AD-50 Installation Manual

Dual Timer and Phase 7 Microprocessor Models

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

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

— WHAT TO DO IF YOU SMELL GAS:

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

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

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

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

— QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

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

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

American Dryer Corp.®

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www.amdry.com

ADC Part No. 113610-1

Retain This Manual in a Safe Place for Future Reference

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

Only qualified technicians should service this equipment.

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

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

FOR YOUR SAFETY	POUR VOTRE SÉCURITÉ
Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.	Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

We have tried to make this manual as complete as possible and hope you will find it useful. The manufacturer reserves the right to make changes from time to time, without notice or obligation, in prices, specifications, colors, and material, and to change or discontinue models. The illustrations included in this manual may not depict your particular dryer exactly.

IMPORTANT

For your convenience, log the following information:

DATE OF PURCHASE _____ **MODEL NO.** AD-50

RESELLER'S NAME _____

SERIAL NUMBER(S) _____

_____

_____

Replacement parts can be obtained from your reseller or the ADC factory. When ordering replacement parts from the factory, you can FAX your order to ADC at +1 (508) 678-9447 or telephone your order directly to the ADC Parts Department at +1 (508) 678-9000. Please specify the dryer model number and serial number in addition to the description and part number, so that your order is processed accurately and promptly.

"IMPORTANT NOTE TO PURCHASER"

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

IMPORTANT

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

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

CAUTION

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

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

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

WARNING

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

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

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

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

FOR YOUR SAFETY

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

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

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

Table of Contents

List of Acronyms

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

Safety Precautions

Warning

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

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

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

Purchaser and user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions should be posted in a prominent location.

What To Do If You Smell Gas:

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

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

Dryers must be exhausted to the outdoors.

Although the manufacturer produces a very versatile dryer, there are some articles that, due to fabric composition or cleaning method, should not be dried in it.

Warning

Dry only water washed fabrics. Do not dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "all purpose" cleaner. Explosion could result.

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

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

Do not use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated tumbler may damage plastics or rubber and also 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 switch(es), lint door/drawer switch(es), or heat safety circuit(s) ever be disabled.

Warning

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

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

Remove articles from the dryer as soon as the drying cycle has been completed.

Warning

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

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

Replace leaking flexible hoses or other steam 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 sixty-six percent, 33 lb (15 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

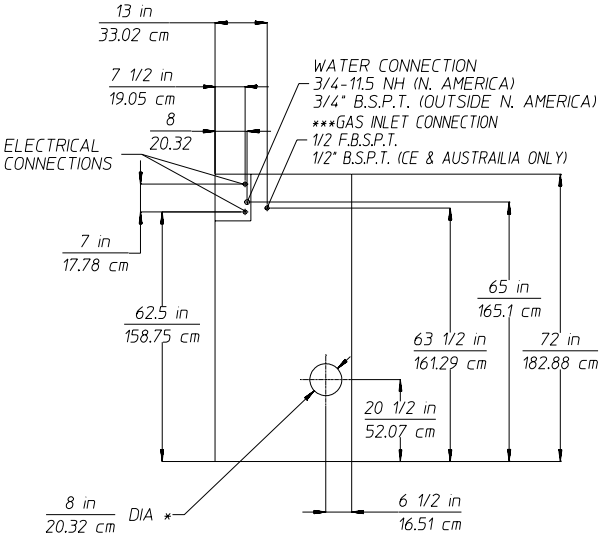
The dryer must be installed in a location/ environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

MAXIMUM CAPACITY (DRY WEIGHT)				50 lb	**22.68 kg**
TUMBLER DIAMETER				32 3/4”	**83.19 cm**
TUMBLER DEPTH				37 1/2”	**95.25 cm**
TUMBLER VOLUME				18.30 cu ft	**518.20 L**
TUMBLER/DRIVE MOTOR				3/4 hp	**0.56 kW**
BLOWER/FAN MOTOR				N / A	
DOOR OPENING (DIAMETER)				21 1/2”	**54.61 cm**
DOOR SILL HEIGHT				N / A	
WATER CONNECTION				3/4”-11.5 NH	
DRYERS PER 20’/40’ CONTAINER				10 / 20	
DRYERS PER 48’/53’ TRUCK				26 / 28	
Gas	VOLTAGE AVAILABLE			120-460V 1,3ø w 60 Hz	
	APPROXIMATE NET WEIGHT			635 lb	**288.03 kg**
	APPROXIMATE SHIPPING WEIGHT			680 lb	**308.44 kg**
	AIRFLOW 60 Hz			600 cfm	**16.99 cmm**
	HEAT INPUT			150,000 Btu/hr	**37,799 kcal/hr**
	EXHAUST CONNECTION (DIAMETER)			8”	**20.32 cm**
	COMPRESSED AIR CONNECTION			N / A	
	COMPRESSED AIR VOLUME			N / A	
	INLET PIPE CONNECTION			N / A	
Electric	VOLTAGE AVAILABLE			208-460V 3ø w 60 Hz	
	APPROXIMATE NET WEIGHT			N / A	
	APPROXIMATE SHIPPING WEIGHT				
	AIRFLOW 60 Hz				
	EXHAUST CONNECTION (DIAMETER)				
	COMPRESSED AIR CONNECTION				
	COMPRESSED AIR VOLUME				
	OVEN SIZE				
	kW	Btu/hr	**kcal/hr**		
	24	81,900	**20,638**		
	30	102,390	**25,802**		
Steam	VOLTAGE AVAILABLE			120-460V 1,3ø w 60 Hz	
	APPROXIMATE NET WEIGHT			667 lb	**302.55 kg**
	APPROXIMATE SHIPPING WEIGHT			710 lb	**322.05 kg**
	AIRFLOW 60 Hz			600 cfm	**16.99 cmm**
	STEAM CONSUMPTION			142 lb/hr	**64.41 kg/hr**
	OPERATING STEAM PRESSURE			125 psi max	**8.62 bar**
	EXHAUST CONNECTION (DIAMETER)			8”	**20.32 cm**
	COMPRESSED AIR CONNECTION			1/4” F.N.P.T.	
	COMPRESSED AIR VOLUME			0.75 cfh	**0.02 cmh**
	BOILER HORSEPOWER (NORMAL LOAD)			4.1 Bhp	
	SUPPLY CONNECTION			1” F.N.P.T.	
	RETURN CONNECTION			1” F.N.P.T.	

