



# DV SERIES

## Generation B

Magic Aire Fan Coil Unit – Sizes 04 through 10

### Magic Aire Fan Coil Unit

#### HVAC Guide Specifications

Size Range: **400 to 1000 Nominal CFM**

Magic Aire Model DV

#### Part 1 — General

##### 1.01 SYSTEM DESCRIPTION

Vertical, 2-pipe or 4-pipe (or electric heat), room fan coil unit with painted finish cabinet for exposed or concealed installation.

##### 1.02 QUALITY ASSURANCE

Unit shall be tested in accordance with ARI Standard 440 and ETL listed to US and Canadian safety standards. Each coil shall be factory tested for leakage at 450 psig air pressure with coil submerged in water. Insulation and adhesive shall meet NFPA-90A requirements for flame spread and smoke generation. All equipment wiring shall comply with NEC requirements.

##### 1.03 DELIVERY, STORAGE AND HANDLING

Each unit shall be individually packaged from point of manufacture. Unit shall be handled and stored in accordance with the manufacturer's instructions.

#### Part 2 — Product

##### 2.01 EQUIPMENT

###### General:

Factory-assembled, vertical, draw-thru type fan coil for exposed or ducted installations. Unit shall be complete with water coil(s), fan(s), motor(s), drain pan, and all required wiring, piping, controls and special features.

###### Base Unit:

Units shall be fabricated of galvanized or galvanized steel. Casing to consist of heavy gauge steel insulated with 3/4" – 1.5 pound density insulation providing effective acoustical and thermal control, fire safety, and resistance to air erosion. Units shall pass 500 hour salt spray test as described in ASTM B-117. Cabinet shall include a removable front access panel with ducted return air, filter rack and 1-in. fiberglass throwaway filter. Cabinet exterior has a baked on polyurethane powder-coated finish for corrosion and scratch resistance while providing an enhanced appearance.

The drain pan shall extend the entire length and width of the coil. The drain connection shall be 3/4" FPT. Drain pan shall have average 3mil thick antimicrobial coating that provides 750hr salt spray rating per ASTM B117.

Standard – 19ga galvanized steel

Optional - 20ga 304 stainless steel.

###### Fans:

Direct-driven, double-width fan wheels with forward curved blades shall be statically and dynamically balanced. The housing shall be constructed of heavy gauge galvanized steel with die-formed inlet cones. Fan wheels shall be constructed of galvanized steel.

###### Coils:

Standard base unit shall be equipped with a 4-row CW or DX coil for installation in a 2 or 4-pipe system.

Hot water heating coils in a 4 pipe system shall be two row water coils, field installed, for mounting on the unit discharge opening.

Field installed electric resistance heater shall be 1.0 to 10.0kW, depending on unit size and voltage, for mounting on unit discharge opening. Heaters shall include high limit cutout with auto reset and contactor.

Cooling coil options include a 4 row DX coil with orifice (R-22 only) or TXV (R-22 or R-410A).

All coils shall have 3/8-in. copper tubes and aluminum fins. Coil fins are mechanically bonded to tubes. The copper tubes comply with ASTM B-75.

The fin thickness is 0.0045-in and tube thickness is 0.014-in. All coils are tested with air under water.

###### Controls and Safeties:

Unit shall be furnished with an optional 3-speed, 4-position fan switch on a wall plate for field mounting. The fan motor(s) shall be equipped with integral automatic temperature reset for motor protection.

###### Operating Characteristics:

A unit with single hydronic coil installed in a 2-pipe system shall be capable of providing heating or cooling as determined by the operating mode of the central water supply system and as determined by field-provided and installed valves and controls.

