

**SECTION 11600**  
**LABORATORY GLASSWARE WASHER**  
**Model 1400 LXP**

**PART 1 GENERAL**

**1.01 SYSTEM DESCRIPTION**

- A. Laboratory Glassware Washer/Dryer

**1.02 SUBMITTALS**

- A. Bill of Materials
- B. Product Literature
- C. Installation Plans
- D. Operations and Maintenance Manual
- E. Preventative Maintenance Procedures
- F. Recommended Spare Parts List
- G. Warranty Statement

**1.03 QUALITY ASSURANCE**

- A. Quality Standards: Laboratory Glassware Washer/Dryer manufactured under ISO 9001 accreditation.
- B. Manufacturer Qualifications: A company with a minimum of 35 years experience in the manufacture of products similar to those specified.
- C. Service Support: Manufacturer must have a nationwide network of trained service professionals.

**1.04 WARRANTY**

- A. The Warranty Period is 13 months from the date your equipment is shipped from our facility or 12 months from installation, whichever occurs first.

**PART 2 PRODUCTS**

**2.01 DESIGN STANDARD MANUFACTURER**

- A. This specification is based on the LANCER **1400 LXP** Series Washer/Dryer, manufactured by and exclusively for LANCER USA Incorporated, 3543 State Road 419, Winter Springs, FL 32708. Telephone: (407) 327-8488, Fax: (407) 327-1229.

**2.02 EQUIPMENT**

- A. Model: LANCER **1400 LXP** Glassware Washer/Dryer

B. General Description:

Freestanding, fully automatic and programmable laboratory glassware washer/dryer designed to wash inside of small-necked laboratory glassware using injectors and open glassware using rotary spraying arms. Wash pump and hydraulic circuit provide a high flow rate and low-pressure delivery for thorough cleaning without breakage of washed items. A drying blower, HEPA filter, and electrical heating element force hot air into the wash chamber and through the jet rack spindles to accomplish thorough drying up to 110°C. Through the use of a diverse range of racks, baskets, and accessories, the machine is capable of injection washing on multiple levels, thereby minimizing footprint while maximizing wash/dry capacity. Load bearing drop-down door and extendable rack rails allow for loading of each wash level without the use of carts or trolleys.

C. Dimensions and Capacities:

1. Exterior Dimensions: 68.02 inches (1,728 mm) high by 31.1 inches (790 mm) wide by 32.71 inches (831 mm) deep, maximum.
2. Interior Wash Chamber Dimensions: 30.3 inches (770 mm) high by 24.4 inches (620 mm) wide by 24.4 inches (620 mm) deep, minimum.
3. Rack Capacity: 3 racks simultaneously, 4 interchangeable rack locations with automatic rack-to-column connection valves.
4. Rotating Spray Arms: 1 located at top and 1 located at bottom of wash chamber.
5. Wash Chamber Load Area: 3 wash levels – 524 square inches per level, 1,572 square inches total 3 levels.

D. Engineering Data:

1. Shipping Weight: 700 lbs (318 kg).
2. Shipping Dimensions: 78 inches (1,981 mm) high by 41 inches (1,041 mm) wide by 42.7 inches (1085 mm) deep, maximum.
3. Heat Loss: 4,760 Btu/hr (1,200 Kcal/h) maximum.
4. Sound Level: <63 dBA.

E. Utility Requirements:

1. Electrical Requirements
  - a. Provide a power cord or hard wire connection and a fusible disconnect switch.
  - b. Electrically Heated Washer (Standard):
    - 3 Phase, 208 Volt, 60 Hz, 13.5 kW, 37 A.
    - 3 Phase, 230 Volt, 60 Hz, 13.5 kW, 34 A.
    - 3 Phase, 480 Volt, 60 Hz, 13.5 kW, 17 A.
  - c. Steam Heated Washer:
    - 3 Phase, 208 Volt, 60 Hz, 4 kW, 19 A.
    - 3 Phase, 230 Volt, 60 Hz, 4 kW, 17 A.
    - 3 Phase, 480 Volt, 60 Hz, 4 kW, 9 A.
2. Hot Water
  - a. Provide a shut off valve with a threaded  $\frac{3}{4}$  inch male hose thread nozzle. Flow Rate: 5  $\frac{1}{4}$  gal/min (20 l/min) with a pressure between

29 to 87 psig (200 to 600 KPa). Maximum Temperature: 50°C (122°F).

