

359BAV
Direct Vent 4-Way Multipoise
Condensing Gas Furnace
95% Downflow / Horizontal Orientations
93.5% Upflow Orientation



Product Data

95% Variable Speed Two-Stage Heating Furnace

FLEXIBILITY

- Supports two-stage cooling units
- Dual Certified venting (1 or 2 pipe), Direct Vent Furnace
- 40in (1016mm) high with wider cabinets, for ease of installation
- Factory shipped for natural gas, with Propane Gas conversion kits available
- Four-way multipoise installation
- Vent pipe can be run horizontally or vertically
- Internal condensate drain system

SERVICE

- Self diagnostics
- Entire blower assembly removable

COMFORT

- Adjustable timed blower heating Off delay
- Adjustable timed blower cooling On/Off delay
- Thermal lined, one piece steel cabinet for noise reduction
- Insulated blower compartment
- 24 and 115VAC humidifier terminals
- Electronic air cleaner terminal
- Dehumidification option

EFFICIENCY

- 95% AFUE Downflow / Horizontal
- 93.5% AFUE Upflow
- Two-stage operation
- ECM Variable speed DC motor

- Two-stage Induced draft blower
- In-shot burners
- California NOx approved

QUALITY

- Stainless steel heat exchanger
- Stainless steel secondary heat exchanger
- High temperature limit control prevents overheating
- Direct ignition with Silicon Nitride ignitor
- Flame roll-out sensors standard
- External filter rack with permanent filters

WARNING

UNIT OPERATION HAZARD

Failure to follow this warning could result in personal injury, death or property damage.

This furnace is not designed for use in mobile homes, trailers, or recreational vehicles.



**Always Ask For
FACTORY
AUTHORIZED
PARTS**



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to www.ahridirectory.org.



ISO 9001
QMI-SAI Global

UPFLOW/DOWNFLOW/HORIZONTAL (NATURAL GAS)

Model Number	Dimensions H x W x D		Input (MBTUH)	Efficiency AFUE Downflow/ Horizontal	Efficiency AFUE Upflow	Cooling Capacity @ .5 in wc (125 Pa)	Weight	
	Inches	Millimeters					Lbs	Kg
359BAV036040	40 x 19 ¹ / ₈ x 29	1016 x 486 x 737	40	95	93.5	1.5 - 3.0 TON	150	68
359BAV036060	40 x 19 ¹ / ₈ x 29	1016 x 486 x 737	60	95	93.5	1.5 - 3.5 TON	168	76
359BAV060080	40 x 22 ³ / ₄ x 29	1016 x 578 x 737	80	95	93.5	3 - 5.0 TON	187	85
359BAV060100	40 x 24 ¹ / ₂ x 29	1016 x 522 x 737	100	95	93.5	3 - 5.0 TON	203	92

FURNACE SPECIFICATIONS

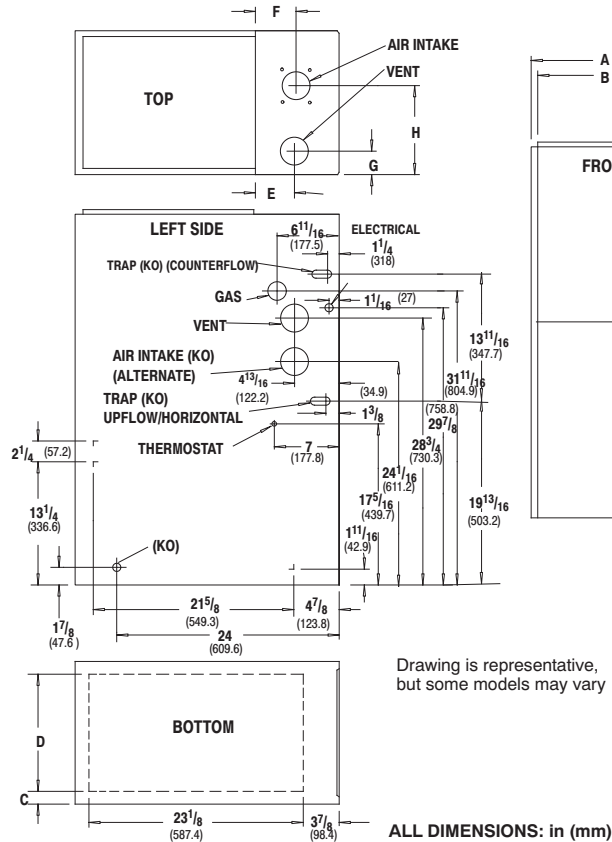
Model Number		359BAV036040	359BAV036060	359BAV060080	359BAV060100
† INPUT	HIGH HEAT (BTUH) LOW HEAT (BTUH)	40,000 28,000	60,000 42,000	80,000 56,000	100,000 70,000
† HTG. CAPACITY	HIGH HEAT (BTUH) LOW HEAT (BTUH)	38,000 27,000	58,000 41,000	77,000 54,000	96,000 67,000
TEMP. RISE RANGE	HIGH HEAT (°F/°C) LOW HEAT (°F/°C)	25-55/14-31 25-55/14-31	30-60/17-33 30-60/17-33	30-60/17-33 30-60/17-33	30-60/17-33 30-60/17-33
VENT SIZE^ in(mm)		2" (51) OD	2" - 3" (51 - 76) OD	3" (76) OD	3" (76) OD
VOLTS/HZ/PH		115/60/1	115/60/1	115/60/1	115/60/1
RATING PLATE AMPS.		9.5	11.4	14.6	14.6
MIN./MAX. VOLTAGE		104/127	104/127	104/127	104/127
TRANSFORMER (V.A.)		40	40	40	40
GAS PIPE SIZE - inches(mm)		1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)
COOLING CAP. (TONS)		3.0	3.5	5.0	5.0
HIGH ALTITUDE PRESSURE SWITCH		1177766	1177767	1177768	1177769
FILTER SIZE - inches(mm) (qty)		16X25X1 (406x635x25) (1)	16X25X1 (406x635x25) (1)	16X25X1 (406x635x25) (2)	16X25X1 (406x635x25) (2)
DIMENSIONS - WxDxH inches(mm)		19 1/8x29x40 (486x737x1016)	19 1/8x29x40 (486x737x1016)	22 3/4x29x40 (486x737x1016)	24 1/2x29x40 (622x737x1016)
WEIGHT - Lbs(kg)		150 (68)	168 (76)	187 (85)	203 (92)

^ Vent size may vary depending on length, number of elbows, standard vent or direct vent. See Installation Instructions.

