

**AD-100**  
**Installation / Service / Parts Manual**  
**for models mfd. between 10/85 and 12/87**

**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.

Do not store or use gasoline or other flammable vapors 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.



For replacement parts, contact the distributor from which the dryer was purchased or  
**American Dryer Corporation**  
88 Currant Road  
Fall River MA 02720-4781  
Telephone: (508) 678-9010 / Fax: (508) 678-9447

ADC Part No. 450075

# 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.*

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

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-100

DISTRIBUTOR'S 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) 678-9010. 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.

INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE USER SMELLS GAS MUST BE POSTED IN A PROMENT LOCATION. THE INSTRUCTIONS TO BE POSTED SHALL BE OBTAINED FROM THE LOCAL GAS SUPPLIER.

## **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 THE COMPUTER BOARD and THE IGNITION MODULE. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION. WIRING.**

## **CAUTION**

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

## **WARNING**

**The dryer must not be operated with any of the front and/or rear control doors, side access doors, or service panels removed. PERSONAL INJURY 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.**

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## SECTION I

### IMPORTANT INFORMATION

#### A. Receiving and Handling

The dryer is shipped with a protective polyethylene cover and protective corners and is enclosed in a cardboard carton as a means of protection in transit. Upon delivery, the shipping carton and wooden skid should be visually inspected for shipping damage. If carton or wooden skid is damaged, inspect further.

#### 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 number refused must be noted on the receipt.
4. If you determine that the dryer has been damaged after the trucker has left your location, you should call your local freight terminal immediately and request an inspection and freight claim form. 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.
5. If you need assistance in handling the situation, please call Monique Sullivan at American Dryer Corporation.

IMPORTANT: THE DRYER SHOULD BE TRANSPORTED AND HANDLED IN AN UPRIGHT POSITION AT ALL TIMES.

#### B. Safety Precautions

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. Dryer must be exhausted to the outdoors.
4. Although the American dryer is 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" cleaners. Fire or explosion could result.

WARNING: Do not dry rags or articles coated with gasoline, kerosene, paint, wax, or grease. Fire or explosion could result.

WARNING: Do not dry mopheads. Contamination by wax or flammable solvents will create a fire hazard.

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

5. A program should be established for the inspection and cleaning of the lint in the burner area and exhaust duct work. 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.

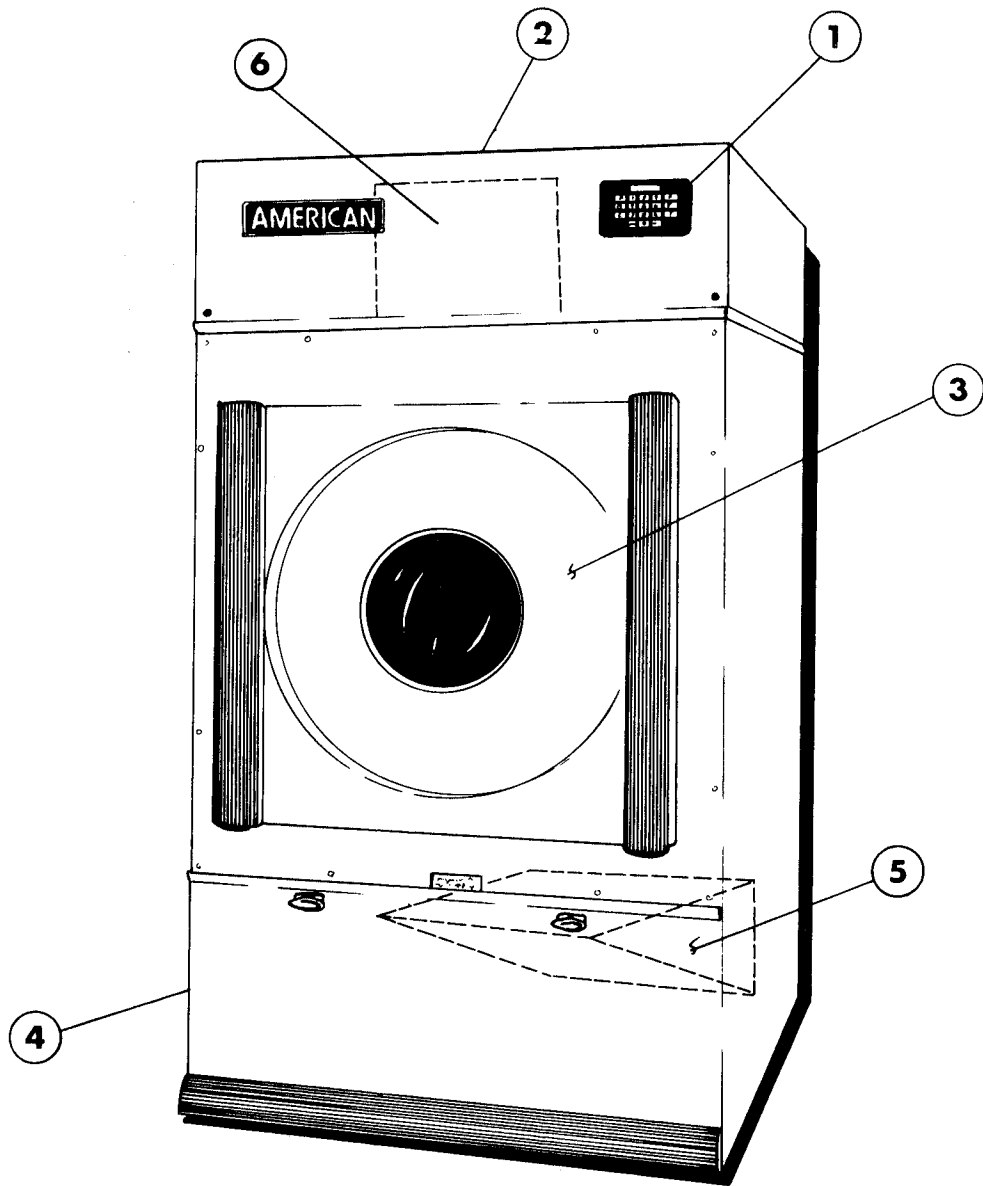
6. For personal safety, the dryer must be electrically grounded in accordance with local codes and/or the National Electric Code ANSI/NFPA No. 70-1984.

NOTE: Failure to do so will void warranty.

7. Under no circumstances should the dryer door switch or heat circuit safety devices ever be disabled.

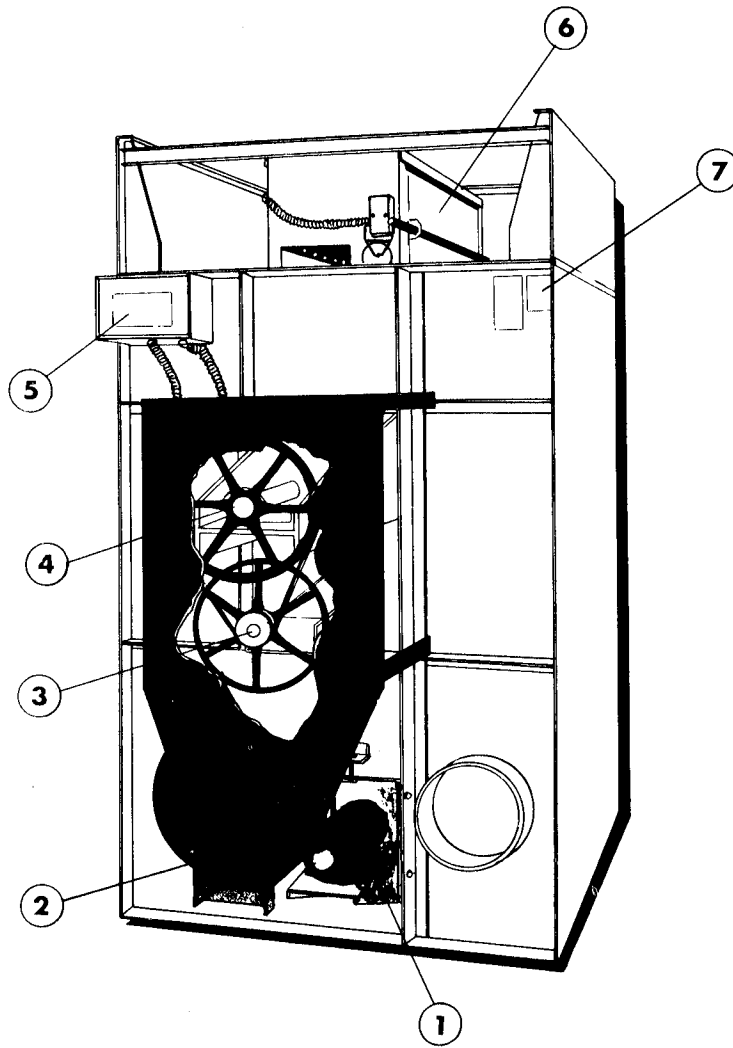
WARNING: Personal injury or fire could result.

8. READ AND FOLLOW ALL CAUTION AND DIRECTION LABELS ATTACHED TO DRYER.



FRONT VIEW

1. Control Panel Assembly
  - a. Phase 3 Computer; page 70
  - b. Dual Timer (not shown); page 72
2. Control Door Assembly; page 73
3. Front Panel and Main Door Assembly; page 74
4. Lint Door Assembly; page 76
5. Lint Coop/Thermostat Bracket Assembly; page 78
6. Wiring Schematic (behind control door)



REAR VIEW

1. Tumbler Motor Mount Assembly; page 82
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3. Idler Bearing Mount Assembly; page 81
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  - c. Non-reversing; page 86
6. Gas Burner Assembly; page 88
7. Data Label and Installation Label

SECTION II  
INSTALLATION PROCEDURES

Installation should be performed by competent technicians in accordance with local and state codes. In the absence of these codes, installation must conform to applicable AMERICAN NATIONAL STANDARDS:

ANSI Z223.1 - 1984 (NATIONAL FUEL GAS CODE) or  
ANSI/NFPA NO. 70-1984 (NATIONAL ELECTRIC CODE)

A. Unpacking/Setting Up

Remove shipping carton, polyethylene cover and protective shipping corners from dryer.

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

Once these bolts are off, remove the eight (8) nuts and bolts holding the skid together and take the skid apart. The dryer can now be removed from the skid.

The lint coop is supported during shipping by a bracket. Remove this bracket before starting the dryer.

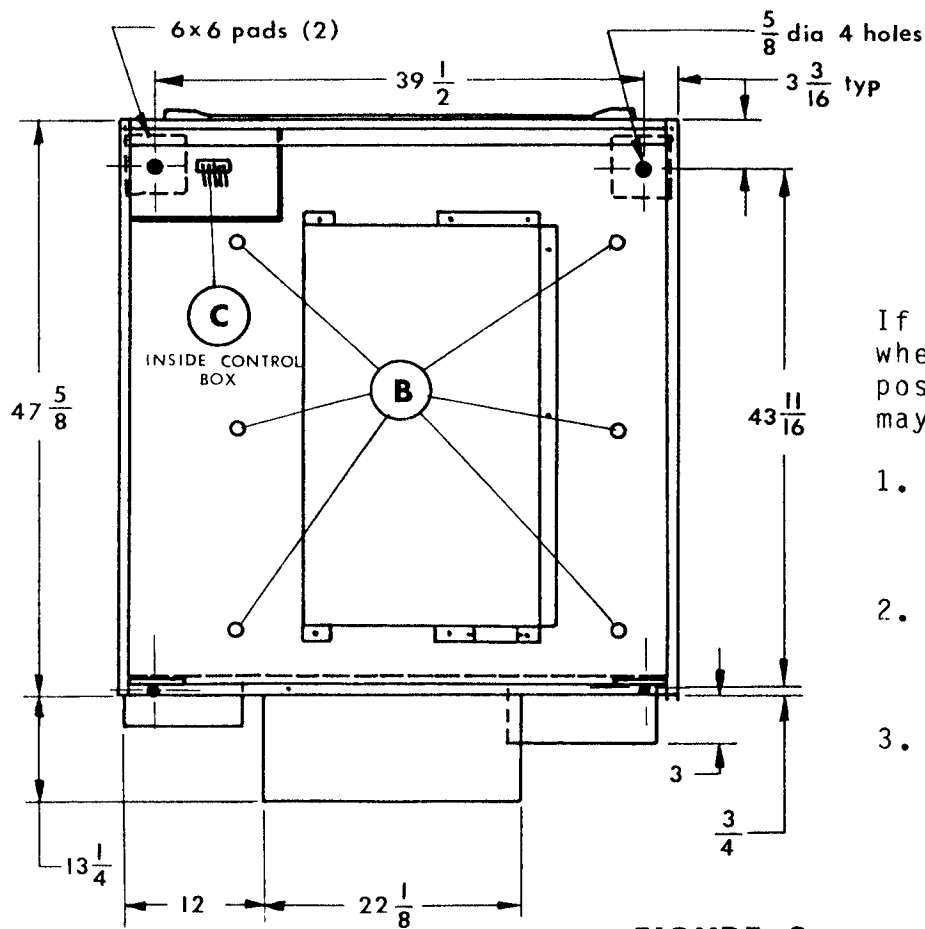
The V-belts are disconnected from the tumbler drive motor for shipping. Reconnect the belts before starting the dryer.

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 that the dryer is to rest on.

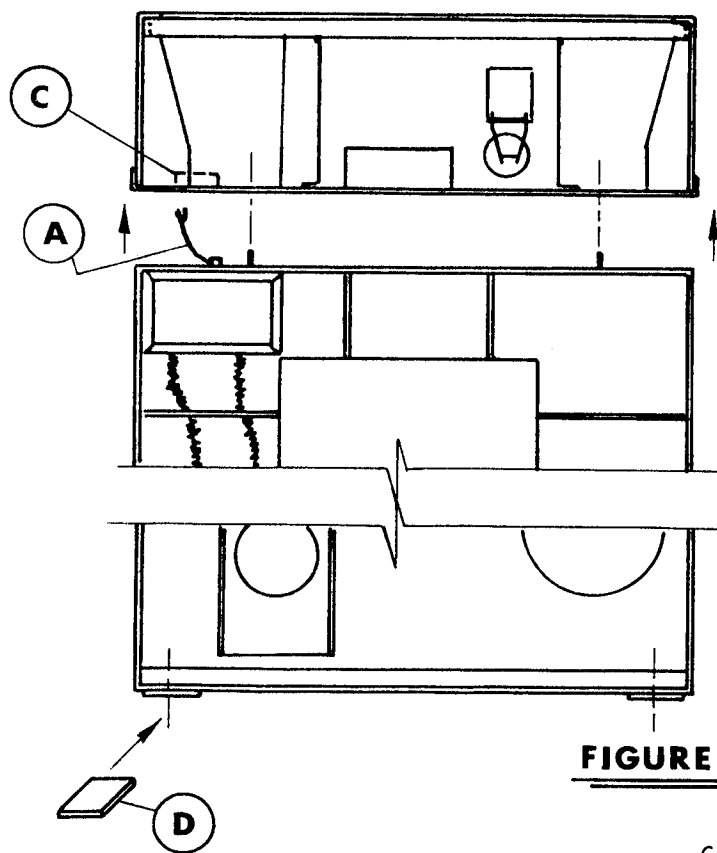
It is recommended that the rear of the dryer be positioned about two (2) feet away from the nearest obstruction (i.e., wall) for ease of installation, maintenance, and service.



**FIGURE 3**

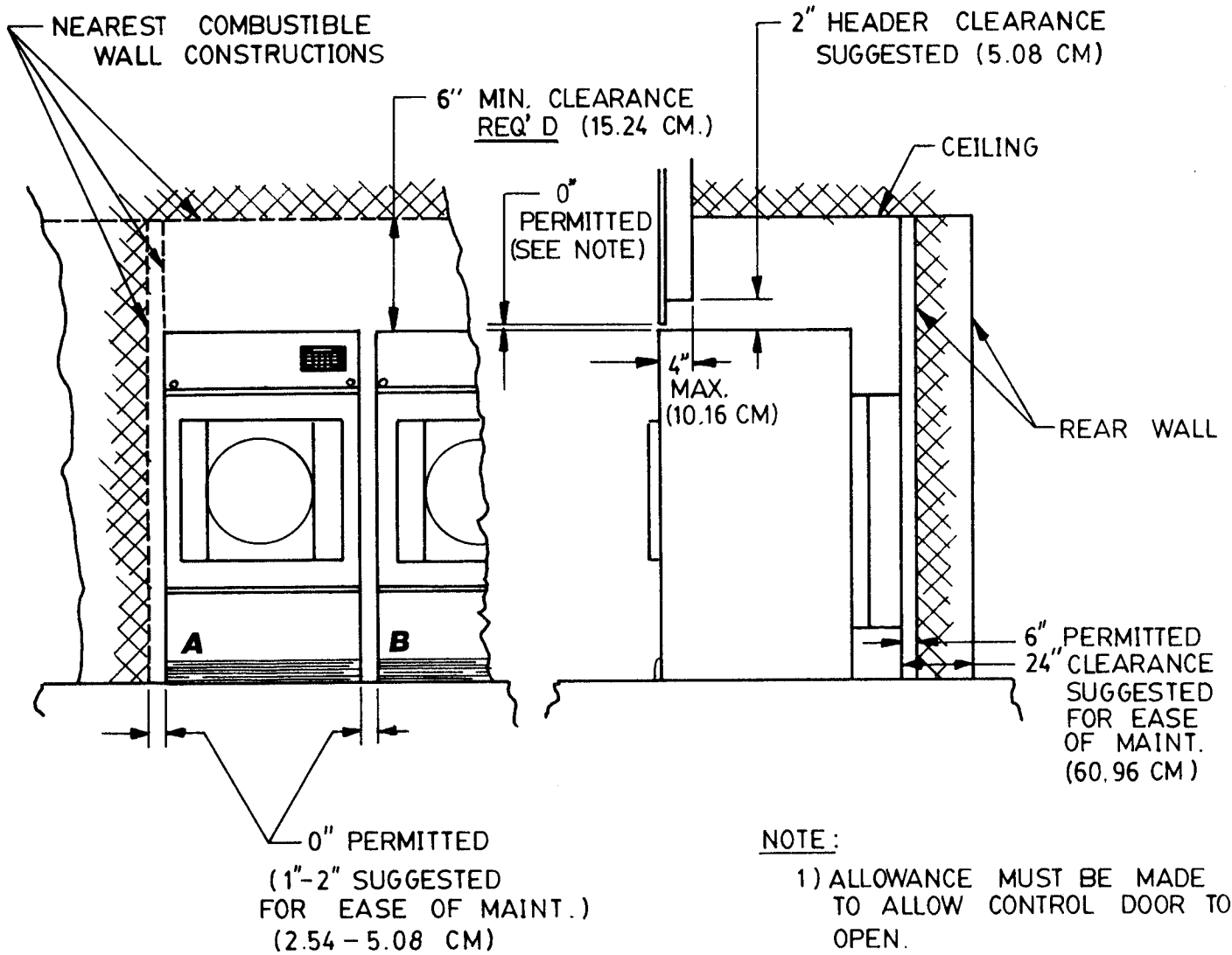
If more headroom is needed when moving the dryer into position, the top console may be removed.

1. Disconnect the ground wire (A) at the rear of the dryer. (Figure 4)
2. Remove the six (6) nuts (B) holding the console to the base. (Figure 3)
3. Open the control door and disconnect the white 15-pin plug (C) located at the bottom of the control box. (Figures 3 and 4)
4. Lift the console off the base. (Figure 4)



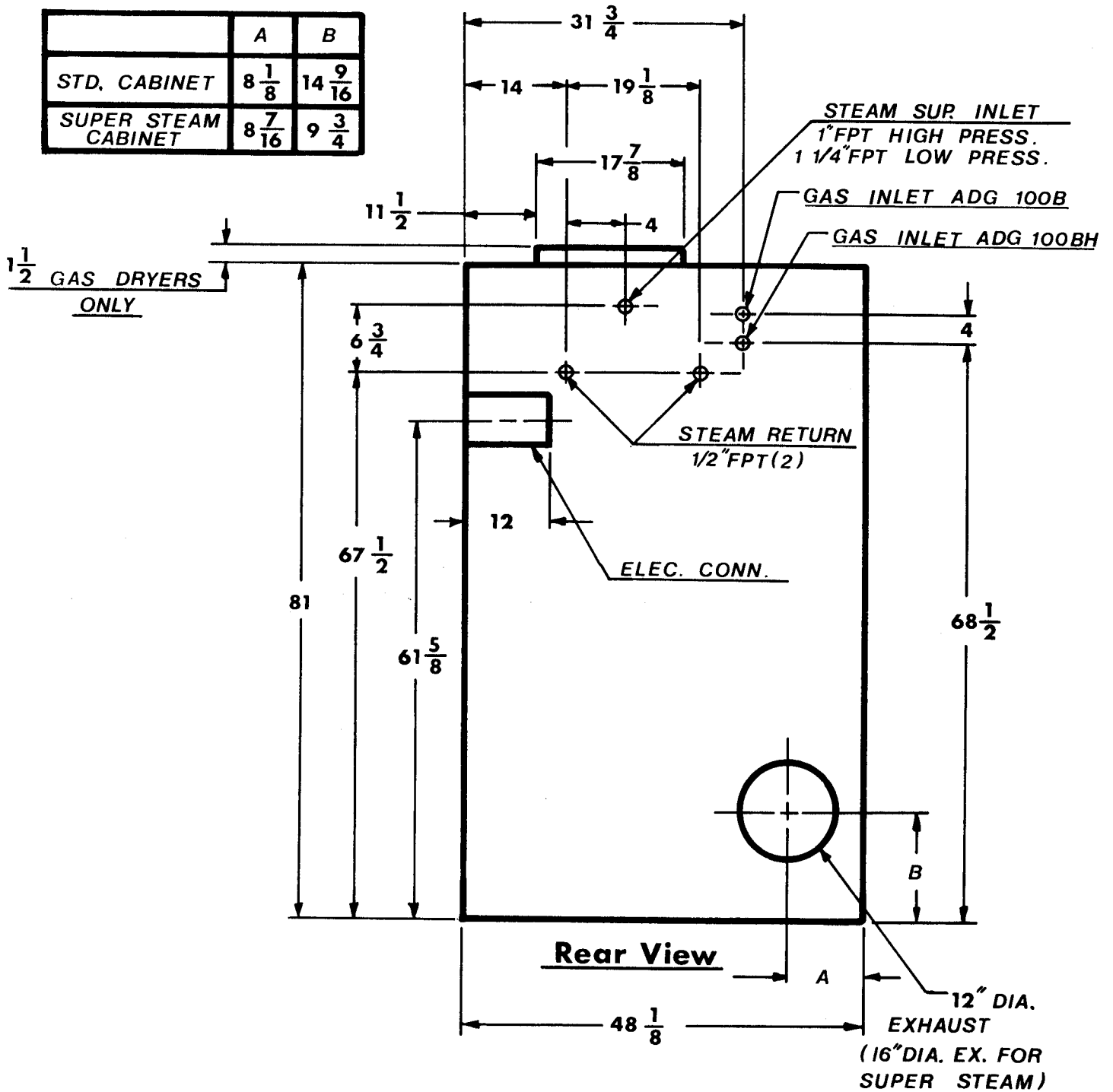
**FIGURE 4**

To level the dryer, place 4" square metal shims (D) (Figure 4) or other suitable material under the base pads.



INSTALLATION: DRYER CLEARANCE TO ADJACENT WALL STRUCTURES.

	A	B
STD. CABINET	$8 \frac{1}{8}$	$14 \frac{9}{16}$
SUPER STEAM CABINET	$8 \frac{7}{16}$	$9 \frac{3}{4}$



INSTALLATION INFORMATION FOR GAS, STEAM, AND ELECTRICAL CONNECTIONS AND EXHAUST LOCATION.

### C. Dryer Enclosure Requirements

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

NOTE: Allowance must be made for opening the control door.

Dryers may be positioned side wall to side wall. However, allowances should be made for the opening and closing of the control and lint doors.

It is suggested that the dryer be positioned about two (2) feet away from the nearest rear obstruction for ease of installation, maintenance, and service. Refer to the previous illustration for details.

### D. Fresh Air Supply

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 on gas dryers may result, and you also could have premature motor failure from overheating.

Air supply (make-up air) must be given careful consideration to assure proper performance of each dryer. An unrestricted source of air is necessary for each dryer. An air flow of 1750 CFM must be supplied to all gas, electric, and steam dryers, except the super-steam dryer which requires 2500 CFM. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) of a minimum of three (3) square feet is required for each dryer. Five (5) square feet are required for the super-steam model.

If registers or louvres are installed over the openings, then the area must be increased.

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.

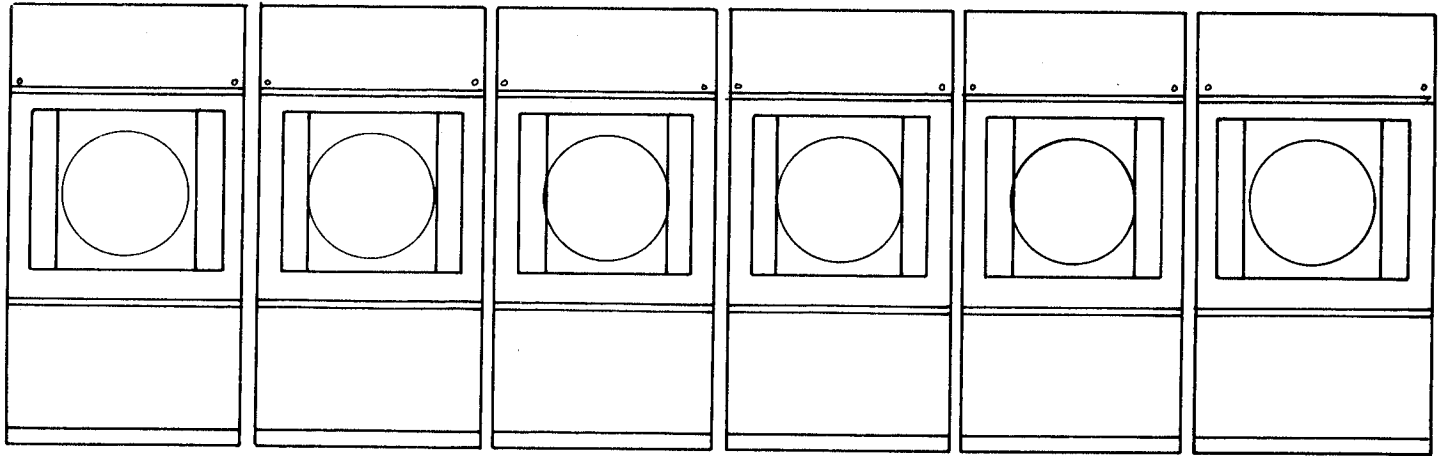
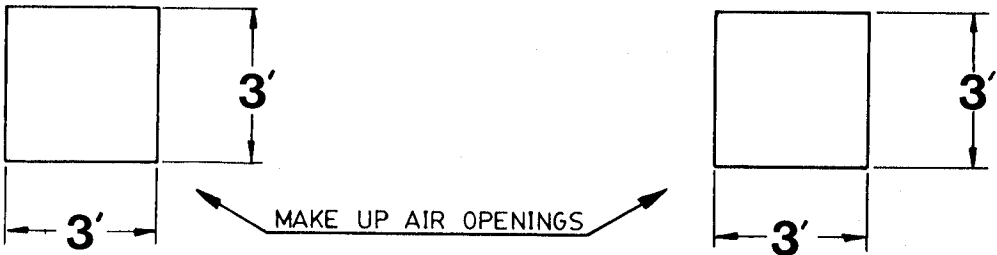
Example: For a bank of six (6) gas dryers, two (2) openings measuring 3'x3' (9 square feet) is acceptable. Refer to the following illustration for details.



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 fumes. Make-up air that is contaminated by dry cleaning fumes will result in irreparable damage to motors and other dryer components.

NOTE: Component failure due to dry cleaning fumes voids warranty.



TYPICAL INSTALLATION SHOWING MAKE-UP AIR OPENINGS

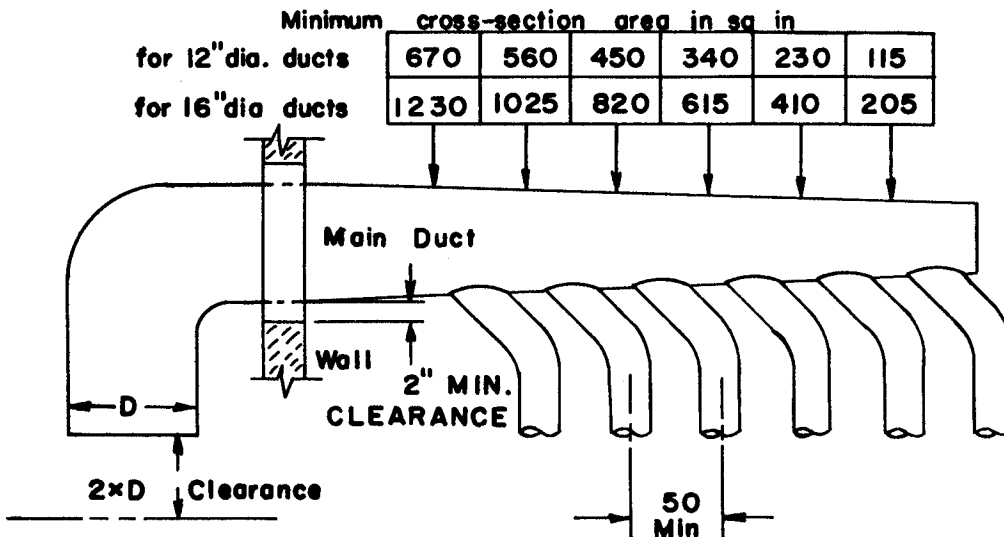
## E. Exhaust Requirements

Exhaust duct work should be designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which will result in slow drying, increased use of energy, and shutdown of the burner by the air flow (sail) switch, burner hi-limit or lint chamber hi-heat protector thermostat. Refer to the following illustrations for details.

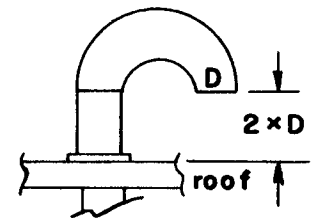
**CAUTION:** Improperly sized or installed exhaust duct work can create a potential fire hazard.

**NOTE:** When a dryer is exhausted separately, it is recommended that a back draft damper be installed.

**NOTE:** When dryers are exhausted into a common exhaust line, each dryer must be supplied with a back draft damper.



**FIGURE 1**



**FIGURE 2**

Where possible, it is desirable to provide a separate exhaust air duct for each dryer. The duct should be 12" in diameter (16" for super-steam dryers). The duct should go as directly as possible to the outside air. Avoid sharp 90° right angle turns in the ducting; use 30 degree or 45 degree angles instead. The radius of the elbows should preferably be 1-1/2 times the diameter of the duct. To protect the outside end of the duct from the weather, it may be bent downward as indicated in Figure 1. Leave at least twice the diameter of the duct clear between the duct opening and the nearest obstruction. If the exhaust duct goes through the roof, it may be protected from the weather by a hood or by using a 180° turn to point the opening down as indicated in Figure 2. In either case, allow at least twice the diameter of the duct as clearance from the nearest obstruction as indicated above.

Do not use screens or caps on the outside opening of the exhaust duct. The ducting 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. Provide inspection doors for periodic clean-out of lint from the main duct.

If it is not feasible to provide separate exhaust ducts for each dryer, ducts from the individual dryers may be channeled into a common main duct. Each dryer must be provided with a back draft damper. The individual ducts should enter the bottom or side of the main duct at an angle not more than 45 degrees and should be spaced at least 50" apart. The main duct should be tapered with the diameter increasing before each individual duct is added. The minimum increase in cross-section area should be 115 square inches for each 12" duct added and 205 square inches for each 16" duct added. Where rectangular main ducting is used, the areas shown should be increased 10 square inches, and the ratio of duct width to depth should not be greater than 3-1/2 to one. Figure 1 shows the minimum cross-section areas of the main duct for either 12" or 16" dryer ducts. These figures should be increased if the main duct is unusually long (20' or over) or has numerous elbows in it.

Inadequate exhaust facilities may cause high temperature limit switches or air flow switches to shut off the dryers. Do not disable the switches, which are provided for your safety. Instead, investigate the exhaust ducting. Any obstruction or air friction due to numerous elbows/fittings in the ducting will slow the passage of air through the system with resulting inefficiency and potential fire hazard.

## 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. In the absence of such codes, all electrical connections, material, and workmanship must conform to the applicable requirements of the NATIONAL ELECTRIC CODE ANSI/NFPA NO. 70-1984.

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 voids warranty.

It is recommended that a separate circuit serving each dryer

be provided. The dryer must be connected to copper wire only. Do not use aluminum wire which could cause a fire hazard.

NOTE: The use of aluminum wire voids warranty.

2. Electrical Service Specifications

a. Electric Service - Gas and Steam Dryers

<u>Model</u>	<u>208VAC, 3-Phase</u>			<u>230VAC, 3-phase</u>		
	<u>Amp Draw</u>	<u>Wire Size</u>	<u>3-Pole Breaker</u>	<u>Amp Draw</u>	<u>Wire Size</u>	<u>3-Pole Breaker</u>
ADG-100	11	#14	15	10	#14	15
ADS-100	11	#14	15	10	#14	15
ADS-100 Super Steam	15	#12	20	14	#14	20

IMPORTANT: The dryer must be connected to the electrical supply shown on the data label affixed to the dryer. In the case of 208 or 230 volts, the supply voltage must match the electric service specs of the data label exactly. The voltages 208 and 230 are not the same. Should it be found that a gas dryer was manufactured for operation at 230 volts and the service supply voltage is 208 volts, (or vice versa), a slight wiring change is necessary at the heat circuit transformer. This transformer is located inside the control wire box and is used to step down the control (primary) voltage (i.e., 208 or 230) down to 110 volts. The transformer is dual (primary) voltage; however, it must be wired accordingly. In the case of 208 volts, the yellow primary lead must be used, and the red lead dead ended. For 230 volts, the red primary lead must be used, and the yellow lead dead ended. See the wiring diagram located on the back of the control door.

NOTE: Refer to the drawing in the Technical Data section of this manual for the exact wiring connection diagram.

b. Electric Service - Electric Dryers

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

NOTE: Component failure due to improper voltage application will void warranty.

ELECTRIC OVEN SELECTION				
KW	EQUIV. HEAT BTU'S	SUPPLY VOLTAGE	LINE AMPS	SUPPLY CABLE AWG
60	204,780	208	167	0
50	170,650	220	132	1/0
55	187,720	230	138	1/0
60	204,780	240	145	1/0
60	204,780	416	83.5	4
50	170,650	440	66	4
55	187,720	460	69	4
60	204,780	480	72.5	4

### 3. 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 ELECTRIC CODE (ANSI/NFPA NO. 70-1984). 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 (no. 12 minimum) be connected from the ground connection of the dryer to a grounded cold water pipe. Do not ground to a gas pipe. The grounded cold water pipe must have metal to metal connections all the way to electrical ground. If there are any non-metallic interruptions, such as, a meter, pump, plastic, rubber, or other insulating connectors, they must be jumped with no. 4 copper wire and securely clamped to bare metal at both ends.

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

### 4. Electrical Connections

The only electrical input connections to the dryer are the

3-phase power leads and ground. Single-phase power for the control circuit is done internally to the dryer. No single-phase input connection is required.

a. Gas and Steam Dryers

For gas and steam dryers, the electrical connections are made at the wire leads located in the service box at the rear, upper left corner of the dryer. To gain access to the service box and contactor, the service box cover must be removed.

Providing local codes permit, power to the dryer can be made by the use of a flexible U.L. listed chord/pigtail (wire size must conform to the rating of the dryer), or the dryer can be hard wired directly to the service breaker. In all cases, a strain relief should be used both where the wiring enters the dryer and the service box.

NOTE: It is recommended that a circuit serving each dryer be provided.

b. Electric Dryers

For dryers made to operate at 208, 230, or 240 volts, the electrical input connection is made into the terminal block located at the upper rear of the dryer. For dryers made to operate at 380, 416, 440, or 480 volts, the electrical input connection is made to the oven relay located at the upper rear of the dryer. Input connection wiring must be sized properly to handle the dryer's current draw. This information is printed on the dryer's data label.

NOTE: It is recommended that a circuit serving each dryer be provided.

CAUTION: The dryer must be grounded. A ground screw connection has been provided in the service box for this purpose.

The only electrical connections to the dryer are the 3-phase leads and ground. Single-phase power for the control circuit is done by the factory at the contactor (relay), and no other wiring connections are necessary.

G. Gas Information

The dryer and its individual shut off 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.

The dryer must be isolated from the gas supply piping system by closing its individual manual shut off valve during any

pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig.

### 1. Gas Supply

The gas dryer installation must meet the AMERICAN NATIONAL STANDARD, NATIONAL FUEL GAS CODE ANSI Z223.1-1984, as well as, local codes and ordinances and must be done by a qualified technician.

NOTE: Undersized gas piping will result in ignition problems and slow drying and can create a safety hazard.

The dryer must be connected to the type of gas (natural or L.P.) indicated on the dryer data label. If this information does not agree with the type of gas available, contact the distributor who sold the dryer or contact the factory.

The gas input ratings shown on the dryer data label are for elevations up to 2,000 feet, unless elevation requirements of over 2,000 feet 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 are made by changing the burner orifices. If this adjustment is necessary, contact the distributor who sold the dryer or contact the factory.

NOTE: Any burner changes must be made by a qualified technician.

### 2. Technical Gas Data

#### a. Natural Gas

The natural gas supply pressure to the dryer must be between 6 and 12 inches water column. If the pressure is too low, ignition failure and/or slow drying times may result. Excessively high supply pressure will result in erratic operation of the gas valve's internal pressure regulator. The pressure measured at the pressure tap on the body of the gas valve must be 4 inches water column.

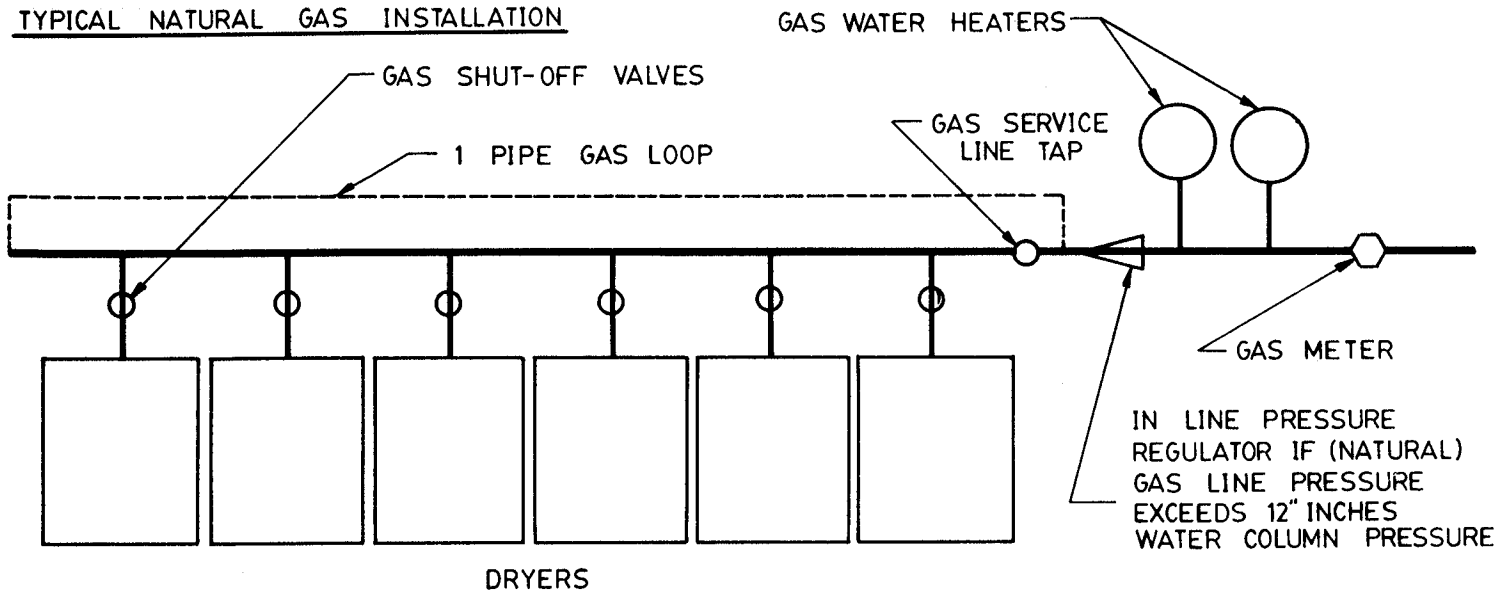
#### b. Liquid Petroleum (L.P.) Gas

Dryers made for use with L.P. have the gas valve pressure regulator blocked open, so that the gas pressure must be regulated downstream of the dryer. The pressure measured at the gas valve body pressure tap must be 11 inches water column.

