

COMMERCIAL SPLIT SYSTEMS CONDENSING UNITS R-410A, 6 to 12.5 TONS

BUILT TO LAST, EASY TO INSTALL AND SERVICE

- Single stage cooling capacity control on all models with Micro-channel (MCHX) technology condenser coils
- Brass suction and liquid line service valves
- Full perimeter base rail with built-in rigging adapters and fork truck slots
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Fully insulated cabinet
- Fully hermetic scroll compressor with crankcase heater
- Compressor mounted on independent vibration isolators
- Comfort Alert™ Diagnostic Board
 - LED Go-No-Go and fault code
 - Built in time guard anti-short cycle
 - Phase protection
 - Fault code retention logic
 - Low volt compressor contactor protector
- All units have high and low pressure switches
- Direct drive permanently lubricated condenser fan motors
- Newly designed terminal board facilitates simple safety circuit troubleshooting and simplified control box arrangement
- Outdoor temperature cooling operation range up to 125°F (52°C) and down to 35°F (2°C)
- All units factory run tested



WARRANTY

- 5 Year compressor limited warranty
- 1 Year parts limited warranty



UNIT PERFORMANCE DATA¹

Model Number	Cooling Stages	COOLING			Total Power (KW)	Unit Dimensions H x W x L	Ship Weight lb. / kg
		Nominal Capacity Ton	Net Capacity BTUH	E.E.R			
CAS072*AG0A00A	1	6	71,000	11.2	6.1	42-3/8" x 59-3/8" x 45-7/8"	350 / 159
CAS091*AG0A00A	1	7.5	92,000	11.2	8.2	42-3/8" x 59-3/8" x 45-7/8"	383 / 174
CAS121*AG0A00A	1	10	117,000	11.2	10.3	50-3/8" x 59-3/8" x 45-7/8"	450 / 204
CAS151*AG0A00A	1	12.5	148,000	11.0	13.5	50-3/8" x 59-3/8" x 45-7/8"	480 / 218

* - Indicates Unit voltage: H = 208/230-3-60, L = 460-3-60, S = 575-3-60

¹ - Above ratings are with matching size air handling unit

NOTE: BASE MODEL NUMBERS LISTED. SEE MODEL NOMENCLATURE LISTING FOR ADDITIONAL OPTIONS

MODEL NOMENCLATURE

MODEL SERIES	C	A	S	0	9	1	H	A	G	0	A	0	0	A											
Position Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14											
C = R-410A Condensing Unit	Type			Efficiency																					
A = Air Conditioning (Cooling Only)																									
H = Heat Pump																									
S = Standard ASHRAE 90.1-2010 Efficiency	Nominal Cooling Capacity																								
072 = 6 Tons																									
091 = 7.5 Tons (1 circuit)																									
121 = 10 Tons (1 circuit)																									
151 = 12.5 Tons (1 circuit)	VOLTAGE																								
H = 208/230-3-60																									
L = 460/208/230-3-60																									
S = 575-3-50																									
A = Single Circuit	Refrigerant System Options																								
B = Single Circuit w/ Low Ambient Control																									
G = AI/AI Standard Cond. (AC only)	Outdoor Coil Options																								
K = AI/AI E-Coat (AC only)																									
0 = None	Service Options																								
A = None																									
	Factory Installed Options																								
0 = Elec-Mechanical Standard																									
0 = Future Use	Base Unit Controls																								
A = Standard																									
	Future Use																								
	Packaging																								

Table 1 – CAS FACTORY INSTALLED OPTIONS AND FIELD INSTALLED ACCESSORIES

ITEM	FACTORY INSTALLED OPTION	FIELD INSTALLED ACCESSORY
E-coated Coil Protection	X	
Low Ambient temperature head pressure controller	X	X
Louvered Hail Guard		X
Wired Condenser Coil Grille		X
Winter Start Kit		X

CAS factory-installed options

E-coated aluminum-fin coils have a flexible and durable epoxy coating uniformly applied to all coil surfaces. E-coating provides superior protection with unmatched flexibility, edge coverage, metal adhesion, thermal performance, and most importantly, corrosion resistance.

E-coated coils provide this protection since all coil surfaces are completely encapsulated from environmental contamination. This coating is especially suitable in industrial environments.

-20°F low-ambient temperature kit option (Motormaster®) controls outdoor-fan motor operation to maintain the correct head pressure at low outdoor ambient temperatures.

CAS field-installed accessories

-20°F low-ambient temperature kit accessory (MotorMaster I) controls outdoor-fan motor operation to maintain the correct head pressure at low outdoor ambient temperatures.

Louvered hail guard package protects coils against damage from flying debris and hail.

Condenser coil grille package protects condensing unit coil from impact by large objects and vandalism.

Winter Start Package contains time delay relay for timed bypass of low pressure switch on startup.

CAS OPTIONS AND ACCESSORIES

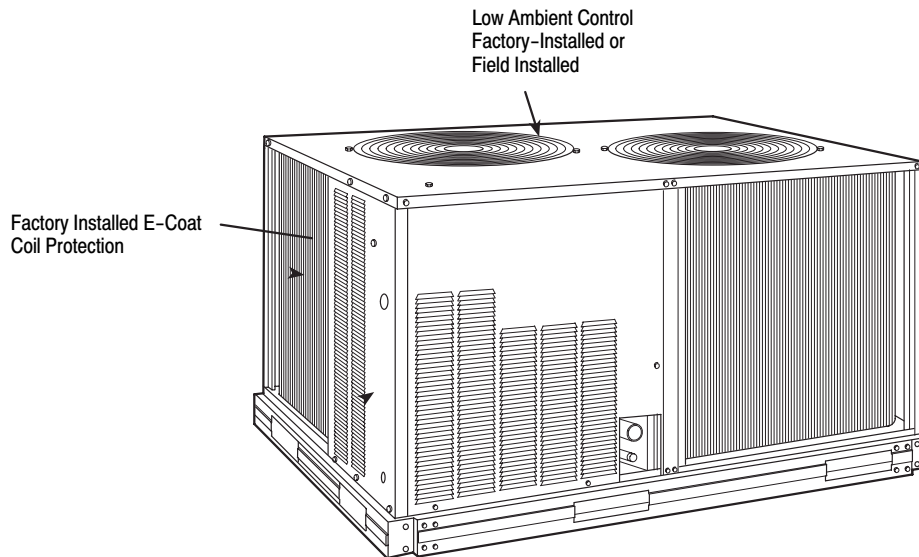


Table 2 – FAS (Fan Coil) FACTORY INSTALLED OPTIONS AND FIELD INSTALLED ACCESSORIES

ITEM	FACTORY INSTALLED OPTION	FIELD INSTALLED ACCESSORY
Alternate Fan Motors/drives	X	
CO ₂ Sensors		X
Condensate Drain Trap with overflow switch		X
Discharge Plenum		X
Economizer		X
Electric Heat		X
Hot Water Heating Coils		X
Overhead Suspension Package		X
Prepainted Units	X	
Return Air Grille		X
Steam Heating Coil		X
Subbase		X

FAS factory-installed options

Alternate fan motors and drives are available to provide the widest possible range of performance.

Units constructed of prepainted steel are available from the factory for applications that require painted units. Unit color is American Sterling Gray.

FAS field-installed accessories

Two-row hot water coils have 5/8-in. diameter copper tubes mechanically bonded to aluminum plate fins. Coils have non-ferrous headers.

One-row steam coil has 1-in. OD copper tube and aluminum fins. The Inner Distributing Tube (IDT) design provides uniform temperatures across the coil face. The IDT steam coils are especially suited to applications where sub-freezing air enters the unit.

Electric resistance heat coils have an open-wire design and are mounted in a rigid frame. Safety cutouts for high temperature conditions are standard.

Economizer (enthalpy controlled) provides ventilation air and provides “free” cooling if the outside ambient temperature and humidity are suitable. The economizer can also be used in conjunction with CO₂ sensors to help meet indoor air quality requirements.

Discharge plenum directs the air discharge into the occupied space; integral horizontal and vertical louvers enable redirection of airflow.

Return-air grille provides a protective barrier over the return-air opening and gives a finished appearance to units installed in the occupied space.

Subbase provides a stable, raised platform and room for condensate drain connection for floor-mounted units.

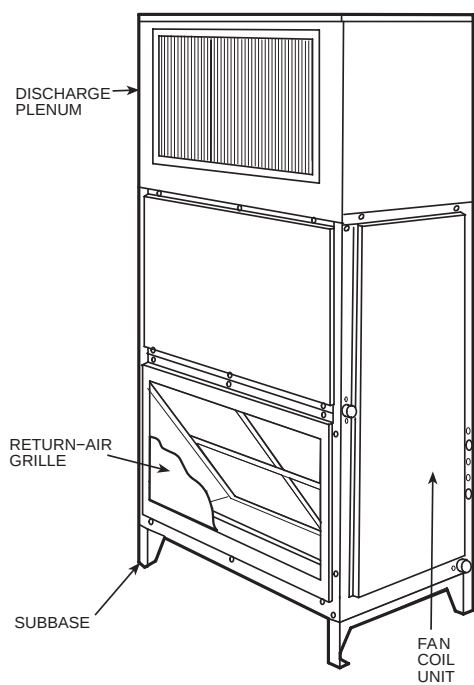
Overhead suspension package includes necessary brackets to support units in horizontal ceiling installations.

CO₂ sensors can be used in conjunction with the economizer accessory to help meet indoor air quality requirements. The sensor signals the economizer to open when the CO₂ level in the space exceeds the setpoint.

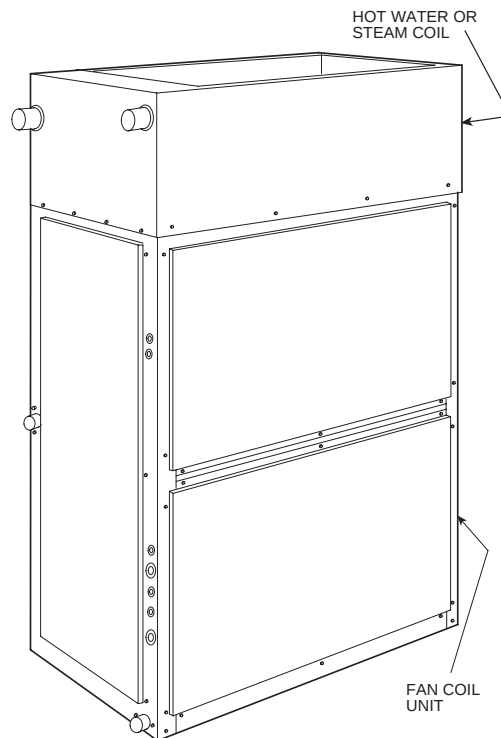
Condensate drain trap includes an overflow shutoff switch that can be wired to turn off the unit if the trap becomes plugged. The kit also includes a wire harness that can be connected to an alarm if desired. The transparent trap is designed for easy service and maintenance.

FAS OPTIONS AND ACCESSORIES (cont.)

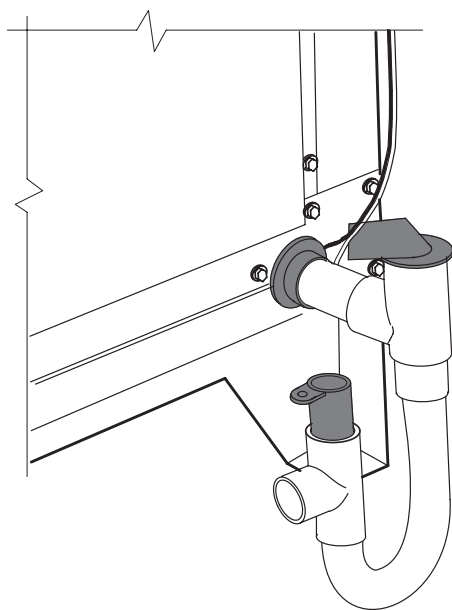
FAS WITH DISCHARGE PLENUM
RETURN-AIR GRILLE AND SUBBASE



FAS WITH HOT WATER OR STEAM COIL



FAS WITH CONDENSATE TRAP



ACCESSORIES – CAS072–151

LOW AMBIENT CONTROLS		
Model Number	Description	Use With Model Size
DALOWAMB001A00	Low Ambient Temperature Head Pressure Controller, allows cooling operation down to 20°F	072 – 151 (208/230–3–60v only)
DALOWAMB002A00	Low Ambient Temperature Head Pressure Controller, allows cooling operation down to 20°F	072 – 151 (460–3–60v only)
DALOWAMB003A00	Low Ambient Temperature Head Pressure Controller, allows cooling operation down to 20°F	072 – 151 (575–3–60v only)
DNWINSTR001A00	Winter Start Package	072 – 151*
LOUVERED HAIL GUARDS – CONDENSER COIL		
Model Number	Description	Use With Model Size
DALVHLGD001A00	Louvered Condenser Coil Hail Guard – Includes louvered panel(s) to protect condenser coil from damage and vandalism	072
DALVHLGD002A00	Louvered Condenser Coil Hail Guard – Includes louvered panel(s) to protect condenser coil from damage and vandalism	091
DALVHLGD003A00	Louvered Condenser Coil Hail Guard – Includes louvered panel(s) to protect condenser coil from damage and vandalism	121
DALVHLGD004A00	Louvered Condenser Coil Hail Guard – Includes louvered panel(s) to protect condenser coil from damage and vandalism	151
LOUVERED WIRED GUARDS – CONDENSER COIL		
Model Number	Description	Use With Model Size
DAGRILLI006A00	Wired Grille Condenser Coil Guard – Includes panel(s) to protect condenser coil from larger objects	072
DAGRILLI007A00	Wired Grille Condenser Coil Guard – Includes panel(s) to protect condenser coil from larger objects	091
DAGRILLI008A00	Wired Grille Condenser Coil Guard – Includes panel(s) to protect condenser coil from larger objects	121
DAGRILLI009A00	Wired Grille Condenser Coil Guard – Includes panel(s) to protect condenser coil from larger objects	151
LIQUID LINE SOLENOID VALVES (LLSV) †		
Model Number**	Description	Use With Model Size
ALC066205	Liquid Line Solenoid Valve	072 – 091 (3/8" L) ‡
ALC066209	Liquid Line Solenoid Valve	091 (1/2" L)
ALC066211	Liquid Line Solenoid Valve	121 (1/2" L)
ALC066212	Liquid Line Solenoid Valve	151 (5/8" L)
1178273	Solenoid Coil	ALL
FILTER DRIERS		
Model Number**	Description	Use With Model Size
EK083S	Filter Drier	072 – 091 (3/8" L) ††
EK164S	Filter Drier	091 – 121 (1/2" L) ††
EK305S	Filter Drier	151 (1/2" L) ††
SIGHT GLASSES		
Model Number**	Description	Use With Model Size
HMI1TT3	Sight Glass	072 – 091 (3/8" L)
HMI1TT4	Sight Glass	091 – 121 (1/2" L)
HMI1TT5	Sight Glass	151 (1/2" L)
SUCTION LINE ACCUMULATORS		
Model Number**	Description	Use With Model Size
1178265	Suction Line Accumulator	072 (1–1/8" S‡) – 091 (1–1/8S‡)
1178264	Suction Line Accumulator	121 (1–3/8" S) – 151 (1–3/8" S)

* Required with Low Ambient Temperature Head Pressure Controller

† LLSV must be installed at the INDOOR unit

‡ Bushing required

†† Bushings required on all except on CAS091 with 1/2" liquid line

L – Liquid line

S – Suction Line

** Available from FAST Parts

Table 3 – ARI* CAPACITY RATINGS

PERFORMANCE DATA COOLING						
UNIT	COOLING STAGES	NOM. CAPACITY (TONS)	NET COOLING CAPACITY (BTUH)	TOTAL POWER (KW)	EER	IPLV
CAS072	1	6	71,000	6.1	11.20	N/A
CAS091	1	7.5	92,000	8.2	11.20	N/A
CAS121	1	10	117,000	10.3	11.20	N/A
CAS151	1	12.5	148,000	13.5	11.00	N/A

* Above ratings are with matching size air handling unit.

