airsideproducts

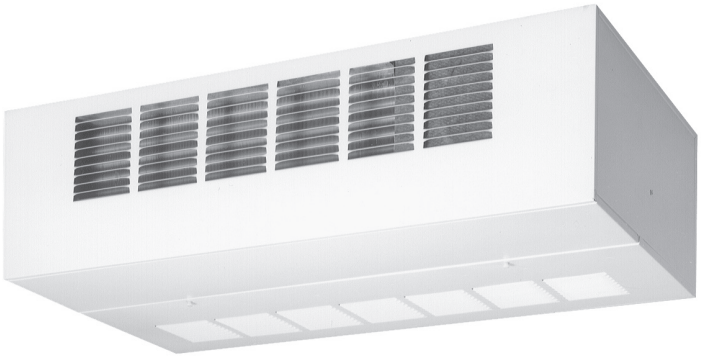
Product Specifications
Cabinet Exposed
Hydronic Fan Coils w/Electric Heat

YCHH

Electric Heat 0-12kW

300 THROUGH 1,400 CFM

240 Volt with 24V Controls
(Available with 277V)



YCHH Series
(cabinet exposed)

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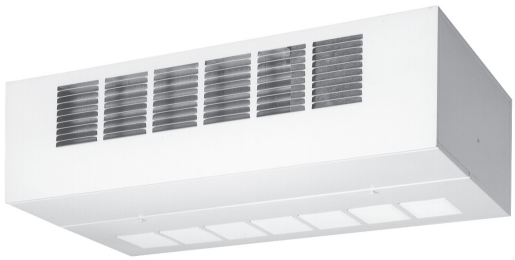
Features

YCHH series - exposed ceiling model

The YCHH Series fan coil is designed for installations where sufficient room for ductwork isn't available. It contains all of the features of the YHH Series and includes a decorative cabinet with stamped discharge grille. The cabinet has an attractive baked on off white enamel finish. An attractive stamped return air grille in the hinged bottom panel is standard.



General Construction

Basic Unit

All fan coils are manufactured with heavy gauge galvanized steel to resist corrosion.

All models are approved for installation with "0" clearance to combustible material.

Piping, drain, and wiring connections are readily accessible and mounting holes and/or slots are pre-drilled to save installation time and field labor expense. All valve packages feature field installed "Pop Top" power heads.

Plenums and Cabinets

Plenums and cabinets are insulated to increase efficiency and to insure quiet operation. Exposed cabinets and access panels are coated with an attractive baked on finish. All models have throw away filters and hinged panels are included for easy access and service.

Motors

Standard motors are 240v, 2 speed, PSC type with internal thermal overload protection and are mounted with rubber bushings. Blower wheels are centrifugal, forward curved, and dynamically balanced.

Coils

Coils have 3/8" O.D. copper tubing expanded to high efficiency aluminum fins. Each coil is factory tested to 350 psig. Manual air vents are standard on all coils. Tube connections are 5/8" O.D. Left and right hand coil connections are available (looking with airflow, from the blower end). We furnish right hand, if hands are not specified on the order.

Drain Pans

All drain pans shall be coated on the inside surface with a closed cell, fire retardant expanding foam insulation. This provides superior corrosion resistance. All drain pans include both primary and secondary (overflow) drain connections. All drain pans are sloped toward the drain connections to facilitate condensate removal.

Standard Features

YCHH

These fan coils are completely factory assembled and are available in either 2 pipe or 4 pipe arrangements. Models are available with 300 to 1400 cfm, cooling capacities up to 40,000 BTUH, and heating capacities up to 110,000 BTUH. Two pipe models are available in 3 and 4 row versions.

Options (1)

Available options include 277v models, motorized/hand valve packages, thermostats, aquastats, circuit setters, disconnect switch (factory installed), extended drip pans, 3-speed switches. Contact factory for other available options.

