Vertical Air Cooled DSV Series R-410A

Model	DSV096	DSV120	DSV144	DSV180
Nominal Cooling (Tons)	8	10	12	15
Refrigerant	R-410A	R-410A	R-410A	R-410A
Cooling Performance				
Gross Cooling Capacity(Btu/h)	95,000*	121,000*	145,000*	175,000*
Design CFM	3,200	4,000	4,800	6,000
Net Cooling Capacity	93,000**	115,000**	141,000**	168,500**
Net Cooling CFM	3,200	3,600	4,800	5,000
EER	11.9	11.3	11.4	11.0
Compressor-Qty/Type	2/Scroll	2/Scroll	2/Scroll	2/Scroll
Evaporator Coil-Type	Enhanced Copper Tubes, Enhanced Aluminum Fins			
Dimension- Height x Width (in)	28X52	28x52	34X67	34x67
Face Area (sq ft)	10.11	10.11	15.82	15.82
Rows/FPI	3/12	4/12	3/14	4/14
Filters- Quantity/Size(in)	3-20x14x2 3-20x16x2	3-20x14x2 3-20x16x2	3-14x25x2 3-20x25x2	3-14x25x2 3-20x25x2
Condenser Coil-Type	Enhanced Copper Tubes, Enhanced Aluminum Fins			
Dimension- Height x Width (in)	34X56	34X56	40X67	40X67
Face Area (sq ft)	13.22	13.22	18.61	18.61
Rows/FPI	4/14	4/14	4/14	4/14
Evaporator Fan-Type	Centrifugal, Forward Curved			
Qty.-Diameter x Width(in)	1-15X15	1-15X15	2-15X11	2-15X11
Drive	Adjustable Belt			
Motor HP (Standard)	1.5	2	2	3
Condenser Fan-Type	Centrifugal, Forward Curved			
Qty.-Diameter x Width(in)	2-15X9	2-15X9	2-18X9	2-18X9
Drive	Adjustable Belt			
Motor HP (Standard)	2	3	3	5
Dimension- Height (in)	78	78	91.5	91.5
- Width (in)	64	64	78	78
- Depth (in)	32.5	32.5	34	34
Weight-Operating (lbs)	1055	1110	1415	1480
- Shipping (lbs)	1105	1170	1500	1565

**Cooling performance is rated at 95 °F ambient, 80°F entering dry bulb, 67°F web bulb and CFM listed. Gross capacity does not include the effect of fan motor heat.*

***Rated in accordance with ANSI/AHRI Standard 340/360-2007*

DSV FAN PERFOMANCE DATA

EVAPORATOR FAN PERFORMANCE

MODEL #	SUPPLY CFM	EXTERNAL STATIC PRESSURE - Inches W.C.																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
DSV096A	3000	486	0.45	563	0.57	632	0.70	697	0.83	757	0.97	817	1.14	872	1.30	926	1.44	978	1.62	1028	1.80
	3200	508	0.53	581	0.66	648	0.79	710	0.93	768	1.09	827	1.25	876	1.39	930	1.55	980	1.75	1030	1.91
	3400	530	0.62	601	0.75	665	0.89	725	1.04	783	1.20	837	1.38	884	1.50	940	1.70	990	1.86	1040	2.02
DSV120A	3600	552	0.72	620	0.86	683	1.01	740	1.16	796	1.32	845	1.46	900	1.65	947	1.83	-	-	-	-
	4000	598	0.95	662	1.11	720	1.26	774	1.43	826	1.60	876	1.78	924	1.96	970	2.08	-	-	-	-
	4400	645	1.22	704	1.39	759	1.57	810	1.75	859	1.93	906	2.12	952	2.32	996	2.51	-	-	-	-
DSV144A	4300	616	0.93	681	1.11	747	1.33	800	1.50	857	1.76	913	1.94	963	2.18	1017	2.45	1068	2.76	1110	2.91
	4800	672	1.24	732	1.44	787	1.66	839	1.88	900	2.10	950	2.32	995	2.66	1050	2.84	1090	3.11	1134	3.40
	5300	729	1.62	785	1.84	837	2.06	882	2.37	936	2.62	987	2.91	1025	3.00	1072	3.38	1115	3.65	1175	3.86
DSV180A	5400	741	1.70	796	1.93	847	2.15	896	2.42	944	2.62	988	2.85	1033	3.18	1078	3.44	1133	3.72	1166	3.95
	6000	811	2.27	862	2.53	909	2.77	954	3.00	1000	3.31	1040	3.62	1080	3.88	1124	4.15	1164	4.48	1205	4.85
	6600	882	2.97	929	3.25	973	3.52	1016	3.80	1054	4.05	1094	4.41	1134	4.72	1174	5.07	1212	5.37	1247	5.6