† Gas input ratings are certified for elevations to 2000 ft. (610 M).

In USA for elevations above 2000 ft. (610 M), ratings must be derated 2% (natural gas) or 4% (propane gas) for each 1000 ft. (305 M) above sea level.

In Canada for altitudes of 2000 ft. (610 M) to 4500 ft. (1372 M) ratings must be derated 5% (natural gas) and 10% (propane gas).



Drawing is representative, but some models may vary

MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS FOR ALL UNITS - in (mm)	
REAR	0
FRONT (combustion air openings in furnace and in structure)	3" (76.2)
Required For Service	*24" (609.6)
ALL SIDES OF SUPPLY PLENUM	1" (25.4)
SIDES	0
VENT	0
TOP OF FURNACE	1" (25.4)

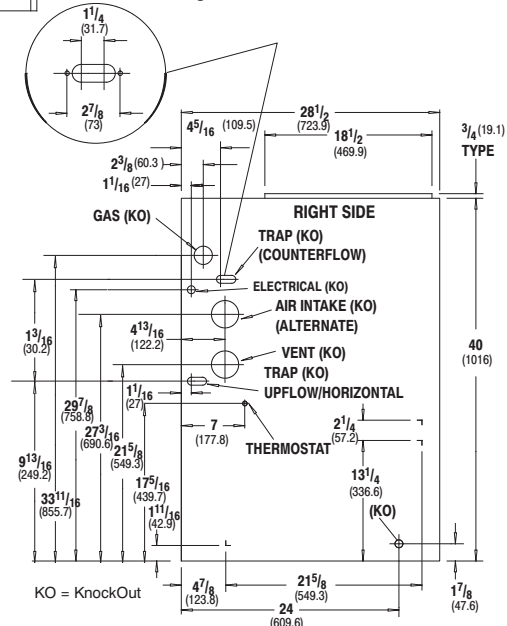
*30" (762mm) clearance recommended for furnace removal.

Horizontal position: Line contact is permissible only between lines formed by intersections of top and two sides of furnace jacket, and building joists, studs or framing.

NOTE: Evaporator "A" coil drain pan dimensions may vary from furnace duct opening size. Always consult evaporator specifications for duct size requirements.

Furnace is designed for bottom return or side return.

Return air through back of furnace is NOT allowed.



Unit Capacity	Cabinet		Bottom		Top			
	A	B	C	D	E	F	G	H
359BAV036040	19 1/8 (485.8)	17 9/8 (447.7)	2 1/8 (54)	14 9/4 (374.7)	4 3/8 (111.1)	4 1/2 (114.3)	2 1/2 (63.5)	9 1/2 (241.3)
359BAV036060	19 1/8 (485.8)	17 9/8 (447.7)	2 1/8 (54)	14 3/4 (374.7)	4 3/8 (111.1)	4 1/2 (114.3)	2 1/2 (63.5)	9 1/2 (241.3)
359BAV060080	22 3/4 (577.9)	21 1/4 (539.8)	1 5/16 (49.2)	18 3/4 (476.3)	4 3/8 (111.1)	4 1/2 (114.3)	2 5/8 (66.7)	11 3/8 (288.9)
359BAV060100	24 1/2 (622.3)	23 (584.2)	7/16 (11.1)	23 (584.2)	4 3/8 (111.1)	4 1/2 (114.3)	2 1/4 (57.2)	12 1/4 (311.2)

ACCESSORIES

Model Number	Description	Used With Models
KGANP47012HW	Gas Conversion Kits - Natural gas to propane conversion Kit. Allows field conversion to propane gas.	359BAV
KGAPN40012HW	Gas Conversion Kits - Propane to natural gas conversion kit. Allows field conversion to natural gas.	359BAV
KGAFR0901P16	Filter Kits - External filter frame. 16" x 25" (406 x 635 mm)	359BAV
KGAFR1001P20	Filter Kits - External filter frame. 20" x 25 (508 x 635 mm)	359BAV
P908-0001 ⁺	Condensate neutralizer kit - for condensing gas furnaces	All if required
KGAVT0801CVT	3" (76 mm) Concentric vent kit - allows single wall penetration for 2 pipe direct vent applications (90+).	359BAV036060 359BAV060080 359BAV060100
KGAVT0701CVT	2" (51 mm) Concentric vent kit - allows single wall penetration for 2 pipe direct vent applications (90+).	359BAV036060 359BAV060080 359BAV060100
KGAA6101PSW	High Altitude Pressure Switch Kit	359BAV036040
KGAA6201PSW	High Altitude Pressure Switch Kit	359BAV036060,
KGAA6301PSW	High Altitude Pressure Switch Kit	359BAV060080
KGAA6401PSW	High Altitude Pressure Switch Kit	359BAV060100
KGALB0201KIT	Downflow Door Label Kit	All if required
KGASB0301P01 KGASB0401P02 KGASB0801P06	Combustible Floor Base without cased coil used	359BAV
KGASB0501P03 KGASB0601P04 KGASB0701P05	Combustible Floor Base with cased coil used	359BAV
KGADA0101PYN	Downflow Coil Adapter	359BAV
333730-701	Orifice Kit (Qty. 5)	Size 41
333730-702		Size 42
333730-703		Size 43
333730-704		Size 44
333730-705		Size 45
333730-709		Size 46
333730-710		Size 47
333730-711		Size 48
333730-712		Size 49
333730-706		Size 54
333730-707		Size 55
333730-708		Size 56

⁺ Must be ordered from Service Parts

Circulation Air Blower Data - 359BAV036040

359BAV

Cooling Adjustment						Heating Rise Adjustment			
DIP Switch (OFF = 0 ON = 1)	High Cool @ .50 in wc(125 Pa)		Low Cool (80% of High Cool)		** Adjust Jumper Setting	DIP Switch (OFF = 0 ON = 1)	High Heat Rise Change @ 0.20 in wc (50 Pa)	Low Heat Rise Change at Resultant Static	
5 & 6	CFM	L/s	CFM	L/s		3 & 4			
00	1244	587	995	470	+	00	-3	-3	
*00	1206	569	965	455	*NOM	*00	0	0	
00	1126	531	901	425	-	00	4	4	
01	1109	523	887	419	+	01	2	2	
01	1032	487	826	390	NOM	01	6	6	
01	941	444	753	355	-	01	13	10	
10	901	425	721	340	+	10	0	-1	
10	828	391	662	313	NOM	10	3	3	
10	757	357	606	286	-	10	8	7	
11	705	333	564	266	+	11	-12	-13	
11	633	299	506	239	NOM	11	-10	-10	
11	556	262	445	210	-	11	-8	-8	

Airflow performance includes 1" washable filter media.