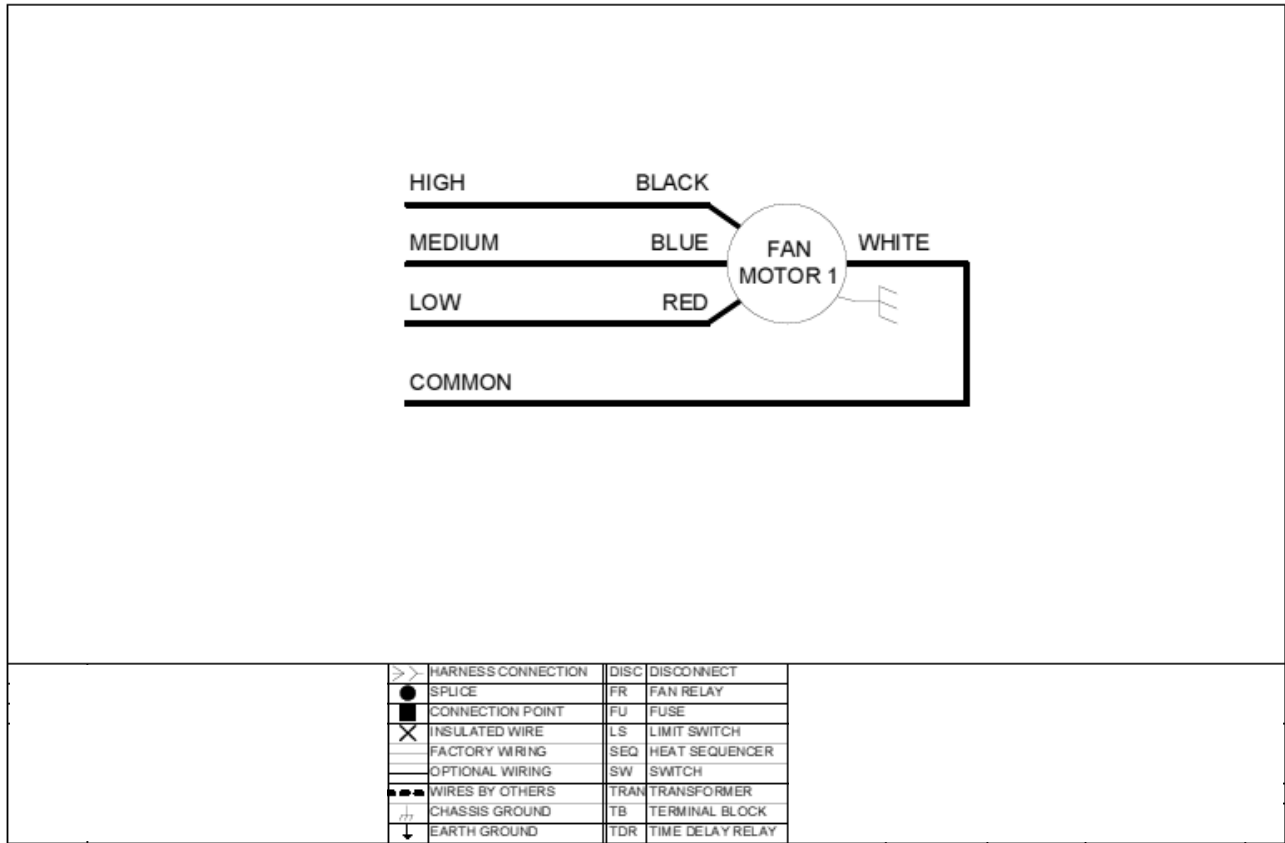
A unit with two hydronic coils installed in a 4-pipe system shall be capable of providing heating and cooling, controlled as determined by field-provided and installed valves and controls.

###### Electrical Requirements:

The unit power supply shall be single phase, 60 Hz. The standard unit is 120V, but 208/240V and 277V options are available.

###### Motor(s):

Fan motors shall be 3-speed; permanent split capacitor type, with sleeve type bearings and factory-sealed oil reservoirs to ensure lubrication; except for 277V motor which may have oil port.



**Figure 3**  
PSC Motor Option  
Unit Wiring

**ELECTRICAL CONNECTIONS**

PSC MOTOR: Figure 3 illustrates the internal wiring for the unit. The utility box is mounted on the coil connection side of the unit. All leads pass through a strain relief where they enter the utility box. Wiring within the cabinet has been positively located and supported so that it does not pass over sharp metal edges or come in contact with moving parts. After servicing, properly position electrical leads in their original supports.

