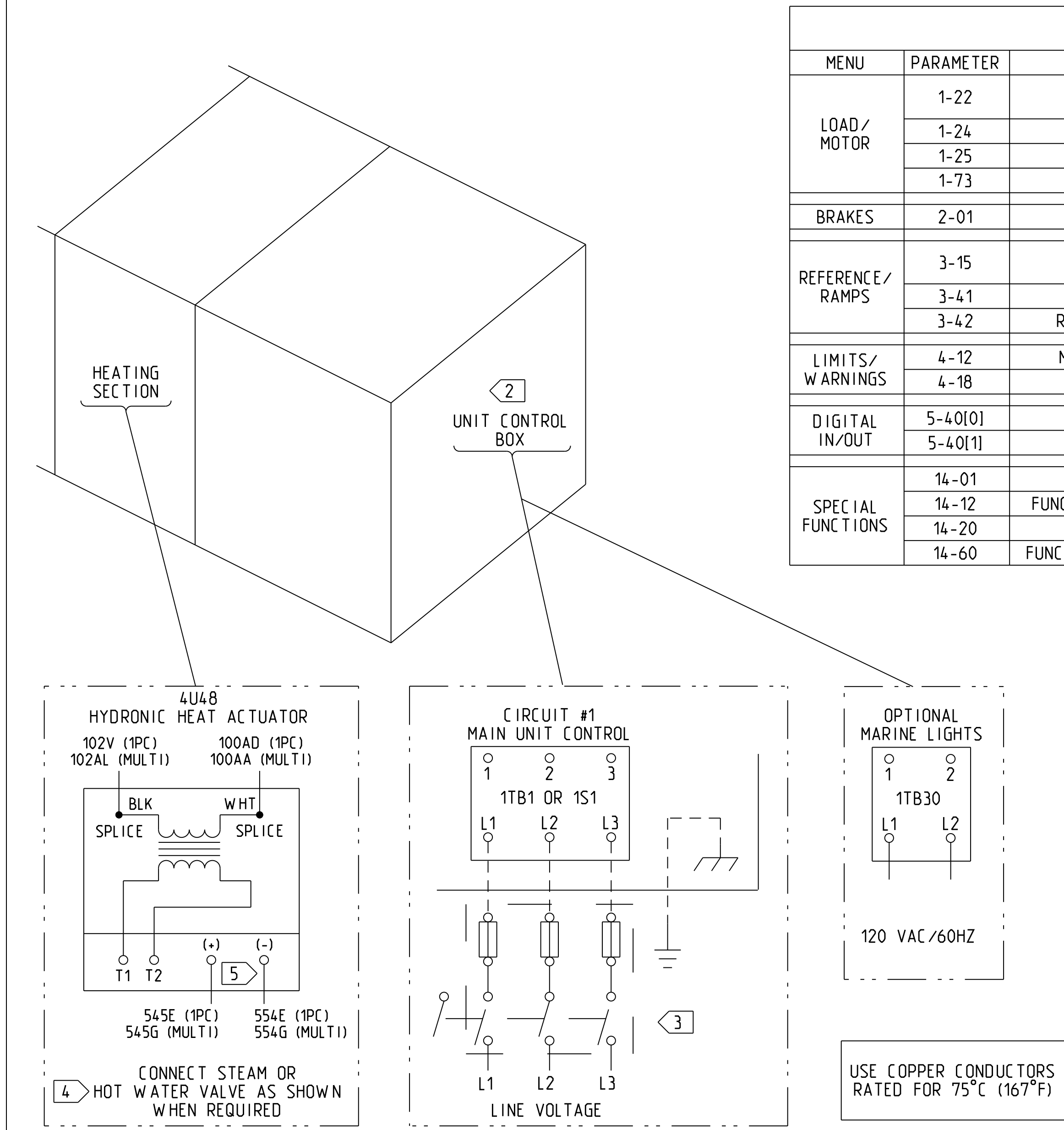




| VARIABLE FREQUENCY DRIVE PROGRAMMING PARAMETERS |           |                              |                                                         |
|-------------------------------------------------|-----------|------------------------------|---------------------------------------------------------|
| MENU                                            | PARAMETER | DESCRIPTION                  | SETTING                                                 |
| LOAD/<br>MOTOR                                  | 1-22      | MOTOR VOLTAGE                | SET ONLY FOR 200/230V 60HZ & 380/415V 50HZ APPLICATIONS |
|                                                 | 1-24      | MOTOR CURRENT                | SET BASED ON MOTOR NAMEPLATE                            |
|                                                 | 1-25      | MOTOR NOMINAL SPEED          | 1800 RPM                                                |
|                                                 | 1-73      | FLYING START                 | ENABLED                                                 |
| BRAKES                                          | 2-01      | DC BRAKE CURRENT             | 0%                                                      |
| REFERENCE/<br>RAMPS                             | 3-15      | REFERENCE 1 SOURCE           | ANALOG INPUT 53 <25>                                    |
|                                                 | 3-41      | RAMP 1 RAMP UP TIME          | 30 SECONDS                                              |
|                                                 | 3-42      | RAMP 1 RAMP DOWN TIME        | 30 SECONDS                                              |
| LIMITS/<br>WARNINGS                             | 4-12      | MOTOR SPEED LOW LIMIT        | 22HZ                                                    |
|                                                 | 4-18      | CURRENT LIMIT                | 100% RATED CURRENT                                      |
| DIGITAL<br>IN/OUT                               | 5-40(I)   | FUNCTION RELAY 1             | NO ALARM                                                |
|                                                 | 5-40(I)   | FUNCTION RELAY 2             | RUNNING                                                 |
| SPECIAL<br>FUNCTIONS                            | 14-01     | SWITCHING FREQUENCY          | 4.5KHZ                                                  |
|                                                 | 14-12     | FUNCTION AT MAINS IMBALANCE  | DERATE                                                  |
|                                                 | 14-20     | RESET MODE                   | AUTOMATIC RESET X 3                                     |
|                                                 | 14-60     | FUNCTION AT OVER TEMPERATURE | DERATE                                                  |

| CUSTOMER CONNECTION WIRE RANGE                                                                                                                                                                                                                                                                                                                 |            |                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------|
| UNITS WITH MAIN POWER TERMINAL BLOCK (ALL VOLTAGES)                                                                                                                                                                                                                                                                                            |            |                                  |
