WIRING DIAGRAM MANUAL Split System Heat Pump

WCH5, NXH5, WCH6

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:

WARNING

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

A CAUTION

Signal Words on Product Labeling

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

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A 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.

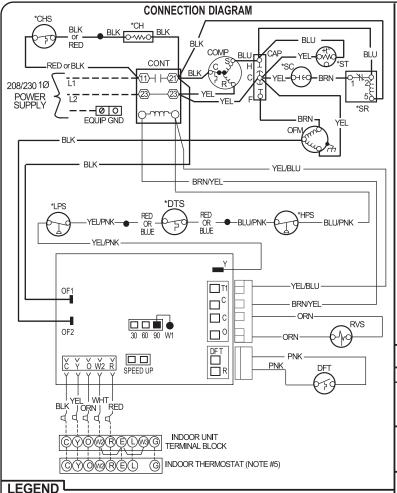
Installation must conform with local building codes and with the National Electrical Code NFPA70 current edition or Canadian Electrical Code Part 1 CSA C.22.1.

TRAINING

My Learning Center is your central location for professional residential HVAC training resources that help strengthen careers and businesses. We believe in providing high quality learning experiences both online and in the classroom.

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339903-101 — WCH5, WCH6 (24, 30, 36, 48)



FACTORY POWER WIRING CRANKCASE HEATER SWITCH *CHS FACTORY CONTROL WIRING COMP COMPRESSOR ----- FIELD CONTROL WIRING CONT CONTACTOR FIELD POWER WIRING DFT **DEFROST THERMOSTAT** CONDUCTOR ON CIRCUIT BOARD DEFROST RELAY AND CIRCUITRY 0 COMPONENT CONNECTION DISCHARGE TEMP SWITCH 1/4-IN QUICK CONNECT TERMINAL *HPS HIGH PRESSURE SWITCH Ą FIELD SPLICE *LPS LOW PRESSURE SWITCH JUNCTION OFM **OUTDOOR FAN MOTOR** PLUG RECEPTACLE RVS REVERSING VALVE SOLENOID СВ CIRCUIT BOARD START CAPACITOR

*SC

*SR

START RELAY

START THERMISTOR

* MAY BE FACTORY OR FIELD INSTALLED

CAPACITOR (CUAL RUN)

CRANKCASE HEATER

NOTES:

CAP

*CH

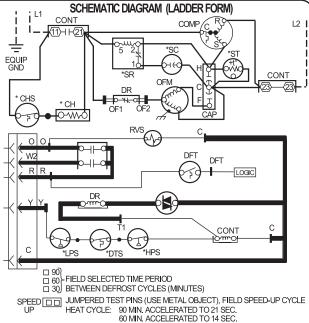
- Symbols are electrical representation only.

 Compressor and fan motor furnished with inherent thermal protection.

 To be wired in accordance with National Electric N.E.C. and local codes.
- N.E.C. class 2, 24 V circuit, min. 40 VA required, 60 VA on units installed with LLS.
- Use copper conductors only. Use conductors 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.

12. Use conductors suitable for at least 75°C (167°F).





DEFROST CYCLE: 10 MIN. ACCELERATED TO 2 SEC CONDENSING UNIT CHARGING INSTRUCTIONS For use with units using R-410A refrigerant