Table 4 – SOUND LEVELS

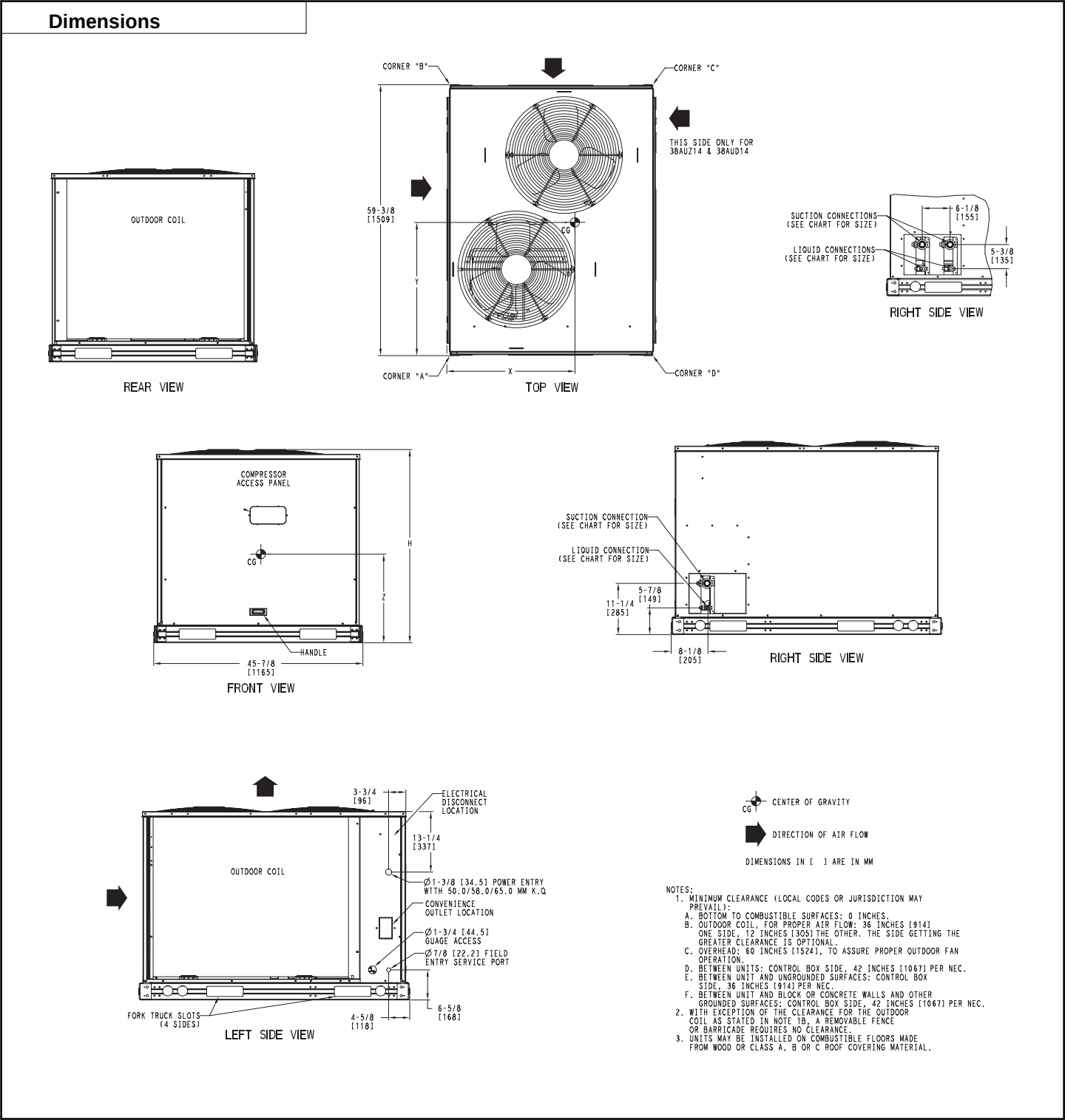
SOUND POWER LEVELS, dB									
Unit	OOUTDOOR SOUND (dB)								
	A-Weighted	63	125	250	500	1000	2000	4000	8000
CAS072	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
CAS091	82	85.8	84.3	80.5	78.7	76.4	72.7	68.3	65.1
CAS121	83	91.2	86.4	81.9	81.0	78.3	73.9	71.4	67.3
CAS151	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7

Table 5 – PHYSICAL DATA

PHYSICAL DATA				
Unit CAS	072	091	121	151
Refrigeration System				
# Circuits / # Comp. / Type	1 / 1 / Scroll	1 / 1 / Scroll	1 / 1 / Scroll	1 / 1 / Scroll
R-410A charge (lbs)	4.4	4.9	6.3	7.3
Metering device	TXV	TXV	TXV	TXV
High-press. Trip / Reset (psig)	630 / 505	630 / 505	630 / 505	630 / 505
Low-press. Trip / Reset (psig)	54 / 117	54 / 117	54 / 117	54 / 117
Compressor				
Model	ZP61	ZP83	ZP103	ZP137
No. of Cylinders	N/A	N/A	N/A	N/A
Speed (rpm)	3500	3500	3500	3500
Cond. Coil				
Material (Tube/Fin)	Al/Al	Al/Al	Al/Al	Al/Al
Coil type	Micro-Channel	Micro-Channel	Micro-Channel	Micro-Channel
Rows / FPI	1 / 17	1 / 17	1 / 17	1 / 17
total face area (ft2)	17.5	20.5	25.0	31.8
Cond. fan / motor				
Qty / Motor drive type	2 / direct	2 / direct	2 / direct	2 / direct
Motor HP / RPM	1/4 / 1100	1/4 / 1100	1/4 / 1100	1/4 / 1100
Fan diameter (in)	22	22	22	22
Nominal Airflow (cfm)	6000	6000	6000	6000
Watts (total)	610	610	610	610
Piping Connections (in. ODS)				
Qty... Suction	1... 1 1/8	1... 1 1/8	1... 1 3/8	1... 1 3/8
Qty... Liquid	1... 3/8	1... 1/2	1... 1/2	1... 5/8

Table 6 – DIMENSIONS AND WEIGHTS

UNIT	BASE UNIT WEIGHT		Corner Weight A		Corner Weight B		Corner Weight C		Corner Weight D		Center of Gravity In [mm]			UNIT HEIGHT
	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	X	Y	Z	
CAS072	328	149	128	58	68	31	62	28	70	32	21 [533.4]	19 [482.6]	13 [330.2]	42-3/8 [1076.0]
CAS091	353	160	138	63	72	33	65	29	78	35	19 [482.6]	23 [584.2]	13 [330.2]	42-3/8 [1076.0]
CAS121	418	190	165	75	85	39	78	35	90	41	23 [584.2]	20 [508.8]	15 [381.0]	50-3/8 [1279.2]
CAS151	431	196	162	73	82	37	92	42	95	43	19 [482.6]	23 [584.2]	15 [381.0]	50-3/8 [1279.2]



SELECTION PROCEDURE

Combination ratings for CAS units matched with FAS Series air handlers are in this book.

I. Determine cooling load, evaporator-air temperature, and quantity.

Given:

Total Cooling Capacity Required (TC)	121,000 Btuh
Sensible Heat Capacity Required (SHC)	95,000 Btuh
Compressor Type	Scroll
Temperature Air Entering Condenser (Edb)	95°F
Temperature Air Entering Evaporator (db/wb)	80°F db, 67°F wb
Evaporator Air Quantity	4,000 cfm
External Static Pressure	0.4 in. wg
Length of Interconnecting Refrigerant Piping	25 ft (Linear)
Power Supply (V-Ph-Hz)	208/230-3-60

II. Select condensing unit air-handler combination.

For this example, select a CAS121 matched with a FAS120 coil. This CAS121/FAS120 condensing unit air-handler combination provides 122,000 Btuh of total cooling capacity and 97,200 Btuh of sensible capacity at the given conditions. If other temperatures or airflow values are required, interpolate the values from the combination ratings.

III. Determine sizes of liquid and suction lines.

Enter Refrigerant Piping Sizes table. The sizes shown are based on an equivalent length of pipe. This equivalent length is equal to the linear length of pipe indicated at the top of each sizing column, plus a 50% allowance for fitting losses. (For a more accurate determination of actual equivalent length in place of using the estimated 50% value. For this example, note in the linear length column that the proper pipe size is $\frac{1}{2}$ in. for the liquid line and $1\frac{3}{8}$ in. for the suction line.

IV. Determine fan rpm and bhp (brake horsepower).

Refer to the FAS Air Handler Catalog – Fan Performance table. Enter the Air Handler Fan Performance table at FAS120 at 4000 cfm and move to the External Static Pressure (ESP) column. Note that the conditions require 803 rpm at 1.77 bhp.

V. Determine motor and drive.

Enter the Fan Motor Data tables and find the standard motor for FAS120 unit rated at 2.4 Hp. Since the bhp required is 1.77, a standard motor satisfies the requirement and should be used.

Next, find the type of drive that satisfies the 803 rpm requirement in the Drive Data tables. For the FAS120 unit, the Standard Drive table shows an rpm range of 666-863. Since the rpm required is 803, the standard drive satisfies the requirement and should be used.

CONTROLS

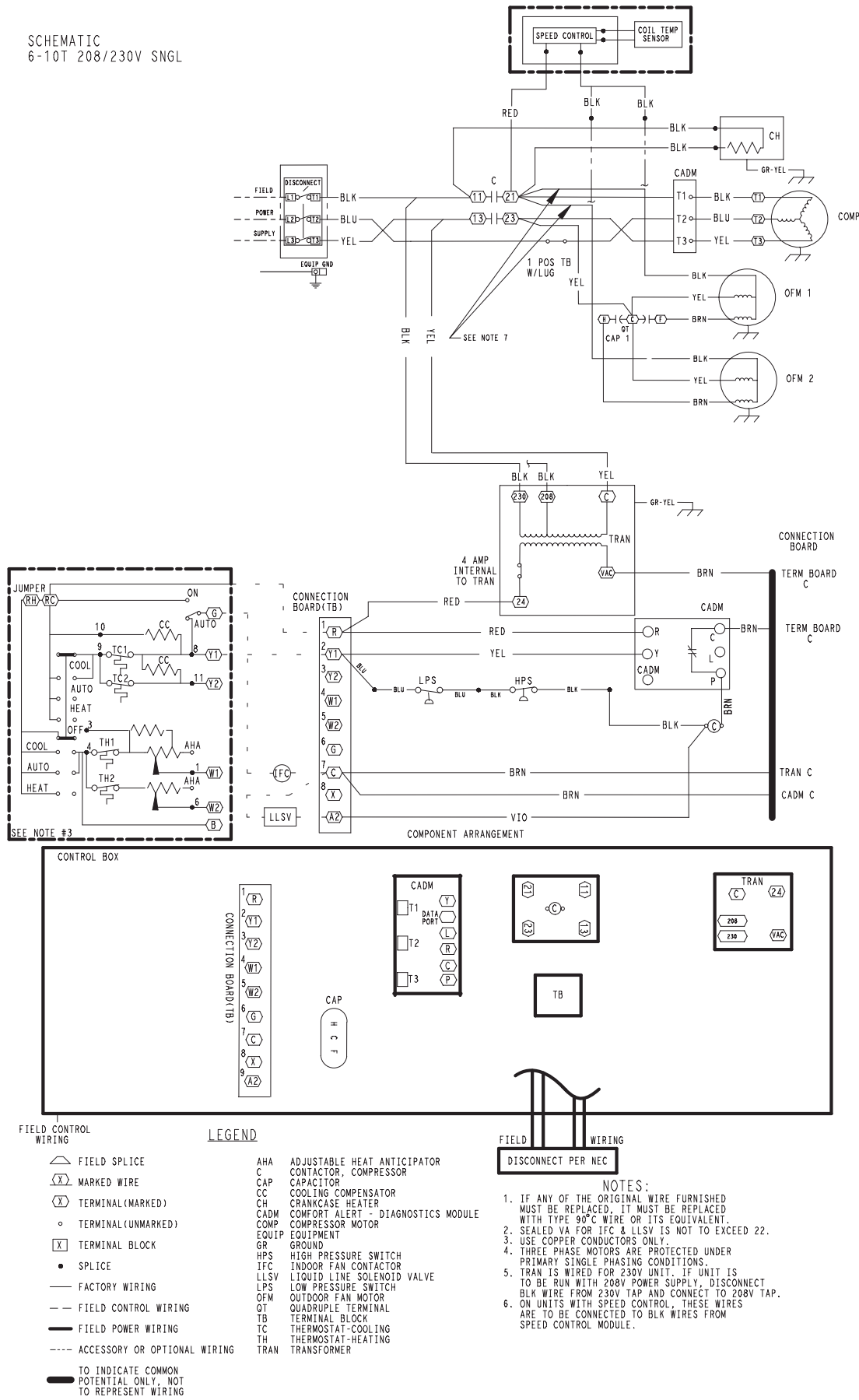
Operating sequences

CAS072–151

At start-up, the thermostat calls for cooling. With all safety devices satisfied, the compressor contactor and fan contactor energize, causing the compressor and outdoor-fan motor to operate. Thermostat contacts energize, allowing the field-supplied and field-installed indoor-fan contactor to function. A field-supplied and field-installed liquid line valve also opens, allowing the system to function in Cooling mode. As cooling demand is satisfied, the thermostat contacts break, deenergizing the contactor and causing the system to shut off. The liquid line solenoid valve closes, minimizing the potential for refrigerant migration. The compressor does not restart until the thermostat again calls for cooling. The system is protected with a safety circuit so that the system will not start if a fault exists (i.e., high or low pressure fault). To reset the safety circuit, set the thermostat to eliminate the cooling demand, then return it to the original setpoint. This should be done only once, and if the system shuts down due to the same fault, determine the problem before attempting to restart the system.

