



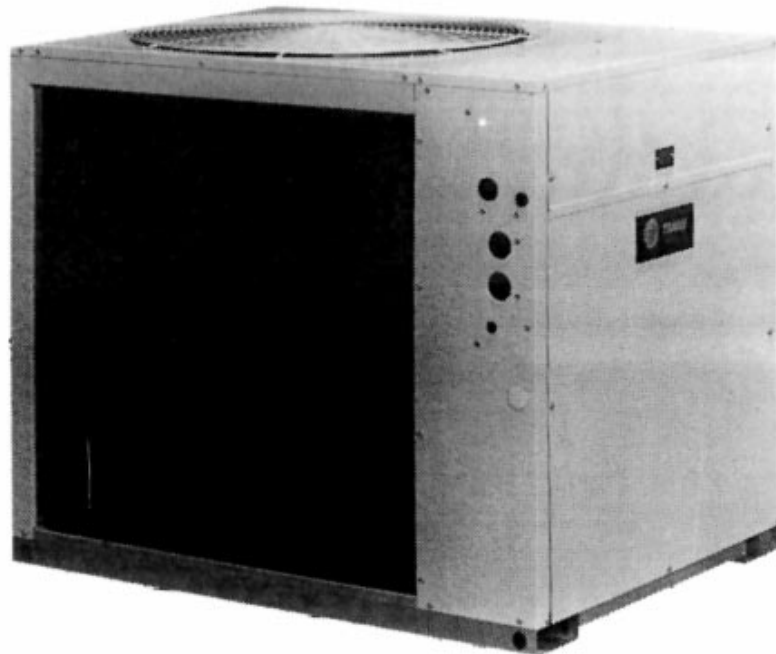
TRANE™

Wiring

CGA-W-4

Library	Service Literature
Product Section	Refrigeration
Product	Recip. Liquid Chillers - A/C Cold Generators
Model	CGA
Literature Type	Unit Wiring
Sequence	4
Date	October 1998
File No.	SV-RF-CG-CGA-W-4-10/98
Supersedes	New

**10 and 15 ton
Air-Cooled
Cold Generators®**



Models

- CGA 120 B ___ D _
- CGA 180 B ___ C _

Since the Trane Company has a policy of continuous product improvement, it reserves the right to change specifications and design without notice. The installation and servicing of the equipment referred to in this booklet should be done by qualified, experienced technicians.

CGA 120B and 180B Unit Wiring Manual

Table of Contents

02	Literature Change History
03	Model Number Description
04	CGA120B1 (208-230V/60/1) Schematic
06	CGA120B1 (208-230V/60/1) Connection
08	CGA120B3 (208-230V/60/3) Schematic
10	CGA120B3 (208-230V/60/3) Connection
12	CGA120B4 (460V/60/3) Schematic
	CGA120BW (575V/60/3) Schematic
14	CGA120B4 (460V/60/3) Connection
	CGA120BW (575V/60/3) Connection
16	CGA180B3 (208-230V/60/3) Schematic
18	CGA180B3 (208-230V/60/3) Connection
20	CGA180B4 (460V/60/3) Schematic
	CGA180BW (575V/60/3) Schematic
22	CGA180B4 (460V/60/3) Connection
	CGA180BW (575V/60/3) Connection

Literature Change History

CGA-W-3 (July 1994)
Original issue of manual; provides typical field and control panel connection diagrams and electrical schematics for 10 and 15 ton CGA units of "C" design. (See digit 11 of the unit model number.)

Warnings and Cautions

Notice that Warnings and Cautions appear at appropriate intervals throughout this manual.

Warnings are provided to alert installing contractors and operating or service personnel to potential hazards that could result in personal injury or death, while Cautions are intended to alert personnel to conditions, that could result in equipment damage.

Your personal safety and the proper operation of this system depend upon the strict observance of these precautions.

Model Number Description

All standard Trane products are identified by a multiple-character model number that precisely identifies a particular type of unit. An explanation of the alphanumeric identification codes used for CGA units is provided on this page. Its use will enable the owner/operator, installing contractors, and service engineers to define the operation, components and options for any specific unit.

<u>C</u>	<u>G</u>	<u>A</u>	<u>1</u>	<u>2</u>	<u>0</u>	<u>B</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>C</u>	<u>A</u>
1	2	3	4	5	6	7	8	9	10	11	12

Digits 1,2,3

Unit Model

CGA = Cold Generator

Digits 4,5,6

Nominal Capacity

120 = 10 Tons

180 = 15 Tons

Digit 7

Form or Configuration

(Number of Refrigerant Circuits/
Number of Compressors)

B = 2 Ref. Ckts/ 2 Compr.

Digit 8

Voltage

1 = 208-230V/60Hz/1 *

3 = 208-230V/60Hz/3

4 = 460V/60Hz/3

W = 575V/60Hz/3

D = 380-415V/50Hz/3

* = Not Available on CGA180 Units

Digit 9

Factory Installed Options

O = No Options

H = Hot Gas Bypass

C = Chromate Coil

K = Hot Gas Bypass
and Chromate Coil

Digit 10

Expansion Valve

O = Standard Expansion Valve

V = Low Leaving Water Temp
Expansion Valve

Digit 11

Major Design Change

C

Digit 12

Service Digit/Minor Design Change

- NOTES:
- UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25°C (77°F), AT ATMOSPHERIC PRESSURE, AND WITH THE POWER OFF. ALL UTILITIES TURNED OFF AND AFTER A 10 MINUTE NORMAL SHUTDOWN HAS OCCURRED.
 - DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. DASHED LINE ENCLOSURES COMPONENTS PROVIDED BY THE FIELD. PHANTOM WIRING IS SHOWN WITH DASHED LINES. PHANTOM CONSTRUCTION INDICATED BY AVAILABLE FIELD INSTALLED ACCESSORIES. SOLID LINE INDICATES WIRING BY TRANE CO.
 - NUMBERS ALONG THE RIGHT SIDE OF THE WIRING DIAGRAM INDICATE THE FIELD CONTACTS BY LINE NUMBER AND UNDERLINED CONTACTS INDICATE CONTACTS UNDER THE CONTACT POINTS. CONTACTS UNDER THE CONTACT POINTS ARE OPEN ARROWS. CONTACTS UNDER THE CONTACT POINTS ARE CLOSED ARROWS. CONTACTS UNDER THE CONTACT POINTS ARE OPEN ARROWS. CONTACTS UNDER THE CONTACT POINTS ARE CLOSED ARROWS. CONTACTS UNDER THE CONTACT POINTS ARE OPEN ARROWS. CONTACTS UNDER THE CONTACT POINTS ARE CLOSED ARROWS.

- FOR CANADIAN INSTALLATION (CSA) ONLY. LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.
- WHEN ICS INTERFACE ACCESSORY IS INSTALLED, AND LTB-11 & LTB-12.
- CONNECTIONS FROM ARE FOR DRV OPERATION AND ORANGE TRANSFORMER IS REQUIRED. SWITCH RED AND ORANGE TRANSFORMER LEADS AROUND AT THE TRANSFORMER TO TERMINAL BOARD. REQUIRE LEAD TO AVOID ACCIDENTLY SHORTING AT TERMINAL BOARD TO TERMINAL BOARD.
- LOW VOLTAGE WIRING MUST BE 18 AWG MINIMUM ONLY.
- ALTERNATE CONSTRUCTION (FACTORY INSTALLED ONLY).
- ACCESSORY (IF FIELD INSTALLED ONLY).
- TIM-E IS NOT INCLUDED IN THE ICS INTERFACE ACCESSORY.

WIRE COLOR	ABBREV	DESCRIPTION
BLACK	BLK	BLACK
BROWN	BRN	BROWN
RED	RED	RED
WHITE	WHI	WHITE
YELLOW	YLW	YELLOW

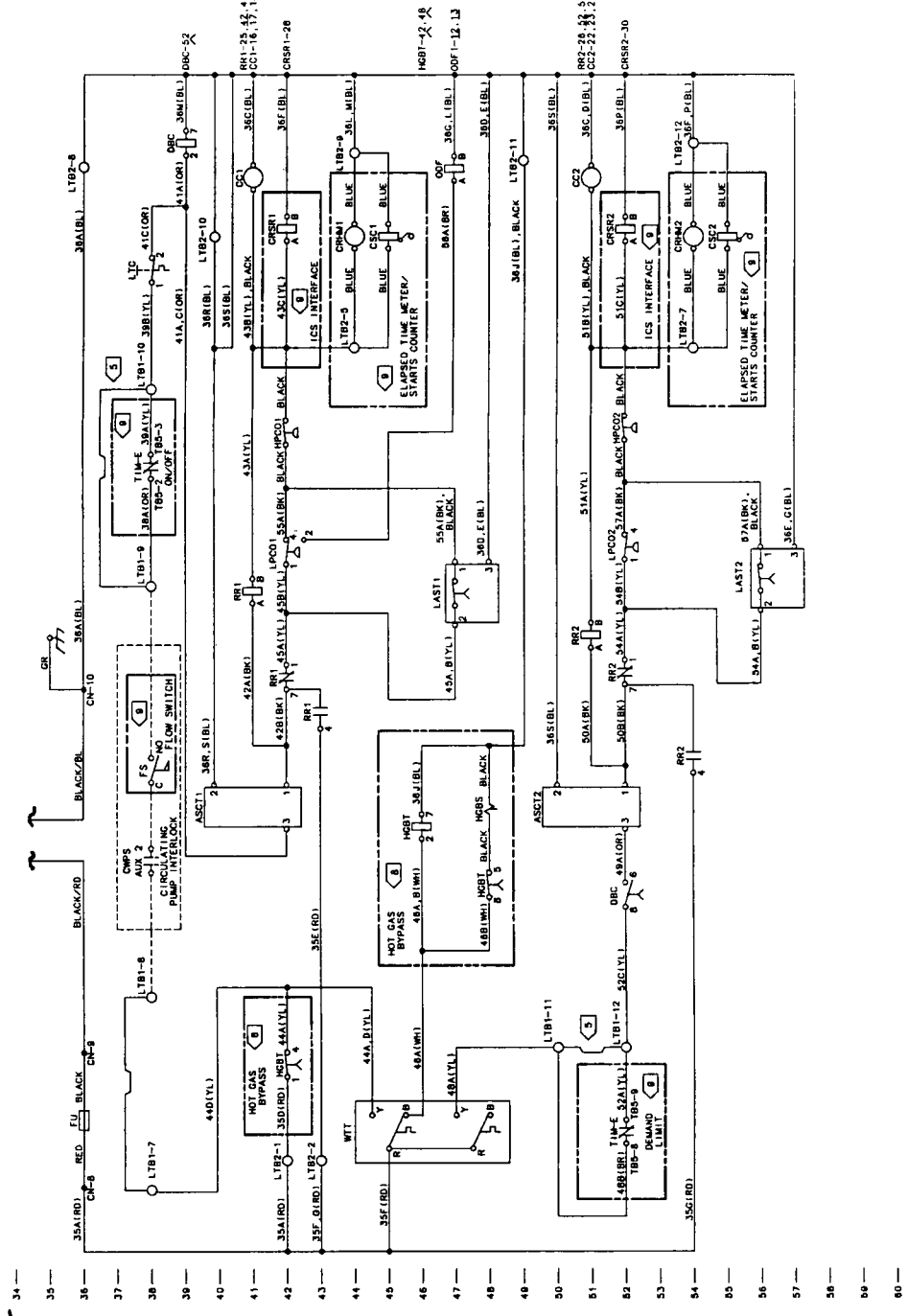
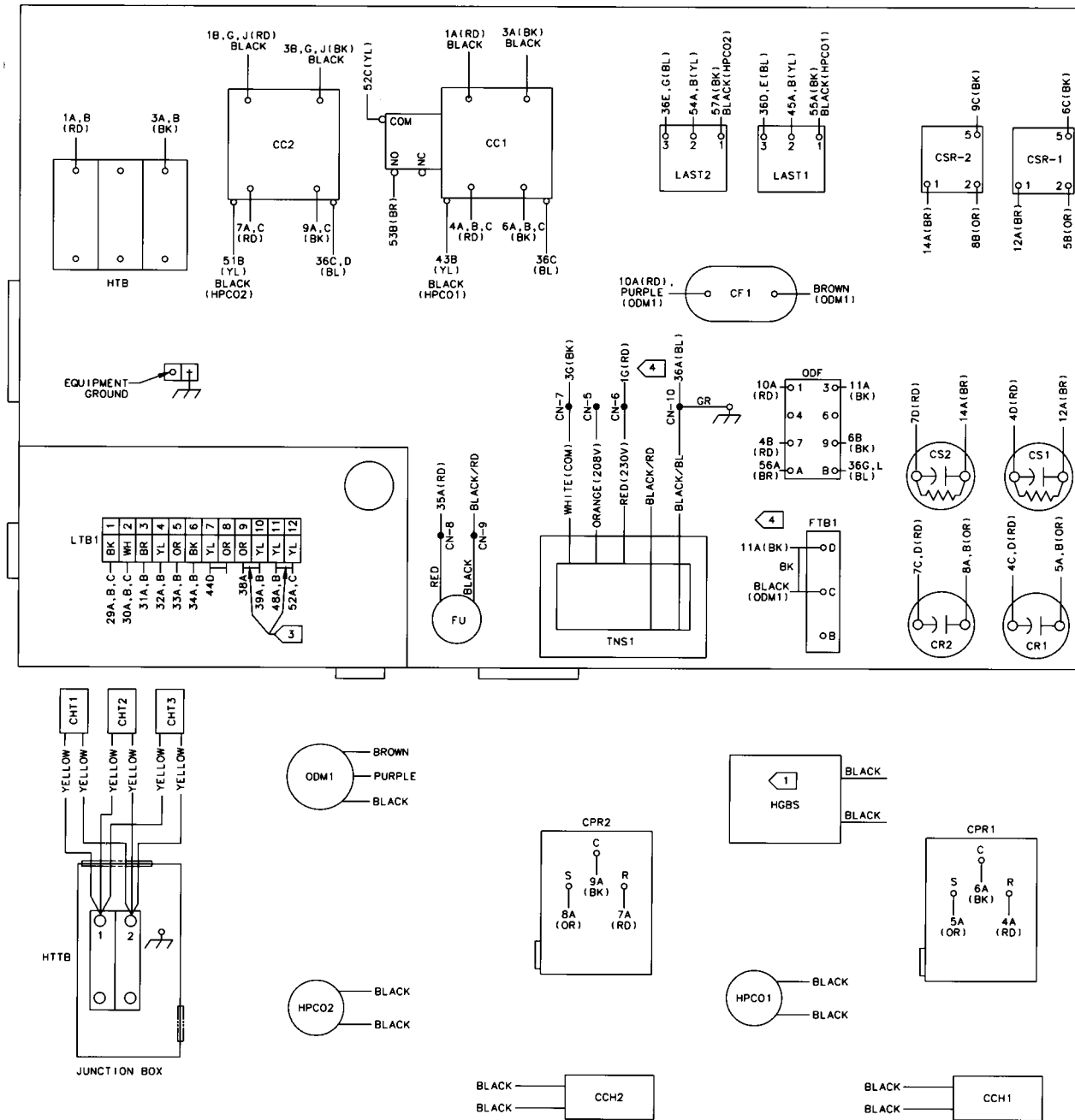
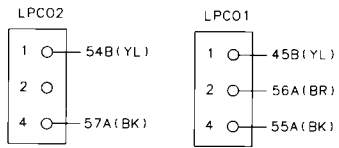
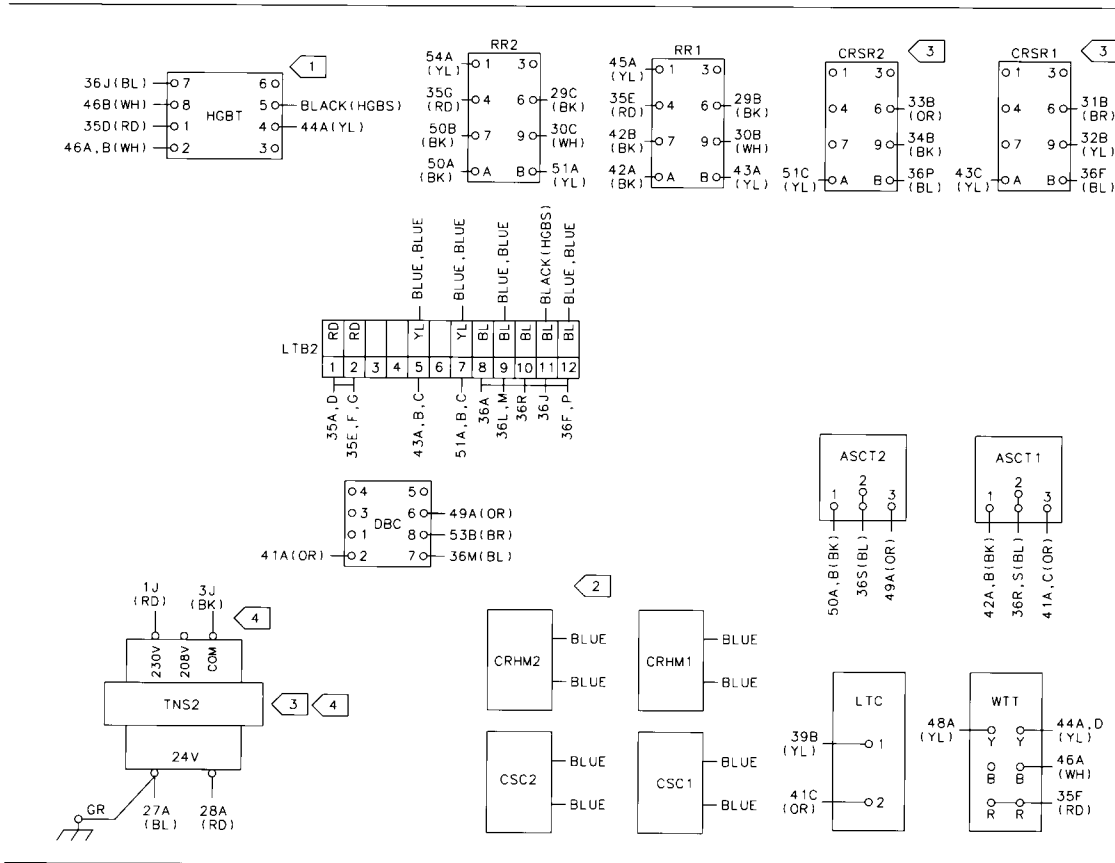


