

MULTISTACK[®]

Originators. Innovators. Never the Imitators.



HeatStack[™]

Product Data Catalog

For Modules:

HS052X1	HS176X2	HS054A1	HS168A2
HS088X1	HS240X2	HS084A1	HS276A2
HS120X1	HS354X2	HS138A1	HS332A2
HS176X1	HS520X2	HS166A1	
HS260X1		HS254A1	
HS340X1		HS330A1	



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Product Features

The new Multistack HeatStack™ family of heat pump water heaters is ideal for smaller commercial buildings or for zones within a large building. These simple, easy to install and highly efficient standalone units require minimal floor space while providing water temperatures up to 180 degrees F. Available in single-phase power models up to 88 MBH and in three-phase power models up to 520 MBH.

- Single- and dual-compressor configurations
- Full-featured digital controls
- Electronic expansion valves
- Include high pressure and low pressure switches, freeze stat, unit-mounted thermal dispersion flow switch
- Options include double wall heat exchangers in select sizes, stainless steel cabinets, remote display panel, internal hot water pumps, BAS interface

HeatStack Water Heater

HS	054	X	1	N	H	B	O	A	A	N	C	-410A	
													Refrigerant (R-410A, R-134a)
													Controller Option (C-Carel, M-mechanical, V-Other)
													Pump (Y-Yes, N-No)
													Condenser ⁴
													Evaporator ³
													AHRI Version - if applicable
													Application ²
													Voltage ¹
													AHRI Certified (C - certified, N - Not certified)
													Number of compressors
													Compressor Type (X - Copeland Scroll (ZP), A - Copeland Scroll (ZR), D-Copeland Digital Scroll)
													Nominal Heating Capacity (MBH)
													Series

¹ A - 208/3/60, C - 575/3/60, H - 460/3/60, L - 230/3/60, S - 220/230/1/60, V - other

² A - High temp. source water (with water reg valve), B - Std. source water (no water reg valve)

³ A - brazed SS, E - double wall brazed, V - other

⁴ A - brazed SS, E - double wall brazed, V - other

General Data

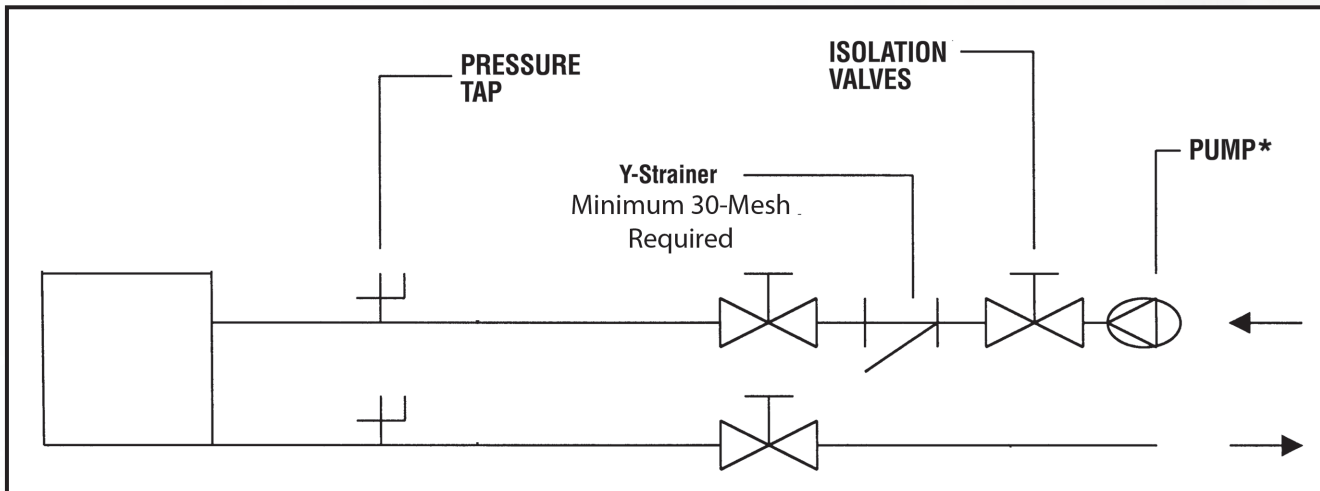
R-410A HEAT STACK UNITS (Single Compressor)						
MODEL #	HS052X1**	HS088X1**	HS120X1	HS176X1	HS260X1	HS340X1
Heating Capacity (MBH)*	52	88	120	176	260	340
Frame Size	1	1	1	2	2	3
Compressor Data						
Dry Weight (Lbs)	66	77	87	135	146	280
Quantity (# Of Circuits)	1	1	1	1	1	1
Oil Charge (Oz)	42	56	60	110	110	152
Evaporator Data						
Dry Weight (Lbs)	11	14	17	22	31	68
Circuit Configuration	1	1	1	1	1	1
Quantity	1	1	1	1	1	1
Water Volume (Gal)	0.2	0.4	0.5	0.7	1.1	1.5
Single Wall Condenser Data						
Dry Weight (Lbs)	12	15	19	26	32	40
Circuit Configuration	1	1	1	1	1	1
Quantity	1	1	1	1	1	1
Water Volume (Gal)	0.3	0.4	0.6	0.8	1.1	1.4
Double Wall Condenser Data						
Dry Weight (Lbs)	16	25	33	48	61	48
Circuit Configuration	1	1	1	1	1	1
Quantity	1	1	1	1	1	2
Water Volume Each (Gal)	0.2	0.4	0.5	0.7	1.0	0.7
Single Wall Module						
Shipping Weight (Lbs)	245	265	280	400	425	675
Operating Weight (Lbs)	250	270	290	415	445	700
Double Wall Module						
Shipping Weight (Lbs)	250	275	295	425	460	735
Operating Weight (Lbs)	255	280	305	435	475	760
* MBH is rated at 140° hot 60° chilled conditions						
** Single and three phase available						

R-410A HEAT STACK UNITS (Two-Compressor)				
MODEL #	HS176X2	HS240X2	HS354X2	HS520X2
Heating Capacity (MBH)*	176	240	354	520
Frame Size	3	3	3	3
Compressor Data				
Dry Weight (Lbs)	77	87	135	146
Quantity (# Of Circuits)	2	2	2	2
Oil Charge (Oz)	56	60	110	110
Evaporator Data				
Dry Weight (Lbs)	40	46	60	75
Circuit Configuration	2	2	2	2
Quantity	1	1	1	1
Water Volume (Gal)	0.7	0.9	1.4	1.9
Single Wall Condenser Data				
Dry Weight (Lbs)	37	40	46	55
Circuit Configuration	2	2	2	2
Quantity	1	1	1	1
Water Volume (Gal)	0.6	0.7	0.9	1.3
Double Wall Condenser Data				
Dry Weight (Lbs)	25	33	48	61
Circuit Configuration	1	1	1	1
Quantity	2	2	2	2
Water Volume Each (Gal)	0.4	0.5	0.7	1.0
Single Wall Module				
Shipping Weight (Lbs)	510	540	665	710
Operating Weight (Lbs)	520	555	685	740
Double Wall Module				
Shipping Weight (Lbs)	525	570	715	780
Operating Weight (Lbs)	535	585	740	815
* MBH is rated at 140° hot 60° chilled conditions				

