



Controls and Troubleshooting Supplement

This booklet supplements the 30GT040-420 Unit Controls and Troubleshooting literature and is to be used for the 30GU040-420 Flotronic chillers utilizing refrigerant R-134a.

GENERAL

The model 30GU chillers are air-cooled Flotronic chillers utilizing Refrigerant R-134a. The start-up, operation, maintenance, and troubleshooting procedures for the 30GU units are identical to the 30GT Flotronic chillers utilizing refrigerant R-22 with the exception of some minor modifications required to accommodate the different temperature and pressure characteristics of R-134a.

Unit sizes 230-420 are modular units which are shipped as separate sections (modules A and B). Installation instructions specific to these units are shipped inside the individual modules. See table below for a listing of unit sizes and modular combinations. For modules 230B-315B, follow all general instructions as noted for unit sizes 080-110. For all remaining modules, follow instructions for unit sizes 130-210.

Unit Sizes and Modular Combinations

UNIT MODEL 30GU	NOMINAL TONS	SECTION A UNIT 30GU	SECTION B UNIT 30GU
40	26	—	—
45	28	—	—
50	34	—	—
60	42	—	—
70	48	—	—
80	55	—	—
90	59	—	—
100	66	—	—
110	72	—	—
130	84	—	—
150	99	—	—
170	110	—	—
190	122	—	—
210	134	—	—
230	154	150	080
245	158	150	090
255	165	150	100
270	176	170	100
290	193	190	110
315	206	210	110
330	219	170	170
360	243	190	190/170*
390	256	210	190
420	268	210	210

*60 Hz units/50 Hz units.

SAFETY CONSIDERATIONS



ELECTRIC SHOCK HAZARD

Open all remote disconnects before servicing this equipment.

Installing, starting up, and servicing this equipment can be hazardous due to system pressures, electrical components, and equipment location.

Only trained, qualified installers and service mechanics should install, start up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When working on the equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment.

- Follow all local safety codes.
- Wear safety glasses and work gloves.
- Use care in handling, rigging, and setting bulky equipment.
- Use care in handling electronic components.

INTRODUCTION

This publication contains supplemental information for the 30GU electronic control system, and 30GU control system troubleshooting information for the Flotronic liquid chillers with refrigerant R-134a.

The Flotronic chillers are equipped with electronic expansion valves (EXVs) and are **NOT** available with conventional thermostatic expansion valves (TXVs).

Differences in operations and controls between standard 30GT and 30GU units are noted in appropriate sections in this publication. Refer to the 30GU Installation, Start-Up and Service Instructions and the 30GU wiring diagrams for the appropriate unit size for further details.

⚠ WARNING

This unit uses a microprocessor-based electronic control system. Do not use jumpers or other tools to short out or bypass components or otherwise depart from recommended procedures. Any short-to-ground of the control board or accompanying wiring may destroy the board or electrical component.

FLOTRONIC™ CONTROL SYSTEM

General — The 30GU air-cooled reciprocating chillers contain a microprocessor-based electronic control system that controls and monitors all operations of the chiller.

The control system is composed of several components as listed below:

- processor board
- relay board
- display board
- thermistors
- EXV
- compressor protection control system (CPCS) (standard on size 070, 50 Hz, and on 080-110 and associated modular sizes)
- ground fault protection system (standard on sizes 130-210 and associated modular sizes)
- accessory board (field installed)
- demand limit board (field installed)

The Flotronic control system monitors and controls the following:

- cooler leaving-fluid temperature (compressor capacity control)
- EXVs
- condenser fans (head pressure control)
- demand limiting
- temperature reset
- pulldown control
- pumpdown on unit shutdown
- diagnostic display
- safety functions
- unit checkout (quick test)

Processor Board — The processor board is the chiller system's main control center. It contains the microprocessor, microprocessor memory, power supplies, analog-to-digital converters, and relay and display drivers.

The processor board is covered with a sheet metal cover containing heaters that are used to keep the processor board above 32 F (0 °C).

All electrical connections to the processor board are made through wire and ribbon cable connectors located around the outside of the board.

There are either 8 or 9 thermistors connected to the microprocessor that are used to sense various temperatures throughout the system. The microprocessor also monitors several status switches in the unit.

From one to 5 potentiometers are connected to the processor board. These potentiometers are used to input set points to the microprocessor.

The microprocessor also controls several outputs. All relay outputs are controlled through the relay board which plugs into the processor board through a ribbon cable. In addition, the processor controls a 2-digit LED (light-emitting diode) display located on the display board. The display board also plugs into the processor board with a ribbon cable. The EXVs are controlled by the microprocessor.

30GT, GU COMMON INFORMATION

The following control components and settings are used for both the 30GT and 30GU units:

- system thermistors
- status switches
- potentiometers
- configuration header and settings
- DIP (dual, in-line package) switches and settings
- processor inputs and outputs
- relay board
- display board and codes
- thermistors and locations
- compressor protection control system (CPCS)
- control relay (CR)
- compressor ground current protection board (CGF)
- quick test steps and codes

30GT, GU SIGNIFICANT DIFFERENCES

The following differences between the 30GT and 30GU units permit them to be applied, operated, and controlled in a consistent manner:

- The control EPROM (erasable, programmable, read-only memory) chips are different.
- The 30GU system superheat is lower than a comparable 30GT, R-22 system.
- compressors, compressor oil types, and oil equalization systems are different
- compressor circuit breakers trip points are different
- high-pressure switch settings are different
- miscellaneous unit labels are different

Refer to 30GU base unit installation instructions for details on these values how they affect the unit.

OPERATION AND TROUBLESHOOTING

The operation and troubleshooting procedures for the 30GU liquid chillers are identical to those for the 30GT liquid chillers.

The electronic controls contain extensive diagnostic capabilities. The 2-digit controls display show useful diagnostic codes that will help troubleshoot the system. If a problem is suspected, check this display for diagnostic information.