Figure 2
CGA120B1
(208-230V/60/1) Connection Diagram

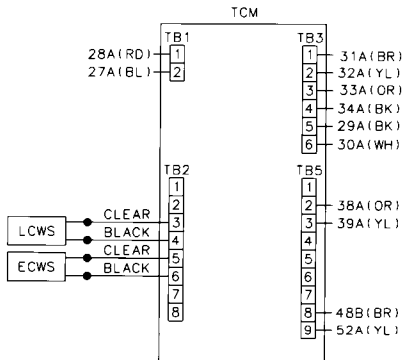
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NOTES:

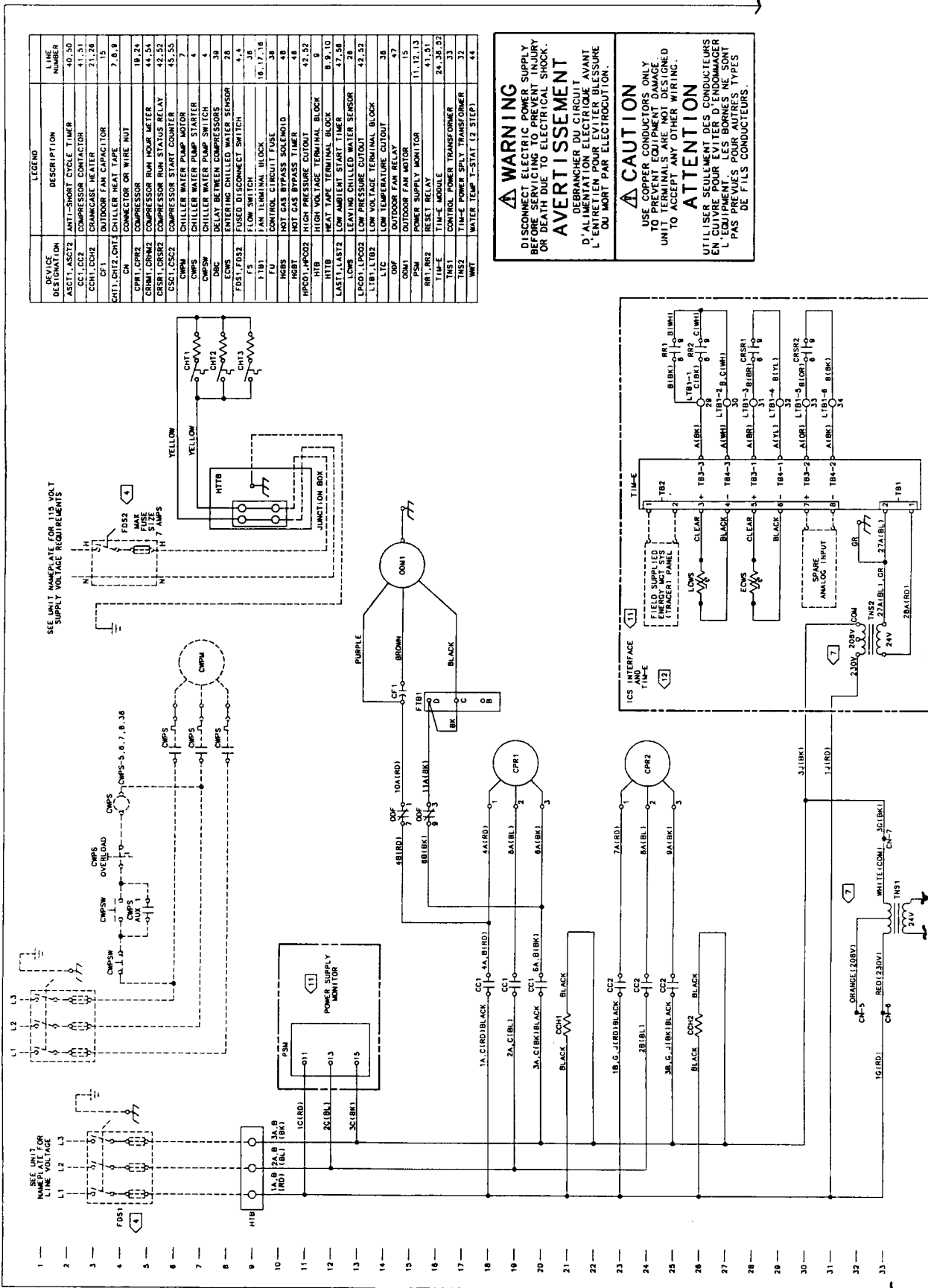
- HOT GAS BYPASS ALTERNATE CONSTRUCTION INCLUDES HGBT, HGBS AND ASSOCIATED WIRING (FACTORY INSTALLED ONLY).
- FIELD INSTALLED ELAPSED TIME METER AND START COUNTER ACCESSORIES.
- FIELD INSTALLED INTEGRATED COMFORT SYSTEM INTERFACE ACCESSORY. REMOVE JUMPERS BETWEEN LTB1-9 & LTB1-10 AND LTB1-11 & LTB1-12 WHEN INSTALLED.
- CONNECTIONS SHOWN ARE FOR 230V OPERATION. WHEN 208V OPERATION IS REQUIRED, SWITCH RED AND ORANGE TRANSFORMER LEADS AROUND AT TRANSFORMER TNS1. INSULATE TNS1 RED WIRE LEAD TO AVOID ACCIDENTLY SHORTING. AT TRANSFORMER TNS2, SWITCH WIRE 1J(RD) FROM TERMINAL 230V TO TERMINAL 208V.



<p>⚠ WARNING</p> <p>DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.</p> <p>AVERTISSEMENT</p> <p>DEBRANCHER DU CIRCUIT D'ALIMENTATION ELECTRIQUE AVANT L'ENTRETIEN POUR EVITER BLESSURE OU MORT PAR ELECTROCUTION.</p>	<p>⚠ CAUTION</p> <p>USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.</p> <p>ATTENTION</p> <p>UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE POUR EVITER D'ENDOMMAGER L'EQUIPEMENT. LES BORNES NE SONT PAS PREVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.</p>
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Figure 3
CGA120B3
(208-230V/60/3) Schematic Diagram

(Continued on next page)



WARNING
 DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.

AVERTISSEMENT
 DÉBRANCHER DU CIRCUIT ÉLECTRIQUE AVANT DE RÉPARER POUR ÉVITER BLESSURE OU MORT PAR ÉLECTROCUTION.

CAUTION
 USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.

ATTENTION
 UTILISER SEULEMENT DES CONDUCTEURS EN CUivre POUR ÉVITER D'ENDOMMAGER L'ÉQUIPEMENT. LES BORNES NE SONT PAS PRÉVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.

- NOTES:
1. UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25°C (77°F) AT ATMOSPHERIC HUMIDITY WITH PRESSURE AT 50% RELATIVE HUMIDITY. AFTER A NORMAL SHUTDOWN HAS OCCURRED.
 2. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. DASHED LINE ENCLOSURES INDICATE RECOMMENDED FIELD WIRING COMPONENTS PROVIDED BY THE FIELD. PNEUMATIC LINE ENCLOSURES INDICATE ALTERNATE FIELD INSTALLED ACCESSORIES. SOLID LINE INDICATES WIRING BY FRAME CO.
 3. NUMBERS ALONG THE RIGHT SIDE OF THE DIAGRAM INDICATE THE LINE NUMBER ON UNDERLINE CONTACTS BY LINE NUMBER. A NORMALLY CLOSED CONTACT IS INDICATED BY A LINE NUMBER POINTING UPWARD. INDICATES A NORMALLY OPEN CONTACT WHICH BEGINS TIMING WHEN ENERGIZED.

4. LOC CHANGING INSTALLATION (CSA) ONLY. SINGLE POWER SOURCE DISCONNECTING MEANS.
5. WHEN POWER SUPPLY MONITOR ACCESSORY IS INSTALLED, REMOVE JUMPER BETWEEN LTB1-7 AND LTB1-8.
6. WHEN ICS INTERFACE ACCESSORY IS INSTALLED, AND LTB1-11 & 12.
7. CONNECTIONS SHOWN ARE FOR 230V OPERATION. WHEN 208V OPERATION IS REQUIRED, SWITCH RED AND ORANGE TRANSFORMER LEADS AROUND AT THE TERMINAL BOARD TO ACCIDENTLY SHORTING AT THE TERMINAL BOARD. TERMINAL 208V. TERMINAL 208V.
8. ALL THREE PHASE MOTORS SUPPLIED WITH THE PRIMARY SINGLE PHASE FAILURE CONDITIONS.
9. LOW VOLTAGE WIRING MUST BE 18 AWG MINIMUM.
10. ALTERNATE CONSTRUCTION (FACTORY INSTALLED ONLY).
11. ACCESSORY (FIELD INSTALLED ONLY).
12. TIME IS NOT INCLUDED IN THE ICS INTERFACE ACCESSORY.