- b. Washer is equipped with a 5 foot (1,524 mm) long, ½ inch (12 mm) diameter hose with ¾ inch (19 mm) diameter female hose thread fitting.
3. Cold Water
  - a. Provide a shut off valve with a threaded ¾ inch male hose thread nozzle. Flow Rate: 5 ¼ gal/min (20 l/min) with a pressure between 29 to 87 psig (200 to 600 KPa).
  - b. Washer is equipped with a 5 foot (1,524 mm) long, ½ inch (12 mm) diameter hose with ¾ inch (19 mm) diameter female hose thread fitting.
4. Deionized/Purified Water
  - a. Provide a shut off valve with a threaded ¾ inch male hose thread nozzle. Flow Rate: 5 ¼ gal/min (20 l/min) with a pressure between 29 to 87 psig (200 to 600 KPa).
  - b. Washer is provided with a 5-foot (1,524 mm) long, ½ inch (12 mm) diameter hose with ¾ inch (19 mm) diameter female hose thread fitting.
5. Water Consumption
  - a. 5.2 to 6.6 gallons (20 to 25 liters) per fill.
6. Drain
  - a. Provide a fixed standpipe and plumbing trap with a minimum inside diameter of 1 ½ inches (40 mm). Height above finished floor level between 31 to 35 inches (800 to 900 mm). Discharge flow rate: 10 ½ gal/min (40 l/min) and maximum temperature 203°F (95 °C).
  - b. Washer is equipped with a 5 foot (1,524 mm) long, ¾ inch (19 mm) diameter hose with gooseneck for connection to standpipe.
7. Overflow Safety Discharge
  - a. Provide a floor drain connection or fixed discharge tube with an outside diameter of 1 ¼ inches (32 mm). Maximum height above finished floor level 20 inches (500 mm). Flow Rate: 5 gal/min (20 l/min) and maximum temperature 203°F (95 °C).
  - b. Washer is equipped with a 5 foot (1,524 mm) long, ¾ inch (19 mm) diameter hose with 1 ¼ inch (32 mm) end piece for connection to discharge tube.
8. Steam Feed (only when steam heating option is purchased)
  - a. Provide a shut off valve, strainer and flexible steam hose for connection to washer's ½ inch male BSP threaded inlet.
  - b. Steam pressure between 29 to 87 psig (200 to 600 kPa). Maximum consumption 265 lbs/hr, 66 lbs/cycle. Typically 1 cycle per hour is used.
9. Steam Condensate Return (only when steam heating option is purchased)
  - a. Provide a shut off valve, steam trap and flexible steam hose for connection to washer's ½ inch male BSP threaded outlet.

10. Exhaust Connection Preferred

- a. Provide an exhaust hood 12 inches (300 mm) minimum, 40 inches (1000 mm) maximum above the washer's exhaust pipe. Discharge flow rate: 40 CFM; maximum temperature 203°F (95°C) and maximum relative humidity of 95%.

F. Construction and Components:

1. Body, Door, and Washing Chamber: #4 sanitary high-grade finish AISI 316L stainless steel construction throughout interior of washer, exterior panels of 304 L stainless steel.
2. Insulation: Synthetic, rubber based closed cell foam.
3. Main Wash Pump: 1.5 HP with capacity of 159 gal/min (600 liters/min).
4. Drain Pump: 30 W with capacity of 6 ¼ gal/min (24 l/min).
5. Detergent and Acid Additive Pumps: Peristaltic type dosing at a rate of 280 ml per minute.
6. Electric Water Heating (Standard): 12 kW, type 304 stainless steel electrical submersion heater elements provide heating up to 95°C.
7. Dryer Heating: 3.6 kW heating elements provide drying up to 110°C.
8. Water Filters: Included in hoses and water inlet valves to prevent debris from entering wash chamber.
9. Double Filter System: In chamber to protect recirculation and drain pump, easily removable for inspection and cleaning.
10. Complete Service Panel Access: To heaters, safety relays and circuit breakers.

G. Features:

1. Washing Circuit: All components in contact with wash and rinse solutions made of stainless steel or other materials impervious to the effects of detergents, additives, and general laboratory chemicals.
2. HEPA Filtered Forced Air Drying: Drying circuit consists of (2) 1.8 kW electrical heating elements, (2) HEPA filters and (2) drying blowers that force hot air into the wash chamber and through the jet rack spindles to thoroughly dry the interior and exterior of all glassware, plastic ware and other parts after cleaning.
3. Glassware Racks and Trays: #4 sanitary high-grade finish AISI 304L stainless steel, removable, interchangeable on two rack levels, with full extension roller slides attached to rack/tray (only track members remaining in wash chamber when rack/tray removed), pinned in place for safety to prevent accidental roll-out.
4. Injectors: #4 sanitary high-grade finish AISI 304L stainless steel, mounted in racks with headers inserted into water outlet on wall of chamber; star-shaped polypropinol feet and integral injector tips for protection of washed items; injectors threaded into rack for easy removal, cleanout, and replacement.
5. Rack-to-Column Connection Valves: Automatically opened when injector racks or spray arm racks are inserted into any level of the multi-level chamber.
6. Spray Arms: #4 sanitary high-grade AISI 316L stainless steel; mounted on top and bottom of chamber; racks and trays available with spray

arms mounted on bottom, with headers inserted into water outlet on wall of chamber; easily disassembled for cleaning and maintenance.