NOTE:

1. At high evaporator air flows, and wet bulb conditions, condensate carry-over may occur. Adjust airflow downward as necessary.
2. Values include pressure drop from wet coil and clean filters.
3. Shaded cells indicate oversized motors.

CONDENSER FAN PERFORMANCE

MODEL #	OUTDOOR CFM	EXTERNAL STATIC PRESSURE - Inches W.C.											
		0.2		0.4		0.6		0.8		1.0		1.2	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
DSV096A	4700	642	1.20	704	1.40	764	1.61	815	1.82	869	2.00	923	2.30
DSV120A	5500	730	1.83	785	2.07	837	2.30	888	2.55	938	2.83	982	3.00
DSV144A	6600	637	2.26	683	2.53	728	2.82	770	3.10	810	3.40	848	3.68
DSV180A	7500	711	3.21	753	3.53	793	3.85	831	4.16	869	4.49	906	4.83

DSV ELECTRICAL DATA-STANDARD MOTOR

MODEL #	VOLTAGE	COMPRESSOR				EVAPORATOR FAN		CONDENSER FAN		MIN. CCT.	MAX FUSE /
		QTY		RLA	LRA	HP	FLA	HP	FLA	AMPACITY	CCT. BKR. AMP
DSV096A2	208-230/3/60	2	@	15.3	83.0	1.50	4.6	2.00	6.0	44.94	60
DSV096A4	460/3/60	2	@	6.2	41.0	1.50	2.1	2.00	2.8	18.79	20
DSV096A5	575/3/60	2	@	4.8	33.0	1.50	1.7	2.00	2.1	14.60	15
DSV120A2	208-230/3/60	2	@	16.0	110.0	2.00	6.0	3.00	8.5	50.45	60
DSV120A4	460/3/60	2	@	7.8	52.0	2.00	2.8	3.00	4.0	24.30	30
DSV120A5	575/3/60	2	@	5.7	38.9	2.00	2.1	3.00	3.1	18.03	20
DSV144A2	208-230/3/60	2	@	19.0	123.0	2.00	6.0	3.00	8.5	57.20	70
DSV144A4	460/3/60	2	@	9.7	62.0	2.00	2.8	3.00	4.0	28.58	35
DSV144A5	575/3/60	2	@	7.4	50.0	2.00	2.1	3.00	3.1	21.85	25
DSV180A2	208-230/3/60	2	@	23.2	164.0	3.00	8.5	5.00	13.8	74.50	90
DSV180A4	460/3/60	2	@	11.2	75.0	3.00	4.0	5.00	6.6	35.80	45
DSV180A5	575/3/60	2	@	7.9	54.0	3.00	3.1	5.00	5.2	26.08	30
DSV240A2	208-230/3/60	2	@	30.1	225.0	5.00	13.8	5.00	13.8	95.33	125
DSV240A4	460/3/60	2	@	16.7	114.0	5.00	6.6	5.00	6.6	50.78	60
DSV240A5	575/3/60	2	@	12.2	80.0	5.00	5.2	5.00	5.2	37.85	50