WIRE COLOR	DESIGNATION
BRN	BROWN
BLK	BLACK
BLU	BLUE
BRN	BROWN
GRN	GREEN
WHI	WHITE
YEL	YELLOW

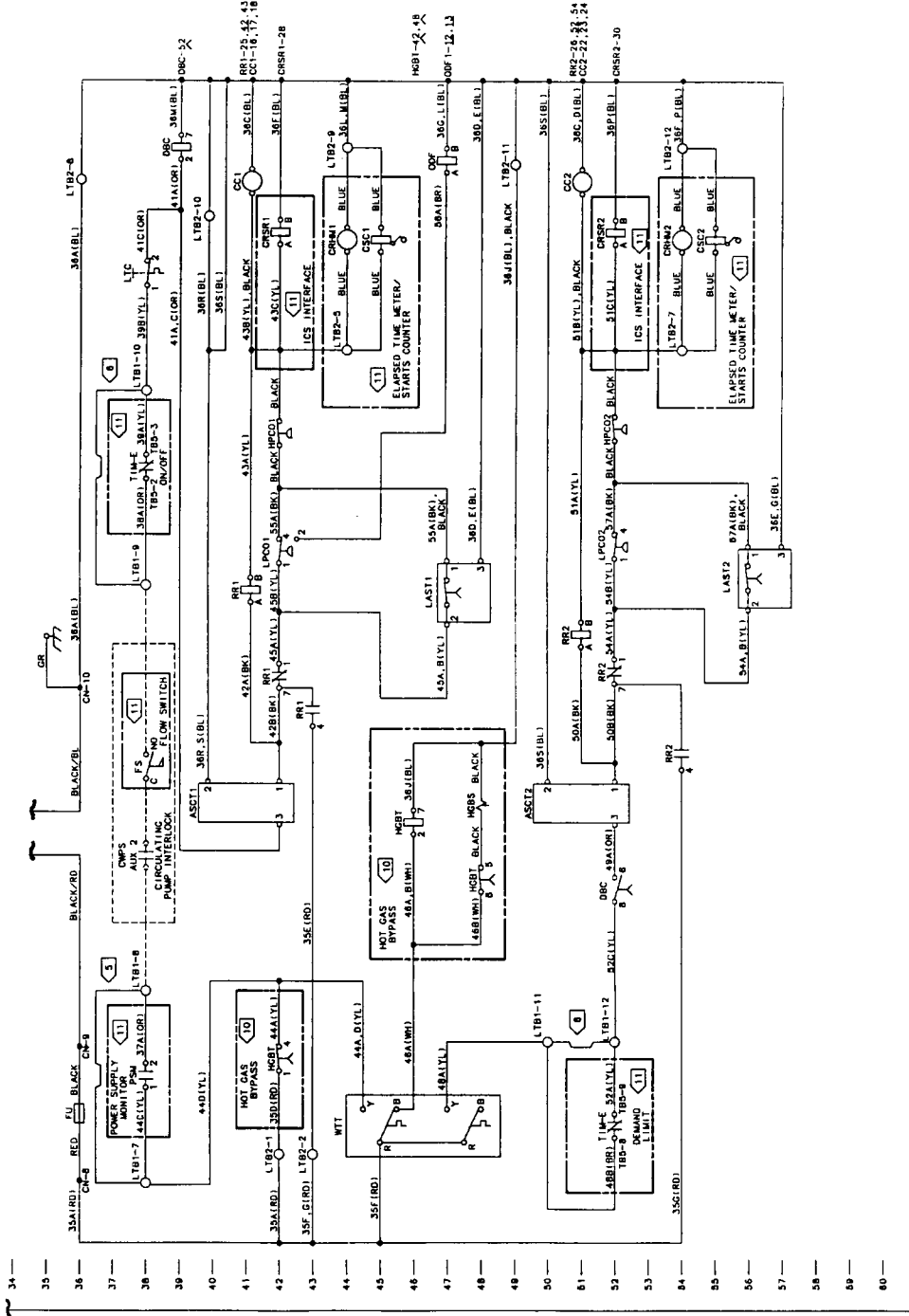
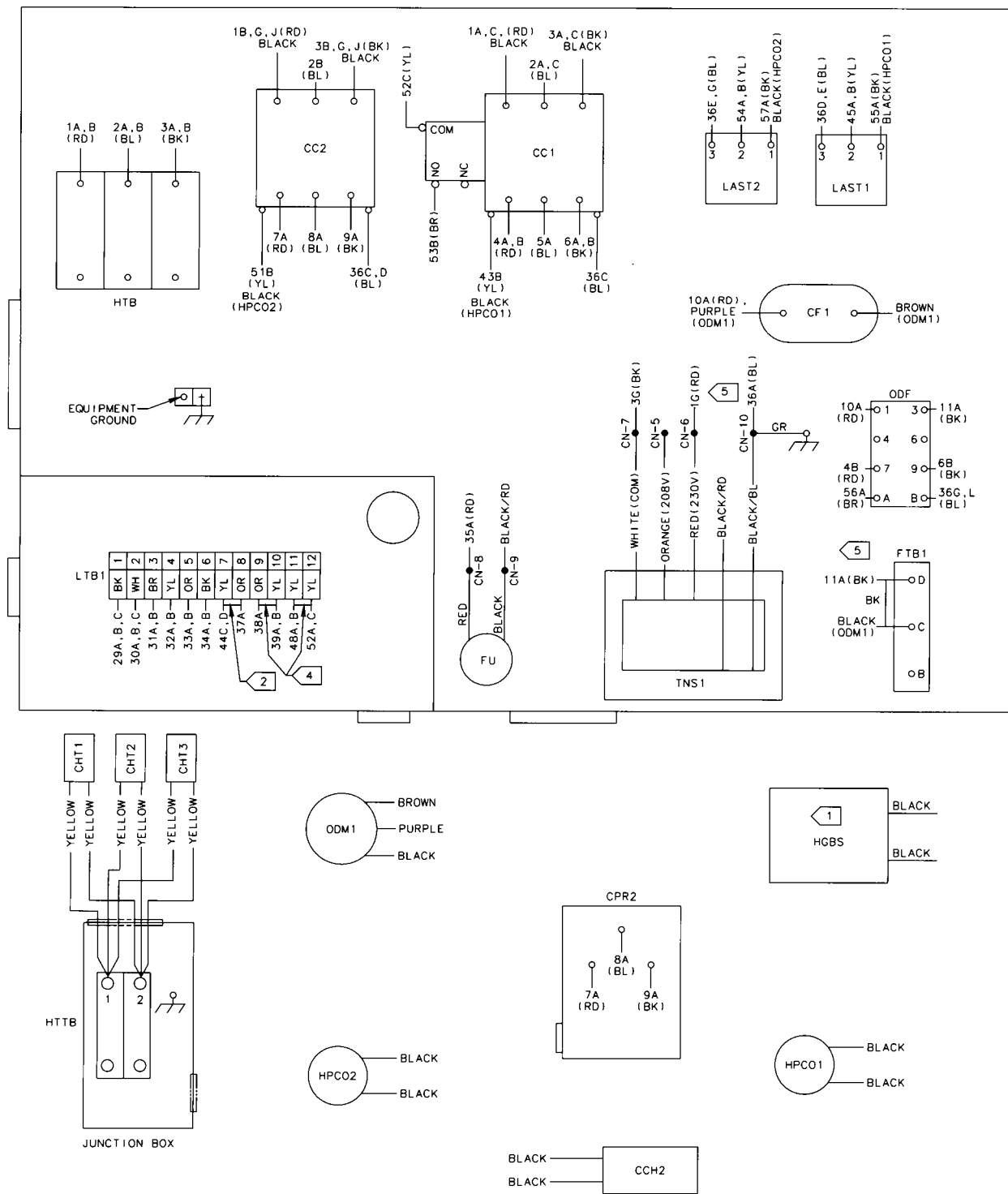
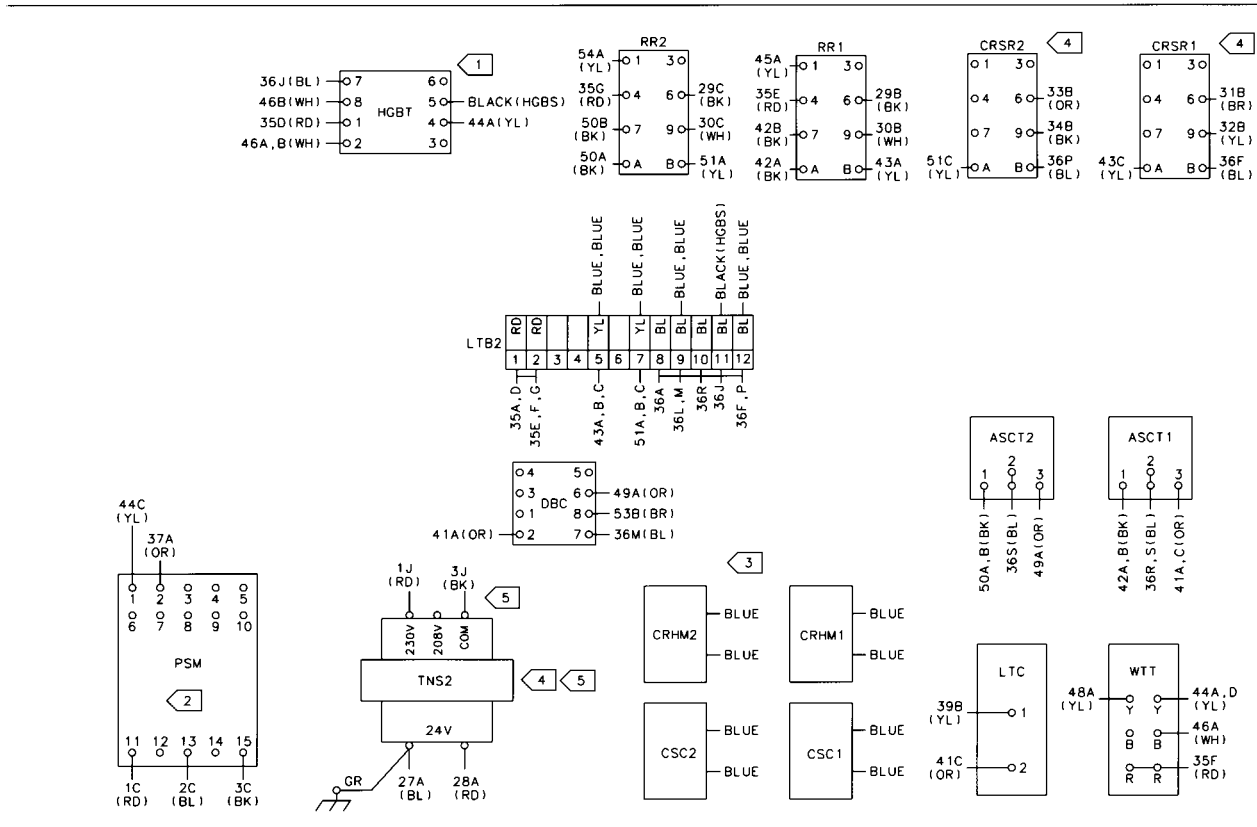


Figure 4
CGA120B3
(208-230V/60/3) Connection Diagram

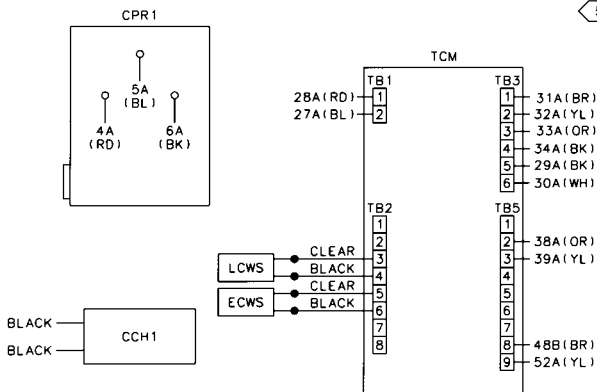
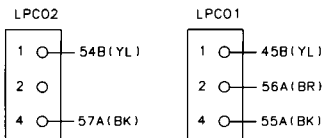
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NOTES:

- ① HOT GAS BYPASS ALTERNATE CONSTRUCTION INCLUDES HGBT, HGBS AND ASSOCIATED WIRING (FACTORY INSTALLED ONLY).
- ② FIELD INSTALLED POWER SUPPLY MONITOR ACCESSORY. REMOVE JUMPER BETWEEN LTB1-7 AND LTB1-8 WHEN INSTALLED.
- ③ FIELD INSTALLED ELAPSED TIME METERS AND START COUNTER ACCESSORIES.
- ④ FIELD INSTALLED INTEGRATED COMFORT SYSTEM INTERFACE ACCESSORY. REMOVE JUMPERS BETWEEN LTB1-9 & LTB1-10 AND LTB1-11 & LTB1-12 WHEN INSTALLED.
- ⑤ CONNECTIONS SHOWN ARE FOR 230V OPERATION. WHEN 208V OPERATION IS REQUIRED, SWITCH RED AND ORANGE TRANSFORMER LEADS AROUND AT TRANSFORMER TNS1. INSULATE TNS1 RED WIRE LEAD TO AVOID ACCIDENTLY SHORTING. AT TRANSFORMER TNS2, SWITCH WIRE 1J(RD) FROM TERMINAL 230V TO TERMINAL 208V.



