Supplemental Instructions

Models:

W3VHYD W5VHYD

This model provides a unique dehumidification circuit for periods of low outdoor ambient temperature and high indoor humidity conditions.

Refer to Specification Sheet S3629 for the standard features of the base units and this manual for electrical data.

Dehumidification Circuit

The dehumidification circuit incorporates an independent heat exchanger coil in the supply air stream. This coil reheats the supply air after it passes over the cooling coil without requiring the electric resistance heater to be used for reheat purposes. This results in very high mechanical dehumidification capability from the air conditioner on demand without using electric resistance reheat.

The dehumidification refrigerant reheat circuit is controlled by a dehumidification valve directing the refrigerant gas to the normal condenser during periods when standard air conditioning is required. During periods of time of low ambient temperature (approximately 65° to 75° outdoor) and high indoor humidity, a humidistat senses the need for mechanical dehumidification. It then energizes both the compressor circuit and the dehumidification valve, thus directing the hot refrigerant discharge gas into a separate desuperheating condenser circuit, which reheats the conditioned air before it is delivered to the room. The refrigerant gas is then routed from the desuperheating condenser to the system condenser for further heat transfer. When the humidistat is satisfied, the system automatically switches off. The result is separate humidity control at minimum operating cost.

Dehumidification Sequence of Operation

Dehumidification is controlled through the thermostat (if capable) or through a separate humidistat. On a call for dehumidification mode of operation, the compressor and dehumidification valve of the unit are energized to provide dehumidification. Dehumidification will continue until the humidistat is satisfied.

A cooling call takes precedence over a dehumidification call for as long as the cooling call is present.

A heating call takes precedence over a dehumidification call unless an occupied signal is received. When occupied, a dehumidification call takes precedence over first stage heating. A second stage heating call takes precedence over a dehumidification call even when occupied.

Bard SINCE 1914
Climate Control Solutions

Bard Manufacturing Company, Inc.
Bryan, Ohio 43506

www.bardhvac.com

Manual: 7960-949
Supersedes: ***NEW***
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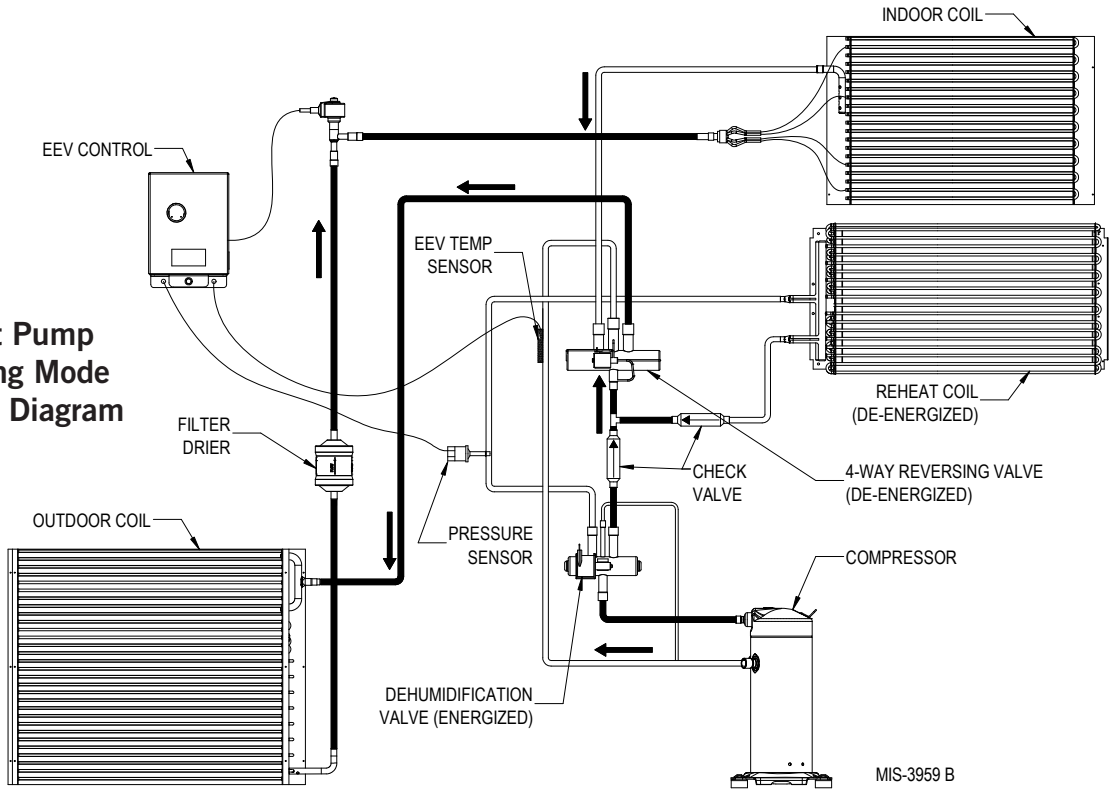
Heat Pump Cooling Mode Circuit Diagram