R-134a HEAT STACK UNITS									
MODEL #	HS054A1**	HS084A1	HS138A1	HS166A1	HS254A1	HS330A1	HS168A2	HS276A2	HS332A2
Heating Capacity (MBH)*	54	84	138	166	254	330	168	276	332
Frame Size	1	1	2	2	3	3	3	3	3
Compressor Data									
Dry Weight (Lbs)	80	126	135	146	400	390	126	135	146
Quantity (# Of Circuits)	1	1	1	1	1	1	2	2	2
Oil Charge (Oz)	66	85	110	110	213	213	85	110	110
Evaporator Data									
Dry Weight (Lbs)	13	17	22	28	75	97	55	73	88
Circuit Configuration	1	1	1	1	1	1	2	2	2
Quantity	1	1	1	1	1	1	1	1	1
Water Volume (Gal)	0.3	0.5	0.7	0.9	1.8	2.4	1.2	1.8	2.3
Single Wall Condenser Data									
Dry Weight (Lbs)	15	19	26	32	49	56	46	55	64
Circuit Configuration	1	1	1	1	1	1	2	2	2
Quantity	1	1	1	1	1	1	1	1	1
Water Volume (Gal)	0.4	0.6	0.8	1.1	0.9	1.1	0.9	1.3	1.6
Double Wall Condenser Data									
Dry Weight (Lbs)	25	33	48	61	48	61	33	48	61
Circuit Configuration	1	1	1	1	1	1	1	1	1
Quantity	1	1	1	1	2	2	2	2	2
Water Volume Each (Gal)	0.4	0.5	0.7	1	0.7	1	0.5	0.7	1
Single Wall Module									
Shipping Weight (Lbs)	265	320	400	425	820	840	640	685	735
Operating Weight (Lbs)	270	330	415	440	840	870	655	715	770
Double Wall Module									
Shipping Weight (Lbs)	275	335	425	455	865	905	660	730	795
Operating Weight (Lbs)	280	345	435	470	895	945	680	755	830
* MBH is rated at 170° hot 60° chilled conditions									
**Single and three phase available									

Required Load-Water Piping (Supplied And Installed By Others)

(*If Pump Module is Supplied by Multistack, eliminate external pump shown below.)



Electrical Data

Wiring Sizing (MCA= Minimum Circuit Ampacity)

$$MCA = (1.25 \times RLA1^*) + RLA2 + RLA3 \dots$$

Maximum Overcurrent Protection (MOP)

$$MOP = (2.25 \times RLA1^*) + RLA2 + RLA3 \dots$$

Where MOP does not equal a standard size fuse, the next larger fuse should be used.

NOTES:

1. Compressor Rated Load Amps (RLA) are based on 145°F Saturated Condensing Temperature.
2. *RLA1 = RLA of the largest motor in the system.
RLA2 & RLA3 = RLA of other motors in the system.
3. Wire sizing is based on Nat. Electr. Code (NEC) rating for 75°C wire.
4. Wiring distance from branch circuit shall not exceed 100 feet.

MCA	WIRE SIZE (AWG) 75° (3 Conductors/1 Conduit)
50	8
65	6
85	4
100	3
115	2
130	1
150	1/0
175	2/0
200	3/0

Pump Information	
Flow Rate:	16 GPM at 20 Feet
Electrical:	115V, 2.3 Amp, 0.3 HP
Note: Pumps are optional. See mechanical specifications for availability.	

Single Compressor, R-410A				
HS052X1				
Multistack Model Number	Voltage	RLA	LRA	MCC
HS052X1_S + suffixes	230/1/60	20.1	112	28
HS052X1_A + suffixes	208/3/60	13.5	88	21.1
HS052X1_L + suffixes	230/3/60	12.2	88	21.1
HS052X1_H + suffixes	460/3/60	6.2	44	9.3
HS052X1_C + suffixes	575/3/60	5	34	7.7
HS088X1				
HS088X1_S + suffixes	230/1/60	31.8	178	48
HS088X1_A + suffixes	208/3/60	21.1	123	29.7
HS088X1_L + suffixes	230/3/60	19	123	29.7
HS088X1_H + suffixes	460/3/60	9.4	62	15.2
HS088X1_C + suffixes	575/3/60	7.8	50	11.6
HS120X1				
HS120X1_A + suffixes	208/3/60	28.5	164	39
HS120X1_L + suffixes	230/3/60	25.8	164	39
HS120X1_H + suffixes	460/3/60	13.3	100	19
HS120X1_C + suffixes	575/3/60	11	78	14
HS176X1				
HS176X1_A + suffixes	208/3/60	41.9	239	52
HS176X1_L + suffixes	230/3/60	37.9	239	52
HS176X1_H + suffixes	460/3/60	19	125	28
HS176X1_C + suffixes	575/3/60	14.9	80	20
HS260X1				
HS260X1_A + suffixes	208/3/60	65.4	340	87
HS260X1_L + suffixes	230/3/60	59.1	340	87
HS260X1_H + suffixes	460/3/60	29.8	173	42
HS260X1_C + suffixes	575/3/60	24.4	132	37
HS340X1				
HS340X1_A + suffixes	208/3/60	82.4	538	113
HS340X1_L + suffixes	230/3/60	74.5	538	113
HS340X1_H + suffixes	460/3/60	35.7	229	48
HS340X1_C + suffixes	575/3/60	28.4	180	39

Two-Compressor, R-410A				
HS176X2				
Multistack Model Number	Voltage	RLA	LRA	MCC
HS176X2_A + suffixes	208/3/60	21.1	123	29.7
HS176X2_L + suffixes	230/3/60	19	123	29.7
HS176X2_H + suffixes	460/3/60	9.4	62	15.2
HS176X2_C + suffixes	575/3/60	7.8	50	11.6
HS240X2				
HS240X2_A + suffixes	208/3/60	28.5	164	39
HS240X2_L + suffixes	230/3/60	25.8	164	39
HS240X2_H + suffixes	460/3/60	13.3	100	19
HS240X2_C + suffixes	575/3/60	11	78	14
HS354X2				
HS354X2_A + suffixes	208/3/60	41.9	239	52
HS354X2_L + suffixes	230/3/60	37.9	239	52
HS354X2_H + suffixes	460/3/60	19	125	28
HS354X2_C + suffixes	575/3/60	14.9	80	20
HS520X2				
HS520X2_A + suffixes	208/3/60	65.4	340	87
HS520X2_L + suffixes	230/3/60	59.1	340	87
HS520X2_H + suffixes	460/3/60	29.8	173	42
HS520X2_C + suffixes	575/3/60	24.4	132	37

Note: LRA is per compressor, RLA is per compressor, MCC is per unit.

