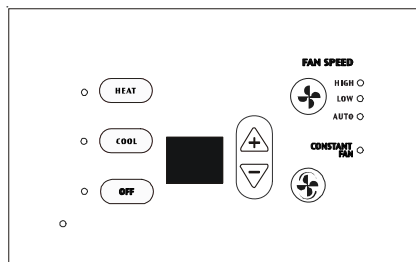
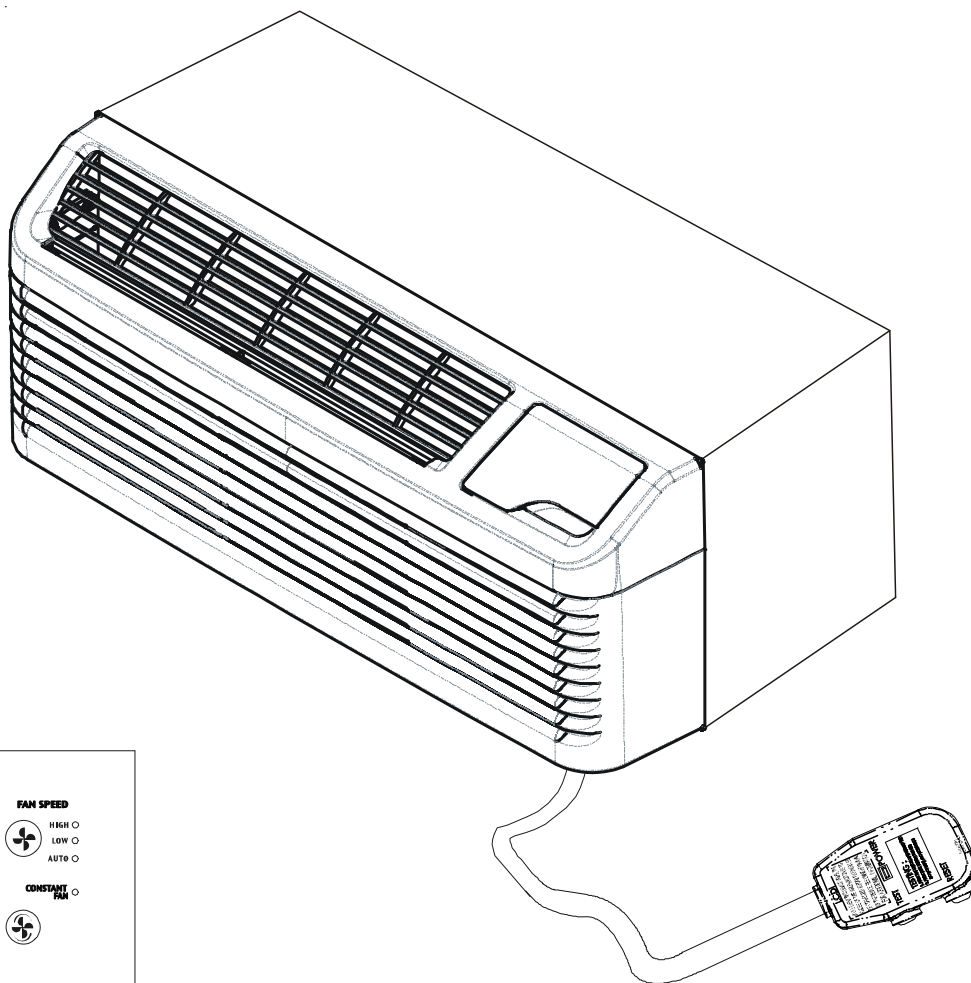


Service Instructions



PACKAGE TERMINAL AIR CONDITIONER/HEAT PUMP

*Standard and Remote Applications
with LED M70 Control Board
and R-410A*



This manual is to be used by qualified, professionally trained HVAC technicians only. Goodman does not assume any responsibility for property damage or personal injury due to improper service procedures or services performed by an unqualified person.

RS4200005r11
September 2017

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IMPORTANT INFORMATION

Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments and the appropriate service manual. **REVIEW ALL SERVICE INFORMATION IN THE APPROPRIATE SERVICE MANUAL BEFORE BEGINNING REPAIRS.**

IMPORTANT NOTICES FOR CONSUMERS AND SERVICERS



RECOGNIZE SAFETY SYMBOLS, WORDS AND LABELS



WARNING

**HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY BE
PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



WARNING

ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER INSTALLATION, ADJUSTMENT, SERVICING OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

THIS AIR CONDITIONER IS NOT MEANT TO PROVIDE UNATTENDED COOLING OR LIFE SUPPORT FOR PERSONS OR ANIMALS WHO ARE UNABLE TO REACT TO THE FAILURE OF THIS PRODUCT.

THE FAILURE OF AN UNATTENDED AIR CONDITIONER MAY RESULT IN EXTREME HEAT IN THE CONDITIONED SPACE CAUSING OVERHEATING OR DEATH OF PERSONS OR ANIMALS.

PRECAUTIONS MUST BE TAKEN TO WARN OF OR GUARD AGAINST SUCH AN OCCURENCE.



WARNING

HIGH VOLTAGE

DISCONNECT ALL POWER BEFORE SERVICING. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. DO NOT SERVICE THIS UNIT WITHOUT FIRST SHUTTING OFF POWER TO THE UNIT FROM THE CIRCUIT BREAKER AND/OR REMOVING THE UNIT CORD SET PLUG FROM THE WALL OUTLET. LINE VOLTAGE WILL BE PRESENT AT THE CONTROL BOARD, TERMINALS L1 AND L2 WHENEVER POWER IS APPLIED TO THE UNIT REGARDLESS OF THE MASTER SWITCH POSITION.



WARNING

GOODMAN WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SERVICE OR SERVICE PROCEDURES. IF YOU INSTALL OR PERFORM SERVICE ON THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY PERSONAL INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. MANY JURISDICTIONS REQUIRE A LICENSE TO INSTALL OR SERVICE HEATING AND AIR CONDITIONING EQUIPMENT.

To locate an authorized servicer, please consult your telephone book or the dealer from whom you purchased this product. For further assistance, please contact:

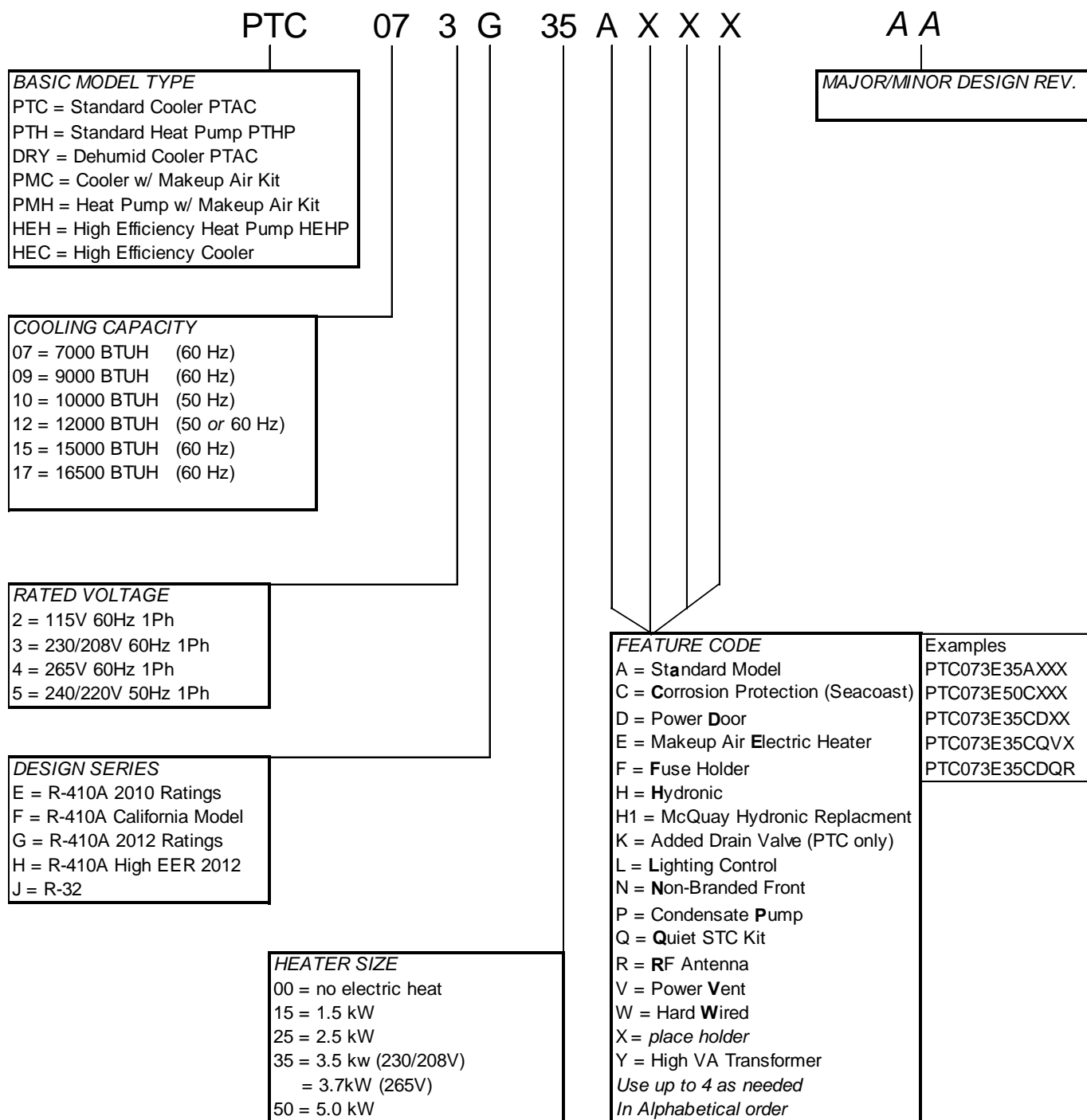
CONSUMER INFORMATION LINE -
AMANA® BRAND PRODUCTS TOLL FREE
1-877-254-4729 (U.S. only)
email us at: customerservice@goodmanmfg.com
fax us at: (713) 856-1821
(Not a technical assistance line for dealers.)

Outside the U.S., call 1-713-861-2500.
(Not a technical assistance line for dealers.)
Your telephone company will bill you for the call.



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PRODUCT IDENTIFICATION



SPECIFICATIONS

PMC/PMH SERIES

Model ^{1, 6, 8, 9}	PMC073G**	PMC093G**	PMC123G**	PMC153G**
Voltage ^{1, 3}	230 / 208	230 / 208	230 / 208	230 / 208
Capacity (BTU/h)	7,700 / 7,700	9,000 / 9,000	12,000 / 11,700	15,000 / 14,700
Amps ¹⁰	3.5 / 3.5	4.1 / 4.1	5.6 / 5.6	7.0 / 7.0
Watts ¹⁰	655 / 655	795 / 795	1,150 / 1,110	1,575 / 1,530
EER	11.7 / 11.7	11.3 / 11.3	10.4 / 10.5	9.5 / 9.6
Kit Fresh Air, CFM	25-35	25-35	25-35	25-35
Kit Dehumidification (Oz/Hr)	5	5	5	5

Model ^{1, 6, 8, 9}	PMH073G**	PMH093G**	PMH123G**	PMH153G**
Voltage ^{1, 3}	230 / 208	230 / 208	230 / 208	230 / 208
Capacity (BTU/h)	7,600 / 7,600	9,000 / 9,000	12,000 / 12,000	14,700 / 14,700
Amps ¹⁰	3.6/3.6	4.1/4.1	5.7/5.7	7.0/7.0
Watts ¹⁰	640 / 640	795 / 795	1150 / 1150	1,530 / 1,530
EER	11.8 / 11.8	11.3 / 11.3	10.4 / 10.4	9.6 / 9.6
Kit Fresh Air, CFM	25-35	25-35	25-35	25-35
Kit Dehumidification (Oz/Hr)	5	5	5	5

Model ^{1, 6, 8, 9}	PMH074G**	PMH094G**	PMH124G**
Voltage ^{1, 3}	265	265	265
Capacity (BTU/h)	7,700	9,000	12,000
Amps ¹⁰	3.2	4.3	5.1
Watts ¹⁰	655	795	1150
EER	11.7	11.3	10.4
Kit Fresh Air, CFM	25-35	25-35	25-35
Kit Dehumidification (Oz/Hr)	5	5	5

* Actual vent CFM performance will vary due to application and installation conditions.

Notes:

- ¹ All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- ² Minimum Circuit Ampacity (MCA) ratings conform to the National Electric Code; however, local codes should apply.
Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
- ³ Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- ⁴ Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis). See heater perform
- ⁵ Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor
- ⁶ Specify two-digit heater kW size to complete model number.
- ⁷ R-410A refrigerant used in all systems. R-134A used in Kit Fresh Air.
- ⁸ All units meet or exceed ASHRAE 90.1 standards.
- ⁹ All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- ¹⁰ Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

SPECIFICATIONS

COOLING - PTC

PTC G SERIES

Model ^{1, 7, 9, 10}	PTC 073G**	PTC 074G**	PTC 092G***BA*	PTC 093G***	PTC 094G***	PTC 123G**	PTC 153G***	PTC 154G***
Voltage ^{1, 3}	230/208	265	115	230 / 208	265	230/208	230 / 208	265
Capacity (BTU/h)	7700/7700	7,700	9,000	9,000 / 9,000	9,000	1200/11700	15,000 / 14,700	14,800
Amps ¹¹	3.5/3.5	3.0	8.3	4.1 / 4.1	3.6	5.6/5.6	7.0 / 7.0	6.1
Watts ¹¹	655/655	655	795	805 / 785	795	1150/1110	1,500 / 1,470	1,480
EER	11.7/11.7	11.7	11.3	11.2 / 11.5	11.3	10.4/10.5	10.0 / 10.0	10.0
Unit without Electric Heater								
Min. Circuit Amps ^{2, 5, 11}	4.3	3.6	8.3	4.9	4.4	6.8	8.5	7.4
CFM (Cool/Wet Coil)	High	330	340	290	290	290	340	340
	Low	245	245	264	264	264	245	314
CFM (Dry Coil)	High	360	370	310	310	310	370	360
	Low	270	270	282	282	282	270	332
Ventilated Air, CFM (Fan Only)**	40*	65*	65**	65**	65**	40*	65**	65**
Dehumidification (Pints/Hr.)	1.7	1.7	2.2	2.2	2.2	1.7	4.4	4.4
Net Weight (lbs.)	106	103	102	102	102	108	113	113
Ship Weight (lbs.)	115	115	117	117	117	125	130	130

* Information in this manual applies only to the BA revision of 092G*** model.

** Actual vent CFM performance will vary due to application and installation conditions.

Notes:

- All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- Minimum Circuit Ampacity (MCA) ratings conform to the National Electric Code; however, local codes should apply.
Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
- Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- Minimum voltage on 115-volt models is 104 volts; maximum is 127 volts.
- Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis). See heater perform
- Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor a
- Specify two-digit heater kW size to complete model number.
- R-410A refrigerant used in all systems.
- All units meet or exceed ASHRAE 90.1 standards.
- All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

SPECIFICATIONS

COOLING - PTC

PTC G SERIES

Model ^{1, 7, 9, 10}		PTC 073G**DA	PTC 093G***DA	PTC 123G**DA
Voltage ^{1, 3}		230/208	230 / 208	230/208
Capacity (BTU/h)		7000/7000	9,200 / 9,000	11500/11400
Amps ¹¹		3.1/3.1	4.1 / 4.1	5.0/5.0
Watts ¹¹		580/560	790/765	1045/1015
EER		12/12.5	11.6 / 11.7	11.0/11.0
Unit without Electric Heater				
Min. Circuit Amps ^{2, 5, 11}		3.7	5.0	6.2
CFM (Cool/Wet Coil)	High	330	290	340
	Low	245	264	245
CFM (Dry Coil)	High	360	310	370
	Low	270	282	270
Ventilated Air, CFM (Fan Only)**		40*	65**	40*
Dehumidification (Pints/Hr.)		1.7	2.2	1.7
Net Weight (lbs.)		106	108	110
Ship Weight (lbs.)		115	119	126

** Actual vent CFM performance will vary due to application and installation conditions.

Notes:

- All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- Minimum Circuit Ampacity (MCA) ratings conform to the National Electric Code; however, local codes should apply.
Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
- Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- Minimum voltage on 115-volt models is 104 volts; maximum is 127 volts.
- Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis). See heater perform
- Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor a
- Specify two-digit heater kW size to complete model number.
- R-410A refrigerant used in all systems.
- All units meet or exceed ASHRAE 90.1 standards.
- All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

SPECIFICATIONS

HEC H SERIES

COOLING - HEC

Model ^{1, 7, 9, 10}		HEC 073H**	HEC 093H***	HEC 123H**
Voltage ^{1, 3}		230/208	230 / 208	230/208
Capacity (BTU/h)		7000/7000	9,200 / 9,000	11600/11400
Amps ¹¹		3.5/3.5	4.5 / 4.5	5.4/5.4
Watts ¹¹		555/535	770/750	1025/990
EER		12.6/13	11.9 / 12	11.3/11.5
Unit without Electric Heater				
Min. Circuit Amps ^{2, 5, 11}		4.2	5.4	6.6
CFM (Cool/Wet Coil)	High	330	290	340
	Low	245	264	245
CFM (Dry Coil)	High	360	310	370
	Low	270	282	270
Ventilated Air, CFM (Fan Only)**		40*	65**	40*
Dehumidification (Pints/Hr.)		1.7	2.2	1.7
Net Weight (lbs.)		106	108	110
Ship Weight (lbs.)		115	119	126

** Actual vent CFM performance will vary due to application and installation conditions.

Notes:

- All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- Minimum Circuit Ampacity (MCA) ratings conform to the National Electric Code; however, local codes should apply.
Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
- Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- Minimum voltage on 115-volt models is 104 volts; maximum is 127 volts.
- Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis). See heater perform
- Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor a
- Specify two-digit heater kW size to complete model number.
- R-410A refrigerant used in all systems.
- All units meet or exceed ASHRAE 90.1 standards.
- All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

SPECIFICATIONS

PTH G SERIES

HEAT PUMP - PTH

Model ^{1, 6, 8, 9}	PTH 073G**	PTH 093G**	PTH 123G**	PTH 153G**	PTH 074G**	PTH 094G**	PTH 124G**	PTH 154G**
Voltage ^{1, 3}	230 / 208	230 / 208	230/208	230 / 208	265	265	265	265
Capacity (BTU/h)	7600/7600	9,000 / 9,000	12,000 / 12,000	14,200 / 14,200	7,600	9,100	12,000	14,200
Amps ¹⁰	3.6/3.6	4.2 / 4.2	5.7/5.7	7.0 / 7.0	3	3.7	4.9	6.1
Watts ¹⁰	645/630	785 / 785	1,090 / 1,090	1,465 / 1,465	645	790	1090	1,465
EER	11.7/12.0	11.5 / 11.5	11.0/11.0	9.7 / 9.7	11.7	11.5	11	9.7
Unit without Electric Heater								
Min. Circuit Amps ^{2, 4, 10}	5.4	5.1	6.9	8.5	3.6	4.5	6.0	7.4
CFM (Cool/Wet Coil)	High	330	330	330	390	330	330	390
	Low	245	245	245	340	245	245	340
CFM (Dry Coil)	High	360	360	360	410	360	360	410
	Low	270	270	270	370	270	270	370
Ventilated Air, CFM (Fan Only)*	40*	65*	65*	65*	65*	65*	65*	65*
Dehumidification (Pints/Hr.)	1.7	2.2	2.2	4.4	2.2	2.2	4.4	4.4
Net Weight (lbs.)	111	112	123	126	108	112	124	125
Ship Weight (lbs.)	131	127	141	143	123	127	142	142

* Actual vent CFM performance will vary due to application and installation conditions.

Notes:

- ¹ All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- ² Minimum Circuit Ampacity (MCA) ratings conform to the National Electric Code; however, local codes should apply.
Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
- ³ Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- ⁴ Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis). See heater performance.
- ⁵ Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor.
- ⁶ Specify two-digit heater kW size to complete model number.
- ⁷ R-410A refrigerant used in all systems.
- ⁸ All units meet or exceed ASHRAE 90.1 standards.
- ⁹ All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- ¹⁰ Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

SPECIFICATIONS

HEH H SERIES

HEAT PUMP - HEH

Model ^{1, 6, 8, 9}	HEH073H **AXXX	HEH093H **AXXX	HEH123H **AXXX	HEH074H **AXXX	HEH094H **AXXX	HEH124H **AXXX
Voltage ^{1, 3}	230 / 208	230 / 208	230 / 208	265	265	265
Capacity (BTU/h)	7,700/7,700	9,000 / 9,000	12,000 / 12,000	7,700	9,100	12,000
Amps ¹⁰	4.1 / 4.1	4.7 / 4.7	6.2 / 6.2	3.6	4.2	5.4
Watts ¹⁰	595 / 595	720 / 720	1,040 / 1,040	595	730	1,040
EER	12.9 / 12.9	12.5/12.5	11.5/11.5	12.9	12.4	11.5
Unit without Electric Heater						
Min. Circuit Amps ^{2, 4, 10}	5.4	5.4	5.4	3.6	3.6	3.6
CFM (Cool/Wet Coil)	High	340	330	340	330	340
	Low	245	245	245	245	245
CFM (Dry Coil)	High	370	360	370	360	370
	Low	270	270	270	270	270
Ventilated Air, CFM (Fan Only)*	65*	65*	65*	65*	65*	65*
Dehumidification (Pints/Hr.)	1.7	2.2	3.6	1.7	2.2	3.6
Net Weight (lbs.)	107	111	114	107	111	114
Ship Weight (lbs.)	122	126	131	122	126	131

* Actual vent CFM performance will vary due to application and installation conditions.

Notes

- ¹ All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- ² Minimum Circuit Ampacity (MCA) ratings conform to the National Electric Code; however, local codes should apply.
Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
- ³ Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- ⁴ Overcurrent protection for all units without electric heaters is 15 amps.
Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis).
- ⁵ Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor ambient.
- ⁶ Specify two-digit heater kW size to complete model number.
- ⁷ R-410A refrigerant used in all systems.
- ⁸ All units meet or exceed ASHRAE 90.1 standards.
- ⁹ All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- ¹⁰ Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

SPECIFICATIONS

HEAT PUMP HEATING DATA

PTH G SERIES

Model	PTH 093G**	PTH 123G**	PTH 153G**	PTH 094G**	PTH 124G**	PTH 154G**
Voltage ^{1, 3}	230 / 208	230/208	230 / 208	265	265	265
BTU/h ⁵	8,300 / 8,100	12,000 / 12,000	13,800 / 13,600	8,300	12,000	13,700
Amps ¹⁰	4.2 / 4.2	5.7 / 5.7	7.0 / 7.0	3.7	4.9	6.1
Watts ¹⁰	715 / 700	1090 / 1090	1350 / 1330	715	1090	1340
COP ⁵	3.4 / 3.4	3.1 / 3.2	3.0 / 3.0	3.4	3.1	3.0
CFM (Dry)	360	360	410	360	410	410

COP = Coefficient of Performance; per AHRI Test Procedures, units are rated for capacities and efficiencies.

Notes:

- ¹ All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- ² Minimum Circuit Ampacity (MCA) ratings conform to the National Electric Code; however, local codes should apply. Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
- ³ Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- ⁴ Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis). See heater performance.
- ⁵ Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor.
- ⁶ Specify two-digit heater kW size to complete model number.
- ⁷ R-410A refrigerant used in all systems.
- ⁸ All units meet or exceed ASHRAE 90.1 standards.
- ⁹ All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- ¹⁰ Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

HEH H SERIES

Heating Capacity ¹	HEH073H**AXXX	HEH093H**AXXX	HEH123H**AXXX	HEH074H**AXXX	HEH094H**AXXX	HEH124H**AXXX
Voltage ^{1, 3}	230/208	230/208	230/208	265	265	265
BTU/h ⁵	6,800/6,800	8,300/8,100	11,500/11,300	6,800	8,300	11,400
Amps ¹⁰	4.1/4.1	4.7/4.7	6.2/6.2	3.6	4.2	5.4
Watts ¹⁰	600/600	735/715	1,085/1,065	600	735	1,075
COP ⁵	3.3/3.3	3.3/3.3	3.1/3.2	3.3	3.3	3.1
CFM (Dry)	360	370	370	360	370	370

Notes

- ¹ All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- ² Minimum branch circuit ampacity ratings conform to the National Electric Code; however, local codes should apply.
- ³ Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts. Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- ⁴ Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis).
- ⁵ Total watts for 15,000 BTU/h models; subtract 20 watts for HEH07/09/12
- ⁶ Specify two-digit heater kW size to complete model number.
- ⁷ R-410A refrigerant used in all systems.
- ⁸ All units meet or exceed ASHRAE 90.1 standards.
- ⁹ All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.
- ¹⁰ Refer to electric heat performance data for total MCA and recommended overcurrent protection. Amps and Watts notation refers to compressor only.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

SPECIFICATIONS

PTH G SERIES HEH H SERIES PMH & PMC SERIES

ELECTRIC HEAT PERFORMANCE

Voltage	Electric Heater Size (kW)	No. of Stages	Nominal Heating (BTU/h)			Total Watts ⁶	Total Amps	Min. Circuit Ampacity ²	MOD ⁴ (amps)	Power Cord
			@ 230V	@ 208V	@ 265V					
230/208V	2.5	1	8,500	6,800	- -	2,545 / 2,090	11.2 / 10.2	14.1	15	6-15 P
230/208V	3.5	1	12,000	9,900	- -	3,545 / 2,905	15.6 / 14.1	19.5	20	6-20 P
230/208V	5	1	17,100	14,000	- -	5,045 / 4,130	22.0 / 20.0	27.6	30	6-30 P
265V	2.5	1	- -	- -	8,500	2,550	9.6	12.0	15	7-20 P
265V	3.7	1	- -	- -	12,600	3,750	14.2	17.7	20	7-20 P
265V	5	1	- -	- -	17,100	5,050	19.1	23.8	25	7-30 P

Notes:

- ¹ All 265-volt models must use an Amana® brand sub-base (PTSB4**E) or an Amana® brand hard-wire kit (PTPWHWK4).
- ² Minimum branch circuit ampacity ratings conform to the National Electric Code; however, local codes should apply.
- ³ Minimum voltage on 230/208-volt models is 197 volts; maximum is 253 volts.
Minimum voltage on 265-volt models is 239 volts; maximum is 292 volts.
- ⁴ Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265-volt models must be cartridge-style time-delay fuses (included and factory-installed on all Amana® brand 265-volt chassis).
- ⁵ Heating capacity and efficiency based on unit operation without condensate pump; unit automatically switches to electric heat at approximately 24°F outdoor ambient.
- ⁶ Total watts for 15,000 BTU/h models; subtract 20 watts for PT07/09/12 & HEH07/09/12
- ⁷ Specify two-digit heater kW size to complete model number.
- ⁸ R-410A refrigerant used in all systems.
- ⁹ All units meet or exceed ASHRAE 90.1 standards.
- ¹⁰ All units less than 250 volts have a Leak Current Detector Interrupter (LCDI) power cord and meet UL 484 standards.

EER - Energy Efficiency Ratio per The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Test Procedures and Canadian Standards Association (CSA) Test Procedures.

COP - Coefficient of Performance per AHRI Test Procedures

PROPER INSTALLATION

OPERATING VOLTAGES

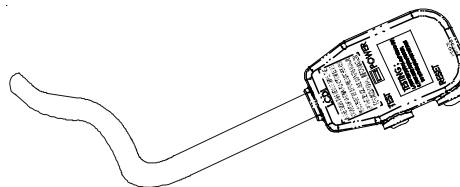


Use a voltmeter, check the voltage at the outlet.

The reading must be within the minimums and maximums shown below for the operating voltage.

Operating Voltages		
Unit Voltage	Voltage Utilization Range	
Rating	Minimum Voltage	Maximum Voltage
115	104	127
230/208	197	253
265	238	292

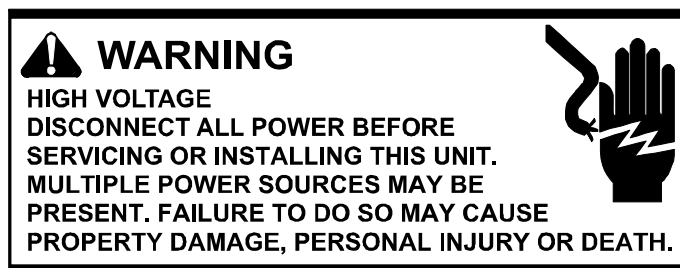
- **LCDI or AFCI Power Cords** - Underwrites Laboratories and the National Electric Code (NEC) now require power cords that sense current leakage and can open the electrical circuit to the unit on units rated at 250 volts or less. In the event that unit does not operate, check the reset button located on or near the head of the power cord as part of the normal troubleshooting procedure.



LCDI Power Cord

PROPER INSTALLATION

WALL SLEEVE INSTALLATION

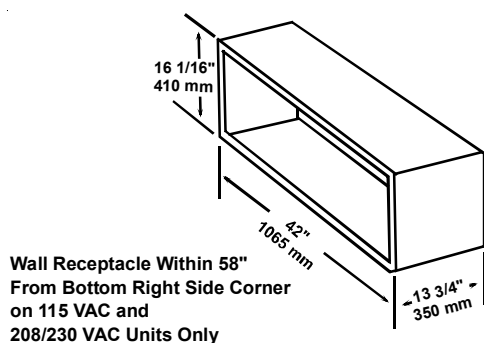


The wall sleeve must be installed before the air conditioner or heat pump chassis can be set in place. Read the instructions thoroughly before proceeding.

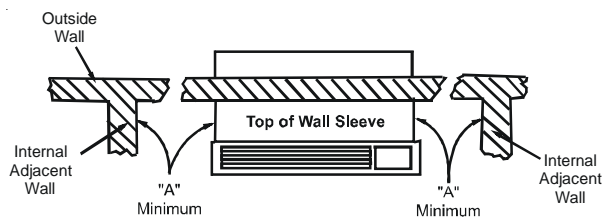
Pre-installation Considerations

Before proceeding with the sleeve installation, ensure the following guidelines for locating the wall opening and sleeve are met:

- The wall opening must be the correct size. See the figures below for wall sleeve Dimensions and minimum wall opening size.



Wall Sleeve Dimensions

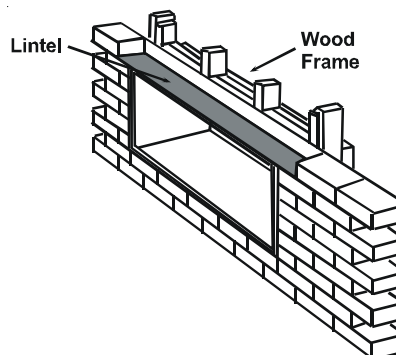


Allow Front Clearance (See Table 1)

Minimum Unit Clearances

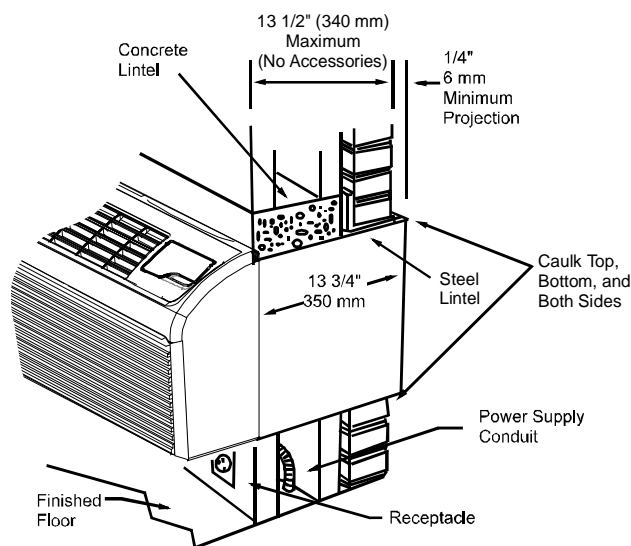
- The wall sleeve will need to be installed with minimum clearances to the floor and adjacent walls. Minimum projections of the sleeve into and out of the room will also have to be met. See Minimum Unit Clearances and Minimum Interior and Exterior Projections Figures as well as Minimum Clearances and Projections table for details.

