

SINGLE PACKAGED COOLING / ELECTRIC HEAT

4TCC3030C1000A

IMPORTANT — This document contains a wiring diagram and service information. This is customer property and is to remain with this furnace. Please return to service information pack upon completion of work.

⚠ WARNING: HAZARDOUS VOLTAGE- DISCONNECT POWER and DISCHARGE CAPACITORS BEFORE SERVICING

PRODUCT SPECIFICATIONS

MODEL	4TCC3030C1000A
RATED Volts/Ph/Hz	208-230/1/60
Performance Cooling BTUH^①	29000
Indoor Airflow (CFM)	970
Power Input (KW)	2.5
EER/SEER (BTU/Watt-Hr.) ^⑥	11.0 / 13.0
Sound Power Rating [dB(A)] ^②	70
POWER CONN.—V/Ph/Hz	208-230/1/60
Min. Brch. Cir. Ampacity ^③	15.9
Fuse Size — Max. (amps)	25
Fuse Size — Recmd. (amps)	25
COMPRESSOR	SCROLL
Volts/Ph/Hz	208-230/1/60
R.L. Amps — L.R. Amps	9.0 / 73
OUTDOOR COIL — TYPE	SPINE-FIN
Rows/F.P.I.	2 / 24
Face Area (sq.ft.)	13.32
Tube Size (in.)	3/8
INDOOR COIL — TYPE	PLATE FIN
Rows/F.P.I.	3 / 15
Face Area (sq.ft.)	3.54
Tube Size (in.)	3/8
Refrigerant Control	EXPANSION VALVE
Drain Conn. Size (in.)	3/4 FEMALE NPT
OUTDOOR FAN — TYPE	PROPELLER
Dia. (in.)	23.4
Drive/No. Speeds	DIRECT / 1
CFM @ 0.0 in. w.g. ^④	3220
Motor — HP/R.P.M.	1/6 / 830
Volts/Ph/Hz	208-230/1/60
F.L. Amps/L.R. Amps	1.0 / 1.7
INDOOR FAN — TYPE	CENTRIFUGAL
Dia x Width (in.)	10 X 10
Drive/No. Speeds	DIRECT / 3
CFM @ 0.0 in. w.g. ^⑤	SEE FAN PERF TABLE
Motor — HP/R.P.M.	1/2 / 1080
Volts/Ph/Hz	200-230/1/60
F.L. Amps/L.R. Amps	2.0 / 4.4
FILTER / FURNISHED	NO
Type Recommended	THROWAWAY
Recmd. Face Area (sq. ft.) ^⑦	4.0
REFRIGERANT	R-410
Charge (lbs.)	6.0
DIMENSIONS	H X D X W
Crated (in.)	45.86 / 44.5 / 52.03
WEIGHT	
Shipping (lbs.) / Net (lbs.)	445 / 349

① Rated in accordance with AHRI Standard 210/240.

② Sound Power values are not adjusted for AHRI 270-95 tonal corrections.

③ Calculated in accordance with currently prevailing Nat'l Electrical Code.

④ Standard Air -- Dry Coil -- Outdoor.

⑤ Standard Air -- Dry Coil -- Indoor.

⑥ Rated in accordance with D.O.E. test procedure.

⑦ Filters must be installed in return air stream. Square footages listed are based on 300 f.p.m. face velocity. If permanent filters are used size per manufacturer's recommendation with a clean resistance of 0.05" W.C.

⚠ WARNING

THIS INFORMATION IS FOR USE BY INDIVIDUALS HAVING ADEQUATE BACKGROUNDS OF ELECTRICAL AND MECHANICAL EXPERIENCE. ANY ATTEMPT TO REPAIR A CENTRAL AIR CONDITIONING PRODUCT MAY RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE. THE MANUFACTURER OR SELLER CANNOT BE RESPONSIBLE FOR THE INTERPRETATION OF THIS INFORMATION, NOR CAN IT ASSUME ANY LIABILITY IN CONNECTION WITH ITS USE.

