

WIRING DIAGRAM MANUAL

Split System Air Conditioner

(C/H/T)SA6

Safety Labeling and Signal Words

DANGER, WARNING, CAUTION, and NOTE

The signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTE** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING**, **CAUTION**, and **NOTE** will be used on product labels and throughout this manual and other manuals that may apply to the product.

DANGER – Immediate hazards which **will** result in severe personal injury or death.

WARNING – Hazards or unsafe practices which **could** result in severe personal injury or death.

CAUTION – Hazards or unsafe practices which **may** result in minor personal injury or product or property damage.

NOTE – Used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

Signal Words in Manuals

The signal word **WARNING** is used throughout this manual in the following manner:



The signal word **CAUTION** is used throughout this manual in the following manner:



Signal Words on Product Labeling

Signal words are used in combination with colors and/or pictures on product labels.

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MODELS

208/230–1–60
CSA6
HSA6
TSA6

WARNING

DEATH, PERSONAL INJURY, AND/OR PROPERTY DAMAGE HAZARD

Failure to carefully read and follow this warning could result in equipment malfunction, property damage, personal injury and/or death.

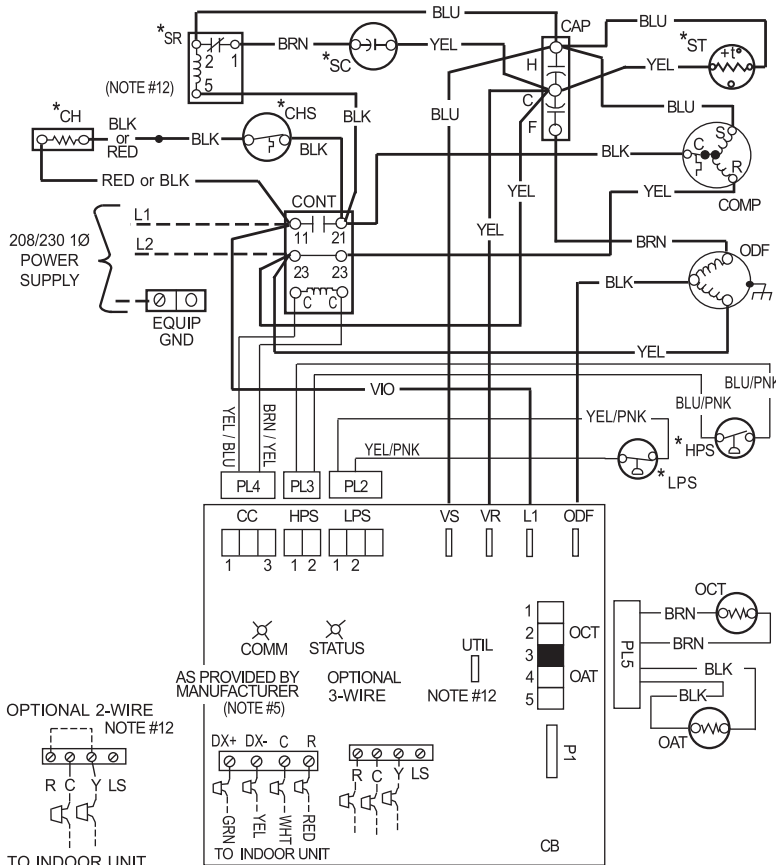
Installation or repairs made by unqualified persons could result in equipment malfunction, property damage, personal injury and/or death.

The information contained in this manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Installation must conform with local building codes and with the National Electrical Code NFPA70 current edition or Canadian Electrical Code Part 1 CSA C.22.1.

338440-101 — (C,H,T)SA6(18-60)GKA

CONNECTION DIAGRAM



FLASH CODE	FAULT DEFINITION	FLASH CODE	FAULT DEFINITION
On, No Flash	Standby (3 or 4 Wire Only)	55	Coil Temp Sensor
1, Pause	Normal Operation	56	Thermistor Range Error
16	System Communications Failure	72	Thermal Cutout
31	High Pressure Switch	73	Contact Shorted
32	Low Pressure Switch	74	No 240V at Compressor
45	Control Fault	82	Thermal lockout
46	Brown out (24V)	83	Low pressure lockout
53	Outside Temp Sensor	84	High pressure lockout

