

AD-531
Microprocessor Controls
Gas (Hot Surface Ignition)
Installation/Operator's Manual

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

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

WHAT DO YOU DO IF YOU SMELL GAS

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

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

Electrolux Japan

Rev1. 012998JEV/tf
100197JEV/tf

ADC Part No. 113006

Retain This Manual In A Safe Place For Future Reference

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

ONLY properly licensed technicians should service this equipment.

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

WARNING: UNDER NO CIRCUMSTANCES should the door switch or the heat circuit devices ever be disabled.

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

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

Important

For your convenience, log the following information:

DATE OF PURCHASE _____ MODEL NO. **AD-531HS**

DISTRIBUTORS NAME _____

Serial Number(s) _____

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

The illustrations on the following pages may not depict your particular dryer exactly. The illustrations are a composite of the various dryer models. Be sure to check the descriptions of the parts thoroughly before ordering.

“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 (Occupational Safety and Health Administration) STANDARDS.

CAUTION

LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING CONTROLS. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION.

VERIFY PROPER OPERATION AFTER SERVICING.

CAUTION

DRYER(S) SHOULD NEVER BE LEFT UNATTENDED WHILE IN OPERATION.

WARNING

CHILDREN SHOULD NOT BE ALLOWED TO PLAY ON OR NEAR THE DRYER(S).

CHILDREN SHOULD BE SUPERVISED IF NEAR DRYER(S) IN OPERATION.

WARNING

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

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPOR AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

DO NOT DRY MOP HEADS IN THE DRYER.

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

IMPORTANT

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

Dryer(s) **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.

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SECTION I

IMPORTANT INFORMATION

A. Receiving and Handling

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

Dryers damaged in shipment:

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

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

B. Safety Precautions

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

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

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

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

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

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

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

7. A program **should be** established for the inspection and cleaning of lint in the burner area, exhaust duct work, 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 duct work can create a potential fire hazard.

8. For personal safety, the dryer *must be* electrically grounded in accordance with local codes.

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

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

WARNING: PERSONAL INJURY or FIRE COULD RESULT.

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

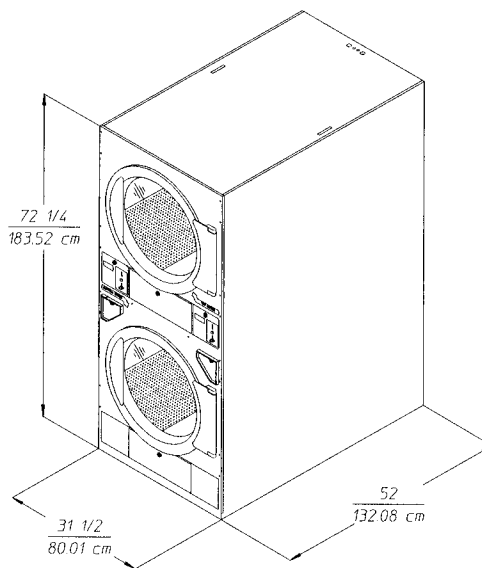
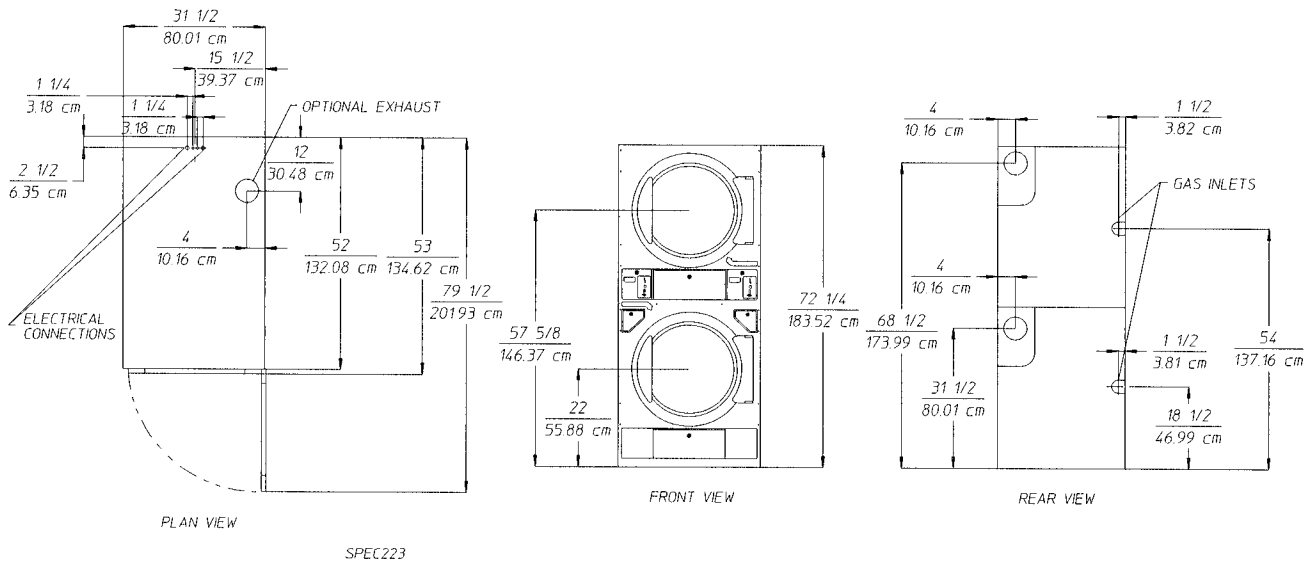
WARNING: Articles left in the dryer after the drying and cooling cycles have been complete can create a fire hazard.

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

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..

SECTION II

AD-531 SPECIFICATIONS



NOTE: The manufacturer reserves the right to make changes in specifications at any item, without notice or obligation.

AD-531HS Specifications		
Maximum Capacity (dry weight per basket/tumbler)	30 lbs.*	13.61 kg
Basket (Tumbler) Depth	30"	76.2 cm
Basket (Tumbler) Volume (per basket)	10.1 cu.ft.	.29 cu.m.
Basket (Tumbler) Motor (2 places)	3/4 HP	.560 kw
Door Opening - Diameter (2 places)	21-1/2"	54.61 cm
Exhaust Duct Outlet (2 places)	6" dia**	15.24 cm**
Voltage Available	200v / 1 ϕ / 50/60 Hz	
Approx. Weight (uncrated)	850 lbs.	385.48 kg
Approx. Weight (crated)	900 lbs.	408.15 kg
Heat Input ((per basket/tumbler)	102,000 btuh	25,704 kcal/hr
Airflow (per basket/tumbler)	550 cfm	15.5 cmm
Gas Inlet Size (2 places)	3/4" N.P.T.	1.91 cm
Dryers per 45'/48' Truck	24/26	

Shaded areas are in metric equivalents

* Total capacity for both baskets (tumblers) is 60 lbs (27.21 kg).

** EXHAUST MUST BE **INCREASED** TO A MINIMUM OF 8-INCH (20.32 CM) DIAMETER IMMEDIATELY AFTER LEAVING THE DRYER CABINET.

NOTE: The manufacturer reserves the right to make changes in specifications at any item, without notice or obligation.

SECTION III

INSTALLATION PROCEDURES

Installation *should be* performed by qualified professionals in accordance with local and state codes.

A. Unpacking/Setup

Remove stretch wrap protective cover, shipping corners, and top cover from dryer.

NOTE: The access keys for the service doors are included in the information packet shipped in the basket (tumbler). These keys *should be* removed and put in a safe place yet made accessible because some will be needed throughout various phases in the installation of the dryer.

Coin dryer's are shipped with a coin box and coin box faceplate only. The coin box lock *is not* included and *must be* purchased elsewhere.

The dryer can be moved to its final location while still attached to the skid or with the skid removed. To unskid the dryer, locate and remove the four (4) bolts securing the base of the dryer to the wooden skid. Two (2) are located at the rear of the base, and two (2) are located in the front. Once the bolts are removed, slide the dryer off the skid.

With the skid removed, to make it easier to slide the dryer into its final position, slightly lower all leveling legs so that the dryer will slide on the legs instead of the base frame. The dryer is equipped with four (4) leveling legs, one at each corner of the dryer base. The slotted adjustment bolts for the two (2) front leveling legs are located directly behind the lower access door, and the rear two (2) adjustments are directly behind the lower rear back (guard) panel.

B. Location Of The Dryer

Before installing the dryer, be sure the location conforms to local codes and ordinances.

The dryer *must be* installed on a sound, level floor capable of supporting its weight. *It is recommended* that carpeting be removed from the floor area on which the dryer is to rest.

Even though a 12-inch clearance is acceptable, *it is recommended* that the rear of the dryer be positioned approximately 2 feet away from the nearest obstruction, i.e., wall, for ease of installation, maintenance, and service.

1. Leveling The Dryer

To increase bearing life, improve efficiency, and provide for better automatic closure of main doors, the tumbler *should be* tilted slightly to the rear. Four (4) leveling legs are provided for this purpose and are shipped inside of the top tumbler (basket) and *must be* installed at the time of installation. A leveling leg *must be* screwed into the bottom of the dryer base at each corner area where the bolts used to secure the dryer to the wooden skid were removed.

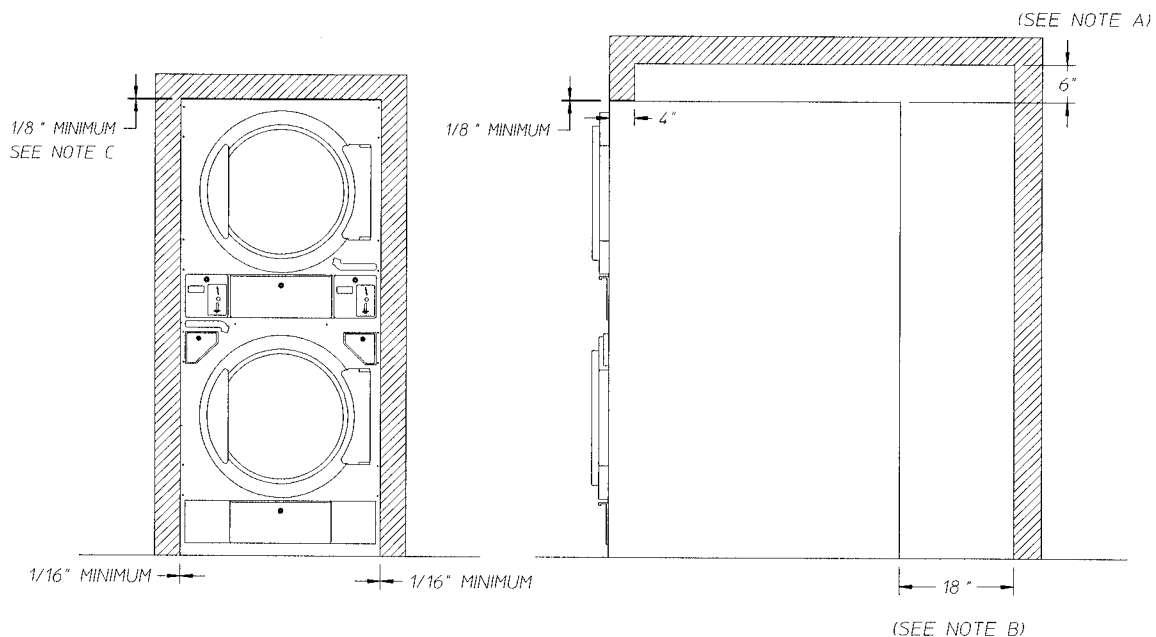
C. Dryer Enclosure Requirements

Bulkheads and partitions *should be* made of noncombustible materials and *must be* located a minimum of 6-inches above the dryer outer top, except along the front of the dryer which may be closed in if desired.