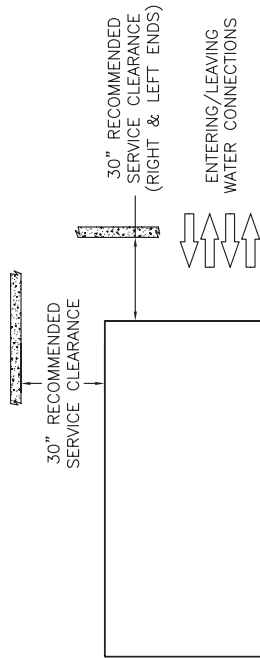
Single Compressor, R-134a				
HS054A1				
Multistack Model Number	Voltage	RLA	LRA	MCC
HS054A1_S + suffixes	230/1/60	34.8	144	37
HS054A1_A + suffixes	208/3/60	23.8	128	29
HS054A1_L + suffixes	230/3/60	21.6	128	29
HS054A1_H + suffixes	460/3/60	10.6	63	14
HS054A1_C + suffixes	575/3/60	8.6	49	10.3
HS084A1				
HS084A1_A + suffixes	208/3/60	42	195	39.5
HS084A1_L + suffixes	230/3/60	38	195	39.5
HS084A1_H + suffixes	460/3/60	19	95	18
HS084A1_C + suffixes	575/3/60	15.2	80	16
HS138A1				
HS138A1_A + suffixes	208/3/60	54.4	245	61.5
HS138A1_L + suffixes	230/3/60	49.2	245	61.5
HS138A1_H + suffixes	460/3/60	23.4	125	24.5
HS138A1_C + suffixes	575/3/60	15.2	100	20.5
HS166A1				
HS166A1_A + suffixes	208/3/60	80.3	340	82
HS166A1_L + suffixes	230/3/60	72.6	340	82
HS166A1_H + suffixes	460/3/60	36.3	173	40
HS166A1_C + suffixes	575/3/60	29.1	132	33
HS254A1				
HS254A1_A + suffixes	208/3/60	103	500	114
HS254A1_L + suffixes	230/3/60	93.1	500	114
HS254A1_H + suffixes	460/3/60	46.6	250	55
HS254A1_C + suffixes	575/3/60	37.2	198	44
HS330A1				
HS330A1_A + suffixes	208/3/60	131.7	599	146
HS330A1_L + suffixes	230/3/60	119	599	146
HS330A1_H + suffixes	460/3/60	59.6	310	71
HS330A1_C + suffixes	575/3/60	47.7	239	57

Two-Compressor, R-134a				
HS168A2				
Multistack Model Number	Voltage	RLA	LRA	MCC
HS168A2_A + suffixes	208/3/60	42	195	39.5
HS168A2_L + suffixes	230/3/60	38	195	39.5
HS168A2_H + suffixes	460/3/60	19	95	18
HS168A2_C + suffixes	575/3/60	15.2	80	16
HS276A2				
HS276A2_A + suffixes	208/3/60	54.4	245	61.5
HS276A2_L + suffixes	230/3/60	49.2	245	61.5
HS276A2_H + suffixes	460/3/60	23.4	125	24.5
HS276A2_C + suffixes	575/3/60	15.2	100	20.5
HS332A2				
HS332A2_A + suffixes	208/3/60	80.3	340	82
HS332A2_L + suffixes	230/3/60	72.6	340	82
HS332A2_H + suffixes	460/3/60	36.3	173	40
HS332A2_C + suffixes	575/3/60	29.1	132	33

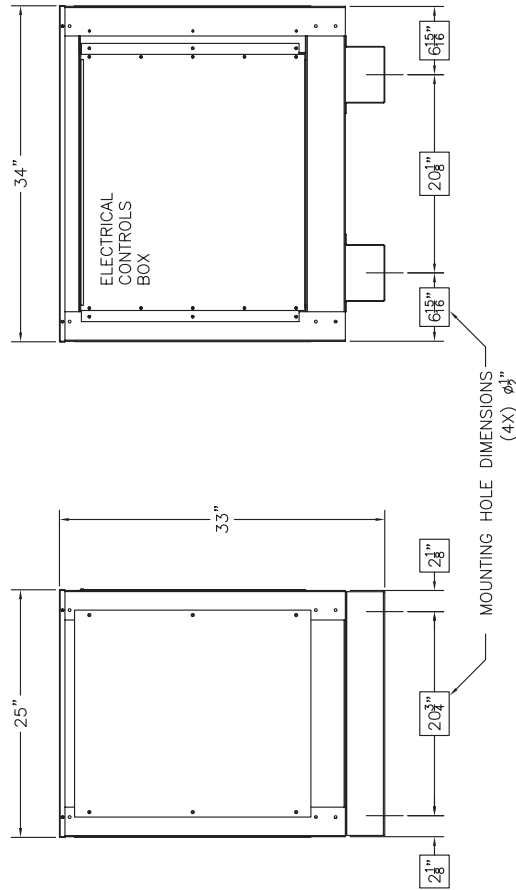
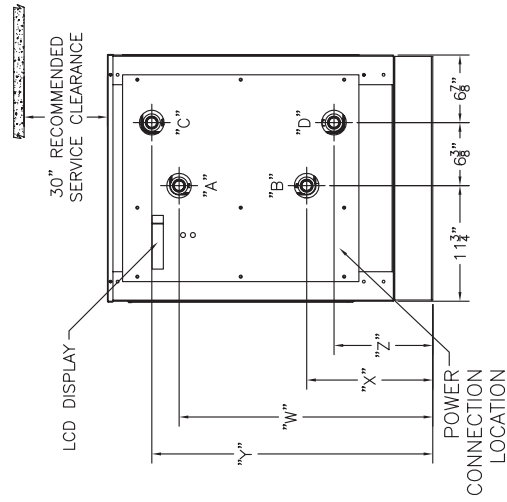
Note: LRA is per compressor, RLA is per compressor, MCC is per unit.

