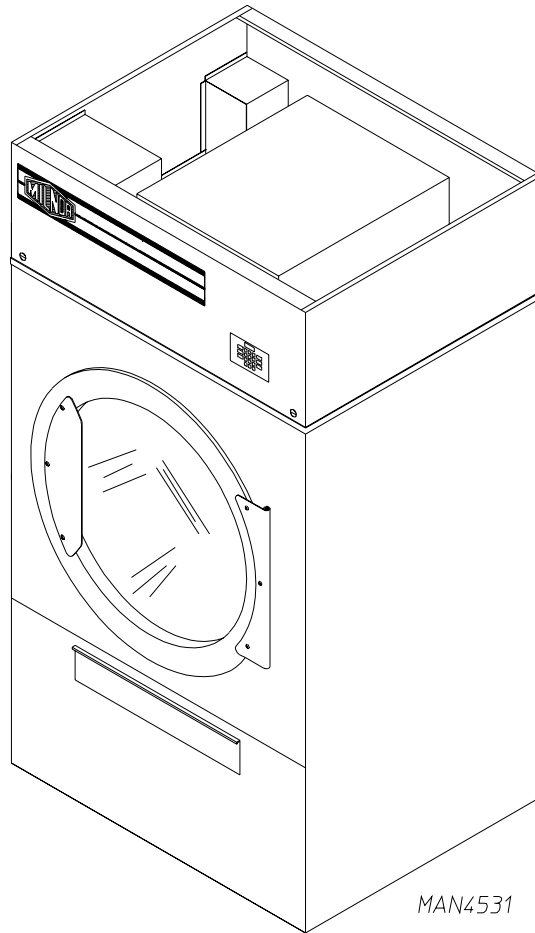


ML-96 / ML-122 Service Manual



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ADC Part No. 450412-4

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 qualified technicians should service this equipment.

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

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

FOR YOUR SAFETY

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

POUR VOTRE SÉCURITÉ

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

We have tried to make this manual as complete as possible and hope you will find it useful. 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. _____

RESELLER'S NAME _____

Serial Number(s) _____

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

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

“IMPORTANT NOTE TO PURCHASER”

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

IMPORTANT

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

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

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

CAUTION

Dryers should never be left unattended while in operation.

WARNING

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

FOR YOUR SAFETY

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

WARNING

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

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

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

IMPORTANT

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

Dryers must not be installed or stored in an area where it will be exposed to water or weather.

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

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List of Acronyms

HSI	Hot Surface Ignition
HV	High Voltage
in wc	Inches of Water Column
L.E.D.	Light Emitting Diode
L.P.	Liquid Propane
OPL	On-Premise Laundry (Non-Coin)
OSHA	Occupational Safety and Health Administration
S.A.F.E.	Sensor Activated Fire Extinguishing
T.E.F.C.	Totally Enclosed, Fan-Cooled

Important Information _____

Safety Precautions



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

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

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

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

What To Do If You Smell Gas...

- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Clear the room, building, or area of all occupants.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency, or gas supplier.
- Dryer(s) must be exhausted to the outdoors.
- Although ADC produces a very versatile machine, there are some articles that, due to fabric composition or cleaning method, should not be dried in it.



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

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

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

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

A program should be established for the inspection and cleaning of lint in the heating unit area, exhaust ductwork, and inside the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.



WARNING: The collection of lint in the burner area and exhaust ductwork can create a potential fire hazard.

For personal safety, the dryer must be electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

NOTE: Failure to do so will void the warranty.

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



WARNING: Personal injury or fire could result.

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

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



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

Do not operate steam dryers with more than 125 PSI (8.61 bar) steam pressure. Excessive steam pressure can damage steam coil and/or harm personnel.

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

Read and follow all caution and direction labels attached to the dryer.



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

Routine Maintenance _____

Cleaning

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



WARNING: Lint from most fabrics is highly combustible. The accumulation of lint can create a potential fire hazard.

Keep dryer area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

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

Clean lint drawer and screen every third load.

NOTE: Frequency can best be determined at each location.

Daily

(Beginning) of each work shift.

Clean lint from the drawer and screen. Inspect lint screen and replace if torn.

Weekly

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



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

90 Days

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

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

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

Every 6 Months

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



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

Do not obstruct the flow of combustion and ventilation air. Check customer furnished back draft damper in exhaust ductwork. Inspect and remove any lint accumulation, which can cause damper to bind or stick.

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

When cleaning dryer cabinets, avoid using harsh abrasives. A product intended for cleaning appliances is recommended.