*Factory Setting

**Adjust Jumper Setting (+, NOM, -) is applied to both Cooling and Heating

Note 1: HP Mode Jumper provides a 10% reduction in airflow when in Comfort position and a call for low or high cooling is present with the "O" line off. This feature is to provide lower airflow for running in HP Heating Mode if desirable.

Note 2: DEHUM mode (24VAC on DEHUM terminal) provides a 20% airflow reduction during cooling calls.

Note 3: Low Heat ESP is a result of High Heat ESP (- is decrease in rise).

Note 4: High and low heat rise values are approximate air temperature change from return air temperature when at factory default settings.

Table 2	Airflow	
DIP Switch (OFF = 0 / ON = 1)	Continuous Fan @ 0.10 in wc (25 Pa) ESP	
1 & 2	CFM	L/s
*00	592	279
01	1021	482
10	1346	635
11	1346	635

Table 3	SW2 DIP Assignments
DIP Switch	Blower Parameter
1 & 2	Cont Fan Adj
3 & 4	Heat Speed Adj
5 & 6	Cool Speed Adj
7 & 8	Cool On/Off Delay

* Factory Setting

Table 4	Cooling Delay Options (SW2 - 7, 8)			
	ON DELAY		OFF DELAY	
DIP SW2 - 7/8 (OFF = 0 / ON = 1)	Timed ON (sec)	Airflow during on delay	Timer OFF (sec)	Airflow during off delay
*00	5	OFF	90	100%
01	5	OFF	0	OFF
10	30	50%	30	100%
11	30	50%	180	50%

Airflow % is of High Cool airflow demand determined from SW2-5/6 Table 1

Airflow resumes to 100% after on delay time is completed

Airflow stops (or switches to continuous fan speed) after off delay time is completed

* Factory Setting

MAX CFM's for Factory Washable Filters		
Filter Size (in/mm)	CFM	L/s
14" X 25" / 356 x 635	1400	661
16" X 25" / 406 x 635	1600	755
20" X 25" / 508 x 635	2000	944
24" X 25" / 610 x 635	2500	1180
Max CFM based on 600 FPM (3.0 M/s)		

NOTE: Disposable filters are typically rated at 300 FPM (1.5 m/s). These filters only allow half the airflow when compared to 600 FPM (3.0 M/s) filters.

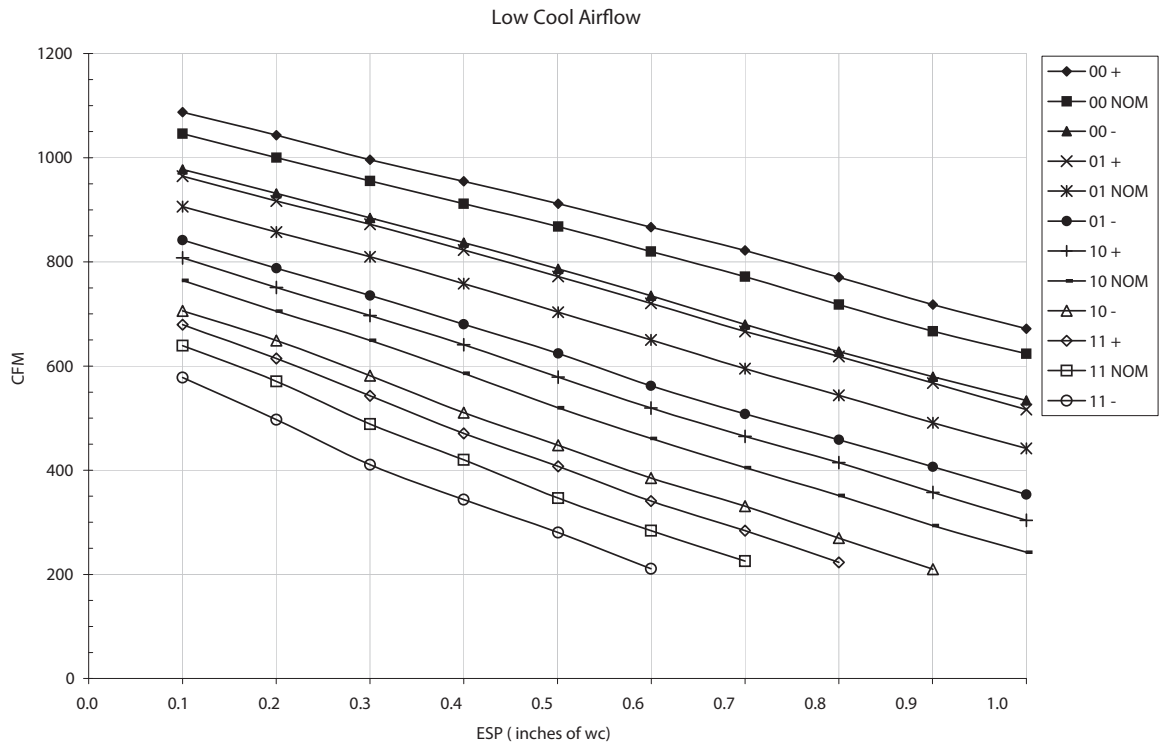
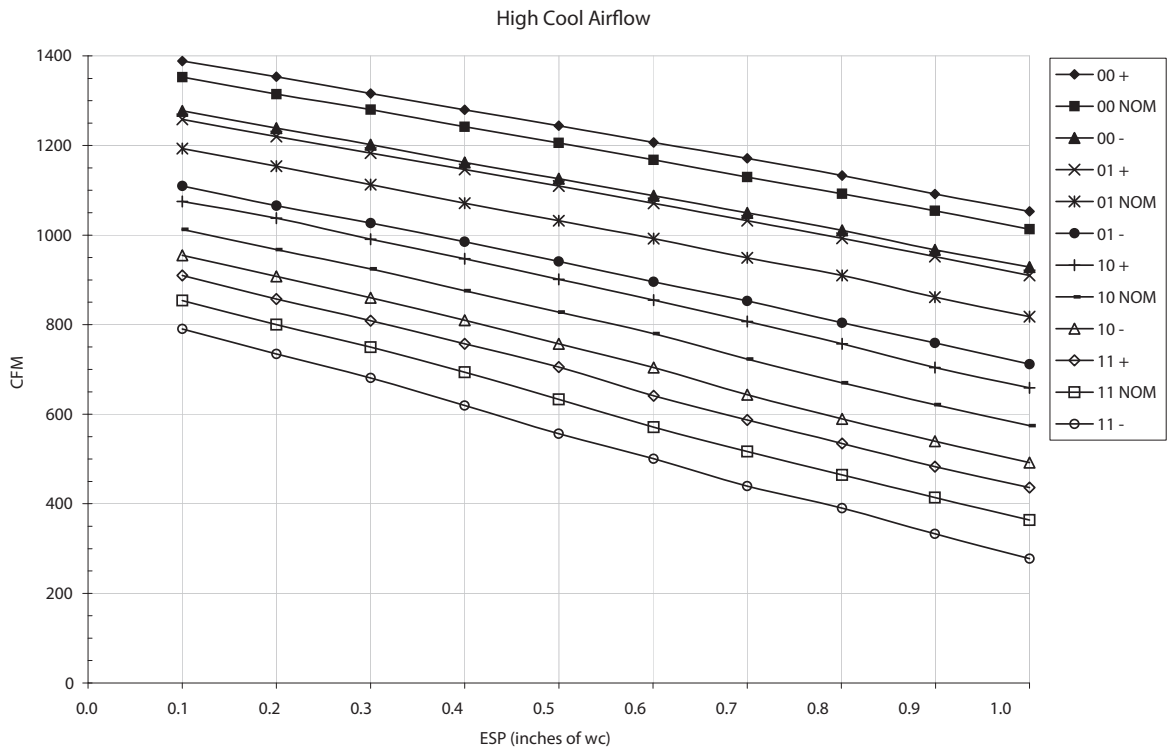
EXAMPLE (approx.):

