

# MDG-50

## Installation Manual

**WARNING:** For your safety the information in this manual must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury or death.

— Do not store or use gasoline or other flammable vapor and liquids in the vicinity of this or any other appliance.

— **WHAT DO YOU DO IF YOU SMELL GAS**

- \* Do not try to light any appliance.
- \* Do not touch any electrical switch; do not use any phone in your building.
- \* Clear the room, building or area of all occupants.
- \* Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- \* If you cannot reach your gas supplier, call the fire department.

— Installation and service must be performed by a qualified installer, service agency or the gas supplier.

**AVERTISSEMENT:** Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

— Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de tout autre appareil.

— **QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:**

- \* Ne pas tenter d'allumer d'appareil.
- \* Ne touchez à aucun interrupteur. Ne pas vous servir des téléphones se trouvant dans le bâtiment où vous vous trouvez.
- \* Évacuez la pièce, le bâtiment ou la zone.
- \* Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- \* Si vous ne pouvez rejoindre le fournisseur de gaz, appelez le service des incendies.

— L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.



For replacement parts, contact the distributor from which the dryer was purchased or contact:

**Maytag Co.**  
403 West Fourth St North  
Newton, Iowa 50208  
(515) 787-7000

## Retain This Manual In A Safe Place For Future Reference

Our products embody advanced concepts in engineering, design, and safety. If this product is properly maintained, it will provide many years of safe, efficient, and trouble-free operation.

*ONLY qualified technicians should service this equipment.*

**OBSERVE ALL SAFETY PRECAUTIONS** displayed on the equipment or specified in the installation and operator's manual included with the dryer.

The following “**FOR YOUR SAFETY**” caution **must be** posted near the dryer in a prominent location.

### FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

### POUR VOTRE SÉCURITÉ

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de tout autre appareil.

We have tried to make this manual as complete as possible and hope you will find it useful. Manufacturer reserves the right to make changes from time to time, without notice or obligation, in prices, specifications, colors, and material, and to change or discontinue models.

## Important

For your convenience, log the following information:

DATE OF PURCHASE \_\_\_\_\_ MODEL NO. **MDG-50** \_\_\_\_\_

DISTRIBUTORS NAME \_\_\_\_\_

Serial Number(s) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

For replacement parts, contact the distributor from which the dryer was purchased or contact:

**Maytag Co.**  
403 West Fourth St North  
Newton, Iowa 50208  
(515) 787-7000

### **“IMPORTANT NOTE TO PURCHASER”**

Information **must be** obtained from your local gas supplier on the instructions to be followed if the user smells gas. These instructions **must be** posted in a prominent location near the dryer.

## **IMPORTANT**

**YOU MUST DISCONNECT AND LOCKOUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) STANDARDS.**

“Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper operation.”

«Attention: Lors des opérations d'entretien des commandes étiqueter tous fils avant de les déconnecter. Toute erreur de câblage peut être une source de danger et de panne.»

## **CAUTION**

**DRYERS SHOULD NEVER BE LEFT UNATTENDED WHILE IN OPERATION.**

## **WARNING**

**CHILDREN SHOULD NOT BE ALLOWED TO PLAY ON OR NEAR THE DRYERS.  
CHILDREN SHOULD BE SUPERVISED IF NEAR DRYERS IN OPERATION.**

## **FOR YOUR SAFETY**

**DO NOT DRY MOP HEADS IN THE DRYER.  
DO NOT USE DRYER IN THE PRESENCE OF DRY CLEANING FUMES.**

## **WARNING**

**UNDER NO CIRCUMSTANCES should the door switches, lint drawer switch, or heat safety circuit, ever be disabled.**

### **WARNING**

The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. **PERSONAL INJURY OR FIRE COULD RESULT.**

### **WARNING**

DRYER **MUST NEVER BE** OPERATED WITHOUT THE LINT FILTER/SCREEN IN PLACE, EVEN IF AN EXTERNAL LINT COLLECTION SYSTEM IS USED.

### **IMPORTANT**

PLEASE OBSERVE **ALL** SAFETY PRECAUTIONS displayed on the equipment and/or specified in the installation manual included with the dryer.

Dryers *must not be* installed or stored in an area where it **will be** exposed to water or weather.

The wiring diagram for the dryer is located in the front electrical control box area.

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# SECTION I

## IMPORTANT INFORMATION

### A. RECEIVING AND HANDLING

The dryer is shipped in a protective stretch wrap cover with protective cardboard corners and top cover (or optional box) as a means of preventing damage in transit. Upon delivery, the dryer and packaging, and wooden skid **should be** visually inspected for shipping damage. If any damage whatsoever is noticed, inspect further before delivering carrier leaves.

If there are dryers damaged in shipment:

1. **ALL** dryers **should be** inspected upon receipt and before they are signed for.
2. If there is suspected damage or actual damage, the trucker's receipt **should be** so noted.
3. If the dryer is damaged beyond repair, it **should be** refused. Those dryers which were not damaged in a damaged shipment **should be** accepted, but the number received and the number refused **must be** noted on the receipt.
4. If you determine that the dryer was damaged after the trucker has left your location, you should call the delivering carrier's freight terminal immediately and file a claim. The freight company considers this concealed damage. This type of freight claim is very difficult to get paid and becomes extremely difficult when more than a day or two passes after the freight was delivered. It is your responsibility to file freight claims. Dryers and parts damaged in transit **cannot** be claimed under warranty.
5. Freight claims are the responsibility of the consignee, and **ALL** claims **must be** filed at the receiving end. Manufacturer assumes no responsibility for freight claims or damages.
6. If you need assistance in handling the situation, please contact the manufacturer traffic manager at (508) 678-9000.

<b>IMPORTANT:</b> The dryer <i>must be</i> transported and handled in an upright position at <b><u>ALL</u></b> times.
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## B. SAFETY PRECAUTIONS

**WARNING:** For your safety, the information in this manual *must be* followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

**WARNING:** The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. **PERSONAL INJURY OR FIRE COULD RESULT.**

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
2. Purchaser or user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.
3. WHAT TO DO IF YOU SMELL GAS...
  - a. **DO NOT** try to light any appliance.
  - b. **DO NOT** touch any electrical switch.
  - c. **DO NOT** use any phone in your building.
  - d. Clear the room, building, or area of **ALL** occupants.
  - e. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - f. If you **cannot** reach your gas supplier, call the fire department.
4. Installation and service **must be** performed by a qualified installer, service agency, or gas supplier.
5. Dryers **must be** exhausted to the outdoors.
6. Although the MDG-50 is a very versatile dryer, there are some articles that, due to fabric composition or cleaning method, **should not be** dried in it.

**WARNING:** Dry only water washed fabrics. **DO NOT** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "all purpose" cleaner.  
**EXPLOSION COULD RESULT.**

**WARNING:** **DO NOT** dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, or wax.  
**EXPLOSION COULD RESULT.**



**WARNING:** ***DO NOT*** dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

**WARNING:** ***DO NOT*** use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated basket (tumbler) may damage plastics or rubber and may be a fire hazard.

7. A program **should be** established for the inspection and cleaning of lint in the burner area, exhaust ductwork, and area around the back of the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.

**WARNING:** The collection of lint in the burner area and exhaust ductwork can create a potential fire hazard.

8. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

**NOTE:** Failure to do so will VOID THE WARRANTY.

9. **UNDER NO CIRCUMSTANCES** should the dryer door switches, lint drawer switch, or heat safety circuit, ever be disabled.

**WARNING: PERSONAL INJURY OR FIRE COULD RESULT.**

10. This dryer is not to be used in the presence of dry cleaning solvents or fumes.
11. Remove articles from the dryer as soon as the drying cycle has been completed.

**WARNING:** Articles left in the dryer after the drying and cooling cycles have been completed can create a fire hazard.

12. **READ AND FOLLOW ALL CAUTION AND DIRECTION LABELS ATTACHED TO THE DRYER.**

13. For safety, proper operation, and optimum performance, the dryer **must not be** operated with a load less than sixty-six percent (66%), 33 lbs (15 kg) of its rated capacity.

**WARNING: YOU MUST DISCONNECT AND LOCKOUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) STANDARDS.**

## SECTION II

### SPECIFICATIONS

#### A. SPECIFICATIONS

MAXIMUM CAPACITY (DRY WEIGHT)		50 lbs.	<b>22.7 kg</b>
BASKET (TUMBLER) DIAMETER		32-3/4"	<b>83.2 cm</b>
BASKET (TUMBLER) DEPTH		37-1/2"	<b>95.3 cm</b>
BASKET (TUMBLER) MOTOR		3/4 HP*	<b>0.560 kw</b>
DOOR OPENING (DIAMETER)		21-1/2"	<b>54.61 cm</b>
BASKET (TUMBLER) VOLUME		18.3 cu. ft.	<b>0.518 cu.m.</b>
DRYERS PER 20'/40' CONTAINER		10/20	
DRYERS PER 45'/48' TRUCK		24/26	
<b>GAS</b>	VOLTAGE AVAILABLE	120-460v 1ø - 3ø 3, 4w 50/60 Hz	
	APPROX. WEIGHT (UNCRATED)	601 lbs.	<b>272.6 kg</b>
	APPROX. WEIGHT (CRATED)	646 lbs.	<b>293 kg</b>
	HEAT INPUT	130,000 btuh	<b>32,760 kcal/hr</b>
	AIRFLOW	600 cfm	<b>17 cmm</b>
	INLET PIPE CONNECTION	1/2" F.P.T.**	

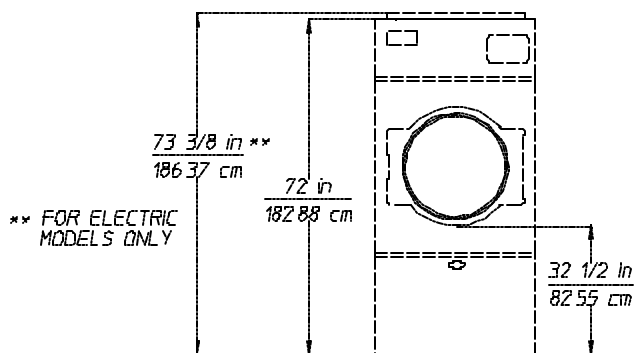
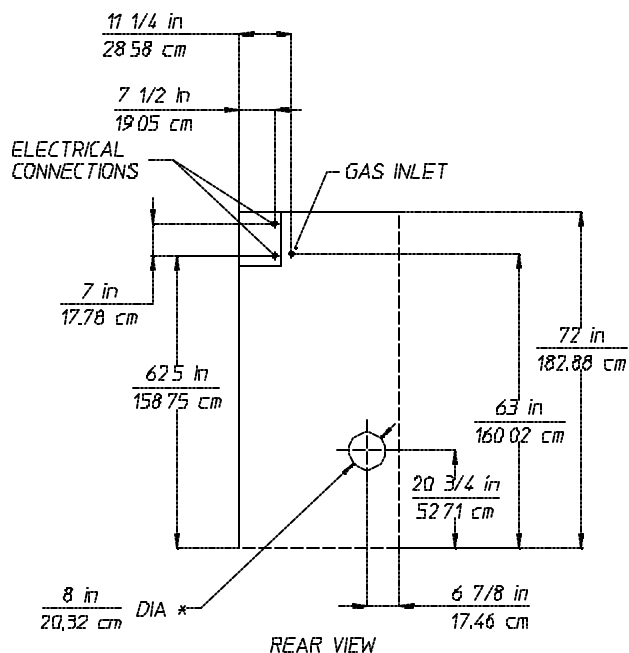
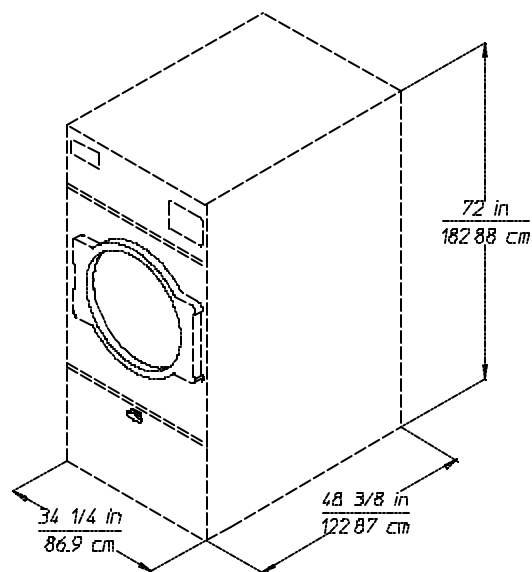
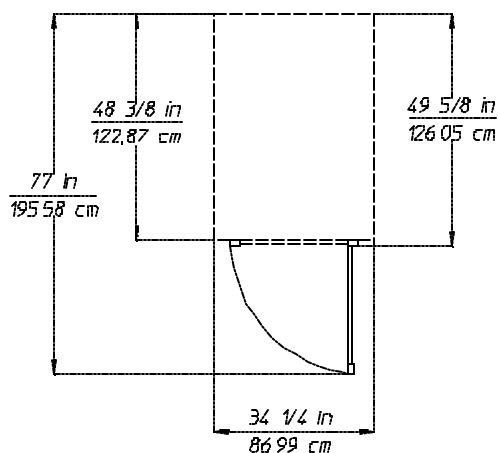
\* 50 lbs reversing dryer available with 3-phase (3ø) motors standard with 1/2 HP motors.

\*\* Size of piping to dryer varies with installation conditions. Contact factory for assistance.