30 MIN ACCELERATED TO 7 SEC

ı	1 of use with units using it								
ı	REQUIRED LIQUID LINE TEMPERATURE								
ı	Liquid Pressure	Required Subcooling							
ı	at Service		Temperature (°F)						
ı	Valve (psig)	6	8	10	12	14	16		
	251 259	78 80	76 78	74 76	72 74	70 72	68 70		
	266 274	82 84	80 82	78 80	76 78	74 76	72 74		
	283 291	86 88	84 86	82 84	80 82	78 80	76 78		
	299 308	90 92	88 90	86 88	84 86	82 84	80 82		
	317 326	94 96	92 94	90 92	88 90	86 88	84 86		
	335 345	98 100	96 98	94 96	92 94	90 92	88 90		
	354	102	100	98	96	94	92		
ı	364 374	104 106	102 104	100 102	98 100	96 98	94 96		
ı	384	108	106	104	102	100	98		
	395 406	110 112	108 110	106 108	104 106	102 104	100 102		
	416 427	114	112 114	110 112	108 110	106 108	104 106		
ı	439	118	116	114	112	110	108		
	450	120	118	116	114	112	110		
	462 474	122 124	120 122	118 120	116 118	114 116	112 114		
ı					Λ		ALIT	$\overline{\mathbf{a}}$	

COOLING ONLY CHARGING PROCEDURE

- 1. Only use sub cooling 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.
- 3. Measure liquid service valve pressure by attaching an accurate gauge to the service port.
- 4. Measure the liquid line temperature by attaching an accurate thermistor type or electronic thermometer to the
- liquid line near the outdoor coil. 5. Refer to unit rating plate for required subcooling temperature.
- 6. Find the point where the required subcooling temperature intersects the measured liquid service valve pressure.
- 7. To obtain the required subcooling 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.

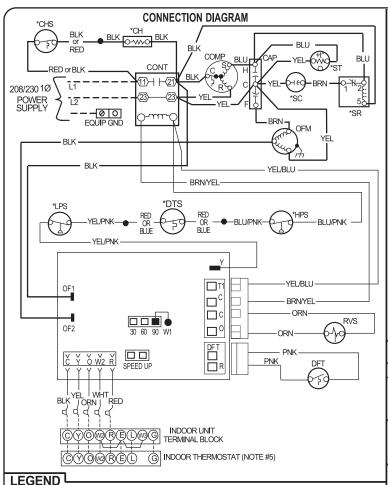
- Compressor damage may occur if system is over charged.
 This unit is factory charged with R-410A in accordance with the amount shown
- on the rating plate. The charge is adequate for most systems using matched coils and tubing not over 15 feet long. Check refrigerant charge for maximum efficiency. 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
- Never vent refrigerant to atmosphere. Use approved recovery equipment.



339903-101 REV. A

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343179-101 — WCH6 (18)



*CHS CRANKCASE HEATER SWITCH COMPRESSOR

CONTACTOR CONT

COMP

DFT DEFROST THERMOSTAT

DEFROST RELAY AND CIRCUITRY DR

*DTS DISCHARGE TEMP SWITCH

HIGH PRESSURE SWITCH *HPS

LOW PRESSURE SWITCH *LPS OFM **OUTDOOR FAN MOTOR**

REVERSING VALVE SOLENOID

*SC START CAPACITOR

*SR START RELAY *ST START THERMISTOR

* MAY BE FACTORY OR FIELD INSTALLED

NOTES:

 \bigcirc

CB

CAP

FACTORY POWER WIRING

- FACTORY CONTROL WIRING

COMPONENT CONNECTION

CAPACITOR (CUAL RUN)

CRANKCASE HEATER

CONDUCTOR ON CIRCUIT BOARD

1/4-IN QUICK CONNECT TERMINAL

----- FIELD CONTROL WIRING

· - - - FIELD POWER WIRING

FIELD SPLICE

← PLUG RECEPTACLE

CIRCUIT BOARD

JUNCTION

Symbols are electrical representation only.

Compressor and fan motor furnished with inherent thermal protection.

To be wired in accordance with National Electric N.E.C. and local codes.

N.E.C. class 2, 24 V circuit, min. 40 VA required, 60 VA on units installed with LLS.

Use copper conductors only. Use conductors 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.