Model Number Nomenclature

6 YC HH - 3 RH

NOM. CFM (100's)
3, 4, 5, 6, 8, 10 or 12

Basic Unit Options
C - cabinet exposed

Basic Unit
YHH - horizontal blower coil (24v, 60hz)

Coil Configuration
3 = 2 Pipe Coil, 3 Row
4 = 2 Pipe Coil, 4 Row

Coil Connections (looking with airflow, from blower end)
RH = Right Hand
LH = Left Hand

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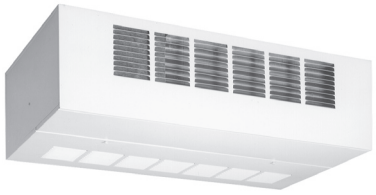
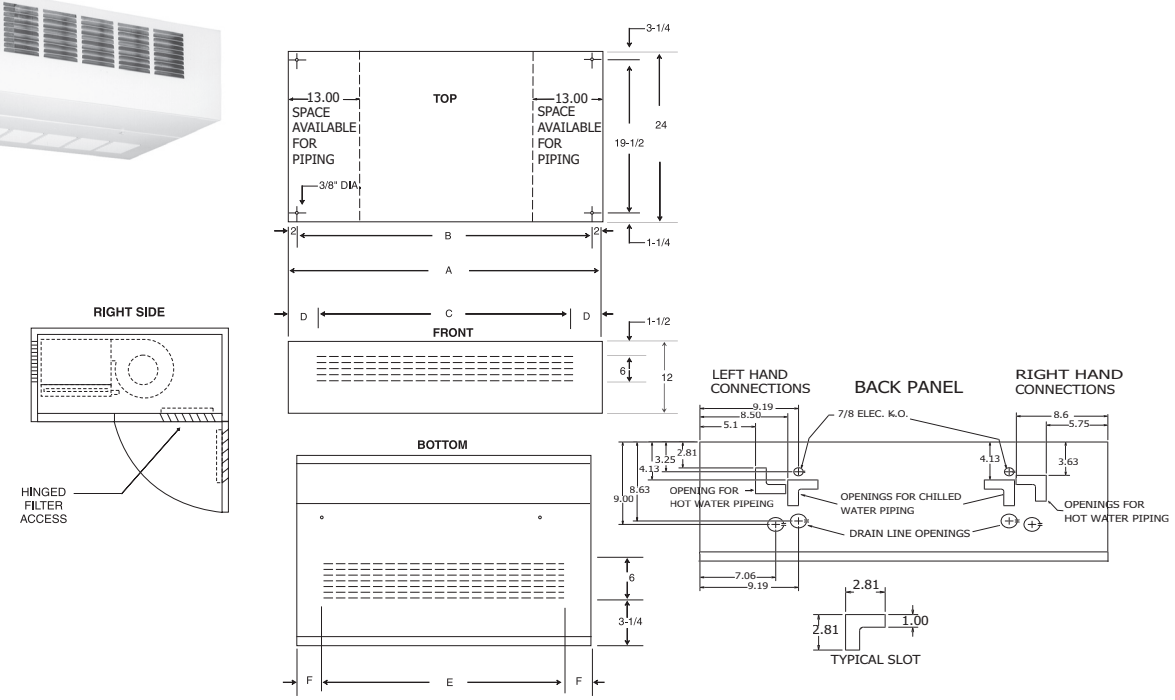
PHYSCIAL DATA

NOTES:
1) ALL DIMENSIONS IN INCHES.
2) COIL CONNECTION TOLERANCE ± 1/4".
3) RIGHT HAND UNIT SHOWN, LEFT HAND MIRROR IMAGE.
(HAND IS DETERMINED BY FACING THE BLOWER END)





GENERAL DIMENSIONS								
MODEL	**A**	**B**	**C**	**D**	**E**	**F**	**FILTER SIZE (INCL)**	**CONNECTIONS PRIMARY O.D.**
3YCHH	38	34	26	6	31-1/2	3-1/2	10 X37	5/8"
4YCHH	44	40	31-1/2	6	37	3-1/2	10 X 43	
5YCHH	48	44	37	5-1/2	42-1/2	3	10 X 46	
6YCHH	48	44	37	5-1/2	42-1/2	3	10 X 46	
8YCHH	54	50	42-1/2	6	48	3	10 X 53	
10YCHH	60	56	48	6	53	3-1/2	10 X 59	
12YCHH	67	63	53	7	58-1/2	4	10 X 65	

NOTES:
1. Side panels are removable for easier valve access.
2. Plastic thumb screws are provided for easy filter access.