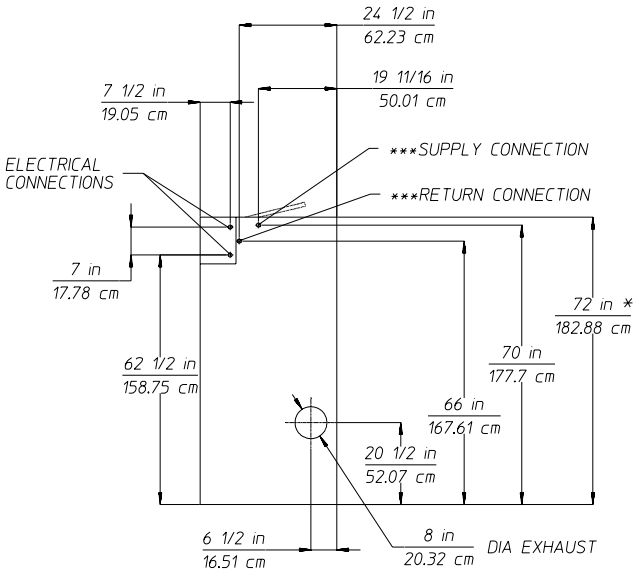
Shaded areas are stated in metric equivalents 8/23/07

Note

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

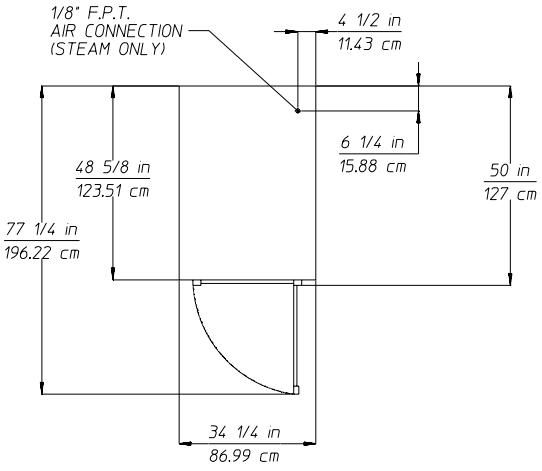


REAR VIEW (GAS ONLY)

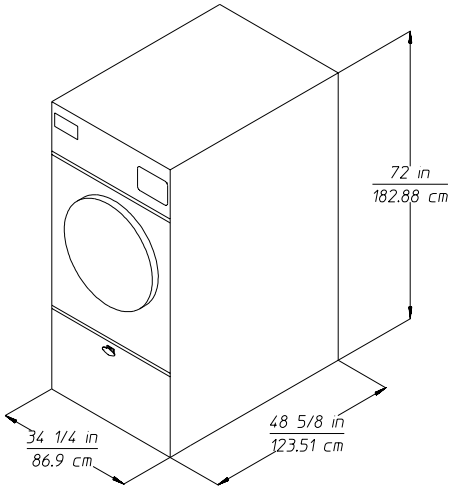


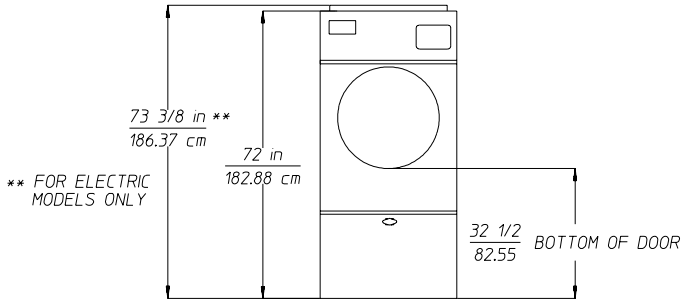
REAR VIEW (STEAM ONLY)

* STEAM OPERATING HEIGHT IS 78" (198.1 cm)



PLAN VIEW





FRONT VIEW

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

8/23/07

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

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 bolts securing the base of the dryer to the wooden skid. 2 are at the rear base (remove the back panel for access) and 2 are located in the bottom of the lint chamber. (Remove the lint drawer/door for access.)

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

Leveling Dryer

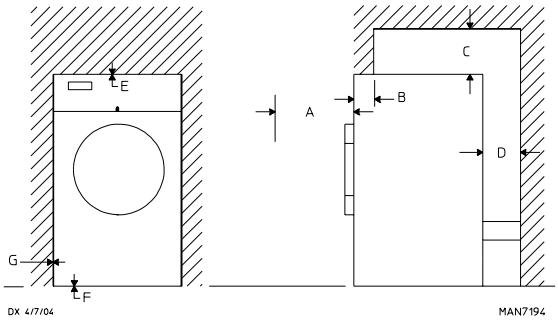
The dryer is equipped with 4 leveling legs, 1 at each corner of the base. 2 are located at the rear of the dryer base, and 2 are located in the lint chamber. To increase bearing life and improve efficiency, the dryer should be tilted slightly to the rear.

Dryer Enclosure Requirements

Bulkheads and partitions should be made of noncombustible material.

Note

Allowances must be made for opening the control door.

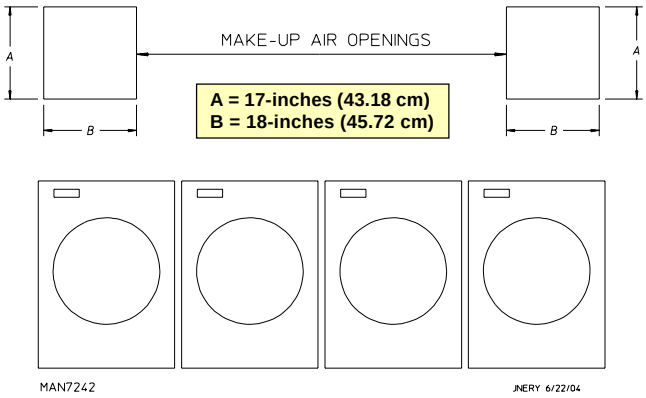


A 30-inches (76.2 cm) for optimum opening of load door.
B The maximum thickness of the bulkhead is 4-inches (10.16 cm). For electric dryers the maximum thickness of the bulkhead is 1-inch (2.54 cm) within 3-inches (7.62 cm) from the top of the control door.
C For gas and electric dryers a minimum overhead 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.

Fresh Air Supply Requirements

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

Air supply (make-up air) must be given careful consideration to ensure proper performance of each dryer. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) of a minimum of 150[2] inches (967.74[2] cm) is required for each dryer. (Based on 1[2] inch per 1,000 Btu.)



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

It is not necessary to have a separate make-up air opening for each dryer. Common make-up air openings are acceptable. However, they must be set up in such a manner that the make-up air is distributed equally to all the dryers.

EXAMPLE: For a bank of 4 dryers, 2 unrestricted openings measuring 17-inches by 18-inches (43.18 cm by 45.72 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, and shutdown of the burner by the airflow (sail) switch, burner hi-limits, or lint chamber hi-limit protector thermostat. The dryer must be installed with a proper exhaust duct connection to the outside.

Caution

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

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

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. It is suggested that the use of 90° turns be avoided; use 30° and/or 45° bends instead. The radius of the elbows should preferably be 1-1/2 times the diameter of the duct. 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/ magnehelic 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."

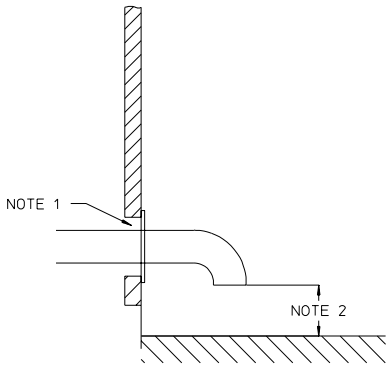
Outside Ductwork Protection

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 (refer to the diagram).

