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# Dehumidification Performance Data

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## Models

W24G3DA	W30G3DA	W36G3DA	W42G3DA	W48G3DA	W60G3DA
W24G3DB	W30G3DB	W36G3DB	W42G3DB	W48G3DB	W60G3DB
W24G3DC	W30G3DC	W36G3DC	W42G3DC	W48G3DC	W60G3DC

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This model provides a unique dehumidification circuit for periods of 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 S3500 for the standard features of the base unit. Electrical data for the dehumidification models is identical to the electrical data for the standard W\*\*G models.

### Dehumidification Circuit

The dehumidification circuit incorporates an independent heat exchanger coil in the supply airstream. This coil reheats the supply air after it passes over the cooling coil without requiring the gas furnace to be used for reheat purposes. This results in very high mechanical dehumidification capability from the air conditioner on demand without using gas furnace 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 drain back orifice 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. This will make the method of checking the ball freedom with a magnet difficult. Refer to Page 2 for the location of the check valve and drain back orifice. 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 temperature control. On a call for dehumidification mode of operation, the compressor and 3-way valve of the unit are energized through circuit R – 3 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.

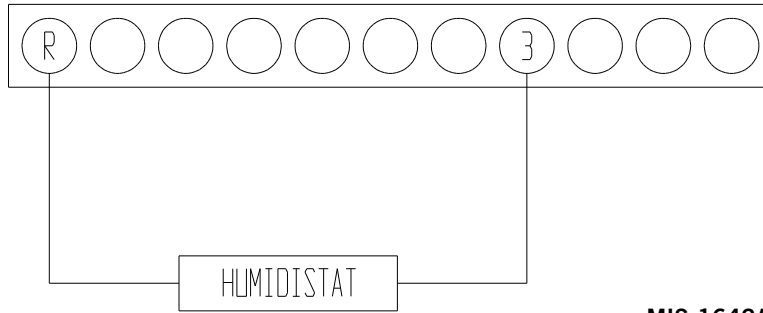
The indoor coil is equipped with a “freeze stat”. When the sensed indoor coil temperature falls below 27°, the compressor will be de-energized. Restart is dependent of the freeze stat reaching 50° to reset, and the time-out on the compressor control module.



Bard Manufacturing Company, Inc.  
Bryan, Ohio 43506  
www.bardhvac.com

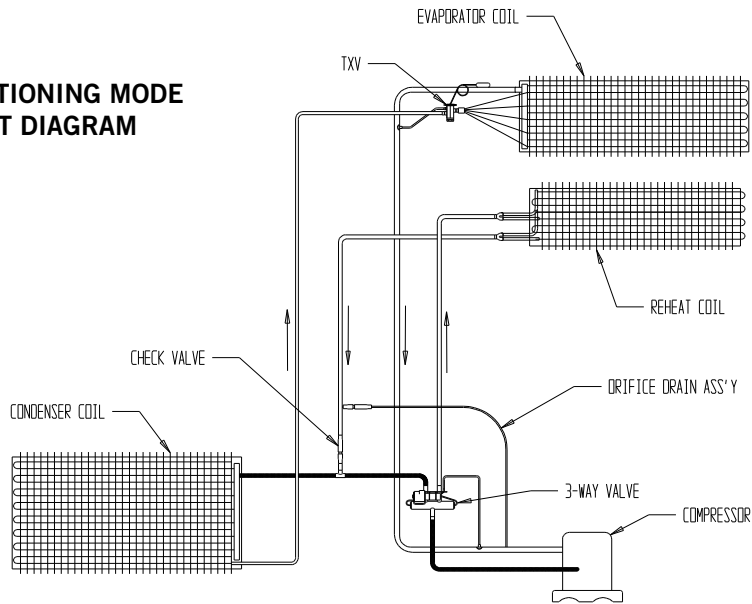
Manual: 7960-722A  
Supersedes: 7960-722  
Date: 4-18-16