TYPICAL CONTROL WIRING

SCHEMATIC
6-10T 208/230V SNGL



PERFORMANCE DATA

CAS072

CONDENSER ONLY RATINGS

SST (F)		AIR TEMPERATURE ENTERING CONDENSER (F)					
		80	85	95	100	105	115
20	TC	46.7	45.1	41.7	39.8	37.9	33.9
	kW	4.04	4.27	4.77	5.04	5.32	5.93
	SDT	91.6	96.4	105.9	110.6	115.3	124.7
25	TC	51.8	50.2	46.5	44.6	42.6	38.4
	kW	4.06	4.29	4.79	5.05	5.33	5.95
	SDT	92.7	97.5	106.9	111.6	116.3	125.6
30	TC	57.0	55.2	51.4	49.4	47.3	42.9
	kW	4.07	4.30	4.80	5.07	5.35	5.96
	SDT	93.9	98.6	108.1	112.7	117.4	126.7
35	TC	62.7	60.8	56.8	54.6	52.4	47.8
	kW	4.09	4.32	4.81	5.08	5.36	5.98
	SDT	95.1	99.8	109.2	113.9	118.6	127.8
40	TC	68.7	66.7	62.5	60.2	57.9	53.0
	kW	4.11	4.34	4.83	5.10	5.38	5.99
	SDT	96.5	101.1	110.5	115.1	119.7	128.8
45	TC	75.2	73.1	68.5	66.2	63.7	58.6
	kW	4.13	4.36	4.84	5.10	5.38	5.99
	SDT	97.9	102.5	111.8	116.3	120.9	129.9
50	TC	82.2	79.9	75.1	72.5	69.9	64.4
	kW	4.15	4.37	4.85	5.12	5.39	6.00
	SDT	99.4	104.0	113.1	117.6	122.2	131.1

LEGEND:

kW — Compressor Power

SDT — Saturated Discharge Temperature at Compressor (F)

SST — Saturated Suction Temperature (F)

TC — Gross Cooling Capacity (1000 Btuh)

NOTE:

Condensing unit only ratings are at 45 F SST and 95 F entering—air temperature. EER = 13.1

CAS091

CONDENSER ONLY RATINGS

SST (F)		AIR TEMPERATURE ENTERING CONDENSER (F)					
		80	85	95	100	105	115
20	TC	65.2	63.2	59.1	57.0	54.8	50.5
	kW	5.04	5.33	5.98	6.34	6.73	7.60
	SDT	95.3	100.2	109.8	114.7	119.5	129.2
25	TC	71.5	69.4	65.0	62.8	60.5	55.9
	kW	5.12	5.42	6.07	6.42	6.81	7.66
	SDT	96.4	101.2	110.8	115.6	120.4	129.9
30	TC	77.8	75.5	70.9	68.5	66.2	61.3
	kW	5.22	5.51	6.16	6.51	6.89	7.74
	SDT	97.6	102.4	111.9	116.6	121.3	130.7
35	TC	84.8	82.4	77.5	75.0	72.4	67.2
	kW	5.32	5.61	6.26	6.61	6.99	7.83
	SDT	98.8	103.5	112.9	117.6	122.3	131.6
40	TC	92.3	89.7	84.5	81.8	79.0	73.5
	kW	5.44	5.73	6.37	6.72	7.10	7.94
	SDT	100.1	104.8	114.2	118.8	123.5	132.7
45	TC	100.3	97.5	91.9	89.0	86.1	80.1
	kW	5.57	5.86	6.50	6.85	7.23	8.07
	SDT	101.6	106.2	115.5	120.2	124.8	133.9
50	TC	108.7	105.8	99.8	96.7	93.6	87.3
	kW	5.71	6.00	6.64	7.00	7.38	8.21
	SDT	103.1	107.8	117.0	121.6	126.2	135.3

LEGEND:

kW — Compressor Power

SDT — Saturated Discharge Temperature at Compressor (F)

SST — Saturated Suction Temperature (F)

TC — Gross Cooling Capacity (1000 Btuh)

NOTE:

Condensing unit only ratings are at 45 F SST and 95 F entering—air temperature. EER = 13.0

PERFORMANCE DATA (cont.)

CAS121

CONDENSER ONLY RATINGS

SST (F)		AIR TEMPERATURE ENTERING CONDENSER (F)					
		80	85	95	100	105	115
20	TC	78.0	75.4	70.1	67.3	64.6	58.9
	kW	6.03	6.44	7.31	7.76	8.23	9.21
	SDT	94.0	98.7	108.2	113.0	117.7	127.2
25	TC	86.4	83.6	77.9	74.9	72.0	66.0
	kW	6.11	6.53	7.41	7.87	8.36	9.36
	SDT	95.2	100.0	109.4	114.2	118.9	128.2
30	TC	94.7	91.8	85.6	82.5	79.4	73.0
	kW	6.20	6.62	7.51	7.98	8.47	9.49
	SDT	96.6	101.3	110.7	115.4	120.0	129.2
35	TC	104.0	100.8	94.3	90.9	87.6	80.7
	kW	6.30	6.71	7.61	8.09	8.58	9.62
	SDT	98.1	102.7	112.0	116.6	121.2	130.4
40	TC	113.9	110.4	103.4	99.9	96.2	88.9
	kW	6.39	6.81	7.71	8.20	8.70	9.75
	SDT	99.5	104.2	113.4	117.9	122.5	131.6
45	TC	124.3	120.6	113.1	109.2	105.4	97.5
	kW	6.49	6.92	7.83	8.32	8.82	9.89
	SDT	101.1	105.7	114.8	119.4	123.9	132.9
50	TC	135.4	131.4	123.3	119.2	115.0	106.5
	kW	6.61	7.04	7.96	8.45	8.96	10.03
	SDT	102.8	107.3	116.4	120.9	125.4	134.3

LEGEND:

kW — Compressor Power
 SDT — Saturated Discharge Temperature at Compressor (F)
 SST — Saturated Suction Temperature (F)
 TC — Gross Cooling Capacity (1000 Btuh)

NOTE:

Condensing unit only ratings are at 45 F SST and 95 F entering—air temperature. EER = 13.5

CAS151

CONDENSER ONLY RATINGS

SST (F)		AIR TEMPERATURE ENTERING CONDENSER (F)					
		80	85	95	100	105	115
20	TC	100.8	97.4	90.3	86.6	83.0	75.5
	kW	8.48	8.97	10.00	10.53	11.07	12.19
	SDT	98.0	102.6	111.8	116.4	120.9	130.0
25	TC	111.8	108.1	100.5	96.6	92.7	84.7
	kW	8.66	9.15	10.20	10.75	11.31	12.47
	SDT	99.6	104.1	113.2	117.7	122.3	131.3
30	TC	122.9	118.9	110.7	106.6	102.4	93.9
	kW	8.84	9.35	10.41	10.97	11.55	12.75
	SDT	101.3	105.8	114.8	119.3	123.8	132.7
35	TC	134.9	130.6	121.9	117.4	113.0	103.8
	kW	9.05	9.55	10.64	11.21	11.80	13.03
	SDT	103.1	107.6	116.5	120.9	125.4	134.2
40	TC	147.7	143.0	133.7	128.9	124.1	114.3
	kW	9.27	9.78	10.88	11.47	12.07	13.32
	SDT	105.1	109.5	118.3	122.8	127.1	135.8
45	TC	161.1	156.2	146.1	141.0	135.8	125.4
	kW	9.51	10.03	11.15	11.73	12.34	13.61
	SDT	107.2	111.6	120.3	124.7	129.0	137.5
50	TC	175.4	170.1	159.3	153.8	148.3	137.1
	kW	9.78	10.30	11.42	12.02	12.63	13.92
	SDT	109.5	113.8	122.4	126.7	130.9	139.4

LEGEND:

kW — Compressor Power
 SDT — Saturated Discharge Temperature at Compressor (F)
 SST — Saturated Suction Temperature (F)
 TC — Gross Cooling Capacity (1000 Btuh)

NOTE:

Condensing unit only ratings are at 45 F SST and 95 F entering—air temperature. EER = 12.5

PERFORMANCE DATA (cont.)

CAS072 & FAS072

COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
1800 Cfm	EA (WB)	58	THC	65.8	65.8	74.1	63.4	63.4	71.4	60.7	60.7	68.3	58.3	58.3	65.7	54.7	54.7	61.6
			SHC	57.4	65.8	74.1	55.3	63.4	71.4	53.0	60.7	68.3	50.9	58.3	65.7	47.8	54.7	61.6
		62	THC	68.1	68.1	70.7	65.2	65.2	69.2	62.0	62.0	67.6	58.1	58.1	65.7	54.6	54.6	55.4
			SHC	51.9	61.3	70.7	50.4	59.8	69.2	48.9	58.3	67.6	47.1	56.4	65.7	36.3	45.9	55.4
		67	THC	74.0	74.0	74.0	70.9	70.9	70.9	67.3	67.3	67.3	63.4	63.4	63.4	56.7	56.7	56.7
			SHC	42.3	51.8	61.3	41.0	50.5	59.9	39.5	49.0	58.4	37.9	47.3	56.8	35.3	44.9	54.4
		72	THC	80.7	80.7	80.7	77.3	77.3	77.3	73.6	73.6	73.6	69.4	69.4	69.4	63.2	63.2	63.2
			SHC	32.7	42.2	51.8	31.4	40.9	50.4	30.0	39.5	49.0	28.4	37.9	47.4	26.2	35.7	45.3
		76	THC	—	86.2	86.2	—	82.6	82.6	—	78.6	78.6	—	74.3	74.3	—	70.7	70.7
			SHC	—	34.5	44.3	—	33.2	43.0	—	31.8	41.6	—	30.3	40.0	—	29.0	38.7
2100 Cfm	EA (WB)	58	THC	69.0	69.0	77.8	66.5	66.5	74.9	63.7	63.7	71.8	61.2	61.2	69.0	—	—	—
			SHC	60.3	69.0	77.8	58.0	66.5	74.9	55.6	63.7	71.8	53.5	61.2	69.0	—	—	—
		62	THC	70.2	70.2	77.1	67.2	67.2	75.5	64.0	64.0	73.6	60.4	60.4	70.7	—	—	—
			SHC	55.7	66.4	77.1	54.2	64.8	75.5	52.5	63.0	73.6	50.2	60.4	70.7	—	—	—
		67	THC	75.9	75.9	75.9	72.6	72.6	72.6	68.9	68.9	68.9	64.8	64.8	64.8	59.1	59.1	59.9
			SHC	44.8	55.7	66.5	43.4	54.3	65.1	41.9	52.8	63.6	40.3	51.1	62.0	38.1	49.0	59.9
		72	THC	82.5	82.5	82.5	79.0	79.0	79.0	75.2	75.2	75.2	70.9	70.9	70.9	63.9	63.9	63.9
			SHC	33.7	44.6	55.5	32.4	43.3	54.2	31.0	41.8	52.7	29.4	40.3	51.1	26.9	37.9	48.8
		76	THC	—	88.1	88.1	—	84.3	84.3	—	80.2	80.2	—	75.5	75.5	—	71.8	71.8
			SHC	—	35.8	47.0	—	34.5	45.6	—	33.0	44.2	—	31.4	42.5	—	30.2	41.2
2400 Cfm	EA (WB)	58	THC	71.7	71.7	80.8	69.0	69.0	77.8	66.1	66.1	74.5	62.6	62.6	70.6	58.9	58.9	66.3
			SHC	62.6	71.7	80.8	60.3	69.0	77.8	57.7	66.1	74.5	54.7	62.6	70.6	51.4	58.9	66.3
		62	THC	72.0	72.0	82.7	69.1	69.1	80.8	66.2	66.2	77.4	63.0	63.0	73.6	—	—	—
			SHC	59.0	70.9	82.7	57.4	69.1	80.8	55.0	66.2	77.4	52.3	63.0	73.6	—	—	—
		67	THC	77.3	77.3	77.3	74.0	74.0	74.0	70.2	70.2	70.2	66.1	66.1	66.9	62.5	62.5	65.0
			SHC	47.1	59.3	71.5	45.7	57.9	70.1	44.2	56.4	68.6	42.6	54.7	66.9	41.0	53.0	65.0
		72	THC	84.0	84.0	84.0	80.4	80.4	80.4	76.4	76.4	76.4	71.8	71.8	71.8	67.5	67.5	67.5
			SHC	34.6	46.9	59.1	33.3	45.5	57.8	31.9	44.1	56.3	30.2	42.4	54.6	28.7	40.8	52.9
		76	THC	—	89.5	89.5	—	85.7	85.7	—	81.4	81.4	—	76.7	76.7	—	—	—
			SHC	—	36.9	49.4	—	35.6	48.1	—	34.2	46.6	—	32.6	45.0	—	—	—
2700 Cfm	EA (WB)	58	THC	73.9	73.9	83.3	71.2	71.2	80.2	68.1	68.1	76.7	64.8	64.8	73.0	58.6	58.6	66.0
			SHC	64.6	73.9	83.3	62.2	71.2	80.2	59.5	68.1	76.7	56.5	64.8	73.0	51.2	58.6	66.0
		62	THC	74.0	74.0	86.5	71.3	71.3	83.3	68.2	68.2	79.7	64.8	64.8	75.8	—	—	—
			SHC	61.5	74.0	86.5	59.2	71.3	83.3	56.6	68.2	79.7	53.8	64.8	75.8	—	—	—
		67	THC	78.5	78.5	78.5	75.1	75.1	75.1	71.2	71.2	73.2	67.0	67.0	71.5	63.2	63.2	69.4
			SHC	49.3	62.7	76.2	47.9	61.3	74.8	46.4	59.8	73.2	44.7	58.1	71.5	43.0	56.2	69.4
		72	THC	85.1	85.1	85.1	81.4	81.4	81.4	77.3	77.3	77.3	72.6	72.6	72.6	65.3	65.3	65.3
			SHC	35.5	49.0	62.5	34.2	47.6	61.1	32.7	46.1	59.6	31.1	44.5	57.9	28.6	42.2	55.7
		76	THC	—	90.7	90.7	—	86.7	86.7	—	82.3	82.3	—	—	—	—	—	—
			SHC	—	38.1	51.8	—	36.7	50.4	—	35.3	48.9	—	—	—	—	—	—
3000 Cfm	EA (WB)	58	THC	75.9	75.9	85.5	73.0	73.0	82.3	69.8	69.8	78.7	66.3	66.3	74.7	62.4	62.4	70.4
			SHC	66.3	75.9	85.5	63.8	73.0	82.3	61.0	69.8	78.7	57.9	66.3	74.7	54.5	62.4	70.4
		62	THC	75.9	75.9	88.8	73.1	73.1	85.4	69.9	69.9	81.7	66.4	66.4	77.6	60.2	60.2	70.4
			SHC	63.1	75.9	88.8	60.7	73.1	85.4	58.0	69.9	81.7	55.1	66.4	77.6	50.0	60.2	70.4
		67	THC	79.5	79.5	80.7	76.0	76.0	79.3	72.1	72.1	77.6	67.9	67.9	75.7	63.7	63.7	73.5
			SHC	51.4	66.0	80.7	49.9	64.6	79.3	48.4	63.0	77.6	46.7	61.2	75.7	44.8	59.2	73.5
		72	THC	86.1	86.1	86.1	82.3	82.3	82.3	78.0	78.0	78.0	73.3	73.3	73.3	69.6	69.6	69.6
			SHC	36.3	51.0	65.8	35.0	49.7	64.4	33.5	48.1	62.8	31.9	46.5	61.1	30.5	44.9	59.3
		76	THC	—	91.6	91.6	—	87.6	87.6	—	—	—	—	—	—	—	—	—
			SHC	—	39.1	54.0	—	37.8	52.7	—	—	—	—	—	—	—	—	—

