D120 Installation Manual

Phase 7 / Non-Coin / S.A.F.E. System

WARNING: For your safety the information in this manual must be followed to minimize the risk of fire or explosion and 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.

JLA™

Your **in**house Laundry Partner

JLA Limited
Meadowcroft Lane, Halifax Road
Ripponden
West Yorkshire, England
HX6 4AJ

Telephone: 01422 822282 / Fax: 01422 824390

Part No. 113375-6

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.** D120 PH7

DISTRIBUTOR'S NAME _____

SERIAL NUMBER(S) _____

_____

_____

Replacement parts can be obtained from your distributor or JLA. When ordering replacement parts from JLA, you can FAX your order to JLA at 01422 824390 or telephone your order directly to the JLA Parts Department at 01422 822282. 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
HSI	Hot Surface Ignition
HVAC	Heating, Ventilating, and Air-Conditioning
in WC	Inches of Water Column
L.E.D.	Light Emitting Diode
L.P.	Liquid Propane
OSHA	Occupational Safety and Health Administration
S.A.F.E.	Sensor Activated Fire Extinguishing
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/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.

Dryer(s) must be exhausted to the outdoors.

Although JLA 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 rubberlike materials. Drying in a heated tumbler may damage plastics 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 can create a potential 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 do so will void the warranty.

Under no circumstances should the dryer door switch, the lint drawer switch, or the heat safety circuit ever be disabled.

Warning

Personal injury or fire could result.

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, 79 lb (35.83 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).

MAXIMUM CAPACITY (DRY WEIGHT)				120 lb	**54.43 kg**
TUMBLER DIAMETER				44-1/8”	**112.09 cm**
TUMBLER DEPTH				40-9/16”	**103.02 cm**
TUMBLER VOLUME				35.90 cu ft	**1,016.57 L**
TUMBLER/DRIVE MOTOR				1 hp	**0.75 kW**
BLOWER/FAN MOTOR				3 hp	**2.24 kW**
DOOR OPENING (DIAMETER)				31-3/8”	**79.71 cm**
DOOR SILL HEIGHT				26-5/8”	**67.64 cm**
WATER CONNECTION				3/4”-11.5 NH (North America)	
				3/4” B.S.P.T. (Outside North America)	
DRYERS PER 20’/40’ CONTAINER				3 / 7	
DRYERS PER 48’/53’ TRUCK				9 / 10	
Gas	VOLTAGE AVAILABLE			208-480v 3ø 3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT			1,370 lb	**621.42 kg**
	APPROXIMATE SHIPPING WEIGHT			1,430 lb	**648.64 kg**
	AIRFLOW	60 Hz		2,800 cfm	**79.29 cmm**
		50 Hz		2,333 cfm	**66.06 cmm**
	HEAT INPUT			375,000 Btu/hr	**94,498 kcal/hr**
	EXHAUST CONNECTION (DIAMETER)			16”	**40.64 cm**
	COMPRESSED AIR CONNECTION			1/4” Quick Connection	
	COMPRESSED AIR VOLUME			2.50 cfh	**0.07 cmh**
	INLET PIPE CONNECTION			1” F.B.S.P.T.	
				1” B.S.P.T. (CE and Australia Only)	
Electric	VOLTAGE AVAILABLE			208-480v 3ø 3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT			1,370 lb	**621.42 kg**
	APPROXIMATE SHIPPING WEIGHT			1,430 lb	**648.64 kg**
	AIRFLOW	60 Hz		2,800 cfm	**79.29 cmm**
		50 Hz		2,333 cfm	**66.06 cmm**
	EXHAUST CONNECTION (DIAMETER)			16”	**40.64 cm**
	COMPRESSED AIR CONNECTION			1/4” Quick Connection	
	COMPRESSED AIR VOLUME			2.50 cfh	**0.07 cmh**
	OVEN SIZE				
	kW	Btu/hr	**kcal/hr**		
	72	245,729	**61,923**		
Steam	VOLTAGE AVAILABLE			208-480v 3ø 3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT			1,450 lb	**657.71 kg**
	APPROXIMATE SHIPPING WEIGHT			1,500 lb	**680.39 kg**
	AIRFLOW	60 Hz		2,800 cfm	**79.29 cmm**
		50 Hz		2,333 cfm	**66.06 cmm**
	STEAM CONSUMPTION			450 lb/hr	**204.12 kg/hr**
	OPERATING STEAM PRESSURE			125 psi max	**8.62 bar**
	EXHAUST CONNECTION (DIAMETER)			16”	**40.64 cm**
	COMPRESSED AIR CONNECTION			1/4” Quick Connection	
	COMPRESSED AIR VOLUME			3.25 cfh	**0.09 cmh**
	BOILER HORSEPOWER (NORMAL LOAD)			13 Bhp	
	SUPPLY CONNECTION			1-1/4” F.N.P.T.	
	RETURN CONNECTION			1-1/4” F.N.P.T.	

Shaded areas are stated in metric equivalents 4/26/06

Note

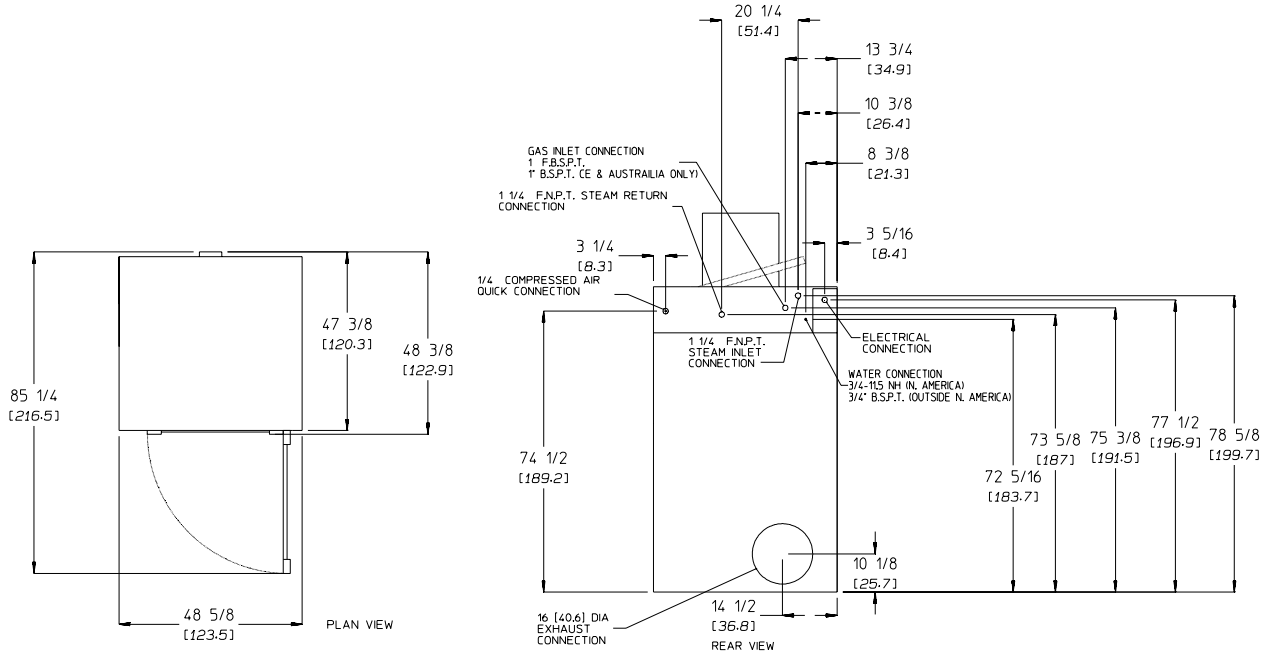
The manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

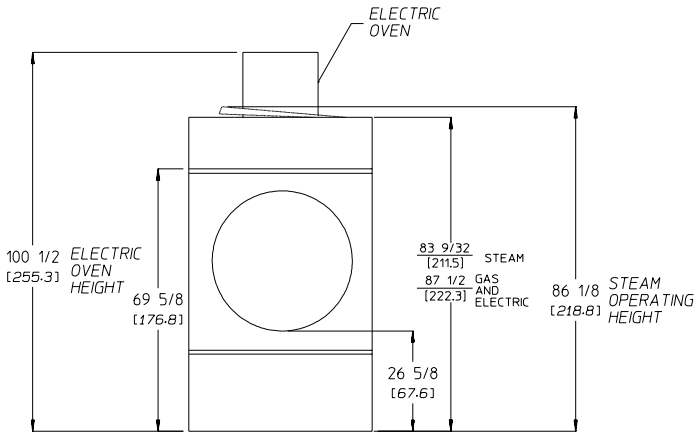
DRYER NOTES:

° 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.