Heat Pump Dehumidification Mode Circuit Diagram

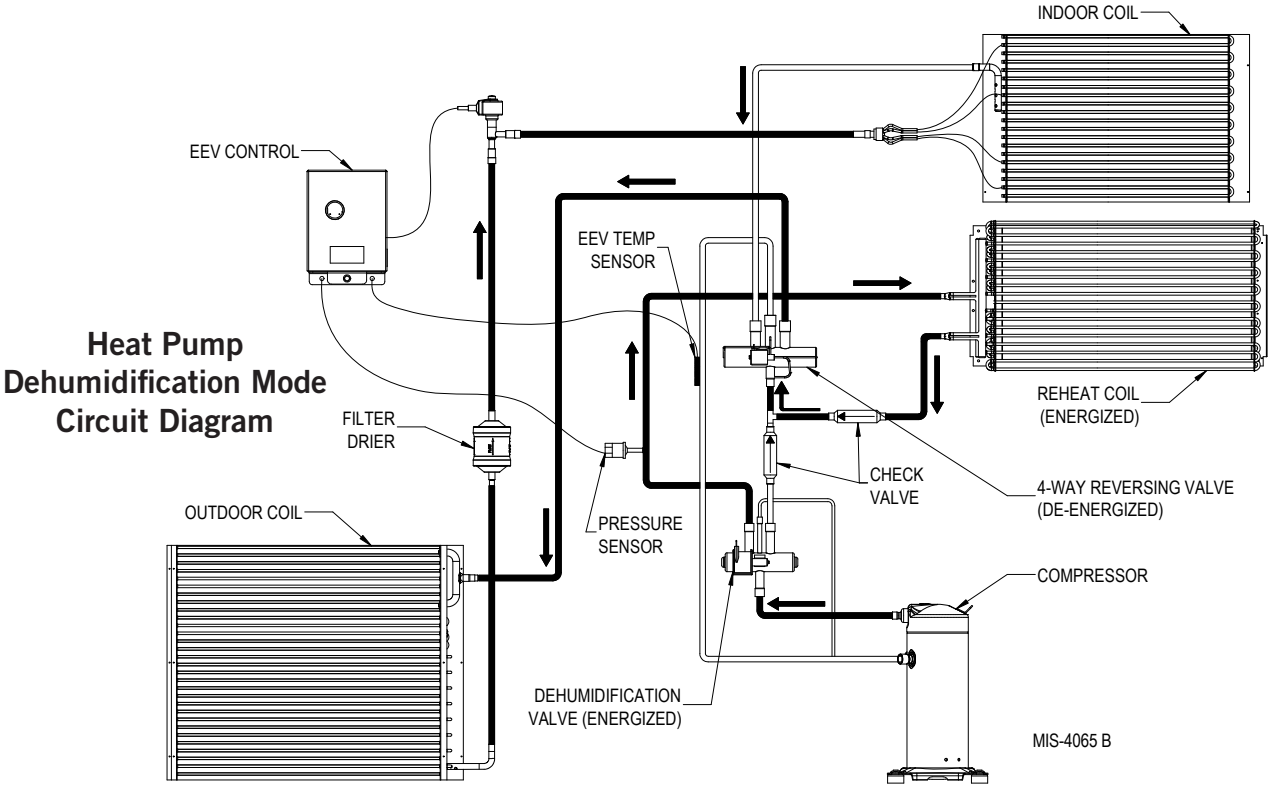


TABLE 1
W3VHYD Cooling and Dehumidification Application Data[1]