Adjustments

7 Days After Installation and Every 6 Months Thereafter

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

Lubrication

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

The motor bearings and under normal/most conditions the tumbler bearing are permanently lubricated. It is physically possible to re-lubricate the tumbler bearing if you choose even though this practice may not be necessary. Use Industrial Chevron ball or roller bearing SRI grease NLG12 or its equivalent, which has a broad operating temperature range of 22° F (-6° C) to 350° F (177° C).

Installation Requirements

Installation should be performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation must conform to applicable AMERICAN NATIONAL STANDARDS: National Fuel Gas Code ANSI.Z223.1-LATEST EDITION or National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the installation must conform to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

Enclosure, Air Supply, and Exhaust Requirements

NOTE: The following information is very brief and general. For detailed description, refer to the installation manual supplied with dryer.

Bulkheads and partitions around the dryer should be made of noncombustible materials. Allowances should be made for the opening and closing of the control door and lint door. (Refer to appropriate installation manual for recommended distances and minimum allowances required.)

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. The air supply must be given careful consideration to insure proper performance of each dryer.

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.

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



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

Electrical and Gas Requirements

It is your responsibility to have all electrical connections made by a properly licensed and competent electrician to assure 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 Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

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

The dryer installation must meet the American National Standard, National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections) 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 reseller 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 (610 meters), unless elevation requirements of over 2,000 feet (610 meters) were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet (610 meters) are made by changing the burner orifices. If this adjustment is necessary, contact the reseller who sold the dryer or contact the factory.

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

Operational Service Check Procedure

Turn on electric power to the dryer.

To start dryer:

Display will read "READY."

Press "E" on the keypad of microprocessor controller (computer).

The dryer will start to run.

NOTE: Pressing keypad selections "A," "B," "C," "D," or "F" will also start the dryer. Six preprogrammed drying cycles (A through F) have been stored in the computer's memory. (Refer to the computer operator's manual for details.)

Make a complete operational check of all the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.

Make a complete operational check of all safety-halted circuits: door switches, hi-limit thermostat, sail switch, cycling thermostats, etc.

For gas dryers 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 the gas valve body):

Natural Gas _____ 3.5 in wc (8.7 mb).

L.P. Gas _____ 10.5 in wc (26.1 mb).

If computer program changes are required, refer to the operator's manual, which was supplied with the dryer.

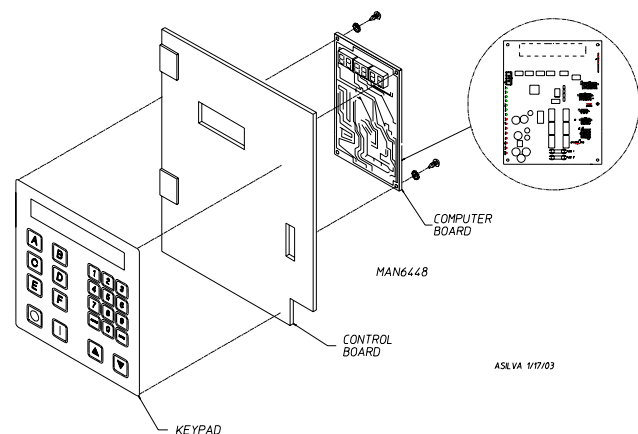
The dryer should be operated through one complete cycle to assure that no further adjustments are necessary and that all components are functioning properly.

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

Description of Parts _____

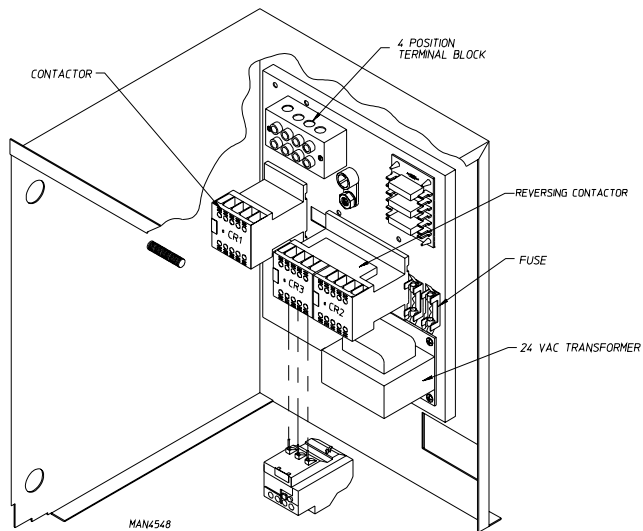
Control Panel (Microprocessor)

Lifting the control door will reveal the control panel assembly. Opening the control panel will allow access to the major components, which include the microprocessor computer board and the keypad.



