

**AIREDALE**

air conditioning for every environment

**AIR 2-510.1**

5H101545A Rev. A

December, 2006

# ClassMate® HE

# INSTALLATION AND OPERATION MANUAL

Customer Order No: \_\_\_\_\_

Unit Model No: \_\_\_\_\_

Unit Serial No: \_\_\_\_\_

Date of Manufacture: \_\_\_\_\_



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## MODEL IDENTIFICATION

CLASSMATE HE UNITS	
CH	<b>Base Model:</b> CH = Classmate High Efficiency (HE)
X or H	<b>Model Type:</b> X = DX Cooling H = Heat Pump
2, 3, 4, or 5	<b>Model Size:</b> Nominal Cooling Tons
/1 or /2	<b>Compressor Type:</b> /1 = Single Stage /2 = Two Stage
-230, -208, -460	<b>Supply Voltage:</b> -230 = 208-230V/1Ph/60Hz -208 = 208-230V/3Ph/60Hz -460 = 460-480V/3Ph/60Hz
/22 or /410	<b>Refrigerant Type:</b> /22 = R22 /410 = R410A
Example	<b>CHX4/2-230/410</b> = Classmate HE, DX Cooling, Two Stage, 208-230V/1Ph/60Hz, R410A

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## TECHNICAL SPECIFICATION - CHX/CHH

### Two Stage Compressor - R410A Refrigerant (1)

CHX/CHH		2	3	4	5
<b>PERFORMANCE</b>					
<b>FULL LOAD</b>					
Cooling Capacity Total (2)	Mbh	24.4	34.2	45.5	55.0
Cooling Capacity Sensible (2)	Mbh	20.6	27.2	35.8	43.0
Heat Pump Capacity (3)	Mbh	24.6	34.8	46.0	57.0
<b>PART LOAD</b>					
Cooling Capacity Total (2)	Mbh	19.6	26.2	34.8	42.0
Cooling Capacity Sensible (2)	Mbh	18.4	23.6	30.8	37.2
Heat Pump Capacity (3)	Mbh	18.6	24.4	33.4	42.5
<b>SEER</b>		13.00	13.00	13.00	12.33
<b>DIMENSIONS</b>					
(H X W X D)	in.	90 X 42 X 30		90 X 48 X 30	
<b>SUPPLY FAN</b>					
Fan Type		Direct Drive Centrifugal			
Fan Quantity		2	2	2	2
Motor Size (Qty 1)	hp	1/2	1/2	1	1
Motor Type		GE - Electronically Commutated Motor (ECM)			
Airflow	cfm	900	1,100	1,400	1,700
Max External Static Pressure	in Wg	0.25	0.25	0.25	0.25
<b>INDOOR COIL</b>					
Face Area	in <sup>2</sup>	720	720	853	853
<b>EXHAUST FAN</b>					
Fan Type		Backward Curved Motorized Impellor			
Fan Quantity		2	2	2	2
Motor Size (Qty 2)	hp	1/3	1/3	1/2	1/2
Airflow	cfm	2,300	2,300	2,700	2,700
Max External Static Pressure	in Wg	0.1	0.1	0.1	0.1
<b>COMPRESSOR</b>					
Type		Copeland ULTRA TECH			
Stages		0, 66, 100%			
Refrigerant Type		HCFC-R410A			
<b>OUTDOOR COIL</b>					
Face Area	in <sup>2</sup>	1048	1048	1240	1240
<b>UNIT WEIGHT</b>					
Operating Weight	lbs.	685	735	765	830
<b>FILTER</b>					
Type		2" Pleated 90% Arrestance			
Quantity		2	2	2	2
Dimensions	in.	16 x 20	16 x 20	16 X 20	16 X 20
<b>ELECTRIC HEATING (optional)</b>					
Electric Heating Capacity	kW	7.5	7.5	15	15
Stages		1	1	2	2
<b>HOT WATER HEATING - 1 ROW (optional)</b>					
Heating Capacity - 3/6 GPM (4)	Mbh	65/75	68/79	77/90	80/95
Water Pressure Drop - 3/6 GPM	Ft-H <sub>2</sub> O	0.28/0.98	0.28/0.98	0.31/1.05	0.31/1.05

(1) Performance data table with no applied external static

(2) Cooling capacity based on Air On 80/67°F Dry/Wet Bulb & 95°F Ambient

(3) Heat Pump capacity based on Air On 70/60°F Dry/Wet Bulb & 47/43°F Ambient

(4) Hot water heating capacity based on a Air On 35°F (2 Ton), 41°F (3 Ton), 48°F (4 Ton), and 51°F (5 Ton), entering water temperature 180°F, and water flow rate of 3 and 6 GPM. The Air On based on 450 CFM outside air at 0°F and 70°F room ambient for all model sizes.

## TECHNICAL SPECIFICATION - CHX/CHH

### Single Stage Compressor - R410A or R22 Refrigerant (1)

CHX/CHH		2	3	4	5
<b>PERFORMANCE</b>					
<b>FULL LOAD - R410A</b>					
Cooling Capacity Total (2)	Mbh	24.6	35.0	45.0	56.0
Cooling Capacity Sensible (2)	Mbh	20.6	27.8	35.6	43.5
Heat Pump Capacity (3)	Mbh	24.6	35.6	47.0	59.5
<b>SEER</b>		10.70	11.10	11.21	10.26
<b>FULL LOAD - R22</b>					
Cooling Capacity Total (2)	Mbh	27.0	37.8	50.0	56.5
Cooling Capacity Sensible (2)	Mbh	21.6	28.8	37.6	43.5
Heat Pump Capacity (3)	Mbh	27.0	38.5	45.5	56.0
<b>SEER</b>		10.80	11.04	10.57	10.38
<b>DIMENSIONS</b>					
(H X W X D)	in.	90 X 42 X 30		90 X 48 X 30	
<b>SUPPLY FAN</b>					
Fan Type		Direct Drive Centrifugal			
Fan Quantity		2	2	2	2
Motor Size (Qty 1)	hp	1/2	1/2	1	1
Motor Type		GE - Electronically Commutated Motor (ECM)			
Airflow	cfm	900	1,100	1,400	1,700
Max External Static Pressure	in Wg	0.25	0.25	0.25	0.25
<b>INDOOR COIL</b>					
Face Area	in <sup>2</sup>	720	720	853	853
<b>EXHAUST FAN</b>					
Fan Type		Backward Curved Motorized Impellor			
Fan Quantity		2	2	2	2
Motor Size (Qty 2)	hp	1/3	1/3	1/2	1/2
Airflow	cfm	2,300	2,300	2,700	2,700
Max External Static Pressure	in Wg	0.1	0.1	0.1	0.1
<b>COMPRESSOR</b>					
Type		Copeland, Scroll			
Stages		Single			
Refrigerant Type		R410A or R22			
<b>OUTDOOR COIL</b>					
Face Area	in <sup>2</sup>	1048	1048	1240	1240
<b>UNIT WEIGHT</b>					
Operating Weight	lbs.	685	735	765	830
<b>FILTER</b>					
Type		2" Pleated 90% Arrestance			
Quantity		2	2	2	2
Dimensions	in.	16 x 20	16 x 20	16 X 20	16 X 20
<b>ELECTRIC HEATING (optional)</b>					
Electric Heating Capacity	kW	7.5	7.5	15	15
Stages		1	1	2	2
<b>HOT WATER HEATING - 1 ROW (optional)</b>					
Heating Capacity - 3/6 GPM (4)	Mbh	65/75	68/79	77/90	80/95
Water Pressure Drop - 3/6 GPM	Ft-H <sub>2</sub> O	0.28/0.98	0.28/0.98	0.31/1.05	0.31/1.05

