



# SPECIFICATION DATA SHEET

## FLORIDA HEAT PUMP HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# SX048

## SUPER XTRA

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elec. Sym.	COMPRESSOR		BLOWER		Min. Circuit Amp-acity*	Fuse (T/D) HACR Cir. Bkr.*
		RLA	LRA	NPA	H.P.		
208/230-1-60	-1	17.6	90	7.0	1.0	34.8	50
208/230-3-60	-3	12.7	60	7.0	1.0	28.7	40
-	-	-	-	-	-	-	-

Units are complete packages containing all refrigeration components: compressor, reversing valve, expansion valve metering device and water-to-refrigerant condenser. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out impedance relay. The units are finished in a beige color. \* Includes 0.4 for H.R.P. pump and 5.4 AMPs for external water pump.

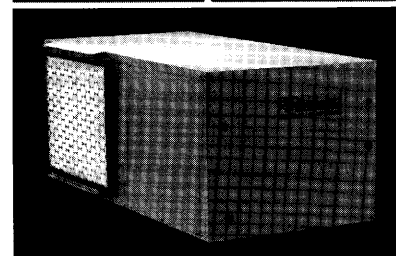
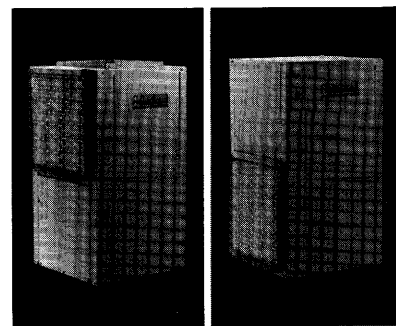
### MECHANICAL SPECIFICATIONS

EVAPORATOR				BLOWER SIZE	WEIGHT	
SQUARE FEET	ROWS DEEP	TUBE SIZE	FPI		NET	SHIP
5.25	3	3/8	14	12 X 9	390	415

### ARI/CSA PERFORMANCE DATA

COOLING (ARI 325 CERTIFIED)					HEATING (ARI 325 CERTIFIED)					ARI 330/CSA-C446 CERTIFIED					
HIGH TEMP		LOW TEMP		GPM	HIGH TEMP		LOW TEMP		GPM	COOLING			HEATING		
BTUH	EER	BTUH	EER		BTUH	COP	BTUH	COP		BTUH	EER	GPM	BTUH	COP	GPM
*H 50,500	14.4	56,000	17.6	6.0	55,500	4.3	42,000	3.6	6.0	49,000	14.1	12.0	32,800	3.3	12.0
*L 27,200	17.9	31,200	24.8	3.0	27,600	5.3	20,600	4.0	3.0	28,400	22.2	6.0	18,700	3.9	6.0

\* NOTE: H = HIGH SPEED OPERATION L = LOW SPEED OPERATION \* ALL HIGH SPEED RATINGS CERTIFIED PER ARI/CSA STD.



### GUIDE SPECIFICATIONS

**GENERAL**- Units shall be A.R.I. Standard 325 (ground water), and A.R.I. 330/C.S.A. 446 (ground source closed loop) performance certified and Underwriters Laboratories (UL) listed and Canadian Standards Association (CSA) certified for safety. Each unit shall be run tested at the factory. Each unit shall be pallet mounted and shipped in a corrugated box.

The units shall be warranted by the manufacturer against defects in materials and workmanship for a period of one year on all parts, and 5 years on the compressor.

The units shall be designed to operate with entering liquid temperature between 20°F and 110°F as manufactured by FHP Manufacturing in Fort Lauderdale, Florida.