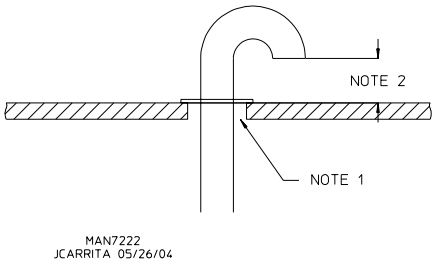
Important

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

HORIZONTAL DUCTING



VERTICAL DUCTING



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

Important

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

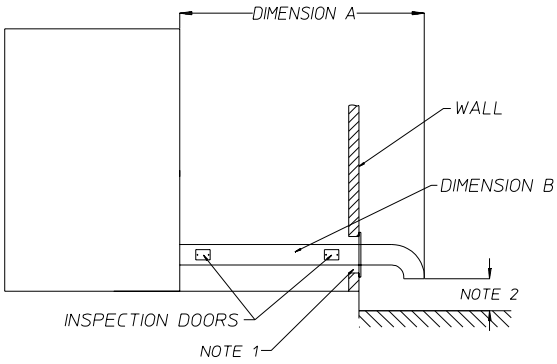
Horizontal Venting

When horizontal dryer venting is used, the length of the ductwork from the dryer to the outside exhaust outlet, must not exceed Dimension A (30 feet [9.144 meters]). The minimum diameter of this ductwork must be at least Dimension B (8-inches [20.32 cm]). Including tumbler/dryer elbow connections or elbows used for outside protection from the weather, no more than 1 elbow should be used in the exhaust duct run. If more than 1 elbow is used, the cross-sectional area of the ductwork must be increased.

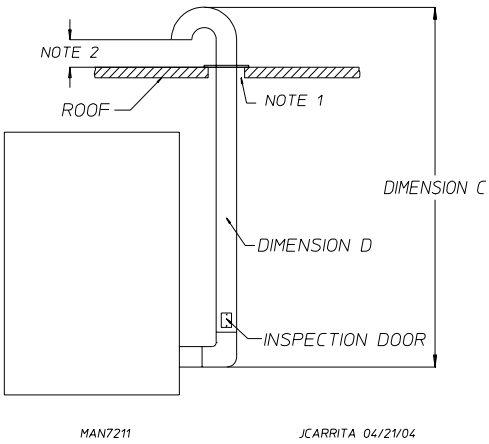
Vertical Venting

When vertical dryer venting is used, the length of the ductwork from the dryer to the outside exhaust outlet, must not exceed Dimension C (35 feet [10.668 meters]). The minimum diameter of this ductwork must be at least 10-inches (25.4 cm) even though the dryer exhaust duct connection is only Dimension D (8-inches [20.32 cm]). Including tumbler/dryer elbow connections or elbows used for outside protection from the weather, no more than 3 elbows should be used in the exhaust duct run. If more than 3 elbows are used, the cross-sectional area of the ductwork must be increased.

HORIZONTAL DUCTING



VERTICAL DUCTING



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.

Multiple Dryer (Common) Venting

Important

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

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 45º in the direction of airflow. The main duct should be tapered, with the diameter increasing before each individual duct is added. The minimum diameter of the individual ductwork (Dimension A) must be at least 8-inches (20.32 cm).

Important

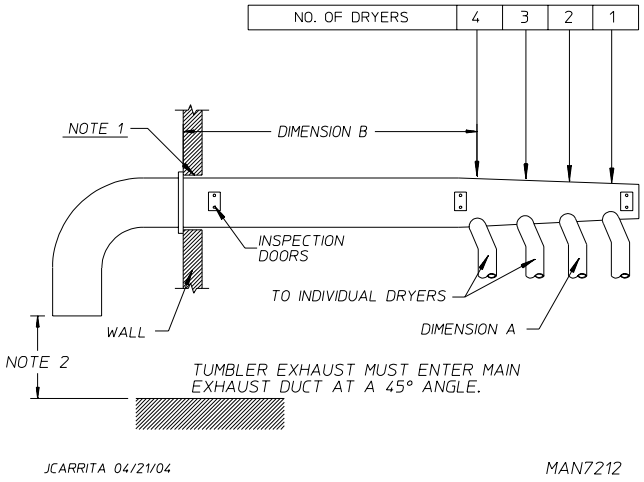
No more than 4 dryers should be connected to 1 main common duct.

The illustration below shows the minimum cross-sectional area for multiple dryer round or square venting. These figures must be increased if the main duct run from the last dryer to where it exhausts to the outdoors is longer than Dimension B or has more than 1 elbow in it.

Dimension B is 20 feet (6.096 meters).

Multiple Dryer Venting (Gas) with 8-Inch (20.32 cm) Diameter 600 cfm (16.99 cmm) Exhaust Connections at Common Duct

NUMBER OF DRYERS		4	3	2	1
MINIMUM CROSS-SECTIONAL AREA	SQ IN	200	155	115	80
	SQ CM	1290	999	741	516
MINIMUM ROUND DUCT DIAMETER	IN	16	14	12	10
	CM	40	35	30	25



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.

NOTES _____

Electrical Information

Electrical Requirements

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

Important

Failure to comply with these codes or ordinances, and/or the requirements stipulated in this manual can result in personal injury or component failure.

Note

Component failure due to improper installation will void the warranty.

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

Note

The use of aluminum wire will void the warranty.

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

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

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

Important

A separate protected circuit must be provided to each dryer.

The dryer must be connected to the electric supply shown on the data label. In the case of 208 VAC or 240 VAC, the supply voltage must match the electric service specifications of the data label exactly.

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

Warning

208 VAC and 240 VAC are not the same. Any damage done to dryer components due to improper voltage connections will automatically void the warranty.

Electrical Service Specifications

Important

Figures shown are for non-reversing models only. For reversing models contact the factory.

Gas and Steam Models Only

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	
100	1ø	2	12.3	—	20
120	1ø	2	12.0	—	20
208	1ø	2	7.1	—	15
220	1ø	2	7.0	5.3	15
230	1ø	2	—	4.9	15
240	1ø	2	6.5	—	15
208	3ø	3	3.0	—	15
230	3ø	3	—	3.6	15
240	3ø	3	3.2	—	15
380	3ø	4*	—	2.2	15
400	3ø	4*	—	2.2	15
416	3ø	4*	—	2.3	15
460	3ø	3	2.1	—	15
480	3ø	3	2.1	—	15

* 3-Wire is available. 9/24/07

Electric Models Only

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

ELECTRICAL SERVICE SPECIFICATIONS (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	
20 kW					
208	1ø	2	103	—	150
230	1ø	2	—	92	125
240	1ø	2	90	—	125
24 kW					
208	3ø	3	74	—	100
230	3ø	3	—	65	90
240	3ø	3	64	—	90
380	3ø	4*	—	42	60
416	3ø	4*	—	38	50
480	3ø	3	31	—	40
30 kW					
208	3ø	3	90	—	125
220	3ø	3	86	84	110
230	3ø	3	—	80	100
240	3ø	3	79	—	100
380	3ø	4*	—	51	70
400	3ø	4*	—	48	60
416	3ø	4*	—	47	60
440	3ø	3	42	—	60
480	3ø	3	38	—	50
575	3ø	3	32	—	40

* 3-Wire is available. 9/24/07

Grounding

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

For added personal safety, when possible, it is suggested that a separate ground wire (size per local codes) be connected from the ground connection of the dryer to a grounded cold water pipe. Do not ground to a gas pipe or hot water pipe. The grounded cold water pipe must have metal-to-metal connection all the way to the electrical ground. If there are any nonmetallic interruptions, such as, a meter, pump, plastic, rubber, or other insulating connectors, they must be jumped out with a wire (size per local codes) and securely clamped to bare metal at both ends.