WATER CONNECTION CHART				
MODEL #	"A" PORT	"B" PORT	"C" PORT	"D" PORT
HS052X1	1" LW	1" ECW	1" EEW	1" LEW
HS054A1	1" LW	1" ECW	1" EEW	1" LEW
HS084A1	1" LW	1" ECW	1" EEW	1" LEW
HS088X1	1" LW	1" ECW	1" EEW	1" LEW
HS120X1	1" LW	1" ECW	1" EEW	1" LEW
WATER CONNECTION HEIGHT CHART				
MODEL #	"A" PORT - W	"B" PORT - X	"C" PORT - Y	"D" PORT - Z
HS052X1	25 $\frac{3}{4}$ "	12 $\frac{13}{16}$ "	28 $\frac{9}{16}$ "	10 $\frac{11}{16}$ "
HS054A1	25 $\frac{3}{4}$ "	12 $\frac{13}{16}$ "	28 $\frac{9}{16}$ "	10 $\frac{11}{16}$ "
HS084A1	28 $\frac{15}{16}$ "	10 $\frac{11}{16}$ "	25 $\frac{3}{4}$ "	12 $\frac{13}{16}$ "
HS088X1	25 $\frac{3}{4}$ "	12 $\frac{13}{16}$ "	28 $\frac{9}{16}$ "	10 $\frac{11}{16}$ "
HS120X1	25 $\frac{3}{4}$ "	12 $\frac{13}{16}$ "	28 $\frac{9}{16}$ "	10 $\frac{11}{16}$ "

NOTES:
 LW - ENTERING EVAPORATOR WATER (COLD)
 ECW - LEAVING EVAPORATOR WATER (COLD)
 EEW - ENTERING CONDENSER WATER (HOT)
 LEW - LEAVING CONDENSER WATER (HOT)
 - ALL WATER CONNECTION TYPES ARE FEMALE PIPE THREAD (FPT)

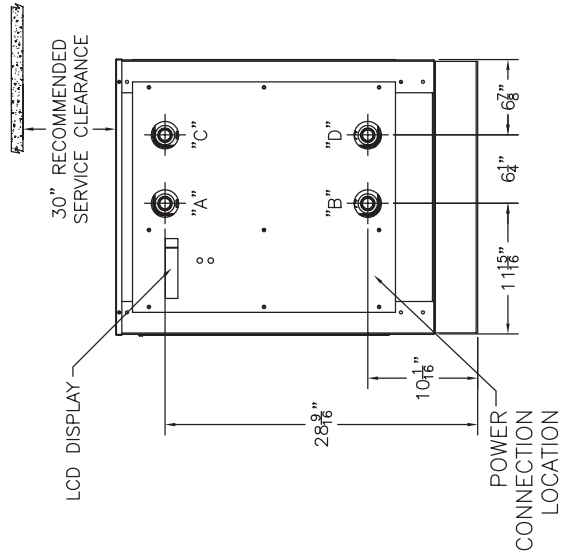
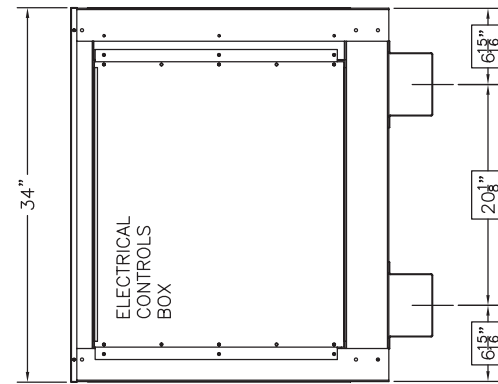
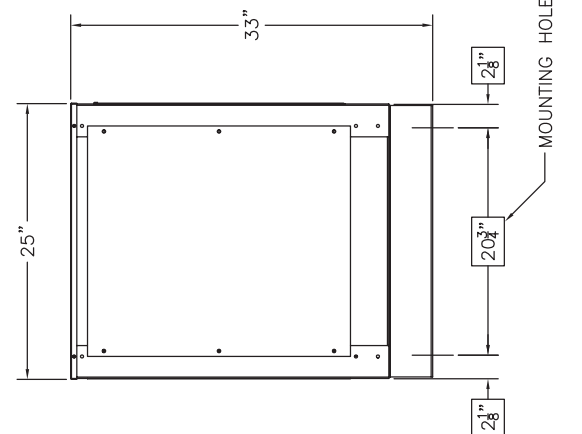
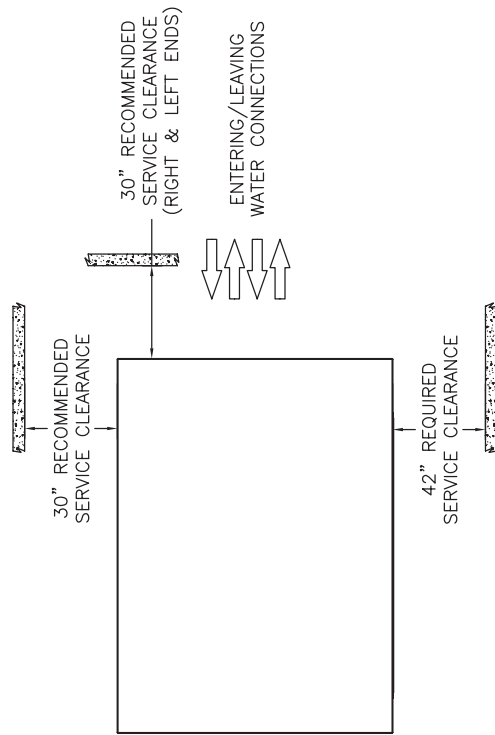