- If installed in a concrete or masonry wall, a lintel must be provided in the wall opening for support. **Do not use the wall sleeve as a lintel.** See Framing with Lintel Figure for a typical lintel construction.



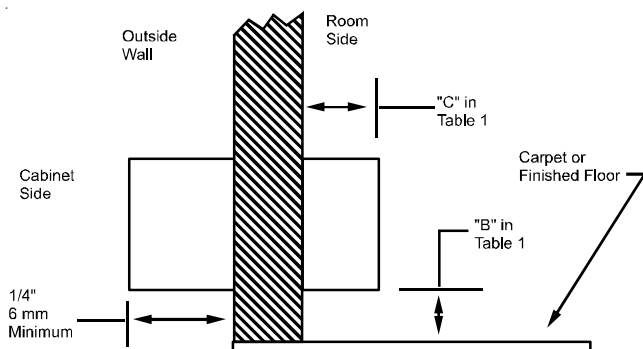
Framing with Lintel

- When installed in the opening, the wall sleeve must be horizontally level from side to side and pitched (one quarter bubble in the sight glass) to the outside. **DO NOT INSTALL LEVEL (FRONT TO BACK) OR SLOPE THE WALL SLEEVE TOWARD THE ROOM.**
- The installer must determine and supply the mounting bolts and/or screws to attach the wall sleeve to the sides of the wall opening. Make sure the wall opening is adequate for strong support.
- The installer must provide adequate sealing and insulation around the sleeve after it is installed (air and water tight). See Block and Brick Veneer Installation Figure for one of many types of constructions.



Block and Brick Veneer Installation

PROPER INSTALLATION



Minimum Interior and Exterior Projections

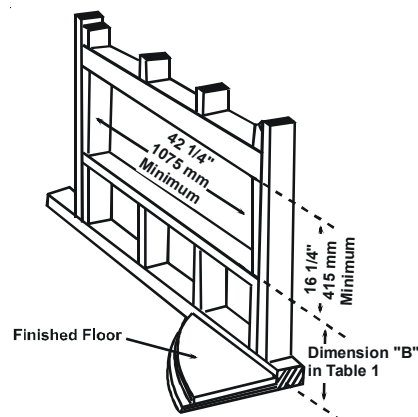
MINIMUM CLEARANCES AND PROJECTIONS						
Option	Minimum Clearances				Minimum Projection	
	A		B		C	
	in.	mm	in.	mm	in.	mm
Wall Sleeve Only	3	75	0	0	0	0
Subbase Kit	3	75	3 1/4	85	2 3/4	70
Leveling Legs Kit	3	75	3	75	2	50
Duct Kit	3	75	0	0	1 3/8	35
Drain Kit	3	75	0 ¹	0 ¹	0	0
Hard Wire Kit	3	75	1 1/4	30	0	0
Hydronic Heat Kit "A" Series	9	230	0 to 3 1/4 ³	0 to 85 ³	32	752
Hydronic Heat Kit "J" Series	6	150	0	0	2 1/2	65

¹ If inside mounted then B = 1 1/2 inches (40 mm).

² To achieve a flush fit between the hydronic front and the finished wall, Dimension "C" must be between 3" and 3 1/8". If this dimension is more than 3 1/8" there will be a gap between the front and the wall. This gap could permit occupant access to hydronic lines or other dangerous parts.

³ This dimension can be from 0" to 3-1/4", but cannot exceed 3-1/4". If this dimension exceeds 3-1/4", the skirt around the front will not reach the floor.

- For installations in walls deeper than 13-1/2 inches, special care is necessary to prevent problems with rain water, condensate drainage and intake/discharge air. Under these circumstances, careful job site analysis and precautions are required. You must consult with your Sales Representative and receive approval before attempting such installations.
- If used, a 115 volt or 230/208 volt wall receptacle must be located within 58 inches of the lower right sleeve corner. Extension cords must not be used with the unit. See the note on Wall Sleeve Dimensions Figure.



Minimum Wall Opening Dimensions

When 115 volt or 230/208 volt units are to be installed, the power supply may be either cord connected or permanent wiring. Permanent wiring may be done through the accessory hard wire junction box, or the accessory subbase.

When 265 volt units are to be installed, the power supply must be permanent wiring. Permanent wiring may be done through the accessory hard wire junction box, or the accessory subbase. **An exposed cord connection on 265 volt units is not permitted.**

The subbase accessory includes leveling legs. If added wall sleeve support is required and the subbase is not to be used as an accessory, leveling leg kit may be installed.

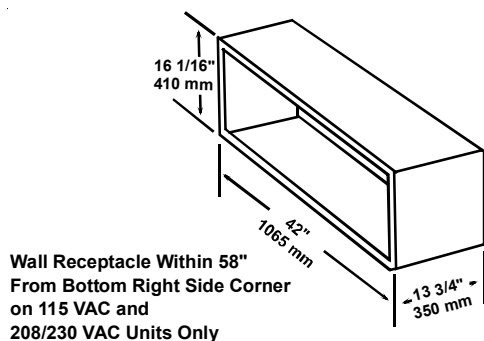
Drain Kit

An indoor/outdoor drain kit is available as an accessory item. When a drain kit is to be installed, do so before installing the wall sleeve in the wall. See the drain kit for actual installation instructions.

Subbase, Leveling Legs, Main Duct, and Hydronic Heat Kits

Installation of these kits requires drilling of mounting holes on both sides of the wall sleeve. The minimum required clearance distance between the wall sleeve and wall is shown in Minimum Clearances and Projections Table. If the distance between wall sleeve and wall will be at or near the minimum clearance distance, mount these kits on the sleeve before installing the sleeve in the wall. The kit installation instructions are included with the accessory kits.

PROPER INSTALLATION



Wall Sleeve Dimensions

Outside Enclosure Panel Removal

The sleeve stiffener must be taken out before the enclosure panel can be removed from the sleeve.

The enclosure panel can be removed by folding the four flaps up and downward and manipulating the front ends of the top plus bottom towards the center. The entire panel can be pulled out diagonally from one side.

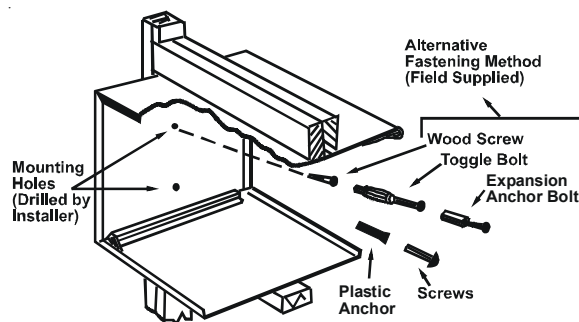
Install the wall sleeve condenser air grille by using the screws and holes provided.

Installation (WS900B or WS900D)

After the wall opening is checked and approved for location, size, and clearances, complete the following to install the wall sleeve.

NOTE: Check with Amana® Brand Technical Service when a chassis is installed in any wall sleeve not supplied by Goodman.

1. Remove the outside enclosure panel from the wall sleeve.
2. Slide the wall sleeve into the wall opening. Do not distort the cabinet shape to fit the wall opening. The unit chassis must fit snugly and uniformly into the wall sleeve.
3. Locate the sleeve within the range of minimum projections, as shown in Minimum Wall Opening Dimensions and Minimum Interior and Exterior Projections Figures, so both sides are at least the minimum projection from the wall.
4. Check the level of the wall sleeve. For proper drainage, the sleeve should be level from side to side and one-quarter bubble in the sight glass sloping to the outside.
5. Two holes will need to be drilled in both sides of the wall sleeve for mounting into the wall. Drill holes of proper size and in the proper location so the screws will engage into strong supporting members of the wall. **DO NOT DRILL THROUGH BOTTOM OF SLEEVE.** The following figure shows possible fastening methods.



Attaching Wall Sleeve to Opening

6. Check the level of the wall sleeve and adjust if necessary.
7. Caulk or seal around the outside of the entire sleeve.
8. If the unit chassis will not be installed immediately, replace the enclosure panel on the outside opening of the sleeve. This will prevent weather damage to the building interior.
9. Recycle or dispose of packaging materials per local codes.

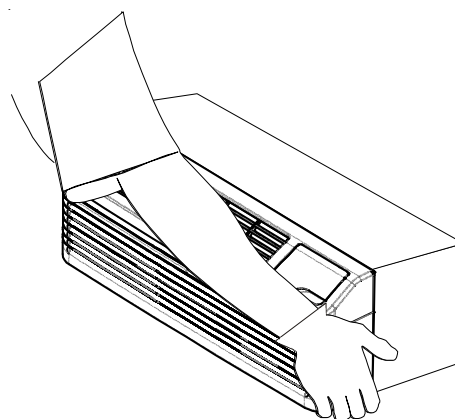
OUTDOOR GRILLE

An outside grille must be installed to direct air flow for proper unit operation and also protect the outdoor coil. The grille must be installed before installing the chassis. Refer to the Installation Instructions supplied with the outdoor grille kit for a complete description of the installation procedure.

This model requires either a Stamped Grille Kit (Model SGK-B) or an Architectural Grille Kit (Model AGK--B). When replacing an old chassis with an existing grille, please check with your sales representative to determine if the new chassis should be used with the old outdoor grille. An improper outdoor grille can decrease cooling or heating capacity, increase energy usage and shorten compressor life.

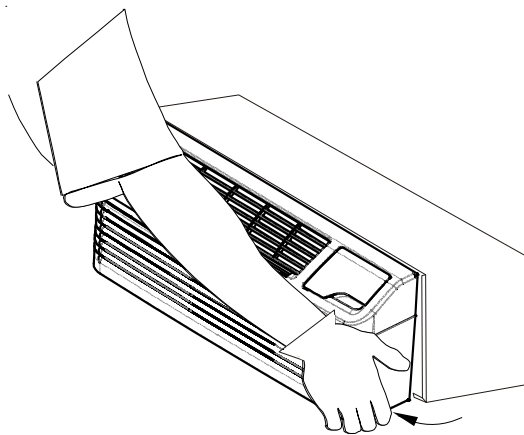
FRONT REMOVAL

1. Grasp the cabinet front as shown.



2. Pull the bottom of the cabinet front away from the chassis until the retaining clips disengage.

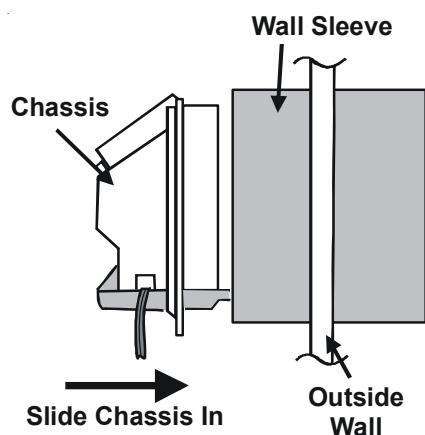
PROPER INSTALLATION



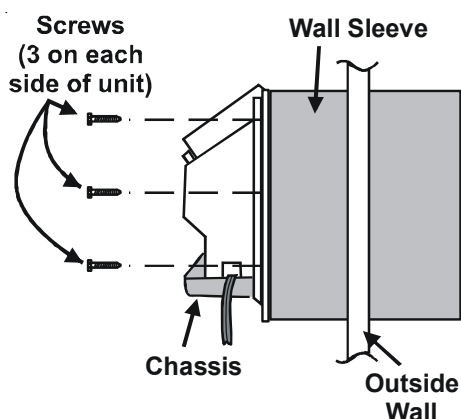
3. Lift the cabinet front off the chassis. Reverse this procedure to reinstall the cabinet front.

CHASSIS INSTALLATION

1. Remove the cabinet front from the chassis as described in Front Removal.
2. Insert the chassis into the wall sleeve.



3. Slide the chassis into the wall sleeve until the chassis flanges contact the front edge of the wall sleeve.

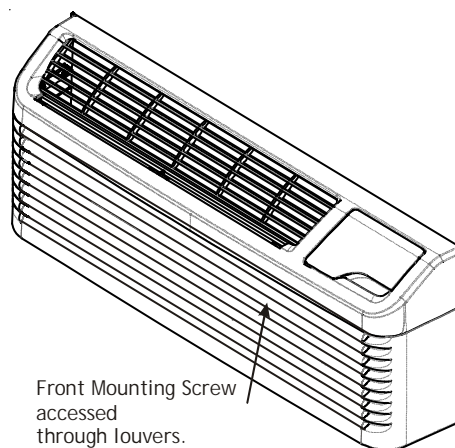


4. Secure the chassis to the wall sleeve using *three* screws on each side of the chassis to ensure a proper seal between the chassis and the wall sleeve. The screws are supplied in a plastic bag which is attached to the power cord.

IMPORTANT NOTES:

1. The unit is equipped with a rubber grommet mounted compressor. These grommets are factory set and require no adjustment.
2. If a standard subbase is used, be sure the right hand subbase cover is removed before the chassis is installed in the sleeve.
3. On 230V, 30A units installed with an existing subbase, use the subbase cover extension kit.
4. Check the indoor and outdoor grilles for obstructions to air flow. The unit must be located where curtains, furniture, trees, shrubs or other objects do not block the air flow to and from the unit. If air is obstructed and/or deflected back into the unit, the air conditioner's compressor may cycle on and off rapidly. This could damage the compressor and void the warranty.


Front Mounting Holes - Two mounting holes are provided to give the owner the option of securing the front to the chassis. The mounting holes are located behind the intake grille. The owner must supply two 1/2 inch long #8 sheet metal screws per unit. The two screws must be removed before the front can be removed.




Front Mounting Screws


PROPER INSTALLATION

WIRING

**WARNING**



HIGH VOLTAGE
DISCONNECT **ALL** POWER BEFORE SERVICING.
MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.
DO NOT SERVICE THIS UNIT WITHOUT FIRST SHUTTING OFF THE POWER TO THE UNIT FROM THE CIRCUIT BREAKER AND/OR REMOVING THE UNIT CORD SET PLUG FROM THE WALL OUTLET.

**WARNING**

DO NOT ALTER POWER CORD.
DO NOT REMOVE LDCI OR AFCI CIRCUIT BOARD.
DO NOT REPLACE TERMINALS OR OTHER PARTS OF CORD.
DO NOT USE CORD IF DAMAGED.
CONTACT SERVICE PARTS FOR A REPLACEMENT CORD, IF NEEDED.

**WARNING**


UNIT MAY **ONLY** BE HARD WIRED WITH A FACTORY SUPPLIED KIT.

**CAUTION**

TO AVOID PROPERTY DAMAGE, PERSONAL INJURY OR DEATH DUE TO ELECTRICAL SHOCK, DO NOT USE AN EXTENSION CORD WITH THIS UNIT.

**CAUTION**

TO AVOID THE RISK OF PROPERTY DAMAGE, PERSONAL INJURY OR FIRE, USE ONLY COPPER CONDUCTORS.

**CAUTION**

TO AVOID THE RISK OF PROPERTY DAMAGE, PERSONAL INJURY OR FIRE, DO NOT INSTALL WITH POWER CORD STRETCHED OR UNDER A STRAIN AS THIS MAY CREATE A LOOSE PLUG/RECEPTACLE CONNECTION.

**CAUTION**

TO AVOID THE RISK OF PERSONAL INJURY, WIRING TO THE UNIT MUST BE PROPERLY POLARIZED AND GROUNDED.

Cord connection to a wall socket is not permitted for 265-volt units. All 265-volt units must be hard wired using the hard wire kit or make use of the plug-in receptacle in the standard subbase.

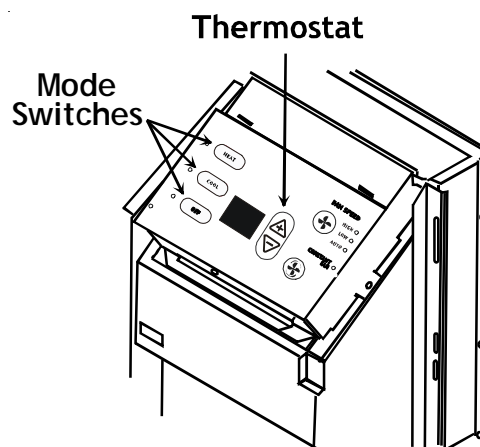
Heaterless Units

If a heaterless unit is ordered, field provisions must be made for supplemental heat if desired. All 208/230 volt heaterless units are shipped with a 15 Amp power cord and all heaterless 265 volt units are shipped with a 20 Amp power cord.

OPERATING CONTROLS

Users Controls

A 7 button touch key pad, located behind the control door, controls both temperature and operation mode. The key pads can be used alone or in combination.



Master Switch

The master switch disconnects power to all of the system components. When this switch is in the off position, the compressor, fan motor, reversing valve, and electric resistance heater will all be de-energized.

REMOTE/STANDARD

The remote/standard configuration is used to change the control of the unit from the standard on board controls in the standard mode, to a remote wall mounted thermostat in the remote mode. For remote control configuration settings, refer to **Configuration Settings**.

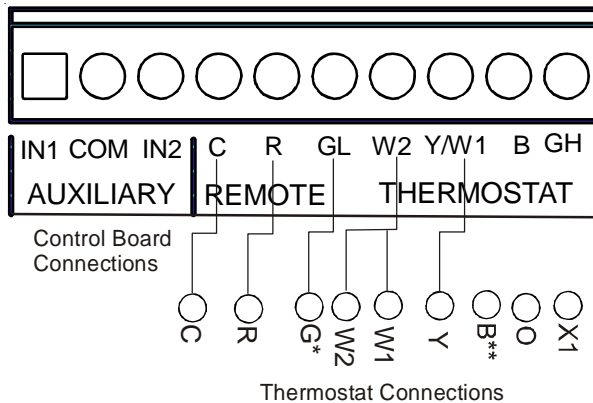
Fan Cycle Configuration

The fan cycle configuration sets the operational mode of the fan. In the ON position, the fan will run continuously whenever the unit is in the heat or cool mode. In the **AU** position, the fan will cycle on and off with the compressor or electric heater when the unit is in the cool or heat mode.

PROPER INSTALLATION

Remote Control Inputs

The C, R, G, (GL for low fan speed or GH for high speed fan on W2, Y/W1 and B terminals provide control inputs for a remote wall mounted thermostat. See following illustration.



*NOTE: For high speed fan operation, connect "G" to "GH".

IMPORTANT NOTE: Disconnect power to the unit and/or turn the Master Switch on the control board to OFF when connecting or altering wiring to any terminal. Failure to do so may result in shorting the fuse or damaging the control board.

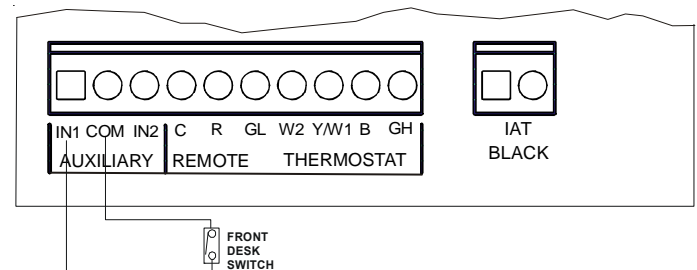
Front Desk Control (IN1, IN2, COM)

The COM and (IN2 or IN1) terminals provide control inputs for a front desk switch. Shorting across the terminals will disable unit operation. The only control function which will remain active when these terminals are shorted is freeze protection. Any switch which will produce a short circuit across these two terminals can be used as a front desk switch. The contact resistance of the switch, when closed, must be less than 200 ohms for the front desk feature to operate properly. Table 3 shows the maximum wire length and corresponding gage size for installation of a front desk switch. The following figure shows a wiring schematic for connecting the front desk switch to the unit.

If the unit is configured for wired unrented setback energy management (see *Configuration Settings* section u8 and u9). If IN* and COM are shorted, the unit will go into setback temperatures for cooling and heating as configured in c3 and c4 (see *Configuration Settings*). Unit operation will be disabled. "Fd" (see *Diagnostic Codes*) will appear on the display. This allows the room to quickly recover to a comfortable temperature when the room is occupied.

MAXIMUM WIRE LENGTH FOR FRONT DESK SWITCH	
Wire Size (AWG)	Maximum Length Allowed (ft)
#24	400
#22	600
#20	900
#18	1500
#16	2000

The following figure shows a wiring schematic for connecting the front desk switch to the unit.



Front Desk Switch Wiring Schematic

IMPORTANT NOTE: Do not apply 24VAC across these terminals. Applying 24VAC to these terminals will result in failure of the control board. Shorting these terminals to any other terminals may also result in control board failure.

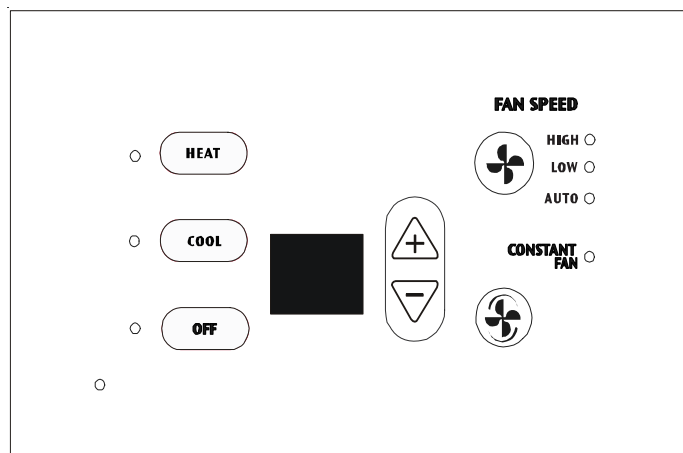
Temperature Limiter

The temperature limiting feature can reduce energy costs by controlling the maximum temperature available in heating and the minimum temperature available in cooling. While approximate temperature settings are shown below, actual room temperature will vary slightly.

PROPER INSTALLATION

Users Controls "Digital Touch Pad"

A seven button touch key pad located behind the control door controls both temperature and operation mode. The key pads can be used alone or in combination.



Touch Pad With Display User Controls

Thermostat Setting

7 BUTTON TOUCH PAD WITH DISPLAY

Pressing the COOL thermostat control and the up or down arrows will provide a cooler room temperature, respectively. Pressing the HEAT thermostat control and the up or down arrow keys will provide a warmer room temperature.

Fan Speed

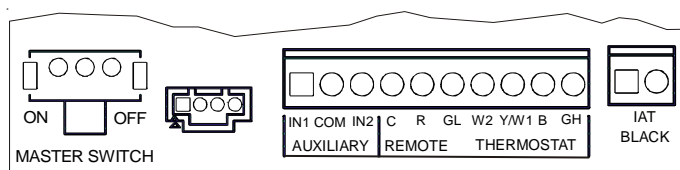
The fan speed touch key will deliver high, low or auto fan speed to circulate room air. NOTE: The AUTO selection will not be available if a fan speed is selected without COOL or Heat selection.

Fan Operation HIGH or LOW with HEAT or COOL mode selected - The selected fan speed shall run in the selected speed.

Fan Operation AUTO with HEAT or COOL mode selected - The fan will run in low and high speed. The changes in fan speed are automatic. See "Configuration Settings" section for further details.

Diagnostic Light

The green diagnostic light located in the lower left hand corner of the touchpad and indicates operation warnings. This light usually indicates that either the filter or coils need cleaning. Please refer to the *Maintenance and Cleaning* section for the proper cleaning procedure. If this light is still on after cleaning, please refer to the *Diagnostic & Status Report* section for assistance.



Control Board User Inputs*


***NOTE:** The PTAC Wire Harness Kit (PWHK01G70) is required for the auxiliary or remote thermostat options.


Additional Control Inputs

The control inputs provide additional unit control and features. To access these control inputs, the cabinet front must be removed (see Front Removal).

Master Switch

The master switch disconnects power to all of the system components. When this switch is in the off position, the compressor, fan motor, reversing valve, and electric resistance heater will all be de-energized.

**WARNING**



HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE SERVICING.
MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.
DO NOT SERVICE THIS UNIT WITHOUT FIRST SHUTTING OFF THE POWER TO THE UNIT FROM THE CIRCUIT BREAKER AND/OR REMOVING THE UNIT CORD SET PLUG FROM THE WALL OUTLET.
LINE VOLTAGE WILL BE PRESENT AT THE CONTROL BOARD, TERMINALS L1 AND L2 WHENEVER POWER IS APPLIED TO THE UNIT REGARDLESS OF THE MASTER SWITCH POSITION.

Remote Control Inputs

The C, R, GL, W2, Y/W1, B/O, and GH terminals provide control inputs for a "manufacturer-approved" remote wall mounted thermostat. The "B" terminal can be configured to become "O" if needed see *Configuration Settings* For remote control thermostat operation, refer to the *Remote Thermostat Operation* section.

Vent Control

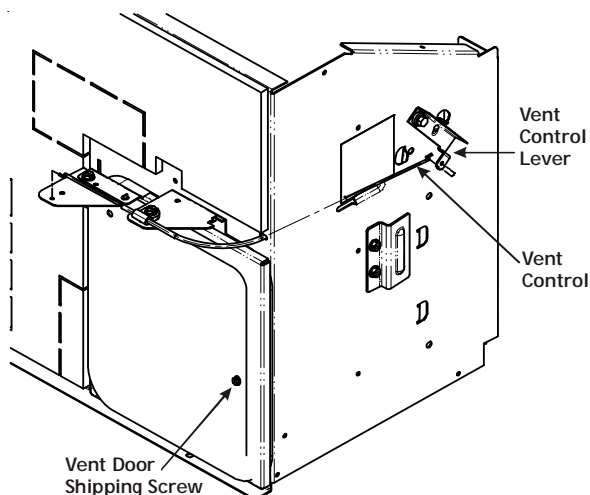
NOTE: Vent control is only used on units with the power vent or power vent door kit not installed.

The vent control allows fresh air to be drawn into the conditioned area. This fresh air can provide ventilation when the blower is operating, but it will increase the heating or cooling load and operating costs.

PROPER INSTALLATION

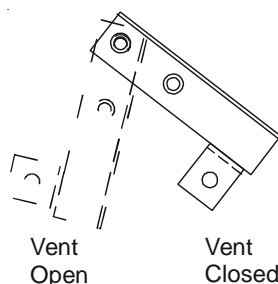
To obtain access to the vent control:

1. Remove the cabinet front (see Front Removal).
2. Remove the shipping screw (if installed) from the vent door.
3. Remove the label (if present) from over the vent control lever on the left side of the chassis. Remove the vent door shipping screw.



Vent Control Lever

4. Rotate the vent control lever to either open or close the damper.



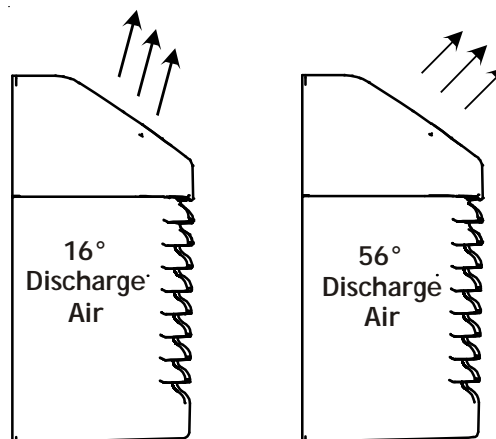
Vent Door Lever Positions

HYDRONIC HEAT INSTALLATIONS

To avoid the risk of freezing the steam or water coil during prolonged shut down periods, the vent door must be left closed when the outdoor temperature might fall below freezing or a power door kit must be installed.

AIR DISCHARGE GRILLE

The discharge grille can be adjusted to expel air at either a 16° or 56° angle.



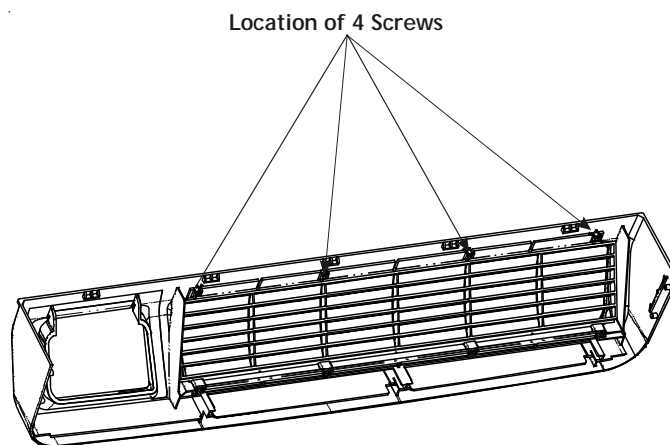
Discharge Grille Orientation Options

Use the following procedure to change the angle of the discharge air flow:

1. Remove the front cabinet (see Front Removal).
2. Position the front so that the backside is accessible.

Discharge Air Flow

3. Remove the four (4) screws which secure the discharge air grille to the cabinet front.



Discharge Air Flow Grille Removal

4. Rotate the grille 180° end-for-end.
5. Reinstall the screws securing the discharge air grille to the cabinet front. Reinstall the cabinet front on the unit.







PROPER INSTALLATION CONFIGURATION SETTINGS FOR R410A



G SERIES MODEL BOARDS

7 BUTTON TOUCH PAD WITH DISPLAY



The control can be configured to operate a wide range of options. The options listed below with the * are the factory default settings. If these are acceptable, then the unit does not require any additional configuration and is fully operable. To configure the unit, first select the configuration feature code setting and then an option code to change from the factory default setting.

To enter configuration feature mode:


1. Press and hold the up and down   arrow keys at the same time and press the OFF  key twice within a two (2) second time frame. The display will indicate - -., and then release the   key and press the  key one time. The display will then alternate between C1 and 0.

To select a different configuration feature code, press the HEAT  key until the desired configuration comes up. To scroll to a previously viewed configuration codes press the COOL  key.

Once you have scrolled to the correct feature, then to select the option code for your desired configuration,

press either the up or down key   to scroll through the options of the selected feature code.

To exit configuration mode:

1. Press the OFF  key. Configuration feature mode will also exit if no keys are pressed for a period of two (2) minutes.


Refer to the Configuration Chart.

Wireless Communications


PTAC models PT**G*** have the option to use a wireless thermostat and door sensor. These features will only work on the models listed above. The thermostat and /or door sensor will require an antenna for communication with the digital control board.

ANTENNA INSTALLATION FOR DT01* KIT

A DT01* antenna must be installed on the digital PTAC to allow operation of either the DS01* remote RF thermostat or a DD01* combination PIR motion sensor and door switch.

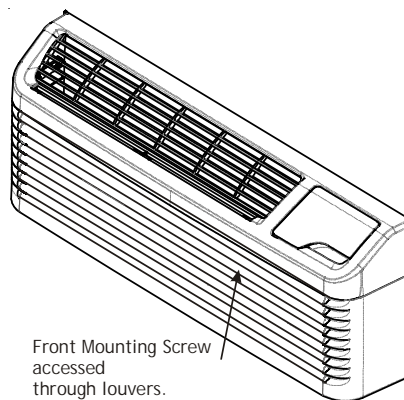
**WARNING**

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS KIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. THE "OFF" SWITCH DOES NOT DISCONNECT ALL POWER TO THE UNIT.



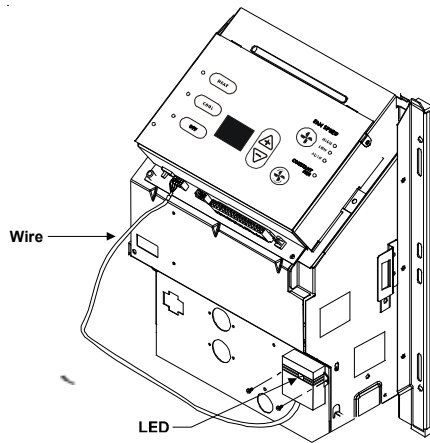
PREPARATION

1. Disconnect power to the unit by unplugging the power cord at the wall outlet or subbase, or disconnect power at the fuse box or circuit breaker.
2. If the cabinet front is screwed to the chassis, remove the 1/4" screw (or screws). See following figure.