⚠ CAUTION

RECONNECT ALL GROUNDING DEVICES. All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

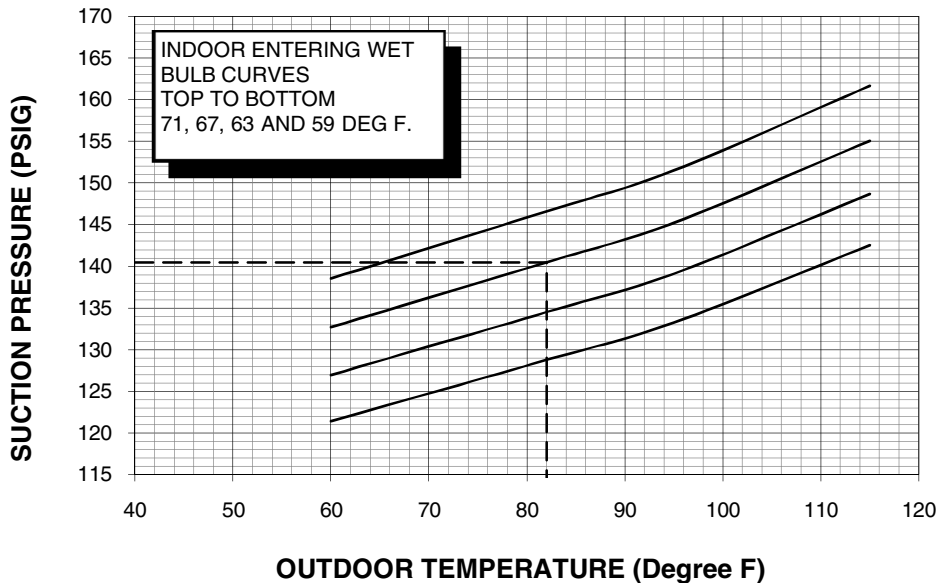
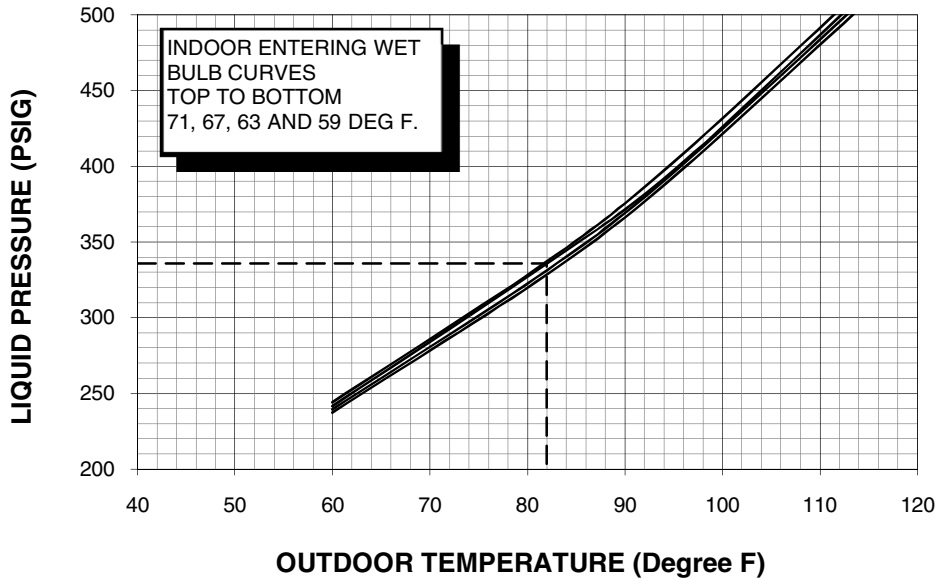
⚠ CAUTION

CONTAINS REFRIGERANT! SYSTEM CONTAINS OIL AND REFRIGERANT UNDER HIGH PRESSURE. RECOVER REFRIGERANT TO RELIEVE PRESSURE BEFORE OPENING SYSTEM. Failure to follow proper procedures can result in personal illness or injury or severe equipment damage.