42" REQUIRED
SERVICE CLEARANCE



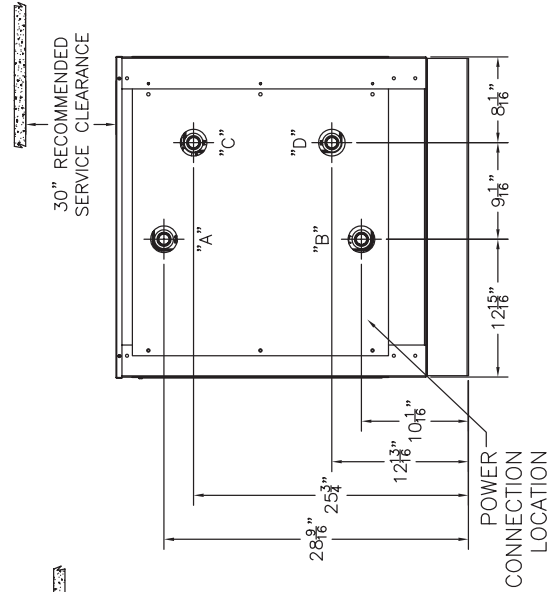
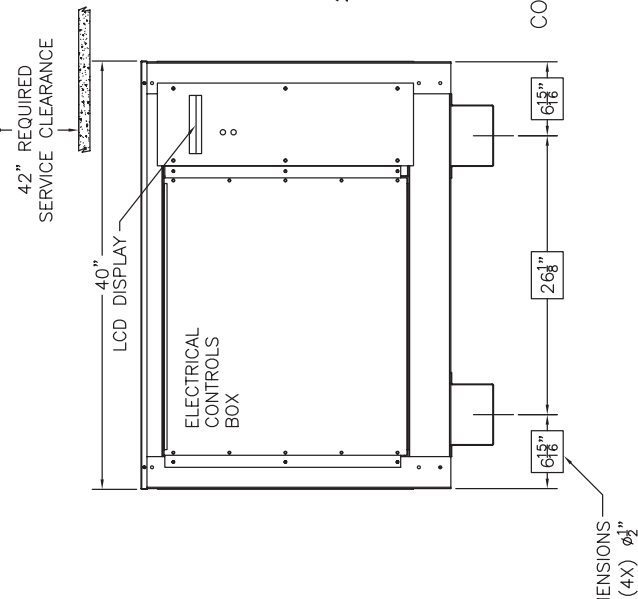
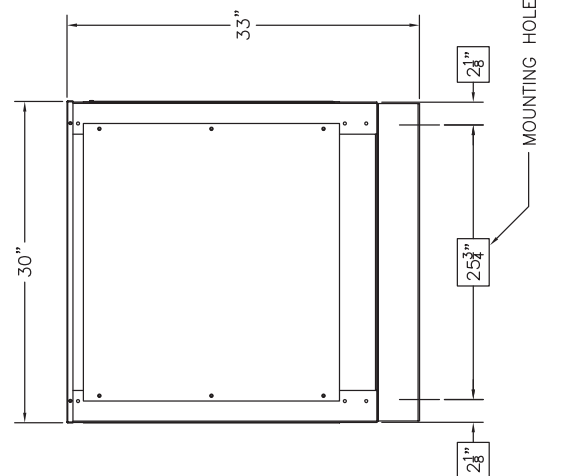
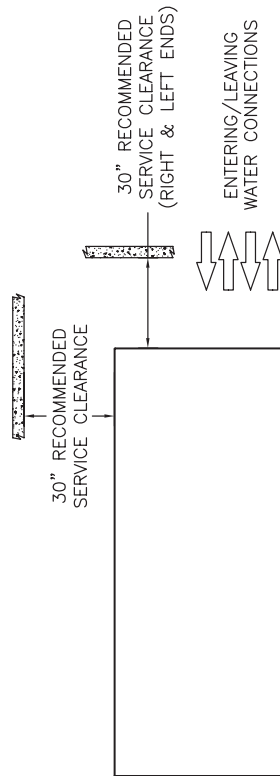
WATER CONNECTION CHART					
MODEL #	"A" PORT	"B" PORT	"C" PORT	"D" PORT	"D" PORT
HS052X1	1" LW	1" ECW	1" EEW	1" LEW	1" LEW
HS054A1	1" LW	1" ECW	1" EEW	1" LEW	1" LEW
HS084A1	1" EEW	1" LW	1" ECW	1" LEW	1" LEW
HS088X1	1" LW	1" ECW	1" EEW	1" LEW	1" LEW
HS120X1	1" LW	1" ECW	1" EEW	1" LEW	1" LEW

NOTES:
 EEW - ENTERING EVAPORATOR WATER (COLD)
 LEW - LEAVING EVAPORATOR WATER (COLD)
 ECW - ENTERING CONDENSER WATER (HOT)
 LEW - LEAVING CONDENSER WATER (HOT)
 - ALL WATER CONNECTION TYPES ARE FEMALE PIPE THREAD (FPT)



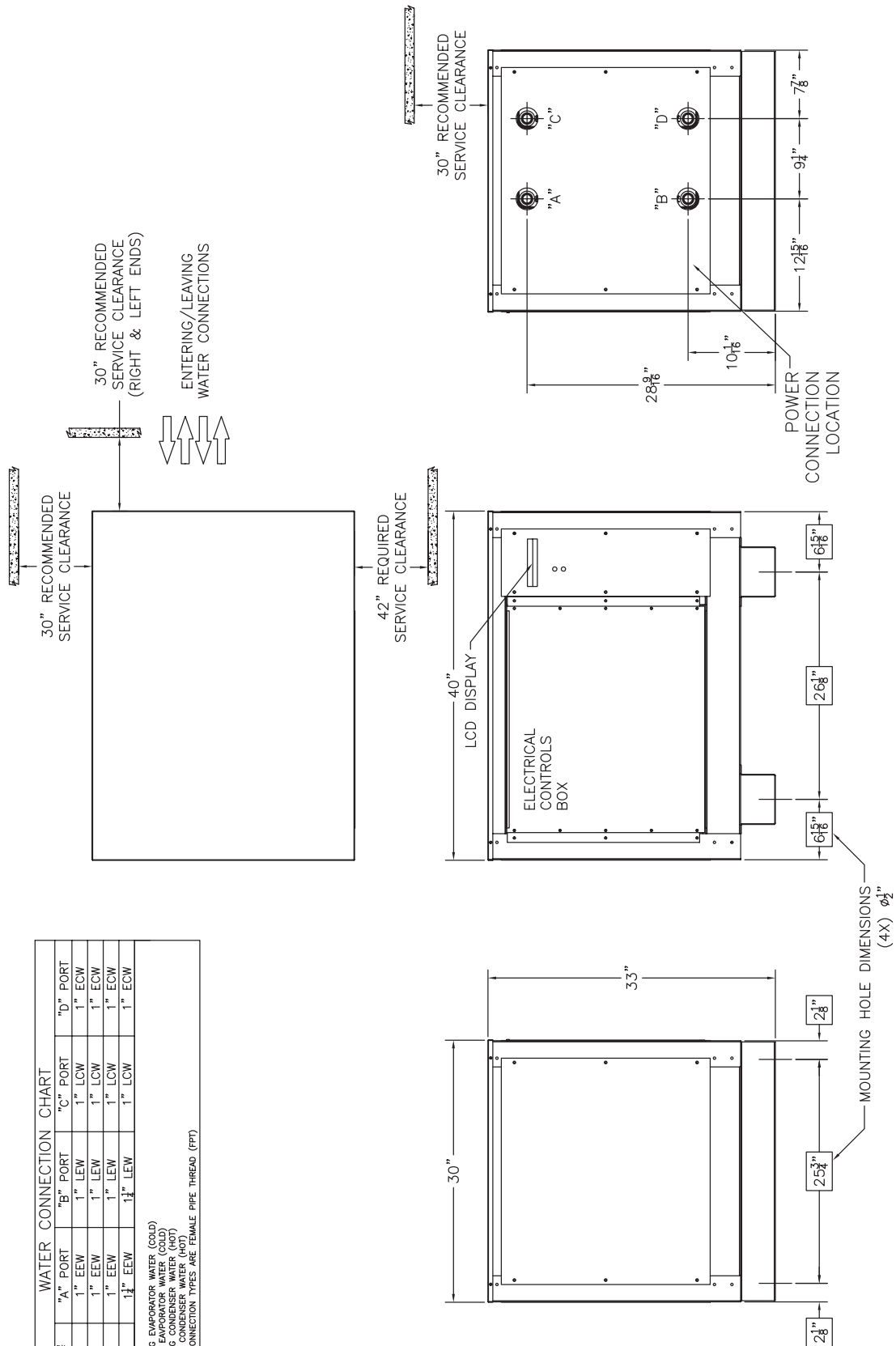
WATER CONNECTION CHART				
MODEL #	"A" PORT	"B" PORT	"C" PORT	"D" PORT
HS138A1	1" EEW	1" LEW	1" LCW	1" ECW
HS166A1	1" EEW	1" LEW	1" LCW	1" ECW
HS176X1	1" EEW	1" LEW	1" LCW	1" ECW
HS260X1	1 1/2" EEW	1 1/2" LEW	1" LCW	1" ECW