PERFORMANCE DATA (cont.)

CAS072 & FAS091 COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
1800 Cfm	EA (WB)	58	THC	66.9	66.9	75.4	64.4	64.4	72.6	61.9	61.9	69.7	—	—	—	—	—	—
			SHC	58.4	66.9	75.4	56.3	64.4	72.6	54.0	61.9	69.7	—	—	—	—	—	—
		62	THC	69.4	69.4	72.0	66.5	66.5	70.5	63.2	63.2	68.9	59.4	59.4	67.0	—	—	—
			SHC	52.8	62.4	72.0	51.4	61.0	70.5	49.8	59.4	68.9	48.0	57.5	67.0	—	—	—
		67	THC	75.5	75.5	75.5	72.4	72.4	72.4	68.9	68.9	68.9	64.9	64.9	64.9	58.6	58.6	58.6
			SHC	43.1	52.8	62.4	41.8	51.5	61.1	40.4	50.0	59.6	38.7	48.3	58.0	36.2	45.9	55.6
		72	THC	82.3	82.3	82.3	79.0	79.0	79.0	75.2	75.2	75.2	71.1	71.1	71.1	67.0	67.0	67.0
			SHC	33.3	43.0	52.7	32.0	41.7	51.4	30.6	40.3	50.0	29.1	38.7	48.4	27.5	37.2	46.8
		76	THC	—	88.0	88.0	—	84.5	84.5	—	80.5	80.5	—	76.1	76.1	—	—	—
			SHC	—	35.1	45.0	—	33.9	43.8	—	32.5	42.4	—	30.9	40.8	—	—	—
2400 Cfm	EA (WB)	58	THC	73.2	73.2	82.5	70.6	70.6	79.6	67.6	67.6	76.2	64.4	64.4	72.5	61.3	61.3	69.1
			SHC	63.9	73.2	82.5	61.6	70.6	79.6	59.0	67.6	76.2	56.2	64.4	72.5	53.6	61.3	69.1
		62	THC	73.5	73.5	84.7	70.6	70.6	82.6	67.7	67.7	79.2	64.4	64.4	75.3	60.3	60.3	70.6
			SHC	60.4	72.5	84.7	58.7	70.6	82.6	56.2	67.7	79.2	53.5	64.4	75.3	50.1	60.3	70.6
		67	THC	79.0	79.0	79.0	75.6	75.6	75.6	71.9	71.9	71.9	67.7	67.7	68.6	61.6	61.6	66.5
			SHC	48.1	60.7	73.2	46.8	59.3	71.8	45.3	57.8	70.3	43.6	56.1	68.6	41.4	54.0	66.5
		72	THC	85.7	85.7	85.7	82.2	82.2	82.2	78.1	78.1	78.1	73.7	73.7	73.7	69.5	69.5	69.5
			SHC	35.4	47.9	60.5	34.1	46.6	59.2	32.6	45.1	57.7	31.0	43.5	56.0	29.5	41.9	54.4
		76	THC	—	91.5	91.5	—	87.7	87.7	—	—	—	—	—	—	—	—	—
			SHC	—	37.7	50.5	—	36.5	49.2	—	—	—	—	—	—	—	—	—
2700 Cfm	EA (WB)	58	THC	75.6	75.6	85.1	72.8	72.8	82.1	69.7	69.7	78.6	66.4	66.4	74.8	62.6	62.6	70.5
			SHC	66.0	75.6	85.1	63.6	72.8	82.1	60.9	69.7	78.6	57.9	66.4	74.8	54.6	62.6	70.5
		62	THC	75.6	75.6	88.4	72.9	72.9	85.2	69.8	69.8	81.6	66.4	66.4	77.6	62.4	62.4	72.9
			SHC	62.8	75.6	88.4	60.6	72.9	85.2	58.0	69.8	81.6	55.2	66.4	77.6	51.8	62.4	72.9
		67	THC	80.2	80.2	80.2	76.7	76.7	76.8	73.0	73.0	75.3	68.7	68.7	73.5	65.0	65.0	71.4
			SHC	50.5	64.3	78.2	49.1	63.0	76.8	47.6	61.4	75.3	45.9	59.7	73.5	44.2	57.8	71.4
		72	THC	86.9	86.9	86.9	83.3	83.3	83.3	79.1	79.1	79.1	74.6	74.6	74.6	69.5	69.5	69.5
			SHC	36.3	50.2	64.1	35.0	48.9	62.8	33.5	47.4	61.3	31.9	45.8	59.6	30.1	44.0	57.8
		76	THC	—	92.7	92.7	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	38.9	53.0	—	—	—	—	—	—	—	—	—	—	—	—
3000 Cfm	EA (WB)	58	THC	77.6	77.6	87.4	74.8	74.8	84.2	71.5	71.5	80.6	67.9	67.9	76.5	64.9	64.9	73.1
			SHC	67.7	77.6	87.4	65.3	74.8	84.2	62.5	71.5	80.6	59.3	67.9	76.5	56.7	64.9	73.1
		62	THC	77.7	77.7	90.8	74.8	74.8	87.5	71.6	71.6	83.7	67.9	67.9	79.4	64.9	64.9	75.9
			SHC	64.5	77.7	90.8	62.1	74.8	87.5	59.5	71.6	83.7	56.4	67.9	79.4	53.9	64.9	75.9
		67	THC	81.2	81.2	83.0	77.7	77.7	81.6	73.9	73.9	80.0	69.6	69.6	78.0	65.3	65.3	74.4
			SHC	52.7	67.8	83.0	51.3	66.4	81.6	49.8	64.9	80.0	48.0	63.0	78.0	44.5	59.4	74.4
		72	THC	87.9	87.9	87.9	84.2	84.2	84.2	80.0	80.0	80.0	75.3	75.3	75.3	70.2	70.2	70.2
			SHC	37.1	52.3	67.6	35.8	51.0	66.2	34.3	49.5	64.7	32.7	47.9	63.0	31.0	46.1	61.2
		76	THC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3750 Cfm	EA (WB)	58	THC	81.5	81.5	91.9	78.5	78.5	88.4	75.0	75.0	84.5	71.1	71.1	80.1	64.7	64.7	72.9
			SHC	71.2	81.5	91.9	68.5	78.5	88.4	65.5	75.0	84.5	62.1	71.1	80.1	56.5	64.7	72.9
		62	THC	81.6	81.6	95.4	78.5	78.5	91.8	75.1	75.1	87.8	71.2	71.2	83.2	66.3	66.3	77.5
			SHC	67.8	81.6	95.4	65.2	78.5	91.8	62.4	75.1	87.8	59.1	71.2	83.2	55.1	66.3	77.5
		67	THC	83.2	83.2	93.9	79.7	79.7	92.2	75.8	75.8	90.3	71.5	71.5	87.7	—	—	—
			SHC	57.7	75.8	93.9	56.2	74.2	92.2	54.6	72.4	90.3	52.6	70.2	87.7	—	—	—
		72	THC	89.7	89.7	89.7	85.8	85.8	85.8	81.5	81.5	81.5	76.8	76.8	76.8	—	—	—
			SHC	39.1	57.4	75.7	37.8	56.0	74.3	36.3	54.5	72.7	34.7	52.8	71.0	—	—	—
		76	THC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

PERFORMANCE DATA (cont.)