(1) Performance data table with no applied external static

(2) Cooling capacity based on Air On 80/67°F Dry/Wet Bulb & 95°F Ambient

(3) Heat Pump capacity based on Air On 70/60°F Dry/Wet Bulb & 47/43°F Ambient

(4) Hot water heating capacity based on a Air On 35°F (2 Ton), 41°F (3 Ton), 48°F (4 Ton), and 51°F (5 Ton), entering water temperature 180°F, and water flow rate of 3 and 6 GPM. The Air On based on 450 CFM outside air at 0°F and 70°F room ambient for all model sizes.

## ELECTRICAL DATA TABLES

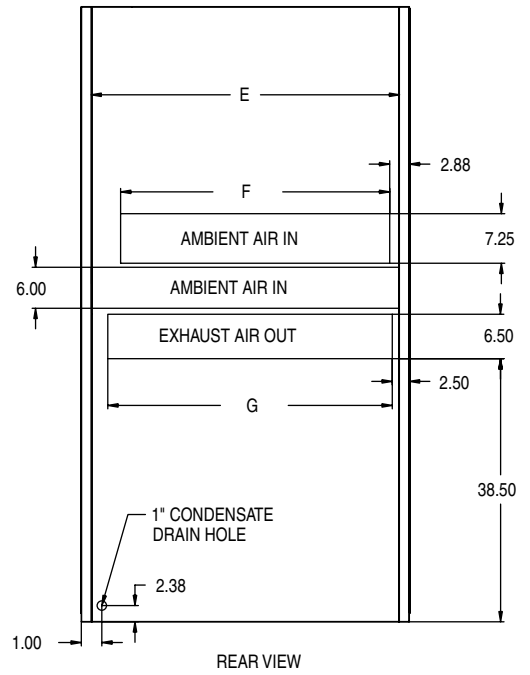
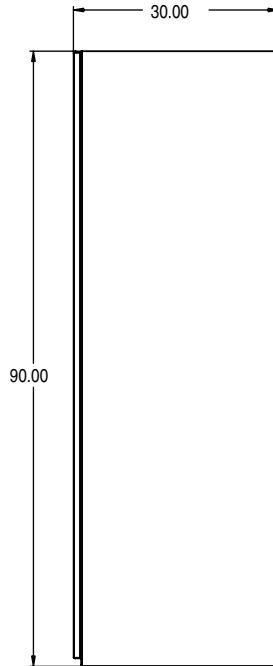
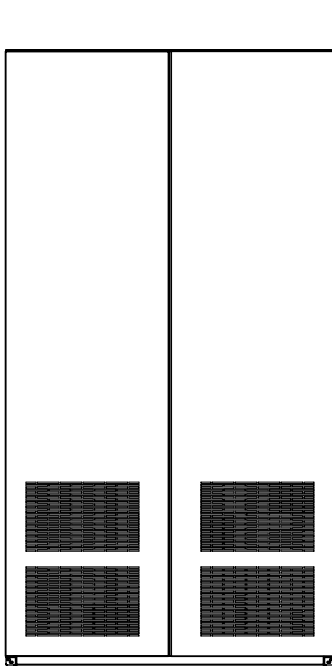
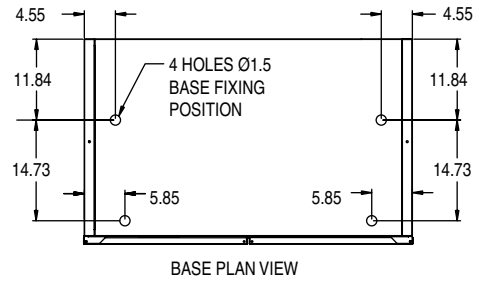
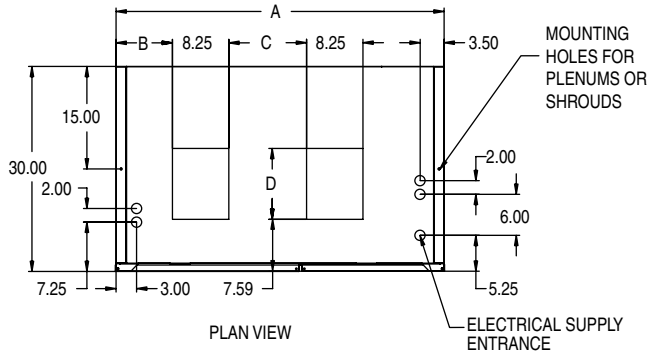
CHX / CHH # Stages - Refrigerant	2		3		4		5	
	1-R22	1-R410A / 2-R410A	1-R22	1-R410A / 2-R410A	1-R22	1-R410A / 2-R410A	1-R22	1-R410A / 2-R410A
<b>208-230V / 1Ph / 60Hz</b>								
Compressor RLA	13.8	14.5	18.6	17.3	22.3	23.0	32.4	31.0
Compressor LRA	63.0	60.0	95.0	83.0	137.0	109.0	148.0	158.0
Exhaust Fans FLA	1.6	1.6	1.6	1.6	2.6	2.6	2.6(1)	2.6(1)
Supply Fan FLA	5.0	5.0	5.0	5.0	9.4	9.4	9.4(1)	9.4(1)
Electric Heating FLA(2)(3)	32.6	32.6	32.6	32.6	65.2(2)(3)	65.2(2)(3)	65.2(2)(3)	65.2(2)(3)
Unit FLA / FLA with Elec. Heat	20.9/39.7	21.6/39.7	25.7/39.7	24.4/39.7	34.8/77.7	35.5/77.7	44.9/77.7	43.5/77.7
Unit MCA / MCA with Elec. Heat	24.3/49.6	25.2/49.6	30.3/49.6	28.7/49.6	40.3/97.1	41.2/97.1	53.0/97.1	51.2/97.1
Unit MOP / MOP with Elec. Heat	32/50	32/50	40/50	40/50	50/100	63/100	80/100	80/100
Unit FLA / FLA with Elec. Heat	20.9/53.5	21.6/54.2	25.7/58.3	24.4/57	34.8/77.7	35.5/77.7	44.9/77.7	43.5/77.7
Unit MCA / MCA with Elec. Heat	24.3/56.9	25.2/57.8	30.3/62.9	28.7/61.3	40.3/97.1	41.2/97.1	53.0/97.1	51.2/97.1
Unit MOP / MOP with Elec. Heat	32/63	32/63	40/80	40/63	50/100	63/100	80/100	80/100
<b>208-230V / 3Ph / 60Hz</b>								
Compressor RLA	8.8	8.8	11.6	13.1	16.6	16.4	19.6	20.5
Compressor LRA	55.0	55.0	77.0	77.0	91.0	91.0	123.0	137.0
Exhaust Fans FLA	1.6	1.6	1.6	1.6	2.6	2.6	2.6	2.6
Supply Fan FLA	5.0	5.0	5.0	5.0	9.4	9.4	9.4	9.4
Electric Heating FLA(2)(3)	20.8(2)	20.8(2)	20.8(2)	20.8(2)	41.6(2)(3)	41.6(2)(3)	41.6(2)(3)	41.6(2)(3)
Unit FLA / FLA with Elec. Heat	15.9/27.9	15.9/27.9	18.7/27.9	20.2/27.9	29.1/54.1	28.9/54.1	32.1/54.1	33.0/54.1
Unit MCA / MCA with Elec. Heat	18.0/34.9	18.0/34.9	21.5/34.9	23.4/34.9	33.2/67.6	32.9/67.6	37.0/67.6	38.1/67.6
Unit MOP / MOP with Elec. Heat	25/40	25/40	32/40	32/40	40/80	40/80	50/80	50/80
Unit FLA / FLA with Elec. Heat	15.9/36.7	15.9/36.7	18.7/39.5	20.2/41	29.1/54.1	28.9/54.1	32.1/54.1	33.0/54.1
Unit MCA / MCA with Elec. Heat	18.0/38.8	18.0/38.8	21.5/42.3	23.4/44.2	33.2/67.6	32.9/67.6	37.0/67.6	38.1/67.6
Unit MOP / MOP with Elec. Heat	25/40	25/40	32/50	32/50	40/63	40/63	50/63	50/63
<b>460-480V / 3Ph / 60Hz</b>								
Compressor RLA	4.4	4.5	5.8	5.8	7.9	7.3	9.3	10.2
Compressor LRA	27.0	22.4	39.0	35.0	50.0	46.0	62.0	62.0
Exhaust Fans FLA	1.6(1)	1.6(1)	1.6(1)	1.6(1)	2.6(1)	2.6(1)	2.6(1)	2.6(1)
Supply Fan FLA	5.0(1)	5.0(1)	5.0(1)	5.0(1)	9.4(1)	9.4(1)	9.4(1)	9.4(1)
Electric Heating FLA(2)(3)	9.4(2)	9.4(2)	9.4(2)	9.4(2)	18.8(2)(3)	18.8(2)(3)	18.8(2)(3)	18.8(2)(3)
Unit FLA / FLA with Elec. Heat	7.7/12.7	7.8/12.7	9.1/12.7	9.1/12.7	13.7/24.6	13/24.6	15.0/24.6	15.9/24.6
Unit MCA / MCA with Elec. Heat	8.8/15.9	8.9/15.9	10.5/15.9	10.5/15.9	15.7/30.7	14.9/30.7	17.3/30.7	18.5/30.7
Unit MOP / MOP with Elec. Heat	16/16	16/16	16/16	16/16	20/32	20/32	25/32	25/32
Unit FLA / FLA with Elec. Heat	7.7/17.1	7.8/17.2	9.1/18.5	9.1/18.5	13.7/24.6	13.0/24.6	15.0/24.6	15.9/25.3
Unit MCA / MCA with Elec. Heat	8.8/18.2	8.9/18.3	10.5/19.9	10.5/19.9	15.7/30.7	14.9/30.7	17.3/30.7	18.5/30.7
Unit MOP / MOP with Elec. Heat	16/20	16/20	16/25	16/25	20/32	20/32	25/32	25/32