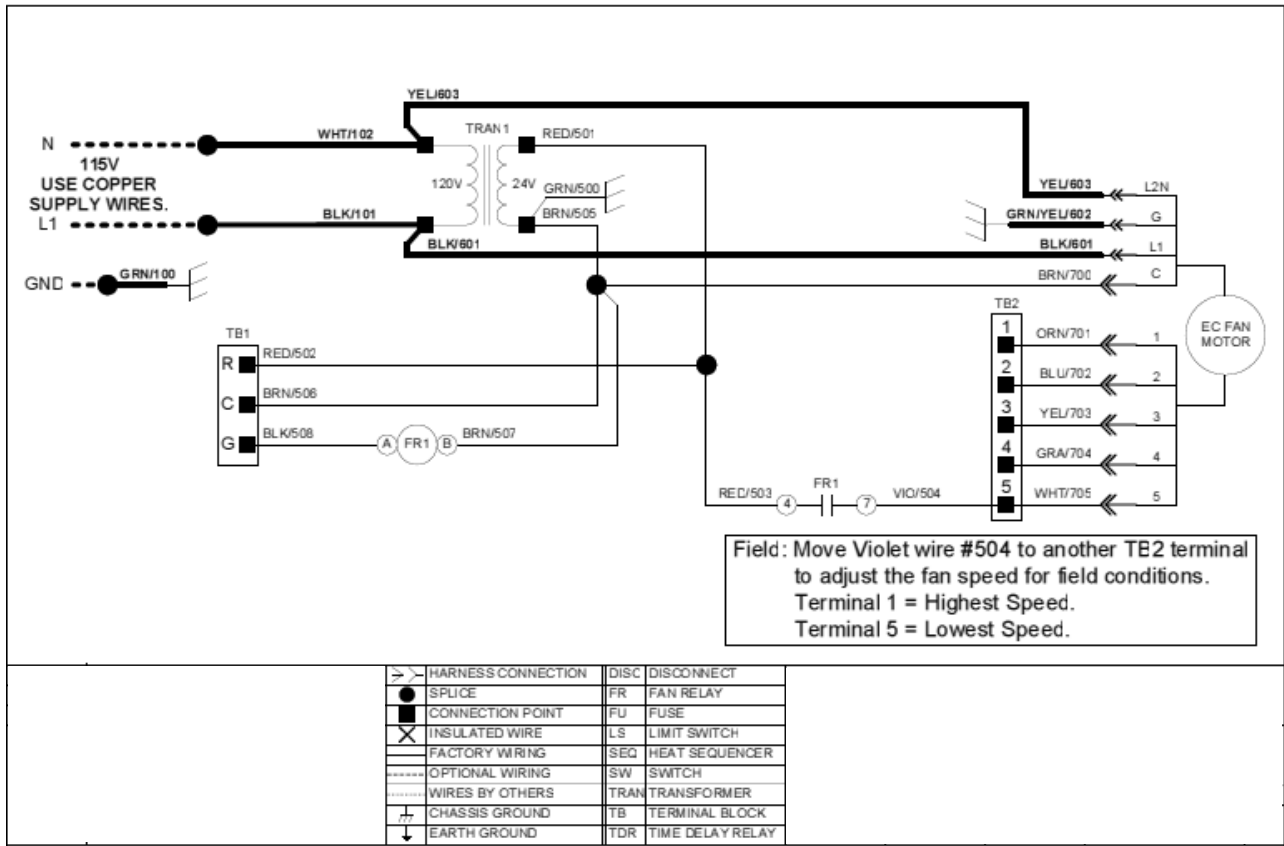
ECM MOTOR: Figure 6 indicates the internal wiring for the unit. The electrically commutated motor (ECM) has 5 discrete speed settings that can be adjusted. The single fan relay allows the thermostat to activate one of the 5 fan speeds. The 24VAC, 40VA control transformer allows the unit to power a thermostat and up to two water flow control valves. See also Figure 8.

**WARNING: CHECK MOTOR RATING PLATE FOR CORRECT LINE VOLTAGE.**  
This appliance must be permanently grounded in accordance with the National Electrical Code and local codes and ordinances.