Service Facts

PRESSURE CURVES FOR 4TC*3030C1 1010 CFM

Cooling with Thermal Expansion Valve



COOLING PERFORMANCE CAN BE CHECKED WHEN THE OUTDOOR TEMP IS ABOVE 65 DEG F.

TO CHECK COOLING PERFORMANCE, SELECT THE PROPER INDOOR CFM, ALLOW PRESSURES TO STABILIZE. MEASURE INDOOR WET BULB TEMPERATURE, OUTDOOR TEMPERATURE, LIQUID AND SUCTION PRESSURES. ON THE PLOTS LOCATE OUTDOOR TEMPERATURE (1); LOCATE INDOOR WET BULB (2); FIND INTERSECTION OF OD TEMP. & ID W.B. (3); READ LIQUID (4) OR SUCTION (5) PRESSURE IN LEFT COLUMN.

EXAMPLE: (1) OUTDOOR TEMP. 82 F.

(2) INDOOR WET BULB 67 F.

(3) AT INTERSECTION

(4) LIQUID PRESSURE @ 1010 CFM CFM IS 336 PSIG

(5) SUCTION PRESSURE @ 1010 CFM CFM IS 140 PSIG

ACTUAL:

LIQUID PRESSURE SHOULD BE +/- 10 PSI OF CHART

SUCTION PRESSURE SHOULD BE +/- 3 PSIG OF CHART

DWG.NO. 4TC*3030C1

Sequence of Operation

General

Operation of the system cooling (and optional heating) cycles is controlled by the the comfort control. Once the comfort control is set to either the HEAT or COOL, unit operation is automatic. The optional automatic changeover comfort control, when set to AUTO, automatically changes to heat or cool with sufficient room temperature change.

With the unit disconnect closed, voltage is supplied to the unit control transformer and the crankcase heater (if provided). On single phase units, the crankcase heater is an option that is field installed.

Cooling Mode

With the comfort control set to COOL and the fan set to AUTO, the compressor contactor (CC) and the indoor fan motor (IDM) are energized.

The energized compressor contactor (CC) completes the circuit to the compressor (CPR) and a secondary circuit to the outdoor fan motor (ODM). If the compressor safety controls are closed, the compressor (CPR) will operate with the outdoor fan motor (ODM). The indoor fan motor (IDM) will operate. The comfort control will continue to cycle the compressor and fans to maintain the desired temperature.

With the fan switch set to ON, the indoor fan motor (IDM) will continue to run regardless of compressor and condenser fan operation. Continuous fan mode during cooling operation may not be appropriate in humid climates. If the indoor air exceeds 60% relative humidity or simply feels uncomfortably humid, it is recommended that the fan only be used in the AUTO mode.

Indoor Fan Performance 4TC*3030C1

230v performance

Horizontal Airflow

4TC*3030C1-HOR		EXTERNAL STATIC PRESSURE (IN. WG)										
MOTOR SPEED		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
LOW	WATTS	275	267	263	258	248	-	-	-	-	-	-
	CFM	992	930	881	823	746	-	-	-	-	-	-
MEDIUM	WATTS	350	342	334	324	311	296	280	-	-	-	-
	CFM	1164	1120	1067	1002	921	826	720	-	-	-	-
HIGH	WATTS	-	-	572	558	542	523	501	473	-	-	-
	CFM	-	-	1463	1390	1306	1210	1088	912	-	-	-

Down Airflow

4TC*3030C1-DOWN		EXTERNAL STATIC PRESSURE (IN. WG)										
MOTOR SPEED		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
LOW	WATTS	275	270	264	256	245	-	-	-	-	-	-
	CFM	974	910	861	800	716	-	-	-	-	-	-
MEDIUM	WATTS	352	341	332	323	312	298	283	-	-	-	-
	CFM	1151	1096	1039	977	903	812	698	-	-	-	-
HIGH	WATTS	-	-	574	552	533	517	498	466	-	-	-
	CFM	-	-	1434	1337	1243	1151	1036	842	-	-	-

Heating Mode

Heating mode uses electric heaters, which are installed separately. Refer to the Supplemental Electric Heaters Installer's Guide for additional information.

