D170 Installation Manual

Phase 7 / Non-Coin / DSI / Gas / Steam

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 competent professional.

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 professionnel compétent.

JLA™

Your **in**house Laundry Partner

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Ripponden
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Telephone: 01422 822282 / Fax: 01422 824390

Part No. 113376-4

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

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

POUR VOTRE SÉCURITÉ

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables 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.** **D170**

DISTRIBUTOR'S NAME _____

Serial Number(s) _____

_____

_____

Replacement parts can be obtained from your distributor or JLA. When ordering replacement parts, 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.

Before installation, check that the local distribution conditions, nature of gas and pressure, and adjustment of the appliances are compatible.

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 behind the control panel.

Table of Contents

List of Acronyms

DSI	Direct Spark 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
U.L.	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 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 electrically ground the dryer properly will void the warranty.

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

Warning

Personal injury or fire could result should the dryer door switches, the lint drawer switch, or the 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.

Do not operate steam dryers with more than 125 psi (8.62 bar) steam pressure. Excessive steam pressure can damage the steam coil and/or harm personnel.

Replace leaking flexible steam hoses or other fixtures immediately. Do not operate the dryer with leaking flexible hoses. Personal injury may result.

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 66%, 112 lb (51 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)			170 lb	**77.11 kg**
TUMBLER DIAMETER			51-1/8”	**129.86 cm**
TUMBLER DEPTH			42-3/4”	**108.59 cm**
TUMBLER VOLUME			50.76 cu ft	**1,437.36 L**
TUMBLER/DRIVE MOTOR			3 hp	**2.24 kW**
BLOWER/FAN MOTOR			7-1/2 hp	**5.59 kW**
DOOR OPENING (DIAMETER)			31-3/8”	**79.71 cm**
DOOR SILL HEIGHT			36-1/4”	**92.08 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			8 / 8	
Gas	VOLTAGE AVAILABLE		208-575v 3ø 3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT		1,848 lb	**838.24 kg**
	APPROXIMATE SHIPPING WEIGHT		2,104 lb	**913.54 kg**
	AIRFLOW	60 Hz	3,700 cfm	**104.77 cmm**
		50 Hz	3,108 cfm	**88.00 cmm**
	HEAT INPUT		550,000 Btu/hr	**138,598 kcal/hr**
	EXHAUST CONNECTION (DIAMETER)		18”	**45.72 cm**
	COMPRESSED AIR CONNECTION		1/4” Quick Connection	
	COMPRESSED AIR VOLUME		4.25 cfh	**0.12 cmh**
	INLET PIPE CONNECTION		1-1/2” F.B.S.P.T.	
			1-1/2” B.S.P.T. (CE and Australia Only)	
Electric	VOLTAGE AVAILABLE		N / A	
	APPROXIMATE NET WEIGHT			
	APPROXIMATE SHIPPING WEIGHT			
	AIRFLOW			
	EXHAUST CONNECTION (DIAMETER)			
	COMPRESSED AIR CONNECTION			
	COMPRESSED AIR VOLUME			
	OVEN SIZE			
	kW	Btu/hr **kcal/hr**		
Steam	VOLTAGE AVAILABLE		208-575v 3ø 3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT		2,001 lb	**907.64 kg**
	APPROXIMATE SHIPPING WEIGHT		2,168 lb	**983.39 kg**
	AIRFLOW	60 Hz	4,400 cfm	**124.59 cmm**
		50 Hz	3,696 cfm	**104.65 cmm**
	STEAM CONSUMPTION		725 lb/hr	**328.85 kg/hr**
	OPERATING STEAM PRESSURE		125 psi max	**8.62 bar**
	EXHAUST CONNECTION (DIAMETER)		20”	**50.80 cm**
	COMPRESSED AIR CONNECTION		1/4” Quick Connection	
	COMPRESSED AIR VOLUME		4.25 cfh	**0.12 cmh**
	BOILER HORSEPOWER (NORMAL LOAD)		19 Bhp	
	SUPPLY CONNECTION		1-1/2” F.N.P.T.	
	RETURN CONNECTION		1-1/2” F.N.P.T.	

Shaded areas are stated in metric equivalents 3/7/06

Note

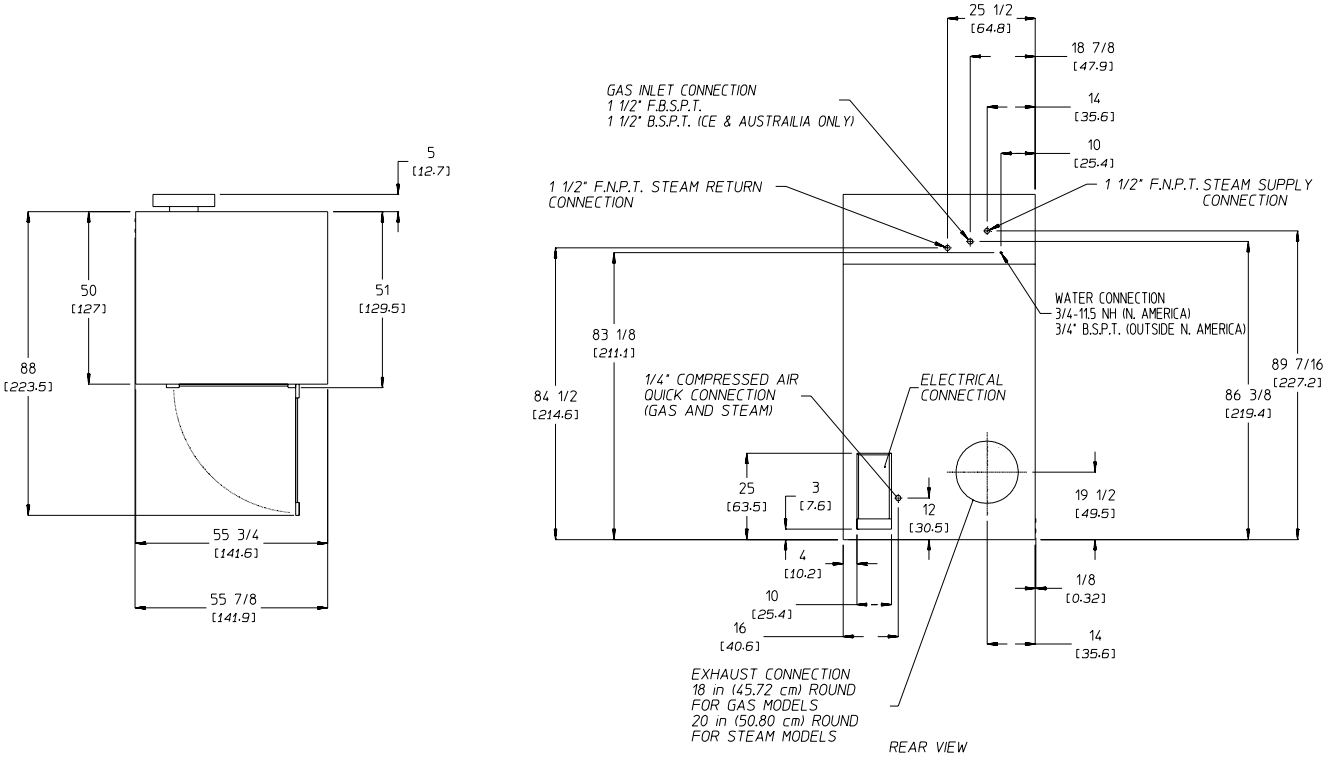
The manufacturer reserves the right to make changes in specifications at any time without notice or obligation.