| BLOCK SIZE                                                                                                                                                                                                                                                                                                                                     | WIRE QTY.  | CONNECTOR WIRE RANGE             |
| 760 AMP                                                                                                                                                                                                                                                                                                                                        | (2)        | #4 - 500 MCM                     |
| UNITS WITH MAIN POWER DISCONNECT SWITCH OR CIRCUIT BREAKER (ALL VOLTAGES)                                                                                                                                                                                                                                                                      |            |                                  |
| DISCONNECT SIZE                                                                                                                                                                                                                                                                                                                                | WIRE QTY.  | CONNECTOR WIRE RANGE             |
| 250 AMP                                                                                                                                                                                                                                                                                                                                        | (1)        | #4 - 350 kcmil                   |
| 400 AMP                                                                                                                                                                                                                                                                                                                                        | (1) OR (2) | #1 - 600 kcmil OR #1 - 250 kcmil |
| 600 AMP                                                                                                                                                                                                                                                                                                                                        | (2)        | 250 - 500 MCM                    |
| 800 AMP                                                                                                                                                                                                                                                                                                                                        | (3)        | 3/0 - 500 kcmil                  |
| NOTES:<br>A. BLOCK SIZE & DISCONNECT SIZES ARE CALCULATED BY SELECTING THE SIZE GREATER THAN OR EQUAL TO 1.15 x (SUM OF UNIT LOADS). SEE UNIT LITERATURE FOR UNIT LOAD VALUES.<br>B. CIRCUIT BREAKER SIZES ARE CALCULATED BY SELECTING THE SIZE GREATER THAN OR EQUAL TO 125% x (SUM OF UNIT LOADS). SEE UNIT LITERATURE FOR UNIT LOAD VALUES. |            |                                  |