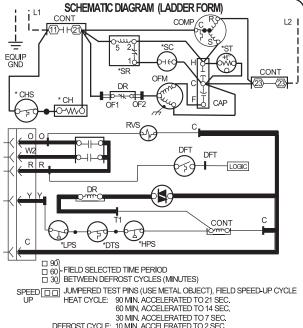
If any of the original wire, as supplied, must be replaced, use the same or equivalent wire

Check all electrical connections inside control box for tightness. Do not attempt to operate unit until service valves have been opened.

12. Use conductors suitable for at least 75°C (167°F).

343179-101 REV A





CONDENSING UNIT CHARGING INSTRUCTIONS For use with units using R-410A refrigerant

REQUIRED LIQUID LINE TEMPERATURE						Г	
Liquid Pressure at Service	Required Subcooling Temperature (°F)						
Valve (psig)	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	

COOLING ONLY CHARGING PROCEDURE

- 1. Only use sub cooling 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.
- 2. Operate unit a minimum of 15 minutes before checking the charge.
- 3. Measure liquid service valve pressure by attaching an accurate gauge to the service port
- 4. Measure the liquid line temperature by attaching an accurate thermistor type or electronic thermometer to the liquid line near the outdoor coil.
- 5. Refer to unit rating plate for required subcooling temperature.
- 6. Find the point where the required subcooling temperature intersects the measured liquid service valve pressure
- To obtain the required subcooling 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

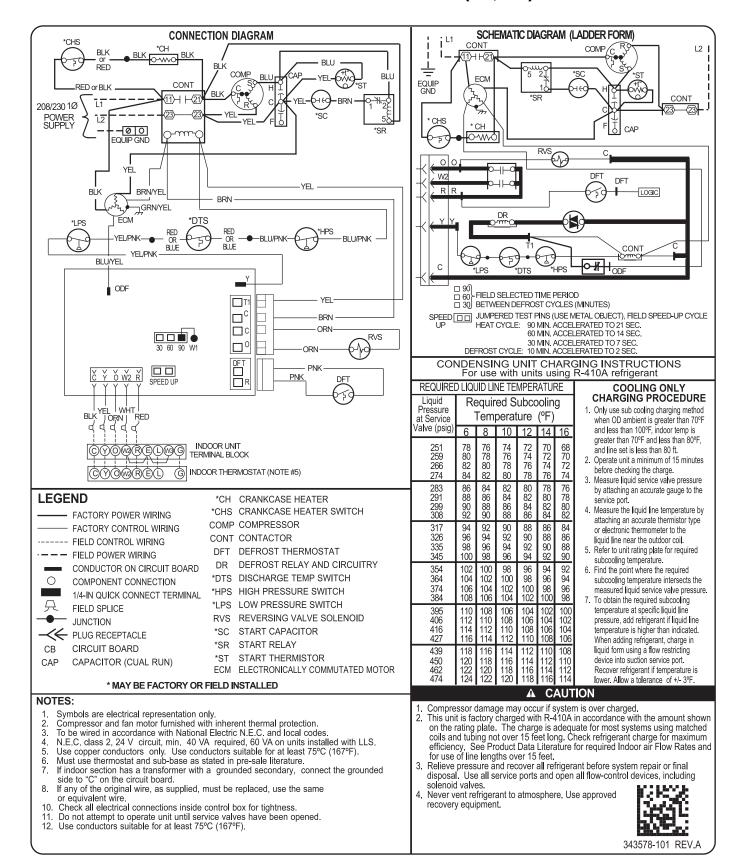
A CAUTION

- 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.