STEAM DRYER NOTES:

° SIZE OF PIPING TO DRYER VARIES WITH INSTALLATION CONDITIONS. CONTACT FACTORY FOR ASSISTANCE.
° STEAM DRYERS MUST BE PROVIDED WITH CLEAN, DRY, REGULATED 80 PSI ± 10 PSI (5.5 BAR ± 0.69 BAR) AIR SUPPLY.
° BACK DRAFT EXHAUST ADAPTER INCREASES DEPTH OF DRYER 10 INCHES.





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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 while still attached to the skid or with the skid removed. To remove the skid from the dryer, locate and remove the four lag bolts securing the base of the dryer to the wooden skid. Two are at the rear base, and two are located in the bottom of the lint chamber. To remove the two lag bolts located in the lint chamber area, remove the front panel.

Leveling Dryer

To level the dryer, place 4-inch (10.16 cm) square metal shims or other suitable material under the base pads. It is suggested that the dryer be tilted slightly to the rear.

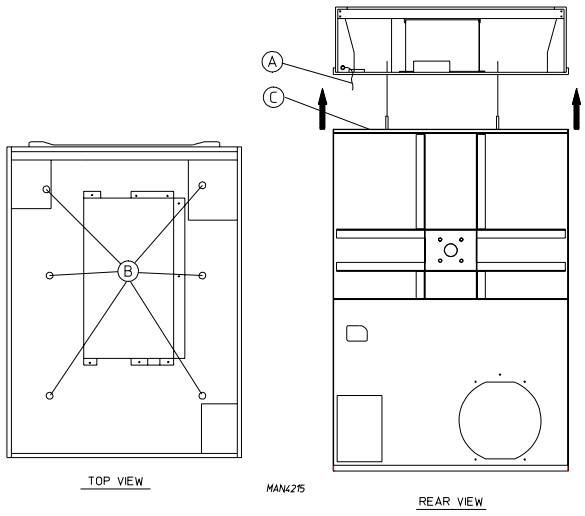
If more headroom is needed when moving the dryer into position, the top console (module) may be removed.

To Remove Top Console (Module)

- Disconnect the ground wire (A in the illustration below) located at the rear upper left corner of the dryer.
- Remove the six sets of nuts and washers (B in the illustration below) holding the console (module) to the base.
- Disconnect the white plug connector (C in the illustration below) located on the top of the rear electric service/ relay box (provides power to the heat circuit).
- Disconnect air connection from the 3-way micro valve.
- Lift the console (module) off of the dryer base.

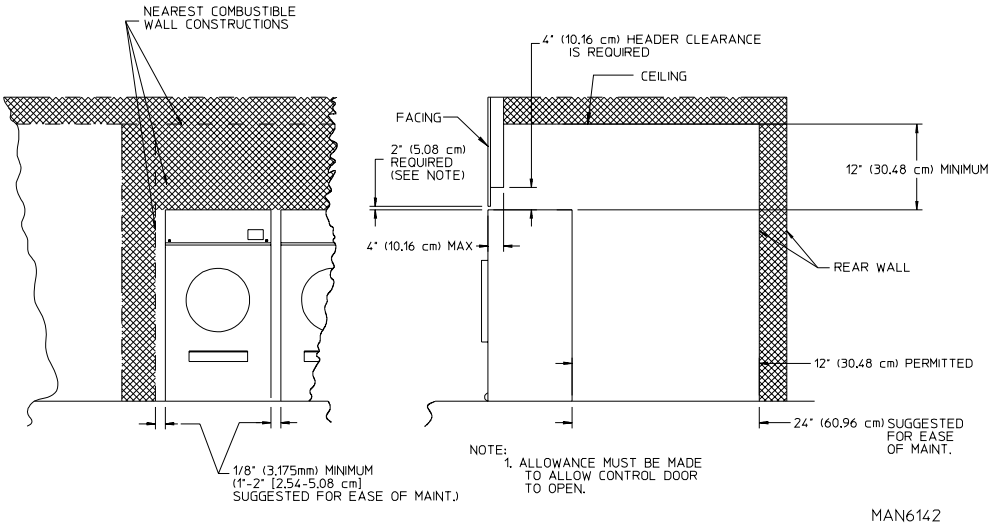
Important

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



Dryer Enclosure Requirements

Even though a 12-inch (30.48 cm) clearance is acceptable, it is recommended that the rear of the dryer be positioned approximately 24-inches (60.96 cm) from the nearest obstruction (i.e., wall) for ease of installation, maintenance, and service. Bulkheads and partitions should be made from noncombustible materials. The clearance between the bulkhead header and the dryer must be a minimum of 4-inches (10.16 cm) and must not extend more than 4-inches (10.16 cm) to the rear of the front. A 2-inch (5.08 cm) clearance is required between the bulkhead facing and the top of the dryer.



INSTALLATION: DRYER CLEARANCE TO ADJACENT WALL STRUCTURES.

DMG 4/16/02

Note

Bulkhead facing should not be installed until after the dryer is in place. Ceiling area must be located a minimum of 12-inches (30.48 cm) above the dryer top console (module) and 18-inches (45.72 cm) for steam models.

When fire sprinkler systems are located above the dryers, a minimum of 18-inches (45.72 cm) above the dryer console (module) is required. Dryers may be positioned sidewall to sidewall, however, 1 or 2-inches (2.54 or 5.08 cm) is suggested for ease of installation and maintenance. Allowances must be made for the opening and closing of the control door and the lint door.

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.

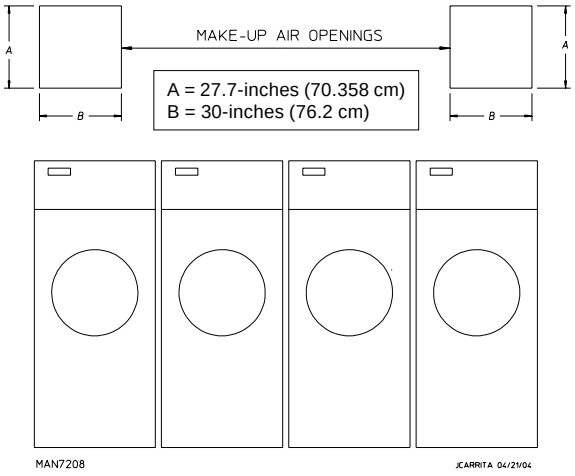
Air supply (make-up air) must be given careful consideration to assure proper performance of each dryer. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) of a minimum of 1.4 feet^2 (0.13 meters^2) is required for each dryer. (Based on 1 inch^2 per 1,000 Btu.)