CAS091 & FAS091

COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
2250 Cfm	EA (WB)	58	THC	84.6	84.6	95.4	81.7	81.7	92.1	78.5	78.5	88.5	75.5	75.5	85.1	70.7	70.7	79.7
			SHC	73.9	84.6	95.4	71.3	81.7	92.1	68.5	78.5	88.5	65.9	75.5	85.1	61.7	70.7	79.7
		62	THC	88.2	88.2	89.4	84.6	84.6	87.6	80.7	80.7	85.6	76.9	76.9	83.6	73.2	73.2	81.3
			SHC	66.1	77.7	89.4	64.3	75.9	87.6	62.4	74.0	85.6	60.5	72.0	83.6	58.5	69.9	81.3
		67	THC	95.5	95.5	95.5	91.5	91.5	91.5	87.3	87.3	87.3	82.7	82.7	82.7	76.1	76.1	76.1
			SHC	54.1	65.8	77.5	52.3	64.1	75.8	50.5	62.2	74.0	48.6	60.3	72.0	46.0	57.8	69.5
		72	THC	103.4	103.4	103.4	99.2	99.2	99.2	94.6	94.6	94.6	89.6	89.6	89.6	82.3	82.3	82.3
			SHC	41.8	53.7	65.5	40.2	52.0	63.8	38.4	50.2	62.0	36.6	48.3	60.1	33.8	45.6	57.4
		76	THC	—	109.9	109.9	—	105.4	105.4	—	100.6	100.6	—	95.3	95.3	—	87.8	87.8
			SHC	—	43.9	56.2	—	42.3	54.7	—	40.6	52.8	—	38.7	50.9	—	36.1	48.3
2625 Cfm	EA (WB)	58	THC	88.7	88.7	99.9	85.6	85.6	96.4	82.1	82.1	92.5	78.7	78.7	88.7	75.4	75.4	85.0
			SHC	77.4	88.7	99.9	74.7	85.6	96.4	71.7	82.1	92.5	68.8	78.7	88.7	65.8	75.4	85.0
		62	THC	90.7	90.7	97.2	87.0	87.0	95.3	83.0	83.0	93.1	78.9	78.9	90.6	75.3	75.3	86.4
			SHC	70.7	84.0	97.2	68.8	82.1	95.3	66.9	80.0	93.1	64.7	77.6	90.6	61.7	74.0	86.4
		67	THC	97.8	97.8	97.8	93.7	93.7	93.7	89.2	89.2	89.2	84.4	84.4	84.4	76.7	76.7	76.7
			SHC	57.0	70.4	83.8	55.3	68.7	82.1	53.4	66.8	80.2	51.5	64.8	78.2	48.6	62.0	75.5
		72	THC	105.7	105.7	105.7	101.3	101.3	101.3	96.5	96.5	96.5	91.5	91.5	91.5	86.2	86.2	86.2
			SHC	43.0	56.5	70.0	41.4	54.9	68.3	39.6	53.0	66.5	37.8	51.2	64.5	35.8	49.2	62.5
		76	THC	—	112.2	112.2	—	107.6	107.6	—	102.5	102.5	—	97.0	97.0	—	—	—
			SHC	—	45.4	59.5	—	43.8	57.8	—	42.0	55.9	—	40.2	54.0	—	—	—
3000 Cfm	EA (WB)	58	THC	92.0	92.0	103.7	88.7	88.7	99.9	85.1	85.1	95.9	81.2	81.2	91.5	76.0	76.0	85.7
			SHC	80.3	92.0	103.7	77.4	88.7	99.9	74.3	85.1	95.9	70.9	81.2	91.5	66.4	76.0	85.7
		62	THC	92.9	92.9	104.3	89.2	89.2	102.0	85.1	85.1	95.5	81.4	81.4	95.1	—	—	—
			SHC	74.9	89.6	104.3	72.9	87.4	102.0	70.7	85.1	99.5	67.6	81.4	95.1	—	—	—
		67	THC	99.6	99.6	99.6	95.3	95.3	95.3	90.8	90.8	90.8	86.0	86.0	86.0	79.1	79.1	81.7
			SHC	59.7	74.7	89.8	58.0	73.0	88.0	56.1	71.1	86.1	54.2	69.1	84.1	51.7	66.7	81.7
		72	THC	107.5	107.5	107.5	103.0	103.0	103.0	98.0	98.0	98.0	92.9	92.9	92.9	88.0	88.0	88.0
			SHC	44.1	59.2	74.3	42.5	57.5	72.6	40.7	55.7	70.7	38.8	53.8	68.7	37.0	51.8	66.7
		76	THC	—	114.0	114.0	—	109.1	109.1	—	103.9	103.9	—	98.3	98.3	—	—	—
			SHC	—	46.9	62.4	—	45.2	60.7	—	43.4	58.8	—	41.5	56.8	—	—	—
3375 Cfm	EA (WB)	58	THC	94.8	94.8	106.8	91.3	91.3	102.9	87.5	87.5	98.6	83.4	83.4	94.0	77.9	77.9	87.8
			SHC	82.8	94.8	106.8	79.7	91.3	102.9	76.4	87.5	98.6	72.9	83.4	94.0	68.0	77.9	87.8
		62	THC	94.8	94.8	110.9	91.4	91.4	106.8	87.6	87.6	102.4	83.5	83.5	97.6	79.3	79.3	92.7
			SHC	78.8	94.8	110.9	75.9	91.4	106.8	72.8	87.6	102.4	69.3	83.5	97.6	65.9	79.3	92.7
		67	THC	101.0	101.0	101.0	96.6	96.6	96.6	92.0	92.0	92.0	87.0	87.0	89.6	82.8	82.8	87.3
			SHC	62.3	78.9	95.4	60.6	77.1	93.7	58.7	75.2	91.7	56.7	73.2	89.6	54.8	71.0	87.3
		72	THC	108.9	108.9	108.9	104.3	104.3	104.3	99.2	99.2	99.2	93.8	93.8	93.8	86.1	86.1	86.1
			SHC	45.2	61.7	78.3	43.5	60.0	76.6	41.7	58.2	74.7	39.7	56.2	72.6	37.1	53.6	70.0
		76	THC	—	115.4	115.4	—	110.4	110.4	—	105.1	105.1	—	99.3	99.3	—	92.2	92.2
			SHC	—	48.2	65.2	—	46.5	63.4	—	44.7	61.6	—	42.7	59.5	—	40.4	57.1
3750 Cfm	EA (WB)	58	THC	97.1	97.1	109.5	93.5	93.5	105.4	89.6	89.6	101.0	85.3	85.3	96.1	—	—	—
			SHC	84.8	97.1	109.5	81.7	93.5	105.4	78.2	89.6	101.0	74.5	85.3	96.1	—	—	—
		62	THC	97.2	97.2	113.7	93.6	93.6	109.5	89.7	89.7	104.8	85.5	85.5	100.0	78.2	78.2	91.4
			SHC	80.8	97.2	113.7	77.8	93.6	109.5	74.5	89.7	104.8	71.1	85.5	100.0	64.9	78.2	91.4
		67	THC	102.2	102.2	102.2	97.7	97.7	99.0	93.1	93.1	97.0	88.1	88.1	94.8	—	—	—
			SHC	64.8	82.8	100.8	63.0	81.0	99.0	61.1	79.1	97.0	59.1	77.0	94.8	—	—	—
		72	THC	110.1	110.1	110.1	105.3	105.3	105.3	100.2	100.2	100.2	94.7	94.7	94.7	90.0	90.0	90.0
			SHC	46.1	64.2	82.2	44.4	62.4	80.4	42.6	60.5	78.4	40.7	58.5	76.4	38.9	56.6	74.2
		76	THC	—	116.5	116.5	—	111.5	111.5	—	106.0	106.0	—	100.1	100.1	—	90.8	90.8
			SHC	—	49.4	67.8	—	47.7	66.0	—	45.9	64.1	—	43.9	62.0	—	40.8	58.8

PERFORMANCE DATA (cont.)

CAS091 & FAS120 COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
2250 Cfm	EA (wB)	58	THC	85.9	85.9	96.8	82.9	82.9	93.5	79.8	79.8	89.9	76.7	76.7	86.5	—	—	—
			SHC	75.0	85.9	96.8	72.4	82.9	93.5	69.6	79.8	89.9	67.0	76.7	86.5	—	—	—
		62	THC	89.6	89.6	90.8	86.0	86.0	89.0	82.0	82.0	87.1	78.2	78.2	85.0	74.5	74.5	82.8
			SHC	67.1	79.0	90.8	65.4	77.2	89.0	63.5	75.3	87.1	61.6	73.3	85.0	59.6	71.2	82.8
		67	THC	97.1	97.1	97.1	93.1	93.1	93.1	88.9	88.9	88.9	84.2	84.2	84.2	79.3	79.3	79.3
			SHC	54.9	66.9	78.8	53.2	65.2	77.1	51.4	63.3	75.3	49.5	61.4	73.3	47.5	59.4	71.3
		72	THC	105.2	105.2	105.2	100.9	100.9	100.9	96.4	96.4	96.4	91.6	91.6	91.6	83.2	83.2	83.2
			SHC	42.5	54.6	66.6	40.9	52.9	64.9	39.2	51.1	63.1	37.3	49.3	61.2	34.2	46.2	58.1
		76	THC	—	111.9	111.9	—	107.4	107.4	—	102.6	102.6	—	97.3	97.3	—	—	—
			SHC	—	44.6	56.9	—	43.0	55.4	—	41.3	53.7	—	39.4	51.7	—	—	—
3000 Cfm	EA (wB)	58	THC	93.7	93.7	105.5	90.3	90.3	101.8	86.7	86.7	97.7	82.7	82.7	93.2	—	—	—
			SHC	81.8	93.7	105.5	78.9	90.3	101.8	75.7	86.7	97.7	72.2	82.7	93.2	—	—	—
		62	THC	94.5	94.5	106.5	90.8	90.8	104.2	86.8	86.8	101.5	83.0	83.0	97.0	78.0	78.0	91.2
			SHC	76.4	91.4	106.5	74.4	89.3	104.2	72.1	86.8	101.5	68.9	83.0	97.0	64.8	78.0	91.2
		67	THC	101.3	101.3	101.3	97.0	97.0	97.0	92.4	92.4	92.4	87.7	87.7	87.7	80.4	80.4	83.5
			SHC	60.9	76.3	91.7	59.2	74.5	89.9	57.3	72.7	88.0	55.4	70.7	86.0	52.7	68.1	83.5
		72	THC	109.4	109.4	109.4	104.9	104.9	104.9	100.0	100.0	100.0	94.7	94.7	94.7	87.1	87.1	87.1
			SHC	44.9	60.4	75.8	43.3	58.7	74.1	41.5	56.9	72.2	39.6	54.9	70.2	36.9	52.2	67.6
		76	THC	—	116.1	116.1	—	111.3	111.3	—	106.1	106.1	—	100.4	100.4	—	—	—
			SHC	—	47.7	63.5	—	46.0	61.8	—	44.3	60.0	—	42.3	57.9	—	—	—
3500 Cfm	EA (wB)	58	THC	97.4	97.4	109.7	93.9	93.9	105.8	90.0	90.0	101.4	85.9	85.9	96.8	79.7	79.7	89.8
			SHC	85.0	97.4	109.7	82.0	93.9	105.8	78.6	90.0	101.4	75.0	85.9	96.8	69.6	79.7	89.8
		62	THC	97.5	97.5	114.0	93.9	93.9	109.9	90.1	90.1	105.4	86.0	86.0	100.5	82.6	82.6	96.6
			SHC	81.0	97.5	114.0	78.0	93.9	109.9	74.8	90.1	105.4	71.4	86.0	100.5	68.6	82.6	96.6
		67	THC	103.2	103.2	103.2	98.8	98.8	98.8	94.2	94.2	95.8	89.1	89.1	93.7	82.7	82.7	91.4
			SHC	64.5	82.1	99.6	62.8	80.3	97.8	60.9	78.4	95.8	58.9	76.3	93.7	56.5	73.9	91.4
		72	THC	111.2	111.2	111.2	106.6	106.6	106.6	101.6	101.6	101.6	96.2	96.2	96.2	88.8	88.8	88.8
			SHC	46.3	63.9	81.4	44.7	62.2	79.7	42.9	60.3	77.8	40.9	58.3	75.8	38.4	55.8	73.2
		76	THC	—	117.9	117.9	—	113.0	113.0	—	107.6	107.6	—	101.8	101.8	—	—	—
			SHC	—	49.5	67.4	—	47.8	65.6	—	46.0	63.7	—	44.0	61.6	—	—	—
4000 Cfm	EA (wB)	58	THC	100.4	100.4	113.1	96.7	96.7	109.0	92.7	92.7	104.5	88.4	88.4	99.6	82.0	82.0	92.4
			SHC	87.7	100.4	113.1	84.4	96.7	109.0	80.9	92.7	104.5	77.2	88.4	99.6	71.6	82.0	92.4
		62	THC	100.4	100.4	117.4	96.8	96.8	113.2	92.8	92.8	108.5	88.4	88.4	103.4	81.7	81.7	95.5
			SHC	83.4	100.4	117.4	80.4	96.8	113.2	77.1	92.8	108.5	73.5	88.4	103.4	67.8	81.7	95.5
		67	THC	104.7	104.7	107.0	100.3	100.3	105.1	95.5	95.5	103.1	90.4	90.4	100.8	82.8	82.8	94.5
			SHC	67.9	87.5	107.0	66.1	85.6	105.1	64.2	83.6	103.1	62.2	81.5	100.8	54.7	74.6	94.5
		72	THC	112.7	112.7	112.7	108.0	108.0	108.0	102.8	102.8	102.8	97.3	97.3	97.3	89.9	89.9	89.9
			SHC	47.7	67.2	86.7	46.0	65.5	84.9	44.1	63.6	83.0	42.2	61.6	80.9	39.7	59.0	78.4
		76	THC	—	119.4	119.4	—	114.3	114.3	—	108.7	108.7	—	103.0	103.0	—	94.3	94.3
			SHC	—	51.2	71.0	—	49.5	69.2	—	47.6	67.2	—	45.6	65.1	—	42.8	62.0
5000 Cfm	EA (wB)	58	THC	105.0	105.0	118.3	101.0	101.0	113.9	96.8	96.8	109.0	92.1	92.1	103.8	88.1	88.1	99.3
			SHC	91.7	105.0	118.3	88.2	101.0	113.9	84.5	96.8	109.0	80.5	92.1	103.8	76.9	88.1	99.3
		62	THC	105.1	105.1	122.9	101.1	101.1	118.2	96.8	96.8	113.2	92.2	92.2	107.8	85.5	85.5	100.0
			SHC	87.3	105.1	122.9	84.0	101.1	118.2	80.4	96.8	113.2	76.6	92.2	107.8	71.1	85.5	100.0
		67	THC	107.1	107.1	120.5	102.6	102.6	118.3	97.8	97.8	115.8	92.7	92.7	112.8	—	—	—
			SHC	74.1	97.3	120.5	72.2	95.3	118.3	70.1	93.0	115.8	67.8	90.3	112.8	—	—	—
		72	THC	114.9	114.9	114.9	109.9	109.9	109.9	104.6	104.6	104.6	98.9	98.9	98.9	89.1	89.1	89.1
			SHC	50.1	73.4	96.7	48.4	71.6	94.8	46.5	69.6	92.7	44.6	67.5	90.5	41.4	64.6	87.7
		76	THC	—	121.4	121.4	—	116.2	116.2	—	110.4	110.4	—	104.7	104.7	—	—	—
			SHC	—	54.2	77.5	—	52.4	75.6	—	50.5	73.4	—	48.5	71.1	—	—	—

PERFORMANCE DATA (cont.)