3. Remove cabinet front from chassis by tilting the bottom of the front forward, lifting slightly up and forward.
4. Mount the antenna as high up on the control panel as possible and as far to the right as possible in a location that will not interfere with the reinstallation of the PTAC polymer room front. Mark holes for screw location. Remove antenna housing and drill two 1/8" holes where marked. Some units may have the holes already pre-drilled in the correct location.

PROPER INSTALLATION



DT01* Mounting

5. Remove antenna cable and route cable through opening in bottom of antenna housing.
6. Mount antenna housing with two screws as shown in figure. (**NOTE:** The Amana® brand logo should be in the lower right hand corner).
7. Plug wire harness from antenna into connector on the control board to the right of the master switch, being careful not to bend and/or break the wires when you connect the cable to the PTAC. Gently push the connector into place by pushing on the edge of the connector with your thumb nails. *Avoid pushing directly on the wires.*
8. Restore power to the PTAC unit.
9. Reinstall the polymer room cover.

NOTE: The LED must be oriented at the **top** of the antenna housing (the Amana® brand logo will be on the lower right) for proper unit operation.

THERMOSTAT INSTALLATION FOR DS01E KIT

NOTE: A DT01* must be installed on the digital PTAC unit for the DS01* to be operable.

Skip these steps if not installing.

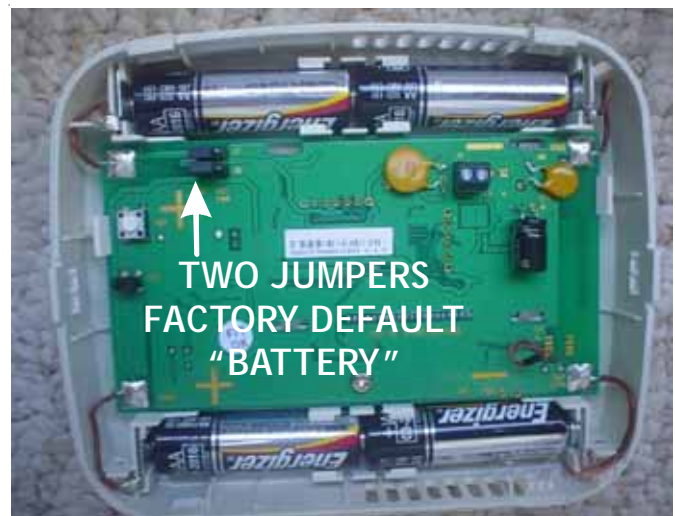
1. Select thermostat mounting location about five feet above the floor, on an inside wall, out of direct sunlight, away from sources of radiant heat (lamps, fireplaces, heating and air conditioning equipment, etc.), away from windows or door to the outside, and avoid areas with poor air circulation. If the PIR in the thermostat is to be used with a DD01* device as a 2nd motion sensor, point the thermostat towards the area where you are requiring additional motion sensing.
Ensure location is out of the path of foot traffic where a person might accidentally bump into the thermostats and damage the device.
2. Remove thermostat from mounting plate by pulling apart at the bottom of the thermostat about 1", and slide thermostat up to release from the top of the mounting plate.

3. Place thermostat mounting plate against the wall at desired location and mark placement of mounting holes. Make sure the UP arrow is pointing up on the mounting plate.
4. If mounting in drywall, tap plastic anchors into wall. For other surfaces, drill a 3/16" hole.
5. Screw mounting plate to the wall. DO NOT SNAP THERMOSTAT INTO PLACE UNTIL AFTER BINDING PROCESS. See Binding Instructions.
6. Install four (4) AA batteries (included) into the back of the thermostat. Terminals are marked "+" and "-" for polarity.

NOTE: Do not install thermostat on wall plate until all configuration settings and binding processes have been completed.

WIRED POWER OPTION

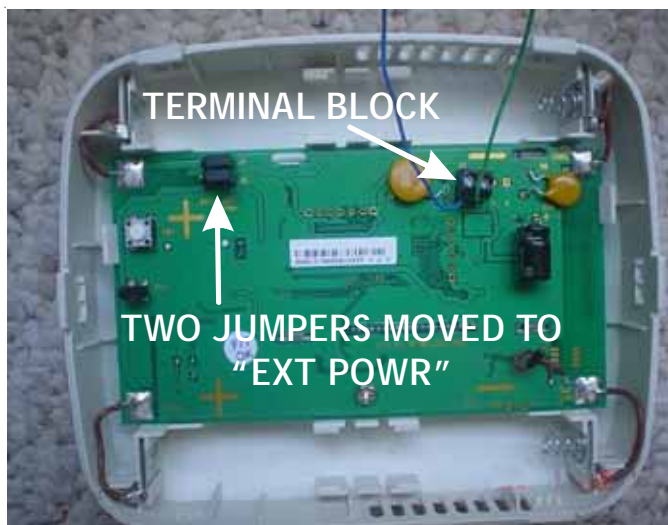
1. If the option for wired power is used, the two thermostat wires (20 gauge minimum field supplied) can be connected to the thermostat.
2. Route wires through the opening in the mounting plate.
3. Loosen set screws on wired terminal and insert wires into the opening. Tighten set screws.
4. Connect wires at PTAC unit to terminal pins **C** and **R**. The wire harness kit PWHK01C is required for this connection.



BATTERY CONNECTION

NOTE: For battery connection the 2 jumpers must be positioned as shown above, with jumpers on the center & left pins.

PROPER INSTALLATION



POWERED CONNECTION

NOTE: For powered connection, the 2 jumpers must be positioned as shown above, with jumpers on the center & right pins.

MOUNTING SENSOR/DOOR MAGNET INSTALLATION FOR DD01E AND DD01F KITS

DD01E and DD01F must be mounted on the top door frame as close to the door as possible in the horizontal position.

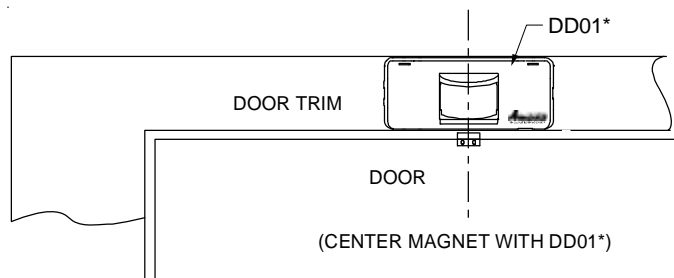
A DT01A must be installed in the PTAC unit for the DD01E or DD01F to be operable.

Skip these steps if not installing.

1. Remove motion sensor from mounting plate by pulling apart.
2. Mount the back plate on the door trim directly above the door using the enclosed screws. (Position so the UP arrow is pointing up.) Mount the DD01E as low as possible on the door frame to be as close to the moving part of the door as possible without interfering with the door opening or closing. Choose a location for mounting the back plate that will provide good coverage of the PIR for motion into the room. Make sure that the DD01E will not interfere with the normal opening and closing of the door.

DO NOT SNAP MOTION SENSOR IN PLACE UNTIL AFTER BINDING PROCESS.

See Binding instructions.



DD01E and DD01F Mounting

3. Install two (2) AA batteries (included) into the back of the thermostat. Terminals are marked "+" and "-" for polarity. **Do NOT put batteries into the device until AFTER the magnet location is selected to test.** WIRED

WIRED MAGNET AND POWERED DOOR SENSOR OPTION

In cases where there is no top door frame, the sensor will need to be mounted on the wall next to the door. In these cases a wired magnet (a field supplied single pole single throw wired magnet) can be recessed or surface mounted and wired to the door sensor. The magnet will be a recessed style magnet with wired switch. The wires for the sensor (20 gauge field supplied) in the magnet will need to be run during construction. Two wires will be run from the door sensor location to the PTAC unit; the remaining two wires will be run from the magnet location to the sensor location. The door sensor has four (4) terminal locations for wired power and/or wired magnets. The two (2) terminals closest to the binding button are for wired magnet and the top two (2) terminals are for wired power.

Run the magnet wires through the opening in the center of the door sensor wall plate.

CONNECTING MAGNET

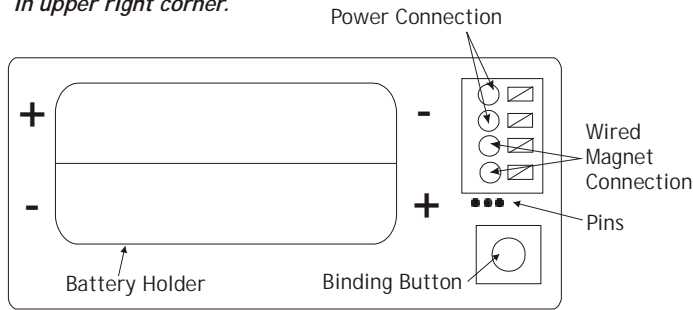
Using a pocket size straight blade screw driver push down on the terminal button to open the socket, insert wire into socket and release the terminal button. Insert one wire into each of the two (2) terminals. See image below for wire locations.

POWER CONNECTION

If using the wired powered option for the door sensor, using a pocket size straight blade screw driver, push down on the terminal button to open the socket. Insert wire into socket and release the terminal button. Insert one wire into each of the two (2) terminals. See following for wire locations. Connect the power wires from the door sensor to the PTAC on terminals C & R. The wire harness kit PWHK01C is required for this connection.

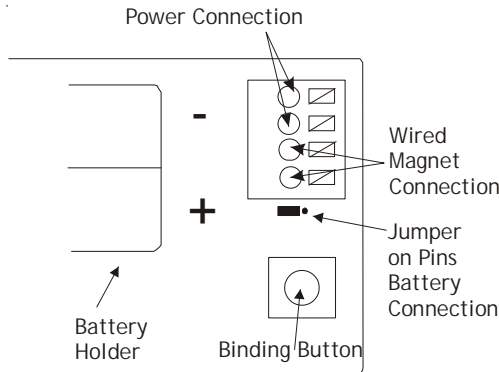
PROPER INSTALLATION

Viewed from the back with the power block in upper right corner.

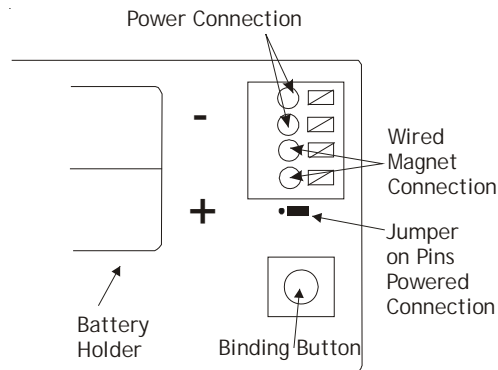


Select the correct slot in the magnet holder (there are three slots) to obtain 15/16" from back of sensor mounting plate to the center of the magnet. (If you can easily slide a business card between the magnet and the DD01E or DD01F sensor, unit is properly placed vertically.) See following image for magnet and sensor alignment.

Screw in place with the 2 screws provided. Open and close the door to make sure that the magnet holder and motion sensor will not interfere with normal opening and closing of the door. See following images.



Note: For battery connection, the jumper must be placed as shown above



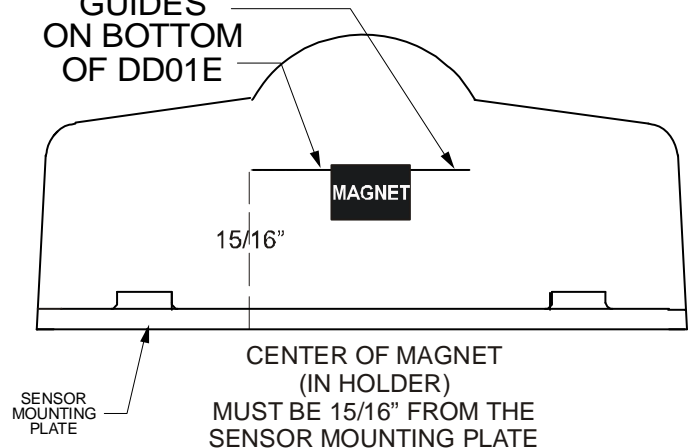
Note: For 24v powered connection, the jumper must be placed as shown in preceding graphic.

DOOR MAGNET INSTALLATION

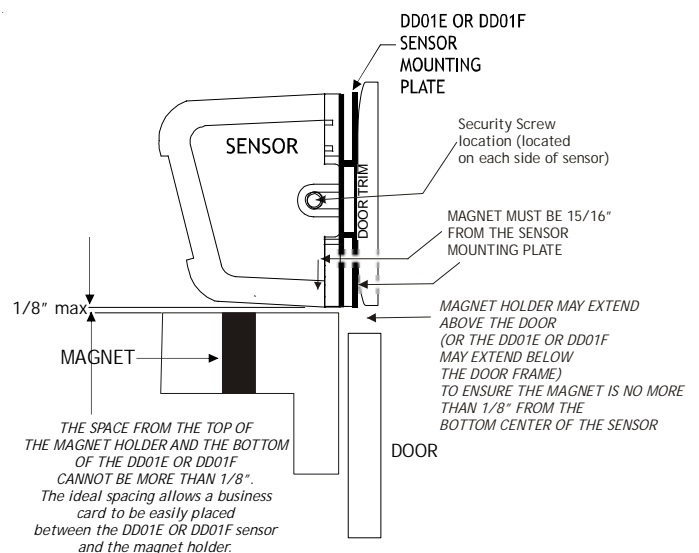
NOTE: MAGNET BUCKETS ARE SHIPPED FROM THE FACTORY WITH THE MAGNETS IN POSITION A. THE POSITION MAY CHANGE BASED ON THE DOOR AND DOOR FRAME ALIGNMENT ON PAGE 23.

Mount the door magnet holder on the front of the door where it will be as close as possible to the bottom of the motion sensor but no more than 1/8" from the bottom center of the motion sensor (DD01E or DD01F) when the door is closed.

ALIGNMENT GUIDES ON BOTTOM OF DD01E

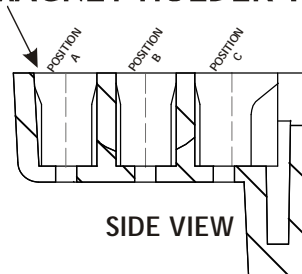


Do NOT install batteries until you are ready to test the magnet location with DD01E.

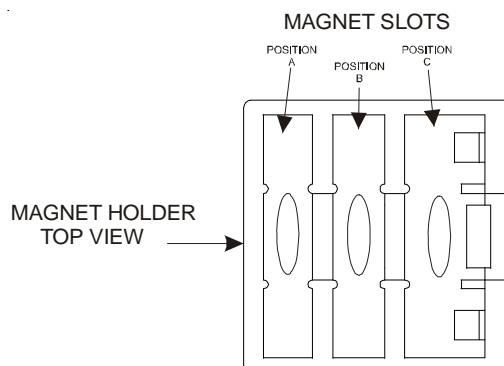


PROPER INSTALLATION

MAGNET HOLDER TOP



SIDE VIEW

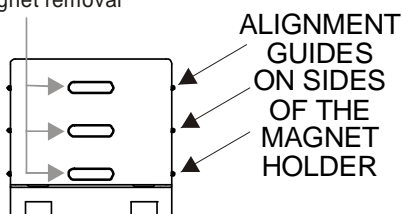


MAGNET HOLDER
TOP VIEW

INSTALL THE MAGNET IN
THE CORRECT SLOT.

15/16th" FROM BACK EDGE OF
SENSOR MOUNTING PLATE
TO BACK OF MAGNET.

Straight edge screwdriver
may be placed in slots
for magnet removal



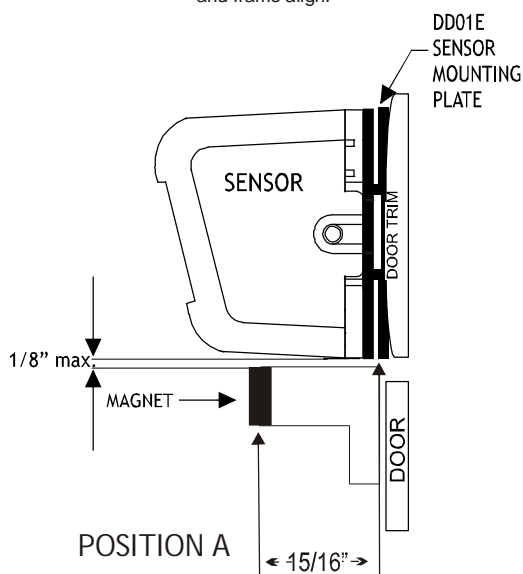
Select one of the three slots that places the magnet 15/16" from the sensor mounting plate on the door frame. See *following examples*. The door frame and door usually will not align. Place holder on the door and select the slot that places the magnet as close as possible to the 15/16" depth from the back of the DD01* mounting plate.

NOTE: To install bucket to extend into the room, place provided shim in appropriate slot.

The following figures show the magnet 15/16" from the sensor mounting plate in different slot positions (A, B & C).

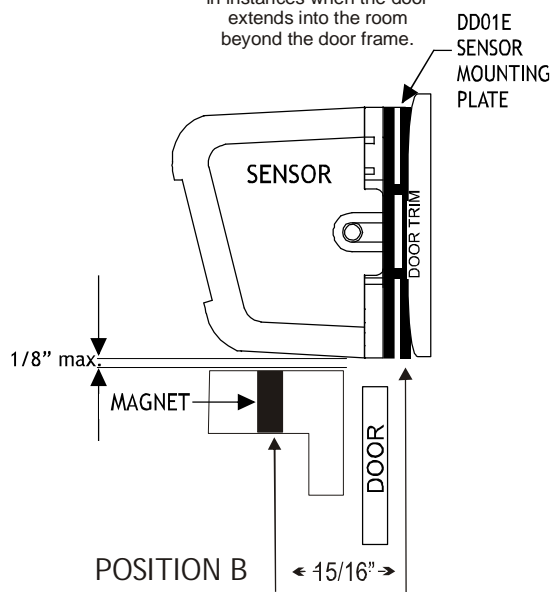
CONSTRUCTION STYLE 1

Place magnet in Position A
in instances when the door
and frame align.



CONSTRUCTION STYLE 2

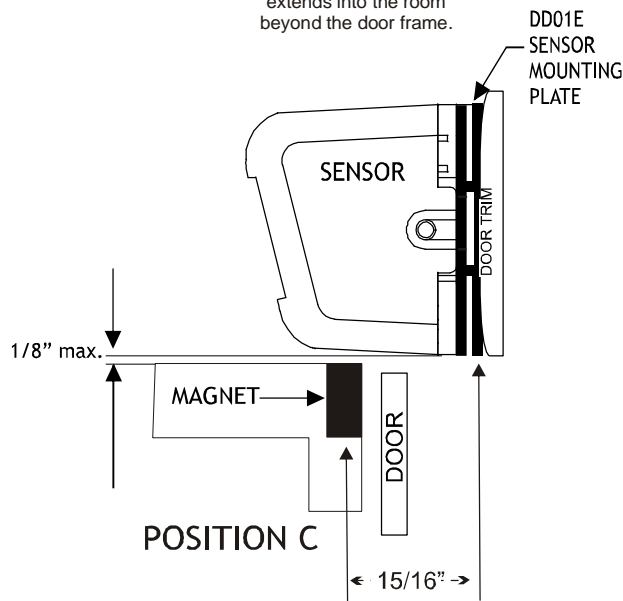
Place magnet in Position B
in instances when the door
extends into the room
beyond the door frame.



PROPER INSTALLATION

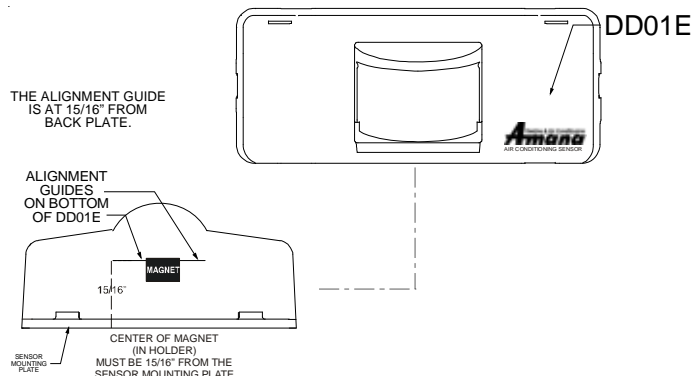
CONSTRUCTION STYLE 3

Place magnet in Position C in instances when the door extends into the room beyond the door frame.



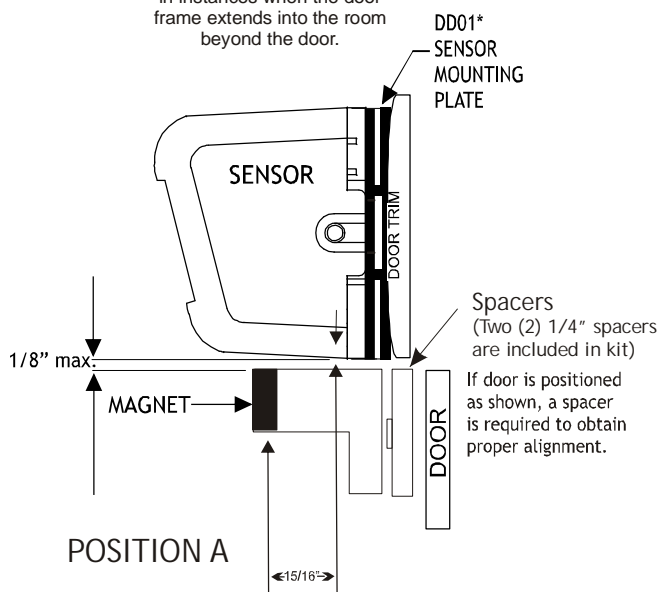
There is a line on the bottom of the DD01E and DD01F to assist in aligning the magnet in the proper bucket location.

Above graphics are for example only. Always measure and place the magnet in the proper slot to obtain the 15/16" needed between the magnet and the sensor mounting plate on the door frame.



CONSTRUCTION STYLE 4

Place magnet in Position A in instances when the door frame extends into the room beyond the door.



Above shows magnet 15/16" from the sensor mounting plate in different slot positions.

NOTE: Two (2) 1/4" spacers are provided in this kit for instances where the door is recessed behind the door trim. See Construction style 4.

IMPORTANT NOTE: When properly installed, the center line mark on the bottom of the DD01E will line up with the center of the line of the magnet holder containing the magnet. Choose magnet position A, B, or C to align the magnet 15/16" from the back of the DD01E or DD01F.

DOOR SENSOR OPERATION VERIFICATION

NOTE: Do NOT attempt to bind a DD01E unless proper operation has been validated.

To verify that door sensor is installed properly:

1. Install batteries into DD01E or DD01F and snap sensor onto wall plate.
2. Close the door. Green light in lens should illuminate. Open door and green light will turn off. **Repeat this step several times to ensure door sensor is operating correctly.**

Procedure must be accomplished within one minute. If not accomplished within one minute, remove batteries and repeat Steps 1 & 2.

Configuration Settings

The PTAC control will automatically self-configure to work with the wall thermostat (DS01E Kit) if installed and bound. The PTAC control will automatically self-configure to activate pre-configured energy management routine when the DD01E or DD01F is installed and bound to the PTAC. Additionally, the setback times and setback temperatures can be changed using the configuration settings. If you are using DP01* or DL01E Front Desk Platform, the PTAC control will need to be configured to identify its room number placement.

PROPER INSTALLATION


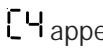
STANDARD AND DS01E CONFIGURATION



ENTERING ROOM NUMBER (SKIP IF NOT USING DP01* FRONT DESK PLATFORM) IN CONFIGURATION MODE



TO ENTER CONFIGURATION FEATURE MODE,



SEE PAGE 27.

1. The PTAC control can be set for a 4-digit room number. To select the first two digits (floor), press the



HEAT  key until  appears, then press the



up  down  arrows to select the first two digits.



2. To select the last two digits of the room number, press the HEAT  key until  appears, then





press the up and down   arrows to select the last 2 digits of the room number.


For example for Room "201", press the HEAT  key until  appears, then press the up  down  arrows to select "02":  = .

Next to select the last two digits of the room number, press the HEAT  key until  appears, then

press the up and down   arrows to select "01":  = .





3. If a room contains more than one unit (a suite), a suffix must also be entered to identify which unit is in the main room and which unit(s) are in bedroom(s). Master unit ALWAYS MUST have a 01 suffix and slaves a suffix or 02, 03, etc. To select the room # suffix, while still in configuration mode, press the HEAT  key until  appears. Then press the up and down

  arrows to select the room # suffix. Example: For the unit serving the main living area in room 224, press the HEAT  key until  appears, then press

the up and down   arrow keys to select  ( =  appears in the display).

For the bedroom unit closest to the main room in room

224, press the up and down   arrow keys to select

 ( =  appears in the display) Press the  key to exit configuration mode.

Binding of RF Devices

CAUTION

DO NOT HAVE TWO GROUPS OF PEOPLE BINDING UNITS IN THE PROPERTY AT THE SAME TIME. RADIO FREQUENCY (RF) GOES THROUGH WALLS AND UP TO 400'.

IMPORTANT NOTE: If wireless platform DP01*, DP01E or DL01E are being utilized, then room numbers MUST BE CONFIGURED in the control board prior to binding wireless devices.

**DO NOT ATTEMPT TO BIND
MORE THAN ONE ROOM AT A TIME AT THE
SAME PROPERTY!!!
RF TRANSMITS THROUGH WALLS.**

The wireless devices (DS01E and or DD01E must be bound to the PTAC DT01E control for proper in-room communication. Ensure the unit is powered but in the OFF position.

NOTE: Both the DS01E and the DD01E must be bound to the PTAC unit during the same "learn" operation.

If you need to rebind one device - then you must rebind both devices during the same learn mode event.

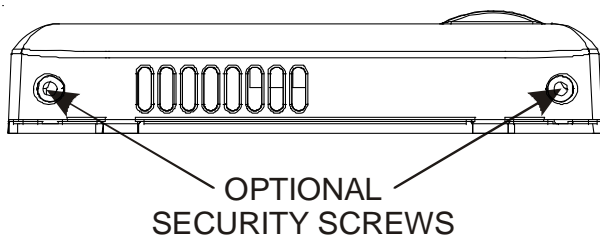
All must be bound at one time.

PROPER INSTALLATION

1. Press and hold OFF button on the PTAC until **L** appears.
2. Press and then immediately release the white tactile button on the back of the DS01* thermostat. **L** should now be displayed on the PTAC LED display. If **L** does not show on the display in 1-2 seconds, then press and release the white button a second time. Skip this step if there is no thermostat.
3. Press and then immediately release the white tactile button on the back of the DD01* motion sensor. **L** or **L** should now be displayed on the PTAC LED display. If **L** or **L** does not show on the display in 1-2 seconds, then press and release the white button a second time. **NOTE:** If both a DD01* and a DS01* are being bound, then the display will show **L**.

Skip if there is no motion sensor.

4. Press "OFF" on the PTAC touchpad to exit the binding sequence.
5. Slide top of the thermostat down onto the wall plate and then snap into place.
6. Provided optional security screws may be used in lower corners of the thermostat.



7. Snap motion sensor onto motion sensor mounting plate.
8. Provided optional security screws may be installed on right and left side of the sensor.
9. If you wish to change from the factory default settings, configure the device or devices that were bound. See the next section for configuration choices.

NOTE: If a wireless device is replaced or added, all devices (including those previously bound) will need to be bound/re-bound to the unit. See directions above.

ENTERING ROOM NUMBER (SKIP IF NOT USING DP01* FRONT DESK PLATFORM)

1. The PTAC control can be set for a 4-digit room number. To select the first two digits (floor), press the

HEAT **HEAT** key until **C4** appears, then press the



up down arrows to select the first two digits.

2. To select the last two digits of the room number, press the HEAT **HEAT** key until **C5** appears, then



press the up and down arrows to select the last 2 digits of the room number.

For example for Room "201", press the HEAT **HEAT**



key until **C4** appears, then press the up down arrows to select "02": **C4 = 02**.

Next to select the last two digits of the room number, press the HEAT **HEAT** key until **C5** appears, then



press the up and down arrows to select "01": **C5 = 01**.

3. If a room contains more than one unit (a suite), a suffix must also be entered to identify which unit is in the main room and which unit(s) are in bedroom(s). Master unit ALWAYS MUST have a 01 suffix and slaves a suffix or 02, 03, etc. To select the room # suffix, while still in configuration mode, press the HEAT **HEAT**

key until **C5** appears. Then press the up and down







arrows to select the room # suffix. Example:

For the unit serving the main living area in room 224,

PROPER INSTALLATION





press the HEAT  key until  appears, then




press the up and down  arrow keys to select 

( =  appears in the display). Since  is the factory default setting for configuration code , it may not be necessary to configure the suffix for the main room.

For the bedroom unit closest to the main room in room

224, press the up and down  arrow keys to select

01  ( =  appears in the display) Press the  key to exit configuration mode.

- If a property identifies rooms by an alpha character (such as WINGS), a prefix must also be entered to identify room numbers (example: A-115). To select the room # prefix, while still in configuration mode, press the HEAT  key until  appears. Then press the up and down  arrows to select the room # prefix. Contact the manufacturer to have the prefix show as the correct letter on the platform.

SETBACK TEMPS - DD01E / DD01F

The DD01* and the DigiSmart™ control can be programmed for 3 different times to activate temperature setbacks. The current factory default temperature setbacks in v2.5 * software release are: 2° from set point in 30 minutes, 3° in one (1) hour, and 6° in three (3) hours. For each time, you can select a setback temperature. The amount of setback is the amount of degrees the control will operate from guest's setting in degrees F. If a change to the factory default temperature settings is desired, use the following instructions.

NOTE: WHEN first entering the configuration mode, if you see " - - " then you have version 2.5 or higher. You can verify the software version by starting with the unit in the OFF position, and while holding down the "+" and "-"

buttons, double click the COOL button and then release and push the FAN button within one second. The unit display will scroll through all of the thermister temperatures and the last item displayed will be CS (current software) and you will see 25 for v2.5.

*Other software versions may have different factory setback defaults. *Contact your PTAC representative to determine factory default settings.*











WARNING




USE OF SETBACK TEMPERATURES

Do not use motion sensing setback temperatures in rooms where incapacitated persons or animals are unable to change the control setting.




An unattended air conditioner with extreme setbacks may result in undesirable or unhealthy temperatures in the conditioned space causing under heating, under cooling or death of persons or animals.

- To select first unoccupied set back temperature, press the HEAT  key until  feature code comes up. To scroll to a previously viewed feature codes, press the COOL  key.
Once you have scrolled to the  feature, press either the up or down arrow  to scroll to the desired first unoccupied setback temperature. Cooling example: 72° (guest set point) + 2° (Setback temperature) = 74° (operational set point).
- Press HEAT  key to scroll to  first unoccupied setback time. The first unoccupied setback time is the time between when the control determines that the room is not occupied and when the control sets the operating set point temperature back. The increments are in hours (.1 = 6 mins., .5 = 30 mins., 1 = 1 hour, etc.). Press either the up or down arrow  to the desired first unoccupied setback time.
- To select second unoccupied setback temperature,




PROPER INSTALLATION



press the **HEAT**  key until  comes up. Press either the up or down arrow  to the desired second unoccupied setback temperature.

Cooling example: 72° (guest set point) + 4° (Setback temperature) = 76° (operational set point).

7. Press **HEAT**  key to scroll to  second unoccupied setback time. Press either the up or down arrow  to the desired second unoccupied setback time.

Example: Operating set point would be 76° instead of 72, one hour (1.0 hour) after guest leaves room.

8. Press **HEAT**  key to scroll to  third unoccupied setback temperature. Press either the up or down arrow  to the desired third unoccupied setback temperature.


9. Press **HEAT**  key to scroll to  third unoccu-

pied setback time. Press either the up or down arrow



to the desired third unoccupied setback time.

10. To **exit configuration mode**:

Press the **OFF**  key. **NOTE:** Configuration feature mode will also automatically exit **if no keys are pressed** for a period of **two (2) minutes**.

The changes made in configuration mode are now in effect.