NOTES:
 EEW – ENTERING EVAPORATOR WATER (COLD)
 LEW – LEAVING EVAPORATOR WATER (COLD)
 EEW – ENTERING CONDENSER WATER (COLD)
 LEW – LEAVING CONDENSER WATER (HOT)
 LCW – LEAVING CONDENSER WATER (HOT)
 ECW – ENTERING CONDENSER WATER (HOT)
 ALL WATER CONNECTION TYPES ARE FEMALE PIPE THREAD (FPT)



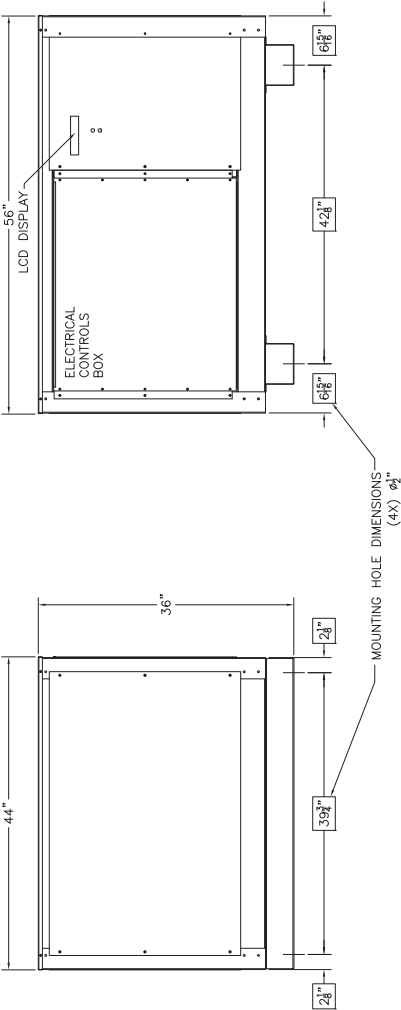
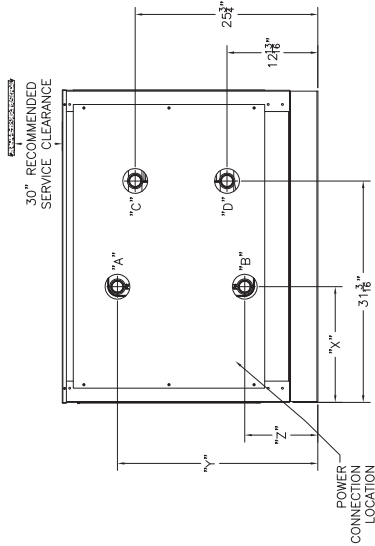
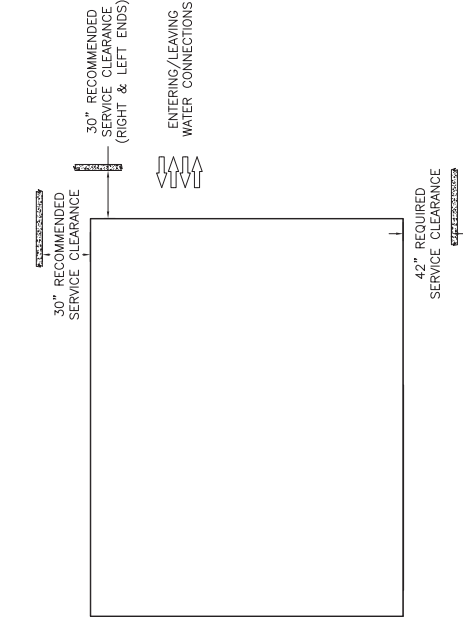
WATER CONNECTION CHART				
MODEL #	"A" PORT	"B" PORT	"C" PORT	"D" PORT
HST38A1	1" EEW	1" LEW	1" LCW	1" ECW
HST66A1	1" EEW	1" LEW	1" LCW	1" ECW
HST76X1	1" EEW	1" LEW	1" LCW	1" ECW
HS260X1	1½" EEW	1½" LEW	1" LCW	1" ECW

NOTES:
 EEW - ENTERING EVAPORATOR WATER (COLD)
 LEW - LEAVING EVAPORATOR WATER (COLD)
 ECW - ENTERING CONDENSER WATER (HOT)
 LCW - LEAVING CONDENSER WATER (HOT)
 - ALL WATER CONNECTION TYPES ARE FEMALE PIPE THREAD (FPT)