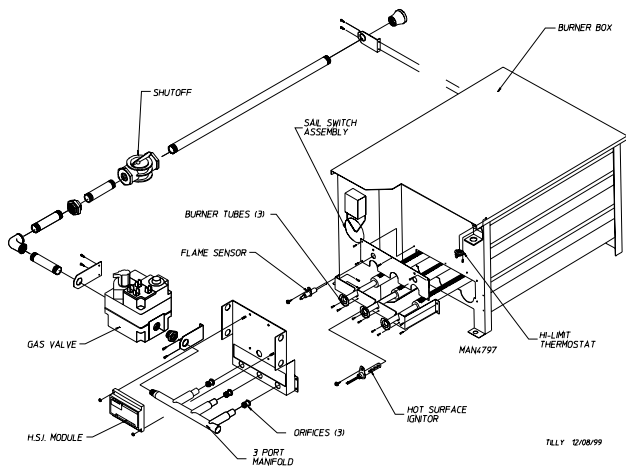
Reversing Relay Panel

Lifting the control door will reveal the reversing relay box. Located on the back of the relay box is the reversing relay panel. Included on this panel is a 4-position terminal block, blower overload, blower contactor, reversing contactor, 24 VAC transformer, fuse or circuit breaker, ground lug, and possibly an arc suppressor board.



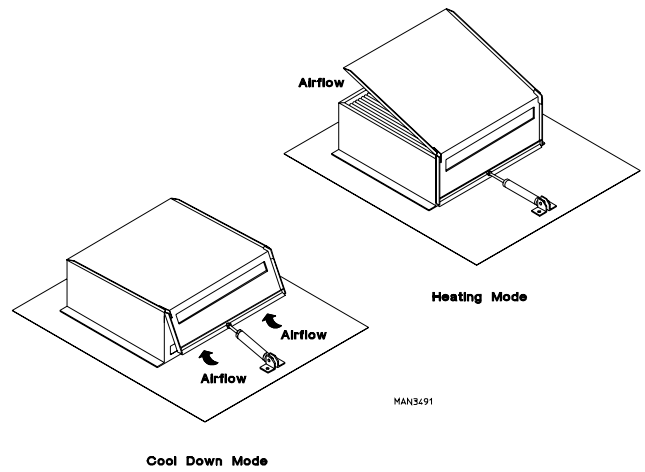
Gas Burner Assembly

Gas heated dryers are equipped with a gas burner assembly consisting of 3 burner tubes, a gas valve, an ignitor, a flame sensor, a sail switch, a hi-limit thermostat, and an ignition control module. The inlet piping enters through the rear of the dryer on the left-hand side (viewing from the front) and runs to the front of the dryer where the gas valve is located.



Steam Coil and Damper System

The steam coil is constantly charged, thereby eliminating repeated expansion and contraction and also provide instant heating to start the drying process. The steam damper, located on top of the steam coil, is the only temperature controlling device in this system. When the steam damper is open, ambient air is drawn through the coil providing heat to the dryer. When the steam damper is closed, ambient air is drawn directly into the tumbler, bypassing the coil, allowing a rapid cool down.



NOTE: With the dryer off or no air supply to the damper piston, the damper is in the cool down mode.

Steam Coil pH Level

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

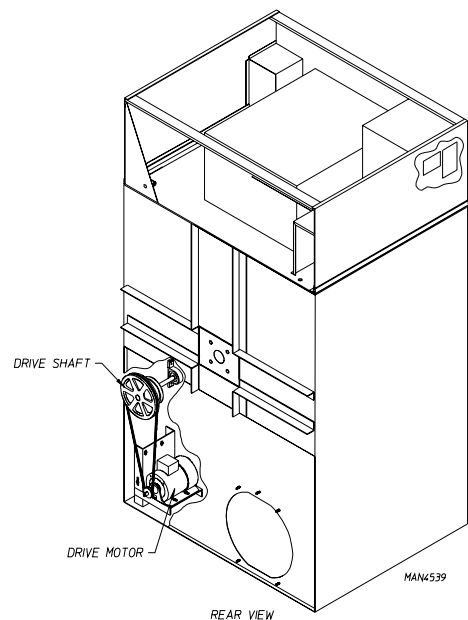
IMPORTANT: Coil failure due to improper pH level will void the warranty.

Steam Damper Actuator System

The steam damper actuator system consists of a hinged damper plate, pneumatic piston, and a 24 volt solenoid valve with a needle valve to control the speed of the piston actuation.

Drive Motor

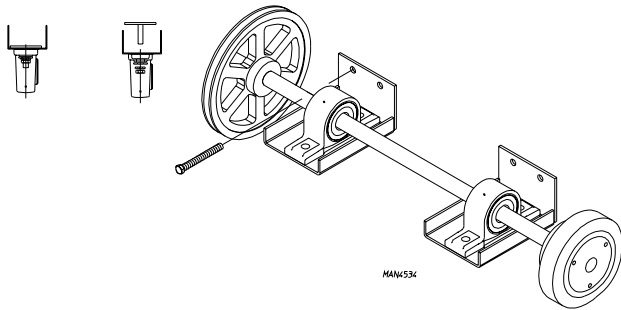
The T.E.F.C. drive motor is located in the rear right corner (viewing from front) behind the front panel of the dryer. It sits on an adjustable base so the motor can be easily adjusted to the left or right, up or down, forward or backward.