NOTE: Additional codes are present and may be accessed within this menu. Contact the manufacturer for additional information.






PROPER INSTALLATION

CONFIGURATION SETTINGS

7 BUTTON TOUCH PAD WITH DISPLAY



The control can be configured to operate a wide range of options. The options listed below with the * are the factory default settings. If these are acceptable, then the unit does not require any additional configuration and is fully operable. To configure the unit, first select the configuration feature code setting and then an option code to change from the factory default setting.

To enter configuration feature mode:

1. Press and hold the up and down   arrow keys at the same time and press the OFF  key twice within a two (2) second time frame then release the  .

The display will indicate = = if the security code (configuration code uL) has been previously set. The display



alternates between = = and 00. Use the up and

down   arrow keys to change 00 to the previously selected security code.



NOTE: The control will not proceed to the next step until the correct code is entered. The security code step will be skipped if no code has been set or if it has been set back to 00.

The display will indicate - -. Press the HEAT  key one


time. The display will then alternate between C1 and 0.

To select a different configuration feature code, press the HEAT  key until the desired configuration comes up. To scroll to a previously viewed configuration codes press the COOL  key.

Once you have scrolled to the correct feature, then to select the option code for your desired configuration,

press either the up or down key   to scroll through the options of the selected feature code.

To exit configuration mode:

1. Press the OFF  key. Configuration feature mode will also exit if no keys are pressed for a period of two (2) minutes.

CONFIGURATION SETTINGS

Configuration Code	Configuration Feature	Option Code	Option
C1	Interface	0 *	Chassis Membrane *
		L5	Wired Thermostat
		rE	Wireless Stat & 7-Button
		L0	Locked Membrane
C2	ID Fan Operation	Au	<i>do not use</i>
		On	<i>do not use</i>
		bP	Button present
		bA*	Revert to Cyclic
		A	Always run fan (even if Off)
		C	<i>do not use</i>
		bC	Revert to Continuous
C3	Reverse Cycle Operation	C	Cooler Only PTC
		H*	Heat Pump PTH *
		0	Sevice No Operation "Eo"
		dC	Dry Cooler DRY
		dH	<i>do not use</i>
		uC	MTC Cooler
		uH	MTH Heat Pump
C4	Room I.D. Digit 1 & 2	00* - 99	00* - 99
C5	Room I.D. Digit 3 & 4	00* - 99	00* - 99
C6	Wired Occupancy	0*	Off*
		1	On
		18	18 Hour Automatic Entry
		2	Bound T-stat PIR w/o Door
C8	Temp. Limiting Cool	60* - 80	60* - 80
C9	Temp. Limiting Heat	68 - 90, 80*	68 - 90, 80*
c3	Un-rent ClnTemp.	45 - 95, 79*	45 - 95, 79*
c4	Un-rent HtnTemp.	45 - 95, 63*	45 - 95, 63*
CA	Wireless Twin Unit	0*	Not Twinned*
		5	Twinned
Cd	English / Metric Temp	F*	Fahrenheit Scale*
		C	Celsius Scale
d6	Sensorless Un-Occ. Time	1 - 32, 18*	1 - 32, 18*
d7	1st Un-Occ. Set Back Temp.	1 - 16, 2*	1 - 16, 2*
d8	1st Un-Occ. Set Back Time	.1, .5*, 1 - 24	.1, .5, 1 - 24, .5*
d9	2nd Un-Occ. Set Back Temp.	1 - 16, 3*	1 - 16, 3*
dA	2nd Un-Occ. Set Back Time	.5, 1* - 24	(d8) - 24, 1*
db	3rd Un-Occ. Set Back Temp.	1 - 16, 6*	1 - 16, 6*
dC	3rd Un-Occ. Set Back Time	1 - 24, 3*	(dA) - 24, 3*
dF	Platform Group Code	00* - 99	00* - 99
r4	Room Prefix	00* - 99	00* - 99
r5	Room Suffix	00* - 99	00* - 99
u8	Input Pins UN1 & COM	0*	Door Switch
		1	Motion Sensor
		2	Front Desk
		3	Wired Un-rented Set Back
		4	Emergency Hydronic
		5	Load Shedding
		6	Alarm Sensor
u9	Input Pins UN2 & COM	0*	Door Switch
		1	Motion Sensor
		2	Front Desk
		3	Wired Un-rented Set Back
		4	Emergency Hydronic
		5	Load Shedding
		6	Alarm Sensor
uL	Config. Security Code	00* - 99	00* - 99

*Indicates factory default. See manufacturer for additional configuration options.

MAINTENANCE

NOTE: The compressor does not require maintenance. It is hermetically sealed, permanently lubricated.

WARNING

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR CLEANING THIS UNIT.
MULTIPLE POWER SOURCES MAY BE
PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

HIGH VOLTAGE
TO AVOID PROPERTY DAMAGE, PERSONAL
INJURY OR DEATH DUE TO ELECTRICAL
SHOCK, CLEAN AIR FILTERS OR COILS
REGULARLY. CLOGGED OR SEVERELY RESTRICTED
FILTERS OR COILS REDUCE AIRFLOW WHICH CAN
CAUSE DRASTIC EFFICIENCY LOSS AS WELL AS
SEVERE COMPONENT DAMAGE TO COMPRESSORS,
ELECTRIC HEATER OR FAN MOTOR. IN EXTREME
CASES, CLOGGED FILTERS AND/OR COILS MAY
CREATE A FIRE HAZARD AND WILL VOID THE WARRANTY.



WARNING

SOME LOCAL CONDITIONS AND ENVIRONMENTS
CAN CAUSE FUNGI AND OTHER MATERIAL TO
GROW INSIDE THE PTAC UNIT. THIS MATERIAL
WHEN DRIED, AS WELL AS OTHER FOREIGN
MATERIAL, SIMILAR TO DRYER LINT IN YOUR
CLOTHES DRYER, ARE FIRE HAZARDS. BE SURE TO
THOROUGHLY CHECK AND CLEAN THE UNIT'S
COILS, BLOWER WHEEL AND BASEPAN PER THE
INSTRUCTIONS CONTAINED IN THIS MANUAL.

MONTHLY MAINTENANCE AND CLEANING

Intake Air Filter

To properly maintain the operational performance of your PTAC unit, it is **extremely** important that the inlet air filter be cleaned once per month or more often if operated in dusty or dirty locations or conditions. The intake air filter is constructed of durable polypropylene. The "air intake" air filter can be easily inserted into the cabinet front using the cabinet filter guides. The intake air grille pulls upward for easy access to the filter. Before cleaning the intake filter, turn the unit off by setting the mode switch to the OFF position. Filter should be cleaned as required.

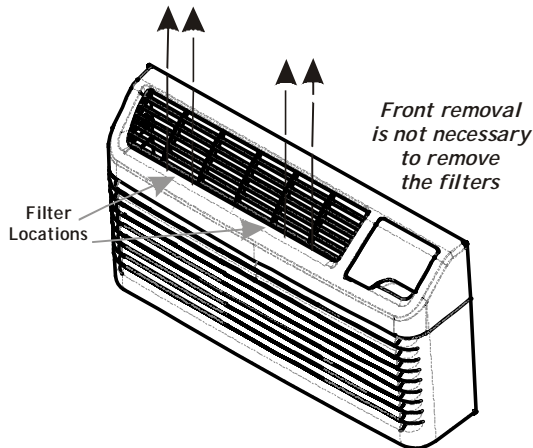
The following procedure is used to remove the intake filter:

1. Grasp each filter by its molded handle, located on the front edge of the front, below the discharge grill.
2. Pull the filter straight up and remove.

3. Clean filter with vacuum or with running water.
Reverse this procedure to reinstall the filters.

NOTE: Available accessory filter kits are FK10B (air intake filter - 10 per pack) and CFK10B (charcoal filter - 10 per pack). The charcoal filters will greatly improve the quality of the air by absorbing odors from tobacco smoke, mold, mildew, etc. Both filters are permanent and cleanable. Contact your sales person for details.

Filters are removed by grasping the filter's top and gently pulling up



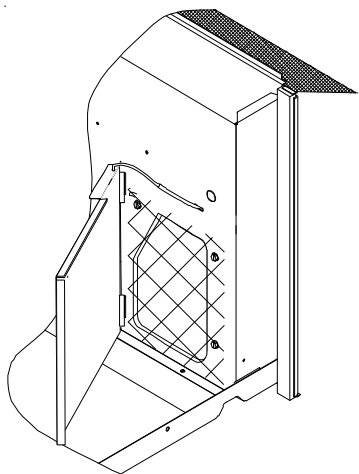
Intake Filter Removal

Vent Screen

Before cleaning the vent screen, disconnect power to the unit by unplugging the power cord at the wall outlet or sub-base, or disconnect power at the fuse box or circuit breaker. **If unit is operated with vent door closed**, the vent screen does not need to be cleaned.

1. Remove the cabinet front as described in Front Removal.
2. Remove the six screws securing the chassis to the wall sleeve.
3. Slide the chassis out of the wall sleeve far enough so that the vent screen is accessible.
4. Clean and replace the vent screen, slide the chassis back into the wall sleeve, secure it in place with six screws and reinstall the front cabinet.

MAINTENANCE



Vent - (Left Side Unit)

Cabinet Front

The cabinet front and discharge air grille can be cleaned with a water dampened cloth. **Under no circumstances should hydrocarbon-based cleaners (e.g. acetone, benzene, naphtha gasoline, etc.) or ammonia based cleaners be used to clean the front or air grilles. Use care when cleaning the control area.**

YEARLY MAINTENANCE AND CLEANING

NOTE: Use a mild **biodegradable** detergent such as Simple Green™ when cleaning the unit.

Special care must be taken to protect the unit's control board and other electrical components from getting any water on them while cleaning. The use of harsh or caustic cleaning agents or materials such as bleach or coil cleaners that are not designed for PTAC products will cause damage or deterioration of the aluminum fin or coil material and is not recommended. Care must be taken not to bend the aluminum fin stock.

Routine Scheduled Maintenance

To achieve continuing top performance and high efficiency, establish a "once a year" cleaning/inspection schedule for the unit. Take the unit out of the sleeve and thoroughly clean and rinse. Be sure to include in the yearly cleaning the evaporator coils, and condenser coils, basepan, and drain passages. Scheduled maintenance can be accomplished by either local maintenance staff or by an authorized servicer. They must follow the instructions described in this manual.

Adverse Operating Conditions Maintenance

Units operating in dusty or corrosive locations; i.e. dusty construction site or sea coast, must be cleaned more often. A minimum of four (4) times a year will maintain proper operational conditions and protect unit components.

Wall Sleeve

Clean the wall sleeve while cleaning the unit. The caulking around the sleeve should be checked to make sure that any potential air and water openings around the sleeve are properly sealed. The wall sleeve's level should also be rechecked. Proper leveling for most installations are a ¼ bubble tilt to the outside and level from right to left. Contact your sales person for detailed maintenance or cleaning instructions.

Basepan and Condenser Coil



DO NOT USE COMMERCIAL GRADE COIL CLEANERS. SOME OF THESE CLEANERS MAY CONTAIN ETHYLENE DIAMINE TETRACETIC ACID (EDTA) WHICH CAN SHORTEN THE LIFE OF THE CONDENSER COIL.

Before cleaning the basepan and condenser coil, turn OFF unit mode switch and disconnect power to the unit. To disconnect power, either unplug the power cord at the wall outlet or subbase, or disconnect power at the fuse box or circuit breaker.

1. Create a water-tight seal by tightly covering the entire control panel area and fan motor with plastic. Creating this seal prevents water from entering the control area or the fan motor and damaging the unit.
2. Spray condenser coil and basepan down with water. Next spray a mild **biodegradable** detergent such as Simple Green™ onto the condenser coil and basepan. Let set for five (5) minutes.
3. Rinse condenser coil and basepan with water again. **NOTE:** Ensure water pressure is no higher than that of an ordinary garden hose and the water temperature no higher than 120°F.
4. Tilt the non-compressor side of the unit up no higher than 45 degrees and allow water to drain out the other side of the unit.
5. Remove excess water left in the basepan by wiping the basepan with a dry cloth.
6. Remove the water-tight seal from the motor and control panel area.
7. Reinstall unit back into wall sleeve.
8. Allow unit to dry for 24 hours before reapplying power. When power is reapplied test unit for proper operation.
9. Place a non-acidic algaecide in the basepan to inhibit bacteria growth. Ensure the algaecide is compatible with wet coil operation and is not corrosive to the coil.



HIGH PRESSURE AND HIGH TEMPERATURE CLEANING IS NOT RECOMMENDED. DOING SO COULD DAMAGE THE ALUMINUM FIN STOCK AND ELECTRICAL COMPONENTS.

MAINTENANCE

CLEARANCE CHECK

Clearances around the unit should also be checked to make sure that the intake air and discharge air paths have not become blocked or restricted. A minimum of eight inches clearance is needed from unit to furniture, beds, or other objects for proper operation. Restricted discharge or intake air will reduce the units operational performance. In severe airflow restrictions damage can occur to unit components such as the compressor, electric heater or fan motor.

NORMAL OPERATING SOUNDS AND CONDITIONS

Water Trickling Sounds

Water is picked up and distributed over the coil. This improves the efficiency and helps with water removal.

Water Dripping

Water will collect in the base pan during high humidity days. This can cause overflow and drip from the outside of the unit.

Air Sounds

The fan cycle switch sets the operational mode of the fan in the on position. When the unit is in conditioning mode for example high or low heat or cool, the fan will run continuously. In the AUTO position, the fan will cycle on and off with the compressor or electric heater.

Starting Delay

You may notice a few minutes delay in the starting if you try to start the unit too soon after turning the unit off. This is due to a built in delay to protect the compressor.

OPERATIONS

SEQUENCE OF OPERATION

Cooling Mode

Set the thermostat to the desired temperature then set the mode switch to high or low cool. The fan motor will start first then the compressor will start approximately 10 seconds later. When the room temperature has reached the desired temperature the compressor will shut off and the fan will continue to run for 30 seconds then shut off. If the fan cycle switch has been set to "ON" or the electronic board has been programmed for "ON" the fan will continue to run.

Heating Mode

Set the thermostat to the desired temperature then set the mode switch to high or low heat. The fan motor will start, the reversing valve will engage and then the compressor or electric heat strip will start. If the unit is a heat pump the temperature of the room and the set point of the thermostat will determine if the unit brings on the compressor or electric heat. The room temperature will need to be within 4 degree's of the thermostat set point on "C-K" models and 2 1/2 degree's on "A-B" models for the compressor to come on in the heat pump mode. Any time the temperature of the room is more than 4 degree's or 2 1/2 degree's colder than the set point the electric heat will be energized. The outdoor coil thermostat or thermistor will lock out the compressor when the outdoor coil reaches a certain temperature. Clamp on bi-metal thermostat disc's may be on "A-B" model units. The bi-metal thermostats will open when the coil temperature reaches $25^{\circ} \pm 5^{\circ}$ and closes at 50° . The plug in thermistors on the "C-K" models will lock the compressor out at 24° outdoor temperature and allow heat pump operation to come back on at 33° .

CONTROL BOARD CHARACTERISTICS

- **Automatic 3-minute Compressor Lockout** - After the compressor cycles off, it will not restart for three minutes. This feature is enabled in standard or remote thermostat control.

NOTE: This delay may be defeated by shorting the "FD1" and "FD2" terminals together for a minimum of 5 seconds

- **Compressor lock-in feature-** Whenever the compressor is switched from off to on because the room temperature has risen above or fallen below the specified limit it will remain on for at least four minutes. However, if the thermostat point is changed during the four minutes this lock in feature is overridden.
- **Automatic 2nd Stage Electric Heat (Heat Pump Models)-** If the room temperature falls to 4°F below the set point temperature, the reverse cycle heat pump is shut off and the strip heat is turned on.

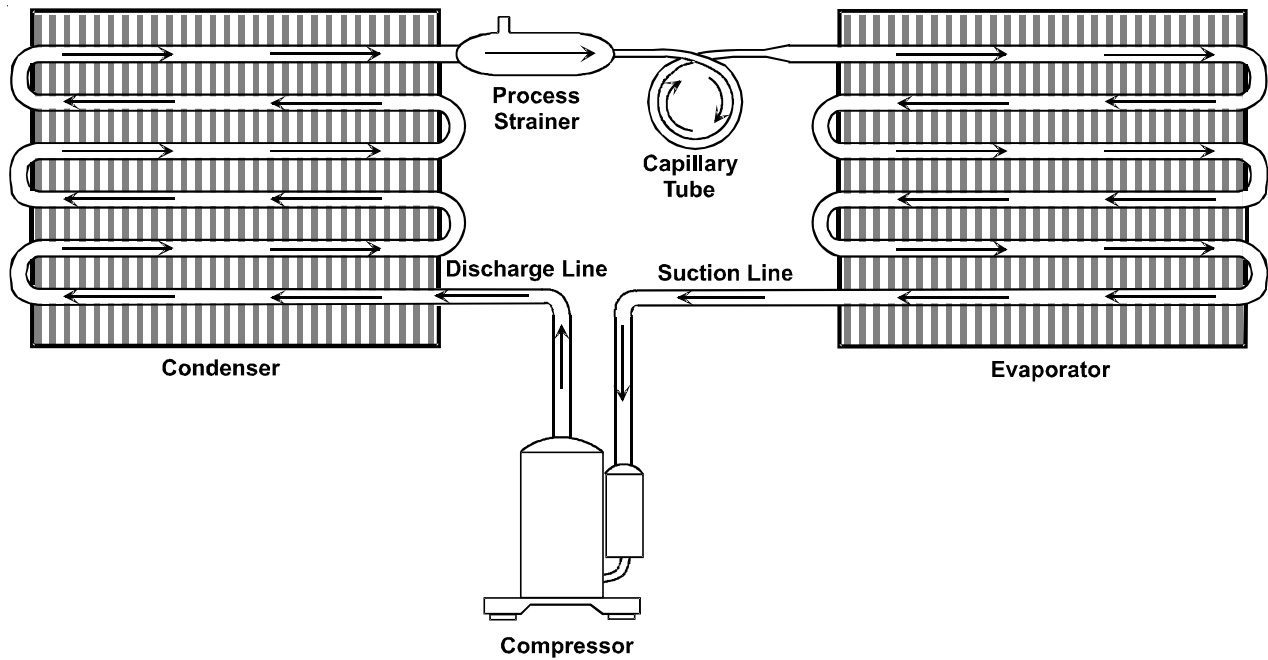
- **Automatic Freeze Protection** - Whenever power is supplied to the unit and the master switch is in the ON position, automatic freeze protection is active. If the thermistor senses temperature below $40^{\circ}\text{F} \pm 5^{\circ}\text{F}$, the fan motor and electric strip heat (or hydronic heat, if applicable) are switched on. The heater and fan will remain on until the Thermistor senses a temperature of 43°F .
- **Fan Advance/ Delay-** The advance feature will allow the fan to start six seconds prior to the compressor starting in either cooling or heating mode. The delay will keep the fan running for thirty seconds after the compressor stops in either cooling or heating modes.
- **Remote Thermostats** - Always use an approved thermostat supplied by the manufacturer. A wall thermostat that has not been approved by the manufacturer may not work correctly with this unit.
- **Remote Functions** - All functions are controlled by a wall mounted thermostat.
- **Remote Fan-** When GL terminal is connected to R terminal the remote fan speed is switched to low. GH terminal connected to the R terminal fan speed is switched to high.
- **Fuse Protection-** The fuse protection has been maximized on the 24 volt circuit so accidental groundings of the external terminals will not result in a burned out board. The unit may be operated in standard mode if the fuse is blown. There will be an auxiliary fuse supplied with the board. It will be attached to the main fuse by a plastic clip. The fuse is a 500 ma fuse. When replacing the fuse always use the correct fuse part #M0804205.
- **Random Delay** - When the master switch is turned on or power is reapplied to the control, all functionality will be locked out for a random period between two and four minutes, if Y or W inputs are active in remote or the mode switch is set to HI/LO heat or cool. The delay can be avoided if the front desk terminals are closed for more than two seconds, or the mode switch is in the off or fan only position.
- **Transformer Selection-** Some boards come with the transformer selection set for on-board use, if an external transformer is utilized move the jumper from "ON-BOARD" to "EXTERNAL". If applicable, the wiring for an external transformer connects to the "EXT XFRMR" terminals.
- **Indoor Ambient Thermistor-** The Indoor Ambient Thermistor senses actual room temperature.

OPERATIONS

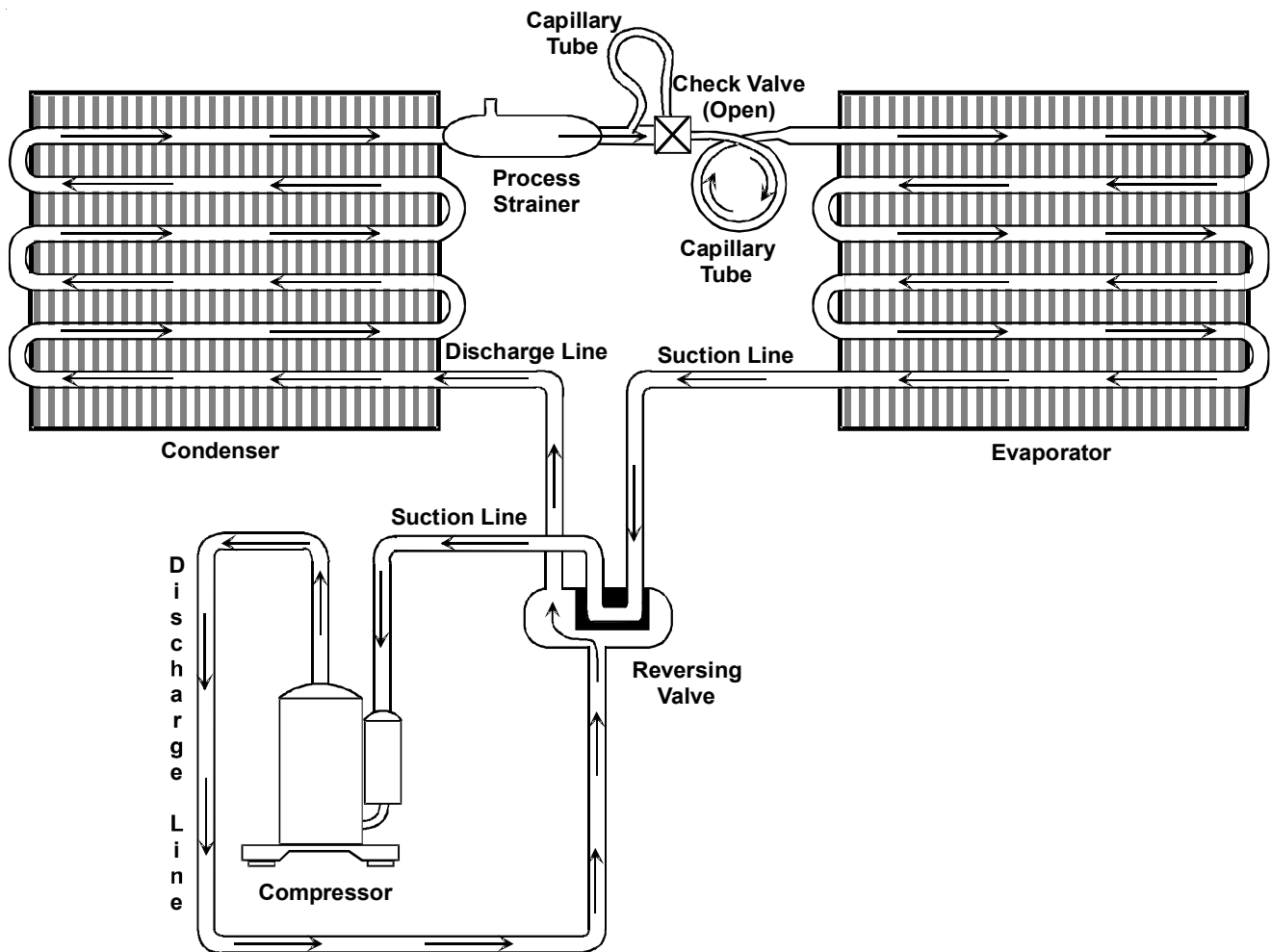
- **Indoor/Outdoor Coil Thermistors**- In the cooling mode, if the compressor is engaged continuously for 20 minutes and the Indoor Coil Thermistor is below 30 degrees the compressor is disengaged until the ICT rises above 45 degrees. The Outdoor Coil Thermistor senses coil temperature which correlates to outdoor air temperature. Heat pump operation can operate as low as 24°F outdoor temperature depending upon humidity conditions and/or the balance point of the system. After defrost is initiated, the compressor remains off for at least thirty minutes and resumes operation when the outdoor coil temperature reaches 33°F. Electric resistance heat will maintain the ambient room temperature anytime the temperature falls 4°F below the room set point temperature.
- **Load Shedding**-The LS & IN terminals are used for load shedding. A switch can be added to close the circuit to lock out the compressor and electric heat when the power company or energy management system is trying to reduce its load for a specified time.
- **Sample Before Start** - The SBS routine is used in the cooling mode. This routine runs the unit fan on low speed for up to 120 seconds. The sample fan is aborted if compressor demand is detected. To avoid unnecessary sampling the period between samples will be based on specific room conditions. The default sample before start period after a power up is 5 minutes. The period is corrected every time a sample run is completed without a compressor demand. The minimum sample period is 5 minutes and the maximum period is 15 minutes.
- **Remote Temperature Sensor** - An auxiliary temperature sensor (RTS02) may be connected to the control that senses actual room temperature. This sensor replaces the Indoor Ambient Thermistor and will connect to the Indoor Air terminals on the control.
- **Front Desk Control** - The front desk control terminals are FD1 and FD2. These terminals will provide a connection for a user supplied switch that will allow the operation of the unit to be remotely defeated.
- **Transfer Fan**- A transfer fan may be used if a user supplied relay is connected to TF1 and TF2. Make sure the relay is a manufactured approved relay. The relay will be energized whenever the blower/fan relay is energized.
- **Emergency Hydronic Heat** - A switch can be added to the EH & IN terminals to close the circuit to enable the fan, enable the heater relay and lockout the compressor to continue minimum operations with auxiliary power, if the main power goes out.

OPERATIONS

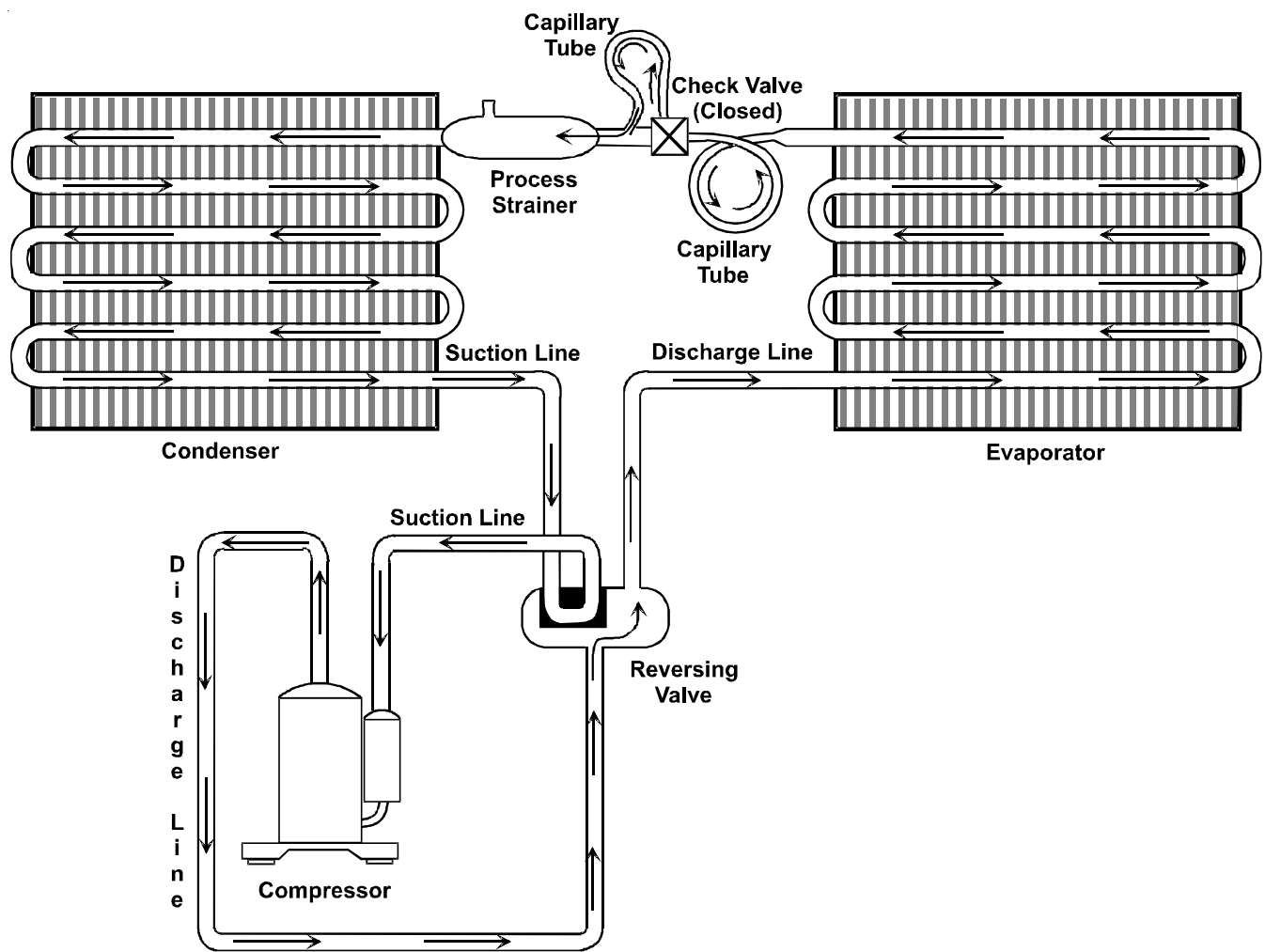
REFRIGERATION SEALED SYSTEM



Refrigeration System - Air Conditioner



Refrigeration Sealed System - Heat Pump (Air Conditioning Mode)



Refrigeration Sealed System - Heat Pump (Heat Pump Mode)

SERVICING

REFRIGERATION SYSTEM SERVICE

WARNING

**HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



WARNING

**BRAZING REQUIRES HIGH TEMPERATURES. TAKE
PRECAUTION TO PROTECT AGAINST PERSONAL
INJURY OR PROPERTY DAMAGE. TO AVOID THE
RISK OF FIRE, THE REFRIGERATION SYSTEM MUST
BE KEPT FREE FROM CONTAMINATION DUE TO THE
PRESENCE OF AIR. FOLLOW THESE INSTRUCTIONS
EXACTLY. TO AVOID THE RISK OF BURNS,
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH,
DO NOT PLUG IN THIS PRODUCT OR APPLY POWER
TO THE COMPRESSOR IF THE COMPRESSOR
TERMINAL COVER HAS BEEN REMOVED OR IS NOT
FIRMLY IN PLACE.**

IMPORTANT NOTE: Effective July 1, 1992 before opening any refrigerant system it is the responsibility of the service technician to capture the refrigerant for safe disposal.

Refer to the cooling and heater performance charts in this section for capacity test procedure.

A step-by-step procedure for determining source of trouble, suggested method and normal values are provided in the Diagnosis Charts.

Service operations requiring opening of the hermetically sealed refrigeration system should not be performed in the home. The unit must be taken to a well equipped shop where special equipment for evacuating, dehydrating, charging and testing is available. The following equipment is necessary.

Equipment to use dry nitrogen of no more than .0012 grains of moisture. Vacuum pump capable of evacuating to a minimum of 50 microns.

Vacuum Pump - Kenney or equivalent. Micron gauge to check vacuum. Refrigerant charging cylinder accurate to within 1/4 oz. Electronic leak detector - General Electric or equivalent. Electrical equipment to test: compressors, capacitors, voltage relays and overload protectors Electrical test board or portable equipment, including: volt meter, ammeter, and watt meter. Silver soldering and brazing equipment: Pinch off tools 1/4" to 5/8" Thermocouple tester.