(1) The motor is a 208V motor using a 460 to 208 transformer, the motor FLA's are shown at 208 V and the unit FLA, MCA, & MOP have been calculated at 460V.

(2) Two & three ton units are available with 7.5kW of electric heat. Four & five ton units are available with 15kW of electric heat in two stages.

(3) On Heat pump units with electric heat the FLA, MCA and MOP shown here is the largest of: (1) Heating mode with one stage of electric heat or (2) Two stages of electric heat.

## DIMENSIONAL DATA - CHX/CHH




MODEL SIZE	DIMENSIONS						
	A	B	C	D	E	F	G
2-3	42.00	7.00	8.25	10.25	39.00	33.25	36.75
4-5	48.00	8.25	11.38	10.38	45.00	39.38	41.63

## GENERAL STATEMENT

- Important** The information contained in this manual is critical to the correct Installation, Operation and Maintenance of the ClassMate unit and should be read by all persons responsible for the Installation, Start-Up and Maintenance of this Airedale ClassMate unit.
- Safety** This unit has been designed and manufactured to meet international safety standards, but like any mechanical/electrical equipment, care must be taken if you are to obtain the best results.
1. The Service and Maintenance of Airedale equipment should only be performed by qualified personnel.
  2. When working with any air conditioning units, ensure that the electrical disconnect is switched OFF prior to doing any servicing or repair work and that there is no power to any part of the unit.
  3. Also ensure that there are no other power feeds to the unit such as fire alarm circuits, BMS circuits, etc.
  4. Electrical Installation, Start-Up, and Maintenance work on this unit should be performed by competent and trained personnel in accordance with all relevant Federal & Local standards and codes.
- Parts** For ease of identification when ordering parts or when contacting Airedale about your ClassMate unit, please provide the unit type, model number, unit serial number and date of manufacture. This information can be found on the serial plate attached to your ClassMate. An area has been provided on the front cover of this manual for this information to be recorded. A recommended parts list can be found at the back of this manual.

### Serial Plate Example



air conditioning for every environment

1221 Magnolia Avenue  
Buena Vista, Virginia 24416  
Phone: 1.866.823.1631 (Toll Free)

UNIT TYPE	
UNIT SERIAL No.	
DATE OF MANUFACTURE	DAY/ MTH/ YR
ELECTRICAL RATING	V/ PH/ HZ
COMPRESSOR	<div style="border: 1px solid black; padding: 2px;">RLA</div> <div style="border: 1px solid black; padding: 2px;">LRA</div>
EVAPORATOR FAN MOTOR	<div style="border: 1px solid black; padding: 2px;">FLA</div> <div style="border: 1px solid black; padding: 2px;">HP</div>
CONDENSER FAN MOTOR	<div style="border: 1px solid black; padding: 2px;">FLA</div> <div style="border: 1px solid black; padding: 2px;">HP</div>
ELECTRIC HEATERS	A
MIN. CIRCUIT AMPACITY	A
MAX. OVERCURRENT PROTECTION	A
REFRIGERANT	R22
FACTORY CHARGED	LB
FACTORY TESTED PRESSURES HIGH SIDE	300 PSIG
FACTORY TESTED PRESSURES LOW SIDE	150 PSIG
MIN. INSTALLATION CLEARANCE TO COMBUSTIBLES: ZERO INCHES	

## WARRANTY INFORMATION

### Important

For the warranty to be valid, copies of the relevant Start-Up Sheets must be fully completed and returned to Airedale within 30 days of the unit Start-Up date. Failure to submit the Start-Up Sheets within the specified time will invalidate any future warranty claims. A copy of the Start-Up Sheets is located in the rear of this manual for your records. Airedale will cover under warranty all component parts for a period of 18 months beginning from the shipping date of the unit from the Airedale factory.