DSV ELECTRICAL DATA-OVERSIZED MOTOR

MODEL #	VOLTAGE	COMPRESSOR				EVAPORATOR FAN		CONDENSER FAN		MIN. CCT.	MAX FUSE /
		QTY		RLA	LRA	HP	FLA	HP	FLA	AMPACITY	CCT. BKR. AMP
DSV096A2	208-230/3/60	2	@	15.3	83.0	2.00	5.6	2.00	6.0	45.97	60
DSV096A4	460/3/60	2	@	6.2	41.0	2.00	2.8	2.00	2.8	19.45	25
DSV096A5	575/3/60	2	@	4.8	33.0	2.00	2.1	2.00	2.1	15.00	15
DSV120A2	208-230/3/60	2	@	16.0	110.0	3.00	8.5	3.00	8.5	53.00	60
DSV120A4	460/3/60	2	@	7.8	52.0	3.00	4.0	3.00	4.0	25.55	30
DSV120A5	575/3/60	2	@	5.7	38.9	3.00	3.1	3.00	3.1	19.03	20
DSV144A2	208-230/3/60	2	@	19.0	123.0	2.00	6.0	3.00	8.5	57.20	70
DSV144A4	460/3/60	2	@	9.7	62.0	2.00	2.8	3.00	4.0	28.58	35
DSV144A5	575/3/60	2	@	7.4	50.0	2.00	2.1	3.00	3.1	21.85	25
DSV180A2	208-230/3/60	2	@	23.2	164.0	5.00	13.8	5.00	13.8	79.80	100
DSV180A4	460/3/60	2	@	11.2	75.0	5.00	6.6	5.00	6.6	38.40	45
DSV180A5	575/3/60	2	@	7.9	54.0	5.00	5.2	5.00	5.2	28.18	35
DSV240A2	208-230/3/60	2	@	30.1	225.0	5.00	13.8	5.00	13.8	95.33	125
DSV240A4	460/3/60	2	@	16.7	114.0	5.00	6.6	5.00	6.6	50.78	60
DSV240A5	575/3/60	2	@	12.2	80.0	5.00	5.2	5.00	5.2	37.85	50

DSV-SERIES VERTICAL AIR-COOLED SELF-CONTAINED UNIT
GENERAL MECHANICAL SPECIFICATIONS

GENERAL

The 8-10 ton units ship as factory-charged unitized packages. The 12 and 15 ton models shall be shipped as separate evaporator and condensing unit models (nitrogen holding charge only). All units may be field split and installed as separate modules to suit on-site requirements. All packages are designed for free standing mounting on the floor, or on a field fabricated structural steel stand. The 8 and 10 ton models are shipped with vertical evaporator fan discharge as standard. The 12 and 15 ton models are shipped with horizontal discharge as standard.

CABINET

All cabinets are completely constructed of heavy gauge galvanized steel. The entire unit interior (both evaporator and condensing section) is insulated with 1/2" thick, 2-lb density insulation. Service panels are equipped with lifting handles for ease of removal and handling. Duct flanges for condenser discharge, condenser intake, and evaporator discharges are provided with the unit for field installation. Duct flange on evaporator return is incorporated into the filter frame.

COMPRESSORS

All models utilize "Scroll" type, R-410A, hermetic compressors. Compressors are mounted on rubber isolators to minimize vibration transmission. Internal overload protection is provided. External high pressure and low pressure cut-out switches are included in each compressor control circuit. The 8-15 ton units have two individual scroll compressors.

REFRIGERANT CIRCUITS

The 8-15 ton units feature two independent refrigeration circuits. Each refrigeration circuit includes an adjustable thermal expansion valve (with external equalizer), liquid line filter drier, sight glass/moisture indicator, and service gauge ports.

EVAPORATOR AND CONDENSER COILS

The evaporator and condenser coils are constructed of internally enhanced copper tubes mechanically bonded to rippled aluminum plate fins. Both coils are employed in a draw-thru configuration. Large evaporator coil face area minimizes potential water blow-off.

INDOOR/OUTDOOR FANS

Forward curved, double inlet and double width centrifugal blowers are used for both evaporator and condenser air movement. Blower wheels are fabricated of galvanized steel. Blowers employ solid steel shafts, supported in permanently lubricated ball bearings. All blowers are belt driven. Variable-pitch motor sheaves allow for field adjustment of blower rpm. Motor shall be 1750 RPM, open drip proof design.

ELECTRICAL/CONTROLS

All units are completely factory wired with all necessary controls. Manual reset protection is provided on both evaporator and condenser motors. A manual reset circuit is also provided on each compressor control circuit in the event of high/low pressure cut-out. Time delay relay will be provided for each compressor circuit. Compressor will be locked out for 5 minutes when thermostat contact opens, or there is a momentary power outage. A 24 volt control circuit, with oversize transformer, is provided for field connection.