DB/WB[2]	OD Temp	65°F[3]		75°F		85°F		95°F	
	Mode	A/C	Dehum	A/C	Dehum	A/C	Dehum	A/C	Dehum
75/64.1 (55% RH)	Total Cooling Btuh	40,800	17,300	38,700	14,700	36,300	10,500	33,800	4,700
	Sensible Btuh	26,900	4,700	26,100	2,200	25,000	(1,100)	23,900	(5,100)
	Latent Btuh	13,900	12,600	12,600	12,500	11,300	11,600	9,900	9,800
	Lbs. H2O/hr	13.1	11.9	11.9	11.8	10.7	10.9	9.3	9.2
	Supply Air DB	51.8	69.7	52.5	72.8	53.4	76.7	54.3	81.5
	Supply Air WB	50.9	56.6	51.6	57.8	52.3	59.7	53.1	62.2
	Suction PSIG[4]	126	250	127	153	129	103	132	100
	Discharge PSIG[4]	259	130	293	252	340	333	401	373
75/65.5 (60% RH)	Total Cooling Btuh	41,600	18,400	39,500	16,500	37,200	11,600	34,700	5,800
	Sensible Btuh	25,600	4,200	24,700	2,300	23,700	(1,500)	22,600	(5,500)
	Latent Btuh	16,000	14,200	14,800	14,200	13,500	13,100	12,100	11,300
	Lbs. H2O/hr	15.1	13.4	14.0	13.4	12.7	12.4	11.4	10.7
	Supply Air DB	53.0	70.3	53.7	72.8	54.6	77.3	55.5	82.1
	Supply Air WB	52.2	57.6	52.9	58.7	53.6	60.7	54.4	63.2
	Suction PSIG[4]	129	252	130	126	132	104	134	102
	Discharge PSIG[4]	261	130	295	274	342	333	403	373
75/66.7 (65% RH)	Total Cooling Btuh	42,500	19,500	40,400	17,500	38,100	12,700	35,500	6,900
	Sensible Btuh	24,300	3,800	23,400	1,900	22,400	(1,900)	21,300	(6,000)
	Latent Btuh	18,200	15,700	17,000	15,600	15,700	14,600	14,200	12,900
	Lbs. H2O/hr	17.2	14.8	16.0	14.7	14.8	13.8	13.4	12.2
	Supply Air DB	54.2	71.0	54.9	73.4	55.8	78.0	56.7	82.8
	Supply Air WB	53.5	58.6	54.2	59.8	54.9	61.7	55.7	64.3
	Suction PSIG[4]	132	253	133	127	135	106	137	103
	Discharge PSIG[4]	263	130	297	275	344	333	405	373
75/68 (70% RH)	Total Cooling Btuh	43,400	20,500	41,300	18,600	39,000	13,800	36,400	8,000
	Sensible Btuh	23,000	3,400	22,100	1,400	21,100	(2,400)	20,000	(6,400)
	Latent Btuh	20,400	17,100	19,200	17,200	17,900	16,200	16,400	14,400
	Lbs. H2O/hr	19.2	16.1	18.1	16.2	16.9	15.3	15.5	13.6
	Supply Air DB	55.4	71.6	56.1	74.1	57.0	78.6	57.9	83.4
	Supply Air WB	54.8	59.7	55.5	60.8	56.2	62.8	57.0	65.3
	Suction PSIG[4]	135	255	136	129	138	107	140	105
	Discharge PSIG[4]	265	130	298	275	346	333	406	373

[1] Values listed are with ventilation package disabled.

[2] Return air temperature °F @ Default airflow (800 CFM) for AC tests and Balanced Climate airflow (560 CFM) for dehumidification tests.

[3] Below 50°F, unit requires a factory- or field-installed low ambient control.

[4] Suction pressure +/- 4 psi, Discharge pressure +/- 10 psi.

TABLE 2
W5VHYD Cooling and Dehumidification Application Data[1]

DB/WB[2]	OD Temp	65°F[3]		75°F		85°F		95°F	
	Mode	A/C	Dehum	A/C	Dehum	A/C	Dehum	A/C	Dehum
75/64.1 (55% RH)	Total Cooling Btuh	60,700	38,600	58,500	26,000	55,600	16,200	52,000	9,000
	Sensible Btuh	40,600	15,200	39,500	8,600	38,200	2,800	36,700	(2,200)
	Latent Btuh	20,100	23,400	19,000	17,400	17,400	13,400	15,300	11,200
	Lbs. H2O/hr	19.0	22.1	17.9	16.4	16.4	12.6	14.4	10.6
	Supply Air DB	52.3	63.3	52.9	68.5	53.6	73.1	54.5	77.1
	Supply Air WB	51.3	54.2	51.9	56.9	52.6	59.3	53.4	61.4
	Suction PSIG[4]	129	120	132	126	135	131	138	134
	Discharge PSIG[4]	263	255	301	286	342	321	387	360
75/65.5 (60% RH)	Total Cooling Btuh	61,800	40,200	59,600	29,400	56,700	17,800	53,100	10,700
	Sensible Btuh	38,400	14,100	37,200	9,000	36,100	1,700	34,600	(3,300)
	Latent Btuh	23,400	26,100	22,400	20,400	20,600	16,100	18,500	14,000
	Lbs. H2O/hr	22.1	24.6	21.1	19.2	19.4	15.2	17.5	13.2
	Supply Air DB	53.6	64.3	54.2	68.1	54.9	74.0	55.8	78.1
	Supply Air WB	52.7	55.2	53.3	57.3	54.0	60.4	54.8	62.5
	Suction PSIG[4]	132	123	135	128	138	134	141	137
	Discharge PSIG[4]	265	258	303	286	344	324	389	363
75/66.7 (65% RH)	Total Cooling Btuh	62,900	41,900	60,700	31,100	57,800	19,400	54,200	12,300
	Sensible Btuh	36,200	13,000	35,000	7,900	33,900	600	32,400	(4,500)
	Latent Btuh	26,700	28,900	25,700	23,200	23,900	18,800	21,800	16,800
	Lbs. H2O/hr	25.2	27.3	24.2	21.9	22.5	17.7	20.6	15.8
	Supply Air DB	54.9	65.3	55.5	69.1	56.2	75.0	57.1	79.1
	Supply Air WB	54.2	56.3	54.7	58.3	55.4	61.4	56.2	63.5
	Suction PSIG[4]	135	126	138	131	141	136	144	140
	Discharge PSIG[4]	267	261	305	288	346	326	390	365
75/68 (70% RH)	Total Cooling Btuh	64,000	43,500	61,800	32,700	58,900	21,100	55,300	13,900
	Sensible Btuh	34,000	11,800	32,800	6,800	31,700	(600)	30,200	(5,600)
	Latent Btuh	30,000	31,700	29,000	25,900	27,200	21,700	25,100	19,500
	Lbs. H2O/hr	28.3	29.9	27.4	24.4	25.7	20.5	23.7	18.4
	Supply Air DB	56.2	66.3	56.8	70.1	57.5	76.0	58.4	80.0
	Supply Air WB	55.6	57.3	56.1	59.4	56.8	62.5	57.6	64.5
	Suction PSIG[4]	139	129	142	133	144	139	147	143
	Discharge PSIG[4]	268	263	306	291	348	329	392	368