LEGEND

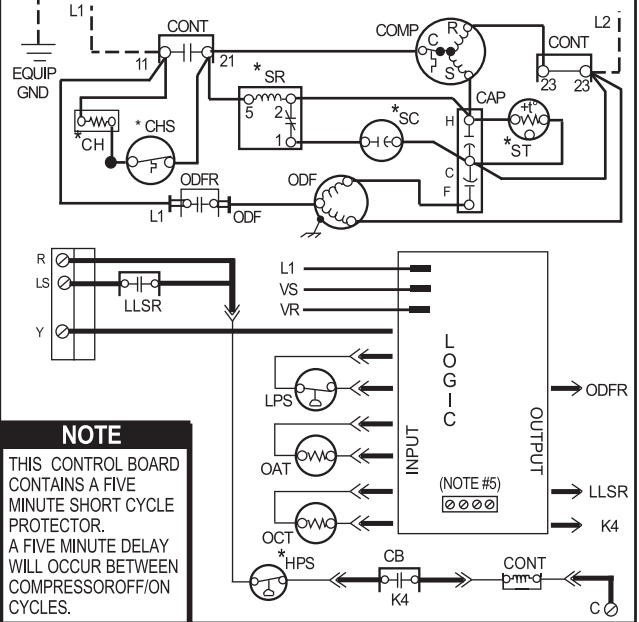
- FACTORY POWER WIRING
- FACTORY CONTROL WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CONDUCTOR ON CIRCUIT BOARD
- COMPONENT CONNECTION
- 1/4 - INCH QUICK CONNECT TERMINALS
- FIELD SPLICE
- JUNCTION
- PLUG RECEPTACLE
- CAP CAPACITOR (DUAL RUN)
- CB CIRCUIT BOARD
- *CH CRANKCASE HEATER
- *CHS CRANKCASE HEATER SWITCH
- COMP COMPRESSOR
- CONT CONTACTOR
- *HPS HIGH PRESSURE SWITCH
- *LPS LOW PRESSURE SWITCH
- OAT THERMISTOR (OUTDOOR AIR)
- OCT THERMISTOR COIL
- ODFR OUTDOOR FAN RELAY
- ODF OUTDOOR FAN
- *SC START CAPACITOR
- *SR START RELAY
- *ST START THERMISTOR

NOTES:

- Compressor and fan motor furnished with inherent thermal protection.
- To be wired in accordance with National Electric Code (N.E.C.) and local codes.
- N.E.C. Class 2, 24V circuit, min. 40VA required, 60VA on units installed with LLS.
- Use copper conductors only from disconnect to unit suitable for at least 75°C (167°F).
- For communicating control only.
- If indoor section has a transformer with a grounded secondary, connect the grounded side to "C" on the circuit board.
- If any of the original wire, as supplied, must be replaced, use the same or equivalent wire.
- Check all electrical connections inside control box for tightness.
- Do not attempt to operate unit until service valves have been opened.
- Symbols are electrical representation only.
- When start relay and start capacitor are installed, start thermistor is not used.
- In case of non-communicating Indoor system, disconnect factory provided wires from DX+, DX-, C and R terminals. Using factory provided wires, connect to R, C and/or Y Terminals per installation instructions. Connect field 24V wires to factory provided wires, cap or remove unused factory provided wires.

* MAY BE FACTORY OR FIELD INSTALLED

SCHEMATIC DIAGRAM (LADDER FORM)



NOTE
THIS CONTROL BOARD CONTAINS A FIVE MINUTE SHORT CYCLE PROTECTOR. A FIVE MINUTE DELAY WILL OCCUR BETWEEN COMPRESSOR OFF/ON CYCLES.

CONDENSING UNIT CHARGING INSTRUCTIONS

For use with units using R-410A refrigerant

REQUIRED LIQUID LINE TEMPERATURE		COOLING ONLY CHARGING PROCEDURE					
Liquid Pressure at Service Valve (psig)	Required Subcooling Temperature (°F)						<ol style="list-style-type: none"> Only use subcooling charging method when OD ambient is greater than 70°F and less than 100°F, indoor temp is greater than 70°F and less than 80°F, and line set is less than 80 ft. Operate unit a minimum of 15 minutes before checking the charge. Measure liquid service valve pressure by attaching an accurate gauge to the service port. Measure the liquid line temperature by attaching an accurate thermistor type or electronic thermometer to the liquid line near the outdoor coil. Refer to unit rating plate for required subcooling temperature. Find the point where the required subcooling temperature intersects the measured liquid service valve pressure. When adding refrigerant, charge in liquid form using a flow restricting device into suction service port. Recover refrigerant if temperature is lower. Allow a tolerance of +/- 3°F. Never vent refrigerant to atmosphere. Use approved recovery equipment.
	6	8	10	12	14	16	
251	78	76	74	72	70	68	
259	80	78	76	74	72	70	
266	82	80	78	76	74	72	
274	84	82	80	78	76	74	
283	86	84	82	80	78	76	
291	88	86	84	82	80	78	
299	90	88	86	84	82	80	
308	92	90	88	86	84	82	
317	94	92	90	88	86	84	
326	96	94	92	90	88	86	
335	98	96	94	92	90	88	
345	100	98	96	94	92	90	
354	102	100	98	96	94	92	
364	104	102	100	98	96	94	
374	106	104	102	100	98	96	
384	108	106	104	102	100	98	
395	110	108	106	104	102	100	
406	112	110	108	106	104	102	
416	114	112	110	108	106	104	
427	116	114	112	110	108	106	
439	118	116	114	112	110	108	
450	120	118	116	114	112	110	
462	122	120	118	116	114	112	
474	124	122	120	118	116	114	