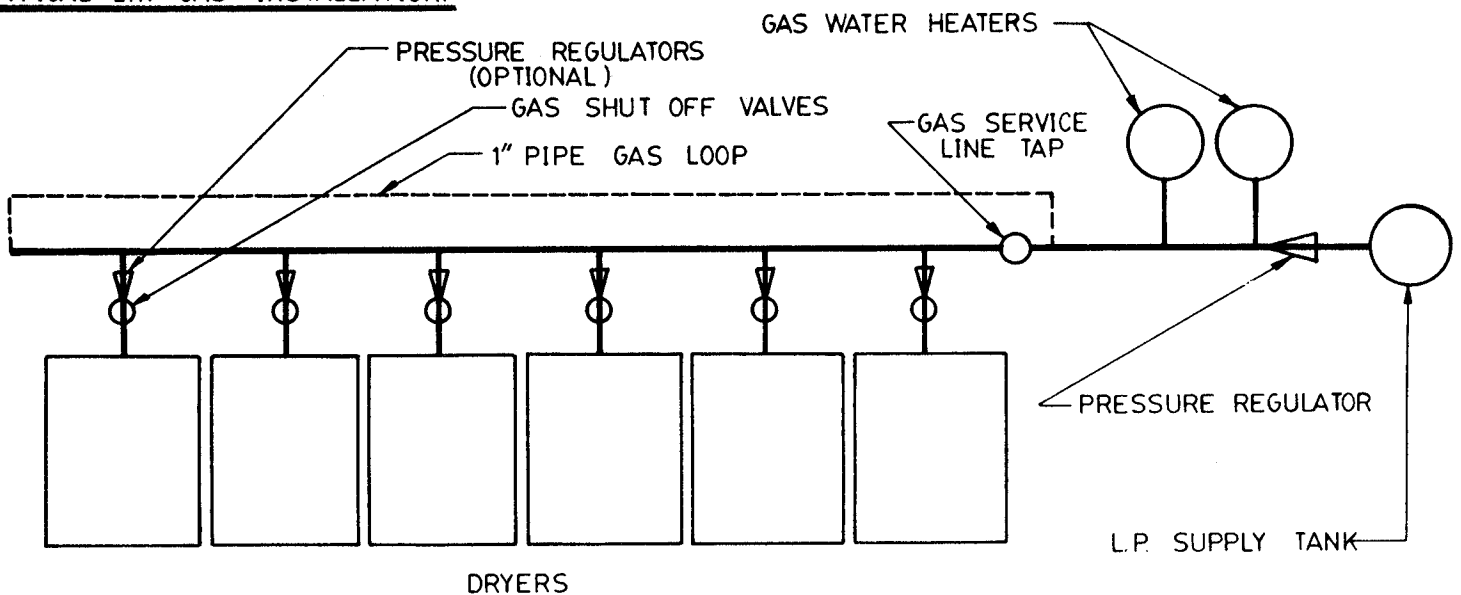
### 3. Piping/Connections

The dryer is provided with a 3/4" N.P.T. inlet pipe connection extending out the rear area. For ease of servicing, the gas supply line of each dryer should have its own shut-off valve.

TYPICAL NATURAL GAS INSTALLATION



TYPICAL L.P. GAS INSTALLATION.



ORIFICE AND WATER COLUMN TABLE						
ADG-100	NATURAL			LP		
	DIA. OF HOLE	DRILL SIZE	QTY	DIA. OF HOLE	DRILL SIZE	QTY
ADG-100B (265,000 BTU)	.1730"	17	3	.1065"	36	3
MAIN BURNER ORIFICE	4.39 mm			2.71 mm		
ADG-100BH (250,000 BTU)	DIA. OF HOLE	DRILL SIZE	QTY	DIA. OF HOLE	DRILL SIZE	QTY
HEAT RECLAIMER	.1695"	18	3	.1040"	37	3
MAIN BURNER ORIFICE	4.30 mm			2.64 mm		
WATER COLUMN (MEASURED AT PRESSURE TAP ON BODY OF GAS VALVE)	4"			11"		



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, 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 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 1" pipe gas loop be installed in the supply line serving the bank of dryers. An inline pressure regulator must be installed in the gas supply line (header) if (natural) gas line pressure exceeds 12 inches water column pressure. Refer to the following illustrations for details.

IMPORTANT: Water column pressure of 4 inches for natural gas dryers and 11 inches 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 tapping, 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 A FLAME

All components/materials must conform to National Fuel Gas Code specifications.

It is important that gas pressure regulators meet applicable pressure requirements, and gas meters be rated for the total amount of appliance BTU's being supplied.

#### H. Steam Piping Hookup

Piping must be installed in accordance with good commercial steam system practice.

Care must be exercised when leveling steam dryers in 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 twenty feet, it should be dripped just before the control valve with a proper trap and dirt pocket.

### 1. Low Pressure Steam (10-15 psig)

Low pressure steam requires oversized piping. Lines running from each main to each dryer must be 1-1/4" pipe.

We recommend an F&T (float and thermostatic) trap for low pressure steam.

Do not elevate the condensate return line after the F&T trap. Drain only by gravity into a properly vented low pressure return or condensate tank. Locate the steam trap at least 12" below coil outlet to assure proper drainage.

If a steam valve is factory supplied with the low pressure steam dryer, it will be a solenoid type steam valve. Wire the steam solenoid into the dryer per the electrical wiring diagram supplied with the dryer.

### 2. High Pressure Steam (100-125 psig)

Dryers equipped to operate with high pressure steam require a 1" supply line and a 1/2" return line.

We recommend an inverted bucket trap for high pressure dryers. DO NOT USE THERMODYNAMIC, DISC, OR IMPULSE TRAPS.

The condensate return line may be elevated after a bucket trap, but only if there is sufficient line pressure to overcome the head. Determine head loss by deducting 12 psi for the control valve, coil, and trap losses, and deduct 1/2 psi for each foot of elevation.

Locate the steam trap at least 12" below the coil outlet.

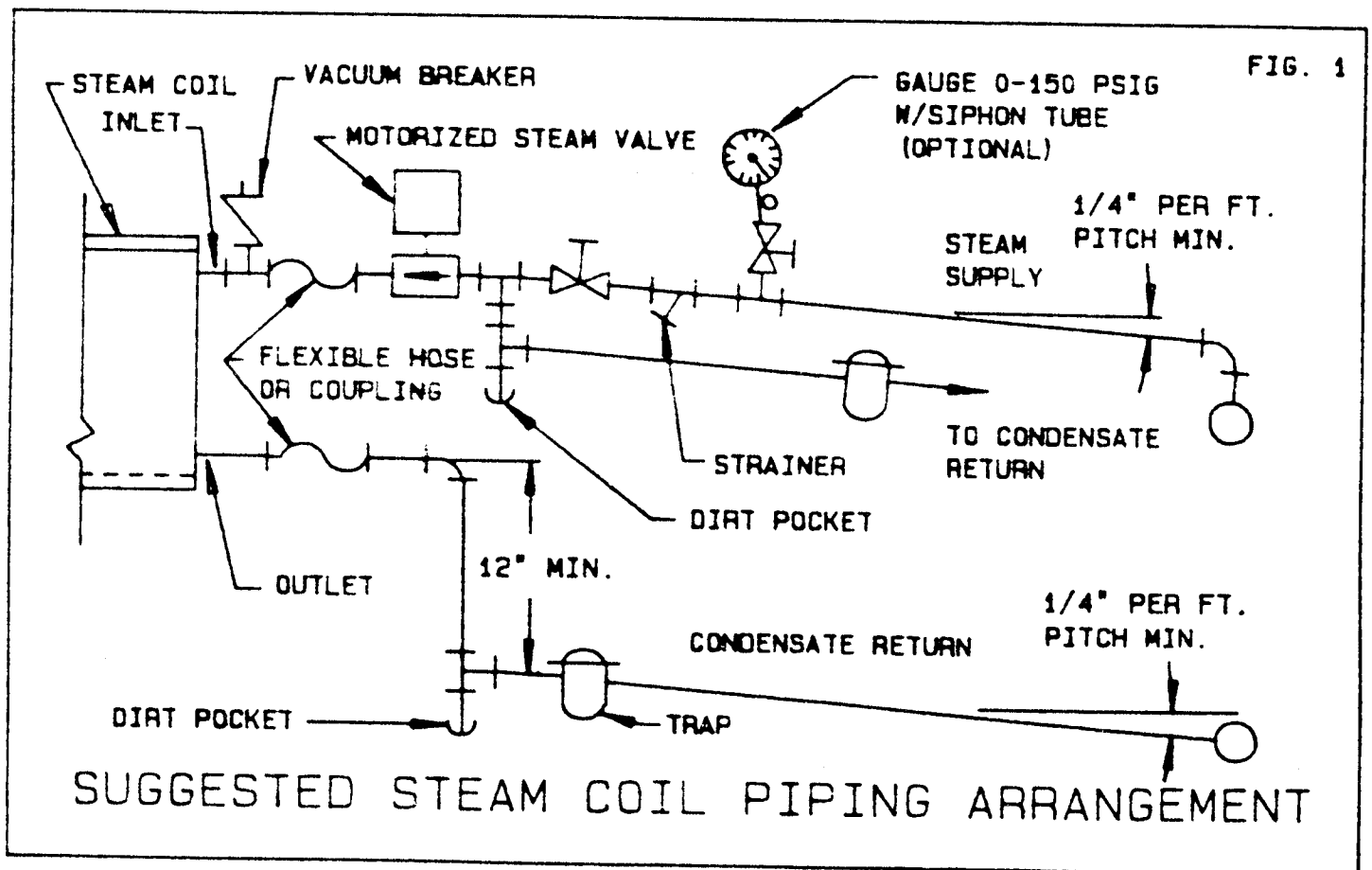
If a steam valve is factory supplied with a high pressure dryer, it will be a motorized steam valve. This is a slow opening and closing valve which will significantly reduce water hammer. Remove the motor cover and connect power wires to the

motor's terminal strip per the wiring diagram supplied with the dryer. The motor operates on 120 volts only, so a power transformer will be supplied with the dryer. It is important to remember that the motor requires electrical power to open the valve and electrical power to close the valve. So, if main dryer power is cut off when the valve is open, it will remain open. Steam flow must be in the direction of the arrow printed on the steam valve body.

The motorized steam valve should be mounted horizontally, so that the motor is directly above the valve.

NOTE: Flexible hose must be provided between the coil and main lines to prevent piping strains.

The preceding precautions are necessary and any variation from them will void the warranty on the heat exchanger.



All steam piping hook-up and maintenance must be performed by a qualified technician in accordance with local codes.

## I. 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 on the back of the dryer.
3. For gas dryers, check to assure that the dryer is connected to the type of gas indicated on the dryer data label.
4. The sail switch damper assembly is installed and pre-adjusted at the factory prior to dryer shipment. However, the sail switch adjustment must be checked to assure that this important safety control is functioning. A sail switch is provided on gas and electric dryers only.
5. Check bolts, nuts, screws, terminals, and fittings for tightness.
6. Be sure all shut-off valves are in the open position.
7. Be sure the back guard and service box cover have been replaced.
8. Make sure the lint coop support bracket has been removed. Make sure tumbler drive motor V-belts have been reconnected.
9. Check the lint door to assure that it is closed and secured in place.

IMPORTANT: If during installation the lint door safety chain was disconnected, it must be reconnected or personal injury may result.

10. Rotate the tumbler (drum) by hand to be sure it moves freely.

## J. Pre-operational Test

All dryers are thoroughly tested and inspected before leaving the factory. However, a pre-operational test should be done before the dryer is put into use. It is possible that adjustments have changed in transit.

1. Turn on electric power to dryer.

2. To Start dryer:

a. Dual Timer Dryer

- 1) Turn drying timer knob for a time of 20 minutes.
- 2) Select "High Temp".
- 3) Push "Push to Start" switch.

b. Computer Dryer

- 1) Display will say "FILL".
- 2) Press the "E" touch pad on keyboard of computer.
- 3) Display will quickly show Ld30, LC04, F180. The dryer will start, and the display will show dr30.

NOTE: Pressing touch pads A, B, C, D, and F will also start the dryer. Six pre-programmed drying cycles (A through F) have been stored in the computer's memory. See page 55 for these preset programs.

3. When a gas dryer is first started, it may not ignite on the first ignition attempt. This is because the gas supply piping may be filled with air, and it may take a few minutes for this air to be purged from the lines.

During this purging period, check to be sure all gas shut-off valves are open. If the dryer still fails to heat, refer to the trouble shooting section.

4. Make a complete operational check of all the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.
5. Make a complete operational check of all safety related circuits. Door switch(es), hi-limit thermostat, sail switch, cycling thermostats, etc.
6. A gas pressure test should be taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

NOTE: Water column pressure requirements: (measured at the pressure tap on gas valve body)

Natural Gas - 4 inches W.C.  
L.P. Gas - 11 inches W.C.

7. If computer program changes are required, refer to the Phase 3 Computer Programming section of this manual.
8. The dryer should be operated through one complete cycle to assure that no further adjustments are necessary and that all components are functioning properly.

IMPORTANT: The dryer tumbler (basket/drum) is treated with a protective coating. We suggest tumbling old clothes or material in the basket using a mild detergent to remove coating.

9. Check the electric service phase sequence. While the dryer is operating, check to see if the blower wheel is rotating in the proper direction. Looking from the front, the blower wheel should spin in the clockwise direction. If so, the phasing is correct. If the phasing is incorrect, reverse two (2) leads at connections L1, L2, or L3 of power supply to the dryer.

### SECTION III

#### OPERATING INSTRUCTIONS - DUAL TIMER DRYER

##### A. Dual Timer Control Components

<u>Component</u>	<u>Function</u>
Drying Timer	Permits the dryer to run in the heating mode for a maximum time of 60 minutes.
Cool Down Timer	Permits the dryer to run in the cool down mode for a maximum of 15 minutes. Cool down time starts at the conclusion of the drying time.
Heat Selector Switch	Controls the temperature during the drying cycle. Selections available are high temp, low temp, and permanent press.
"Push to Start" Button	Safety Device which must be manually pressed to start the dryer. Whenever the dryer is stopped by opening the main door during a cycle, the "Push to Start" button must be pressed to restart the dryer.
Indicator Light	Lights to indicate that the dryer is in the drying or cooling cycle.

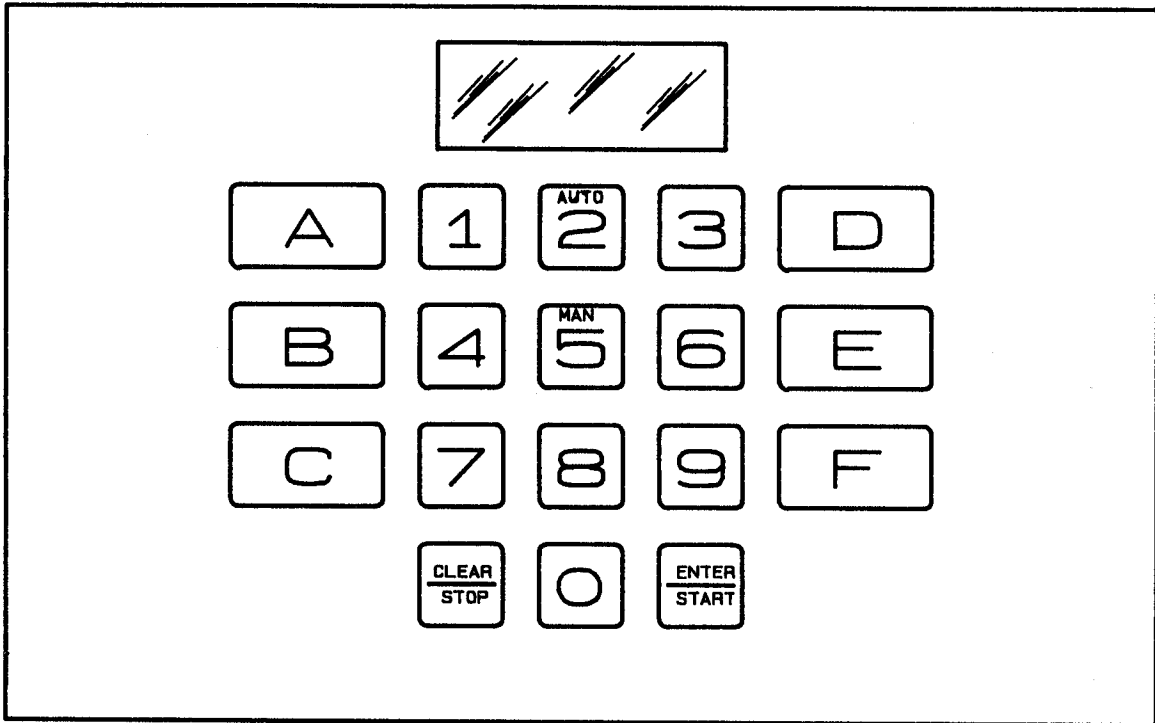
##### B. Operating Sequence

1. Turn drying timer knob to desired drying time. Turn cool down timer knob to desired cool down time.
2. Make temperature selection in accordance with the type of material being dried.
3. To start unit, press "Push to Start" button.

NOTE: Main door must be closed.

4. The dryer will start, and the heat circuit will activate. The indicator light will come on.
5. The heat will come on and stay on until the tumbler reaches the temperature setting of the selected thermostat. The thermostat will open shutting off the heat. As the tumbler temp cools, the thermostat will reclose, turning on the heat. The dryer will operate in this manner for the duration of the drying time. At the completion of the drying time, the cool down time will start. The dryer will run without heat for the duration of the cool down time.

# PHASE 3 OPL



American Dryer Corporation's  
latest advancement in  
Micro-processor Technology.



## SECTION IV

### INTRODUCTION TO PHASE 3

#### Programmable

All programming for the Phase 3 O.P.L computer is done through the computer keyboard and the programs are displayed for verification. Dip switches are eliminated to avoid the possibility of switch failure, due to an accumulation of lint or moisture. To enter the programs, a security code is entered into the computer, through the keyboard. The security code prevents unauthorized entry.

#### Manually Loaded Cycles

These cycles are not stored in the computer memory. They are entered by the operator when the cycle is needed.

- a. Automatic Mode - This program will cycle the dryer off when the pre-programmed dryness levels have been reached. The operator will enter the dryness levels (1-225 peaks) and the drying temperature. At the end of the drying cycle, the dryer will begin an automatic pre-programmed cooling cycle.
- b. Manual Mode - In this program, the operator will enter the dry time (0-99 minutes), the cool down time (0-99 minutes), and the drying temperature.

#### Drying Temperature

Operating temperatures can be programmed from a minimum of 110° F. (45° C.) to 200° F. (90° C.) in 1° increments.

#### Pre-Programmed Cycles

The Phase 3 O.P.L. computer can store in its memory six (6) pre-programmed cycles (A through F on the keyboard) which are entered complete into the computer prior to operation. Any of these programs can be started by pressing one button. These pre-programmed cycles can be set in either the automatic or manual mode and are displayed at the beginning of each cycle start-up.

#### System Parameters

The function of the dip switches in our previous computers has been to set the basic system parameters. With the elimination of the dip switches, these parameters are now entered through the keyboard and stored in four program locations. These programs are entered only once and are called up at each cycle selection when required.

### Pre-programmed Cycle Check

To check the parameters of the pre-programmed cycles, without entering the program mode, the operator can open the tumbler loading door and press any of the pre-program keys (A through F on the keyboard). The cycle parameters will be displayed for verification only. A cycle will not begin with the door open.

### Temperature Conversion Status

Temperature-related circuits are programmable to be operated in Fahrenheit or Celsius. Programs affected are:

- a. Temperature display mode
- b. Temperature selections
- c. Cool down temperatures

### L.E.D. Flash Display

The display is programmable to allow the L.E.D. readout to display (while a cycle is in progress) a choice of cycle time or temperature. Programming also allows the L.E.D. readout to flash back and forth from cycle time to temperature, which can be set from 1-15 seconds.

If the temperature display program is not used, the temperature can be viewed through the L.E.D. display by pressing the enter/start button at any time while a cycle is in progress.

### Anti-Wrinkle Cycle

This program helps keep permanent press items wrinkle free when they are not removed from the dryer promptly at the end of the drying and cooling cycle. Programming allows the dryer to automatically restart in the cool down cycle if the clothes are not removed in a pre-programmed amount of time. Anti-wrinkle program settings:

- a. Guard Delay Time: 15-4095 seconds in 1-second increments.
- b. Guard On Time: 10-63 seconds in 1-second increments.
- c. Maximum Guard Time: 1-127 minutes in 1-minute increments.

### Audible Tone

A tone will sound for each program entry. In addition, programming allows the tone to sound from 1-15 seconds at the end of the drying and cooling cycle to indicate that the cycle is complete.

## Reversing Option

Programming allows:

- a. Select Reverse or Always Reverse, or, in the case of the pre-programmed cycle, Reverse or No Reverse.
- b. Stop Time - 4-19 seconds in 1-second increments.
- c. Spin Time - 30-93 seconds in 1-second increments.

## Battery Back-up (option)

Dryers ordered from the factory with the 9 volt battery back-up option (battery not included) allows the computer to maintain its operating status should a momentary power interruption occur while the dryer cycle is in progress.

It is suggested that the battery be replaced at least once a year or as found necessary. The battery life will depend on the age of the battery, the amount of power interruptions, and back-up time used.

## IMPORTANT

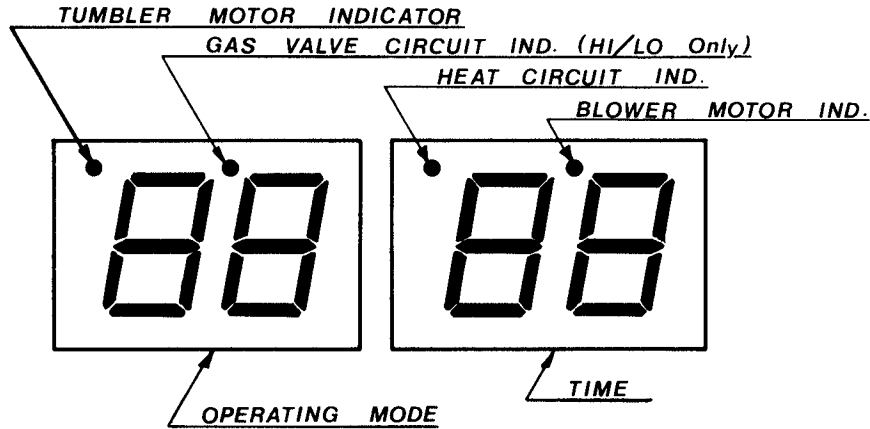
For proper operation use alkaline batteries only. Suggest Eveready Energizer, Duracell, or equivalent. DO NOT USE CARBON TYPE BATTERIES.

## Diagnostics

All major circuits, including door, micro-processor, temperature sensor, heat, and motor circuits, are monitored.

SECTION V

L.E.D. DISPLAY CODES



Auto	Automatic Mode
ArEV	Always Reverse
buz	Buzzer (tone)
buz time	Buz Time
°CEL	Degree in Celsius
CL	Cool Down Cycle in Progress
Cool Time	Cool Down Time
Cool temp	Cool Down Temperature
CY A	Pre-programmed Cycle A
CY b	" " b
CY C	" " C
CY d	" " d
CY E	" " E
CY F	" " F
CYCL--time	Cycle Display Time
d	Dryness Level (auto peaks)
done	Drying or Cooling Cycles Complete or Dryer is in Anti-Wrinkle Cycle
door	Door Circuit is Open
dr	Drying Cycle in Progress
drY--LvL	Dryness Level (auto peaks)
dry temp	Drying Temperature
dSFL	Dryer Sensor Circuit Failure
F	Fabric (temperature)
°FAr	Degree in Fahrenheit
FILL	No Cycle in Progress
FLS	Flash Display Active
GdLY	Anti-Wrinkle Delay Time
Gon	Anti-Wrinkle On Time
Grd	Anti-Wrinkle Program Active
LC	Load Cool Down Time
Ld	Load Drying Time

nAnU	Manual Mode
nGrd	Maximum Guard Time
nbUZ	No Buzzer (tone)
nFLS	No Flash Display
nGrd	No Anti-Wrinkle Cycle
nrEV	No Reverse
ProG	Program Mode
rEV	Reverse
Spin--tine	Spin Time
SrEV	Select Reverse
StoP--tine	Stop Time
tEnP	Temperature
tEnP--tine	Temperature Display Time
tine	Time

### L.E.D. Indicator Dots

#### Tumbler Motor Indicator

When lit, the computer is telling the tumbler motor to spin. On reversing dryers, this light will go out when the computer stops the tumbler motor before reversing the motor's direction.

#### Gas Valve Circuit Indicator

For hi/lo gas dryers, this dot is on whenever the computer calls for heat. For electric, steam, and non-hi/lo gas dryers, this dot serves no purpose.

#### Heat Circuit Indicator

For electric, steam, and non-hi/lo gas dryers, this dot is on whenever the computer is calling for heat. For hi/lo gas dryers, this dot being on indicates a call for hi-fire gas flow.

#### Blower Motor Indicator

This dot lights whenever the computer calls for the blower motor to come on.

## SECTION VI

### OPERATING INSTRUCTIONS (PHASE 3 O.P.L.)

NOTE: Unless otherwise specified at the time of ordering, the Phase 3 O.P.L. computer has been pre-programmed by the factory with the parameters shown on pages 53 and 54. Should program changes be found necessary, please read this manual carefully to thoroughly familiarize yourself with the Phase 3 programming characteristics.

#### A. Manually-Operated Timed Mode

1. When turning on power or when no cycle is in progress, the L.E.D. display will read "FILL".
2. Press key number 5.
3. Select cycle drying time. Display will read "Ld\_\_". Enter the drying time desired in the two blank spaces. Press enter/start key.
4. Select cycle cool down time. Display will read "LC\_\_". Enter the cool down time desired in the two blank spaces. Press enter/start key.
5. Select cycle drying temperature. Display will read "F\_\_\_\_". Enter the drying temperature desired in the three blank spaces. Press enter/start key.
6. (For reversing dryers in select reverse mode only) Display will read "Sr\_\_". Press enter/start key to begin a reversing cycle and 0 to begin a non-reversing cycle.
7. When the dryer starts, the display will read "dr" and the drying time selected. The drying time will count downward in one-minute increments.
8. When the drying time has counted down to zero, the cool down cycle will begin. The display will read "CL" and the amount of cool down time selected. The cool down time will count downward in one-minute increments.
9. Upon completion of drying and cooling cycles, the tone will sound, and the display will read "donE" at which time the dryer will shut off.

NOTE: a. If the anti-wrinkle program is active, the display will remain reading "donE", and the computer will proceed through the anti-wrinkle program until the maximum Guard On Time has expired or until the door is opened, whichever comes first. The display will read "FILL".

b. If the anti-wrinkle program is not active or in use, the display will read "FILL".

## B. Manually-Operated Automatic Mode

1. When turning on power or when no cycle is in progress, the L.E.D. display will read "FILL".
2. Press key number 2.
3. Select cycle drying temperature. Display will read "F\_\_\_". Enter the drying temperature required in the three blank spaces. Press enter/start key.
4. Select number of dryness levels. Display will read "d\_\_\_". Enter dryness levels required in the three blank spaces. Press enter/start key.
5. (For reversing dryers in select reverse mode only) Display will read "Sr\_\_". Press enter/start to begin a reversing cycle and 0 to begin a non-reversing cycle.
6. When the dryer starts, the display will read "dr00". The drying time will count upwards in one-minute increments until the selected number of dryness peaks (levels) is reached.
7. When the drying cycle is completed, the dryer will go into the cool down cycle. The display will read "CL00", and the time will count upward in one-minute increments until the preset cool down time or temperature is reached.
8. Once the pre-programmed drying time and cool down period have been reached, the tone will sound, and the display will read "donE" at which time the dryer will shut off.

NOTE: a. If the anti-wrinkle program is active, the display will continue to read "donE", and the computer will proceed through the anti-wrinkle program until the maximum Guard On Time has expired or until the door is opened, whichever comes first. The display will read "FILL".

b. If the anti-wrinkle program is not active or in use, the display will read "FILL".

## C. Pre-programmed Cycles

1. All programming for the pre-programmed cycles is already complete. Simply press the letter on the keyboard corresponding to the cycle desired (A through F), and the cycle will begin.

NOTE: The anti-wrinkle program will operate identical to manually entered programs.

D. Stopping the Dryer

To check on the dryness of a load during a drying or cool down cycle, simply open the door. To restart the dryer after checking the load, close the door and press the "start" touchpad. The computer will then continue with the drying and cool down cycle.

The dryer can also be stopped by pressing the "stop" touchpad. The display will return to "FILL".



## SECTION VII

### INTRODUCTION TO PROGRAMMING

To enter the program mode to access either the four (4) program locations (basic system parameters) or the six (6) pre-programmed cycles, the security code must be entered. The procedure for entering the security code is as follows:

First, make sure that no cycle is in progress and that the display shows "FILL". Then, press the enter/start key once and the 0 key three times. The three zeros must be entered within two seconds after pressing enter/start. If this sequence is not entered correctly, the computer will deny access into the program mode. If the code is entered correctly, the computer will display "ProG". From this point, any of the program locations or pre-programmed cycles can be accessed.

#### Programming of System Parameters

The four (4) program locations containing the system parameters are located at keys 2, 5, 8, and 0 on the keyboard. Touching any of those keys when the display reads "ProG" will access that particular program.

The parameters stored in each location are listed on page 35. All of these parameters affect the manually-loaded program cycles, and some affect the pre-programmed cycles. The chart on page 35 also shows which parameters affect which programs.

To alter the programming of the program locations, the operator will first locate the parameter he wishes to change. If the change is a numerical one (time or temperature), the operator will simply enter the numerical value desired. If the change is a status change, such as changing the temperature readout from °F. (degree Fahrenheit) to °C. (degree Celsius), the operator will press the 0 key. This zero key acts as a flip-flop switch to change the programming of a parameter.

The actual programming steps are covered in the flow charts in Section VIII. These parameters will be preset at the factory and may suit your needs as is. The preset parameters are listed on pages 53 and 54, and the limits for these parameters are listed on page 54.



Minimum Cool Down Temperature (automatic cycles only)  
Reversing Status (reversing dryers only)

After programming a pre-programmed cycle, the operator then has a choice of entering any of the other pre-programmed cycles or program locations or, by pressing clear/stop on the keyboard, exiting the program mode.

Once the program has been stored in the memory and the computer is out of the program mode, the operator can begin that cycle by pressing the corresponding letter on the keyboard.

An actual example for programming a pre-programmed cycle is shown on page 41.

The pre-programmed cycles are preset at the factory and may already suit your needs without having to reprogram. The preset parameters are listed on pages 53 and 54.

The limitations of the pre-programmed cycles are listed on page 54.

#### Manually-Entered Programs

There may be times when the six (6) pre-programmed cycles will not suit the needs of the operator. At that time, a manually-entered cycle can be used. This cycle can be set to run in the automatic or manual mode and will not be stored in the computer memory.

All the basic system parameters have already been entered into the four (4) program locations, and the dryer will operate from them. The only parameters that now have to be entered to begin a cycle are certain specifics, such as drying time and temperature. The exact parameters are listed as follows:

##### Manually-entered Automatic Cycles (Key 2)

Cycle Drying Temperature  
Number of Dryness Levels  
Reversing Status (reversing dryers set in select reverse mode only)



##### Manually-entered Manual Cycles (Key 5)


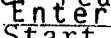
Cycle Drying Time  
Cycle Cool Down Time  
Cycle Drying Temperature  
Reversing Status (reversing dryers set in select reverse mode only)

## SECTION VIII

### FLOW CHARTS

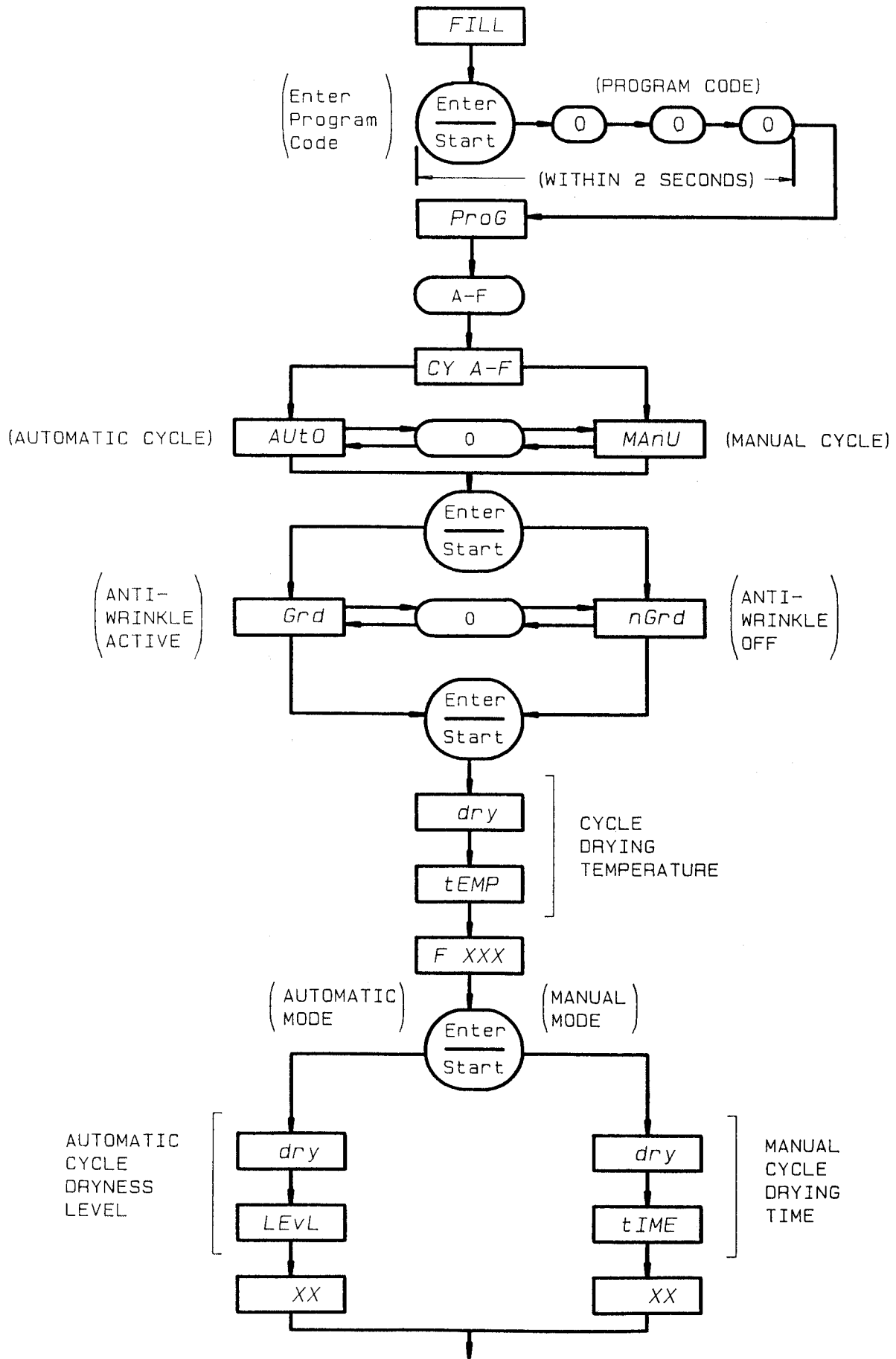
This section explains the programming of the pre-programmed cycles and the system parameters through flow charts. A flow chart is nothing more than a diagram of the programming process.

Two different symbols will be used in the flow charts - a rectangle  and an oval . Each rectangle will represent a readout on the computer display, and each oval will represent a key pressed.

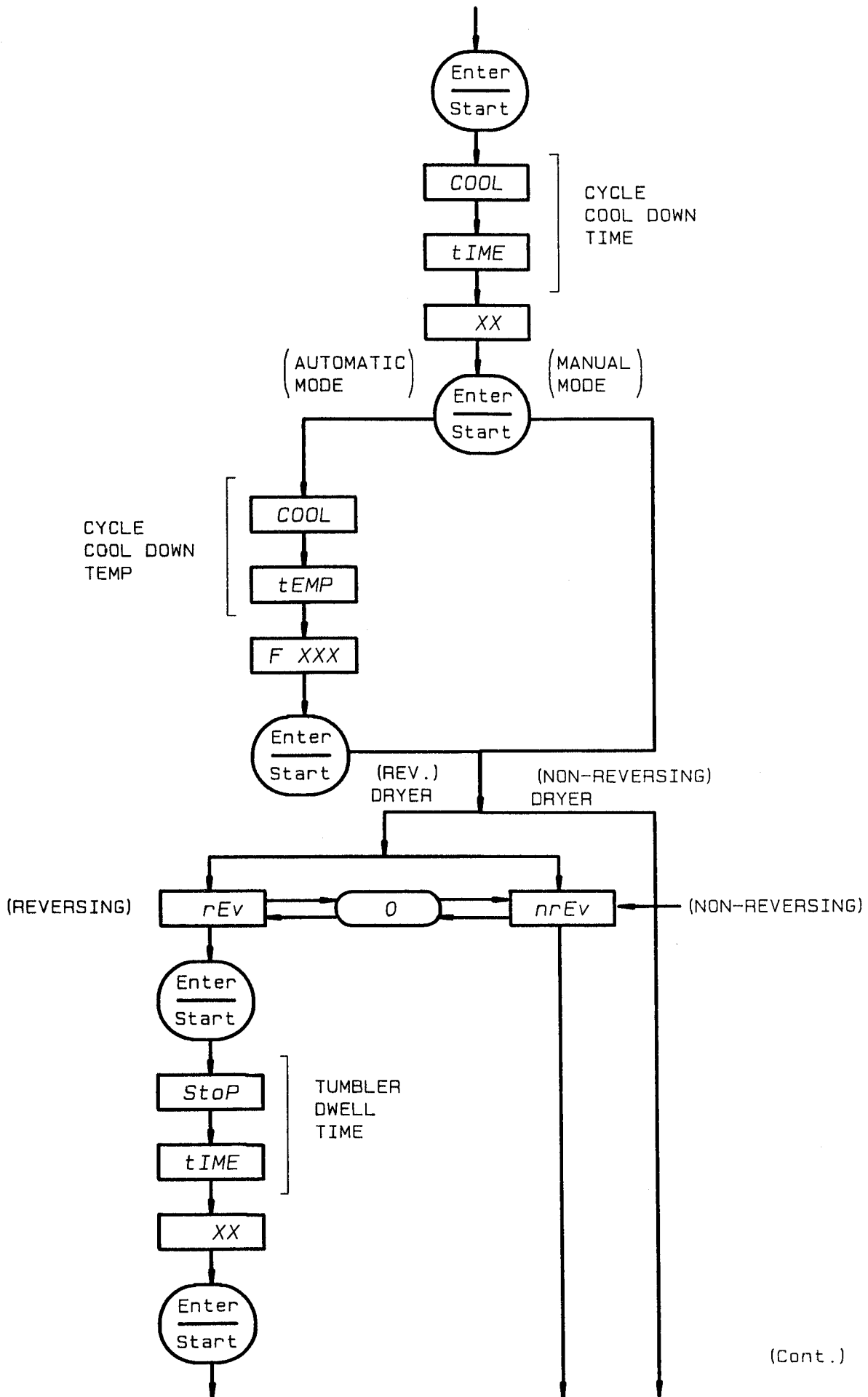
For instance, if the flow chart shows the symbol , the computer readout will display the same. Also, if the flow chart shows Enter , you will press that key, on the label. The flow chart arrows represent the program path.

The following is an index for the flow charts:

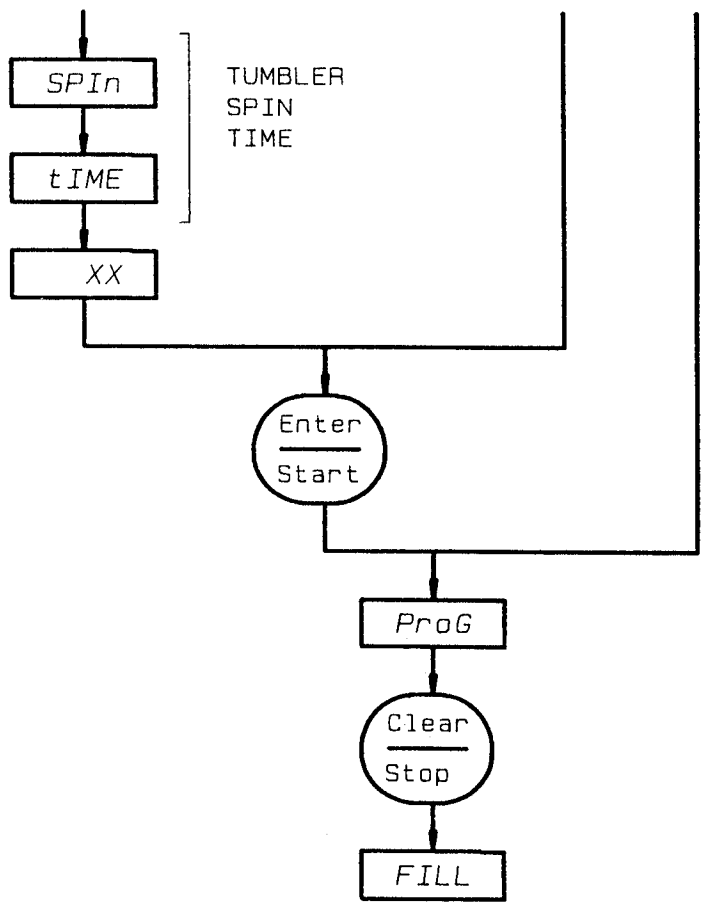
<u>Program</u>	<u>Flow Chart</u>	<u>Page</u>
Pre-programmed Cycle .....	A .....	38
Example of a Pre-programmed Cycle .....	B .....	41
Program Location 1 .....	C .....	44
Program Location 2 .....	D .....	46
Program Location 3 .....	E .....	48
Program Location 4 .....	F .....	50
Manually-entered Automatic Cycle .....	G .....	51
Manually-entered Manual Cycle .....	H .....	52



(Cont.)



