AD-78 Installation Manual

Phase 7 Microprocessor / Dual Timer Rotary Meter / Fire Suppression System

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 vapors and liquids in the vicinity of this or any other appliance.

— WHAT TO 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 à proximité de cet appareil ou de tout autre appareil.

— QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

- Ne pas tenter d'allumer d'appareils.
- Ne touchez à aucun interrupteur. Ne pas vous servir des téléphones se trouvant dans le bâtiment.
- 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.

American Dryer Corp.®

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ADC Part No. 113206

Retain This Manual in a Safe Place for Future Reference

This product embodies 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 manual included with the dryer.

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

FOR YOUR SAFETY	POUR VOTRE SÉCURITÉ
Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.	Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité 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. The 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. The illustrations included in this manual may not depict your particular dryer exactly.

IMPORTANT

For your convenience, log the following information:

DATE OF PURCHASE _____ **MODEL NO.** **AD-78 PH7**

RESELLER'S NAME _____

Serial Number(s) _____

_____

_____

Replacement parts can be obtained from your reseller or the ADC factory. When ordering replacement parts from the factory, you can FAX your order to ADC at (508) 678-9447 or telephone your order directly to the ADC Parts Department at (508) 678-9000. Please specify the dryer model number and serial number in addition to the description and part number, so that your order is processed accurately and promptly.

"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 or the steam 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 standards.

Please observe all safety precautions displayed on the equipment and/or specified in the installation manual included with the dryer.

CAUTION

Dryer(s) should never be left unattended while in operation.

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

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

WARNING

Children should not be allowed to play on or near the dryer(s). Children should be supervised if near dryer(s) in operation.

Under no circumstances should the dryer door switch(es), lint door/drawer switch(es), or heat safety circuit(s) ever be disabled.

The dryer must never be operated with any of the back guards, outer tops, or service panels removed. Personal injury or fire could result.

The dryer must never be operated without the lint filter/screen in place, even if an external lint collection system is used.

FOR YOUR SAFETY

Do not dry mop heads in the dryer. Do not use dryer in the presence of dry cleaning fumes.

The dryers must not be installed or stored in an area where it will be exposed to water and/or weather.

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

Table of Contents

List of Acronyms

D.M.S.	Drill Measurement Size
DSI	Direct Spark Ignition
HVAC	Heating, Ventilating, and Air-Conditioning
in WC	Inches of Water Column
L.C.D.	Liquid Crystal Display
L.E.D.	Light Emitting Diode
L.P.	Liquid Propane
OSHA	Occupational Safety and Health Administration
R.M.A.	Return Material Authorization
UL	Underwriters Laboratory

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.

The dryer must never be operated with any of the back guards, outer tops, or service panels removed. Personal injury or fire could result.

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

Purchaser and 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.

What To 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 gas supplier.

Dryers must be exhausted to the outdoors.

Although the manufacturer produces 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.

Do not dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, or wax. Explosion could result.

Do not dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

Do not use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated tumbler may damage plastic or rubber and may be a fire hazard.

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 could create a fire hazard.

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 electrically ground the dryer properly will void the warranty.

Under no circumstances should the dryer door switch(es), lint door/drawer switch(es), or heat safety circuit(s) ever be disabled.

Warning

Personal injury or fire could result should the dryer door switch, lint door/drawer, or heat safety circuit ever be disabled.

This dryer is not to be used in the presence of dry cleaning solvents or fumes.

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.

Read and follow all caution and direction labels attached to the dryer.

For safety, proper operation, and optimum performance, the dryer must not be operated with a load less than sixty-six percent 50 lb (22 kg) of its rated capacity.

Warning

You must disconnect and lockout the electric supply and the gas supply or the steam 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 standards.

Important

The dryer must be installed in a location/ environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

Specifications

MAXIMUM CAPACITY (DRY WEIGHT)			75 lb	**34.02 kg**
TUMBLER DIAMETER			44-1/2”	**113.03 cm**
TUMBLER DEPTH			24-7/8”	**63.18 cm**
TUMBLER VOLUME			22.40 cu ft	**634.30 L**
TUMBLER/DRIVE MOTOR			1 hp*	**0.75 kW**
BLOWER/FAN MOTOR			1/2 hp	**0.37 kW**
DOOR OPENING (DIAMETER)			31-3/8”	**79.69 cm**
DOOR SILL HEIGHT			31”	**78.74 cm**
WATER CONNECTION			3/4”-11.5 NH (North America)	
			3/4” B.S.P.T. (Outside North America)	
DRYERS PER 20’/40’ CONTAINER			10 / 20	
DRYERS PER 48’/53’ TRUCK			25 / 27	
Gas	VOLTAGE AVAILABLE		120-575v 1,3ø 2,3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT		888 lb	**402.79 kg**
	APPROXIMATE SHIPPING WEIGHT		938 lb	**425.47 kg**
	AIRFLOW	60 Hz	1,200 cfm	**33.98 cmm**
		50 Hz	1,000 cfm	**28.31 cmm**
	HEAT INPUT		204,000 Btu/hr	**51,407 kcal/hr**
	EXHAUST CONNECTION (DIAMETER)		10”	**25.40 cm**
	COMPRESSED AIR CONNECTION		N / A	
	COMPRESSED AIR VOLUME		N / A	
	INLET PIPE CONNECTION		3/4” F.N.P.T.	
			3/4” B.S.P.T. (CE and Australia Only)	
Electric	VOLTAGE AVAILABLE		208-480v 3ø 3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT		888 lb	**402.79 kg**
	APPROXIMATE SHIPPING WEIGHT		938 lb	**425.47 kg**
	AIRFLOW	60 Hz	1,200 cfm	**33.98 cmm**
		50 Hz	1,000 cfm	**28.31 cmm**
	EXHAUST CONNECTION (DIAMETER)		10”	**25.40 cm**
	COMPRESSED AIR CONNECTION		N / A	
	COMPRESSED AIR VOLUME		N / A	
	OVEN SIZE			
	kW	Btu/hr	**kcal/hr**	
	24	81,900	**20,600**	
	36	122,800	**31,000**	
Steam	VOLTAGE AVAILABLE		N / A	
	APPROXIMATE NET WEIGHT			
	APPROXIMATE SHIPPING WEIGHT			
	AIRFLOW			
	STEAM CONSUMPTION			
	OPERATING STEAM PRESSURE			
	EXHAUST CONNECTION (DIAMETER)			
	COMPRESSED AIR CONNECTION			
	COMPRESSED AIR VOLUME			
	BOILER HORSEPOWER (NORMAL LOAD)			
	SUPPLY CONNECTION			
	RETURN CONNECTION			

Shaded areas are stated in metric equivalents 5/23/06

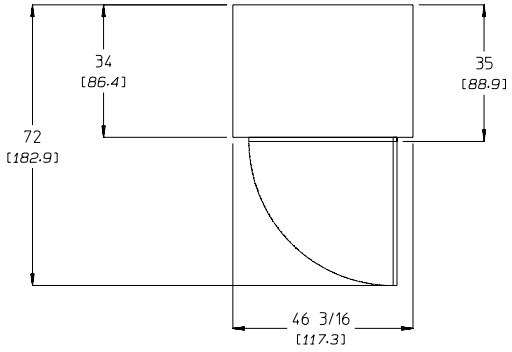
* For single-phase (1ø) dryers use 1 motor: 1 hp drive/fan. For 3-phase (3ø) non-reversing dryers use 1 motor: 1 hp drive/fan and for 3-phase (3ø) reversing dryers use 2 motors: 1 hp fan and 1/2 hp drive.

Note

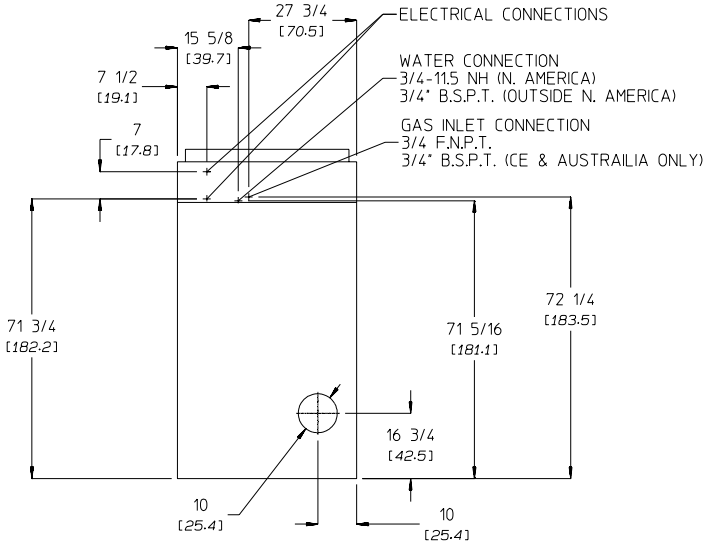
The manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

DRYER NOTES:

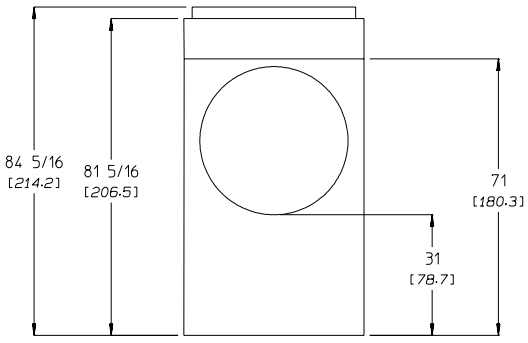
° A MINIMUM OF 3/4 in PIPE MUST BE SUPPLIED TO THE GAS INLET FOR EACH DRYER. SIZE OF PIPING TO DRYER VARIES WITH INSTALLATION CONDITIONS.
° TOP SECTION CAN BE REMOVED FOR EASY INSTALLATION. WITH TOP MODULE REMOVED THE HEIGHT OF THE CABINET IS REDUCED TO 71 in. (180.3 cm).
° 3 in (7.62 cm) HIGH COVER PANEL IS REMOVABLE FOR EASE OF INSTALLATION, REDUCING THE CABINET HEIGHT TO 81 5/16 in (207 cm).
° DUCTWORK SIZE VARIES WITH INSTALLATION CONDITIONS.
° EXHAUST STATIC PRESSURE MUST BE NO LESS THAN 0 AND MUST NOT EXCEED 0.3" (0.74 MB) WATER COLUMN.



