MODELS:

WA424D, WA485D, WA604D

Bard Manufacturing Company, Inc.
Bryan, Ohio 43506

MODEL FEATURES

This model provides a unique dehumidification circuit for periods of low outdoor ambient temperature and high indoor humidity conditions. Additionally an "energy recovery ventilator" may be provided to allow for outside ventilation air requirements by eliminating excessive sensible and latent loads as a result of the increased ventilation requirement.

Refer to specification sheet S3208 for the standard features of the base unit. Electrical data for the dehumidification models is identical to the electrical data for the standard WA models.

SPECIAL FEATURES

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 3-way 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 3-way 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. A small capillary tube inserted between the reheat coil return line and suction line will prevent liquid from accumulating in the reheat coil when it is inactive. This drain does not affect the normal operation of the system. A check valve is located in the reheat coil return line. It has a soft spring to hold the ball on the seat. Refer to Page 2 for the location of the check valve and drain back capillary. When the humidistat is satisfied, the system automatically switches back to normal A/C mode and either continues to operate or turns off based on the signal from the wall thermostat. The result is separate humidity control at minimum operating cost.

SEQUENCE OF DEHUMIDIFICATION OPERATION

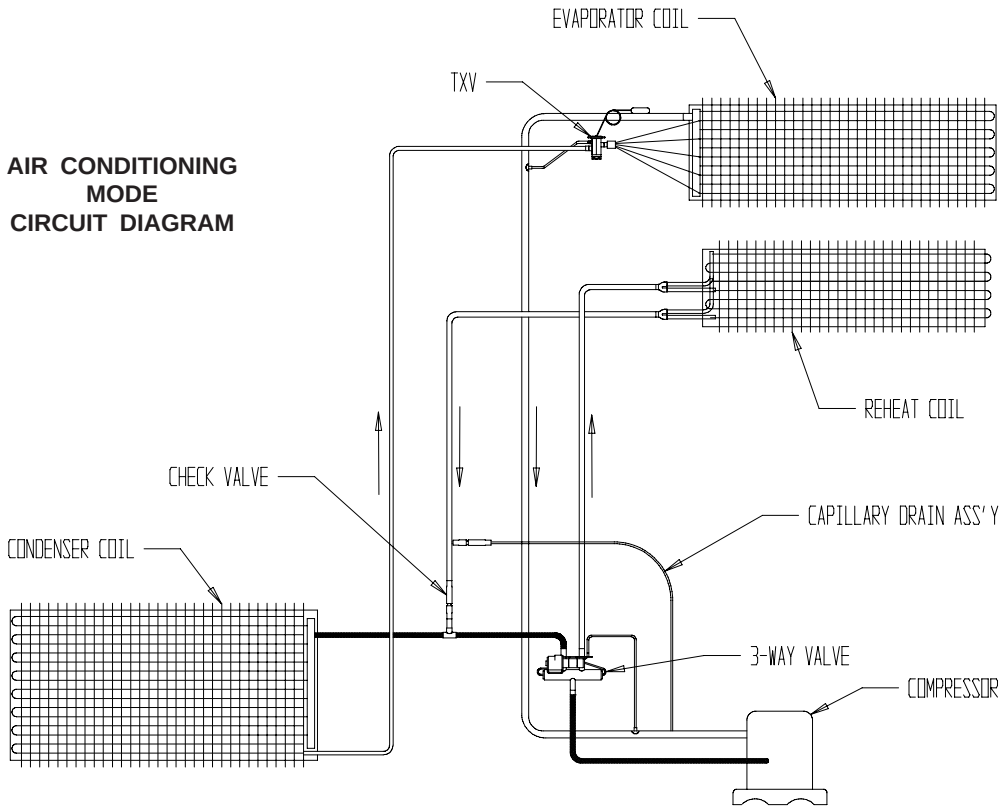
Dehumidification is controlled through a humidistat and is independent of the thermostat. On a call for dehumidification mode of operation the compressor and 3-way valve of the unit are energized through circuit R - F to provide dehumidification. Dehumidification will continue until the humidistat is satisfied.

Any time there is a call for cooling mode or operation through circuit R - Y the dehumidification mode will cancel and the system will return to cooling operation.

Any time there is a call for heating mode of operation through circuit R - W2 the dehumidification mode will cancel and the system will return to heating operation.

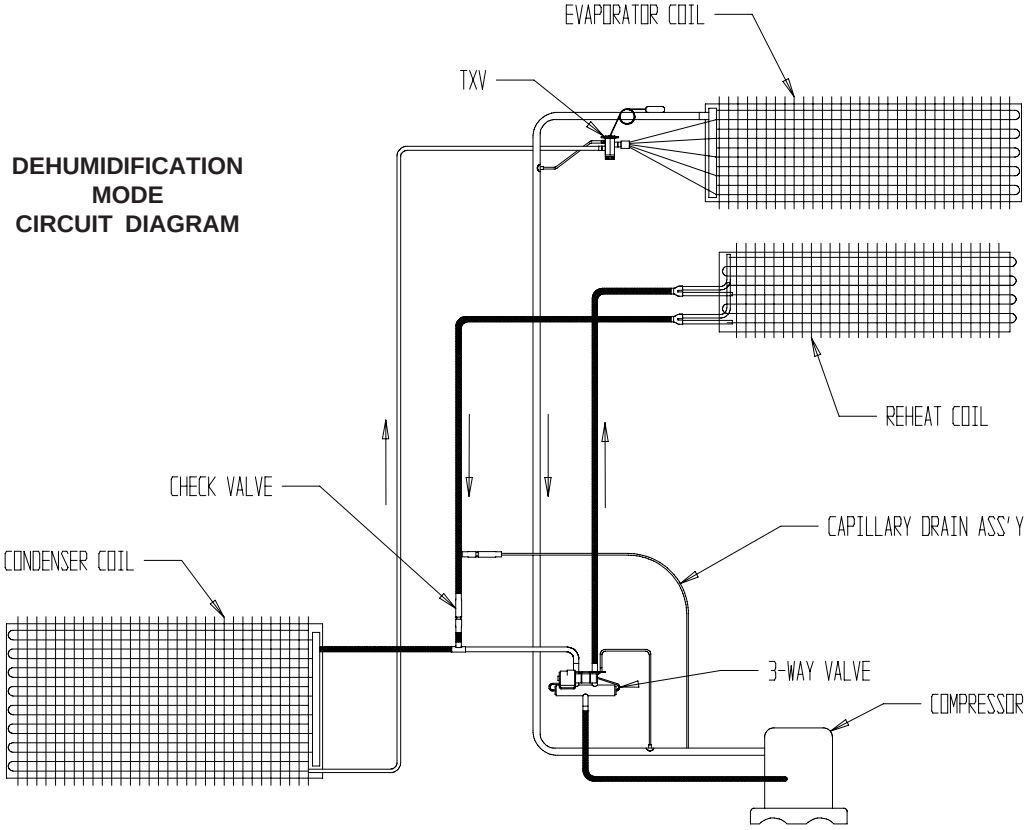
If the room temperature falls below 65° the dehumidification mode will discontinue until the room temperature rises above 72°.

