Perlick PC-2000 Glycol Chiller Service Manual

Equipment: Commercial Glycol Chiller System
Model: PC-2000
Manufacturer: Perlick Corporation
Service Level: Certified Refrigeration Technician

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1. Safety Information & Warnings

■■ CRITICAL SAFETY WARNINGS:

• This system contains pressurized refrigerant and glycol
• Always wear safety glasses and insulated gloves
• Disconnect power before servicing
• Refrigerant handling requires EPA certification
• Glycol is toxic - avoid skin contact

2. System Specifications

Electrical Specifications:

• Voltage: 115V, 60Hz, Single Phase
• Current: 8.5 Amps
• Power: 1.0 kW (1,000 Watts)
• Ground Fault Protection: Required
• Wire Size: #12 AWG minimum

Refrigeration Specifications:

• Refrigerant: R-134a
• Charge: 1.8 lbs
• Compressor: Hermetic reciprocating, 1/3 HP
• Condenser: Air-cooled
• Evaporator: Plate heat exchanger

Glycol Specifications:

• Glycol Type: Food-grade propylene glycol
• Concentration: 30% glycol, 70% water
• Capacity: 2.5 gallons
• Operating Temperature: 28-35°F
• Flow Rate: 2-4 GPM

Performance Specifications:

• Cooling Capacity: 2,000 BTU/hr
• Temperature Range: 25-40°F
• Pressure Range: 10-20 PSI
• Dimensions: 18" W x 24" D x 36" H

3. Electrical Testing Procedures

Pre-Test Checklist:

■ Verify power is disconnected
■ Check multimeter calibration
■ Inspect all connections for damage
■ Ensure proper grounding

Voltage Testing:

1. Test L1-N: Should read 115V ±10%
2. Test L1-Ground: Should read 115V ±10%
3. Test N-Ground: Should read 0V
4. Test control voltage: 24V DC ±10%

Current Testing:

• Normal Operation: 7-8 Amps
• Startup Current: 12-15 Amps
• Compressor Locked: 20+ Amps

4. Refrigeration System Testing

Pressure Testing:

• High Side Pressure: 140-180 PSI (normal operation)
• Low Side Pressure: 15-25 PSI (normal operation)
• Suction Temperature: 25°F ±3°F
• Discharge Temperature: 160°F ±15°F
• Subcooling: 8-12°F
• Superheat: 6-10°F

Compressor Testing:

1. Check compressor windings resistance
- L1-L2: 3.2 ohms
- L2-L3: 3.2 ohms
- L1-L3: 3.2 ohms
2. Test start capacitor: 150-200 MFD
3. Verify compressor start-up sequence
4. Monitor current draw during operation

5. Glycol System Testing

Glycol Flow Testing:

• Flow Rate: 2-4 GPM
• Pressure: 10-20 PSI
• Temperature: 28-35°F
• Pump Head: 15-25 feet

Glycol Quality Testing:

1. Test glycol concentration: 30% ±5%
2. Check pH level: 7.0-8.5
3. Test for contamination
4. Check for air bubbles in system
5. Test freeze point: -10°F minimum

6. Control System Diagnostics

Control Board Testing:

1. Check power supply voltage: 24V DC ±10%
2. Test input signals from sensors
3. Verify output signals to actuators
4. Check communication with display

Sensor Testing:

• Temperature Sensor: 10K ohm thermistor @ 77°F
• Pressure Switch: Normally open, closes at 10 PSI
• Flow Switch: Normally open, closes at 1 GPM
• Level Switch: Normally closed, opens when low

7. Troubleshooting Flow Charts

Low Glycol Pressure:

1. Check pump operation - Is pump running?
YES → Check for restrictions
NO → Check electrical connections
2. Check for restrictions - Are lines clear?
YES → Check pump impeller
NO → Clean or replace lines
3. Check pump impeller - Is it damaged?
YES → Replace pump
NO → Check system charge

8. Error Code Reference

Error Code	Description	Cause	Solution
E01	Low Glycol Pressure	Pump issue	Check pump and lines
E02	High Pressure	Condenser dirty	Clean condenser coils
E03	Low Pressure	Refrigerant leak	Check for leaks and recharge
E04	Temperature High	Glycol flow issue	Check pump and flow
E05	Sensor Fault	Bad sensor	Replace temperature sensor
E06	Communication Error	Wiring issue	Check control board connections
E07	Low Glycol Level	Glycol leak	Check for leaks and refill
E08	Pump Overload	Pump motor issue	Check pump motor and connections

9. Parts & Service Procedures

Common Replacement Parts:

Part Number	Description	Price	Replacement Time
GP-300	Glycol Pump Assembly		1 hour
T-100	Temperature Sensor		30 minutes
GL-500	Glycol Lines (per foot)		15 minutes
PS-200	Pressure Switch		20 minutes
CB-400	Control Board		45 minutes
FS-150	Flow Switch		25 minutes
CP-500	Compressor		3 hours
EV-400	Evaporator		2 hours

10. Maintenance Schedules

Daily Maintenance:

• Check glycol temperature
• Inspect for leaks
• Clean exterior surfaces

Weekly Maintenance:

• Clean condenser coils
• Check glycol concentration
• Test all safety switches

Monthly Maintenance:

• Replace glycol filter
• Clean glycol system
• Check electrical connections

Quarterly Maintenance:

• Professional service required
• Check refrigerant charge
• Calibrate temperature sensors

11. Wiring Diagrams

Refer to electrical schematic for detailed wiring information.
All electrical work must be performed by licensed electrician.
For technical support: support@myguy.dev

12. Warranty Information

This equipment is covered by a 2-year parts and labor warranty.
Warranty is void if equipment is modified without authorization.
For service: support@myguy.dev