PLAN VIEW



REAR VIEW



FRONT VIEW

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Note

The manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

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 (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).

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 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing).

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."

The dryer must not be installed or stored in an area where it will be exposed to water and/or weather.

The dryer is for use in noncombustible locations.

Provisions for adequate air supply must be provided as noted in this manual (refer to Fresh Air Supply Requirements section).

Clearance provisions must be made from combustible construction as noted in this manual (refer to Dryer Enclosure Requirements section).

Provisions must be made for adequate clearances for servicing and for operation as noted in this manual (refer to Dryer Enclosure Requirements section).

The dryer must be installed with a proper exhaust duct connection to the outside as noted in this manual (refer to Exhaust Requirements section).

The dryer must be located in an area where correct exhaust venting can be achieved as noted in this manual (refer to Exhaust Requirements section).

Important

The dryer should be located where a minimum amount of exhaust ducting will be necessary.

The dryer must be installed with adequate clearance for air openings into the combustion chamber.

Caution

This dryer produces combustible lint and must be exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint buildup.

Important

The dryer must be installed in a location/environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

Unpacking/Setting Up

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

Important

The dryer must be transported and handled in an upright position at all times.

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

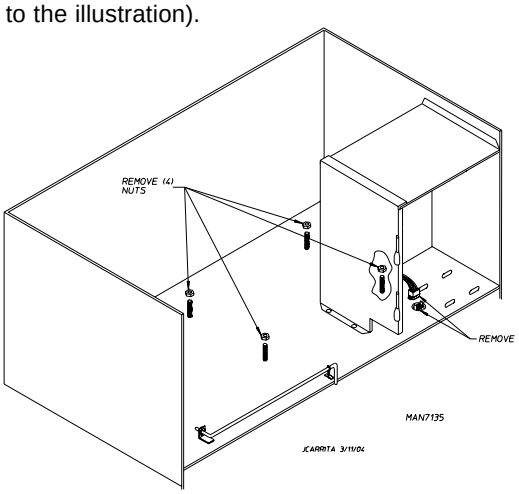
To increase bearing life and improve efficiency, the dryer should be tilted slightly to the rear.

If more headroom is needed when moving the dryer into position, the top console (module) may be removed.

To Remove Top Console (Module)

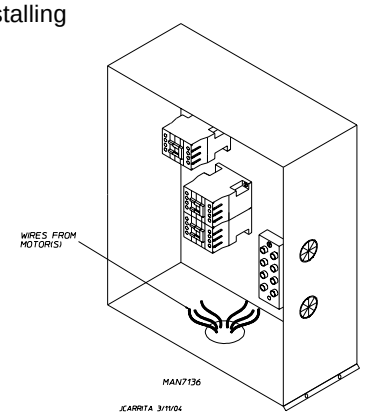
Remove the 4 nuts as shown in the illustration.

Disconnect the connector in the bottom of the control box (refer to the illustration).



Pull through all associated wires from the motor to the rear electrical box (refer to the illustration below).

Reverse procedure for installing top section.

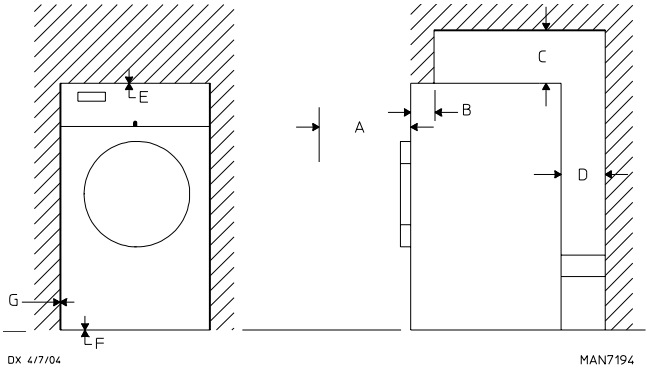


Dryer Enclosure Requirements

Bulkheads and partitions should be made of noncombustible material.

Note

Allowances must be made for opening the control door.



A 40-inches (101.6 cm) for optimum opening of load door.

B The maximum thickness of the bulkhead is 4-inches (10.16 cm). For electric dryers the maximum thickness of the bulkhead is 1-inch (2.54 cm) within 3-inches (7.62 cm) from the top of the control door.

C For gas and electric dryers a minimum overhead clearance of 12-inches (30.48 cm) is required, providing no sprinkler is located above the dryer. For steam dryers or if a sprinkler is located above the dryer, 18-inches (45.72 cm) is required.

D Dryer should be positioned 12-inches (30.48 cm) away from the nearest obstruction and 24-inches (60.96 cm) is recommended for ease of installation, maintenance, and service.

E 2-inch (5.08 cm) minimum is required for opening the control door.

F Flooring should be level or below dryer cabinet for ease of removing panels during maintenance.

G Dryers may be positioned sidewall to sidewall, however a 1/16" (1.5875 mm) minimum allowance must be made for the opening and closing of the control door, along with the removal of panels during maintenance.

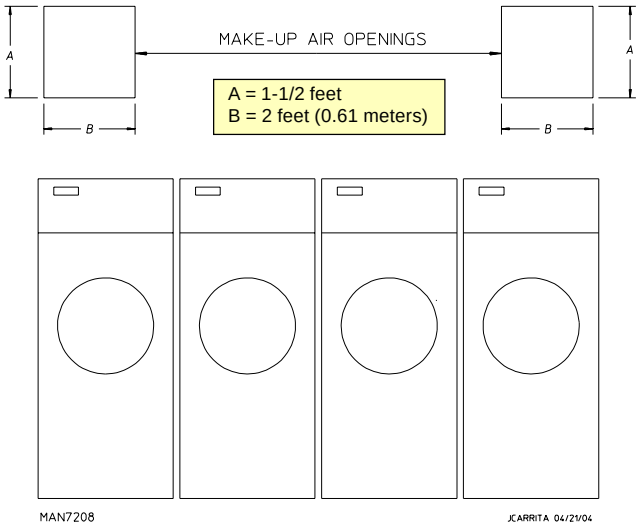
Fresh Air Supply Requirements

When the dryer is operating, it draws in room air, heats it, passes this air through the tumbler and exhausts it out of the building. Therefore, the room air must be continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems may result, as well as premature motor failure from overheating. The dryer must be installed with provisions for adequate combustion and make-up air supply.

Air supply (make-up air) must be given careful consideration to ensure proper performance of each dryer. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) of a minimum of 1-1/2 square feet (0.41 square meters) is required for each dryer. (Based on 1 square inch per 1,000 Btu.)

To compensate for the use of registers or louvers used over the openings, this area must be increased by approximately thirty-three percent. Make-up air openings should not be located in an area directly near where exhaust vents exit the building.

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 all the dryers.



EXAMPLE: For a bank of 4 dryers, 2 unrestricted openings measuring 2 feet by 1-1/2 feet (0.61 meters by 0.46 meters) are acceptable.

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.

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, overheating of the dryer, and shutdown of the burner by the airflow (sail) switches, burner hi-limits, or tumbler hi-limit thermostats. 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.

Improperly sized or installed exhaust ductwork can create a potential fire hazard.

Important

It is recommended that exhaust or booster fans not be used in the exhaust ductwork system.

The 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. Single or independent dryer venting is recommended.

Horizontal Venting

When single dryer venting is used, the length of the ductwork from the dryer to the outside exhaust outlet must not exceed 15 feet (4.6 meters). The minimum diameter of this ductwork must be at least 10-inches (25.4 cm). In the case of multiple (common) dryer venting, the distance from the last dryer to the outside exhaust outlet must not exceed 15 feet (4.6 meters). The shape of the ductwork is not critical as long as the minimum cross-sectional area is provided. It is suggested that the use of 90° turns be avoided; use 30° and/or 45° angles instead. The radius of the elbows should preferably be 1-1/2 times the diameter of the duct. Including tumbler/dryer elbow connections or elbows used for outside protection from the weather, no more than 1 elbow should be used in the exhaust duct run. If more than 1 elbow is used, the cross-sectional area of the ductwork must be increased. All ductwork should be smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. All ductwork joints must be taped to prevent moisture and lint from escaping into the building. Inspection doors should be installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.

Vertical Venting

When single dryer venting is used, the length of the ductwork from the dryer to the outside exhaust outlet must not exceed 20 feet (6.1 meters). The minimum diameter of this ductwork must be at least 12-inches (30.48 cm). The shape of the ductwork is not critical as long as the minimum cross-sectional area is provided. It is suggested that the use of 90º turns be avoided; use 30º and/or 45º bends instead. The radius of the elbows should preferably be 1-1/2 times the diameter of the duct. Including tumbler/dryer elbow connections or elbows used for outside protection from the weather, no more than 3 elbows should be used in the exhaust duct run. If more than 3 elbows is used, the cross-sectional area of the ductwork must be increased. All ductwork should be smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. All ductwork joints must be taped to prevent moisture and lint from escaping into the building. Inspection doors should be installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.

Note

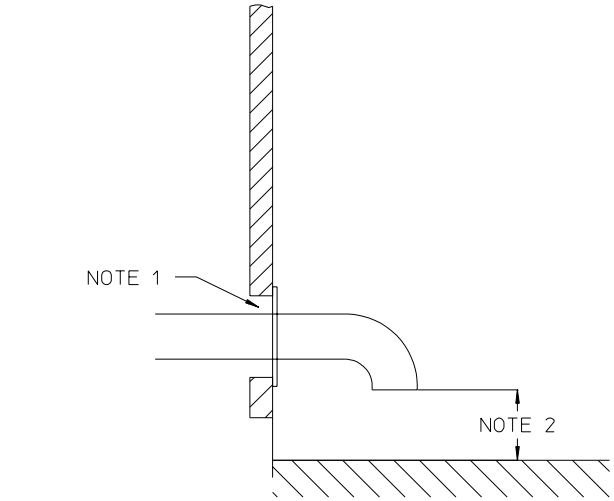
As per the National Fuel Gas Code, "Exhaust ducts for Type 2 clothes dryers shall be constructed of sheet metal or other noncombustible material. Such ducts shall be equivalent in strength and corrosion resistance to ducts made of galvanized sheet steel not less than 26 gauge (0.0195-inches [0.50 mm]) thick."