| FUSE REPLACEMENT TABLE                                                                                                       |                  |      |      |      |
|------------------------------------------------------------------------------------------------------------------------------|------------------|------|------|------|
| CONDENSER FAN FUSE<br>1F10 THRU 1F15 CLASS RK5                                                                               | FUSE SIZE        | 380V | 460V | 575V |
|                                                                                                                              |                  | 15A  | 15A  | 15A  |
| EVAPORATIVE CONDENSING<br>CONDENSER FAN FUSE<br>1F10 THRU 1F15 CLASS CC                                                      | FUSE SIZE        | N/A  | 460V | N/A  |
|                                                                                                                              |                  | N/A  | 8A   | N/A  |
| CONTROL POWER FUSES                                                                                                          |                  |      |      |      |
| TRANSFORMER PRIMARY<br>PROTECTION FUSE<br>1F3 & 1F4<br>CLASS CC                                                              | TRANSFORMER SIZE | 380V | 460V | 575V |
|                                                                                                                              | 1.00 KVA         | 6A   | 5A   | 4A   |
|                                                                                                                              | 1.50 KVA         | 10A  | 7A   | 6A   |
|                                                                                                                              | 2.00 KVA         | 10A  | 10A  | 7A   |
| TRANSFORMER SECONDARY<br>PROTECTION FUSE<br>1F1<br>TYPE S OR CLASS CC                                                        | TRANSFORMER SIZE | 380V | 460V | 575V |
|                                                                                                                              | 1.00 KVA         | 15A  | 15A  | 15A  |
|                                                                                                                              | 1.50 KVA         | 20A  | 20A  | 20A  |
|                                                                                                                              | 2.00 KVA         | 20A  | 20A  | 20A  |
| CONTROL WIRING PROTECTION<br>FUSE 1F7 & 1F8 TYPE MTH                                                                         | FUSE SIZE        | 380V | 460V | 575V |
|                                                                                                                              |                  | 6A   | 6A   | 6A   |
| VFD PROTECTION FUSES <span style="border: 1px solid black; padding: 0 2px;">24</span>                                        |                  |      |      |      |
| SUPPLY FAN VFD FUSES<br>1F19, 1F20, 1F21<br>&<br>OPTIONAL EXHAUST/RETURN<br>FAN VFD FUSES<br>1F22, 1F23, 1F24<br><br>CLASS T | MOTOR HP         | 380V | 460V | 575V |
|                                                                                                                              | 7.5 HP           | 45A  | 35A  | 25A  |
|                                                                                                                              | 10 HP            | 50A  | 45A  | 35A  |
|                                                                                                                              | 15 HP            | 90A  | 60A  | 50A  |
|                                                                                                                              | 20 HP            | 100A | 90A  | 70A  |
|                                                                                                                              | 25 HP            | 125A | 100A | 80A  |
|                                                                                                                              | 30 HP            | 150A | 125A | 90A  |
|                                                                                                                              | 40 HP            | 175A | 150A | 125A |
|                                                                                                                              | 50 HP            | 225A | 200A | 175A |
|                                                                                                                              | 60 HP            | 250A | 225A | 200A |
|                                                                                                                              | 75 HP            | 350A | 300A | 225A |
|                                                                                                                              | 100 HP           | N/A  | 350A | N/A  |
| MISCELLANEOUS FUSES                                                                                                          |                  |      |      |      |
| OPTIONAL CONVENIENCE<br>OUTLET FUSES 1F25 AND 1F26<br>CLASS CC                                                               | FUSE SIZE        | 380V | 460V | 575V |
|                                                                                                                              |                  | N/A  | 5A   | 4A   |
| ENERGY RECOVERY WHEEL<br>MOTOR FUSE 1F39 1F40, 1F41<br>CLASS CC                                                              | FUSE SIZE        | 380V | 460V | 575V |
|                                                                                                                              |                  | N/A  | 2A   | 2A   |
| SUMP HEAT FUSE<br>1F16, 1F17, 1F18<br>CLASS CC                                                                               | FUSE SIZE        | 380V | 460V | 575V |
|                                                                                                                              |                  | N/A  | 5A   | N/A  |

**WARNING**

HAZARDOUS VOLTAGE!

DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE.

FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.

**AVERTISSEMENT**

TENSION DANGEREUSE!