Important

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

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

Electrical Connections

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

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

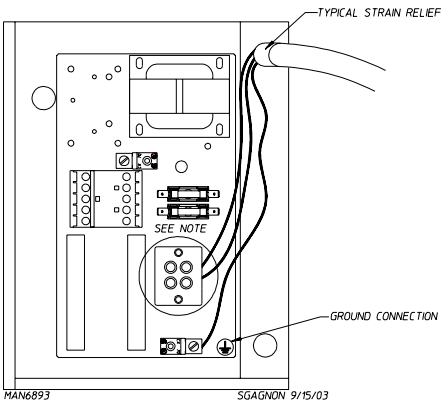
Gas and Steam Models Only

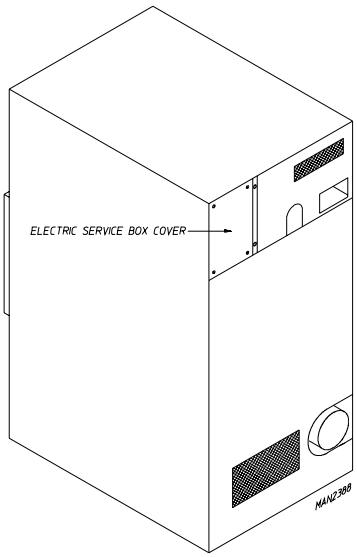
Important

A separate protected circuit must be provided to each dryer.

Single-Phase (1ø) Wiring Connections/Hookup

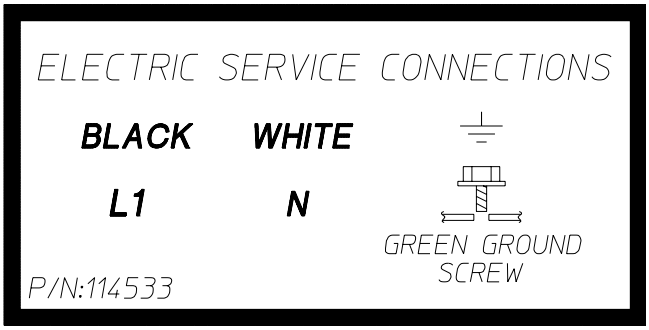
The electrical input connections on all single-phase (1ø) gas and steam dryers are made into the rear service box located at the upper left area of the dryer. The ground connection is made to the copper lug, also provided in this box. To gain access, the service box cover must be removed.

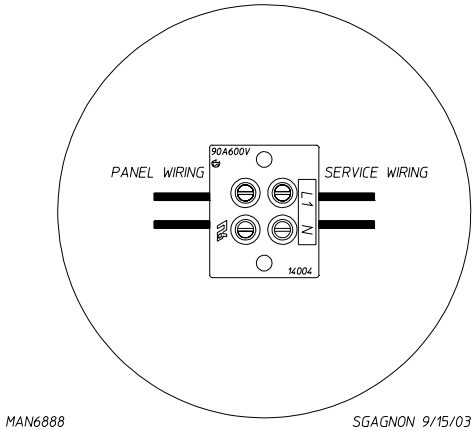




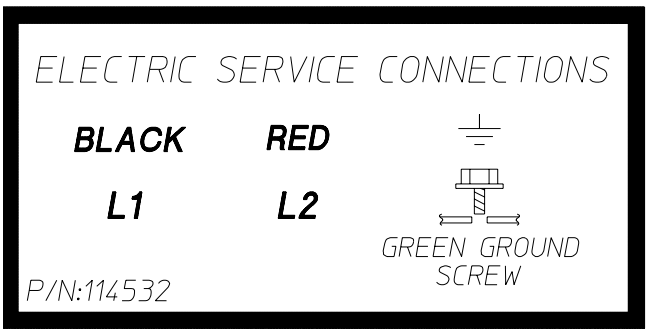
Single-Phase Electrical Lead Connections		
Black + Positive	White or Red + Neutral or L2	Green + Ground

For 110V Applications





For 208-240V Applications



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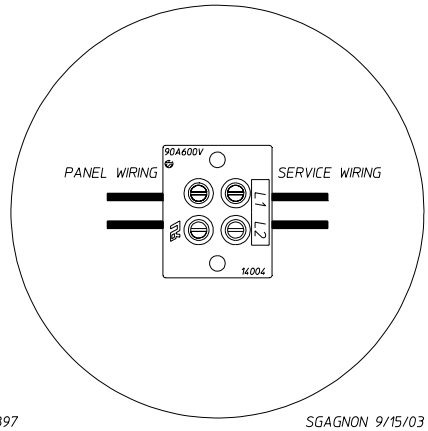

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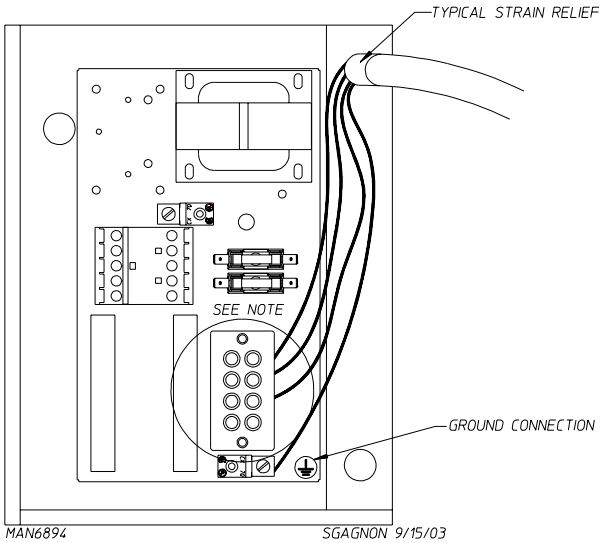
A ground lug is provided in the rear electrical box to connect your service ground.

3-Phase (3ø) Wiring Connections/Hookup

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

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



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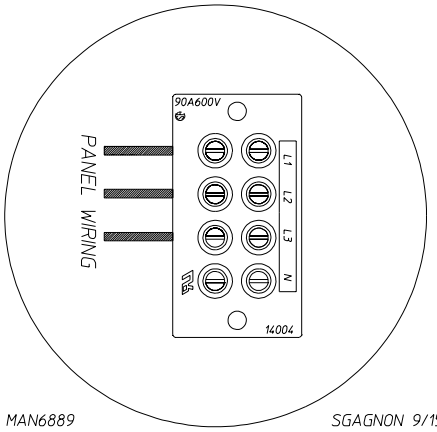

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Electrically Heated Models Only

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

The only electrical input connections to the dryer are the 3-phase (3ø) power leads (L1, L2, L3, and sometimes neutral) and ground. Single-phase (1ø) power for the control circuit and for any single-phase (1ø) motors (if present) is done internally to the dryer by the factory at the oven contactor. No single-phase (1ø) input connection is required on a 3-phase (3ø) dryer.