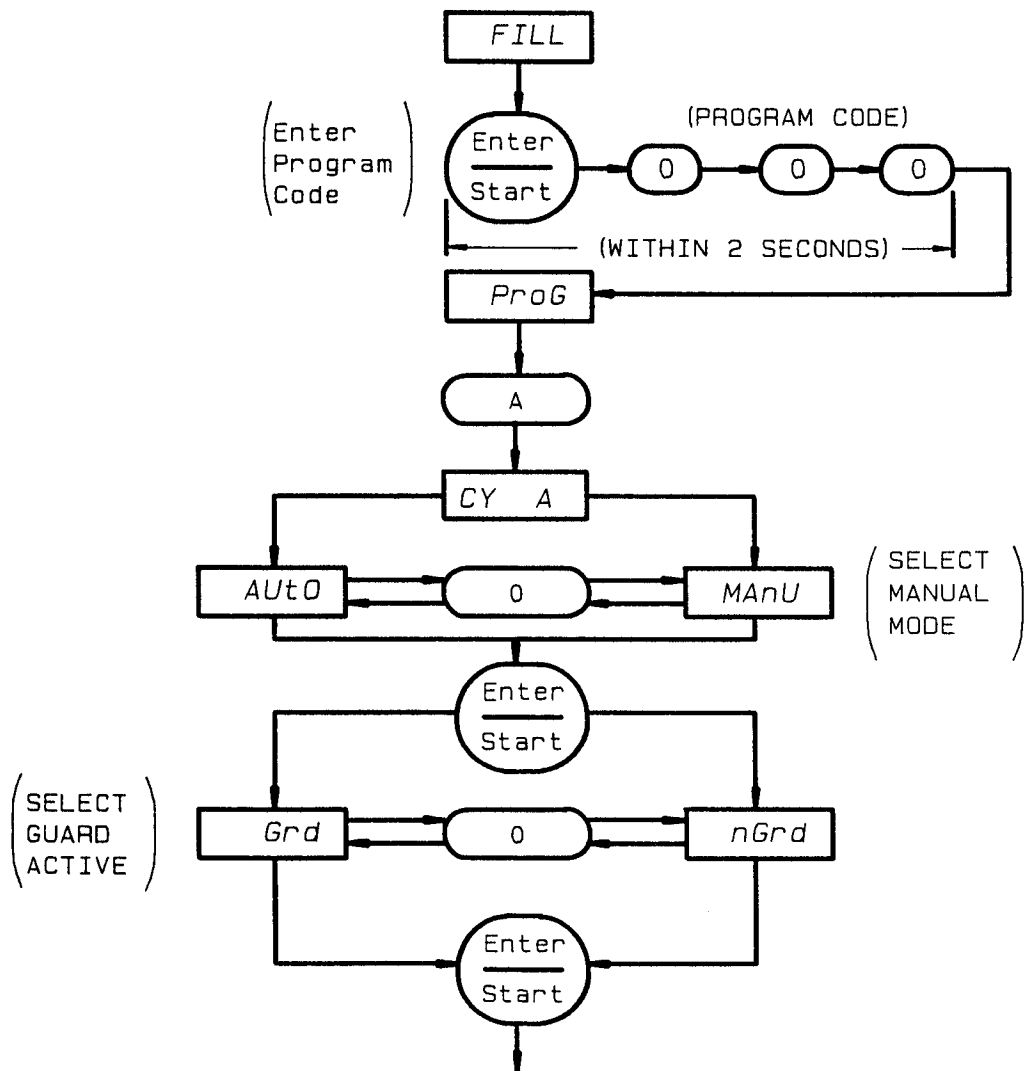
(Cont.)



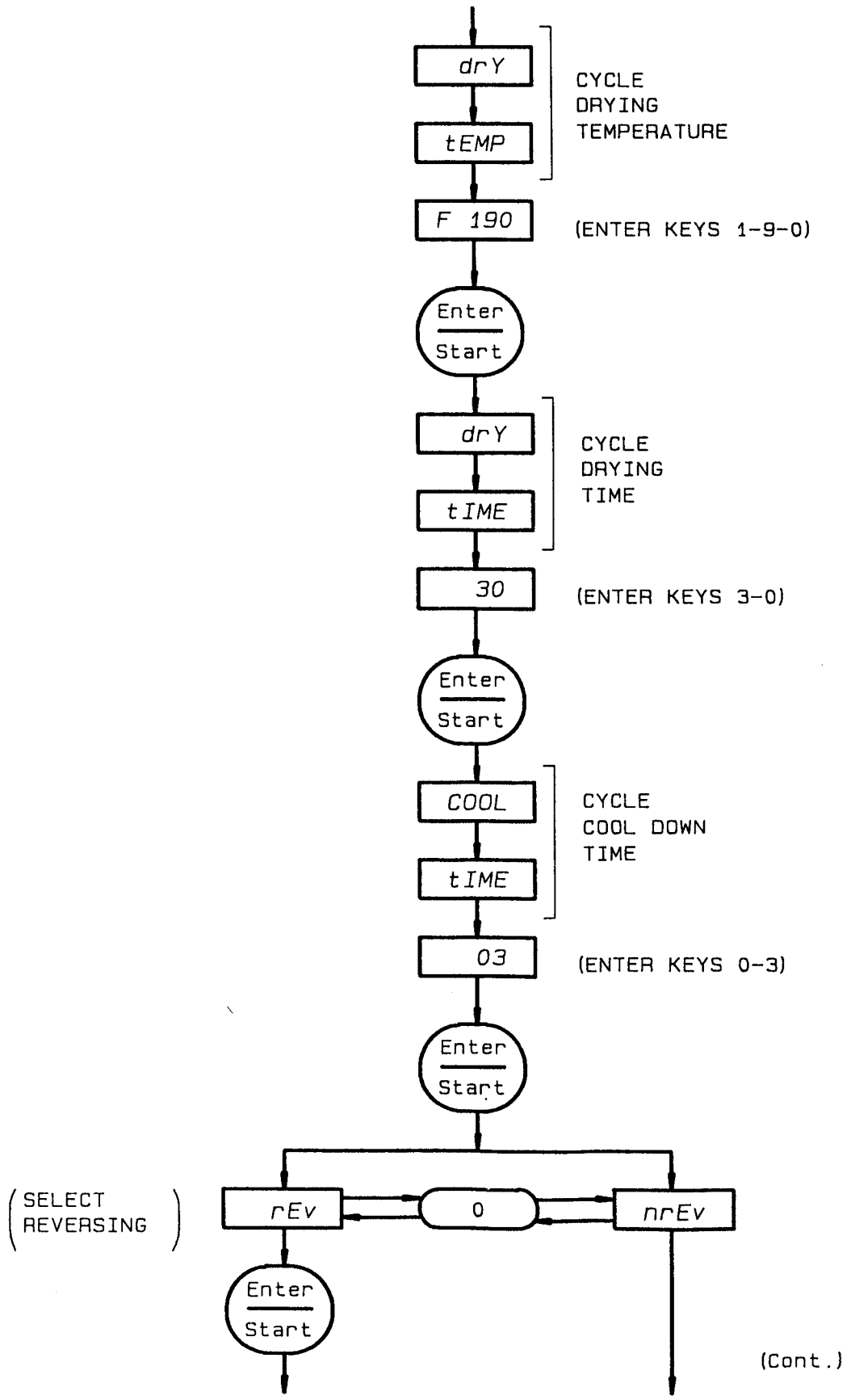
EXAMPLE OF A PRE-PROGRAMMED CYCLE

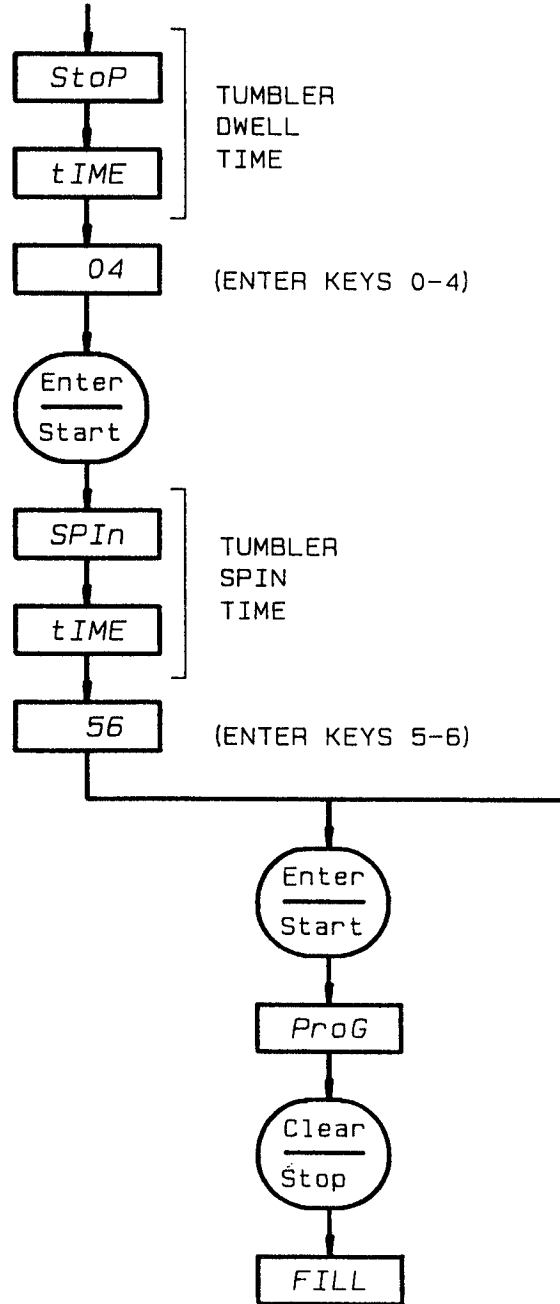
Program a cycle with the following parameters:

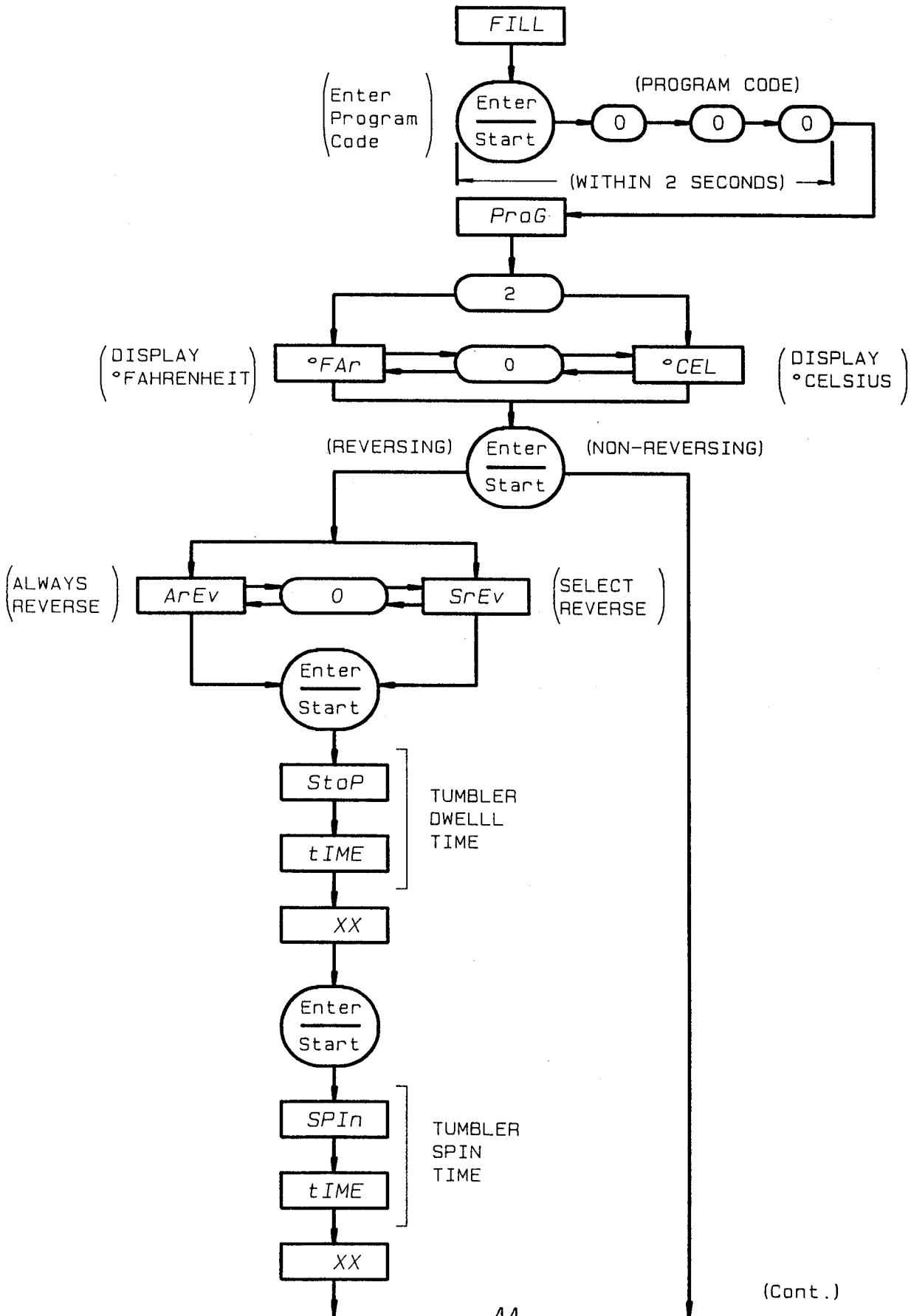
1. Enter cycle under program A.
2. Set a manual cycle.
3. Set Anti-Wrinkle active.
4. Set the drying temperature at 190° F.
5. Set the cycle drying time at 30 minutes.
6. Set the cycle cool down time at 3 minutes.
7. Set the dryer in the reversing mode.
8. Set tumbler dwell time at 4 seconds.
9. Set tumbler spin time at 56 seconds.

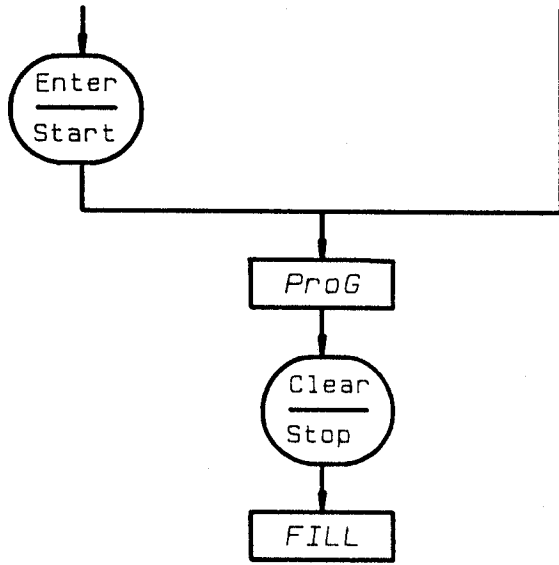


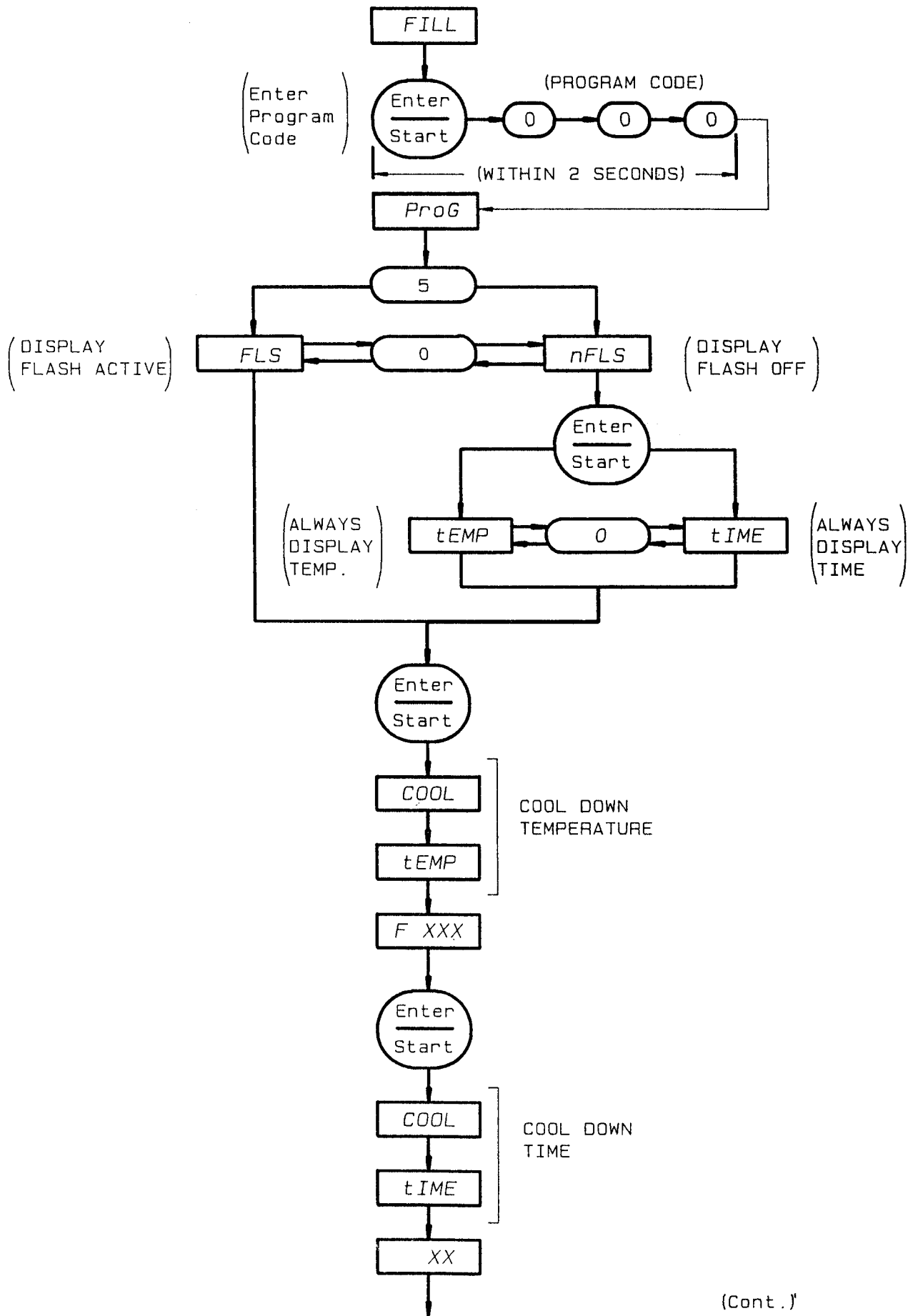


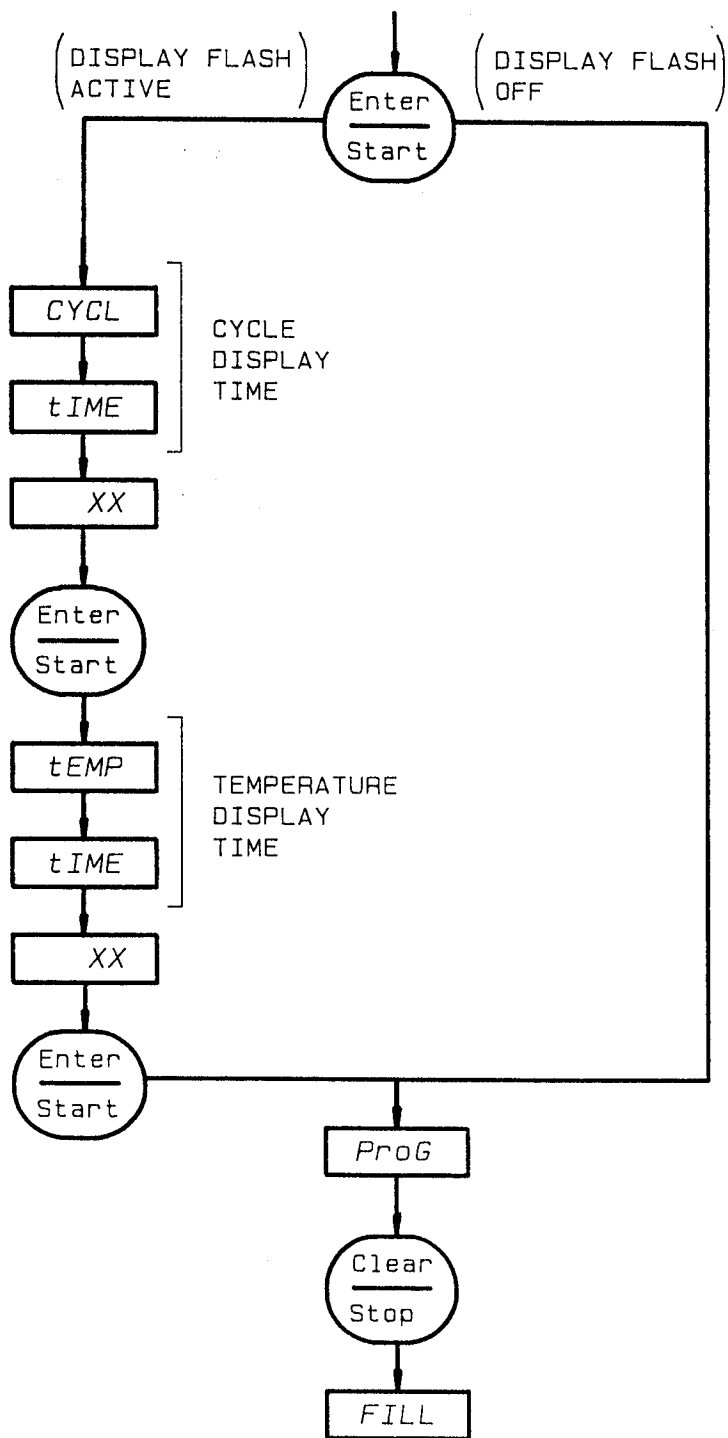


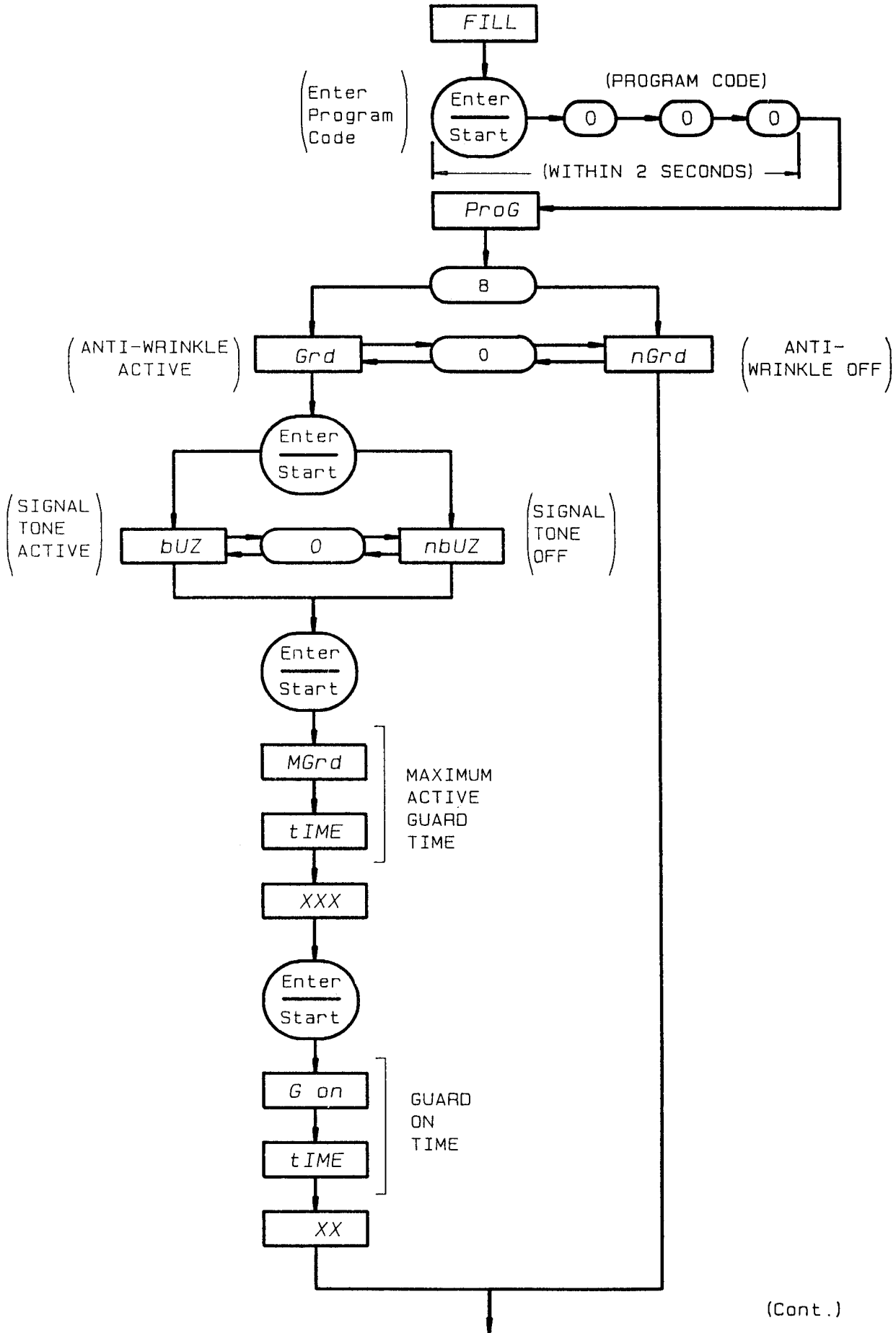




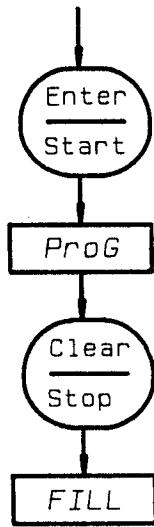




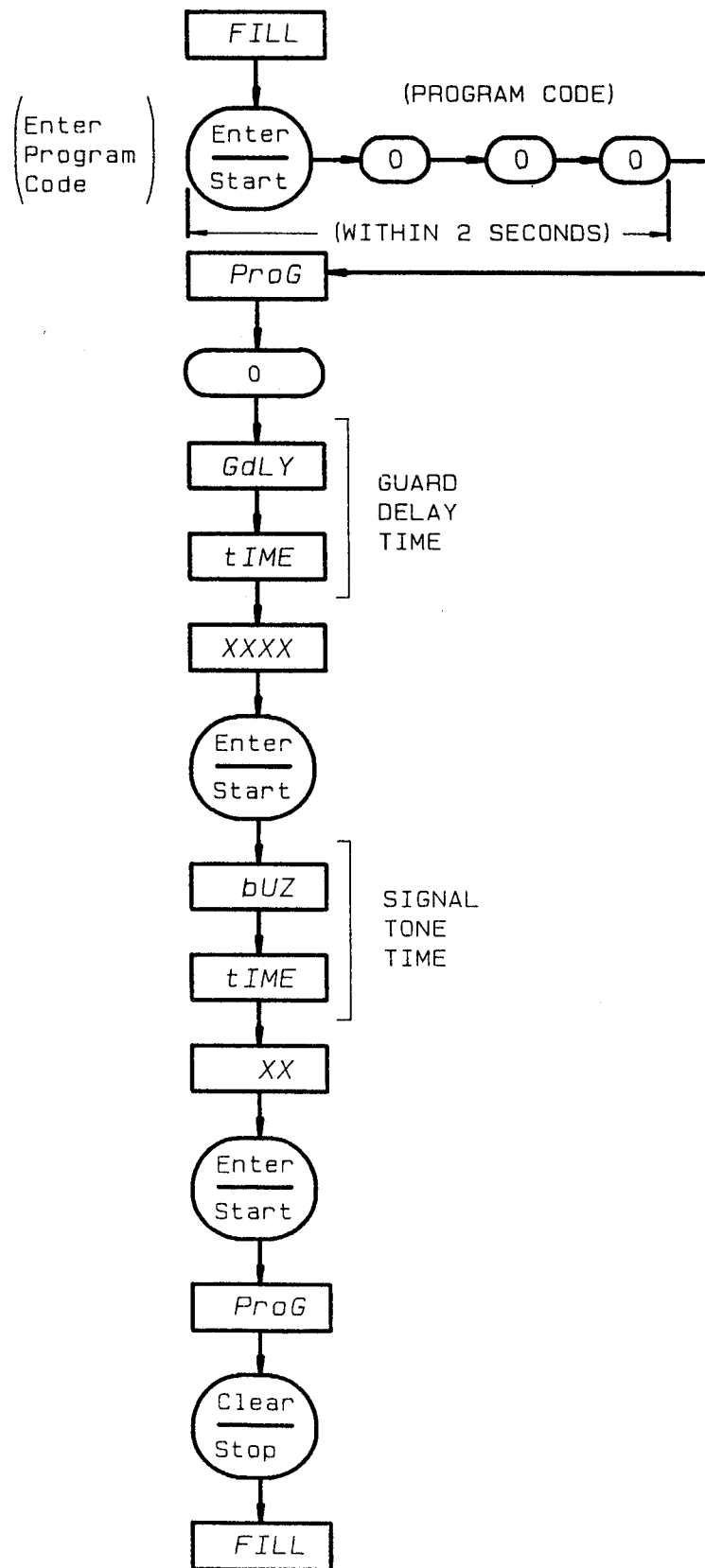


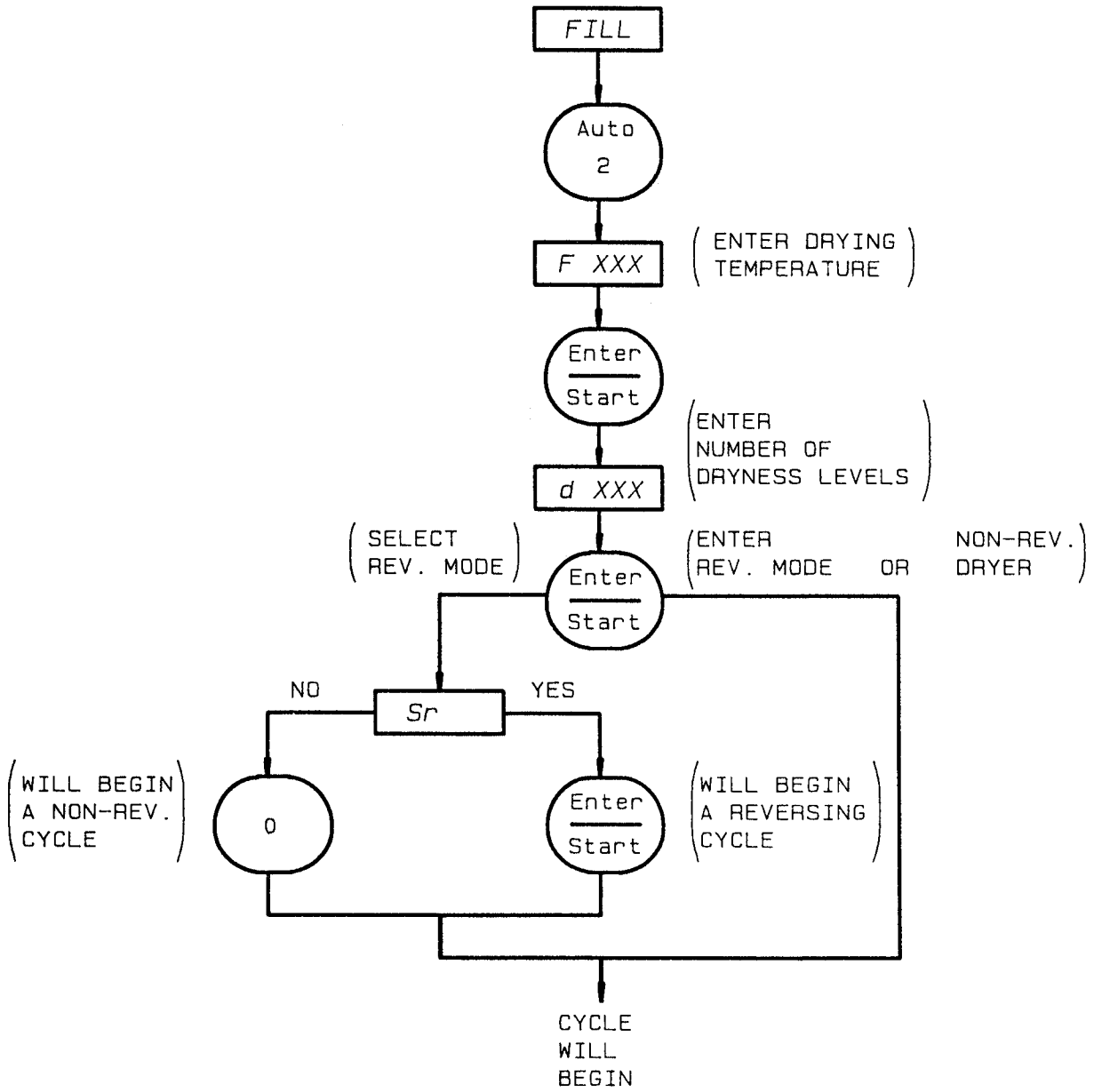


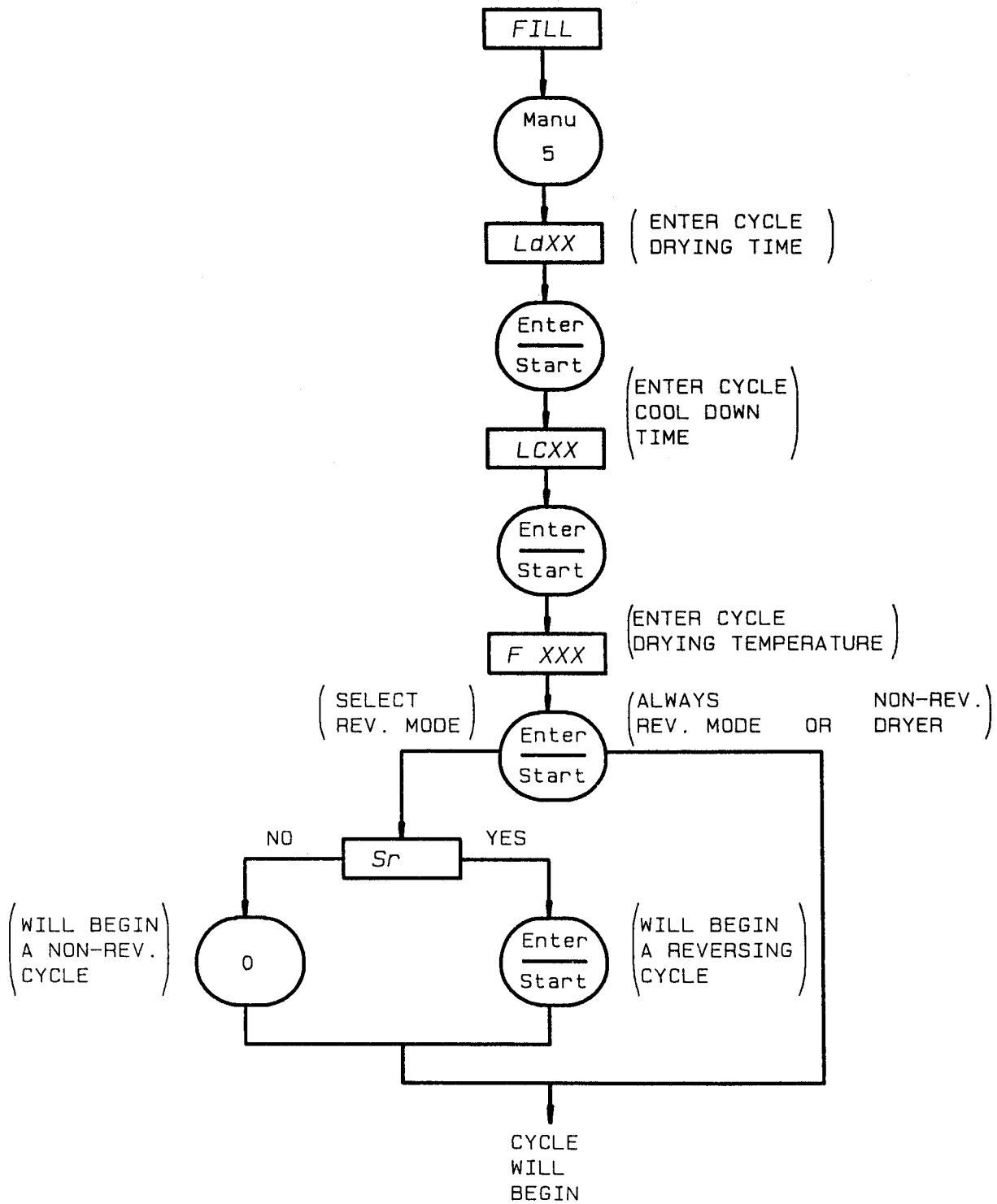
(Cont.)











## PHASE 3 O.P.L. PARAMETERS

### I. Factory Preset Programs (Reversing Dryers)

- Cycle A Automatic Mode, Anti-Wrinkle active, Dry Temperature 190°F., Dryness Level 30, Cool Down Time 6 minutes, Cool Down Temperature 100°F., No Reverse.
- Cycle B Automatic Mode, Anti-Wrinkle active, Dry Temperature 190°F., Dryness Level 20, Cool Down Time 4 minutes, Cool Down Temperature 100°F., No Reverse.
- Cycle C Automatic Mode, Anti-Wrinkle active, Dry Temperature 160°F., Dryness Level 20, Cool Down Time 4 minutes, Cool Down Temperature 100°F., No Reverse.
- Cycle d Manual Mode, Anti-Wrinkle active, Dry Temperature 190°F., Dry Time 40 minutes, Cool Down Time 6 minutes, No Reverse.
- Cycle E Manual Mode, Anti-Wrinkle active, Dry Temperature 180°F., Dry Time 30 minutes, Cool Down Time 4 minutes, No Reverse.
- Cycle F Manual Mode, Anti-Wrinkle active, Dry Temperature 170°F., Dry Time 10 minutes, Cool Down Time 2 minutes, No Reverse.

### System Parameters

- Program Location 1 Temperature Conversion Status set in Fahrenheit, Reverse, Stop Time 8 seconds, Spin Time 45 seconds.
- Program Location 2 No Flash, Display Time, Cool Temperature 100°F., Cool Time 6 minutes, Cycle Display Time 15 seconds, Temperature Display Time 1 second.
- Program Location 3 Anti-Wrinkle active, Buzzer (Tone) active, Maximum Anti-Wrinkle Time 10 minutes, Anti-Wrinkle On Time 20 seconds.
- Program Location 4 Anti-Wrinkle Delay Time 90 seconds, Buz Time 7 seconds.

### J. Factory Preset Programs (Non-reversing Dryers)

- Cycle A Automatic Mode, Anti-Wrinkle active, dry temperature 190°F., Dryness Level 30, Cool Down Time 6 minutes, Cool Down Temperature 100°F.

- Cycle B Automatic Mode, Anti-Wrinkle active, Dry Temperature 190°F., Dryness Level 20, Cool Down Time 4 minutes, Cool Down Temperature 100°F.
- Cycle C Automatic Mode, Anti-Wrinkle active, Dry Temperature 160°F., Dryness Level 20, Cool Down Time 4 minutes, Cool Down Temperature 100°F.
- Cycle d Manual Mode, Anti-Wrinkle active, Dry Temperature 190°F., Dry Time 40 minutes, Cool Down Time 6 minutes.
- Cycle E Manual Mode, Anti-Wrinkle active, Dry Temperature 180°F., Dry Time 30 minutes, Cool Down Time 4 minutes.
- Cycle F Manual Mode, Anti-Wrinkle active, Dry Temperature 170°F., Dry Time 10 minutes, Cool Down Time 2 minutes.

#### System Parameters

- Program Location 1 Temperature Conversion Status set in Fahrenheit.
- Program Location 2 No Flash, Display Time, Cool Down Temperature 100°F., Cool Down Time 6 minutes, Cycle Display Time 15 seconds, Temperature Display Time 1 second.
- Program Location 3 Anti-Wrinkle active, Buzzer (Tone) active, Maximum Anti-Wrinkle Time 10 minutes, Anti-Wrinkle On Time 20 seconds.
- Program Location 4 Anti-Wrinkle Delay Time 90 seconds, Buz (Tone) Time 7 seconds.