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PERFORMANCE DATA

ELECTRICAL DATA

MODEL		HEATING kW	HEATING BTUH	TOTAL AMP (2)	MIN. CIR. AMPACITY	MAX. FUSE
3YCHHS	2-240	2	6,820	9.3	12	15
	3-240	3	10,230	13.5	17	20
	4-240	4	13,640	17.6	23	25
	5-240	5	17,050	21.8	28	30
4YCHHS	1-240	1	3,410	5.0	7	15
	3-240	3	10,230	13.3	17	20
	5-240	5	17,050	21.6	27	30
	6-240	6	20,460	25.8	33	35
6YCHHS	1-240	1	3,410	6.2	8	15
	3-240	3	10,230	14.1	18	20
	5-240	5	17,050	22.4	28	30
	6-240	6	20,460	26.6	34	35
	8-240	8	27,280	34.9	44	45
6YCHH	3-240	3	10,230	14.5	20	20
	5-240	5	17,050	22.8	30	30
	6-240	6	20,460	27.0	35	35
	8-240	8	27,280	35.3	45	45
	10-240	10	34,100	43.6	55	60
8YCHH	1-240	1	3,410	6.2	8	15
	4-240	4	13,640	14.5	19	20
	5-240	5	17,050	22.8	30	30
	6-240	6	20,460	27.0	36	40
	8-240	8	27,280	35.3	45	45
	10-240	10	34,100	43.6	55	60
10YCHH	2-240	2	6,820	10.3	13	15
	5-240	5	17,050	22.8	30	30
	6-240	6	20,460	27.0	35	35
	8-240	8	27,280	35.3	45	45
	10-240	10	34,100	43.6	55	60
12YCHH	5-240	5	17,050	23.6	30	30
	6-240	6	20,460	27.8	35	35
	8-240	8	27,280	36.1	46	50
	10-240	10	34,100	44.5	56	60
	12-240	12	40,920	27.8	35	35
				25.0	32	35

(1) Heating ratings at 240 volt, derate 25% for 208 volt application
(2) Includes motor and heaters

ARI STANDARD APPROVED RATINGS

MODEL	COIL	CFM	GPM	P.D. (FT. WTR.)	COOLING (1000 BTUH) TH	COOLING (1000 BTUH) SH	POWER INPUT (WATTS)	TYPE MOTOR
3YHHS(*)-240-3	3 ROW	310	1.5	3.3	7.5	4.9	130	SP
4YHHS(*)-240-3		410	2.6	12.0	12.9	8.9	90	SP
6YHHS(*)-240-3		590	3.1	7.0	15.4	10.5	145	SP
6YHH(*)-240-3		790	4.0	10.5	19.8	14.2	290	SP
8YHH(*)-240-3		950	4.2	6.5	21.2	16.3	320	PSC
10YHH(*)-240-3		1170	5.2	10.0	26.2	20.2	398	PSC
12YHH(*)-240-3		1460	6.4	9.2	32.1	24.9	490	PSC
3YHHS(*)-240-4	4 ROW	275	1.7	5.0	8.5	5.1	120	SP
4YHHS(*)-240-4		400	3.2	24.0	15.8	9.8	88	SP
6YHHS(*)-240-4		550	3.3	6.0	16.5	11.0	140	SP
6YHH(*)-240-4		770	4.5	9.0	22.5	15.5	280	SP
8YHH(*)-240-4		920	5.0	10.0	24.9	17.5	310	PSC
10YHH(*)-240-4		1160	6.2	10.5	30.9	22.1	390	PSC
12YHH(*)-240-4		1440	8.4	18.4	42.2	30.7	485	PSC

