil connection illustrated above.

Water Coil Notes

- Fabricated from 22 ga. galvanized steel mechanically sealed, leak resistant construction
- Configuration of coil connection varies with size & circuitry of coil.
- Performance rated and certified in accordance with the current edition of AHRI standard 410
- Standard coils supplied with 10 fins per inch
- Hand of water coil connections is determined when viewed from air inlet side
- Hot water coils have copper tubes and aluminum fins with O.D. sweat connections
- Refer to submitted terminal unit schedule for air volumes and reheat coil capacities
- Method of venting reheat coil is to be provided by installing contractor
- It is not recommended to reverse 3 & 4 row coils. indicate handing while ordering

Attenuator ATT5

5 Foot Attenuator Integral



Unit Size	Casing Size	В	С
10	12	16	15

PROJECT: SUBMITTAL NO: 258148-L SUBMITTAL DATE: 2/28/2018 ENGINEER: CUSTOMER:

DESCRIPTION: Single Duct - DDC By Others