Important

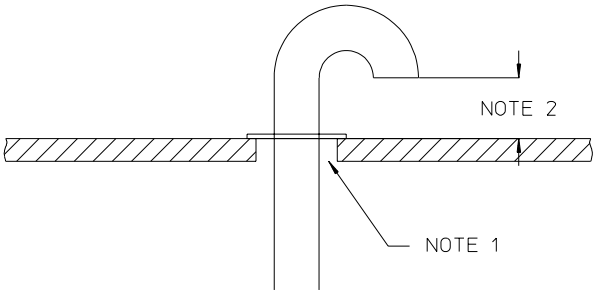
Exhaust back pressure measured by a manometer in the exhaust duct must be no less than 0 and must not exceed 0.3 in WC (0.74 mb).

Minimum ductwork diameter for horizontal venting is 10-inches (25.4 cm) and for vertical venting the minimum is 12-inches (30.48 cm).

HORIZONTAL DUCTING



VERTICAL DUCTING



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NOTE 1 Opening must be 2-inches (5.08 cm) larger than the duct (all the way around). The duct must be centered within this opening.

NOTE 2 Distance should be 2 times the diameter of the duct to the nearest obstruction.

Note

When the exhaust ductwork passes through a wall, ceiling, or roof made of combustible materials, the opening must be 2-inches (5.08 cm) larger than the duct (all the way around). The duct must be centered within this opening.

Outside Ductwork Protection

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.

Important

Do not use screens, louvers, or caps on the outside opening of the exhaust ductwork.

Single Dryer Venting

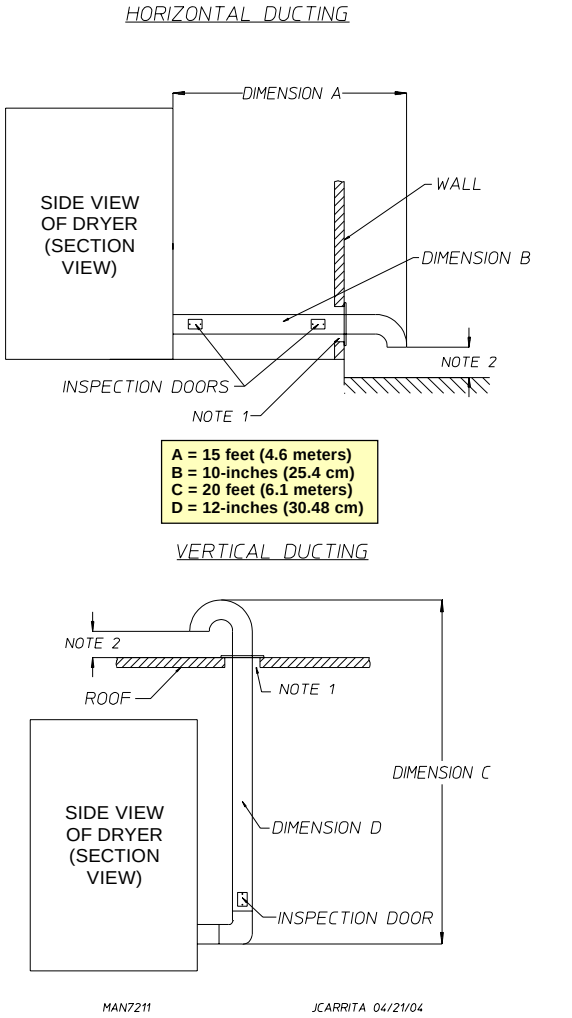
Whenever possible, it is suggested to provide a separate exhaust duct for each dryer. The exhaust duct should be laid out in such a way that the ductwork travels as directly as possible to the outdoors with as few turns as possible. It is suggested that the use of 90° turns in the ducting be avoided; use 30° and/or 45° angles instead. The shape of the exhaust ductwork is not critical as long as the minimum cross-sectional area is provided.

Important

Minimum duct size for a dryer that is vented horizontally is 10-inches (25.4 cm) for a round duct or an equivalent of 80 square inches (516.1 square centimeters). The duct size must not be reduced anywhere downstream of the dryer.

Exhaust back pressure measured by a manometer in the exhaust duct must be no less than 0 and must not exceed 0.3 in WC (0.74 mb).

Minimum duct size for a dryer that is vented vertically is 12-inches (30.48 cm) for a round duct or an equivalent of 113 square inches (729 square centimeters). The duct size must not be reduced anywhere downstream of the dryer.



NOTE 1 Opening from combustible materials must be 2-inches (5.08 cm) larger than the duct (all the way around). The duct must be centered within this opening.

NOTE 2 Distance should be 2 times the diameter of the duct to the nearest obstruction.

Important

For extended ductwork runs, the cross-sectional area of the ductwork can only be increased to an extent. When the ductwork approaches the maximum limits noted in this manual, a professional HVAC firm should be consulted for proper venting information.

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

Note

When the exhaust ductwork passes through a wall, ceiling, or roof made of combustible materials, the opening must be 2-inches (5.08 cm) larger than the duct (all the way around). The duct must be centered within this opening.

Outside Ductwork Protection

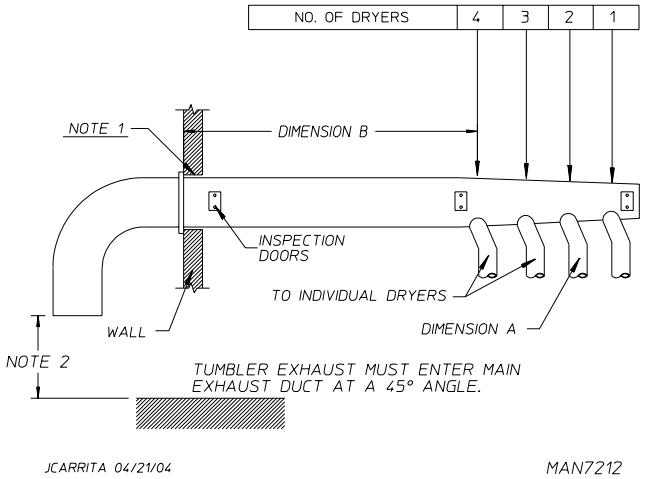
To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward should be installed where the exhaust exits the building. If the ductwork travels vertically up through the roof, it should be protected from the weather by using a 180° turn to point the opening downward.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

Important

Do not use screens, louvers, or caps on the outside opening of the exhaust ductwork.

Multiple Dryer Venting with 10-inch (25.4 cm) Diameter
1,200 cfm (33.98 cmm) Exhaust Connections at Common Duct

NUMBER OF DRYERS		4	3	2	1
MINIMUM CROSS-SECTIONAL AREA	SQ IN	315	254	200	113
	SQ CM	2032	1638	1290	729
MINIMUM ROUND DUCT DIAMETER	IN	20	18	16	12
	CM	50	45	40	30



NOTE 1 Opening must be 2-inches (5.08 cm) larger than the duct (all the way around). The duct must be centered within this opening.

NOTE 2 Distance should be 2 times the diameter of the duct to the nearest obstruction.

Electrical Information

Electrical Requirements

All electrical connections must be made by a properly licensed and competent electrician. This is to ensure 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, and/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.

Each dryer should be connected to an independently protected branch circuit. The dryer must be connected with copper wire only. Do not use aluminum wire, which could cause a fire hazard. The copper conductor wire/cable must be of proper ampacity and insulation in accordance with electric codes for making all service connections.

Note

The use of aluminum wire will void the warranty.

An individual ground circuit must be provided to each dryer, do not daisy chain.

Important

A separate protected circuit must be provided to each dryer.

The dryer must be connected to the electric supply shown on the data label. In the case of 208 VAC or 230/240 VAC, the supply voltage must match the electric service specifications of the data label exactly. 208 VAC and 230/240 VAC are not the same.

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

Note

Component failure due to improper voltage application will void the warranty.

The manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

Electrical Service Specifications

Gas Models Only

ELECTRICAL SERVICE SPECIFICATIONS

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	
NON-REVERSING MODELS					
120	1ø	2	13.0	—	20
208	1ø	2	7.6	—	15
230	1ø	2	—	8.0	15
240	1ø	2	7.0	—	15
208	3ø	3	4.7	—	15
230	3ø	3	—	4.7	15
240	3ø	3	4.9	—	15
380	3ø	4*	—	2.9	15
400	3ø	4*	—	3.1	15
416	3ø	4*	—	3.1	15
460	3ø	3	2.8	—	15
480	3ø	3	2.8	—	15
REVERSING MODELS					
208	3ø	3	6.7	—	15
230	3ø	3	—	7.3	15
240	3ø	3	7.1	—	15
380	3ø	4*	—	4.1	15
400	3ø	4*	—	4.2	15
416	3ø	4*	—	4.4	15
460	3ø	3	3.9	—	15
480	3ø	3	3.9	—	15
575	3ø	3	3.3	—	15

* 3-Wire is available. 12/19/06

Electric Models Only

All electrically heated dryers must be connected to the electric service shown on the dryer's data label. The connecting wires must be properly sized to handle the rated current.

ELECTRICAL SERVICE SPECIFICATIONS

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) 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	
NON-REVERSING					
208 (24 kW)	3ø	3	71	—	90
208 (36 kW)	3ø	3	105	—	150
380 (36 kW)	3ø	4*	—	58	75
416 (36 kW)	3ø	4*	—	53	70
460 (36 kW)	3ø	3	48	—	60
480 (36 kW)	3ø	3	46	—	60
REVERSING					
208 (24 kW)	3ø	3	73	—	100
460 (36 kW)	3ø	3	49	—	70
480 (36 kW)	3ø	3	47	—	60

* 3-Wire is available. 12/19/06

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 (size per local codes) 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 a wire (size per local codes) 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.

Electrical Connections

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

If local codes permit, power to the dryer can be made by the use of a flexible UL listed power cord/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.