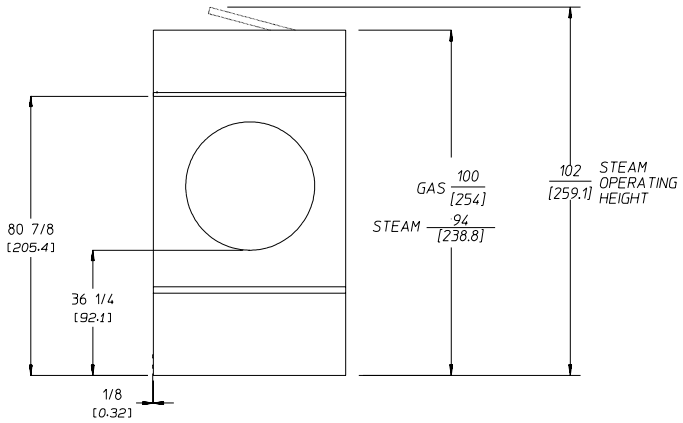
DRYER NOTES:

° 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.
° DRYERS MUST BE PROVIDED WITH CLEAN, DRY, REGULATED 80 PSI ± 10 PSI (5.5 BAR ± 0.69 BAR) AIR SUPPLY.

STEAM DRYER NOTES:

° SIZE OF PIPING TO DRYER VARIES WITH INSTALLATION CONDITIONS. CONTACT FACTORY FOR ASSISTANCE.





3/6/06

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 duct 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 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 4 lag bolts securing the base of the dryer to the wooden skid. 2 are at the rear base, and 2 are located in the bottom of the lint chamber. To remove the 2 lag bolts located in the lint chamber area, remove the lint drawer and the 3 Phillips head screws securing the lint door in place.

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.

The V-belts are disconnected from the tumbler drive motor for shipping. Reconnect V-belts before starting the dryer.

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) located at the rear upper left corner of the dryer.

Remove the 8 sets of nuts and washers (B in the illustration) holding the console (module) to the base.

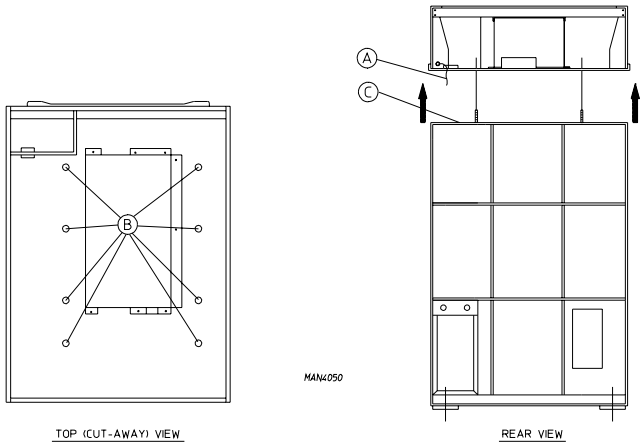
Disconnect the white plug connector (C in the illustration) located on the top of the rear electric service/relay box (provides power to the heat circuit).

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.

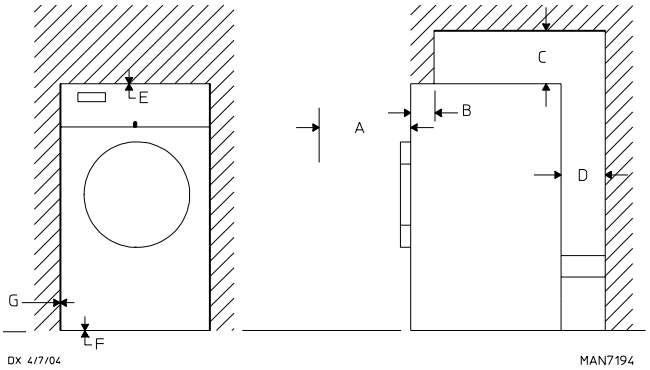


Dryer Enclosure Requirements

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.

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.



A 30-inches (76.2 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.