The Airedale warranty covers the component parts only and does not include any allowance for labor costs or other expenses involved in the replacement of faulty parts within the warranty period.

Replaced faulty parts should be returned to Airedale within 21 days for full evaluation.

Parts replaced under warranty are warranted for the unexpired period of warranty for the unit, or 3 months from delivery, whichever period is longer. This excludes compressors for which an additional 12 months warranty is granted.

The detailed Warranty Policy is located in the rear of this manual.

### Return Analysis

All faulty components returned under warranty are analyzed on a monthly basis as a means of verifying component and product reliability as well as supplier performance. It is important that all component failures are reported correctly.

### Unit Inspection

When the unit is received all items should be carefully checked against the bill of lading to insure a complete shipment. Each unit should be carefully inspected for damage that may have occurred while in transit.

IF ANY DAMAGES OR SHORTAGES ARE NOTED, A REPORT SHOULD BE FILED WITH THE CARRIER IMMEDIATELY.

Although Airedale will assist in the reparation of equipment, it is the responsibility of the freight carrier to bear the expense of repairing/replacing the unit and the responsibility of the receiver to file the claim. It is important to document the serial numbers of the damaged pieces.

### Handling

Each unit will be shipped to the site on a wood skid. Whenever possible, all lifting and handling of the unit should be done with the packing and skid in position.

When slinging or using a forklift to lift the unit, the support points should be sufficiently apart to give stability when lifting. Unless otherwise noted the lifting points should be equidistant from the centerline. Extreme care should be taken not to drop the unit.

Considerable damage can occur to the unit during positioning, in particular, to the paneling and exterior paint. Use an adequate number of personnel and the correct tools when moving the unit. The unit is designed to remain upright so care should be taken when lifting the unit up steps.

## INSTALLATION

### Preparation

1. Before installation, ensure that the correct electrical power supplies are available for the unit.  
**Note:** Each unit requires an independently fused and isolated power supply.
2. If the installation has multiple units, check that unit identifications correspond with the network diagrams. Advise Airedale immediately if discrepancies are noted.
3. Check to make sure that the units will have adequate installation clearance around them.
4. Note that each unit has a condensate connection at the rear and suitable provisions should be made for draining. If multiple units tee into a common drain manifold, it must be sized to ensure free draining with all the units in operation.
5. Inspect the Wall Sleeve installation for gaps that would allow leakage of outdoor air into the space. All joints and abutments should be sealed with waterproof sealant.
6. The cabinet must be secured to the floor. The floor of the cabinet has four pre-punched holes. The type of materials used for the floor will determine the type of fastener to use. The use of 5/8" diameter fasteners with 1-1/4" diameter washers is recommended. Securing the cabinet to the floor helps to reduce movement and noise due to vibration.

### Drainage

Each unit has a condensate drain, terminating internally to the unit. A 1" Condensate Drain Hole is available in rear (see page 6 for the location). Should a different location be desired the hole may be drilled at a maximum to 12" from the base of the unit for CHX units only. This must be connected to the main drain system in accordance with any Local codes and general good piping practice.

### Electrical

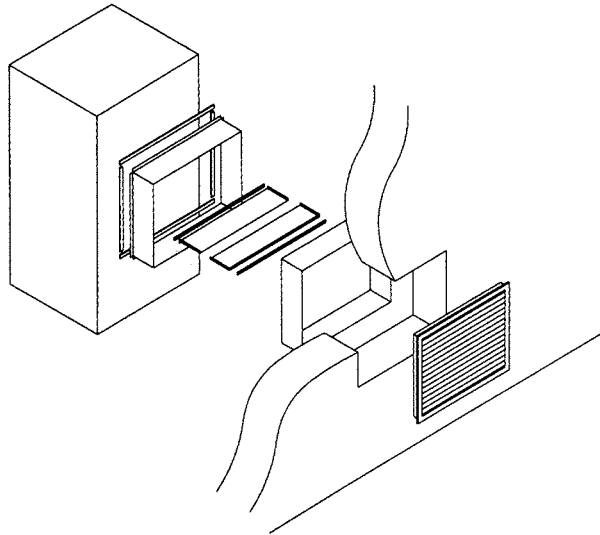
Electrical wiring should be done in accordance with all applicable National and Local codes. It is the responsibility of the electrical contractor to adhere to such codes. The warranty will be voided if wiring is not in accordance with the specifications of the unit. Airedale recommends using copper conductors ONLY.

All power supply wiring must be capable of carrying the maximum current load under no fault conditions at the stipulated voltages. Care should be taken to avoid significant voltage drops.

A power connection hole can be drilled in the unit at a maximum of 14" from the top of the unit for connecting to the terminal strip. When supplied with an optional disconnect switch on the control panel lid located in the evaporator section, the field connection is made to the disconnect switch.

## WALL SLEEVE INSTALLATION PROCEDURE

1. Check to insure that the opening in the wall is at the correct height from the floor, and that the size is correct. This information is contained in the Airedale Submittal.
  2. Slide the Inner and Outer Wall Sleeve pieces together.
  3. From the inside of the room, slide the two pieces into the Wall Opening until the flange is in tight contact with the wall.
  4. Use the Masonry Screws (provided) to fasten the Wall Sleeve Flange to the wall.
  5. Slide the Outer Wall Sleeve half outwards until it is even with the exterior of the wall.
  6. Use the Tek-Screws (provided) to fasten the two Wall Sleeve halves together.
  7. From the outside, use an Exterior Grade Sealant to fill the gap between the wall sleeve and the wall.
  8. Place the Louver into the Wall Sleeve until the flange is in tight contact with the wall.
  9. Use an Exterior Grade Sealant to seal the louver to the wall.
  10. From the inside, use the Tek-Screws (provided) to secure the Louver to the Wall Sleeve.
  11. \*Clean the front flange of the Outer Splitter Plate and attach the Gasket to it.
  12. \*Place the Outer Splitter Plate in the proper position inside the wall sleeve ensuring that the gasket is in tight contact with a Louver Blade.
  13. \*Use the Tek-Screws (provided) to fasten the Outer Splitter Plate to the Wall Sleeve.
  14. \*Place the Inner Splitter Plate over the Outer Splitter Plate, ensuring that the room side flange is flush with the Wall Sleeve flange.
  15. \*Use the Tek-Screws (provided) to fasten the Inner Splitter Plate to the Wall Sleeve and to the Outer Splitter Plate.
  16. \*Seal the Inner and Outer Splitter Plates to the Wall Sleeve, ensuring that no air can pass from one side to the other.
  17. \*Clean the top surface of the two Splitter Plates, and attach 1" thick Foil-Faced Insulation (by others).
  18. Clean the Wall Sleeve flange and attach the Double-Sided Gasket.  
**Note:** Do Not remove the backing strip from the room side of the Gasket until the cabinet is ready for installation.
- \* - Disregard these steps for Double Wall Sleeve/Double Louver installations.