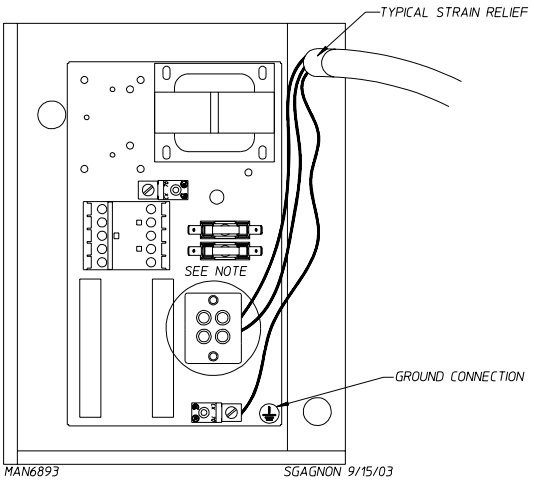
Gas Models Only

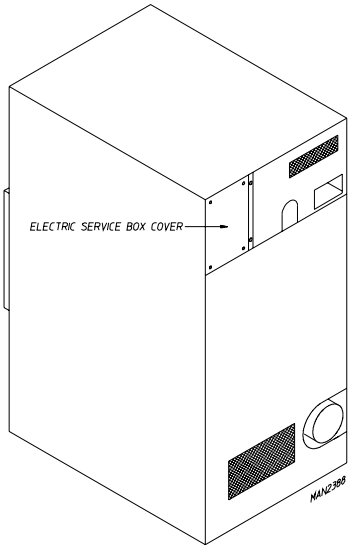
Important

A separate protected circuit must be provided to each dryer.

Single-Phase (1ø) Wiring Connections/Hookup

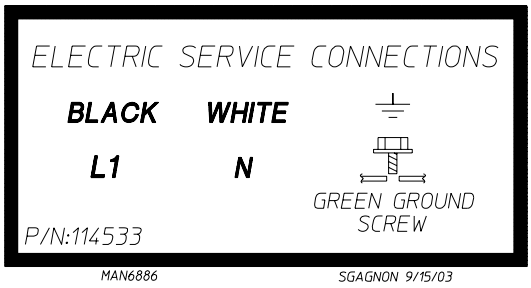
The electrical input connections on all single-phase (1ø) gas dryers are made into the rear service box, located at the upper left area of the dryer.

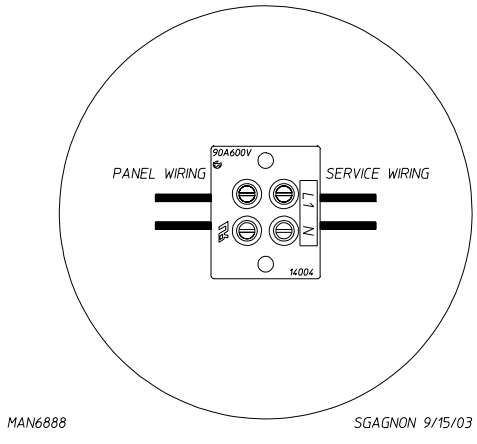




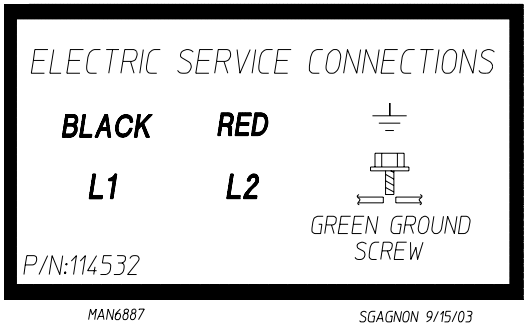
Single-Phase Electrical Lead Connections		
Black + Positive	White or Red + Neutral or L2	Green + Ground

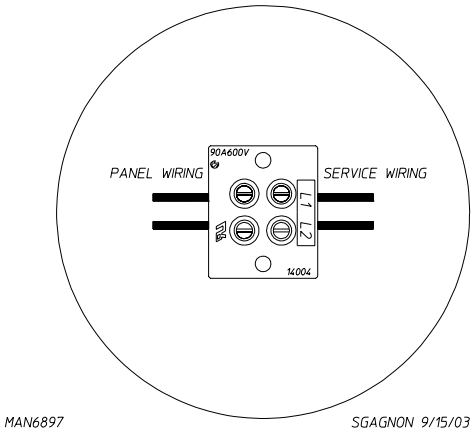
For 110V Applications





For 208-240V Applications



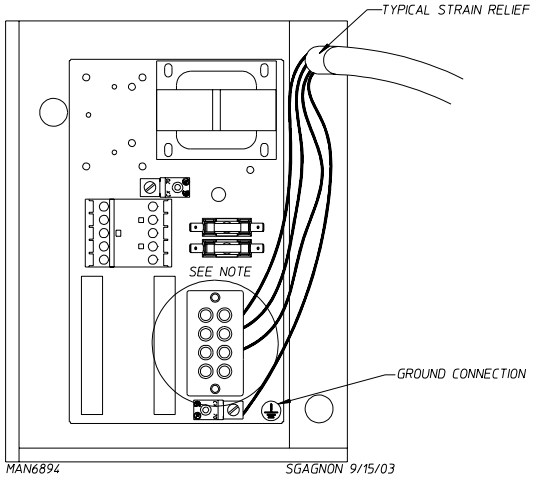


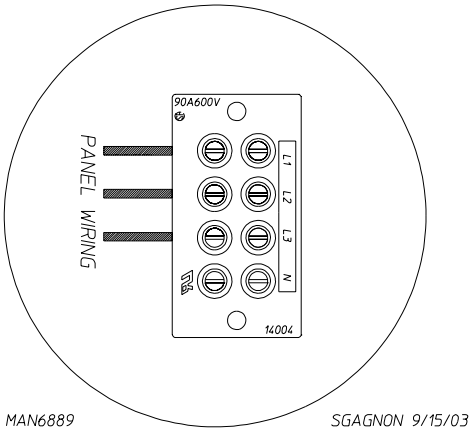
A ground lug is provided in the rear electrical box to connect your service ground.

3-Phase (3ø) Wiring Connections/Hookup

The electrical connections on all 3-phase (3ø) gas dryers are made into the rear service box, located at the upper left area of the dryer. The electrical connections are made at the power distribution block, located in the service box. The ground connection is made to the copper lug, also provided in this box. To gain access, the service box cover must be removed.

The neutral will only be used on 4-wire service. This is typical for 380-416V, 50 Hz.





Electrically Heated Models Only

The electrical input connections are made at the electric oven contactor, located inside the assembly at the rear center upper section of the dryer. The ground connection is made to a copper lug also provided in this area. To gain access, remove oven rear service cover.

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 and for any single-phase (1ø) motors (if present) is done internally to the dryer by the factory at the oven contactor. No single-phase (1ø) input connection is required on a 3-phase (3ø) dryer.

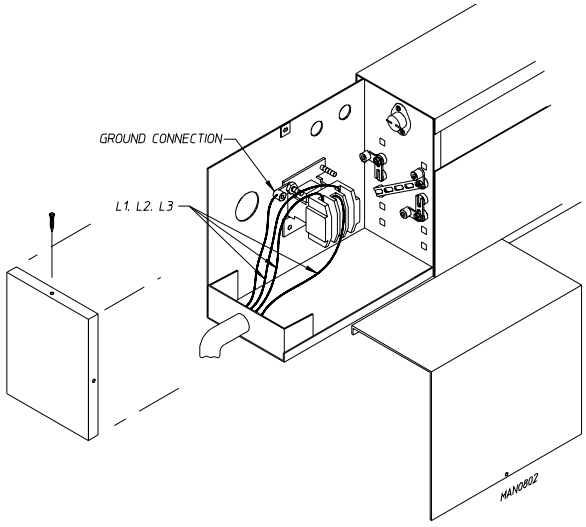
Caution

The dryer must be grounded. A ground lug has been provided for this purpose.

Input connection wiring must be sized properly to handle the dryer's current draw. This information is printed on the dryer's data label.

Important

A strain relief must be used where the input wiring enters the oven assembly.



Gas Information

It is your responsibility to have all plumbing connections made by a qualified professional to ensure 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 (L.P. Gas) or LATEST EDITION.

In Australia, the fuel gas code is AS 5601 / AG 601, local authority, gas, electricity, and any other relevant statutory regulations.

Important

Failure to comply with these codes or ordinances, and/or the requirements stipulated 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, voiding the warranty.

Warning

Fire or explosion could result due to failure of isolating or disconnecting the gas supply as noted.

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/gas indicated on the data label. If this information does not agree with the type of gas available, do not operate the dryer. Contact the reseller who sold the dryer or the manufacturer.

Important

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

The input ratings shown on the data label are for elevations up to 2,000 feet (610 meters), unless elevation requirements of over 2,000 feet (610 meters) 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 (610 meters) is made by changing each burner orifice. If this conversion is necessary, contact the reseller who sold the dryer or the manufacturer.

Important

This gas dryer is not provided with an internal gas supply shutoff and an external gas supply shutoff must be provided.

Technical Gas Data

Gas Specifications

Type of Gas	Manifold Pressure*	In-Line Pressure
Natural	3.5 in WC	6.0-12.0 in WC
	8.7 mb	**14.92 - 29.9 mb**
Liquid Propane	10.5 in WC	11.0 in WC
	26.1 mb	**27.4 mb**

Shaded areas are stated in metric equivalents

* Measured at gas valve pressure tap when the gas valve is on.

Gas Connections

Inlet connection ..... 3/4" N.P.T.
Inlet supply size ..... 3/4" Diameter Pipe (minimum)
Heat input (per dryer) ... 204,000 Btu/hr (51,408 kcal/hr)

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 in WC (14.92 mb) and a maximum of 12.0 in WC (29.9 mb) pressure.

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 in WC (26.1 mb). 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					
Btu/hr Rating	**kcal/hr Rating**	Natural			Liquid Propane		
		Qty.	D.M.S.*	Part No.	Qty.	D.M.S.*	Part No.
204,000	**51,408**	3	#23	140856	3	#42	140810
Liquid Propane Conversion Kit Part Number 881655							

Shaded area is stated in metric equivalent

* D.M.S. equivalents are as follows:

Natural Gas ..... #23 = 0.1540" (3.9116 mm).
L.P. Gas ..... #42 = 0.0935" (2.3749 mm).

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 (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 Btu being supplied.