Drive Shaft Assembly

(Viewing from the front of the dryer)

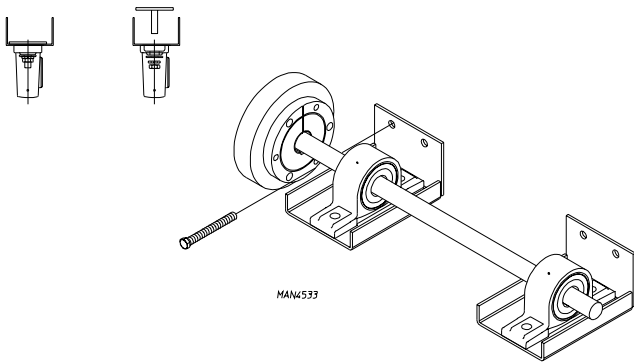
Behind front panel on the right side of the dryer, you can view the drive shaft assembly, which consists of a 9-inch (22.86 cm) drive pulley, two 6-inch (15.24 cm) wheels, and two 1-inch (2.54 cm) pillow block bearings.



Idler Shaft Assembly

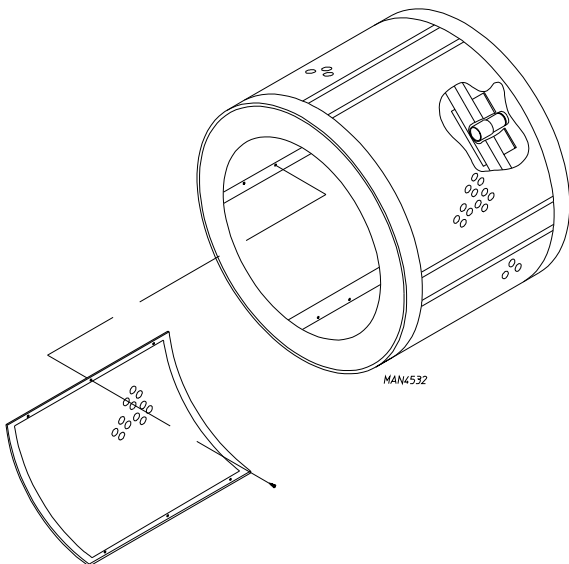
(Viewing from the front of the dryer)

Behind the front panel on the left side of the dryer you will view the idler shaft assembly, which consists of one 6-inch (15.24 cm) wheel, and two 1-inch (2.54 cm) pillow block bearings.



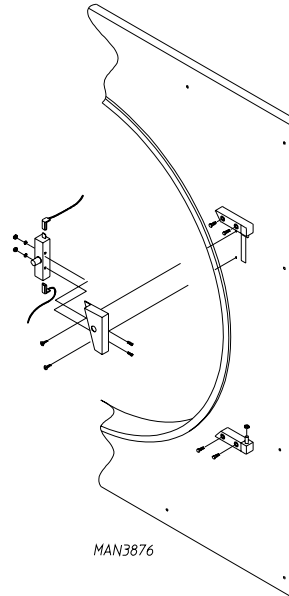
Tumbler

The tumbler consists of a tumbler, which has 4 ribs and 4 removable perforated panels, which are mounted to the rib sections of the tumbler with 1/4-20 x 1/4" socket button head screws.



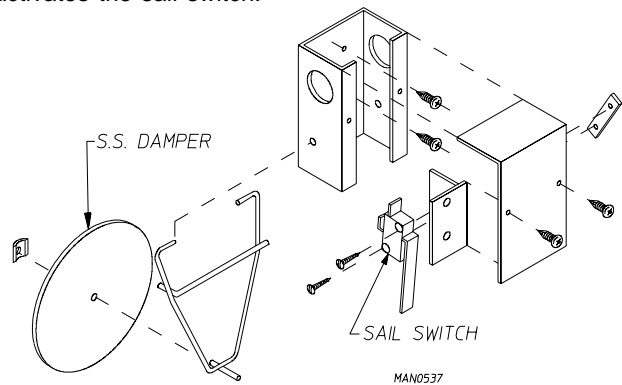
Main Door Switch

The main door switch is mounted to the front panel behind the main door. When the main door opens, the switch will also open, preventing the dryer from operating. The main door switch is a safety device and should never be disabled.