**NOTE:** Manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

# Specifications

## MDG-50



SPEC281

**NOTE:** Manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

# SECTION III

## INSTALLATION PROCEDURES

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation **must conform** to applicable American National Standards: ANSI Z223.1-LATEST EDITION (National Fuel Gas Code) or ANSI/NFPA NO. 70-LATEST EDITION (National Electrical Code) or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

### A. UNPACKING AND SETTING UP

Remove protective shipping material (i.e., plastic wrap and optional shipping box) from dryer.

**IMPORTANT:** Dryer *must be* transported and handled in an upright position at **ALL** times.

**NOTE:** For OPL dryer models equipped with locks, the lock used is a dummy lock and no key is supplied or needed. The lock can be turned with any key, a screwdriver, a small coin, or any small sharp object. For coin-operated dryers, a key is provided, and (master key for both the control door and lint door) *should be* made accessible because it **will be** needed throughout various phases in the installation of the dryer.

The dryer can be moved to its final location while still attached to the skid or with the skid removed. To unskid the dryer, locate and remove the four (4) bolts securing the base of the dryer to the wooden skid. Two (2) are at the rear base (remove the back panel for access), and two (2) are located in the bottom of the lint chamber. To remove the two (2) bolts located in the lint chamber area, remove the lint door.

With the skid removed, to make it easier to slide the dryer into its final position, slightly lower **ALL** four (4) leveling legs, so that the dryer will slide on the legs instead of the base frame.

To increase bearing life and improve efficiency, the dryer **should be** tilted slightly to the rear.

The lint coops of **ALL** MDG-50 model dryers are supported during shipping by a bracket. **REMOVE THIS BRACKET BEFORE STARTING THE DRYER.**

#### 1. Leveling Dryer

The dryer is equipped with four (4) leveling legs, one (1) at each corner of the base. Two (2) are located at the rear of the dryer base, and two (2) are located in the lint chamber (coop). To increase bearing life and improve efficiency, the dryer **should be** tilted slightly to the rear.

## **B. LOCATION REQUIREMENTS**

Before installing the dryer, be sure the location conforms to local codes and ordinances. In the absence of such codes or ordinances the location **must conform** with the National Fuel Gas Code ANSI.Z223.1-LATEST EDITION or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

1. The dryer **must be** installed on a sound level floor capable of supporting its weight. Carpeting **must be** removed from the floor area that the dryer is to rest on.

**IMPORTANT:** “The dryer *must be* installed on noncombustible floors only.”

2. The dryer **must not be** installed or stored in an area where it will be exposed to water and/or weather.
3. The dryer is for use in noncombustible locations.
4. Provisions for adequate air supply **must be** provided as noted in this manual (refer to **Fresh Air Supply Requirements** in Section D).
5. Clearance provisions **must be** made from combustible construction as noted in this manual (refer to **Dryer Enclosure Requirements** in Section C).
6. Provisions **must be** made for adequate clearances for servicing and for operation as noted in this manual (refer to **Dryer Enclosure Requirements** in Section C).
7. Dryer **must be** exhausted to the outdoors as noted in this manual (refer to **Exhaust Requirements** in Section E).
8. Dryer **must be** located in an area where correct exhaust venting can be achieved as noted in this manual (refer to **Exhaust Requirements** in Section E).

**IMPORTANT:** Dryer *should be* located where a minimum amount of exhaust duct **will be** necessary.

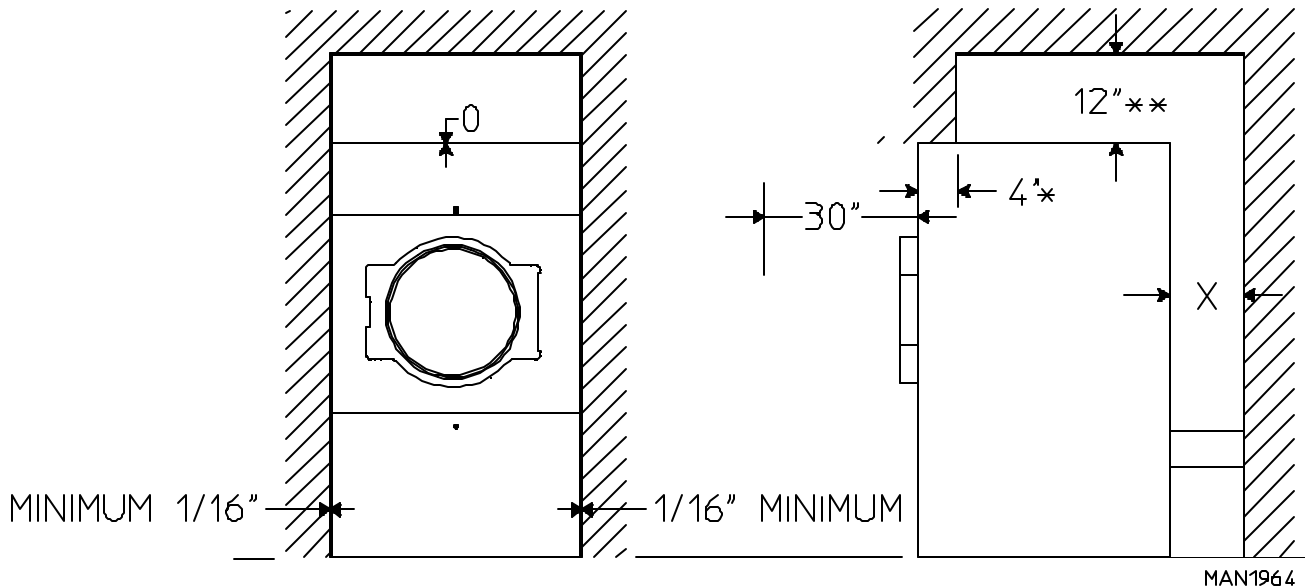
9. The dryer **must be** installed with a proper exhaust duct connection to the outside.
10. The dryer **must be** installed with provisions for adequate combustion and make-up air supply.

**CAUTION:** This dryer produces combustible lint and *must be* exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint build up.

## C. DRYER ENCLOSURE REQUIREMENTS

Bulkheads and partitions **should be** made of noncombustible materials and **must be** located a minimum of 12-inches above the dryer's outer top; 18-inches for locations with sprinkler systems, except along the front of the dryer, which may be closed if desired.

**NOTE:** Allowances **must be** made for opening the control door.



X = 12-inch minimum, 24-inches is suggested for ease of maintenance.

\* 1-inch maximum for electric dryers.

\*\* 18-inch minimum for locations with sprinkler systems.

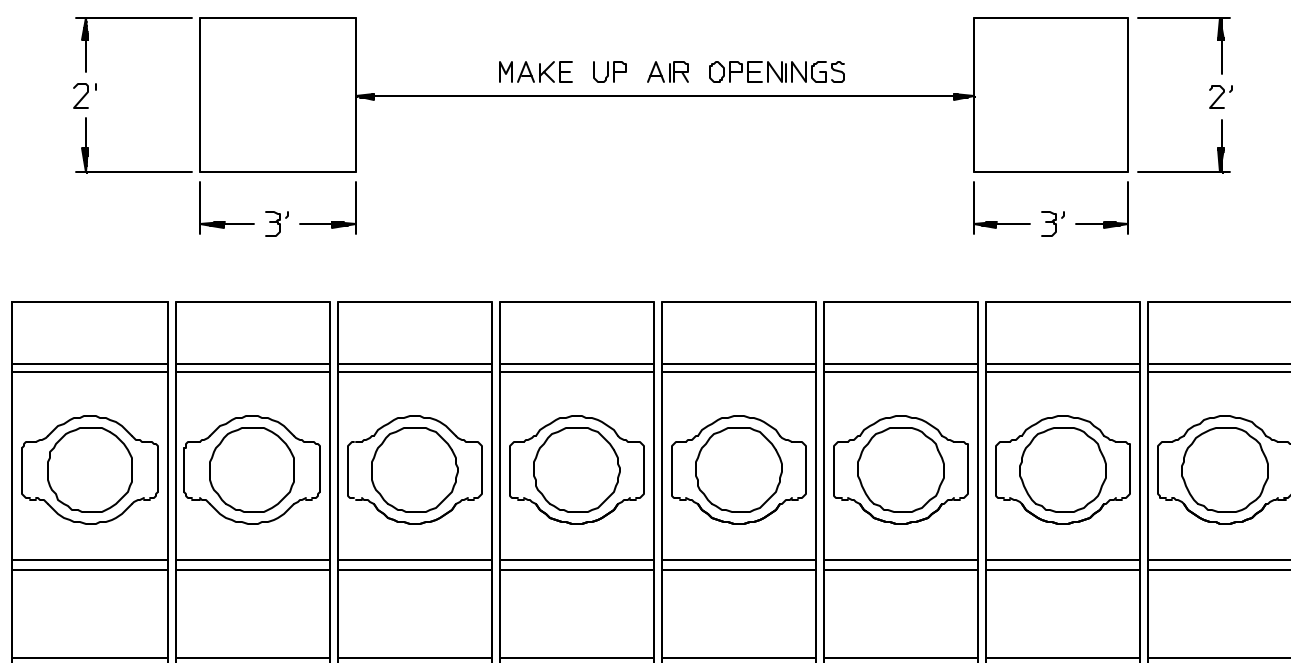
**NOTE:** Air considerations are important for proper and efficient operation.

Dryers may be positioned sidewall to sidewall. However, a 1/16" minimum allowance **must be** made for opening and closing of the control door and the lint door. It is suggested that the dryer be positioned about 2 feet away from the nearest obstruction for ease of installation, maintenance, and service (to be measured from the back guard). Refer to the **illustration above** for details.

## D. FRESH AIR SUPPLY REQUIREMENTS

The MDG-50 air supply (make-up air) **must be** given careful consideration to assure proper performance of each dryer. An unrestricted source of air is necessary for each dryer. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) of a minimum of 1-1/2 square feet is required for each dryer. If registers or louvers are installed over the openings, then the area **must be** increased. It is not necessary to have a separate make-up air opening for each dryer. Common make-up air openings are acceptable. However, they **must be** set up in such a manner that the make-up air is distributed equally to the dryers. The dryer **must be** installed with provisions for adequate combustion and make-up air supply. The dryer **must be** installed with provisions for adequate combustion and make-up air supply.

*EXAMPLE:* For a bank of eight (8) dryers, 12 square feet, two (2) unrestricted openings measuring 2 feet by 3 feet (6 square feet each) are acceptable.



MAN1779

TYPICAL INSTALLATION SHOWING MAKE - UP AIR OPENINGS

**IMPORTANT:** Make-up air openings *should not be* located in an area directly near where exhaust vents exit the building.

Allowances **must be** made for remote or constricting passageways or where dryers are located at excessive altitudes or predominantly low pressure areas.

**IMPORTANT:** Make-up air **must be** provided from a source free of dry cleaning solvent fumes. Make-up air that is contaminated by dry cleaning solvent fumes will result in irreparable damage to the motors and other dryer components.

**NOTE:** Component failure due to dry cleaning solvent fumes will VOID THE WARRANTY.

## E. EXHAUST REQUIREMENTS

Exhaust ductwork **should be** designed and installed by a qualified professional. Improperly sized ductwork will create excessive back pressure which results in slow drying, increased use of energy, and shutdown of the burner by the airflow (sail) switch, burner hi-limit, or lint chamber hi-heat protector thermostat. The dryer **must be** installed with a proper exhaust duct connection to the outside.

**CAUTION:** This dryer produces combustible lint and **must be** exhausted to the outdoors.

Where possible, it is suggested to provide a separate (single) exhaust duct for each dryer.

**CAUTION: IMPROPERLY SIZED OR INSTALLED EXHAUST DUCTWORK CAN CREATE A POTENTIAL FIRE HAZARD.**

**CAUTION: DRYER *MUST BE* EXHAUSTED TO THE OUTDOORS.**

The exhaust ductwork **should be** laid out in such a way that the ductwork travels as directly as possible to the outdoors with as few turns as possible. The shape of the ductwork is not critical so long as the minimum cross section area is provided. Single or independent dryer venting is recommended.

It is suggested that the use of 90° turns be avoided; use 30° or 45° angles instead.

The ductwork **should be** smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. When adding ducts, the ducts to be added should overlap the duct to which it is connected. **ALL** ductwork joints **must be** taped to prevent moisture and lint from escaping into the building. Additionally, inspection doors **should be** installed at strategic points in the exhaust ductwork for periodic inspection and cleaning.

**IMPORTANT:** When connecting ductwork to the dryer exhaust duct, be sure that when screws are used they **DO NOT** restrict the operation (both opening and closing) of the damper.

**NOTE:** When the exhaust ductwork passes through a wall, ceiling, or roof made of combustible materials, the opening **must be** 2-inches larger than the duct (all the way around). The duct **must be** centered within this opening.

To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward **should be** installed where the exhaust exits the building. If the ductwork travels vertically up through the roof, it **should be** protected from the weather by using a 180° turn to point the opening downward. In either case, allow at least twice the diameter of the duct between the duct opening and the nearest obstruction (i.e., roof or ground level).

**IMPORTANT: *DO NOT*** use screens, louvers, or caps on the outside opening of the exhaust ductwork.

**IMPORTANT:** Exhaust back pressure measured by a manometer at the dryer exhaust duct area **must be** no less than 0 and **must not exceed** 0.3 inches of water column (W.C.).