AIR CONDITIONING MODE CIRCUIT DIAGRAM



MIS-1200

DEHUMIDIFICATION MODE CIRCUIT DIAGRAM



MIS-1199

WA424D Application Performance Data

Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Air Flow	Approximate Supply Air	Mode
DB/WB	% RH	DB	Total	Sensible	Latent	S/T	Lbs.	CFM	DB/WB	A/C vs Dehum
65/63	90	65	49,400	20,500	28,900	0.41	27.30	1400	52.2 / 51.6	A/C
65/63	90	65	35,000	6,500	28,500	0.18	26.89	1400	60.9 / 54.8	Dehum
75/62.5	50	75	45,800	34,600	11,200	0.76	10.56	1400	52.3 / 51.0	A/C
75/62.5	50	75	14,400	5,000	9,400	0.32	8.87	1400	71.9 / 59.2	Dehum
75/65.5	60	75	49,900	31,100	18,800	0.62	17.73	1400	54.6 / 53.7	A/C
75/65.5	60	75	17,400	400	17,000	0.03	16.04	1400	74.6 / 61.7	Dehum
75/68	70	75	50,200	27,500	22,700	0.55	21.40	1400	57.0 / 56.2	A/C
75/68	70	75	20,100	-0-	20,100	-0-	18.96	1400	75.0 / 63.9	Dehum
80/67	50	95	42,000	32,300	9,700	0.77	9.15	1400	58.0 / 56.9	A/C
80/67	50	95	7,100	-0-	7,100	-0-	6.70	1400	80.0 / 65.5	Dehum

WA485D Application Performance Data

Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Air Flow	Approximate Supply Air	Mode
DB/WB	% RH	DB	Total	Sensible	Latent	S/T	Lbs.	CFM	DB/WB	A/C vs Dehum
65/63	90	65	51,700	21,800	29,900	0.42	28.20	1550	52.2 / 51.6	A/C
65/63	90	65	34,300	4,900	29,400	0.14	27.74	1550	63.8 / 56.1	Dehum
75/62.5	50	75	48,700	36,800	11,900	0.75	11.23	1550	53.8 / 51.7	A/C
75/62.5	50	75	15,400	6,400	9,000	0.42	8.49	1550	71.2 / 59.3	Dehum
75/65.5	60	75	52,400	33,000	19,400	0.63	18.30	1550	55.5 / 54.4	A/C
75/65.5	60	75	21,200	2,100	19,100	0.10	18.02	1550	73.8 / 61.3	Dehum
75/68	70	75	55,000	29,000	26,000	0.52	24.53	1550	58.0 / 56.9	A/C
75/68	70	75	19,900	-0-	19,900	-0-	18.77	1550	75.0 / 64.1	Dehum
80/67	50	95	47,500	37,300	10,200	0.78	9.62	1550	58.0 / 56.9	A/C
80/67	50	95	7,500	-0-	7,500	-0-	7.08	1550	80.0 / 65.6	Dehum

WA604D Application Performance Data

Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Air Flow	Approximate Supply Air	Mode
DB/WB	% RH	DB	Total	Sensible	Latent	S/T	Lbs.	CFM	DB/WB	A/C vs Dehum
65/63	90	65	62,600	24,900	37,700	0.40	35.57	1700	52.2 / 51.6	A/C
65/63	90	65	36,700	2,800	33,900	0.07	31.98	1700	63.4 / 55.3	Dehum
75/62.5	50	75	59,000	42,100	16,900	0.71	15.94	1700	50.7 / 49.8	A/C
75/62.5	50	75	18,700	4,900	13,800	0.26	13.02	1700	72.1 / 58.8	Dehum
75/65.5	60	75	63,400	37,800	25,600	0.60	24.15	1700	53.8 / 53.8	A/C
75/65.5	60	75	22,600	-0-	22,600	-0-	21.32	1700	74.9 / 61.3	Dehum
75/68	70	75	66,500	33,200	33,400	0.50	31.51	1700	56.1 / 55.4	A/C
75/68	70	75	25,300	-0-	25,300	-0-	23.87	1700	75.0 / 63.6	Dehum
80/67	50	95	57,500	40,400	17,100	0.70	16.13	1700	58.2 / 56.9	A/C
80/67	50	95	12,000	-0-	12,000	-0-	11.32	1700	80.0 / 65.1	Dehum