COOLING / HEATING CAPACITIES

MODEL	COIL ROWS	CFM	GPM	P.D. (FT. WTR.)	TOTAL (2) COOLING	SENSIBLE COOLING	WATER (3) HEATING CAPACITY
3YCHH	3	270	1.0	1.4	6.1	5.1	18.9
			2.0	5.0	8.1	5.9	21.0
			3.0	10.5	8.9	6.2	21.8
	4	215	1.0	1.8	6.7	5.1	18.8
			2.0	6.3	8.4	5.7	20.5
			3.0	13.1	9.0	6.0	21.1
4YCHH	3	410	1.5	4.2	11.1	8.6	32.2
			2.0	7.0	12.5	9.2	33.6
			2.5	10.5	13.5	9.5	34.5
	4	390	1.5	5.8	12.5	9.3	34.9
			2.0	9.7	14.1	9.9	36.4
			2.5	14.5	15.1	10.3	37.4
6YCHH	3	535	3.0	5.7	15.3	11.3	41.1
			4.0	9.5	16.6	11.8	42.4
			5.0	14.2	17.5	12.1	43.3
	4	490	3.0	3.9	16.5	11.9	43.5
			4.0	6.5	18.0	12.5	45.0
			5.0	9.7	18.9	12.8	46.0
6YCHH	3	840	3.0	5.7	18.6	15.0	54.2
			4.0	9.5	20.8	15.7	56.6
			5.0	14.2	22.2	16.2	58.1
	4	770	3.0	3.9	20.5	16.1	59.1
			4.0	6.5	22.9	17.0	61.8
			5.0	9.7	24.5	17.6	63.5
8YCHH	3	925	4.0	5.4	20.9	16.4	59.1
			5.0	8.0	22.5	17.0	60.9
			6.0	11.0	23.7	17.4	62.3
	4	845	4.0	6.6	23.3	18.0	65.7
			5.0	9.6	25.5	18.7	67.6
			6.0	13.3	26.9	19.2	69.0
10YCHH	3	1145	4.0	5.5	24.2	19.5	70.6
			5.0	8.4	26.3	20.3	73.1
			6.0	11.7	27.9	20.8	74.9
	4	1110	4.0	4.3	27.2	22.0	80.5
			5.0	6.5	30.0	23.0	83.1
			6.0	9.1	31.9	23.7	85.8
12YCHH	3	1445	6.0	7.9	30.6	24.3	87.9
			7.0	10.5	32.3	24.9	89.9
			8.0	13.3	33.7	25.4	91.5
	4	1335	6.0	10.0	35.6	27.4	99.5
			7.0	13.1	37.5	28.1	101.7
			8.0	16.5	39.0	28.7	103.5

(1) Cooling at 80DB/67WB 45°F EWT.
(2) Heating at 70DB/180°F EWT.

NOTE:
Ratings based on high fan speed, standard air at dry coil operation, 10 °F water temp. rise ent. air 80DB, 67WB entering water at 45°F.

Rated in accordance with ARI Standard 440.

SH - sensible heat
TH - total heat

MOTOR DATA

MODEL	COIL ROWS	VOLATGE	SPEED	CFM	COIL ROWS	VOLATGE	SPEED	CFM
			Cooling	270			Cooling	215
3YCHH	3	240	Heating	240	4	240	Heating	200
			Cooling	410			Cooling	390
4YCHH	3	240	Heating	360	4	240	Heating	320
			Cooling	535			Cooling	490
6YCHH	3	240	Heating	390	4	240	Heating	335
			Cooling	840			Cooling	770
6YCHH	3	240	Heating	735	4	240	Heating	675
			Cooling	925			Cooling	845
8YCHH	3	240	Heating	805	4	240	Heating	760
			Cooling	1145			Cooling	1110
10YCHH	3	240	Heating	740	4	240	Heating	765
			Cooling	1445			Cooling	1335
12YCHH	3	240	Heating	975	4	240	Heating	930