<p>WARNING</p> <p>DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.</p> <p>AVERTISSEMENT</p> <p>DEBRANCHER DU CIRCUIT D'ALIMENTATION ELECTRIQUE AVANT L'ENTRETIEN POUR EVITER BLESSURE OU MORT PAR ELECTROCUTION.</p>	<p>CAUTION</p> <p>USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.</p> <p>ATTENTION</p> <p>UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE POUR EVITER D'ENDOMMAGER L'EQUIPEMENT. LES BORNES NE SONT PAS PREVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.</p>
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Figure 5
CGA120B4 (460V/60/3) and
CGA120BW (575V/60/3) Schematic Diagram

(Continued on next page)

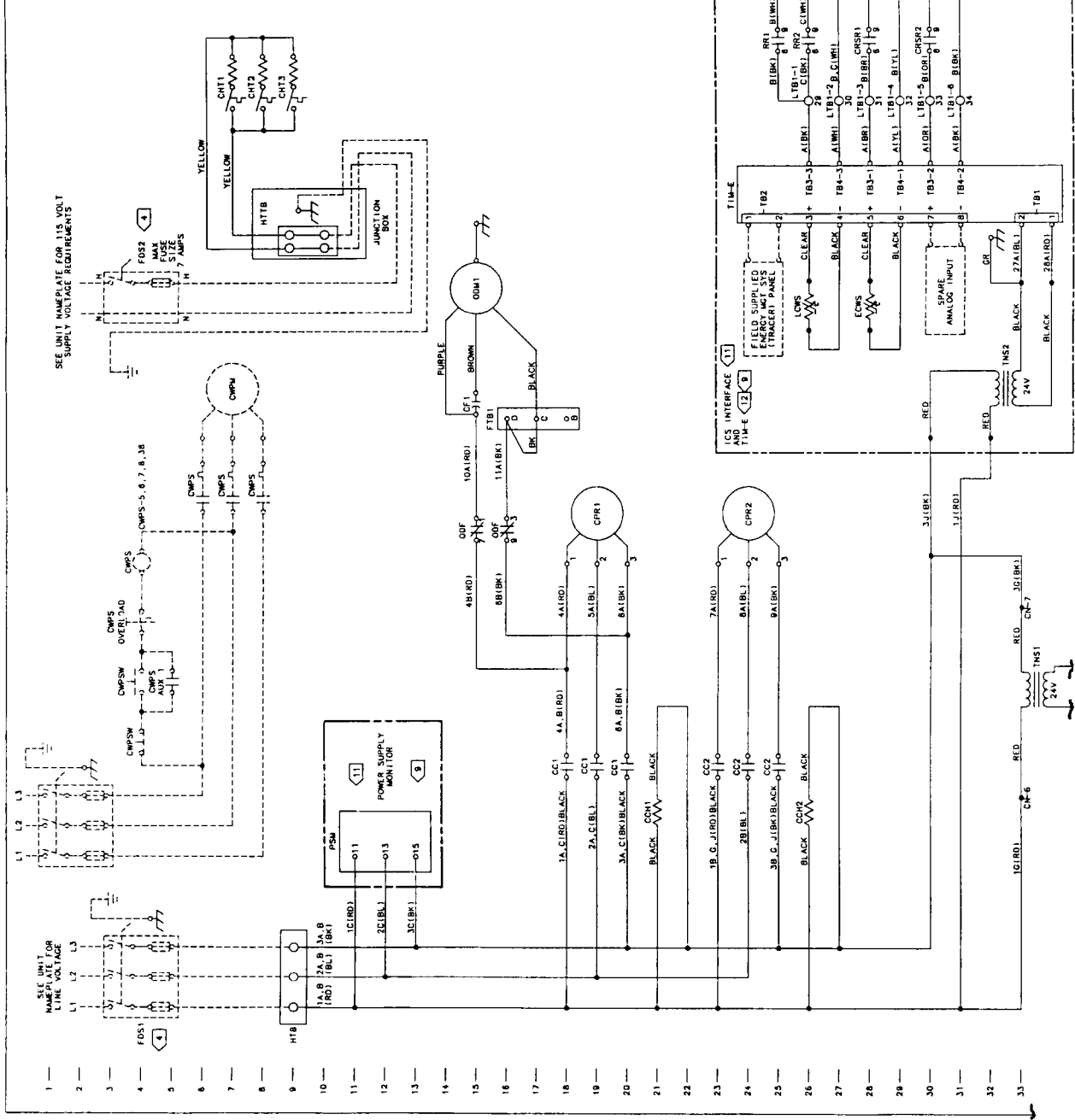
DEVICE	DESCRIPTION	LINE NUMBER
ASCL1,ASCL2	ANTI-SHORT CYCLE TIMER	40,50
CC1,CC2	COMPRESSOR CONTACTOR	41,51
CCHL,CCCL	COMPRESSOR HEATER	21,26
CF1	OUTDOOR FAN CAPACITOR	15
CHLL,CHLLZ,CHLL1	CHILLER HEAT TAP	7,8,9
CHLL	CHILLER HEAT TAP CONNECTION ON WIRE NUT	18,24
CPM1,CPM2	COMPRESSOR RUN HOUR METER	44,54
CPM1,CPM2	COMPRESSOR RUN STATUS RELAY	42,52
CSM1,CSM2	COMPRESSOR START COUNTER	40,55
CWPA	CHILLER WATER PUMP MOTOR	7
CWPSW	CHILLER WATER PUMP STARTER	4
CWPSW	CHILLER WATER PUMP SWITCH	4
DBSC	DELAY BETWEEN COMPRESSORS	38
EWS	ENTERING CHILLED WATER SENSOR	28
FDS1,FDS2	FUSED DISCONNECT SWITCH	4,4
FS	FAN SWITCH	38
FTB1	FAN TERMINAL BLOCK	16,17,18
FU	CONTROL CIRCUIT FUSE	38
HGBS	HOT GAS BYPASS SOLENOID	49
HGBT	HOT GAS BYPASS TIMER	46
HPD01,HPD02	HIGH PRESSURE OUTOUT	47,53
HTB	HEAT TAP TERMINAL BLOCK	8,9,10
HTB	HEAT TAP TERMINAL BLOCK	9,9,10
LAST1,LAST2	LOW AMBIENT START TIMER	49,58
LPC1,LPC2	LOW PRESSURE CUTOUT	25
LPC1,LPC2	LOW PRESSURE CUTOUT	42,52
LTC	LOW TEMPERATURE CUTOUT	38
ODF	OUTDOOR FAN RELAY	47
ODM1	OUTDOOR FAN MOTOR	15
PSM	POWER SUPPLY MONITOR	11,12,13
RR1,RR2	RESET RELAY	41,51
TM-E	TIME-E MODULE	24,38,52
TMS1	CONTROL POWER TRANSFORMER	33
TMS2	TIME-P TEMP 1-STAT 12-STEP1	32
WTT	WATER TEMP 1-STAT 12-STEP1	44

⚠ WARNING
 DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.

⚠ AVERTISSEMENT
 DÉBRANCHER L'ÉQUIPEMENT ÉLECTRIQUE AVANT L'ENTRETIEN POUR ÉVITER BLESSURE OU MORT PAR ÉLECTROCUTION.

⚠ CAUTION
 USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.

⚠ ATTENTION
 UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE POUR ÉVITER D'ENDOMMAGER L'ÉQUIPEMENT. LES BORNES NE SONT PAS PRÉVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.



- NOTES:
- UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25°C (77°F) AT ATMOSPHERIC PRESSURE. ALL SWITCHES ARE TO BE OPERATED WITH ALL UTILITIES TURNED OFF, AND AFTER A NORMAL SHUTDOWN HAS OCCURRED.
 - DASHED LINES INDICATE RECOMMENDED FIELD WIRING. DASHED LINES AND THE ENCLOSURES AND/OR DASHED LINES INDICATE THE PHANTOM COMPONENTS PROVIDED BY THE FIELD. PHANTOM COMPONENTS ARE TO BE INSTALLED BY THE FIELD. CONSTRUCTION OF FIELD WIRING ON AVAILABLE FIELD INSTALLED ACCESSORIES. SOLID LINE INDICATES WIRING BY TRADE CO.
 - NUMBERS ALONG THE RIGHT SIDE OF THE CONTACTS BY LINE NUMBER. AN UNDERLINE NUMBER INDICATES A CONTACT TO BE INSTALLED BY THE TRADE COMPANY. A CONTACT LINE NUMBER POINTING UPWARD INDICATES A FIELD INSTALLED CONTACT WHICH BEGINS TYPING WHEN ENERGIZED.
 - FOR CONTACT INSTALLATION ONLY. LOCAL INSPECTION AUTHORITY MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.
 - WHEN POWER SUPPLY MONITOR ACCESSORY IS INSTALLED, REMOVE JUMPER BETWEEN LTB1-7 AND LTB1-8.
 - WHEN ICS INTERFACE ACCESSORY IS INSTALLED, REMOVE JUMPER BETWEEN LTB1-9 AND LTB1-11 & 12.
 - ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
 - LOW VOLTAGE WIRING MUST BE 18 AWG MINIMUM.
 - ACCESSORIES ARE NOT AVAILABLE FOR 350-415 V/20 HZ/3 # (WHERE NOTED).
 - ALTERNATE CONSTRUCTION IF FACTORY INSTALLED ONLY.
 - ACCESSORY/FIELD INSTALLED ONLY.
 - TIME IS NOT INCLUDED IN THE ICS INTERFACE ACCESSORY.