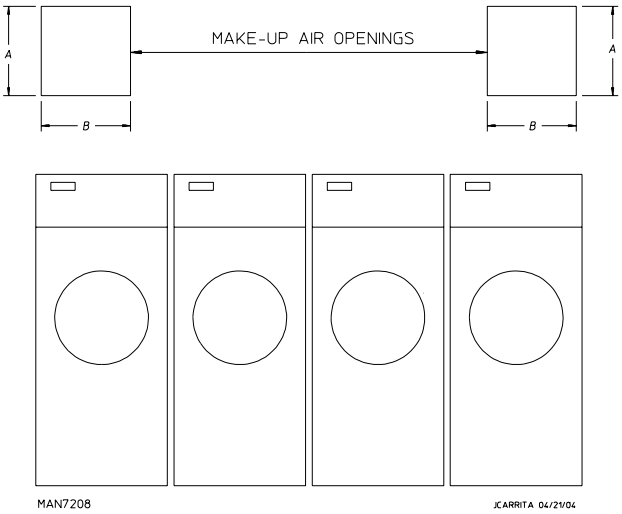
Note

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 ensure proper performance of each dryer. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) measuring a minimum size of 22-inches by 25-inches (55.9 cm by 63.5 cm) is required for each dryer. (Based on 1 square inch per 1,000 Btu.)



A = 34.3-inches (87.2 cm) B = 35-inches (88.9 cm)

To compensate for the use of registers or louvers used over the openings, this area must be increased by approximately 33%. 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 34.3-inches by 35-inches (87.2 cm by 88.9 cm) 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-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 a dryer is exhausted separately, it is recommended that a back draft damper be installed.

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 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° 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 2 elbows should be used in the exhaust duct run. If more than 2 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

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.

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

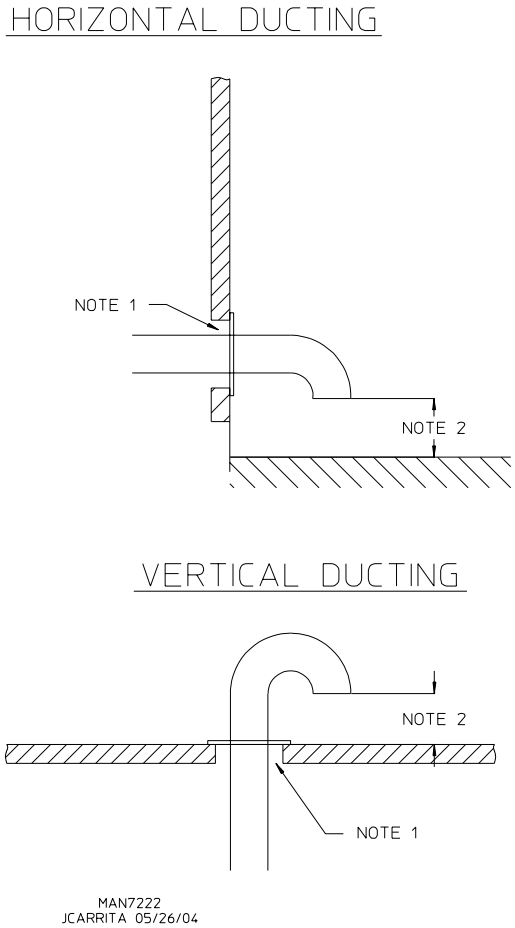
It is recommended that exhaust or booster fans not be used in the exhaust ductwork system.

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.



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.

Single Dryer Venting

When 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 section area is provided.

Important

The minimum duct size for a gas unit is 18-inches (45.72 cm) for a round duct and 16-inches x 16-inches (40.64 cm x 40.64 cm) for a square duct and for a steam unit is 20-inches (50.80 cm) for a round duct and 18-inches x 18-inches (45.72 cm x 45.72 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 2 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 20% for each additional 20 feet (6.09 meters). The diameter of a round exhaust duct should be increased 10% 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).

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 2 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.

Outside Ductwork Protection

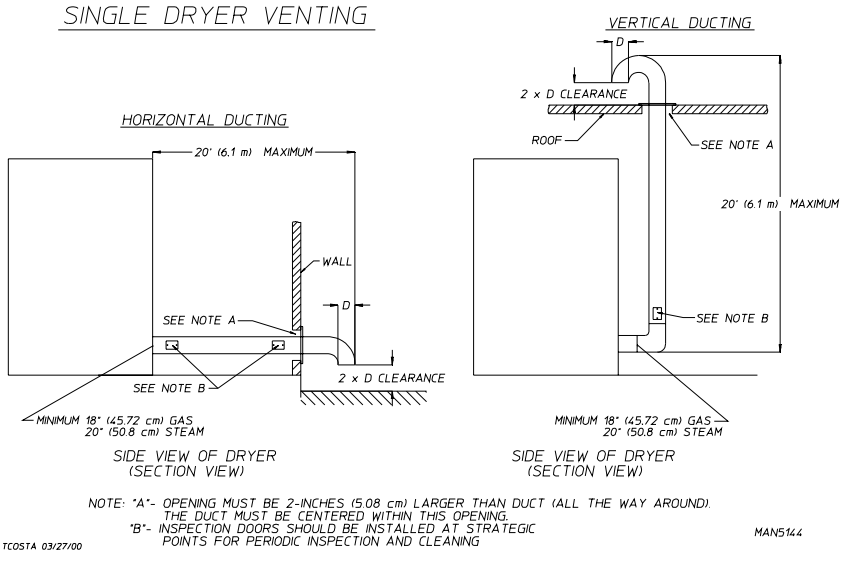
To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward should be installed where the exhaust exits the building. If the ductwork travels vertically up through the roof, it should be protected from the weather by using a 180° turn to point the opening downward. 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 (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 55-3/4” (141.61 cm) apart. The main duct should be tapered, with the diameter increasing before each individual 18-inch (45.72 cm) duct is added.



Important

The dryer is not provided with a back draft damper. When exhausted into a multiple (common) exhaust line, a back draft damper must be installed at each dryer duct.

No more than 3 dryers should be connected to 1 main common duct.

The main duct may be any shape or cross-sectional area, as long as the minimum cross section area is provided. The illustrations show the minimum cross section area for multiple dryer round or square venting. These figures must be increased 10 square inches (64.52 square centimeters) 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 2) in it. In calculating ductwork size, the cross-sectional area of a square or rectangular duct must be increased 20% for each additional 20 feet (6.09 meters). The diameter of a round exhaust must be increased 10% 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 2 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.

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.