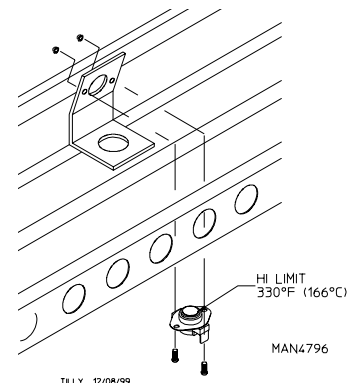
Sail Switch (Gas Models Only)

The sail switch is located on the front of the burner box. A sail switch consists of a round damper plate on a lever arm, which is in contact with an electric switch. When the fan/blower comes on, it draws air through the gas burner. This creates a negative pressure inside the burner box, and this negative pressure pulls in the round damper and activates the sail switch.



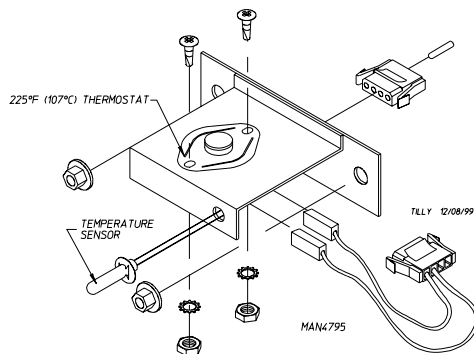
Burner Hi-Limit (Gas Models Only)

The hi-limit thermostat is a disc-type thermostat set at 330° F (166° C) and located near the burner. If the burner flame gets too hot, this thermostat will shut off the burner. This is generally caused by low airflow through the dryer.



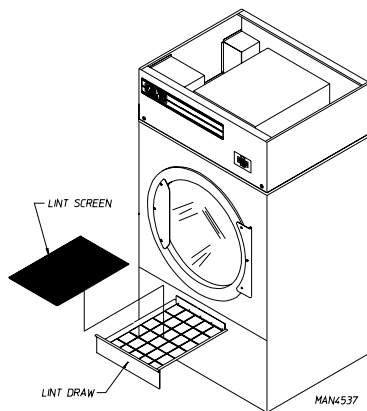
Temperature Sensor Bracket

This is located inside the dryer in the lint compartment above the lint screen. This bracket consists of 2 devices. One is a temperature sensor probe and the other is a high limit thermostat, which is set at 225° F (107° C).



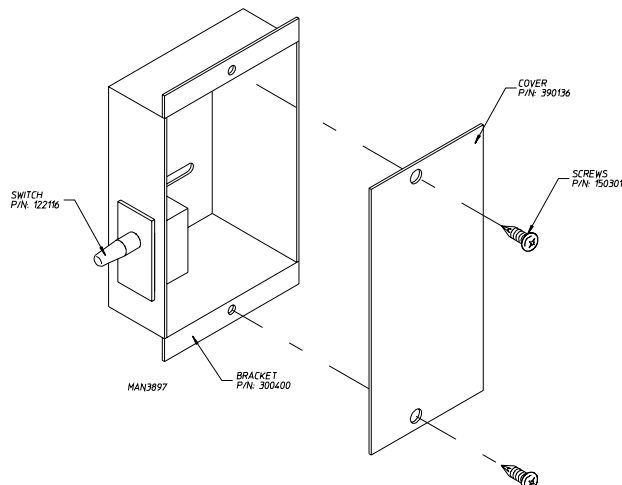
Lint Screen

The lint screen is located in the front of the dryer in the lint coop assembly. To clean the lint off the screen simply brush the screen clean. The lint screen must be kept clean in order for the dryer to operate properly and efficiently. Inspect the screen for tears and replace as needed.



Lint Drawer Switch

The lint drawer switch is located in the lint compartment and attached to the side of the lint coop. The lint door switch ensures that the dryer will operate only when the lint drawer is completely closed. This is a safety device and should never be disabled.



Servicing

Introduction

All electrical and 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. Service work should be performed by competent technicians in accordance with local, state, and federal codes. 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.

Before considering replacement, make sure that all connectors are in place and making proper contact.

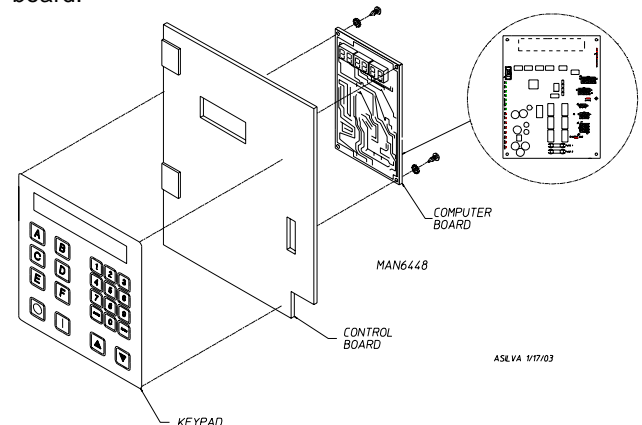
Computer Controls

Microprocessor Computer Board Replacement

Discontinue electrical power to the dryer.