**CASING & CABINET**- The cabinet shall be fabricated from heavy-gauge "paint-grip" galvanized steel and finished with two coats of lacquer acrylic. The interior shall be insulated with 1/2" thick, multi density, coated glass fiber. All units shall allow sufficient service access to replace the compressor without unit removal. One blower and two compressor compartment access panels shall be removable with supply and return ductwork in place. A duct collar shall be provided on the supply air opening. A 2" return air filter rack/duct collar which uses standard size 1" filters shall be provided with each unit. The unit shall have a 1" high density insulated divider panel between the air handling section and the compressor section to minimize the transmission of compressor noise, and to permit operational service testing without air bypass. The base pan shall be insulated with 1/2" high density foam also.

**REFRIGERANT** - All units shall contain a sealed refrigerant circuit including a 2 speed hermetic compressor, bi-directional thermal expansion valve, finned tube air-to-refrigerant heat exchanger, refrigerant reversing valve and service ports. Compressors shall be high efficiency designed for heat pump duty and mounted on vibration isolators. Compressor motors shall be equipped with internal overload protection. Refrigerant reversing valves shall be pilot operated sliding piston type with replaceable encapsulated magnetic coil energized only during the cooling cycle. The finned tube coil shall be constructed of lanced aluminum fins not exceeding fourteen fins per inch bonded to rifled copper tubes in a staggered pattern not less than three rows deep and have a 450 PSIG

working pressure. The coaxial water-to-refrigerant heat exchanger shall be constructed of a convoluted copper (optional cupronickel) inner tube and steel outer tube with a designed refrigerant working pressure of 450 PSIG. The water-to-refrigerant exchanger shall be insulated to prevent condensation at low liquid temperatures. The thermal expansion valve shall provide proper superheat over the entire liquid temperature range with minimal "hunting." The valve shall operate bi-directionally without the use of check valves.

**FAN MOTOR & ASSEMBLY** - The fan shall be direct drive centrifugal type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low velocity operation. The fan housing shall be removable from the unit without disconnecting the supply air ductwork for servicing of the fan motor. The fan motor shall be a variable speed integrally control motor (ICM-2) type. The ICM-2 fan motor shall be fully programmable and shall be soft starting and automatically maintain constant CFM over its operating static range. The motor shall be permanently lubricated and have thermal overload protection.

**ELECTRICAL** - Controls and safety devices will be factory wired and mounted within the unit. Controls shall include compressor contactor, 24V transformer, reversing valve coil, lockout relay, high and low speed pump relays, low pressure by-pass time delay relay, hi speed compressor time delay relay, and a solid state control interface board for field control wiring and logic control for the ICM-2 motor. Solid state control interface board shall have L.E.D. operation indication. Safety devices include a low pressure cutout control set at 20 PSIG, high pressure cutout control set at 380 PSIG and a condensate overflow switch. A terminal strip is provided to power the unit transformer and motor when an electric heater package is utilized.

**PIPING** - Supply, return water and condensate drain connections shall be brass female pipe thread fittings and mounted flush to cabinet exterior with optional stainless steel, braided hose kit with swivel connectors. Optional heat recovery package supply and return water connections shall be 1/2" brass female pipe thread fittings and mounted flush to cabinet.

**OPTIONS** - Factory installed heat recovery package with pump and associated controls. Factory installed UL and CSA strip heaters and associated controls.