COUPER TOUTES LES TENSIONS ET OUVRIR LES SECTIONNEURS À DISTANCE. PUIS SUIVRE LES PROCÉDURES DE VERROUILLAGE ET DES ÉTIQUETTES AVANT TOUTE INTERVENTION. VÉRIFIER QUE TOUTS LES CONDENSATEURS DES MOTEURS SONT DÉCHARGÉS. DANS LE CAS D'UNITÉS COMPORTANT DES ENTRAÎNEMENTS À VITESSE VARIABLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAÎNEMENT POUR DÉCHARGER LES CONDENSATEURS.

NE PAS RESPECTER CES MESURES DE PRÉCAUTION PEUT ENTRAÎNER DES BLESSURES GRAVES POUVANT ÊTRE MORTELLES.

**ADVERTENCIA**

¡VOLTAJE PELIGROSO!

DESCONECTE TODA LA ENERGÍA ELÉCTRICA. INCLUIDO LAS DESCONECIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGÚRESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCIÓN DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR.

EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRÍA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.

**IMPORTANT!**

DO NOT ENERGIZE UNIT UNTIL CHECK-OUT AND START-UP PROCEDURE HAS BEEN COMPLETED.

| TRANE                                                                                                                          |                         | FILE NUMBER: | DRAWING NUMBER: | SHEET: | REV |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------|-----------------|--------|-----|
| THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE CONSENT OF TRANE. |                         |              | 2313-0817       | 1 of 1 | B   |
| ROOFTOP PACKAGED AIR CONDITIONER DIAGRAM                                                                                       |                         |              |                 |        |     |
| FIELD CONNECTIONS - CONSTANT VOLUME 90T-162T UNITS AND AIR HANDLERS                                                            |                         |              |                 |        |     |
| DRAWN BY:<br>D. SHANNON                                                                                                        | TRANE® DATE:<br>8-27-10 |              |                 |        |     |
| REPLACES:<br>2309-3911                                                                                                         | REVISION DATE:<br>--    |              |                 |        |     |
| CAD SYSTEM USED:<br>PRO/ENGINEER                                                                                               | SIMILAR TO:<br>--       |              |                 |        |     |