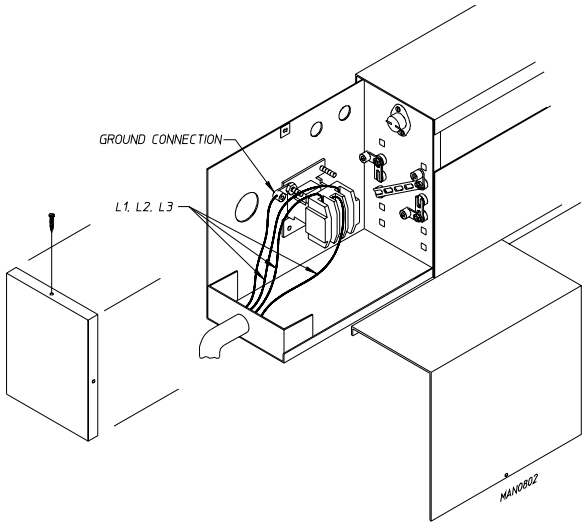
Caution

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

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

Important

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



Gas Information

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

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 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).

Failure to isolate or disconnect the dryer from supply as noted can cause irreparable damage to the gas valve, voiding the warranty.

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).

Warning

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

Gas Supply

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

Note

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

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

Important

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

The input ratings shown on the data label are for elevations up to 2,000 feet (610 meters), unless elevation requirements of over 2,000 feet (610 meters) were specified at the time the dryer order was placed with the factory. The adjustment or conversion of dryers in the field for elevations over 2,000 feet (610 meters) is made by changing each burner orifice. If this conversion is necessary, contact the reseller who sold the dryer or the manufacturer.

Important

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

Technical Gas Data

Gas Specifications

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

Shaded areas are stated in metric equivalents

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

Gas Connections

Inlet connection ..... 1/2" N.P.T.
Inlet supply size ..... 1/2" Diameter Pipe (minimum)
Heat input (per dryer) ..... 150,000 Btu/hr (37,799 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 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.
150,000	**37,799**	2	#19	140846	2	#43	140809
Liquid Propane Conversion Kit Part Number 874044							

Shaded area is stated in metric equivalent

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

Natural Gas ..... #19 = 0.1660" (4.2164 mm).
L.P. Gas ..... #43 = 0.0890" (2.2606 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.

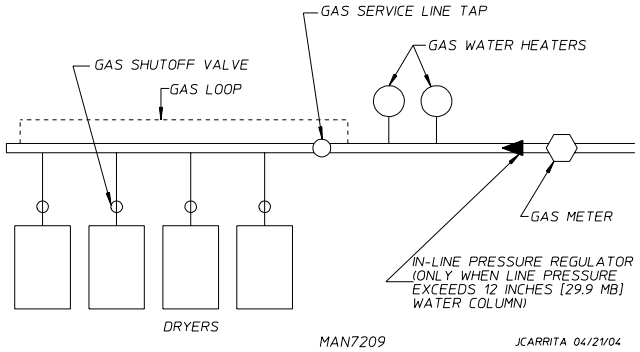
The dryer is provided with a 1/2" N.P.T. inlet pipe connection located at the upper left rear of the dryer. The minimum pipe size (supply line) to the dryer is 1/2" diameter. For ease in servicing, the gas supply line of each dryer must have its own shutoff valve.

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.

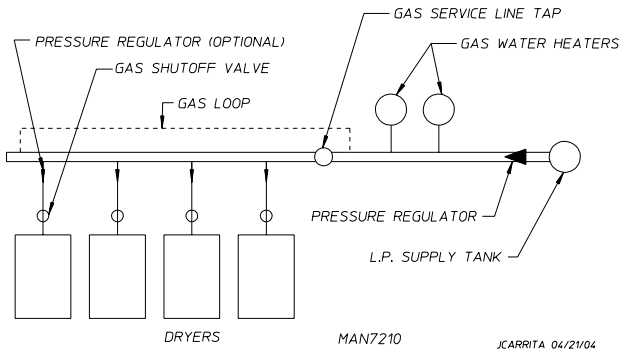
Note

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

Typical Natural Gas Installation



Typical L.P. Gas Installation



Consistent gas pressure is essential at all gas connections. It is recommended that a 3/4-inch (19.05 mm) pipe gas loop be installed in the supply line servicing a bank of dryers. An in-line pressure regulator must be installed in the gas supply line (header) if the (natural) gas pressure exceeds 12.0 in WC (29.9 mb) pressure.

Note

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

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

Important

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

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

Warning

Never test for leaks with a flame!!!

Steam Information

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

Care must be exercised when leveling steam dryers into final position. After leveling the dryer, check the downward pitch of the heat exchanger from front to rear with a level. Likewise, check the downward pitch of the return condensate manifold toward its outlet part. Absence of these downward pitches will result in probable water hammer and premature heat exchanger fracture and leakage.

The presence of condensate in the steam will cause water hammer and subsequent heat exchanger failure. The steam supply connection must be taken from the top of a well-dripped steam main. If the supply run-out to the dryer exceeds 20 feet (6.096 meters), it should be dripped just before the control valve with a proper trap and dirt pocket.

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 air supply of 0.75 cfh @ 80 psi +/- 10 psi (0.02 cmh @ 5.51 bar +/- 0.69 bar).

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” N.P.T. supply line connection
1 at top manifold
Return ..... 1” N.P.T. return line connection
1 at bottom manifold

Operating Steam Pressure		
Maximum	125 psig*	**862 kPa**
Heat Input (Normal Load)	4.1 Bhp	
Consumption (Approximate) @ 125 psi (8.6 bar)	142 lb/hr	**64.41 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 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.

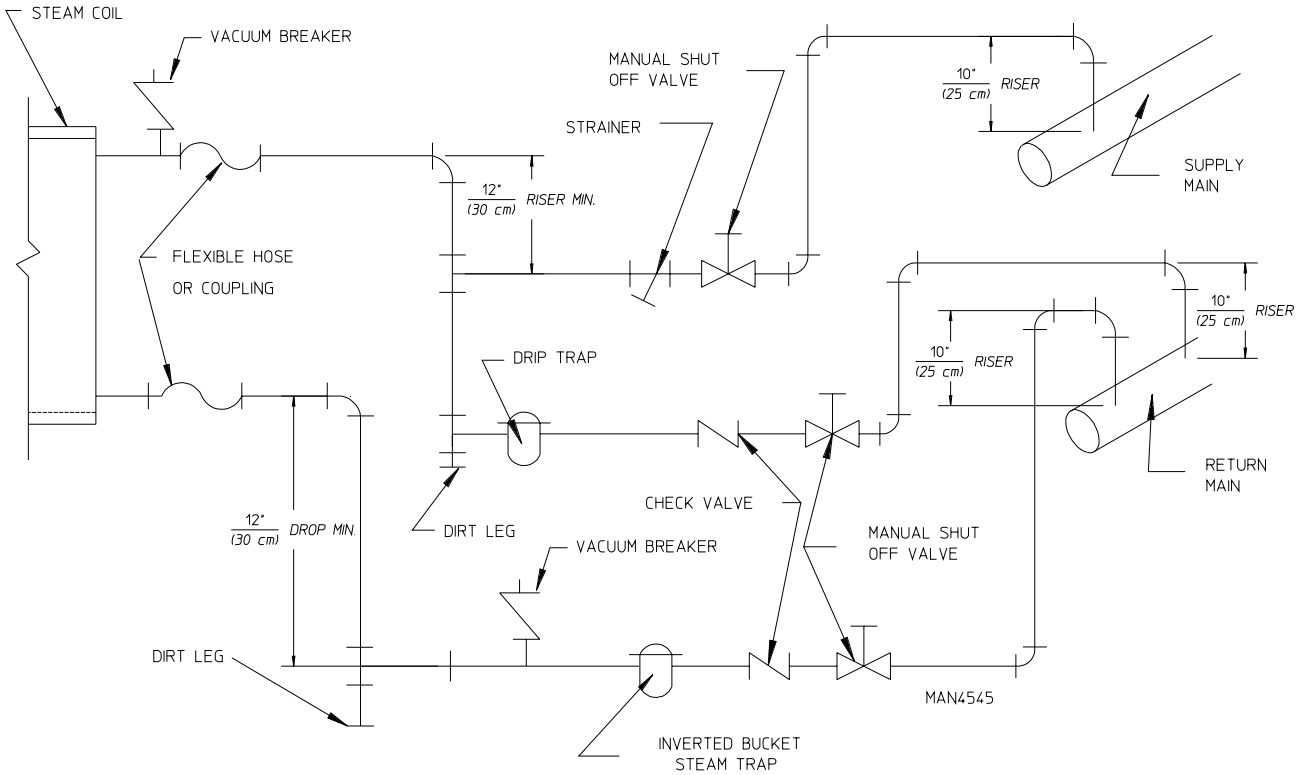
Install an inverted bucket steam trap and check valve at least 12-inches (30.48 cm) below the steam coil as close to the coil as possible. A trap with a minimum capacity of 300 lb (136.07771 kg) of condensate per hour at 125 psi (8.62 bar) is needed for each unit. (Based on 2 times the steam consumption per hour.)