To compensate for the use of registers or louvers used over the openings, this make-up air 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 four dryers, two unrestricted openings measuring 27.7-inches by 30-inches (70.358 cm by 76.2 cm), (11.5 feet^2 [1.068385 meters^2]) 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

General Exhaust Ductwork Information

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 shut down of the burner by the airflow (sail) switches, burner hi-limits, or tumbler hi-heat 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.

Note

When dryers are exhausted into a multiple (common) exhaust line, each dryer must be supplied with a back draft damper.

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.

When single dryer venting is used, the ductwork from the dryer to the outside exhaust outlet should not exceed 20 feet (6.09 meters). In the case of multiple (common) dryer venting, the distance from the last dryer to the outside exhaust outlet should not exceed 20 feet (6.09 meters). The shape of the ductwork is not so critical so 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° bends/angles instead. The radius of the elbows should preferably be 1-1/2 times the diameter of the duct. Excluding tumbler/dryer elbow connections or elbows used for outside protection from the weather, no more than two elbows should be used in the exhaust duct run. If more than two elbows are used, the cross-sectional area of the ductwork must be increased in proportion to the number of elbows used.

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.

Important

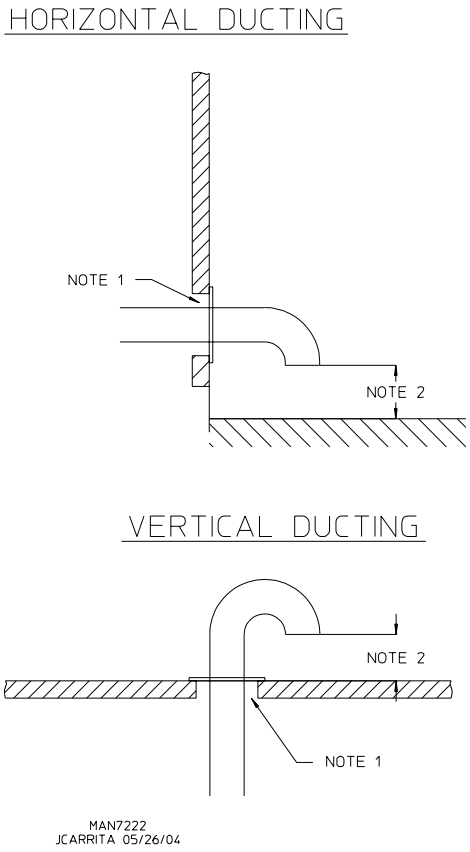
It is recommended that exhaust or booster fans not be used in the exhaust ductwork system.

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).

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.

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."



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.

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

Where 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 so long as the minimum cross section area is provided.

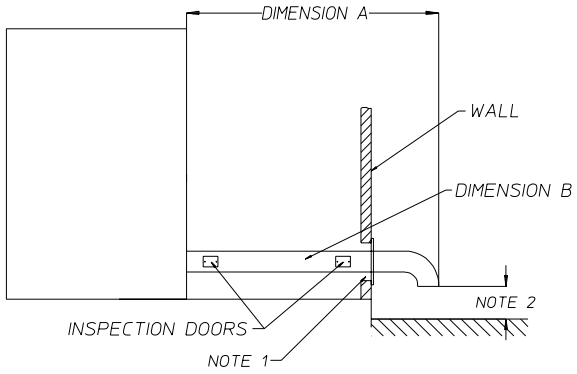
Important

The minimum duct size is 16-inches (40.64 cm) for a round duct and 14-1/4" x 14-1/4" (36.2 cm x 36.2 cm) for a square duct. The duct size must not be reduced anywhere downstream of the dryer.

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

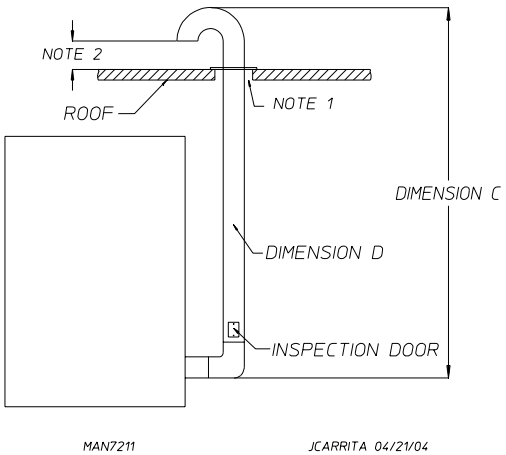
It is suggested that the ductwork from each dryer not exceed 20 feet (6.09 meters) with no more than two elbows (excluding dryer connections). If the ductwork exceeds 20 feet (6.09 meters) or has numerous elbows, the cross-sectional area of the ductwork must be increased in proportion to the length and number of elbows in it. In calculating duct size, the cross-sectional area of a square or rectangular duct must be increased twenty percent for each additional 20 feet (6.09 meters). The diameter of a round exhaust duct should be increased ten percent for each additional 15 feet (4.57 meters). Each 90° elbow is equivalent to an additional 40 feet (12.19 meters), and each 45° elbow is equivalent to an additional 20 feet (6.09 meters).

HORIZONTAL DUCTING



A = 20 feet (6.09 meters)	**C = 20 feet (6.09 meters)**
B = 16-inches (40.64 cm)	**D = 16-inches (40.64 cm)**

VERTICAL DUCTING



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 section area of the ductwork can only be increased to an extent. Maximum proportional ductwork runs cannot exceed 20 feet (6.09 meters) more than the original limitations of 20 feet (6.09 meters) with two elbows. When the ductwork approaches the maximum limits as 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.

Multiple Dryer (Common) Venting

If it is not feasible to provide separate exhaust ducts for each dryer, ducts from individual dryers may be channeled into a "common main duct." 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 flow and should be spaced at least 48-3/4" (123.82 cm) apart. The main duct should be tapered, with the diameter increasing before each individual 16-inch (40.54 cm) duct is added.

Important

When exhausted into a multiple (common) exhaust line, a back draft damper must be installed at each dryer duct.

No more than four dryers should be connected to one main common duct.

The main duct may be any shape or cross-sectional area, so long as the minimum cross section area is provided. The illustration on the next page shows the minimum cross section area for multiple dryer round or square venting. These figures must be increased 10 inches^2 (64.52 centimeters^2) when rectangular main ducting is used, and the ratio of duct width to depth should not be greater than 3-1/2 to 1. These figures must be increased in proportion if the main duct run to the last dryer to where it exhausts to the outdoors is unusually long (over 20 feet [6.09 meters]) or has numerous elbows (more than two) in it. In calculating ductwork size, the cross-sectional area of a square or rectangular duct must be increased twenty percent for each additional 20 feet (6.09 meters). The diameter of a round exhaust must be increased ten percent for each additional 20 feet (6.09 meters). Each 90° elbow is equivalent to an additional 40 feet (12.19 meters) and each 45° elbow is equivalent to an additional 20 feet (6.09 meters).