20in X 25in @ 600 FPM = 2000 CFM, @ 300 FPM = 1000 CFM

508mm x 635mm @ 3.0 M/s = 944 L/s, @ 1.5 M/s = 472 L/s

Circulation Air Blower Data - 359BAV036040

Cooling Airflow Settings



359BAV

Circulation Air Blower Data - 359BAV036060

Cooling Adjustment						Heating Rise Adjustment			
DIP Switch (OFF = 0 ON = 1)	High Cool @ .50 in wc(125 Pa)		Low Cool (80% of High Cool)		** Adjust Jumper Setting	DIP Switch (OFF = 0 ON = 1)	High Heat Rise Change @ 0.20 in wc (50 Pa)	Low Heat Rise Change at Resultant Static	
5 & 6	CFM	L/s	CFM	L/s		3 & 4			
00	1377	650	1102	650	+	00	-3	-3	
*00	1239	585	991	585	*NOM	*00	0	0	
00	1097	518	878	518	-	00	3	3	
01	1165	550	932	550	+	01	1	2	
01	1044	493	835	493	NOM	01	4	4	
01	889	420	711	420	-	01	8	8	
10	966	456	773	456	+	10	-1	0	
10	848	400	678	400	NOM	10	2	2	
10	715	337	572	337	-	10	7	7	
11	74	353	599	353	+	11	-5	-4	
11	650	307	520	307	NOM	11	-2	-2	
11	523	247	418	247	-	11	1	1	

Airflow performance includes 1" washable filter media.

*Factory Setting

**Adjust Jumper Setting (+, NOM, -) is applied to both Cooling and Heating

Note 1: HP Mode Jumper provides a 10% reduction in airflow when in Comfort position and a call for low or high cooling is present with the "O" line off. This feature is to provide lower airflow for running in HP Heating Mode if desirable.

Note 2: DEHUM mode (24VAC on DEHUM terminal) provides a 20% airflow reduction during cooling calls.

Note 3: Low Heat ESP is a result of High Heat ESP (- is decrease in rise).

Note 4: High and low heat rise values are approximate air temperature change from return air temperature when at factory default settings.

Table 2	Airflow	
DIP Switch (OFF = 0 / ON = 1)	Continuous Fan @ 0.10 in wc (25 Pa) ESP	
1 & 2	CFM	L/s
*00	612	475
01	1096	822
10	1403	1040
11	1403	1040

Table 3	SW2 DIP Assignments
DIP Switch	Blower Parameter
1 & 2	Cont Fan Adj
3 & 4	Heat Speed Adj
5 & 6	Cool Speed Adj
7 & 8	Cool On/Off Delay

* Factory Setting

Table 4	Cooling Delay Options (SW2 - 7, 8)			
	ON DELAY		OFF DELAY	
DIP SW2 - 7/8 (OFF = 0 / ON = 1)	Timed ON (sec)	Airflow during on delay	Timer OFF (sec)	Airflow during off delay
*00	5	OFF	90	100%
01	5	OFF	0	OFF
10	30	50%	30	100%
11	30	50%	180	50%

Airflow % is of High Cool airflow demand determined from SW2-5/6 Table 1

Airflow resumes to 100% after on delay time is completed

Airflow stops (or switches to continuous fan speed) after off delay time is completed

* Factory Setting

MAX CFM's for Factory Washable Filters		
Filter Size (in/mm)	CFM	L/s
14" X 25" / 356 x 635	1400	661
16" X 25" / 406 x 635	1600	755
20" X 25" / 508 x 635	2000	944
24" X 25" / 610 x 635	2500	1180
Max CFM based on 600 FPM (3.0 M/s)		

NOTE: Disposable filters are typically rated at 300 FPM (1.5 m/s). These filters only allow half the airflow when compared to 600 FPM (3.0 M/s) filters.