FILTERS

All models are shipped with 2-inch thick medium-efficiency throwaway filters factory installed. Filter rack is external to the cabinet (shipped loose).

FACTORY INSTALLED OPTIONS

Oversized Evaporator Fan Motors
Increased horsepower motors and drive components are available for those applications where external static pressure requirements exceed the capability of the standard motor.

Corrosion Resistant Coatings
Condenser and/or evaporator coils shall receive a 1-mil thickness of a cathodic epoxy type electro-deposition coating, applied in a multiple dip and bake process.

Stainless Steel Drain Pan
Evaporator drain pan shall be fabricated of 304 stainless steel material. The 3/4 in NPT drain connection fitting is also constructed of 304 stainless steel.

FIELD INSTALLED ACCESSORIES

Low Ambient Control
Head pressure control damper kit will allow unit operation down to 0 F ambient. Damper assembly mounts on condenser air intake. The kit includes damper actuator and low pressure switch bypass timer(s).

Airside Economizer

APPLICATION – Johnson Control's air side economizers are designed to meet current building and legislated codes for indoor ventilation. In addition to improving indoor air quality, economizers provide substantial energy savings by utilizing cool outside air instead of mechanical cooling whenever outside conditions permit.

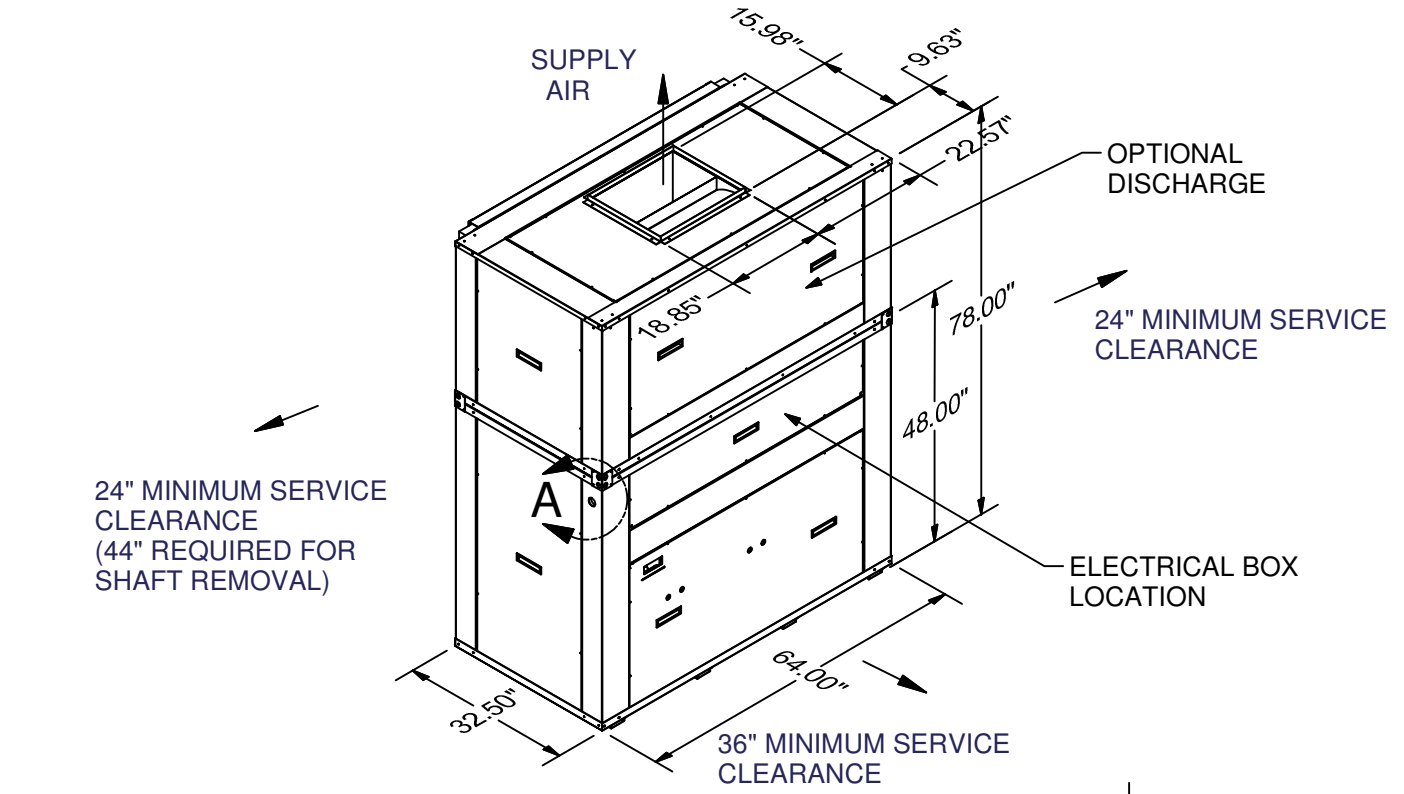
The outlet or discharge of the air side economizer is fitted to the return air inlet of the packaged air conditioning unit. The two inlets to the economizer are fitted to the return air and outside air ductwork. Opposed blade dampers located in each inlet modulate the incoming air streams as they enter the mixing box. The outside air damper can be maintained at a predetermined minimum position. In this way the buildings ventilation requirements can be met at all times.