Dehydrating And Evacuating Refrigeration System

A rather popular misconception exists that since air conditioners normally operate with a refrigerant temperature above 32°F., moisture in the system is harmless. Nothing could be further from the truth. Oxygen from moisture plus normal compressor and motor heat reacts chemically with the refrigerant and oil to form corrosive hydrochloric and hydrofluoric acids. These acids contribute to the breakdown of motor winding insulation and the corrosion of compressor working parts and cause unnecessary compressor failure. Sludge, which is a residue of the chemical action, coats all compressor parts, the inside of refrigerant tubing, and may even restrict refrigerant flow through the capillary tube(s).

Leak Testing

Refrigerant leaks are best detected with a halide or electronic leak detector.

NOTE: Leak detectors must be compatible with R-410A refrigerant.

The importance of careful leak testing cannot be overemphasized. Undetected leaks invariably lead to repeated calls and eventually result in system contamination, restrictions and burned out compressors.

For a system that contains a refrigerant charge and is suspected of having a leak, stop the operation, check all tubing and fittings. Soap suds may also be used.

NOTE: The flame of the halide detector will glow green in the presence of R-410A refrigerant.

If a leak is detected, do not attempt to apply more brazing material to the joint. Recover the charge, unbrazed the joint, clean and rebrase.

For a system that has been newly repaired and does not contain a charge, connect a cylinder of refrigerant, through a gauge manifold, to the process tube of the compressor and liquid line strainer. Open the valve on the cylinder and manifold and allow the pressure to build up within the system. Check for and handle leaks as described above.

After the test has been completed, recover the test charge, evacuate the system, and recharge with clean refrigerant.

Brazing

Satisfactory results require cleanliness, experience and the use of proper material and equipment.

The connections to be brazed must be properly sized, free of rough edges and clean.

The generally accepted materials are:

SIL-FOS (Alloy of 15% silver, 80% copper, 5% phosphorus) is used without flux on copper to copper. **DO NOT USE FOR A COPPER TO STEEL CONNECTION.** Recommended heat is approximately 1400°F.

SERVICING

SILVER SOLDER (Alloy of 30% silver, 38% copper, 32% zinc.) is used with fluoride base flux on copper to steel, brass to copper, steel to steel, brass to steel. Recommended heat is approximately 1200°F.

Evacuation



WARNING

TO PREVENT SEVERE BURNS. DO NOT ALLOW THE SLUDGE OR OIL TO CONTACT THE SKIN.

This is the most important part of the entire service procedure. The life and efficiency of the equipment is dependent upon the thoroughness exercised by the serviceman when evacuating air (non-condensables) and moisture from the system.

Air in the system causes high condensing temperature and pressure, resulting in increased power input and reduced performance.

Moisture chemically reacts with the refrigerant and oil to form corrosive hydrofluoric and hydrochloric acids. These attack motor windings and parts, causing breakdown.

The equipment required to thoroughly evacuate the system is a high vacuum pump, capable of producing a vacuum equivalent to 50 microns, and a thermocouple vacuum gauge to give a true reading of the vacuum in the system.

NOTE: Never use the system compressor as a vacuum pump or run when under a high vacuum. Motor damage could occur.

1. Connect the vacuum pump, vacuum tight manifold set with high vacuum hoses, thermocouple vacuum gauge and charging cylinder.
2. Connect the low side line to the process tube of the compressor.
3. Connect the high side line to the process tube of liquid line strainer.

NOTE: If either process tube is not long enough to receive the compression or flare fitting and still leave room for a pinch-off, swag the tube and braze in an extra length of tubing.

4. Start the vacuum pump and open shut off valve to the high vacuum gauge manifold only. After the compound gauge (low side) has dropped to approximately 29 inches of vacuum open the valve to the vacuum thermocouple gauge. See that the vacuum pump will bank-off to a minimum of 50 microns. A high vacuum pump can only produce a good vacuum if its oil is not contaminated.
5. If the vacuum pump is working properly, close the valve to the vacuum thermocouple gauge and open the high and low side valves or the high vacuum manifold set. With the valve on the charging cylinder closed, open the manifold valve to the cylinder.

6. Evacuate the system to at least 29 inches gauge before opening valve to thermocouple vacuum gauge.
7. Continue to evacuate to a minimum of 250 microns. Close valve pump and watch rate of rise. If vacuum does not rise above 1500 microns in three minutes, system can be considered properly evacuated.
8. If thermocouple vacuum gauge continues to rise and levels off at about 5000 microns, moisture and non-condensables are still present. If gauge continues to rise a leak is present. Repair and re-evacuate.
9. Close valve to thermocouple vacuum gauge and vacuum pump. Shut off pump and prepare to charge.

Charging

Charge the system with the exact amount of refrigerant.

Refer to the unit nameplate for the correct refrigerant charge. An inaccurately charged system will cause future problems.

1. When using an ambient compensated calibrated charging cylinder, allow liquid refrigerant only to enter the high side.
2. After the system will take all it will take, close the valve on the high side of the manifold.
3. Start the system and charge the balance of the refrigerant though the low side. Do not charge in a liquid form.
4. Close the low side valve on the manifold and pinch-off both process tubes. Remove the manifold set, crimp shut the open ends of the process tubes and braze.
5. Recheck for refrigerant leaks.

NOTE: Do not use a refrigerant other than that shown on the serial number identification plate.

All precautionary measures recommended by the refrigerant manufacturers and suppliers should be observed.

Line Piercing Valves

Line piercing valves may be used for diagnosis but are not suitable for evacuating or charging due to the minute holes pierced in the tubing.

Line piercing valves must not be left on the refrigerant system. The connection between the valve and the refrigerant tubing is not hermetically sealed and will eventually leak.

Open Lines

During any processing of the refrigeration system the lines should never be left open to atmosphere since water vapor will enter and add to the problem of proper evacuation.

Operating Test

The final step in a successful repair is an accurate operating test. Follow the Cooling and Heating Performance tests provided to make sure the product is again performing to design standards.

SERVICING

WARNING

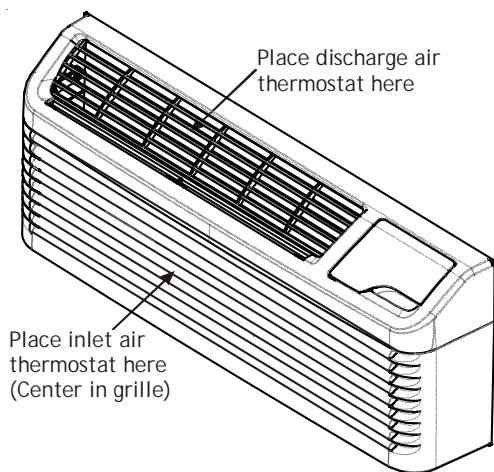
NEVER TEST OPERATION WITHOUT THE UNIT IN THE WALL SLEEVE. A SERIOUS CHANGE IN DESIGN SPECIFICATIONS FOR AIR MOVEMENT THROUGH THE EVAPORATOR AND CONDENSER COMPARTMENTS, CAUSING THE FAN MOTOR TO OVER HEAT AND THE REFRIGERATION SYSTEM TO BECOME UNBALANCED WILL OCCUR WHEN THE UNIT IS NOT INSTALLED IN THE WALL SLEEVE.

Efficient operation is dependent on a balanced system. One of the most common reasons for inefficiency is the users failure to adequately clean the condenser thereby creating reduced air movement.

Cooling Performance Test Thermometers

The following precautions are necessary in observing the thermometer readings in the cooling performance test.

1. Use two accurately calibrated refrigeration type thermometers or a thermocouple potentiometer.
2. Thermometers are affected by body heat or changes in air flow. Therefore, the thermometers must be secured in proper locations with masking tape, wire or other applicable retainers.
3. Readings should be observed without touching or moving the thermometers.



Sling Psychrometer

The sling psychrometer is used to obtain the wet bulb temperature in determining the percent relative humidity.

To obtain the wet bulb operate the sling psychrometer as follows:

Saturate the wick (only once during procedure of obtaining wet bulb readings) with clean water slightly below room temperature. Psychrometer reading should be acquired five to six feet in front of the unit and approximately four feet off the floor.

NOTE: Direct discharge airflow away from the sling psychrometer.

The cooling performance test should not be employed when outside temperatures are 20° below that of the room. Best results are obtained when the test is conducted under peak load conditions.

The air conditioner must operate at least 20 minutes on the High Cool position before testing.

Cooling Test

The following temperature must be recorded for the cooling performance test:

- A. Dry bulb temperature of return air at conditioner. Locate thermometer as illustrated.
- B. Dry bulb temperature of air leaving conditioner. Thermometer has to be located as illustrated.
- C. The dry bulb thermometer temperature on the sling psychrometer should be plus or minus 1°F within reading obtained on thermometer in the return air. Check wet bulb temperature on sling psychrometer and record same.
- D. After the wet bulb temperature, dry bulb temperature, and return air temperature have been recorded, proceed to calculate the temperature difference as follows.
- E. Subtract temperature obtained in Step B from temperature obtained in Step A. The remainder temperature is used to calculate from the Cooling Range Chart.

EXAMPLE: Assume a PTH15 unit is under test and the temperature readings indicated below were obtained.

1. Return air D.B. temperature: 80°F, Step A.
2. Discharge air D.B. temperature: 69°F, Step B.
3. Return air, wet and dry bulb temperature as recorded in Step C: Dry Bulb 80°F, Wet Bulb 75°F.
4. In left hand column of Cooling Capacity Charge headed Dry Bulb, find the 80° value.
5. In column headed Wet Bulb find the 75°F value and find the value 8 -13 in the cooling range column under the Model "PTH153 PTH154".

This data shows that the temperature of the air passing through the cooling coil is reduced at least 8°F but not more than 13°F. This example unit is operating normally for the existing conditions.

SERVICING

For the example unit under test, the temperature difference was 11°F (80°F, return air, minimum 69°F discharge air). Since the value is within the listed cooling range 8 - 13, this unit is considered to be operating normally.

For Total Power Input Test (wattage) the following additional readings must be recorded after the unit under test is interconnected with a wattmeter.

- Outdoor dry bulb temperature. Avoid direct exposure of thermometer to sunlight or to hot condenser discharge air.
- Total watts input, measured by wattmeter or calculate by multiplying applied voltage by unit amps.

Calculating Procedure

1. Locate the outdoor temperature obtained in first column of Total Power Consumption Cooling Chart.
2. Locate in second column the return air wet bulb temperature obtained in Step C.
3. The total watts input should come between minimum and maximum values indicated for each model.

EXAMPLE: Assume that a PTH15 is again under test. Proceed as follows and observe test readings as simultaneously as possible.

1. Outdoor dry bulb temperature reading - 95°F.
2. Check watts input - 1510.
3. Wet bulb temperature as described in Step C - 75°F.

In column headed Outdoor Dry Bulb Temperature of the Power Consumption Chart find the 95°F value. Read to the right from the 95°F value and find the room wet bulb temperature (75°F).

Read to the right front the 75°F W.B. value in the PTH15 column and note the minimum and maximum wattage of 1460 - 1575.

Since the wattage reading (1510) obtained in the test is within the prescribed range, the total power input in watts is considered to be normal.

Electric Heat Test

For the electric heat test, the following readings must be recorded after the unit is interconnected with a wattmeter or by recording the total amp draw to the unit.

NOTE: Cabinet front must be in place during this test.

- Record supply voltage to unit.
- Operate unit in highest heat setting.
- Record wattage recorded on wattmeter or total amp draw to unit.
- Refer to heating watts/amps chart. (Whichever is applicable for voltage rating on the unit being tested.)

- The total watts or amps recorded should fall within the minimum and maximum watts/amps listed on these charts.

EXAMPLE: Assume that a PTH15 230/208V with 3.5 kW electric heater is under test.

1. Supply voltage as recorded - 208volts.
2. Watts recorded - 2750W or Amps recorded - 13.5 Amps.
3. Locate the readings listed on the following pages. You will note that these readings fall within the voltage, watts and amp draw minimum and maximum ranges listed and therefore the unit heating performance would be considered normal.

Heating Power Consumption Test (Heat Pump Mode Only)

For the total power consumption test, the following readings must be recorded after the unit is interconnected with a wattmeter.

- Outside coil inlet air dry bulb temperature.
- Inside coil inlet air dry bulb temperature.
- Total watts input measured by wattmeter.

Calculating procedure

1. Locate temperature obtained in Step A in first column of Heating Wattage Chart.
2. Locate in second column the inside coil inlet D.B. temperature.
3. The total watts input should come between minimum and maximum values indicated for each model.

EXAMPLE: Assume that a PTH15 is under test.

Proceed as follows and observe test readings as simultaneously as possible.

1. Outside coil inlet D.B. temperature readings as described in Step A: 45°F.
2. Check watts input: 1370 W.
3. Inside coil inlet D.B. temperature reading as described in Step B: 75°F.

Read to the right from the 75°F inside coil inlet D.B. value in the column and note the minimum and maximum wattage of 1335 - 1470.

Since the wattage reading (1370) obtained in the test is within the prescribed range, the total power input in watts is considered to be normal.

See the charts on the following pages.

COOLING CHANGE OF TEMPERATURE - AIR CONDITIONERS									
Model		PMC073 PTC073	PMC074 PTC074	PMC093 PTC093	PMC094 PTC094	PMC123 PTC123	PMC124 PTC124	PMC153 PTC153	PMC154 PTC154
Temperature		Temperature Across Indoor Coil (ΔT)	Temperature Across Indoor Coil (ΔT)	Temperature Across Indoor Coil (ΔT)	Temperature Across Indoor Coil (ΔT)	Temperature Across Indoor Coil (ΔT)	Temperature Across Indoor Coil (ΔT)	Temperature Across Indoor Coil (ΔT)	Temperature Across Indoor Coil (ΔT)
Outside Coil Dry Bulb (°F)	Room Wet Bulb (°F)								
90	85	Min	Max	Min	Max	Min	Max	Min	Max
	80	1	3	2	6	1	5	1	4
	78	6	11	10	15	9	13	8	13
	70	15	19	18	23	17	22	16	21
	65	23	28	27	31	25	30	24	29
85	80	3	8	7	11	5	10	5	9
	75	11	16	14	19	13	18	12	17
	70	18	23	22	26	20	25	20	24
	65	26	31	29	34	28	33	27	32
80	75	7	12	10	15	9	13	8	13
	70	14	18	17	21	15	20	15	19
	65	20	25	23	28	22	26	21	26
	60	27	31	30	34	28	33	28	32
75	70	9	14	12	17	10	15	10	15
	65	14	19	17	22	15	20	15	20
	60	19	24	22	27	20	25	20	25
	55	24	29	27	32	25	30	25	30
70	65	9	13	11	15	9	13	9	14
	60	13	17	15	19	13	17	13	18
	55	17	21	19	23	17	21	17	22

HEH / PMH / PTH

COOLING CHANGE OF TEMPERATURE - HEAT PUMPS									
Model		HEH073 PMH073 PTH073	HEH074 PMH074 PTH074	HEH093 PMH093 PTH093	HEH094 PMH094 PTH094	HEH123 PMH123 PTH123	HEH124 PMH124 PTH124	HEH153 PMH153 PTH153	HEH154 PMH154 PTH154
Temperature		Temperature Across Indoor Coil (Temperature Across Indoor Coil (Temperature Across Indoor Coil (Temperature Across Indoor Coil (Temperature Across Indoor Coil (Temperature Across Indoor Coil (Temperature Across Indoor Coil (Temperature Across Indoor Coil (
Outside Coil Dry Bulb (°F)	Room Wet Bulb (°F)	ΔT)	ΔT)	ΔT)	ΔT)	ΔT)	ΔT)	ΔT)	ΔT)
90	85	Min	Max	Min	Max	Min	Max	Min	Max
	80	1	3	2	6	1	5	1	4
	78	6	11	10	15	9	13	8	13
	70	15	19	18	23	17	22	16	21
	65	23	28	27	31	25	30	24	29
85	80	3	8	7	11	5	10	5	9
	75	11	16	14	19	13	18	12	17
	70	18	23	22	26	20	25	20	24
	65	26	31	29	34	28	33	27	32
80	75	7	12	10	15	9	13	8	13
	70	14	18	17	21	15	20	15	19
	65	20	25	23	28	22	26	21	26
	60	27	31	30	34	28	33	28	32
75	70	9	14	12	17	10	15	10	15
	65	14	19	17	22	15	20	15	20
	60	19	24	22	27	20	25	20	25
	55	24	29	27	32	25	30	25	30
70	65	9	13	11	15	9	13	9	14
	60	13	17	15	19	13	17	13	18
	55	17	21	19	23	17	21	17	22

SERVICING

DIGITAL BOARD DIAGNOSTICS

If a failure is detected on the digital board, there will be a green light constantly lit up. This light is located under the OFF touch pad button. The board will need to enter in the Diagnostic Mode to determine failure code and procedures to follow to correct problem.



Diagnostic Maintenance & Status Report

The Diagnostic Maintenance & Status Report Mode provides detailed information on PTAC control operation and operational status including present modes, failures, airflow restriction warnings, operating temperatures, and past failures. The lower right hand dot on the center display flashes in this mode. In some cases the green LED located in the lower left hand corner of the touchpad below the OFF key will also be lit. This Green LED "Status Light" only illuminates if there is an status code that has been activated and should be reviewed. In most cases, this light indicates that the indoor room filter is dirty should be cleaned or replaced.

NOTE: Dirty filters cause the unit to consume more energy than normally needed to condition a room. Once the filter has been cleaned or replaced, the LED should go out. If the LED is still illuminated after the filter has been cleaned, activate the Diagnostic and Status mode to view any active codes. The unit may need additional cleaning or maintenance of the evaporator or condenser coils. Please perform this step before calling a servicer. **A servicer should be called only if cleaning the filter or coils does not clear the status code or the code indicates that servicer should be called.**

DIAGNOSTIC STATUS REPORT MODE.



To enter **Diagnostic Status Report mode**, press and hold

the up and down  arrows and, while holding, quickly press the COOL key  twice.




Active Failures.

- If there are no active failures or lockouts, the display will show a double dash, "- -". If there is a code listed, see the unit "Diagnostic Codes" chart for a list of definitions.


Operating Temperatures.

- If not in Diagnostic Status Report Mode, enter as instructed above and press the Fan Speed  key.
- If already in Diagnostic Status Report mode, press the Fan Speed  key. The display will show the temperature of the desired set point, **SP**; the temperature at the wireless thermostat, **rL**; the indoor ambient temperature behind the filter, **IA**; the indoor coil temperature, **IC**; the indoor discharge air temperature, **Id**; the outdoor coil temperature, **OC**; the outdoor ambient temperature, **OA**; and the spare probe temperature, **IH**. If any of the probes are not populated the display will show the corresponding failure code.

Past Failure Log

- If not in Diagnostic Status Report Mode, enter as instructed above and press the Fan Speed  key twice.
- If already in Diagnostic Status Report mode, press the Fan Speed  key. While the display is showing operating temperatures, the last 10 failure codes active or past can be requested by pressing the Fan Speed  key again. The codes are displayed last entry first followed subsequently by each preceding code.

Note that modes **F1** and **Fd** are also displayed in the normal control operation (see "Diagnostic Codes" chart).

To exit **Diagnostic Status Report mode**, press the OFF  key.

SERVICING

CODE		STATUS	DISPLAY	ERROR LIGHT	SUGGESTED ACTION
MODES	FP	Freeze Protection Engaged. The room temperature measured by the wireless remote thermostat or indoor ambient thermistor active sensor falls below 40°F.	Y	N	No Action required. This setting will disengage when the room temperature rises above 43°F.
	Fd	Front Desk switch is closed. All outputs are switched off.	Y	N	Open front desk switch to allow occupant unit operation.
	Eo	Un-Configured Service Board - All operation held awaiting configuration	Y	Y	Enter Configuration Menu and set "C3" to "C" for coolers with electric heat or "H" for heat pumps.
	EH	Emergency Hydronic Engaged. The EHH switch is closed. Compressor is switched off.	Y	N	Open front emergency hydronic switch to allow occupant unit operation.
	LS	Load Shedding Engaged. The LS switch is closed. Compressor and Electric heat is switched off.	Y	N	Open load shedding switch to allow occupant unit operation.
	On	Control is configured to respond to a wired thermostat	Y	N	No action if a wired thermostat is being used. Otherwise, see Configuration Settings.
	oP	Open Door Lockout (DS1 & DS2 open; wireless)	Y	Y	Close Room Door. Unit will not condition space with door open.
	nP	Window Switch Lockout - (LS & INN open)	Y	Y	Close Room Door or Window. Unit will not condition space with door or window open.
	HP	Heat Sentinel - (WIAT > u3)	Y	N	No action required. This setting will disengage when the room temperature falls.
	Ur	Un-Rented Status (EHH & INN or wireless)	Y	N	Front Desk needs to set to Rented mode (if applicable).
FAILURES	F1	Indoor Ambient Thermistor reads outside the range -20°F to 200°F & the wireless thermostat is not communicating to the unit control or	Y	Y	Replace black Indoor Ambient Thermistor or Wireless Remote Thermostat.
		Indoor Ambient Thermistor (IAT) without a wireless remote thermostat reads outside the range -20°F to 200°F.			
	F2	Wireless Remote Thermostat failure	N	N	Replace Wireless Thermostat.
	F3	Indoor Ambient Thermistor reads outside the range -20°F to 200°F	Y	N	Replace black Indoor Ambient Thermistor.
	F4	Indoor Coil Thermistor either above or below operating tolerances.	N	Y	Replace Red Indoor Coil Thermistor .
	F5	Wireless Thermostat failure.	N	Y	Attempt to rebind Wireless Thermostat or Replace Wireless Thermostat.
	F6	Indoor Discharge Thermistor either above or below operating tolerances.	N	Y	Replace Yellow Indoor Discharge Thermistor.
	Fb	Low Remote Battery Warning.	N	Y	Replace Batteries in Wireless Devices.
	H1	High Voltage Protection engaged. Power supply voltage is to high.	Y	N	Check for incoming power at correct voltage.
	br	Brown Out Protection engaged. Power was lost or voltage is low.	N	N	Check for incoming power at correct voltage.
AIRFLOW ALERTS	L6	Discharge Air Too Hot.	N	Y	Clean Filter or Remove Air Blockage.
	LC	Outdoor Coil Thermistor temperature high.	N	Y	Clean Condenser Coils, Check Fan for fault. Code will reset after cleaning.
	C2	Indoor Air Recirculation. Large delta between thermostat and return.	N	Y	Clean Filter or Remove Air Blockage or Close Vent Door or Improve indoor to outdoor seal.
	C5	Outdoor Coil temperature too high for outdoor ambient temperature.	N	Y	Check for Blocked Outdoor Air or Clean Coil.
REFRIGERATION ALERTS	C1	Indoor Coil is freezing up.	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.
	C3	Indoor Coil is freezing up.	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.
	C4	Indoor Coil froze up.	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.
	C6	Poor Unit Performance.	N	Y	Check for blower motor, compressor, or electric heat operation.
	C7	Indoor Freezing Lockout (ICT - IAT > 20) +10 Min	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.

ANALYSIS CHART

Complaint	No Heat							Unsatisfactory Cooling					System Operating Pressures				Test Method Remedy	See Service Procedure Reference	
POSSIBLE CAUSE DOTS IN ANALYSIS GUIDE INDICATE "POSSIBLE CAUSE"	SYMPTOM	System Will Not Start	Compressor will not start - fan runs	Compressor and Condenser Fan will not start	Evaporator fan will not start	Condenser fan will not start	Compressor runs - goes off on overload	Compressor cycles on overload	System runs continuously - little cooling	Too cool and then too warm	Not cool enough on warm days	Certain areas too cool others, too warm	Compressor is noisy	Low suction pressure	Low head pressure	High Suction Pressure			High head pressure
Power Failure	•																	Test Voltage	S-1
Blown Fuse	•		•	•														Impact Fuse Size & Type	
Loose Connection	•			•		•												Inspect Connection - Tighten	S-2
Shorted or Broken Wires	•	•	•	•	•	•												Test Circuits With Ohmmeter	S-3
Open Overload	•	•		•	•													Test Continuity of Overloads	S-17A
Faulty Thermostat	•			•					•									Test Continuity of Thermostat & Wiring	S-3
Shorted or Open Capacitor		•			•	•												Test Capacitor	S-15
Internal Overload Open	•																	Test Continuity of Overload	S-6
Shorted or Grounded Compressor		•				•												Test Motor Windings	S-17
Compressor Stuck	•					•												Use Test Cord	S-17
Open Control Circuit				•														Test Control Circuit with Voltmeter	S-1
Low Voltage		•				•	•											Test Voltage	S-1
Faulty Evap or Cond. Fan Motor				•										•				Repair or Replace	S-16
Shorted or Grounded Fan Motor					•												•	Test Motor Windings	S-16
Shortage or Refrigerant							•	•						•	•			Test for Leaks, Replace Drier	S-1, S-2
Restructed Liquid Line							•	•						•	•			Replace Restricted Part	
Dirty Air Filter								•	•	•			•				•	Inspect Filter - Clean or Replace	
Dirty Indoor Coil								•	•	•			•				•	Inspect Coil - Clean	
Airflow Across Coils															•			Check Motor Operation	
Overcharge of Refrigerant						•	•								•	•		Recover & Replace Cap Tube	S-116
Dirty Outdoor Coil						•	•			•							•	Inspect Coil - Clean	
Noncondensibles							•			•							•	Remove Charge, Replace Cap Tube	S-1, S-2
Recirculation of Condensing Air							•			•							•	Remove Obstruction to Air Flow	
Infiltration of Outdoor Air								•	•	•								Check Windows, Doors, Vent Fans, etc.	
Improperly Located Thermostat						•			•									Relocate Thermostat	
System Undersized								•	•									Refigure Cooling Load	
Broken Internal Parts													•					Replace Compressor	S-17
Broken Values													•					Test Compressor Efficiency	S-104
Inefficient Compressor								•						•	•			Test Compressor Efficiency	S-104

SERVICING

S-1 CHECKING VOLTAGE

**WARNING**

**HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



1. Using a voltmeter, measure the voltage across terminals L1 and L2 of the outlet.
2. No reading - indicates open wiring, open fuse(s), no power or etc. from the unit to fused disconnect service. Repair as needed.

S-3 CHECKING THERMOSTAT, WIRING AND ANTICIPATOR

1. Visually inspect all the wires.
2. Check wires for loose connections (tighten as needed or replace Terminal if needed).
3. Check wires for pinched or cut wires.

**WARNING**

LINE VOLTAGE NOW PRESENT.

With power ON and thermostat calling for cooling.

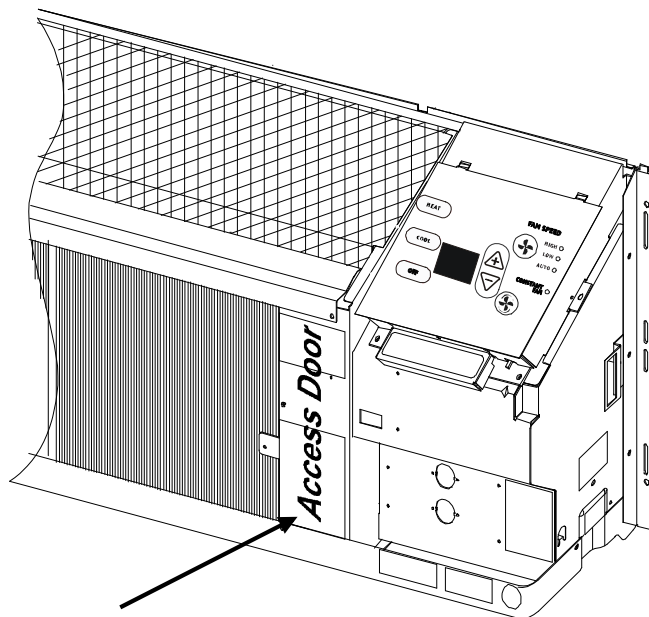
1. Use a voltmeter to check for 24 volts at thermostat wires C and R on the terminal strip of the control board.
2. No voltage indicates trouble in the thermostat, wiring or external transformer source.
3. Check the continuity of the thermostat and wiring. Repair or replace as necessary.

Indoor Coil Thermistor

See following page for resistance/temperature

1. Remove front cover.
2. Remove the two mounting screws, one on each side of the control board cover. Tilting the control panel out, remove the cover.
3. Disconnect the floodback protector wiring or thermistor from the control board's Indoor Switch terminals.
4. Remove the two screws securing the top screen to the evaporator assembly. (Be sure to slide the top of the screen between the top flange and chassis when reassembling.)
5. Remove the two screws securing the heater assembly to the evaporator.

6. Pull heater assembly up and out of the chassis.
7. Disconnect floodback protector.
8. If the unit has a Red Thermistor on the indoor coil follow steps 1-6 then steps 12 and 13.
9. Remove the access panel on the evaporator assembly.



10. The thermistor is clipped on the vertical section of the 90° bend of the inlet line to the indoor coil. Unclip the thermistor and remove.

Outdoor Coil Thermistor

1. Remove chassis from wall sleeve.
2. Remove the two mounting screws, one on each side of the control board cover. Tilting the control panel out, disconnect ribbon connector from control board. **DO NOT PULL ON RIBBON. GRASP THE BLACK RIBBON CONNECTOR AND PULL GENTLY.**
3. Unplug the Blue Thermistor from the connector.
4. Unclip thermistor from outdoor coil.
5. Carefully slide thermistor wiring through the center partition. When replacing, be sure all holes in the

SERVICING

THERMISTOR RESISTANCE - TEMPERATURE CHARACTERISTIC

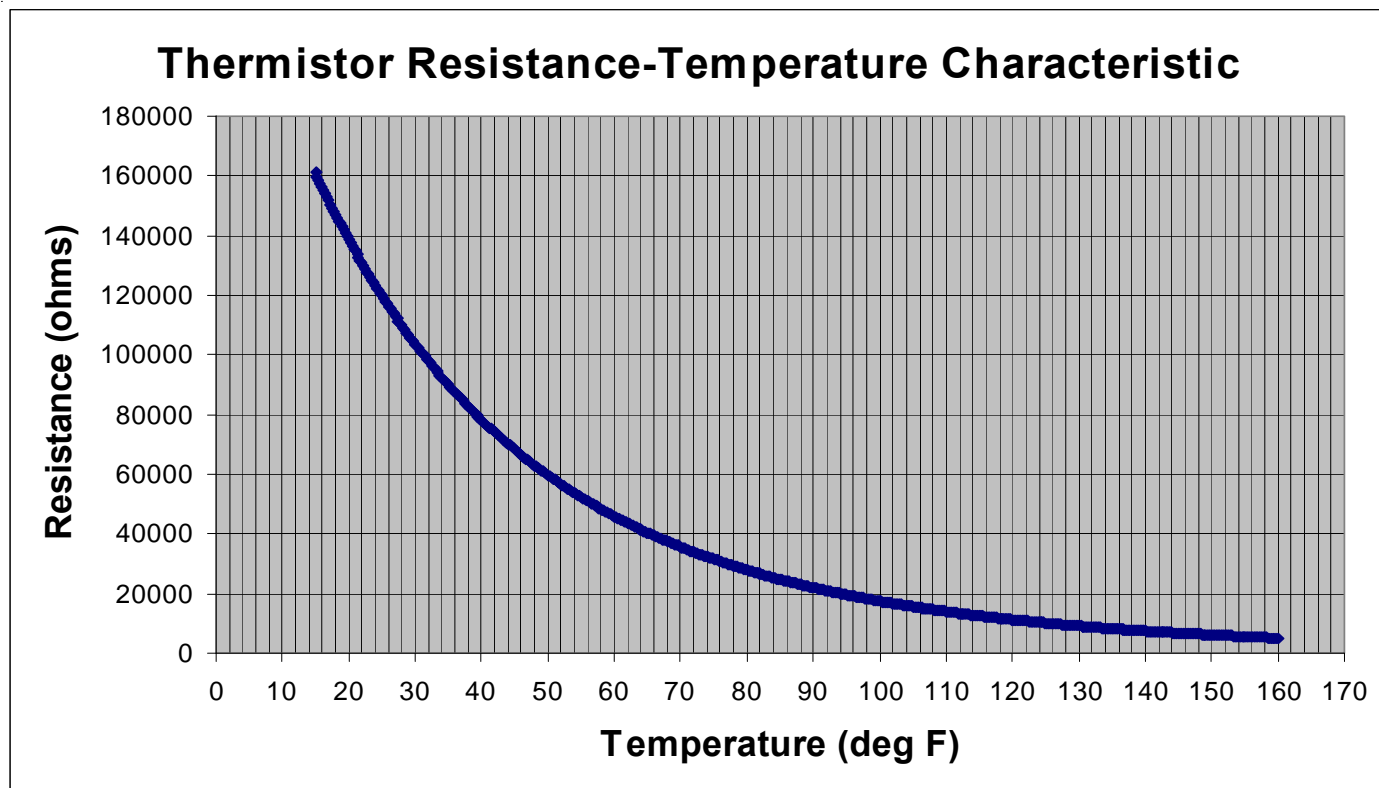


Chart applies to black, red, blue, yellow and green wires; it does not apply to orange wires.


center partition are properly sealed with Permagem.S-5 Outdoor Coil Thermostat or Thermistor (Switchover Thermostat).