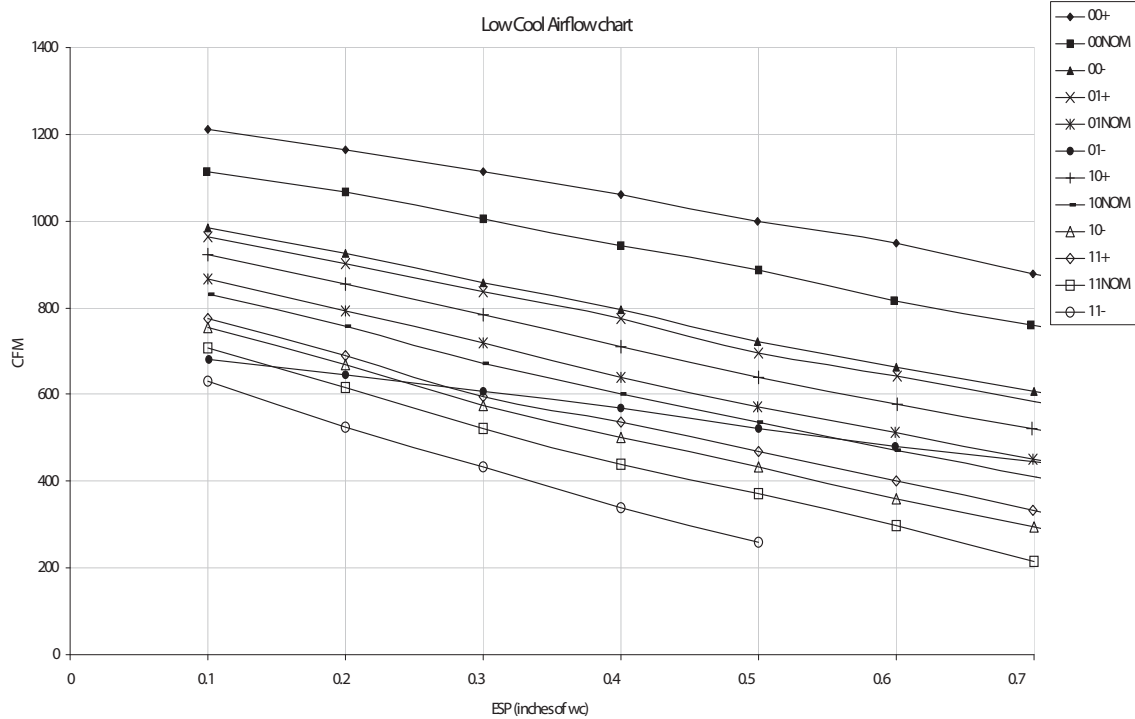
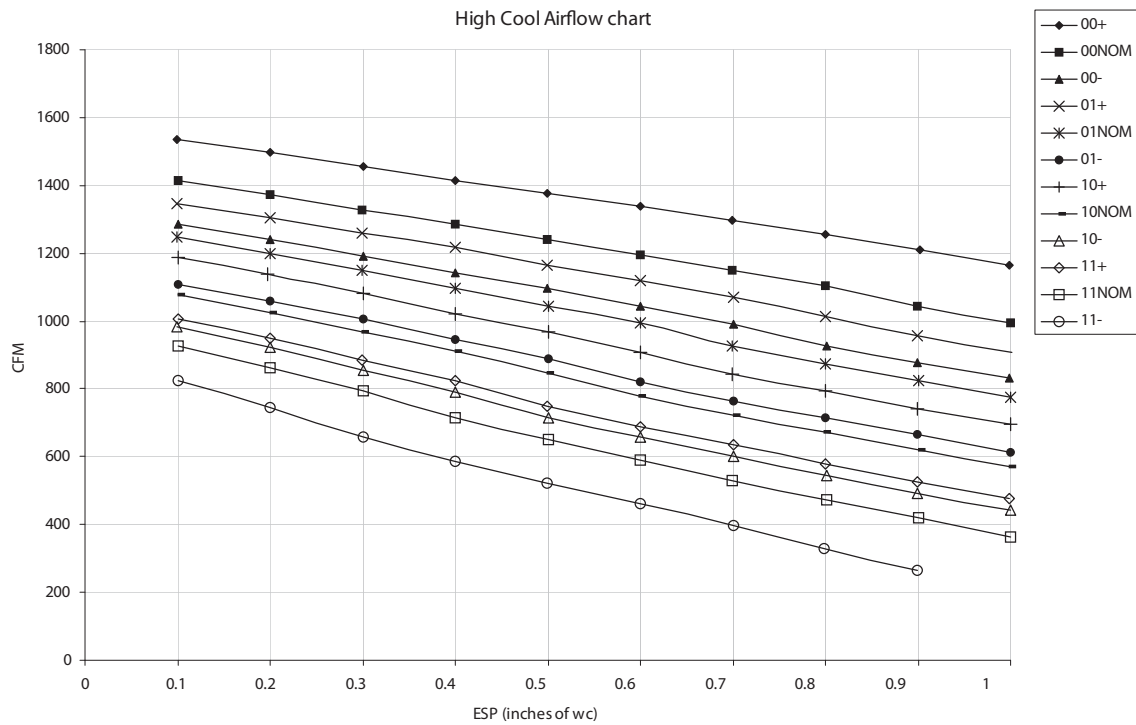
EXAMPLE (approx.):

20in X 25in @ 600 FPM = 2000 CFM, @ 300 FPM = 1000 CFM

508mm x 635mm @ 3.0 M/s = 944 L/s, @ 1.5 M/s = 472 L/s

Circulation Air Blower Data - 359BAV036060

Cooling Airflow Settings



359BAV

Circulation Air Blower Data - 359BAV060080

Cooling Adjustment						Heating Rise Adjustment		
DIP Switch (OFF = 0 ON = 1)	High Cool @ .50 in wc(125 Pa)		Low Cool (80% of High Cool)		** Adjust Jumper Setting	DIP Switch (OFF = 0 ON = 1)	High Heat Rise Change @ 0.20 in wc (50 Pa)	Low Heat Rise Change at Resultant Static
5 & 6	CFM	L/s	CFM	L/s		3 & 4		
00	2146	1013	1717	1013	+	00	-3	-3
*00	2009	948	1607	948	*NOM	*00	0	0
00	1843	870	1474	870	-	00	5	5
01	1779	840	1423	840	+	01	3	3
01	1645	776	1316	776	NOM	01	6	8
01	1498	707	1198	707	-	01	11	11
10	1409	665	1127	665	+	10	0	0
10	1294	611	1035	611	NOM	10	6	4
10	1147	541	918	541	-	10	10	9
11	1005	474	804	474	+	11	-5	-6
11	887	419	710	419	NOM	11	-2	-2
11	757	357	606	357	-	11	3	2

Airflow performance includes 1" washable filter media.

*Factory Setting

**Adjust Jumper Setting (+, NOM, -) is applied to both Cooling and Heating

Note 1: HP Mode Jumper provides a 10% reduction in airflow when in Comfort position and a call for low or high cooling is present with the "O" line off. This feature is to provide lower airflow for running in HP Heating Mode if desirable.

Note 2: DEHUM mode (24VAC on DEHUM terminal) provides a 20% airflow reduction during cooling calls.

Note 3: Low Heat ESP is a result of High Heat ESP (- is decrease in rise).

Note 4: High and low heat rise values are approximate air temperature change from return air temperature when at factory default settings.