**UNIT 24V TERMINAL BLOCK**



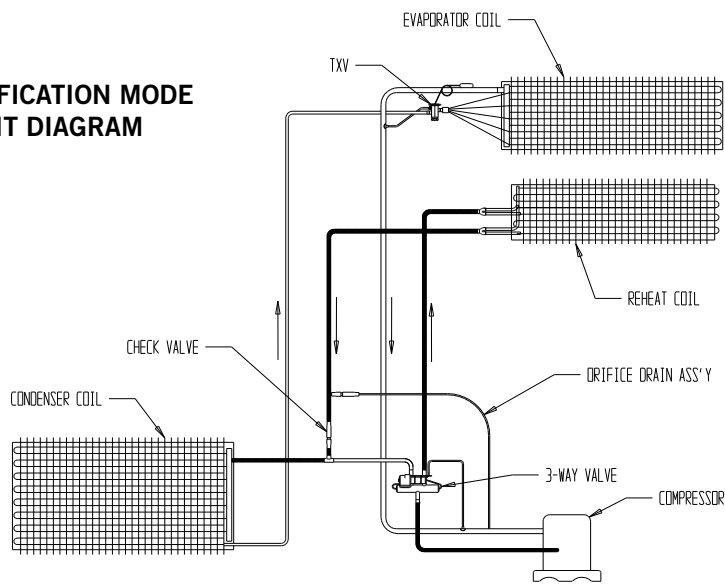
**MIS-1642A**

**AIR CONDITIONING MODE  
CIRCUIT DIAGRAM**



**MIS-1200A**

**DEHUMIDIFICATION MODE  
CIRCUIT DIAGRAM**



**MIS-1199A**

<b>W24G3D Application Performance Data</b>										
Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Airflow	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	27,900	11,900	16,000	.43	15.1	800	51.6 / 51.1	A/C
65/63	90	65	-0-	(800)	13,050	-0-	12.3	800	66.0 / 58.2	Dehum
75/62.5	50	75	28,750	19,750	7,000	.69	6.6	800	52.5 / 50.8	A/C
75/62.5	50	75	9,650	3,700	5,950	.38	5.6	800	70.8 / 58.5	Dehum
75/65.5	60	75	28,550	17,550	11,000	.62	10.4	800	54.9 / 53.7	A/C
75/65.5	60	75	10,950	2,000	8,950	.18	8.5	800	72.9 / 61.3	Dehum
75/68	70	75	29,650	15,450	14,200	.52	13.4	800	57.4 / 56.5	A/C
75/68	70	75	11,850	350	11,500	.03	10.8	800	74.7 / 63.8	Dehum
80/67	50	95	26,000	18,900	7,100	.73	6.7	800	58.8 / 56.8	A/C
80/67	50	95	-0-	(2,500)	6,000	-0-	5.7	800	82.9 / 65.8	Dehum

<b>W30G3D Application Performance Data</b>										
Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Airflow	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	35,650	15,550	20,100	.43	19.0	1000	51.1 / 50.8	A/C
65/63	90	65	-0-	(950)	16,200	-0-	15.3	1000	65.9 / 58.1	Dehum
75/62.5	50	75	33,050	25,300	7,750	.76	7.3	1000	52.1 / 50.9	A/C
75/62.5	50	75	10,300	4,200	6,100	.41	5.8	1000	71.1 / 59.2	Dehum
75/65.5	60	75	34,950	22,200	12,750	.64	12.0	1000	54.8 / 53.9	A/C
75/65.5	60	75	11,900	2,450	9,450	.21	8.9	1000	72.8 / 61.8	Dehum
75/68	70	75	36,400	19,550	16,850	.54	15.9	1000	57.2 / 56.5	A/C
75/68	70	75	13,300	700	12,600	.05	11.9	1000	74.3 / 64.1	Dehum
80/67	50	95	32,000	24,350	7,650	.76	7.2	1000	58.0 / 56.8	A/C
80/67	50	95	-0-	(2,200)	6,350	-0-	6.0	1000	82.1 / 65.8	Dehum

<b>W36G3D Application Performance Data</b>										
Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Airflow	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	35,050	15,350	19,700	.44	18.6	1100	52.1 / 52.1	A/C
65/63	90	65	11,600	(2,450)	14,050	-0-	13.3	1100	67.2 / 59.8	Dehum
75/62.5	50	75	33,800	26,250	7,550	.78	7.1	1100	53.7 / 51.9	A/C
75/62.5	50	75	7,150	1,500	5,650	.21	5.3	1100	73.9 / 62.5	Dehum
75/65.5	60	75	34,900	22,550	12,350	.65	11.6	1100	56.6 / 55.3	A/C
75/65.5	60	75	8,850	(100)	8,950	-0-	8.5	1100	75.2 / 65.6	Dehum
75/68	70	75	36,100	19,600	16,500	.54	15.5	1100	58.8 / 58.0	A/C
75/68	70	75	10,250	(1,350)	11,600	-0-	11.0	1100	76.2 / 65.3	Dehum
80/67	50	95	34,500	26,600	7,900	.77	7.5	1100	57.9 / 57.1	A/C
80/67	50	95	300	(5,500)	5,800	-0-	5.5	1100	84.7 / 67.0	Dehum