CAS121 & FAS120

COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3000 Cfm	EA (wB)	58	THC	110.5	110.5	121.5	106.2	106.2	117.1	101.6	101.6	112.4	96.9	96.9	107.5	92.5	92.5	102.9
			SHC	99.4	110.5	121.5	95.3	106.2	117.1	90.9	101.6	112.4	86.3	96.9	107.5	82.0	92.5	102.9
		62	THC	114.0	114.0	114.0	108.8	108.8	111.4	103.3	103.3	108.7	97.6	97.6	105.6	91.2	91.2	101.6
			SHC	92.3	103.2	114.0	89.9	100.6	111.4	87.3	98.0	108.7	84.5	95.1	105.6	80.8	91.2	101.6
		67	THC	123.2	123.2	123.2	117.4	117.4	117.4	111.5	111.5	111.5	105.1	105.1	105.1	—	—	—
			SHC	76.4	86.8	97.2	74.1	84.4	94.7	71.7	81.9	92.1	69.1	79.3	89.4	—	—	—
		72	THC	133.0	133.0	133.0	126.8	126.8	126.8	120.4	120.4	120.4	113.5	113.5	113.5	106.0	106.0	106.0
			SHC	60.2	70.1	79.9	57.9	67.7	77.5	55.6	65.3	74.9	53.2	62.7	72.3	50.5	60.0	69.4
		76	THC	—	140.7	140.7	—	134.2	134.2	—	127.6	127.6	—	120.2	120.2	—	112.3	112.3
			SHC	—	56.4	65.8	—	54.1	63.4	—	51.8	61.0	—	49.3	58.4	—	46.6	55.6
3500 Cfm	EA (wB)	58	THC	115.8	115.8	128.4	111.2	111.2	123.6	106.3	106.3	118.6	101.1	101.1	113.2	94.3	94.3	106.2
			SHC	103.3	115.8	128.4	98.8	111.2	123.6	94.1	106.3	118.6	89.0	101.1	113.2	82.5	94.3	106.2
		62	THC	117.4	117.4	124.5	112.0	112.0	121.6	106.6	106.6	118.3	101.1	101.1	113.2	93.0	93.0	104.8
			SHC	99.5	112.0	124.5	96.9	109.2	121.6	93.8	106.0	118.3	89.0	101.1	113.2	81.2	93.0	104.8
		67	THC	126.1	126.1	126.1	120.0	120.0	120.0	113.8	113.8	113.8	107.2	107.2	107.2	101.0	101.0	101.0
			SHC	81.5	93.4	105.4	79.1	91.0	102.8	76.7	88.4	100.2	74.1	85.8	97.4	71.6	83.2	94.7
		72	THC	135.6	135.6	135.6	129.2	129.2	129.2	122.6	122.6	122.6	115.5	115.5	115.5	108.0	108.0	108.0
			SHC	62.8	74.1	85.4	60.5	71.7	82.9	58.2	69.3	80.4	55.7	66.7	77.7	53.2	64.0	74.9
		76	THC	—	143.2	143.2	—	136.5	136.5	—	129.7	129.7	—	122.1	122.1	—	—	—
			SHC	—	58.4	69.2	—	56.1	66.8	—	53.8	64.4	—	51.3	61.8	—	—	—
4000 Cfm	EA (wB)	58	THC	120.2	120.2	134.3	115.3	115.3	129.2	110.1	110.1	123.8	104.5	104.5	118.0	97.1	97.1	110.4
			SHC	106.1	120.2	134.3	101.4	115.3	129.2	96.4	110.1	123.8	91.0	104.5	118.0	83.9	97.1	110.4
		62	THC	120.5	120.5	133.7	115.3	115.3	129.2	110.2	110.2	123.9	104.6	104.6	118.1	97.0	97.0	110.3
			SHC	105.6	119.7	133.7	101.4	115.3	129.2	96.5	110.2	123.9	91.1	104.6	118.1	83.8	97.0	110.3
		67	THC	128.2	128.2	128.2	122.0	122.0	122.0	115.6	115.6	115.6	108.8	108.8	108.8	101.3	101.3	102.0
			SHC	86.2	99.7	113.2	83.9	97.2	110.6	81.4	94.7	108.0	78.8	92.0	105.1	76.0	89.0	102.0
		72	THC	137.6	137.6	137.6	131.0	131.0	131.0	124.2	124.2	124.2	116.9	116.9	116.9	109.3	109.3	109.3
			SHC	65.2	78.0	90.7	62.9	75.6	88.2	60.6	73.1	85.7	58.1	70.6	83.0	55.6	67.8	80.1
		76	THC	—	145.0	145.0	—	138.2	138.2	—	131.2	131.2	—	—	—	—	—	—
			SHC	—	60.3	72.5	—	58.1	70.1	—	55.8	67.7	—	—	—	—	—	—
4500 Cfm	EA (wB)	58	THC	123.8	123.8	139.3	118.6	118.6	134.0	113.2	113.2	128.4	107.3	107.3	122.2	102.3	102.3	117.1
			SHC	108.2	123.8	139.3	103.2	118.6	134.0	98.0	113.2	128.4	92.4	107.3	122.2	87.6	102.3	117.1
		62	THC	123.9	123.9	139.4	118.7	118.7	134.1	113.3	113.3	128.4	107.4	107.4	122.3	101.8	101.8	116.5
			SHC	108.3	123.9	139.4	103.3	118.7	134.1	98.1	113.3	128.4	92.5	107.4	122.3	87.1	101.8	116.5
		67	THC	130.0	130.0	130.0	123.6	123.6	123.6	117.1	117.1	117.1	110.2	110.2	112.5	102.8	102.8	109.3
			SHC	90.8	105.8	120.9	88.3	103.2	118.2	85.8	100.6	115.4	83.2	97.8	112.5	80.3	94.8	109.3
		72	THC	139.1	139.1	139.1	132.4	132.4	132.4	125.5	125.5	125.5	118.1	118.1	118.1	110.3	110.3	110.3
			SHC	67.4	81.7	95.9	65.2	79.3	93.3	62.9	76.8	90.8	60.4	74.2	88.1	57.8	71.5	85.2
		76	THC	—	146.4	146.4	—	139.6	139.6	—	—	—	—	—	—	—	—	—
			SHC	—	62.2	75.7	—	59.9	73.3	—	—	—	—	—	—	—	—	—
5000 Cfm	EA (wB)	58	THC	126.8	126.8	143.8	121.4	121.4	138.2	115.8	115.8	132.3	109.8	109.8	126.1	103.0	103.0	119.1
			SHC	109.8	126.8	143.8	104.5	121.4	138.2	99.2	115.8	132.3	93.4	109.8	126.1	86.9	103.0	119.1
		62	THC	126.9	126.9	143.9	121.4	121.4	138.2	115.9	115.9	132.4	109.8	109.8	126.2	103.1	103.1	119.2
			SHC	109.8	126.9	143.9	104.6	121.4	138.2	99.3	115.9	132.4	93.5	109.8	126.2	87.0	103.1	119.2
		67	THC	131.4	131.4	131.4	125.0	125.0	125.5	118.4	118.4	122.7	111.5	111.5	119.6	104.1	104.1	116.1
			SHC	95.1	111.7	128.2	92.6	109.1	125.5	90.1	106.4	122.7	87.3	103.4	119.6	84.2	100.1	116.1
		72	THC	140.3	140.3	140.3	133.5	133.5	133.5	126.6	126.6	126.6	119.0	119.0	119.0	111.1	111.1	111.1
			SHC	69.6	85.3	100.9	67.4	82.9	98.4	65.1	80.5	95.9	62.6	77.9	93.2	60.0	75.1	90.3
		76	THC	—	147.6	147.6	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	64.0	78.8	—	—	—	—	—	—	—	—	—	—	—	—

PERFORMANCE DATA (cont.)

CAS121 & FAS150 COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3000 Cfm	EA (wB)	58	THC	111.7	111.7	122.7	107.6	107.6	118.5	103.3	103.3	114.0	98.6	98.6	109.2	—	—	—
			SHC	100.7	111.7	122.7	96.8	107.6	118.5	92.5	103.3	114.0	88.0	98.6	109.2	—	—	—
		62	THC	116.3	116.3	116.3	111.2	111.2	112.2	105.8	105.8	109.5	100.1	100.1	106.6	93.5	93.5	102.9
			SHC	93.2	104.0	114.8	90.9	101.5	112.2	88.4	98.9	109.5	85.6	96.1	106.6	82.2	92.5	102.9
		67	THC	125.8	125.8	125.8	120.5	120.5	120.5	114.8	114.8	114.8	108.6	108.6	108.6	99.3	99.3	99.3
			SHC	77.5	87.7	98.0	75.3	85.4	95.6	73.0	83.1	93.1	70.5	80.5	90.5	67.0	76.9	86.7
		72	THC	135.4	135.4	135.4	130.0	130.0	130.0	124.1	124.1	124.1	117.6	117.6	117.6	110.4	110.4	110.4
			SHC	61.2	70.9	80.6	59.2	68.8	78.4	57.1	66.6	76.1	54.7	64.1	73.5	52.2	61.5	70.8
		76	THC	—	143.2	143.2	—	137.7	137.7	—	131.7	131.7	—	125.0	125.0	—	—	—
			SHC	—	57.3	66.4	—	55.3	64.4	—	53.2	62.2	—	50.9	59.8	—	—	—
3500 Cfm	EA (wB)	58	THC	117.4	117.4	129.9	113.0	113.0	125.4	108.4	108.4	120.6	103.4	103.4	115.4	98.0	98.0	109.8
			SHC	104.9	117.4	129.9	100.7	113.0	125.4	96.2	108.4	120.6	91.3	103.4	115.4	86.2	98.0	109.8
		62	THC	119.7	119.7	125.5	114.5	114.5	122.7	109.0	109.0	119.6	103.5	103.5	115.5	98.8	98.8	110.6
			SHC	100.7	113.1	125.5	98.2	110.4	122.7	95.3	107.5	119.6	91.5	103.5	115.5	87.0	98.8	110.6
		67	THC	128.8	128.8	128.8	123.3	123.3	123.3	117.4	117.4	117.4	111.0	111.0	111.0	104.0	104.0	104.0
			SHC	82.7	94.5	106.3	80.6	92.2	103.9	78.2	89.8	101.4	75.8	87.2	98.7	73.1	84.4	95.8
		72	THC	138.3	138.3	138.3	132.7	132.7	132.7	126.7	126.7	126.7	120.0	120.0	120.0	112.7	112.7	112.7
			SHC	64.0	75.1	86.1	62.0	73.0	84.0	59.9	70.8	81.7	57.5	68.3	79.1	55.0	65.7	76.3
		76	THC	—	145.9	145.9	—	140.4	140.4	—	—	—	—	—	—	—	—	—
			SHC	—	59.4	69.9	—	57.4	67.9	—	—	—	—	—	—	—	—	—
4000 Cfm	EA (wB)	58	THC	122.0	122.0	135.9	117.4	117.4	131.2	112.6	112.6	126.2	107.2	107.2	120.6	97.8	97.8	110.9
			SHC	108.0	122.0	135.9	103.6	117.4	131.2	98.9	112.6	126.2	93.8	107.2	120.6	84.7	97.8	110.9
		62	THC	122.6	122.6	135.1	117.5	117.5	131.3	112.6	112.6	126.2	107.3	107.3	120.7	98.5	98.5	111.6
			SHC	107.2	121.2	135.1	103.7	117.5	131.3	99.0	112.6	126.2	93.9	107.3	120.7	85.4	98.5	111.6
		67	THC	131.1	131.1	131.1	125.5	125.5	125.5	119.5	119.5	119.5	112.9	112.9	112.9	105.7	105.7	105.7
			SHC	87.8	101.1	114.3	85.6	98.8	112.0	83.3	96.4	109.5	80.8	93.7	106.7	78.0	90.9	103.7
		72	THC	140.4	140.4	140.4	134.7	134.7	134.7	128.7	128.7	128.7	121.8	121.8	121.8	114.3	114.3	114.3
			SHC	66.6	79.1	91.5	64.6	77.0	89.4	62.5	74.8	87.1	60.2	72.4	84.5	57.6	69.7	81.7
		76	THC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5000 Cfm	EA (wB)	58	THC	128.9	128.9	145.7	124.1	124.1	140.7	118.9	118.9	135.3	113.2	113.2	129.3	106.8	106.8	122.7
			SHC	112.1	128.9	145.7	107.5	124.1	140.7	102.5	118.9	135.3	97.0	113.2	129.3	90.9	106.8	122.7
		62	THC	129.0	129.0	145.8	124.2	124.2	140.7	119.0	119.0	135.3	113.3	113.3	129.4	106.8	106.8	122.7
			SHC	112.2	129.0	145.8	107.6	124.2	140.7	102.6	119.0	135.3	97.1	113.3	129.4	91.0	106.8	122.7
		67	THC	134.4	134.4	134.4	128.6	128.6	128.6	122.5	122.5	124.7	115.8	115.8	121.8	108.4	108.4	118.5
			SHC	97.3	113.6	129.8	95.1	111.2	127.4	92.7	108.7	124.7	90.1	105.9	121.8	87.0	102.8	118.5
		72	THC	143.4	143.4	143.4	137.5	137.5	137.5	131.3	131.3	131.3	124.3	124.3	124.3	—	—	—
			SHC	71.6	86.8	102.0	69.6	84.7	99.9	67.5	82.6	97.6	65.2	80.1	95.0	—	—	—
		76	THC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6250 Cfm	EA (wB)	58	THC	134.9	134.9	155.1	129.8	129.8	149.8	124.4	124.4	144.2	118.3	118.3	137.8	111.6	111.6	130.8
			SHC	114.7	134.9	155.1	109.9	129.8	149.8	104.7	124.4	144.2	98.9	118.3	137.8	92.5	111.6	130.8
		62	THC	135.0	135.0	155.2	129.9	129.9	149.9	124.5	124.5	144.2	118.4	118.4	137.9	111.7	111.7	130.9
			SHC	114.8	135.0	155.2	109.9	129.9	149.9	104.7	124.5	144.2	98.9	118.4	137.9	92.5	111.7	130.9
		67	THC	137.2	137.2	147.6	131.4	131.4	144.9	125.3	125.3	141.6	118.7	118.7	137.5	111.8	111.8	131.0
			SHC	107.8	127.7	147.6	105.3	125.1	144.9	102.4	122.0	141.6	98.6	118.1	137.5	92.7	111.8	131.0
		72	THC	145.7	145.7	145.7	139.9	139.9	139.9	—	—	—	—	—	—	—	—	—
			SHC	77.3	96.0	114.7	75.4	94.0	112.6	—	—	—	—	—	—	—	—	—
		76	THC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

PERFORMANCE DATA (cont.)