Unplug keypad ribbon from rear of the computer.

Unplug all wiring harnesses connected to the computer board.



Remove the 2 screws securing the computer to the computer panel. Remove the computer by pulling the other 2 corners off the clinch studs.

Install new computer by reversing this procedure.

Keypad Label Assembly Replacement

Discontinue electrical power to the dryer.

Unplug keypad ribbon from rear of the microprocessor computer.

Slowly peel off and remove keypad label assembly from control panel.

Peel paper backing off new keypad label assembly.

Holding the new keypad label assembly close to the panel, insert the keypad ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window on the label to the rectangular cutout in the panel and gently press into place.

Connect keypad ribbon to the computer.
Reestablish electrical power to the dryer.

Microprocessor Temperature Sensor Probe Replacement

Discontinue electrical power to the dryer.
Remove perforated panel from tumbler.
Remove microprocessor sensor bracket assembly from dryer.
Disconnect sensor bracket harness connector.
Loosen the 2 Phillips head screws, which secure bracket assembly to dryer and remove bracket from dryer.

NOTE: Do not remove screws.

Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe from bracket. Use a small screwdriver to slowly pry the fastener off.

Disconnect the 2 "orange" wires from the high heat (225° F [107° C]) thermostat, and remove modular bracket connector, wires, and probe from bracket assembly.

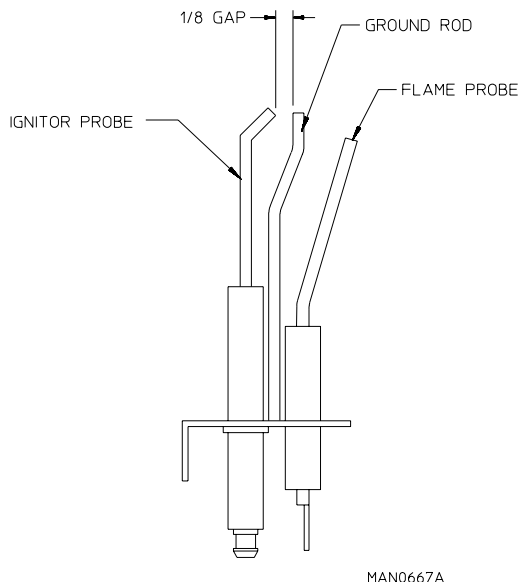
Install new sensor probe assembly by reversing procedure.
Reestablish electrical power to the dryer.

NOTE: If, when electrical power is reestablished, the microprocessor computer L.E.D. display reads "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE," check for a loose connection in the wiring.

To Replace Spark Ignitor and Flame Probe

Discontinue power to the dryer.
Disconnect high voltage connector and flame-probe connection from ignitor.
Disassemble ignitor from burner by removing the 2 self-tapping screws.
Reverse procedure for installing the new ignitor probe.

NOTE: Before reestablishing power to the dryer, visually check the following: (refer to the illustration).



MAN0667A

The flame-probe, ignitor probe, and ground rod are all on the same line of axis.

There should be a 1/8" gap (+/- 1/32) between the ignitor probe and ground rod.

Do not wrap the red high voltage wire and flame-probe wire together. (Improper operation may result.) They may run along side each other.

Hot Surface Ignitor

Discontinue electrical power to the dryer.
Disconnect the hot surface ignitor wires from S1 and ground (GND) on the HSI module.
Disassemble hot surface ignitor probe from burner by removing the one self-tapping screw.
Reverse procedure for installation of new hot surface ignitor.

NOTE: Do not wrap the hot surface ignitor wires and the flame electrode wire together. Improper operation may result. They may run alongside each other.

Reestablish electrical power to the dryer.

Gas Valve Replacement

(Refer to burner illustration on page 11)
Discontinue electrical power to the dryer.
Close shutoff valves in gas supply line.
Disconnect gas valve wiring.

NOTE: Identify location of each wire for correct reinstallation.

Break union connection before gas valve.
Loosen and remove 4 screws securing pipe brackets to burner.
Remove valve and manifold assembly from dryer.
Remove valve mounting bracket, manifold and piping from gas valve.
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!!!

Main Burner Orifices Replacement

Refer to "To Replace Gas Valve" and follow steps.
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.

Reverse the removal procedure for reinstalling.



WARNING: Test all connections for leaks by brushing on a soapy water solution.

NEVER TEST FOR LEAKS WITH A FLAME!!!