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.

Important

Flexible hoses/couplings must be used. Coil failure due to hard plumbing connections will void the warranty.

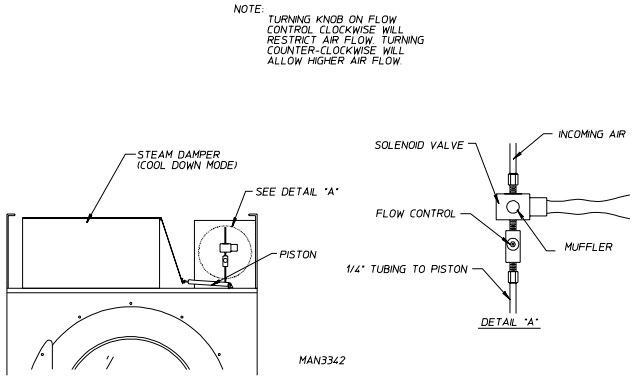


Steam Damper Air System Connections

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 Preoperational Test section 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 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.

Steam Damper System Operation

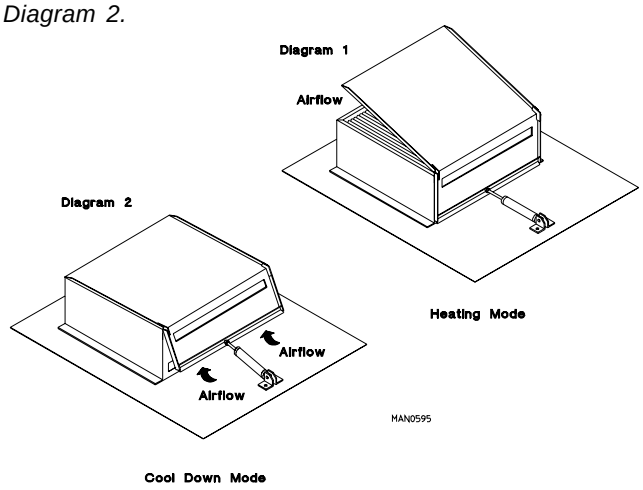
The steam damper shown in Diagram 1 in the following illustration, allows the coil to stay constantly charged eliminating repeated expansion and contraction. When the damper is opened, the air immediately passes through the already hot coil, providing instant heat to start the drying process. When the 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.



Water Information

Before You Start
Check Local Codes and Permits

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

Important

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

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

Installation

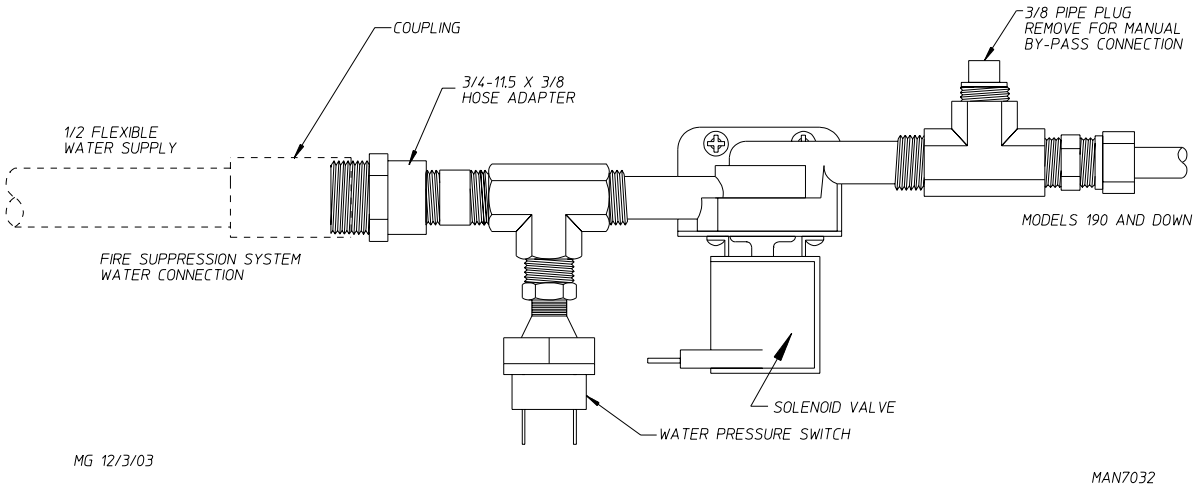
Water Supply

The fire suppression system must be supplied with a minimum water pipe size of 1/2-inch (12.7 mm) 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.

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!!



Water Connections

The water connection is made to the 3/4"-11.5 NH hose adaptor, located in the rear of the dryer. For gas and electric models it is on the left side of the oven, for steam models, it is located at the right side of the steam coil. The flexible supply line/coupling must be used in an effort to avoid damaging the electric water solenoid valve.

Note

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

It is recommended that a filter or strainer be installed in the water supply line.