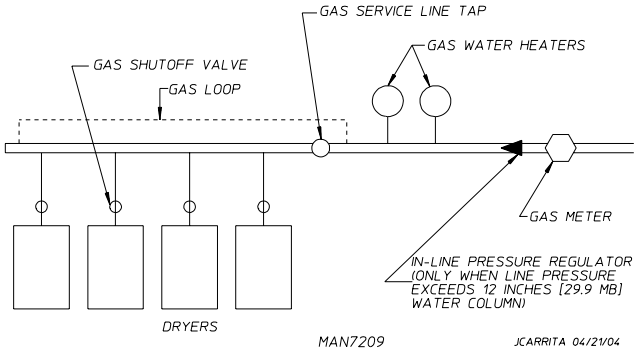
The dryer is provided with a 3/4" N.P.T. inlet pipe connection, located at the upper left rear of the dryer. The minimum pipe size (supply line) to the dryer is 3/4" diameter. For ease in servicing, the gas supply line of each dryer must have its own shutoff valve.

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 L.P. gas, the supply tank, or other gas-operated appliances on the same line, etc. Specific information regarding supply line size should be determined by the gas supplier.

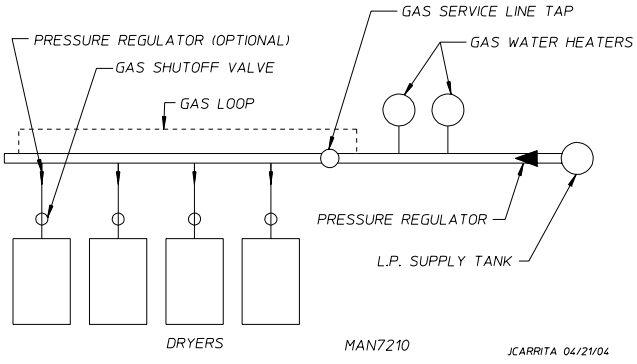
Note

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

TYPICAL NATURAL GAS INSTALLATION



TYPICAL L.P. GAS INSTALLATION



Consistent gas pressure is essential at all gas connections. It is recommended that a 3/4-inch (19.05 mm) 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 in WC (29.9 mb) pressure.

Note

A water column test pressure of 3.5 in WC (8.7 mb) for natural gas and 10.5 in WC (26.1 mb) for L.P. dryers is required at the gas valve pressure tap of each dryer for proper and safe operation.

A 1/8" 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.

Test all connections for leaks by brushing on a soapy water solution (liquid detergent works well).

Warning

Never test for leaks with a flame!!!

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).

Water Information

Before You Start

Check Local Codes and Permits

Call your local water company or the proper municipal authority for information regarding local codes.

Important

It is your responsibility to have all plumbing connections made by a qualified professional to ensure that the plumbing installation is adequate and conforms to local, state, and federal regulations or codes.

It is the installer's or owner's responsibility to see that the required water pressure, pipe size, or connections are provided. The manufacturer assumes no responsibility if the fire suppression system is not connected, installed, or maintained properly.

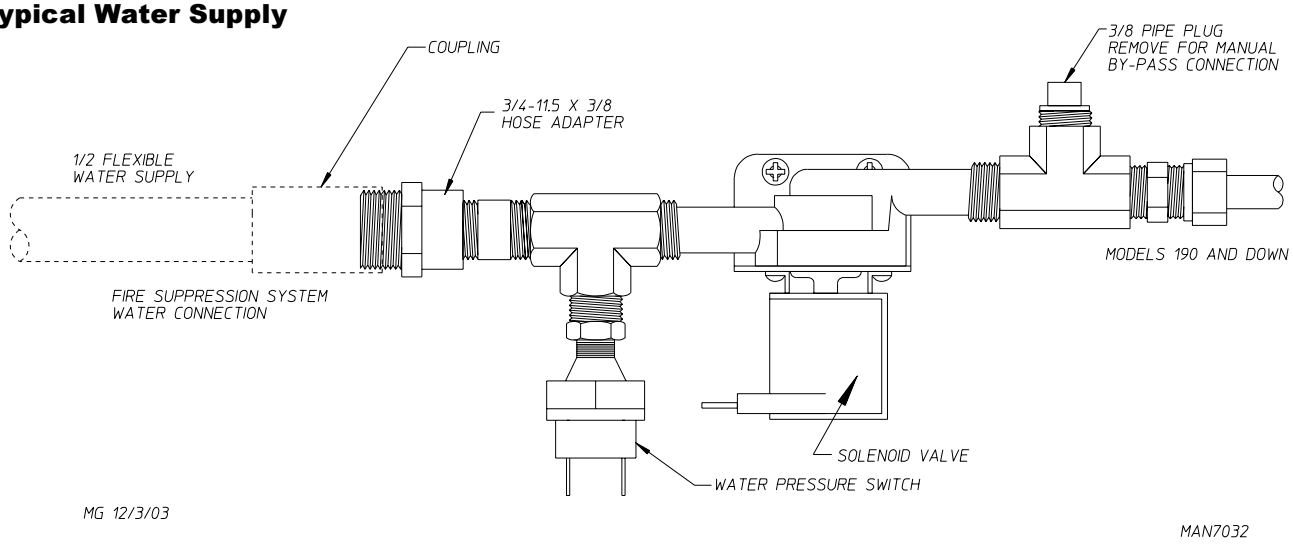
Installation

Water Supply

The fire suppression system must be supplied with a minimum water pipe size of 1/2-inch and be provided with 40 psi +/- 20 psi (2.75 bar +/- 1.37 bar) of pressure. For use of optional manual bypass, a second source with the same piping and pressure requirements is required.

Flexible 1/2 feeds must be provided to avoid damage to electric water solenoid valve by vibration.

Typical Water Supply



Important

Flexible supply line/coupling must be used. Solenoid valve failure due to hard plumbing connections will void warranty.

If the rear area of the dryer or the water supply is located in an area where it will be exposed to cold/freezing temperatures, provisions must be made to protect these water lines from freezing.

Warning

If the water in the supply line or water solenoid valve freezes, the fire suppression system will be inoperative!!

Important

The dryer is to be connected to the water mains using a new hose set and the old hose set should not be reused.

Water Connections

The water connection is made to the 3/4”-11.5 NH hose adaptor, located at the rear upper midsection of the dryer.

The water solenoid valve has a 3/8” M.P.T. connection supplied with a 3/4”-11.5 NH hose adaptor to provide the minimum 1/2-inch supply (feed) line. Flexible supply line/coupling must be used in an effort to avoid damaging the electric water solenoid valve.

Note

The 3/4”-11.5 NH is a standard hose coupling screw thread. It is not to be confused with 3/4” N.P.T. The sealing of an NH connection is made with a washer opposed to the mating threads of an N.P.T. assembly. The 2 thread designs are not compatible.

Important

Flexible supply line/coupling must be used. Solenoid valve failure due to hard plumbing connections will void warranty. It is recommended that a filter or strainer be installed in the water supply line.

Optional Manual Bypass

Provisions are made in the dryer’s fire suppression system for the installation of an optional manual bypass. Depending on the model dryer, the connections for the manual bypass are made at the “T” or “three way” fitting, located in the outlet supply side of the water solenoid valve. The use and connections of this manual bypass are at the option or discretion of the owner.

The water connection for the manual bypass is made to the “T” or “three way” fitting, which has a 3/8” F.P.T. and a coupling must be used to provide the minimum 1/2-inch supply (feed) line.

If the rear area of the dryer or the water supply is located in an area where it will be exposed to cold/freezing temperatures, provisions must be made to protect these water lines from freezing.

Warning

If the water in the supply line or water solenoid valve freezes, the fire suppression system will be inoperative!!

The manual ball cock shutoff valve must be located outside of the dryer at a distance from the dryer where it is easily accessible.

Electrical Requirements

No independent external power source or supply connection is necessary. The 24-volt power to operate the fire suppression system is accomplished internally in the dryer (from the dryer controls).

Warning

Electrical power must be provided to the dryer at all times. If the main electrical power supply to the dryer is disconnected, the fire suppression system is inoperative!!

Fire Suppression System Theory of Operation

While the dryer is in an idle state, or 20-seconds after the heat turns off, the Phase 7 microprocessor controller (computer) monitors the thermistor probe, located in the top of the tumbler chamber, and records the minimum temperature. If the minimum recorded thermistor probe temperature is greater than 120° F (48° C) and the Phase 7 microprocessor controller (computer) detects a 50° rise in temperature, this will be the trip point and the fire suppression system routine will activate.

While a drying cycle is in process and the heat has turned on at least once, the Phase 7 microprocessor controller (computer) monitors the exhaust temperature transducer. If the drying cycle temperature set point is set greater than 160° F (71° C) and the Phase 7 microprocessor controller (computer) detects an exhaust temperature rise 25° F greater than set point, this will be the trip point and the fire suppression system routine will activate. If set point is below 160° F (71° C), the trip point will be 185° F (85° C).

Once the fire suppression system routine is activated, the Phase 7 microprocessor controller (computer) will display "S.A.F.E. SYSTEM ACTIVATED" and water will be injected into the tumbler chamber. Any time water is being injected into the tumbler, the tumbler drive will turn the load for 1-second every 15-seconds. This process will continue for a minimum of 2 minutes. After the 2 minutes have elapsed, the Phase 7 microprocessor controller (computer) will check if the temperature remained above trip point; if so, the water will remain on. The Phase 7 microprocessor controller (computer) will continue to check if the temperature is above trip point every 30-seconds. If the water has been on for a constant 10 minutes, the water will be turned off, regardless of the temperature, and the Phase 7 microprocessor controller (computer) will display "S.A.F.E. SYSTEM WAS ACTIVATED". If the temperature has dropped below trip point, the Phase 7 microprocessor controller (computer) will turn off the water prior to 10 minutes.

System Reset

After the Phase 7 microprocessor controller (computer) determines that the situation is under control and shuts the water being injected into the tumbler off, the Phase 7 microprocessor controller (computer) display will read, "S.A.F.E. SYSTEM WAS ACTIVATED", and the horn/tone will sound until reset manually.

Non-Coin – To reset the Phase 7 microprocessor controller (computer) once the Phase 7 microprocessor controller (computer) displays, "S.A.F.E. SYSTEM WAS ACTIVATED", press the red "STOP/CLEAR" key on the keypad.

Coin – To reset the Phase 7 microprocessor controller (computer) once the Phase 7 microprocessor controller (computer) displays, "S.A.F.E. SYSTEM WAS ACTIVATED", press and hold the red "PAUSE" key for 3-seconds on the keypad.