Table 2	Airflow	
DIP Switch (OFF = 0 / ON = 1)	Continuous Fan @ 0.10 in wc (25 Pa) ESP	
1 & 2	CFM	L/s
*00	1007	475
01	1742	822
10	2204	1040
11	2204	1040

Table 3	SW2 DIP Assignments
DIP Switch	Blower Parameter
1 & 2	Cont Fan Adj
3 & 4	Heat Speed Adj
5 & 6	Cool Speed Adj
7 & 8	Cool On/Off Delay

* Factory Setting

Table 4	Cooling Delay Options (SW2 - 7, 8)			
	ON DELAY		OFF DELAY	
DIP SW2 - 7/8 (OFF = 0 / ON = 1)	Timed ON (sec)	Airflow during on delay	Timer OFF (sec)	Airflow during off delay
*00	5	OFF	90	100%
01	5	OFF	0	OFF
10	30	50%	30	100%
11	30	50%	180	50%

Airflow % is of High Cool airflow demand determined from SW2-5/6 Table 1

Airflow resumes to 100% after on delay time is completed

Airflow stops (or switches to continuous fan speed) after off delay time is completed

* Factory Setting

MAX CFM's for Factory Washable Filters		
Filter Size (in/mm)	CFM	L/s
14" X 25" / 356 x 635	1400	661
16" X 25" / 406 x 635	1600	755
20" X 25" / 508 x 635	2000	944
24" X 25" / 610 x 635	2500	1180
Max CFM based on 600 FPM (3.0 M/s)		

NOTE: Disposable filters are typically rated at 300 FPM (1.5 m/s). These filters only allow half the airflow when compared to 600 FPM (3.0 M/s) filters.

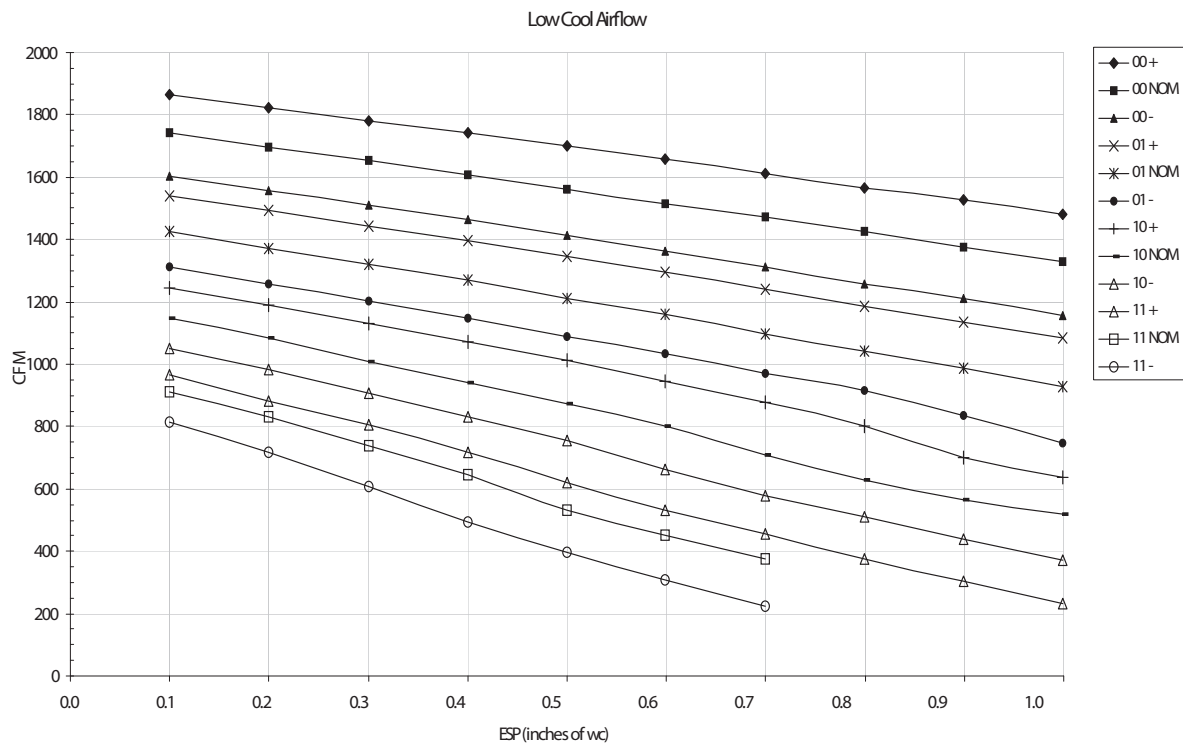
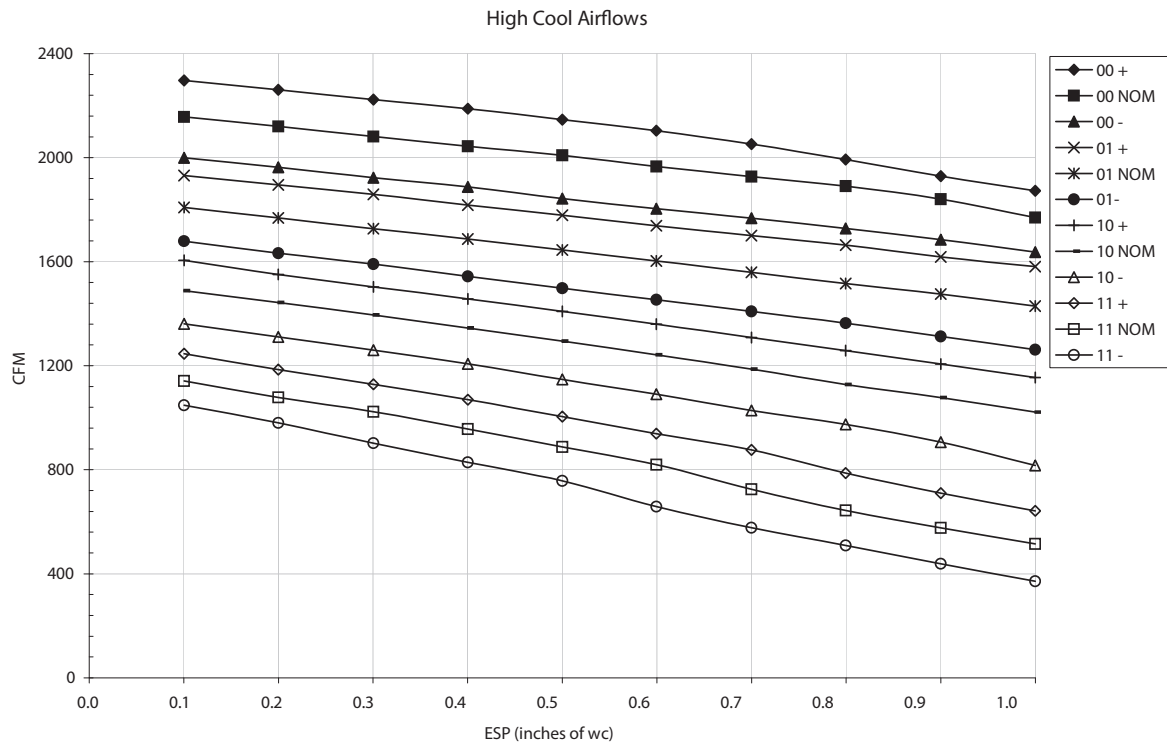
EXAMPLE (approx.):