#### K. Programming Limits

##### System Parameters

Stop Time	4-19 seconds in 1-second increments
Spin Time	30-93 seconds in 1-second increments
Auto Cool Temperature	70°-100°F. or 25°-40°C. in 10°F. or 5°C. increments
Auto Cool Time	0-15 minutes in 1-minute increments
Cycle Display Time	1-15 seconds in 1-second increments
Temperature Display Time	1-15 seconds in 1-second increments

Guard On Time	10-63 seconds in 1-second increments
Guard Delay Time	15-4095 seconds in 1-second increments
Maximum Guard Time	1-127 minutes in 1-minute increments
Buz Time	1-15 seconds in 1-second increments

Pre-programmed Cycles

Dry Temperature	110°-200°F. or 45°-90°C. in 1° increments
Dry Time (manual)	0-127 minutes in 1-minute increments
Cool Temperature (auto)	70°-100°F. or 25°-40°C. in 10°F. or 5°C. increments
Cool Time (manual)	0-31 minutes in 1-minute increments
Cool Time (auto)	0-14 minutes in 2-minute increments
Stop Time	4-19 seconds in 1-second increments
Spin Time	30-93 seconds in 1-second increments
Dryness Level	1-127 peaks in 1-peak increments

Manually-loaded Cycles

Dry Temperature (auto)	110°-200°F. or 40°-95°C. in 1° increments
Dryness Level (auto)	1-255 peaks in 1-peak increments
Dry Time (manual)	0-99 minutes in 1-minute increments
Cool Time (manual)	0-99 minutes in 1-minute increments
Dry Temperature (manual)	110°-200°F. or 40°-95°C. in 1° increments

## SECTION IX

### HEAT/IGNITION/FLAME SAFETY CIRCUIT OPERATION

#### A. Dual Timer Dryer Gas Valve System

##### 1. Components and Operational Sequence

This heat/ignition system consists of a single stage redundant solenoid gas valve, diode logic board, glo-bar, I.R. sensor, and drying timer.

When the drying time and drying temperature have been selected and the dryer is started, the first solenoid (GV1) in the gas valve opens, and current is supplied to the glo-bar through the diode logic board. When the glo-bar reddens and reaches sufficient temperature, the I.R. sensor switch opens which opens the second solenoid (GV2) in the gas valve. This allows gas to flow through the gas valve into the burner tubes and be ignited by the glo-bar. The I.R. sensor switch remains open as long as there is flame in the burner. When the tumbler cavity reaches the selected drying temperature, the temperature sensing thermostat (located below the tumbler) will open, and the gas valve will shut off the gas flow. After 30-45 seconds, the I.R. sensor contacts and the temperature sensing thermostat switch will reclose, and the ignition cycle will be restarted.

#### B. Computer-controlled Hi/Lo Gas Valve System

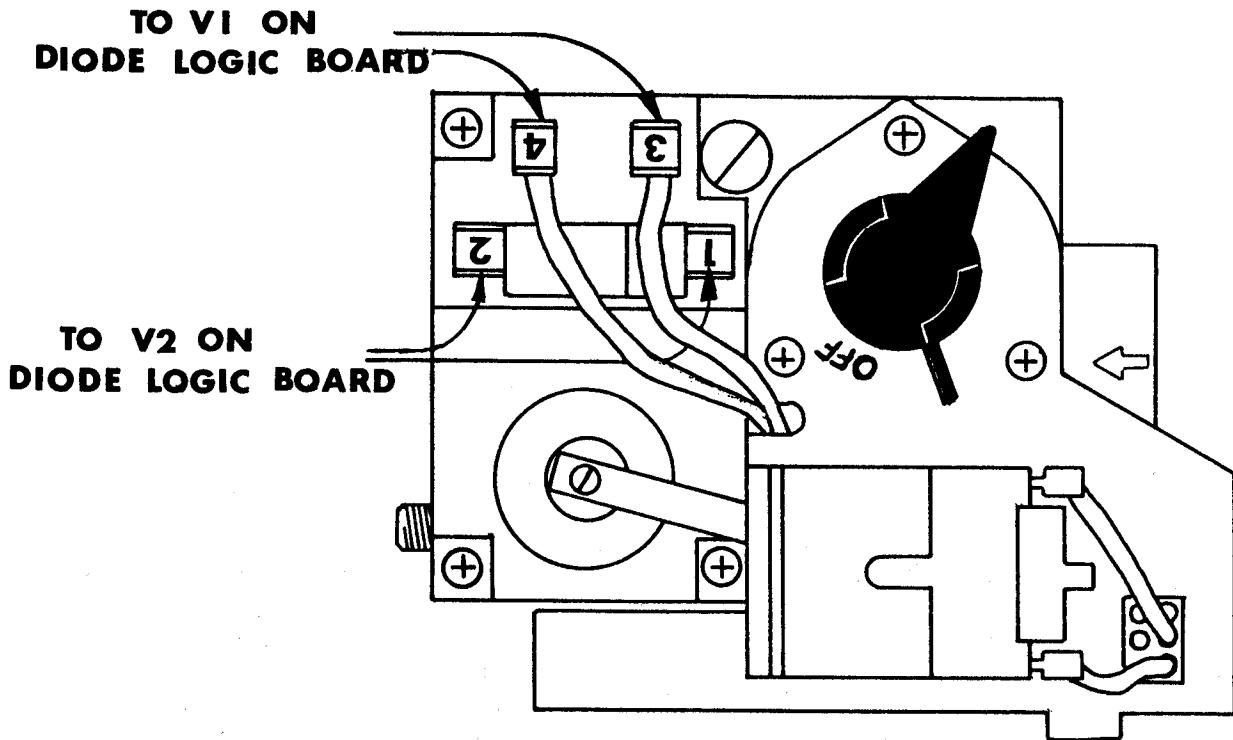
##### 1. Introduction

The computer-controlled hi/lo gas valve system developed by American Dryer Corporation is a new advancement in clothes drying. The system consists of a hi/lo gas valve, diode logic board, phase 3 computer, glo-bar, and I.R. sensor. With computer control of the gas valve, three stages of gas flow are available: gas on hi-fire, gas on lo-fire, and gas off. During dryer operation, when the tumbler cavity reaches the selected drying temperature, the computer cycles the gas valve between its hi-fire and lo-fire stages to maintain a constant drying temperature. The result of this constant drying temperature is a significant decrease in drying time and increase in dryer efficiency.

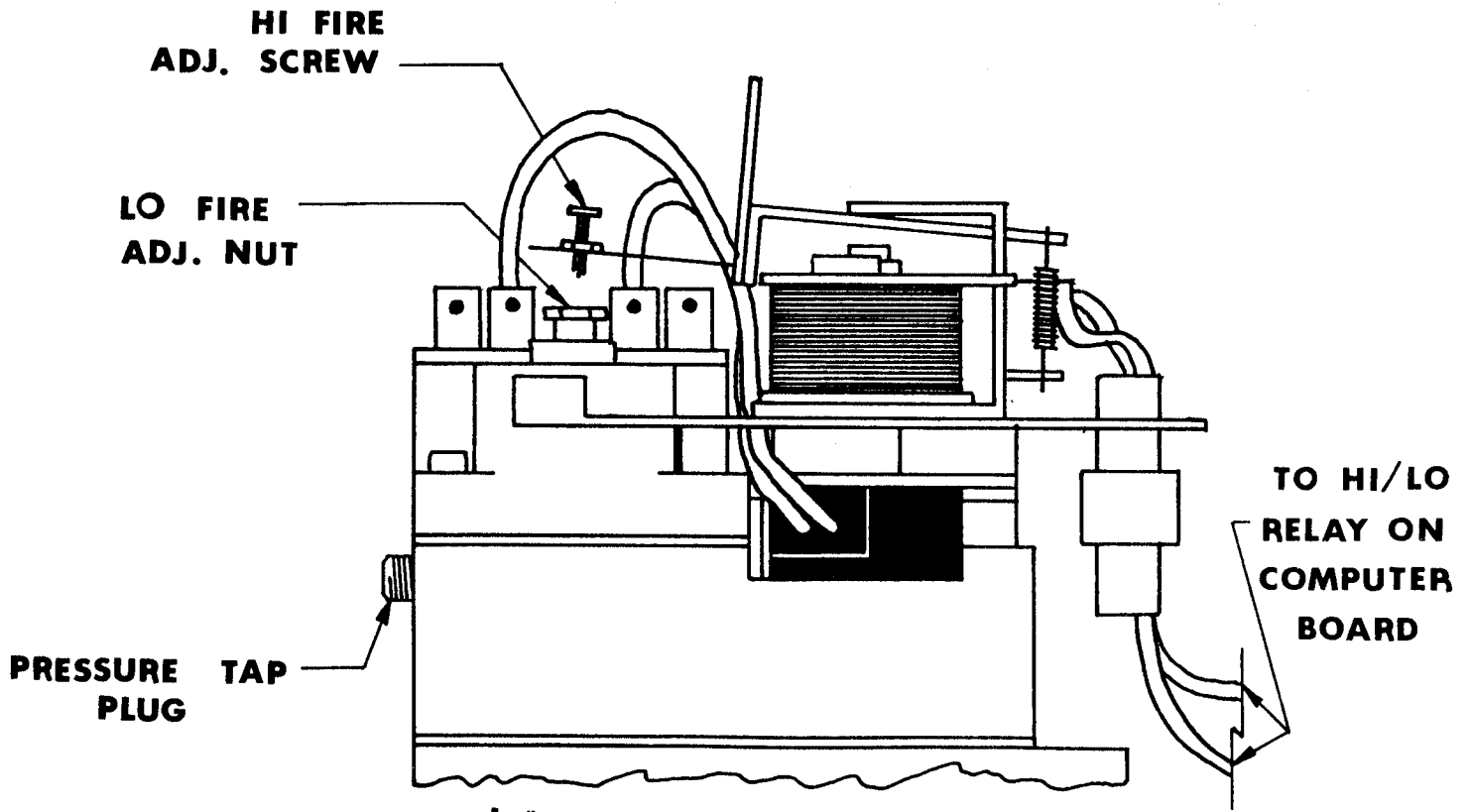
##### 2. 1/2" Hi/Lo Gas Valve (Refer to illus. on next page)

This valve contains the same two redundant on/off solenoid valves as the standard 1/2" gas valve, and these two solenoids operate in the same manner and sequence in both valves. The difference in the hi/lo valve is the addition of a hi/lo cap assembly located on top of the valve. This cap assembly, protected by a sheet metal cover, changes the gas flow from hi-fire to lo-fire. It cannot shut off gas flow; only the two

HI/LO GAS VALVE W/ SOLENOID  
COVER REMOVED



(TOP VIEW)



1/2" HI/LOW GAS VALVE

(FRONT VIEW)



redundant solenoids can do this. Removing its cover reveals a relay coil and lever arm with the hi-fire adjustment screw located at the lever arm's end. Power to the relay coil is supplied through the white plastic plug located at the bottom of the cap assembly base plate. When 115 volts are applied here, the relay coil pulls the lever arm down, and the valve is in the hi-fire stage. With zero volts to the relay coil, the arm lifts up, and the valve is in lo-fire.

To increase the hi-fire gas flow, turn the hi-fire adjustment screw clockwise. Turn it counterclockwise for a hi-fire flow decrease. Lo-fire has been set at approximately 50 percent of hi-fire. To decrease the lo-fire flow, turn the lo-fire adjustment nut counterclockwise. Turning this nut clockwise will increase the lo-fire flow level.

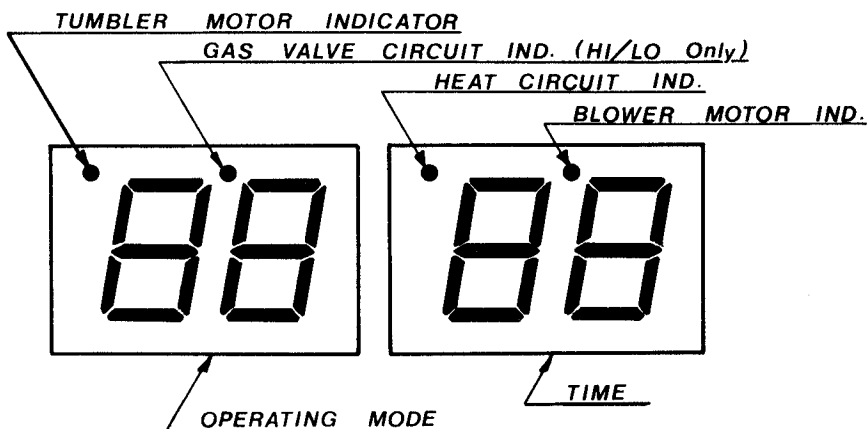
NOTE: If adjustment is required, apply Loctite or some other similar substance to the lo-fire adjustment nut to prevent vibrations from loosening it.

NOTE: Adjusting the lo-fire flow will affect the hi-fire flow. When adjusting the gas flow, set the lo-fire flow first; then, adjust the hi-fire flow.

The gas valve is electrically controlled by six (6) wires. The four (4) wires that connect to the top of the valve control the two (2) on/off redundant solenoids, and the two (2) wires running into the white plastic plug control the hi/lo relay coil.

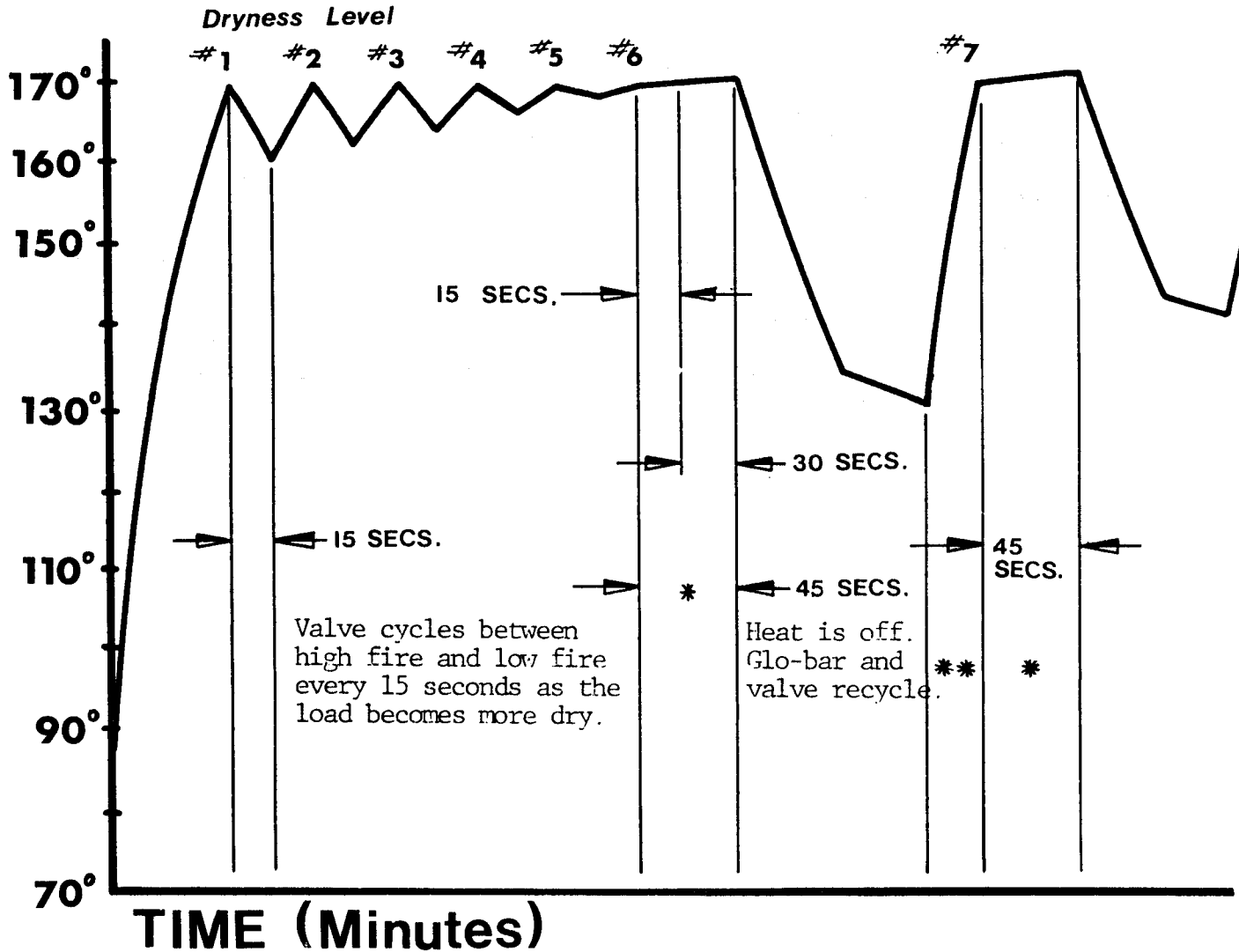
### 3. Operational Sequence (Computerized Hi/Lo System)

When the dryer is started and both the heat circuit and gas valve circuit indicator dots in the computer display are on, the first on/off solenoid (GV1) in the gas valve opens, the valve is put into its hi-fire stage, and current is supplied to the glo-bar. When the glo-bar reddens and reaches sufficient temperature, the IR Sensor switch opens which opens the second on/off solenoid (GV2) in the gas valve. This allows gas to flow into the burners and be ignited by the glo-bar.



# Phase 3 HI LO Gas Valve Operation

## TEMPERATURE (°F)



NOTE: THIS DIAGRAM DEPICTS A COMPRESSED DRYING TIME AND AN ARBITRARY CYCLING TEMPERATURE.

\* AFTER 15 SECONDS, VALVE GOES INTO LOW FIRE, BUT THE TEMPERATURE REMAINS AT OR ABOVE THE PRESET TEMPERATURE IN LOW FIRE. THE TIMING CIRCUIT ON THE COMPUTER BOARD TAKES OVER, ALLOWING THE LOW FIRE TO REMAIN ON FOR ANOTHER 30 SECONDS. IF THE TEMPERATURE IS STILL AT OR ABOVE THE PRESET TEMPERATURE, THE VALVE TURNS THE GAS OFF COMPLETELY.

\*\* GLO-BAR IGNITES BURNER. VALVE IS IN HIGH FIRE.

When the tumbler cavity reaches the selected drying temperature, the computer display heat circuit indication dot goes off, and the gas flow is reduced to lo-fire for 15 seconds. At the end of this 15-second period, the computer checks the tumbler temperature. If the tumbler temperature has dropped below the selected drying temperature, then the computer returns the gas valve to its hi-fire stage, and the heat circuit dot comes back on. Hi-fire remains on until the selected drying temperature is again reached at which point, the lo-fire stage is again activated. This hi-fire/lo-fire cycling will continue as long as the tumbler's temperature is below the selected drying temperature at the end of the 15-second lo-fire stage. As the clothes in the tumbler get dryer, lo-fire gas flow will eventually produce enough heat to keep the tumbler at or above the selected drying temperature.

When at the end of the 15-second lo-fire period the tumbler's temperature is equal to or above the selected drying temperature, the computer keeps the gas valve in its lo-fire stage for approximately 30 more seconds. At the end of this additional 30-second period of lo-fire, the computer again checks the tumbler's temperature. If the tumbler's temperature has dropped below the selected drying temperature, then the hi-fire stage is turned back on. If, however, the tumbler's temperature is still above the selected drying temperature, then the gas flow is shut off. (Both the heat circuit and gas valve circuit dots will be off.) At this point, the glo-bar ignition sequence is restarted.

The dryer will continue to operate until either the drying time runs out (computer in manual mode) or the preset number of drying cycles (dryness level) have been run (automatic mode).

#### 4. Manual Mode of Drying

The manual mode is simply based on time. The drying time and cool down time are selected, and the dryer runs for this length of time before stopping.

#### 5. Automatic Mode of Drying (Computer Dryers Only)

The automatic mode of drying is based on counting dryness levels to determine when the load is dry. The computer does not shut off the dryer after a certain amount of time has elapsed but will stop the dryer after the selected number of dryness levels (or peaks) have been reached.

Refer to the temperature/time curve on the previous page.

When the dryer first starts, hi-fire gas flow stays on until the selected drying temperature is reached (170° on this curve). Then, the computer switches the gas valve to its lo-fire stage. This is dryness level number one. Lo-fire stays on for 15 seconds, and the tumbler temperature drops. Hi-fire is then

turned on again. After a short time, the selected drying temperature is again reached, and the computer again switches the gas valve to lo-fire flow. This is dryness level number two. Whenever the computer switches the gas valve from hi-fire to lo-fire, it counts one dryness level. In this temperature/time curve there are seven dryness levels.

If you are going to operate in the automatic mode, you must first establish what dryness levels you need for the types of loads you will run. For example, if you dry 75-lb. loads of terry towels, this may require a dryness level of 35. The desired dryness level can only be established by running a series of these loads in the dryer using different dryness levels until you establish the dryness level that gives you the drying results you desire.

If you also dry 80-lb. loads of sheets, you may find that this type of load requires a dryness level of 25. This dryness level would be established by running a series of loads at different dryness levels to determine the level which gives the drying results you desire. You will have to establish the dryness level for each various type of load you run in the dryer.

## C. Ignition/Flame Safety Components

### 1. Glo-bar

The glo-bar is a silicon carbide hot surface ignitor, which will become red hot when 120 volts is applied across it. Once flame is established in the burner, the voltage across the glo-bar drops to about 2 volts. This keeps the glo-bar relatively cool and lengthens its life.

When the glo-bar is cool, the resistance across it will measure from 45-70 ohms.

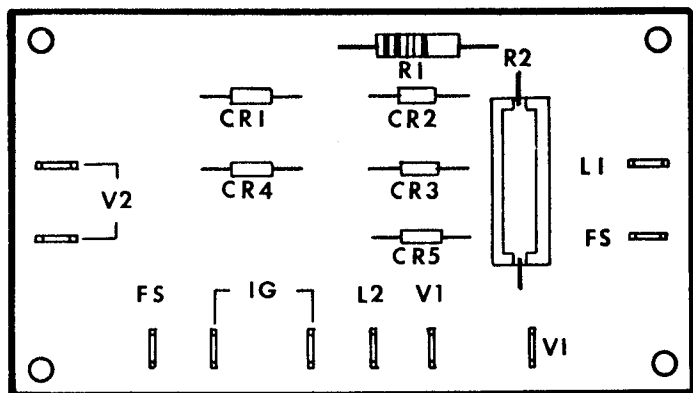
### 2. I.R. Sensor

The I.R. sensor is a normally closed "infrared" bimetal switch which acts as an ignition system safety device. The I.R. sensor switch opens when the glo-bar reaches a sufficient ignition temperature and is kept open by the flame in the burner box. If there is a failure to establish flame at ignition or if there is a failure to hold the flame after ignition, the I.R. sensor switch will reclose after about 45 seconds, which will close gas valve solenoid V2 and shut off the gas flow. A new ignition sequence will now be restarted.

### 3. Diode Logic Board

All of our model ADG-100 gas dryers are equipped with a diode logic (EQS0) board. This board controls the ignition sequence and the flame safety characteristics of the dryer.

<u>Terminal Marking</u>	<u>Control Function</u>
L1, L2	Line Voltage
V2	Gas Valve Solenoid V2
V1	Gas Valve Solenoid V1
IG	Glo-bar (Ignitor)
FS	I.R. Sensor (flame switch)



On a call for heat, 120 volts is supplied across the L1 and L2 terminals of the diode logic board, starting the ignition sequence.

a. Ignition Sequence Trouble Shooting

To locate any breakdown in the ignition system, voltage measurements can be taken at the terminals of the diode logic board. Tables of these voltage readings at different times in the ignition sequence follow. The first table is for dryers with a single stage gas valve. The second table is for hi/lo gas valve dryers.

DIODE LOGIC BOARD TROUBLE SHOOTING CHART FOR DUAL TIMER DRYER

Diode Logic Board Terminals

	<u>L1 &amp; L2</u>	<u>V2</u>	<u>V1</u>	<u>1G</u>	<u>FS</u>
Dryer is started and calls for heat; 120 volts is applied across L1 and L2 terminals of diode logic board; gas valve solenoid V1 opens and glow-bar reddens.	120V	∅V	60-70V	110-120V	∅V
IR sensor opens; gas valve solenoid V2 opens; gas flows through valve and ignites.	120V	60-70V	18-30V	1-2V	120V
Tumbler reaches selected temperature; operating thermostat opens; voltage between L1 and L2 drops to ∅V; voltage remains ∅V for 30 to 45 seconds until IR sensor recloses.	∅V	∅V	∅V	∅V	∅V

DIODE LOGIC BOARD TROUBLE SHOOTING CHART FOR PHASE 3 COMPUTER DRYER

Refer to the technical data section of this manual for additional information on the diode logic control system.

Diode Logic Board Terminals

	<u>L1 &amp; L2</u>	<u>V2</u>	<u>V1</u>	<u>1G</u>	<u>FS</u>	<u>Hi/Lo Coil</u>
<p>Dryer is started and calls for heat; 120 volts is applied across L1 and L2 terminals of diode logic board; gas valve solenoid V1 opens, and glo-bar reddens.</p> <p>*Heat indication dot is on. *Gas valve circuit dot is on.</p>	120V	∅V	60-70V	110-120V	∅	120V
<p>IR sensor opens; gas valve solenoid V2 opens; gas flows through valve and ignites.</p> <p>*Heat indicator dot is on. *Gas valve circuit dot is on.</p>	120V	60-70V	18-30V	1-2V	120V	120V
<p>Tumbler reaches selected temperature; hi/lc relay on computer board opens dropping voltage to hi/lo relay coil on gas valve to ∅ volts. Gas flow drops to lo-fire.</p> <p>*Heat indicator dot is off. *Gas valve circuit dot is on.</p>	120V	60-70V	18-30V	1-2V	120V	∅V
<p>Computer calls for heat to be shut off; ∅ volts is applied between L1 and L2 terminals of diode logic board.</p> <p>*Heat indicator dot is off. *Gas valve circuit dot is off.</p>	∅V	∅V	∅V	∅V	∅V	∅V

## SECTION X

### MOTORIZED STEAM VALVE (High Pressure Steam Only - 125 psi)

This is a slow opening and closing valve (6 seconds) meant to reduce water hammer on the coil and thereby increase coil life. The motor requires power to open the valve and power to close the valve. So, if main power to the dryer is shut off when the valve is opened, it will remain in that position. The motor for the valve operates on 120 volts, and there will be an internal transformer supplied in the dryer to supply this voltage.

Steam flow through the valve must be in the direction of the arrow on the valve body.

On a call for heat, power is supplied through the steam relay to the motor of the steam valve. The motor will spin for 90° before stopping. Micro-switches (located underneath the cover of the steam valve motor) are what stop the motor. If the motor does not stop in the proper position or if it does not stop at all, then these micro-switches have to be checked for alignment and continuity.

NOTE: Shaft protruding through top of motor can be used to manually spin steam valve. Shaft must be pressed downward to disengage clutch before it can be spun.

### TROUBLE SHOOTING THE MOTORIZED STEAM VALVE

<u>Trouble</u>	<u>Probable Cause</u>
Actuator stops operating	1. Interruption of power to steam valve motor
	2. Interruption of power to steam valve motor relay
	3. Ball jammed in valve

Make sure that the computer or dual timer control is calling for heat. If there is no power to the steam valve motor, check for broken wires, defective steam relay, or defective computer or drying timer. If there is power to the motor and it will not turn, there are two possible causes. The ball might be jammed in the valve. Disconnect the motor from the valve and see if it now spins. If it still will not spin, it is possible that the internal micro-switches which stop the motor after it spins 90° are out of alignment.

<u>Trouble</u>	<u>Probable Cause</u>
Actuator spins but does not stop at 90°	1. Internal micro-switch out of adjustment

Refer to page 131 for instructions for adjusting internal micro-switches.



## SECTION XI

### ROUTINE MAINTENANCE

#### A. Cleaning

A program 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, an American 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.

<u>Suggested Interval</u>	<u>Function</u>
Daily	Clean lint from the lint trap, screen, bottom, and walls of the lint chamber. Inspect lint screen and replace if torn.
90 Days	Remove lint accumulation from lint chamber, thermostats, and sensor.  <u>WARNING:</u> To avoid the hazard of electrical shock, discontinue electrical supply to the dryer.
90 Days	Remove lint from the motor air vents and surrounding area.  <u>IMPORTANT:</u> Lint accumulation will restrict internal motor air flow, causing overheating and irreparable motor damage. Motor failure due to lint accumulation will void the manufacturer's warranty.
120 Days	Remove lint from gas burner area with a dusting brush or vacuum cleaner attachment.  <u>NOTE:</u> To prevent damage, avoid cleaning or touching ignitor (glo-bar).
6 Months	Inspect and remove lint accumulation in customer-furnished exhaust duct work system.  Clean lint/dust accumulation from between fins of steam coil.

IMPORTANT: The accumulation of lint in the exhaust duct work can create a potential fire hazard.

As required In the cleaning and care of the cabinet, avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

B. Adjustments

<u>Suggested Interval</u>	<u>Function</u>
7 Days after installation and every 6 months	Inspect bolts, nuts, screws, non-permanent gas connections (unions, orifices, etc.), electrical terminals, and grounding connections.
6 Months	Motor and drive belts should be examined. Cracked or seriously frayed belts should be replaced. Tighten loose belts when necessary, and check belt alignment.
6 Months	Complete operational check of controls and valves.
6 Months	Complete operational check of all safety devices (door switches, sail switch, burner and lint chamber thermostats).

C. Lubrication

The motor bearings, idler bearings, and tumbler bearings are permanently lubricated, and no relubrication is necessary. Some tumbler bearings are equipped with grease fittings. Should lubrication ever be found necessary, use a general purpose lithium-based grease. (Do not use animal- or vegetable-based lubricants.) Do not overgrease. Be sure grease fitting is thoroughly cleaned of all foreign material before greasing.

## SECTION XII

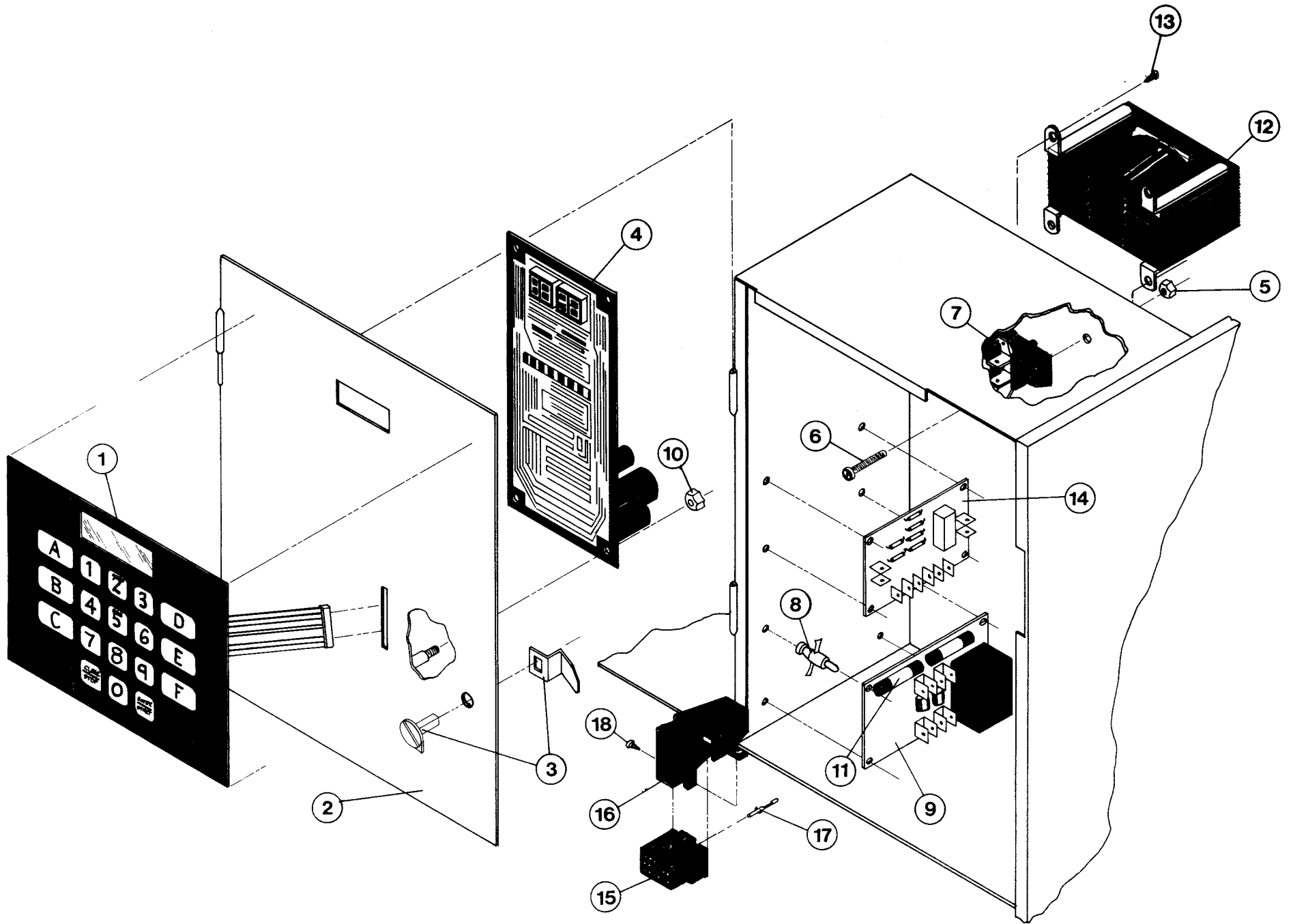
### PARTS MANUAL: ILLUSTRATIONS AND DESCRIPTIONS

When ordering replacement parts from your distributor or the factory, specify the dryer model number and serial number in addition to the part description and part number, so that your order is processed accurately and promptly.

When ordering replacement parts from the factory, credit card orders are accepted. Please refer to page 139 for detailed information.

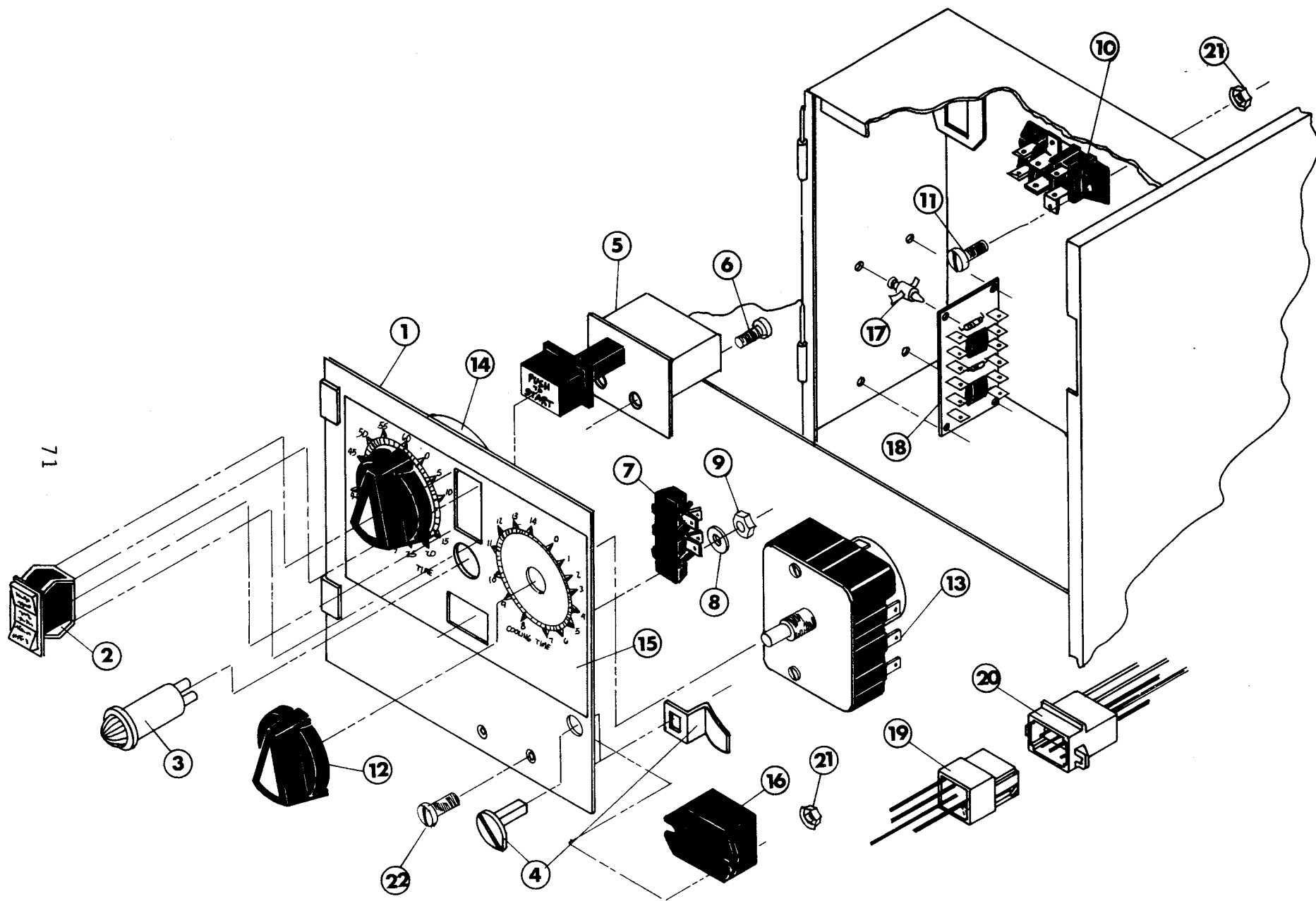
The illustrations on the following pages may not depict your particular dryer exactly. The illustrations are a composite of the various dryer models. Be sure to check the description of the parts thoroughly before ordering.