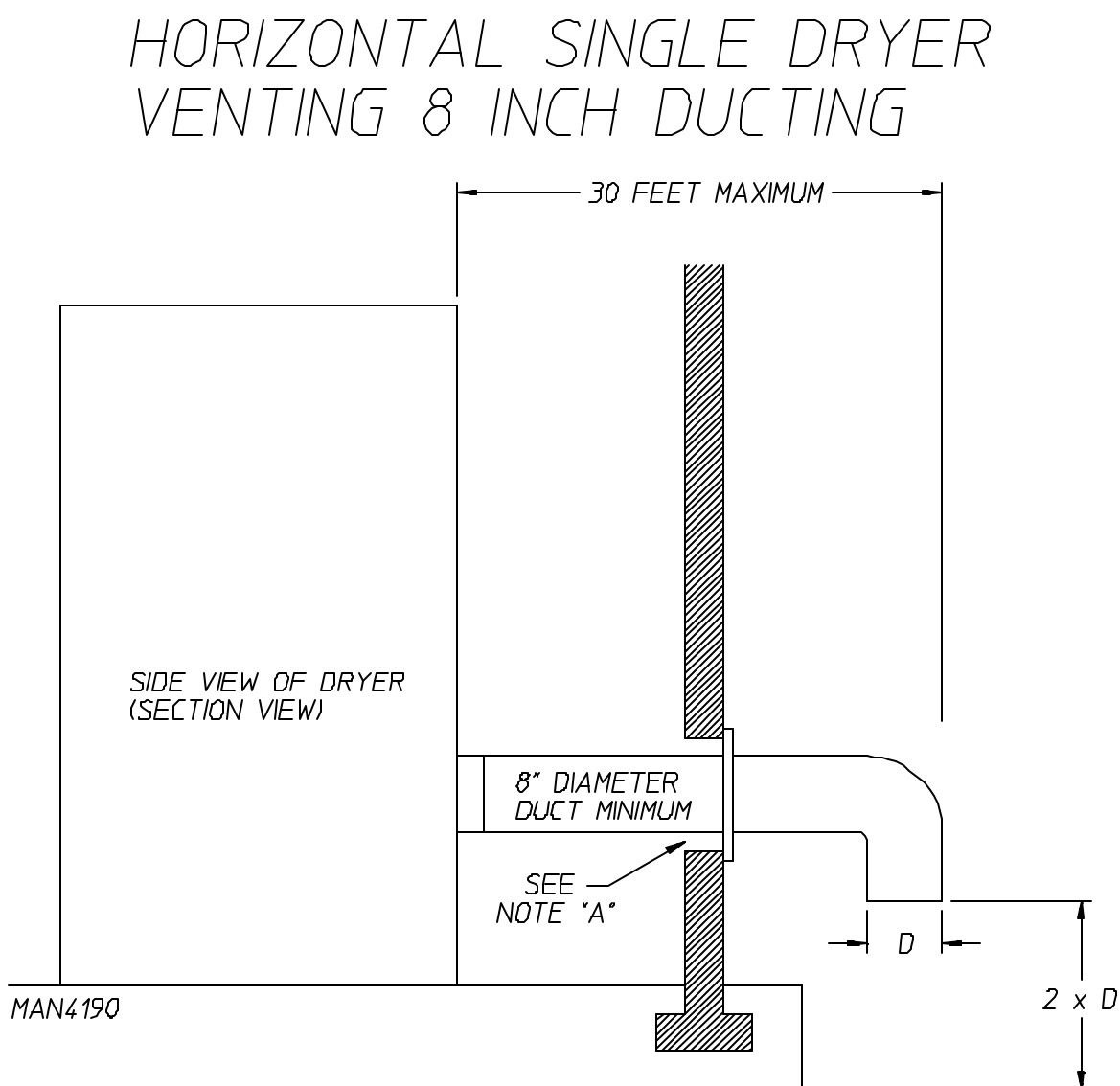
# SINGLE DRYER VENTING

**IMPORTANT:** For exhaust duct runs over 30 feet a minimum size of 10 inches *must be* used.

## HORIZONTAL VENTING

When horizontal single 8-inch venting is used, the ductwork to the outlet cannot exceed 30 feet (refer to **Illus. A below**). This calculation of 30 feet compensates or allows for the use of a maximum of only one (1) elbow (which is the outside outlet protection).

### ILLUS. A



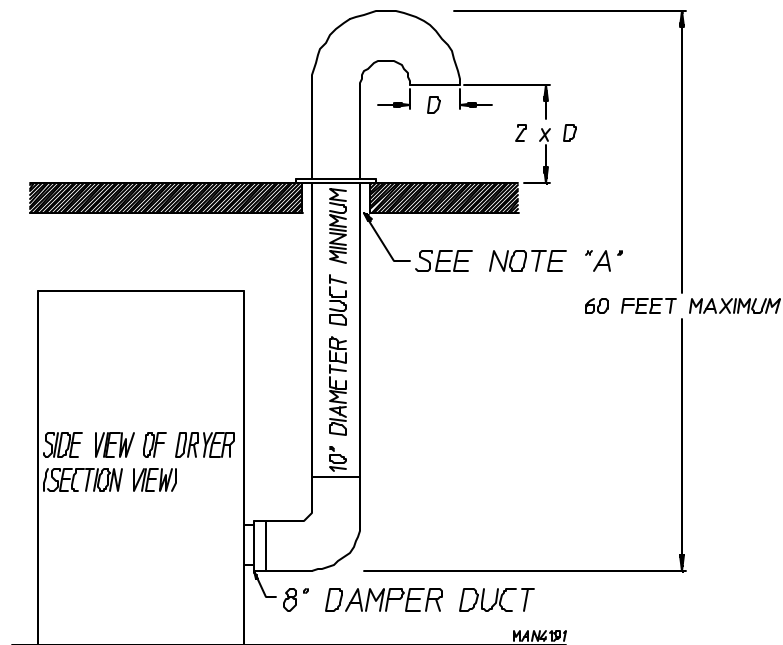
NOTE A. OPENING MUST BE TWO (2) INCHES LARGER THAN THE DUCT (ALL THE WAY AROUND) THE DUCT MUST BE CENTERED WITHIN THIS OPENING.

## VERTICAL VENTING

When vertical single 10-inch venting is used, the ductwork from the dryer to the outside outlet **cannot** exceed 60 feet (refer to **Illus. B below**). This calculation compensates for the use of a maximum of three (3) elbows including the two (2) elbows creating the 180° (turned downward) outside outlet.

### ILLUS. B

VERTICAL SINGLE DRYER VENTING



NOTE A: OPENING MUST BE TWO (2) INCHES LARGER THAN THE DUCT (ALL THE WAY AROUND)  
THE DUCT MUST BE CENTERED WITHIN THIS OPENING.

If the length of the duct run or quantity of elbows used exceeds the above noted specifications, the cross section area of the ductwork **must be** increased in proportion to the number of elbows or duct run added.

**IMPORTANT:** For extended ductwork runs, the cross section area of the duct can only be increased to an extent. For extended ductwork runs, a professional heating, venting, and air conditioning (HVAC) firm **should be** consulted for proper venting information.

## **MULTIPLE DRYER (COMMON) VENTING**

If it is not feasible to provide separate exhaust ducts for each dryer, ducts for individual dryers may be channeled into a common main duct. Each dryer is provided with a back draft damper. The individual ducts should enter the bottom or side of the main duct at an angle not more than 45° in the direction of the airflow.

The main common duct may be any shape so long as the minimum cross-sectional area is provided. The main duct **should be** tapered with the diameter increasing before each individual 8-inch duct is added (refer to **Illus. C** for horizontal venting and **Illus D.** for vertical venting).

**IMPORTANT:** No more than four (4) dryers maximum **should be** connected to one (1) main common duct with a vertical run.

**NOTE:** Distance between dryer single ducts being connected to the main common duct **must be** a minimum of 34-1/4" (dryer width).

Ductwork **should be** laid out in such a manner where allowances are made at rear area of the dryer for removal of rear service panels or guards.

The **illustrations** on **page 16** show the minimum cross section area for multiple dryer venting. These figures **must be** increased in proportion if the main duct run from the last dryer to where it exhausts has numerous elbows or is unusually long.

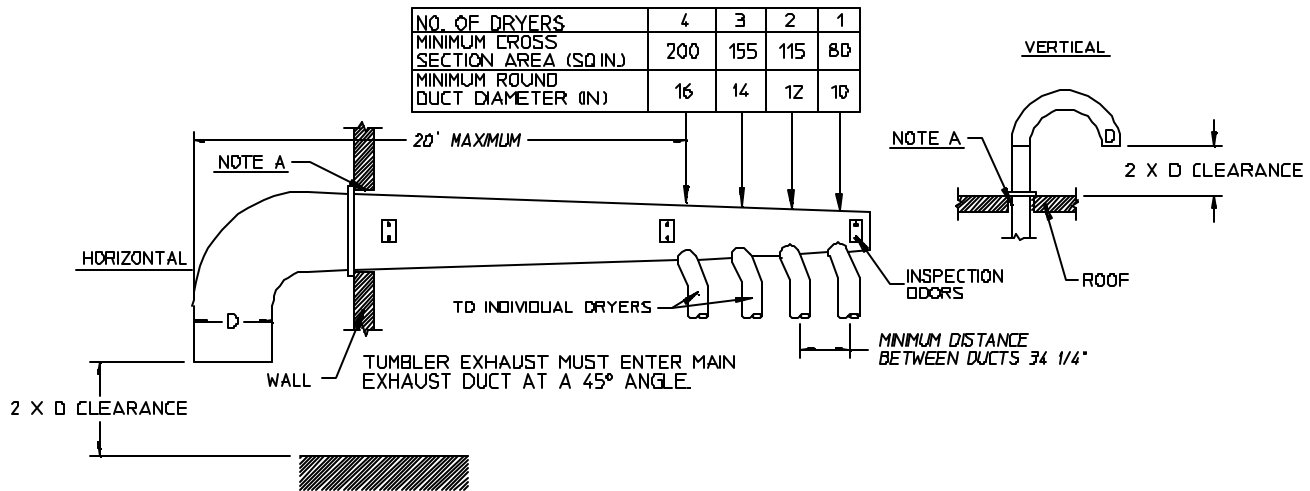
**IMPORTANT:** For extended ductwork runs, the cross section area of the duct can only be increased to an extent. For extended ductwork runs, a professional heating, venting, and air conditioning (HVAC) firm **should be** consulted for proper venting information.

Refer to **page 16** for multiple dryer horizontal venting and vertical venting examples and illustrations.

## HORIZONTAL VENTING

### ILLUS. C

MULTIPLE DRYER VENTING  
WITH 8" DIAMETER EXHAUST  
CONNECTIONS AT COMMON DUCT



MAN4218

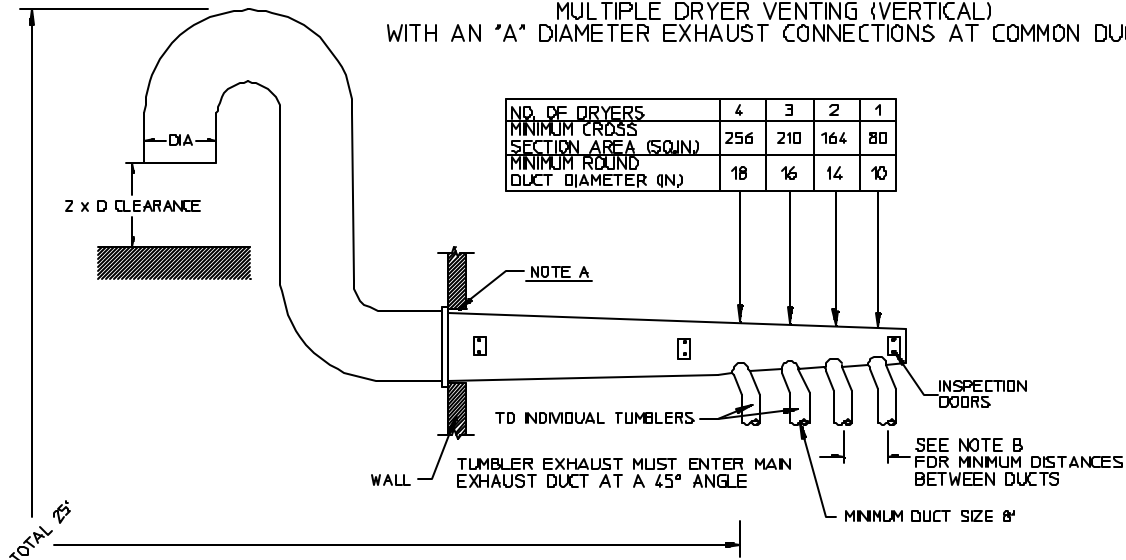
IMPORTANT, NO MORE THAN 4 DRYERS CAN  
BE CONNECTED TO ONE COMMON DUCT ( VENT ).

NOTE A OPENING MUST BE TWO (2) INCHES LARGER THAN DUCT (ALL THE WAY AROUND) THE DUCT  
MUST BE CENTERED WITHIN THIS OPENING

## VERTICAL VENTING

### ILLUS. D.

MULTIPLE DRYER VENTING (VERTICAL)  
WITH AN "A" DIAMETER EXHAUST CONNECTIONS AT COMMON DUCT



IMPORTANT, NO MORE THAN 4 DRYERS CAN  
BE CONNECTED TO ONE COMMON DUCT ( VENT )

NOTE A OPENING MUST BE TWO (2) INCHES LARGER THAN DUCT (ALL THE WAY AROUND) THE DUCT  
MUST BE CENTERED WITHIN THIS OPENING

NOTE B AD-50 3/4 1/4"

MAN4230

FORMULAS TO CALCULATE DUCTING CROSS SECTIONAL AREA	
CROSS SECTIONAL AREA OF A ROUND DUCT = $.785 \times \text{DIA}^2$	
CROSS SECTIONAL AREA OF A RECTANGULAR DUCT = WIDTH x HEIGHT	

## **IMPORTANT VENTING REMINDERS**

1. Ductwork size and installation **should be** done by a qualified professional.
2. The dryer **must be** exhausted to the outdoors.
3. Ductwork **should be** routed as short as possible to the outdoors with as few elbows as possible.
4. Avoid 90° turns, use 30° or 45° turns instead.
5. The size of the ductwork **must be** a minimum of 8-inches for horizontal runs and 10-inches for vertical runs.
6. The inside of the ductwork **should be** as smooth as possible with no projections from sheet metal screws.  
  