# SX048

## HIGH SPEED PERFORMANCE

**CAPACITY DATA:** All performance at 1600 CFM (ARI Rated CFM)

EWT °F	GPM	COOLING									HEATING				
		Ent. Air W.B., °F	Total Btuh	Watts Input	Heat Rej. Btuh	Sensible Btuh, at ent. air dry bulb, °F			EER	WPD Ft. Hd.	Ent. Air D.B., °F	Htg. Btuh	Heat of Absorb. Btuh	Watts Input	COP
						75	80	85							
45	6.0	63	53.8	2592	62.6	38.8	48.8	-	20.8	3.6	60	40.3	30.9	2737	4.3
		67	57.1	2616	66.0	32.8	42.8	53.7	21.8		70	39.1	29.2	2881	4.0
		71	61.0	2637	69.8	17.4	33.9	44.8	23.0		80	38.1	27.9	3011	3.7
	9.0	63	58.1	2436	66.5	40.3	50.7	-	23.9	6.8	60	41.8	32.3	2796	4.4
		67	61.7	2459	70.1	34.1	44.5	55.8	25.1		70	40.6	30.6	2943	4.0
		71	65.7	2479	74.2	18.1	35.3	46.6	26.5		80	39.7	29.2	3073	3.8
	12.0	63	62.5	2281	70.3	41.8	52.6	-	27.4	10.6	60	42.5	32.9	2821	4.4
		67	66.4	2302	74.2	35.4	46.2	57.9	28.8		70	41.3	31.2	2969	4.1
		71	70.6	2321	78.5	18.8	36.6	48.3	30.4		80	40.3	29.7	3099	3.8
50	6.0	63	52.7	2740	62.1	38.1	47.9	-	19.2	3.6	60	43.3	33.6	2844	4.5
		67	56.0	2765	65.4	32.2	42.0	52.7	20.3		70	42.0	31.8	2994	4.1
		71	59.6	2788	69.1	17.1	33.3	43.9	21.4		80	40.7	30.0	3144	3.8
	9.0	63	57.0	2576	65.8	35.5	49.7	-	22.1	6.8	60	45.2	35.3	2916	4.5
		67	60.5	2599	69.4	33.4	43.6	54.7	23.3		70	43.9	33.4	3069	4.2
		71	64.4	2621	73.4	17.7	34.6	45.7	24.6		80	42.6	31.6	3222	3.9
	12.0	63	61.3	2411	69.5	41.0	51.6	-	25.4	10.6	60	46.5	36.5	2944	4.6
		67	65.1	2433	73.4	34.7	45.3	56.8	26.7		70	45.2	34.6	3099	4.3
		71	69.2	2454	77.6	18.4	35.9	47.4	28.2		80	43.8	32.7	3252	3.9
60	6.0	63	50.2	2902	60.1	36.0	45.9	-	17.3	3.6	60	50.2	39.9	3025	4.9
		67	53.3	2929	63.2	30.6	39.9	50.6	18.2		70	48.8	37.9	3184	4.5
		71	56.7	2953	66.8	15.8	31.5	42.2	19.2		80	47.3	35.9	3343	4.1
	9.0	63	54.3	2728	63.6	37.4	47.7	-	19.2	6.8	60	52.5	41.9	3100	5.0
		67	57.6	2753	67.0	31.8	41.5	52.6	20.9		70	50.9	39.8	3264	4.6