On a call for heat, power from the comfort control is received at "W1", which energizes the "AH" contactor coil. The "AH" contactor closes, powering the heater provided all element limits are closed.

If two stages of heat are provided and additional heat is required, the comfort control's second stage "W2" circuit is energized powering the "BH" contactor coil.

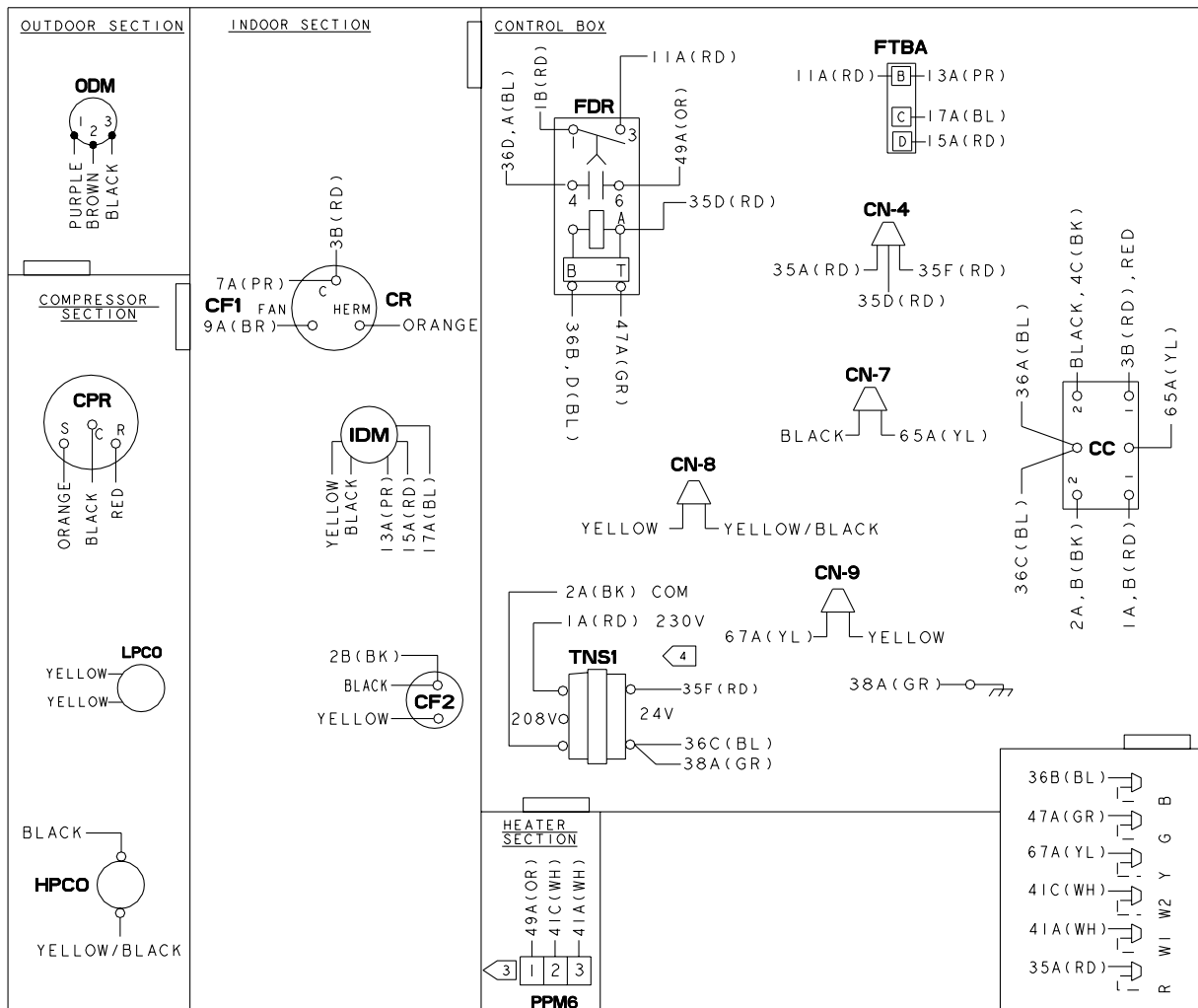
Note: The comfort control must be configured to provide a "G" signal to energize the indoor fan relay (F) during the heating mode. The heater control circuit will not be energized unless the indoor fan relay (F) is energized.