To Convert Natural Gas to L.P. Gas

NOTE: All dryers are sold as natural gas, unless otherwise specified at the time the dryer order was placed. For L.P. gas the dryer must be converted as follows.

Refer to "Replace Gas Valve" and follow steps.

For models with 3/4" White-Rodgers gas valve

- Remove top vent cap.
- Insert spring and pin.
- Replace vent cap.

Unscrew main burner orifices and replace with L.P. orifices.

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

Reverse the procedure for reinstalling valve assembly to the dryer.



WARNING: Test all connections for leaks by brushing on a soapy water solution.

NEVER TEST FOR LEAKS WITH A FLAME!!!

NOTE: There is no regulator provided in an L.P. dryer. The water column pressure must be regulated at the source (L.P. tank) or an external regulator must be added to each dryer.

Burner Tubes Replacement

Refer to "Replace Gas Valve" and follow steps.

Remove 4 screws securing the ignition module mounting bracket.

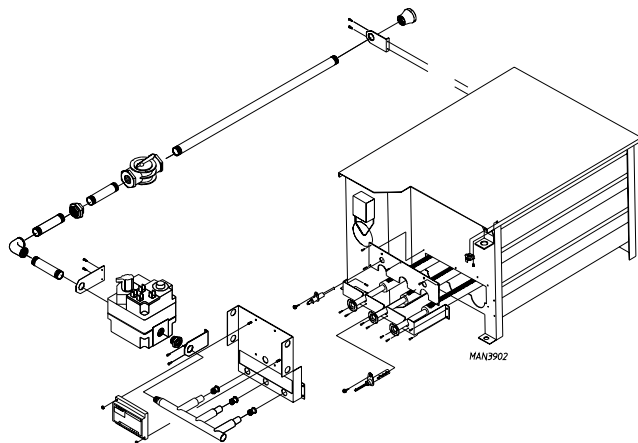
Remove front flanges of the burner tubes to the burner tube rest.

Remove the screws securing the burner tube rest to the oven and remove this rest.

Remove screws securing burner box cover plate to the oven and remove the cover.

Remove burner tubes by sliding them out.

Replace by reversing procedure.



Ignition Module Replacement

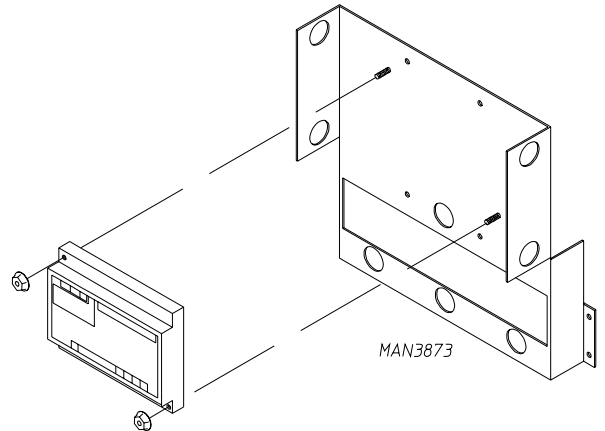
Discontinue electrical power to the dryer.

Remove the wires connected to the terminal strip at the bottom of the module. (Mark correct location of each wire to aid in replacement on new module).

Remove the 2 pal nuts securing the module to the mounting bracket.

Replace module by reversing procedure.

Reestablish electrical power to the dryer.



Thermostats

Burner Hi-Limit (330° F [166° C]) Thermostat Replacement (Gas Models Only)

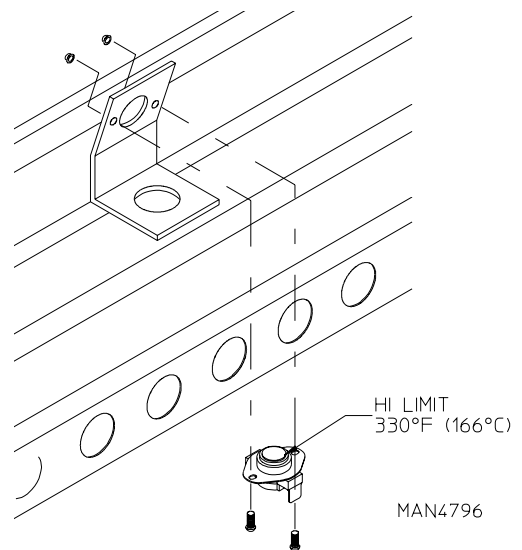
Discontinue electrical power to the dryer.

Disconnect wires from hi-limit thermostat.

Remove the 2 screws, washers and nuts securing thermostat to the bracket. Remove thermostat.

Reversing procedure for installing new thermostat.

Reestablish electrical power to the dryer.



TILLY 12/08/99

Tumbler Hi-Limit Thermostat (225° F [107° C]) Replacement

Disconnect electrical power to the dryer.

