BOILER LOOP AIR HANDLERS

MEETS 2006 DOE REQUIREMENTS (1)

HBXB-HW Series

Vertical / Horizontal / Counterflow (Except 60HBXB-HW) Air Handler

Cooling or Heat Pump / Boiler heating

1-1/2 through 5 tons, up to 131,700 BTUH Heating

Description :

The new **HBXB-HW** series air handler has been fitted with a **Multi-Function MicroProcessor** that reduces the number of electrical parts in the unit while adding **many new integrated features**.

HEATING: Air handlers can now be directly wired from the boiler to the air handler without adding any additional relays or related controls. Multiple air handlers may be connected to a single, high efficiency natural gas or oil fired hot water boiler to provide complete, whole house hydronic space heating. Each air handler includes a high efficiency cooling coil, a separate hot water coil, horizontal drain pan, flue gas door switch (except 60HBXB-HW), 120V three or four speed blower motor, throwaway filter, microprocessor, and a 24V transformer. (Note: If connecting to a circulator, it must have a circulator relay).

COOLING: These air handlers are completely compatible with all split system type condensing units and heat pumps. Cooling coils in the **HBXB-HW** air handlers are extra-large and engineered to offer cooling efficiencies to **14 SEER**, depending on the outside condensing unit used.

(1) First Co's customer is ultimately responsible for confirming which fan coil models are compatible with selected outdoor units(s) and which expansion valves (if any) are required. To determine approved indoor/outdoor matches, go to www.firstco.com or contact the factory.

ACCESSORIES: (see P. 2) Optional field installed accessories include TXV Kits, Flow Control Modules, Counterflow Conversion Kits, and Freeze Protector.

NOW WITH "DIRECT CONNECT" FROM THE BOILER TO THE AIR HANDLER

FEATURES:

Heating Cycle

1. **Boiler Start Relay:** Eliminates field installed boiler relay, allowing direct wiring from the boiler to the air handler.
2. **Heating Cycle Blower Delay:** 45 second delay of the blower start to allow the coil to be preheated before the blower energizes. It also operates the fan motor 20 seconds after shutdown, increasing heating efficiency.
3. **Blower Jumper:** Set from the factory for low speed heating and high speed cooling. This can be field changed to high speed on heating and cooling for higher capacity out-put.
4. **Microprocessor:** Allows either 24V or 120V power for field installed motorized valves.

Cooling Cycle

1. **Cooling Cycle Blower Delay:** Maximizes cooling efficiency by allowing the blower to operate 45 seconds after the thermostat is satisfied.
2. **Horizontal Drain Pan:** Factory installed. (re-positions within the cabinet for left-to-right airflow)
3. **Piston-type** metering device or factory installed R22 or R410a TXV on cooling coil.
4. **Drain Connections:** Primary and secondary on cooling coil.

Optional Features

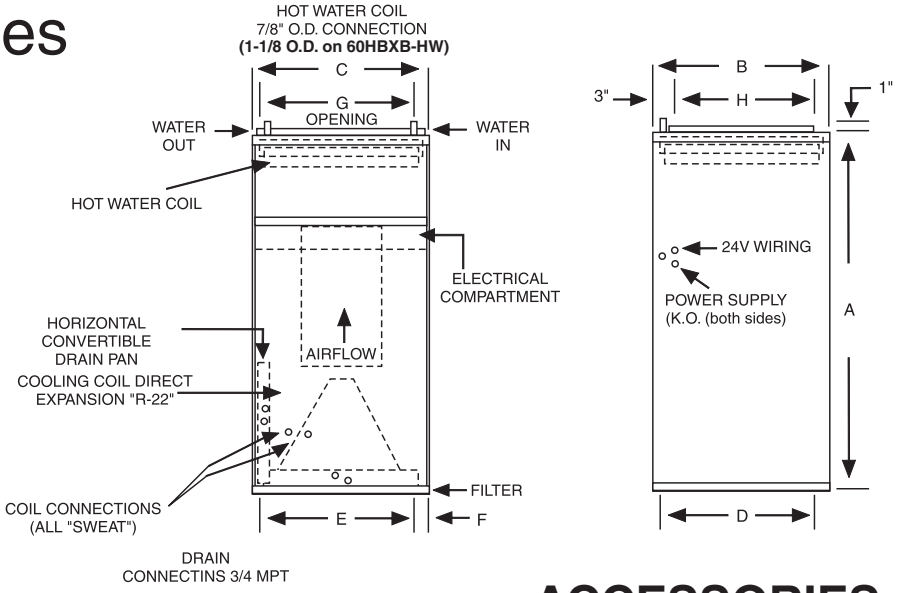
1. **Freeze Protector:** (Optional freeze protector switch required Reduces the possibility of the water coil freezing by switching the unit to the heating mode if the water temperature is nearing a freezing condition.
2. Factory or field installed R22 or R410a TXV's.