CAS151 & FAS150

COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3750 Cfm	EA (wB)	58	THC	138.4	138.4	152.4	133.2	133.2	147.0	127.6	127.6	141.2	121.6	121.6	135.0	113.3	113.3	126.5
			SHC	124.5	138.4	152.4	119.4	133.2	147.0	114.0	127.6	141.2	108.2	121.6	135.0	100.2	113.3	126.5
		62	THC	144.5	144.5	144.5	137.9	137.9	138.9	131.0	131.0	135.4	123.7	123.7	131.6	—	—	—
			SHC	114.9	128.6	142.3	111.8	125.4	138.9	108.6	122.0	135.4	105.0	118.3	131.6	—	—	—
		67	THC	156.4	156.4	156.4	149.4	149.4	149.4	141.9	141.9	141.9	134.0	134.0	134.0	125.3	125.3	125.3
			SHC	95.6	108.7	121.7	92.7	105.7	118.6	89.7	102.5	115.3	86.5	99.2	111.9	83.1	95.7	108.2
		72	THC	168.6	168.6	168.6	161.2	161.2	161.2	153.4	153.4	153.4	144.8	144.8	144.8	135.6	135.6	135.6
			SHC	75.7	88.1	100.4	73.0	85.2	97.5	70.1	82.2	94.3	67.0	79.0	91.0	63.8	75.6	87.4
		76	THC	—	178.5	178.5	—	170.8	170.8	—	162.6	162.6	—	153.6	153.6	—	143.9	143.9
			SHC	—	71.4	83.2	—	68.7	80.3	—	65.8	77.3	—	62.7	74.0	—	59.4	70.6
4375 Cfm	EA (wB)	58	THC	145.4	145.4	161.2	139.7	139.7	155.4	133.7	133.7	149.2	127.3	127.3	142.6	121.3	121.3	136.3
			SHC	129.5	145.4	161.2	124.0	139.7	155.4	118.3	133.7	149.2	112.1	127.3	142.6	106.3	121.3	136.3
		62	THC	148.6	148.6	155.2	141.9	141.9	151.6	134.8	134.8	147.6	127.5	127.5	142.8	121.2	121.2	136.1
			SHC	123.8	139.5	155.2	120.5	136.0	151.6	116.8	132.2	147.6	112.3	127.5	142.8	106.1	121.1	136.1
		67	THC	160.2	160.2	160.2	152.9	152.9	152.9	145.2	145.2	145.2	136.9	136.9	136.9	127.9	127.9	127.9
			SHC	101.9	116.9	131.8	99.0	113.8	128.7	96.0	110.7	125.4	92.8	107.3	121.9	89.3	103.7	118.1
		72	THC	172.3	172.3	172.3	164.7	164.7	164.7	156.5	156.5	156.5	147.7	147.7	147.7	138.1	138.1	138.1
			SHC	79.0	93.2	107.3	76.3	90.3	104.3	73.4	87.3	101.1	70.3	84.0	97.8	67.0	80.6	94.2
		76	THC	—	182.1	182.1	—	174.2	174.2	—	165.6	165.6	—	156.4	156.4	—	146.3	146.3
			SHC	—	74.0	87.5	—	71.3	84.6	—	68.4	81.5	—	65.3	78.3	—	61.9	74.8
5000 Cfm	EA (wB)	58	THC	151.0	151.0	168.8	145.0	145.0	162.6	138.7	138.7	156.0	131.9	131.9	149.0	124.6	124.6	141.4
			SHC	133.2	151.0	168.8	127.5	145.0	162.6	121.4	138.7	156.0	114.9	131.9	149.0	107.9	124.6	141.4
		62	THC	152.2	152.2	166.8	145.3	145.3	162.8	138.9	138.9	156.2	132.0	132.0	149.1	124.7	124.7	141.5
			SHC	131.5	149.1	166.8	127.8	145.3	162.8	121.5	138.9	156.2	115.0	132.0	149.1	107.9	124.7	141.5
		67	THC	163.1	163.1	163.1	155.6	155.6	155.6	147.6	147.6	147.6	139.1	139.1	139.1	130.1	130.1	130.1
			SHC	107.9	124.8	141.6	105.0	121.7	138.5	101.9	118.5	135.1	98.6	115.1	131.5	95.1	111.4	127.7
		72	THC	175.0	175.0	175.0	167.3	167.3	167.3	158.8	158.8	158.8	149.8	149.8	149.8	140.0	140.0	140.0
			SHC	82.1	98.0	113.9	79.4	95.2	111.0	76.5	92.1	107.8	73.4	88.9	104.4	70.1	85.4	100.7
		76	THC	—	184.8	184.8	—	176.6	176.6	—	167.9	167.9	—	158.4	158.4	—	—	—
			SHC	—	76.5	91.6	—	73.8	88.8	—	70.8	85.7	—	67.7	82.4	—	—	—
5625 Cfm	EA (wB)	58	THC	155.6	155.6	175.2	149.4	149.4	168.8	142.8	142.8	161.9	135.7	135.7	154.5	127.9	127.9	146.4
			SHC	136.0	155.6	175.2	130.0	149.4	168.8	123.7	142.8	161.9	116.8	135.7	154.5	109.4	127.9	146.4
		62	THC	155.7	155.7	175.3	149.5	149.5	168.8	142.9	142.9	162.0	135.8	135.8	154.6	128.0	128.0	146.5
			SHC	136.1	155.7	175.3	130.1	149.5	168.8	123.8	142.9	162.0	117.0	135.8	154.6	109.5	128.0	146.5
		67	THC	165.3	165.3	165.3	157.8	157.8	157.8	149.6	149.6	149.6	140.9	140.9	140.9	131.7	131.7	136.8
			SHC	113.6	132.4	151.2	110.7	129.3	148.0	107.5	126.0	144.5	104.1	122.5	140.8	100.5	118.6	136.8
		72	THC	177.3	177.3	177.3	169.3	169.3	169.3	160.7	160.7	160.7	151.5	151.5	151.5	141.6	141.6	141.6
			SHC	85.0	102.7	120.5	82.3	99.9	117.4	79.4	96.8	114.2	76.3	93.6	110.8	73.0	90.1	107.2
		76	THC	—	187.0	187.0	—	178.7	178.7	—	169.7	169.7	—	—	—	—	—	—
			SHC	—	78.9	95.7	—	76.2	92.8	—	73.2	89.8	—	—	—	—	—	—
6250 Cfm	EA (wB)	58	THC	159.5	159.5	180.9	153.1	153.1	174.3	146.2	146.2	167.1	138.9	138.9	159.5	131.0	131.0	151.2
			SHC	138.0	159.5	180.9	131.9	153.1	174.3	125.3	146.2	167.1	118.3	138.9	159.5	110.7	131.0	151.2
		62	THC	159.6	159.6	181.0	153.2	153.2	174.4	146.3	146.3	167.2	139.0	139.0	159.5	131.0	131.0	151.2
			SHC	138.2	159.6	181.0	132.0	153.2	174.4	125.5	146.3	167.2	118.4	139.0	159.5	110.7	131.0	151.2
		67	THC	167.2	167.2	167.2	159.5	159.5	159.5	151.2	151.2	153.5	142.5	142.5	149.6	133.1	133.1	145.3
			SHC	119.0	139.7	160.4	116.0	136.6	157.1	112.8	133.1	153.5	109.2	129.4	149.6	105.3	125.3	145.3
		72	THC	179.0	179.0	179.0	170.9	170.9	170.9	162.2	162.2	162.2	152.8	152.8	152.8	142.6	142.6	142.6
			SHC	87.9	107.4	126.8	85.1	104.5	123.8	82.2	101.4	120.6	79.1	98.2	117.2	75.9	94.7	113.5
		76	THC	—	188.7	188.7	—	180.2	180.2	—	—	—	—	—	—	—	—	—
			SHC	—	81.3	99.8	—	78.5	96.9	—	—	—	—	—	—	—	—	—

PERFORMANCE DATA (cont.)

CAS151 & FAS180 COMBINATION RATINGS

				AMBIENT TEMPERATURE														
				85			95			105			115			125		
				EA (dB)			EA (dB)			EA (dB)			EA (dB)			EA (dB)		
				75	80	85	75	80	85	75	80	85	75	80	85	75	80	85
3750 Cfm	EA (WB)	58	THC	141.5	141.5	155.3	136.0	136.0	149.7	130.2	130.2	143.7	124.0	124.0	137.3	116.1	116.1	129.2
			SHC	127.6	141.5	155.3	122.3	136.0	149.7	116.7	130.2	143.7	110.7	124.0	137.3	103.1	116.1	129.2
		62	THC	147.8	147.8	147.8	140.9	140.9	141.2	133.8	133.8	137.6	125.9	125.9	133.7	117.9	117.9	129.3
			SHC	117.6	131.1	144.7	114.4	127.8	141.2	111.0	124.3	137.6	107.3	120.5	133.7	103.2	116.2	129.3
		67	THC	160.0	160.0	160.0	152.8	152.8	152.8	145.0	145.0	145.0	136.7	136.7	136.7	126.7	126.7	126.7
			SHC	97.9	110.8	123.7	94.9	107.7	120.5	91.8	104.4	117.1	88.4	101.0	113.5	84.6	97.0	109.4
		72	THC	172.5	172.5	172.5	165.0	165.0	165.0	156.8	156.8	156.8	147.9	147.9	147.9	—	—	—
			SHC	77.7	89.9	102.1	74.9	87.0	99.1	71.9	83.9	95.8	68.7	80.5	92.4	—	—	—
		76	THC	—	182.7	182.7	—	175.0	175.0	—	166.4	166.4	—	157.1	157.1	—	—	—
			SHC	—	72.9	84.5	—	70.2	81.7	—	67.2	78.5	—	63.9	75.2	—	—	—
4375 Cfm	EA (WB)	58	THC	148.7	148.7	164.5	142.9	142.9	158.5	136.7	136.7	152.0	129.8	129.8	144.9	122.5	122.5	137.3
			SHC	133.0	148.7	164.5	127.3	142.9	158.5	121.3	136.7	152.0	114.7	129.8	144.9	107.7	122.5	137.3
		62	THC	152.1	152.1	158.1	145.1	145.1	154.4	137.7	137.7	150.4	130.1	130.1	145.2	121.2	121.2	136.0
			SHC	127.0	142.5	158.1	123.6	139.0	154.4	119.8	135.1	150.4	115.0	130.1	145.2	106.4	121.2	136.0
		67	THC	164.0	164.0	164.0	156.5	156.5	156.5	148.5	148.5	148.5	139.8	139.8	139.8	—	—	—
			SHC	104.5	119.3	134.1	101.5	116.2	130.9	98.4	112.9	127.5	95.0	109.4	123.8	—	—	—
		72	THC	176.3	176.3	176.3	168.6	168.6	168.6	160.1	160.1	160.1	150.9	150.9	150.9	—	—	—
			SHC	81.2	95.2	109.1	78.4	92.3	106.1	75.4	89.1	102.8	72.2	85.7	99.3	—	—	—
		76	THC	—	186.5	186.5	—	178.5	178.5	—	169.7	169.7	—	—	—	—	—	—
			SHC	—	75.7	88.9	—	72.9	86.0	—	69.9	82.9	—	—	—	—	—	—
5000 Cfm	EA (WB)	58	THC	154.6	154.6	172.2	148.5	148.5	165.9	141.9	141.9	159.1	134.8	134.8	151.7	124.7	124.7	141.2
			SHC	137.0	154.6	172.2	131.1	148.5	165.9	124.8	141.9	159.1	117.9	134.8	151.7	108.2	124.7	141.2
		62	THC	155.8	155.8	170.3	148.8	148.8	166.1	142.0	142.0	159.1	134.9	134.9	151.8	125.1	125.1	141.6
			SHC	135.3	152.8	170.3	131.4	148.8	166.1	124.9	142.0	159.1	118.0	134.9	151.8	108.6	125.1	141.6
		67	THC	167.0	167.0	167.0	159.3	159.3	159.3	151.0	151.0	151.0	142.1	142.1	142.1	—	—	—
			SHC	110.8	127.5	144.2	107.9	124.4	141.0	104.7	121.1	137.5	101.2	117.5	133.8	—	—	—
		72	THC	179.3	179.3	179.3	171.3	171.3	171.3	162.6	162.6	162.6	153.2	153.2	153.2	—	—	—
			SHC	84.5	100.2	115.9	81.7	97.3	112.9	78.7	94.1	109.6	75.5	90.8	106.1	—	—	—
		76	THC	—	189.4	189.4	—	181.2	181.2	—	—	—	—	—	—	—	—	—
			SHC	—	78.2	93.1	—	75.5	90.3	—	—	—	—	—	—	—	—	—
6250 Cfm	EA (WB)	58	THC	163.7	163.7	184.8	157.1	157.1	178.0	149.9	149.9	170.6	142.2	142.2	162.5	—	—	—
			SHC	142.5	163.7	184.8	136.2	157.1	178.0	129.3	149.9	170.6	121.9	142.2	162.5	—	—	—
		62	THC	163.8	163.8	184.9	157.2	157.2	178.1	150.1	150.1	170.7	142.3	142.3	162.6	—	—	—
			SHC	142.6	163.8	184.9	136.3	157.2	178.1	129.4	150.1	170.7	122.0	142.3	162.6	—	—	—
		67	THC	171.2	171.2	171.2	163.4	163.4	163.4	154.8	154.8	156.6	145.6	145.6	152.6	—	—	—
			SHC	122.7	143.1	163.6	119.7	140.0	160.3	116.3	136.5	156.6	112.7	132.6	152.6	—	—	—
		72	THC	183.3	183.3	183.3	175.1	175.1	175.1	166.1	166.1	166.1	156.2	156.2	156.2	—	—	—
			SHC	90.7	109.9	129.1	87.9	107.0	126.1	84.9	103.8	122.8	81.7	100.4	119.2	—	—	—
		76	THC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7500 Cfm	EA (WB)	58	THC	170.1	170.1	194.7	163.2	163.2	187.6	155.7	155.7	179.7	147.5	147.5	171.2	—	—	—
			SHC	145.4	170.1	194.7	138.8	163.2	187.6	131.6	155.7	179.7	123.8	147.5	171.2	—	—	—
		62	THC	170.2	170.2	194.8	163.3	163.3	187.7	155.8	155.8	179.8	147.6	147.6	171.3	—	—	—
			SHC	145.6	170.2	194.8	139.0	163.3	187.7	131.7	155.8	179.8	123.9	147.6	171.3	—	—	—
		67	THC	174.3	174.3	181.8	166.3	166.3	178.1	157.7	157.7	174.0	148.4	148.4	169.1	—	—	—
			SHC	133.4	157.6	181.8	130.1	154.1	178.1	126.4	150.2	174.0	122.0	145.5	169.1	—	—	—
		72	THC	186.0	186.0	186.0	177.6	177.6	177.6	168.4	168.4	168.4	158.4	158.4	158.4	—	—	—
			SHC	96.5	119.2	141.9	93.8	116.3	138.9	90.8	113.2	135.6	87.6	109.8	132.0	—	—	—
		76	THC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SHC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