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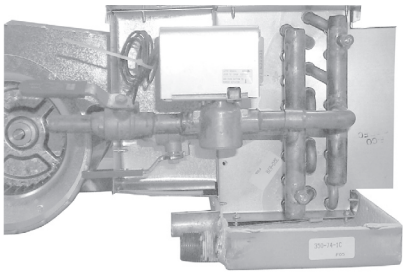
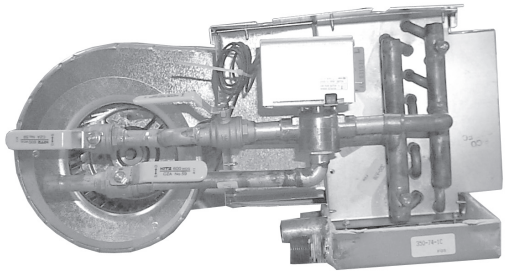
	VALVE CLUSTERS AND INDIVIDUAL COMPONENTS: (field installed (1))		
	Assembled Valve Clusters: (factory-assembled and field installed) Components are factory piped together **(order power heads separately)**. Contact factory for other valve clusters.		
	Right Hand	**Left Hand**	**Description (all 1/2") -** YCHH
2 pipe	9VHR2BV 9VHR22B 9VHR23B	9VHL2BV 9VHL22B 9VHL23B	2-pipe, 2 hand valves only 2-pipe, one **2-way** valve body and 2 hand valves 2-pipe, one **3-way** valve body and 2 hand valves
4 pipe	9VHR4BV 9VHR42B 9VHR43B	9VHL4BV 9VHL42B 9VHL43B	4-pipe, 4 hand valves only 4-pipe, two **2-way** valve bodies and 2 hand valves 4-pipe, two **3-way** valve bodies and 2 hand valves
	POWER HEADS: (two power heads required for 4-pipe) - For all units		
	E50131180 E50132180 E50137180 E50138180		24V 110V/50Hz - 120V/60Hz 277V 220V/50Hz - 230V/60Hz
	Separate Valve Bodies: (order power heads separately)		
	E421213 E431213	1/2" 2-way - For YCHH 1/2" 3-way - For YCHH	
	HAND VALVES: (Combination balance / shut-off) (2 usually required per coil)		
	CP9		1/2"
	Circuit Setters and Strainers		
	CP601 CP612 CP603	1/2" Circuit Setter (Taco) 1/2" Circuit Setter (Bell and Gossett) 1/2" Strainer (Kitz)	

(1) Contact factory for information concerning factory mounting.



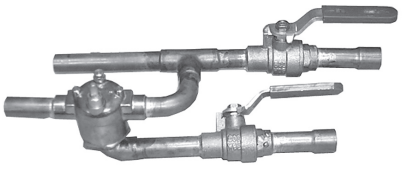
MOUNTED 2 WAY VALVE CLUSTER (RIGHT HANDSHOWN)

(YHBC - Shown)

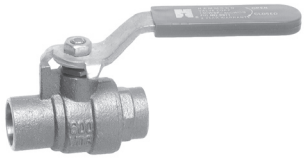


MOUNTED 3 WAY VALVE CLUSTER (RIGHT HAND SHOWN)

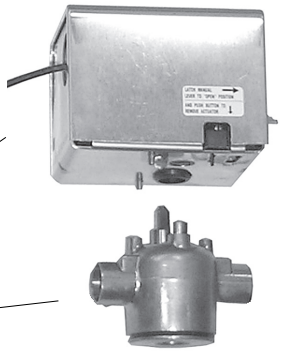
(YHBC - Shown)



Assembled Valve Cluster (3-way)



CP90



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Guide Specifications

Furnish and install fan coil units as indicated on the plans.

Units shall be certified to deliver published capacities when tested in accordance with latest ARI Standard 440.

Units shall be complete with water coil, one or more centrifugal fans, condensate drain pan, and galvanized steel casing.

Coils shall be (3-row) (4-row) with staggered 3/8 in. O.D. copper tubes mechanically bonded to aluminum fins with 5/8 in. O.D. copper tube connections. All coils shall be factory leak tested at 400 psig minimum air pressure. Coils shall have manual air vents.