NOTE: Even though a minimum of 6-inches above the dryer outer top is acceptable, a clearance of 18-inches (or more) is suggested for ease of installation and service (power electrical connections).

NOTE: When fire sprinkler systems are located above the dryers, a minimum of 12-inches above the dryer outer top is required.

CLEARANCES SHOWN ARE MINIMUM DIMENSIONS TO NEAREST COMBUSTIBLE MATERIALS.



NOTES:

- MINIMUM OF 6" CLEARANCE IS ACCEPTABLE FOR EASE OF INSTALLATION AND SERVICE (POWER CONNECTIONS), AT LEAST 18" IS RECOMMENDED.
- MINIMUM OF 18" CLEARANCE IS ACCEPTABLE FOR EASE OF INSTALLATION, MAINTANCE AND SERVICE, AT LEAST 24" IS RECOMMENDED.
- MINIMUM OF 1/8" ABOVE FRONT PANEL FOR EASE OF REMOVAL.

MAN3607

D. Fresh Air Supply

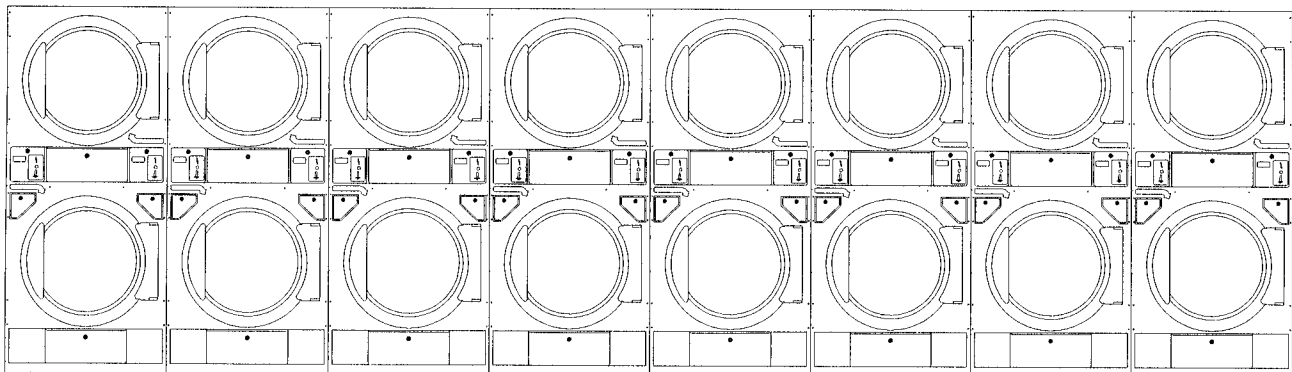
Air supply (make-up air) **must be** given careful consideration to assure proper and safe performance of each dryer. An unrestricted source of air of 550 cfm is necessary for each tumbler. An unrestricted air entrance from the outdoors (atmosphere) of a minimum of 2 square feet is required for each dryer. This area **must be** enlarged if louvers or registers cover the opening. It is not necessary to have a separate make-up air opening for each dryer. Common make-up air openings are acceptable. However, they **must be** set up in such a manner that the make-up air is distributed equally to the dryers. For example, for a bank of eight (8) dryers, a total make-up air opening of 16 square feet is required. Two (2) openings measuring 2' by 4' (16 square feet) 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 contaminated by dry cleaning solvents will result in irreparable damage to motors and dryer components.

IMPORTANT: Make-up air openings **should not** be located near duct work exhaust outlets. If the make-up air opening(s) are too close to the exhaust outlet, lint and fumes may be drawn back into the dryer area through these openings.

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



MAN3608

TYPICAL INSTALLATION SHOWING MAKE-UP AIR OPENINGS

E. Exhaust Requirements

General Information

Exhaust duct work *should be* designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which results in slow drying, increased use of energy, and shutdown of the burner by the airflow (sail) switch, burner hi-limit, or lint chamber hi-heat protector thermostat.

Where possible, it is suggested that a separate (single) exhaust duct for each dryer/tumbler be provided.

CAUTION: IMPROPERLY SIZED or INSTALLED EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

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

The exhaust duct work *should be* laid out in such a way that the duct travels as directly as possible to the outdoors with as few turns as possible. The shape of the duct work is not critical so long as the minimum cross-sectional area is provided.

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

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

IMPORTANT: When connecting duct work to the dryer's top basket (tumbler) exhaust duct work, be sure that when screws are used they *do not* restrict the operation (both opening and closing) of the damper.

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

To protect the outside end of horizontal duct work from the weather, a 90° elbow bent downward *should be* installed where the exhaust exits the building. If the exhaust duct work 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 nearest obstruction.

IMPORTANT: *DO NOT* use screens or caps on the outside opening of exhaust duct work.

IMPORTANT: Exhaust back pressure measured by a manometer at the dryer exhaust duct area *must not* exceed 0.3 inches water column.

NOTE: Careful consideration *should be* given to where the exhaust duct is located in relation to the make-up air openings. If make-up air opening is too close to exhaust outlet, lint and fumes will draw back in to the dryer area through these openings.

If the length of duct work run or quantity of elbows used exceeds the specifications noted in this booklet, the cross-sectional area of the duct work *must be* increased in proportion to the number of elbows or duct run added.

IMPORTANT: For extended duct work runs, the cross-sectional area of the duct can only be increased to an extent. For extended duct work runs, a professional HVAC firm *should be* consulted for proper venting information.

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

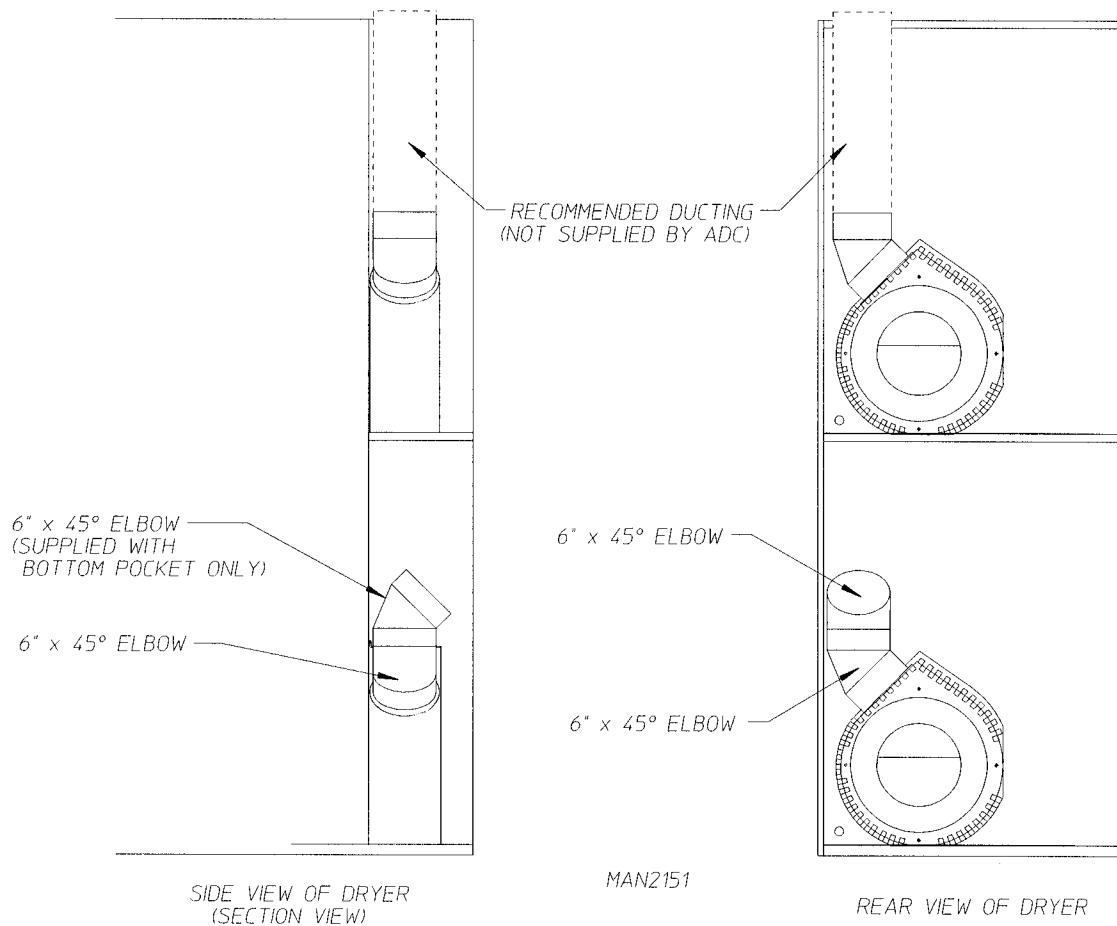
IMPORTANT: Even though the dryer's exhaust outlet size is six (6) inches in diameter (at both the top basket [tumbler] damper duct and the bottom basket [tumbler] elbow where it leaves the dryer), **the minimum connection at the point of exit from the dryer in ALL cases MUST BE increased.** The amount of increase in diameter will depend on the venting application/layout as described further in this manual.

IMPORTANT: UNDER NO CIRCUMSTANCES CAN THE DRYER BE VENTED TO THE OUTDOORS USING A 6-INCH DIAMETER EXHAUST DUCT!!!

1. Exhaust Connections of Top and Bottom Baskets (Tumblers)

There is no common venting connection provided with the dryer. Each basket (tumbler) exhaust duct is provided with its own back draft damper. Each basket (tumbler) can be exhausted directly outdoors independently (refer to the illustration [MAN2114] on page 16) or connected commonly ("Y") together (refer to the illustration [MAN2113] on page 17). Both single or common "Y" duct work can be rigid or flexible ducting.

The illustration below shows the duct work connection points and what internal duct work is included in the dryer.