Important

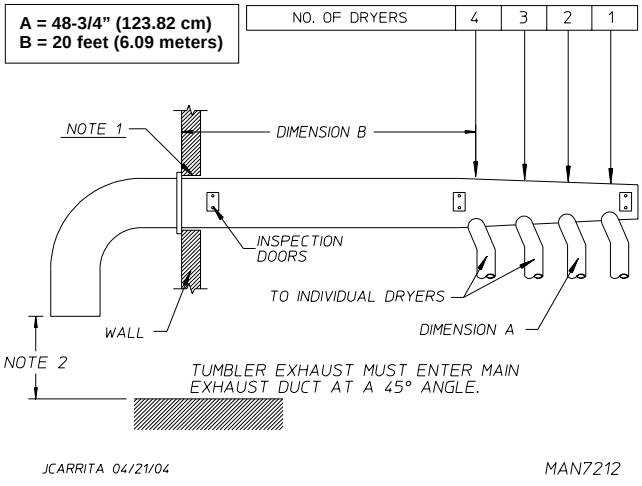
For extended ductwork runs, the cross section area of the ductwork can only be increased to an extent. Maximum proportional ductwork runs cannot exceed 20 feet (6.09 meters) more than the original limitations of 20 feet (6.09 meters) with two elbows. When the ductwork approaches the maximum limits as noted in this manual, a professional HVAC firm should be consulted for proper venting information.

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).

The 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.

Multiple Dryer Venting 16-Inch (40.64 cm)
Diameter Minimum Exhaust Connections at Common Duct

NUMBER OF DRYERS		4	3	2	1
MINIMUM CROSS-SECTIONAL AREA	SQ IN	615	455	315	200
	SQ CM	3967	2935	2032	1290
MINIMUM ROUND DUCT DIAMETER	IN	28	24	20	16
	CM	71	61	50	40



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 duct.

Electrical Information

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, material, and workmanship must conform to the applicable requirements of the National Electrical Code ANSI/NFPA NO. 70-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.

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.

Wiring diagrams are affixed to the inside at the top front control door and the rear upper back guard/panel.

Electrical Service Specifications

Gas and Steam Models Only

Gas and Steam

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	
208	3ø	3	13.7	—	20
220	3ø	3	—	10.4	20
230	3ø	3	11.6	—	20
240	3ø	3	—	10.8	20
380	3ø	4*	—	5.9	15
400	3ø	4*	—	5.9	15
416	3ø	4*	—	5.9	15
460	3ø	3	6.6	—	15
480	3ø	3	6.6	—	15

* 3-Wire is available. 8/8/08

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.

Electric – 72 kW

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) 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	
208	3ø	3	213.6	—	300
230	3ø	3	192.3	—	250
380	3ø	4*	—	115.3	150
480	3ø	3	93.2	—	125

* 3-Wire is available. 8/8/08

Important

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.

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

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

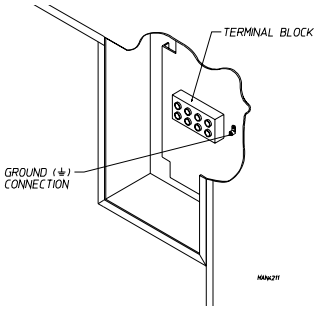
Electrical Connections

Note

A wire diagram is included with each dryer and is affixed to the back side of the top control (access) door.

The only electrical input connections to the dryer are the 3-phase (3ø) power leads (L1, L2, and L3), ground, and in the case of 4 wire service, the neutral. These electrical connections are made at the terminal block located in the service/relay box at the rear, upper left hand corner of the dryer. To gain access into this service box, the service cover must be removed.

The "line power" and the "ground" connections to the dryer must be made through the knockout hole at the top of the electric service/relay box. A strain relief must be used where the line power ground wires go into the electric service/ relay box.



Providing local codes permit, power connections to the dryer can be made by use of a flexible UL listed power cord/pigtail (wire must conform to ratings of the dryer), or the dryer can be hard wired directly to the service breaker. In all cases, a strain relief must be used where the wire(s) enter the dryer electrical service (relay) box.

Note

A circuit servicing each dryer must be provided.

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.

Note

A grounding connection (terminal lug) is provided in the dryer's electrical service/relay box at the rear, upper left hand corner of the dryer.

For added personal safety, when possible, it is suggested that a separate ground wire (sized 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 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. For proper operation of the microprocessor controller (computer), an earth (zero) ground is required.

Note

Grounding via metallic electrical conduit (pipe) is not recommended.

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 (L.P. Gas) 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 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 dryer from supply as noted can cause irreparable damage to the gas valve, which will void the warranty.

Warning

Fire or explosion could result.

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 dryer data label. 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 factory.

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 (609.6 meters), unless elevation requirements of over 2,000 feet (609.6 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 (609.6 meters) is made by changing each burner orifice. If this conversion is necessary, contact the distributor who sold the dryer or contact the factory.

Important

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

Technical 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 the gas valve pressure tap when the gas valve is on.

Gas Connections

Inlet connection ..... 1" F.B.S.P.T.
Inlet supply size ..... 1-1/4" N.P.T. (minimum)
Btu/hr input ..... 375,000 (94,498 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 inches (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.
375,000	**94,498**	3	#4	140832	3	#31	140818
Liquid Propane Conversion Kit Part Number 883118							

Shaded area is stated in metric equivalent

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

Natural Gas ..... #4 = 0.2090" (5.3086 mm).
L.P. Gas ..... #31 = 0.1200" (3.048 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 1" F.B.S.P.T. inlet pipe connection extending out the back area of the burner box. The minimum pipe size (supply line) to the dryer is 1-1/4" 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 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.

Consistent gas pressure is essential at all gas connections. It is recommended that a 1-inch (2.54 cm) 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 consistent 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).

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).

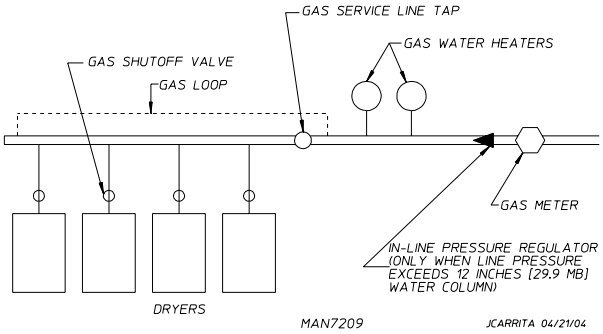
Warning

Never test for leaks with a flame!!!

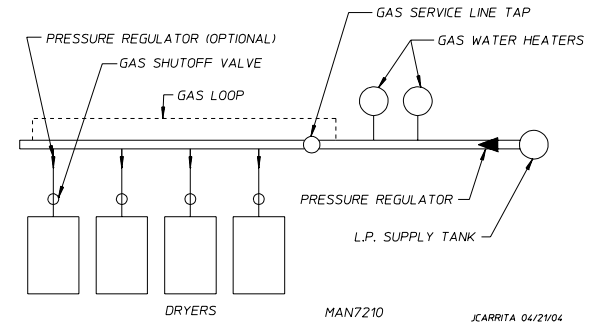
Note

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).

TYPICAL NATURAL GAS INSTALLATION



TYPICAL L.P. GAS INSTALLATION



Steam 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.

Important

Failure to comply with the requirements stipulated in this manual can result in component failure, which will void the warranty.

Note

The dryer is manufactured with a pneumatic (piston) damper system, which requires an external supply of clean, dry, regulated air 80 psi +/- 10 psi (5.51 bar +/- 0.69 bar). Refer to Steam Damper Air System Connections on the following page.

Steam Coil pH Level

The normal pH level for copper type steam coils must be maintained between a value of 8.5 to 9.5. For steel type steam coils the pH level must be maintained between a value of 9.5 to 10.5. These limits are set to limit the acid attack of the steam coils.

Important

Coil failure due to improper pH level will void the warranty.