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508mm x 635mm @ 3.0 M/s = 944 L/s, @ 1.5 M/s = 472 L/s

Circulation Air Blower Data - 359BAV060080

Cooling Airflow Settings



359BAV

Circulation Air Blower Data - 359BAV060100

Cooling Adjustment						Heating Rise Adjustment		
DIP Switch (OFF = 0 ON = 1)	High Cool @ .50 in wc(125 Pa)		Low Cool (80% of High Cool)		** Adjust Jumper Setting	DIP Switch (OFF = 0 ON = 1)	High Heat Rise Change @ 0.20 in wc (50 Pa)	Low Heat Rise Change at Resultant Static
5 & 6	CFM	L/s	CFM	L/s		3 & 4		
00	2108	995	1686	995	+	00	-3	-3
*00	1974	932	1579	932	*NOM	*00	0	0
00	1812	855	1450	855	-	00	4	5
01	1712	808	1370	808	+	01	1	1
01	1587	749	1270	749	NOM	01	4	5
01	1422	671	1138	671	-	01	9	10
10	1312	619	1050	619	+	10	-2	-1
10	1197	565	958	565	NOM	10	1	2
10	1056	498	845	498	-	10	5	7
11	919	434	735	434	+	11	-5	-6
11	797	376	638	376	NOM	11	-3	-3
11	641	303	513	303	-	11	2	2

Airflow performance includes 1" washable filter media.

*Factory Setting

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Note 2: DEHUM mode (24VAC on DEHUM terminal) provides a 20% airflow reduction during cooling calls.

Note 3: Low Heat ESP is a result of High Heat ESP (- is decrease in rise).

Note 4: High and low heat rise values are approximate air temperature change from return air temperature when at factory default settings.

Table 2	Airflow	
DIP Switch (OFF = 0 / ON = 1)	Continuous Fan @ 0.10 in wc (25 Pa) ESP	
1 & 2	CFM	L/s
*00	1032	487
01	1778	839
10	2178	1028
11	2178	1028

Table 3	SW2 DIP Assignments
DIP Switch	Blower Parameter
1 & 2	Cont Fan Adj
3 & 4	Heat Speed Adj
5 & 6	Cool Speed Adj
7 & 8	Cool On/Off Delay

* Factory Setting

Table 4	Cooling Delay Options (SW2 - 7, 8)			
	ON DELAY		OFF DELAY	
DIP SW2 - 7/8 (OFF = 0 / ON = 1)	Timed ON (sec)	Airflow during on delay	Timer OFF (sec)	Airflow during off delay
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10	30	50%	30	100%
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20" X 25" / 508 x 635	2000	944
24" X 25" / 610 x 635	2500	1180
Max CFM based on 600 FPM (3.0 M/s)		

NOTE: Disposable filters are typically rated at 300 FPM (1.5 m/s). These filters only allow half the airflow when compared to 600 FPM (3.0 M/s) filters.