The exhaust connection at the TOP basket (tumbler) **must be** made at the blower duct inside the cabinet. **No internal duct work is included for the TOP basket/tumbler.** (Not available from ADC and **must be** purchased elsewhere). Depending on the external duct work layout, the installer has the option of the duct work coming out of the top of the back of the dryer. The duct work used inside of the dryer, from the blower duct to where it exits the dryer, **must be** a minimum of 6-inches in diameter (30 square inches cross-sectional area). At this point (where the internal ducting ends) the diameter **must be** increased to meet the application as described further in this manual.

IMPORTANT: When connecting duct work to the top basket (tumbler) exhaust duct, be sure that when screws are used they **do not** restrict the operation (both opening and closing) of the damper.

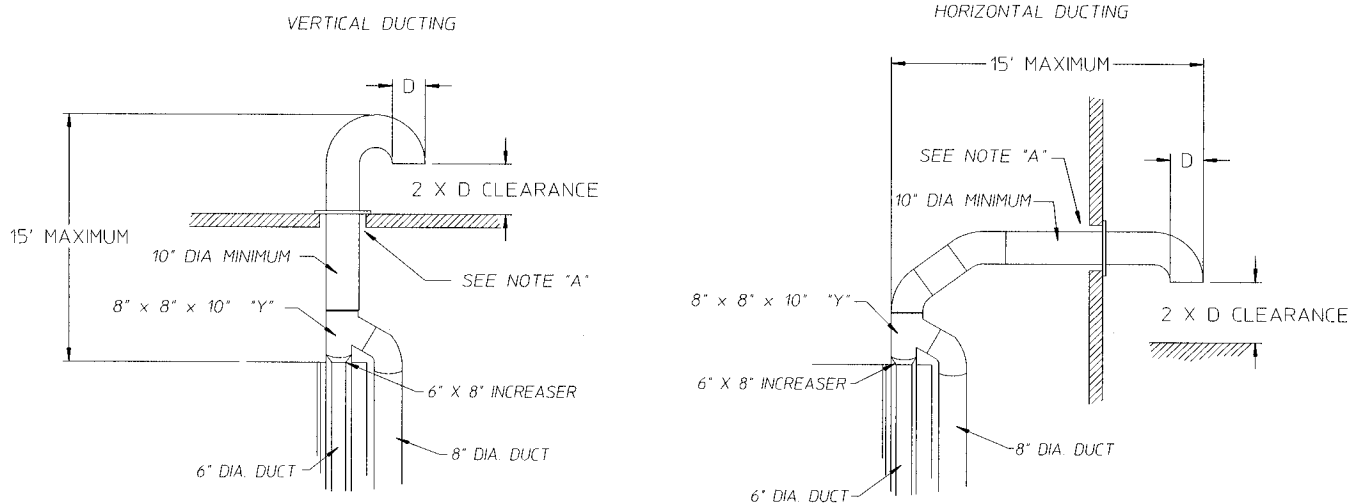
IMPORTANT: **ALL** duct work joints **must be** taped to prevent moisture and lint from escaping into the dryer and/or building.

The BOTTOM basket (tumbler) includes 6-inch duct work which extends from the dryer blower duct to the lower back guard area. At this point the diameter **must be increased** to meet the application as described further in this manual.

a. Connecting Both Top Basket (Tumbler) and Bottom Basket (Tumbler) Together

Both the top basket (tumbler) and the bottom basket (tumbler) can "Y" together to form one common connection point. The bottom basket (tumbler) already includes 6-inch diameter ducting extending to the lower back guard area. **The minimum connection at this point is 8 inches. The upper basket (tumbler) includes no internal duct work.** (Not provided by ADC and **must be** purchased elsewhere, **must be** a minimum of 6 inches, and only to the top of the dryer.) At this point (where the internal ducting ends at top of the dryer) the diameter **must be** increased to meet the application as described further in this manual.

EXTERNAL SINGLE DRYER VENTING CONNECTIONS (WITH DRYER COMMON EXHAUST)



MAN2168

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

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

IMPORTANT: **ALL** duct work joints **must be** taped to prevent moisture and lint from escaping into the dryer and/or building.

NOTE: Common ("Y") exhaust connections of top basket (tumbler) and bottom basket (tumbler) **should be** installed in such a manner that the back guards/panels can be removed easily for servicing.

IMPORTANT: Exhaust back pressure measured by a manometer at each basket (tumbler) exhaust duct area should not exceed 0.3 inches water column when both baskets (tumblers) are operating.

2. Single Dryer Venting

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

IMPORTANT: Exhaust back pressure measured by a manometer at the dryer exhaust duct area *should not* exceed 0.3 inches water column.

If the length of the duct work run or quantity of elbows used exceeds the specifications noted in this manual, the cross-sectional area of the duct work *must be* increased in proportion to the number of elbows or duct run added.

- a. **Single Dryer Venting - with each basket (tumbler) independently vented all the way to the outdoors.**

IMPORTANT: For extended duct work runs...or where numerous elbows are used, the cross-sectional area can only be increased to an extent and a professional HVAC firm should be consulted for proper venting information.

IMPORTANT: UNDER NO CIRCUMSTANCES CAN THE DRYER BE VENTED TO THE OUTDOORS USING A 6-INCH DIAMETER EXHAUST DUCT!!!

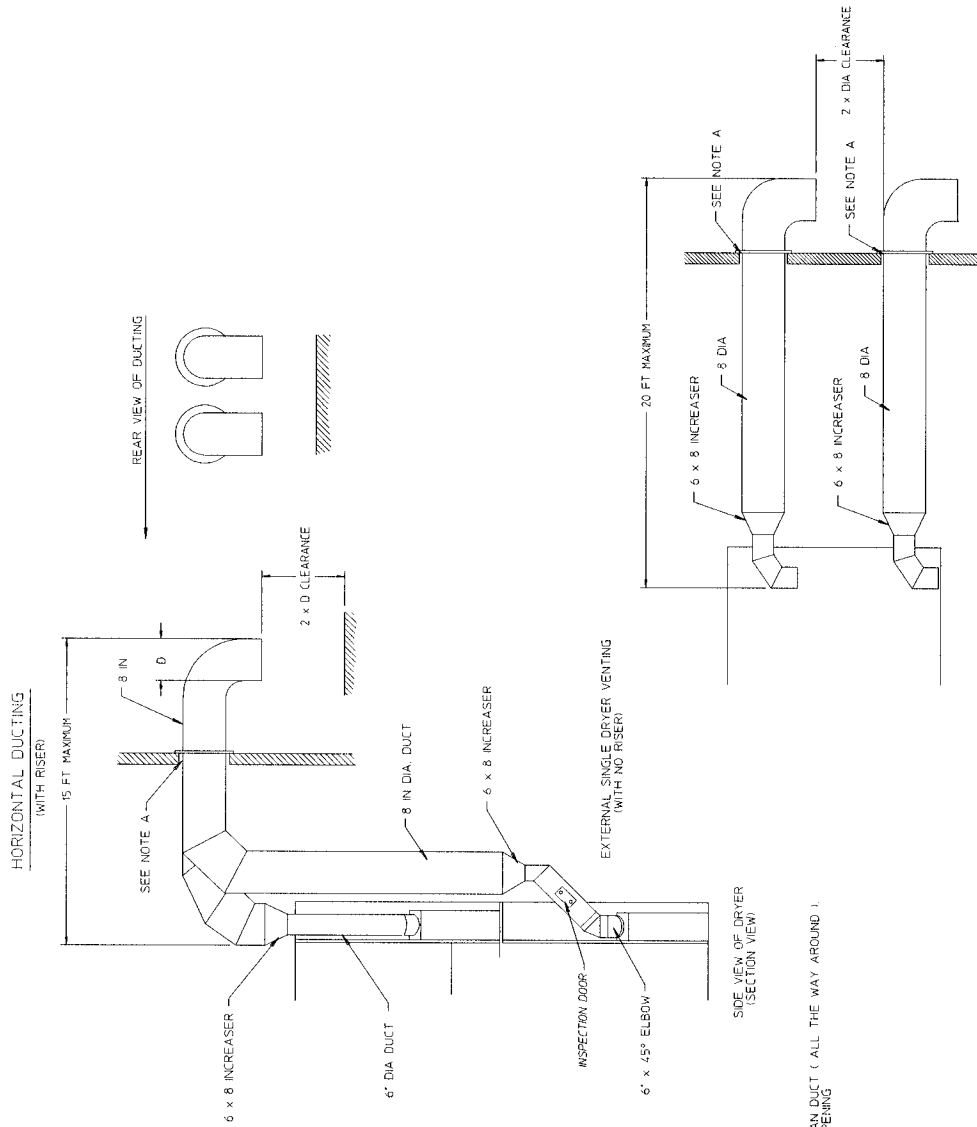
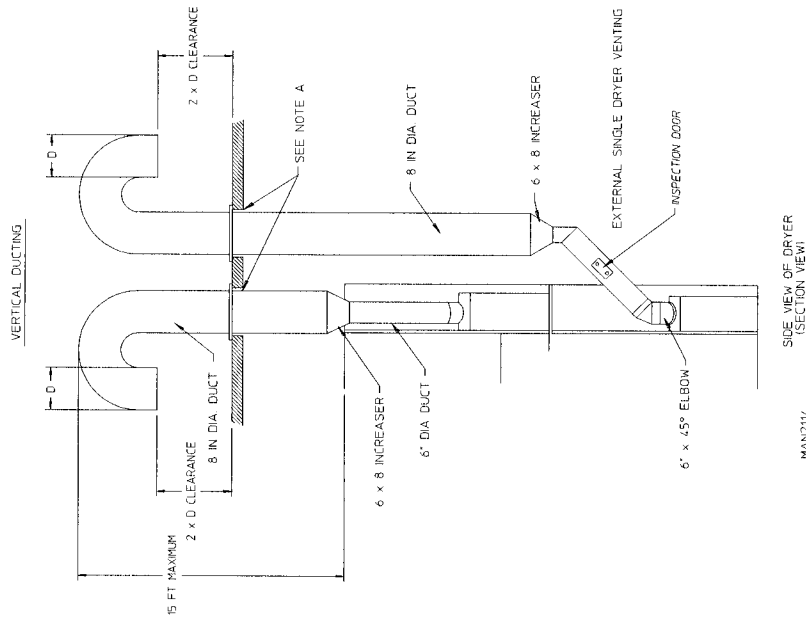
Where independent exhaust ducting is used for each basket (tumbler), the connection size at the point where the internal ducting (6-inch diameter) leaves the dryer, the minimum size connection is 8-inch diameter (54 square inches cross-sectional area)...and this is only true providing;

(Refer to the illustration [MAN2114] on page 16 for details.)

- 1) The maximum duct run is no more than 20 feet.
- 2) The duct work is a horizontal run (no riser).
- 3) There is no more than one (1) elbow...which includes the outside outlet (i.e., elbow used for outside protection).