General – Consisting of an integrated mixing box and control assembly, the economizer mates easily to all Skymark horizontal and vertical air handlers. A factory supplied wiring harness and jack plug assembly simplifies field wiring, reducing valuable installation time. No additional controls or transformers are necessary to complete the installation.

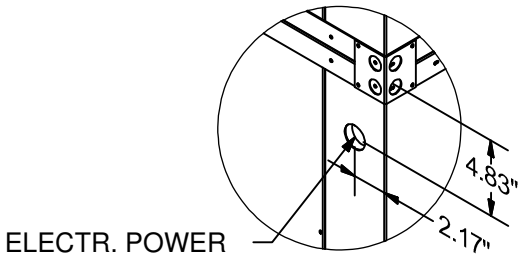
Mixing Box – The mixing box is manufactured from heavy gauge steel and completely insulated with one half inch of insulation. The mixing box is complete with fully modulating opposed blade dampers and linkage.

Low Leakage – Low leakage dampers meet the criteria of less than 10 cfm per square foot at 4" w.g. (0.5% at 2000 fpm). All damper blades are provided with neoprene seals providing a tight seal and quiet operation.

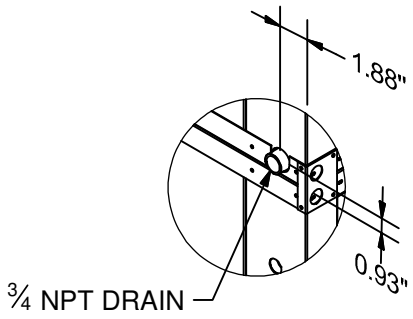
W7215 Economizer Control Module – The W7215 is a multi-functional controller capable of analyzing dry bulb, enthalpy and air quality inputs. An output from the economizer module will position the mixing box dampers to provide energy saving through the introduction of outside air for free cooling.