		71	61.3	2776	70.8	16.4	32.8	43.9	22.1		80	49.4	37.7	3427	4.2
	12.0	63	58.4	2554	67.1	38.9	49.4	-	22.9	10.6	60	54.0	43.3	3131	5.1
		67	61.9	2577	70.7	33.0	43.1	54.6	24.0		70	52.4	41.2	3295	4.7
		71	65.9	2598	74.8	17.1	34.0	45.5	25.4		80	50.9	39.1	3458	4.3
70	6.0	63	47.6	3064	58.0	34.3	43.2	-	15.5	3.6	60	57.2	46.2	3205	5.2
		67	50.5	3092	61.0	29.0	37.9	47.5	16.3		70	55.5	44.0	3374	4.8
		71	53.7	3118	64.4	15.4	30.0	39.6	17.2		80	54.0	42.0	3533	4.5
	9.0	63	51.4	2880	61.2	35.7	44.9	-	17.8	6.8	60	59.7	48.5	3285	5.3
		67	54.6	2906	64.5	30.1	39.4	49.3	18.8		70	58.0	46.2	3458	4.9
		71	58.1	2931	68.1	16.0	31.2	41.2	19.8		80	56.5	44.1	3621	4.6
	12.0	63	55.3	2696	64.5	37.0	46.5	-	20.5	10.6	60	61.2	49.9	3316	5.4
		67	58.7	2721	68.0	31.3	40.8	51.2	21.6		70	59.5	47.5	3489	5.0
		71	62.4	2744	71.8	16.6	32.4	42.7	22.8		80	57.9	45.5	3652	4.6
85	6.0	63	37.4	3881	50.6	28.3	36.3	-	9.6	3.6	-	-	-	-	-
		67	39.6	3918	53.0	24.1	31.5	39.6	10.1		-	-	-	-	-
		71	42.2	3950	55.7	12.3	24.8	33.5	10.7		-	-	-	-	-
	9.0	63	40.4	3648	52.9	29.4	37.7	-	11.1	6.8	-	-	-	-	-
		67	42.8	3683	55.4	25.1	32.7	41.7	11.6		-	-	-	-	-
		71	45.6	3713	58.3	12.8	25.8	34.8	12.3		-	-	-	-	-
	12.0	63	43.4	3416	55.1	30.6	39.2	-	12.7	10.6	-	-	-	-	-
		67	46.0	3448	57.8	26.0	33.9	43.3	13.4		-	-	-	-	-
		71	49.0	3476	61.0	13.2	26.7	36.1	14.1		-	-	-	-	-
100	6.0	63	33.0	4331	47.8	23.6	31.5	-	7.6	3.6	-	-	-	-	-
		67	34.8	4373	49.8	20.4	26.6	34.8	8.0		-	-	-	-	-
		71	37.2	4408	52.2	9.3	20.1	29.3	8.4		-	-	-	-	-
	9.0	63	35.7	4071	49.6	24.5	32.8	-	8.8	6.8	ALL BTUH ARE THOUSANDS				
		67	37.7	4111	51.7	21.2	27.6	36.6	9.2						
		71	40.2	4143	54.3	9.7	21.5	30.5	9.7						
	12.0	63	38.4	3811	51.4	25.4	34.0	-	10.1	10.6	ALL BTUH ARE THOUSANDS				
		67	40.4	3848	53.6	22.0	28.7	38.0	10.5						
		71	43.2	3879	56.4	10.0	22.3	31.6	11.1						