Pressure Drop for Electric Heater

AIR-FLOW CFM	NUMBER OF RACKS	
	1	2
	AIR PRESSURE DROP INCHES W.G.	
600	.003	----
800	.004	----
1000	.005	.007
1200	.006	.008
1400	.007	.009
1600	.008	.01
2000	.01	.02

From Dwg. No. 21A730642

Service Facts



NOTES:

- 1 CONNECTIONS SHOWN ARE FOR A TYPICAL THERMOSTAT. SEE SCHEMATIC SUPPLIED WITH THERMOSTAT FOR PROPER CONNECTIONS. LOW VOLTAGE WIRING TO UNIT MAY BE NEC CLASS 2 AND MUST BE A MIN. OF 18 A.W.G.
2. MAXIMUM ADDITIONAL EXTERNAL LOAD (PILOT DUTY) BETWEEN "B" AND "R" OF 0.5 AMPS, 24 VAC IS AVAILABLE WHEN A HEATER IS INSTALLED.
- 3 SEE WIRING DIAGRAM WITH HEATER FOR DETAILS OF HEATER WIRING
- 4 FOR 208 VOLT OPERATION MAKE THE FOLLOWING WIRING CHANGES:
A: AT COMPRESSOR CONTACTOR REMOVE IC(RD) WIRE FROM TNS1 AND CONNECT TO TNS1 AT 208V TERMINAL.
5. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED IN THIS UNIT MUST BE REPLACED, REPLACE IT WITH APPLIANCE WIRING MATERIAL RATED AT 105° C.

WIRE COLOR DESIGNATION			
ABBR	COLOR	ABBR	COLOR
BK	BLACK	PR	PURPLE
BL	BLUE	RD	RED
BR	BROWN	WH	WHITE
GR	GREEN	YL	YELLOW
OR	ORANGE		

DEVICE	DESCRIPTION	LINE
AH, BH	CONTACTOR, ELECTRIC HEAT	39, 40
CC	COMPRESSOR CONTACTOR COIL	43
CF1	OUTDOOR FAN CAPACITOR	19
CF2	INDOOR MOTOR CAPACITOR	26
CN	CONNECTOR OR WIRE NUT	
CPR	COMPRESSOR	18
CR	COMPRESSOR RUN CAPACITOR	19
FDR	INDOOR FAN DELAY RELAY	44
FTB	FAN TERMINAL BLOCK	28, 29
IDM	INDOOR FAN MOTOR	28
IOL	INTERNAL OVERLOAD	
ODM	OUTDOOR FAN MOTOR	22
PCD	PRINTED CIRCUIT BOARD	45-47
PPM6	HEATER PLUG (FEMALE)	39, 40
TNS1	CONTROL POWER TRANSFORMER	34
HPCO	HIGH PRESSURE SWITCH	43
LPCO	LOW PRESSURE SWITCH	43

IMPORTANT — Retain this wiring diagram; please return this document to service information pack upon completion of work.

1 CAUTION-NOT SUITABLE FOR USE ON
2 SYSTEMS EXCEEDING 150 VOLTS TO
3 GROUND.
4 ATTENTION: NE CONVIENT PAS POUR
5 LES INSTALLATIONS DE PLUS DE
6 150V. A TERRE.

6 UNIT FACTORY WIRED
7 FOR 230V
8 SEE WIRING DIAGRAM NOTES FOR
9 REQUIRED WIRING CHANGES WHEN
10 INSTALLED ON A 208V POWER SUPPLY.