A fully illustrated step-by-step version of these instructions is supplied with the Wall Sleeve Kit.

## UNIT INSTALLATION PROCEDURE

**Note:** The instructions detailed below are for the Installation of a “Standard” unit. Accommodations and adjustments will be required for the usage of additional unit accessories. Should assistance be required for the installation of these additional items, consult Airedale at the phone number listed on the back cover of this manual.

1. Check the walls and floor for straightness and check to ensure that the wall is at a right angle to the floor. Should there be any irregularity, the placement of foam tape on the outside edges of the unit will fill the gaps between the unit and the wall, allowing for the use of a sealant, to create a smooth transition from the unit to the wall.
2. After adjusting for any irregularity in the location site, locate the position for the floor mounting bolts. *A Floor Mounting Location Template is shipped with the unit.* Drill the appropriate sized holes, for the fasteners that are to be utilized, and insert the anchors that are to be used.
3. Remove the backing strip from the gasket on the Wall Sleeve(s). Place the unit in the correct location, ensuring a tight seal with the Wall Sleeve(s) and the wall.
4. Check to ensure that the unit is level in both directions and also plumb. If adjustment is necessary, Airedale recommends the placement of metal shims in the outer most corners of the base.
5. Secure the unit to the floor and to the rear wall using 5/8" Dia. Bolts with 1-1/4" Dia. Washers.
6. Make the Condensate Drain connection and the necessary Electrical connections to the unit.

## UNIT START-UP

The unit has been factory tested and set for proper operation, but a full unit start-up is recommended.

### Pre Start-Up Procedure

1. Check that the unit has the correct Main Power Supply wired to the unit and all the electrical connections are tight.
2. Check that the unit has no visible damage and that all the components are secure.
3. Check that all field electrical and mechanical work has been performed according to all applicable Federal, State, and Local codes.
4. Check the Supply Voltage to the unit is within +/- 10% of the Voltage on the unit Serial Nameplate.

### Unit Start-Up Procedure

1. Disconnect and cap the wires to the CP1 Contactor Coil. This will allow the Compressor Crankcase Heater to operate without the Compressor operating.

It is necessary to allow at least 4 hours of Compressor Crankcase Heater operation before energizing the Compressor.

2. Turn the Disconnect Switch to the "ON" position.
3. After the 4 hour Compressor Crankcase Heater operation time, reconnect the CP1 Contactor Coil wires.
4. If the unit is equipped with an Airedale Microprocessor, follow the instructions in the microprocessor book. If the unit is equipped with a microprocessor that has been supplied by a controls contractor, it is recommended that the controls contractor be available during the unit Start-Up.
5. On Airedale equipped units the control parameters and setpoints have all been factory set to the default values.
6. During the unit operation, measure and record all the information that is required to complete the Unit Start Up Sheets that are supplied with the unit. Copy the information into the Unit Start-Up Sheets in the rear of this manual for your records.

## UNIT MAINTENANCE

The routine care and maintenance of this unit will increase longevity, provide for the proper operational performance, and reduce the probability of failure.

Once the unit is operational, it will be necessary to perform certain routine maintenance/service checks. Following is a chart with the recommended checks. If your unit is equipped with special features, there may be additional checks that are required. Consult Airedale for assistance.

### Safety

**Warning:** Ensure that All power to the unit is switched “OFF” before carrying out any servicing or maintenance task.

### Access

Access to the unit is gained by opening the door using the Airedale door key that is provided.

Access to the compressor/outside coil and outside fan is gained by removal of the sound trap panel in the bottom section of the unit.

Access to the supply fan is gained by carefully lowering the control panel. This is fastened down on each side of the panel.

### INTERVAL

### MAINTENANCE ACTION

Every 3 Months

1. Change the filters, by sliding the filter out of the track. The filters are positioned on either side of the indoor coil.

Every 6 Months  
(before the heating  
& cooling season)

1. Check the refrigeration system performance (Suction and Discharge pressures) and compare with the Start-Up Sheet. If there is any significant variation, then the fault should be found and corrected. Refer to the troubleshooting section.
2. If it is determined that the unit is under-charged careful inspection of the refrigeration circuit should be carried out to identify the source of the leak. Concentrate on schrader valve fittings and capillary line connections.
3. If the Filter/Drier requires replacing either due to Compressor burn out or collection of non-condensables follow the proper Filter/Drier replacement procedure.
4. Check that the High and Low Pressure Switches are cutting out the Compressor at the correct settings.

	<u>Cut-Out</u>	<u>Cut-In</u>	<u>Differential</u>
High Pressure Switch:	600 PSIG	400 PSIG	100 PSIG
Low Pressure Switch:	15 PSIG	40 PSIG	30 PSIG

The gauges can then be removed from the system. Do not forget to replace the caps on the schrader valves.

## UNIT MAINTENANCE cont.

5. With the Disconnect Switch in the "OFF" position, inspect all electrical circuits for loose connections. The electrical control section should also be wiped clean of all dirt that may affect the unit operation.
6. Check for correct fan operation, no excessive noise or vibrations. Oil the fan motor bearings, if required.

### Electric Heat

1. Check that the electrical connections are secure.
2. Check the operation of the electric heaters.
3. Check the operation of the manual reset overheat cut-out.

**Note:** The Auto-Reset Overheat Cut-Out Switch opens at 248°F (100°C) and resets at 194°F (90°C).

### Cabinet

Wash down cabinet using a mild detergent. Treat any paint damage or rust as necessary.

### Electrical

1. Check all electrical connections for signs of overheating or arcing.
2. Check all cables for signs of chafing or physical damage.

### Controls

1. Visually inspect sensors and wiring.
2. Check operation and sequencing of controls.
3. Ensure that all relevant setpoints are recorded.

## ENERGY RECOVERY WHEEL

**Energy Recovery Wheel** Rotary counterflow heat exchangers (heat wheels) with laminar airflow are “self cleaning” with respect to dry particles. Small particles may pass through, while larger particles that land on the surface are blown clear as the flow direction is reversed. For this reason, the primary need for cleaning is to remove films of oil based aerosols that have condensed on energy transfer surfaces.

**Cleaning Procedure** Remove the wheel assembly from the unit. Remove the wheel from the assembly. Wash the wheel with a non-acid based (evaporator) coil cleaner or alkaline detergent solution. (Non-acid based coil cleaners, such as KMP Acti-Clean AK-1 concentrate, in a 5% solution has been demonstrated to provide excellent results).