7. Door: Front, drop-down, spring counterbalanced; capable of supporting full glassware load and functioning as a loading platform to eliminate the requirement for a loading trolley; double-wall construction; insulated to minimize noise and surface temperature.
8. Fully Extendable Load Bearing Arms: Support jet racks for easy loading and unloading of glassware without the need for a loading cart.
9. On-Board Chemical Storage: Pullout drawer provides storage and spill containment for a 2 ½ gallon (10 liter) container of detergent solution and a 2 ½ gallon (10 liter) container of acid solution.
10. Tested for compliance with EC Electromagnetic Compatibility Directive.

#### H. Microprocessor Controls:

1. LANCER Control System
  - a. Capable of storing 40 wash (4 preset, 36 user definable) programs, identified by name, with up to 55 functions per program.
  - b. All machine parameters are password protected.
2. Wash Cycle Program Functions:
  - a. Prewash: 0 to 3 cycles, at up to 95°C, of 0 to 30 minutes each, 0 to 6 minutes (1,680 ml) of liquid detergent addition at 280 ml/min. User can select hot, cold or purified water.
  - b. Wash: 0 or 1 cycle, at up to 95°C, of 0 to 30 minutes, 0 to 6 minutes (1,680 ml) of liquid detergent intake at 280 ml/min. User can select hot, cold or purified water.
  - c. Running Water Rinse Number 1: 0 to 9 fill, 30 second rinse and drain cycles. User can select hot, cold or purified water.
  - d. Acid Rinse: 0 or 1 cycle of 0 to 30 minutes, 0 to 6 minutes (1,680 ml) of liquid acid rinsing additive intake at 280 ml/min. User can select hot, cold or purified water.
  - e. Running Water Rinse Number 2: 0 to 9 fill, 30 second rinse and drain cycles. User can select hot, cold or purified water.
  - f. Pure Water Rinse COLD: 0 to 4 cycles of 0 to 30 minutes each. User can select cold or purified water.
  - g. Pure Water Rinse HOT: 0 or 1 cycle, at up to 95°C, of 0 to 30 minutes. User can select hot or purified water.
  - h. Drying Time: 0 to 90 minutes, temperature selection up to 110°C.
  - i. Cooling Time: 0 to 30 minutes.
3. Service Mode:
  - a. Enables access for verification of component function and calibration.
  - b. Enables adjustment of general operating parameters for optimal performance at individual facilities.
4. Control Panel Display: 16-character, 2 row liquid crystal display, 4-1/2 inches (63.5 mm) long, to display all program parameters.
5. Control Panel Keypad
  - a. Power button to turn washer on and off.
  - b. Numeric keyboard to select wash program.

- c. Start button to start wash cycle and to confirm information when in programming mode.
  - d. Minus “-” button to display phase and status.
  - e. Temperature symbol button to display current temperature and programmed temperature.
  - f. Clock symbol button to display phase, sequence and cycle times.
  - g. Number “1” button to display Relay 1 to 8 status during wash cycle.
  - h. Number “2” button to display Relay 9 to 16 status during wash cycle.
  - i. Number “3” button to display Relay 17 to 24 status during wash cycle.
  - j. Number “8” button to display Input 1 to 8 status during wash cycle.
  - k. Number “9” button to display Input 9 to 16 status during wash cycle.
- 6. Alarm conditions displayed in plain language with clear definition, not requiring reference to operation manual for interpretation of codes.
  - 7. Water Temperature: Capable of heating up to and maintaining 95°C for a minimum of 30 minutes.
  - 8. Automatic intake and dispensing of liquid detergent with independent adjustable dosing times for each prewash and wash cycle.
  - 9. Automatic intake and dispensing of liquid acid rinse additive with adjustable dosing.
  - 10. Automatic self-diagnosis of mechanical and electrical malfunctions with audible and visual alarms, including automatic monitoring of fill and drain time to detect possible malfunctions that could result in overflow.
  - 11. Door safety interlock acts as a fail-safe by removing power from machine output components when door is in the open position.
  - 12. Two sensors control water level inside machine and prevent overflow.

## **PART 3 EXECUTION**

### **3.01 PREPARATION, DELIVERY**

- A. Verify utility connections have been installed and are in proper location before beginning installation of equipment.
- B. Do not install equipment until all construction work and painting has been completed.
- C. Provide receiving, distribution, and storage areas of sufficient size and capacity to accommodate crated equipment.

### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and in accordance with all Local, State, and Federal Codes.
- B. Install equipment plumb, square and straight, without distortions; securely anchor.
- C. Connect equipment hoses and power.

### **3.03 COMMISSIONING AND TRAINING**

- A. Provide services of manufacturer's designated service group to place equipment in complete and proper operating condition.
- B. Provide manufacturer's representative to train owner's personnel in the operation of equipment.

#### **3.04 CLEANING AND PROTECTION**

- A. Clean all equipment surfaces using methods recommended by manufacturer.
- B. Provide protection for equipment surfaces until accepted by owner.

END OF SECTION