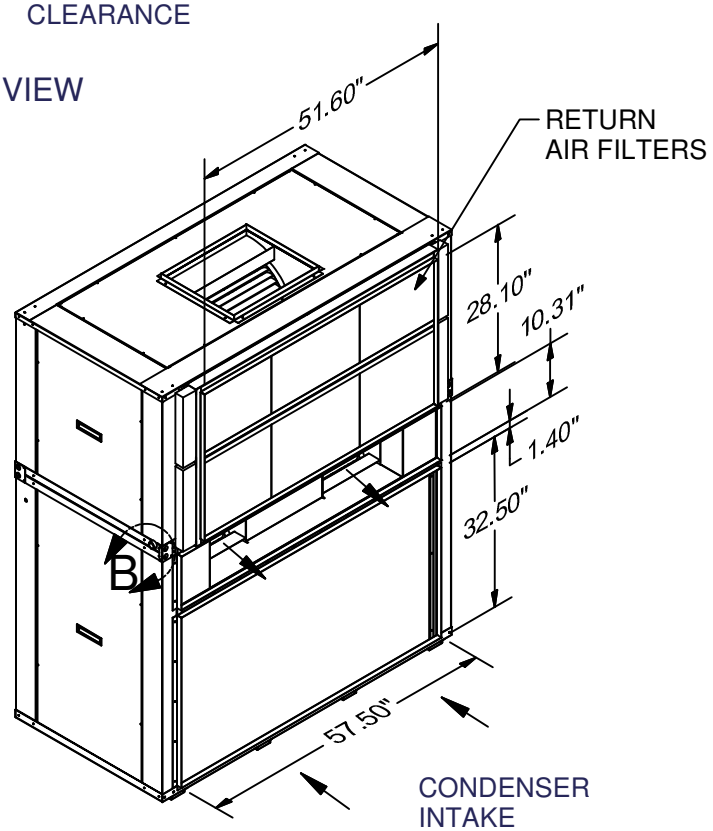
FRONT VIEW



DETAIL A

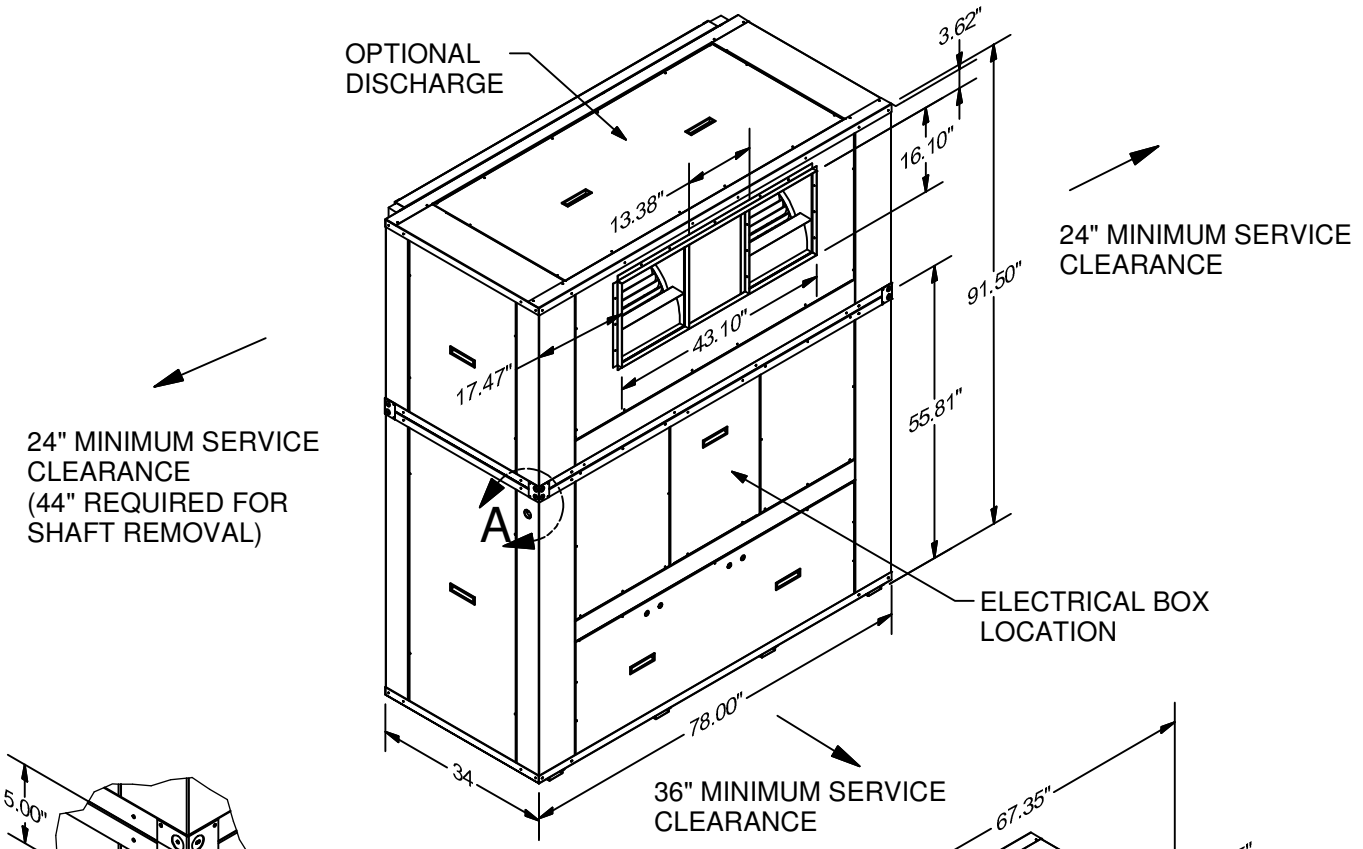


DETAIL B

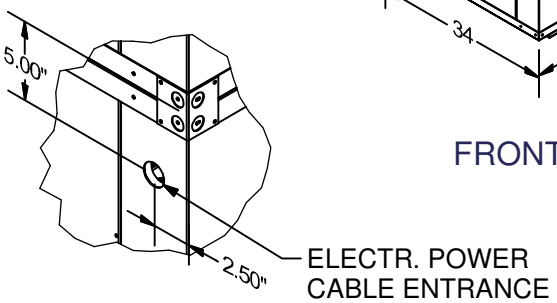


BACK VIEW

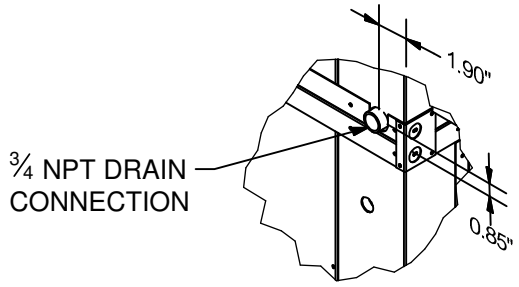
Johnson Controls	DESCRIPTION: DSV096/120 VERTICAL AIR-COOLED SELF-CONTAINED AIR CONDITIONERS SUBMITTAL DIMENSIONS	Form: DSV120-USS-00-1 Date: 8/17/2009