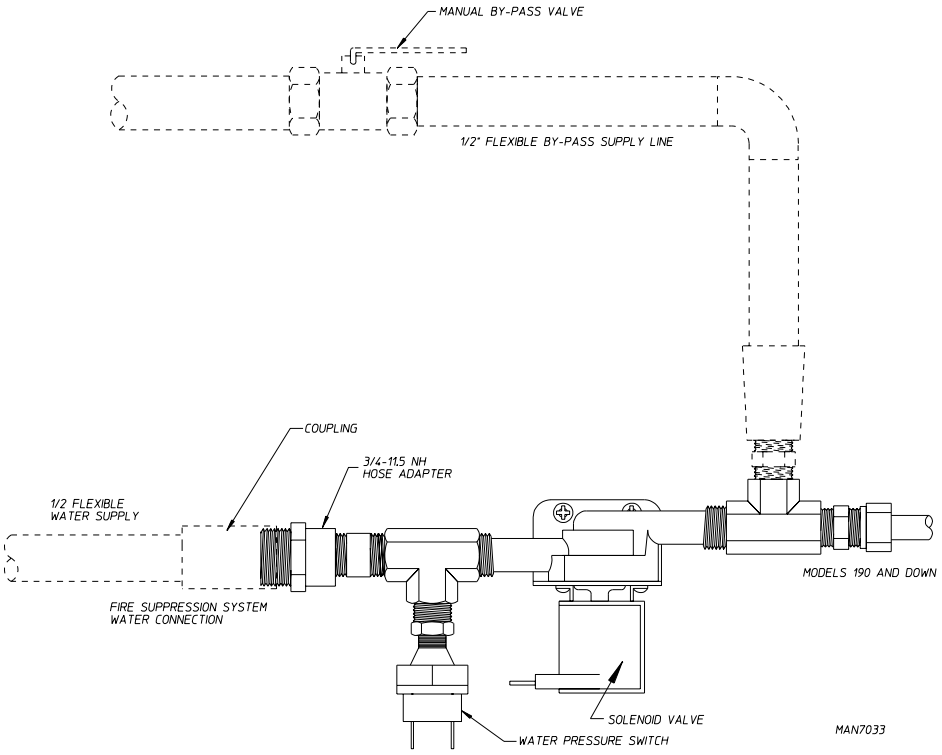
Important

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

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

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 manual ball cock shutoff valve must be located outside of the dryer at a distance from the dryer where it is easily accessible. The use and connections of this manual bypass are at the option or discretion of the owner.



TYPICAL INSTALLATION
1/2" WATER LINE

The water connection for the manual bypass is made to the "T" or "three way" fitting, which has a 3/8" F.P.T. and a coupling must be used to provide the minimum 1/2-inch (12.7 mm) 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.

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!!

Preparation for Operation/Start-Up

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

- Read all "CAUTION," "WARNING," and "DIRECTION" labels attached to the dryer.
- Check incoming supply voltage to be sure that it is the same as indicated on the data label. In the case of 208 VAC or 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 – Be sure that all gas shutoff valves are in the open position.
- GAS AND ELECTRIC 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. (Refer to Sail Switch Adjustment in the Preoperational Test section).
- Be sure all back panels (guards) and electric box covers are in place.
- Be sure the service doors are closed and securely in place.
- Be sure the lint door/drawer is securely in place.
- Rotate the tumbler (drum) by hand to be sure it moves freely.
- Check bolts, nuts, screws, terminals, and fittings for tightness and security.
- STEAM MODELS – Check to ensure that a clean, dry, regulated air supply (80 psi [5.51 bar]) is on the dryer (with air-operated damper system only).
- 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.
- Check that the vent is connected to the dryer and is exhausted to the outdoors.

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.

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

Gas Dryers

Open all shutoff valves.

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

Note

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

Gas dryers are equipped with a DSI system, which has internal diagnostics. If ignition is not established within 3 attempts, the heat circuit in the DSI module will "lockout" until it is manually reset. To reset the DSI system, open and close the main door and restart the dryer.

A gas pressure test should be taken at the gas valve pressure tap of each dryer to ensure that the water column pressure is correct and consistent.

Note

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

Check to ensure that 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 Steam Damper Air Piston (Flow Control) Operation Adjustment instructions in the steam information section.

Electrical Dryers

Check to ensure that electric oven/contactor assembly is activating.

Safety Related Circuits

Make a complete operational check of all safety related circuits:

- Door Switch(es)
- Hi-Limit Thermostats
- Sail Switch (for Gas and Electric Models Only)

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

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

Make a complete operational check of all operating controls.

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

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.

3-Phase (3ø) Electric Service

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

Important

If the blower/fan is rotating in the wrong direction, it will drastically reduce drying efficiency and it can also cause premature component failure.

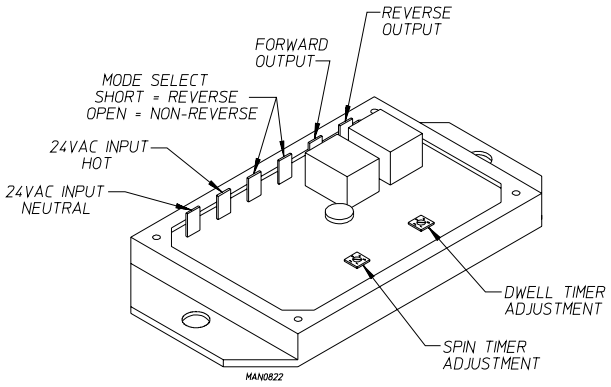
Spin and Dwell (Stop) Times Adjustment

Reversing tumbler dryers should never be operated with less than a 33 lb (15 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 Models – Spin and dwell (stop) times are adjustable in the manual (timed) mode. 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 forward direction, 120-seconds in the reverse direction and a 5-second dwell (stop) time.

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

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



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

Preoperational Instructions

Important

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

Coin Models

Microprocessor Controller (Computer)

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

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

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

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

Note

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

Mechanical Drop/Rotary Coin Meter or Slide Coin Meter

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

Select temperature.

Push the "Start" button.

To stop the dryer, open the main door.

Non-Coin Models

Microprocessor Controller (Computer)

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

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

The dryer will then start (i.e., blower, tumbler, and heat).

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

Note

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

When the programmed drying time has expired, the Phase 7 non-coin microprocessor controller (computer) will proceed into the cool down cycle.

Once the cool down cycle begins at the end of the heat cycle, the L.E.D. display will read COOL DOWN TEMP ___/___ MINUTES remaining. At the end of the heat cycle, the dryer will shut off the heat and continue the fan and tumbler until the cool down time or temperature is reached.

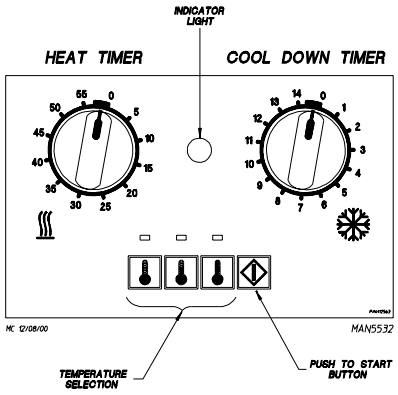
Mechanical Timer

Turn drying timer knob for a time of 20 minutes.

Select "High Temp."

Push "Push to Start" button.

To stop the dryer, open the main door.



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.

SHUT OFF internal gas supply shutoff valve located in the gas valve burner area.

Steam Models – Discontinue the steam supply.

SHUT OFF external (location furnished) shutoff valve.

SHUT OFF internal steam valves in the supply lines and the return lines.

NOTES _____

Service/Parts Information

Service

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

Note

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

Parts

Replacement parts should be purchased from the reseller from whom the equipment was purchased. If the reseller cannot be contacted or is unknown, contact the Parts Department for a reseller in your area. Parts may also be purchased directly from the factory by calling the Parts Department at +1 (508) 678-9000 or you may FAX in your order at +1 (508) 678-9447.

Note

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

Warranty Information

Returning Warranty Cards

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

If a warranty card did not come with your dryer, contact the Warranty Department or the Service Department at +1 (508) 678-9000.

Important

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

Note

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

Warranty

For a copy of the commercial warranty covering your particular dryer(s), contact the reseller from whom you purchased the equipment and request a dryer warranty form. If the reseller cannot be contacted or is unknown, warranty information can be obtained from the factory by contacting the Warranty Department at +1 (508) 678-9000.