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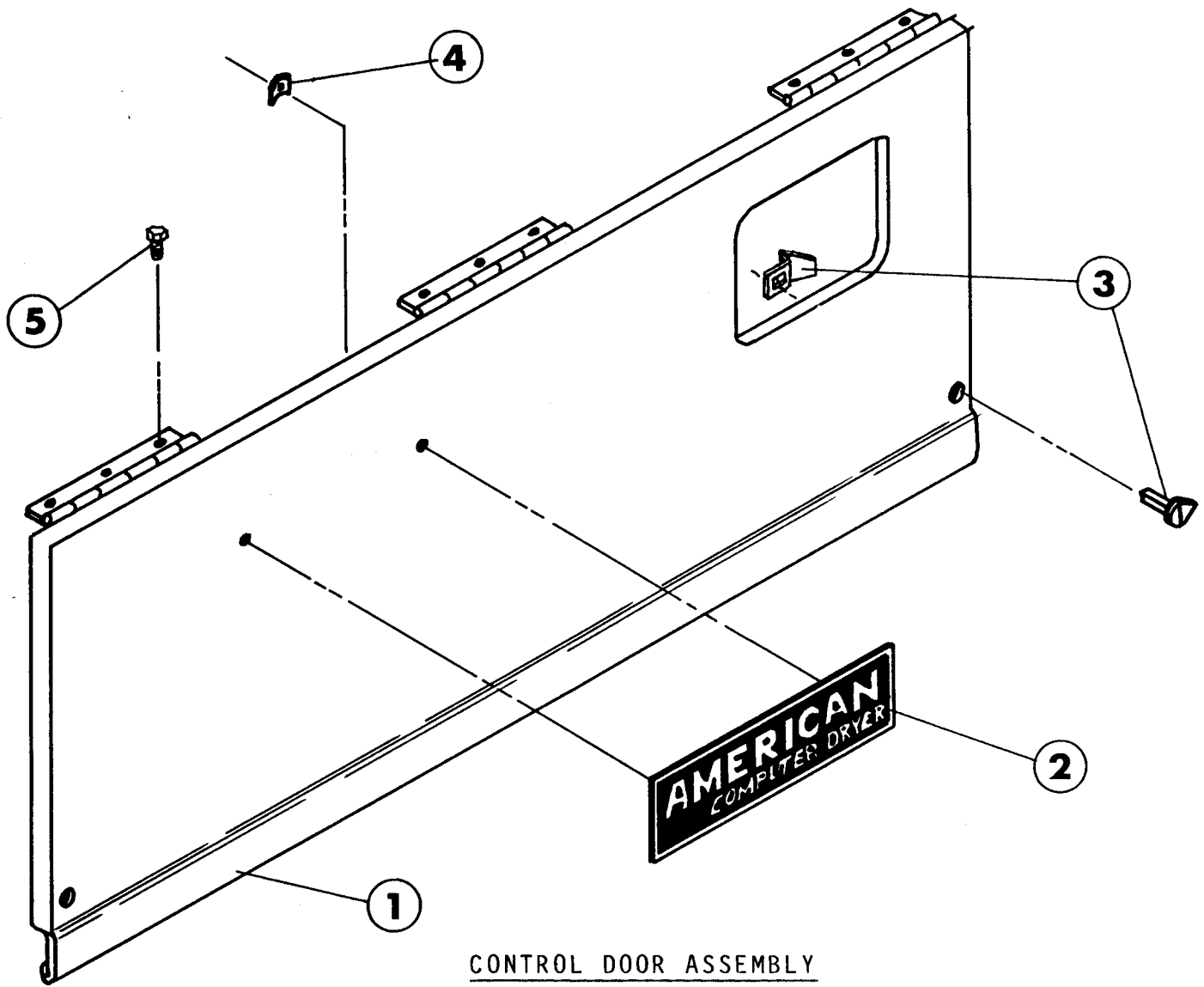
CONTROL PANEL ASSEMBLY - PHASE 3 COMPUTER

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	112535	1	Label/Keyboard Assembly
2	800057	1	Control Panel Only
	800164	1	Control Panel Only with Battery Bracket
			<u>Complete Control Panel Assemblies:</u>
	800161	1	Phase 3 Non-rev. 115/230V
	800163	1	Phase 3 Non-rev. 115/230V with Battery Opt.
	800160	1	Phase 3 Non-rev. 208V
	800162	1	Phase 3 Non-rev. 208V with Battery Option
	865088	1	Phase 3 Reversing 230V
	865089	1	Phase 3 Reversing 230V with Battery Option
	865090	1	Phase 3 Reversing 208V
	865091	1	Phase 3 Reversing 208V with Battery Option
3	160005	1	Latch Fastener
4	137092	1	Computer, Non-rev., 120/240V
	137093	1	Computer, Non-rev., 120/240V with Battery Back-up.
	137094	1	Computer, Rev., 120/240V
	137095	1	Computer, Rev., 120/240V with Battery Back-up
	137088	1	Computer, Non-rev., 208V
	137089	1	Computer, Non-rev., 208V with Battery Back-up
	137090	1	Computer, Rev., 208V
	137091	1	Computer, Rev., 208V with Battery Back-up
5	151000	2	6-32 Pal Nut
6	150002	2	6-32x1" Round Head Machine Screw
7	120709	1	Terminal Strip (8-Position)
8	137013	8	Standoff
9	137079	1	Relay Board (Gas Hi/lo Dryers)
	137061	1	Relay Board (Low Pressure Steam Dryers)
	137083	1	Relay Board (High Pressure Steam Dryers)
	137061	1	Relay Board (Electric Dryers)
10	152001	4	8-32 Hex Nuts
11	136052	2	4 Amp Fuse
12	132001	1	GB 208/220V Transformer (Gas and High Pressure Steam Only)
13	150300	2	10x1/2 Hex Washer TEK
14	140150	1	Diode Logic Board (Gas Only)
15	137020	1	15-Pin Connector
16	137022	1	Strain Relief
17	137021	15	Connector Socket
18	150301	1	8-18x7/16 Phillips Head TEK Screw



CONTROL PANEL ASSEMBLY - DUAL TIMER

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	800081	1	Dual Timer Control Panel Less Timers and Knobs, 110V
	800083	1	Dual Timer Control Panel Less Timers and Knobs, 220V
	800051	1	Dual Timer Control Panel only
2	122400	1	Rocker Switch
3	123000	1	Indicator Light, 110V
	123001	1	Indicator Light, 220V
4	160005	1	Latch Fastener
5	131812	1	Push to Start Switch, 110V
	131813	1	Push to Start Switch, 220V
6	150207	2	10-32x1/2" Round Head Machine Screw
7	120708	1	Terminal Strip, 3-Position
8	153017	2	#6 Steel Burr
9	152013	2	6-32 Hex Nut
10	120709	1	Terminal Strip
11	150002	2	6-32x1" Round Head Machine Screw
12	124103	2	Timer Knob
13	124022	1	Timer, 15 Minute, 120V, 50/60HZ
	124023	1	Timer, 15 Minute, 230V, 50/60Hz
14	124020	1	Timer, 60 Minute, 120V, 50/60Hz
	124021	1	Timer, 60 Minute, 230V, 50/60Hz
15	112050	1	Dual Timer Label
16	131030	1	Dual Timer Relay, 110V
	131031	1	Dual Timer Relay, 220V
17	137013	4	Standoff (Gas Models Only)
18	140150	1	Diode Logic Board (Gas Models Only)
19	122602	1	9-Pin Connector Only
	122700	8	Pin Terminal Only
20	122603	1	9-Pin Socket Connector Only
	122701	8	Socket Terminal Only
21	151000	4	6-32 Pal Nut
22	150103	2	6-32x1/2" Pan Head Machine Screw
23	132002	1	Transformer, Motorized Steam Valve (not shown)
24	131031	1	Relay, Motorized Steam Valve (Not Shown)

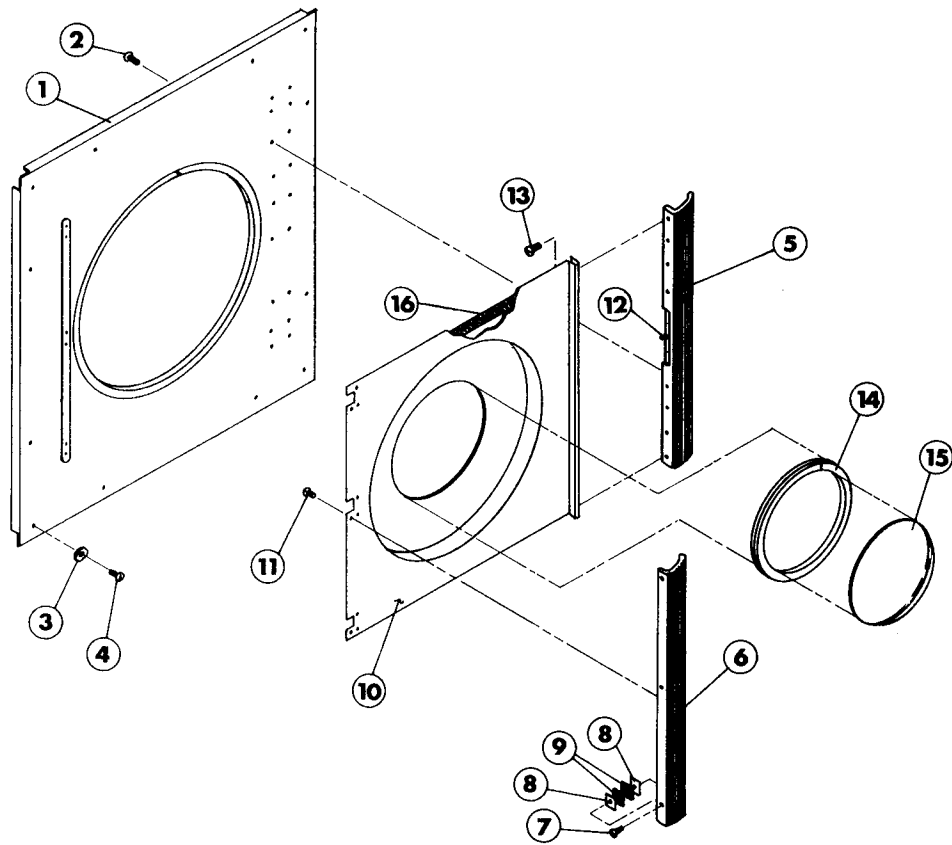


CONTROL DOOR ASSEMBLY

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	800016*	1	Control Door
2	112302	1	Computer Dryer Nameplate
	112314	1	Dual Timer Dryer Nameplate
	112306	1	UniMac Dryer Nameplate
3	160005	2	Latch Fastener
4	154002	2	1/8 Push-on Fastener
5	150300	9	10x1/2" Hex Washer TEK

\* Specify color

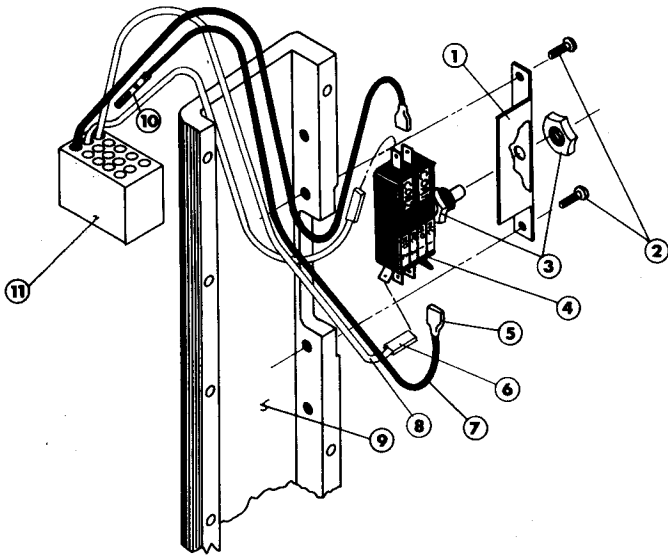




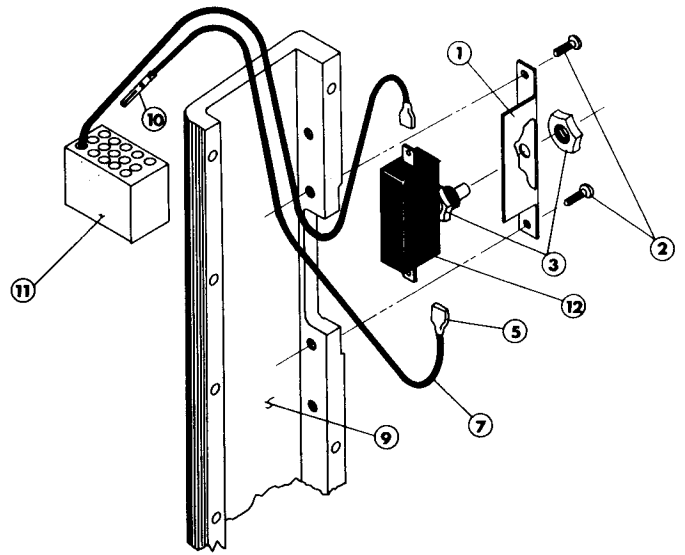
FRONT PANEL AND MAIN DOOR ASSEMBLY

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	800318*	1	Right Hand Front Panel
2	150400	10	10-24x1/2 Phillips Taptite
3	150700	12	#8 Counter Sunk Washer
4	150304	12	#8x3/4 Oval Phillips Head
5	170210	1	35" Hinge Block
6	170201	1	35" Main Door Handle
7	150401	3	10-24x1-1/4 Phillips Taptite
8	306801	6	Magnet Keeper
9	102100	6	Magnets
10	800108*	1	Solid Main Door Complete Assembly
	800109*	1	Solid Main Door Only
	800110*	1	Main Door Complete Assembly Convex
	800112*	1	Convex Glass Main Door Only
11	150400	9	10-24x1/2 Phillips Taptite
12			Door Switch Assembly (See following page)
13	150402	11	10-24x5/8 Special Tr. Head
14	102300	1	16-1/4 convex glass gasket
15	102200	1	16-1/4 convex glass
16	117601	3	Door Gasket

\* Specify color



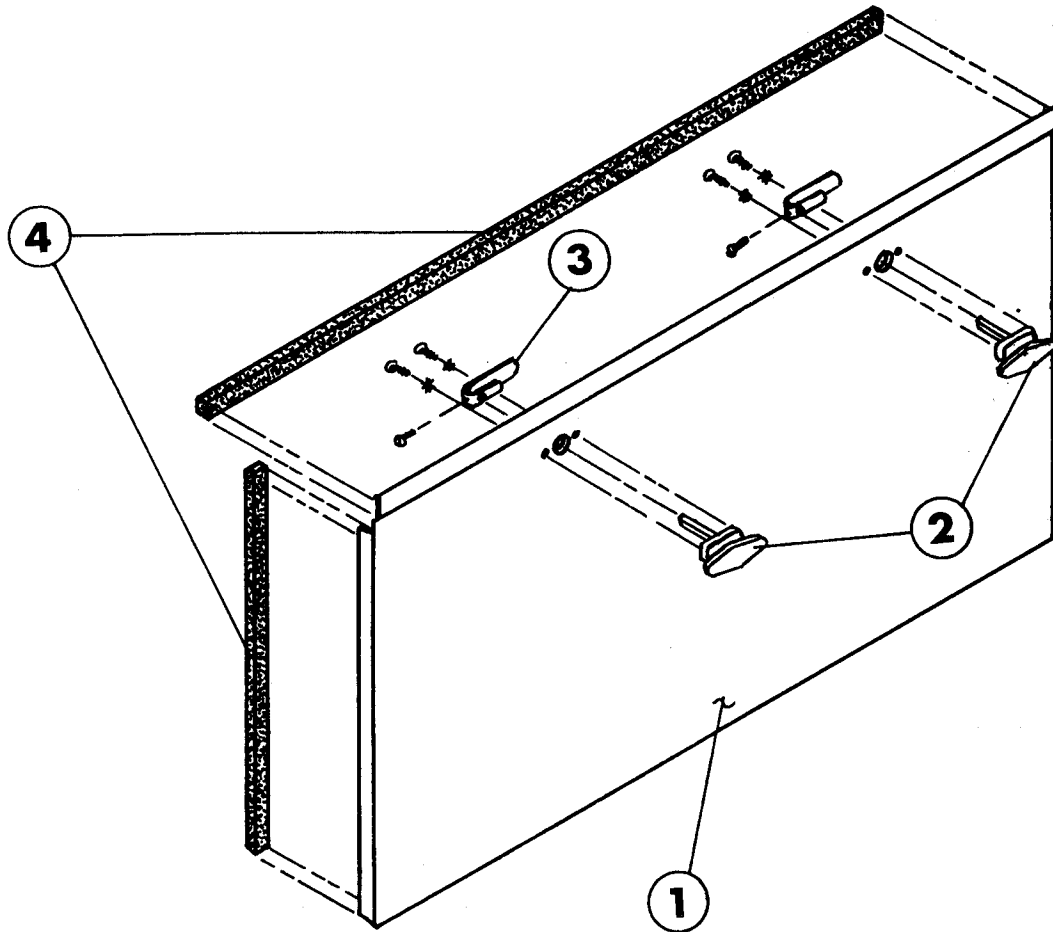
COMPUTER DRYERS



NON-COMPUTER DRYERS

DOOR SWITCH ASSEMBLY

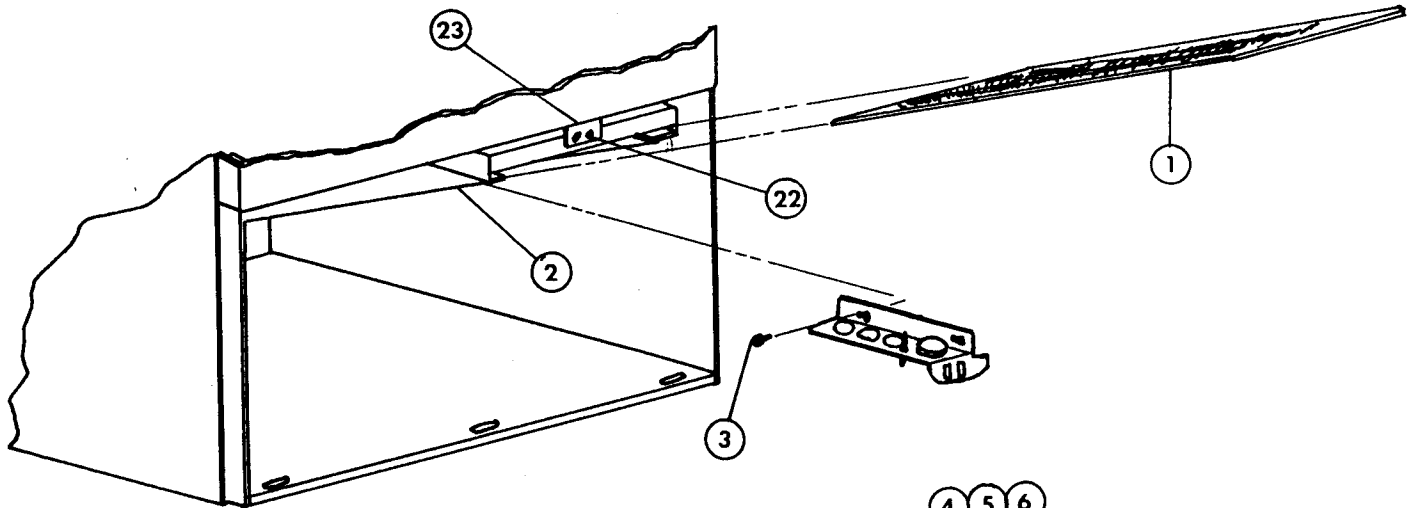
<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	313208	1	Door Switch Bracket
2	150400	2	10-24X1/2" Phillips Taptite
3	152003	2	Door Switch Nut
4	137006	1	Door Switch, Computer Dryers
5	121028	2	1/4x.032 Insulated Terminal
6	121027	2	3/16x.032 Insulated Terminal
7	132750	2 Ft.	16 Gauge Wire
8	133345	2 Ft.	20 Gauge Twisted Pair Wire
9	170210	1	Hinge Block
10	122705	4	Socket Terminal
11	122626	1	15-Pin Cap Housing
12	122100	1	Door Switch (Dual Timer Dryers)



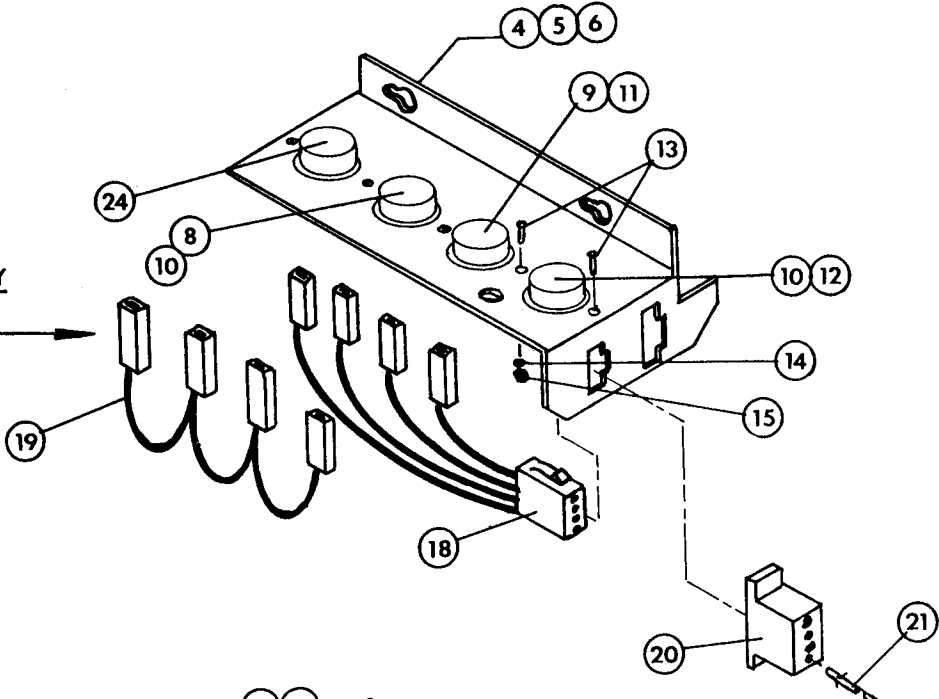
LINT DOOR ASSEMBLY

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	800213*	1	Lint Door, Drop Type
2	160200	2	Knob Latch (With Screws)
3	160019	2	Adjustable Cam (With Screw)
	800150	1	Knob Latch Kit (Includes Items 2 & 3)
4	117600	8 Ft.	Noise Suppressor Tape (Sold by the Foot)

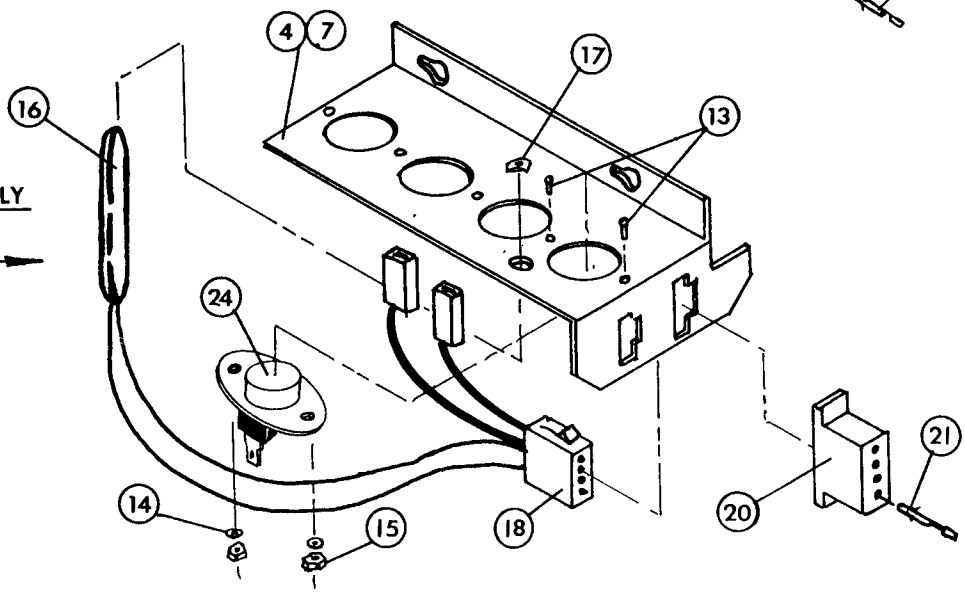
\* Specify color



**SENSOR BRACKET ASSEMBLY  
NON-COMPUTER DRYERS**

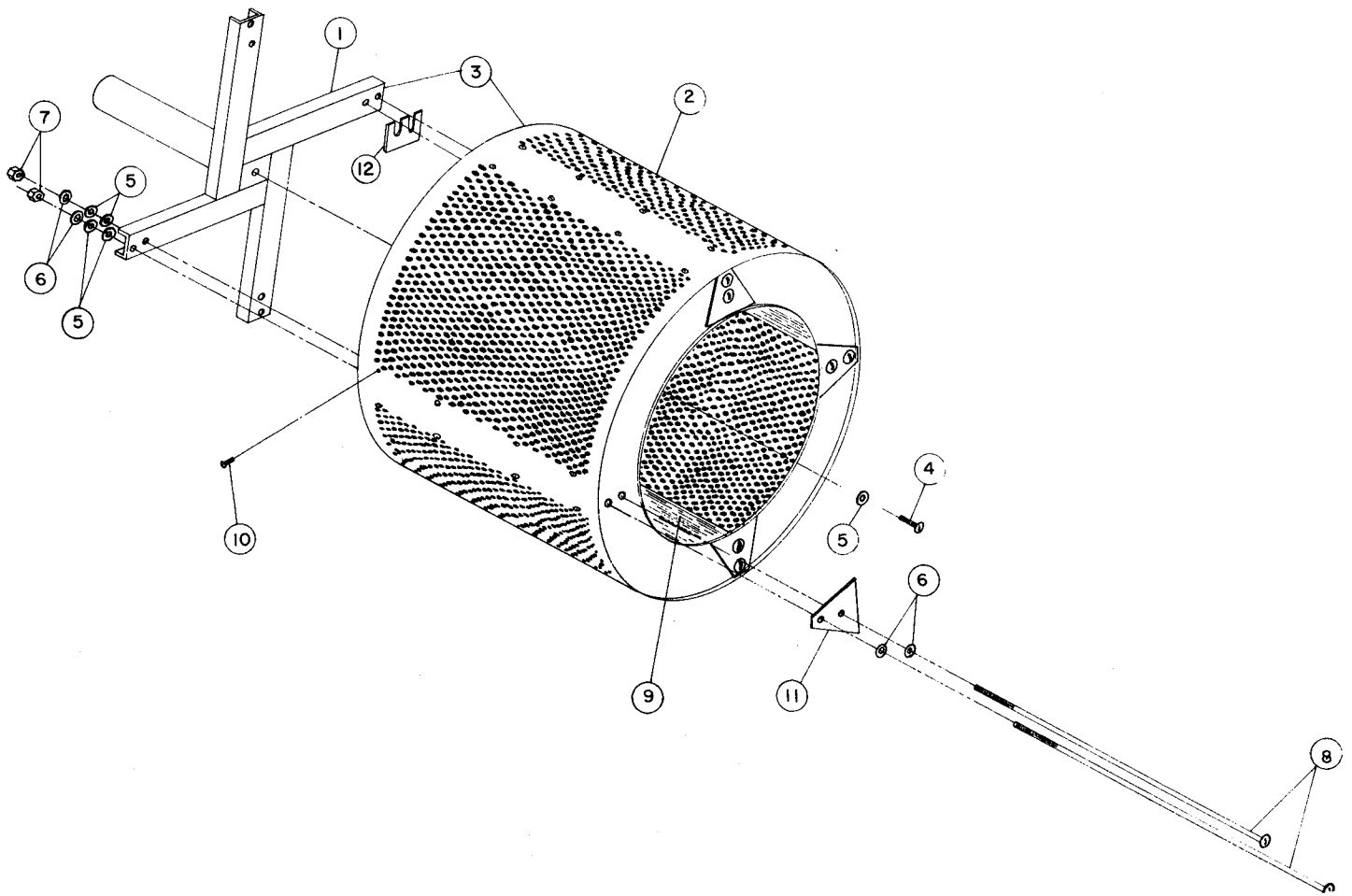


**SENSOR BRACKET ASSEMBLY  
COMPUTER DRYERS**



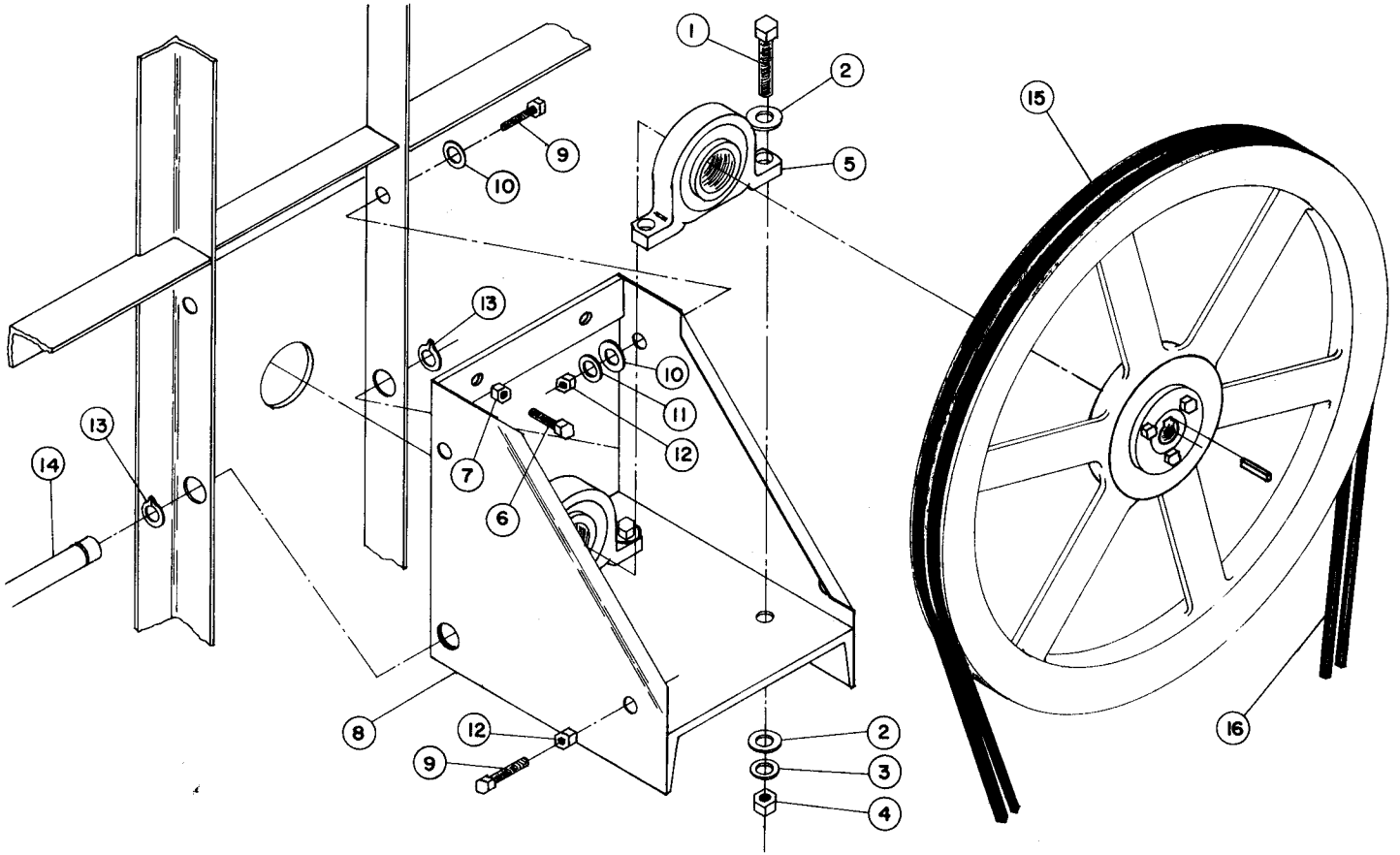
LINT COOP/THERMOSTAT BRACKET ASSEMBLY

<u>Illus.</u> <u>No.</u>	<u>Part</u> <u>No.</u>	<u>Qty.</u>	<u>Description</u>
1	800504	1	Lint Screen
2	800412	1	Lint Screen Housing
	800413	1	Lint Housing Complete Assembly
3	150301	2	7/16 Self-Drilling Screw
4	305007	1	Sensor Mounting Bracket Only
5	801403	1	Sensor Mounting Bracket (Dual-Timer Gas and Electric Dryers)
6	801408	1	Sensor Mounting Bracket (Dual-Timer Steam Dryers)
7	801425	1	Sensor Mounting Bracket (All Computer Dryers)
8	130107	1	Thermostat, L-160
9	130109	1	Thermostat, L-140
10	130101	1	Thermostat, L-180
11	130100	1	Thermostat, L-150
12	130104	1	Thermostat, L-215
13	150001	1	6-32x1/2" Right Hand Machine Screw
14	153008	1	#6 Lock Washer
15	152000	1	6-32 Hex Nut
16	880251	1	Micro-processor Temperature Sensor Probe Assembly
17	154007	2	1/4" Push-on Fastener
18	122605	1	4-Pin Socket Connector Only
	122701	4	Socket Terminal Only
19	831701	1	Jumper 4 Sensors
20	122604	1	4-Pin Connector Only
21	122700	4	Pin Terminal Only
22	154200	4	Pop Rivets
23	304025	1	Hanger Bracket
24	130103	1	Thermostat, Hi Limit, L-225 Automatic Reset



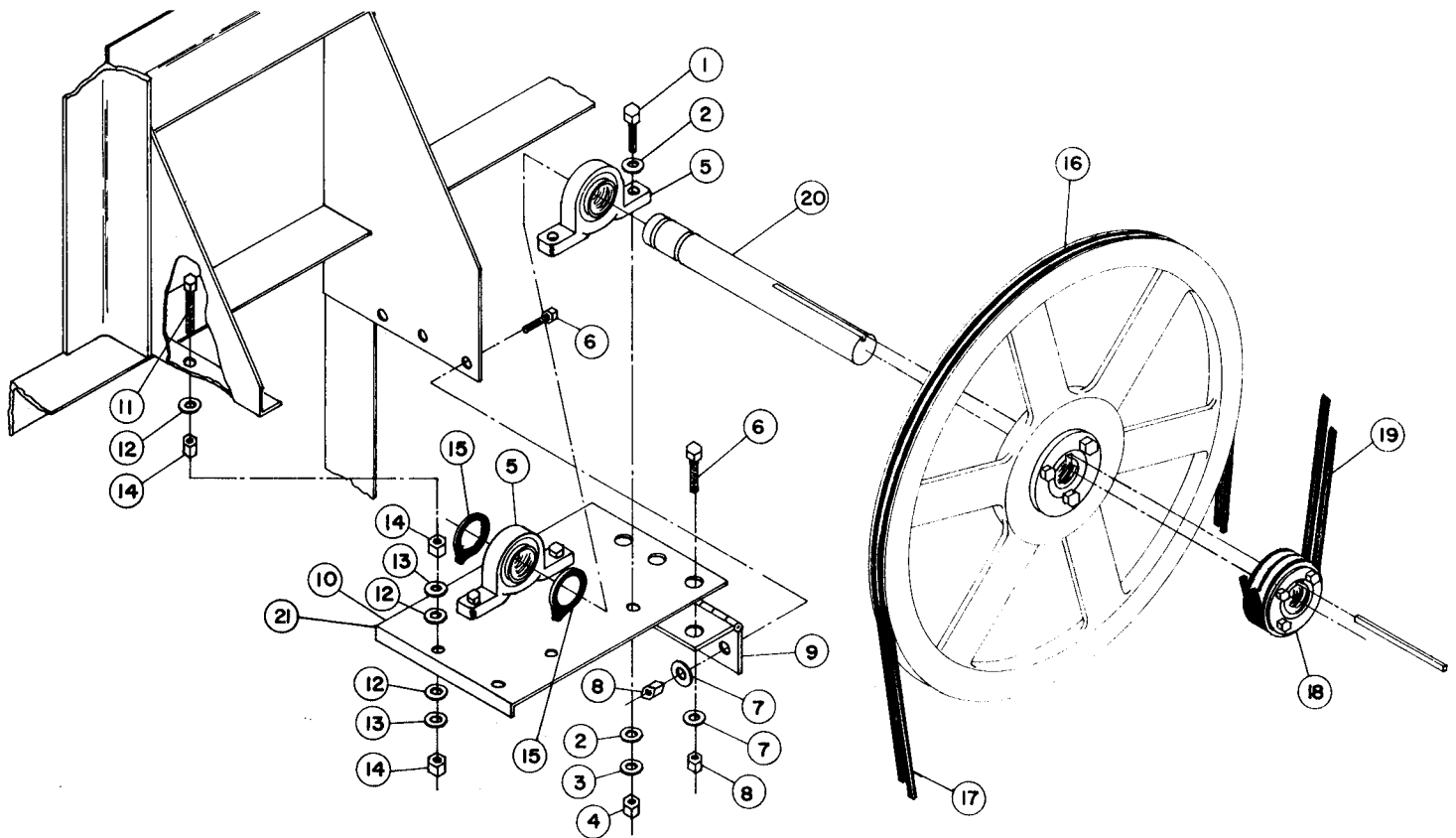
TUMBLER ASSEMBLY

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	800607	1	Tumbler Support
2	800707	1	Tumbler Only
3	800807	1	Tumbler & Support Complete
4	150500	1	5/16 - 18x3/4" Socket Head Screw, Plated
5	153014	17	7/16 Flat Washer
6	153013	16	7/16 Lock Washer
7	152009	8	7/16 - 14 Hex Nut
8	100904	8	7/16 - 14x43" Tie Rod
9	301300	4	Tumbler Rib
10	150301	32	#8 - 18x7/16" #2 Self-Drilling Screw
11	301700	4	Tumbler Reinforcing Plate
12	301701	A/R	Shim
13	116004	1	Felt Band (Not Shown)
14	401010	A/R	Felt Band Adhesive



TUMBLER BEARING MOUNT ASSEMBLY

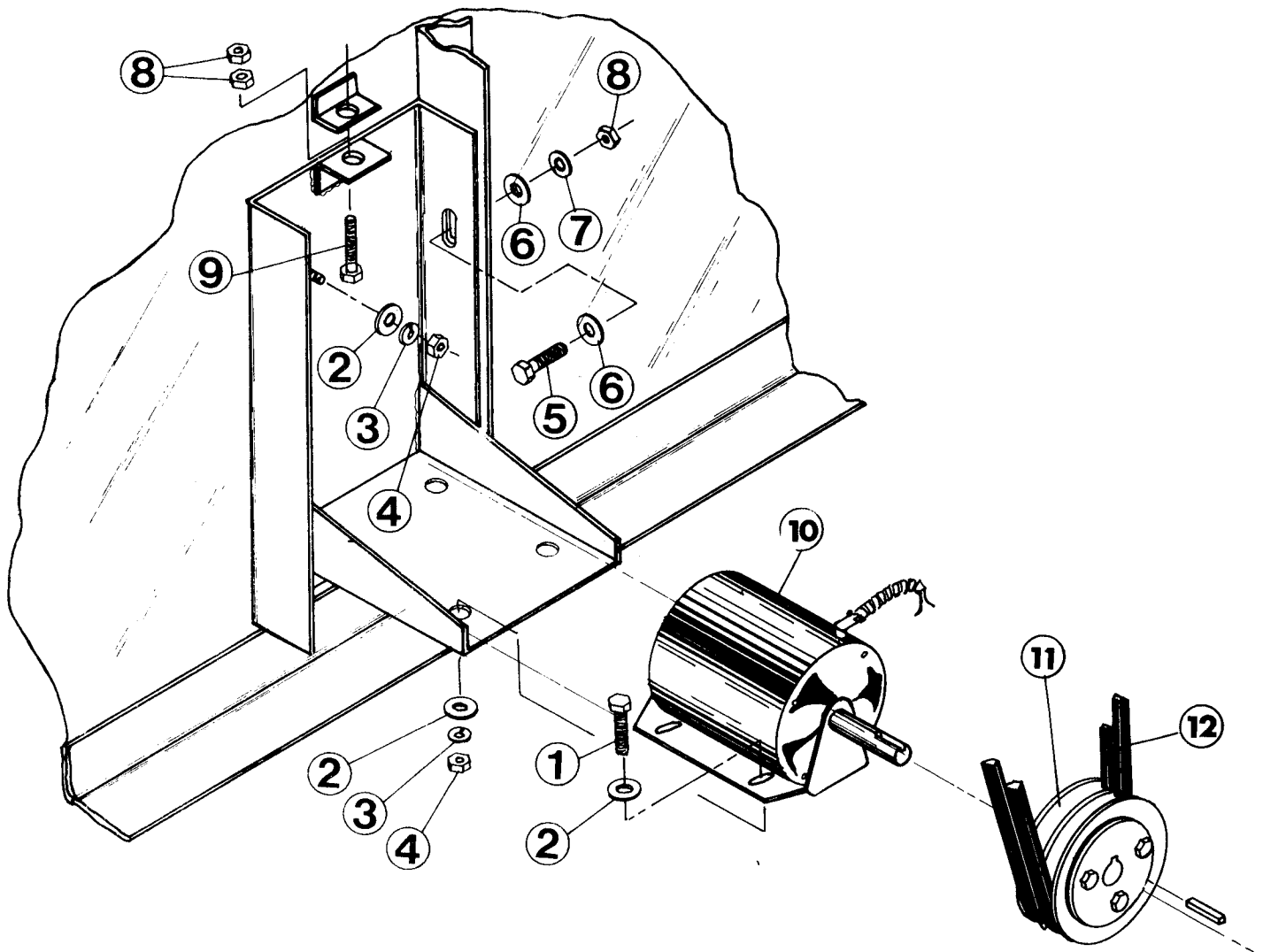
<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	150602	4	5/8-11X3" Hex Head Machine Bolt, Plated
2	153016	8	5/8 Flat Washer
3	153015	4	5/8 Lock Washer
4	152010	4	5/8-11 Hex Nut
5	100204	2	2-1/4 Pillow Block Bearing
6	150603	2	1/2-13x3" Square Head Machine Screw, Plated
7	152011	2	1/2-13 Hex Nut
8	801102	1	Bearing Mount
9	150600	4	3/8-16x1-1/2" Hex Head Machine Bolt, Plated
10	153004	4	3/8 Flat Washer
11	153005	2	3/8 Lock Washer
12	152005	4	3/8 Hex Nut
13	100801	2	5/8 Retaining Ring
14	103400	1	Hinge Pin
15	101111	1	Tumbler Pulley 18"
	101108	1	SK Bushing
16	100104	2	A68 V-Belt



IDLER BEARING MOUNT ASSEMBLY

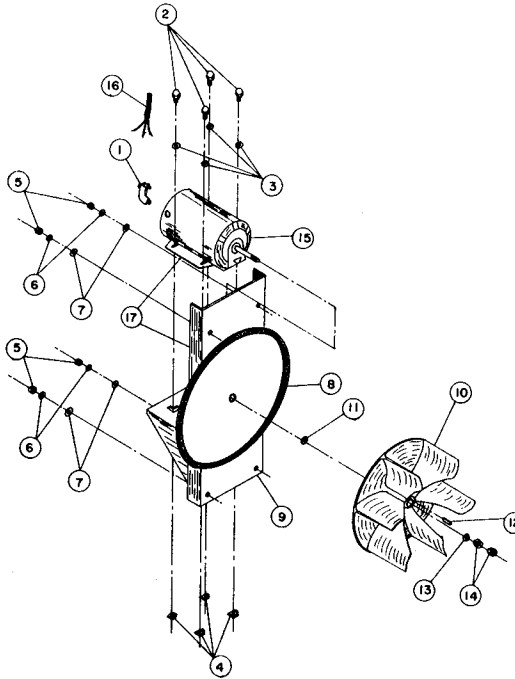
<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	150600	4	3/8-16x1-1/2" Hex Head Machine Bolt, Plated
2	153004	8	3/8 Flat Washer
3	153005	4	3/8 Lock Washer
4	152005	4	3/8 Hex Nut
5	100205	2	1" Pillow Block Bearing
6	150510	6	1/4-20X3/4 Hex Head Machine Bolt, Plated
7	153007	6	1/4 Lock Washer
8	152002	6	1/4-20 Hex Nut
9	103005	1	Idler Adjustment Hinge
10	311401	1	Idler Bearing Mount
11	150509	2	5/16-18x3" Hex Head Machine Bolt, Plated
12	153001	4	5/16 Flat Washer
13	153002	6	5/16 Lock Washer
14	152004	6	5/16-18 Hex Nut
15	100800	2	1" Retaining Ring
16	101112	1	Idler Pulley 19"
	101107	1	SK Bushing
17	100102	2	75 V-Belt
18	101113	1	Idler Sheave 3"
	101110	1	SK Bushing
19	100104	2	A68 V-Belt
20	100401	1	1" Idler Shaft
21	801001	1	Idler Mount Complete (Pulleys, Bushing, and Belts Not Included)