**NOTE:** Reference Figures 4 and 5 for access to motor and electrical components.

ELECTRICAL DATA - DVB with PSC MOTOR							
Model	Motor				MCA	MOPD	
	Voltage	Phase	HP	FLA			
DVB04	115	1	1/10	2.1	2.6	15	
	208-230		1/10	0.8			1.0
	277		1/6	0.9			1.1
DVB06	115	1	1/6	2.7	3.4	15	
	208-230			1.0			1.3
	277			0.9			1.1
DVB08	115	1	1/4	4.1	5.1	15	
	208-230			1.3			1.6
	277			2.0			2.5
DVB10	115	1	1/3	6.9	8.6	15	
	208-230			2.2			2.8
	277			2.4			3.0

**Notes:**  
 1.MCA = Minimum Circuit Ampacity  
 2.MOPD = Maximum Overcurrent Protective Device, in amps.  
 3.FLA = Full Load Amps  
 4.HP = Motor nominal horsepower.  
 5.All motors are 60Hz.  
 6.Use minimum wire size #14 AWG 75C wire at unit.



**Figure 6**  
ECM Motor-Unit Wiring

**ECM APPLICATION GUIDELINES**

DV units with ECM motor have 5 pre-programmed speeds to choose from. Which speed is active is selected using the terminal block.

How it works: Airflow, RPM and static pressure is similar to a PSC motor but more stable and much more efficient.

1. As system static pressure goes up, RPM goes up and CFM goes down.
2. At around 1050rpm, as SP increases, CFM decreases rapidly down to zero at 1200rpm.

How to select the fan speed:

1. Use the airflow tables or New Magic 4 Software to locate the desired operating point.
2. Identify the corresponding tap number from the table.
3. Move Violet wire (504) to the matching connection on terminal block TB2.

How to integrate with 24V thermostat:

Connect R, C and G connections on terminal block TB1 to matching connections on thermostat. Energizing the G connection will start the fan.

ECM ELECTRICAL DATA				
Unit Size	Coil	Motor hp	Motor FLA	
			115V	208-230V
DVB04	All	1/3	3.2	2.2
DVB06	All	1/3	4.3	3
DVB08	All	1/3	4.3	3
DVB10	All	1/2	6.8	4.1

Notes:

1. Motor is Regal Beloit Endura Pro or equivalent (formerly model "X-13").
2. Overload Protection: ECM motor is electronically protected.
3. Locked Rotor Amps: If motor speed decreases below a programmed stall speed, the motor will shut down and after a delay period, the control will attempt to restart the motor. Starting current is limited to significantly less than full load current.
4. Agency Listings for the motor: UL File: E100625 Vol. 9 for Motor, Vol. 7 Sect. 14 for Control; CSA File: LR80176

CODE NO.  
CATALOG NO.

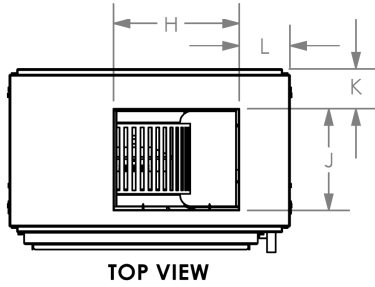


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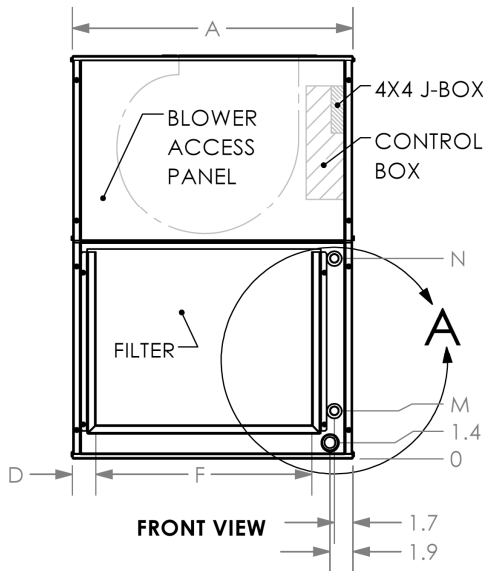
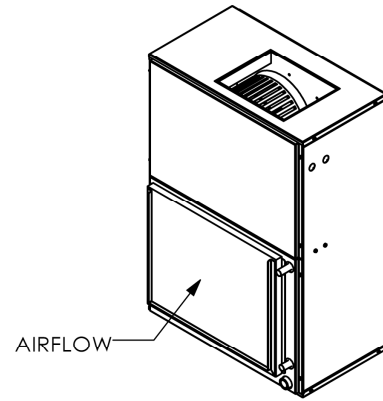
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**VERT AHU, DIRECT DRIVE  
RIGHT HAND, UPFLOW**

