

**SPECIFICATION
FOR
DRYERS, TUMBLERS, COMMERCIAL
GAS AND OIL**

(This specification is released for procurement purposes until revised or rescinded.)

SCOPE

This specification covers gas heated and oil heated drying and conditioning laundry tumblers.

I. CLASSIFICATION

Commercial laundry drying and conditioning tumblers covered by this specification shall be nominal 400 lb. dry weight capacity and minimum 155 cu. ft. basket volume. The basket volume is the volume bounded by the rotating cylinder which contains the materials to be dried. Types of dryers are as follows:

Type I - Single door, end loading, reversible

NOTE: The basket volume for Type I dryers may also include the contiguous volume, if any, forward of the basket to the inside surface of the door/window.

Type II - Pass through, end loading, reversible

Type III - Rollover, end loading, reversible

II. APPLICABLE STANDARDS

The following documents of issue in effect on the date of the Invitation for Bids shall form a part of this specification:

Mega MG-2 - Motors and Generators
National Electrical Manufacturer's Association (NEMA)
155 East 44th Street
New York, NY 10017

National Electrical Code (70)
Oil Burning Equipment (31)
National Fuel Gas Code (54)
National Fire Protection Assn. (NFPA)
470 Atlantic Avenue
Boston, MA 02210

U.L. 1240 - Clothes Drying Equipment,
Electric, Coin Operated and Commercial

Underwriters' Laboratories, Inc. (UL)
Publications Stock
333 Pfingsten Road
Northbrook, IL 60062

Occupational Safety and Health Act
N.C. Department of Labor
OSHA Division
4 West Edenton Street
Raleigh, N. C. 27611

III. REQUIREMENTS

A. DESIGN

The design and construction shall conform to the general and detail requirements as specified hereinafter. The equipment shall be a currently standard product of an established manufacturer, except for such deviations as called for in this specification. All accessories and components normally furnished commercially with the standard product offered under this specification shall be in the same quantity and of the same quality as furnished commercially with the standards products except, items listed in this specification as optional and not specified in the Invitation for Bids need not be furnished commercially with the standard current, in-production model, with units in commercial or institutional use for evaluation performance.

B. SAFETY FEATURES

Tumblers shall be equipped with the following safety devices:

1. Excess temperature cut-out switches and operating temperature controls.
2. Excess temperature sprinkler protection.
3. Door and tilt interlocks so that tumbler shall operate only with door closed and cylinder in proper drying position, except when loading unloading, for which a manually operated switch shall be provided.
4. Lights to designate that tumbler is operating.
5. Means for visual observation of pilot light and main burner scanning device.
6. Manual override device to permit opening door in case of power failure.
7. Guard for Types I and II tumblers shall be provided around base to prevent placement of objects under machine.

C. TYPES

Type 1: Drying tumblers, single door, end loading, reversing. The tumbler shall be single cylinder and provided with electrical device to reverse the cylinder at regular intervals. The tumbler shall be equipped with a mechanical timing device capable of timing a maximum cycle of 30 minutes and equipped with an audible and visible signal that will notify the operator when the end of the cycle for which the timer has been set is reached. The sizes, capacities, and water evaporation requirements of the tumblers shall be as specified under CLASSIFICATION.

Type 2: Drying tumblers, pass through, end loading, reversing. The tumbler shall be single cylinder and conform to requirements specified under Type I.

Type 3: Drying tumblers, rollover, end loading, reversing. The tumbler shall be single cylinder and conform to requirements specified under Type I.

D. CONTROLS AND FEATURES

1. Standard Controls and Features

The following minimum controls and features shall be provided:

- (a) Automatic ignition.
- (b) Automatic flame failure disconnect.
- (c) Automatic power failure fuel shut-off.
- (d) Automatic flame modulation.
- (e) Lights and alarm to signal end of cycle.
- (f) Automatic timer for heat and cool down cycle.
- (g) Automatic temperature control and thermometer.
- (h) Door and tilt switch (front and rear if passthrough or rollover).
- (i) Burner signal switch.
- (j) Heat selector switch.
- (k) Reverse non-reverse switch.
- (l) Push button unloading.
- (m) Automatic proportionate air to fuel ratio.

2. Optional Controls and Features

When so stated in the Invitation for Bids, the following options shall be furnished.

- (a) Teflon coated cylinder.
- (b) Either removable cylinder panels or Teflon coated cylinder. If the manufacturer cannot furnish removable panels, a Teflon coated cylinder will be accepted as a substitute.
- (c) Moisture retention device to provide for conditioning the clothes to a moisture retention of approximately 15% to 45% range.