WIRE COLOR	DESIGNATION
BRN	BROWN
BLK	BLACK
BLU	BLUE
GRN	GREEN
WHI	WHITE
YEL	YELLOW

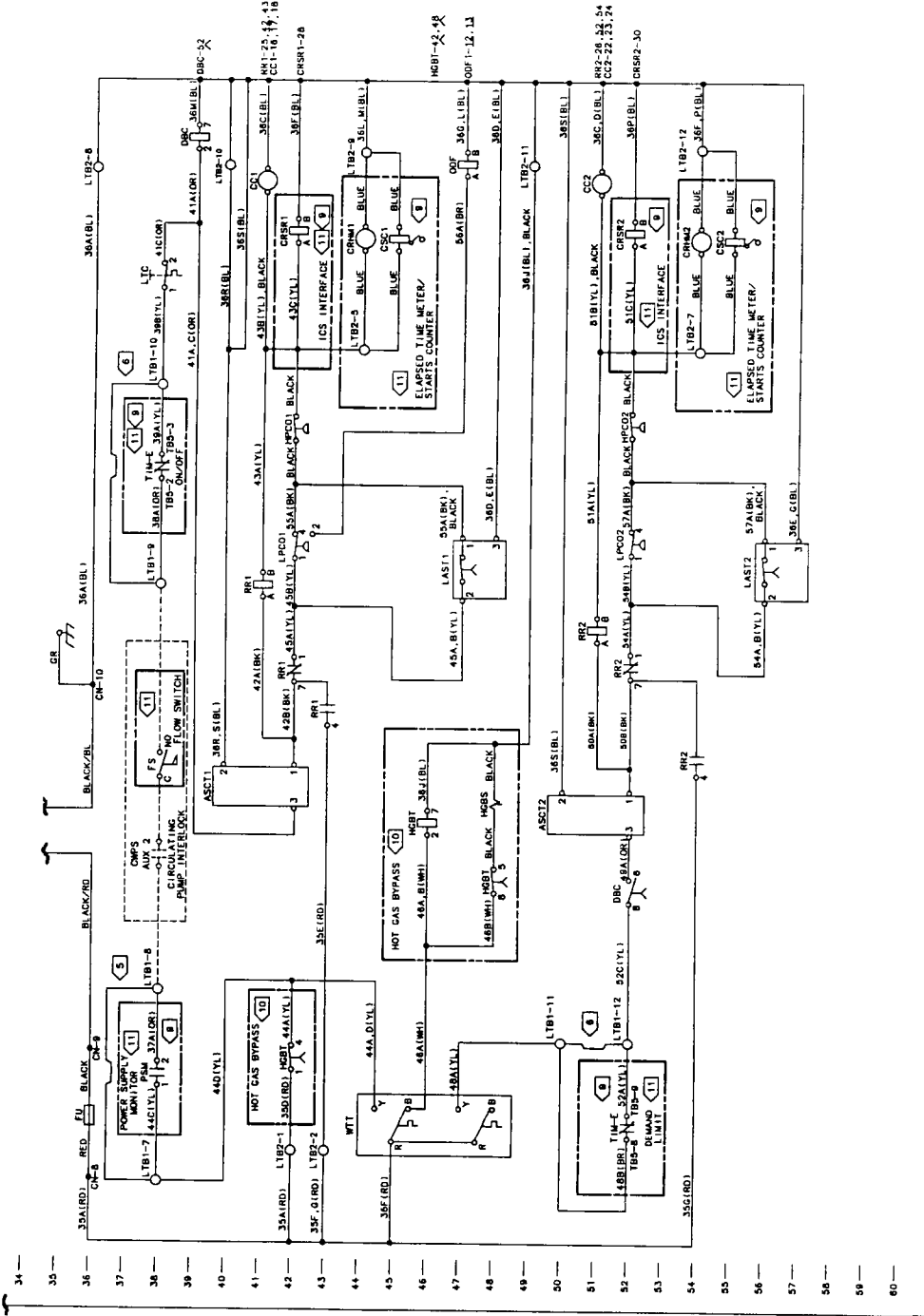
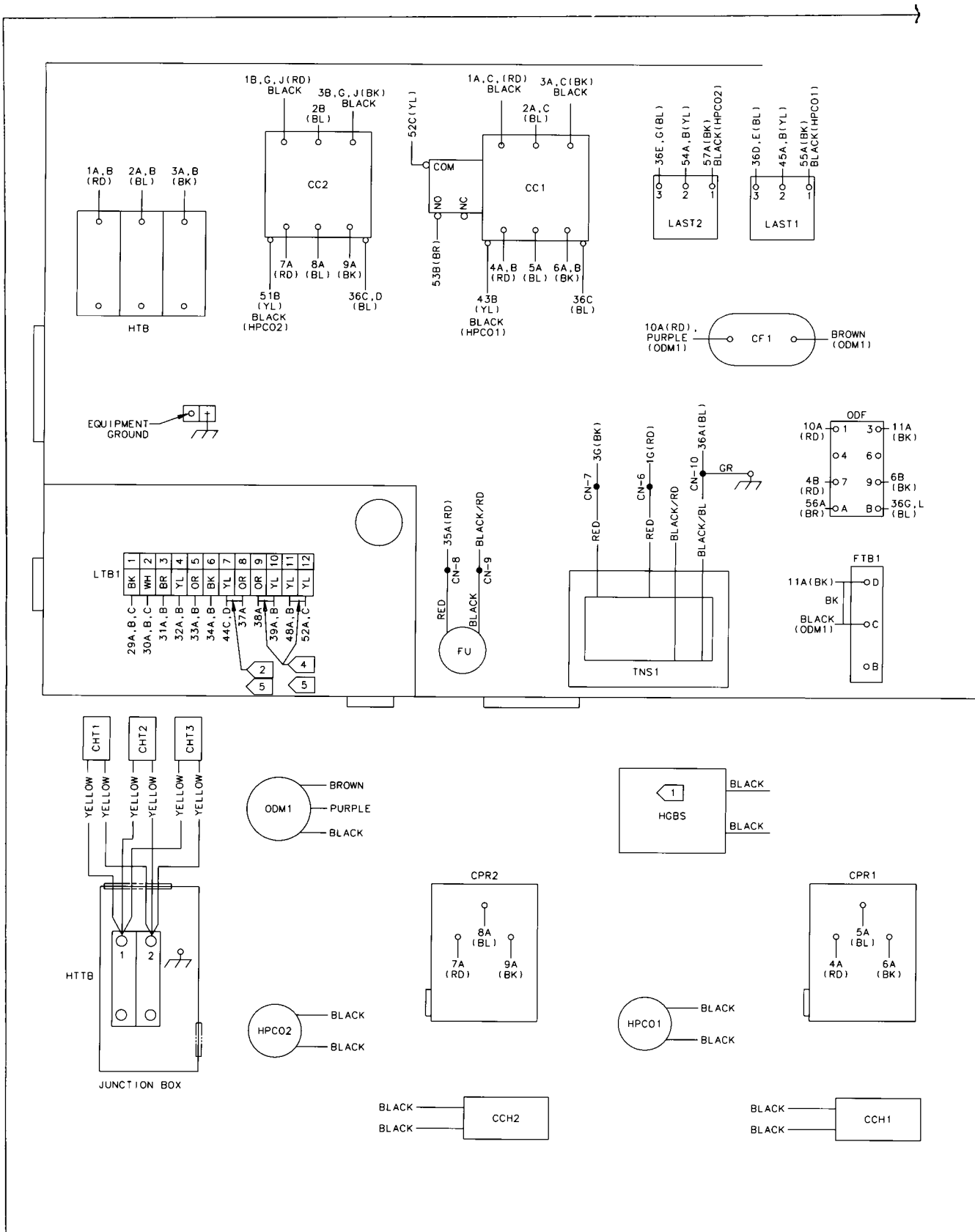
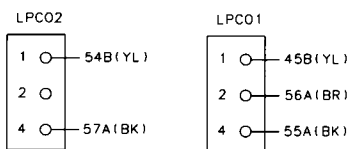
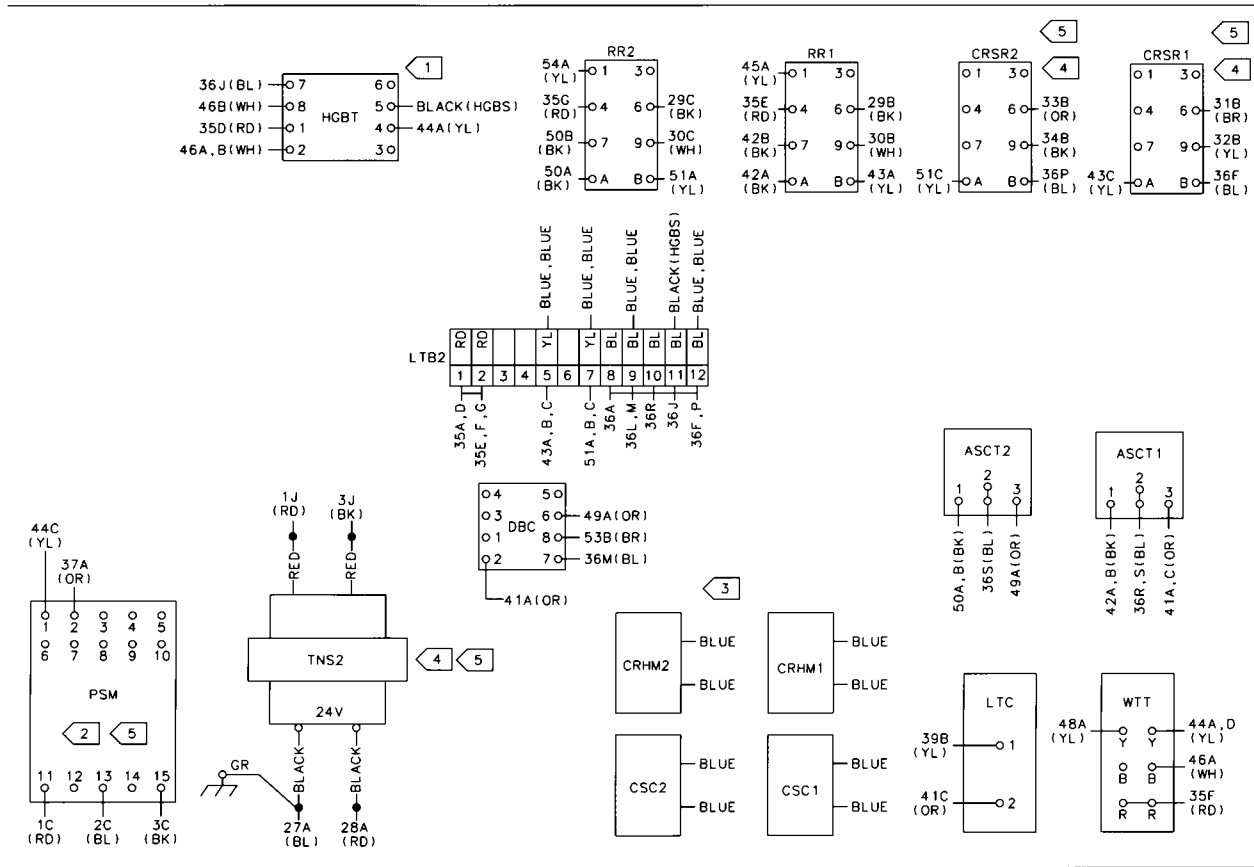


Figure 6
CGA120B4 (460V/60/3) and
CGA120BW (575V/60/3) Connection Diagram

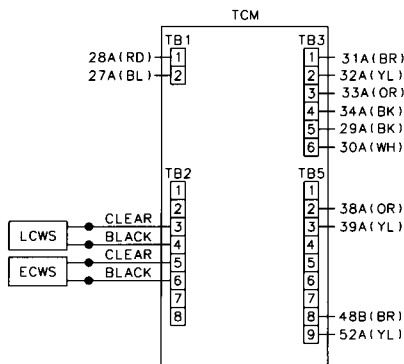
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NOTES:

- 1 HOT GAS BYPASS ALTERNATE CONSTRUCTION INCLUDES HGBT, HGBS AND ASSOCIATED WIRING (FACTORY INSTALLED ONLY).
- 2 FIELD INSTALLED POWER SUPPLY MONITOR ACCESSORY. REMOVE JUMPER BETWEEN LTB1-7 AND LTB1-8 WHEN INSTALLED.
- 3 FIELD INSTALLED ELAPSED TIME METER AND START COUNTER ACCESSORIES.
- 4 FIELD INSTALLED INTEGRATED COMFORT SYSTEM INTERFACE ACCESSORY. REMOVE JUMPERS BETWEEN LTB1-9 & LTB1-10 AND LTB1-11 & LTB1-12 WHEN INSTALLED.
- 5 THIS ACCESSORY NOT AVAILABLE FOR 380-415V./50 HZ./3 PHASE UNIT APPLICATION.



<p>⚠ WARNING</p> <p>DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.</p> <p>AVERTISSEMENT</p> <p>DEBRANCHER DU CIRCUIT D'ALIMENTATION ELECTRIQUE AVANT L'ENTRETIEN POUR EVITER BLESSURE OU MORT PAR ELECTROCUTION.</p>	<p>⚠ CAUTION</p> <p>USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.</p> <p>ATTENTION</p> <p>UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE POUR EVITER D'ENDOMMAGER L'EQUIPEMENT. LES BORNES NE SONT PAS PREVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.</p>
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Figure 7
CGA180B3
(208-230V/60/3) Schematic Diagram

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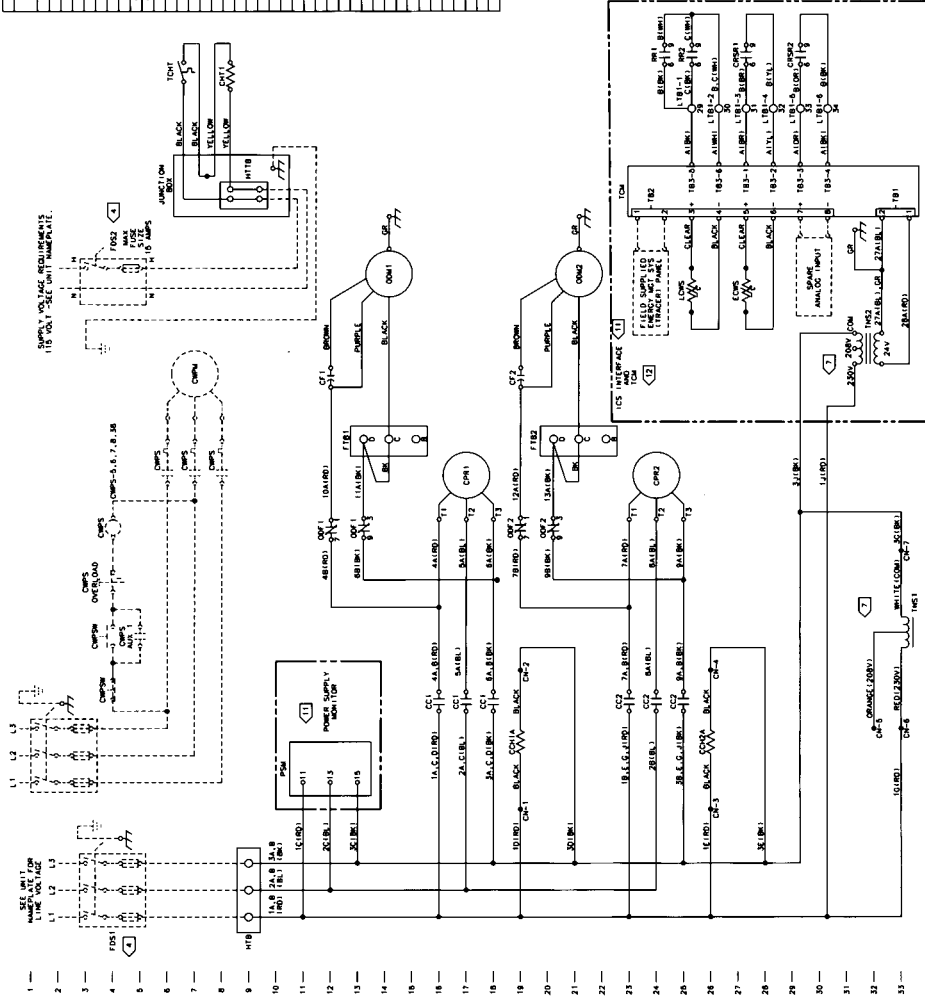
LEGEND		
SYMBOL	DESCRIPTION	WIRE NUMBER
[Symbol]	ANTI-SHORT CYCLE TIMER	40,50
[Symbol]	COMPRESSOR CONTACTOR	41,51
[Symbol]	CHASISIS METER	18
[Symbol]	OUTDOOR FAN EXPANDER	12,18
[Symbol]	CHILLER HEAT TAP	8,9
[Symbol]	COMPRESSOR ON WIRE UNIT	17,23
[Symbol]	COMPRESSOR RUN POWER METER	44,54
[Symbol]	COMPRESSOR STATUS RELAY	42,52
[Symbol]	CHILLER WATER PUMP MOTOR	7
[Symbol]	CHILLER WATER PUMP STARTER	4
[Symbol]	CHILLER WATER PUMP STOP	4
[Symbol]	DELAY BEBEEZ COMPRESSORS	39
[Symbol]	ENTERING CHILLED WATER SENSOR	28
[Symbol]	TEMPERATURE SENSITIVE SWITCH	34
[Symbol]	FAN TERMINAL BLOCK	13,20
[Symbol]	FAN CONTROL CIRCUIT FUSE	36
[Symbol]	FAN MOTOR	36
[Symbol]	HOT GAS BYPASS TIMER	48
[Symbol]	HEAT TAP FOR MANUAL BLOCK	8,9
[Symbol]	LOW AMBIENT START TIMER	42,52
[Symbol]	LEAVING CHILLED WATER SENSOR	28
[Symbol]	LOW VOLTAGE TERMINAL BLOCK	42,52
[Symbol]	LOW TEMPERATURE CUTOFF	28
[Symbol]	OUTDOOR FAN MOTOR	14,21
[Symbol]	OUTDOOR FAN STARTER	14,21
[Symbol]	POWER SUPPLY MONITOR	11
[Symbol]	RESET RELAY	41,51
[Symbol]	CONTROL POWER TRANSFORMER	33
[Symbol]	120V POWER SUPPLY TRANSFORMER	32
[Symbol]	TRIPER TEMP. SENSITIVE SWITCH	44

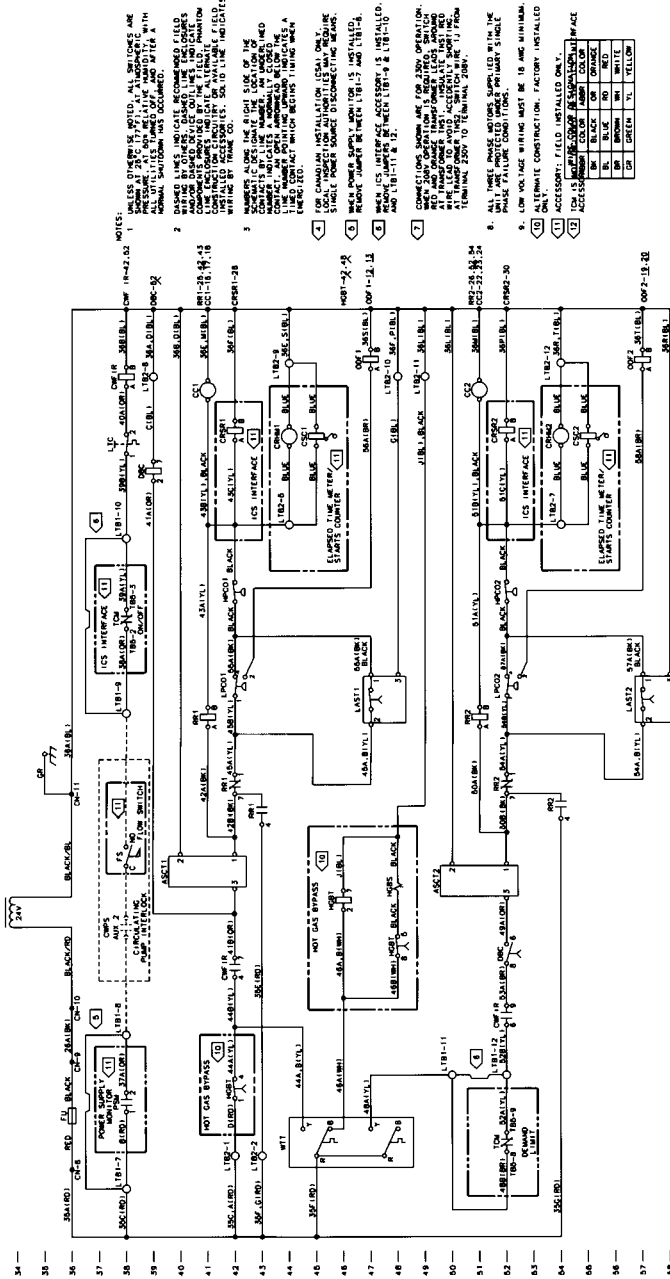
WARNING
 DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.