Outside Ductwork Protection

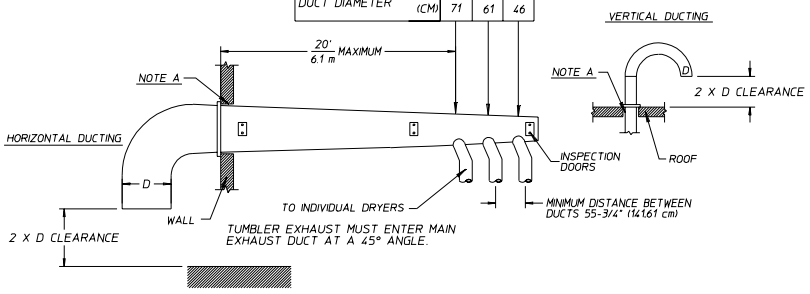
To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward should be installed where the exhaust exits the building. If the exhaust ductwork travels vertically up through the roof, it should be protected from the weather by using a 180° turn to point the opening 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 (GAS MODELS)
WITH 18" (45.72 cm) DIAMETER (3700 CFM [104.77 CMM]) EXHAUST CONNECTIONS AT COMMON DUCT

NO. OF DRYERS		3	2	1
MINIMUM CROSS SECTION AREA	(SQ IN)	615	455	255
	(SQ CM)	3967	2935	1645
MINIMUM ROUND DUCT DIAMETER	(IN)	28	24	18
	(CM)	71	61	46



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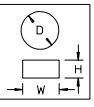
IMPORTANT: NO MORE THAN 3 DRYERS CAN BE CONNECTED TO ONE COMMON DUCT (VENT).

FORMULAS TO CALCULATE DUCTING CROSS SECTIONAL AREA

CROSS SECTIONAL AREA OF A ROUND DUCT = .785 (19.939 mm) x D^2 WHERE D = DIAMETER OF THE DUCT.

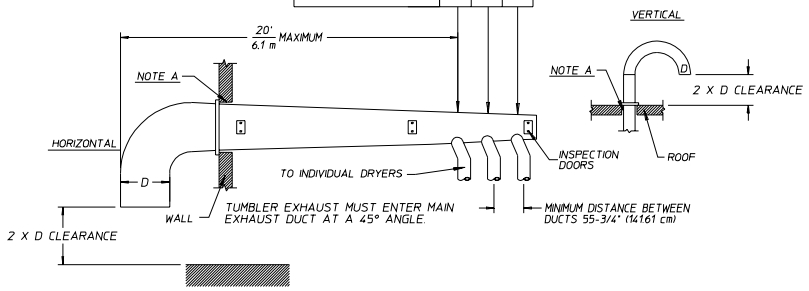
CROSS SECTIONAL AREA OF A RECTANGULAR DUCT = W x H WHERE W = WIDTH AND H = HEIGHT.



NOTE A: 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 VENTING (STEAM MODELS)
WITH 20" (50.8 cm) DIAMETER (4400 CFM [124.59 CMM]) EXHAUST CONNECTIONS AT COMMON DUCT

NO. OF DRYERS		3	2	1
MINIMUM CROSS SECTION AREA	(SQ IN)	707	531	315
	(SQ CM)	4561	3426	2032
MINIMUM ROUND DUCT DIAMETER	(IN)	30	26	20
	(CM)	76	66	51



TCOSTA 05/15/00

IMPORTANT: NO MORE THAN 3 DRYERS CAN BE CONNECTED TO ONE COMMON DUCT (VENT).

Electrical Information

Electrical Requirements

It is your responsibility to have all electrical connections made by a properly licensed and competent electrician 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 can create 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

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	35.8	—	60
240	3ø	3	33.9	—	60
230	3ø	3	—	30.2	50
380	3ø	4*	—	16.4	25
400	3ø	4*	—	16.1	25
416	3ø	4*	—	15.7	25
440	3ø	3	17.6	—	30
460	3ø	3	17.4	—	30
480	3ø	3	17.4	—	30
575	3ø	3	12.5	—	20

* 3-Wire is available. 4/1/08

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.

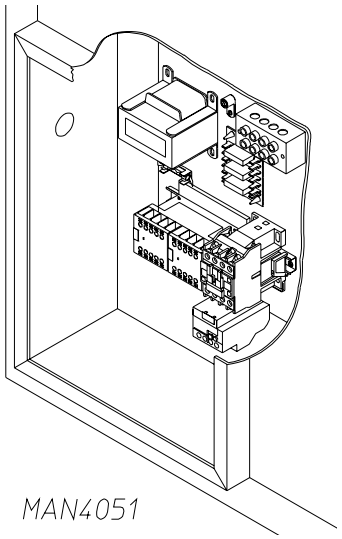
Warning

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



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 U.L. 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

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

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 (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. 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 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 dryer from supply as noted can cause irreparable damage to the gas valve, which will void 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 dryer 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 the manufacturer.

Important

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

The input ratings shown on the dryer data label are for elevations up to 2,000 feet (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 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 inches W.C.	6.0-12.0 inches W.C.
	8.7 mb	**14.92 - 29.9 mb**
Liquid Propane	10.5 inches W.C.	11.0 inches W.C.
	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 ..... 1-1/2" F.P.T.
Inlet supply size ..... 1-1/2" Diameter Pipe (minimum)
Btu/hr input ..... 550,000 (138,598 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.
550,000	**138,598**	4	#2	140839	4	#30	140819
Liquid Propane Conversion Kit Part Number 883111							

Shaded area is stated in metric equivalent

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

Natural Gas ..... #2 = 0.2210" (5.6134 mm).
L.P. Gas ..... #30 = 0.1285" (3.2639 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 1-1/2" N.P.T. inlet pipe connection extending out the back area of the burner box. The minimum pipe size (supply line) to the dryer is 1-1/2" 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, 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 1-1/2" (3.81 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).

Warning

Never test for leaks with a flame!!!