IMPORTANT: Even though the dryer's exhaust outlet size is six (6) inches in diameter (at both the top basket [tumbler] damper duct and bottom basket [tumbler] elbow where it leaves the dryer), the minimum connection at this point of exit from the dryer is 8-inches diameter (54 square inches cross-sectional area).

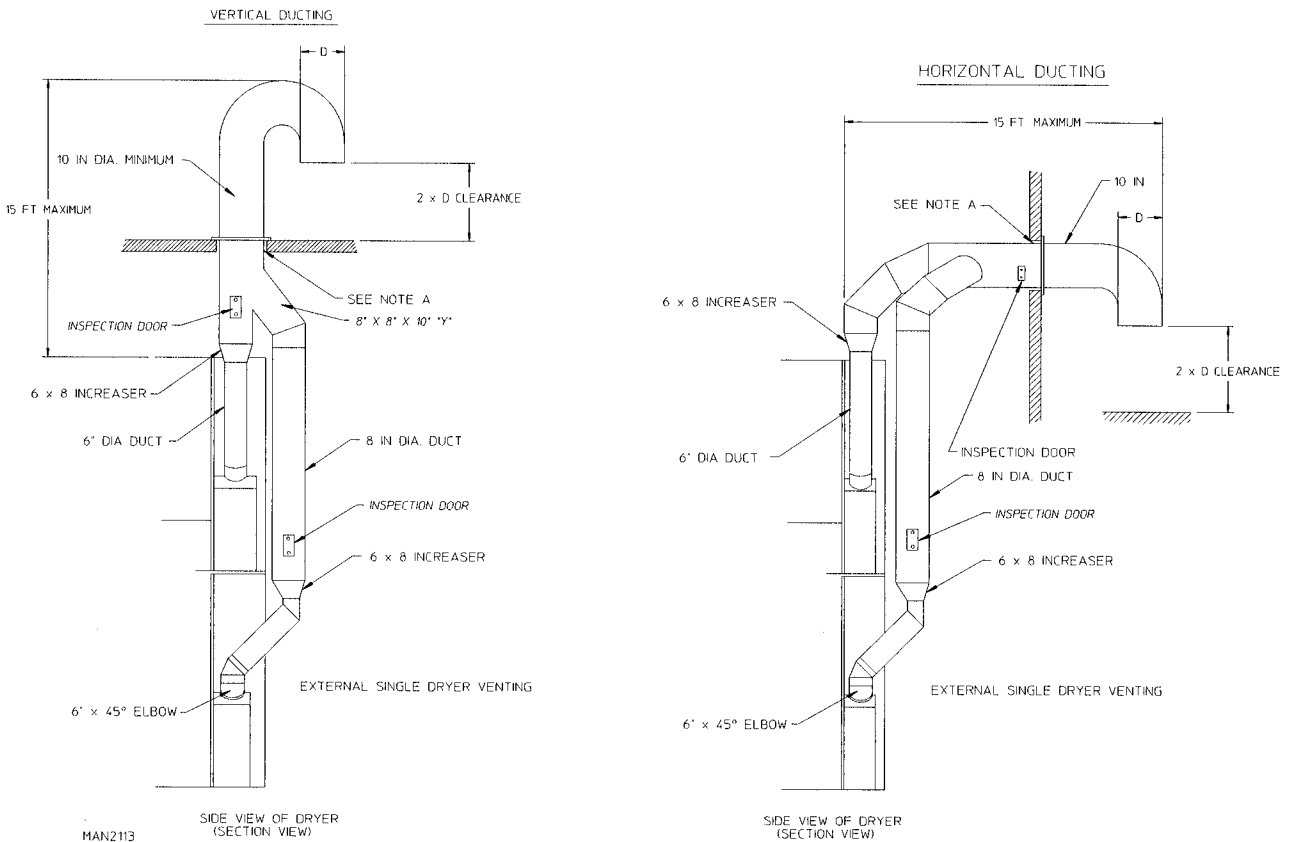
EXTERNAL SINGLE DRYER VENTING CONNECTIONS
(WITH DRYER INDEPENDENT EXHAUST)



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

EXTERNAL SINGLE DRYER VENTING CONNECTIONS

(WITH DRYER COMMON EXHAUST)



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

b. Single Dryer Venting - with common (top basket [tumbler] and bottom basket [tumbler] connected together) exhaust connections.

If the top and bottom baskets (tumblers) connect or "Y" together as noted in **Section E1**, the minimum diameter size at the "Y" or point of connection is 10 inches in diameter (80 square inches cross-sectional area). Additionally, the maximum duct work travel from the top of the dryer to the outside exhaust outlet **must not** exceed fifteen (15) feet. Refer to the illustration [MAN2113] located above for examples.

The vertical ducting need not be a minimum of 10-inches in diameter all the way into the dryer. Connections inside the dryer can be 6-inches in diameter for the top basket (tumbler) and for the bottom basket (tumbler) increased to 8-inches up to the top area of the dryer and then at that point **must be** a minimum of 10-inches in diameter (80 square inches cross-sectional area). Additionally, the length of the exhaust run **cannot** exceed fifteen (15) feet from the top of the dryer to the point where the exhaust end outside.

3. Multiple Dryer Venting (with Common Main Duct)

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

The main common duct may be any shape so long as the minimum cross-sectional area is provided. The main duct *should be* tapered with the diameter increasing before each individual duct is added as per the illustration [MAN2172] on page 19 and the illustration [MAN2171] on page 20.

The maximum length of venting from the last dryer to where it exhausts is the following:

VERTICAL ——— venting run *must not* exceed eight (8) feet. This calculation compensates for the use of a maximum of three (3) elbows including the two (2) elbows creating 180° (turned downward) outside outlet.

HORIZONTAL — venting run *must not* exceed fifteen (15) feet. This calculation compensates for the use of a maximum of only one (1) elbow which is the outside outlet protection.

IMPORTANT: No more than four (4) dryers (eight [8] baskets [tumblers]) maximum *should be* connected to one (1) main common duct. Refer to the applicable section of this manual for specific common venting size.

NOTE: The distance between the dryer single ducts being connected to the main common duct *must be* a minimum of 31-1/2 inches (the dryer's width).

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

The illustration [MAN2172] on page 19 and the illustration [MAN2171] on page 20 show the minimum cross-sectional area for multiple dryer venting. These figures *must be* increased in proportion if the main duct run from the last dryer to where it exhausts, has numerous elbows, or is unusually long.

IMPORTANT: For extended duct work runs, the cross-sectional area of the duct can only be increased to an extent. For extended duct work runs or where numerous elbows are used, a professional HVAC firm *should be* consulted for proper venting information.

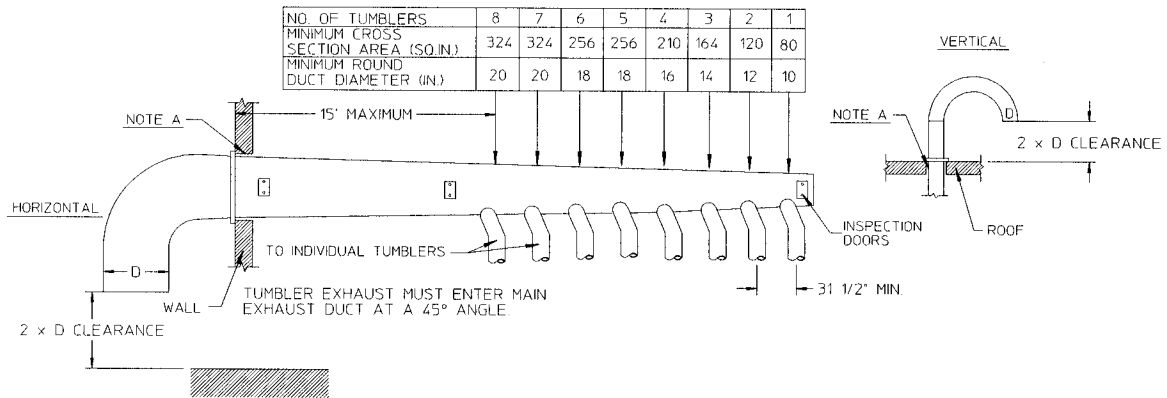
NOTE: Inspection doors *should be* installed at strategic points in the exhaust duct work for periodic inspection and cleaning.

a. **Multiple Dryer Venting - where each basket (tumbler) is individually vented.**

With multiple venting where each basket is vented independently (a separate exhaust is used for each basket [tumbler]) to the common main duct, a minimum of an 8-inch diameter duct (50 square inches cross-sectional area) connection between the dryer and common main duct is acceptable providing this duct *does not* exceed eight (8) feet in length.

IMPORTANT: No more than four (4) dryers (eight [8] baskets [tumblers]) can be connected to one (1) common duct (vent).

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



IMPORTANT: NO MORE THAN 4 DRYERS (8 TUMBLERS) CAN BE CONNECTED TO ONE COMMON DUCT (VENT).

FORMULAS TO CALCULATE DUCTING CROSS SECTIONAL AREA

CROSS SECTIONAL AREA OF A ROUND DUCT = $.785 \times D^2$ WHERE D = DIAMETER OF THE DUCT.

CROSS SECTIONAL AREA OF A RECTANGULAR DUCT = $w \times h$ WHERE W = WIDTH AND H = HEIGHT

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

DRYER EXHAUST DUCT SIZE: 8

DRYER AIR FLOW: 550 CFM

MODEL NO.(S): AD - 531

HEAT RECLAIMER: YES NO

CONTROLS: COIN OPL

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NOTE: The distance between the dryer single ducts being connected to the main common duct *must be* a minimum of 31-1/2 inches (the dryer's width).

NOTE: The duct work *should be* laid out in such a manner where allowances are made at the rear area of the dryer for removal of rear service panels/guards.

IMPORTANT: Individual ducts being added to the main common vent must enter the main common vent duct work at an angle not more than 45° in the direction of the air-flow.

The above illustration [MAN2172] shows the minimum cross-section area for multiple (common) dryer venting.

The maximum length of venting from the last dryer to where it exhausts is the following:

VERTICAL — venting run *must not* exceed eight (8) feet.

HORIZONTAL — venting run *must not* exceed fifteen (15) feet.

