

Thermo Scientific
Forma FFGL Series – HP Lab Freezers with Manual Defrost

PART 1 – GENERAL

1.1 DESIGN AND PERFORMANCE CRITERIA

- A. High performance laboratory freezer with manual defrost manufactured to operate at -20C. Must be available in 115V/60 Hz or 208-230V/60 Hz.
- B. Freezer must be constructed of 2" non-CFC foamed-in-place polyurethane insulation with solid door(s)
- C. Freezer shall have self closing door with magnetic gasket
- D. Freezer shall be painted with high-impact, scratch resistant powder coat finished interior and exterior to ensure long term viability and maximum interior temperature uniformity.
- E. Door allows one-handed opening and closing and must include door key lock
- F. Freezer shall have adjustable epoxy-coated wire shelving
- G. Refrigerator shall have a 1 inch access ports as standard feature
- H. Freezer shall have auto-defrost
- I. Freezer shall "dry" remote alarm contacts for remote alarm monitoring

1.2 SUBMITTALS

- A. Submit complete submittal package of product literature, manual, and drawings. Incomplete submittals are not acceptable, will be considered non-responsive, and will be returned without review.

1.3 QUALITY ASSURANCE

- A. High performance freezers must be built to, and contain the registration mark for UL, cUL, (60 Hz models) and CE (50 Hz models) standards for safety and performance.

1.4 QUALIFICATION

- A. Manufacturer – Company must have 10 years documented experience in the construction of high performance laboratory refrigerators.
- B. High performance freezers – Shall be registered for UL, cUL, (60 Hz models) and CE (50 Hz models) standards.

1.5 WARRANTY

- A. Manufacturer's warranty against defects in material and workmanship covering parts must be available for a period of 2 years covering parts and labor. (2 yr parts only for international)
- B. Standard exceptions for air filters, batteries, and gaskets shall apply.
- C. Extended manufacturer's warranty options should be available at additional charge if required

PART 2 – PRODUCT

2.1 MANUFACTURERS

- A. Thermo Scientific

2.2 Forma FFGL Series high performance freezer capacities

- A. Model FFGL2320A/FFGL2320D – 23.3 cu ft capacity
- B. Model FFGL3020A/FFGL3020D – 29.2 cu ft capacity

2.3 Forma FFGL Series high performance freezer dimensions

- 1. Exterior Dimensions (H x W x D)
 - a. Model FFGL2320A/FFGL2320D – 79.2" x 37.2" x 28.0" (201.2 x 94.5 x 71.1 cm)
 - b. Model FFGL3020A/FFGL3020D – 79.2" x 37.2" x 34.0" (201.2 x 94.5 x 86.4 cm)
- 2. Interior Dimensions (H x W x D)
 - a. Model FFGL2320A/FFGL2320D – 58.0" x 29.0" x 24.0" (147.3 x 73.7 x 61.0 cm)
 - b. Model FFGL3020A/FFGL3020D – 58.0" x 29.0" x 30.0" (147.3 x 73.7 x 76.2 cm)

2.3 Forma FFGL Series high performance refrigerator control requirements

- A. Microprocessor controller must monitor in one degree C increments, with the digital display
- B. Eye level information center for "At-a-glance" monitoring and ease of setting controls
- C. Must have high and low temperature alarms, door ajar alarm, power fail alarm, alarm test, and low battery alarm
- D. Battery back-up for temperature alarm monitoring system
- E. Keyed security lock for power, temperature and alarm settings

2.4 – OPTIONS AND ACCESSORIES

- A. Options
 - a. 4 – 20 mA output
 - b. Factory installed chart recorder

B. Accessories

- a. Shelf kit
- b. Chart paper
- c. Alarm delay module
- d. Remote alarms
- e. Freestanding chart recorder
- f. Seismic restraint kit
- g. Telephone dialing system

PART 3 – EXECUTION**1.01 INSTALLATION**

A. Install equipment level and plumb, according to manufacturer's written instructions.

- 1. Verify utility services are in required locations and are ready for use before installation of equipment.
- 2. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and requirements of authorities having jurisdiction.
- 3. Complete equipment assembly where field assembly is required.
- 4. Connect equipment to utilities.
- 5. Remove all packing materials from the site.