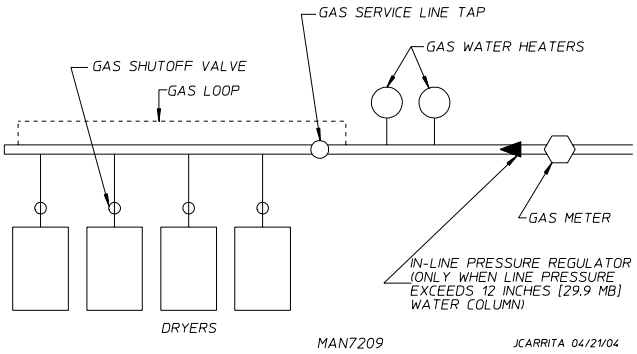
Important

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).

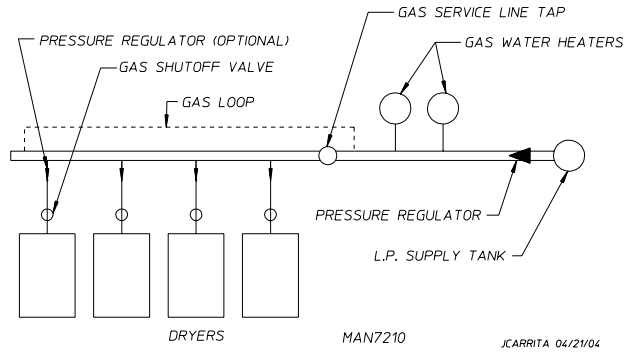
Note

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).

TYPICAL NATURAL GAS INSTALLATION



TYPICAL L.P. GAS INSTALLATION



Steam Information

It is your responsibility to have all steam plumbing connections made by a qualified professional to ensure that the 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 +/- 0.68 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 ..... 1-1/2" N.P.T. supply line connection (1 at top manifold)
Return ..... 1-1/2" N.P.T. return line connection (1 at bottom manifold)

Operating Steam Pressure		
Maximum	125 psig*	**861.84 kPa**
Heat Input (Normal Load)	19 Bhp	
Consumption (Approximate)	725 lb/hr	**328.85 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 presence 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 10-inch (25.4 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.

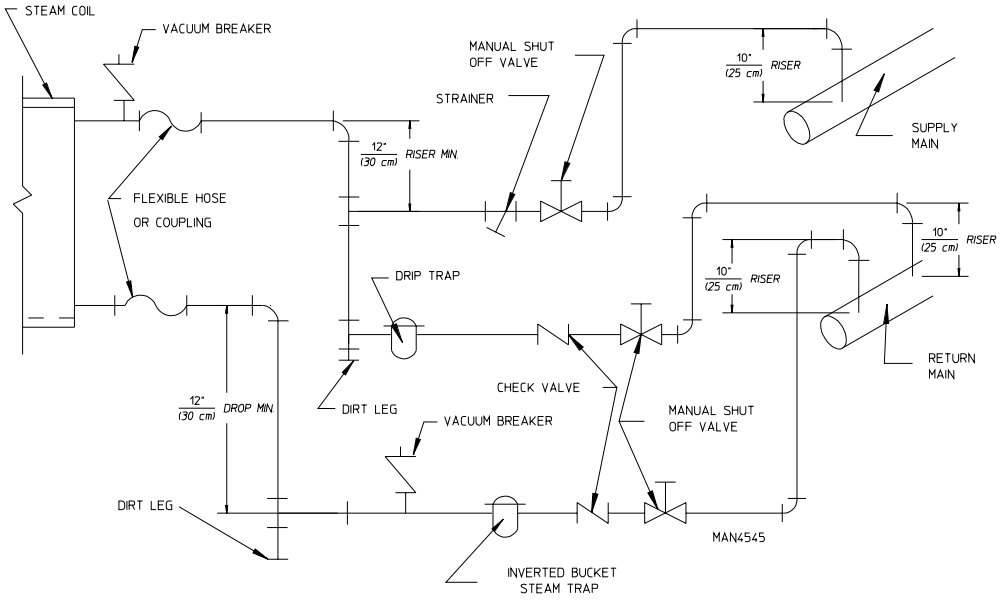
Shutoff valves for each dryer should be installed in the supply line, return line, and drip trap return line. This will allow the dryer to be isolated from the supply main and the return main if the dryer needs maintenance work.

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 2,000 lb (907.18 kg) of condensate per hour at 125 psi (8.62 bar) is required for each dryer. (Based on 2 times the steam consumption per hour.)

A 3/4-inch (19.05 mm) vacuum breaker should be installed. 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 one foot (0.30 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 System

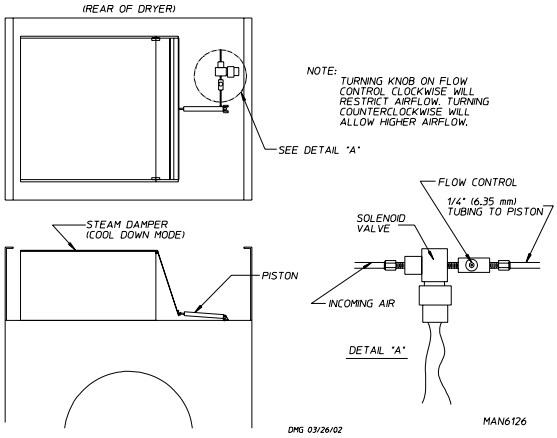


Steam Damper Air System Connections

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 inner top area of the dryer just in front of the electric service relay box.

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 Preoperational Test to check steam damper system operation. If steam damper adjustment is necessary, locate the flow control valve and make the necessary adjustments as noted below.



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 — 1/8" N.P.T.

Air Regulation

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.

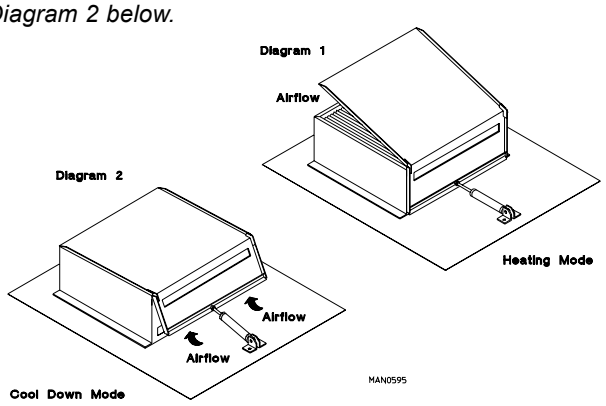
Steam Damper System Operation

The steam damper shown in Diagram 1 in the illustration below, 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 2).