ATTENTION
 DÉBRANCHER LE CORDON D'ALIMENTATION ÉLECTRIQUE AVANT D'ENTREPRENDRE TOUT TRAVAIL ÉLECTRIQUE POUR ÉVITER BLESSURES OU MORT PAR ÉLECTROCUTION.

CAUTION
 USE COPPER CONDUCTORS ONLY IF THE MANUFACTURER'S SPECIFICATIONS ARE MET. USE ONLY THE EQUIPMENT DESIGNED TO ACCEPT ANY OTHER WIRING.

ATTENTION
 UTILISER SEULEMENT DES CONDUCTEURS EN LAITON POUR LES BRANCHES DE SONT PAS PRÉVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.





- NOTES:
1. ALL ELECTRICAL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
 2. WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
 3. WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

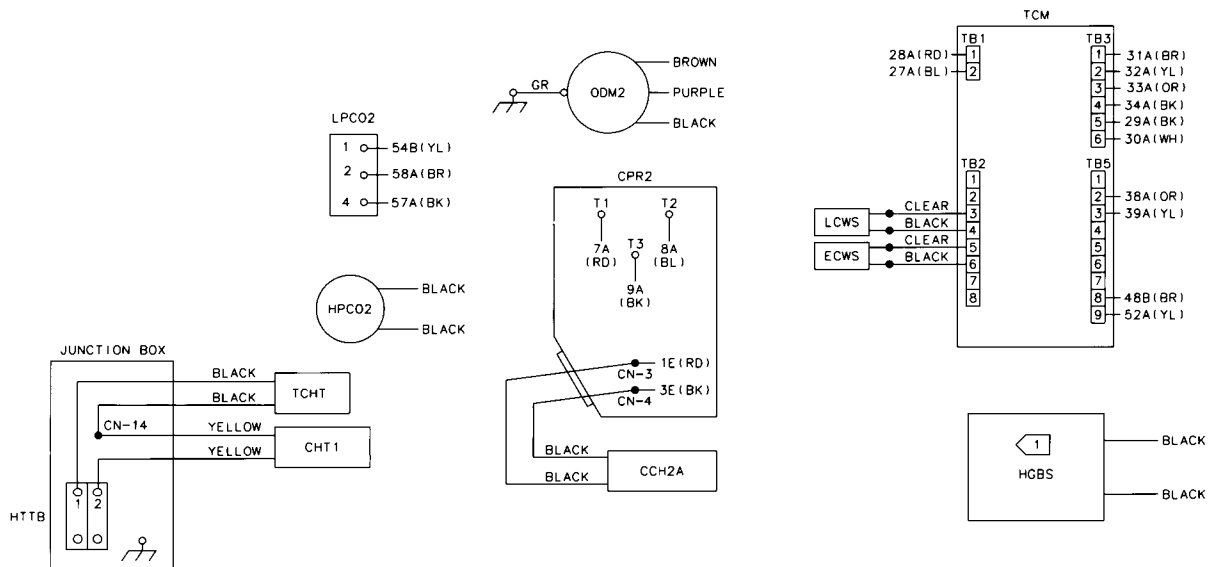
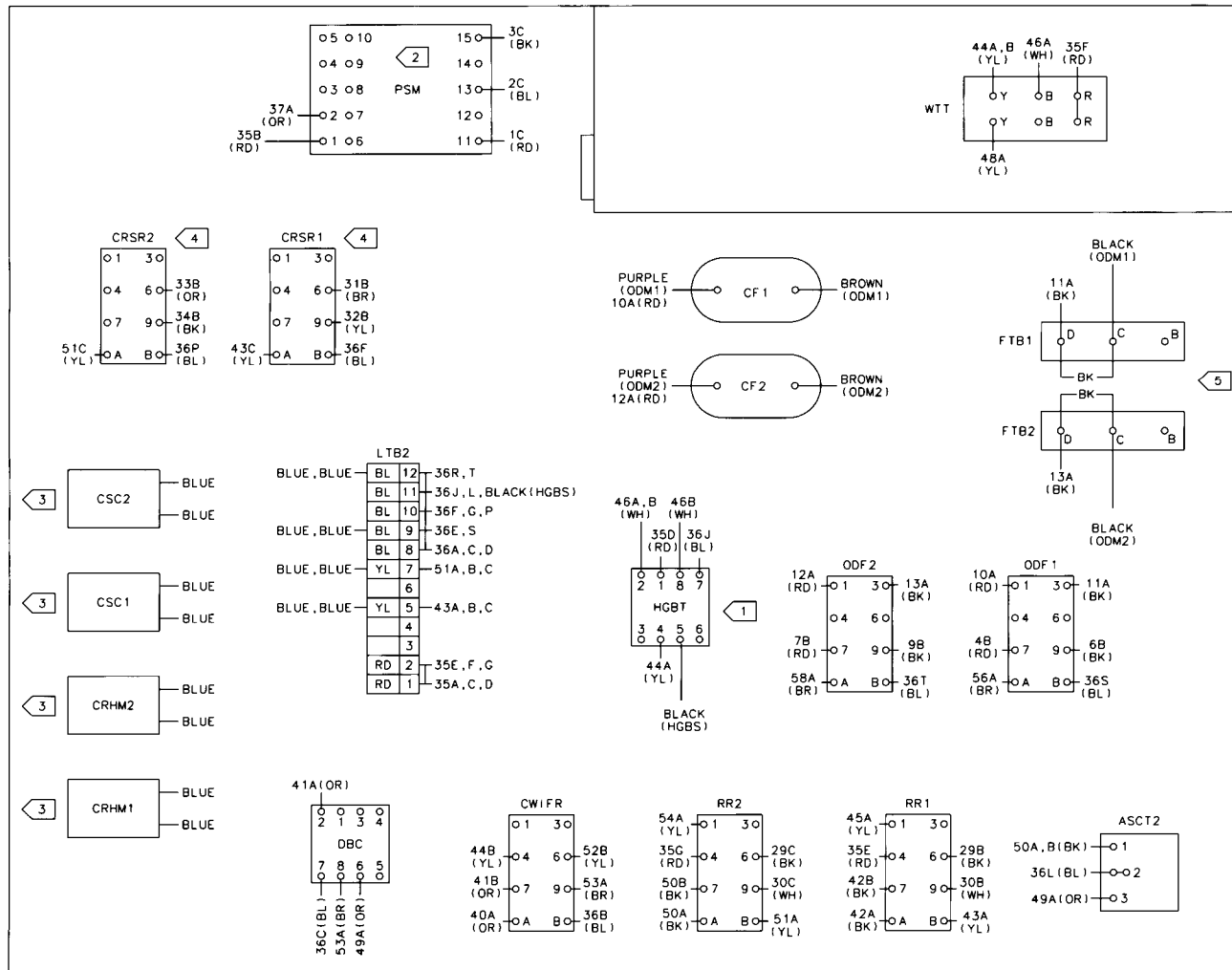
4. FOR CANADIAN INSTALLATION (CSA ONLY), LOCAL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
5. WIRE GAUGES SHALL BE AS SPECIFIED IN THE DRAWINGS AND ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
6. WHEN CS INTERFACE ACCESSORY IS INSTALLED, ACCESSORY FIELD SHALL BE INSTALLED.
7. ALL THREE PHASE MOTORS SUPPLIED WITH THE PHASE FAILURE CONDUIT SHALL BE INSTALLED.
8. ALL THREE PHASE MOTORS SUPPLIED WITH THE PHASE FAILURE CONDUIT SHALL BE INSTALLED.
9. LOW VOLTAGE WIRING MUST BE 18 AWG MINIMUM.
10. ACCESSORY FIELD, INSTALLED ONLY.
11. ACCESSORY FIELD, INSTALLED ONLY.
12. ACCESSORY FIELD, INSTALLED ONLY.

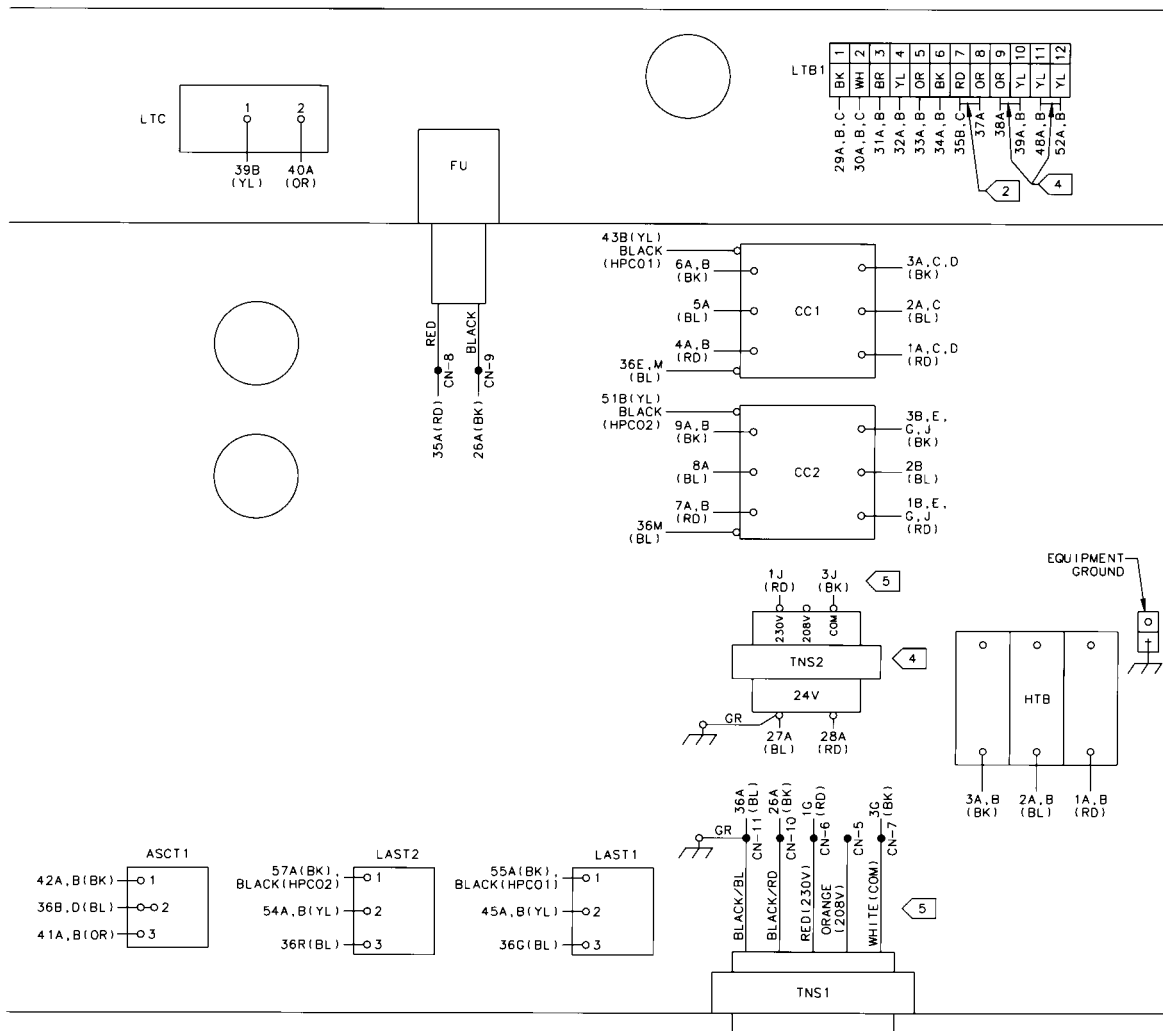
ACCESSORY FIELD COLOR	ACCESSORY FIELD COLOR
18	BLACK
19	BLACK
20	BLACK
21	BLACK
22	BLACK
23	BLACK
24	BLACK
25	BLACK
26	BLACK
27	BLACK
28	BLACK
29	BLACK
30	BLACK
31	BLACK
32	BLACK
33	BLACK
34	BLACK
35	BLACK
36	BLACK
37	BLACK
38	BLACK
39	BLACK
40	BLACK
41	BLACK
42	BLACK
43	BLACK
44	BLACK
45	BLACK
46	BLACK
47	BLACK
48	BLACK
49	BLACK
50	BLACK
51	BLACK
52	BLACK
53	BLACK
54	BLACK
55	BLACK
56	BLACK
57	BLACK
58	BLACK
59	BLACK
60	BLACK