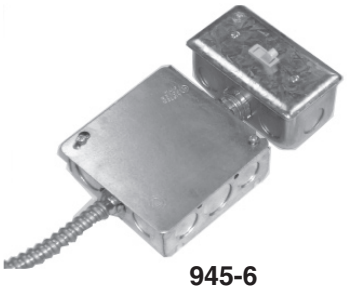
Motors shall be 2-speed permanent split capacitor type with built-in overload protection and sleeve bearings with oil tubes. Voltage is 240V/60Hz. with 24V controls.

Drain pan shall be insulated with expanding closed cell foam fire retardant insulation to prevent sweating. Primary drain connection shall be 3/4 in. MPT. Pan shall be furnished with 7/8 in. O.D. copper secondary overflow drain connection. All drain pans are sloped toward the drain connections to facilitate condensate removal.

Exposed units and panels shall have a baked on off-white finish.

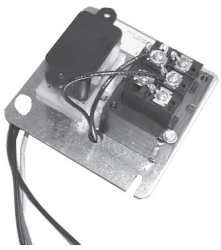
Thermostats and Accessories (all field installed)

PART NO.	VOLTS	DESCRIPTION	MANUFACTURER	MANUF. NUMBER
T409	240/120	WALL STAT WITH BUILT IN 3 SPEED SWITCH, AUTO CHANGEOVER	HONEYWELL	T40339M
T414	277/240/120	WALL STAT WITH BUILT IN 3 SPEED SWITCH, AUTO CHANGEOVER	SUNNE (continuous fan)	TE154
T420	277/240/120	BUILT IN 3 SPEED SWITCH MANUAL CHANGEOVER	SUNNE (continuous fan)	- - -
T421	277/240/120	BUILT IN 3 SPEED SWITCH AUTO CHANGEOVER	SUNNE (continuous fan)	- - -
E332	120	3 SPEED WALL SWITCH WITH OFF POSITION	- - -	- - -
E332-1	120	3 SPEED WALL SWITCH WITH NO OFF POSITION	- - -	- - -
E301	24/120	RELAY/TRANSFORMER	- - -	- - -
T4071	120	AQUASTAT	- - -	- - -
919-1	---	EXTENDED DRIP LIP	- - -	- - -
CP34	---	RUBBER GROMMETS	- - -	- - -
945-6	120	FACTORY INSTALLED DISCONNECT	- - -	- - -

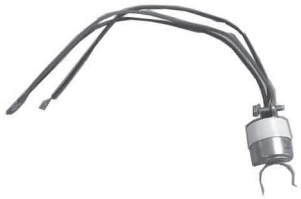


945-6
DISCONNECT

T420 - T421
THERMOSTAT



E301
RELAY / TRANSFORMER



T4071
AQUASTAT

"Twilight Electric" Fan Coil Installations (Supplemental Seasonal Electric Heat)

Developers in many parts of the country are giving a great deal of attention to the "twilight electric" fan coil system for heating and cooling. The interest in this system is a result of being able to offer individual unit control which provides the room comfort of a four-pipe fan coil system yet maintains most of the economic advantages of a two-pipe installation. Often mortgage money has a restriction of individual unit control as a condition of the mortgage and the twilight electric system provides one way to satisfy this requirement without greatly increasing either installation or operating costs as compared to the familiar two-pipe system.

The twilight electric system is a two-pipe fan coil unit with a small kilowatt electric resistance heater element added. When properly furnished with adequate controls, the electric heating element provides limited heating capability for use in mild weather during seasonal changeover of the central-chiller-boiler system. During the winter season, with the central boiler operational, the system functions as a standard two-pipe system utilizing hot water as the heating source. Because the electric heat is only intended to provide a limited amount of heat during mild weather, the size of the heater is relatively small, usually selected to provide adequate heat with about a 50 degree outdoor temperature.