<b>W42G3D Application Performance Data</b>										
Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Airflow	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	46,800	20,700	26,100	.44	24.6	1400	52.0 / 51.6	A/C
65/63	90	65	23,450	(900)	24,350	-0-	23.0	1400	65.6 / 57.4	Dehum
75/62.5	50	75	44,050	34,700	9,350	.79	8.8	1400	52.6 / 51.6	A/C
75/62.5	50	75	17,650	9,750	7,900	.55	7.5	1400	68.8 / 58.5	Dehum
75/65.5	60	75	46,500	30,350	16,150	.65	15.2	1400	55.5 / 54.8	A/C
75/65.5	60	75	20,550	6,200	14,350	.30	13.5	1400	71.2 / 61.1	Dehum
75/68	70	75	49,000	26,850	22,150	.55	20.9	1400	58.0 / 57.3	A/C
75/68	70	75	23,100	3,150	19,950	.14	18.8	1400	73.3 / 63.3	Dehum
80/67	50	95	42,000	32,400	9,600	.77	9.1	1400	58.8 / 57.5	A/C
80/67	50	95	9,700	1,800	7,900	.18	7.5	1400	79.0 / 65.1	Dehum

<b>W48G3D Application Performance Data</b>										
Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Airflow	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	52,550	22,300	30,250	.42	28.6	1450	51.0 / 50.7	A/C
65/63	90	65	24,350	(2,050)	26,400	-0-	24.9	1450	66.3 / 57.8	Dehum
75/62.5	50	75	50,200	38,600	11,600	.77	11.0	1450	50.8 / 50.3	A/C
75/62.5	50	75	17,800	8,300	9,500	.46	9.0	1450	69.0 / 58.6	Dehum
75/65.5	60	75	52,750	33,350	19,400	.63	18.3	1450	54.1 / 53.6	A/C
75/65.5	60	75	20,650	5,250	15,400	.26	14.5	1450	71.6 / 61.3	Dehum
75/68	70	75	55,600	29,200	26,400	.53	24.9	1450	56.7 / 56.3	A/C
75/68	70	75	23,050	1,650	21,400	.07	20.2	1450	73.9 / 63.6	Dehum
80/67	50	95	48,000	36,400	11,600	.76	10.9	1450	57.1 / 56.5	A/C
80/67	50	95	7,200	150	7,050	.02	6.6	1450	79.9 / 65.6	Dehum

<b>W60G3D Application Performance Data</b>										
Indoor Conditions		Outdoor Conditions	System Capacity				Pounds of Water/Hour	Evaporator Airflow	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	63,400	28,150	35,250	.44	33.3	1650	49.9 / 49.7	A/C
65/63	90	65	31,250	1,550	29,700	.05	28.0	1650	66.3 / 57.0	Dehum
75/62.5	50	75	60,100	44,400	15,700	.74	14.8	1650	50.8 / 49.6	A/C
75/62.5	50	75	24,200	10,100	14,100	.42	13.3	1650	69.6 / 57.8	Dehum
75/65.5	60	75	63,600	39,400	24,200	.62	22.8	1650	53.7 / 52.8	A/C
75/65.5	60	75	27,700	5,950	21,750	.21	20.5	1650	72.1 / 60.5	Dehum
75/68	70	75	66,400	35,150	31,250	.53	29.5	1650	56.2 / 55.6	A/C
75/68	70	75	30,650	2,300	28,350	.08	26.7	1650	74.2 / 62.7	Dehum
80/67	50	95	57,000	41,700	15,300	.73	14.4	1650	57.3 / 56.0	A/C
80/67	50	95	13,950	100	13,850	.01	13.1	1650	80.2 / 64.6	Dehum