Checking OCT Thermistor

1. With power off, remove the thermistor leads from the circuit board.
2. Check the thermistor for continuity. See chart above for resistance values.
3. Replace thermistor if it does not test as above.

S-6 HEATER ASSEMBLY

1. Disconnect power to the unit

**WARNING**



HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

2. Remove front cover of unit.
3. Remove the three screws securing the indoor fan motor cover and remove the cover. See Figure A.
4. Remove the 8 screws securing the partition panel top to the chassis, Figure A.
5. Remove the 2 screws securing the two tie braces to the partition panel. See Figure A.
6. Remove the partition panel top
7. Remove the 4 screws on the top of the evaporator, Figure A.

SERVICING

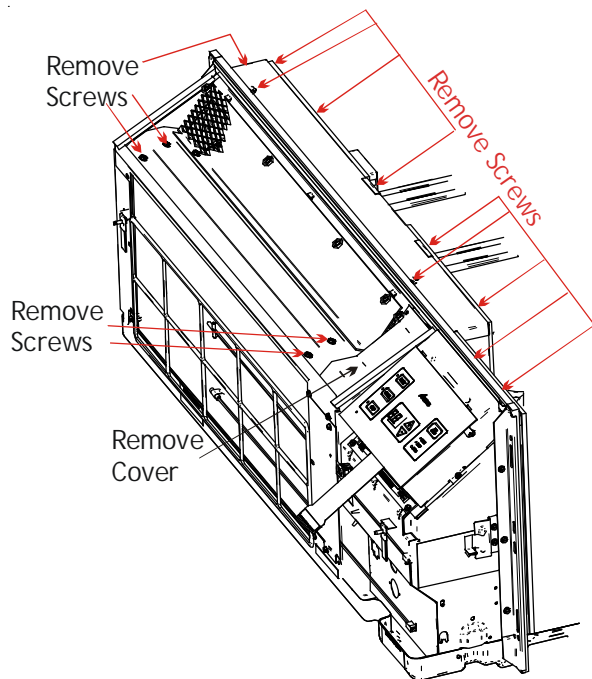


Figure A

8. Remove the two screws on the left side panel securing the motor panel assembly, Figure B.

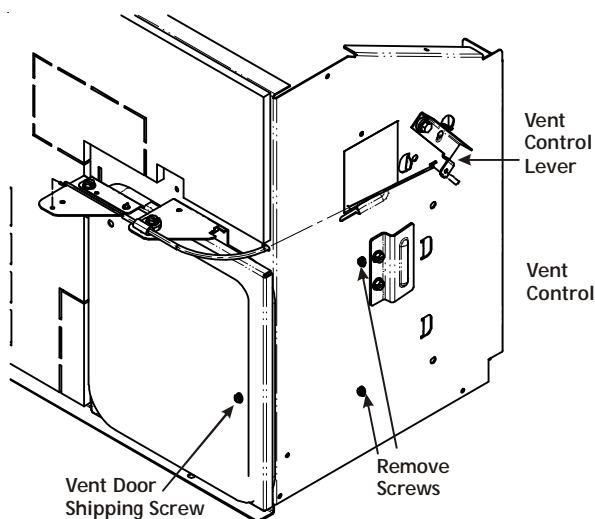


Figure B

9. Lift up on the right side of the fan motor assembly to release the housing.
10. Slide whole assembly to the right as you are looking at it and lift the assembly straight up.
11. Remove the two screws securing the heater assembly, Figure C.
12. Remove heater assembly and disconnect wires from the heater.

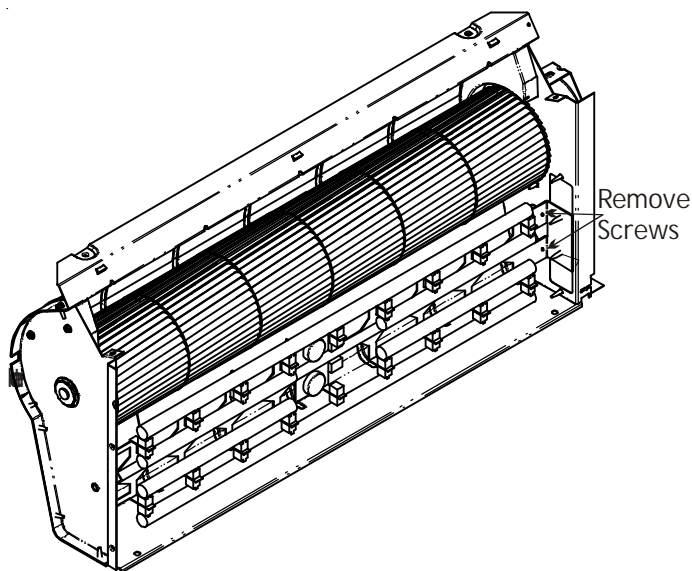


Figure C

Checking Heater Assembly

1. With power off to the unit and heater, remove the heaters in question and visually inspect the element for broken condition.
2. Remove the wires from the element and check for continuity through the heater. If there is no continuity the heater needs to be replaced.

S-7 DRAIN PAN VALVE (HEAT PUMP MODELS ONLY)

1. Remove the chassis from the wall sleeve.
2. Remove the mounting screw and remove the drain valve.

The drain pan operates to remove condensate from base pan. This is a thermal operated device that opens at 40°F and closes at 60°F.

Checking Operation of the Drain Valve


1. Cool the valve to 40°F or below and the plunger should open.
2. Warm the valve up to 60°F and the plunger should close.

S-15 CAPACITOR CHECK


1. Remove front cover.
2. Remove the two mounting screws, one on each side of the control board cover. Tilting the control panel out, disconnect ribbon connector from control board. *DO NOT PULL ON RIBBON. GRASP THE BLACK RIBBON CONNECTOR AND PULL GENTLY.*
3. Disconnect all wiring to the capacitor. Label the wires to ensure proper reassembly.
4. Remove the screw securing the capacitor mounting clamp to the center partition. Remove the capacitor.

SERVICING

Resistance Check

**WARNING**

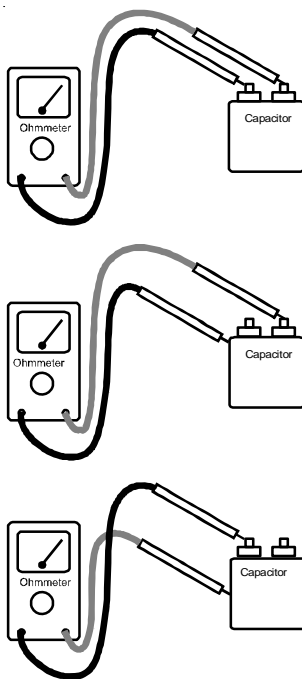
HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



Discharge capacitor and remove wire leads.

**WARNING**

DISCHARGE CAPACITOR THROUGH A 20 TO 30 OHM
RESISTOR BEFORE HANDLING.



Capacitor Resistance TEST

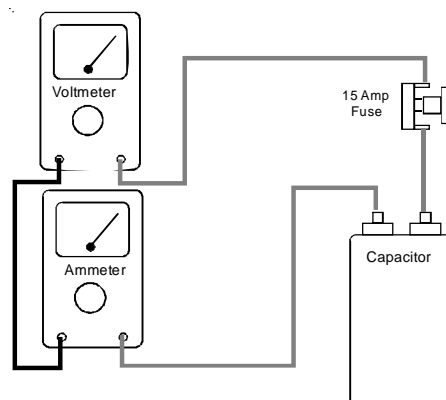
- Good Condition - indicator swings to zero and slowly returns to infinity. (Start capacitor with bleed resistor will not return to infinity. It will still read the resistance of the resistor).
 - Shorted - indicator swings to zero and stops there - replace.
 - Open - no reading - replace. (Start capacitor would read resistor resistance).
- Testing for ohms between either capacitor terminal and the capacitor body must show infinite ohms.

Capacitance Check

Using a hookup as shown below, take the amperage and voltage readings and use them in the formula:

**WARNING**

LINE VOLTAGE NOW PRESENT.




$$\text{Capacitance (MFD)} = \frac{2650 \times \text{Amperage}}{\text{Voltage}}$$

If the value obtained is not within 10% of the rating printed on the capacitor, replace.


S-16 CHECKING FAN AND MOTOR BLOWER WINDINGS

BLOWER WHEEL, BLOWER MOTOR, FAN BLADE

- Disconnect power to the unit.

**WARNING**

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



- Remove front cover of unit.
- Remove the three screws securing the indoor fan motor cover and remove the cover. See Figure D.
- Remove the 8 screws securing the partition panel top to the chassis, Figure D.
- Remove the 2 screws securing the two tie braces to the partition panel. See Figure D.
- Remove the partition panel top
- Remove the 4 screws on the top of the evaporator, Figure D.

SERVICING

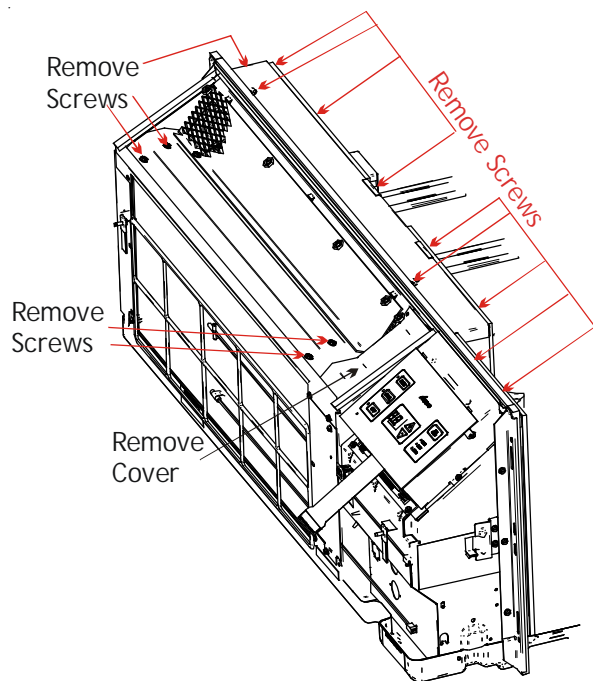


Figure D

8. Remove the two screws on the left side panel securing the motor panel assembly, Figure E.

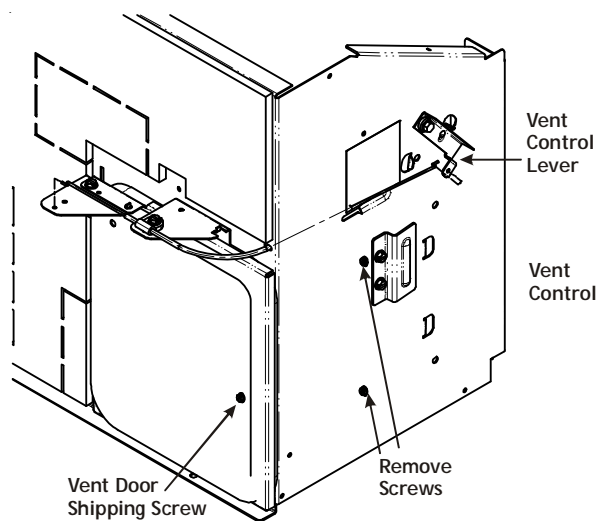


Figure E

8. Remove the partition panel top.
9. Remove the 4 screws on the cut off (top of the evaporator) and remove, Figure F.
10. Remove the two screws on the left side panel securing the motor panel assembly. See Figure F.

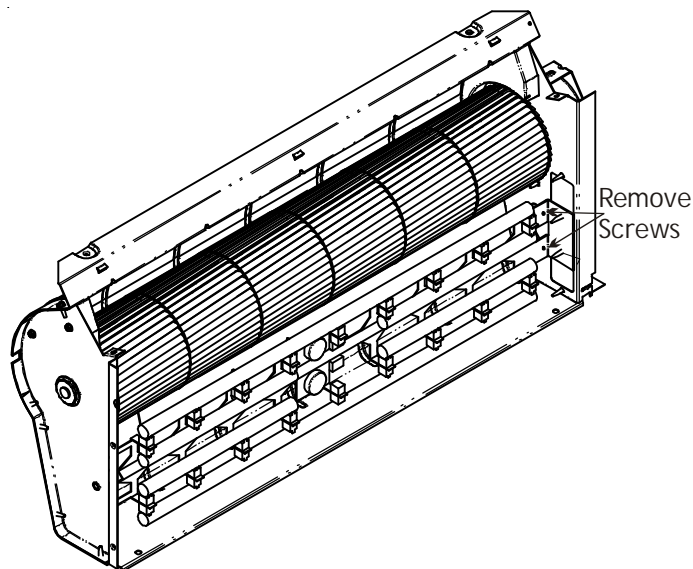




Figure F

11. Lift up on the right side of the fan motor assembly to release the housing.
12. Slide the assembly to the right as you are looking at it, and lift the assembly straight up.
13. Loosen the set screw on the blower wheel
14. Remove the three screws securing the motor to the housing and remove the motor from the blower wheel.
15. Disconnect the blower motor wiring as follows:
 - White from capacitor C terminal
 - Red from control board FAN LOW terminal
 - Brown from capacitor FAN terminal
 - Black from control board FAN HIGH terminal
 Gently pull the wire through the center partition.

The auto reset fan motor overload is designed to protect the motor against high temperature and high amperage conditions by breaking the common circuit within the motor, similar to the compressor internal overload. However, heat generated within the motor is faster to dissipate than the compressor, allow at least 45 minutes for the overload to reset, then retest.



WARNING



HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

SERVICING

1. Remove the motor leads from their respective connection points and capacitor (if applicable).
2. Check the continuity between each of the motor leads.
3. Touch one probe of the ohmmeter to the motor frame (ground) and the other probe in turn to each lead.

If the windings do not test continuous or a reading is obtained from lead to ground, replace the motor.



WARNING

THE USE OF THE DIAGNOSTIC BOX AND RELATED PROCEDURES ARE TO BE USED BY QUALIFIED, PROFESSIONALLY TRAINED HVAC TECHNICIANS ONLY. GOODMAN DOES NOT ASSUME ANY RESPONSIBILITY FOR PROPERTY DAMAGE OR PERSONAL INJURY DUE TO IMPROPER SERVICE PROCEDURES OR SERVICES PERFORMED BY AN UNQUALIFIED PERSON.

S-17 COMPRESSOR WINDINGS

1. Remove the chassis from the wall sleeve.
2. Remove the compressor terminal cap and disconnect all compressor wiring.
3. After capturing the refrigerant from the system, debraze the inlet and discharge tubing from the compressor.
4. Remove the three foot mounting bolts and remove the compressor.



WARNING

HIGH VOLTAGE
TO PREVENT PROPERTY DAMAGE,
PERSONAL INJURY OR DEATH DUE TO
ELECTICAL SHOCK, DO NOT CONNECT
ELECTRICAL POWER TO THIS UNIT OR TO THE
COMPRESSOR IF THE COMPRESSOR TERMINAL
COVER HAS BEEN REMOVED OR IS NOT FIRMLY IN
PLACE.



If the test indicates shorted, grounded or open windings, see procedure for the next steps to be taken.

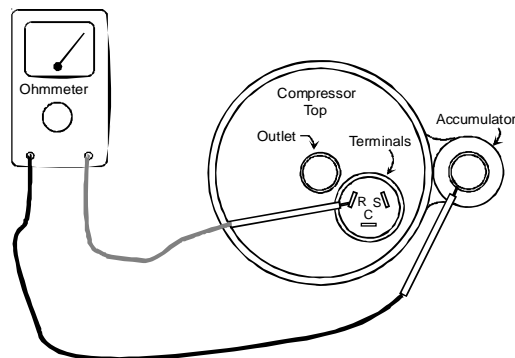
Resistance Test

1. With no power, remove the leads from the compressor terminals.
2. Touch the leads of an ohmmeter to terminals C-S, start windings and C-R, run winding.

Ground Test

With no power and compressor leads removed:

Set an ohmmeter on its highest scale. Touch one lead to the compressor body (clean point of contact, as a good connection is a must) and the other probe to each compressor terminal in turn. If a reading is obtained, then the compressor is grounded and must be replaced.



Compressor Ground Test

If the voltage, capacitor, overload and motor windings test fail to show the cause for failure.



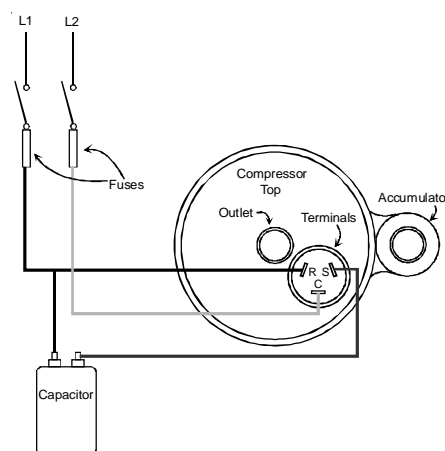
WARNING

DISCONNECT ELECTRICAL POWER SUPPLY.

With no power, wire a test cord to line voltage (L1 & L2).

NOTE: The wire size of the test cord must equal the line size, and the fuses in the test line must be of the proper size and type.

Test Cord Connections



1. Connect a good capacitor of the right MFD and voltage rating into the circuit as shown.

SERVICING

2. Carefully apply line voltage.
 - a. If the compressor starts and continues run, the cause for failure is somewhere else in the system.
 - b. If the motor fails to start - replace.

Since all single phase compressors are of the permanent split capacitor design the high and low side pressure must be approximately equal or the low torque compressor may not start.

S-17A OVERLOAD

Each compressor is equipped with an internal overload.

The line break internal overload senses both motor amperage and winding temperature. High motor temperature or amperage heats the disc causing it to open, breaking the common circuit within the compressor.

Fuse, circuit breaker, ground fault protective device, etc. has not tripped.

1. With no power to the unit, remove the compressor cover, and overload lead from the compressor terminal.
2. Using an ohmmeter: Test continuity between terminals of the overload. If not continuous, the overload is open, replace the overload.

S-104 CHECKING COMPRESSOR EFFICIENCY

The reason for compressor inefficiency is broken or damaged suction and/or discharge valves, or scroll flanks on Scroll compressors, reducing the ability of the compressor to pump refrigerant vapor.

The condition of the valves or scroll flanks is checked in the following manner.

1. Attach gauges to the high and low side of the system.
2. Start the system and run a "Cooling Performance Test."

If the test shows:


- a. Below normal high side pressure.
- b. Above normal low side pressure.
- c. Low temperature difference across coil.
- d. Low amp draw at compressor.

and the charge is correct. The compressor is faulty - replace the compressor. **NOTE: THIS TEST CANNOT BE DONE IN THE HEATING MODE.**

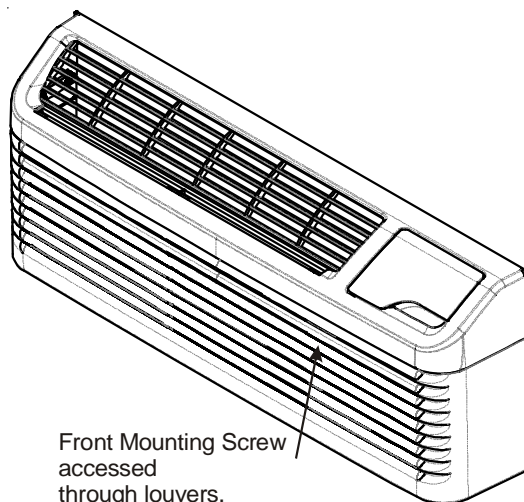
S-116 FILTER DRIER REPLACEMENT

⚠ WARNING

**HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



1. Remove the two screws securing the front. Not all installations have the screws. Then remove the front. Do this by pulling the bottom corners out and lifting up.

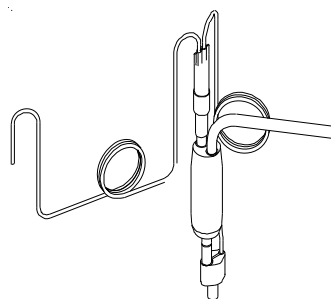


2. Remove the six screws securing the unit to the wall sleeve. If screws are not present they should be installed when units is reinstalled.
3. Pull unit from wall sleeve and take unit to adequate work area. Taking care not to spill any condensate which may still be in the basepan.

IMPORTANT NOTE: Effective July 1, 1992. Before opening any refrigerant system it is the responsibility of the service technician to capture the refrigerant for safe disposal.

4. After all the refrigerant has been recovered from the system, remove bottom of strainer by unbrazing the strainer from the condenser elbow. Hold the strainer with a pair of pliers while heating up the brazed joint with a torch. When joint is hot pull up on strainer and remove.

Heat up Capillary tube and remove from line.



5. To install the new filter drier assembly, remove the end plugs and clean the ends to be brazed into place.

SERVICING

6. Clean the end of the capillary tube and insert into the tube, it may be necessary to crimp tubing around the capillary tube, being careful not to damage the capillary tube. Insert the bottom of the filter drier into the condenser elbow, it may be necessary to heat slightly to get coupling to go into place.

Brazing



WARNING

BRAZING REQUIRES HIGH TEMPERATURES. TAKE PRECAUTION TO PROTECT AGAINST PERSONAL INJURY OR PROPERTY DAMAGE.

Satisfactory results require cleanliness, experience and the use of proper material and equipment.

The connections to be brazed must be properly sized, free of rough edges and clean.

The generally accepted materials are:

- **SIL-FOS** (Alloy of 15% silver, 80% copper, 5% phosphorus) is used without flux on copper to copper. *DO NOT USE FOR A COPPER TO STEEL CONNECTION.* Recommended heat is approximately 1400°F.
 - **SILVER SOLDER** (Alloy of 30% silver, 38% copper, 32% zinc.) Is used with fluoride base flux on copper to steel, brass to copper, steel to steel, brass to steel. Recommended heat is approximately 1200°F. This is the most important part of the entire service procedure.
8. Braze coupling and cap tube into place.



WARNING

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PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



S-122 REVERSING VALVE

Occasionally the reversing valve may stick in the heating or cooling position or in the mid-operation.

When stuck in the mid-position, part of the discharge gas from the compressor is directed back to the suction side resulting in excessively high suction pressure.

Check the operation of the valve by starting the system and switching the operation from COOLING to HEATING and then back to COOLING.

If the valve fails to change its position, test the voltage (230 V. or 265 V.) at the valve coil connector cap, while the system is on the HEATING CYCLE.



WARNING

SET THE THERMOSTAT ALL THE WAY COUNTER-CLOCKWISE TO PREVENT THE FAN FROM SUDDENLY COMING ON AND ENDANGERING THE SERVICER'S HANDS.

If no voltage is registered to the coil, check the operation of the reversing relay and the continuity of the connecting wires.

If voltage is registered at the coil, tap the valve body lightly while switching the system from HEATING to COOLING etc. If this fails to cause the valve to switch position, remove the coil connector cap and wiring and test the continuity of the valve coil. If the coil does not test continuous replace it.

If the valve is inoperative, replace.

SOUND LEVEL

Noise complaints are frequently caused by a faulty installation or by the customer's lack of knowledge and information. Sources of actual noise may be traced to operational components, tubing vibration, or misalignment of case or sleeve with chassis.

COMPONENT REPLACEMENT

Replacement of the compressor, evaporator, condenser, capillary tubes and reversing valve must be in accordance with accepted service practices. These procedures include a complete evacuation of both high and low sides, and changing of both strainer whenever the refrigerant system is opened.

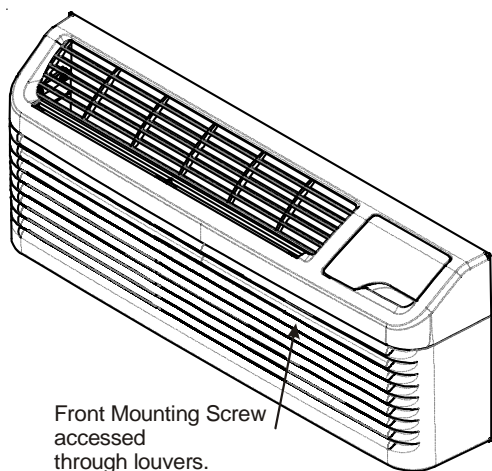
Before replacing a component in the sealed system, make sure that the cause for complaint does not lie in the electrical circuit, control, overload or is due to some other reason. The serviceman must be familiar with the operational characteristics of the product and should not jump to conclusions.

FRONT COVER

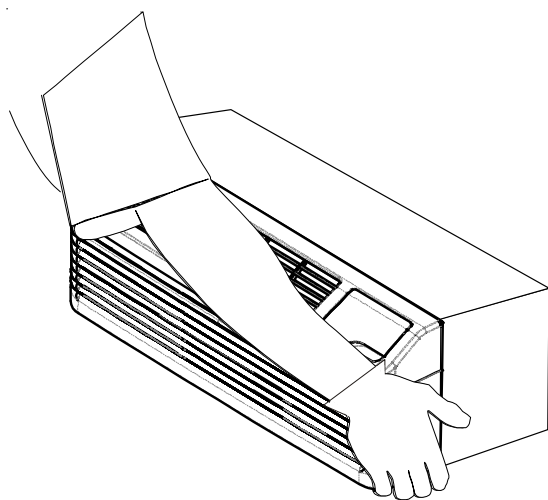
1. Remove the two screws securing the front to the chassis.

NOTE: Not all installations will use these screws.

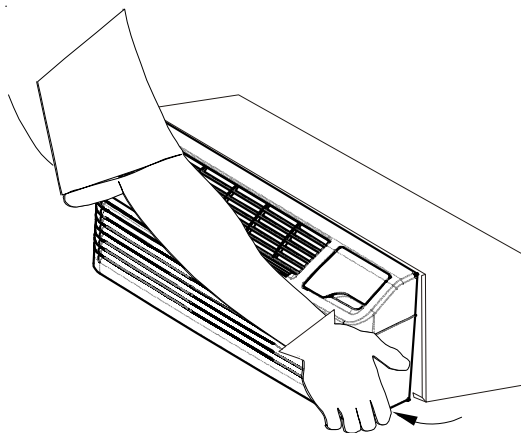
SERVICING



2. Grasp the cabinet front as shown.




3. Pull the bottom of the cabinet front away from the chassis until the retaining clips disengage.




4. Lift the cabinet front off the chassis. Reverse this procedure to reinstall the cabinet front.

CHASSIS

**WARNING**

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE
SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY
BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



1. Disconnect power to the unit.
2. Remove the front cover.
3. Remove three screws on each side of the chassis, securing the chassis to the wall sleeve.
4. Carefully slide chassis out of wall sleeve, placing on floor or protected cart.

ESCUTCHEON, CONTROL BOARD, CONTROL PANEL

1. Remove front cover.
2. Remove the two mounting screws, one on each side of the control board cover. Tilting the control panel out, disconnect ribbon connector from control board. *DO NOT PULL ON RIBBON. GRASP THE BLACK RIBBON CONNECTOR AND PULL GENTLY.*
3. Disconnect all wiring to the control board. Label the wires to ensure proper reassembly.
4. Remove the thermistor in front of the evaporator.
5. Remove the four control board mounting screws and remove the control board.

SERVICING

DigiAIR™ PRODUCT INFORMATION

The Amana brand PTAC factory installed DigiAIR™ module is a “make-up air” system to assist in providing outside air into a room (living space) to replace ventilation air that is usually removed through an exhaust air system in bathroom areas. This exhausted air creates a negative air pressure in the room and the DigiAIR™ make up air system is designed to move most of the needed replacement outside air to enter the room through the DigiAIR™ dehumidification module. To assist in this needed outside make up air to be directed to come through the DigiAIR™ dehumidification module, a fan in the module operates continuously (as long as the module is properly maintained and powered), to provide positive pressure through the DigiAIR™ module to the inside room.

The DigiAIR™ Amana brand PTAC is a 2 compressor system. The Amana brand R410A PTAC system is used to assist in control of the sensible heat (room temperature) and latent load (moisture) that is brought into the room by the DigiAIR system and also the typical sensible and latent loads created in the room from occupants and typical air infiltration. The DigiAIR™ module is an R134A compressor system designed to continuously provide outside make up air at rates of up to 75 CFM (dependent on the room’s negative pressure *). The outside air entering the room through the DigiAIR™ module is first filtered, to assist in keeping the DigiAIR™ coils clean, and then dehumidified. The DigiAIR™ dehumidification is engaged at outside air temperatures and humidity levels (RH%: Relative Humidity) when the air entering the room generally should have moisture reduced before it comes into the room.

The DigiAIR™ compressor/dehumidification process is controlled both by a humidity sensor and temperature sensor that monitor the outdoor environment. The DigiAIR™ module is factory pre-set at

50% RH: $\geq 46^{\circ}\text{ F}$ and $< 68^{\circ}\text{ F}$

40% RH: $\geq 68^{\circ}\text{ F}$ and $< 78^{\circ}\text{ F}$

25% RH: $\geq 78^{\circ}\text{ F}$

When the outdoor humidity (RH %) and temperature levels are above the DigiAIR™ settings, the compressor and dehumidification process begins. If the outdoor humidity level drops below the RH% settings at the temperatures above or the outdoor temperature drops below 48° F the compressor dehumidification operation ceases. The DigiAIR™ dehumidification RH% can easily be adjusted through the Amana brand PTAC touch pad, if changes to the factory preset RH% are desired. The 25% RH setting can be adjusted to as low as 15% or as high as 60%. The factory preset ranges are based on HVAC industry psychometric chart sensible temperature and humidity ratios that would generally require outside air to be dehumidified before being introduced into a room and should suffice from most applications.

A temperature sensor (brown thermistor) monitors the refrigeration temperature coming into the compressor (suction line) to protect against potential liquid refrigerant entering the compressor. If refrigerant temperatures are too low, the compressor will be cutoff to help protect the compressor from liquid refrigerant damage. A temperature sensor (green thermistor) monitors the outdoor air temperature, and if the temperature falls below 48° F , the compressor is disabled. Generally, at air temperatures below 48° F , the air coming through the DigiAIR™ module does not need to be dehumidified before entering the indoor room. Additionally, since the dehumidification coil (evaporator) is generally operating 12° F to 18° F below the outdoor temperature, the compressor should be cut off to prevent the evaporator coil from frosting or icing and not being able to exchange heat. A frosted or iced coil cannot dehumidify the incoming air. All dehumidifier controls and safety features are automatically reset.

The DigiAIR™ fan, when the unit is properly powered and maintained, will operate 24/7/365 to provide continuous outside makeup air, even when the compressor is not operating. For installation locations where the winters are cold, or it is desired to warm the air coming through the DigiAIR™ system before it enters the room, an optional 250 watt electric heater is available for the make-up air system.