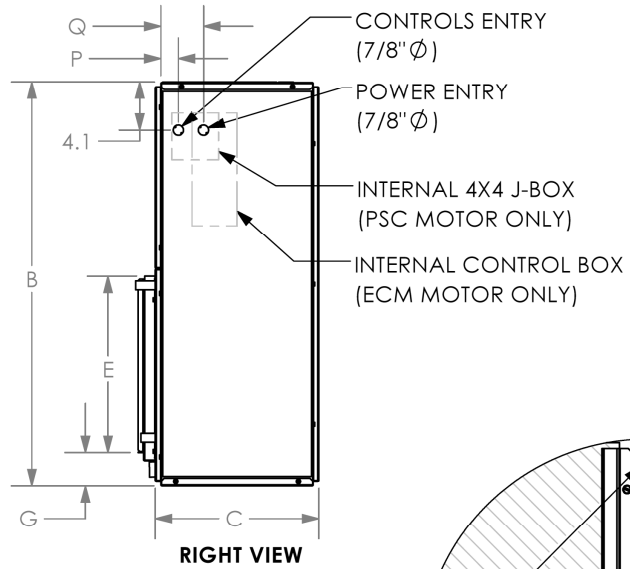
**DV  
DESIGN "B"**



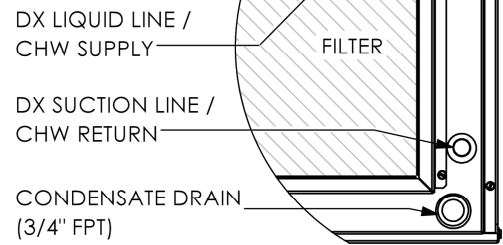
**TOP VIEW**



**FRONT VIEW**



**RIGHT VIEW**



**DETAIL A**

**NOTE:**  
RIGHT HAND UPFLOW UNIT SHOWN ABOVE. FOR LEFT HAND UNIT, COIL CONNECTIONS MOVE TO LEFT HAND SIDE, MIRRORED ACROSS FRONT VIEW.

ALL UNITS IN INCHES	WIDTH	HEIGHT	DEPTH	RETURN DUCT INLET				BLOWER OUTLET				COIL CONNECTIONS		ELECTRICAL CONNECTIONS	
				A	B	C	D	E	F	G	H	J	K	L	M
DVB04	24.0	26.5	14.0	2.0	6.3	18.0	2.8	10.5	7.5	3.4	4.5	4.1	9.1	1.5	3.6
DVB06	24.0	30.5	14.0	2.0	10.3	18.0	2.8	10.5	9.0	3.4	4.5	4.1	13.1	1.5	3.6
DVB08	24.0	34.5	14.0	2.0	14.3	18.0	2.8	10.5	9.0	3.4	4.5	4.1	17.1	1.5	3.6
DVB10	29.0	36.3	15.0	2.0	14.3	23.0	2.8	11.8	9.0	3.2	5.5	4.1	17.1	2.0	4.1

PRODUCT INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE

JOB NAME	JOB #	BUYER	BUYER #	LOCATION	DRAWING NO. <b>DVB-100</b>	REV -
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DVB-100.SLDDRW

Unit Dimensions  
(Upflow)

CODE NO.  
CATALOG NO.



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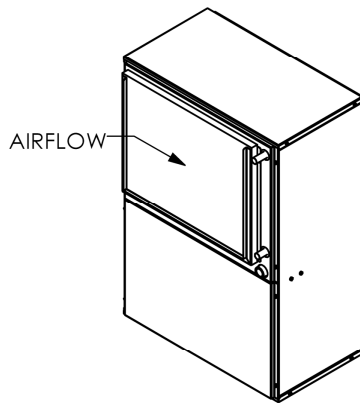
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**VERT AHU, DIRECT DRIVE  
RIGHT HAND, DOWNFLOW**

**DV  
DESIGN "B"**

**NOTE:**

RIGHT HAND DOWNFLOW UNIT SHOWN BELOW. FOR LEFT HAND UNIT, COIL CONNECTIONS MOVE TO LEFT HAND SIDE, MIRRORED ACROSS FRONT VIEW.