Steam Requirements – High Pressure

Inlet _____ 1-1/4" F.N.P.T. supply line connection
One at top manifold
Return _____ 1-1/4" F.N.P.T. return line connection
One at bottom manifold

Operating Steam Pressure		
Maximum	125 psig*	**862 kPa**
Heat Input (Normal Load)	13 Bhp	
Consumption (Approximate)	450 lb/hr	**204 kg/hr**

Shaded areas are stated in metric equivalents

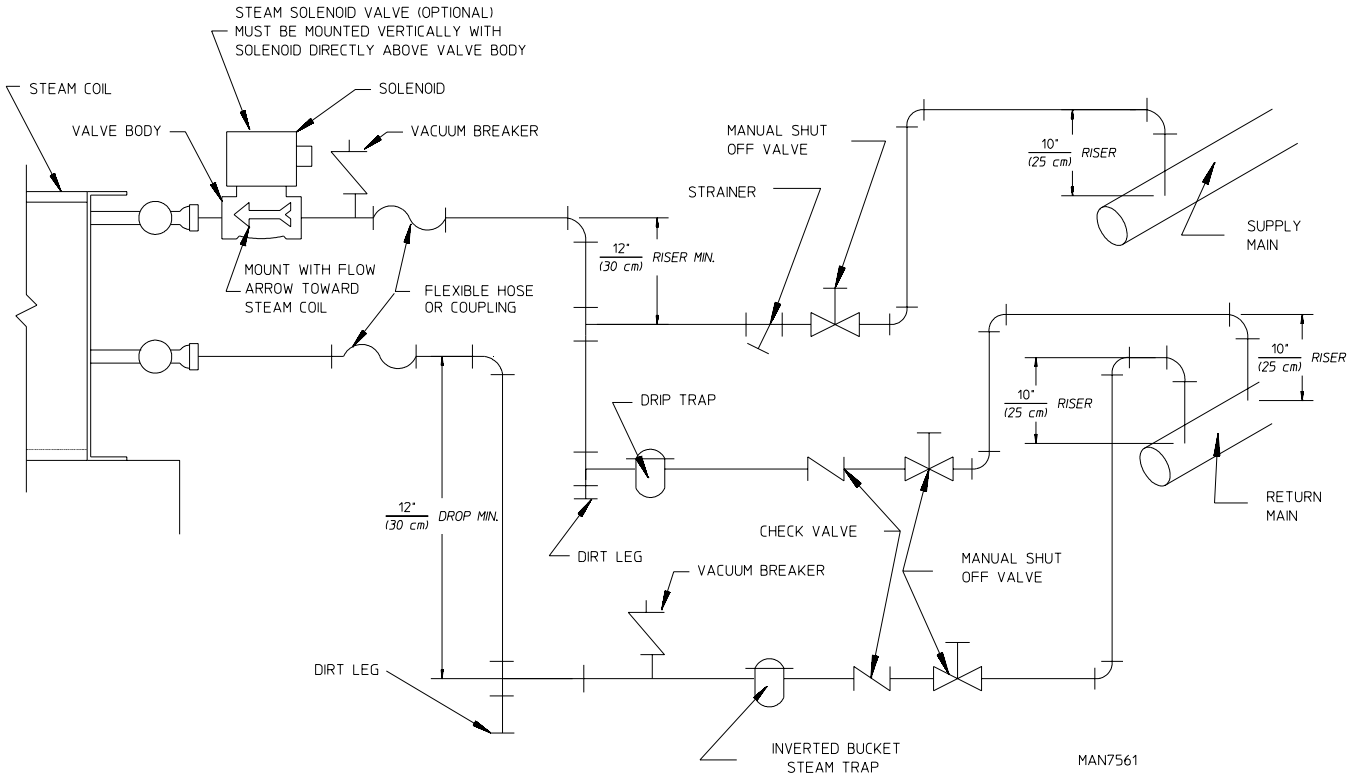
* The minimum operating pressure for optimum results is 100 psig (689.47 kPa).

Installation Instructions

To ensure an adequate supply of steam is provided, be sure that the steam supply lines and steam return lines are sized and laid out as stipulated in this manual. Inadequate steam supply lines and steam return lines or improper steam plumbing will result in poor performance and can cause component failure. Clean, dry steam must be provided to the dryer.

Important

Steam coil failure due to water hammer by wet steam will void the warranty.



The pressure of the condensate in the steam supply line will cause water hammer and subsequent heat exchanger (steam coil) failure. The steam supply connection into the main supply line must be made with a minimum 12-inch (30.48 cm) riser. This will prevent any condensate from draining towards the dryer.

The steam supply line to the dryer must include a 12-inch (30.48 cm) riser along with a drip trap and check valve. This will prevent any condensate from entering the steam coil.

Flexible hoses or couplings must be used. The dryer vibrates slightly when it runs and this will cause the steam coil connections to crack if they are hard piped to the supply and return mains.

Shutoff valves for each dryer should be installed in the supply line, return line, and drip trap return line. This will allow the dryer to be isolated from the supply main and the return main if the dryer needs maintenance work.

Install an inverted bucket steam trap and check valve at least 12-inches (30.48 cm) below the steam coil as close to the coil as possible.

An inverted bucket steam trap with a capacity of 1,200 lb (544 kg) of condensate per hour @ 125 psi (8.62 bar) is required for each unit.

Dryers with optional solenoid valve must be mounted with coil positioned directly above the valve body.

The supply line and the return line should be insulated. This will save energy and provide for the safety of the operator and maintenance personnel.

Water pockets in the supply line, caused by low points, will provide wet steam to the coil possibly causing steam coil damage. All horizontal runs of steam supply piping should be pitched 1/4-inch (6.35 mm) for every 1 foot (0.31 meters) back towards the steam supply header causing the condensate in the line to drain to the header. Install a bypass trap in any low point to eliminate wet steam.

Steam Damper Air System Connections

The dryer is manufactured with a pneumatic (piston) damper system, which requires an external supply of compressed air. The air connection is made to the steam damper solenoid valve, which is located at the rear of the top console.

Air Requirements

Compressed Air Supply	Air Pressure	
Normal	80 psi	**5.51 bar**
Minimum Supply	70 psi	**4.82 bar**
Maximum Supply	90 psi	**6.21 bar**

Shaded areas are stated in metric equivalents

Air Connection

Air connection to system — 1/4" Quick Connection

No air regulator or filtration is provided with the dryer. External regulation/filtration of 80 psi (5.51 bar) must be provided. It is suggested that a regulator/filter gauge arrangement be added to the compressed air line just before the dryer connection. This is necessary to ensure that correct and clean air pressure is achieved.

Steam Damper System Operation

The steam damper, as shown in the illustration below (Diagram 1), allows the coil to stay constantly charged eliminating repeated expansion and contraction. When the damper is opened, the air immediately passes through the already hot coil, providing instant heat to start the drying process. When the damper is closed, ambient air is drawn directly into the tumbler, allowing a rapid cool down.

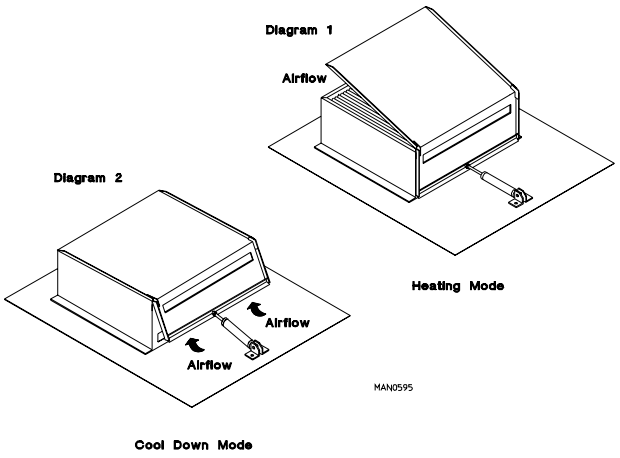


Diagram 1 shows the damper in the heating (open) mode, allowing heat into the tumbler.