Condensate water generated from the DigiAIR™ dehumidifier operation drains directly into the PTAC’s exterior base pan. When the PTAC’s R410A compressor is operating in the cooling mode, and the outside air temperature is above 60° F , condensate water in the PTAC’s exterior base pan will be picked up and slung onto the condenser coil for re-evaporation to the outside air. Excess condensate is drained into the PTAC’s wall case from which it can drain either to the outside through the drain holes in the sleeve or piped to a drainage system with the use of an optional drain kit. Since condensate water can be generated from the PTACs compressor operation in either the cooling mode or, in the case of a heat pump, during reverse cycle operation plus the added condensate water generated from the DigiAIR™ dehumidification operation, a piped condensate drain system is highly recommended.

- NOTE: A DigiAIR™ module is intended to work in conjunction with a building exhaust system. As an example, to obtain 55 CFM of outside makeup air, the room exhaust ventilation system needs to create a 0.053 (inches H2O) negative static pressure in the indoor conditioned room. CFM can be increased or decreased by increasing or lowering the negative static pressure created by the property ventilation system. The DigiAIR can provide up to 75 CFM when negative static pressures are increased to a high enough level. Failure to properly exhaust the air introduced by the DigiAIR™ makeup air module will result in poor performance of both the outside air volumes (CFM) and the proper dehumidification of the makeup air.

This unit is shipped, tested and rated with the dehumidification switch off.

SERVICING

Dehumidification Kit Volts	230
Frequency (Hz)	60
Phase	1
Dehmid Comp. RLA	1.05
Dehumid comp. LRA	3.30
Res. Heat Watts	250
Res. Heat Amps	1.10
Refrigerant R-134A Oz.	3.20
High Side Pressure (Psig)	200
Low Side Pressure (Psig)	60
Air Flow (CFM)	55
Dehumidification (Oz/Hr)	5
Kit Weight (lbs)	20

DIGIAIR™ SYSTEM FEATURES

DigiAIR™ is a factory added module to an Amana brand PTAC to provide for outside makeup air that is dehumidified when needed:

1. Lower installation and renovation costs than typical central dedicated outdoor air systems (DOAS).
2. Configurable dehumidification settings based on HVAC industry psychometric data. Configuration can easily and accurately be adjusted through a few button clicks of the PTAC touchpad by any authorized site personnel.
3. Outside Makeup air volumes of up to 75 CFM.
4. Drier room conditions (lower RH %) usually means that room occupants will feel comfortable at higher sensible temperatures saving PTAC operational costs.
5. Optional 250 watt electric heater to warm colder outside air when needed.
6. Filter to assist in keeping the DigiAIR™ coils cleaner to maintain dehumidification and outside air flow. Permanent and washable.
7. Vent door is configurable to either be open 100% of the time or can be closed if codes permit intermittent operation.

8. Future, optional Web access to allow monitoring and configuration access through an Amana DigiSmart / DigiLink internet connectivity.

INSTALLATION INSTRUCTIONS

The DigiAIR™ makeup air and dehumidification module is factory installed to the PTAC partition panel and base pan as shown in Figure 2. The optional heater, to raise the inlet air temperature in cold climates, is attached to the indoor section of the partition panel. The DigiAIR™ power switch is shipped from the factory in the “off” position. Before installing the PTAC front cover, change the DigiAIR™ power switch to the “on” position if makeup air is desired. The DigiAIR™ power switch is located on the front of the PTAC control and is visible when the front is not installed. Also, if the DigiAIR™ vent door is to be manually secured in the open position, the vent door screw must be inserted before the PTAC is installed into the wall sleeve.

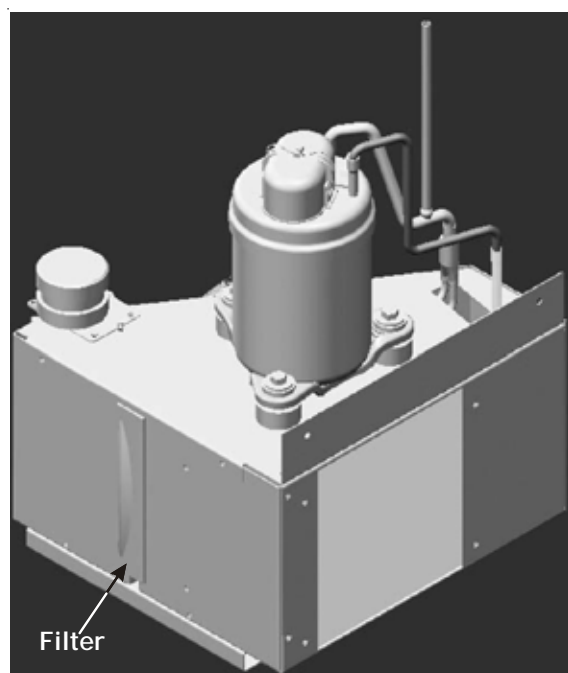


Figure 1 - DigiAIR™ Kit

SERVICING

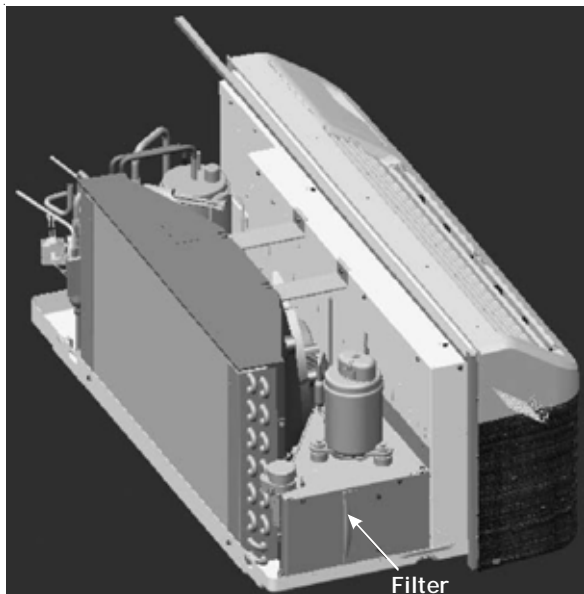


Figure 2 - DigiAIR™ Kit installed in PTAC unit

POWER CORD

1. Remove the unit front by tilting the bottom of the front outward and then lift the front straight up.
2. Remove the control knobs on the control panel cover by pulling upward on the knobs. Remove the escutcheon.
3. Remove the control panel cover by removing the two screws holding the control panel cover. Tilt the control panel forward to gain access to the wires.
4. Remove the power cord clamp located near the bottom right of the chassis.

OPERATING INSTRUCTIONS

The DigiAIR™ power switch should be in the “ON” position to activate the module. When this switch is ON and the PTAC unit is properly powered, the fan will operate and the vent door motor will keep the DigiAIR™ vent door in the open position.

This allows makeup outside air to flow through the DigiAIR™ system, 24/7/365. The compressor and optional 250 watt electric resistance heater may be energized when configured temperatures, outside air RH% and operating conditions are met. If codes or property ownership mandate that the makeup air is required 100% of the time, then the DigiAIR™ module should never be powered off. If preferred, the vent door can be permanently installed in the open position by adding a screw to the additional holes provided in the vent panel and vent door, Figures 3, 4, 5. To keep the vent door always open, manually align Figures 4 and 5 then insert a screw through the vent door & vent panel holes. See Figure 4 & 5.

If local codes allow for the property (or individual room) ventilation exhaust system to be powered off in extreme weather conditions (very cold weather, dust storms etc.) or when the room becomes unoccupied, the DigiAIR™ module can be powered off and the fan will cease operating and the vent door will slide to the closed position. (if the optional vent door screw is not installed)

NOTE: If it is preferable for the vent door to be manually kept open at all times, the screws must be inserted before the unit is installed into the wall sleeve.

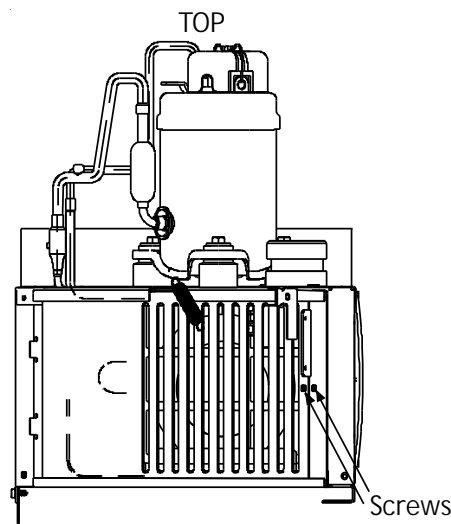


Figure 3

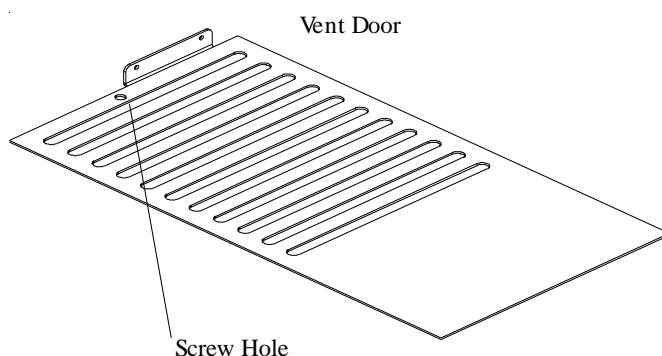


Figure 4

SERVICING

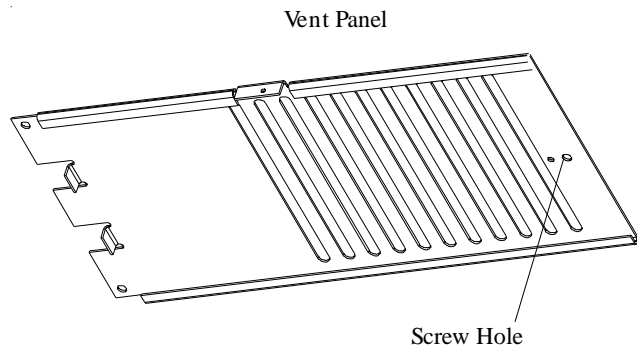




Figure 5

**WARNING**



HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE SERVICING.
MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. DO NOT SERVICE THIS UNIT WITHOUT FIRST SHUTTING OFF POWER TO THE UNIT FROM THE CIRCUIT BREAKER AND/OR REMOVING THE UNIT CORD SET PLUG FROM THE WALL OUTLET.

MAINTENANCE AND CLEANING

Complete PTAC maintenance and cleaning instructions can be found in IO-447*.

DigiAIR™ Intake Air Filter

To properly maintain the operational performance of your DigiAIR™ Make-up air module, it is extremely important that the inlet air filter be cleaned, at minimum, every 3 months or more often if operated in dusty or dirty locations or conditions. Dirty filters will dramatically reduce both the supplied CFM of outside air as well as lower the dehumidification of the air passing through the DigiAIR™ module. The intake air filter is constructed of durable polypropylene, and is designed to be permanent and washable.

Filters should be checked frequently after initial installation and operation and cleaned as required. This will assist in establishing the proper time interval to maintain for future scheduled cleaning.

Before cleaning the intake filter, turn off the power to the entire PTAC unit and unplug the unit from the power receptacle.

The following procedure is used to remove the intake filter:

1. Pull the PTAC unit out from the wall sleeve sufficiently to allow access to the filter. See complete instructions for removing and reinstalling the PTAC chassis from the wall sleeve in IO-447*.

2. Grasp the filter by its molded handle, located on the side of the kit (see Figures 1 & 2).
3. Pull the filter straight out from the side and remove.

NOTE: Spare filters are available and you can also replace the existing filters with new ones and remove the dirty filters to a central location to thoroughly clean and have them ready for the next filter check.

4. Clean filter with vacuum or with running water. Reverse this procedure to reinstall the filter.
5. Also inspect and clean the vent door as needed to remove material that can restrict air flow into the DigiAIR module. It is also recommended that the condensate drainage is checked while the DigiAIR™ filter is being cleaned or replaced. Make sure that water is properly allowed to drain from the PTAC base pan and wall sleeve or drainage system. Also, with the added condensate volumes from the DigiAIR™ system, manufactured approved time released algacide pads should be considered to keep the water flowing properly.
6. Reinstall the PTAC chassis into the wall sleeve. Reinstate power to the PTAC and make sure that the DigiAIR™ power switch is in the on position.
7. While the R410A PTAC is not actively conditioning the air and the PTAC fan(s) are in the off position, check to make sure that air is flowing through the DigiAIR™ module into and through the PTAC into the room.

OBTAINING SERVICE FOR DigiAIR™

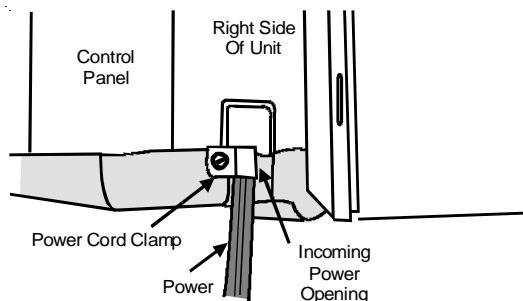
In the event this unit requires repair or servicing beyond what is covered in this manual, contact an authorized service organization.

To obtain an authorized servicer, contact your sales representative or agency.

POWER CORD

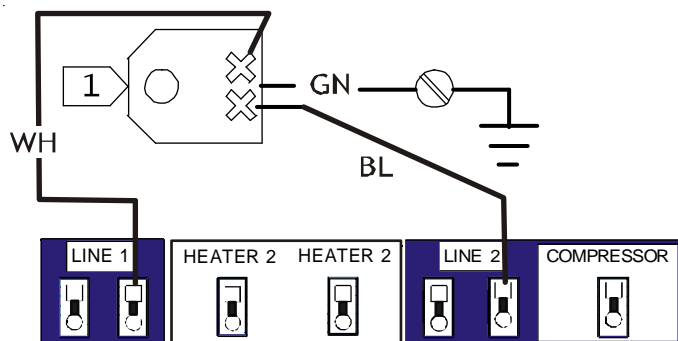
1. Remove the unit front by tilting the bottom of the front outward and then lift the front straight up.
2. Remove the control knobs on the control panel cover by pulling upward on the knobs. Remove the escutcheon.
3. Remove the control panel cover by removing the two screws holding the control panel cover. Tilt the control panel forward to gain access to the wires.
4. Remove the power cord clamp located near the bottom right of the chassis.

SERVICING



- On 115 volt or 230/208 volt units disconnect the white lead from the LINE 1 terminal on the control board and the black lead from LINE 2 terminal on the control board and the green ground wire from the partition panel.

On 265 volt units disconnect the ribbed lead from the LINE 1 terminal on the control board and the smooth lead from the fuse holder and the green ground wire from the partition panel.



EVAPORATOR

- Remove front cover.
- Remove the two mounting screws, one on each side of the control board cover. Tilting the control panel out, disconnect ribbon connector from control board. *DO NOT PULL ON RIBBON. GRASP THE BLACK RIBBON CONNECTOR AND PULL GENTLY.*
- Remove the two screws securing the top screen to the evaporator assembly. (Be sure to slide the top of the screen between the top flange and chassis when reassembling.)
- Remove screws on mid partition panel and shift out of the way.
- Remove the two screws securing the heater assembly to the evaporator.
- Pull heater assembly up and out of the chassis.
- Disconnect all wiring to the heater assembly and remove the assembly.

- Remove the floodback protector or thermistor from the evaporator discharge tube.
- Remove screws holding evaporator to basepan and partition panel.
- After recapturing the refrigerant charge (see Refrigeration Service section), debraise the tubes into the evaporator. Be sure to protect all chassis components, especially foam parts, from excessive heat.
- Lift the evaporator up over the basepan edge and remove.

OUTDOOR COIL

- Remove the chassis from the wall sleeve.
- After capturing the refrigerant from the system, debraise the inlet and discharge tubing from the outdoor coil.
- Remove all screws from the sides of the outdoor coil securing the shroud to the coil.
- Pressing the tabs on the right side of the shroud separate the shroud from the outdoor coil.
- The "E-K" models have a four piece condenser shroud where the top, sides and shroud will come apart separately.
- Remove the two screws securing the outdoor coil to the base pan.
- Carefully lift the outdoor coil over the basepan lip.

VENT DOOR

- Remove Chassis from wall sleeve.
- Remove P clamp securing vent door control cable to center partition and disconnect cable from vent door.
- Remove vent door by opening door and pulling hinge tabs out of slots in center partition.
- Remove the door by pulling hinge tabs out away from the center partition.

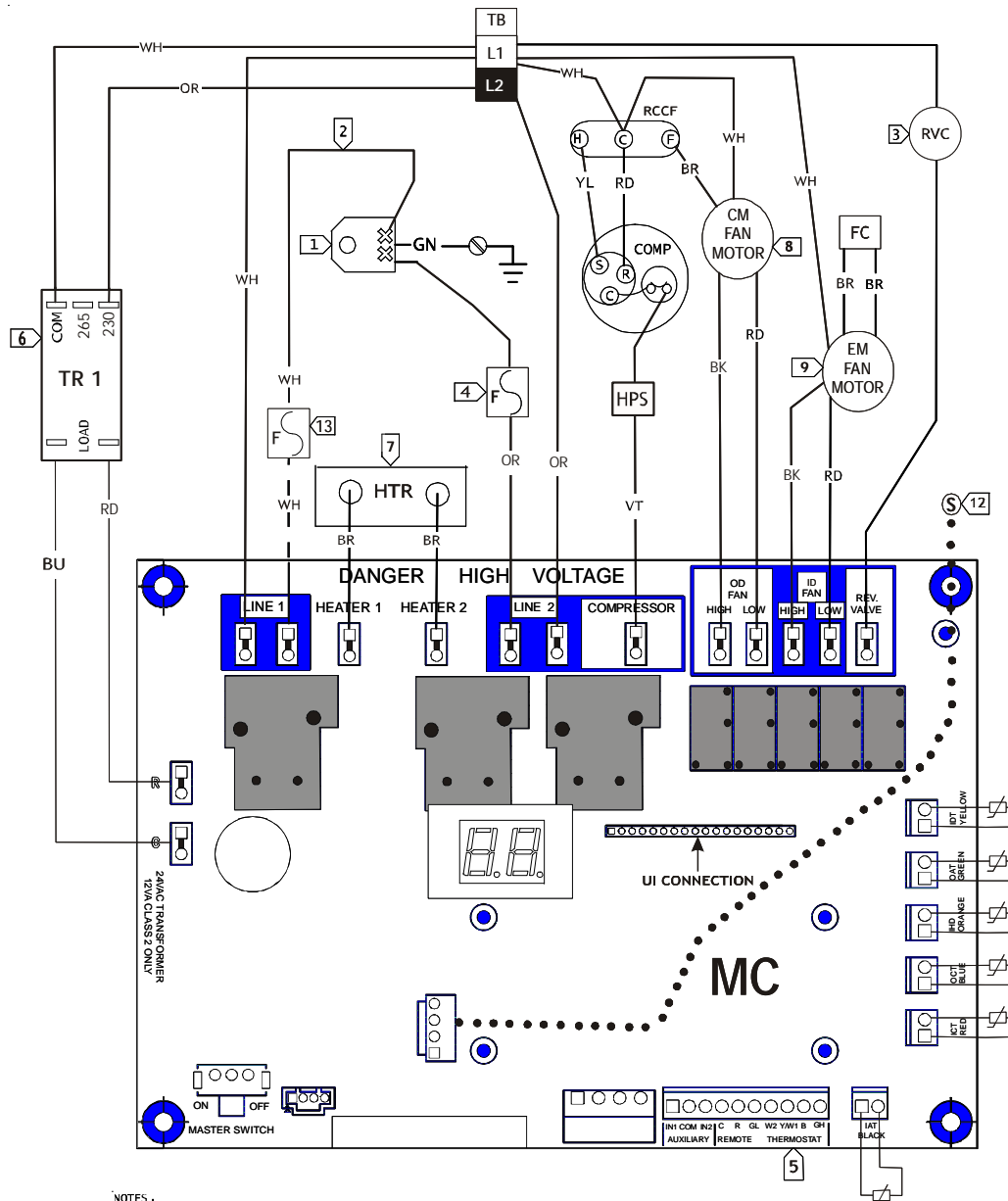
WIRING DIAGRAM

DigiAIR™ MAKE-UP SOLUTION KIT



WARNING

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE
POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE,
PERSONAL INJURY OR DEATH.



NOTES:

- 1 WARNING: DISCONNECT POWER BEFORE SERVICING. WIRING TO UNIT MUST BE PROPERLY POLARIZED (FOR 265V) AND GROUNDING.
- 2 WHITE WIRE MUST BE CONNECTED AS SHOWN.
- 3 ON HEAT PUMP MODELS ONLY.
- 4 "OR" ON LINE 2 WITH FUSE SHOWN CONNECTED FOR 265V, OPTIONAL FOR 230V & 115 V, CONNECT POWER CORD TO LINE 2.
- 5 FOR REMOTE OPERATION, SEE CONFIGURATION CHART.
- 6 IF SUPPLY VOLTAGE IS 208V/230V, USE THE 230V OR 240V TAP ON TRANSFORMER. IF SUPPLY VOLTAGE IS 265V, USE THE 265V TAP ON TRANSFORMER. 115V TRANSFORMER NOT SHOWN.
- 7 SEE OPTIONAL HYDRONIC HEAT DIAGRAM FOR HOT WATER STEAM HEAT.
- 8 SEE ALTERNATE WIRING FOR DC OUTDOOR MOTORS.
- 9 SEE ALTERNATE WIRING FOR DC INDOOR MOTORS.
- 10 SEE TABLE FOR OUTDOOR MOTOR SPEED SELECTION.
- 11 SEE TABLE FOR INDOOR MOTOR SPEED SELECTION.
- 12 SEE OPTIONAL WIRING DIAGRAMS FOR SERIAL CABLE CONNECTIONS.
- 13 OPTIONAL FOR 208/230V.
- 14 SET DIP SWITCHES PER TABLE.

REMOTE THERMOSTAT OPERATION	
COOLING UNIT W/ELECTRIC HEAT	
FUNCTION	CONNECT R. TO:
OFF	-----
FAN	G, G*
COOL	G, Y/W1
HEAT	G, W2 OR G, B, Y/W1
HEAT PUMP W/AUXILIARY ELECTRIC HEAT	
FUNCTION	CONNECT R. TO:
OFF	-----
FAN	G**
COOL	G, Y/W1
1ST STAGE HEAT	G, B, Y/W1
2ND STAGE HEAT	G, W2

* FOR A HEAT PUMP THERMOSTAT USED ON A STRAIGHT COOL UNIT.
** GL - LOW SPEED
GH - HIGH SPEED

CM OUTDOOR FAN MOTOR
COMP COMPRESSOR
DB DAUGHTER BOARD
EM EVAPORATOR MOTOR
FC FAN CAPACITOR
F FUSE
HPS HIGH PRESSURE SWITCH
HTR HEATER ELEMENT
MC MAIN CONTROL RELAY
RCCF RUN CAPACITOR FOR COMPRESSOR AND FAN
RVC REVERSING VALVE
TR TRANSFORMER
TB TERMINAL BLOCK
VSM VARIABLE SPEED MOTOR
VSTM VARIABLE SPEED TERMINAL BOARD

USE COPPER CONDUCTORS ONLY	
CHASSIS	CONTROL PANEL
WIRE LEGEND	
	HIGH VOLTAGE (FACTORY)
	HIGH VOLTAGE (FACTORY OR FIELD)
	LOW VOLTAGE (FACTORY OR FIELD)
	HIGH VOLTAGE DC HARNESS (FACTORY)

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

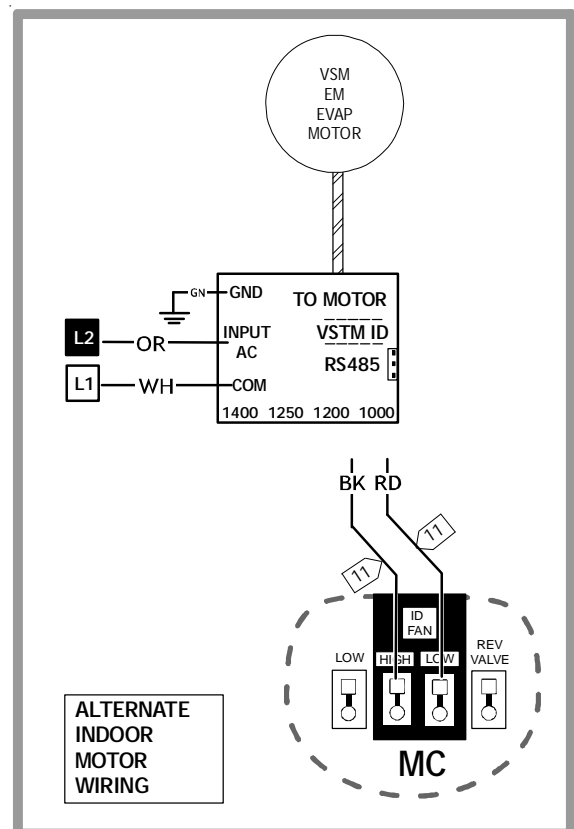
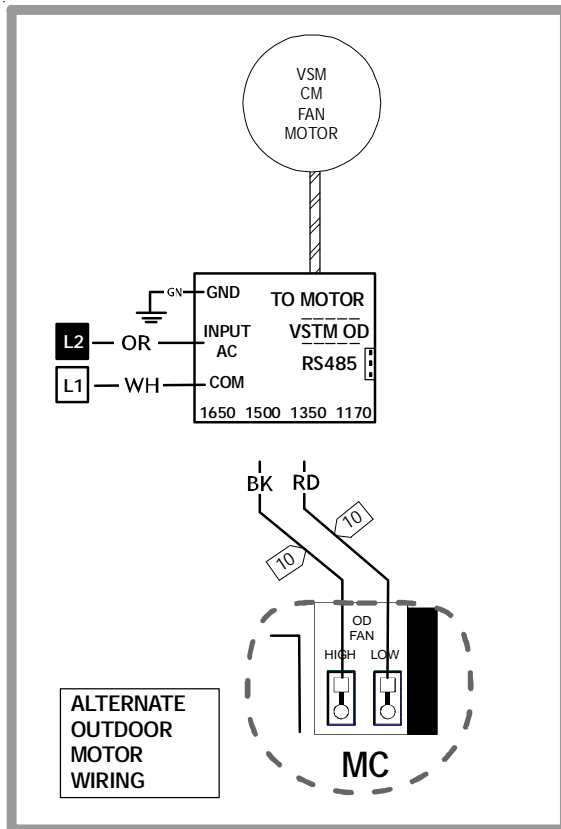
WIRING DIAGRAM

DigiAIR™ MAKE-UP SOLUTION KIT



WARNING

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10

PTAC Outdoor Motor Speed Selection

Model Starts With	High Speed VSTM Tap (Black Wire)	Low Speed VSTM Tap (Red Wire)
DRY093G(00 to 35)	1350	1170
DRY094G(00 to 35)	1350	1170
PTC173G	1500	1350

11

PTAC Indoor Motor Speed Selection

Model Starts With	High Speed VSTM Tap (Black Wire)	Low Speed VSTM Tap (Red Wire)
PTH073G(00 to 35)	1250	1000

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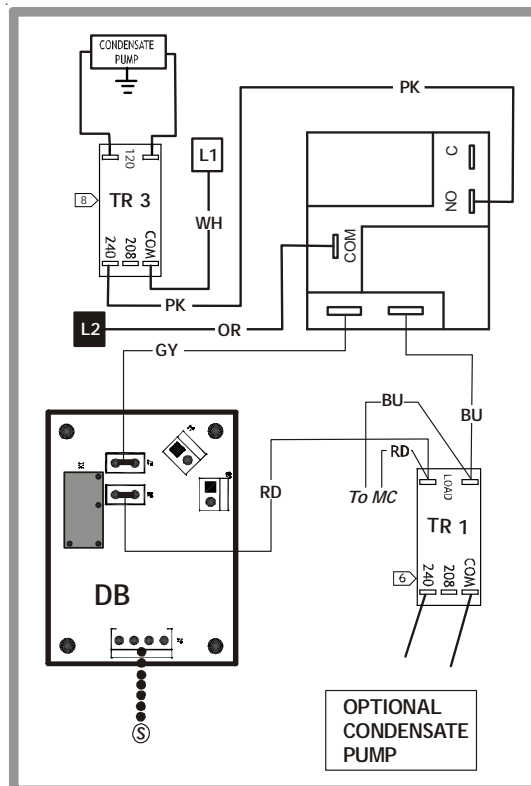
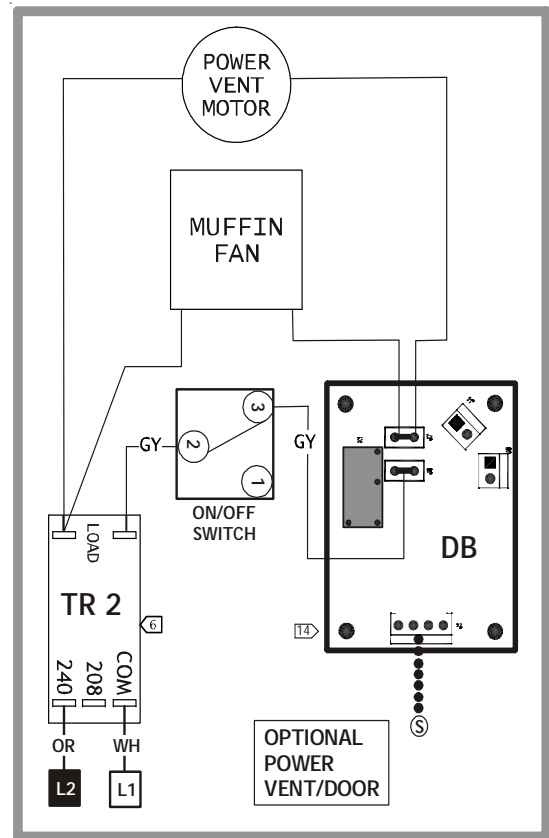
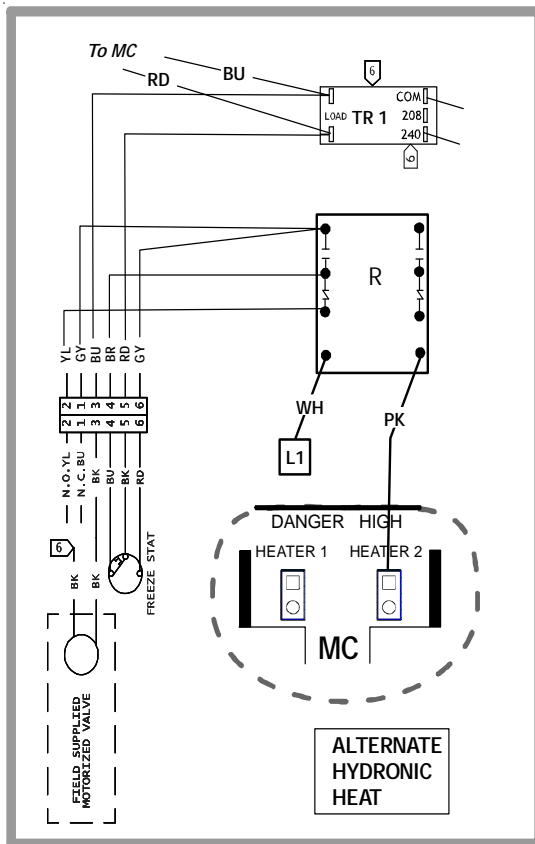
WIRING DIAGRAM