Ducts added **should overlap** the duct to which it is to be connected.
7. **ALL** ducts **should be** taped to prevent moisture and lint from escaping into the building.
8. Inspection or cleaning doors **should be** installed throughout strategic points in the ductwork for periodic inspection and cleaning.
9. Wherever the ductwork passes through combustible materials, the opening **must be** 2-inches larger than the duct (all the way around). The duct **must be** centered within this opening.
10. The outside of the ductwork **must be** protected from the weather. A 90° elbow **must be** used for horizontal run and when vertically through a roof by using a 180° turn to point the opening downward. The distance between the exhaust duct and the nearest obstruction (i.e., roof or ground) **must be** twice the diameter of the duct.
11. **DO NOT** use screens, louvers, or caps on the outside opening of the exhaust ductwork.
12. Exhaust back pressure measured by a manometer at the dryer exhaust duct area **must be** no less than 0 and **must not exceed** 0.3 inches of water column (W.C.).
13. Exhaust ductwork outlets **should not be** located in an area directly where make-up air openings are located.
14. **WARNING** - DRYER **MUST NEVER BE** OPERATED WITHOUT THE LINT FILTER OR SCREEN IN PLACE, EVEN IF AN EXTERNAL LINT COLLECTION SYSTEM IS USED.

## F. ELECTRICAL INFORMATION

### 1. Electrical Requirements

It is your responsibility to have **ALL** electrical connections made by a properly licensed and competent electrician to assure that the electrical installation is adequate and conforms to local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, materials, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

**IMPORTANT:** Failure to comply with these codes or ordinances or the requirements stipulated in this manual can result in personal injury or component failure.

**NOTE:** Component failure due to improper installation will VOID THE WARRANTY.

**IMPORTANT:** Each circuit ***must be*** connected to an independently protected branch circuit.

**IMPORTANT:** USE ONLY COPPER CONDUCTOR CABLE of proper ampacity and insulation in accordance with electric codes for making service connections.

**NOTE:** The use of aluminum wire will VOID THE WARRANTY.

**IMPORTANT:** A separate circuit servicing each dryer ***must be*** provided.

### 2. Electrical Service Specifications

#### a. Electric Service

**IMPORTANT:** The dryer ***must be*** connected to the electric supply shown on the data label that is affixed to the left side panel area behind the top control (access) door. In the case of 208 VAC or 230/240 VAC, the supply voltage must match the electric service specifications of the data label **exactly**.

**IMPORTANT:** USE ONLY COPPER CONDUCTOR CABLE of proper ampacity and insulation in accordance with electric codes for making service connections.

**WARNING:** **208 VAC AND 230/240 VAC ARE NOT THE SAME.** Any damage done to dryer components due to improper voltage connections will automatically VOID THE WARRANTY.

**NOTE:** On gas dryers, to convert from 208 VAC to 240 VAC (or visa versa), the 24 VAC transformer wiring sequence ***must be*** changed.

**NOTE:** Component failure due to improper voltage application will VOID THE WARRANTY.

### 3. Grounding

A ground (earth) connection **must be** provided and installed in accordance with state and local codes. In the absence of these codes, grounding **must conform** to applicable requirements of the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION, or in Canada, the installation **must conform** to applicable Canada Standards: Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION. The ground connection may be to a proven earth ground at the location service panel.

For added personal safety, when possible, it is suggested that a separate ground wire (no. 18 minimum) be connected from the ground connection of the dryer to a grounded cold water pipe. **DO NOT ground to a gas pipe or hot water pipe**. The grounded cold water pipe must have metal to metal connection **ALL** the way to the electrical ground. If there are any nonmetallic interruptions, such as, a meter, pump, plastic, rubber, or other insulating connectors, they **must be** jumped out with no. 4 copper wire and securely clamped to bare metal at both ends.

**IMPORTANT:** For personal safety and proper operation, the dryer **must be** grounded.

Provisions are made for ground connection in each dryer at the electrical service connection area.

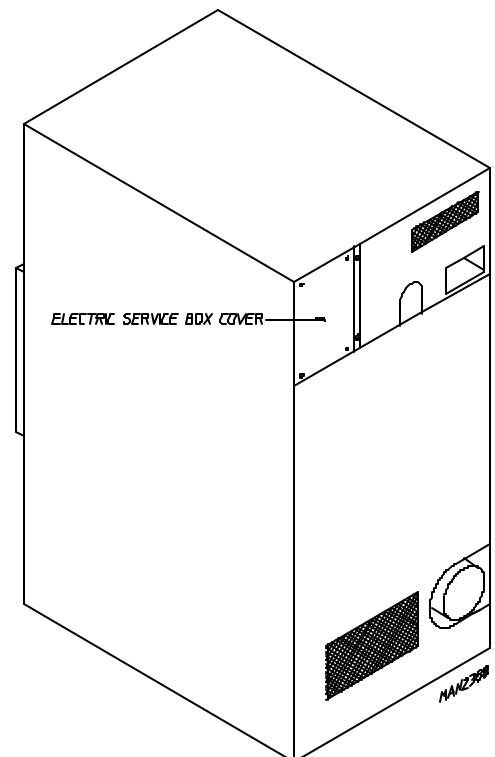
### 4. Electrical Connections

A wiring diagram is located inside the control box for connection data.

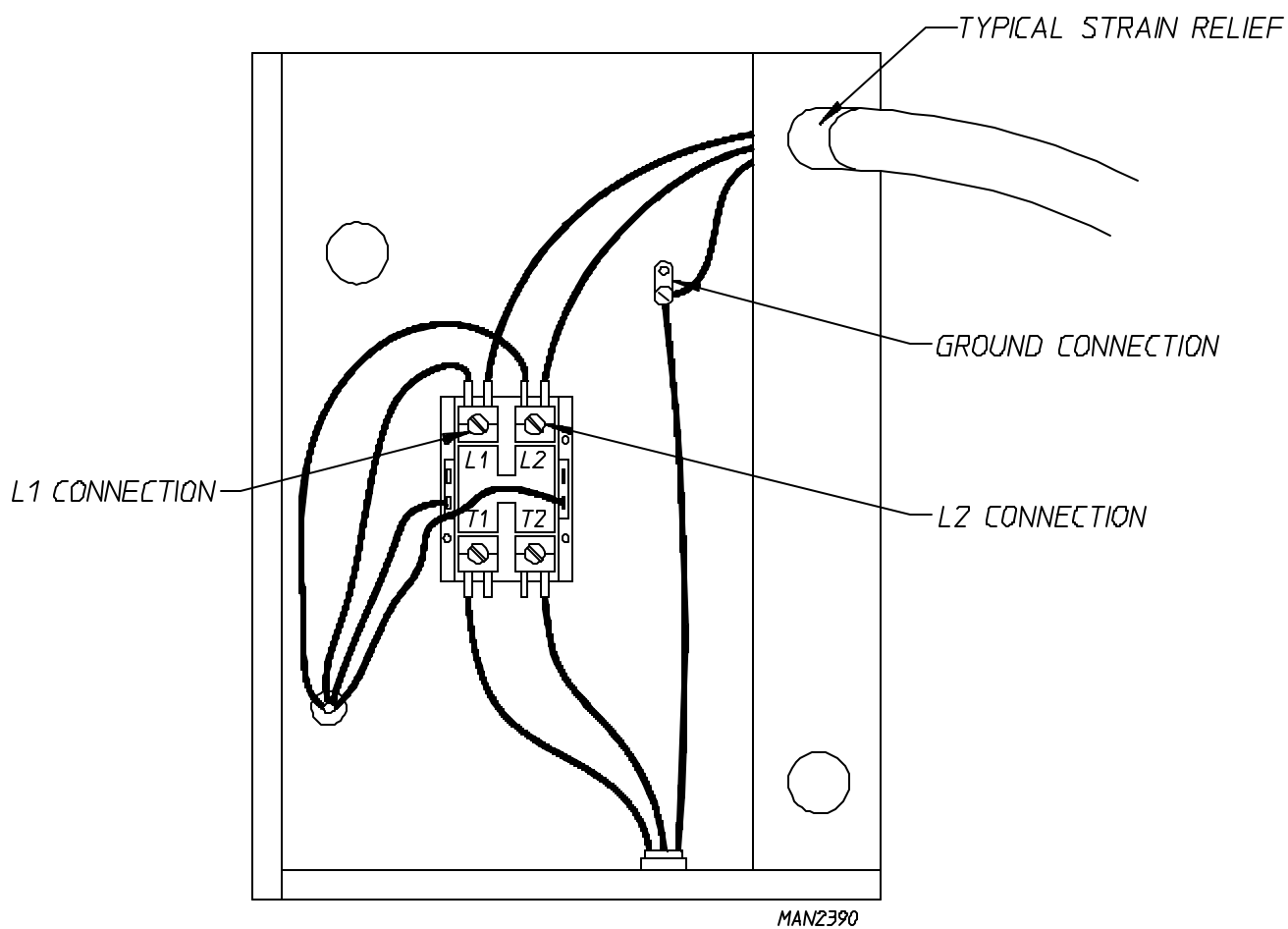
**NOTE: A CIRCUIT SERVICING EACH DRYER  
MUST BE PROVIDED.**

#### a. Single-Phase (1 $\phi$ ) Wiring Connections and Hookup

The electrical input connections on **ALL** single-phase (1 $\phi$ ) dryers are made into the rear service box located at the upper left area of the dryer.



SINGLE-PHASE (1Ø) ELECTRICAL CONNECTIONS LEADS		
Black + Positive	White - Neutral	Green Ground
or L2		



If local codes permit, power to the dryer can be made by the use of a flexible U.L. listed power cord or pigtail (wire size **must conform** to rating of dryer), or the dryer can be hard wired directly to the service breaker panel. In both cases, a strain relief **must be** installed where the wiring enters the dryer.



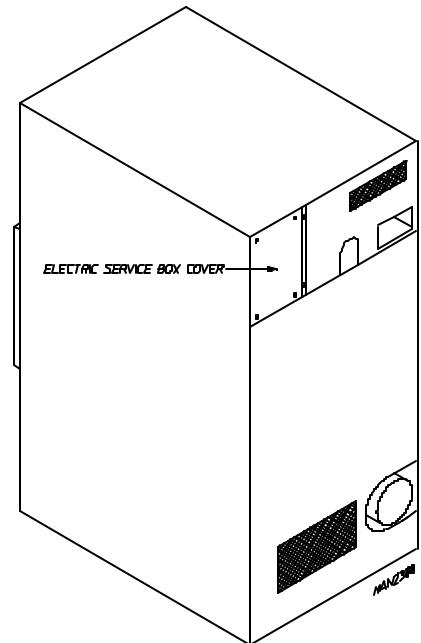
## 5. 3-Phase (3Ø) Wiring Connections/Hookup

The only electrical input connections to the dryer are the 3-phase (3Ø) power leads (L1, L2, L3, and sometimes Neutral) and ground. Single-phase (1Ø) power for the control circuit is done internally to the dryer. No single-phase (1Ø) input connection is required on a 3-phase (3Ø) dryer.

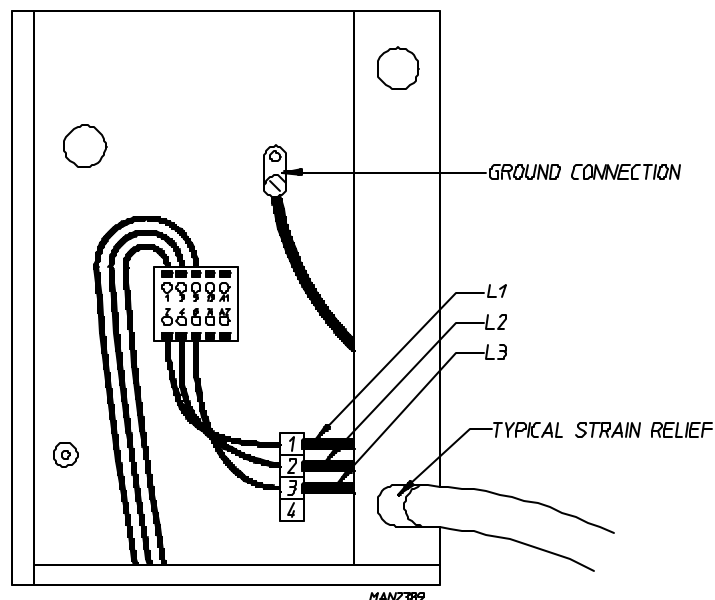
**IMPORTANT: A CIRCUIT SERVICING EACH DRYER *MUST BE* PROVIDED.**

### a. 3-Phase (3Ø) Wiring Connections/Hookup

For gas dryers manufactured for operation at 3-phase (3Ø), the electrical connections are made at the power distribution block located in the service box at the rear, upper left corner of the dryer. The ground connection is made to the copper lug also provided in this box. To gain access to the service box and contactor, the service box cover **must be** removed.



Providing local codes permit, power to a dryer can be made by the use of a flexible U.L. listed power cord or pigtail (wire size **must conform** to rating of dryer), or the dryer can be hard wired directly to the service breaker panel. In **ALL** cases, a strain relief **must be** installed where the wiring enters the dryer and service box area.