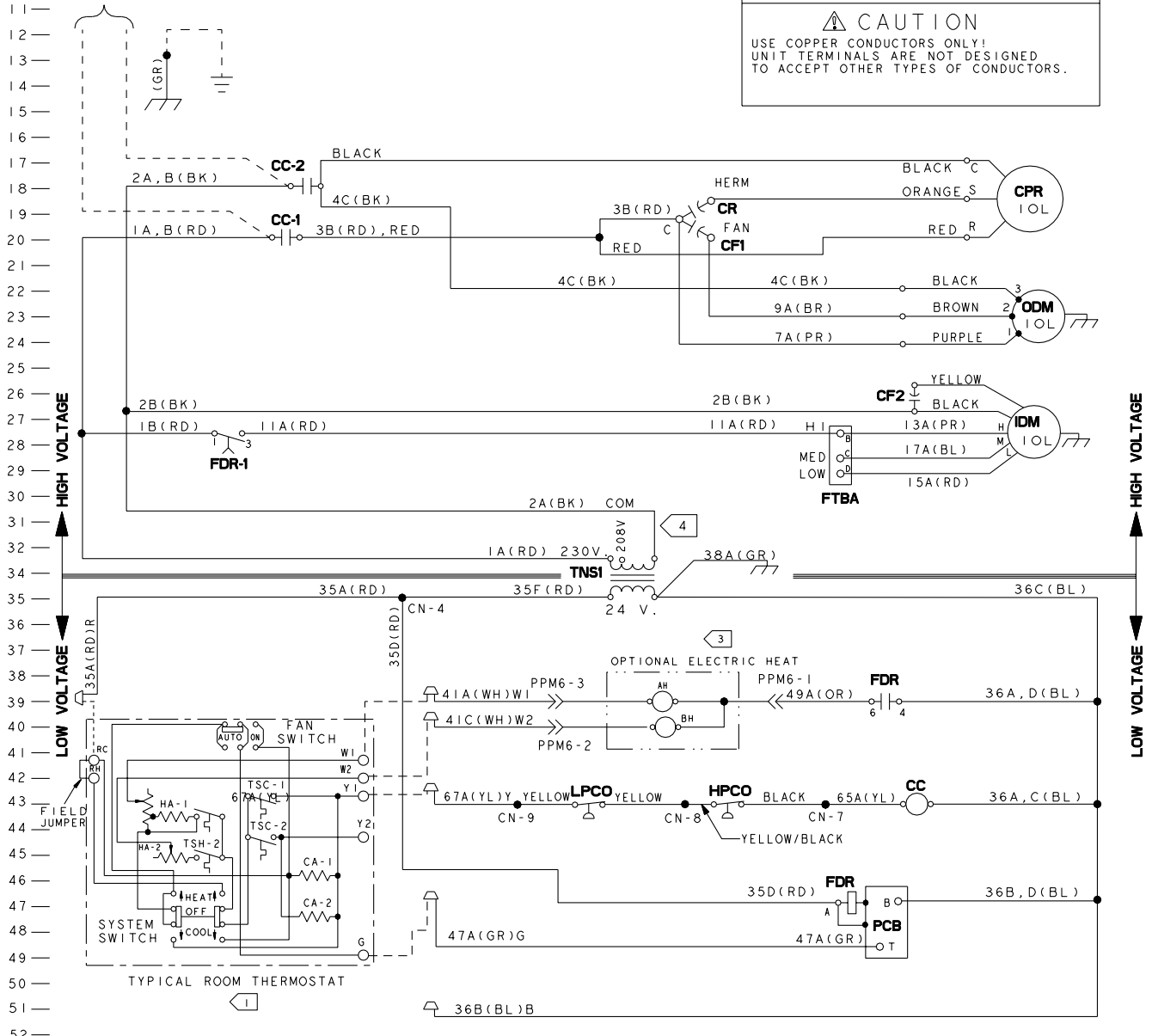
10 POWER SUPPLY PER LOCAL CODES
11 SEE NAMEPLATE FOR LINE VOLTAGE.