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Figure 8
CGA180B3
(208-230V/60/3) Connection Diagram

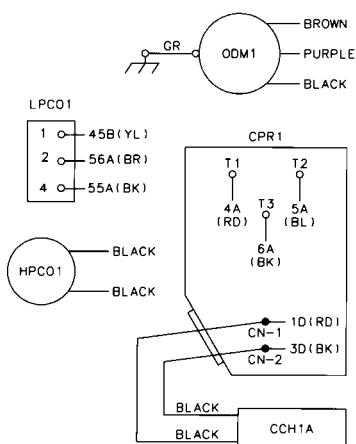
(Continued on next page)





NOTES:

- 1 HOT GAS BYPASS ALTERNATE CONSTRUCTION INCLUDES HGBT, HGBS AND ASSOCIATED WIRING.-(FACTORY INSTALLED ONLY).
- 2 FIELD INSTALLED POWER SUPPLY MONITOR ACCESSORY. REMOVE JUMPER BETWEEN LTB1-7 AND LTB1-8 WHEN INSTALLED.
- 3 FIELD INSTALLED ELAPSED TIME METER/ STARTS COUNTER ACCESSORY.
- 4 FIELD INSTALLED INTEGRATED COMFORT SYSTEM INTERFACE ACCESSORY. REMOVE JUMPERS BETWEEN LTB1-9 & LTB1-10 AND LTB1-11 & LTB1-12 WHEN INSTALLED.
- 5 CONNECTIONS SHOWN ARE FOR 230V OPERATION. WHEN 208V OPERATION IS REQUIRED, REMOVE WIRE 11A(BK) FROM FTB1-D AND CONNECT TO FTB1-B AND REMOVE WIRE 13A(BK) FROM FTB2-D AND CONNECT TO FTB2-B. AT TRANSFORMER TNS1, SWITCH RED AND ORANGE TRANSFORMER LEADS AROUND. INSULATE TNS1 RED WIRE LEAD TO AVOID ACCIDENTLY SHORTING. AT TRANSFORMER TNS2, SWITCH WIRE 1J(RD) FROM TERMINAL 230V TO TERMINAL 208V.



<p>⚠ WARNING DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.</p> <p>AVERTISSEMENT DEBRANCHER DU CIRCUIT D'ALIMENTATION ELECTRIQUE AVANT L'ENTRETIEN POUR EVITER BLESSURE OU MORT PAR ELECTROCUTION.</p>	<p>⚠ CAUTION USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.</p> <p>ATTENTION UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE POUR EVITER D'ENDOMMAGER L'EQUIPEMENT. LES BORNES NE SONT PAS PREVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.</p>
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Figure 9
CGA180B4 (460V/60/3) and
CGA180BW (575V/60/3) Schematic Diagram

(Continued on next page)

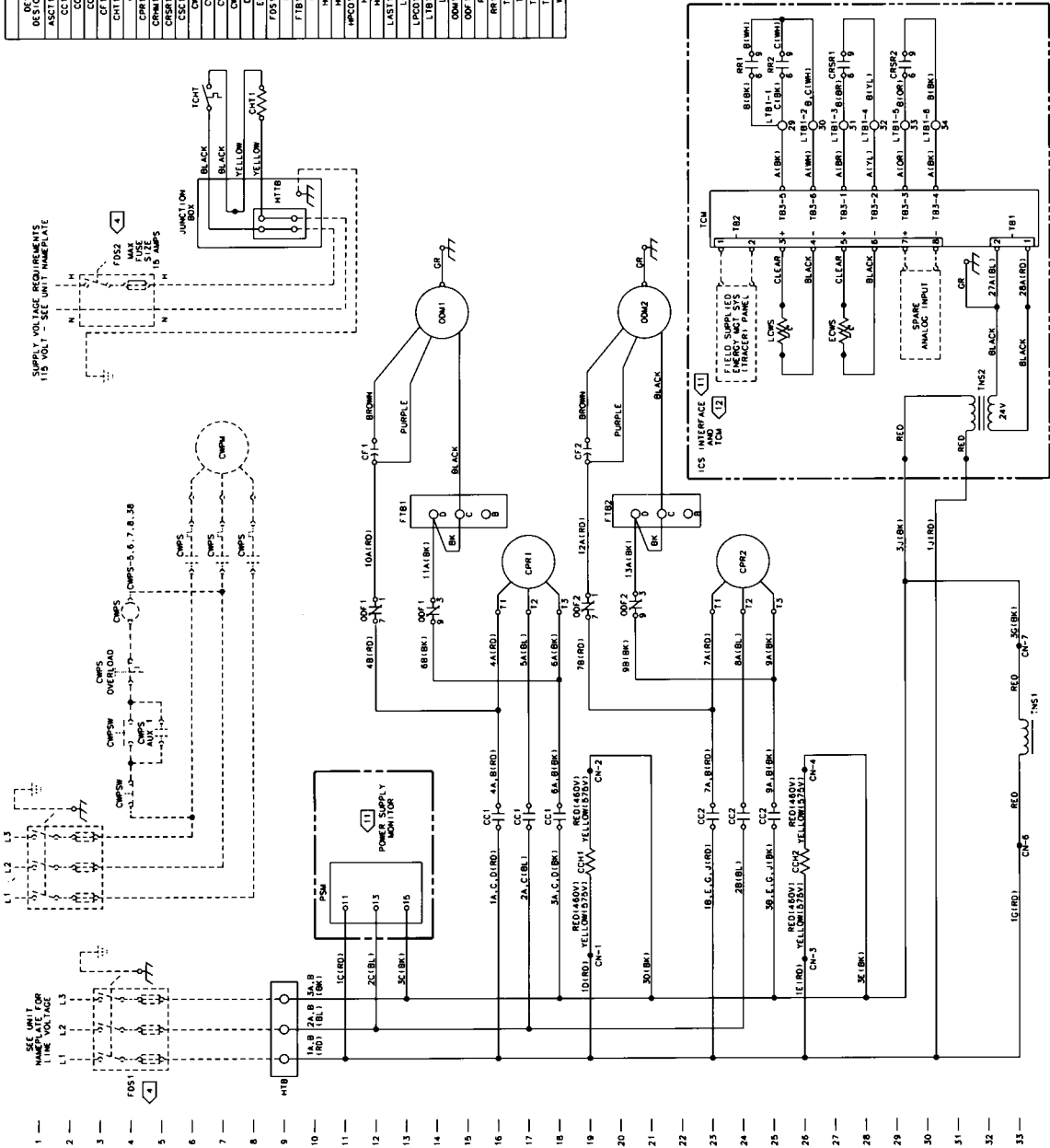
PROJECT DESIGNATION	DESCRIPTION	LINE NUMBER
ASC11-156212	ANTI-SHORT CYCLE TIMER	40,50
CC11-1022	COMPRESSOR CONTACTOR	41,51
COH1A	CRANKCASE HEATER	19
COH1B	CRANKCASE HEATER	26
CF1-1072	OUTDOOR FAN CAPACITOR	12,19
CHT1-CHT2	CHILLER HEAT TAPE	8,9
CHT1	CONNECTOR OR WIRE NUT	17,23
CHT2	CONNECTOR OR WIRE NUT	17,23
CRH1-CRH2	COMPRESSOR RUN HOUR METER	44,54
CRS1-CRS2	COMPRESSOR RUN STATUS RELAY	42,52
CSS1-15627	COMPRESSOR START COILS	45,55
CW1-R	CHILD WTR FLOW INTERLOCK RELAY	7
CW1-L	CHILLER WATER PUMP MOTOR	38
CW2	CHILLER WATER PUMP STARTER	4
CW3	CHILLER WATER PUMP SWITCH	4
CRS	RELAY BETWEEN COMPRESSORS	39
CRS1	RELAY BETWEEN COMPRESSORS	39
FPS1-FPS2	FUSED DISCONNECT SWITCH	4,4
F5	FLOW SWITCH	38
F1B1, F1B2	FAN TERMINAL BLOCK	15,20
FU	CONTROL CIRCUIT FUSE	38
HBS	HOT GAS BYPASS SOLENOID	48
HBT	HOT GAS BYPASS TIMER	46
HPCD1-HPCD2	HIGH PRESSURE CUTOFF	42,52
HTB	HEAT TAPE TERMINAL BLOCK	8,9
HTB	HEAT TAPE TERMINAL BOARD	8,9
LAST1, LAST2	LOW AMBIENT START TIMER	47,57
LOWS	LEAVING CHILLED WATER SENSOR	26
LPD1, LPD2	LOW PRESSURE CUTOFF	42,52
L1B1, L1B2	LOW VOLTAGE TERMINAL BLOCK	38
LTC	LOW TEMPERATURE CUTOFF	14,21
ODM1-ODM2	OUTDOOR FAN MOTOR	47,57
ODM1	OUTDOOR FAN RELAY	47,57
ODM2	OUTDOOR FAN RELAY	47,57
RR1-RR2	RESET MONITOR	11,51
TCMT	CHILLER HEAT TAPE THERMOSTAT	8
TCM	TCM MODULE	24, 38, 82
TMS1	CONTROL POWER TRANSFORMER	33
TMS2	TCM POWER SPLY TRANSFORMER	32
WTT	WATER TEMP T-STAT (2-STEP)	44

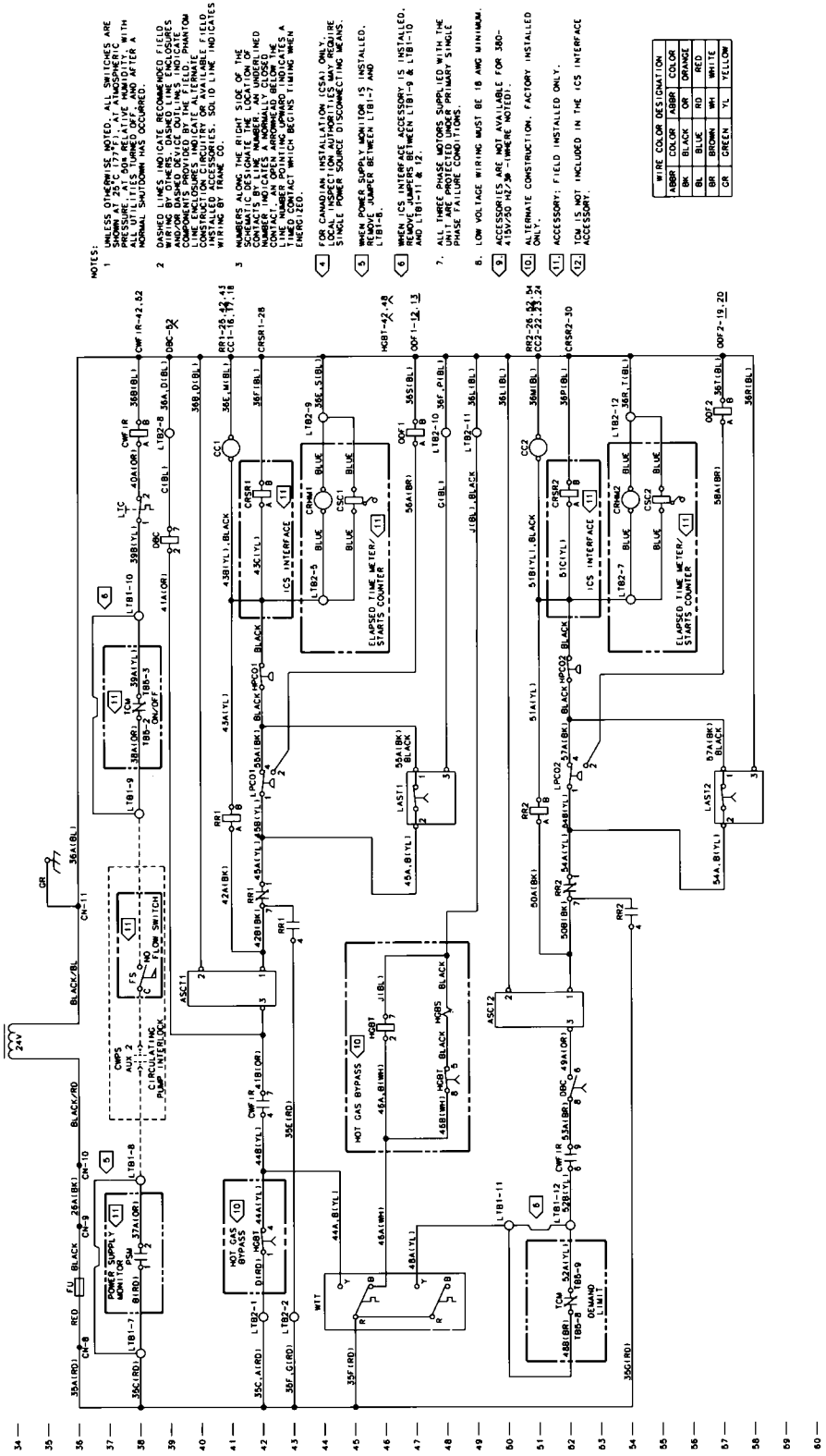
WARNING
 DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.

AVERTISSEMENT
 DEBRANCHER DU CIRCUIT D'ALIMENTATION ELECTRIQUE AVANT L'ENTRAVAILLAGE POUR ASSURER VOTRE SECURITE PAR ELECTROCUTION.

CAUTION
 USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.

ATTENTION
 UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE POUR EVITER D'ENDOMMAGER L'EQUIPEMENT. LES BORNES NE SONT PAS CONÇUES POUR ACCEPTER D'AUTRES TYPES DE FILS CONDUCTEURS.