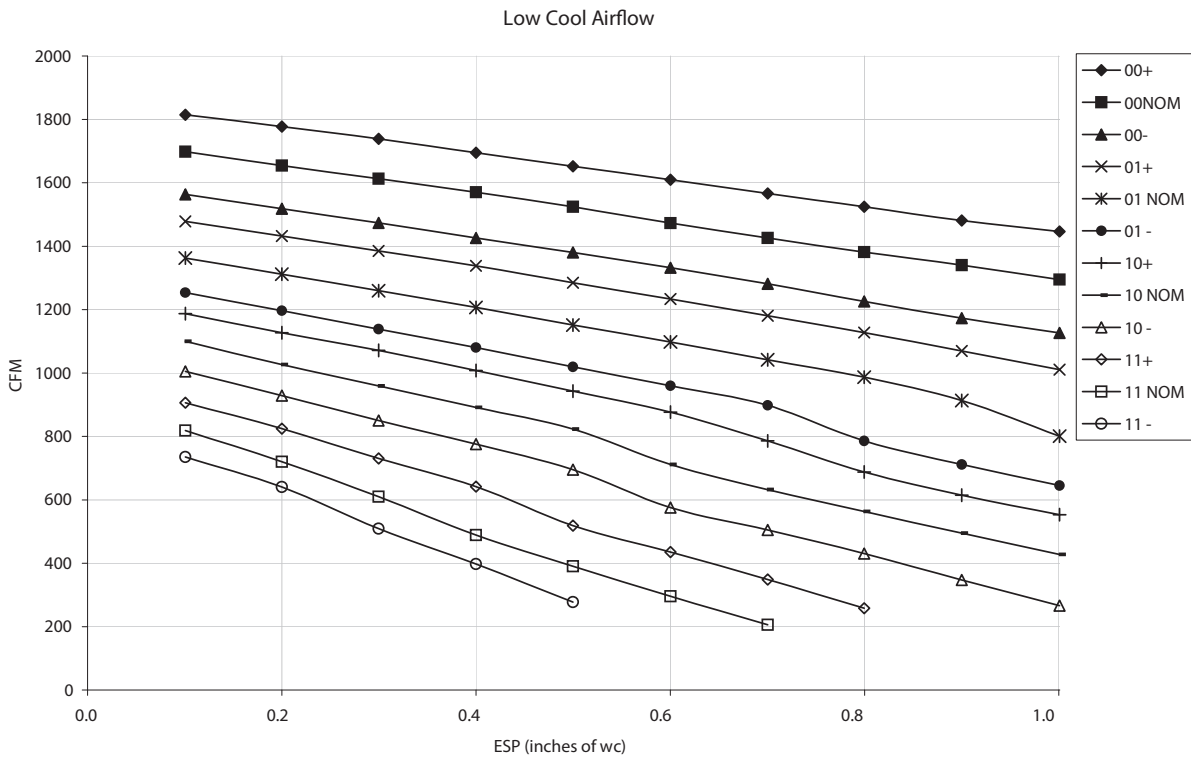
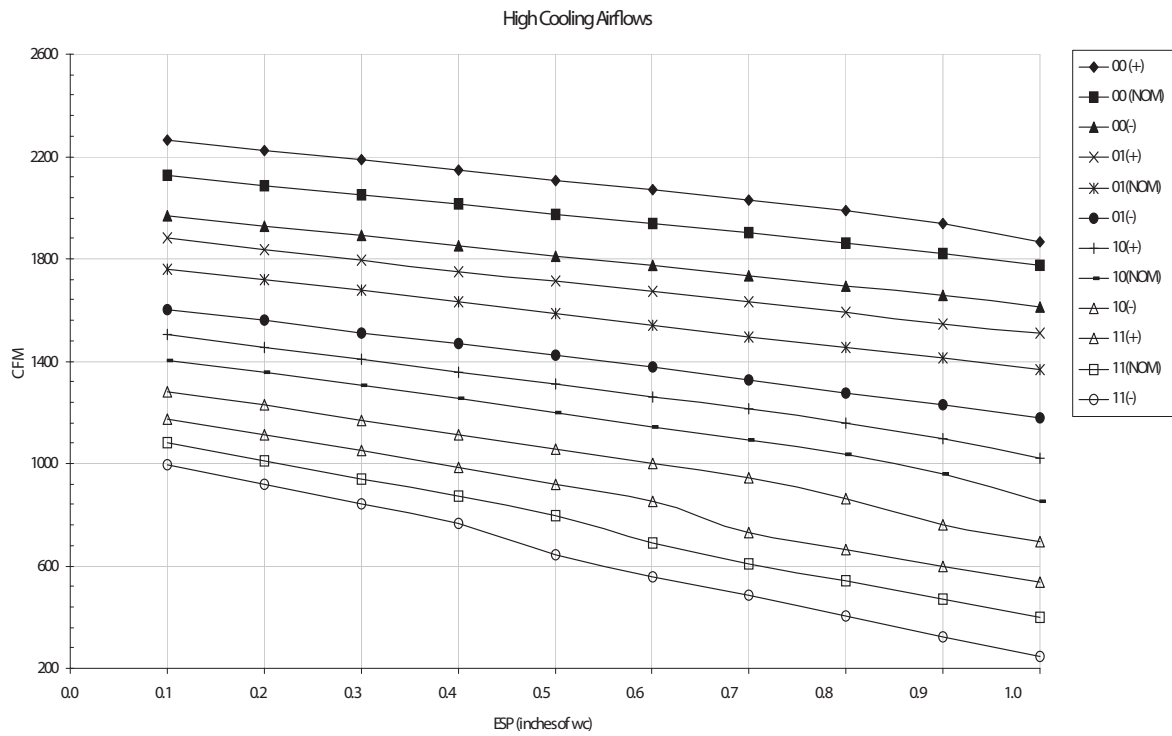
EXAMPLE (approx.):

20in X 25in @ 600 FPM = 2000 CFM, @ 300 FPM = 1000 CFM

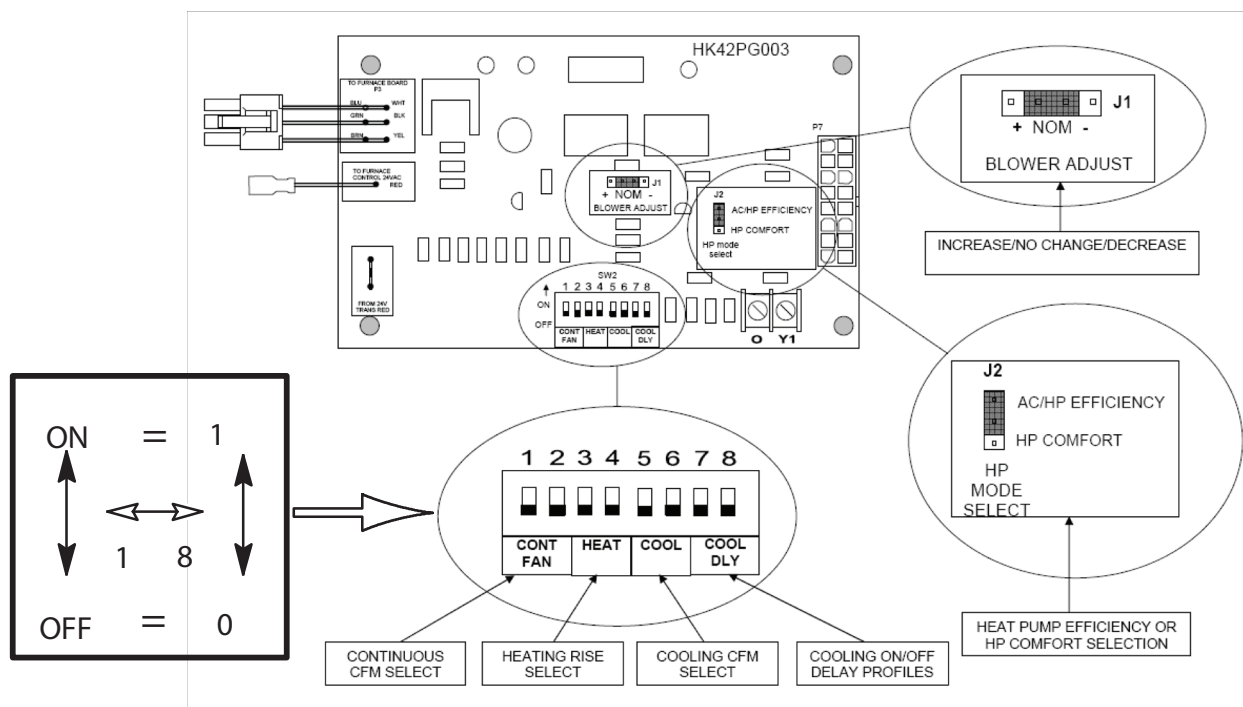
508mm x 635mm @ 3.0 M/s = 944 L/s, @ 1.5 M/s = 472 L/s

Circulation Air Blower Data - 359BAV060100

Cooling Airflow Settings



359BAV



Variable Speed Tap Select Interface Board (TSIB)

A09242