MODELS
4TC*3030C1

WARNING
HAZARDOUS VOLTAGE!
DISCONNECT ALL ELECTRIC POWER
INCLUDING REMOTE DISCONNECTS
BEFORE SERVICING.
FAILURE TO DISCONNECT POWER SUPPLY
BEFORE SERVICING CAN CAUSE SEVERE
PERSONAL INJURY OR DEATH.

AVERTISSEMENT
VOLTAGE HASARDEUX!
DECONNECTEZ TOUTES LES SOURCES
ELECTRIQUES INCLUANT LES DISJONCTEURS
SITUES A DISTANCE AVANT D'EFFECTUER
L'ENTRETIEN. FAUTE DE DECONNECTER
LA SOURCE ELECTRIQUE AVANT D'EFFECTUER
L'ENTRETIEN PEUT ENTRAINER DES
BLESSURES CORPORELLES SEVERES
OU LA MORT.

CAUTION
USE COPPER CONDUCTORS ONLY!
UNIT TERMINALS ARE NOT DESIGNED
TO ACCEPT OTHER TYPES OF CONDUCTORS.



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Service Facts

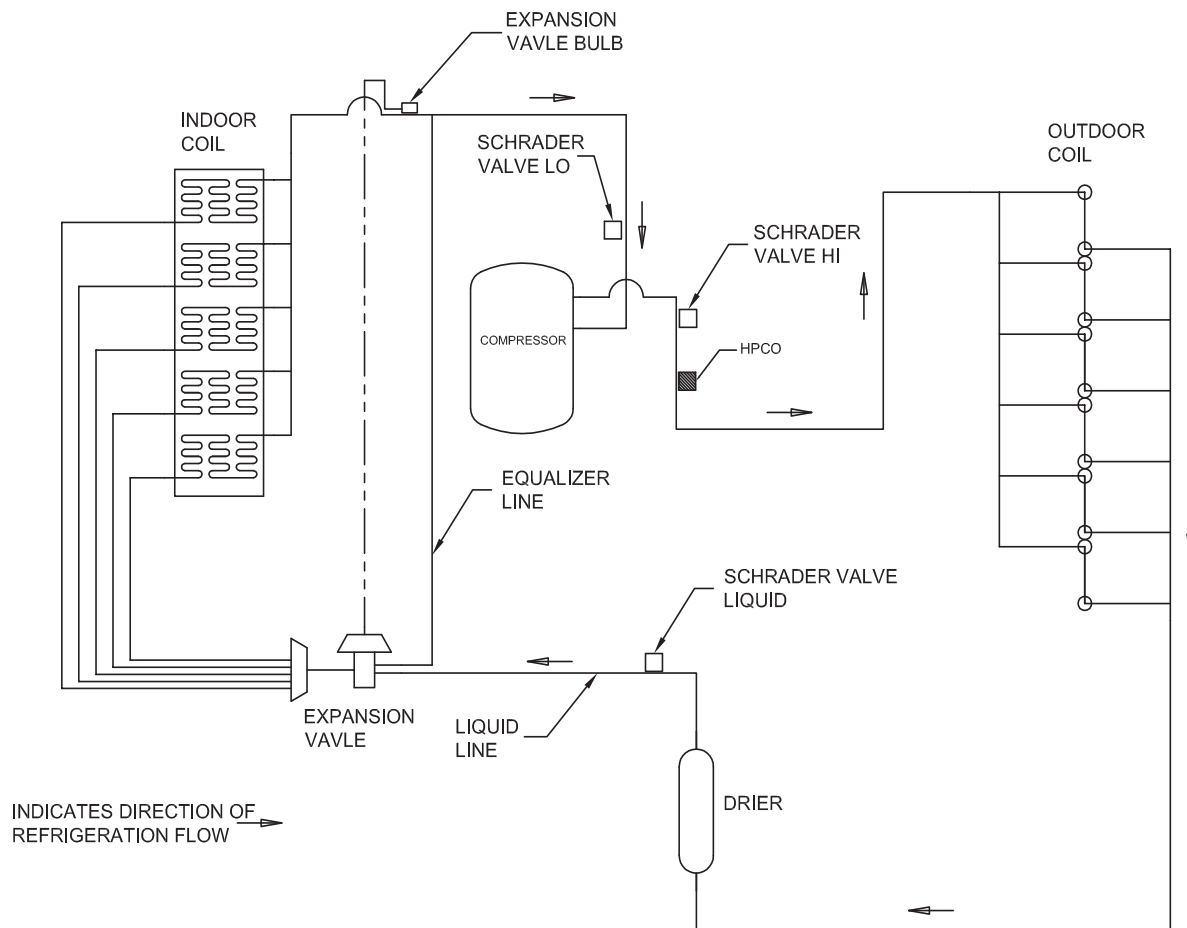
CHARGING IN COOLING ABOVE 55°F OD AMBIENT