ELECTRICAL DATA

CAS072 COOLING STANDARD

V-Ph-Hz	VOLTAGE RANGE		COMP 1		OFM (ea)		POWER SUPPLY	
	MIN	MAX	RLA	LRA	WATTS	FLA	MCA	Fuse
230-3-60	187	253	19	123	325	1.5	25.2	40
460-3-60	414	506	9.7	62	325	0.8	12.9	20
575-3-60	518	633	7.4	50	325	0.6	9.9	15

CAS091 COOLING STANDARD

V-Ph-Hz	VOLTAGE RANGE		COMP 1		OFM (ea)		POWER SUPPLY	
	MIN	MAX	RLA	LRA	WATTS	FLA	MCA	Fuse
230-3-60	187	253	25	164	325	1.5	32.7	50
460-3-60	414	506	12.2	100	325	0.8	16.0	30
575-3-60	518	633	9.0	78	325	0.6	11.8	20

CAS121 COOLING STANDARD

V-Ph-Hz	VOLTAGE RANGE		COMP 1		OFM (ea)		POWER SUPPLY	
	MIN	MAX	RLA	LRA	WATTS	FLA	MCA	Fuse
230-3-60	187	253	30.1	225	325	1.5	39.1	60
460-3-60	414	506	16.7	114	325	0.8	21.7	40
575-3-60	518	633	12.2	80	325	0.6	15.8	30

CAS151 COOLING STANDARD

V-Ph-Hz	VOLTAGE RANGE		COMP 1		OFM (ea)		POWER SUPPLY	
	MIN	MAX	RLA	LRA	WATTS	FLA	MCA	Fuse
230-3-60	187	253	48.1	245	325	1.5	61.6	100
460-3-60	414	506	18.6	125	325	0.8	24.0	40
575-3-60	518	633	14.7	100	325	0.6	19.0	30

APPLICATION DATA

Operating limits

Maximum outdoor temperature	125 F
Minimum return-air temperature (FAS)	55 F
Maximum return-air temperature (FAS)	95 F
Range of acceptable saturation suction temperature	20 to 50 F
Maximum discharge temperature	275 F
Minimum discharge superheat	60 F

NOTES:

1. Select air handler at no less than 300 cfm/ton (nominal condensing unit capacity).
2. Total combined draw of the field-supplied liquid line solenoid valve and air handler fan contactor must not exceed 22 va. If the specified va must be exceeded, use a remote relay to control the load.

Liquid line

For applications with liquid lift greater than 20 ft, use $\frac{1}{2}$ -in. liquid line where $\frac{3}{8}$ in. is shown; use $\frac{5}{8}$ -in. liquid line where $\frac{1}{2}$ in. is shown. The maximum liquid lift is 60 ft.

MINIMUM OUTDOOR-AIR OPERATING TEMPERATURE

UNIT	MINIMUM OUTDOOR TEMP (F)	
	Std	With Motormaster® Control†
CAS072	35	-20
CAS091	35	
CAS121	35	
CAS151	35	

† Wind baffles (field-supplied and field-installed) are recommended for all units with Motormaster control. Refer to Low Ambient Temperature Control Installation Instructions for additional information.

Refrigerant piping

IMPORTANT: Do not bury refrigerant piping underground.

It is recommended that the refrigerant piping for all commercial split systems include a liquid line solenoid valve, a liquid line filter drier and a sight glass.

For refrigerant lines longer than 75 lineal ft, a liquid line solenoid valve installed at the **indoor** unit and a suction accumulator are required. Refer to the Refrigerant Specialties Part Numbers table.

REFRIGERANT PIPING SIZES

UNIT	LINEAR LENGTH OF PIPING — FT							
	0-25		25-50		50-75		75-100	
	Line Size (in. OD)							
	L	S	L	S	L	S	L	S
CAS072	3/8	1 1/8	3/8	1 1/8	3/8	1 1/8	3/8	1 1/8
CAS091	3/8	1 1/8	1/2	1 1/8	1/2	1 1/8	1/2	1 3/8
CAS121	1/2	1 3/8	1/2	1 3/8	1/2	1 3/8	1/2	1 3/8
CAS151	5/8	1 3/8	5/8	1 3/8	5/8	1 3/8	5/8	1 3/8

LEGEND

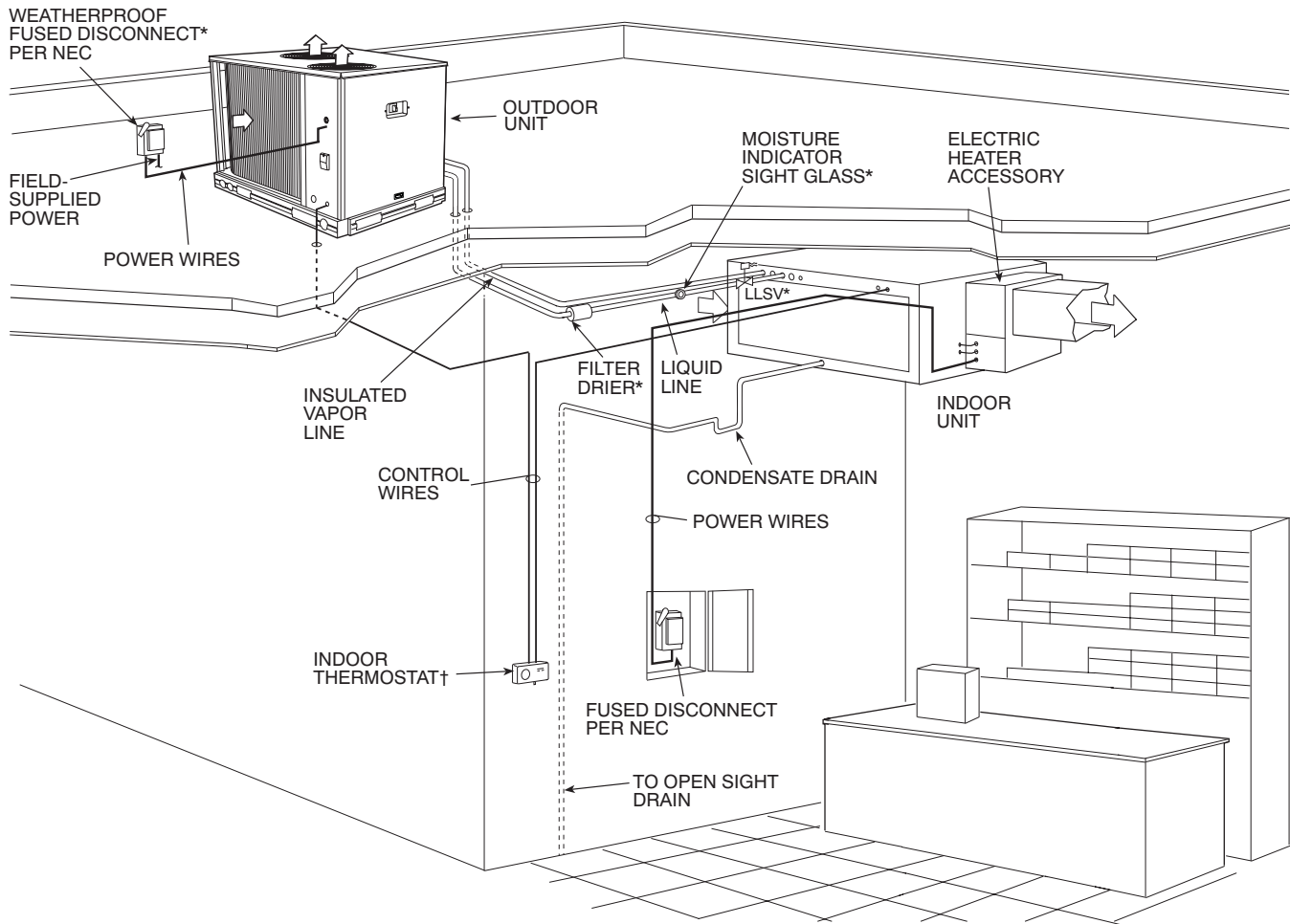
L — Liquid Line

S — Suction Line

NOTES:

1. Pipe sizes are based on a 2° F loss for liquid and suction lines.
2. Pipe sizes are based on the maximum linear length, shown for each column, plus a 50% allowance for fittings.
3. Charge units with R-410A refrigerant in accordance with unit installation instructions.
4. See Accessory Page for list of Refrigerant Specialties Part Numbers

TYPICAL PIPING AND WIRING



LEGEND:

NEC — National Electrical Code

TXV — Thermostatic Expansion Valve

* Field-supplied

† Double riser may be required. Consult condensing unit product data catalog for details.

NOTES:

1. All piping must follow standard refrigerant piping techniques.
2. All wiring must comply with the applicable local and national codes.
3. Wiring and piping shown are general points-of-connection guides only and are not intended for, or to include all details for, a specific installation.
4. Liquid line solenoid valve (solenoid drop control) is recommended to prevent refrigerant migration to the compressor.
5. Internal factory-supplied TXVs not shown.

GUIDE SPECIFICATIONS

Commercial Air-Cooled Condensing Units

HVAC Guide Specifications

Size Range: **6 to 12.5 Tons, Nominal**

Model Numbers: **CAS072-151**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or rooftop installation. Unit shall consist of a hermetic scroll air-conditioning compressor assembly, an air-cooled coil, propeller-type condenser fans, and a control box. Unit shall discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standard 360-2000.
- B. Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- C. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL and UL, Canada label.
- D. Unit cabinet shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
- E. Air-cooled condenser coils for hermetic compressor units (CAS) shall be leak tested at 150 psig, and pressure tested at 650 psig.
- F. Unit shall be manufactured in a facility registered to ISO 9001:2000 manufacturing quality standard.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

1.04 WARRANTY (FOR INCLUSION BY SPECIFYING ENGINEER.)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory-assembled, single piece, air-cooled condensing unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, compressor, holding charge, and special features required prior to field start-up.

B. Unit Cabinet:

- 1. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.

- 2. A heavy-gauge roll-formed perimeter base rail with forklift slots and lifting holes shall be provided to facilitate rigging.

C. Fans:

- 1. Condenser fans shall be direct driven, propeller type, discharging air vertically upward.
- 2. Fan blades shall be balanced.
- 3. Condenser fan discharge openings shall be equipped with PVC-coated steel wire safety guards.
- 4. Condenser fan and motor shaft shall be corrosion resistant.

D. Compressor:

- 1. Compressor shall be of the hermetic scroll type .
- 2. Compressor shall be mounted on rubber grommets.
- 3. Compressors shall include overload protection.
- 4. Compressors shall be equipped with a crankcase heater.
- 5. Compressor shall be equipped with internal high discharge temperature protection (CAS072 and CAS121).

E. Condenser Coil:

- 1. Condenser coil shall be air-cooled and circuited for integral subcooler.
- 2. Standard condenser coils shall have all aluminum micro-channel (MCHX) Heat Exchanger Technology design consisting of aluminum multi-port flat tube design and aluminum fin. Coils shall be a furnace brazed design and contain epoxy lined shrink wrap on all aluminum to copper connections. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 199 burst test at 1980 psig.

F. Refrigeration Components:

Refrigeration circuit components shall include liquid line service valve, suction line service valve, a full charge of compressor oil, and a partial holding charge of refrigerant.

G. Controls and Safeties:

- 1. Minimum control functions shall include:
 - a. Control wire terminal blocks.
 - b. Compressor lockout on auto-reset safety until reset from thermostat.
- 2. Minimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall include:
 - a. High discharge pressure cutout.
 - b. Low pressure cutout.

H. Operating Characteristics:

- 1. The capacity of the condensing unit shall meet or exceed _____ Btuh at a suction temperature of _____ F. The power consumption at full load shall not exceed _____ kW.

2. The combination of the condensing unit and the evaporator or fan coil unit shall have a total net cooling capacity of _____ Btuh or greater at conditions of _____ cfm entering-air temperature at the evaporator at _____ F wet bulb and _____ F dry bulb, and air entering the condensing unit at _____ F.
 3. The system shall have an EER of _____ Btuh/Watt or greater at standard ARI conditions.
- I. Electrical Requirements:
1. Nominal unit electrical characteristics shall be _____ v, 3-ph, 60 Hz. The unit shall be capable of satisfactory operation within voltage limits of _____ v to _____ v.
 2. Unit electrical power shall be single-point connection.
 3. Unit control circuit shall contain a 24-v transformer for unit control.
- J. Special Features:
1. Low-Ambient Temperature Control:
A low-ambient temperature control shall be available as a factory-installed option or as a field-installed accessory. This low-ambient control shall regulate speed of the condenser-fan motors in response to the saturated condensing temperature of the unit. The control shall maintain correct condensing pressure at outdoor temperatures down to -20 F.
 2. Optional Condenser Coil Materials:
 - a. Condenser Coil Protective Coating — E-Coated micro-channel (MCHX) coil:
E-Coated aluminum micro-channel (MCHX) coils shall have a flexible epoxy polymer coating uniformly applied to all coil external surface areas without material bridging between fins or louvers. Coating process shall ensure complete coil encapsulation, including all exposed fin edges. E-Coat thickness of 0.8 to 1.2 mil with top coat having a uniform dry film thickness from 1.0 to 2.0 mil on all external coil surface areas, including fin edges, shall be provided. E-Coated coils shall have superior hardness characteristics of 2H per ASTM D3363-00 and cross-hatch adhesion of 4B-5B per ASTM D3359-02. E-coated products shall have superior impact resistance with no cracking, chipping or peeling per NSF/ANSI 51-2002 Method 10.2.
3. Thermostat Controls (field supplied):
 - a. Programmable multi-stage thermostat shall have 7-day clock, holiday scheduling, large backlit display, remote sensor capability, and Title 24 compliance.
 - b. Commercial Electronic Thermostat shall have 7-day timeclock, auto-changeover, multi-stage capability, and large LCD (liquid crystal display) temperature display.
 4. Louvered hail Guard Package:
Louvered hail guard package shall protect coils against damage from hail and other flying debris.
 5. Condenser Coil Grille:
Grille shall add decorative appearance to unit and protect condenser coil from large objects and vandalism.