*Do not use acid based cleaners, aromatic solvents, temperatures in excess of 170°F or steam; damage to the wheel may result.*

Soak the wheel in the cleaning solution until grease and tar deposits are loosened. Internal heat exchange surfaces may be examined by separating the polymer strips by hand (Note: Some staining of the desiccant may remain and is not harmful to performance). After soaking, rinse the dirty solution from the wheel until the water runs clear. Allow excess water to drain prior to replacing segments in the wheel or re-installing the wheel in the cassette. A small amount of water remaining in the wheel will be dried out by the airflow.

## UNIT START-UP REPORT

*This Document should be returned to Airedale within 30 days of Startup to validate Warranty*

Date:  Site Reference:   
 Job #: PA  Unit #: U  Unit Type:  Room #:   
 Installer:  Rep:

**Installation Check:**

Unit Level:	<input type="text"/>
Unit Bolted To Floor Or Wall:	<input type="text"/>
Condensate Drain Correct:	<input type="text"/>
Wall Sleeve Correct:	<input type="text"/>
Wall Sleeve Insulated:	<input type="text"/>
Splitter Plate Sealed to Louver Blade:	<input type="text"/>
Electrical Connections Tight:	<input type="text"/>
Any Damage To Unit:	<input type="text"/>

**Indoor Fan:**

Size:	<input type="text"/>	Type:	<input type="text"/>	FLA:	<input type="text"/>
Fan Volts: (L1 to M):		High:	<input type="text"/>	Low:	<input type="text"/>
Fan Current: (L1):		High:	<input type="text"/>	Low:	<input type="text"/>

**Outdoor Fan:**

Size:	<input type="text"/>	Type:	<input type="text"/>	FLA:	<input type="text"/>
Fan Volts: (L3 to M):		High:	<input type="text"/>	Low:	<input type="text"/>
Fan Current: (L3):		High:	<input type="text"/>	Low:	<input type="text"/>

**Compressor:**

Size:	<input type="text"/>	Type:	<input type="text"/>	RLA:	<input type="text"/>		
Running Current Cooling:		L1:	<input type="text"/>	L2:	<input type="text"/>	L3:	<input type="text"/>
Running Current Heating:		L1:	<input type="text"/>	L2:	<input type="text"/>	L3:	<input type="text"/>

*Note: Before Running Compressor, the Crank Case Heater Must Be on For A Minimum Of Four Hours*

## UNIT START-UP REPORT cont.

**Electric Heat:** Stage 1 Current: L1:  L2:  L3:   
Stage 2 Current: L1:  L2:  L3:

Mains Voltage: L1:  L2:  L3:   
Control Voltage: (500 to 502):

### Refrigeration:

	Cooling Mode:	Heating Mode:
Suction Pressure:	<input type="text"/>	<input type="text"/>
Discharge Pressure:	<input type="text"/>	<input type="text"/>
Superheat:	<input type="text"/>	<input type="text"/>
Hot Gas Valve Setting:	<input type="text"/>	

### Air Temperatures:

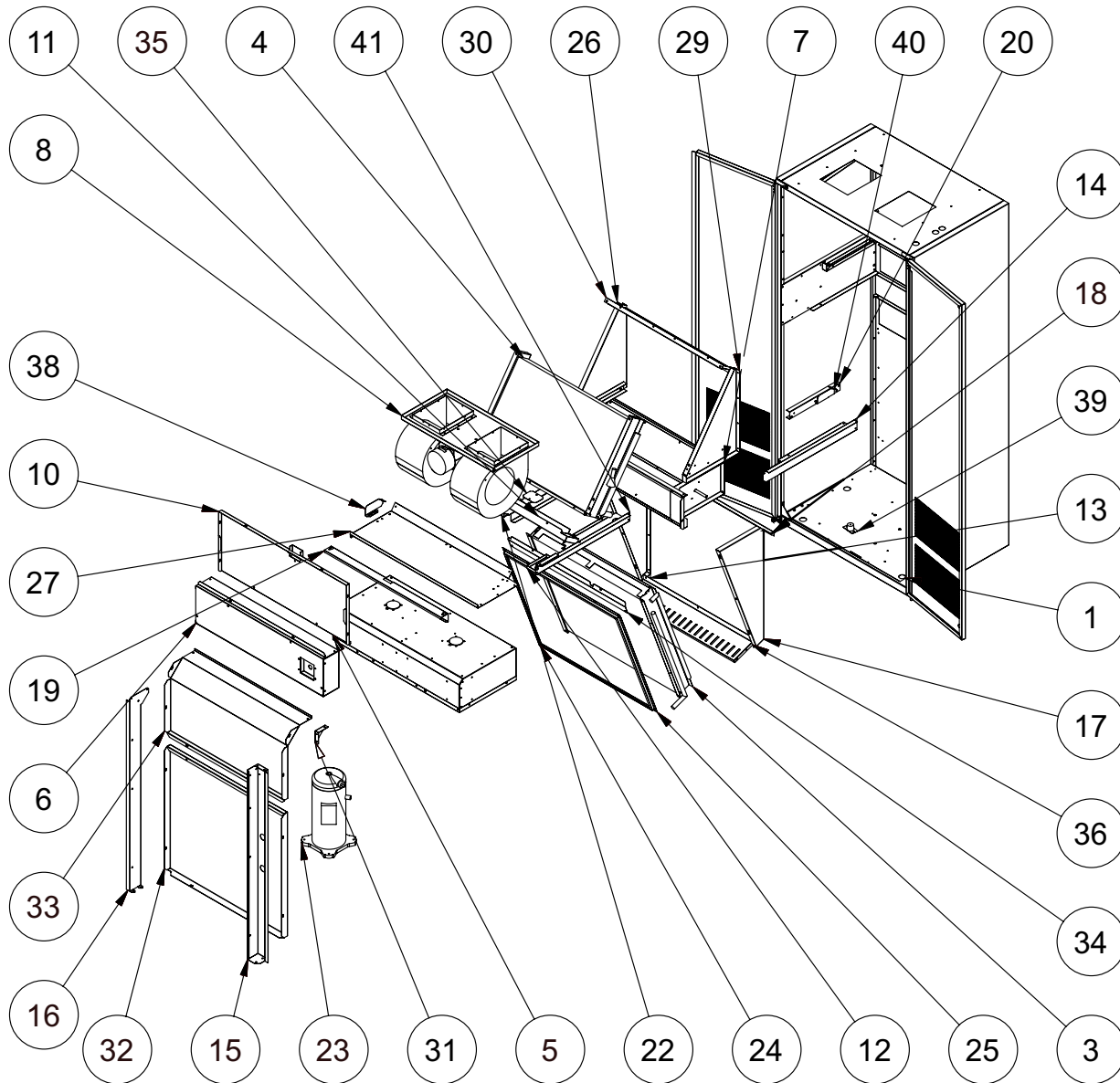
Return Air Temp:	<input type="text"/>	<input type="text"/>
Supply Air Temp:	<input type="text"/>	<input type="text"/>
Outside Temp:	<input type="text"/>	<input type="text"/>
Coil Temp: (SCHP)	<input type="text"/>	<input type="text"/>