[1] Values listed are with ventilation package disabled.

[2] Return air temperature °F @ Default airflow (800 CFM) for AC tests and Balanced Climate airflow (560 CFM) for dehumidification tests.

[3] Below 50°F, unit requires a factory- or field-installed low ambient control.

[4] Suction pressure +/- 4 psi, Discharge pressure +/- 10 psi.

TABLE 3
Optional Accessories

		W3VHYDR	W3VHYDS	W3VHYDT	W5VHYDR	W5VHYDS	W5VHYDT
Heater Kits	EHVH036A-R05	X					
	EHVH036A-R10	X					
	EHCH036A-A15	X					
	EHVH036A-S05		X				
	EHVH036ADS09		X				
	EHVH036A-S15		X				
	EHCH036A-C05			X			
	EHCH036A-C09			X			
	EHCH036A-C15			X			
	EHVH060ADR05				X		
	EHVH060ADR10				X		
	EHVH060ADR15				X		
	EHVH060A-S05					X	
	EHCH060A-B09					X	
	EHCH060A-B15					X	
	EHCH060A-C05						X
	EHCH060A-C09						X
	EHCH060A-C15						X
Circuit Breaker (WMCB)	WMCBC-05A	X					
	WMCBC-04B		X				
	WMCBC-06C			X			X
	WMCBC-08A				X		
	WMCBC-05B					X	

TABLE 4
Electrical Specifications – Dehumidification Models

Model	Rated Volts & Phase	No. Field Power Circuits	Single Circuit		Multiple Circuit			
			① Minimum Circuit Ampacity	② Maximum External Fuse or Circuit Breaker	① Minimum Circuit Ampacity		② Maximum External Fuse or Circuit Breaker	
					Circuit A	Circuit B	Circuit A	Circuit B
W3VHYMA0Z	230/208-1	1	30	35				
A05		1	56	60				
A10		1 or 2	82	90	30	52	35	60
A10		1 or 2	86	90	34	52	35	60
W3VHYMB0Z	230/208-3	1	24	30				
B05		1	39	40				
B09		1	51	60				
B15		1	53	60				
W3VHYMC0Z	460-3	1	14	20				
C05		1	21	25				
C09		1	27	30				
C15		1	27	30				
W5VHYDA0Z	230/208-1	1	40	50				
A05		1 or 2	66	70	40	26	50	30
A10		1 or 2	92	100	40	52	50	60
A15		1 or 2	92	100	40	52	50	60
W5VHYDB0Z	230/208-3	1	29	35				
B05		1	44	45				
B09		1	56	60				
B15		1	56	60				
W5VHYDC0Z	460-3	1	16	20				
C05		1	24	25				
C09		1	30	30				
C15		1	30	30				

① These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electrical code (latest version), Article 310 for power conductor sizing. **CAUTION**: When more than one field power circuit is run through one conduit, the conductors must be derated. Pay special attention to note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three (3) current carrying conductors are in a raceway.

② Maximum size of the time delay fuse or circuit breaker for protection of field wiring conductors.

NOTE: *The Maximum Overcurrent Protection (MOCP) value listed is the maximum value as per UL 60335 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory-installed overcurrent protective device (circuit breaker) in this model may be lower than the maximum UL 60335 allowable MOCP value, but still above the UL 60335 minimum calculated value or Minimum Circuit Ampacity (MCA) listed.*

IMPORTANT: *While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes.*