Fire Suppression System Water Valve Check

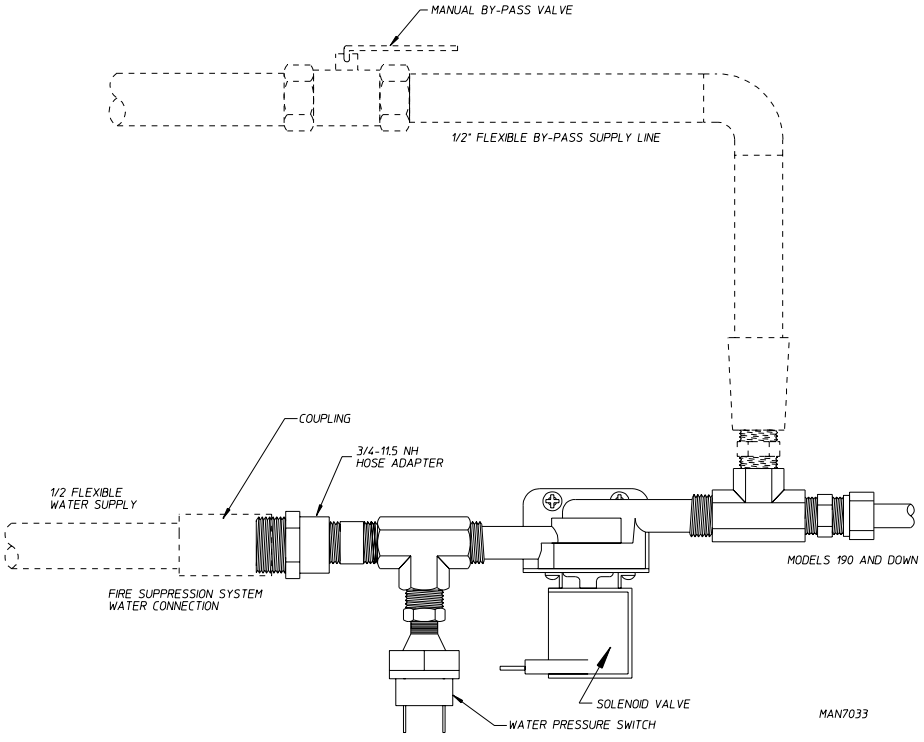
The operation of the water solenoid valve can be tested to ensure that the water supply system and valve are functional. Before attempting a system check, be sure that all water supply shutoff valves to the dryer are in the OPEN position, the dryer must be in the "READY" Mode with no cycle loaded or in progress.

Non-Coin

Press and hold the red "STOP/CLEAR" key (while in "READY" Mode and no cycle is in progress).

Press and hold the "A" key.

Water valve will open and water will be dispensed into tumbler area as long as both keys are held.



The Phase 7 non-coin microprocessor controller (computer) will prompt the user to perform a fire suppression system valve check at every 4000 hours to ensure proper functionality. At the 4000 hour mark, the Phase 7 microprocessor controller (computer) will wait for end of the cycle and then will prompt the user to "PLEASE EMPTY TUMBLER, THEN PRESS THE 'STOP/CLEAR' AND 'A' KEYS TO TEST THE WATER VALVE". When the "STOP/CLEAR" and "A" keys are pressed, the Phase 7 microprocessor controller (computer) will activate the fire suppression system water valve for 2-seconds, at which point the Phase 7 microprocessor controller (computer) will prompt the user with the following message, "IF WATER DID NOT TURN ON, CALL FOR SERVICE. THANK YOU.".

Note

The Phase 7 microprocessor controller (computer) will not let the user continue until the valve test has been completed.

Coin

While the Phase 7 microprocessor controller (computer) is in the Program Mode, press and hold the "PAUSE" key for 3-seconds to get into the Valve Test Mode. The Phase 7 microprocessor controller (computer) will display, "PRESS AND HOLD MEDIUM TO OPEN WATER VALVE". When the medium key is pressed, the Phase 7 microprocessor controller (computer) will activate the water output.

Fire Suppression System Diagnostics

Non-Coin – In the event that the Phase 7 non-coin microprocessor controller (computer) detects a fault in the fire suppression system, the Phase 7 non-coin microprocessor controller (computer) will display the message, "S.A.F.E. SYSTEM DISABLED…READY". To find out why the fire suppression system is disabling, press and hold the red "STOP/CLEAR" and green "START" keys. This will cause the Phase 7 microprocessor controller (computer) to display a diagnostic message, as detailed in the "S.A.F.E. SYSTEM DIAGNOSTICS MESSAGES" section.

Coin – In the event that the Phase 7 coin microprocessor controller (computer) detects a fault in the fire suppression system, the Phase 7 microprocessor controller (computer) will display the message, "S.A.F.E. SYSTEM DISABLED… READY, INSERT XX TO START.". To find out the reason for the fire suppression system disabling, press and hold the red "PAUSE" and "LOW" keys. This will cause the Phase 7 microprocessor controller (computer) to display a diagnostic message, as detailed in the following section.

Fire Suppression System Diagnostics Messages

Open Thermistor Probe – This message indicates that the fire suppression system thermistor probe either is not connected or is damaged. If this condition is detected, the Phase 7 microprocessor controller (computer) will immediately enter "S.A.F.E. SYSTEM DISABLED" Mode.

Shorted Thermistor Probe – This message indicates that the fire suppression system thermistor probe is damaged or the wiring is shorted. If this condition is detected, the Phase 7 microprocessor controller (computer) will immediately enter "S.A.F.E. SYSTEM DISABLED" Mode.

Disconnected Water Valve – This message indicates that the water valve is open or that it is not connected to the Phase 7 microprocessor controller (computer). If this condition is detected, the Phase 7 microprocessor controller (computer) will continue to monitor the condition for a period of 5 minutes before entering "S.A.F.E. SYSTEM DISABLED" Mode. Once the condition is corrected, the Phase 7 microprocessor controller (computer) will continue to monitor the condition for 1 minute before exiting "S.A.F.E. SYSTEM DISABLED" Mode.

Shorted Water Valve – This message indicates that the water valve is shorted or that the wiring to the valve is shorted. If this condition is detected, the Phase 7 microprocessor controller (computer) will continue to monitor the condition for a period of 5 minutes before entering "S.A.F.E. SYSTEM DISABLED" Mode. Once the condition is corrected, the Phase 7 microprocessor controller (computer) will continue to monitor the condition for 1 minute before exiting "S.A.F.E. SYSTEM DISABLED" Mode.

Water Not Connected – This indicates that there is no water pressure at the water valve. This will occur if water is not connected to the dryer, or if there is low water pressure in the water line coming to the dryer. This could also signify a defective pressure switch or defective wiring to the pressure switch. If this condition is detected, the Phase 7 microprocessor controller (computer) will continue to monitor the condition for a period of 5 minutes before entering "S.A.F.E. SYSTEM DISABLED" Mode. Once the condition is corrected, the Phase 7 microprocessor controller (computer) will continue to monitor the condition for 1 minute before exiting "S.A.F.E. SYSTEM DISABLED" Mode.

Starting A Cycle: When Phase 7 Microprocessor Controller (Computer) is in "S.A.F.E. SYSTEM IS DISABLED" Mode

Non-Coin – When the fire suppression system is disabled, the user can still start a cycle. However, when a cycle is started, the Phase 7 microprocessor controller (computer) will display the following message, "S.A.F.E. SYSTEM IS DISABLED. PRESS 'START' TO CONTINUE". This message will be displayed every time a cycle is started, until the disabling condition has been corrected.

Coin – When the fire suppression system is disabled, the user can still start a cycle. Simply insert credit and select a cycle to start.

Preparation for Operation/Start-Up

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

- Read all "CAUTION," "WARNING," and "DIRECTION" labels attached to the dryer.
- Check incoming supply voltage to be sure that it is the same as indicated on the data label. In the case of 208 VAC or 230/240 VAC, the supply voltage must match the electric service exactly.
- GAS MODELS – Check to ensure that the dryer is connected to the type of heat/gas indicated on the dryer data label.
- GAS MODELS – The sail switch damper assembly was installed and adjusted at the factory prior to shipping. However, each sail switch adjustment must be checked to ensure that this important safety control is functioning.

- GAS MODELS – Be sure that all gas shutoff valves are in the open position.
- Be sure all back panels (guards) and electric box covers have been replaced.
- Check all service doors to ensure that they are closed and secured in place.
- Be sure the lint door/drawer is securely in place.
- Rotate the tumbler by hand to ensure that it moves freely.
- Check bolts, nuts, screws, terminals, and fittings for security.
- Check tumbler bearing setscrews to ensure they are all tight.

Preoperational Test

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.

Turn on electric power to the dryer and open all shutoff valves.

Refer to the Operating Instructions for starting your particular model dryer.

Gas Dryers

When a gas dryer is first started (during initial start-up), the burner has a tendency not to ignite on the first ignition attempt. Because the gas supply piping is filled with air, it may take a few minutes for the air to be purged from the lines.

Note

During the purging period, check to ensure that all gas shutoff valves are open.

Gas dryers are equipped with a DSI system, which has internal diagnostics. If ignition is not established within 3 tries, 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 gas pressure test should be taken at the gas valve pressure tap of each dryer to ensure that the water column pressure is correct and consistent.

Note

Water column pressure requirements (measured at the gas valve pressure tap): Natural Gas: 3.5 in WC (8.7 mb); L.P. Gas: 10.5 in WC (26.1 mb).

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.

Make a complete operational check of all safety-related circuits

- Door Switch(es)
- Hi-Limit Thermostats
- Sail Switch

Electrically Heated Dryers

Check to ensure that electric oven/contactor is activating.

Note

To check for proper sail switch operation, open the main door and, while holding the main door switch plunger in, start the dryer. The dryer should start, but the heat circuit should not be activated (on). If the heat system is activated, the sail switch is improperly adjusted and must be adjusted by bending the actuator arm of the sail switch toward the burner box. If the actuator arm is bent too far toward the burner box of the dryer, the dryer may not have heat when needed. After any adjustment to the sail switch, the above procedure must be repeated to verify proper operation of the sail switch.

The dryer should be operated through 1 complete cycle to ensure that no further adjustments are necessary and that all components are functioning properly.

Tumbler Coating

The 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 tumbler to remove this coating.

Make a complete operational check of all operating controls.