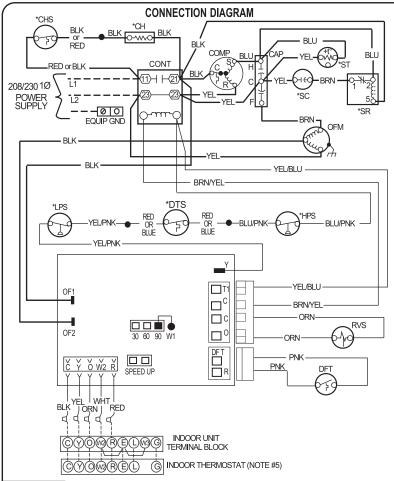
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343578-101 — WCH6 (42, 60)



4 428 03 7205 02

339697-101 — NXH5 (18 - 60)



FACTORY POWER W	/IRING *CH	ıs
FACTORY CONTROL		
		/11
FIELD CONTROL WIF	RING CON	11
FIELD DOWED WIDIN	10 00	_

FIELD POWER WIRING CONDUCTOR ON CIRCUIT BOARD \bigcirc COMPONENT CONNECTION 1/4-IN QUICK CONNECT TERMINAL

FIELD SPLICE JUNCTION PLUG RECEPTACLE

CB CIRCUIT BOARD CAPACITOR (CUAL RUN) CAP *CH CRANKCASE HEATER

* MAY BE FACTORY OR FIELD INSTALLED

NOTES:

LEGEND I

- Symbols are electrical representation only.
- Compressor and fan motor furnished with inherent thermal protection.
- To be wired in accordance with National Electric N.E.C. and local codes.

 N.E.C. class 2, 24 V circuit, min. 40 VA required, 60 VA on units installed with LLS.

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- 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. Use conductors suitable for at least 75°C (167°F).

339697-101 REV. B

CRANKCASE HEATER SWITCH

DEFROST RELAY AND CIRCUITRY

DEFROST THERMOSTAT

DISCHARGE TEMP SWITCH

HIGH PRESSURE SWITCH

LOW PRESSURE SWITCH

REVERSING VALVE SOLENOID

OUTDOOR FAN MOTOR

START CAPACITOR

START THERMISTOR

START RELAY

COMPRESSOR

CONTACTOR

DR

*DTS

*HPS

*LPS

OFM

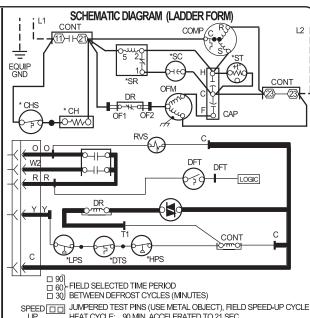
RVS

*SC

*SR

*ST





30 MIN. ACCELERATED TO 7 SEC. DEFROST CYCLE: 10 MIN. ACCELERATED TO 2 SEC. CONDENSING UNIT CHARGING INSTRUCTIONS

HEAT CYCLE: 90 MIN. ACCELERATED TO 21 SEC. 60 MIN. ACCELERATED TO 14 SEC.