FRONT VIEW



DETAIL A



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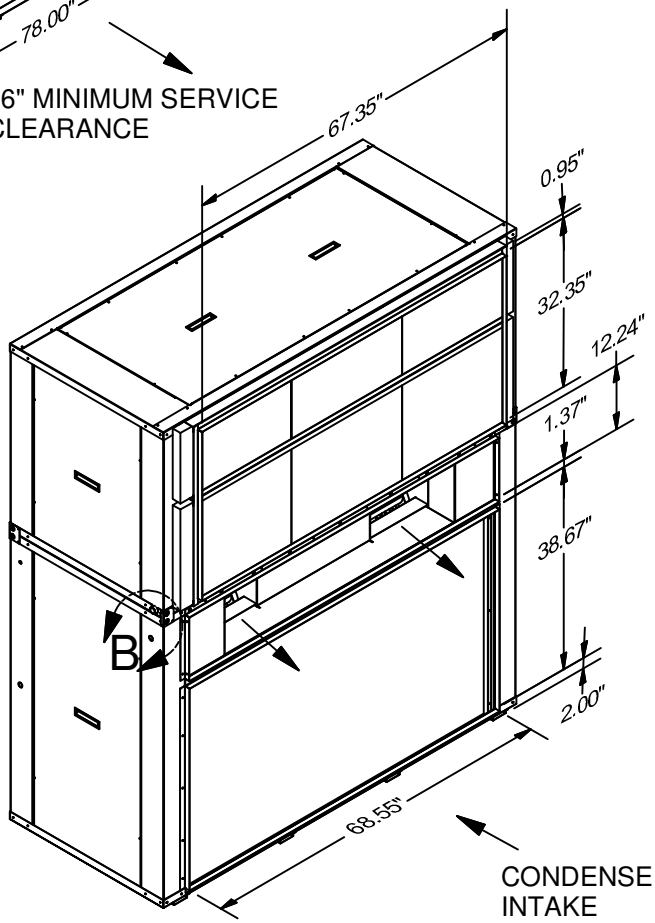

BACK VIEW

Johnson Controls	DESCRIPTION: DSV144/180 VERTICAL AIR-COOLED SELF-CONTAINED AIR CONDITIONERS SUBMITTAL DIMENSIONS	Form: DSV180-USS-00-1 Date: 8/17/2009