For microprocessor controller (computer) model check programs/selections: each microprocessor controller (computer) has been preprogrammed by the factory with the most commonly used parameter (program) selections. If computer program changes are required, refer to the computer programming manual, which was shipped with the dryer.

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

Important

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

A reversing tumbler dryer should never be operated with less than a 50 lb (22 kg) load (dry weight), since the load's weight affects tumbler coast time during a direction reversal command. It is important that the tumbler come to a complete stop prior to starting in the opposite direction.

Microprocessor Controller (Computer) Models

Spin Times and Dwell (Stop) Times are not adjustable in the Automatic Mode and have been preprogrammed into the microprocessor controller (computer) for 120-seconds Spin Time and a 5-second Dwell (Stop) Time.

Spin Times and Dwell (Stop) Times are adjustable in the Manual (Timed) Mode.

Dual Timer Models

Both Dwell (Stop) Time and tumbler Spin Time are adjustable on dual timer models (refer to the illustration on the following page).

Check to ensure that all setscrews (i.e., tumbler drive, idler, etc.) are tight.

Preoperational Instructions _____

Coin Models

Microprocessor Controller (Computer)

When the microprocessor controller (computer) is in the ready state, the L.C.D. screen will display “Ready, Insert $XX.XX (amount) to Start”.

Insert coin(s). Once the correct “Amount to Start” has been inserted, the L.C.D. will display “Select Temperature”.

Select temperature by pressing “HI,” “MED,” or “LO.” The cycle will start and the L.C.D. will display the Dry Cycle selected and the remaining time.

The dryer will continue through the drying and cooling cycles, until the vended time has expired.

Note

To stop dryer, open main door or press the pause key. Continuation of the cycle will resume only after the door has been closed and any of the 3 temperature selections is pressed.

Upon completion of the drying and cooling cycles, the tone (buzzer) will sound and the dryer will go into the Anti-Wrinkle Mode for 99 minutes, or until the main door has been opened.

Important

For more detailed information regarding the microprocessor controller (computer) on your dryer, refer to the microprocessor user’s manual included with the dryer.

Mechanical Drop/Rotary Coin Meter or Slide Coin Meter

Insert coin and turn knob (rotary type meter), or for slide meter unit, push in coin chute.

- Select Temperature.
- Push the “Start” button.
- To stop dryer, open the main door.

Non-Coin Models

The L.E.D. display reads “READY” (no cycle in progress).

Press the letter on the keypad corresponding to the cycle desired (i.e., key “D”).

Note

“0-40” will require the “START/ENTER” key to be pressed after the number is selected in order to accept the selection and start drying.

The dryer will then start. (I.E., blower, tumbler, and heat.)

The L.E.D. display will read MANUAL DRYING CYCLE D, 00:00 MIN REMAIN.

Note

Press and hold the “UP ARROW” to view the tumbler temperature at any time.

The dryer can be stopped at any time by pressing the “STOP/CLEAR” key, at this time the dryer will go into a cycle pause. If the “STOP/CLEAR” key is pressed again at this point, the cycle that was in progress will be cancelled and returned to the “READY” state.

Note

Press and hold the “DOWN ARROW” to view the tumbler RPM.

When the programmed drying time has expired, the Phase 7 non-coin microprocessor controller (computer) will proceed into the Cool Down Cycle.

Once the Cool Down Cycle begins at the end of the heat cycle, the L.E.D. display will read COOL DOWN TEMP __/__ MINUTES REMAINING. At the end of the heat cycle, the dryer will shut off the heat and continue the fan and tumbler until the Cool Down Time or temperature is reached.

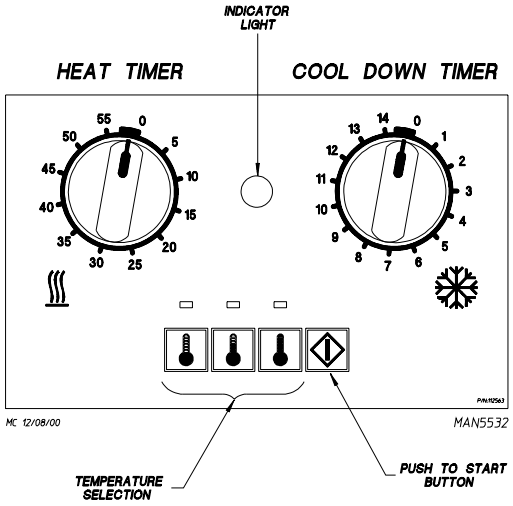
Important

For more detailed information regarding the microprocessor controller (computer) on the dryer, refer to the microprocessor user’s manual included with the dryer.

Dual Timer Dryers

- Turn drying timer knob for a time of 20 minutes.
- Select “High Temp.”
- Push “Push to Start” button.
- To stop dryer, open the main door.

Spin and Dwell (Stop) Times are adjustable at the reversing timer.

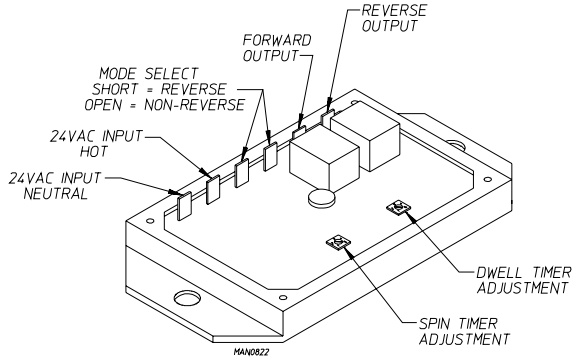


Reversing Timer Spin/Dwell Adjustments

Timer models have an electronic reversing timer in the electrical service box, which is located in the upper right front of the dryer.

Both the Dwell (Stop) Time and the tumbler Spin Time are adjustable by mode selection switches, located on the electronic timer (as noted in the illustration on the following page).

TIMING LEGEND					
SPIN TIME					
Adjustment Position Number	1	2	3	4	5
Time in Seconds*	30	60	90	120	150
DWELL (STOP) TIME					
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.					



Shutdown Instructions

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

Discontinue power to the dryer either at the external disconnect switch or the circuit breaker.

Discontinue the heat (gas) supply: SHUT OFF external gas supply shutoff valve.

Service/Parts Information

Service

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

Note

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

Parts

Replacement parts should be purchased from the reseller from whom the equipment was purchased. If the reseller cannot be contacted or is unknown, contact the Parts Department for a reseller in your area. Parts may also be purchased directly from the factory by calling the Parts Department at (508) 678-9000 or you may FAX in your order at (508) 678-9447.

Note

When ordering replacement parts from the reseller or the manufacturer, be sure to give them the correct model number and serial number so that your parts order can be processed in an expeditious manner.

Warranty Information

Returning Warranty Cards

Before any dryer leaves the factory test area, a warranty card is placed on the back side of the main door glass. These warranty cards are intended to serve the customer where we record the individual installation date and warranty information to better serve you should you file a warranty claim.

If a warranty card did not come with your dryer, contact the Warranty Department or the Service Department at (508) 678-9000.

Important

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

Note

Be sure to include the installation date when returning the warranty card(s).

Warranty

For a copy of the commercial warranty covering your particular dryer(s), contact the reseller from whom you purchased the equipment and request a dryer warranty form. If the reseller cannot be contacted or is unknown, warranty information can be obtained from the factory by contacting the Warranty Department at (508) 678-9000.

Note

Whenever contacting the factory for warranty information, be sure to have the dryer's model number and serial number available so that your inquiry can be handled in an expeditious manner.

Returning Warranty Parts

All dryer or parts warranty claims or inquiries should be addressed to the Warranty Parts Department. To expedite processing, the following procedures must be followed:

No parts are to be returned without prior written authorization R.M.A. from the factory.

Note

An R.M.A. is valid for only 30 days from date of issue.

The R.M.A. issued by the factory, as well as any other correspondence pertaining to the returned part(s), must be included inside the package with the failed merchandise.

Each part must be tagged with the following information:

Model number and serial number of the dryer from which part was removed.

Nature of failure (be specific).

Date of dryer installation.

Date of part failure.

Specify whether the part(s) being returned is for a credit, replacement, or a refund.

Note

If a part is marked for a credit or a refund, the invoice number covering the purchase of the replacement part must be provided.

Warranty tags (Part No. 450064) are available at “no charge” upon request.

The company returning the part(s) must clearly note the complete company name and address on the outside of the package.

All returns must be properly packaged to ensure that they are not damaged in transit. Damage claims are the responsibility of the shipper.

Important

No replacements, credits, or refunds will be issued for merchandise damaged in transit.

All returns should be shipped to the factory in such a manner that they are insured and a proof of delivery can be obtained by the sender.

Shipping charges are not the responsibility of ADC. All returns should be “prepaid” to the factory. Any “C.O.D.” or “COLLECT” returns will not be accepted.

Important

No replacements, credits, or refunds will be issued if the claim cannot be processed due to insufficient information. The party filing the claim will be notified in writing, either by “FAX” or “CERTIFIED MAIL – Return Receipt Requested,” as to the information necessary to process claim. If a reply is not received by the Warranty Department within 30 days from the FAX/ letter date, then no replacements, credits, or refunds will be issued, and the merchandise will be discarded.

Routine Maintenance

Cleaning

A program and/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, the 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.

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 6 to 8 operational (running) hours per day.

Important

The dryer produces combustible lint and must be exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint buildup.

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 door/ drawer is located just below the loading door of the dryer. Open the lint door/drawer, 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 power supply to the dryer.

90 Days

Remove lint from around tumbler drive, motors, and surrounding areas.

Remove lint from gas valve burner area with a dusting brush or vacuum cleaner attachment.

Clean any lint accumulation in and around both the blower and drive motor casing openings.

Every 6 Months

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

Note

The accumulation of lint in the exhaust ductwork can create a potential fire hazard.

Do not obstruct the flow of combustion and ventilation air. Check customer furnished back draft dampers in the exhaust ductwork. Inspect and remove any lint accumulation, which can cause the damper to bind or stick.

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

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

Adjustments

7 Days After Installation and Every 6 Months Thereafter

Inspect bolts, nuts, screws, 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 door/drawer switch, sail switch, burner, and hi-limit thermostats).