For use with units using R-410A refrigerant							
REQUIRED LIQUID LINE TEMPERATURE							COOLING
Liquid Pressure at Service		Required Subcooling Temperature (°F)					CHARGING PRO 1. Only use sub cooling ch when OD ambient is gro
Valve (psig)	6	8	10	12	14	16	and less than 100°F, inc
251 259 266 274	78 80 82 84	76 78 80 82	74 76 78 80	72 74 76 78	70 72 74 76	68 70 72 74	greater than 70°F and lead line set is less than 2. Operate unit a minimum before checking the characteristics. Measure liquid service of the characteristics is serviced to the characteristics of the charac
283 291 299 308	86 88 90 92	84 86 88 90	82 84 86 88	80 82 84 86	78 80 82 84	76 78 80 82	by attaching an accurat service port. 4. Measure the liquid line attaching an accurate the
317 326 335 345	94 96 98 100	92 94 96 98	90 92 94 96	88 90 92 94	86 88 90 92	84 86 88 90	or electronic thermomei liquid line near the outd 5. Refer to unit rating plate subcooling temperature
354 364 374 384	102 104 106 108	100 102 104 106	98 100 102 104	96 98 100 102	94 96 98 100	92 94 96 98	Find the point where the subcooling temperature measured liquid service To obtain the required s
395 406 416 427	110 112 114 116	108 110 112 114	106 108 110 112	104 106 108 110	102 104 106 108	100 102 104 106	temperature at specific pressure, add refrigerar temperature is higher th When adding refrigeran
439 450 462 474	118 120 122 124	116 118 120 122	114 116 118 120	112 114 116 118	110 112 114 116	108 110 112 114	liquid form using a flow device into suction serv Recover refrigerant if te lower. Allow a tolerance
	REQUIRED Liquid Pressure at Service Valve (psig) 251 259 266 274 283 291 299 308 317 326 335 345 354 364 374 384 395 406 416 427 439 450 462	REQUIRED LIQU Liquid Pressure at Service Valve (psig) 259 266 259 266 2274 84 283 88 299 308 92 317 94 326 96 335 98 345 100 354 102 364 104 374 106 384 108 395 110 406 112 416 439 118 459 452 122	REQUIRED LIQUID LII Liquid Pressure at Service Valve (psig) 251 78 76 78 78 76 78 80 78 80 78 80 84 82 80 274 84 82 80 80 80 92 90 88 80 92 90 88 80 92 90 80 80 80 80 92 90 80 80 80 92 90 80 80 80 92 90 80 80 80 90 90 90 80 80 90 90 90 90 80 90 90 90 90 90 80 90 90 90 90 90 90 90 90 90 90 90 90 90	REQUIRED LIQUID LINE TE	REQUIRED LIQUID LINE TEMPER Liquid Pressure at Service Valve (psig)	REQUIRED LIQUID LINE TEMPERATURE Liquid Pressure at Service Valve (psig) 6	REQUIRED LIQUID LINE TEMPERATURE Liquid Pressure at Service Valve (psig) 6 8 10 12 14 16 16 16 16 16 16 16

COOLING ONLY **CHARGING PROCEDURE**

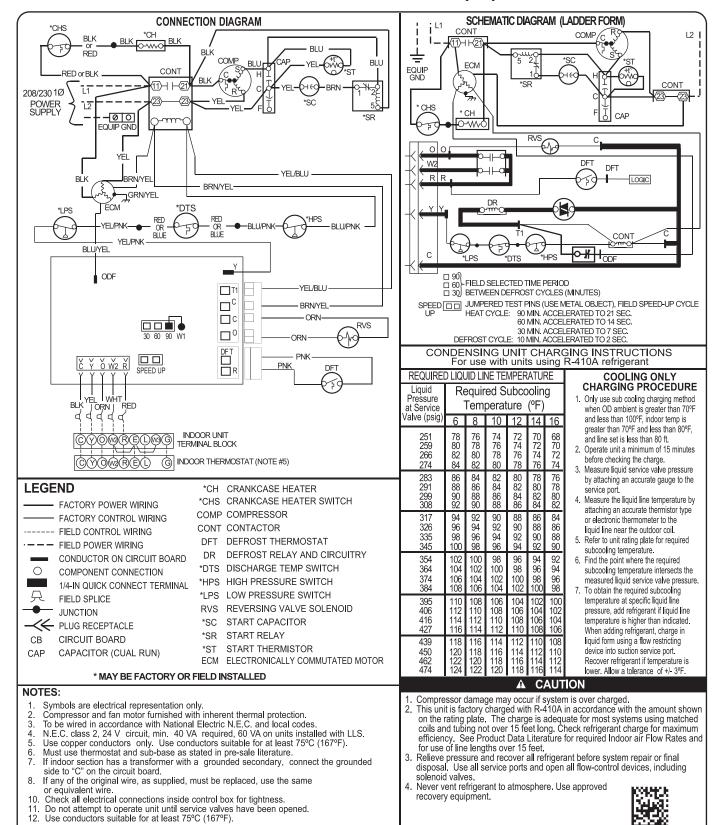
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343211-101 — NXH5 (61)



343211-101 REV.C