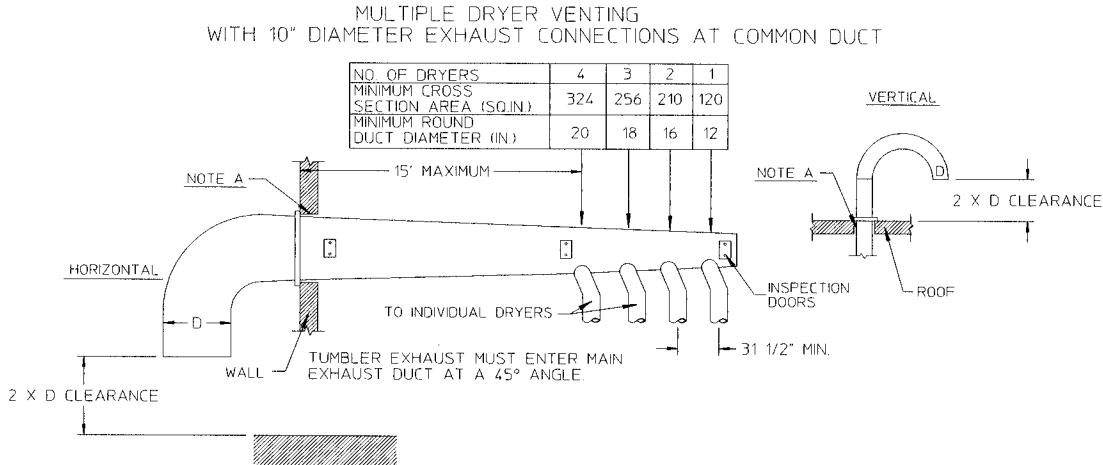
These figures **must be** increased in proportion if the main duct run from the last dryer has numerous elbows or is unusually long. For extended runs or where more elbows are added, the cross-sectional area of the duct can only be increased to an extent and a professional HVAC firm **should be** consulted for proper venting information.

IMPORTANT: Exhaust back pressure measured by a manometer at the dryer exhaust duct are **must not** exceed 0.3 inches of water column when both baskets (tumblers) are operating.

NOTE: Inspection doors **should be** installed at strategic points in the exhaust duct work for periodic inspection and cleaning.

b. Multiple Dryer Venting - where tumblers of each dryer "Y" together.

With multiple venting where the top basket (tumbler) and bottom basket (tumbler) are connected or "Y" together as described in **Section E1** (page 12 thru page 14), the minimum diameter size at the "Y" (point of connection) and main common duct is 10-inches in diameter (80 square inches cross-sectional). This duct run **cannot** exceed eight (8) feet in length.



IMPORTANT: NO MORE THAN 4 DRYERS (8 TUMBLERS) CAN BE CONNECTED TO ONE COMMON DUCT (VENT).

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FORMULAS TO CALCULATE DUCTING CROSS SECTIONAL AREA

CROSS SECTIONAL AREA OF A ROUND DUCT = $785 \times D^2$ WHERE D = DIAMETER OF THE DUCT

CROSS SECTIONAL AREA OF A RECTANGULAR DUCT = $W \times H$ WHERE W = WIDTH AND H = HEIGHT

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

DRYER EXHAUST DUCT SIZE: _____ 10 _____
 DRYER AIR FLOW: _____ 1100* _____ CFM
 MODEL NO(S): _____ AD - 531 _____
 HEAT RECLAIMER: YES _____ NO
 CONTROLS: COIN OPL _____
 *TOTAL FOR BOTH POCKETS

IMPORTANT: No more than four (4) dryers (eight [8] baskets [tumblers]) can be connected to one (1) common duct (vent).

NOTE: The distance between the dryer single ducts being connected to the main common duct *must be* a minimum of 31-1/2 inches (the dryer's width).

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

IMPORTANT: Individual ducts being added to the main common vent must enter the main common vent duct work at an angle not more than 45-degree in the direction of the airflow.

The illustration [MAN2171] on the previous page (page 20) shows the minimum cross-section area for multiple (common) dryer venting.

The maximum length of venting from the last dryer to where it exhausts is the following:

VERTICAL — venting run *must not* exceed eight (8) feet.

HORIZONTAL — venting run *must not* exceed fifteen (15) feet.

These figures *must be* increased in proportion if the main duct run from the last dryer has numerous elbows or is unusually long. For extended runs or where more elbows are added, the cross-sectional area of the duct can only be increased to an extent and a professional HVAC firm *should be* consulted for proper venting information.

IMPORTANT: Exhaust back pressure *must not* exceed 0.3 inches of water column when both baskets (tumblers) are operating.

NOTE: Inspection doors *should be* installed at strategic points in the exhaust duct work for periodic inspection and cleaning.

Important Venting Reminders

1. Duct work sizing and installation *should be* done by a qualified professional.
2. The dryer *must be* vented to the outdoors.
3. The duct work *should be* routed as short as possible to the outdoors with as few turns as possible.
4. Avoid 90° turns...use 30° or 45° turns instead.
5. The size (cross-sectional area) of the duct work will depend on the application (i.e., single dryer venting, common venting, etc.), as well as the length of the duct and the amount of elbows. **DO NOT EXCEED THE SPECIFICATIONS NOTED IN THIS MANUAL.**

IMPORTANT: UNDER NO CIRCUMSTANCES CAN THE DRYER BE VENTED TO THE OUTDOORS USING A 6-INCH DIAMETER EXHAUST DUCT!!!

6. The inside of the duct work *should be* as smooth as possible...with no projections from sheet metal screws.

Ducts to be added should overlap the duct to which it is to be connected.
7. **ALL** ducts *should be* taped to prevent moisture and lint from escaping into the building.
8. Inspection/cleanout doors *should be* installed throughout strategic points in the duct work for periodic inspection and cleaning.
9. Wherever the duct passes through combustible materials, the opening *must be* 2-inches larger (all the way around) than the duct. The duct *must be* centered within this opening.
10. The outside of the duct work *must be* protected from the weather. A 90° elbow *must be* used for a horizontal run and when going vertically through the roof by using a 180° turn to point the opening downward. The distance between the exhaust duct and the nearest obstruction (i.e., roof or ground) *must be* twice the diameter of the duct.
11. **DO NOT** use screens or caps on the outside opening of the exhaust duct work.
12. The duct work exhaust outlets **SHOULD NOT** be located near make-up air openings. If make-up air openings are located too close to the exhaust outlet, lint and fumes may be drawn back into the dryer area through these openings.
13. Exhaust back pressure measured by a manometer at each basket (tumbler) exhaust duct *should not* exceed 0.3 inches water column when both baskets (tumblers) are operating.

F. Electrical Information

1. Electrical Requirements

It is your responsibility to have all electrical connections made by a properly licensed and competent electrician to assure that the electrical installation is adequate and conforms with local and state regulations or codes.

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

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

It is required that a separate circuit serving each basket (tumbler) be provided. The dryer *must be* connected with copper wire only. **DO NOT USE ALUMINUM WIRE WHICH COULD CAUSE A FIRE HAZARD.**

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

2. Electrical Connections

A wiring diagram is included with each dryer showing the wiring connection sequence. The electrical connections are made at the terminal block located in the wiring box located at the rear top area of the dryer. The dryer is shipped with three (3) connection points (L1, L2/Neutral, and Ground) for each basket (tumbler).

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

Electrical Connection Leads		
Black + Positive	White - Neutral	Green Ground
(L1)	(L2)	(GND)

NOTE: *IT IS REQUIRED* that a circuit serving each basket (tumbler) be provided.

3. Grounding

Grounding (earth) connections *must be* provided and installed in accordance with state and local codes.

For added personal safety, when possible, it is suggested that a separate ground wire (sized per local codes) be connected from the ground connection of the dryer to a grounded cold water pipe. ***DO NOT ground to a gas pipe or hot water pipe.*** The grounded cold water pipe *must have* metal to metal connections 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 #4 wire and securely clamped to bare metal at both ends.

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

4. Electrical Service Specifications (per pocket)

IMPORTANT: The dryer *must be* connected to the electrical supply shown on the data label located behind the middle access (control) door, on the right wall, adjacent to the gas valve train (refer to **SECTION IX** [page 48 and page 49] of this manual).

WARNING: Any damage done to dryer components due to improper voltage application or connections will automatically **VOID THE WARRANTY**.

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Electrical Service Specifications (per pocket)

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

NOTE: A. Fuse ratings are dual-element, time-delay, current limiting, class RK1 or RK5 **ONLY**.
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.

VOLTAGE	PHASE	APPROX. AMP DRAW	FUSE	CIRCUIT BREAKER	MINIMUM WIRE SIZE
100	1	9	15	15	14
200	1	5	8	15	14
200	3	4	8	15	14

* AWG Stranded Wire Type ... for individual lengths less than 100 feet.

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

G. Gas Information

It is your responsibility to have **ALL** plumbing connections made by a qualified professional to assure that the gas plumbing installation is adequate and conforms with local and state regulations or codes.

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 shut-off 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 shut-off valves during any pressure testing of the gas supply piping 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 valves...**VOIDING THE WARRANTY.**

WARNING: FIRE or EXPLOSION COULD RESULT.

1. Gas Supply

The gas dryer installation *must meet* local codes and ordinances and *must be* done by a qualified professional.

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

The dryer *must be* connected to the type of heat/gas indicated on the dryer data label located behind the middle access (control) door, on the right wall, adjacent to the gas valve train (refer to **SECTION IX** [page 45 and 46] of this manual). If this information *does not* agree with the type of gas available, contact the distributor who sold the dryer or the ADC factory.

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

The input ratings shown on the dryer data label are for elevations of up to 2,000 feet (609.60 meters) unless elevation requirements of over 2,000 feet (609.60 meters) were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet (609.60 meters) are made by changing each burner orifice. If this adjustment is necessary, contact the distributor who sold the dryer.

2. Technical Gas Data

a. Gas Specifications

	Type of Gas	
	Natural	Liquid Propane
Manifold Pressure*	3.5 Inches W.C. / 9.5 mbar	10.5 Inches W.C. / 37.0 mbar
Inline Pressure	8.0 Inches W.C. / 20.0 mbar	ungoverned

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

W.C. = Water Column in inches.

ADG-531HS	
Gas Inlet Size (each basket/tumbler)	3/4" N.P.T. / 1.91 cm
Btu/hr Input (each basket/tumbler)	102,000 / 25,704 kcal/hr

N.P.T. = National Pipe Thread

Burner Orifice Listing			
	Type of Gas		Quantity*
	Natural	Liquid Propane	
Drill Measurement Size	#10	#33	2
Size in inches	.1935	.1130	2
Size in mm	4.915	2.871	2

* Total For Both Baskets/Tumblers

b. Natural Gas

Regulation is controlled by each gas valve's internal regulator. Incoming supply pressure **must be** consistent 8.0 inches (20.0 mbar) pressure.

c. Liquid Propane (L.P.) Gas

Dryers made for use with L.P. gas have the gas valve's pressure regulator blocked open so that the gas pressure **must be** regulated upstream of the dryer. The pressure measured at each gas valve body pressure tap **must be** a consistent 10.5 inches water column (37.0 mbar). 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.

3. Piping/Connections

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's being supplied.