Lubrication

The motor bearings, idler bearings, and under normal/most conditions the tumbler bearings are permanently lubricated. It is physically possible to relubricate the tumbler bearings although this practice is not necessary. Use Shell Alvania #2 grease or its equivalent. The 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 or from the manufacturer by ordering kit P/N 882159 (which includes 2 fittings).

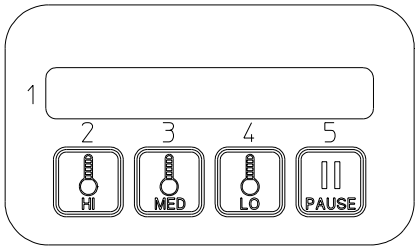
Procedure for Functional Check of Replacement Components

Microprocessor Controller (Computer) Board

Phase 7 Coin Models

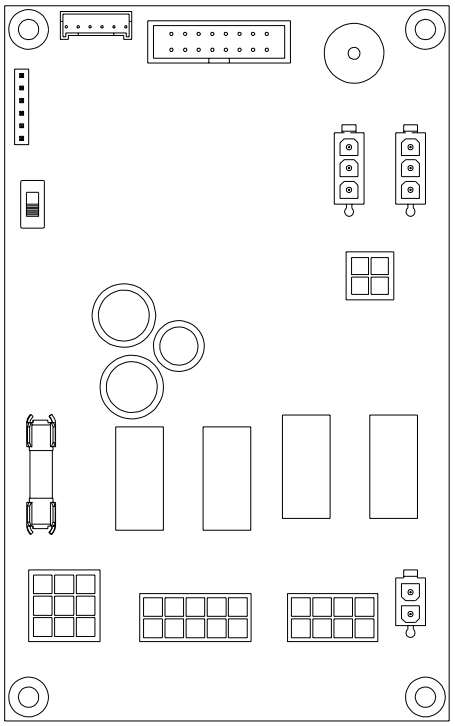
Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.

Start the drying cycle by pressing any temperature selection key (HI, MED, or LO).



JM 9/17/03 MAN6873

Verify that the applicable indicator lights on the microprocessor controller (computer) board are lit. (Refer to the illustration below.)

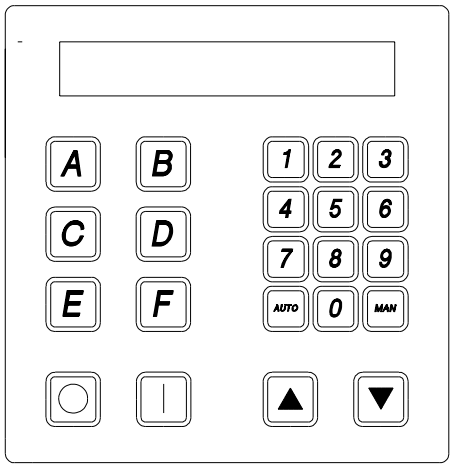


MAN6875 JM 9/11/03

Phase 7 Non-Coin Models

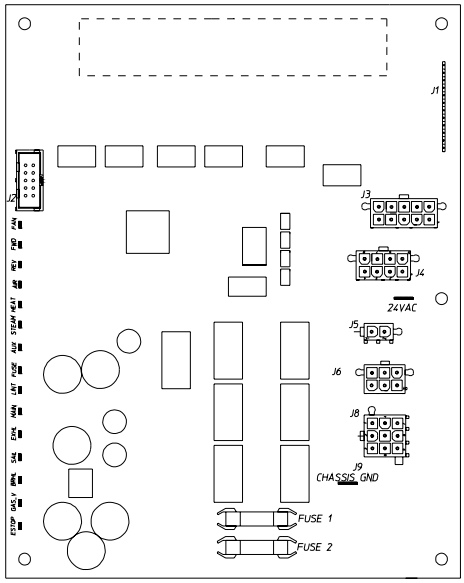
Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.

Start the drying cycle by pressing any of the preset cycles in letters A-F.



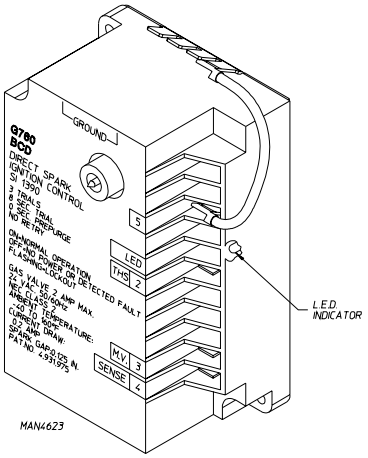
MC 8/02/01 MAN5846

Verify that the applicable indicator lights on the microprocessor controller (computer) board are lit. (Refer to the illustration below.)



MAN5825

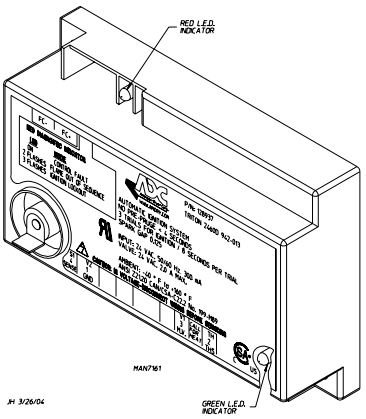
For Models with DSI Module (Type I)



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 3 retries/trials (the initial try and 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" (L.E.D. diagnostic indicator flashes).

A steady L.E.D. indicator indicates normal operation. No L.E.D. indicator indicates a power or an internal failure has occurred.

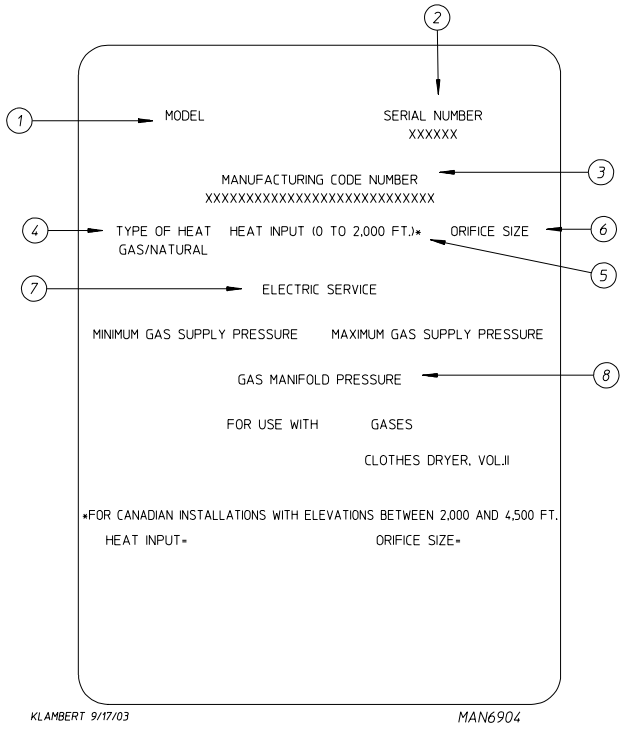
For Models with DSI Module (Type II)



Theory of Operation: Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (8-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 3 retries/trials (the initial try and 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" (a red L.E.D. diagnostic indicator will flash).

An unlit red L.E.D. diagnostic indicator indicates normal operation. A lit green L.E.D. diagnostic indicator indicates dryer controller is calling for heat and that all interlocks have been satisfied.

Data Label Information



When contacting ADC, the information on the data label is required to ensure proper service/parts assistance. The data label is located on the left side panel area behind the top control (access) door.

1. **Model Number** – This describes the style of dryer and type of heat (gas, electric, or steam).

2. **Serial Number** – Allows the manufacturer to gather information on your particular dryer.

3. **Manufacturing Code Number** – The number issued by the manufacturer, 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 L.P. gas), electric, or steam.

5. **Heat Input** (For Gas Dryers) – This describes the heat input in British thermal units per hour (Btu/hr).

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.

Manual Reset
Burner Hi-Limit Instructions

Phase 7

This dryer was manufactured with a manual reset burner hi-limit thermostat, which is monitored by the Phase 7 computer. If the burner hi-limit is open prior to the start of the drying cycle, the dryer will start momentarily and then shut down, the Phase 7 computer will display “BURNER HIGH LIMIT FAULT” with an audio indication.

If the burner hi-limit opens during a drying cycle, the Phase 7 computer will also display the same error code described above, along with an audio indication. If the drum temperature is above 100° F (38° C), the dryer will continue to run with no heat for 3 minutes or until the drum temperature has dropped below 100° F (38° C). For non-coin models, the CLEAR/ STOP button on the Phase 7 keypad must be pressed to clear the error condition. For coin models, the pause key must be held down for 3-seconds to clear the fault. The open burner hi-limit must be reset “manually” prior to the start of the next cycle.

Mechanical Timer

This dryer was manufactured with a manual reset burner hi-limit thermostat. If the burner hi-limit is open prior to the start of the drying cycle, or during the cycle, the dryer will not recognize the open state of the burner hi-limit and will start or continue through the drying cycle with no heat. Manual reset hi-limit must be reset manually.

This hi-temperature condition may be caused due to a restricted exhaust, poor airflow, or improper burner operation.

The location of the burner hi-limit is on the right side of the burner box, looking at the burner from the back of the dryer.

Warning

Discontinue power to dryer before attempting to reset hi-limit.

IMPORTANT IMPORTANT IMPORTANTE

HEATING UNIT IS EQUIPPED WITH A HI-LIMIT THERMOSTAT WHICH *MUST BE RESET MANUALLY.*

WARNING - DISCONTINUE POWER TO DRYER BEFORE ATTEMPTING TO RESET HI-LIMIT.

L'ÉLÉMENT CHAUFFANT EST ÉQUIPÉ D'UN THERMOSTAT À LIMITE MAXIMALE QUI *DOIT ÊTRE RÉGLÉ MANUELLEMENT.*

MISE EN GARDE - COUPER LE COURANT D' ALIMENTATION DU SÉCHE-LINGE AVANT DE RÉGLER LA LIMITE MAXIMALE.

LA UNIDAD DE CALENTAMIENTO ESTÁ EQUIPADA CON UN TERMOSTATO DE LÍMITE SUPERIOR *QUE DEBE REINICIALIZARSE MANUALMENTE.*

ADVERTENCIA - DESCONECTE LA ALIMENTACIÓN ELÉCTRICA A LA SECADORA ANTES DE REINICIALIZAR EL LÍMITE SUPERIOR.

ADC P/N: 114076

Notes