DigiAIR™ MAKE-UP SOLUTION KIT



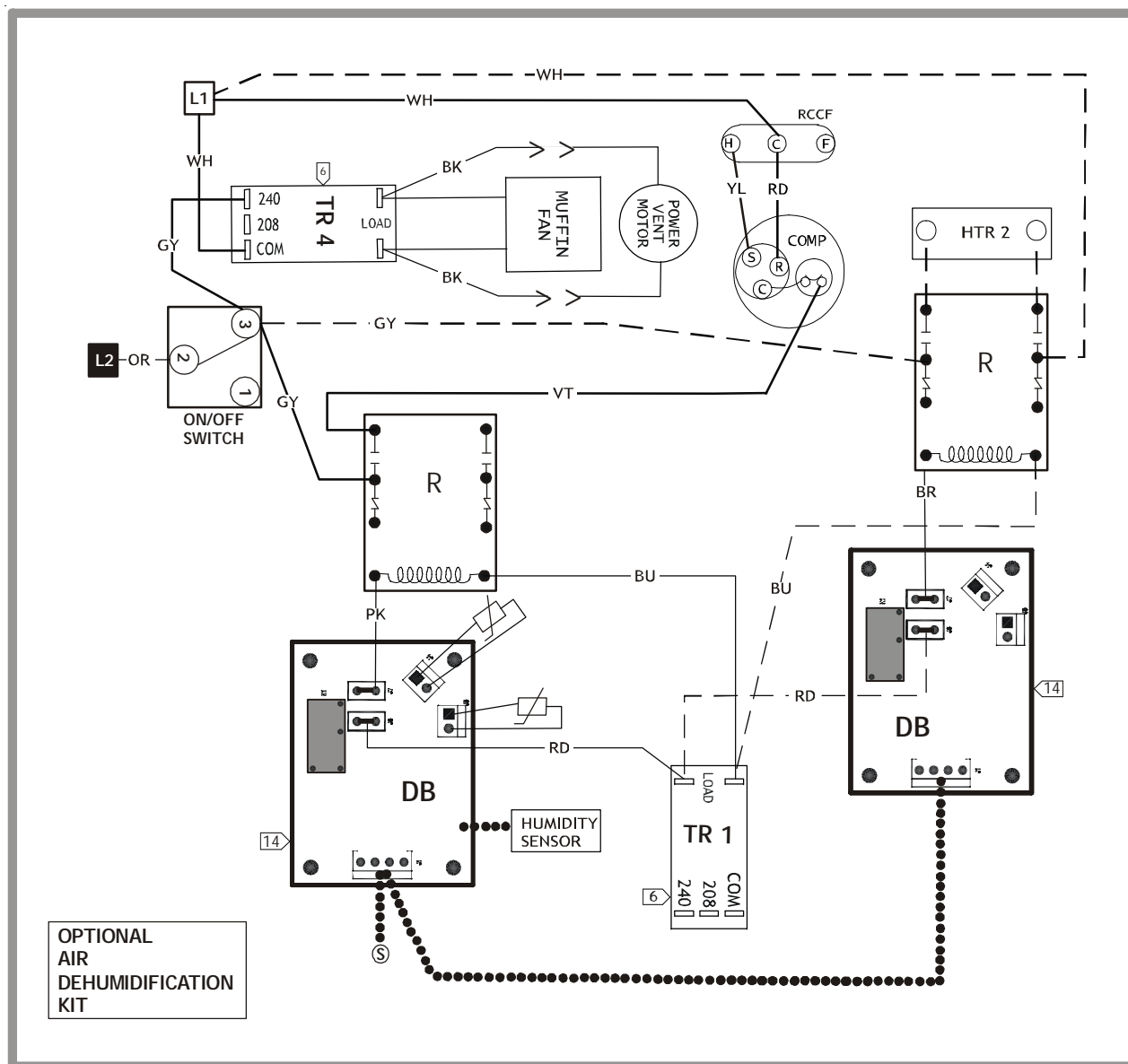
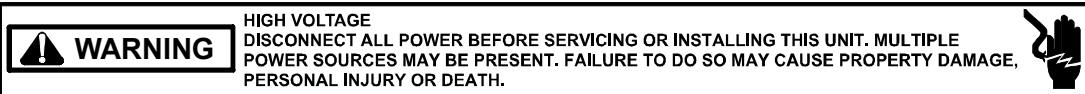
WARNING

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POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE,
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Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

DigiAIR™ MAKE-UP SOLUTION KIT



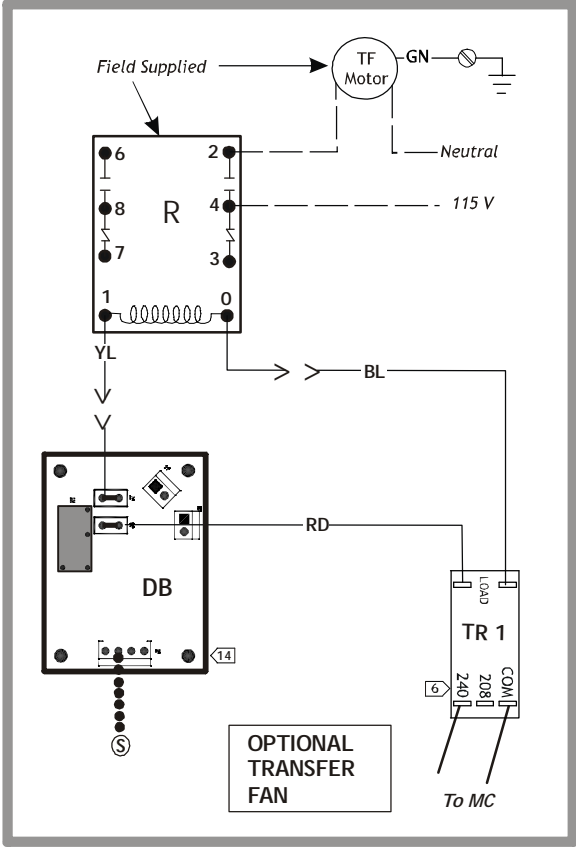
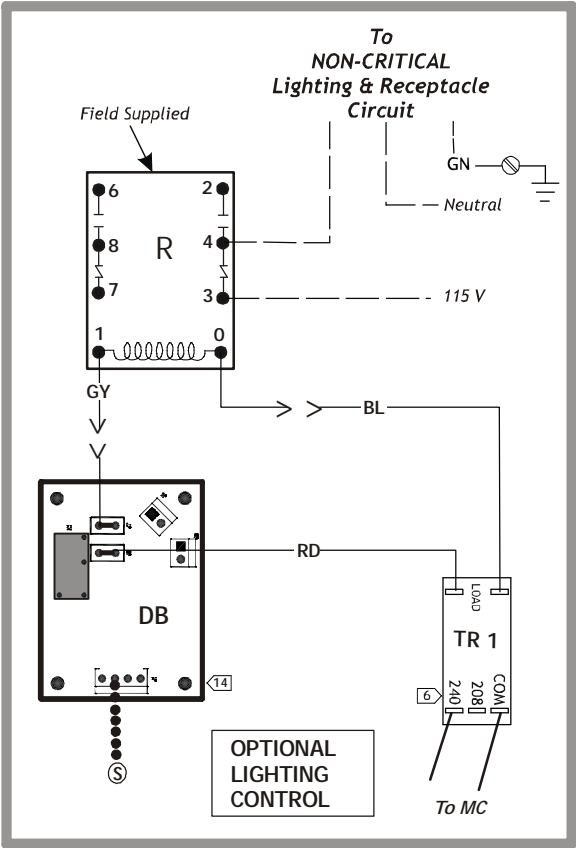
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WIRING DIAGRAM

**WARNING**

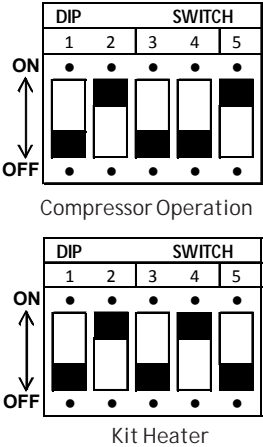
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14

Daughter Board Device	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5
Small Vent	0	0	0	0	1
Power Door / Vent	0	0	1	0	0
Transfer Fan	0	0	1	0	0
Condensate Pump	0	0	1	0	1
Lighting Control	0	1	0	0	0
DigiAIR™ Vent Compressor	0	1	0	0	1
DigiAIR™ Kit Heater	0	1	0	1	0



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WIRING DIAGRAM



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LEGEND FOR WIRING DIAGRAM ON FOLLOWING PAGE

REMOTE THERMOSTAT OPERATION	
COOLING UNIT W/ELECTRIC HEAT	
FUNCTION	CONNECT R TO:
OFF	-----
FAN	G **
COOL	G, Y/W1
HEAT	G, W2 OR G, B, Y/W1*
HEAT PUMP W/AUXILIARY ELECTRIC HEAT	
FUNCTION	CONNECT R TO:
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COOL	G, Y/W1
1ST STAGE HEAT	G, B, Y/W1
2ND STAGE HEAT	G, W2

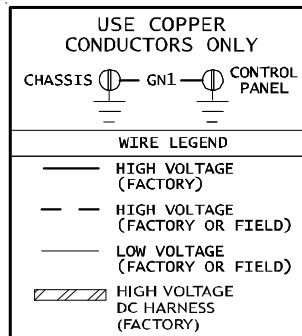
* FOR A HEAT PUMP THERMOSTAT USED
ON A STRAIGHT COOL UNIT.

** GL - LOW SPEED
GH - HIGH SPEED

NOTES:

- 1 WARNING: DISCONNECT POWER BEFORE SERVICING.
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(FOR 265V) AND GROUNDED.
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CM OUTDOOR FAN MOTOR
COMP COMPRESSOR
DB DAUGHTER BOARD
EM EVAPORATOR MOTOR
FC FAN CAPACITOR
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HPS HIGH PRESSURE SWITCH
HTR HEATER ELEMENT
MC MAIN CONTROL
R RELAY
RCCF RUN CAPACITOR
FOR COMPRESSOR AND FAN
RVC REVERSING VALVE
TR TRANSFORMER
TB TERMINAL BLOCK
VSM VARIABLE SPEED MOTOR
VSTM VARIABLE SPEED
TERMINAL BOARD



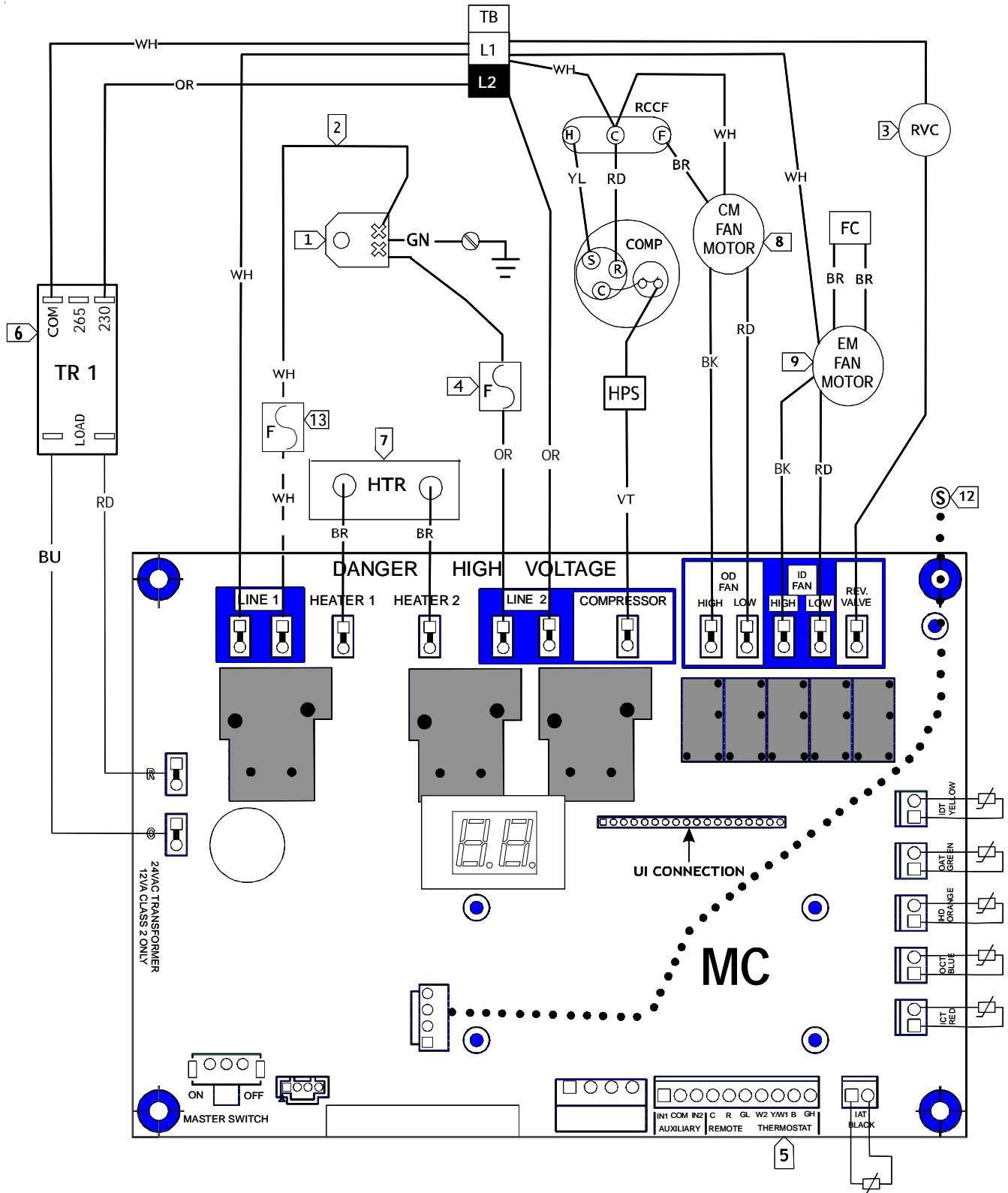
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WIRING DIAGRAM



WARNING

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SEE LEGEND ON PRECEDING PAGE.

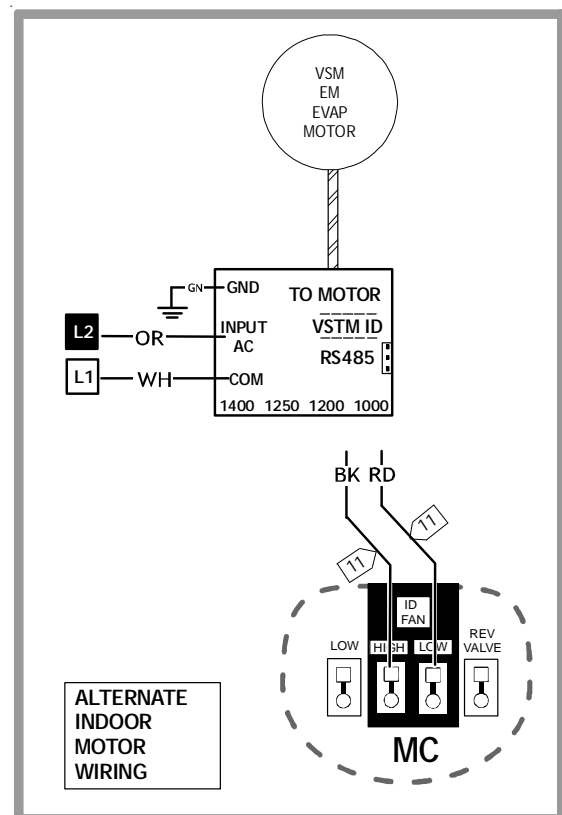
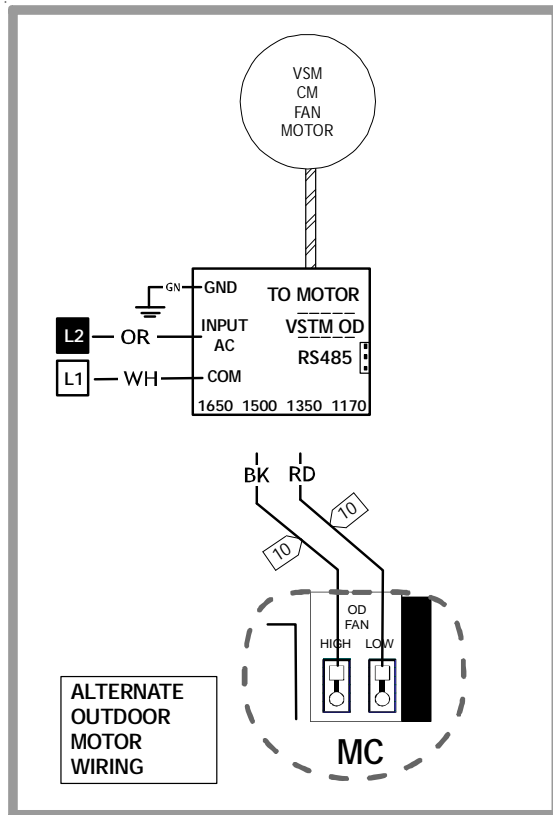
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WIRING DIAGRAM

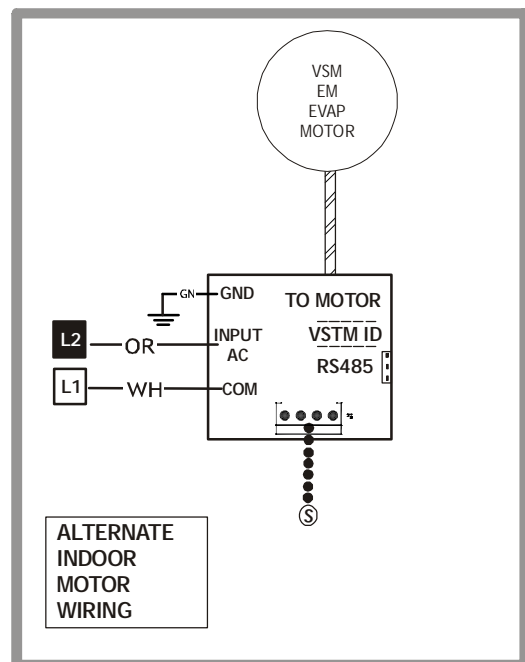
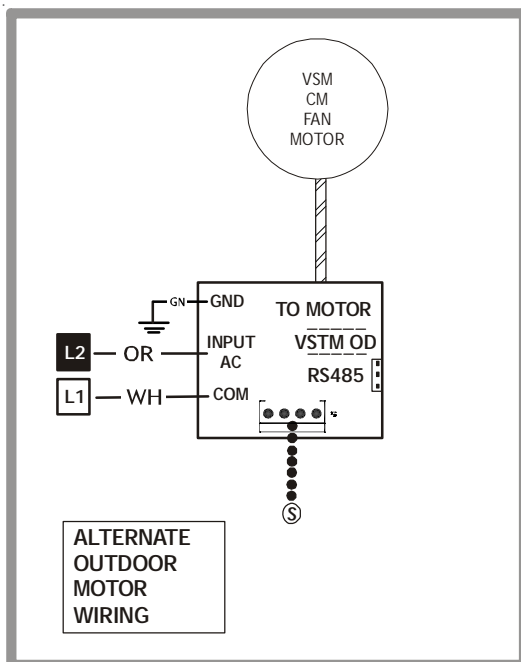
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TYPE A WITH SPEED TABS



TYPE B WITHOUT SPEED TABS

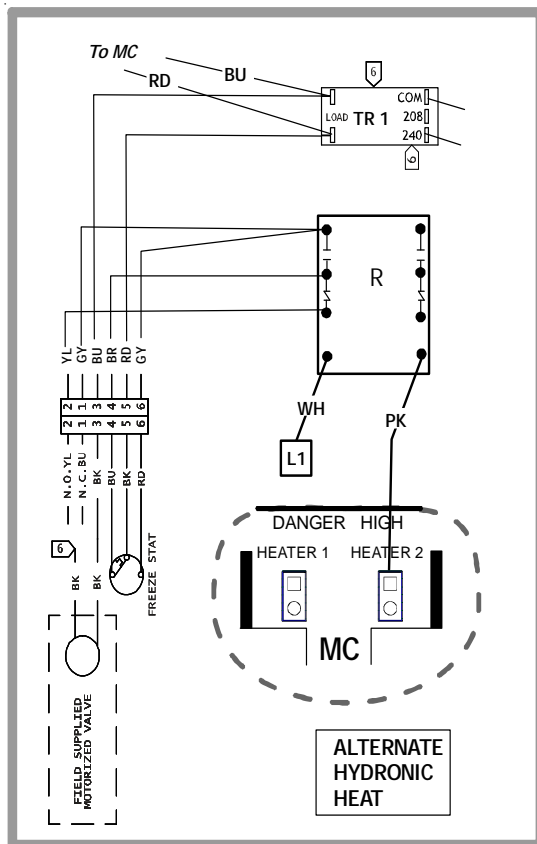
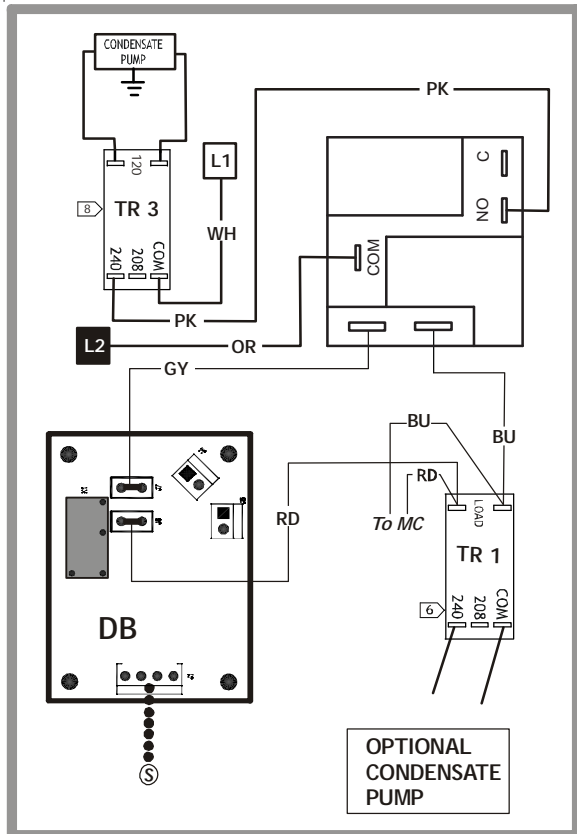
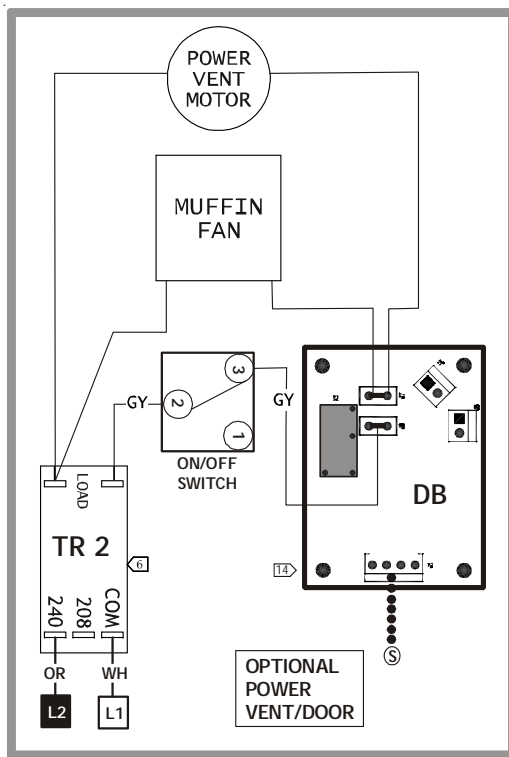


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WIRING DIAGRAM



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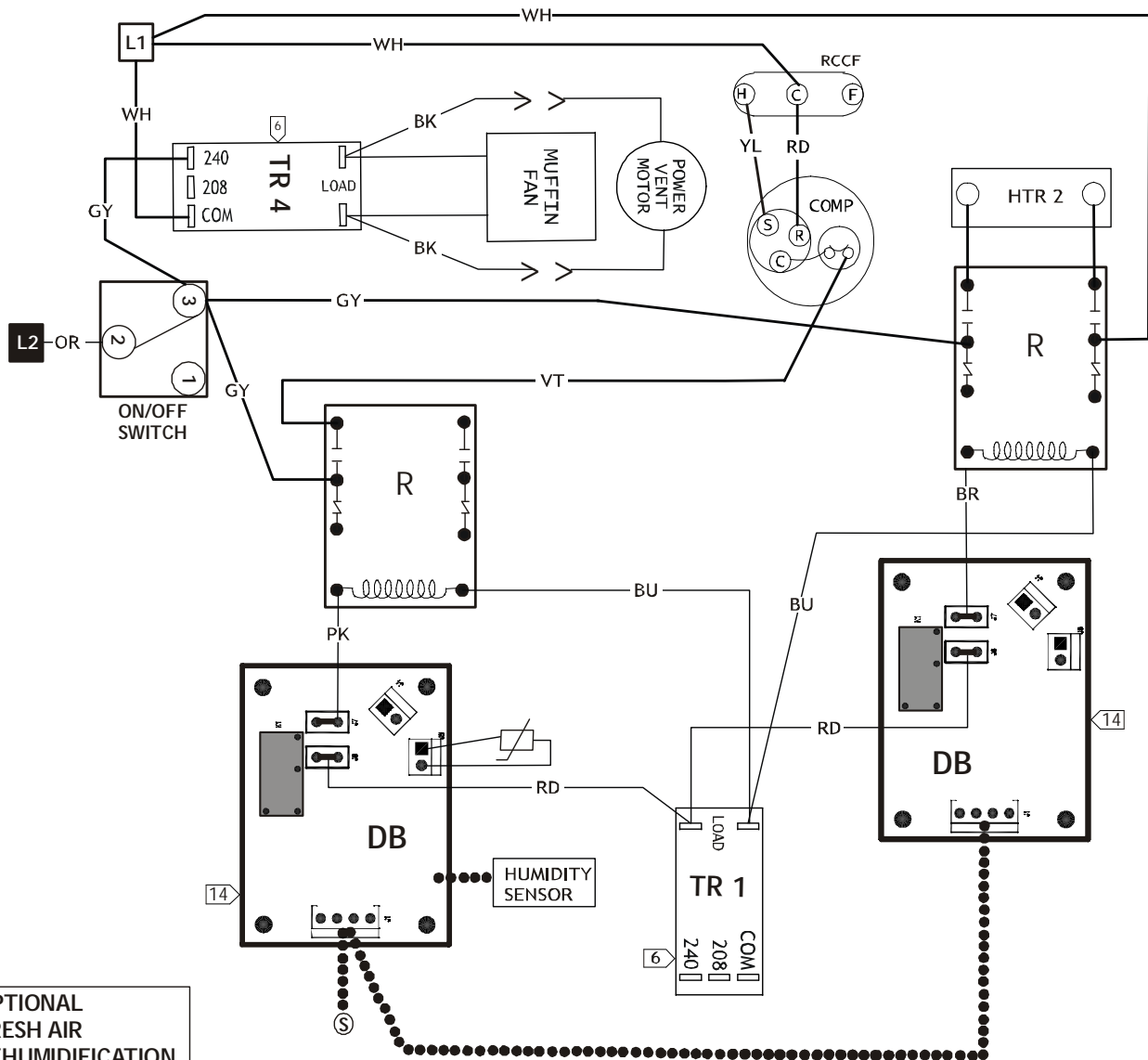
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WIRING DIAGRAM



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OPTIONAL
FRESH AIR
DEHUMIDIFICATION
KIT

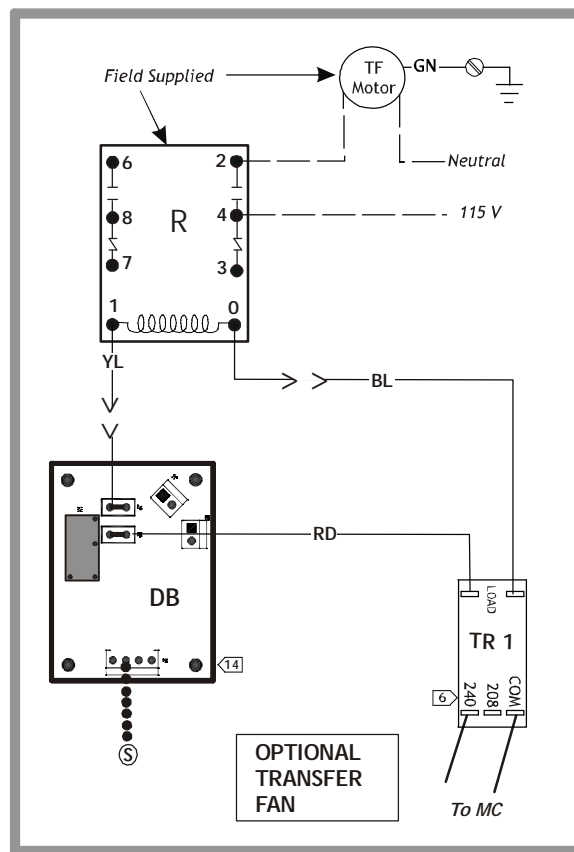
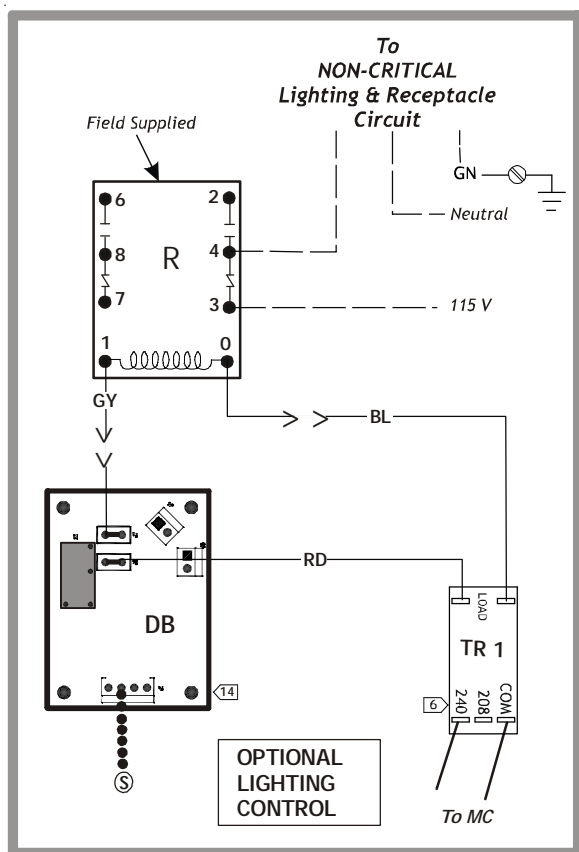
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WIRING DIAGRAM



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Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

10

Outdoor Motor Speed Selection		
Model Starts With	High Speed VSTM Tap (Black Wire)	Low Speed VSTM Tap (Red Wire)
DRY093/DRY094	1350	1170
PTC173	1650	1450
HEC073/PTH073/PTH074	1350	1170
HEC093/PTH093/PTH094	1350	1170
HEC123/PTH123/PTH124	1500	1350
PTH153/PTH154	1650	1500
PMH153/PMH154	1650	1500
PTC073/PTC074	1350	1170
PTC093/PTC094	1350	1170
PTC123/PTC124	1350	1170
PTC153/PTC154	1650	1500

11

Indoor Motor Speed Selection		
Model Starts With	High Speed VSTM Tap (Black Wire)	Low Speed VSTM Tap (Red Wire)
PTH07*G (00 to 35)	1250	1000
PMH07*G (00 to 35)	1250	1000
PMC07*G (00 to 35)	1250	1000
PMC09*G (00 to 35)	1250	1000
PMC12*G (00 to 35)	1250	1000
PTC072G/PMH074/PTH073H/PTH074H (00 to 35)	1250	1000
PTC092G/PMH094/PTH093H/PTH094H (00 to 35)	1250	1000
PMH124/PTH123H/PTH124H (00 to 35)	1250	1000
PTH153H/PTH154H (00 to 35)	1400	1250
PMC154/PMH153G/PMH154G (00 to 35)	1400	1250

14

Daughter Board Device	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5
Small Vent	0	0	0	0	1
Power Door / Vent	0	0	1	0	0
Transfer Fan	0	0	1	0	0
Condensate Pump	0	0	1	0	1
Lighting Control	0	1	0	0	0
DigiAIR™ Vent Compressor	0	1	0	0	1
DigiAIR™ Kit Heater	0	1	0	1	0