TUMBLER MOTOR MOUNT ASSEMBLY

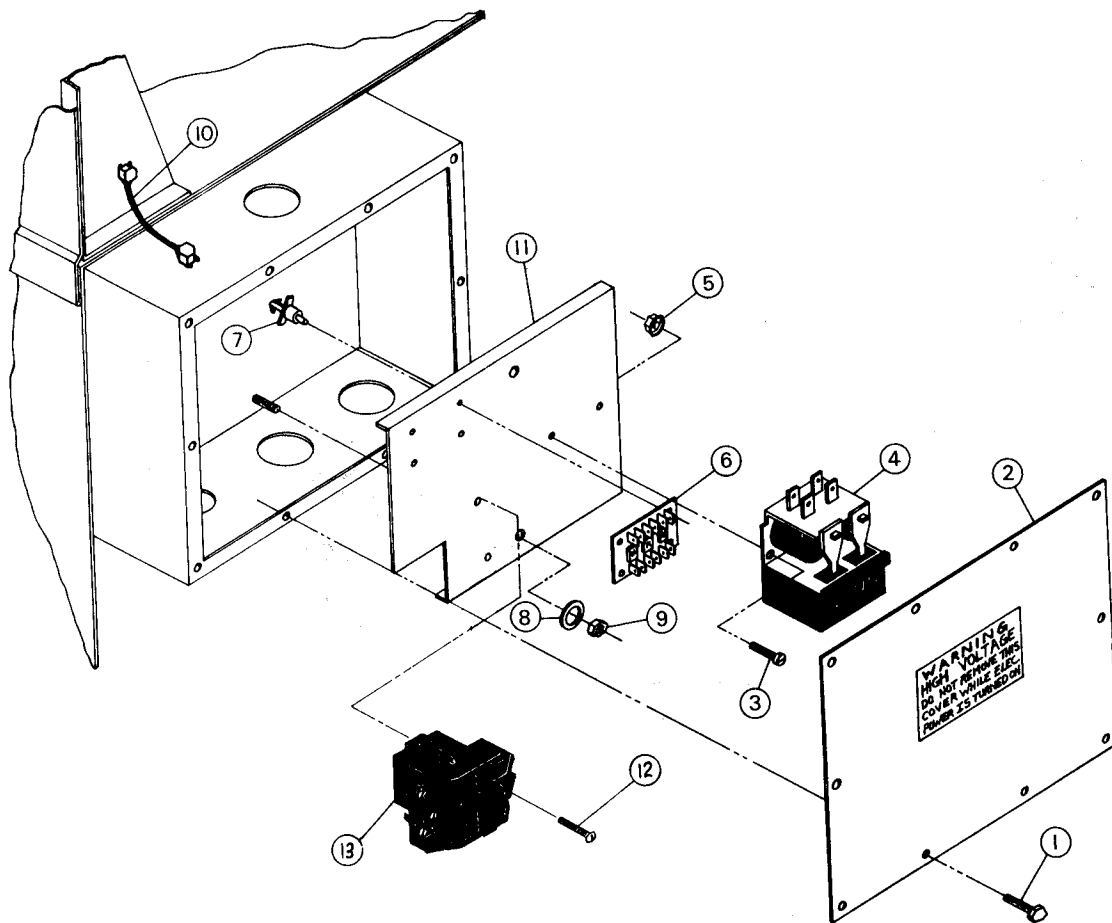
<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	150513	4	5/16-18x1" Hex Head Machine Bolt, Plated
2	153001	10	5/16 Flat Washer
3	153002	6	5/16 Lock Washer
4	152004	6	5/16-18 Hex Nut
5	150600	2	3/8-16x1-1/2" Hex Head Machine Bolt, Plated
6	153004	4	3/8 Flat Washer
7	153005	2	3/8 Lock Washer
8	152005	4	3/8-16 Hex Nut
9	150619	1	3/8-16x3" Hex Head Machine Bolt, Plated
10	100029	1	3/4 HP Tumbler Drive Motor
11	101114	1	Motor Sheave 2.65 Outside Dia. (60Hz Only)
	101120	1	Motor Sheave 3.15 Outside Dia. (50Hz only)
	101121	1	5/8 SK Bushing (50 and 60Hz)
12	100102	2	V-Belt



BLOWER MOTOR MOUNT ASSEMBLY

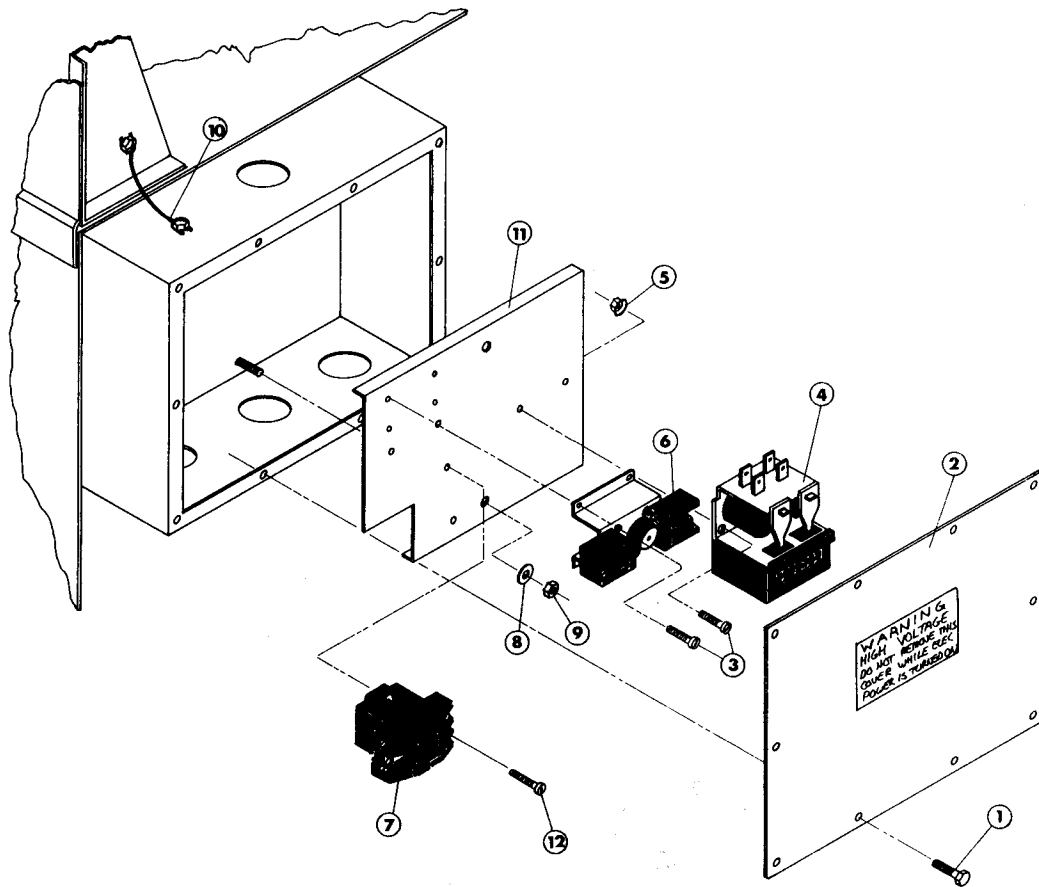
<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	120200	1	3/8 90 Connector
2	150501	4	5/16-18x3/4 Hex Head Machine Bolt, Plated
3	153002	4	5/16 Lock Washer
4	154000	4	5/16-18 Tinnerman
5	152004	4	5/16-18 Hex Nut
6	153002	4	5/16 Lock Washer
7	153001	4	5/16 Flat Washer
8	117600	4 Ft.	Noise Suppressor Tape (Sold in Feet)
9	800907	1	Motor Mount Only
	800913	1	Motor Mount Only (Super Steam)
10	100603	1	16" Impeller
	100605	1	13" Magnesium Impeller (Super Steam)
11	153023	1/AR	3/4x1-1/2 Special Motor Washer
12	100705	1	3/16x3/16"x1-3/8" Key
13	153024	1/AR	1/2x1-1/4x1/16 Flat Washer
14	152006	2	1/2-20 Left Hand Jam Nut
15	100030	1	1 HP 208/230//460/60/3 Motor
	100023	1*	3 HP 208/230/460/60/3 Motor
16	831453	1	Blower Motor Harness 3Ø
17	803891	1	1 HP 208/230/460/3 Motor Mount Complete
	803892	1*	3 HP 208/230/460/3 Motor Mount Complete

\* Super steam model



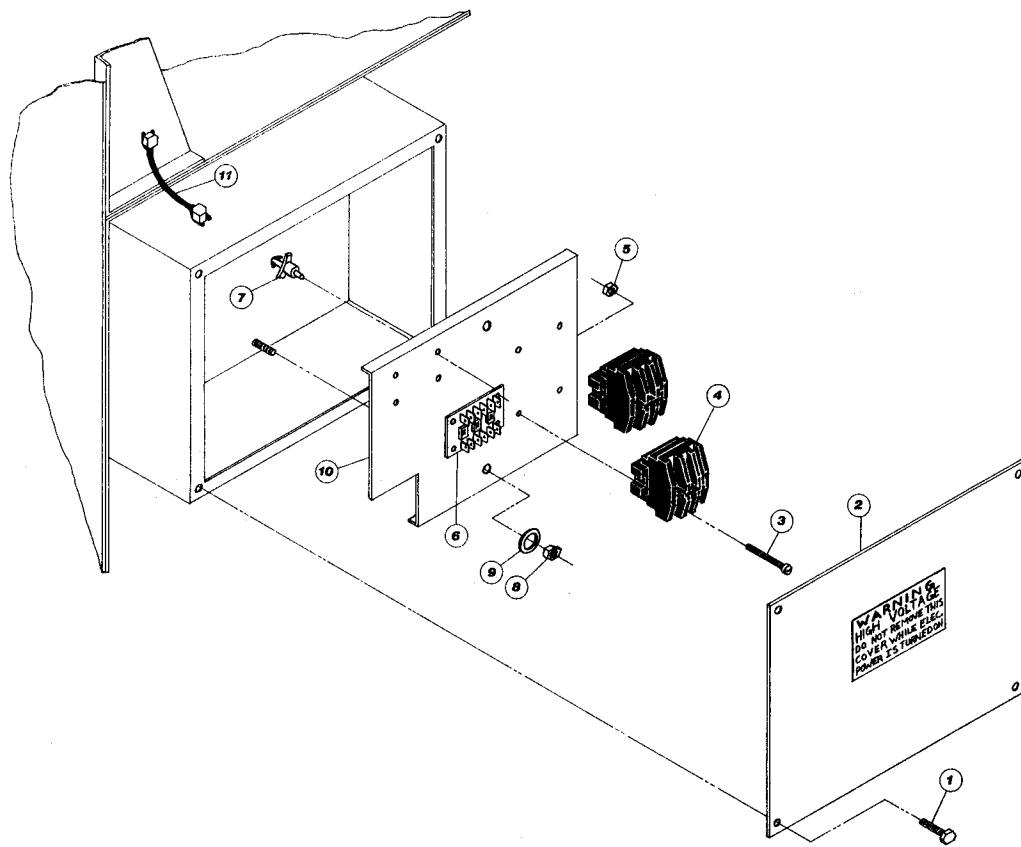
MOTOR RELAY BOX ASSEMBLY (Reversing, Computer)

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	150300	8	10-32X1/2 Hex Head Self-Drilling Screw
2	322808	1	Cover Plate
3	150108	2	8-32X1/2 Pan Head Machine Screw
4	132401	1	Reversing Contactor, 240V
	132404	1	Reversing Contactor, 208V
	132408	1	Reversing Contactor, 120V
5	151001	2	8-32 Pa1 Nut
6	137060	1	Arc Suppressor Board
7	137013	4	Standoff
8	153002	2	5/16 Lock Washer
9	152004	2	5/16-18 Hex Nut
10	831708	1	Ground Wire
11	322807	1	Mounting Panel Only
	803671	1	208V, 50/60 Hz, Rev., Relay Panel Complete
	803672	1	240V, 50/60 Hz, Rev., Relay Panel Complete
	803673	1	380-480V, 50/60 Hz, Rev., Relay Panel Complete
12	150106	2	8-32x1 Round Head Machine Screw
13	132400	1	Impeller Contactor, 240V
	132410	1	Impeller Contactor, 120V



MOTOR RELAY BOX ASSEMBLY (Reversing, Dual Timer)

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	150300	8	10-32x1/2 Hex Head Self-Drilling Screw
2	322808	1	Cover Plate
3	150108	6	8-32x1/2 Pan Head Machine Screw
4	132401	1	Reversing Contactor, 240V
	132404	1	Reversing Contactor, 208V
	132408	1	Reversing Contactor, 120V
5	151001	2	8-32 Pa1 Nut
6	132200	1	Reversing Timer, 220/60
	132202	1	Reversing Timer, 230/50
7	132400	1	Impeller Contactor, 220V
	132410	1	Impeller Contactor, 120V
8	153002	2	5/16 Lock Washer
9	152004	2	5/16-18 Hex Nut
10	831708	1	Ground Wire
11	322807	1	Mounting Panel Only
	803662	1	208V, 50Hz, Reversing, Relay Panel Complete
	803663	1	240V, 50Hz, Reversing, Relay Panel Complete
	803664	1	380-480V, 50Hz, Rev., Relay Panel Complete
	803665	1	208V, 60Hz, Reversing, Relay Panel Complete
	803666	1	240V, 60Hz, Reversing, Relay Panel Complete
	803667	1	380-480V, 60Hz, Rev., Relay Panel Complete
12	150106	2	8-32X1 Round Head Machine Screw



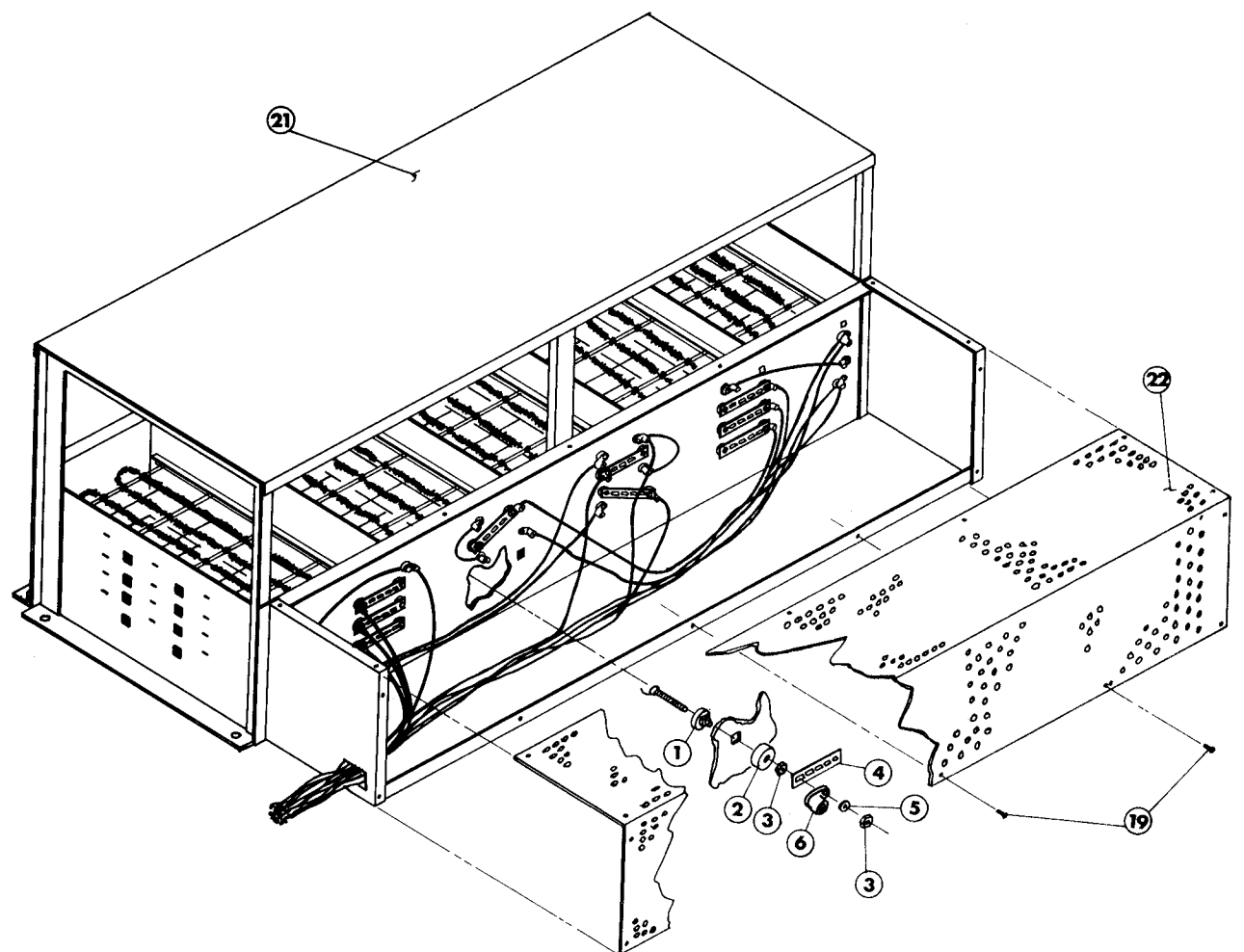
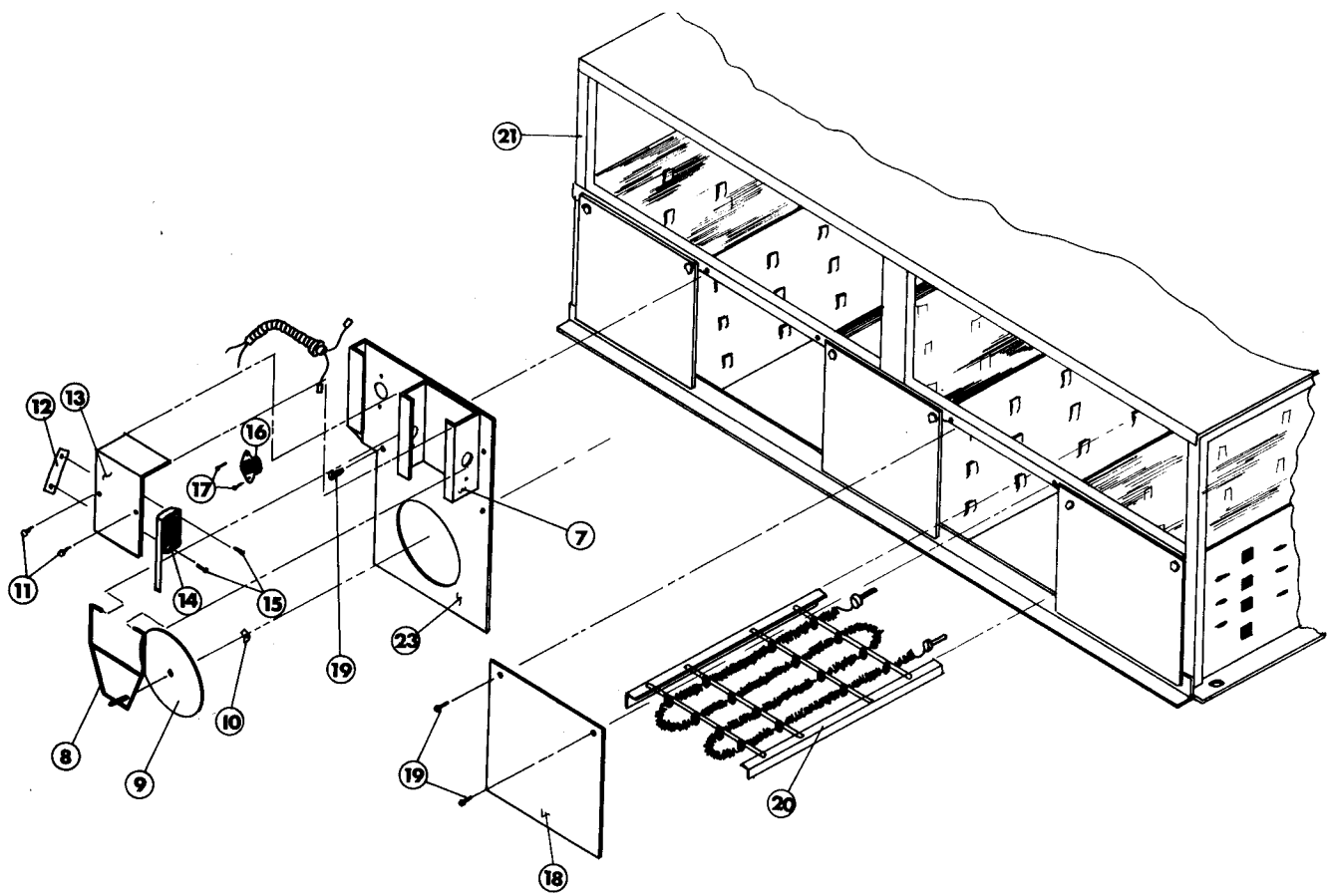
MOTOR RELAY BOX ASSEMBLY (Non-reversing, Computer and Dual Timer)

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	150300	8	10-32X1/2 Hex Head Self-Drilling Screw
2	322808	1	Cover Plate
3	150106	4	8-32x1 Round Head Machine Screw
4	132400	2	Motor Contactor, 240V
	132410	2	Motor Contactor, 120V
5	151001	2	8-32 Pa1 Nut
6	137060	1	Arc Suppressor Board (Computer Dryers Only)
7	137013	4	Standoff
8	152004	2	5/16 Hex Nut
9	153002	2	5/16 Lock Washer
10	322807	1	Mounting Panel Only
Dual Timer Dryers:			
	803661	1	208V, 50/60Hz, Non-reversing, Relay Panel
	803660	1	230V, 50/60Hz, Non-reversing, Relay Panel
Computer Dryers:			
	803668	1	208V, 50/60Hz, Non-reversing, Relay Panel
	803669	1	240V, 50/60Hz, Non-reversing, Relay Panel
	803670	1	380-480V, 50/60Hz, Non-rev., Relay Panel
11	831708	1	Ground Wire



GAS BURNER ASSEMBLY

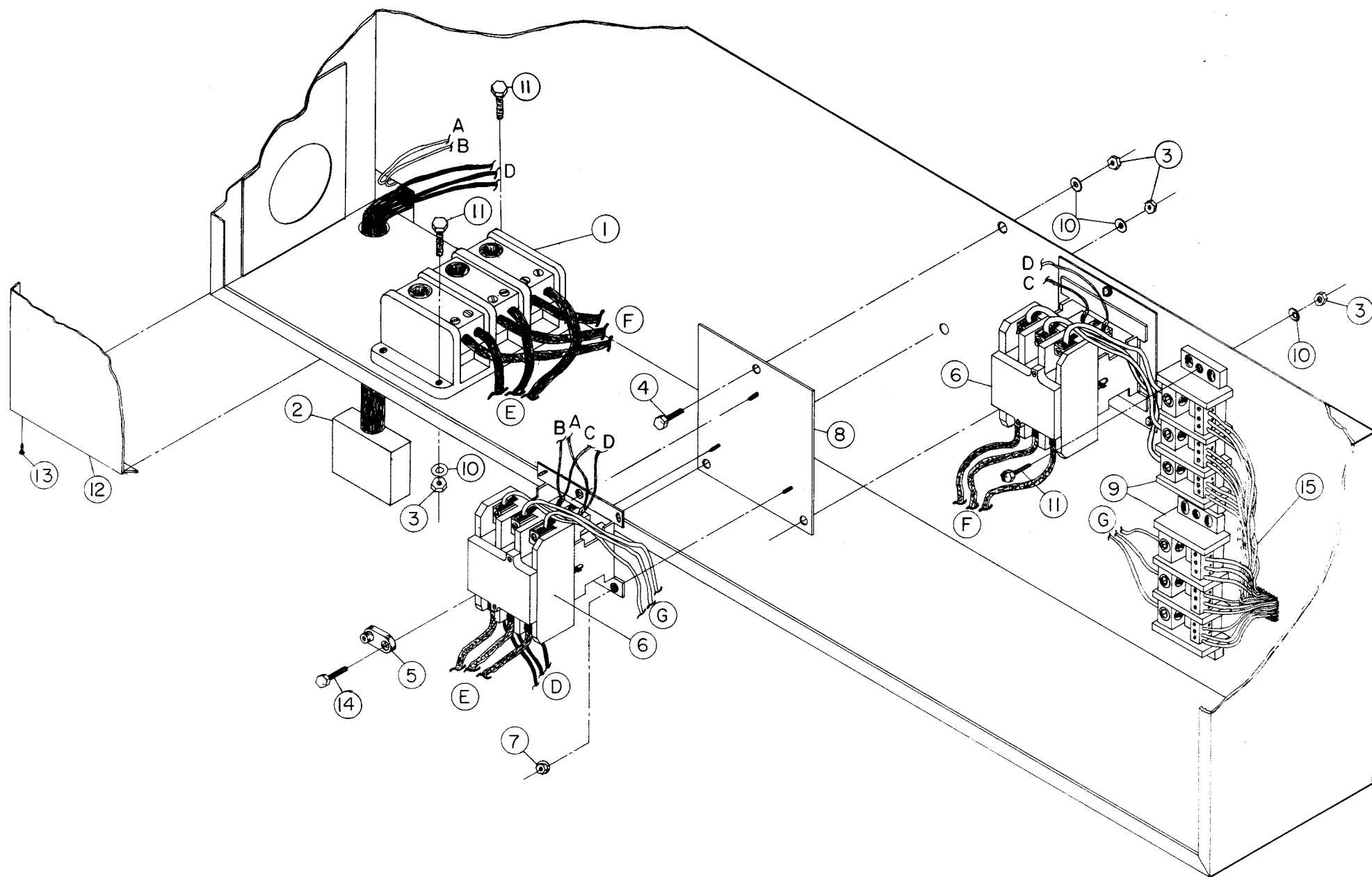
<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
			<u>Dual Timer Dryer:</u>
1	806625	1	Burner Box Assy., Non-heat Recl., Nat. Gas
	806626	1	Burner Box Assy., Non-heat Recl., L.P.
	806627	1	Burner Box Assy., Heat Recl., Nat. Gas
	806628	1	Burner Box Assy., Heat Recl., L.P.
			<u>Computer Dryer:</u>
	806631	1	Burner Box Assy., Non-heat Recl., Nat. Gas (Hi/Lo)
	806632	1	Burner Box Assy., Non-heat Recl., L.P. (Hi/Lo)
	806629	1	Burner Box Assy., Heat Recl., Nat. Gas (Hi/Lo)
	806630	1	Burner Box Assy., Heat Recl., L.P. (Hi/Lo)
2	318364	1	Pipe Bracket (Not Shown)
3	142807	1	3/4"x40" Long Pipe
4	141300	1	3/4" Shutoff
5	142701	2	3/4" Close Nipple
6	142601	1	3/4" Union
7	142511	1	1/2"x3/4" Reducing Elbow
8	142703	1	1/2"x4" Long Pipe
9	140010	1	Gas Valve, Hi/Lo, Natural Gas
	140011	1	Gas Valve, Hi/Lo, L.P.
	140005	1	Gas Valve, Non-Hi/Lo, Natural and L.P. Gas
	140411	1	L.P. Conversion Kit (For 140005 Gas Valve)
10	318317	2	Pipe Bracket
11	141208	1	Manifold, 3-Port
12	140830	3	Orifice, Non-heat Recl., Nat. Gas (#17 Drill)
	140816	3	Orifice, Non-heat Recl., L.P. (#36 Drill)
	140829	3	Orifice, Heat Reclaimer, Nat. Gas (#18 Drill)
	140815	3	Orifice, Heat Reclaimer, L.P. (#37 Drill)
13	141107	3	Burner Tube, Ribbon Type
14	150002	1	6-32x1" Round Head Machine Screw
15	153017	1	#6 Steel Burr
16	319509	1	Glo-bar Mounting Bracket
17	128910	1	Glo-bar
18	151000	1	6-32 Pal Nut
19	150103	1	8-32x1/2" Pan Head Machine Screw
20	813319	1	IR Sensor Mounting Bracket
21	130500	1	IR Sensor
22	153012	1	#8 Star Washer
23	152001	1	8-32 Hex Nut
24	318318	2	Burner Brace
25	150301	6	#8-18x7/16 Phillips, Pan Head, TEK, Plated
26	150300	16	#10x1/2 Self-Drilling Screw
27	142504	1	3/4" Elbow (Heat Reclaimer Burners Only)





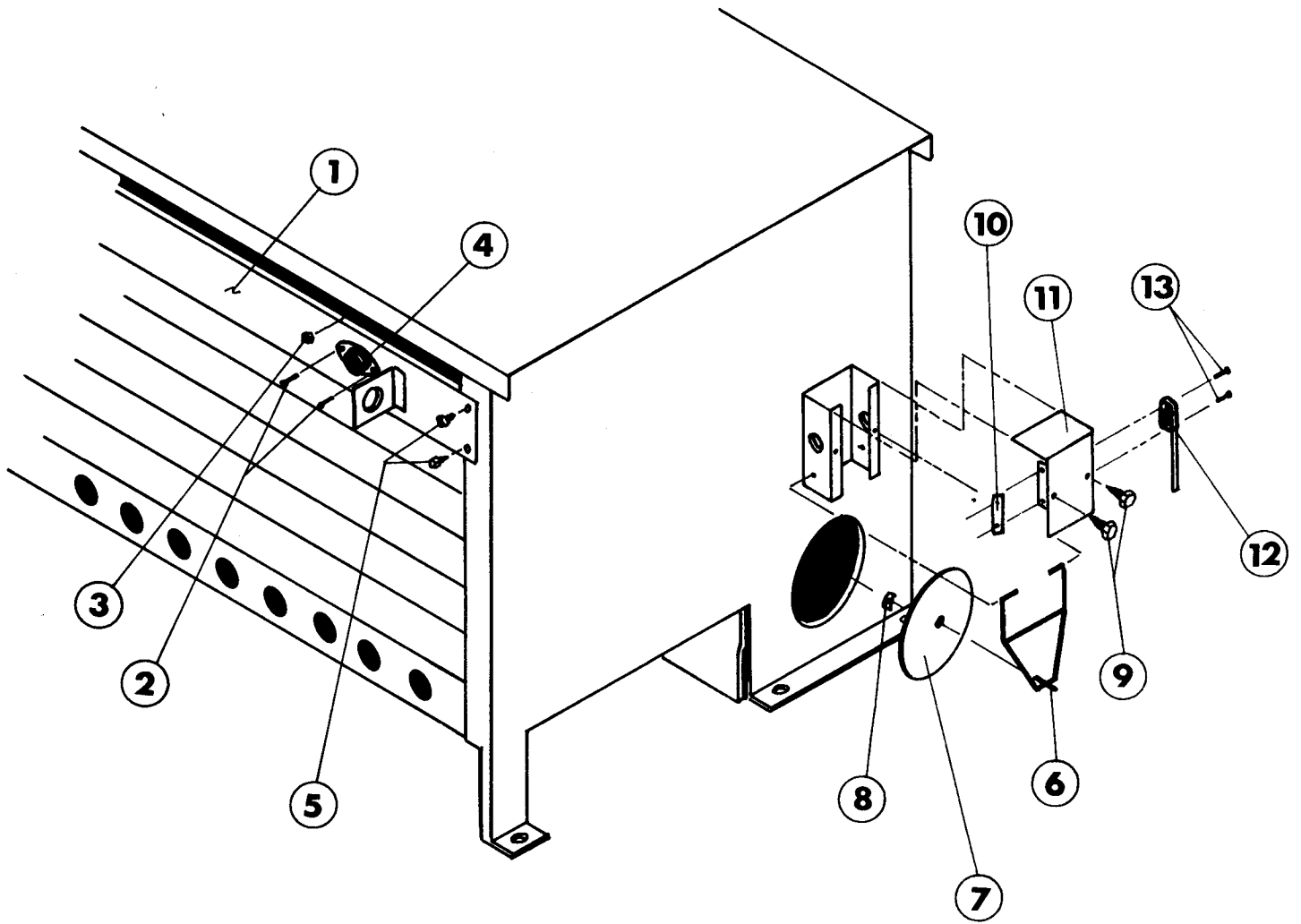
ELECTRIC OVEN ASSEMBLY

<u>Illus.</u> <u>No.</u>	<u>Part</u> <u>No.</u>	<u>Qty.</u>	<u>Description</u>
1	120081	36	Internal Ceramic Insulator
2	120080	36	External Ceramic Insulator
3	152008	72	10-32 Hex Nut
4	121011	1 Ft.	Bus Bar (Sold by the Foot)
5	153009	36	#10 Lock Washer
6	121010	18	Terminal Lug (208/240V)
	121010	9	Terminal Lug (416/480V)
7	802800	1	Sail Switch Box with Cover and Bracket
	802801	1	Sail Switch Box Assembly Complete
8	105500	1	Sail Switch Rod
9	319202	1	Sail Switch Damper
10	154002	1	1/8 Push-on Fastener
11	150300	2	#10x1/2 Hex Washer TEK
12	154004	1	Twin Speed Nut
13	802799	1	Sail Switch Box Cover and Bracket Only
14	122200	1	Sail Switch
15	150303	2	#4x3/4" "A" Pan Head Machine Screw
16	130400	1	290°F. Hi-Limit Thermostat
17	150301	2	#8-18x7/16 TEK Pan Head Screw
18	803101	4	100-Lb. Element Cover
19	150300	26	#8-18x1/2 TEK Hex Head Screw
20	120006	12	3KW, 208V, Heating Element
	120007	12	3KW, 240V, Heating Element
	120008	6	4KW, 208V, Heating Element
	120009	6	4KW, 240V, Heating Element
21	803002	1	Electric Oven Only
	815800	1	60KW, 208V, 3Ø Oven Complete
	815802	1	60KW, 240V, 3Ø Oven Complete
	815805	1	60KW, 416V, 3Ø Oven Complete
	815806	1	60KW, 480V, 3Ø Oven Complete
22	321403	1	Access Cover
23	802802	1	100-Lb. Safety Control Bracket Assembly



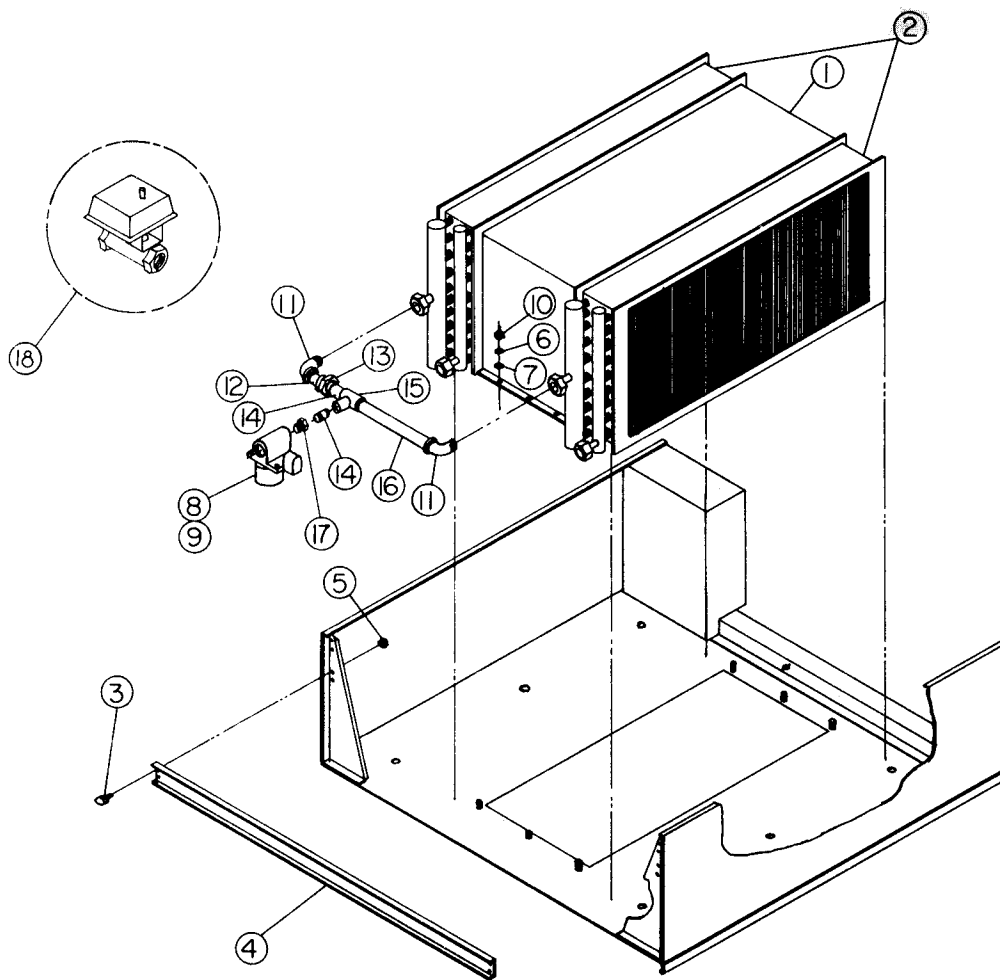
ELECTRIC OVEN RELAY BOX ASSEMBLY

<u>Illus.</u> <u>No.</u>	<u>Part</u> <u>No.</u>	<u>208/240V</u> <u>Qty.</u>	<u>416/480V</u> <u>Qty.</u>	<u>Description</u>
1	120710	1	0	Terminal Block, Power Input
2		1	1	Power Control Harness and Connector
3	152002	12	7	1/4-20 Pal Nut
4	150512	6	3	1/4-20x1/2 Hex Head Bolt
5	121010	1	1	Ground Lug L-70
6	131309	2	1	Relay Contactor 93A, 240V
7	152008	6	3	10-32 Pal Nut
8	803202	2	1	Mounting Adaptor Plate
9	120706	2	1	Terminal Distribution Block
10	153007	12	7	1/4 Lock Washer
11	150511	6	4	1/4-20x1-1/2 Hex Head Bolt
12	320902	1	1	Junction Box Cover
13	150301	14	14	8-18x7/16 Phillips Self-Drill. Screw
14	150510	1	1	1/4-20x3/4 Hex Head Bolt



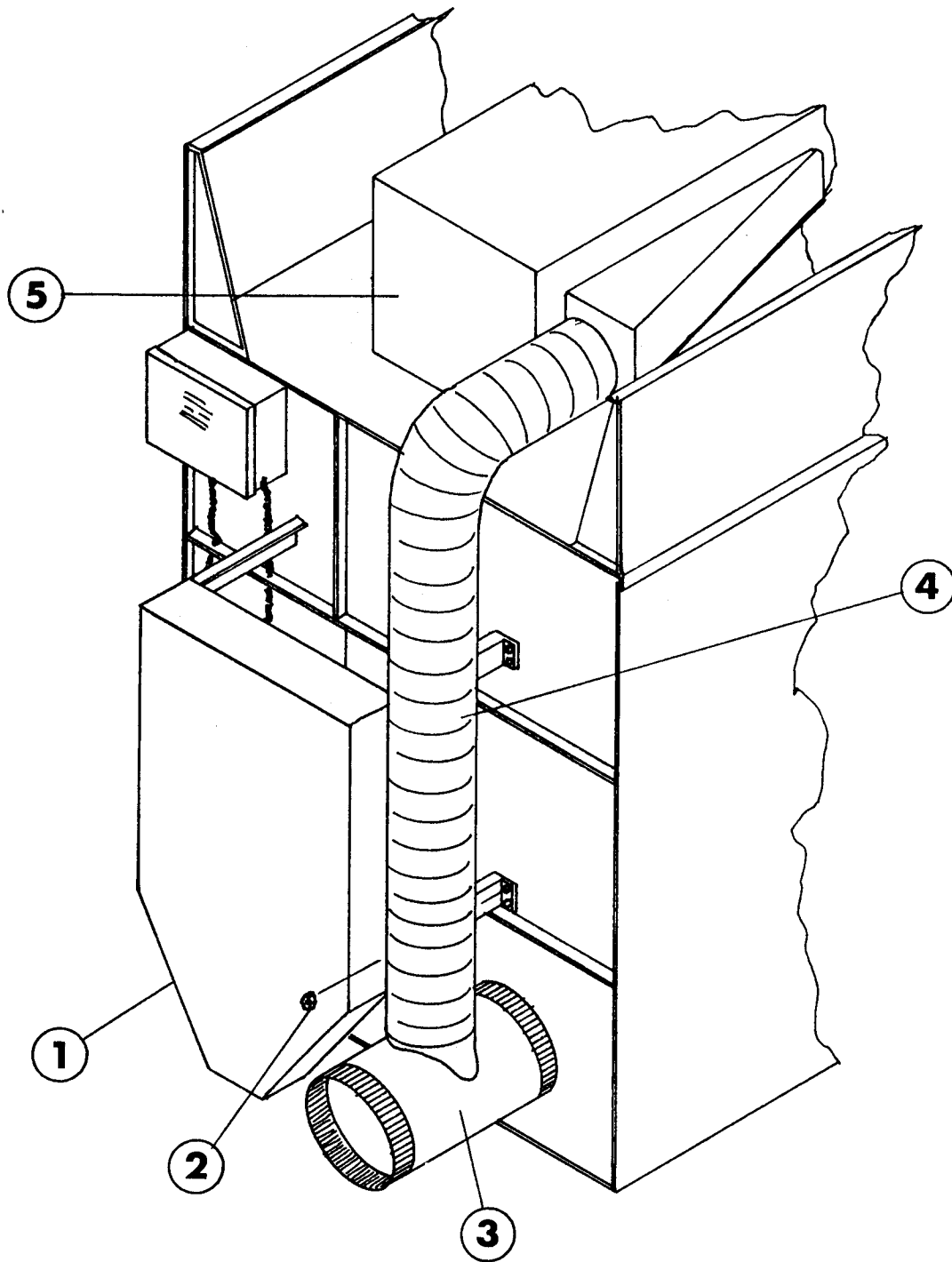
SAIL SWITCH/BURNER HI-LIMIT SWITCH ASSEMBLY

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	319702	1	Hi-limit Thermostat Bracket Assembly
2	150001	2	6/32x1/2" Round Head Machine Screw
3	151000	2	6/32 Pan Nut
4	130401	1	330°F. Hi-limit Thermostat
5	150300	4	#10x1/2 Hex Washer TEK
6	105500	1	Sail Switch Rod
7	319202	1	Sail Switch Damper
8	154002	1	1/8" Push-On Fastener
9	150300	2	#10x1/2 Hex Washer TEK
10	154004	1	Twin Speed Nut
11	802799	1	Sail Switch Box Cover and Bracket Only
12	122200	1	Sail Switch
13	150303	2	#4x3/4" "A" Pan Head Machine Screw



STEAM COIL ASSEMBLY

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	803504	1	Steam Plenum
2	165004	2	Steam Coil (All Models)
3	150510	4	1/4-20x3/4 Hex Head Bolt
4	312307	1	Corner Gusset Brace
5	152002	4	1/4-20 Hex Nut
6	153001	6	5/16 Flat Washer
7	153007	6	1/4 Lock Washer
8	165102	1	1-1/4" Steam Valve, 110V, Lo-press. Steam Only
9	165103	1	1-1/4" Steam Valve, 220V, Lo-press. Steam Only
10	152002	6	1/4-20 Hex Nut
11	142507	2	1" 90° Street Elbow
12	142808	1	1"x3" Nipple
13	142602	1	1" Black Union
14	142711	2	1" Close Nipple
15	142508	1	1" Tee
16	142712	1	1"x10-5/8" Nipple
17	142901	1	1-1/4"x1" Reducing Bushing, Lo-pressure Steam Only
18	165107	1	1" Motorized Steam Valve, Hi-pressure Steam and Super Steam Only



BACK GUARD AND HEAT RECLAIMER DUCT ASSEMBLY

<u>Illus. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
1	801509	1	Back Guard
2	152004	4	5/16-18 Hex Nut
3	143507	1	Tee Duct
4	143510	1	8" Diameter Flex Pipe
5			Gas Burner Assembly (Refer to Gas Burner Assembly Illustration for Part Numbers)

## SECTION XIII

### Servicing

Introduction: All electrical/mechanical service or repairs should be made with the electrical power to the dryer disconnected (power off).