WATER CONNECTION CHART				
MODEL #	"A" PORT	"B" PORT	"C" PORT	"D" PORT
HST68A2	1" LEW	1" LEW	1" LEW	1" LEW
HST76A2	1" LEW	1" LEW	1" LEW	1" LEW
HS240A2	1" LEW	1" LEW	1" LEW	1" LEW
HS254A1	1" LEW	1" LEW	1" LEW	1" LEW
HS276A2	1" LEW	1" LEW	1" LEW	1" LEW
HSS30A1	1" LEW	1" LEW	1" LEW	1" LEW
HSS32A2	1" LEW	1" LEW	1" LEW	1" LEW
HSS340X1	1" LEW	1" LEW	1" LEW	1" LEW
HSS34A2	1" LEW	1" LEW	1" LEW	1" LEW
HSS20A2	2" LEW	2" LEW	1" LEW	1" LEW
WATER CONNECTION LOCATION CHART				
MODEL #	"A" PORT - X	"B" PORT - Y	"C" PORT - X	"D" PORT - Z
HST68A2	19 3/4"	19 3/4"	28 1/2"	10 1/8"
HST76A2	19 3/4"	19 3/4"	26 3/4"	11"
HS240A2	19 3/4"	19 3/4"	26 3/4"	11"
HS254A1	16 5/8"	16 5/8"	28 1/2"	10 1/8"
HS276A2	19 3/4"	19 3/4"	28 1/2"	10 1/8"
HSS30A1	16 5/8"	16 5/8"	28 1/2"	10 1/8"
HSS32A2	19 3/4"	19 3/4"	28 1/2"	10 1/8"
HSS340X1	16 5/8"	16 5/8"	28 1/2"	10 1/8"
HSS34A2	19 3/4"	19 3/4"	26 3/4"	11"
HSS20A2	19 3/4"	19 3/4"	26 3/4"	11"

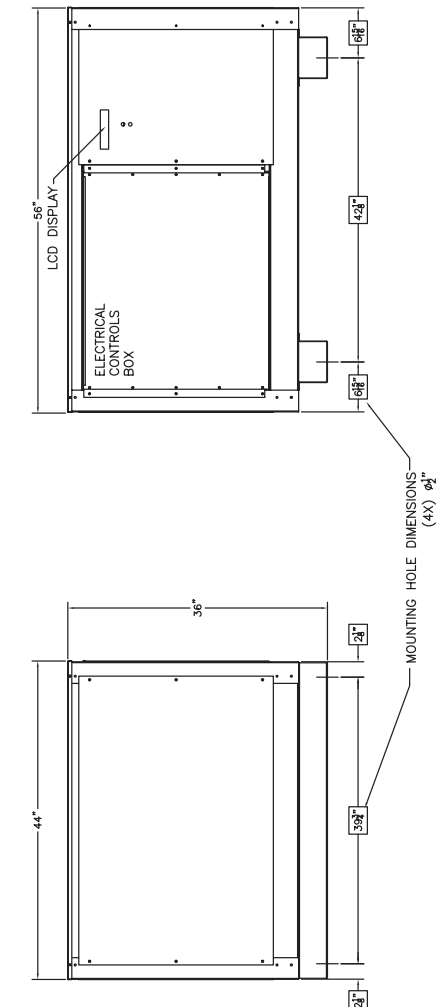
LEW = ENTERING EVAPORATOR WATER (COLD)
LEW = LEAVING EVAPORATOR WATER (COLD)
LEW = ENTERING CONDENSER WATER (HOT)
LEW = LEAVING CONDENSER WATER (HOT)
ALL WATER CONNECTIONS ARE FEMALE PIPE THREAD (FPT)



NOTES:

EEW - ENTERING EVAPORATOR WATER (COLD)

LEW - LEAVING EVAPORATOR WATER (COLD)



Multistack HeatStack Water Heater Model
(HS – 052X, 088X, 120X, 176X, 240X, 260X, 340X, 354X, 520X, 054A,
084A, 108A, 138A, 166A, 254A, 276A, 330A, 332A)
Guide Specification

2.01 Operating Conditions

- A. Provide HeatStack water heater with the capacity as scheduled on drawings at job site elevation.
- B. The HeatStack water heater shall be designed to operate using R-410A or R-134a refrigerant.
- C. The HeatStack water heater shall be designed to provide hot water for domestic or comfort conditions.
- D. The HeatStack water heater shall be designed to operate using _____ volt, 1 phase or 3 phase, 60 (50) Hz electrical power supply.

2.02 HeatStack Water Heater

- A. Approved manufacturer is MULTISTACK.
- B. System Description: The HeatStack water heater shall incorporate scroll-type compressors and may include single or multiple compressors. Each refrigerant circuit shall consist of an individual compressor, common dual- or single-circuit condenser, dual or single-circuit evaporator, electronic expansion valve, and control system. Each refrigeration circuit shall not contain more than 16 pounds of R-410A or R-134a refrigerant.
- C. General
 - 1. The HeatStack water heater shall be ETL listed according to UL Standard 1995 and CSA certified per Standard C22.2#236.
 - 2. Water heaters shall ship wired and charged with refrigerant. All water heaters shall be factory run tested prior to shipment on an AHRI-certified or third party verified test stand.
 - 3. Compressors, heat exchangers, piping and controls shall be enclosed in a heavy gauge, powder coated steel container. Electrical controls, contactors, and relays for each heater shall be installed within that heater.
 - 4. Evaporator and Condenser flow switches are integral to the HeatStack.
- E. Water Connections: Each heater shall include supply and return NPT female adapters.
- F. Evaporators and condensers: Each evaporator and condenser shall be brazed plate heat exchangers constructed of 316 stainless steel; designed, tested, and stamped in accordance with UL 1995 code for 650 psig evaporator working pressure and 650 psig condenser working pressure.
- G. OPTIONAL: Double wall vented hot water heat exchanger for potable water. Hot water heat exchanger shall be double wall vented for use with domestic water.
- H. Compressor: Each water heater shall contain one or two hermetic scroll compressors independently circuited and with internal spring isolation mounted to the unit with rubber-in-shear isolators.
- I. Central Control System.
 - 1. The HeatStack water heater shall be equipped with a microprocessor based leaving water controller. The HeatStack water heater shall have the ability to operate in response to heating set points.
 - 2. The HeatStack water heater shall monitor and report the following on each refrigeration system:
 - a. Discharge Pressure
 - b. Suction Pressure
 - c. Suction Temperature
 - d. Superheat
 - e. Chilled Water Entering and Leaving Temperature
 - f. Hot Water Entering and Leaving Temperature
 - g. Chilled Water and Hot Water Flow status
 - 3. In the case of a fault the entire HeatStack Water Heater will be shut down. This information shall be capable of being retrieved through the onboard USB port. A fault history shall be maintained including date and time of day of each fault (up to the last 20 occurrences).
 - 4. The control system shall monitor entering and leaving hot water temperatures to determine system load. Response times and set points shall be adjustable.
 - 5. OPTIONAL: INTEROPERABILITY The water heater shall be capable of interfacing with a building automation system. Interface shall be accomplished using an Interoperability Web Portal and shall be capable of communication over BACNet, Modbus or LON.