Note

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

Returning Warranty Parts

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

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

Note

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

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

Each part must be tagged with the following information:

- Model number and serial number of the dryer from which part was removed.
- Nature of failure (be specific).
- Date of dryer installation.
- Date of part failure.
- Specify whether the part(s) being returned is for a credit, replacement, or a refund.

Note

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

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

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

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

Important

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

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

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

Important

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

Routine Maintenance

Cleaning

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

Warning

Lint from most fabrics is highly combustible. The accumulation of lint can create a potential fire hazard. Keep dryer area clear and free from combustible materials, gasoline, and other flammable vapors and liquids.

Note

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

Important

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

Suggested Cleaning Schedule

Every Third or Fourth Load

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

Note

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

Weekly

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

Warning

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

Steam Dryers

Clean the steam coil fins. It is suggested that compressed air and a vacuum cleaner with brush attachment be used.

Warning

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, motor(s), and surrounding areas.

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

Clean any lint accumulation in and around the motor(s) casing opening.

Note

To prevent damage, avoid cleaning and/or touching ignitor/flame-probe assembly.

Every 6 Months

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

Note

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

Do not obstruct the flow of combustion and ventilation air. Check 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 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.

Adjustments

7 Days After Installation and Every 6 Months Thereafter

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

Lubrication

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

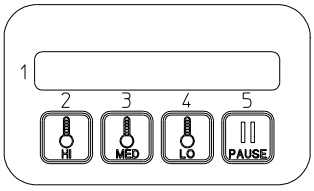
Procedure for Functional Check of Replacement Components

Microprocessor Controller (Computer) Board

Phase 7 Coin Models

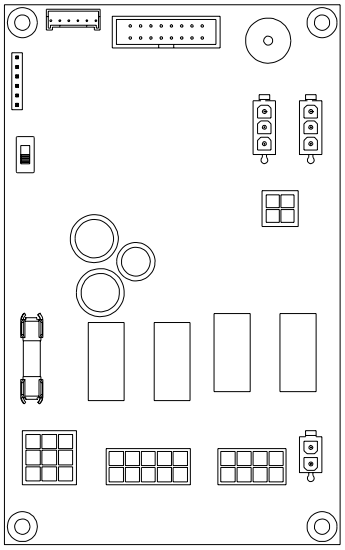
Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.

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



JM 9/17/03 MAN6873

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

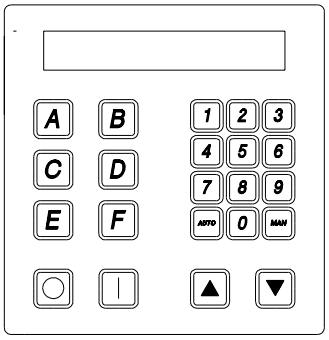


MAN6875 JM 9/11/03

Phase 7 Non-Coin Models

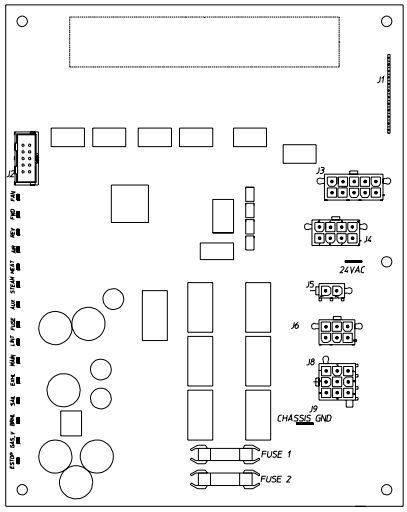
Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.

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



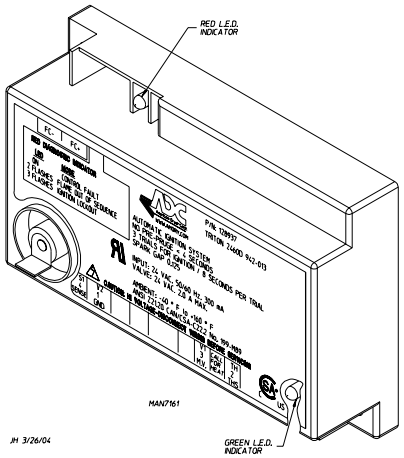
MC 8/02/01 MAN5846

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



MAN5825

For Models with DSI Module



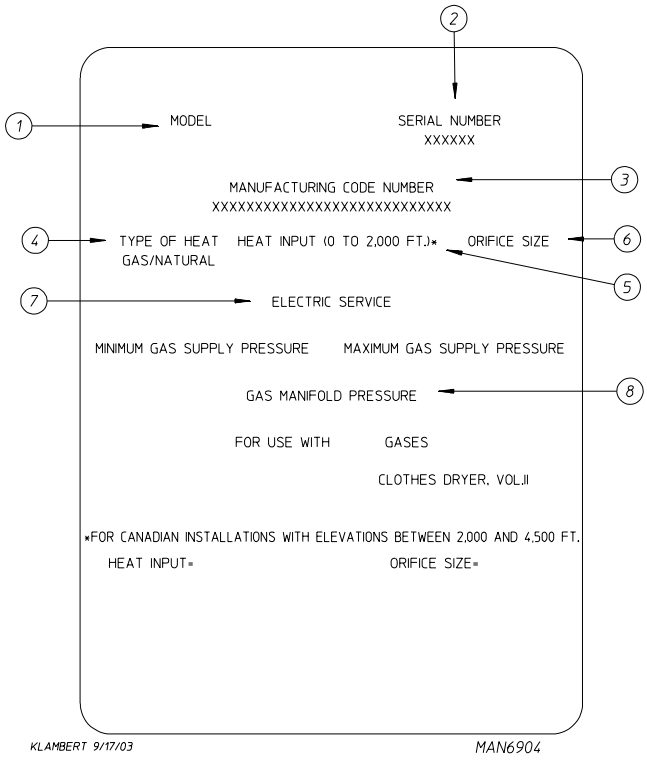
MAN7161

JM 3/26/04

Theory of Operation: Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (8-seconds), the flame sensor detects gas burner flame and signals the DSI module to keep the gas valve open as long as there is a call for heat. The DSI module will “LOCKOUT” if the gas burner flame is not sensed at the end of the trial for ignition period. The trial for ignition period will be repeated for a total of 3 retries/trials (the initial try and 2 more retries/trials). If the flame is not sensed at the end of the third retry/trial (inter-purge period of 30-seconds), the DSI module will “LOCKOUT” (a red L.E.D. diagnostic indicator will flash).

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

Data Label Information



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

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

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

3. Manufacturing Code Number – The number issued by the manufacturer, which describes all possible options on your particular model.

4. Type of Heat – This describes the type of heat for your particular dryer, gas (either natural gas or L.P. gas), electric, or steam.

5. Heat Input (For Gas Dryers) – This describes the heat input in British Thermal Units per Hour (Btu/hr).

6. Orifice Size (For Gas Dryers) – Gives the number drill size used.

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

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

Manual Reset Burner Hi-Limit Instructions

Phase 7

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

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

Mechanical Timer

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

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

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

Warning

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

IMPORTANT IMPORTANT IMPORTANTE

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

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

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

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

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

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

ADC P/N: 114076