Additional Standard Features

1. Manual **air vent** on hot water coil
2. **Blower door safety switch** (except 60HBXB-HW)
3. **Slide out hot water coil assembly** for easier service
4. **Copper tube** heating and cooling coils
5. Compatible with all major brands of **split condensing units** and **heat pumps**
6. **Factory installed filter**
7. Attractive **baked-on finish**
8. Primary and secondary **drain connections** on cooling coil

HBXB-HW Series

DX COOLING
BOILER HEATING



(See P.4 for Model Numbers)

BLOWER DATA					UPFLOW / HORIZONTAL ONLY						DOWNFLOW ONLY				
UNIT MODEL	MOTOR HP-AMPS (120V)	MIN. CKT. AMPACITY	MAX. CKT. PROTECTION	MOTOR SPEED CONN.	CFM vs. EXTERNAL STATIC PRESSURE										
					0.05	0.10	0.20	0.30	0.40	0.50	0.05	0.10	0.20	0.30	0.35
18HBXB-HW	1/5 - 2.8	3.5	15	HIGH MED. MED. LOW LOW	810 680 530 350	780 655 505 325	715 600 460 270	650 545 415 220	580 490 360 160	500 420 295 ---	710 640 480 330	690 620 460 310	630 575 420 260	570 520 380 220	540 490 350 200
24HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	950 860 780	920 835 755	855 785 705	790 720 650	720 650 590	645 580 510	760 720 680	730 690 655	880 640 600	620 590 550	590 550 525
30HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	1120 850 680	1095 840 670	1045 810 655	995 780 625	940 740 585	880 690 510	1080 885 730	1060 860 720	1010 830 690	950 800 660	920 770 640
36HBXB-HW	1/2 - 8.5	10.63	15	HIGH MED. LOW	1340 1290 1200	1310 1260 1170	1250 1200 1120	1190 1140 1070	1120 1080 1010	1050 1000 940	1090 1060 1020	1070 1030 990	1010 980 940	950 920 890	925 890 860
48HBXB-HW	3/4 - 10.7	13.38	15	HIGH MED. LOW	1810 1570 1280	1780 1550 1260	1720 1510 1220	1660 1460 1180	1590 1400 1130	1530 1340 1050	1510 1270 1005	1480 1240 980	1430 1190 930	1380 1150 890	1350 1120 860
60HBXB-HW	1 - 11.5	14.38	15	HIGH MED. LOW	2160 1865 1560	2125 1840 1540	2055 1785 1490	1980 1710 1435	1895 1620 1365	1810 1525 1260	60HBXB-HW is not approved for downflow conversion				

NOTES:
1. All models are approved for installation with 0" clearance to combustible materials.
2. **For downflow applications, select air handler 1/2 ton larger than the outdoor unit in order to achieve nominal airflow.**
3. Use 48HBXB-HW for 3.5 ton applications and field-convert fan motor to medium speed.

PHYSICAL DIMENSIONS									
UNIT MODEL	A	B	C	D	E	F	G	H	FILTER SIZE
18HBXB-HW 24HBXB-HW	40	20	20	18-1/2	16	2	18	16	18 X 20 X 1
30HBXB-HW 36HBXB-HW	42	23	20	21-1/2	16	2	18	19	20 X 22 X 1
48HBXB-HW	48	28	21-1/4	26-1/4	17-1/4	2	18	24	20 X 25 X 1
60HBXB-HW	52	28	25-1/4	26-1/2	21-1/4	2	22	24	14 X 24 X 1 (2 required)

COIL CONNECTIONS		
UNIT SIZE	LIQUID	SUCTION
18/24	3/8	5/8
30/36	3/8	3/4
48/60	1/2	7/8

FREEZE PROTECTOR	
KIT NUMBER	FOR
941-1	18 - 60HBXB-HW

ACCESSORIES
(field installed)

FLOW CONTROL MODULES	
PART NUMBER	FOR
940-3CV	18 - 48HBXB-HW
940-2CV	60HBXB-HW

NOTE:
Flow Control Modules are required when connecting to individual gas water heaters.