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 below.



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 necessary or required water, 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 Requirements

The fire suppression system must be supplied with a minimum water pipe size of 1/2" 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.

Warning

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

Important

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

Water Connections

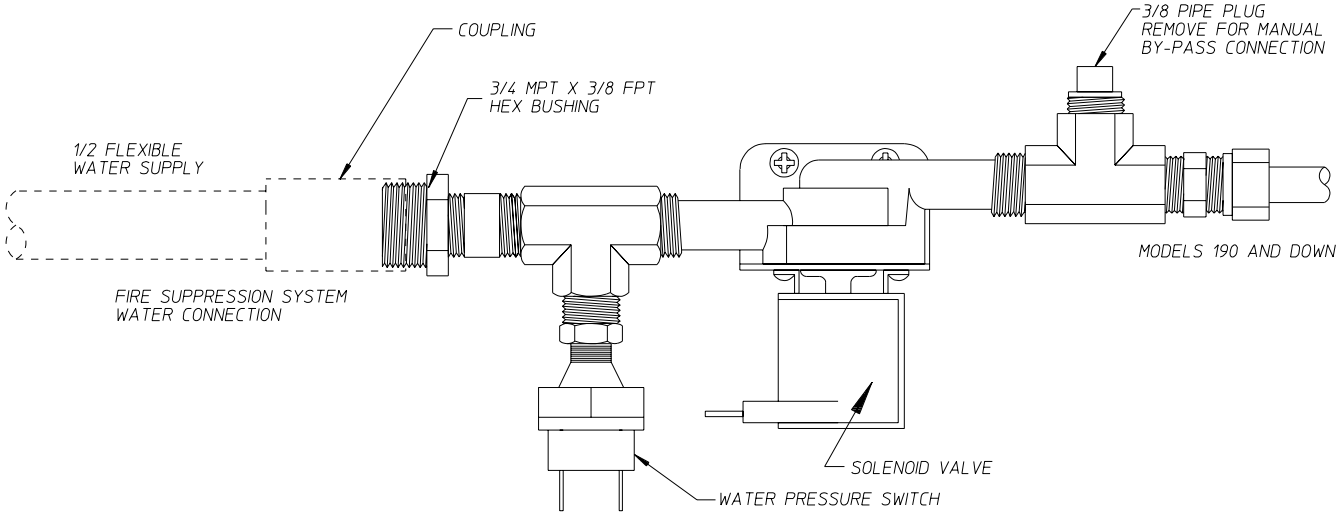
The water connection is made to the 3/4" M.P.T. hex bushing located at the rear upper midsection of the dryer.

The water solenoid valve has a 3/8" M.P.T. connection supplied with a 3/4" M.P.T. x 3/8" F.P.T. hex bushing 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.

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 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" 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!!

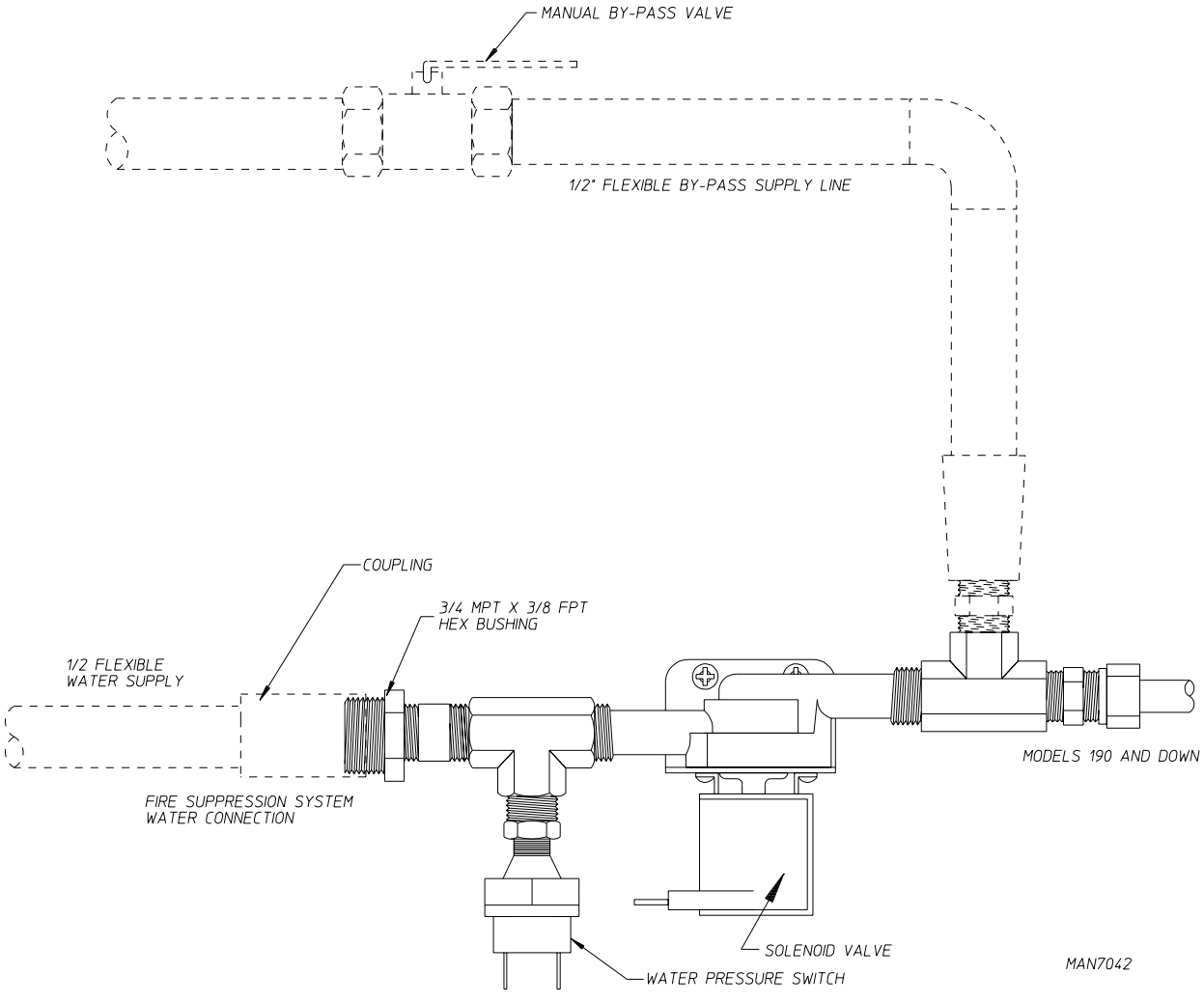
The manual ball cock shutoff valve must be located outside of the dryer at a distance from the dryer where it is easily accessible.