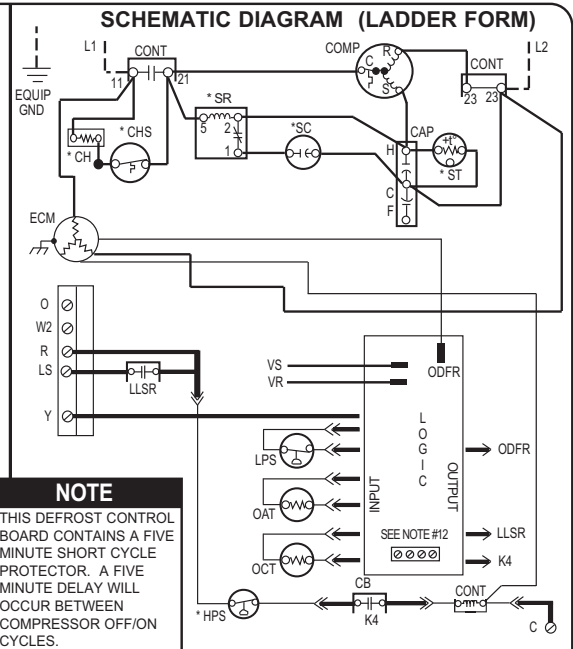
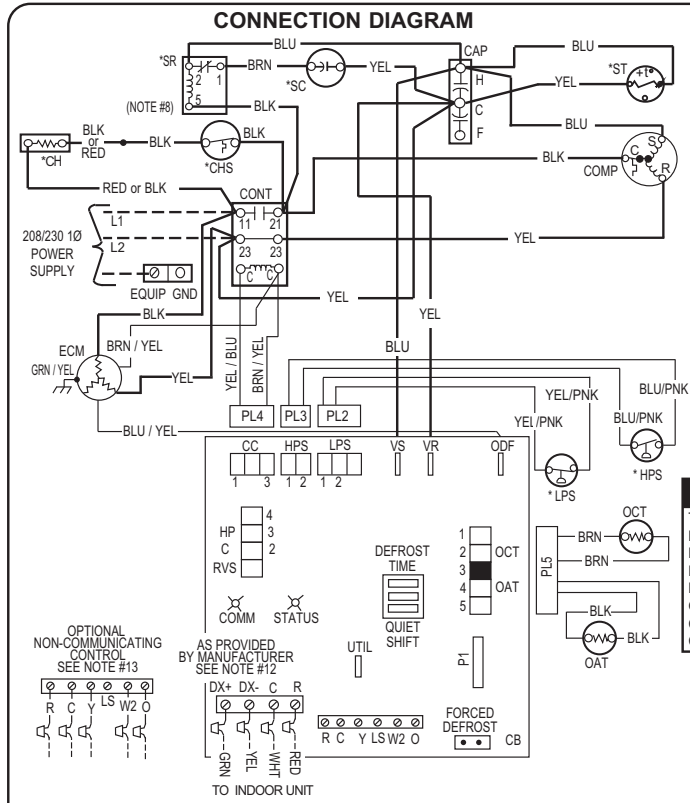
CAUTION

- Compressor damage may occur if system is over charged.
- This unit is factory charged with R-410A in accordance with the amount shown on the rating plate. The charge is adequate for most systems using matched coils and tubing not over 15 feet long. Check refrigerant charge for maximum efficiency. See Product Data Literature for required Indoor air Flow Rates and for use of line lengths over 15 feet.
- Relieve pressure and recover all refrigerant before system repair or final disposal. Use all service ports and open all flow-control devices, including solenoid valves.
- Never vent refrigerant to atmosphere. Use approved recovery equipment.



338440-101 REV. A

345082-101 — (C,H,T)SA660GKB



NOTE
THIS DEFROST CONTROL BOARD CONTAINS A FIVE MINUTE SHORT CYCLE PROTECTOR. A FIVE MINUTE DELAY WILL OCCUR BETWEEN COMPRESSOR OFF/ON CYCLES.