## BLOWER PERFORMANCE

FAN SPEED	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0	1.1	1.2
+ ADJUSTMENT	←					1840						→
NOMINAL	←					1600						→
- ADJUSTMENT	←					1360						→

# SX048

## LOW SPEED PERFORMANCE

**CAPACITY DATA:** All performance at 1100 CFM

EWT °F	GPM	COOLING								HEATING					
		Ent. Air W.B., °F	Total Btuh	Watts Input	Heat Rej. Btuh	Sensible Btuh, at ent. air dry bulb, °F			EER	WPD Ft. Hd.	Ent. Air D.B., °F	Htg. Btuh	Heat of Absorb. Btuh	Watts Input	COP
						75	80	85							
45	3.0	63	30.0	993	33.4	23.1	29.0	-	30.2	60	19.4	15.2	1214	4.7	
		67	31.8	1002	35.2	19.5	25.5	31.8	31.8	70	18.8	14.5	1278	4.3	
		71	33.9	1010	37.3	1.4	20.2	26.6	33.5	80	18.3	13.7	1341	4.0	
	6.0	63	31.3	892	34.3	24.1	30.3	-	35.1	60	21.0	16.8	1230	5.0	
		67	33.2	900	36.3	20.4	26.6	33.2	36.9	70	20.4	16.0	1294	4.6	
		71	35.4	907	38.5	10.8	21.1	27.8	39.0	80	19.8	15.2	1358	4.3	
	9.0	63	32.6	790	35.3	25.1	31.6	-	41.3	60	21.6	17.3	1243	5.1	
		67	34.6	797	37.4	21.2	27.7	34.6	43.4	70	20.9	16.5	1307	4.7	
		71	36.8	804	39.6	11.3	22.0	29.0	45.8	80	20.4	15.7	1371	4.4	
50	3.0	63	29.4	1050	33.0	22.6	28.5	-	28.0	60	21.2	17.0	1241	5.0	
		67	31.2	1059	34.8	19.1	25.0	31.2	29.5	70	20.6	16.1	1306	4.6	
		71	33.2	1068	36.8	10.2	19.8	26.1	31.1	80	20.0	15.3	1372	4.3	
	6.0	63	30.7	942	33.9	23.6	29.7	-	32.6	60	23.1	18.8	1254	5.4	
		67	32.6	951	35.8	20.0	26.1	32.6	34.3	70	22.5	18.0	1320	5.0	
		71	34.7	959	37.9	10.6	20.6	27.3	36.2	80	21.8	17.1	1385	4.6	
	9.0	63	32.0	835	34.8	24.6	31.0	-	38.3	60	24.1	19.8	1266	5.6	
		67	34.0	843	36.8	20.8	27.2	34.0	40.3	70	23.4	18.9	1333	5.2	
		71	36.1	849	39.0	11.0	21.5	28.4	42.5	80	22.8	18.0	1398	4.8	
60	3.0	63	27.6	1179	31.6	21.1	26.9	-	23.4	60	24.8	20.6	1251	5.8	
		67	29.2	1190	33.3	17.9	23.4	29.2	24.5	70	24.1	19.6	1317	5.4	
		71	31.1	1200	35.2	9.2	18.4	24.8	25.9	80	23.4	18.7	1383	5.0	