The operational advantage of a twilight system is obvious when the requirements of the heating-cooling system during the Spring and Fall seasons are considered. During the morning hours heating may be required in some or all of the separate units while the afternoon hours may require cooling. Once again the evening hours may again require heating. The normal two-pipe system simply cannot cope with rapid changes in demand from heating to cooling. With the addition of electric heat, the central system is simply operated in its cooling mode and all demands for heat are satisfied with the electric heaters. Should an extended period of cold weather develop, the central system is then changed over to its heating mode and hot water is again used to provide the necessary heat. This changeover can be achieved with automatic controls on the central equipment.

The included diagram illustrates the typical control arrangement. Both aquastats are strapped to the water supply piping and the 3-way motorized valve is also located in the supply line.

The system functions as follows:

I. Central system in cooling mode. Chilled water available to the fan coil units.

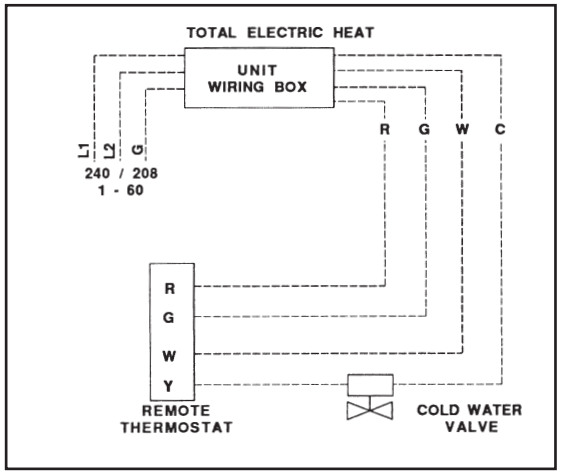
A. **Thermostat calls for cooling** - The (Y) terminal at the thermostat is energized and voltage is applied to the motorized valve by aquastat No. 2 which is in the cold position. The valve opens and allows a flow of water through the unit coil. At the same time the (G) terminal at the thermostat is energized which causes the fan relay to start the fan motor. When the thermostat is satisfied both the fan motor and motorized valve cycle off.

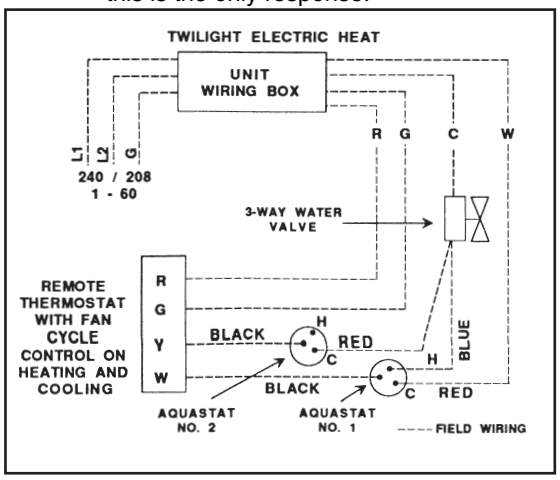
B. **Thermostat calls for heating** - The (W) terminal of the thermostat is energized and voltage is applied to aquastat No. 1. Since the aquastat senses the cold water, its contact is closed in the cold position and voltage is fed to the (W) connection at the control box which causes the electric heat contactor to close energizing the electric heaters. At this time the (G) connection is also energized bringing the fan on. The factory wired box is wired to provide fan operation any time the electric heaters are energized. This interlock is necessary during the cycling operation of the silent contactors.

II. Central system in heating mode. Hot water available to the fan coil units.

A. **Thermostat calls for heat** - The (W) terminal at the thermostat is energized and voltage is applied to aquastat No. 1. Since the aquastat senses the hot water, its contact is closed to the hot position and voltage is fed to the motorized valve which opens and allows a flow of water through the unit coil. At the same time the (G) terminal of the thermostat is energized which causes the fan relay to start the fan motor. When the thermostat is satisfied both the fan motor and motorized valve cycle off.

B. **Thermostat calls for cooling** - Should the thermostat call for cooling while hot water is in the system the (Y) terminal of the thermostat is energized but aquastat No. 2 is in the hot position and no power can get through to the motorized valve. Since the (G) terminal at the thermostat is also energized the fan motor will run but this is the only response.





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