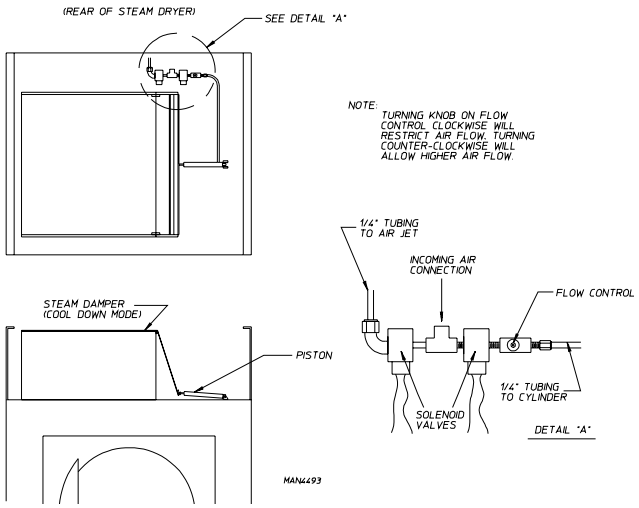
Diagram 2 shows the damper in the cool down (closed) mode, pulling ambient air directly into the tumbler without passing through the coils.

Note

With the dryer off or with no air supply, the steam damper is in cool down mode as shown in Diagram 2.

Steam Damper Air Piston (Flow Control) Operation Adjustment

Although the steam damper operation was tested and adjusted prior to shipping at 80 psi (5.51 bar), steam damper operation must be checked before the dryer is put into operation. Refer to the following page to check steam damper operation. If steam damper adjustment is necessary, locate the flow control valve and make the necessary adjustments as noted below.



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 dryer 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 assure 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 pre-adjusted at the factory prior to shipping. However, each sail switch adjustment must be checked to assure that this important safety control is functioning.
- GAS MODELS – be sure that all gas shutoff valves are in the open position.
- Be sure that all electric box covers have been replaced.
- Check all service doors to assure that they are closed and secured in place.
- Be sure the lint drawer is securely in place.

Note

Lint drawer must be closed to activate the safety switch otherwise the dryer will not start.

- Rotate the tumbler (drum) by hand to be sure it moves freely.
- Check bolts, nuts, screws, terminals, and fittings for security.
- STEAM MODELS – check to ensure air supply (80 psi [5.51 bar]) is connected to the dryer.
- STEAM MODELS – check to ensure all steam shutoff valves are open.
- STEAM MODELS – check steam damper operation.
- 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.

Make sure the main door is closed and the lint drawer is securely in place.

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

Check to ensure that the tumbler starts in the clockwise direction. Additionally, check the direction of the motorized impellor to ensure that the motorized impellor rotates in the clockwise direction as viewed from the front. If it is, the phasing is correct. If the phasing is incorrect, reverse two of the leads at L1, L2, or L3 of the power supply connections made to the dryer.

Important

Motorized impellor as viewed from the front must turn in the clockwise direction, otherwise the dryer efficiency will be drastically reduced and premature component failure can result.

Heat Circuit Operational Test

Gas Models

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

The dryer is equipped with a DSI system, which has internal diagnostics. If ignition is not established after three attempts, the heat circuit DSI module will LOCKOUT until it is manually reset. To reset the DSI system, open and close the main door and restart the dryer (press the “START” key).

Note

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

Once ignition is established, a gas pressure test should be taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

Note

The 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.

Steam Models

Check to ensure that the steam damper is functioning properly.

The steam damper should not “slam” (open or closed) when it reaches the end of (piston) travel. Additionally, the steam damper should not bind and/or stop during travel. If either of these conditions occur, the flow control must be adjusted. Refer to the bottom illustration on the previous page for air adjustment instructions.

Make a complete operational check of all safety-related circuits (i.e., lint drawer switch and sail switch on gas models).

Note

To check for proper sail switch operation, open the main door and while holding main door switch plunger in, start the dryer. The dryer should start but the heat circuit should not be activated (on). If the heat (burner) does activate, shut the dryer off and make the necessary adjustments.

Reversing tumbler dryers should never be operated with less than a 79 lb (35.83 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 opposite direction.

Microprocessor Controller (Computer) Dryer Models

Spin and stop times are not adjustable in the Automatic Mode and have been preprogrammed into the microprocessor controller (computer) for 150-seconds spin time in the forward direction and 120-seconds in the reverse direction with a 5-second dwell (stop) time.

Spin and stop times are adjustable in the Manual (timed) Mode.

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.

Each dryer should be operated through one complete cycle to assure that no further adjustments are necessary and that all components are functioning properly.

Make a complete operational check of all operating controls…

Microprocessor controller (computer) programs/selections...

Each 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.

Compressed Air Requirements

The dryer requires an external supply of compressed air (2.50 cfh at 80 psi [0.07 cmh at 5.51 bar] for gas models and 3.25 cfh at 80 psi [0.09 cmh at 5.51 bar] for steam models). For steam models, compressed air is necessary for the air operated steam damper. On both the steam models as well as the gas models, compressed air is necessary/required for blower air jet operation to clean lint from the impellor/fan (squirrel cage).

Air Requirements

Microprocessor Controller (Computer) Dryers…

Compressed Air Supply	Air Pressure	
Normal	80 psi	**5.51 bar**
Minimum Supply	70 psi	**4.82 bar**
Maximum Supply	90 psi	**6.21 bar**

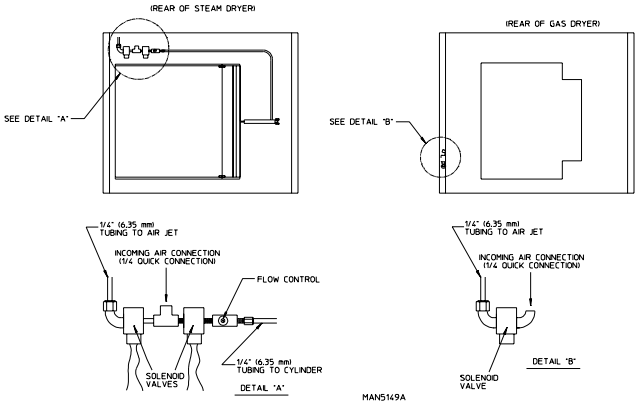
Shaded areas are stated in metric equivalents

Air Regulation

No air regulation or air filtration is provided with the dryer. External regulation/filtration of 80 psi (5.51 bar) must be provided. It is suggested that a filter/regulator/gauge arrangement be added to the compressed air line just before the dryer connection. This is necessary to ensure that correct and clean air pressure is achieved.

Air Connection

Air connection to this system is a 1/4" quick connection as per the illustration below.



Shutdown Instructions

If the dryer is to be shut down (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 supply:

GAS MODELS … discontinue the gas supply.

SHUT OFF external gas supply shutoff valve.

STEAM MODELS … discontinue the steam supply.

SHUT OFF external (location furnished) 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 distributor from whom the JLA equipment was purchased. If the distributor cannot be contacted or is unknown, contact the JLA Service Department for a distributor in your area.

Note

When contacting the JLA 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 distributor from whom the JLA equipment was purchased. If the distributor cannot be contacted or is unknown, contact the JLA Parts Department for a distributor in your area. Parts may also be purchased directly from the factory by calling the JLA Parts Department at 01422 822282 or you may FAX in your order at 01422 824390.

Note

When ordering replacement parts from the distributor or JLA 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 JLA Warranty Department.