	6.0	63	28.8	1059	32.4	22.0	28.1	-	27.2	60	27.1	22.7	1264	6.3	
		67	30.5	1068	34.1	18.7	24.4	30.5	28.5	70	26.3	21.7	1330	5.8	
		71	32.5	1077	36.1	9.6	19.2	25.9	30.1	80	25.5	20.7	1397	5.3	
	9.0	63	30.0	938	33.2	23.0	29.3	-	32.0	60	28.2	23.9	1276	6.5	
		67	31.8	947	35.0	19.5	25.4	31.8	33.6	70	27.4	22.8	1343	6.0	
		71	33.8	954	37.1	10.0	20.1	27.0	35.5	80	26.6	21.8	1410	5.5	
70	3.0	63	25.6	1309	30.1	19.7	24.8	-	19.6	60	28.4	24.1	1261	6.6	
		67	27.2	1321	31.7	16.7	21.8	27.2	20.6	70	27.6	23.1	1328	6.1	
		71	28.9	1332	33.5	8.8	17.2	22.8	21.7	80	26.9	22.1	1394	5.6	
	6.0	63	26.7	1176	30.8	20.6	25.9	-	22.8	60	31.0	26.7	1274	7.1	
		67	28.4	1186	32.4	17.4	22.7	28.4	23.9	70	30.1	25.5	1341	6.6	
		71	30.2	1196	34.3	9.2	18.0	23.8	25.3	80	29.3	24.5	1406	6.1	
	9.0	63	27.9	1042	31.4	21.5	27.0	-	26.8	60	32.2	27.8	1286	7.3	
		67	29.6	1051	33.2	18.1	23.7	29.6	28.2	70	31.2	26.6	1354	6.8	
		71	31.5	1060	35.1	9.6	18.8	24.8	29.7	80	30.5	25.6	1421	6.3	
85	3.0	63	23.2	1384	27.9	17.8	22.7	-	16.8	-	-	-	-	-	
		67	24.6	1397	29.4	15.1	19.7	24.6	17.6	-	-	-	-	-	
		71	26.2	1408	31.0	7.8	15.5	20.9	18.6	-	-	-	-	-	
	6.0	63	24.2	1242	28.5	18.5	23.7	-	19.3	-	-	-	-	-	
		67	25.7	1254	30.0	15.7	20.6	25.7	20.5	-	-	-	-	-	
		71	27.4	1264	31.7	8.1	16.2	21.8	21.7	-	-	-	-	-	
	9.0	63	25.3	1101	29.0	19.3	24.7	-	23.0	-	-	-	-	-	
		67	26.8	1111	30.6	16.4	21.4	26.8	24.1	-	-	-	-	-	
		71	28.5	1120	32.4	8.4	16.9	22.7	25.5	-	-	-	-	-	
100	3.0	63	20.5	1544	25.8	15.4	20.3	-	13.3	-	-	-	-	-	
		67	21.6	1559	27.0	13.3	17.3	21.6	13.9	-	-	-	-	-	
		71	23.1	1571	28.5	6.3	13.5	18.9	14.7	-	-	-	-	-	
	6.0	63	21.4	1387	26.1	16.1	21.2	-	15.4	-	-	-	-	-	
		67	22.6	1400	27.4	13.8	18.1	22.6	16.1	-	-	-	-	-	
		71	24.1	1410	28.9	6.6	14.1	19.7	17.1	-	-	-	-	-	
	9.0	63	22.3	1229	26.5	16.8	22.1	-	18.2	-	-	-	-	-	
		67	23.6	1240	27.8	14.4	18.8	23.6	19.0	-	-	-	-	-	
		71	25.1	1250	29.4	6.9	14.7	20.5	20.1	-	-	-	-	-	