The dryer is provided with two (2) 3/4" N.P.T. (1.91 cm) inlet pipe connections (one for each basket/tumbler) at the rear of the dryer. If a separate feed is provided for each basket (tumbler) from the main supply line (header), then a 3/4" (1.91 cm) line connection is sufficient. However, if the top basket (tumbler) and the bottom basket (tumbler) connections are connected together, the supply from the header **must be** increased to 1-inch (2.54 cm) (maximum fifty [50] feet to the header). For typical gas connections refer to the illustration on page 28. It is recommended that a gas shut-off valve be provided to the gas supply line of each dryer (tumbler) for ease in servicing.

The size of the gas supply line (header) will vary, depending on the distance this supply line travels from the gas meter (or in the case of L.P. gas, the supply tank), the number of tees, other gas-operated appliances on the supply 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 gas 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 3/4" (1.91 cm) pipe loop be installed in the supply line serving the bank of dryers. An in-line pressure regulator **must be** installed in the gas supply line (header) if natural the gas line pressure exceeds 12.0 inches water column pressure. Refer to the illustration on the following page (page 28) for details.

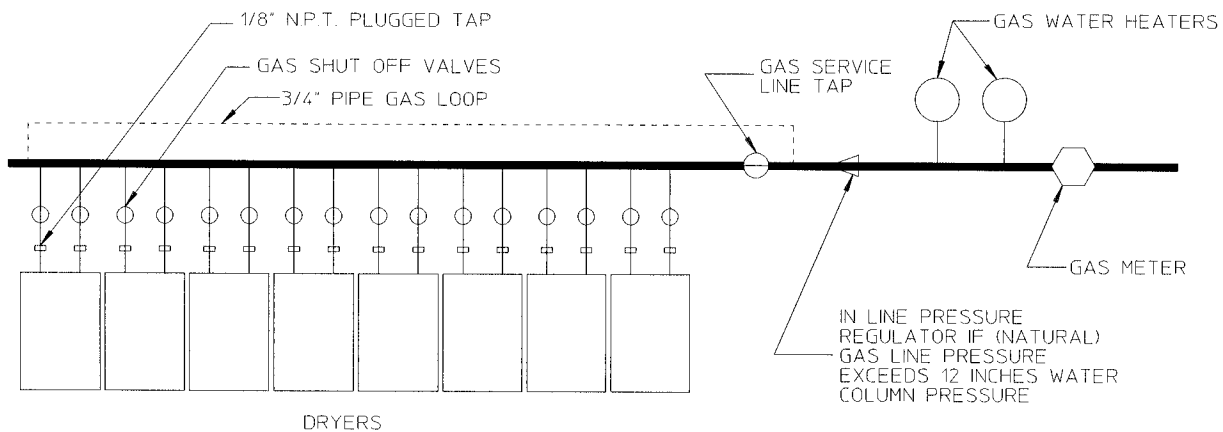
IMPORTANT: Water column pressure of 4.0 inches (20.0 mbar) for natural gas dryers and 10.5 inches (37.0 mbar) for L.P. gas is required at the gas valve pressure tap of each dryer for proper and safe operation.

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.

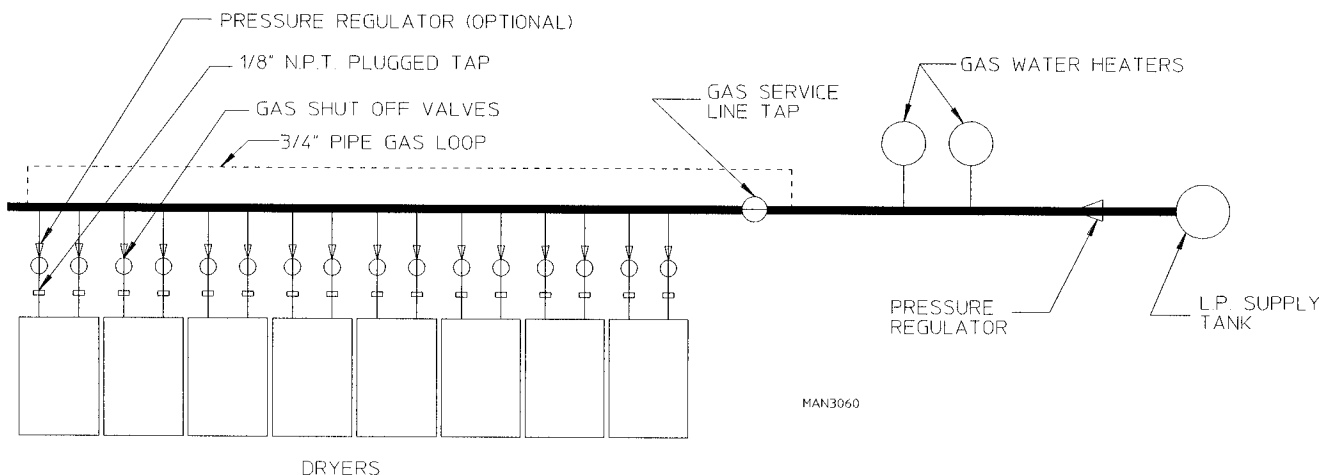
IMPORTANT: Pipe joint compounds that resist the action of natural and L.P. gases *must be* used.

WARNING: Test *ALL* connections for leaks by brushing on a soapy water solution (liquid detergent also works well). **NEVER TEST FOR GAS LEAKS WITH AN OPEN FLAME.**

TYPICAL NATURAL GAS INSTALLATION



TYPICAL L.P. GAS INSTALLATION



MAN3060

H. Preparation For Operation

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

1. Read and follow **ALL** "CAUTION", "WARNING", and "DIRECTION" labels attached to the dryer.
2. Check incoming supply voltage to be sure that it is the same as indicated on the dryer data label located behind the left coin control panel, on the right wall (refer to **SECTION IX** [page 45 and 46] of this manual).
3. Check to assure that the dryer is connected to the type of heat/gas indicated on the dryer data label.
4. The sail switch damper assemblies are installed and pre-adjusted at the factory prior to dryer shipment. However, each sail switch adjustment *should be* checked to assure that this important safety control is functioning.
5. Check bolts, nuts, screws, terminals, and fittings for security.
6. Be sure **ALL** gas shut-off valves are in the open position.
7. Be sure **ALL** back panels (guards) and electric box covers have been replaced.
8. Check **ALL** service doors to assure that they are closed and secured in place.
9. Rotate the baskets (tumblers) by hand to be sure they move freely.

I. Preoperational Tests

ALL dryers are thoroughly tested and inspected before leaving the factory. However, a preoperational test *should be* performed before the dryer is publicly used. It is possible that adjustments have changed in transit.

1. Turn On Electrical Power To The Dryer

- a. Open **ALL** gas shut-off valves.

2. Computer System Operational Test

a. COIN MODELS ONLY

- 1) The LED display(s) read "00", which means that the dryer is available.
- 2) Insert proper number of coins into coin acceptor. Once correct amount has been inserted, the dryer will start and the LED display will show amount of time vended.

NOTE: The dryer can be stopped at any time by opening the main door. To restart dryer, close the main door.

3) Repeat above procedure for other basket (tumbler).

3. Heat Circuit Operational Test

a. GAS MODELS

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

The dryer is equipped with a Hot Surface Ignition (HSI) system which has internal diagnostics. If ignition is not established after the first attempt, the heat circuit HSI module will try two (2) additional times and if a flame is not established the HSI module will lock out until it is manually reset. To reset the HSI system, open and close the main door to restart the dryer.

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

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

NOTE: Water column pressure requirements (measured at the gas valve pressure tap from the manifold side of the gas valve):

Natural Gas 3.5 Inches W.C.
L.P. Gas 10.5 Inches W.C.

IMPORTANT: THERE IS NO REGULATOR PROVIDED IN AN L.P. DRYER. The water column pressure *must be* regulated at the source (L.P. tank) or an external regulator *must be* added to each dryer.

4. **Make a complete operational check of *ALL* safety-related circuits** (i.e., lint basket switches and sail switches).

NOTE: The sail switch can be checked for proper operation by opening the main door, and while holding the main door switch in, start the dryer. The heating unit *should not* come on. If it does, make the necessary adjustments.

5. Each basket (tumbler) **SHOULD BE** operated through one (1) complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

IMPORTANT: The dryer baskets (tumblers) are treated with a protective coating. This coating can be removed by tumbling old clothes or material in the baskets (tumblers) using a mild detergent to remove the protective coating.

6. Computer Programs/Selections

Each Microprocessor Controller (computer) has been preprogrammed by the factory with the most commonly used program (parameter) selections. If microprocessor (computer) program changes are required, refer to the **Microprocessor Controller (Computer) Programming Manual** which was shipped with the dryer.

SECTION IV

OPERATING INSTRUCTIONS

A. Starting the Dryer

1. Coin Dryers

The dryer is available for use when the LED display reads "00". Once the load has been put into the dryer and the main door is closed, start the dryer as follows:

- a. Insert the proper number of coins into the coin acceptor. Once the correct "Amount To Start" has been inserted, the dryer will start and the LED display will show the time vended.
- b. The cycle time will count down until the drying and cooling cycles are completed.
- c. Upon completion of the drying cycle and cooling cycle, the dryer will shut off, the tone (buzzer) will sound for five (5) seconds, and the LED display will read "00".

NOTE: If the Anti-Wrinkle program is active, the LED display will remain reading "00", and the Microprocessor Controller (computer) will proceed through the Anti-Wrinkle program until the maximum "Active Guard Time" has expired or until the main door is opened, whichever comes first.

d. Notes

- 1) The dryer basket (tumbler) can be stopped at any time by opening the main door. To restart dryer, close the main door.

NOTE: When a cycle is interrupted by opening main door, cycle time will continue to count downward.

- 2) Additional time can be purchased at any time. If the dryer is in operation (drying mode) and additional coins are inserted, the LED display will read the additional time for the amount inserted.

B. Shut Down Instructions

In the case where the dryer is to be shut down (taken out of service) for a period of time, the following ***MUST BE*** performed;

1. Discontinue power to the dryer (both baskets [tumblers]) either at the external disconnect switch or the circuit breaker.
2. Discontinue the gas supply:
 - a. ***Shut off external gas supply shut off valve*** (for both the top basket [tumbler] and the bottom basket [tumbler] where the independent supply line to each basket [tumbler] is used).
 - b. ***Shut off internal gas supply shut off valve located at the gas valve train area*** (for both the top basket [tumbler] and the bottom basket [tumbler]).

SECTION V

SERVICE/PARTS INFORMATION

A. Service

Only properly licensed or trained technicians should service the dryer. If service is required, contact the distributor from whom the equipment was purchased.

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

B. Parts

Replacement parts *should be* purchased from the distributor from whom the equipment was purchased.

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

SECTION VI

ROUTINE MAINTENANCE

A. 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 duct work 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 air flow. If the guidelines in this section are met, dryer will provide many years of efficient, trouble-free, and most importantly, safe operation.