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 JLA commercial warranty covering your particular dryer(s), contact the distributor from whom you purchased the equipment and request a dryer warranty form. If the distributor cannot be contacted or is unknown, warranty information can be obtained from JLA by contacting the JLA Warranty Department.

Note

Whenever contacting the JLA 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.

Routine Maintenance

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, a JLA 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

Remove power from the dryer before performing any maintenance in the dryer.

Suggested time intervals shown are for average usage which is considered six to eight 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 build up.

Clean lint from lint drawer/screen every third or fourth load.

Note

The frequency of cleaning the lint screens can best be determined from experience at each location.

Weekly

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

Warning

To avoid hazard of electrical shock, discontinue electrical power supply to the dryer.

Steam Dryers

Clean the steam coil fins. Compressed air and a vacuum cleaner with brush attachment are suggested.

Note

When cleaning steam coil fins, be careful not to bend the fins. If fins are bent, straighten by using a fin comb, which is available from local air-conditioning supply houses.

90 Days

Remove lint from around tumbler, drive motors, and surrounding areas. Remove lint from the gas valve burner area with a dusting brush or vacuum cleaner attachment.

Remove lint accumulation from inside the control box and at rear area behind the control box.

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 shut down of the heat circuit safety switches or thermostats.

When cleaning the dryer cabinet(s), avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

Check all V-belts for tightness and wear. Retighten, realign, or replace V-belt if required.

Note

Replace in matched sets (both belts).

Adjustments

7 Days After Installation and Every 6 Months Thereafter

Inspect bolts, nuts, screws, (bearing setscrews), grounding connections, and nonpermanent gas connections (i.e., 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 (i.e., door switch, lint drawer switch, sail switch, burner and hi-limit thermostat).

Lubrication

The drive shaft bearings and idler shaft bearings should be lubricated every 3 months. Use a #2 grease or its equivalent. Lubrication is necessary.

The motor bearings and under normal/most conditions the tumbler bearing are permanently lubricated. It is physically possible to relubricate the tumbler bearing if you choose to do so even though this practice may not be necessary. Use Industrial Chevron ball or roller bearing SRI grease NLGI2 or its equivalent, which has a broad operating temperature range of -22° F (-30° C) to 350° F (177° C).

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). The CLEAR/STOP button on the Phase 7 keypad must be pressed to clear the error condition. The open burner hi-limit must be reset "manually" prior to the start of the next cycle.

Dual 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.

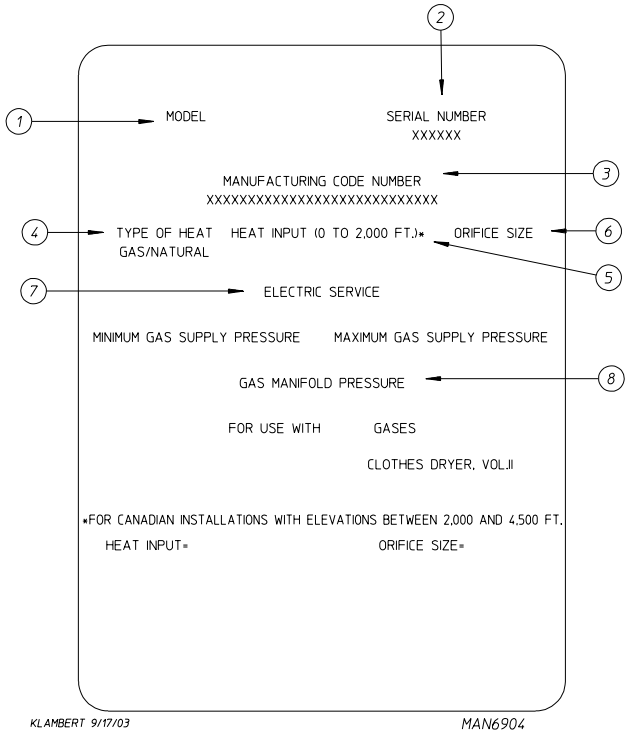
This hi-temperature condition may be caused due to a restricted exhaust, poor airflow, or improper burner operation.

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.

Data Label Information



When contacting JLA, certain information is required to ensure proper service/parts information from JLA. This information is on the data label that is affixed to the rear upper left back area of the dryer, which can be viewed either through the openings in the dryer's back panel/guard, or by removing this back panel/guard. When contacting JLA, please have the model number and serial number available.

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.

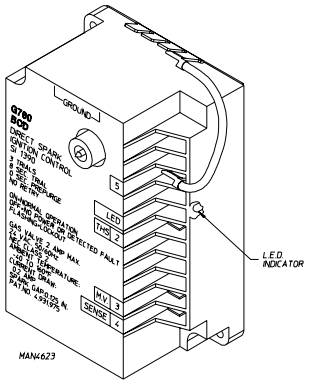
8. Gas Manifold Pressure (For Gas Dryers) – This describes the manifold pressure taken at the gas valve tap.

Procedure for Functional Check of Replacement Components

For Heat Control Module Ignition Circuit

For Models with Johnson Controls DSI Module (G760)

Theory Of Operation

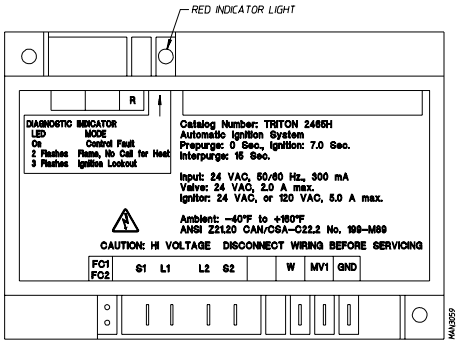


Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (6-seconds), the flame sensor detects gas burner flame and signals the DSI module to keep the gas valve open ... as long as there is a call for heat. The DSI module will "LOCKOUT" if the gas burner flame is not sensed at the end of the trial for ignition period. The trial for ignition period will be repeated for a total of three retries/trials (the initial try and two 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. 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 HSI Module



Start the drying cycle.

The HSI will turn on, and after approximately 4-seconds the ignitor will shut off and the gas valve will be energized. Ignition (flame) should now be established.

With the burner flame on, remove the flame sensor wire from the S2 terminal of the HSI module. The burner flame must shut off immediately.

Stop the drying cycle, with the flame sensor wire still removed, restart the drying cycle.

The HSI will turn on, and after a few seconds later the gas valve will be energized and the HSI will shut off. Ignition (flame) should be evident for approximately 7-seconds and then shut off.

The HSI module will attempt to light burner only "once." If flame is not reestablished the HSI module will lockout and the "red" indicator light will flash continuously.

Functional check of the HSI module is complete.

Replace the flame sensor wire from the S2 terminal to the HSI module.

Phase 7 Non-Coin System Diagnostics

Important

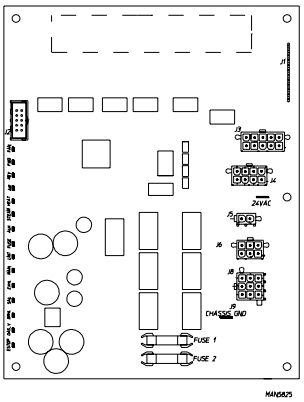
You must disconnect and lockout the electric supply and the gas supply or the steam supply before any covers or guards are removed from the machine to allow access for cleaning, adjusting, installation, or testing of any equipment per OSHA standards.

All major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 7 non-coin microprocessor controller (computer) will inform the user, via the L.E.D. display of certain failure messages, along with L.E.D. indicators on the input/output board on the back panel of the front right control door.