ALL BTUH ARE THOUSANDS

## BLOWER PERFORMANCE

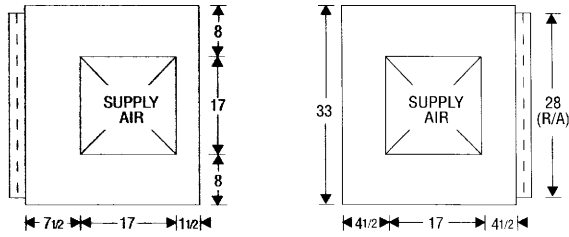
FAN SPEED	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0	1.1	1.2
+ ADJUSTMENT	←					1265						→
NOMINAL	←					1100						→
- ADJUSTMENT	←					935						→

# SX048

SUPER XTRA

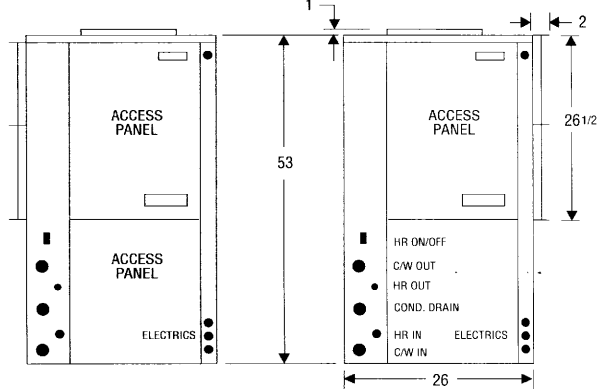
## PHYSICAL CHARACTERISTICS

### VERTICAL

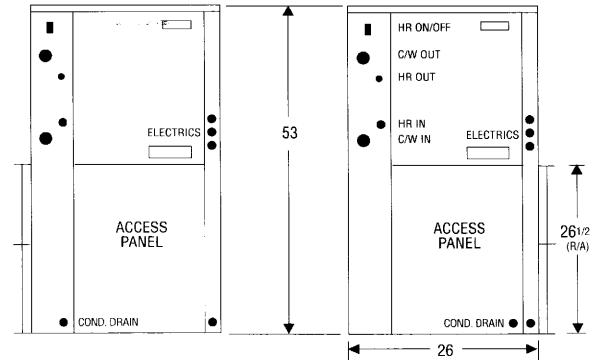


FRONT VIEW - LEFT HAND RETURN

FRONT VIEW - RIGHT HAND RETURN

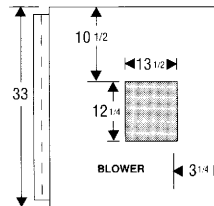


### COUNTERFLOW

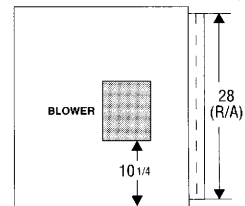


FRONT VIEW - LEFT HAND RETURN

FRONT VIEW - RIGHT HAND RETURN

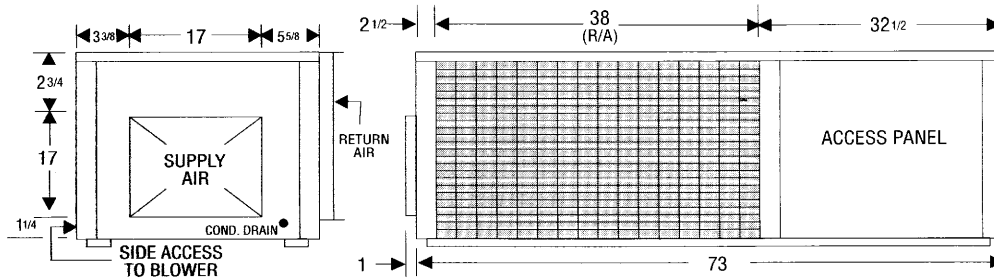


BOTTOM VIEW



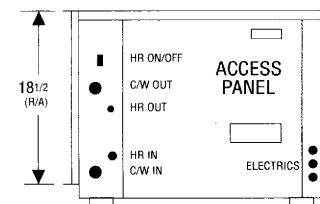
BOTTOM VIEW

### HORIZONTAL

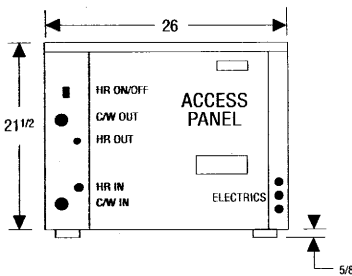


REAR VIEW - LEFT HAND RETURN

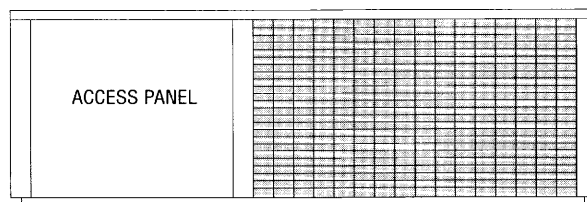
SIDE VIEW - LEFT HAND RETURN



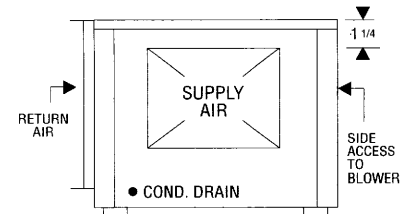
FRONT VIEW - LEFT HAND RETURN



FRONT VIEW - RIGHT HAND RETURN



SIDE VIEW - RIGHT HAND RETURN



2" FILTER & DUCT FLANGE  
REAR VIEW - RIGHT HAND RETURN



a HARROW company

**FHP MANUFACTURING**  
601 N.W. 65th COURT  
FT. LAUDERDALE, FL 33309  
PHONE: (305) 776-5471  
FAX: (305) 776-5529

HEAT RECOVERY WATER CONNECTIONS: 1/2" F.P.T.  
CONDENSER WATER CONNECTIONS: 1" F.P.T.  
CONDENSATE DRAIN CONNECTION: 3/4" F.P.T.  
FILTER SIZE: QTY (2) VT, CF 13 1/2" X 30" X 1"; HZ 19 1/2" X 41" X 1"

As a result of continuing research and development, all ratings and specifications are subject to change without notice. Rev. 5/94