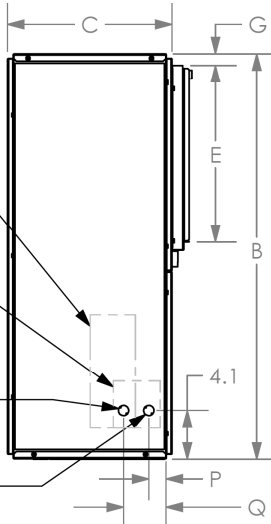
AIRFLOW

INTERNAL CONTROL BOX  
(ECM MOTOR ONLY)

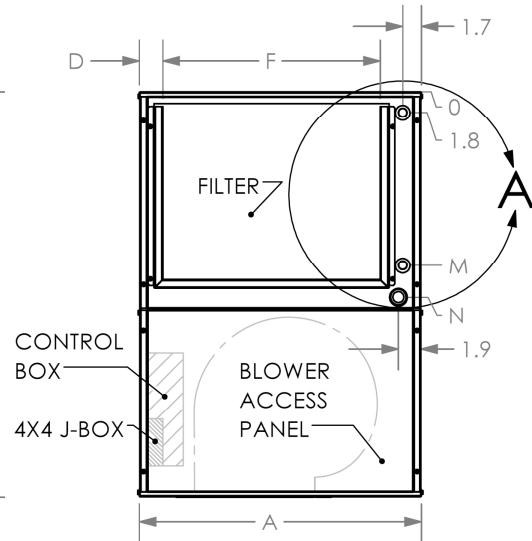
INTERNAL 4X4 J-BOX  
(PSC MOTOR ONLY)

POWER ENTRY  
(7/8" Ø)

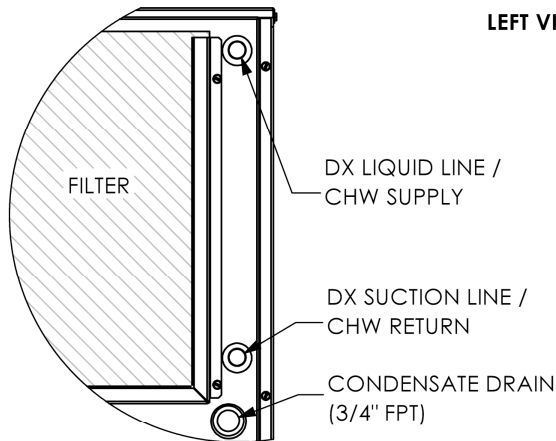
CONTROLS ENTRY  
(7/8" Ø)



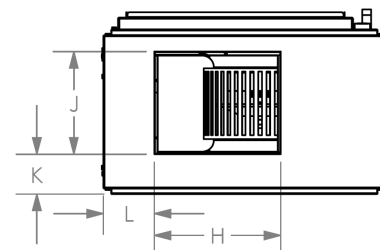
**LEFT VIEW**



**FRONT VIEW**



**DETAIL A**



**BOTTOM VIEW**

ALL UNITS IN INCHES	WIDTH	HEIGHT	DEPTH	RETURN DUCT INLET				BLOWER OUTLET				COIL CONNECTIONS		ELECTRICAL CONNECTIONS	
MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
DVB04	24.0	26.5	14.0	2.0	6.3	18.0	2.0	10.5	7.5	3.4	4.5	6.8	9.5	1.5	3.6
DVB06	24.0	30.5	14.0	2.0	10.3	18.0	2.0	10.5	9.0	3.4	4.5	10.8	13.5	1.5	3.6
DVB08	24.0	34.5	14.0	2.0	14.3	18.0	2.0	10.5	9.0	3.4	4.5	14.8	17.5	1.5	3.6
DVB10	29.0	36.3	15.0	2.0	14.3	23.0	2.0	11.8	9.0	3.2	5.5	14.8	17.5	2.0	4.1

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JOB NAME	JOB #	BUYER	BUYER #	LOCATION	DRAWING NO. <b>DVB-101</b>	REV -
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DVB-101.SLDDRW

Unit Dimensions  
(Downflow)