WARNING: Personal injury could result.

The information provided in this section should not be misconstrued as a device for use by an untrained person making repairs. Only properly licensed technicians should service the equipment.

When contacting the factory for assistance, always have the dryer model and serial numbers available.

CAUTION: Observe all safety precautions displayed on the dryer or specified in this manual before and while making repairs.

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## A. Computer Controls

### To Replace Computer Control Panel Assembly

1. Discontinue power to dryer.
2. Disconnect main power harness from rear of computer by squeezing locking tabs and pulling connector straight back.
3. Disconnect the ground (green) wire from the computer.
4. Disconnect the two (2) red wires from the HI and HO terminals of the computer (hi/lo models only).
5. To remove control panel assembly from control box, gently tap the bottom on the control panel upward and lift off of hinges.
6. Install new control panel assembly by reversing this procedure.

### To Replace Computer

1. Discontinue power to dryer.
2. Disconnect main power harness from rear of computer by squeezing locking tabs and pulling connector straight back.
3. Disconnect the ground (green) wire from the computer.
4. Disconnect the two (2) red wires from the HI and HO terminals of the computer (hi/lo models only).
5. Disconnect keyboard ribbon from computer.
6. Remove the four (4) hex nuts securing the computer to the sheet metal control panel and disassemble computer from panel.
7. Install new computer by reversing this procedure.

### To Replace Keyboard Label Assembly

1. Discontinue power to dryer.
2. Unplug keyboard ribbon from rear of computer.
3. Slowly peel off and remove keyboard label assembly from control panel.

4. Peel paper backing off of new keyboard label assembly.
5. Holding the new keyboard label assembly close to the control panel, insert the keyboard ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window in the label to the rectangular cutout in the panel and gently press into place.
6. Connect keyboard ribbon to computer.
7. Reestablish power to dryer.

#### To Replace Computer Temperature Sensor Probe

1. Discontinue power to dryer.
2. Remove M.P. Sensor bracket assembly from dryer.
  - a. Disconnect sensor bracket harness connector.
  - b. Loosen the two (2) phillips head screws securing bracket assembly to dryer and remove bracket from dryer.

NOTE: Do not remove screws.

3. Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe to the bracket. Use a small screwdriver to slowly pry the fastener off.
4. Disconnect the two (2) orange wires from the high heat (225°) temperature sensor, remove modular bracket connector, wires, and probe from bracket assembly.
5. Install new sensor probe assembly (P/N 880251) by reversing procedure.
6. Reestablish power to dryer.

NOTE: If, when power is reestablished, the computer display reads "dSFL", check for a loose connection in the wiring. If connections appear to be okay, reverse polarity of the sensor probe by reversing the wires at the sensor bracket connector holes number 1 and 2.

#### To Replace A.S. Board and P.C.B. Heat and/or Motor Relays On A.S. Board

1. Discontinue power to dryer.
2. Locate and remove all wires from the arc supressor (A.S.) boards terminals and relays.

NOTE: Identify location of each wire for correct reinstallation.

3. Remove A.S. board assembly from control box wall by pressing in the locking tabs of the nylon standoffs at each corner of the board.

NOTE: If an entire new board is to be used, skip steps 4 through 5.

4. To replace individual printed circuit board (P.C.B.) relays, locate the three (3) solder points securing the relay to the back side of the A.S. board. Using a soldering iron, remove the solder at each of these points and disassemble relay from board.

IMPORTANT: Avoid damaging board printed circuits.

5. Assemble new relay onto A.S. board. Press and hold firmly in place and apply a small amount of solder to each of the three (3) relay pins.

NOTE: The solder points are not only used to secure the relay to the board, they are also important electrical connections.

6. Assemble A.S. board to dryer by reversing steps 2 and 3.
7. Reestablish power to dryer.

## B. Dual Timer Controls

### To Replace Indicator Light

1. Discontinue power to dryer.
2. Disconnect the two (2) wires from the indicator light at the control panel 3-position terminal strip.
3. Push and hold in the two (2) locking lances of the indicator light and pull light out through face side of control panel.
4. Install new indicator light by reversing the procedure.

### To Replace Heat Selector Switch

1. Discontinue power to dryer.
2. Disconnect wiring from heat selector switch.

IMPORTANT: Identify location of each wire for correct reinstallation.

3. Push and hold in the right top and bottom locking lances of the selector switch and push slightly forward to the right. Push and hold in left top and bottom locking lances and push switch out through face side of panel.
4. Install new heat selector switch by reversing this procedure.

#### To Replace Push-to-Start Relay

1. Discontinue power to dryer.
2. Remove wiring from push-to-start relay.
3. Disassemble push-to-start relay from control panel by removing the two (2) slotted head screws securing the push-to-start relay to the panel mounting bracket.
4. Reverse this procedure for installing push-to-start relay.

#### To Replace Timer

1. Discontinue power to dryer.
2. Disconnect wiring at timer.

NOTE: Identify location of each wire for correct reinstallation.

3. Remove timer knob by unscrewing small screw that holds the knob to timer shaft.
4. Remove two (2) screws holding timer to panel.
5. Reverse this procedure for installing timer.

### C. Ignition Components

#### To Replace Glo-bar

1. Discontinue power to dryer.
2. Disconnect glo-bar power harness connector.
3. Disassemble glo-bar from mounting bracket by removing machine screw, washer, and nut.

NOTE: If adjustment of glo-bar closer to burner tube is needed, bend mounting bracket upward. To avoid damaging glo-bar, do not make adjustments while glo-bar is mounted to bracket. Do not touch glo-bar heating element with your fingers. Oil deposits on element can lead to early element failure.

4. Reverse procedure for installing new glo-bar.

IMPORTANT: Before reestablishing power to dryer, visually check glo-bar to assure it is not touching tube burner.

#### To Replace I.R. Sensor (flame switch)

1. Discontinue power to dryer.
2. Disconnect wiring to I.R. Sensor.
3. Disassemble I.R. sensor from mounting bracket by removing machine screw, washer, and nut.
4. Reverse procedure for installing new I.R. sensor.

#### To Replace Gas Valve

1. Discontinue power to dryer.
2. Close shut-off valve(s) in gas supply line.
3. Disconnect gas valve wiring.  
NOTE: Identify location of each wire for correct reinstallation.
4. Break union connection before gas valve.
5. Loosen and remove screws (4) securing pipe brackets to burner.
6. Remove gas valve/manifold assembly from dryer.
7. Remove valve mounting bracket, manifold, and 1/2" pipe from gas valve.
8. Reverse procedure for installing new gas valve.

WARNING: Test all connections for leaks by brushing on a soapy water solution. NEVER TEST FOR LEAKS WITH A FLAME.

### To Replace Main Burner Orifices

1. Refer to "Replace Gas Valve" and follow steps one through six.
2. Unscrew main burner orifices and replace.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reverse the removal procedure for re-installing.

WARNING: Test all connections for leaks by brushing on a soapy water solution. NEVER TEST FOR LEAKS WITH A FLAME.

### To Test and Adjust Gas (water column) Pressure

There are two (2) types of devices commonly used to measure water column pressure. They are spring/mechanical type gauges and manometers. The spring/mechanical type gauge is not recommended, because it is easily damaged and is not always accurate. A manometer is simply a glass or transparent plastic tube with a scale in inches. When filled with water and pressure is applied, the water in the tube rises, showing the exact water column pressure.

NOTE: Manometers are available from the factory by ordering part number 122804.

1. To Test Gas Water Column (W.C.) pressure:
  - a. Connect water column test guage connection to gas valve pressure tap (1/8" N.P.T.)
  - b. Start dryer. With burner on in hi-fire, the correct water column reading in inches should be:

Natural Gas - 4 Inches W.C.  
L.P. Gas - 11 Inches W.C.

2. To adjust water column pressure (natural gas only):

a. Non-Hi/Lo Gas Valve (dual timer dryer)

- 1) Remove regulator adjustment cover.
- 2) Turn slotted head adjustment screw located in the gas valve well clockwise to increase manifold gas pressure and counterclockwise to decrease manifold gas pressure.
- 3) Replace regulator adjustment cover.

NOTE: If correct W.C. pressure cannot be achieved, problem may be due to an undersized gas supply line, a faulty or underrated gas meter, low incoming gas pressure, etc.

b. Hi/Lo Gas Valve (computer dryer) Refer to Fig. 3 on page 57.

- 1) Remove sheet metal box on top of gas valve by removing the three (3) small holding screws.
- 2) To decrease lo-fire gas flow, turn lo-fire adjustment nut counterclockwise. Turn it clockwise for an increase in flow.
- 3) To decrease hi-fire gas flow, turn hi-fire adjustment screw counterclockwise. Turn it clockwise for an increase in flow.

NOTE: Every adjustment of the lo-fire flow affects hi-fire flow. If lo-fire is decreased, hi-fire will decrease with it. So, always adjust lo-fire first, and then, adjust hi-fire.

For example, if you want to decrease lo-fire but keep hi-fire as it is, turn the lo-fire adjustment nut counterclockwise until the proper lo-fire is obtained. Then, the hi-fire screw must be turned clockwise, so that the hi-fire flow will be what it was before lo-fire was adjusted.

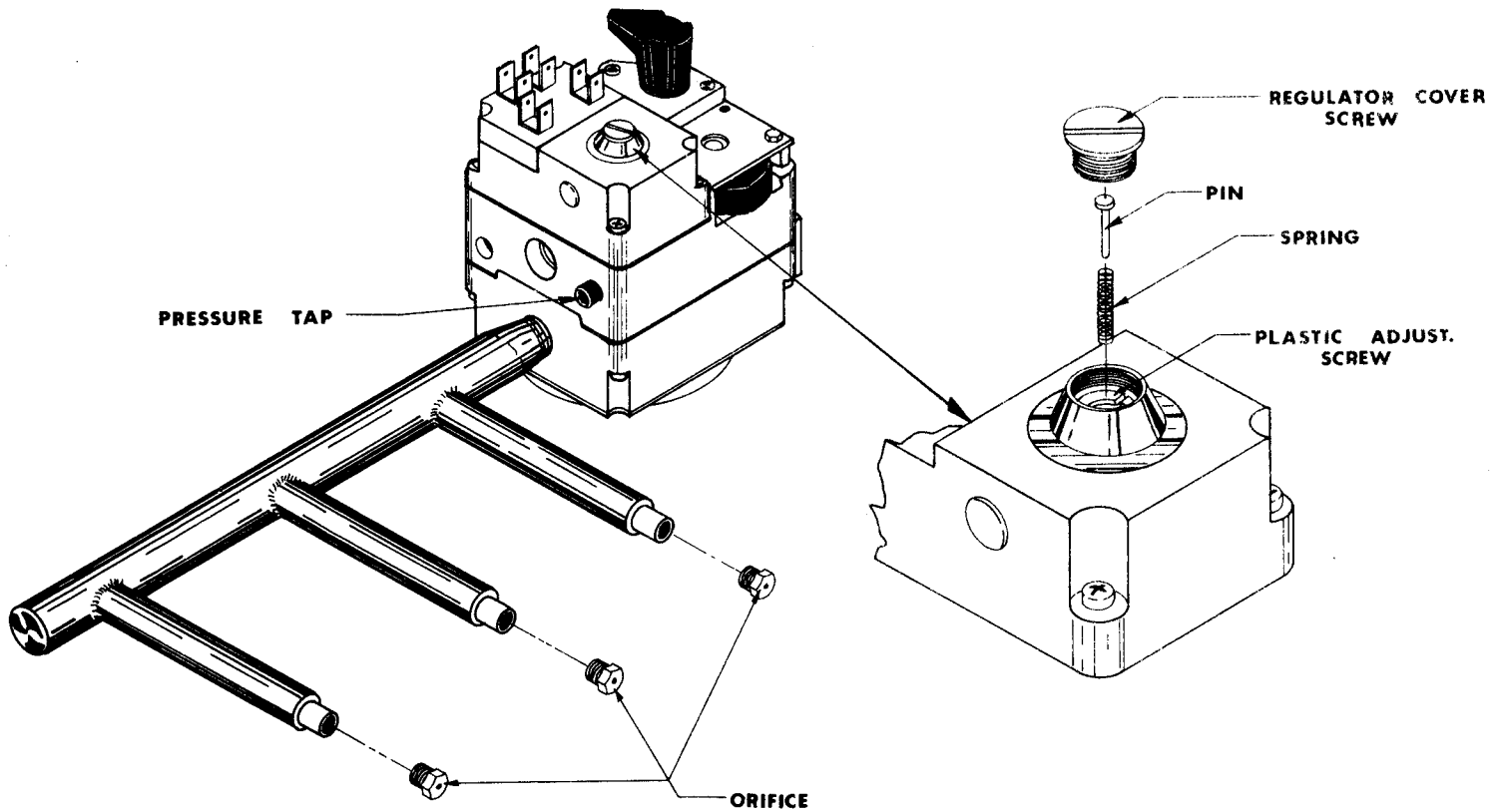
NOTE: If lo-fire adjustment is required, apply Loctite or some other similar substance to the lo-fire adjustment nut to prevent vibrations from loosening it.

3. To adjust water column pressure (L.P. Gas only):

Dryers manufactured for use with L.P. gas have no pressure

regulator or means of regulation built into the dryer. Regulation must be provided at the gas supply (L.P. tank). If regulation adjustment is necessary, contact L.P. gas supplier.

NOTE: If correct or constant W.C. pressure cannot be achieved, problem may be due to an undersized gas supply line or a faulty regulator.





## To Convert from Natural to L.P. Gas

1. Non-Hi/Lo Gas Valve (dual timer dryer) Ask for L.P. Kit P/N 874028. This includes three (3) orifices and a valve stem.
  - a. Replace main burner orifices. Refer to "To Replace Main Burner Orifices" on page 103.
  - b. Remove gas valve regulator adjustment cover. Replace with L.P. stem cover and washer supplied with L.P. kit.
  - c. Reverse procedure for re-installing gas valve to dryer.
2. Hi/Lo Gas Valve (computer dryer) Ask for L.P. Kit P/N 874029. This includes three (3) orifices and an L.P. gas valve.
  - a. Replace gas valve and main burner orifices. Refer to "To Replace Gas Valve" and "To Replace Main Burner Orifices" on page 103.
  - b. Reverse procedure for re-installing gas valve to dryer.

Hi/Lo Gas Valve, Natural Gas	P/N 140010
Hi/Lo Gas Valve, L.P.	P/N 140011

## D. Thermostats

### Burner Hi-Limit (330°) Thermostat

This thermostat is located on the left side of the burner, and is an important safety device serving as an added protection against failure of the air sail switch to open in the event of motor failure or reduced air flow condition.

IMPORTANT: Under no circumstances should heat circuit safety devices ever be disabled.

### To Replace

1. Discontinue power to dryer.
2. Disconnect wires from hi-limit thermostat.
3. Disassemble hi-limit thermostat by removing the two (2) mounting screws and nuts.

4. Reverse this procedure for installing hi-limit thermostat.

#### Lint Compartment Hi-Heat Protector (225°) Thermostat

This thermostat is part of the "sensor bracket assembly" and is secured to the underside of the tumbler wrapper in the lint compartment. As a safety device, this thermostat will open (shut off) the heating unit circuit if an excessive temperature occurs. The dryer motor will remain on, even if this thermostat is open.

IMPORTANT: Under no circumstance should heat safety devices ever be disabled.

#### To Replace

1. Discontinue power to dryer.
2. Open lint compartment door and locate sensor bracket assembly.
3. Loosen the two (2) phillips head screws securing the bracket assembly to the tumbler wrapper.

NOTE: Do not remove screws.

4. Remove bracket assembly by slightly sliding bracket towards rear of dryer and to the right.
5. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
6. Disconnect the two (2) orange wires from the thermostat.
7. Disassemble thermostat from bracket assembly by removing the two (2) mounting screws, washers, and nuts.
8. Reverse this procedure for installing hi-heat protector thermostat.

#### Temperature Control Thermostats (dual timer dryer)

These thermostats will open the circuit to the heating unit when their preset temperature settings are reached. The temperature control thermostats are part of the "sensor bracket assembly" secured to the underside of the tumbler wrapper in the lint compartment.

#### To Replace

1. Discontinue power to dryer.
2. Open lint compartment door and locate sensor bracket assembly.

3. Loosen the two (2) phillips head screws securing bracket assembly to tumbler wrapper.

NOTE: Do not remove screws.

4. Remove bracket assembly by slightly sliding bracket towards rear of dryer and to the right.
5. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
6. Disconnect wiring to defective thermostat.
7. Disassemble defective thermostat from bracket assembly by removing the two (2) mounting screws, washers, and nuts.
8. Reverse this procedure for installing new thermostat.

#### E. Sail Switch Assembly

The sail switch is a heat circuit safety device which controls the burner circuit only. When the dryer is operating and there is proper air flow, the sail switch damper pulls in and closes the sail switch. Providing all the other heat-related circuits are functioning properly, ignition should now be established. If an improper air flow occurs, the sail switch damper will release, and the circuit will open.

IMPORTANT: Under no circumstances should heat circuit safety devices ever be disabled.

#### To Replace

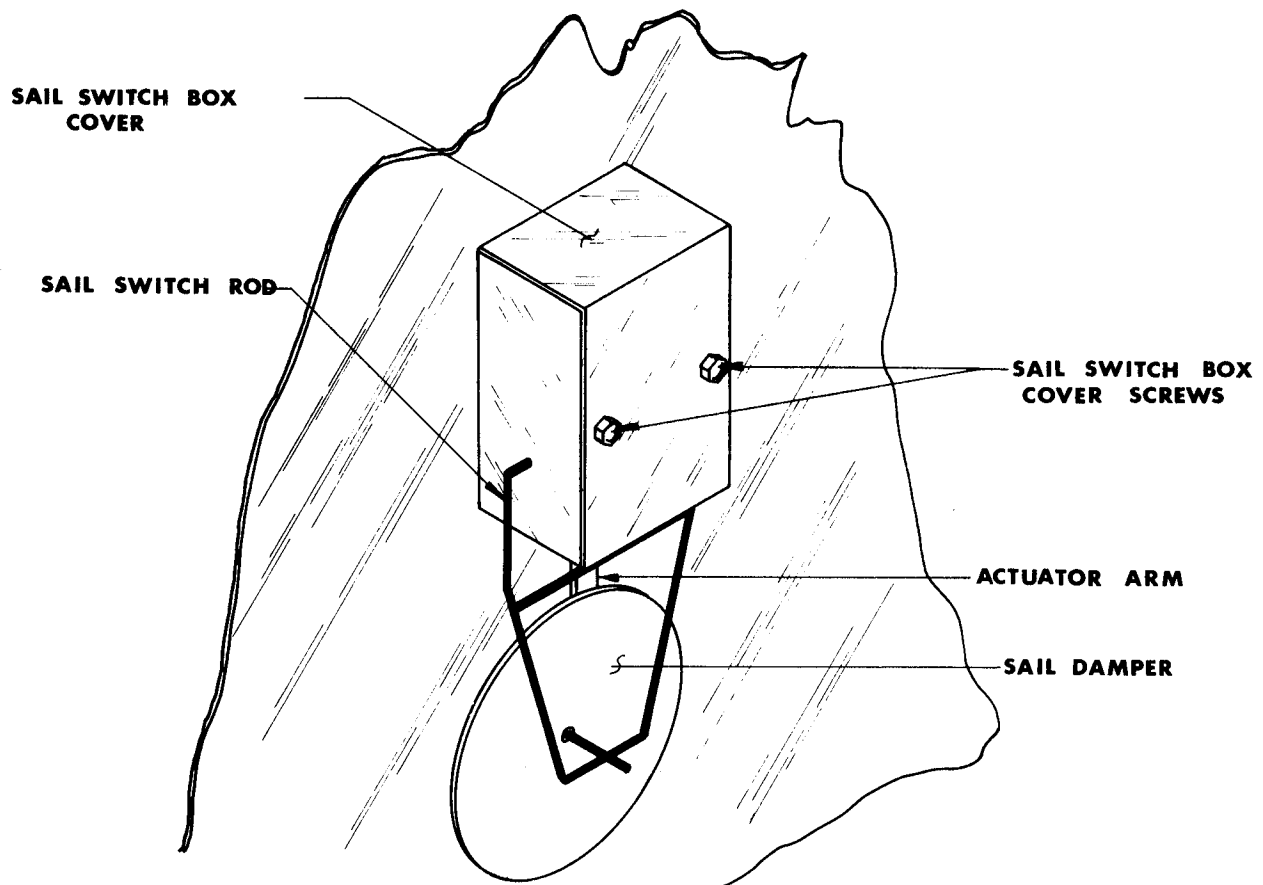
1. Discontinue power to dryer.
2. Remove the two (2) screws which hold the sail switch box cover to the sail switch box.
3. Disconnect the two (2) wires from the switch.
4. Disassemble sail switch from mounting bracket by removing the two (2) screws securing switch in place.
5. Reverse this procedure for installing new sail switch. Adjust switch as described below.

#### To Adjust Sail Switch

With the dryer operating at a high temperature setting, pull the sail switch damper away from the burner. The sail switch

should open and extinguish the burner. Let the sail switch damper return to the burner wall. The sail switch should close to restart the burner ignition cycle. If the sail switch circuit does not operate as described, bend the actuator arm of the sail switch accordingly until proper operation is achieved. To check proper "open" position of sail switch, open main door, manually depress main door switch(es), and start dryer. With the main door open and the dryer operating, the sail switch circuit should be open, and the burner should not come on.

**CAUTION:** Do not abort this switch by taping or screwing sail switch damper to burner. Personal injury or fire could result.



F. To Replace Main Door Switch

1. Discontinue power to dryer.
2. Open main door.
3. Remove the two (2) phillips head screws holding main door switch bracket assembly in place.
4. Remove door switch bracket from hinge block and disconnect wiring from switch.

NOTE: Identify location of each wire for correct re-installation.

5. Disassemble door switch from switch bracket by removing locking adjustment nut. Remove second locking nut and assemble on to new door switch.
6. Reverse this procedure for installing new door switch.

NOTE: When reconnecting wires to door switch, be sure wiring sequence is correct.

IMPORTANT: Under no circumstances should the door switch ever be disabled.

G. To Replace Main Door Assembly

1. Remove screws holding main door to main door hinge pad.
2. Reverse this procedure for re-installing new main door assembly.

H. Front Panel Removal

1. Discontinue power to dryer.
2. Disconnect main door switch wiring from inside control wire box.

NOTE: Identify location of each wire for correct re-installation.

3. Follow procedure for removal of main door assembly.
4. Open control (service) door.
5. Open and remove lint door.
6. Remove the twelve (12) phillips head screws securing front panel to dryer.

7. Gently remove front panel assembly from dryer.

IMPORTANT: When removing front panel assembly, be careful as not to damage main door switch wires disconnected in step 2.

8. Reverse this procedure for installing front panel.

#### I. To Replace Main Door Hinge Pad

1. Discontinue power to dryer.
2. Follow procedure for removal of main door assembly.
3. Follow procedure for removal of front panel assembly.
4. Disassemble hinge pad from front panel by removing the phillips head screws located on the back side of the front panel, which hold the hinge pad to the front panel.

IMPORTANT: When removing hinge pad assembly from front panel, be careful as not to damage main door switch wires.

5. Remove main door switch, wires, and spacer nuts from hinge pad assembly.
6. Reassemble by reversing removal procedure.

NOTE: When reconnecting wires to door switch, be sure wiring sequence is correct.

#### J. Pulleys

##### To Replace Tumbler Pulley (18")

1. Loosen V-belts. Then, rotate pulley and roll V-belts out of grooves.
2. Remove the three (3) hex head bolts and washers that hold the pulley to its bushing.
3. Screw these bolts into the unused threaded holes in the bushing and tighten evenly. This will push pulley off bushing.
4. Loosen the set screw in bushing that holds down the shaft key.
5. Remove bushing, pulley, and key.
6. Replace by reversing procedure.

#### To Replace Small Idler Pulley

1. Loosen V-belts. Then rotate pulley and roll V-belts out of grooves.
2. Remove the three (3) hex head bolts and washers that hold the pulley to its bushing.
3. Screw these bolts into the unused threaded holes in the bushing and tighten evenly. This will push pulley off bushing.
4. Remove bushing and pulley.
5. Replace by reversing procedure.

#### To Replace Large Idler Pulley

1. Remove small idler pulley as described above.
2. Loosen V-belts. Then rotate pulley and roll V-belts out of grooves.
3. Remove the three (3) hex head bolts and washers that hold the pulley to its bushing.
4. Screw these bolts into the unused threaded holes in the bushing and tighten evenly. This will push pulley off bushing.
5. Loosen the set screw in bushing that holds down the shaft key.
6. Remove bushing, pulley, and key.
7. Replace by reversing procedure.

#### To Replace Motor Pulley

1. Loosen V-belts. Then rotate pulley and roll V-belts out of grooves.
2. Remove the three (3) hex head bolts and washers that hold the pulley to its bushing.
3. Screw these bolts into the unused threaded holes in the bushing and tighten evenly. This will push pulley off bushing.
4. Loosen the set screw in bushing that holds down the shaft key.

5. Remove bushing, pulley, and key.
6. Replace by reversing procedure.

K. Tumbler Assembly

Tumbler Alignment (vertical) Refer to illustration on the following page.

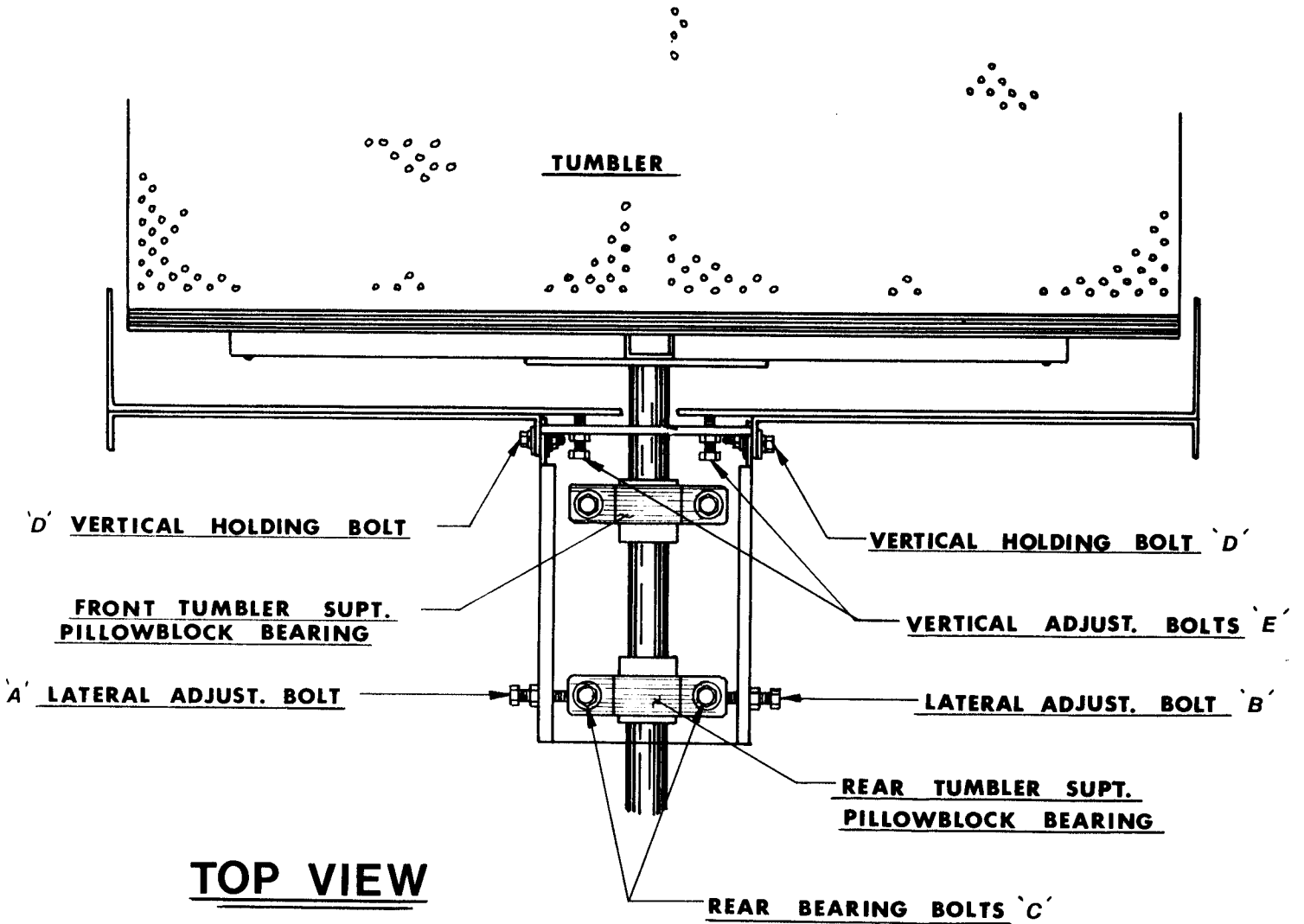
1. Discontinue power to dryer.
2. Remove back guard.
3. Loosen the two (2) vertical holding bolts (D in illustration) on the sides at the top of the bearing box (1 each side).
4. Back off jam nuts on vertical adjustment bolts (E).
5. Turn these bolts (E) clockwise evenly to raise tumbler or counter-clockwise evenly to lower tumbler.
6. Rotate tumbler from front and check alignment with front door opening.
7. Leave a larger gap from the inside ring on the top of the front panel opening to the tumbler (basket), and a smaller gap on the bottom to compensate for the weight of the clothes when drying.
8. Re-tighten the two (2) vertical holding bolts (D) on the sides at the top of the bearing box, and the jam nuts on the two (2) vertical adjustment bolts. (E)
9. Check tumbler drive belt for proper tension. Adjust if required.
10. Replace back guard and reestablish power to dryer.

Tumbler Alignment (lateral) Refer to illustration on the following page.

1. Discontinue power to dryer.
2. Remove back guard.
3. Loosen rear pillow block bearing bolts. (C)
4. Back off jam nuts on the two (2) lateral adjustment bolts. (A) and (B)



5. Simultaneously loosen one bolt and tighten the other. This will move the rear pillow block. Center the tumbler in the wrapper cavity.



6. Tighten and secure both lateral adjustment bolts (A) and (B) and jam nuts.
7. Tighten pillow block bearing bolts (C) loosened in step 3.
8. Replace back guard and reestablish power to dryer.

#### To Replace Tumbler or Tumbler Support

1. Discontinue power to dryer.
2. Follow procedure for removal of main door assembly.
3. Follow procedure for removal of front panel assembly.
4. Remove back guard.
5. Remove tumbler pulley (18").
6. Remove tumbler assembly and tumbler support.
  - a. Loosen the two (2) set screws on both the pillow block bearing collar and the flange bearing collar. The two (2) set screws on the flange bearing can be reached through the opening on bottom of bearing box.
7. Remove tumbler and support assembly from the front of the dryer. If the tumbler cannot be removed freely, clean the shaft area and spray with WD-40 or similar lubricant. With a block of wood against the shaft end, strike the block of wood with a hammer or mallet to move shaft past burrs made by set screws.

IMPORTANT: NEVER STRIKE THE SHAFT DIRECTLY WITH A HAMMER.
8. Remove tumbler from tumbler support.
  - a. Remove the bolt in center of tumbler back wall.
  - b. Loosen and remove the four (4) sets of nuts and washers from tumbler tie rods. Remove tie rods (8).
  - c. Replace either tumbler or tumbler support by reversing procedure.
9. Reassemble components onto dryer by reversing steps 2 through 7.
10. Check tumbler vertical/lateral alignment and adjust as found necessary.

11. Replace back guard and reestablish power to dryer.

#### L. Bearings

Bearings are sealed and need no lubrication.

##### To Replace Rear Tumbler Support Pillow Block Bearing

1. Discontinue power to dryer.
2. Remove back guard.
3. Remove tumbler pulley (18").
4. Loosen lateral adjustment jam nuts and bolts. (A) and (B)  
Refer to illustration on page 114.
5. Loosen set screws (2) from rear pillow block bearing collar.
6. Remove the rear bearing bolts (C), securing bearing to bearing mount. Remove bearing.
7. Replace by reversing steps 3 through 6.
8. Adjust both lateral and vertical tumbler alignment.
9. Replace back guard and reestablish power to dryer.

##### To Replace Front Tumbler Support Pillow Block Bearing

1. Discontinue power to dryer.
2. Follow steps 2 through 6 from "Replacement of Rear Tumbler Support Pillow Block Bearing."
3. Remove the two (2) bolts holding front tumbler support pillow block bearing to dryer.
4. Loosen bearing collar set screws (2) and as end of tumbler shaft is lifted up slightly, slide bearing off shaft.
5. Prop a block of wood between tumbler shaft and bearing mount to keep tumbler level and in place.
6. Replace by reversing steps 2 through 5.

NOTE: Before replacing back guard, check tumbler lateral/vertical adjustment, as well as belt adjustment. Correct as found necessary.

7. Reestablish power to dryer.

To Replace Front Idler Shaft Pillow Block Bearing (bearing nearest back of dryer)

1. Remove V-belts from idler pulleys.
2. Remove bolts holding each idler pillow block bearing to mount.
3. Remove idler shaft (with both bearings and idler pulleys still attached) from dryers.
4. Remove end retaining ring and loosen the two set screws in ring collar.
5. Slide bearing off shaft.
6. Replace bearing by reversing procedure.
7. Align idler pulley with tumbler pulley before tightening bolts.

To Replace Rear Idler Shaft Pillow Block Bearing

1. Follow steps 1 through 3 from "To Replace Front Idler Shaft Bearing".
2. Remove retaining rings on each side of forward idler shaft pillow block bearing.
3. Loosen the two set screws on each bearing collar.
4. Slide both bearings off the shaft.
5. Replace by reversing procedure.

M. V-Belts

V-belts should have proper tension. If too loose, they will slip; if too tight, excessive wear on the bearings will result. If the pulleys are not properly aligned, excessive belt wear will result. Proper belt tension will allow 1/2" displacement under normal thumb pressure at mid span of belt.

V-Belt Tension Adjustment - Tumbler to Idler

1. Back off jam nuts on idler adjustment bolts.
2. Tighten belts by turning both bolts evenly clockwise. (Turn counterclockwise to loosen belts.)
3. Check vertical plane of idler pulley for parallel

- alignment with tumbler pulley.
4. If realignment is required, loosen tumbler pulley and bushing, and move tumbler pulley to proper position.
  5. Re-tighten jam nuts.

#### V-Belt Tension Adjustment - Motor to Idler

1. Loosen the nuts on the two studs holding the drive motor mount to the back of the dryer.
2. Loosen the two hex head bolts holding the drive motor mount flange to the angle iron frame on the back of the dryer.
3. Loosen the jam nuts on the adjustment screw at the top of the motor mount.
4. Turn the adjustment screw to lower the motor mount (to tighten the belts) or raise the motor mount (to loosen the belts).
5. Check vertical plane of motor pulley and idler pulley for parallel alignment.
6. If realignment is required, loosen motor pulley and bushing and move motor pulley to proper position.
7. Re-tighten motor mount bolts and jam nuts.

#### To Replace V-Belts

1. Loosen tension on V-belts, so that they can easily be rolled off pulleys.
2. Replace V-belts.
3. Re-tighten V-belts and adjust tension and alignment per previous instructions.

NOTE: Always replace V-belts in pairs.

#### N. Motors

##### To Replace Drive Motor

1. Discontinue power to dryer.
2. Remove drive belts.

3. Disconnect wiring harness from motor.
4. Remove bolts holding motor to mount and replace with new motor. Do not tighten bolts.
5. Remove pulley from old motor and install on new motor.
6. Align motor pulley with idler pulley and align motor shaft with idler shaft and tighten bolts.
7. Replace belts and adjust belt tension.
8. Re-tighten bolts.

#### To Replace Impeller Motor

1. Discontinue power to dryer.
2. Disconnect motor harness from motor.
3. Remove nuts and washers holding the motor mount to the rear of the dryer and pull motor mount away.
4. Remove the two left-hand nuts on the motor shaft retaining the impeller and work the impeller free from the motor shaft by means of a wheel puller to prevent damage to the motor shaft.
5. Remove bolts holding motor to motor mount and replace with new motor.
6. Align motor with impeller face in plane with the motor mount at no less than 3/16" clearance.
7. Re-install the motor mount, and reconnect motor harness.

#### 0. Impeller

To replace impeller follow steps 1 through 4 of "To Replace Impeller Motor".

#### P. To Replace Lint Screen

1. Open and remove lint door from dryer.
2. Remove the two (2) hex screws securing the lint screen hold-down bracket.
3. Remove lint screen hold-down bracket.
4. Slide lint screen from lint coop.

5. Re-install new screen by reversing procedure.

Q. To Replace Electric Heating Element

1. Discontinue power to dryer.
2. Remove perforated access cover on electrical oven.
3. Disconnect connecting hardware and ceramic insulator from screw terminals of element to be replaced.
4. Remove access cover from opposite side of oven.
5. Slide element out of oven.
6. Replace element by reversing procedure.

R. To Replace Oven Relay Contactor

1. Discontinue power to dryer.
2. Remove junction box cover from electric oven.
3. Loosen cable connector screws and remove electric cables from contactor terminals.
4. Remove wires from coil of contactor.
5. Remove hardware holding contactor (and ground lug) to wall.
6. Replace contactor by reversing procedure.

S. To Replace Steam Coil

1. Shut off steam supply line.
2. Start dryer and run for 10 minutes to relieve inlet steam pressure.
3. Stop dryer and discontinue power to dryer.
4. Shut off condensate return line.
5. Remove steam coil manifold plug and let any condensate drain from coil.
6. Disconnect piping from defective coil.
7. Remove hardware holding defective coil to plenum housing.

8. Lift defective coil off dryer.
9. Install new coil by reversing procedure.

Use 6 percent silver solder to repair minor leaks at joints, fittings, and U-tube joints. In high-pressure coil, do not repair leaks in walls of tubes. Coil must be replaced.

NOTE: Repairs should only be made by a qualified technician.

#### T. To Replace Motorized Steam Valve

1. Shut off steam supply down stream of steam valve.
2. Start dryer and run for 10 minutes to relieve inlet steam pressure.
3. Stop dryer and discontinue power to dryer.
4. Shut off condensate return line.
5. Disconnect the three (3) power lines from motor of steam valve.
6. Disconnect steam valve from piping.
7. Install new valve by reversing procedure.



## SECTION XIV

### Trouble Shooting

The information provided will 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 device for use by an untrained person in making repairs. Only properly licensed technicians should service the equipment.

Observe all safety precautions displayed on the equipment or specified in this manual while making repairs.