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!!



TYPICAL INSTALLATION
1/2" WATER LINE

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 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.
- Check to be sure that the drive belts between the idler pulley and the motor pulley have been reconnected.

Note

The drive belts were disconnected at the factory prior to dryer shipment.

- 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 drawer is securely in place.

Note

Lint drawer must be all the way in place 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.
- Gas Models and 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 blower motor impellor (fan) to ensure that the blower motor impellor (fan) rotates in the clockwise direction as viewed from the front. If it is, the phasing is correct. If the phasing is incorrect, reverse 2 of the leads at L1, L2, or L3 of the power supply connections made to the dryer.

Important

Dryer blower motor/pulley that drives the impellor/fan (squirrel cage) when viewed from the back of the dryer must turn in the counterclockwise 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 3 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 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.

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 illustration on page 16 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 112 lb (51 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 dwell (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 dwell (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 1 complete cycle to ensure 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 microprocessor controller (computer) has been preprogrammed by the factory with the most commonly used parameter (program) selections. If computer changes are required, refer to the computer programming manual, which was shipped with the dryer.

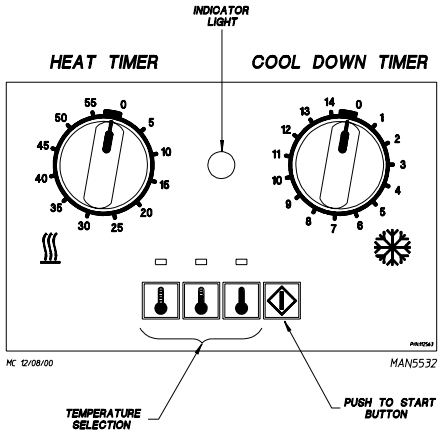
Dual Timer Dryers

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.



Compressed Air Requirements

The dryer requires an external supply of compressed air (2.5 cfh [cubic feet per hour] at 80 psi [0.07 cmh [cubic meters per hour] 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 blower motor 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**

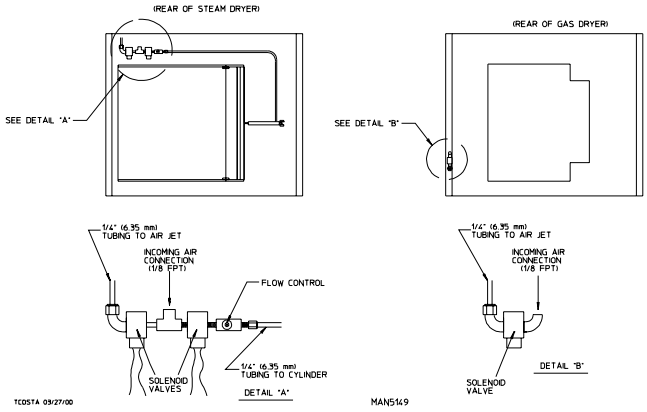
Shaded areas are stated in metric equivalents

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 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.

Air Connection

Air connection to this system is a 1/8" F.P.T. as per the illustration below.



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

Note

When ordering replacement parts from the distributor 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.

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 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 by contacting the Warranty Department.

Note

Whenever contacting the manufacturer 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

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, 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 (cleaning the lint drawers and both steam coil lint screens are the only exceptions).

Suggested time intervals shown are for average usage, which is considered 6 to 8 operational (running) hours per day.

Important

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

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. Suggest using compressed air and a vacuum cleaner with brush attachment.

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 any local air-conditioning supply house.

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.

Blower motor impellor (fan) shaft bearings should be lubricated using Shell Alvania grease NLGI 2 or its equivalent. Generically, this grease would be described as an NLGI grade 2 multipurpose industrial grease with a lithium thickener and mineral base oil.

Check to make sure that the setscrews on the impellor/fan shaft bearings are tight.

Note

To prevent damage, avoid cleaning and/or touching the Direct Spark Ignitor.

Remove lint accumulation from inside.

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 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 if required.

Note

V-belts should be replaced in matched sets (pairs).

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). Blower motor impellor (fan) V-belts, along with the motor and drive belts should be examined and replaced if necessary. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of all safety devices (door switches, lint drawer switch, sail switch, burner, and hi-limit thermostats).

Note

Squirrel cage type fan (impellor) on the blower motor must be inspected and cleaned every 6 months.

Lubrication

The fan shaft bearings and all the tumbler drive shaft and idler shaft bearings must be lubricated every 3 months. Use a #2 grease or its equivalent. Lubrication is necessary or premature bearing failure will be the result. The motor bearings are permanently lubricated and do not require to be serviced.