E. ELECTRICAL SYSTEM AND CONTROLS

The electrical installation shall be in accordance with the applicable portions of the National Electrical Code and the National Electrical Manufacturer's Association Standards. All motors to be protected by thermal overloads. Starters and relays shall be heavy duty, industrial type and sized to NEMA Standards. All wiring to be run in galvanized or sherardized electrical conduit. Conduit shall be either rigid steel, flexible conduit, or electrical metallic tubing.

F. FRAME

The frame shall be constructed of ferrous metal formed to provide a rigid support for the cylinder housing, heating unit, fan, driving mechanism. Types I and II tumblers shall be equipped to tilt forward and backward a minimum of 15°. Type III tumblers shall be designed to rotate a minimum of 220°.

G. HOUSING

The cylinder, heating unit, and fan, shall be enclosed in a ferrous metal housing. The housing shall be airtight and shall be provided with a tight fitting door or removable panels giving ready access to parts requiring maintenance.

H. CYLINDER

The cylinder shall be of open end construction without a door. Means shall be provided for cleaning panels.

I. RIBS

The cylinder shall be fitted with not less than six tumbling ribs.

J. FANS AND AIR DUCTS

The tumbler shall be provided with a fan capable of supplying the necessary volume and velocity of air to accomplish the rate of evaporation specified.

K. EXHAUST AIR OPENINGS

Openings of ample size shall be provided for exhausting the air after passage through the tumbler. The opening shall be provided with duct connections.

L. BURNERS

The tumbler shall be fitted with a direct heated firing system of sufficient capacity to evaporate the quantity of water specified. The burner shall be equipped with safety devices as specified in Section III.B. The burner shall be designed to use one, or a combination of the following fuels as specified in the Invitation for Bids:

1. Natural gas
2. Oil (#1 light weight fuel oil)
3. Propane gas
4. Combination gas/oil
5. Combination gas/propane

If a special part or tool is required to convert from one fuel to another, the extra part or tool shall be provided as part of the original equipment.

M. INSTALLATION

The contractor shall provide a qualified engineer to supervise the installation of the equipment. Unless otherwise specified in the Invitation for Bids, preparation of the foundation and installation of the equipment will be accomplished by the owner with the contractor furnishing all the necessary drawings. After installation, the contractor shall conduct operating tests of his equipment in the presence of designated personnel and give instructions in the operation of the equipment to key laundry personnel.

IV. WARRANTY

The contractor warrants to the owner that all equipment furnished under this specification will be new, of good material workmanship, including the installation, and agrees to replace promptly any part or parts which by reason of defective material or workmanship shall fail under normal use,

free of negligence or accident, for a minimum period of 12 months from date of acceptance. Such replacement shall be free of any charge to the owner or his representative.

V. SERVICE, PARTS, AND MANUALS

The contractor shall furnish complete written instructions for installation, an operation and maintenance manual, and a complete list of replacement parts or assemblies.

The services of a qualified representative of the contractor shall be available to the owner for technical assistance within 24 hours after requesting this service.

VI. ACCEPTANCE EVALUATION AND QUALITY ASSURANCE

A. GENERAL

The tumbler shall be subjected to an inspection and operational and functional testing by state officials to determine compliance with specification. Any nonconformance shall be cause for rejection of tumbler.

B. OPERATIONAL TESTING

Each tumbler furnished shall be connected to power and operationally tested, without garments or laundry. In the course of testing for operational requirements, determination shall be made to establish compliance with all performance requirements applicable to the fully assembled item except those that require functional testing such as processing of garments or laundry through the equipment.

C. FUNCTIONAL TESTING

The tumbler shall be tested by making necessary connections such as electric power, gas, and by operating under full service load as established in the applicable part of the specification. The following items and operations shall be checked:

- (a) Cylinder volume and capacity of machine
- (b) Timing device for compliance with requirements of Section III.A
- (c) Amount of evaporation for compliance with requirements of the class
- (d) Controls for compliance with requirements of Section III.D.

VII. DELIVERY AND PAYMENT

Delivery of and payment for equipment purchased under this specification shall be in accordance with the terms and conditions stated in the Invitation for Bids. The contractor shall be responsible for any packing, packaging, or protection required to insure safe delivery in an undamaged condition.

VIII. ORDERING DATA

Purchasers should exercise any desired options offered herein and should specify the following in the Requisition and Invitation For Bids:

1. Title, number, and date of this specification

2. Type tumbler needed
3. Fuel or fuels to be used.
4. Options required (Sec.III.D.2.)
5. Responsibility for foundation preparation
6. Special requirements by requisitioning agency
7. If agency requires inspection by Quality Assurance Representative