Occupied Setpoint:   
Unoccupied Setpoint:   
Outstation #:

Service Technician:   
Company:   
Phone Number:

### Notes:

## EXPLODED VIEW



ITEM	DESCRIPTION
1	Case Assembly
3	Condenser Coil
4	Evaporator Coil
5	Exhaust Fan Box Assembly
6	Control Panel
7	Damper Assembly
8	Supply Fan Assembly
10	Supply Blank Plate Assembly
11	Evaporator Drain Tray
12	Secondary Drain Tray
13	Condenser Coil Support Left Hand
14	Support Rail Right Hand
15	Vertical Side Rail Right Hand
16	Vertical Rail Left Hand
17	Condenser Coil Support Right Hand
18	Back Stiffener
19	Filter Blanking Plate (2-3 Ton Only)
20	Filter Channel

ITEM	DESCRIPTION
22	Filter Divider (2-3 Ton Only)
23	Compressor
24	Condenser Filter Retainer
25	Condenser Filter Retainer
26	Evaporator Support Left Hand
27	Divider Shelf
29	Evaporator Support Right Hand
30	Evaporator Coil Top Plate
31	Blank Gusset
32	Division Panel Lower
33	Division Plate Upper
34	Exhaust Fan Rail
35	Filter Retainer (2-3 Ton Only)
36	Condenser Coil Bottom Plate
38	Drain Tray Support Left Hand
39	Amount
40	Drain Tray Support Right Hand
41	Side Rail Upper Right Hand

## COMMON SPARE PARTS

### Parts are the same for all voltages

	2-3 Ton Units	4-5 Ton Units
Damper Actuator	006-1061	006-1061
High Pressure Switch	511-1167	511-1167
Low Pressure Switch	511-1168	511-1168
Filter	508-1041	508-1041
Outdoor Fan Capacitor	020-1131	020-1130
Outdoor Fan Motor	503-444	503-386
Indoor Fan Contactor	003-1012	003-1013
Indoor Fan Motor	005-1177	005-1178
Indoor Fan Blower (clockwise)	503-1044	503-1044
Indoor Fan Blower (counterclock)	503-1045	503-1045
Filter Drier - Cooling Only	513-1027	513-161
Filter Drier - Heat Pump	513-1027	513-161

### 2-Stage compressor components

#### 2-Ton Units

#### 208-230/1

Compressor (Two Stage)	005-1158
Compressor Harness	017-1050
Compressor Solenoid Harness	017-1133
Compressor Contactor	003-1014
Compressor Capacitor (Run)	020-1113
Compressor Capacitor (Start)	020-1117
Crankcase Heater	005-1183
Expansion Valve	511-802
Reversing Valve	511-407
Reversing Valve Coil	511-055

#### 3-Ton Units

#### 208-230/1

#### 208-230/3

#### 460/3

Compressor (Two Stage)	005-1159	005-1157	005-1160
Compressor Harness	017-1050	017-1050	017-050
Compressor Solenoid Harness	017-1133	017-1133	017-1133
Compressor Contactor	003-1015	003-1014	003-1012
Compressor Capacitor (Run)	020-1114	-	-
Compressor Capacitor (Start)	020-1117	-	-
Crankcase Heater	005-1183	005-1183	005-1184
Expansion Valve	511-803	511-803	511-803
Reversing Valve	511-407	511-407	511-407
Reversing Valve Coil	511-055	511-055	511-055

**COMMON SPARE PARTS LIST cont.**

<b>4-Ton Units</b>	<b>208-230/1</b>	<b>208-230/3</b>	<b>460/3</b>
Compressor (Two Stage)	005-1161	005-1156	005-1162
Compressor Harness	017-1050	017-1050	017-050
Compressor Solenoid Harness	017-1133	017-1133	017-1133
Compressor Contactor	003-1016	003-1014	003-1012
Compressor Capacitor (Run)	020-1115	-	-
Compressor Capacitor (Start)	020-1117	-	-
Crankcase Heater	005-1183	005-1183	005-1184
Expansion Valve	511-804	511-804	511-804
Reversing Valve	511-320	511-320	511-320
Reversing Valve Coil	511-055	511-055	511-055

<b>5-Ton Units</b>	<b>208-230/1</b>	<b>208-230/3</b>	<b>460/3</b>
Compressor (Two Stage)	005-1163	005-1186	005-1187
Compressor Harness	017-1050	017-050	017-050
Compressor Solenoid Harness	017-1133	017-1133	017-1133
Compressor Contactor	003-1016	003-1016	003-1013
Compressor Capacitor (Run)	020-1116	-	-
Compressor Capacitor (Start)	020-1118	-	-
Crankcase Heater	005-1076	005-1076	005-1184
Expansion Valve	511-805	511-805	511-805
Reversing Valve	511-033	511-033	511-033
Reversing Valve Coil	511-055	511-055	511-055

## TROUBLE SHOOTING

### GENERAL

Problem	Possible Cause	Remedy
Unit Not Operating	1. Unit mounted disconnect switch in the "OFF" position.	1. Turn the disconnect switch to the "ON" position.
Power On	2. Unit switched OFF in the microprocessor	2. Consult microprocessor documentation or contractor.
	3. Delay on start set incorrectly.	3. Consult microprocessor documentation or contractor.
	4. Unit not in occupied mode.	4. Consult microprocessor documentation or contractor.
	5. Fire/smoke alarm tripped.	5. De-energize and re-energize the unit.
	6. Tripped circuit breaker(s).	6. Reset the tripped circuit breaker(s).
	7. Loose mains or control wiring.	7. With power OFF inspect the field wiring connections in the connection box.
Unit Operating	1. Heating/cooling not required.	1. Verify applicable setpoint with return air temperature.
No Mechanical	2. No output from microprocessor.	2. Consult microprocessor documentation or contractor.
Heating/Cooling	3. System P=pressure switch(es) tripped.	3. Inspect high and low system pressures.
	4. Internal overload switch on compressor tripped (open).	4. Wait for compressor motor windings to cool down (this switch is automatic reset).
	5. Loose control wiring connections.	5. Inspect connections beginning with compressor output from the microprocessor.
	6. Tripped circuit breaker(s).	6. Reset the tripped circuit breaker(s).
Compressor	1. Cooling/heating not required.	1. Consult microprocessor documentation or contractor.
Not Operating	2. HP/LP switches tripped (open).	2. Measure operating pressures of unit. Check system pressures and operation of HP & LP switches.
	3. Compressor internal overload switch open.	3. Allow compressor motor windings to cool down. Reset is automatic.
	4. Compressor faulty.	4. Replace compressor.
No Fan	1. Motor tripped on internal & overload.	1. Let motor cool down and reset - possible bad motor or blocked filter.
	2. Fan not required.	2. Consult microprocessor documentation or contractor.
Electric Heat	1. Electric heat not required.	1. Consult microprocessor documentation or contractor.
Not Operating	2. Faulty electric heat relay.	2. Check operation of relay and wiring connections.
(Optional)	3. Overheat cutout switch is tripped (open).	3. This switch requires manual reset. Check current draw of heating elements and compare to nameplate. Check location of sensing probe. To avoid incidental tripping of switch do not power off unit in electric heating mode.
	4. Faulty heating element(s).	4. Replace elements as necessary.
Hot Water Valve	1. Heating not required.	1. Consult microprocessor documentation or contractor.
Not Operating (optional)	2. Loose wiring.	2. Inspect wiring connections at the micro and the valve actuator.
	3. Faulty heating actuator.	3. Test and replace actuator if faulty.