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

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

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

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

DAILY (beginning of each work shift)

Clean lint from basket(s)/tumbler(s).

Inspect lint screen(s)/drawer(s) for damage and replace if torn.

WEEKLY

Clean lint accumulation from around microprocessor temperature sensor probes and sensor bracket assemblies.

90 DAYS

Remove lint from the motor air vents and surrounding area.

IMPORTANT: Lint accumulation will restrict the airflow over the motor(s), causing overheating and irreparable motor damage. Motor failure due to lint accumulation will **VOID THE WARRANTY.**

Remove lint accumulation from around the openings in the dryer's back panels.

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

Remove any lint accumulation from the coin acceptor area, including the optical switch.

Inspect and remove lint accumulation in customer-furnished exhaust duct work system and from the dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: *DO NOT* OBSTRUCT THE FLOW OF COMBUSTION AIR and VENTILATION AIR.

Inspect and remove lint accumulation from the dryer's exhaust duct work back draft dampers.

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

6 MONTHS

In the cleaning of the dryer cabinet, avoid using harsh abrasives. A product for the cleaning of appliances is recommended.

ALL bearings and set screws *should be* checked to insure they are tight.

B. Adjustments

7 Days After Installation and Every 6 Months Thereafter

Inspect bolts, nuts, screws (bearing set screws), non-permanent gas connections (unions, shut-off valves, orifices, etc.), electrical terminations, and grounding connections.

Tighten loose belt(s) when necessary and check the alignment.

Inspect drive (motor/impellor [fan]) shaft belt. A cracked or seriously frayed belt(s) *should be* replaced. Tighten loose belt(s) when necessary and check the alignment.

Complete operational check of controls and valves.

Complete operational check of *ALL* safety devices (door switches, lint compartment switches, sail switches, burner and hi-limit thermostats).

C. Lubrication

The motor bearings, idler bearings, and tumbler bearings are *permanently lubricated*. **NO LUBRICATION IS NECESSARY.**

SECTION VII

TROUBLESHOOTING

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT.

The information provided is a quick reference to help isolate the most probable component(s) associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken or shorted wire may be at fault where electrical components are concerned...not necessarily the suspect component itself.

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

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

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

WARNING: ALL SERVICE and TROUBLESHOOTING SHOULD BE PERFORMED BY A QUALIFIED PROFESSIONAL.

WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER and/or SPECIFIED IN THE MANUAL.

A. No LED Display...

1. Service panel fuse blown or tripped breaker.
2. Blown control circuit fuse (3AG 3/4-Amp [Slo Blo] Fuse).
3. Disconnected or failed display ribbon connector/cable.
4. Failed display board.
5. Failed Microprocessor Controller (computer).

B. Basket (tumbler) motor does not start, microprocessor controller (computer display) shows drying cycle in progress and LED motor indicator dot is on...

1. Microprocessor controller (computer) output indicator LED is on ...
 - a. Failed motor contactor/relay.
 - b. Failed motor.

2. Microprocessor controller (computer) output indicator LED is off and door input indicator is on...
 - a. Failed microprocessor controller (computer).
- C. Basket (tumbler) does not turn, but motor microprocessor controller (computer display) LED dot and motor output LED indicators are on...**
1. Loose tumbler/basket belt (check tension/adjustment).
 2. Tumbler/basket belt jumped off of the motor or idler shaft.
 3. Broken basket (tumbler) belt.
- D. The dryer will not stop, even with no cycle (LED display reads "00") in progress...**
1. Failed motor contactor/relay.
- E. The dryer operates for a few minutes, and with the microprocessor controller (computer) motor LED indicator dot on the motor stops, and then after a period of time restarts on its own...**
1. Motor is overheating and tripping out its internal overload ...
 - a. Motor air vents clogged with lint.
 - b. Low voltage to the motor.
- F. The dryer operates for a few minutes and then stops...microprocessor controller (computer) LED displays continues to read cycle in progress, indicator dots are off and dryer can be restarted by opening and closing main door...**
1. Intermittent connection in the main door/lint drawer circuit ...
 - a. Main door switch or lint drawer switch out of proper adjustment.
 - b. Loose connection in main door switch or lint drawer switch wiring.
 - c. Failed main door or lint drawer switch.
- G. The dryer does not start, and the microprocessor controller (computer) LED display reads time vended...**
1. Microprocessor controller (computer) "door" input LED is off ...
 - a. Main door and/or lint drawer is not properly closed.
 - b. Failed main door switch.
 - c. Failed lint drawer switch.
 - d. Open circuit (broken wire and/or termination) in main door switch wiring or lint drawer switch wiring.

e. Failed 24 VAC step down transformer.

2. Microprocessor controller (computer) "door" input LED is on ...

a. Failed microprocessor controller (computer).

H. The dryer does not start (COIN MODELS ONLY)...coin(s) inserted and the LED display continues to read "00"...

1. Coin acceptor is not adjusted properly or is dirty with lint.

2. Failed coin acceptor switch.

3. Parameter in Program Location 01 (**PL01**) set incorrectly.

a. Bad coin program should be set for "bCrS" and not "bCLO".

I. Microprocessor controller (computer) LED display reads "dSFL"...

1. LED display consistently reads "dSFL" and will not clear ...

a. Microprocessor controller (computer) 1/8-Amp (Slo Blo) fuse is blown.

b. Failed microprocessor controller (computer) temperature sensor.

c. Broken wire and/or termination in sensor harness somewhere between the sensor bracket and the Microprocessor Controller (computer).

d. Failed microprocessor controller (computer).

2. LED display reads "dSFL" for a short period of time (30 seconds or less) and then returns to the normal stop "FILL" mode ...

NOTE: Once the microprocessor controller (computer) detects a problem, it updates every thirty (30) seconds so that if a problem was a loose connection in this circuit which corrected itself, the "dSFL" display condition would automatically be canceled.

a. Loose wire and/or termination in sensor harness somewhere between the sensor bracket and the microprocessor controller (computer).

b. Failed microprocessor controller (computer) temperature sensor.

J. Microprocessor controller (computer) LED display reads "Hot"...

The "Hot" display condition indicates a possible overheating condition. The microprocessor controller (computer) monitors the temperature in the dryer at all times. If the microprocessor controller (computer) detects that the temperature in the dryer has exceeded 220°F (104°C), it will disable *ALL* of the dryer outputs (shut the dryer down), the buzzer (tone) will sound for approximately 5 seconds, and the LED display will read "Hot". The LED display will continue to read "Hot" until the temperature has dropped to 220-degrees F (104-degrees C) or lower and the microprocessor (computer) is manually reset by closing and opening the Program Switch (PS).

Possible reasons for overheating ...

1. Restriction in location exhaust duct work ...
 - a. Dryer exhaust damper stuck in closed position.
 - b. Undersized exhaust duct work.
2. Insufficient make-up air.

K. Microprocessor controller (computer) LED display reads "SEFL"...

The "SEFL" display condition indicates a rotational sensor circuit failure which means that there is a fault somewhere in the basket (tumbler) rotation detection circuit...or...the microprocessor controller (computer) program related to this circuit (**PL01**) is set incorrectly in the active mode ("SEn") where the dryer is not equipped with the optional rotation sensor and *should be* set in the non-active mode ("nSEn").

If the dryer is equipped with the optional rotational sensor and for whatever reason the microprocessor controller (computer) detects that the basket (tumbler) is not turning, it will disable **ALL** of the dryer outputs (shut the dryer down), and the LED display will read "SEFL". The LED display will continue to read "SEFL" until the microprocessor controller (computer) is manually reset by closing and opening the Program Switch (PS).

Possible causes ...

1. Loose/slipping (out of proper adjustment) basket/tumbler belt.
2. Broken basket/tumbler V-belt.
3. Failed motor (refer to **Item B** and **Item E** on page 42).
4. Failure in the rotational sensor circuit ...
 - a. Failed rotational sensor.
 - b. Loose connection or break between the rotation sensor and the microprocessor controller (computer).

L. Microprocessor controller (computer) locks up and the LED display reads erroneous message(s) or only partial segments...

1. Transient power voltage (spikes)...disconnect power to the dryer, wait one (1) minute (**NOTE:** for dryer models with the optional battery backup...disconnect battery), then reestablish power to the dryer. If problem is still evident, proceed to Items M2 through M3.

2. Improper grounding of the dryer or the microprocessor controller (computer) ground connections to the panel or the dryer are not proper.
3. Failed microprocessor controller (computer).

M. Dryer stops during a cycle and the Microprocessor Controller (computer) LED display returns to "00"...

If dryer is equipped with optional battery back up ...

1. Refer to **Item M1**, **Item M2**, or **Item M3**, above.

If the does not have optional battery back up ...

1. Loose connection somewhere in the power source to the dryer.
2. Loose connection in main power circuit to the microprocessor controller (computer).
3. Improper grounding of the dryer or the microprocessor controller (computer) ground connections to the panel or the dryer are not proper.
4. Failed microprocessor controller (computer).

N. Heating unit is not operating (no heat)...basket (tumbler) is turning, microprocessor controller (computer) heat indicator dot is on but "HEAT" output LED is not...

1. Failed microprocessor controller (computer).

O. Gas heating unit is not operating (no heat)...both microprocessor controller (computer) heat indicator dot and "HEAT" indicator are on...but Hot Surface Ignitor does not light when the dryer is first started...

1. Check/motor impellor (fan) drive belt.
2. Fault in sail switch circuit ...
 - a. Sail switch is out of adjustment or has failed.
 - b. Sail switch damper is not closing or is fluttering ...
 - 1) Lint drawer/screen is dirty or clogged.
 - 2) Restriction in exhaust duct work.
3. Fault in burner hi-limit circuit or thermostat.
4. Fault in basket (tumbler) hi-limit circuit or thermostat.
5. Failed Hot Surface Ignitor and/or flame-probe assembly.
6. Failed Hot Surface Ignition (HSI) module (burner control).

P. No heat (GAS MODELS ONLY)...Hot Surface Ignitor lights but there is no flame at burner...

1. Hot Surface Ignitor out of adjustment ...
 - a. Reposition ignitor assembly closer to the burner ribbon area. Also check to make sure ribbon is flush all around the top of the burner tube (ribbon *should not* stick up at any area).
2. Failed flame-probe assembly or problem with wiring connections to the assembly.
3. *NO* gas (check shut off valves) or insufficient (low Water Column [W.C.] pressure) gas supply.
4. Failed Hot Surface Ignition (HSI) module.
5. Failed gas valve.

Q. No heat...Hot Surface Ignitor lights but burner goes on and off right away...

1. Flame sensor (probe) out of adjustment...reposition closer to the flame area.
2. Failed flame sensor (probe).
3. Sail switch is fluttering ...
 - a. Lint drawer/screen is dirty or clogged.
 - b. Restriction in exhaust duct work.
4. Insufficient make-up air.
5. Failed Hot Surface Ignition (HSI) module.