#### A. Dual Timer Controls

<u>Trouble</u>	<u>Probable Cause</u>
1. Dryer will not start.	a. Open circuit breaker switch or blown fuse b. Faulty motor relay c. Faulty "Push to Start" relay d. Faulty timer e. Main door switch is out of adjustment or is defective. f. Faulty motor
2. Tumbler motor runs, the burner is on, but the tumbler will not revolve.	a. Broken, damaged, or loose V-belt b. Belts are contaminated (oil, grease, etc.) c. Loose or broken motor pulley
3. Dryer motors start but the glo-bar is not lighting.	a. Manual reset thermostat in lint compartment has tripped or is defective. (models prior to October 1, 1985)

- b. Lint compartment automatic safety thermostat (225°) is defective. (models manufactured as of October 1, 1985)
  - c. Sail switch is out of adjustment, defective, or sail switch damper is not closing due to back pressure created by a restriction in the exhaust system.
  - d. Blower motor is spinning in wrong direction, so sail switch will not close.
  - e. Faulty glo-bar
  - f. Defective burner hi-limit (330°) safety thermostat
  - g. Defective heating timer switch
  - h. Faulty heat selector switch
  - i. Faulty I.R. sensor
  - j. Faulty gas valve
  - k. Faulty diode logic board
  - l. Ignition system transformer (208 or 230 volt controls only) is defective. Check for 115V across black and white wires of transformer.
4. Dryer operates. Glo-bar heats up and stays on.
- a. Faulty I.R. sensor
5. Dryer operates. Glo-bar heats up and goes out, but gas does not flow.
- a. Dryer or external gas shut-off valve is closed.
  - b. Shut-off valve in dryer's gas valve is closed.
  - c. Defective gas valve (open coil in gas valve)
  - d. For 208 or 230V controls, ignition transformer may not be

- wired correctly. Check wiring sequence for correct voltage application.
- e. Faulty diode logic board
6. Dryer operates. Glo-bar heats up and goes out, but burner does not light even though gas is evident.
- a. Gas pressure is too low. Check manifold pressure and adjust regulation accordingly.
  - b. Incorrect gas/air mixture. Adjust air shutters of each tube burner.
  - c. Insufficient make-up air
7. Dryer operates, but dryer is taking too long to dry.
- a. An inadequate exhaust duct work system.
  - b. Restriction in exhaust system.
  - c. Insufficient make-up air
  - d. Poor housekeeping....dirty or clogged lint screen.
  - e. Extractors are not performing properly.
  - f. An exceptionally cold/humid or low barometric pressure atmosphere
  - g. The gas may have a low heating value. Check with local gas supplier.
8. Dryer will not shut off.
- a. Defective motor relay (Contacts stuck in closed position.)
  - b. Defective timer switch (Switch contacts stuck in closed position.)
9. Tumbler will not reverse
- a. Defective computer
  - b. Defective reversing timer (dual timer models only)

- c. Defective reversing motor contactor
- 10. Motor keeps overheating.
  - a. Either an exceptionally low or high voltage supply.
  - b. Motor bearing failure.
  - c. Motor thermal overload protector is defective.
  - d. An idler or tumbler bearing failure
  - e. Motor vents are blocked with lint.
  - f. Defective motor
  - g. Insufficient make-up air
- 11. Excessive noise or vibration in the dryer.
  - a. Tumbler is out of alignment.
  - b. V-belt is too loose or too tight.
  - c. Loose or broken tumbler (basket/drum) tie rod
  - d. Tumbler or idler bearing failure
  - e. Tumbler adjustment bolts are loose.
  - f. Loose motor mount
  - g. Faulty impellor (fan)
- 12. Dryer is cycling on burner hi-limit thermostat.
  - a. Insufficient exhaust duct work size or restriction in exhaust system.
  - b. Insufficient make-up air
  - c. Lint screen needs cleaning.
  - d. Damaged impellor (fan)
- 13. Main burners are burning with a yellow flame.
  - a. Burner air shutters need adjusting.

- b. Insufficient make-up air
- c. Dust or lint in the burners

B. Computer Controls

<u>Trouble</u>	<u>Probable Cause</u>
1. No display	<ul style="list-style-type: none"> <li>a. Open circuit breaker switch or blown fuse</li> <li>b. A.S. board fuse(s) blown.</li> <li>c. Faulty A.S. board</li> <li>d. Faulty computer controller</li> </ul>
2. Dryer will not start, but computer display indicators are on.	<ul style="list-style-type: none"> <li>a. Door switch is not adjusted properly or is defective.</li> <li>b. Faulty motor or impellor contactor (relay)</li> <li>c. Faulty computer</li> <li>d. Faulty motor</li> </ul>
3. Tumbler motor runs, burner is on, but tumbler will not revolve.	<ul style="list-style-type: none"> <li>a. Broken, damaged, or loose v-belt</li> <li>b. Belts are contaminated (oil, grease, etc.)</li> <li>c. Loose or broken motor pulley.</li> </ul>
4. Dryer motors start, computer display heat indicators are on, but glo-bar is not lighting.	<ul style="list-style-type: none"> <li>a. Manual reset thermostat in the lint compartment has tripped or is defective. (models prior to October 1, 1985)</li> <li>b. Lint compartment automatic safety thermostat (225°) is defective. (models manufactured as of October 1, 1985)</li> <li>c. Sail switch is out of adjustment, defective, or sail switch damper</li> </ul>

is not closing due to back pressure created by a restriction in the exhaust system.

- d. Defective burner hi-limit (330°) safety thermostat
  - e. Defective glo-bar
  - f. Faulty A.S. board heat relay
  - g. Faulty gas valve
  - h. Faulty I.R. sensor
  - i. Faulty computer controller
  - j. Faulty diode logic board
5. Dryer operates. Glo-bar heats up and stays on.
6. Dryer operates. Glo-bar heats up and goes out, but gas does not flow.
- a. Faulty I.R. sensor
  - a. Dryer or external gas shut-off valve is closed or gas valve shutoff is closed.
  - b. Shut-off valve in dryer's gas valve is closed.
  - c. Defective gas valve (open coil in valve)
  - d. For 208 or 230 volt controls, ignition transformer may not be wired correctly. Check wiring sequence for correct voltage application.
  - e. Faulty diode logic board
7. Dryer operates. Glo-bar heats up and goes out, but burner does not light even though gas is evident.
- a. Gas pressure is too low. Check manifold pressure and take necessary corrective action.
  - b. Defective gas valve (hi/lo coil)
  - c. Incorrect gas/air mixture. Adjust air shutters of each burner.

- d. Insufficient make-up air
- 8. Dryer operates, but is taking too long to dry.
  - a. An inadequate exhaust duct work system
  - b. Restriction in exhaust system
  - c. Dryer exhaust damper is stuck partially closed.
  - d. Insufficient make-up air
  - e. Poor housekeeping....dirty or clogged lint screen
  - f. Extractors are not performing properly.
  - g. An exceptionally cold/humid or low barometric pressure atmosphere
  - h. The supply gas may have a low heating value. Check with local gas supplier.
  - i. Faulty temperature sensor (Temperature calibration is incorrect.)
  - j. Faulty computer controller (Temperature calibration is incorrect.)
- 9. Dryer will not shut off.
  - a. Defective motor relay contactor
  - b. Defective computer controller
- 10. Tumbler will not reverse.
  - a. Improperly programmed computer
  - b. Defective computer
  - c. Defective reversing motor contactor
- 11. Motor keeps overheating.
  - a. Either an exceptionally low or high voltage supply
  - b. Motor bearing failures

- c. Motor thermal overload protector is defective.
  - d. An idler or tumbler bearing failure
  - e. Motor vents are blocked with lint.
  - f. Defective motor
  - g. Insufficient make-up air
12. Dryer is cycling on burner hi-limit safety thermostat.
- a. Insufficient exhaust duct work size or restriction in exhaust system
  - b. Insufficient make-up air
  - c. Lint screen needs cleaning.
  - d. Damaged impellor (fan)
  - e. Faulty A.S. board heat relay
  - f. Faulty computer
13. Main burners are burning with a yellow flame.
- a. Burner air shutters need adjusting.
  - b. Insufficient make-up air
  - c. Dust or lint in the burner
14. Display reads "dSFL", Dryer Sensor Circuit Failure.
- a. Faulty micro-processor temperature sensor probe
  - b. Open circuit in either one of two wires leading from sensor probe to computer
    - (1) Connection at sensor bracket assembly connector
    - (2) Connection at computer harness connector
    - (3) Connection at inner top connector



- c. Faulty computer controller
- 15. Dryer does not respond to command at keyboard.
  - a. Faulty keyboard label assembly
  - b. Faulty computer controller
- 16. Dryer does not start. Display reads "door."
  - a. Door switch (D.C. circuit) is out of adjustment or is defective.
  - b. Open circuit in either one of the two gray wires leading from the door switch to the computer.

## SECTION XV

### TECHNICAL DATA

#### A. Adjustment of Internal Micro-switches in Motorized Steam Valve

Always disconnect power supply to the actuator prior to re-setting switches.

WARNING: INADVERTANT CONTACT WITH THE CAPACITOR COULD RESULT IN AN ELECTRICAL SHOCK. THIS COULD BE TRUE EVEN IF ELECTRICAL SUPPLY HAS BEEN DISCONNECTED AS CAPACITORS WILL STORE ELECTRICAL ENERGY.

Remove the actuator cover. Viewing the actuator shaft from the top, note the location of the white circular CAM compression plate. Unlock CAM compression plate by pushing the plate down and rotating the plate out of the lock pin. All 3 CAMS are now unlocked and can be re-set. If clockwise rotation is incorrect, the top CAM should be re-set. If counter-clockwise rotation is incorrect, re-set the middle CAM.

NOTE: while re-setting an individual cam, take care not to disrupt setting of other properly set cams. Bear in mind that when the valve is in its desired position (full open or fully closed), the appropriate switch arm must simultaneously drop into its cam detent to stop actuator rotation.

Replace cover and retest. If further adjustment is necessary, repeat previous step. Once properly adjusted, secure all cover bolts as unit is ready for operation.

Manual Operation - Should it become necessary to manually override the unit, first fully depress the actuator output shaft and then apply a wrench to the shaft flats to rotate the unit.

CAUTION: FAILURE TO FULLY DEPRESS THE SHAFT WILL RESULT IN DAMAGE TO THE ACTUATOR.

If limit switches are far enough out of adjustment, the unit could have both rotation circuits open, and the unit would not rotate in either direction. If unit still fails to rotate, check to see if a switch or switches are burned out. A burned switch will usually show evidence of excessive heat and will not make a "clicking" when the switch button is depressed using a pencil point. If switches are operational and defect has not been found, check to be sure that the valve due to service conditions has not had its torque increased beyond the capacity of the actuator. If so, the valve should be cleaned and rebuilt or replaced.

If the motor shows evidence of running hot, thermal overload protection may have tripped the unit. Allow the unit to return to room temperature and re-test.

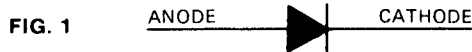
## "DIODE LOGIC" CONTROL SYSTEM FOR COMMERCIAL GAS CLOTHES DRYERS

The "Diode Logic" system expands the use of the simple "Split Coil" silicon carbide ignition system developed for residential gas clothes dryers to commercial clothes dryers. Functionally, the "Diode Logic" system is identical to the "Split Coil" system but is tailored for the higher capacity 36C combination valve.

The 5001A-1 "Diode Logic" board is a very simple and reliable device consisting of only seven active components all of which have ratings well above what they will see in the system application.

- 5 Diodes all rated at 1 AMP 400 VOLTS
- 1 Resistor rated 2 OHMS and 1 WATT
- 1 Resistor rated 3K OHMS and 5 WATTS

A diode in an electric system acts as a check valve in a hydraulic system in that it allows an electric current to flow in only one direction. The symbol for a diode is shown below.



Current flow through the diode occurs when the anode is positive and the cathode is negative. No current flows when the anode is negative and the cathode positive. The physical appearance of the diodes is as shown below.

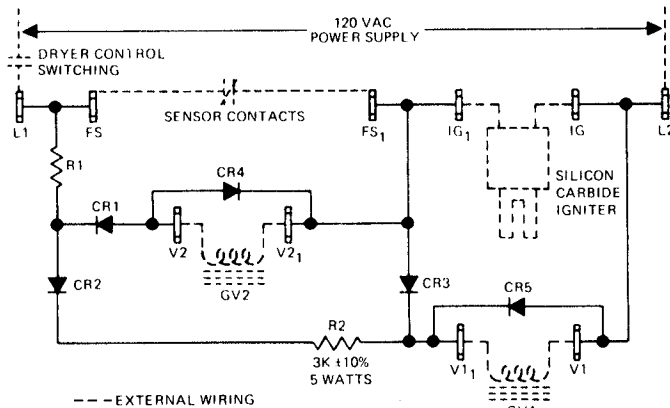
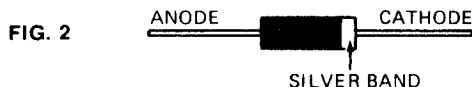


FIG. 3  
SCHEMATIC DIAGRAM — 5001A-1 DIODE LOGIC BOARD

### NORMAL OPERATION OF THE DIODE LOGIC SYSTEM

When the system is energized current flows through the closed sensor contacts and through the silicon carbide igniter causing it to heat. Gas valve 2 (GV2) is shunted by the closed sensor contacts so it is not energized. When L1 is

positive gas valve 1 (GV1) is energized by a circuit through the closed sensor contacts and CR3. CR5 is a back wave diode which maintains current flow through GV1 during the next half cycle when L1 is negative.

When the igniter reaches ignition temperature the sensor contacts open. GV1 remains energized through the fuse R1, CR2 and resistor R2. GV2 is energized on the half cycle when L2 is positive by a circuit through the silicon carbide igniter, CR1 and fuse R1. CR4 is a back wave diode which maintains current flow through GV2 during the next half cycle when L2 is negative.

With both valves energized gas flows to the burner and is ignited by the hot igniter. In this running mode the igniter cools since current through it is limited by CR1 and GV2.

### RECYCLE AFTER MOMENTARY POWER INTERRUPTION

On momentary power interruption GV1 and GV2 close. On resumption of power GV2 opens, but GV1 cannot open because of the current limiting affect of resistor R2. When the sensor cools and its contacts reclose GV2 is shunted out and closes, GV1 opens and the silicon carbide igniter heats and a normal cycle is started.

### IGNITER FAILURE

The "Diode Logic" system also retains the safety feature of the 25K00 split coil system which prevents gas flow if the silicon carbide igniter is broken (the circuit energizing GV2 includes the silicon carbide igniter).

The fuse (R1) insures safe operation should CR1 short. CR1 shorting would negate the recycle sequence after momentary power interruption and there is the possibility the igniter, energized on half wave, would hold the sensor contacts open but not be hot enough to light gas.

### ANALYZING THE 5001A-1 DIODE LOGIC BOARD

The "Diode Logic" board may be tested with an Ohmmeter or Multi-Test meter set at RX100 to use for checking continuity.

An Ohmmeter or a Multi-Test meter set to measure ohms or continuity is really a sensitive ammeter with a small battery connected in series. The + (positive) and - (negative) markings on the Multi-Test meter terminals indicate how the meter must be connected to measure DC current or voltage. When set to measure resistance (ohms) or continuity the meter becomes the power supply as well as the indicating meter and the polarity of the terminals may be reversed — the lead from the negative terminal may be positive and vice-versa. We suggest you check this characteristic of your meter using a separate diode as follows:

The meter will show continuity when the positive ohmmeter output (regardless of meter marking) is connected to the diode anode and the negative ohmmeter output is connected to the diode cathode. The meter will indicate an open circuit if the leads are reversed.

Below is a drawing of the actual 5001A-1 "Diode Logic" board with the terminals labeled as in the schematic diagram above. The terminals on an actual 5001A-1 board do not have the sub numbers required to differentiate between the V1, V2, FS and 1G terminals so in testing a board it will be necessary to refer to this drawing to physically locate the correct terminals for checking with the continuity meter.

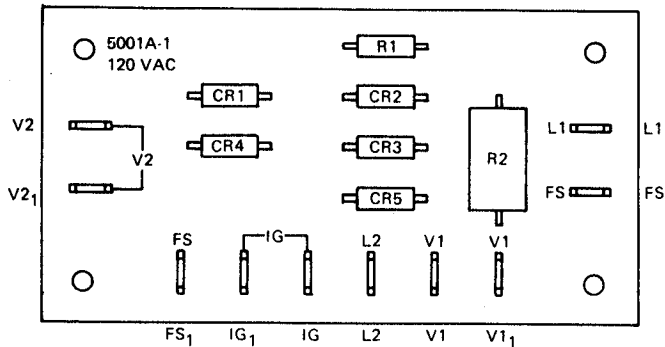


FIG. 4

With all external wiring disconnected, the 5001A-1 "Diode Logic" must pass all the following continuity checks:

With V2 positive, there must be electrical continuity between V2 and L1 — FS — V2<sub>1</sub> — FS<sub>1</sub> — 1G<sub>1</sub>

With V2 negative, there must not be continuity between V2 and L1 — V2<sub>1</sub>

With V1<sub>1</sub> negative, there must be continuity between V1<sub>1</sub> and V1 — L2 — 1G — FS<sub>1</sub> — L1

With V1<sub>1</sub> positive, there must not be continuity between V1<sub>1</sub> and V1 — V2<sub>1</sub> — L1

The above checks are for continuity only. The meter needle will deflect different amounts for the various check points depending on the number of diodes or the presence or absence of a resistor in a particular leg of the circuit.

## CHECKING PERFORMANCE OF THE 36C00 GAS VALVE

The 36C00 gas valve for use in the "Diode Logic" system must meet certain special electrical performance requirements. For testing, the valve must be connected in the "Diode Logic" system in accordance with the attached circuit diagram.

Note the following:

- A SPST manually operated switch has been wired in place of the sensor.
- The 36C00 valve must be mounted in a horizontal gas line in the upright position — mounting tolerance  $\pm 15^\circ$ .
- Inlet pressure to the 36C00 valve must not exceed 14" W.C.
- All voltage measurements must be taken at the L1/L2 "Diode Logic" board terminals.

## OPERATING VOLTAGE CHARACTERISTICS

The 36C00 gas valve must not open at a system input voltage of less than 82VAC, 50/60 HZ and must open at a system input voltage of 102 VAC, 50/60 HZ.

Once open, the 36C00 gas valve must remain open when the system input voltage is reduced to a minimum of 90 VAC, 50/60 HZ.

With the system in the normal running condition (sensor switch open and both valves open) and power is restored after a momentary power interruption, the valve must remain closed and must not leak more than 500 CC/HR (500 CC is less than .01 CU. FT.) when the voltage is increased to 135 VAC 50/60 HZ.

To check these voltage operating characteristics, proceed as follows:

1. Adjust the power supply voltage to 81 VAC.
2. Close the manually operated sensor switch.
3. Close the control switch.
4. After approximately 30 seconds or when the igniter appears to be up to ignition temperature, open the manually operated sensor switch. There must be no flow of gas to the dryer burners.
5. Open the control switch.
6. Reclose the manually operated sensor switch.
7. Adjust the power supply voltage to 102 VAC.
8. Close the control switch.
9. After approximately 30 seconds or when the igniter appears to be up to ignition temperature, open the manually operated sensor switch. Gas should immediately start flowing to the dryer burners and be ignited by the silicon carbide igniter. The system is now in a normal operating mode.
10. Reduce the power supply voltage to 90 VAC. The system should continue to operate normally.
11. Adjust the power supply voltage to 120 VAC.
12. Momentarily open and then reclose the control switch. Gas flow to the dryer burners must be interrupted and remain interrupted. With the manually operated sensor switch still open, increase the power supply voltage to 135 VAC. Leakage through the valve should not exceed 500 CC/HR (500 CC is less than .01 CU. FT.).

## DIODE LOGIC CONTROL SYSTEM

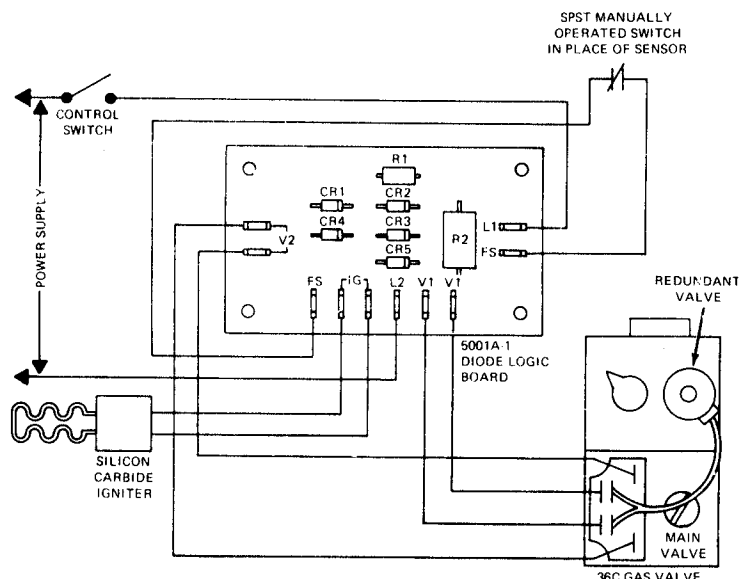


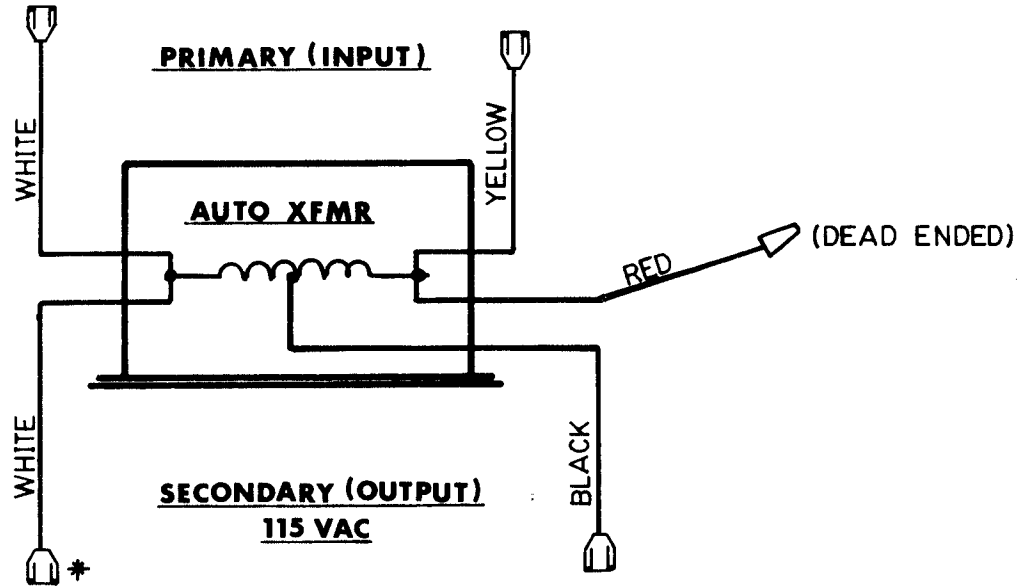
FIG. 5

Ignition Circuit Transformer Wiring  
(208/230 Volt Models Only)

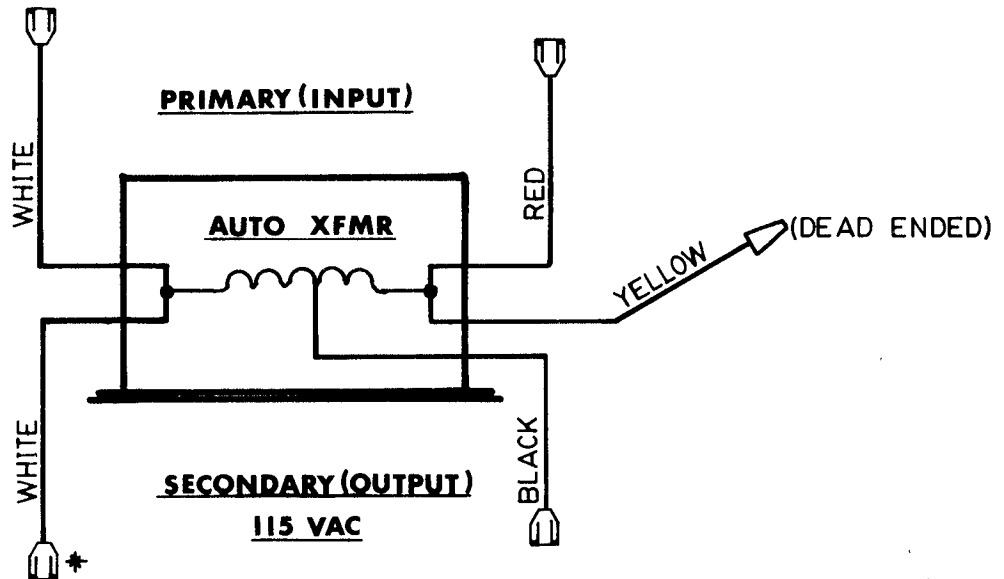
200 Watt Transformer

ADC P/N 132002

**208 Vac Controls**



**230 Vac Controls**

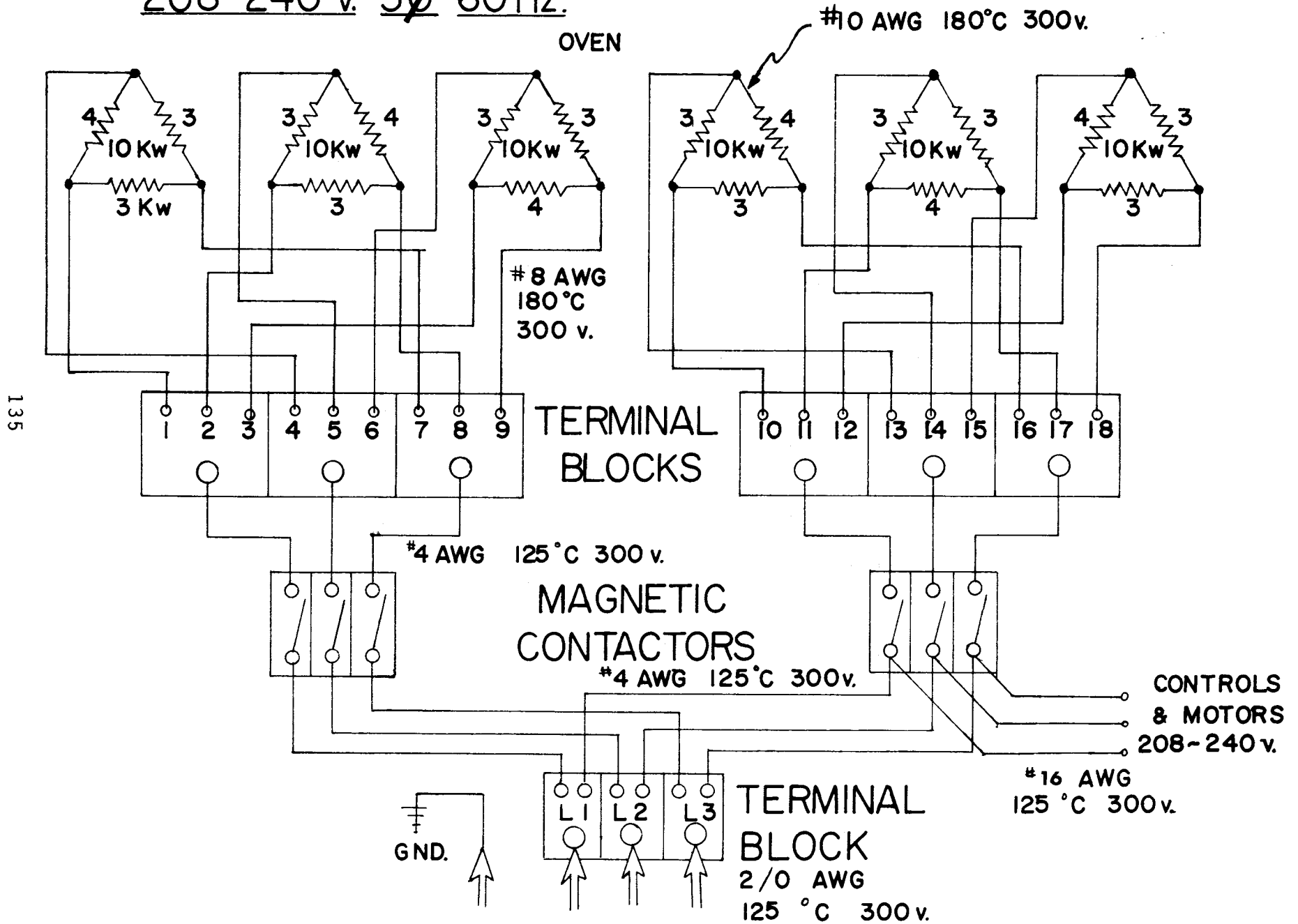


\* LEAD NOT USED ON COMPUTER HI/LO MODELS

# POWER DISTRIBUTION

# MODEL ADE-100

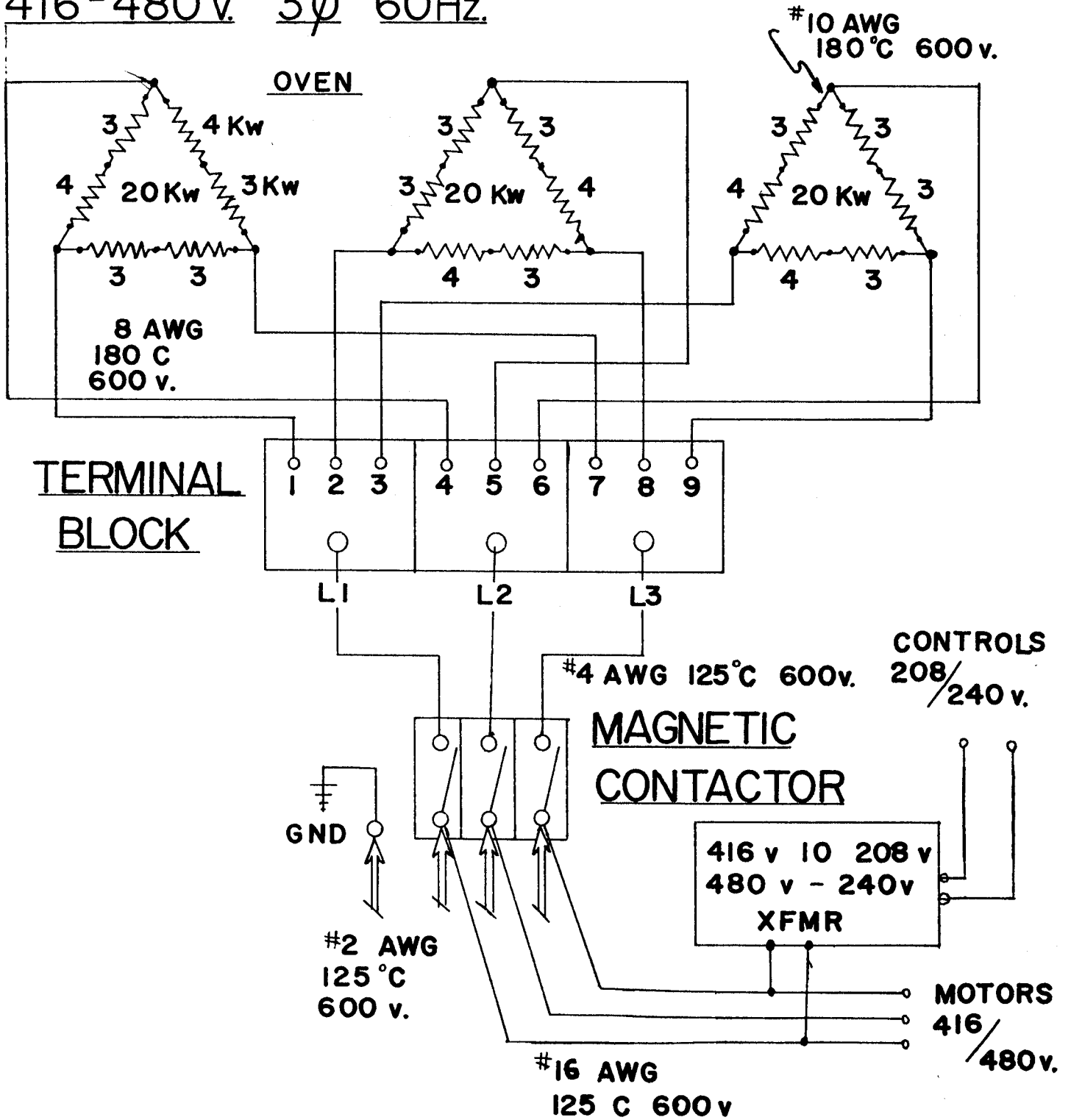
208-240 v. 3 $\phi$  60Hz.



# POWER DISTRIBUTION

# MODEL ADE-100

416-480 v. 3 $\phi$  60Hz.

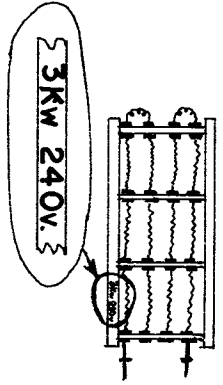
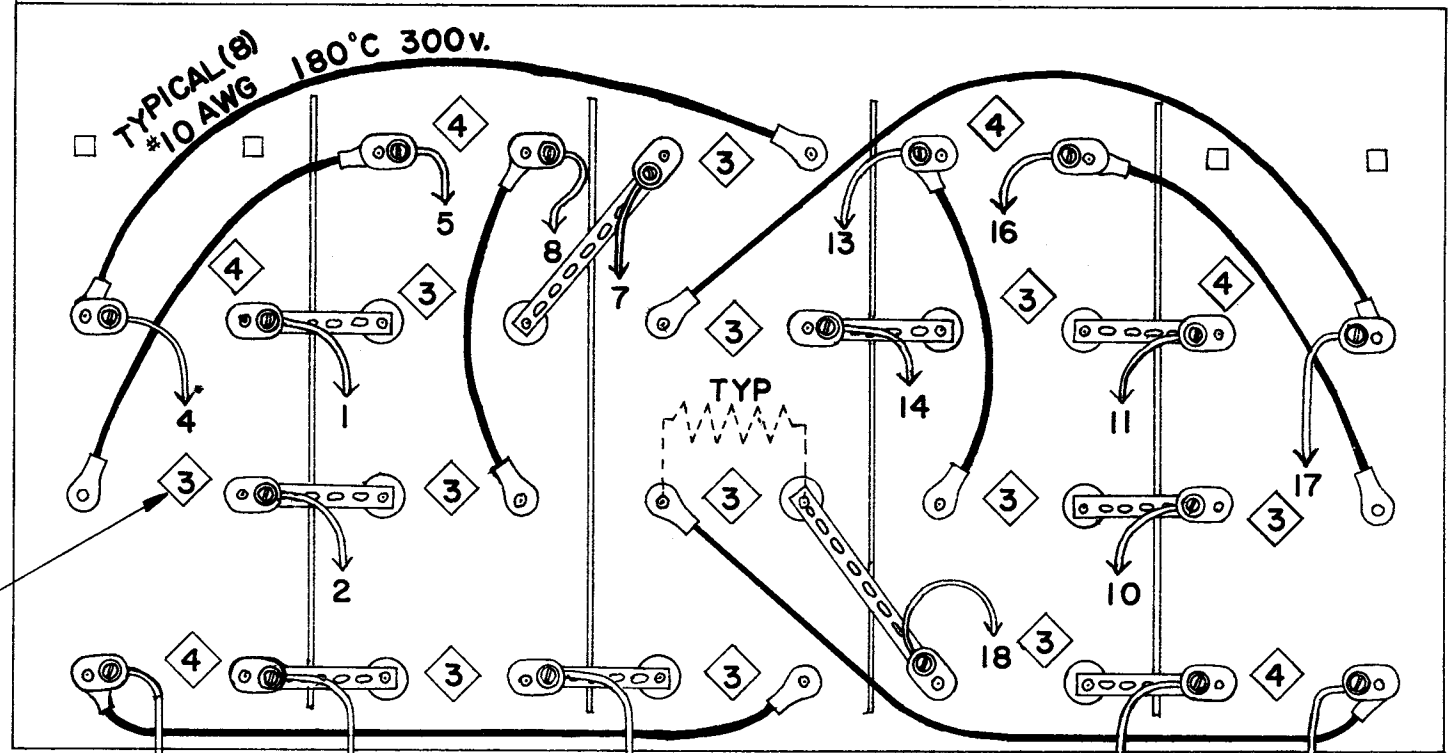


208 / 240v. ELEC. OVEN ADE-100

60kw, 60 Hz, 3φ

ELEMENT ARRANGEMENT, INTERCONNECTIONS, AND  
LINE LEAD IDENTIFICATION (NOT TO SCALE)

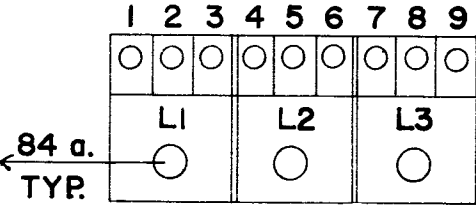
220-240v OVENS  
USE 240v. ELEMENTS



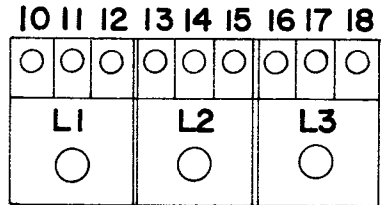
ELEMENT  
KW. RATING  
(3 KW or 4 KW)  
MARKED ON  
ELEMENT  
FRAME

137

H= HIGH AMPROBE RDG.  
L= LOW " " READING



TERMINAL BLOCK #1  
TO CONTACTOR #1



TERMINAL BLOCK #2  
TO CONTACTOR #2

TEST		
1 - H	2 - L	3 - H
4 - H	5 - H	6 - L
7 - L	8 - H	9 - H
10 - L	11 - H	12 - H
13 - H	14 - L	15 - H
16 - H	17 - H	18 - L

<u>208 v.</u>	
H= 29 A.	L= 25 A.
27.8 avg.	
<u>240 v.</u>	
H= 25 A.	L= 22 A.
24.1 avg.	



# 416v. / 480v. ELEC. OVEN ADE - 100

ELEMENT ARRANGEMENT,  
INTERCONNECTIONS, &  
LINE LEAD IDENTIFICATION

(NOT TO SCALE)

60KW, 60 Hz. 3 $\phi$

ADE - 100

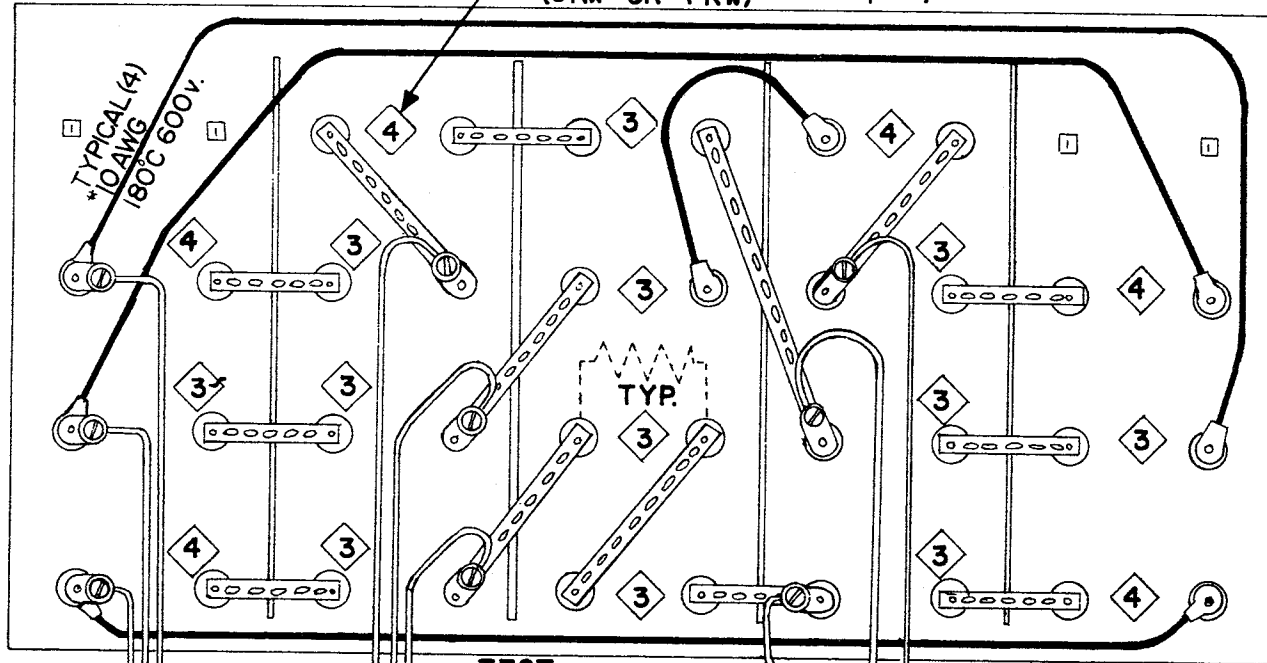
(EXAMPLE)

208V  
4KW



ELEMENT  
KW. RATING  
(3Kw OR 4 Kw)

416 v. OVENS USE  
208 v. ELEMENTS.  
440 - 480 v. OVENS USE  
240 v. ELEMENTS.



\*TYPICAL (4)  
#10 AWG  
180°C 600v.

\*8 AWG  
180°C 690v.

TEST  
H = "HIGH"  
AMPROBE  
READING  
L = "LOW" AMPROBE  
READING

TEST  
1. L 2. L 3. H  
4. H 5. L 6. L  
7. L 8. H 9. L

L1

L2

TERM BLOCK

L3

416 v.  
H = 29 AMPS  
L = 25 A.

480v.  
H = 25 A.  
L = 22 A.

ADC450075

1 - 03/90-250

2 - 12/11/95-200

3 - 02/28/01-25