EXPANSION VALVE KITS (Field installed) (cooling only or heat pump)	
PART NUMBER	
R22	FITS
9EVR22-4	18/24HBXB-HW
9EVR22-5	30/36HBXB-HW
9EVR22-6	48/60HBXB-HW
R410a	
9EVR410-3	18/24HBXB-HW
9EVR410-4	30/36HBXB-HW
9EVR410-5	48/60HBXB-HW

NOTES:
1. Above expansion valve kits are approved for both cooling only (non heat pump) and heat pump applications.
2. Valves are external equalizing, internal bleed.
3. Valves have screw-on connections.

COUNTERFLOW KITS	
KIT NUMBER	FOR
919-11	18, 24HBXB-HW
919-12	30, 36HBXB-HW
919-13	48HBXB-HW

NOTES:
1. Counterflow conversion **not** recommended where the air handler is installed above a finished ceiling.
2. No kit available for 60HBXB-HW. This model is not approved for counterflow installation.

Model Numbers:

		FACTORY INSTALLED TXV'S	
MODEL SIZE (BTU)	**MODEL (PISTON)**	**MODEL (R22 TXV)**	**MODEL (R410a TXV)**
18,000	18HBXB-HW	18HBXB-HW w/R22 TXV	18HBXB-HW w/R410a TXV
24,000	24HBXB-HW	24HBXB-HW w/R22 TXV	24HBXB-HW w/R410a TXV
30,000	30HBXB-HW	30HBXB-HW w/R22 TXV	30HBXB-HW w/R410a TXV
36,000	36HBXB-HW	36HBXB-HW w/R22 TXV	36HBXB-HW w/R410a TXV
42,000/48,000	48HBXB-HW	48HBXB-HW w/R22 TXV	48HBXB-HW w/R410a TXV
60,000	60HBXB-HW	60HBXB-HW w/R22 TXV	60HBXB-HW w/R410a TXV

All TXV's are approved for cooling only or heat pump operation.

NOTE:

Expansion valve requirement depends on the selected outdoor unit.
Go to www.firstco.com or contact the factory for assistance.

PERFORMANCE DATA

UNIT MODEL	NOM. COOLING BTUH	MOTOR SPEED CONN.	CFM @ .3 ESP	GPM (HTG.)	P.D. (FT. WTR.)	BTUH (1000) AT ENTERING WATER TEMPERATURE		
						140°F	160°F	180°F
18HBXB-HW	18,000	HIGH	650	3	1.13	24.6	31.6	38.7
				2	0.51	22.7	29.2	35.7
				1	0.13	17.0	21.9	26.8
		MED.	550	3	1.13	22.4	28.7	35.1
				2	0.51	20.7	26.6	32.5
				1	0.13	15.8	20.4	24.9
		MED. LOW	420	3	1.13	18.9	24.3	29.7
				2	0.51	17.7	22.8	27.8
				1	0.13	13.8	17.8	21.7
24HBXB-HW	24,000	HIGH	800	3	1.13	27.7	35.6	43.5
				2	0.51	25.4	32.7	39.9
				1	0.13	19.0	24.5	29.9
		MED.	725	3	1.13	26.3	33.8	41.3
				2	0.51	24.2	31.1	38.1
				1	0.13	18.3	23.5	28.8
		LOW	650	3	1.13	24.6	31.6	38.7
				2	0.51	22.7	29.2	35.7
				1	0.13	17.1	22.0	26.9
30HBXB-HW	30,000	HIGH	1000	6	7.55	37.5	48.2	58.9
				4	3.64	35.1	45.2	55.2
				2	1.04	30.0	38.6	47.2
		MED.	780	6	7.55	32.3	41.6	50.8
				4	3.64	30.5	39.2	47.9
				2	1.04	26.3	33.9	41.4
		LOW	625	6	7.55	28.2	36.3	44.3
				4	3.64	26.7	34.3	41.9
				2	1.04	23.5	30.2	36.9
36HBXB-HW	36,000	HIGH	1200	6	7.55	41.5	53.4	65.2
				4	3.64	38.7	49.8	60.8
				2	1.04	32.8	42.2	51.5
		MED.	1140	6	7.55	40.3	51.8	63.4
				4	3.64	37.7	48.5	59.3
				2	1.04	32.1	41.3	50.5
		LOW	1070	6	7.55	39.0	50.1	61.3
				4	3.64	36.5	47.0	57.4
				2	1.04	31.3	40.2	49.1
48HBXB-HW	48,000	HIGH	1660	6	2.90	66.6	85.6	104.7
				4	1.40	61.7	79.4	97.0
				2	0.41	48.0	61.8	75.5
		MED.	1460	6	2.90	62.3	80.1	97.9
				4	1.40	57.4	73.8	90.2
				2	0.41	45.0	57.8	70.7
		LOW	1180	6	2.90	54.5	70.1	85.7
				4	1.40	50.6	65.0	79.5
				2	0.41	40.1	51.6	63.0
60HBXB-HW	60,000	HIGH	1980	9	5.15	83.8	107.8	131.7
				7	3.33	80.0	102.9	125.8
				5	1.86	74.5	95.8	117.1
		MED.	1710	9	5.15	76.8	98.7	120.6
				7	3.33	73.5	94.5	115.5
				5	1.86	68.9	88.5	108.2
		LOW	1430	9	5.15	68.5	88.1	107.7
				7	3.33	65.8	84.6	103.4
				5	1.86	61.8	79.5	97.1