R. Dryer operates, but is taking too long to dry...

1. Exhaust duct work run is too long or is undersized...back pressure *cannot* exceed 0.3 inches Water Column (W.C.).
2. Low and/or inconsistent gas pressure.
3. Insufficient make-up air.
4. Poor air/gas mixture at burner...yellow or poor flame pattern. Adjust gas burner air adjustment shutters.
5. Lint drawer/screen not being cleaned out on a regular basis or often enough.
6. Extractors (washers) not performing properly.
7. Sail switch is fluttering...restriction in exhaust.
8. Failed microprocessor controller (computer) temperature sensor...temperature calibration is inaccurate.

9. Failed microprocessor controller (computer)...temperature calibration is inaccurate.
10. Failed burner/oven hi-limit.
11. Failed basket (tumbler) hi-limit thermostat.
12. Lint accumulation in location exhaust system.

S. Condensation on main door glass...

1. Too long, undersized, or improperly installed duct work.
2. Exhaust back draft damper is stuck open or partially open.
3. Restriction in exhaust duct work.

T. Dryer is making scraping noise at basket (tumbler) area...

1. Check for object(s) caught in the basket (tumbler) wrapper area.
2. Basket (tumbler) is out of proper alignment ...
 - a. Check both the vertical alignment and lateral alignment.
 - b. Check gap between the front panel and the basket (tumbler) front...set screws may have come loose and basket (tumbler) walked forwards or backwards.
3. Loose or broken basket (tumbler) tie rod.
4. Broken basket (tumbler) support.

U. Excessive noise and/or vibration ...

1. Dryer is not level.
2. Impellor (fan) out of balance or broken.
3. Loose basket (tumbler) tie rod.
4. Basket (tumbler) is out of adjustment, or adjustment bolts (hardware) are loose.
5. Loose motor or motor mount assembly.

V. Basket (tumbler) turns too fast (as opposed to other baskets [tumblers])...

1. Foreign object(s) caught between basket (tumbler) belt and motor shaft.

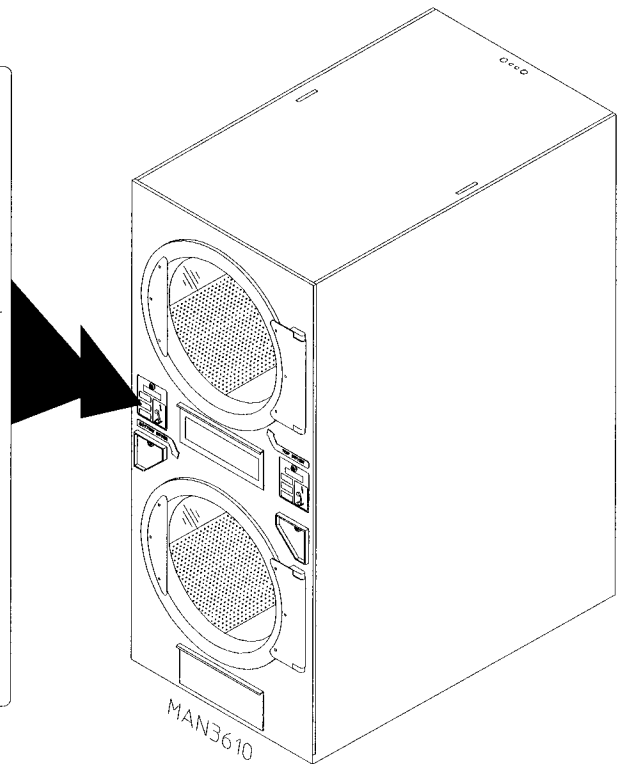
SECTION IX

DATA LABEL LOCATION/INFORMATION

Data Label

Contact **American Dryer Corporation**

MODEL ADG-531HS	SERIAL NO. 395816 QY
MANUFACTURING CODE NUMBER 5300040130315081657XP180185000000 204,000 BTU MAX	
TYPE OF HEAT GAS/NATURAL	HEAT INPUT 102,000 BTUH PER POCKET
ELECTRIC SERVICE (2) 200V/60HZ/1PH 7 AMPS PER POCKET	
GAS MANIFOLD PRESSURE 3.5 IN WC	
FOR USE WITH NATURAL AND L.P. GASES "NRTL"	
ANS Z215.2	b-1992 CLOTHES DRYER VOL II
24 VOLT CONTROL VOLTAGE	



When contacting Dealer, certain information is required to insure proper service/parts information. This information is on the data label that is located behind the left coin control panel, on the right wall, (as shown in the illustration above). When contacting dealer please have the **model number** and the **serial number** readily available.

The Data Label

1. Model Number

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

2. Serial Number

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

3. Manufacturing Code Number

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

4. Type of Heat

The type of heat describes the type of heat; gas (either natural or Liquid Propane [L.P.]), electric, or steam.

5. Heat Input (for GAS DRYERS)

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

6. Electric Service

This describes the electric service for your particular model.

7. Gas Manifold Pressure (for GAS DRYERS)

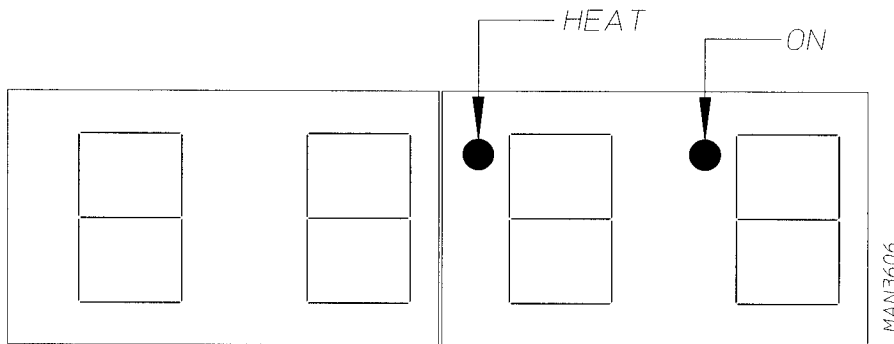
This describes the manifold pressure taken at the gas valve tap.

SECTION X

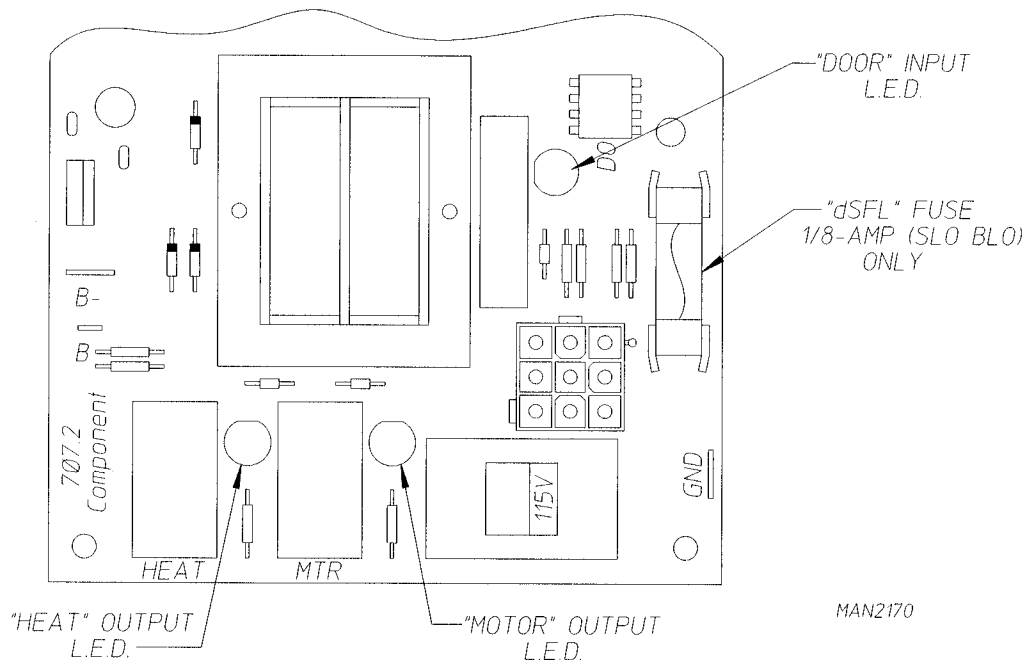
PROCEDURE FOR FUNCTIONAL CHECK OF REPLACEMENT COMPONENTS

1. Microprocessor (computer) Board

- Upon completing installation of the replacement microprocessor (computer) board, reestablish power to the dryer.
- Start the drying cycle.
- Verify that the motor(s) and the heat indicator dots, in the microprocessor (computer) LED display are on. (Refer to the illustration below.)



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



- e. Open main door. The dryer **must stop** and **ALL** indicator lights on the back side of the microprocessor (computer) board **must go out**.
- f. Try to restart the dryer with the main door open.
- g. The microprocessor (computer) board's LED display **must read "DOOR."**
- h. Close the main door and restart the dryer.
- i. Functional check of microprocessor (computer) board is complete.

2. Hot Surface Ignition (HSI) System

- a. Upon completing installation of the replacement Hot Surface Ignition (HSI) module, reestablish power to the dryer.

- b. The HSI module's "red" indicator light will light for up to approximately 5 seconds (self check routine).

If the HSI module's "red" indicator light stays on or flashes continuously, then the HSI module is wired incorrectly or has failed.

- c. Start the drying cycle.

- d. The hot surface ignitor will turn on. After approximately 4 seconds the glo bar will shut off and the gas valve will be energized.
The flame should now be established.

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

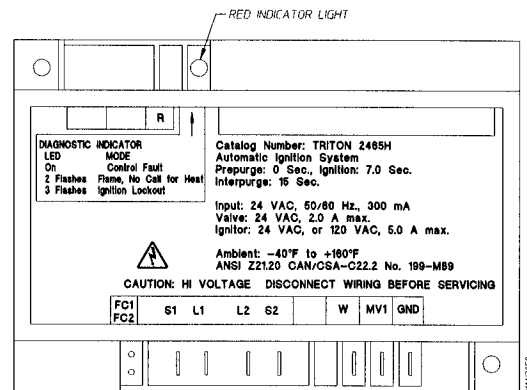
- f. Stop the drying cycle, with the flame sensor wire still removed, restart the drying cycle.

- g. The hot surface ignitor will turn on and after approximately 4 seconds the hot surface ignitor will shut off. The gas valve will be energized and a burner flame **should be evident** for approximately 7 seconds and then shut off.

- h. The HSI module will attempt two (2) additional ignition trails after which the HSI module will lock out and the "red" indicator light **will flash continuously**.

- i. Functional check of the Hot Surface Ignition (HSI) module is complete.

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



ADC 113006 1- 01/29/98-75 2* 05/06/98-100 3- 06/24/98-100



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