## TROUBLE SHOOTING cont.

### GENERAL cont.

Problem	Possible Cause	Remedy
Compressor Cycling	<ol style="list-style-type: none"> <li>1. Incorrect setting for compressor off time.</li> <li>2. For CHX and CX units, low refrigeration charge.</li> <li>3. Unit oversized for application.</li> </ol>	<ol style="list-style-type: none"> <li>1. Consult microprocessor documentation or contractor.</li> <li>2. Measure operating pressures and inspect liquid line solenoid valve operation. Leak check the unit and add refrigerant if necessary.</li> <li>3. Consider the space requirements in contrast to the capacity.</li> </ol>

### REFRIGERATION

Problem	Possible Cause	Remedy
Low Suction Pressure (LP Switch Tripped)	<ol style="list-style-type: none"> <li>1. Low refrigeration charge.</li> <li>2. Clogged filter(s).</li> <li>3. Clogged liquid line filter drier.</li> <li>4. Improper expansion valve setting or valve malfunctioning.</li> </ol>	<ol style="list-style-type: none"> <li>1. Measure unit operating pressures. Add charge and check for leaks.</li> <li>2. Replace filter(s) as necessary.</li> <li>3. Replace drier with a direct replacement. Follow proper procedure.</li> <li>4. Check operation and check superheat.</li> </ol>
Low Discharge Pressure	<ol style="list-style-type: none"> <li>1. Low refrigerant charge.</li> <li>2. Faulty compressor</li> <li>3. Faulty reversing valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Measure operating pressures. Add charge and check for leaks.</li> <li>2. Replace compressor.</li> <li>3. Evacuate system and replace reversing valve.</li> </ol>
High Suction Pressure	<ol style="list-style-type: none"> <li>1. Excessive load.</li> <li>2. Expansion valve malfunctioning (overfeeding).</li> </ol>	<ol style="list-style-type: none"> <li>1. Check occupancy of space.</li> <li>2. Check remote bulb and regulate superheat.</li> </ol>
High Discharge Pressure	<ol style="list-style-type: none"> <li>1. Improper installation of wall sleeve and louver.</li> <li>2. Dirty condenser coil.</li> <li>3. System overcharged.</li> <li>4. Noncondensables in system.</li> <li>5. Condenser fan speed too slow (cooling mode).</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure separator plate is in contact with back of the louver blades and no re-circulation or exhaust air takes place.</li> <li>2. Clean condenser coil.</li> <li>3. Remove excess refrigerant.</li> <li>4. Evacuate refrigerant circuit and recharge.</li> <li>5. Adjust the condenser fan speed controller.</li> </ol>
Condensate Leaking	<ol style="list-style-type: none"> <li>1. Condensate drain pan not piped up.</li> <li>2. Condensate pan/line plugged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Pipe condensate drain.</li> <li>2. Clean drain pan and piping.</li> </ol>
Defrost Cycle Not Working	<ol style="list-style-type: none"> <li>1. Incorrect settings for defrost cycle.</li> <li>2. Coil temperature sensor out of position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Consult microprocessor documentation or contractor.</li> <li>2. Check the position of the sensor. It should be embedded in the condenser coil.</li> </ol>
(CHH, CH units only) Microprocessor Not Working	<ol style="list-style-type: none"> <li>1. Loose sensor wire connections</li> <li>2. Strategy file corrupted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect sensor connections at the microprocessor.</li> <li>2. Consult microprocessor documentation of contractor.</li> </ol>
Faulty Operation		

**NOTE:** For troubleshooting temperature control problems please refer to the AIREDALE microprocessor manual or contact the controls company.

# AIREDALE

## Warranty

AIREDALE warrants all air conditioning systems to be free of defects in material and workmanship under normal use and service for a period of one year from date of startup or eighteen (18) months from date of shipment from the factory, whichever occurs first. Our obligation under this warranty shall be limited to repairing or replacing, F.O.B. Racine, Wisconsin, any part or parts of your AIREDALE air conditioner, which in our judgement shows defect, provided that said part or parts shall be returned to Racine, Wisconsin or to the nearest authorized service depot (as directed), transportation charges prepaid upon our prior written authorization within the period of time set forth below.

These warranties are issued only to the original owner-user and cannot be transferred or assigned.

No provision is made in these warranties for any labor allowance or field labor participation. AIREDALE will not honor any expenses incurred in its behalf with regard to repairs to any AIREDALE product. All defective parts authorized for return **MUST** be sent prepaid. Parts shipped collect will not be accepted and AIREDALE will not be responsible for additional charges so incurred. No credit can be issued for any defective parts returned not properly labeled and identified with serial number of the air conditioner and date of failure.

### OPTIONAL EXTENDED WARRANTY

AIREDALE extends the above warranty for an additional period of four (4) years on the compressor only. The above referenced warranty shall not be applicable to

any of the following items: refrigerant gas; belts; filters; fuses; and other items consumed or worn out by normal wear and tear or conditions beyond seller's control, including (without limitation as to generality) polluted or contaminated or foreign matter contained in the air or water utilized for condenser cooling or if failure of the parts is caused by improper air or water supply, improper or incorrect wiring or power supply, blown fuses, or circuit breakers, or if in our judgement the air conditioner has been subject to misuse, negligence, damage caused in transit, tampering or alteration in any way or if the serial number plate has been altered, defaced, or removed.

AIREDALE shall not be liable for any direct or indirect, incidental, consequential or other loss, injury, damage, cost or expense whether caused by delay, failure or performance or by any cause whatsoever.

The above warranties are in lieu of all other warranties expressed or implied and of all other obligations or liabilities of AIREDALE, which neither grants nor authorizes any person to assume for it other liabilities in connection with the sale of this product. The above warranties shall not apply to said product or any part thereof which has been subjected to abuse, damage by flood, fire and acts of God.

Serial Number(s) \_\_\_\_\_

Sales # \_\_\_\_\_

Signed \_\_\_\_\_

Modine Manufacturing Company • 1500 DeKoven Avenue • Racine, Wisconsin 53403-2552 • 866.823.1631 • Fax: 800.204.6011

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# ClassMate® HE



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