- ### LEGEND
- FACTORY POWER WIRING
 - FACTORY CONTROL WIRING
 - FIELD CONTROL WIRING
 - - - FIELD POWER WIRING
 - CONDUCTOR ON CIRCUIT BOARD
 - ⊕ COMPONENT CONNECTION
 - ⊕ FIELD SPLICE
 - JUNCTION
 - ⊕ PLUG RECEPTACLE
 - CAP CAPACITOR (DUAL RUN)
 - CB CIRCUIT BOARD
 - *CHS CRANKCASE HEATER SWITCH
 - COMP COMPRESSOR
 - *CH CRANKCASE HEATER
 - CONT CONTACTOR
 - ECM ELECTRONICALLY COMMUTATED MOTOR
 - *HPS HIGH PRESSURE SWITCH
 - *LPS LOW PRESSURE SWITCH
 - LLSR LIQUID LINE SOLENOID RELAY
 - OAT OUTDOOR AIR THERMISTOR
 - OCT OUTDOOR COIL THERMISTOR
 - ODFR OUTDOOR FAN RELAY
 - ODF OUTDOOR FAN
 - *SC RELAY START CAPACITOR
 - *SR START RELAY
 - *ST START THERMISTOR
- * MAY BE FACTORY OR FIELD INSTALLED**

- ### NOTES:
- Compressor and fan motor furnished with inherent thermal protection.
 - To be wired in accordance with National Electric Code (N.E.C.) and local codes.
 - N.E.C. Class 2, 24 V circuit, min. 40 VA required, 60VA on units installed with LLS.
 - Use copper conductors only from disconnect to units suitable for at least 75°C (167°F).
 - Must use thermostat and sub-base as stated in pre-sale literature.
 - If indoor section has a transformer with a grounded secondary, connect the Grounded side to "C" on the circuit board.
 - If any of the original wire, as supplied, must be replaced, use the same or equivalent wire.
 - Check all electrical connections inside control box for tightness.
 - Do not attempt to operate unit until service valves have been opened.
 - Symbols are electrical representation only.
 - When start relay and start capacitor are installed, start thermistor is not used.
 - For communicating control only.
 - In case of non-communicating Indoor system, disconnect factory provided wires from DX+, DX-, C and R terminals. Using factory provided wires connect to R, C, Y, W2, and O terminals as required by Installation Instructions. Connect field 24V wires to factory provided wires, cap or remove unused factory provided wires.

CONDENSING UNIT CHARGING INSTRUCTIONS

For use with units using R-410A refrigerant

Liquid Pressure at Service Valve (psig)	Required Subcooling Temperature (°F)					
	6	8	10	12	14	16
251	78	76	74	72	70	68
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395	110	108	106	104	102	100
406	112	110	108	106	104	102
416	114	112	110	108	106	104
427	116	114	112	110	108	106
439	118	116	114	112	110	108
450	120	118	116	114	112	110
462	122	120	118	116	114	112
474	124	122	120	118	116	114

- ### COOLING ONLY CHARGING PROCEDURE
- Only use subcooling charging method when OD ambient is greater than 70°F and less than 100°F; indoor temp is greater than 70°F and less than 80°F, and line set is less than 80 ft.
 - Operate unit a minimum of 15 minutes before checking the charge.
 - Measure liquid service valve pressure by attaching an accurate gauge to the service port.
 - Measure the liquid line temperature by attaching an accurate thermistor type or electronic thermometer to the liquid line near the outdoor coil.
 - Refer to unit rating plate for required subcooling temperature.
 - Find the point where the required subcooling temperature intersects the measured liquid service valve pressure.
 - To obtain the required sub-cooling temperature at specific liquid line pressure, add refrigerant if liquid line temperature is higher than indicated. When adding refrigerant, charge in liquid form using a flow restricting device into suction service port. Recover refrigerant if temperature is lower. Allow a tolerance of +/- 3°F.

FLASH CODE	FAULT DEFINITION	FLASH CODE	FAULT DEFINITION
On, No Flash	Standby	55	Coil Temp Sensor
1, Pause	Normal Operation	56	Thermistor Range Error
16	System Communications Failure	72	Thermal Cutout
31	High Pressure Switch	73	Contactor Shorted
32	Low Pressure Switch	74	No 230V at Compressor
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53	Outside Temp Sensor	84	High pressure lockout

CAUTION

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- Relieve pressure and recover all refrigerant before system repair or final disposal. Use all service ports and open all flow-control devices, including solenoid valves.
- Never vent refrigerant to atmosphere. Use approved recovery equipment.



345082-101 REV. A

NOTES:

TRAINING

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