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

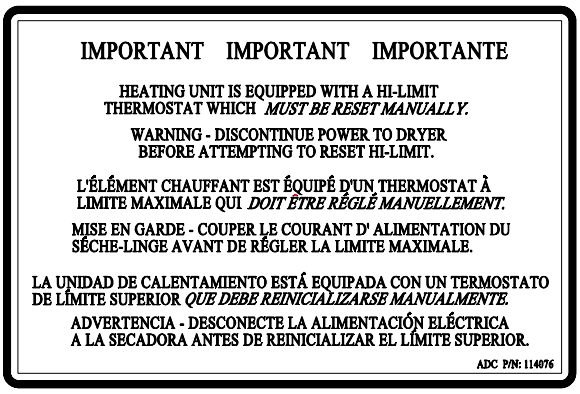
This dryer was manufactured with a manual reset burner hi-limit thermostat. If the burner hi-limit is open prior to the start of the drying cycle, or during the cycle, the dryer will not recognize the open state of the burner hi-limit and will start or continue through the drying cycle with no heat.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

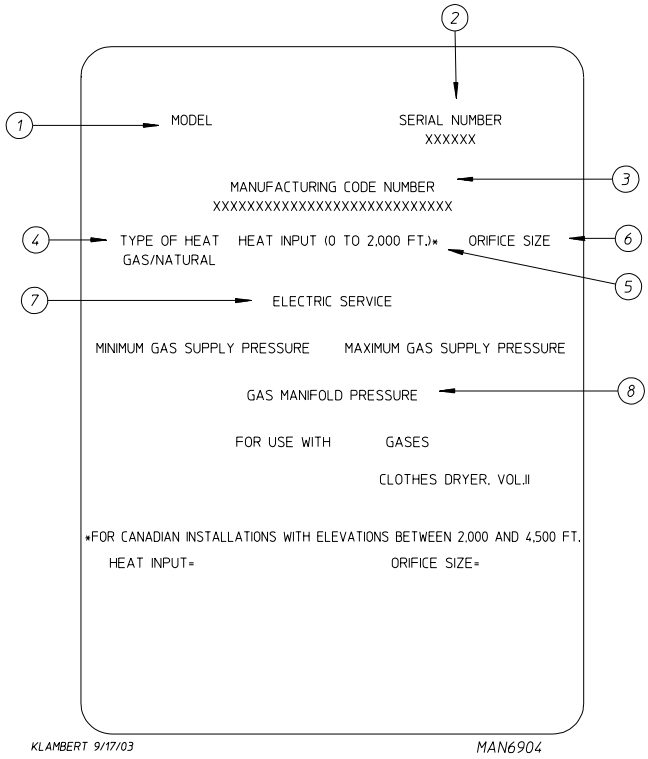
The location of the burner hi-limit is on the right side of the burner box, looking at the burner from the back of the dryer.

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 left side panel/wall area behind the control panel. When contacting JLA, please have the model number and serial number available.

1. **Model Number** – Describes the size of the dryer and the 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.

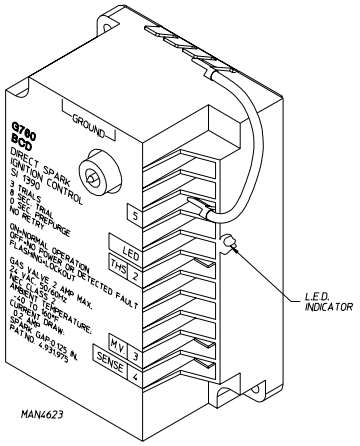
7. **Electric Service** – This describes the electric service for your particular model.

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 DSI Module (Type I)

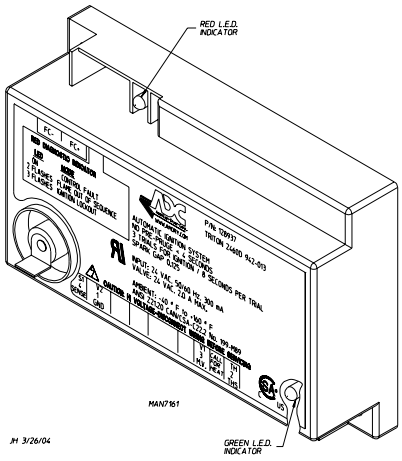


Theory of Operation: Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (6-seconds), the flame sensor detects gas burner flame and signals the DSI module to keep the gas valve open as long as there is a call for heat. The DSI module will "LOCKOUT" if the gas 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. 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.

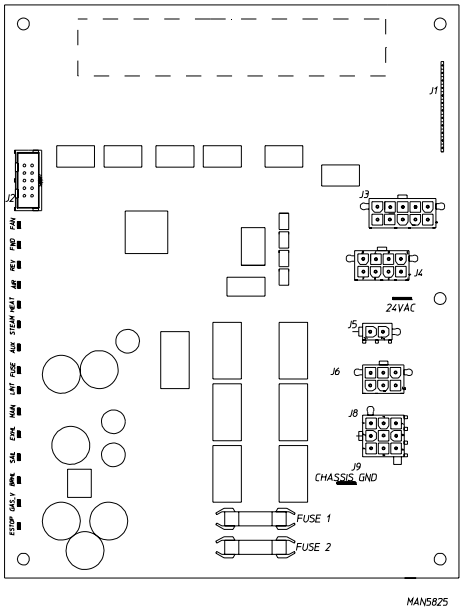
Phase 7 Non-Coin System Diagnostics

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)

1. FAN – Blower Fan On
2. FWD – Tumbler Forward
3. REV – Tumbler Reverse
4. AIR JET – Air Jet On
5. HEAT – Front Heat
6. STEAM – Steam Injection
7. AUX – Fire Suppression System Active On

INPUTS: (RED)

8. FUSE – 24 VAC To Board (F2)
9. LINT – Lint Drawer Closed
10. MAIN – Main Door Closed
11. EXHL – Exhaust High Limit
12. SAIL – Sail Switch
13. BRHL – Burner High Limit
14. GAS_V – Gas Valve
15. ESTOP – Emergency Stop

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

1. **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.

2. **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.

3. **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.

4. **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.

5. **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.

6. **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.

7. **AUX** – This L.E.D. will indicate the status of the Fire Suppression System output. If the request to turn on the Fire Suppression System is made, then the L.E.D. is ON.

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

8. **FUSE** – This L.E.D. will indicate the status of the F2, which fuses the 24 VAC supplied to the board.

9. **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.

10. **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.

11. **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.

12. **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.

13. **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.

14. **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.

15. **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.

Notes