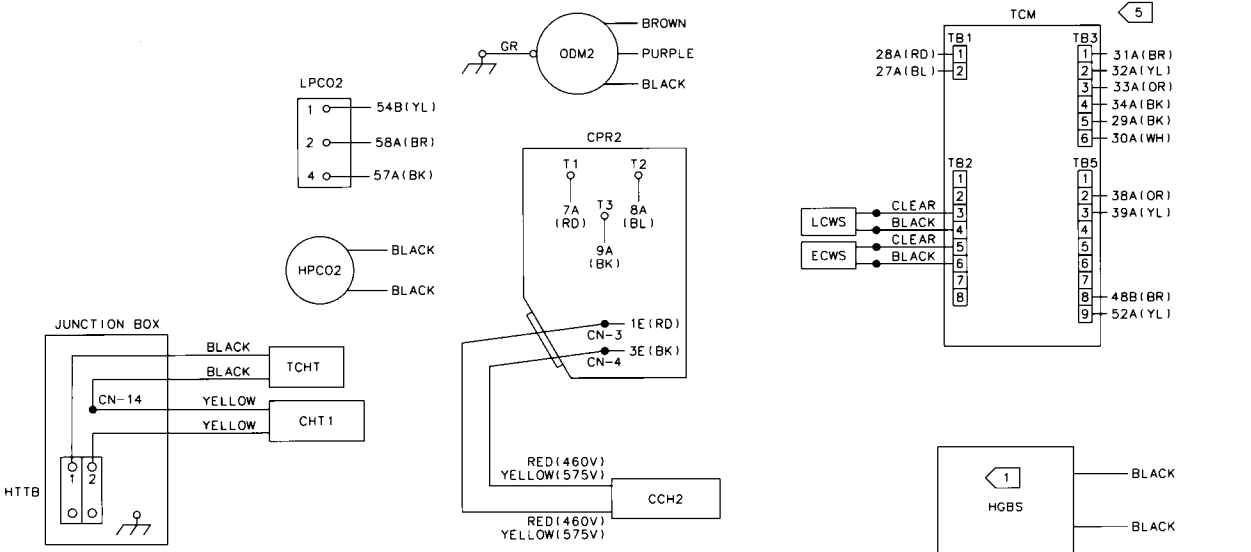
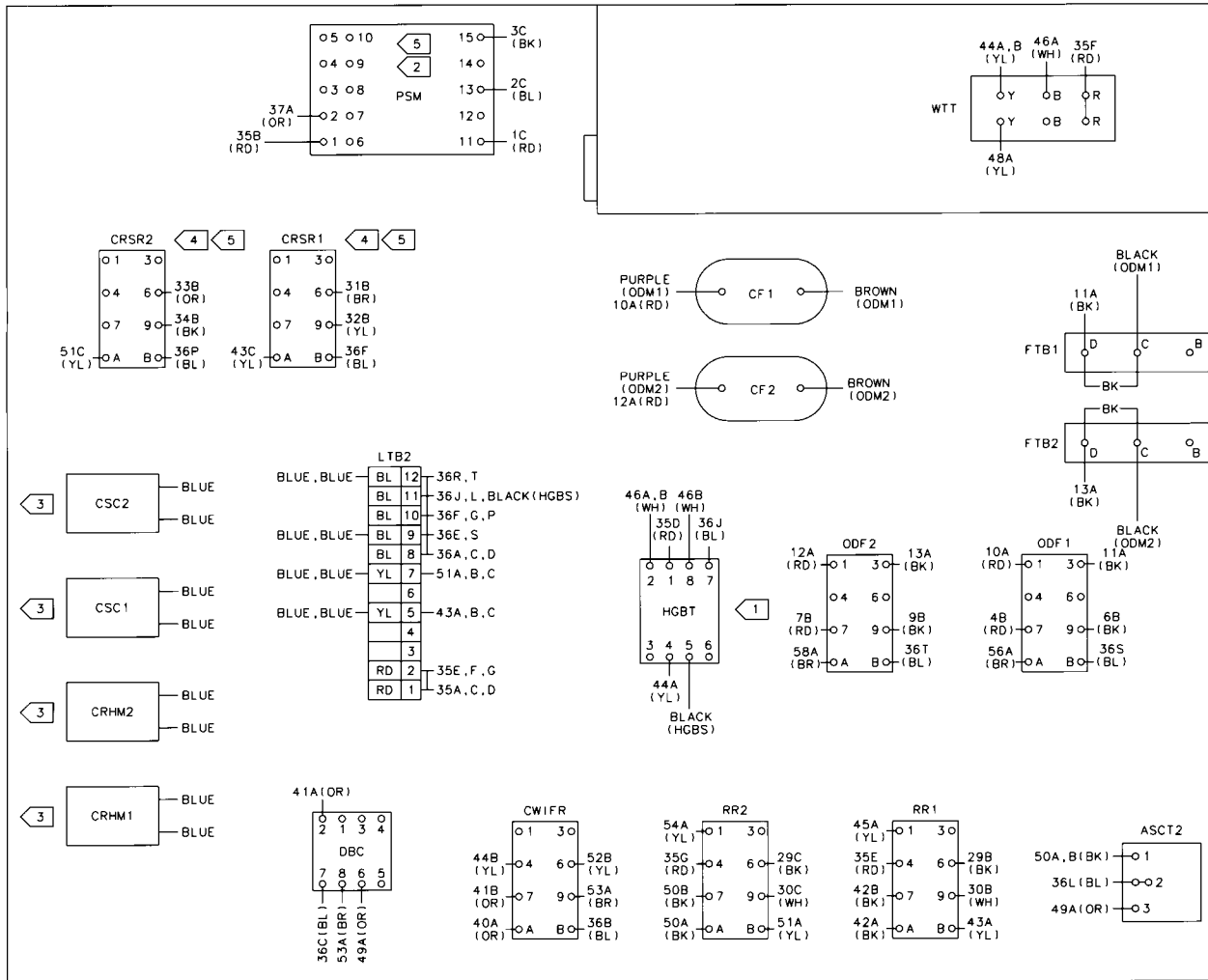


- NOTES:
- UNLESS OTHERWISE NOTED, ALL SWITCHES ARE OPERATED AT 24V RELATIVE HUMIDITY WITH NORMAL SWITCHING AND AFTER A NORMAL SWITCHING HAS OCCURRED.
 - POWER LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. DISKED LINE ENCLOSEURES INDICATE ALTERNATE FIELD WIRING BY OTHERS. DISKED LINE ENCLOSEURES INDICATE ALTERNATE FIELD WIRING BY FRAME CO.
 - NUMBERS ALONG THE RIGHT SIDE OF THE CONTACTS BY LINE NUMBER, AN UNDERLINED CONTACT, AN OPEN ARROWHEAD BELOW THE CONTACT, AN OPEN ARROWHEAD TO THE RIGHT OF THE CONTACT INDICATES A LINE NUMBER WHICH BEGINS WIRING WHEN ENERGIZED.
 - FOR CANADIAN INSTALLATION (CSA ONLY), LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.
 - WHEN POWER SUPPLY MONITOR IS INSTALLED, RELAY JUMPER BETWEEN L1B1-7 AND L1B1-12.
 - WHEN LCS INTERFACE ACCESSORY IS INSTALLED, RELAY JUMPER BETWEEN L1B1-9 & L1B1-10 AND L1B1-11 & 12.
 - ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
 - LOW VOLTAGE WIRING MUST BE 18 AWG MINIMUM.
 - ACCESSORIES ARE NOT AVAILABLE FOR 300-415V/240 HZ/3Ø - (WHERE NOTED).
 - ALTERNATE CONSTRUCTION, FACTORY INSTALLED ONLY.
 - ACCESSORY FIELD INSTALLED ONLY.
 - ACCESSORY NOT INCLUDED IN THE LCS INTERFACE ACCESSORY.

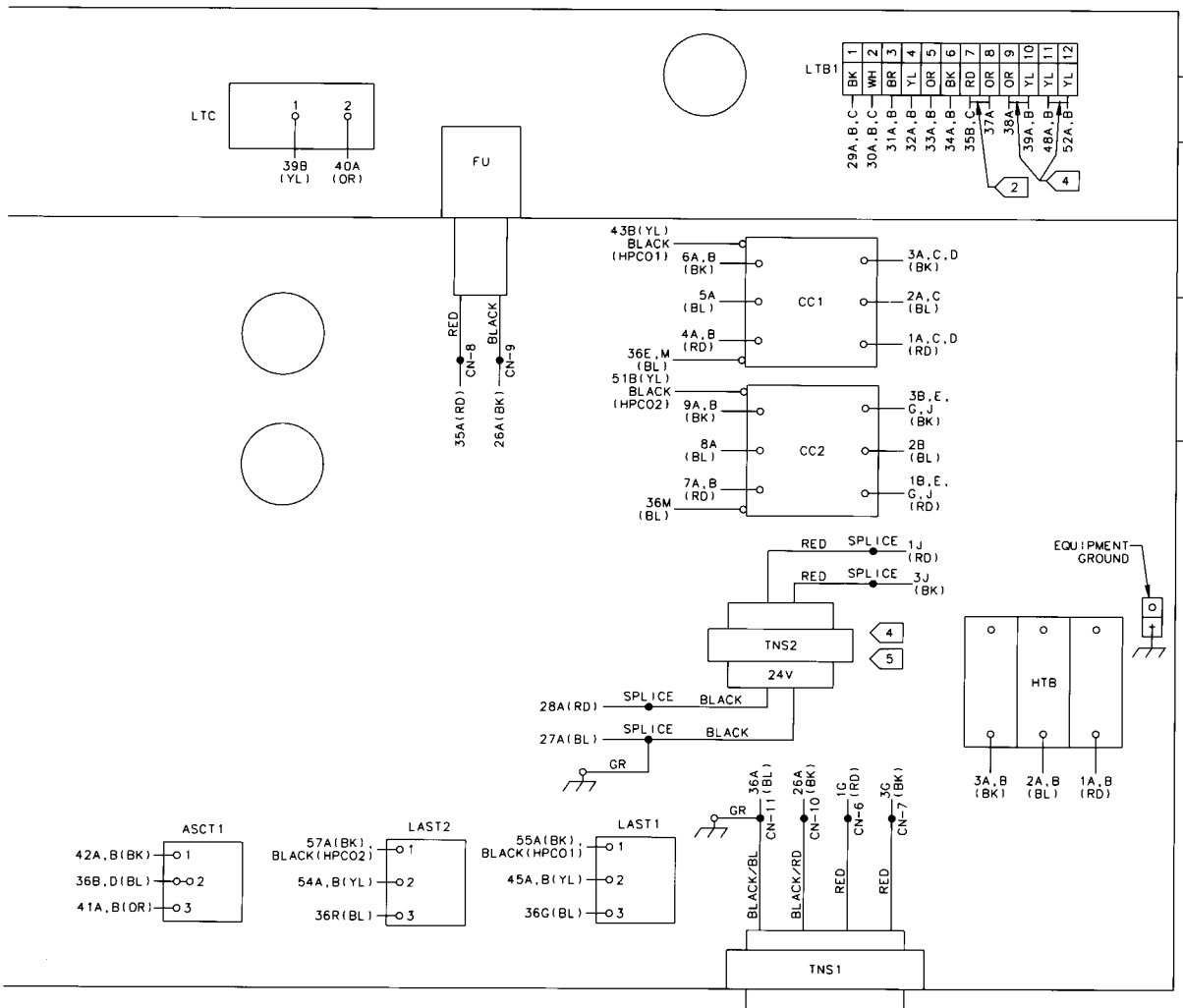
WIRE COLOR DESIGNATION			
L1B1	BLACK	OR	BLACK
L1B2	RED	OR	RED
L1B3	BLUE	OR	BLUE
L1B4	BROWN	OR	BROWN
L1B5	GREEN	OR	GREEN
L1B6	YELLOW	OR	YELLOW

Figure 10
CGA180B4 (460V/60/3) and
CGA180BW (575V/60/3) Connection Diagram

(Continued on next page)

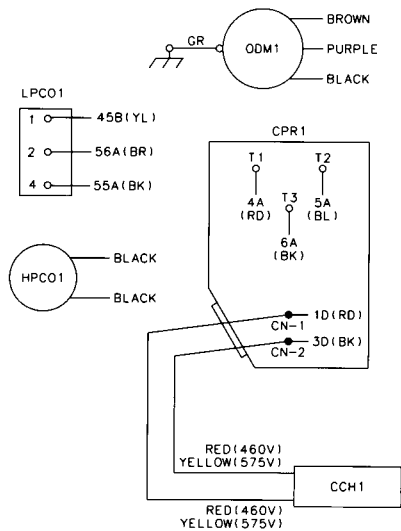


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NOTES:

- 1 HOT GAS BYPASS ALTERNATE CONSTRUCTION INCLUDES HGBT, HGBS AND ASSOCIATED WIRING.—(FACTORY INSTALLED ONLY).
- 2 FIELD INSTALLED POWER SUPPLY MONITOR ACCESSORY. REMOVE JUMPER BETWEEN LTB1-7 AND LTB1-8 WHEN INSTALLED.
- 3 FIELD INSTALLED ELAPSED TIME METER/ STARTS COUNTER ACCESSORY.
- 4 FIELD INSTALLED INTEGRATED COMFORT SYSTEM INTERFACE ACCESSORY. REMOVE JUMPERS BETWEEN LTB1-9 & LTB1-10 AND LTB1-11 & LTB1-12 WHEN INSTALLED.
- 5 THIS ACCESSORY NOT AVAILABLE FOR 380-415V/50 HZ/3 PH UNIT APPLICATION.



<p>⚠ WARNING</p> <p>DISCONNECT ELECTRIC POWER SUPPLY BEFORE SERVICING TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK.</p> <p>AVERTISSEMENT</p> <p>DEBRANCHER DU CIRCUIT D'ALIMENTATION ELECTRIQUE AVANT L'ENTRETIEN POUR EVITER BLESSURE OU MORT PAR ELECTROCUTION.</p>	<p>⚠ CAUTION</p> <p>USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.</p> <p>ATTENTION</p> <p>UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE POUR EVITER D'ENDOMMAGER L'EQUIPEMENT. LES BORNES NE SONT PAS PREVUES POUR AUTRES TYPES DE FILS CONDUCTEURS.</p>
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