Diagnostic (L.E.D. Display) Fault Messages

Outputs: (Green)

FAN	Blower Fan On
FWD	Tumbler Forward
REV	Tumbler Reverse
AIR JET	Air Jet On
HEAT	Front Heat
STEAM	Steam Injection
AUX	S.A.F.E. System Active On



Inputs: (Red)

FUSE	24 VAC to Board (F2)
LINT	Lint Drawer Closed
MAIN	Main Door Closed
EXHL	Exhaust High Limit
SAIL	Sail Switch
BRHL	Burner High Limit
GAS_V	Gas Valve
ESTOP	Emergency Stop

Input/Output Board Output Description (“Green” L.E.D.)

FAN _: This L.E.D. will indicate the status of the Fan output. If the request to turn on the Fan (blower) is made, then the L.E.D. is ON.

FWD _: This L.E.D. will indicate the status of the Tumbler Forward direction output. If the request to tumble the drum in the Forward direction is made, then the L.E.D. is ON.

REV _: This L.E.D. will indicate the status of the Tumbler Reverse direction output. If the request to tumble the drum in the Reverse direction is made, then the L.E.D. is ON.

AIR JET _: This L.E.D. will indicate the status of the Air Jet output. If the request to turn on the Air Jet is made, then the L.E.D. is ON.

HEAT _: This L.E.D. will indicate the status of the Front Heat output. If the request to turn on the Front Burner is made, then the L.E.D. is ON.

STEAM _: This L.E.D. will indicate the status of the Steam Injection output. If the request to turn on the Steam Injection is made, then the L.E.D. is ON.

AUX _: This L.E.D. will indicate the status of the S.A.F.E. system output. If the request to turn on the S.A.F.E. system is made, then the L.E.D. is ON.

Input/Output Board Input Description (“Red” L.E.D.)

FUSE _: This L.E.D. will indicate the status of the (F2), which fuses the 24 VAC supplied to the board.

LINT _: This L.E.D. will indicate the status of the Lint Drawer. If the drawer is closed, then the L.E.D. is ON.

MAIN _: This L.E.D. will indicate the status of the Front Doors. If the doors are closed, then the L.E.D. is ON.

EXHL _: This L.E.D. will indicate the status of the Exhaust Hi-Limit Disk. If the disk is closed (Temperature below 225° F [107° C]), then the L.E.D. is ON.

SAIL _: This L.E.D. will indicate the status of the Sail Switch. If the switch is closed, then the L.E.D. is ON.

BRHL _: This L.E.D. will indicate the status of the Burner Hi-Limit Disk. If the disk is closed (Temperature below 330° F [166° C]), then the L.E.D. is ON.

GAS_V _: This L.E.D. will indicate the status of the Gas Valve. If the Gas Valve is open (ON), then the L.E.D. is ON.

ESTOP _: This L.E.D. will indicate the status of the Emergency Stop Switch. If the Emergency Stop Switch is open (ON), then the L.E.D. is ON.

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 assure that the plumbing installation is adequate and conforms to local, state, and federal regulations or codes.

Installation Requirements

The connection point to the electric water solenoid valve is a 1/2” M.P.T., the S.A.F.E. 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.

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.

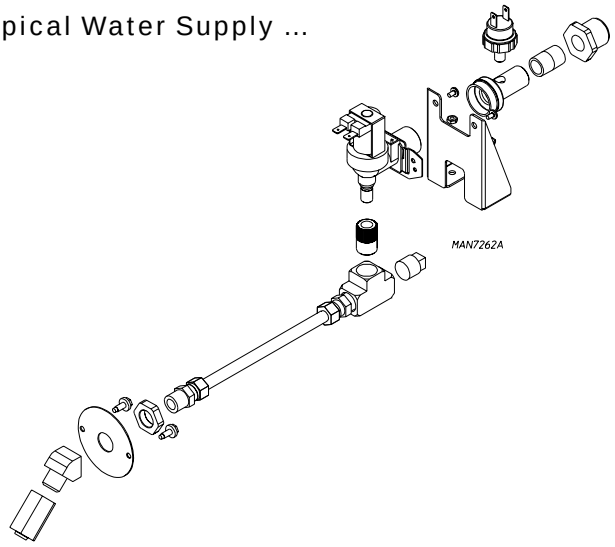
Water Connections

The water connection is made to the 1/2” M.P.T. bushing of the electric water solenoid valve, located at the rear upper left area of the dryer. The water solenoid valve has a 3/8” M.P.T. connection and a 1/2” bushing is supplied to provide the minimum 1/2” supply (feed) line. Flexible supply line/coupling must be used in effort to avoid damage to electric water solenoid valve.

Important

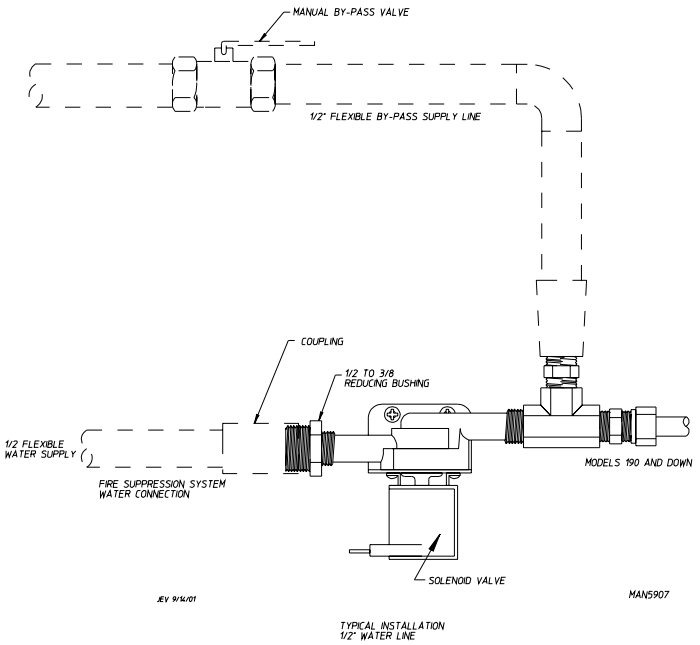
Flexible supply line/coupling must be used. Solenoid valve failure due to hard plumbing connections will void warranty. It is recommended that a filter or strainer be installed in the water supply line.

Typical Water Supply ...



Optional Manual Bypass

Provisions are made in the dryer’s S.A.F.E. 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” 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.

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 S.A.F.E. 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 S.A.F.E. system is inoperative!

S.A.F.E. System Theory of Operation

20-seconds after the heat turns off, the Phase 7 control monitors the S.A.F.E. system probe located in the top of the tumbler chamber and records the minimum temperature. If the minimum recorded temperature is no less than 120° F (48° C) and the control detects a 35° rise in temperature, this will be the trip point and the S.A.F.E. system routine will activate.

While a drying cycle is in process and the heat is on, the Phase 7 control monitors the exhaust temperature transducer. If the drying cycle temperature set point is set greater than 160° F (71° C) and the control detects an exhaust temperature rise 25° F greater than set point, this will be the trip point and the S.A.F.E. system routine will activate.

Once the S.A.F.E. system routine is activated, water will be injected into the tumbler chamber. Anytime 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 2 minutes has elapsed, the control will check if the temperature remained above trip point, if so water will remain on. The control will continue to check if 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. If the temperature has dropped below trip point, the control will turn off the water prior to 10 minutes.

System Reset

After the microprocessor determines that the situation is under control and shuts the water being injected into the tumbler off, the microprocessor display will read “SENSOR ACTIVATED FIRE EXTINGUISHING ACTIVATED”, and the horn/tone will sound until reset manually.

To reset the microprocessor and S.A.F.E. system, press the red key on the keypad.

Notes