NOTES:

(1) Heat BTU is at 65° Entering Air Temperature**.**

(2) Units are shipped with motors connected to high speed for cooling and medium speed for heating.

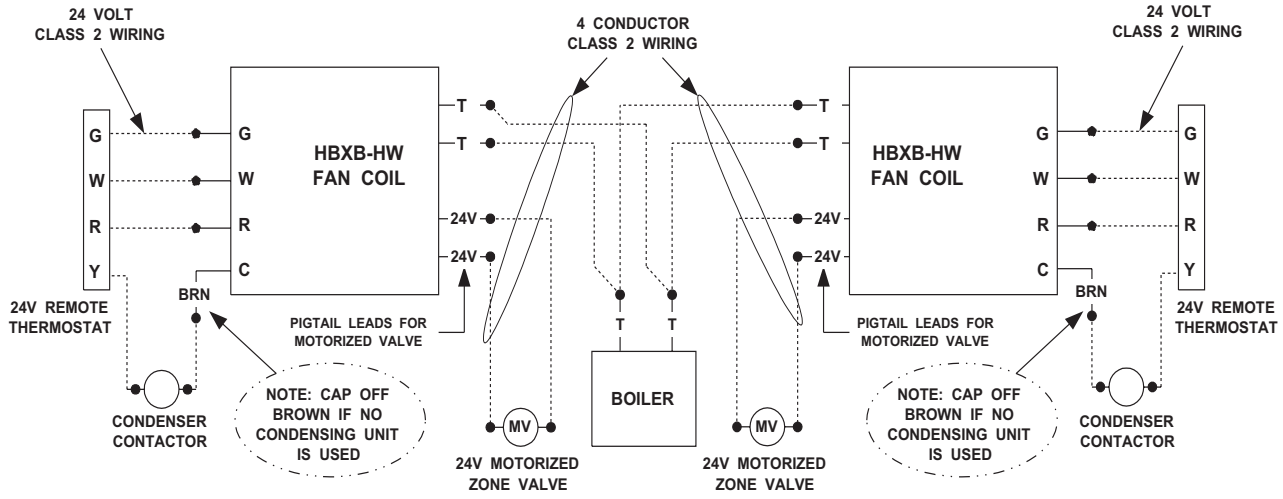
(3) 190° EWT would increase the 180° EWT heating capacities by 9.1%. 200° EWT would increase the 180° EWT heating capacities by 18.2%.

In keeping with its policy of continuous progress and product improvement, First Operations reserves the right to make changes without notice. Maintenance for all First Co. products is available under "Product Maintenance" at www.firstco.com.

APPLICATION GUIDELINES

Zone Valves Install a motorized valve with each air handler to control flow to that zone as required**.**

TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS
WITH ZONE VALVES



TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS TO
TACO SR-504/506 SWITCHING RELAY