# MDG-50 (GAS)

## ELECTRICAL SERVICE SPECIFICATIONS (PER DRYER)

**IMPORTANT:** 208 VAC AND 230/240 VAC ARE NOT THE SAME. When ordering, *specify exact voltage.*

- NOTES:**
- A. When fuses are used they **must be** dual element, time delay, current limiting, class RK1 or RK5 **ONLY**. Calculate/determine correct fuse value, by applying either local and/or National Electrical Codes to listed appliance amp draw data.
  - B. Circuit breakers are thermal-magnetic (industrial) motor curve type **ONLY**. For others, calculate/verify correct breaker size according to appliance amp draw rating and type of breaker used.
  - C. Circuit breakers for 3 phase (3Ø) dryers **must be** 3-pole type.

SERVICE VOLTAGE	PHASE	WIRE SERVICE	APPROX. AMP DRAW		CIRCUIT BREAKER
			60 Hz	50 Hz	
120	1Ø	2	12	--	25
208	1Ø	2	7	--	15
240	1Ø	2	7	4	15
208	3Ø	3	3	--	15
240	3Ø	3	3	3	15
380-400	3Ø	3/4	--	2	15
416	3Ø	3/4	--	2	15
460/480	3Ø	3/4	2	--	15

**IMPORTANT:** Figures shown are for non-reversing models **ONLY**. For reversing models, contact the factory.

**IMPORTANT:** The dryer **must be** connected to the electric supply shown on the data label that is affixed to the left side panel area behind the top control (access) door. In the case of 208 VAC or 230/240 VAC, the supply voltage must match the electric service specifications of the data label **exactly**.

**IMPORTANT:** The wire size **must be** properly sized to handle the related current.

**WARNING:** 208 VAC AND 230/240 VAC ARE NOT THE SAME. Any damage done to dryer components due to improper voltage connections will automatically VOID THE WARRANTY.

**NOTE:** Manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

## G. GAS INFORMATION

It is your responsibility to have **ALL** plumbing connections made by a qualified professional to assure that the gas plumbing installation is adequate and conforms to local and state regulations or codes. In the absence of such codes, **ALL** plumbing connections, materials, and workmanship **must conform** to the applicable requirements of the National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Installation Codes CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION.

**IMPORTANT:** Failure to comply with codes or ordinances, and/or requirements in this manual, can result in personal injury and improper operation of the dryer.

The dryer and its individual shutoff valves **must be** disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa). The dryer **must be** isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure test of the gas supply system at test pressures equal to or less than 1/2 psig (3.5 kPa).

**IMPORTANT:** Failure to isolate or disconnect the dryer from supply as noted can cause irreparable damage to the gas valve, which will VOID THE WARRANTY.

**WARNING: FIRE OR EXPLOSION COULD RESULT.**

### 1. Gas Supply

The gas dryer installation **must meet** the American National Standard...National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Installation Codes CAN/CGA-B149.1 M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION, as well as local codes and ordinances and **must be** done by a qualified professional.

**NOTE:** Undersized gas piping will result in ignition problems, slow drying, increased use of energy, and can create a safety hazard.

The dryer **must be** connected to the type of heat or gas indicated on the dryer label affixed behind the top access or control door. If this information does not agree with the type of gas available, ***DO NOT operate the dryer.*** Contact the distributor who sold the dryer or contact the manufacturer.

**IMPORTANT:** Any burner changes or conversions **must be** made by a qualified professional.

The input ratings shown on the dryer data label are for elevations up to 2,000 feet, unless elevation requirements of over 2,000 feet were specified at the time the dryer order was placed with the factory. The adjustment or conversion of dryers in the field for elevations over 2,000 feet is made by changing each burner orifice. If this conversion is necessary, contact the distributor who sold the dryer or contact the manufacturer.

## 2. Technical Gas Data

### a. Gas Specifications

	<b>TYPE OF GAS</b>			
	NATURAL		LIQUID PROPANE	
Manifold Pressure*	3.5 inches W.C.	<b>8.7 mb</b>	10.5 inches W.C.	<b>26.1 mb</b>
In-Line Pressure	6.0 - 12.0 inches W.C.	<b>14.92 - 29.9 mb</b>	11.0 inches W.C.	<b>27.4 mb</b>

*Shaded areas are stated in metric equivalents*

\* Measured at outlet side of gas valve pressure tap when gas valve is on.

### b. Gas Connections

Inlet connection ----- 1/2-inch N.P.T.

Inlet supply size ----- 1/2-inch N.P.T. (minimum)

Btu/hr input (per dryer) ---- 130,000 (32,760 kcal/hr)

#### 1) Natural Gas

Regulation is controlled by the dryer's gas valve's internal regulator. Incoming supply pressure **must be** consistent between a minimum of 6.0 inches and a maximum of 12.0 inches water column (W.C.) pressure.

#### 2) Liquid Propane (L.P.) Gas

Dryers made for use with L.P. gas have the gas valve's internal pressure regulator blocked open so that the gas pressure **must be** regulated upstream of the dryer. The pressure measured at each gas valve pressure tap **must be** a consistent 10.5 inches water column (W.C.). There is no regulator or regulation provided in an L.P. dryer. The water column pressure **must be** regulated at the source (L.P. tank) or an external regulator **must be** added to each dryer.

			TYPE OF GAS						Liquid Propane (L.P.) Conversion Kit Part Number
MODEL NUMBER	BTU Per Hour Rating	kcal/hr Rating	Natural			Liquid Propane (L.P.)			
			Qty.	D.M.S.*	Part Number	Qty.	D.M.S.*	Part Number	
MDG-50	130,000	32,760	2	#25	140853	2	#43	140809	874044

\* Drill Material Size (D.M.S.) equivalents are as follows:

Natural Gas ..... #25 = 0.1495" (3.7973 mm).

Liquid Propane Gas ..... #43 = 0.0890" (2.2606 mm).

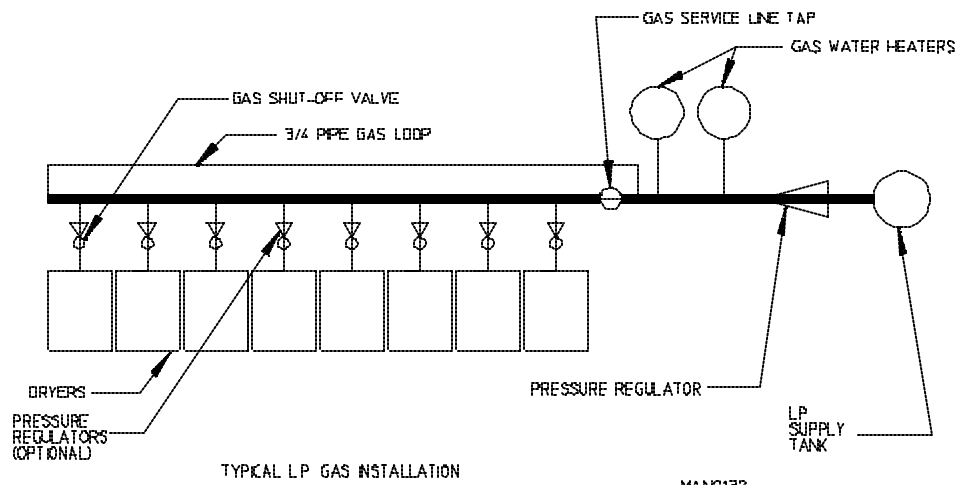
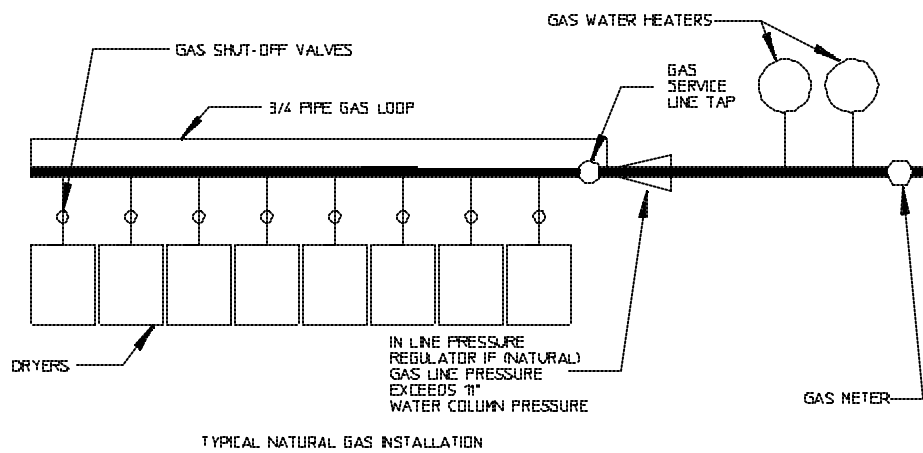
### 3. Piping Connections

**ALL** components/materials **must conform** to National Fuel Gas Code Specifications ANSI Z223.1-LATEST EDITION, or in Canada, CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION (for General Installation and Gas Plumbing), as well as local codes and ordinances and **must be** done by a qualified professional. It is important that gas pressure regulators meet applicable pressure requirements, and that gas meters be rated for the total amount of **ALL** the appliance BTUs being supplied.

The dryer is provided with a 1/2-inch N.P.T. inlet pipe connection located at the upper rear area of the dryer. The minimum pipe size (supply line) to the dryer is 1/2-inch N.P.T. For ease in servicing, the gas supply line of each dryer must have its own shutoff valve.

The size of the main gas supply line (header) will vary depending on the distance this line travels from the gas meter or, in the case of liquid propane (L.P.) gas, the supply tank, other gas operated appliances on the same line, etc. Specific information regarding supply line size **should be** determined by the gas supplier.

**NOTE:** Undersized gas supply piping can create a low or inconsistent pressure, which will result in erratic operation of the burner ignition system.



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Consistent gas pressure is essential at **ALL** gas connections. It is recommended that a 3/4-inch pipe gas loop be installed in the supply line servicing a bank of dryers. An in-line pressure regulator **must be** installed in the gas supply line (header) if the (natural) gas pressure exceeds 12.0 inches of water column (W.C.) pressure. (Refer to the **illustrations** on the previous page.)

**NOTE:** A water column test pressure of 3.5 inches for natural gas and 10.5 inches for liquid propane (L.P.) dryers is required at the gas valve pressure tap of each dryer for proper and safe operation.

A 1/8-inch N.P.T. plugged tap, accessible for a test gauge connection, **must be** installed in the main gas supply line immediately upstream of each dryer.

**IMPORTANT:** Pipe joint compounds that resist the action of natural gas and L.P. gas ***must be*** used.

**IMPORTANT:** Test **ALL** connections for leaks by brushing on a soapy water solution (liquid detergent works well).

**WARNING:** **NEVER TEST FOR LEAKS WITH A FLAME!**

**ALL** components and materials **must conform** to National Gas Code or Canadian Gas specifications. It is important that gas pressure regulators meet applicable pressure requirements and that gas meters be rated for the total amount of **ALL** the appliance BTUs being supplied.

**IMPORTANT:** The dryer and its individual shutoff valve ***must be*** disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

**NOTE:** The dryer ***must be*** isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure test of the gas supply system at test pressures equal to or less than 1/2 psig (3.5 kPa).

## H. PREPARATION FOR OPERATION AND START-UP

The following items **should be** checked before attempting to operate the dryer:

1. Read ALL "CAUTION," "WARNING," and "DIRECTION" labels attached to the dryer.
2. Check incoming supply voltage to be sure that it is the same as indicated on the dryer data label affixed to the left side panel area behind the top control (access) door.
3. Check to assure that the dryer is connected to the type of heat or gas indicated on the dryer data label.
4. The sail switch damper assembly was installed and adjusted at the factory prior to shipping. However, each sail switch adjustment **must be** checked to assure that this important safety control is functioning.
5. Check bolts, nuts, screws, terminals, and fittings for tightness.
6. Be sure that ALL gas shutoff valves are in the open position.
7. Check ALL back guard panels and service box covers have been replaced.
8. Make sure the lint coop support bracket has been removed.
9. Check the lint door to assure that it is closed and secured in place.

<p><b>IMPORTANT:</b> If during installation the lint door safety chain was disconnected, it <i><b>must be</b></i> reconnected or personal injury may result.</p>
--

10. Rotate the basket (tumbler and drum) by hand to be sure it moves freely.
11. Check bolts, nuts, screws, terminals, and fittings for security.
12. Check basket (tumbler) bearing setscrews to ensure that they are ALL tight.

## I. PREOPERATIONAL TESTS

**ALL** dryers are thoroughly tested and inspected before leaving the factory. However, a preoperational test **should be** performed before the dryer is publicly used. It is possible that adjustments have changed in transit or due to marginal location (installation) conditions.

1. Turn on electric power to the dryer.
2. Refer to the Operating Instructions for starting your particular model dryer.
3. When a gas dryer is first started (during initial start-up), it has a tendency not to ignite on the first ignition attempt. This is because the gas supply piping is filled with air, so it may take a few minutes for the air to be purged from the lines.

**NOTE:** During the purging period, check to be sure that **ALL** gas shutoff valves are open.

**NOTE:** Dryers are equipped with a Direct Spark Ignition (DSI) system, which has internal diagnostics. If ignition **is not** established after one (1) time, the heat circuit in the DSI module will lockout until it is manually reset. To reset the DSI system, open and close the main door and restart the dryer.

- a. A gas pressure test **should be** taken at the gas valve pressure tap of each dryer to assure that the water column (W.C.) pressure is correct and consistent.

**NOTE:** Water column pressure requirements (measured at the pressure tap of the gas valve body):

Natural Gas ----- 3.5 Inches Water Column.

Liquid Propane (L.P.) Gas --- 10.5 Inches Water Column.