I. Inputs/Outputs include:

Single Compressor

1. Remote Start/Stop
2. Evaporator Pump Start/Stop
3. Chilled Water Pump Output
4. Hot Water Pump Output

Dual Compressor

1. Remote Start/Stop
2. Reset Signal
3. Chilled Water Output
4. Hot Water Output
5. Run Stats
6. Custom Alarm

- J. Each inlet water connection requires a strainer of at least 30 mesh to prevent heat exchanger fouling. This can be provided by Multistack as an option for field installation.

2.03 Safeties, Controls And Operation

- A. The HeatStack water heater system shall include at a minimum the following safety controls which will cause the respective refrigerant circuit to shut down if the monitored temperature, pressure or flow is outside the required limits:
1. Low evaporator refrigerant pressure
 2. Loss of flow through the evaporator
 3. Loss of flow through the condenser
 4. High condenser refrigerant pressure
 5. High compressor motor temperature
 6. Low suction refrigerant temperature
 7. Low leaving chilled water temperature
- B. Failure of HeatStack water heater to start or HeatStack water heater shutdown due to any of the above safety cutouts shall be annunciated by a display of the appropriate diagnostic description at the unit control panel. Alphanumeric codes shall be acceptable.
- C. The HeatStack water heater shall be furnished with a controller as an integral portion of the HeatStack water heater control circuitry to provide the following functions:
1. Provide automatic shutdown during periods when the load decreases below normal operating requirements of the HeatStack water heater. Upon an increase in load, the HeatStack water heater shall automatically restart provided no fault condition exists.
 2. Provisions for connection to automatically enable the HeatStack water heater from a remote energy management system.
- D. Normal HeatStack Water Heater Operation
1. The HeatStack Water Heater control system shall respond to leaving water temperature.
- E. Power Phase Monitor
1. Provide a Power Phase Monitor on the incoming power supply to the HeatStack water heater. This device shall prevent the HeatStack water heater from operating during periods when the incoming power is unsuitable for proper operation.
 2. The Power Phase Monitor shall provide protection against these conditions:
 - a. Low Voltage (Brown-Out)
 - b. Incorrect Phase Rotation
 - c. Loss of Phase
 - d. Phase Imbalance
 - e. High Voltage

Part 3 Installation

3.01 Piping System Flushing Procedure

- A. Prior to connecting the HeatStack water heater to the condenser and chilled source water loop, the piping loops shall be flushed with a detergent and hot water (110-130° F) mixture to remove previously accumulated dirt and other organics. In old piping systems with heavy encrustation of inorganic materials consult a water treatment specialist for proper passivation and/or removal of these contaminants.
- B. During the flushing, a 30 mesh (min.) strainer (or acceptable equivalent) shall be in place in the system piping and examined periodically as necessary to remove collected residue. The flushing process shall take no less than 6 hours or until the strainers when examined after each flushing are clean. Old systems with heavy encrustation shall be flushed for a minimum of 24 hours and may take as long as 48 hours before the filters run clean. Detergent and acid concentrations shall be used in strict accordance with the respective chemical manufacturer's instructions. After flushing with the detergent and/or dilute acid concentrations the system loop shall be purged with clean water for at least one hour to ensure that all residual cleaning chemicals have been flushed out.
- C. Prior to supplying water to the HeatStack water heater the Water Treatment Specification shall be consulted for water quality requirements for the HeatStack water heater. The appropriate HeatStack Water Heater manufacturer's service literature shall be available to the operator and/or service contractor and consulted for guidelines concerning preventive maintenance and off-season shutdown procedures.

3.02 Water Treatment Requirements

- A. Supply water for both the chilled water and hot water circuits shall be analyzed and treated by a professional water treatment specialist who is familiar with the operating conditions and construction materials specified for the HeatStack water heater heat exchangers and associated piping. Cycles of concentration shall be controlled such that recirculated water quality for the HeatStack water heater using 316 stainless steel brazed plate heat exchangers is maintained within the following parameters:

pH	Greater than 7 and less than 9
Total Dissolved Solids (TDS)	Less than 1000 ppm
Hardness as CaCO ₃	30 to 500 ppm
Alkalinity as Ca CO ₃	30 to 500 ppm
Chlorides	Less than 200 ppm
Sulfates	Less than 200 ppm

3.03 Warranty

- A. Manufacturer's Standard Warranty: Manufacturer shall provide full machine parts-only warranty coverage for the water heater for a period of one year. All parts shall be warranted against defects in material and workmanship.
- B. Optional Manufacturer's Warranties:
 - c. Manufacturer shall provide parts-only coverage for the compressor(s) for a period of ____ years. The warranty period shall commence either on the equipment start-up date or six months after shipment, whichever is earlier.
 - d. Manufacturer shall provide full machine parts-only coverage for the water heater for a period of ____ years. The warranty period shall commence either on the equipment start-up date or six months after shipment, whichever is earlier.
 - e. Manufacturer shall provide labor necessary to remove a major part which proves to be defective and install the replacement so provided for a period of ____ years. The warranty period shall commence either on the equipment start-up date or six months after shipment, whichever is earlier.

Part 4 Options

4.01 Options

- A. Pump - Only available in Frame 1 sized water heaters, up to 120 MBH (R-410A) and up to 84 MBH (R-134a).
- B. Regulation Valve - Reverse acting, pressure independent valve is required for high temp source water.

Originators. Innovators. Never the Imitators.SM

Originators...

Multistack invented the modular water chiller. It started with a radically simple idea: chiller modules that could be brought into the equipment room one at a time, through standard doorways and down elevators, to form a fully integrated chiller system. The idea launched a revolution and transformed Multistack into a leader in the commercial water-chiller industry.

Innovators...

Multistack perfected the modular chiller and leads the industry in innovative and environmentally friendly modular solutions. Since founding in the late 1980s, Multistack has engineered, manufactured, and distributed an impressive array of modular air conditioning firsts: the first on-board strainer, the first modular automatic blow-down device, the first modular chiller for variable flow, the first modular chiller-heater (heat pump), the first modular heat-recovery chiller, the first modular air-to-water heat pump, the first modular chiller to utilize MagLev™ compressor technology, and the first modular chiller to utilize R-410A.

Never the Imitators...

Multistack sets the standard in the industry for superior customer service, fast and on time shipment, superior product quality, and new product development. Our pioneering leadership in environmental issues is well documented. If you want the best, be sure to specify the original – Multistack®.



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