- NOTES:
- ALL WIRING AND COMPONENTS SHOWN DASHED TO BE SUPPLIED AND INSTALLED BY THE CUSTOMER IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.
  - CUSTOMER CONNECTIONS - MAIN UNIT CONTROLS ARE LOCATED IN THE CONDENSER SECTION FOR 90 THRU 162 TON UNITS & ON THE END OF THE UNIT ON AIR HANDLERS.
  - SEE CUSTOMER CONNECTION WIRE RANGE TABLE FOR ACCEPTABLE WIRE SIZES FOR CONNECTION TO MAIN UNIT TERMINAL BLOCK (1TB1) OR DISCONNECT SWITCH (1S1).
  - WIRES TO THE OPTIONAL STEAM AND/OR HOT WATER HEAT VALVE ARE SUPPLIED WITH THE UNIT. WIRE CONNECTIONS TO THE VALVE TO BE MADE BY THE CUSTOMER.
  - WIRES CONNECTING TO THE OPTIONAL STEAM AND/OR HOT WATER HEAT ACTUATOR AT NODES 100, 102, 545 AND 554 WILL BE NUMBERED 100AD, 102V, 545E AND 554E ON 1-PIECE UNITS AND WILL BE NUMBERED 100AA, 102AL, 545G AND 554G ON MULTI-PIECE UNITS.
  - OPTIONAL 9U39 REMOTE ZONE TEMP SENSOR IS USED FOR REMOTE ZONE TEMP SENSING.
  - WHEN 9U40 REMOTE ZONE TEMP SENSOR IS USED, REMOVE INTEGRAL ZONE TEMP SENSOR ATTACHED TO TERMINALS S1 AND S2 ON 9U44 REMOTE PANEL.
  - WIRE USING SHIELDED TWISTED PAIR CABLE.
  - WIRE USING SHIELDED TWISTED PAIR CABLE. WRAP SHIELDS WITH TAPE TO PREVENT CONTACT WITH GROUND.
  - REMOVE JUMPER (1TB4-15 & 1TB4-16) AND INSTALL HIGH DUCT TEMP T-STAT OR FIELD SUPPLIED DEVICE.
  - REMOVE JUMPER (1TB4-17 & 1TB4-18) WHEN FIELD SUPPLIED EXTERNAL AUTO/STOP SWITCH (9S34) IS INSTALLED.
  - CUSTOMER SUPPLIED VAV CHANGEOVER RELAY/CONTACTS (5K87) ARE REQUIRED ON HYDRONIC HEAT AND MODULATING GAS HEAT UNITS FOR OPERATION OF OCCUPIED VAV HEAT MODE.
  - ALARM OUTPUT ACTIVATES ON ANY MAPPED DIAGNOSTIC.
  - OPTIONAL HEAT MODULE AUX. TEMP (9RT17) IS USED FOR MORNING WARM-UP CONTROL ON UNITS WITH HEATING OPTION.
  - TERMINAL BLOCK 1TB7 AND ASSOCIATED WIRING REQUIRED WITH GBAS 0-5V (1U10) OPTION. DEMAND LIMIT RELAY (9K31) TO BE PROVIDED BY CUSTOMER.
  - TERMINAL BLOCK 1TB8 AND ASSOCIATED WIRING REQUIRED WITH GBAS 0-10V (1U11) OPTION.
  - VENTILATION OVERRIDE MODE CONTACTS (5K90 - 5K94) RATED 12 MA TO BE PROVIDED BY CUSTOMER.
  - WIRE NODES 623 & 624 REQUIRED WITH BAS/NETWORK COMM MODULE (1U7) OPTION.
  - CONTACTS RATED 12 MA @ 24 VDC MINIMUM.
  - CONNECT TO 24VAC CLASS 2 CIRCUITS ONLY. CLASS 2 CONTROL CIRCUIT: USE CLASS 2 CONDUCTORS FOR CONNECTION TO REMOTE CONTROL CIRCUITS.
  - FIELD SUPPLIED AND INSTALLED OCCUPIED/UNOCCUPIED CONTACTS (9K29) FOR USE ON UNITS WITHOUT REMOTE PANEL WITH NIGHT SETBACK (9U44).
  - 1TB29 NOT AVAILABLE WHEN BOTH 0-5V GBAS AND 0-10V GBAS ARE INSTALLED. IF A SINGLE GBAS IS INSTALLED, 1TB29 WILL OCCUPY THE POSITION WHERE THE TERMINAL BLOCK SUPPORTING THE SECOND GBAS IS PLACED.
  - FOR FIELD WIRING USE 18 AWG 75°C (167°F) COPPER CONDUCTORS.
  - SEE FUSE REPLACEMENT TABLE ON VFD PANEL FOR VFD POWER FUSES (F40, F41, F42).
  - SWITCH A53, LOCATED ON THE VFD, MUST BE SET TO "U" (OFF).

**CAUTION**

USE COPPER CONDUCTORS ONLY!

UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.

FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

**ATTENTION**

N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!

LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.

**PRECAUCIÓN**

¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!

LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.

SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.

| DEVICE PREFIX LOCATION CODE |                              |
|-----------------------------|------------------------------|
| AREA                        | LOCATION                     |
| 1                           | INSIDE UNIT CONTROL BOX      |
| 2                           | CONDENSER SECTION            |
| 3                           | INSIDE SECONDARY CONTROL BOX |
| 4                           | HEAT/EXTENDED CASING SECTION |
| 5                           | SUPPLY FAN SECTION           |
| 6                           | EVAP SECTION                 |
| 7                           | DAMPER/FILTERS SECTION       |
| 8                           | EXHAUST/RETURN FAN SECTION   |
| 9                           | EXTERNAL FIELD MTD DEVICE    |

| MARINE LIGHT TERMINAL BLOCK TORQUE RATINGS |           |
|--------------------------------------------|-----------|
| LINE                                       | TORQUE    |
| 2/0 - 6 AWG                                | 120 IN/LB |
| 8 AWG                                      | 40 IN/LB  |
| 10 - 14 AWG                                | 35 IN/LB  |