**IMPORTANT:** There is no regulator provided in an L.P. dryer. The water column pressure ***must be*** regulated at the source (L.P. tank), or an external regulator ***must be*** added to each dryer.

4. Make a complete operational check of **ALL** safety related circuits:
  - a. Door Switches
  - b. Hi-Limit Thermostats
  - c. Cycling Thermostat
  - d. Sail Switch

**NOTE:** The sail switch can be checked for proper operation by opening the lint door while heating circuit (gas burner) is active (on). The heating unit should shut off within a few seconds. If not, make necessary adjustments to the sail switch.



5. Make a complete operational check of **ALL** operating controls.

**NOTE:** If computer program changes are required, refer to the computer programming section of the manual supplied with the dryer.

6. The dryer **should be** operated through one (1) complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

### BASKET COATING

The basket (tumbler) is treated with a protective coating. We suggest dampening old garments or cloth material with a solution of water and nonflammable mild detergent and tumbling them in the basket (tumbler) to remove this coating.

7. Check the electric service phase sequence (3-phase [3Ø] models only). While the dryer is operating, check to see if the blower wheel (impellor and fan) is rotating in the proper direction. Looking from the front, the blower wheel (impellor and fan) should spin in the clockwise (CW) direction. If it is, the phasing is correct. If the phasing is incorrect, reverse two (2) of the three (3) leads at connections L1, L2, and L3 of the power supply to the dryer.

**IMPORTANT:** If the blower wheel (impellor and fan) is rotating in the wrong direction, this **will not** only drastically reduce drying efficiency, but it can also cause premature component failure.

## J. PREOPERATIONAL INSTRUCTIONS

### COIN MODELS

1. Automatic Mode (Microprocessor Controller [Computer] Models)
  - a. When turning on power or when no cycle is in progress, the light emitting diode (L.E.D.) display will read "FILL" or "Amount To Start."
  - b. Insert coins.

Once correct "Amount To Start" has been inserted, the L.E.D. display will read "PUSH."

- c. Select temperature by pushing "HI TEMP," "LO TEMP," or "PERM PRESS." The dryer will start, the L.E.D. display will read the temperature cycle selected, and the drying time portion of the L.E.D. display will read "00" and count upward as time elapses.

**IMPORTANT:** If the door is opened during a cycle, both the heat and motor will stop. However, the microprocessor controller (computer) will continue to count downward in time. Continuation of the cycle will resume only after the door has been closed and any other of the three (3) temperature selection buttons is again depressed.

- d. Once the preprogrammed dryness level and cool down period have been reached, or the maximum automatic time has expired, the tone (buzzer) will sound for 5-seconds, and the L.E.D. display will read "donE," at which time the dryer will shut off.

**NOTES:** 1. If the anti-wrinkle program is active, the light emitting diode (L.E.D.) display will continue to read "donE," and the microprocessor controller (computer) will proceed through the anti-wrinkle program until the maximum "Active Guard Time" has expired or until the door is opened, whichever comes first. The L.E.D. display will read "FILL" or "Amount To Start."

2. If the anti-wrinkle program **is not** active or in use, the L.E.D. display will read "FILL" or "Amount to Start."

2. Timed Mode (Microprocessor Controller [Computer] Models)

a. When turning on power or when no cycle is in progress, the L.E.D. display will read "FILL" or "Amount To Start."

b. Insert Coins.

Once the correct "Amount To Start" has been inserted, the L.E.D. display will read "PUSH."

c. Select temperature by pushing "HI TEMP," "LO TEMP," or "PERM PRESS." The dryer will start and the L.E.D. display will read the temperature cycle selected and the drying time.

d. The dryer will continue through the drying and cooling cycles, showing time counting downward.

**IMPORTANT:** If the door is opened during a cycle, both the heat and motor will stop. However, the microprocessor controller (computer) will continue to count downward in time. Continuation of the cycle will resume only after the door has been closed and any other of the three (3) temperature selection buttons is again depressed.

e. Upon completion of drying and cooling cycles, the tone (buzzer) will sound for 5-seconds, and the L.E.D. display will read "donE," at which time the dryer will shut off.

**NOTES:** 1. If the anti-wrinkle program is active, the L.E.D. display will continue to read "donE", and the microprocessor controller (computer) will proceed through the anti-wrinkle program until the maximum "Active Guard Time" has expired or until the door is opened, whichever comes first. The L.E.D. display will read "FILL" or "Amount To Start."

2. If the anti-wrinkle program **is not** active or in use, the L.E.D. display will read "FILL" or "Amount To Start."

3. Free Dry Mode (Microprocessor Controller [Computer] Models)

a. When turning on power or when no cycle is in progress, the L.E.D. display will read "FILL" or "FrEE."

b. Select Temperature

The dryer will start, the light emitting diode (L.E.D.) display will read the temperature cycle selected, and the drying time portion of the L.E.D. display will read "00" and count upward as time elapses, or the vended time will count downward, depending on the program parameter setting.

**IMPORTANT:** If the door is opened during a cycle, both the heat and motor will stop. However, the microprocessor controller (computer) will continue to count the time, either upward or downward, depending on which parameter is programmed. Continuation of the cycle will resume only after the door has been closed and any other of the three (3) temperature selection buttons is again depressed.

- c. Once the preprogrammed dryness level and cool down period has been reached or the maximum automatic time has expired, whichever comes first, the tone (buzzer) will sound for 5-seconds, and the L.E.D. display will read "donE," at which time the dryer will shut off.

**NOTES:** 1. If the anti-wrinkle program is active, the L.E.D. display will continue to read "donE," and the microprocessor controller (computer) will proceed through the anti-wrinkle program until the maximum "Active Guard Time" has expired or until the door is opened, whichever comes first. The L.E.D. display will read "FILL" or "Amount To Start."

2. If the anti-wrinkle program **is not** active or in use, the L.E.D. display will read "FILL" or "FrEE."

4. Non-Microprocessor Controller (Computer) Models

- a. Turn on electric power to the dryer.
- b. Insert coins, rotary meter type ONLY.
- c. Select temperature by using rocker switch and selecting "HI TEMP," "LO TEMP," or "PERM PRESS."
- d. Press "Push To Start" button to start the cycle.
- e. Upon completion of the drying and cooling cycles, the dryer will shut off.

**NOTE:** If the door is opened during a cycle, both the heat and motor will stop. Continuation of the cycle will only resume after the door has been closed, and the "Push To Start" button is pressed.

## OPL MODELS

- 1. To start the dryer:
  - a. Microprocessor Controller (Computer) Dryers
    - 1) The L.E.D. display will read "FILL."

- 2) Press the "E" on the keyboard (touch pad).
- 3) The light emitting diode (L.E.D.) display will quickly show "Ld30," "LC04," and "F180." The dryer will start, and the L.E.D. display will show "dr30."

b. Dual Timer Dryers

- 1) Turn drying timer knob for a time of 20 minutes.
- 2) Select "High Temp."
- 3) Push "Push To Start" switch.
- 4) To stop dryer, open the main door.

## K. SHUT DOWN INSTRUCTIONS

If the dryer is to be shut down (taken out of service) for a period of time, the following **must be** performed:

1. Discontinue power to the dryer either at the external disconnect switch or the circuit breaker.
2. Discontinue the heat supply:

### **GAS MODELS...**

- a. discontinue the gas supply.
  - 1) **SHUT OFF external gas supply shutoff valve.**
  - 2) **SHUT OFF internal gas supply shutoff valve located in the gas valve burner area.**

## SECTION IV

### SERVICE/PARTS INFORMATION

#### A. SERVICE

1. Service **must be** performed by a qualified trained technician, service agency, or gas supplier. If service is required, contact the reseller from whom the Maytag Company equipment was purchased. If the distributor **cannot** be contacted or is unknown, contact the Maytag Company Service Department for a distributor in your area.

**NOTE:** When contacting the Maytag Company Service Department, be sure to give them the correct **model** and **serial number** so that your inquiry is handled in an expeditious manner.

#### B. PARTS

1. Replacement parts **should be** purchased from the distributor from whom the Maytag Company equipment was purchased. If the distributor **cannot** be contacted or is unknown, contact the Maytag Company for a distributor in your area.

**NOTE:** When ordering replacement parts from the Maytag Company dealer or the Maytag Company be sure to give them the correct **model** and **serial number** so that your parts order can be process processed in an expeditious manner.

# SECTION V

## WARRANTY INFORMATION

### A. RETURNING WARRANTY CARDS

1. Before any dryer leaves the manufacturer, a warranty card is affixed to the glass of the main door. These warranty cards are intended to serve the customer as a record installation date of that specific dryer so as to extend the customer's warranty period.

**IMPORTANT:** A separate warranty card *must be* completed and returned for each individual dryer.

**NOTE:** Be sure to include the installation date when returning warranty cards.

2. For specific warranty information on your dryer, contact the Maytag distributor who sold you the dryer or call the Maytag Co. at (515) 787-7000.

# SECTION VI

## ROUTINE MAINTENANCE

### A. CLEANING

A program or schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the ductwork system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, your **Maytag** dryer will provide many years of efficient, trouble-free, and most importantly safe operation.

**WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.**

**WARNING: KEEP DRYER AREA CLEAR AND FREE FROM COMBUSTIBLE MATERIALS, GASOLINE, AND OTHER FLAMMABLE VAPORS AND LIQUIDS.**

**NOTE:** Suggested time intervals shown are for average usage which is considered six (6) to eight (8) operational (running) hours per day.

**IMPORTANT:** Dryer produces combustible lint and *must be* exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint build up.

### SUGGESTED CLEANING SCHEDULE

#### ***EVERY THIRD OR FOURTH LOAD***

Clean the lint screen every third or fourth load. A clogged lint screen will cause poor dryer performance. The lint screen is located behind the lint door in the base of the dryer. Open the lint door, brush the lint off the lint screen, and remove the lint. Inspect lint screen and replace if torn.

**NOTE:** The frequency of cleaning the lint screen can best be determined from experience at each location.

#### ***WEEKLY***

Clean lint accumulation from lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

**WARNING: TO AVOID THE HAZARD OF ELECTRICAL SHOCK, DISCONTINUE ELECTRICAL SUPPLY TO THE DRYER.**

## **90 DAYS**

Inspect and remove lint accumulation in customer furnished exhaust ductwork system from dryer's internal exhaust ducting.

**WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCTWORK CAN CREATE A POTENTIAL FIRE HAZARD.**

**WARNING: *DO NOT* OBSTRUCT THE FLOW OF COMBUSTION AND VENTILATION AIR. INSPECT AND REMOVE ANY LINT ACCUMULATION, WHICH CAN CAUSE THE BACK DRAFT DAMPER TO BIND OR STICK.**

**NOTE:** A back draft damper that is sticking partially closed can result in slow drying and shutdown of heat circuit safety switches or thermostats.

**NOTE:** When cleaning the dryer cabinets, avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

## **B. ADJUSTMENTS**

### ***7 DAYS AFTER INSTALLATION AND EVERY 6 MONTHS THEREAFTER***

Inspect bolts, nuts, screws, (bearing setscrews), grounding connections, and nonpermanent gas connections (unions, shutoff valves, and orifices). Motor and drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of **ALL** safety devices (door switches, lint drawer switch, sail switch, burner, and hi-limit thermostats).

## **C. LUBRICATION**

The motor bearings, idler bearings, and under normal or most conditions the basket (tumbler) bearings are permanently lubricated. It is physically possible to relubricate the basket (tumbler) bearings if you choose to do so even though this practice is not necessary. Use Shell Alvania #2 or its equivalent. The basket (tumbler) bearings used in the dryer **DO NOT** have a grease fitting. Provisions are made in the bearing housing for the addition of a grease fitting, which can be obtained elsewhere.



# SECTION VII

## TROUBLESHOOTING

**IMPORTANT: YOU MUST DISCONNECT AND LOCKOUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) STANDARDS.**

The information provided will help isolate the most probable components associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken or shorted wire may be at fault where electrical components are concerned and not necessarily the suspected component itself.

Electrical parts **should always be** checked for failure before being returned to the factory.

The information provided **should not be** misconstrued as a handbook for use by an untrained person making repairs.

**IMPORTANT:** When replacing blown fuses, the replacement *must be* of the exact rating as the fuse being replaced.

**WARNING: ALL SERVICE AND TROUBLESHOOTING *SHOULD BE* PERFORMED BY A QUALIFIED PROFESSIONAL OR SERVICE AGENCY.**

**WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER OR SPECIFIED IN THIS MANUAL.**

### MICROPROCESSOR CONTROLLER (COMPUTER) MODELS

#### **A. No light emitting diode (L.E.D.) display...**

1. Service panel fuse blown or tripped breaker.
2. Blown control circuit L1 or L2 1/2-amp (Slo Blo) fuse.
3. Failed microprocessor controller (computer).
4. Failed step down transformer (for models 380 volts or higher ONLY).

#### **B. Drive motor is not operating (does not start)...**

1. Failed drive motor contactor (relay).
2. Failed arc suppressor (A.S.) board (for Reversing Models ONLY).
3. Failed drive motor.

4. Failed microprocessor controller (computer).

**C. Drive motor (reversing) operates in one (1) direction only, stops and restarts in same direction...**

1. Failed drive motor contactor (relay).
2. Failed arc suppressor (A.S.) board (for Reversing Models ONLY).
3. Failed microprocessor controller (computer).

**D. Drive motor operates okay for a few minutes and then stops and will not restart...**

1. Motor is overheating and tripping out on internal overload protector
  - a. Motor air vents clogged with lint.
  - b. Low voltage to the motor.
  - c. Failed motor.
  - d. Basket (tumbler) is binding, check for obstruction.
  - e. Failed idler bearings or basket (tumbler) bearings.