The preferred method is to weigh in the factory charge per the unit nameplate. If weighing in the charge is not practical, the following method can be used. The following charging method is prescribed for systems with indoor TXVs.

1. For best results – the indoor temperature should be kept between 70°F to 80°F. Add system heat if needed.
2. Whenever charge is removed or added, the system must be operated for a minimum 20 minutes to stabilize before accurate measurements can be made.
3. Measure Liquid Line Temperature and Refrigerant Pressure at service valves in the compressor compartment.
4. Locate your liquid line temperature in the left column of the table, and the intersecting liquid line pressure under the subcool value column. Add refrigerant to raise the pressure to match the table, or remove refrigerant to lower the pressure. Again, wait 20 minutes for the system conditions to stabilize before adjusting charge again.
5. When system is correctly charged, you can refer to System Pressure Curves (on page 2) to verify typical performance.

R-410A Subcooling Charging Table	
15 (°F) Subcooling	
Liquid Temperature (°F)	Liquid Pressure PSIG
55	200
60	217
65	235
70	254
75	274
80	295
85	317
90	340
95	364
100	390
105	417
110	445
115	475
120	506
125	538

Cooling Refrigeration Cycle



Troubleshooting Chart

SYSTEM FAULTS	HIGH VOLTAGE WIRING POWER SUPPLY	COMPR. IOL	START CAPACITOR	START RELAY	CONTROL CONTACTS	LOW VOLTAGE WIRING	CONTACTOR TRANSFORMER	LOW VOLTAGE WIRING	STUCK COMPRESSOR	INEFFICIENT COMPRESSOR	REFRIGERANT UNDERCHARGE	EXCESSIVE OVERCHARGE	REFRIGERANT UNDERCHARGE	NONCONDENSABLES	O.D. AIR RECIRCULATION	O.D. AIR RECIRCULATION	TXV STUCK OPEN	REF. CIRCUIT RESTRICTIONS	RESTRICTED I.D. AIRFLOW	SUPERHEAT	
REFRIGERANT CIRCUIT																					
Liquid Pressure Too high																	P	S	P	S	
Liquid Pressure Too Low													S	P					S	S	S
Suction Pressure Too High													S	P	P				S	P	
Suction Pressure Too Low													S						S	P	S
Liquid Refrigerant floodback (TXV System)																			S	S	
Liquid Refrig. floodback (Cap. Tube System)														P			S	S		S	P
I. D. Coil Frosting													P							P	S
Compressor Runs Inadequate or No Cooling													S	P	P	S			S	P	S
ELECTRICAL																					
Compressor & O.D. fan Do Not Start	P	P						S	P	P	P										
Compressor Will Not Start But O.D. Fan Runs	P	S	P	P	P						S										
O.D. Fan Won't Start	P		P																		
Compressor Hums But Will Not Start	P		P	P	P	S					S										
Compressor Cycles on IOL	P	S	P	P	P	S					P	S	P	S	S		S			S	S
I.D. Blower Won't Start	P	S					S	P		P											

P-PRIMARY CAUSES S-SECONDARY CAUSES

X664390

Trane
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