**E. Blower motor is not operating (does not start)...**

1. Failed blower motor contactor (relay).
2. Failed arc suppressor (A.S.) board (for Reversing Models ONLY).
3. Failed motor.
4. Failed microprocessor controller (computer).

**F. Blower motor operates okay for a few minutes and then stops and will not restart...**

1. Motor is overheating and tripping out on internal overload protector
  - a. Motor air vents clogged with lint.
  - b. Low voltage to the motor.
  - c. Failed motor.
  - d. Failed (out of balance) impellor (fan).

**G. Both drive motor and blower motor are not operating (DO NOT start), microprocessor controller (computer) motor indicator dots are on...**

1. Fault in main door switch circuit.
2. Blown fuse (2-amp very fast acting fuse [if applicable]).

3. Failed arc suppressor (A.S.) board (for Reversing Models ONLY).
  4. Failed microprocessor controller (computer).
  5. Failed 24 VAC transformer.
- H. Both drive motor and blower motor run a few minutes and then stop, microprocessor controller (computer) display continues to read time or percent of extraction and ALL indicator dots are off...**
1. Fault in main door switch circuit...
    - a. Failed main door switch.
    - b. Main door switch is out of adjustment.
    - c. Loose connection in door switch circuit.
- I. Microprocessor controller (computer) display reads "dSFL"...**
1. Fault in microprocessor heat sensing circuit...
    - a. Failed microprocessor temperature sensor.
    - b. Failed microprocessor controller (computer).
    - c. Broken wire or connection somewhere between the microprocessor controller (computer) and the microprocessor temperature sensor.
- J. Microprocessor controller (computer) display reads "door"...**
1. Fault (open circuit) in door switch circuit...
    - a. Failed main door switch.
    - b. Broken connection or wire in main door circuit.
  2. Failed 24 VAC transformer.
- K. Microprocessor controller (computer) will not accept any keyboard (touch pad) entries, i.e., light emitting diode (L.E.D.) display reads "FILL" and when keyboard (touch pad) entries are selected, the L.E.D. display continues to read "FILL"...**
1. Failed keyboard (touch pad) label assembly.
  2. Failed microprocessor controller (computer).
- L. Microprocessor controller (computer) will only accept certain keyboard (touch pad) entries...**
1. Failed keyboard (touch pad) label assembly.
  2. Failed microprocessor controller (computer).

**M. Microprocessor controller (computer) locks up and light emitting diode (L.E.D.) display reads erroneous messages or only partial segments...**

1. Transient power voltage (spikes), disconnect power to dryer, wait 1 minute, and reestablish power to dryer. If problem is still evident...
  - a. Failed microprocessor controller (computer).
  - b. Failed keyboard (touch pad) label assembly.

**N. Dryer stops during a cycle and L.E.D. display returns to "FILL"...**

1. Fault in microprocessor heat sensor circuit...
  - a. Loose connection in wires between temperature sensor and microprocessor controller (computer).
2. Loose connection somewhere in main power circuit to microprocessor controller (computer).

**O. Gas heating unit is not operating (no heat), no spark at burner area when dryer is first started, and heat indicator is on...**

1. Fault in sail switch circuit...
  - a. Sail switch is out of adjustment or has failed.
  - b. Sail switch damper is not closing or is fluttering
    - 1) Lint screen is dirty.
    - 2) Restriction in exhaust ductwork.
2. Fault in burner hi-limit circuit or thermostat.
3. Fault in lint chamber sensor bracket hi-heat protector thermostat.
4. Failed Direct Spark Ignition (DSI) module.
5. Failed DSI ignitor and flame-probe assembly.
6. Failed microprocessor controller (computer).

**P. No heat, ignitor sparks, burner goes on and off right away...**

1. DSI ignitor or flame-probe is out of adjustment, reposition closer to the flame area.
2. Sail switch is fluttering...
  - a. Lint screen dirty.
  - b. Restriction in exhaust ductwork.
3. Insufficient make-up air.

4. Failed ignitor and flame-probe assembly.
5. Failed DSI module.
6. Failed gas valve.

**Q. Dryer operates but is taking too long to dry...**

1. Exhaust ductwork run too long or is undersized, back pressure **must be** no less than 0 and **cannot** exceed 0.3 inches water column (W.C.).
2. Restriction in exhaust ductwork...
  - a. Exhaust back draft damper is sticking partially closed.
  - b. Restriction in ductwork, check ductwork from dryer **ALL** the way to the outdoors.
3. Low or inconsistent gas pressure.
4. Insufficient make-up air.
5. Poor air and gas mixture at burner, yellow or poor flame pattern; adjust gas burner air adjustment shutters.
6. Lint screen **is not** being cleaned on regular basis.
7. Extractors (washers) **are not** performing properly.
8. Sail switch is fluttering, restriction in exhaust ductwork.
9. Failed microprocessor controller (computer), temperature calibration is inaccurate.
10. Failed microprocessor temperature sensor, calibration is inaccurate.
11. Failed burner or oven hi-limit.
12. Failed lint compartment hi-limit.

**R. Condensation on main door glass...**

1. Too long, undersized, or improperly installed ductwork.
2. Back draft damper is sticking in partially closed position.

**S. Dryer is making a scraping noise at basket (tumbler) area...**

1. Check for object caught in basket (tumbler) or wrapper area.
2. Basket (tumbler) is out of proper alignment...
  - a. Check both vertical and lateral alignment.
  - b. Check gap between front panel and basket (tumbler), setscrews may have come loose, and basket (tumbler) walked forward or backward.

3. Loose basket (tumbler) tie rod.
4. Failed basket (tumbler) support.

**T. Excessive noise or vibration...**

1. Dryer is not leveled properly.
2. Impellor (fan and blower) is out of balance...
  - a. Excessive lint build up on impellor (fan and blower).
  - b. Failed impellor (fan and blower).
3. Loose basket (tumbler) tie rod.
4. Basket is out of adjustment or adjustment bolts (hardware) are loose.
5. Failed basket (tumbler) support.
6. Loose motor mount.
7. Failed idler or basket (tumbler) bearings.
8. V-belts either too tight or too loose.

**U. Main burners are burning with a yellow flame...**

1. Burner air shutters are out of adjustment.
2. Insufficient make-up air.
3. Dust or lint in burner.
4. Insufficient gas pressure.

## **DUAL TIMER MODELS**

**A. Dryer will not start, both drive and blower motors are not operating (indicator light is off)...**

1. Dryer control circuit fuse is blown.
2. Open at location, service main fuse or circuit breaker.
3. Failed push to start relay.
4. Failed door switch or circuit.
5. Failed heat timer.
6. Failed dual timer relay.

**B. Drive motor (only) is not operating...**

1. Failed drive motor contactor.
2. Failed reversing timer (for Reversing Models ONLY).
3. Failed drive motor.

**C. Blower motor (only) is not operating...**

1. Failed impellor (fan and blower) motor contactor (relay).
2. Failed blower (impellor and fan) motor.

**D. Both drive and blower motors are not operating (indicator light is on)**

1. Fault with L1 termination at reversing timer (for Reversing Models ONLY).
2. Failed drying timer.

**E. Reversing drive motor operates in one (1) direction only, stops, and restarts in same direction (for Reversing Models ONLY)...**

1. Failed reversing contactor (relay).
2. Failed reversing timer.

**F. Heating unit is not operating (ALL temperature selections)**

1. Fault in sail switch circuit..
  - a. Sail switch is out of adjustment or has failed.
  - b. Sail switch is not closing or fluttering..
    - 1) Check blower (impellor and fan) motor and rotation direction.
    - 2) Restriction in location exhaust system.
2. Failed burner hi-limit circuit.
3. Failed lint compartment automatic (225° F [107° C]) safety thermostat circuit.
4. Failed heat selector switch.

**G. Heat unit is not operating for only one (1) temperature selection...**

1. Failed thermostat corresponding to selection made.
2. Failed heat selector switch.

## **H. Dryer operates but is taking too long to dry load...**

1. Heating unit cycling on hi-limit thermostat.
2. Housekeeping...
  - a. Lint screen and lint compartment are not being cleaned on a regular basis.
  - b. Lint accumulation in location exhaust system.
3. Insufficient make-up air.
4. Failed hi-limit thermostat.
5. Failed lint compartment automatic (225° F [107° C]) safety thermostat circuit.
6. Extractors (washers) are not performing properly.
7. Low or inconsistent gas pressure.
8. Gas supply may have low heating value.
9. Sail switch is fluttering...
  - a. Restriction in location exhaust system.
10. Exceptional cold or humidity, or low barometric pressure atmosphere.
11. Blower (impellor and fan) motor rotation direction is incorrect.

## **I. Dryer is cycling on hi-limit thermostat...**

1. Blower (impellor and fan) motor failure.
2. Blower (impellor and fan) motor rotation direction is incorrect.
3. Insufficient make-up air.
4. Restriction in location exhaust system...
  - a. Undersized exhaust ducting.
5. Lint screen needs cleaning.
6. Failed hi-limit thermostat.

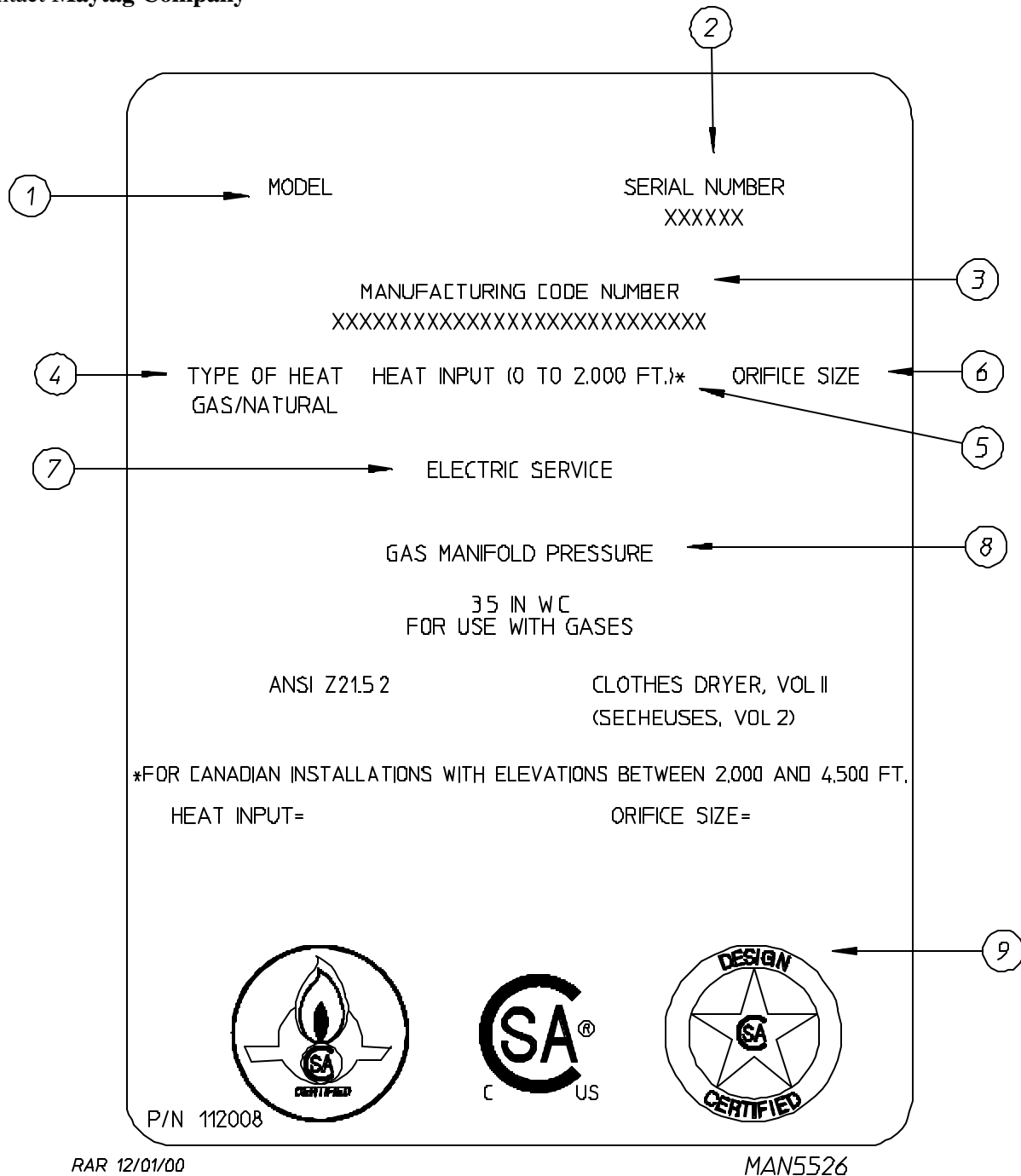


# SECTION VIII

## DATA LABEL INFORMATION

### A. DATA LABEL

Contact **Maytag Company**



When contacting **Maytag Company** certain information is required to insure proper service or parts information from manufacturer. This information is on the data label that is affixed to the left side panel area behind the top control (access) door. When contacting manufacturer please have the **model** and **serial numbers** available.

## THE DATA LABEL

### 1. MODEL NUMBER

The model number is an **Maytag Company** number, which describes the size of the dryer and the type of heat (gas, electric, or steam).

### 2. SERIAL NUMBER

The serial number allows **Maytag** to gather information on your particular dryer.

### 3. MANUFACTURING CODE NUMBER

The manufacturing code number is a number issued by **Maytag**, which describes **ALL** possible options on your particular model.

### 4. TYPE OF HEAT

This describes the type of heat for your particular dryer: gas (either natural gas or liquid propane [L.P.] gas) or steam.

### 5. HEAT INPUT (for GAS DRYERS)

This describes the heat input in British Thermal Units per Hour (BTUH).

### 6. ORIFICE SIZE (for GAS DRYERS)

Gives the number drill size used.

### 7. ELECTRIC SERVICE

This describes the electric service for your particular model.

### 8. GAS MANIFOLD PRESSURE (for GAS DRYERS)

This describes the manifold pressure taken at the gas valve tap.

### 9. APPLICABLE APPROVAL SEAL(S)

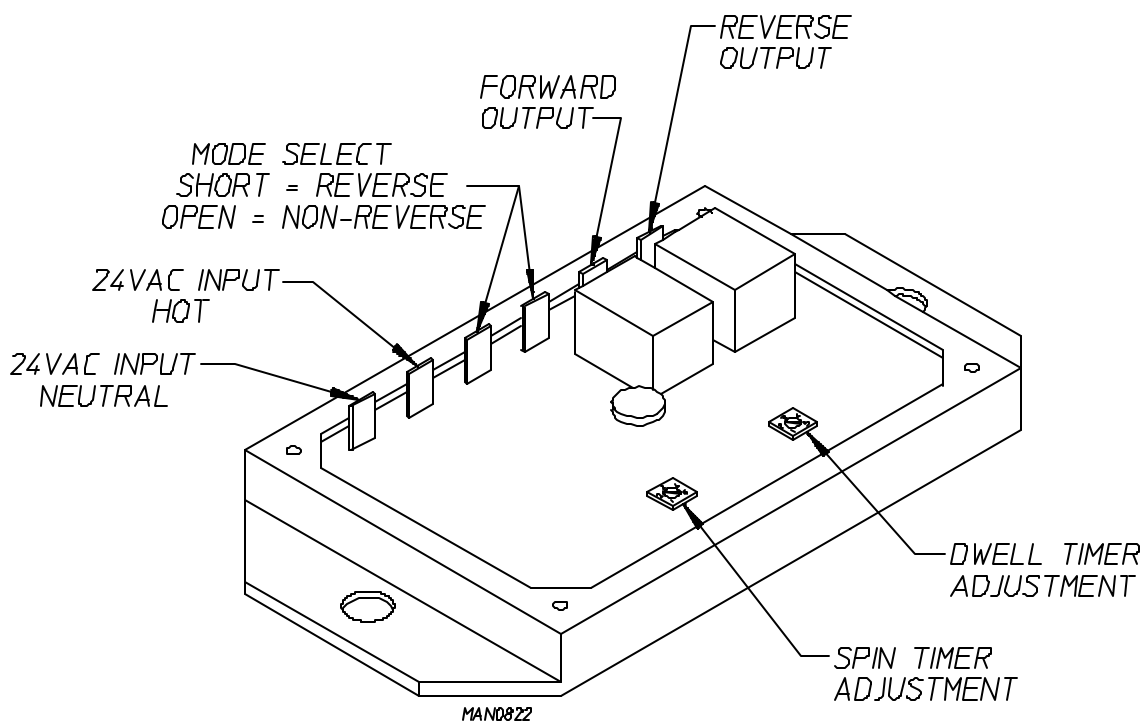
I.E., Canadian Standards Association International.

# SECTION IX

## REVERSING TIMER SPIN/DWELL ADJUSTMENTS

Dual timer models with "reversing option" have an electric reversing timer in the electric service box, which is located in the upper rear area of the dryer.

Both the dwell (stop) time and basket (tumbler) spin time are adjustable by mode selection switches located on the electronic timer (as noted in the **illustration below**).



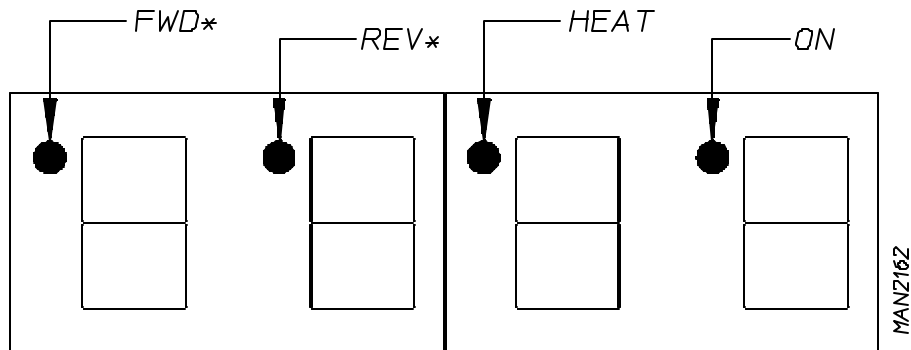
TIMING LEGEND					
<b>SPIN TIME</b>					
Adjustment Position Number	1	2	3	4	5
Time in Seconds*	30	60	90	120	150
<b>DWELL (STOP) TIME</b>					
Adjustment Position Number	1	2	3	4	5
Time in Seconds*	5	6.3	7.6	8.9	10.2
* Values shown are +/- 1-second.					

# SECTION X

## PROCEDURE FOR FUNCTIONAL CHECK OF REPLACEMENT COMPONENTS

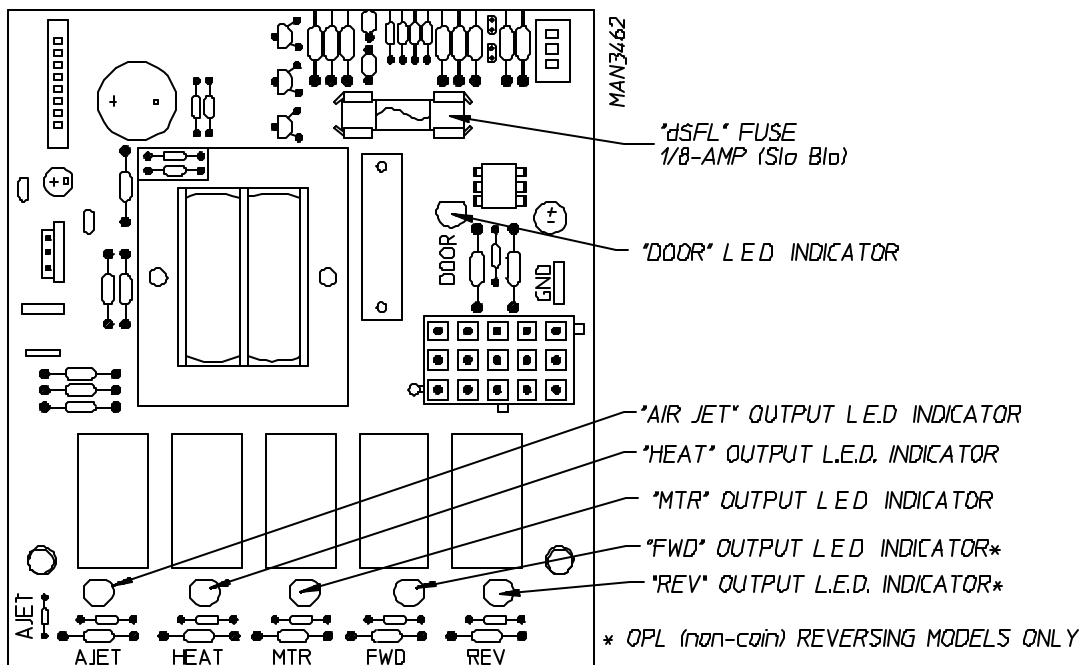
### 1. Microprocessor Controller (Computer) Board

- a. Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.
- b. Start the drying cycle.
- c. Verify that the motors and the heat indicator dots, in the microprocessor controller (computer) light emitting diode (L.E.D.) display are on. (Refer to the **illustration below.**)



*\*OPL (NON-COIN) REVERSING MODELS ONLY.*

- d. Verify that motors, heat, and door indicator lights on the back side of the microprocessor controller (computer) board are lit. (Refer to the **illustration below.**)



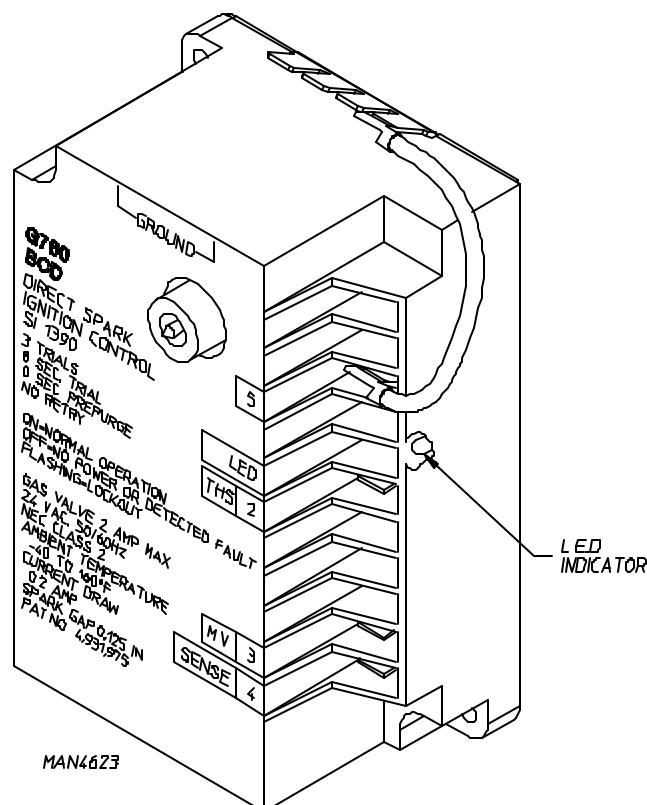
- e. Open main door. The dryer must stop and **ALL** output indicator lights on the back side of the microprocessor controller (computer) board must go out. (Refer to the **illustration** on the previous page.)
  - f. Try to restart the dryer with the main door open.
  - g. The microprocessor controller (computer) board's light emitting diode.(L.E.D.) display must read "DOOR."
  - h. Close the main door and restart the dryer.
  - i. Functional check of microprocessor controller (computer) board is complete.
2. For Models With Johnson Controls Direct Spark Ignition (DSI) Module (G760)

#### Theory Of Operation:

Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (6-seconds), the flame sensor detects gas burner flame and signals the DSI module to keep the gas valve open...as long as there is a call for heat. The DSI module will "LOCKOUT" if the gas burner flame is not sensed at the end of the trial for ignition period. The trial for ignition period will be repeated for a total of three (3) retries/trials (the initial try and two [2] more retries/trials). If the flame is not sensed at the end of the third retry/trial (inter-purge period of 30-seconds) the DSI module will "LOCKOUT" (light emitting diode [L.E.D.] flashes).

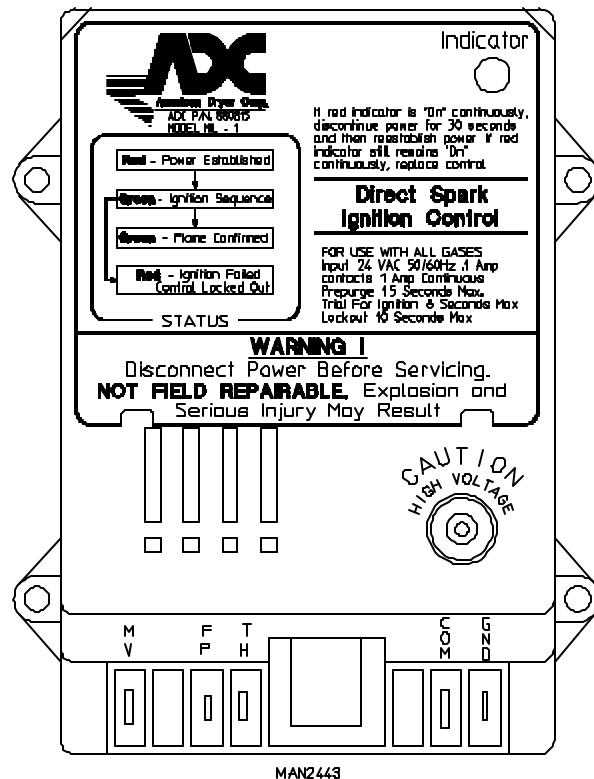
A steady L.E.D. indicator indicates *normal operation*.

No L.E.D. indicator indicates a power or an internal failure has occurred.



3. For Direct Spark Ignition (DSI) System Models Manufactured With ADC Module Part No. 882627

- a. Upon completing installation of the replacement DSI module, reestablish power to the dryer.
- b. Starting the drying cycle.
- c. The ignition DSI module's light emitting diode (L.E.D.) indicator will light "red" for up to approximately 1.5-seconds (prepurge time).
- d. The module's indicator light will then turn "green." The gas valve will be energized and the ignitor probe will spark for approximately 8-seconds. The burner flame **should now be** established.
- e. With the burner flame on, remove the flame sensor wire from the FS terminal of the DSI module.
- f. The burner flame must shut off and the ignition module must lockout with the DSI module's indicator light "red."



- g. Stop the drying cycle, with the flame sensor wire still removed, restart the drying cycle.
- h. The ignition module must proceed through the prepurge, with the indicator light "red," the ignition trial time of approximately 8-seconds, with the indicator light "green," and then proceed to lockout with the indicator light "red."
- i. Functional check of the DSI module is complete.
  - 1) Replace the flame sensor wire from the FS terminal to the DSI module.

Part No. 113067   **1-** 01/12/99-150   **2-** 03/26/99-150   **3-** 12/15/99-150  
                         **4-** 01/19/00-150   **5-** 03/03/00-150   **6\*** 10/30/00-150  
                         **7-** 03/27/01-200   **8\*** 09/14/01-200