Open lint door.

Locate sensor bracket assembly, remove the 2 nuts securing bracket assembly to the tumbler wrapper.

Remove bracket assembly by slightly sliding bracket toward the rear of the dryer and to the left.

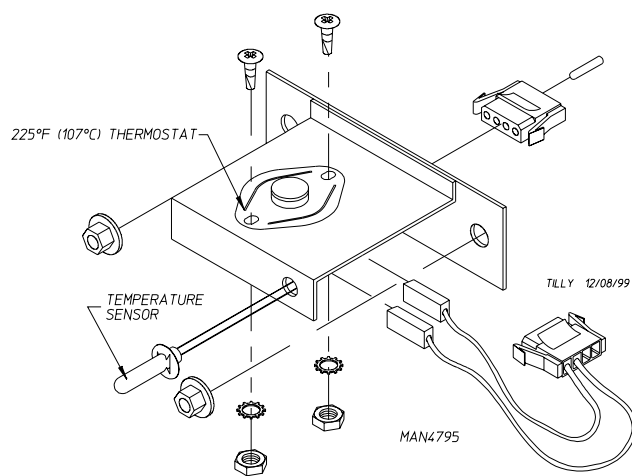
Disconnect sensor bracket harness connector and remove bracket assembly from dryer.

Disconnect the 2 "orange" wires from the thermostat.

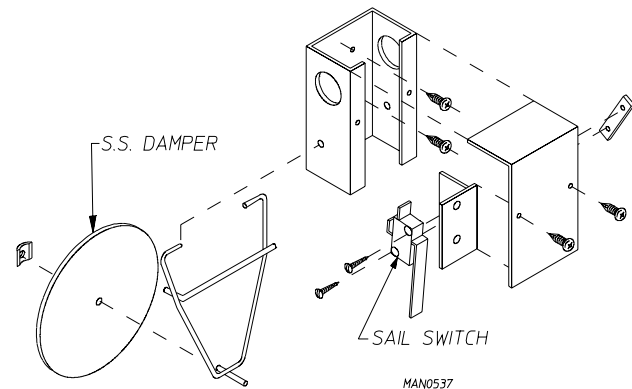
Disassemble thermostat from bracket assembly by removing the 2 mounting screws, washers and nuts.

Reverse this procedure for installing a hi-heat protector thermostat.

Reestablish electrical power to the dryer.



Sail Switch Assembly (Gas Models Only)



Sail Switch Replacement

Discontinue electrical power to the dryer.

Remove the 2 screws, which hold the sail switch box cover to sail switch box.

Disconnect the 2 wires from the switch.

Disassemble sail switch from mounting bracket by removing the 2 screws securing switch in place.

Reverse this procedure for installing new sail switch. Adjust sail switch as described in the next section.

Sail Switch Adjustment

With the dryer operating at a high temperature setting, pull the sail switch 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 and start dryer. With the main door open and the dryer operating, the sail switch should be open, and the burner should not come on.

Steam Damper Actuator System Service and Replacement

Steam Damper Cylinder or Piston Replacement

Disconnect compressed air supply from the dryer.

Disconnect tubing from the piston.

Remove the spring clip from clevis pin then slide out the clevis pin.

Remove the steam damper cylinder (piston).

To install new steam damper cylinder (piston), reverse above procedure.

Steam Solenoid Valve Replacement

Disconnect compressed air supply from the dryer.

Discontinue electrical service to the dryer.

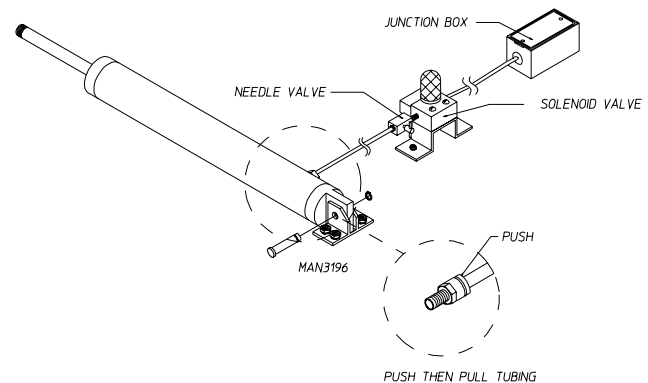
Disconnect wires in junction box.

Remove tubing from the inlet side of the valve.

Remove the valve from the bracket.

Unscrew the valve from the outlet side.

To install new steam solenoid valve, reverse above procedure.



Needle Valve Replacement

Disconnect compressed air supply from the dryer.

Remove tubing from the valve.

Unscrew needle valve from the solenoid valve.

To install new needle valve, reverse above procedure.

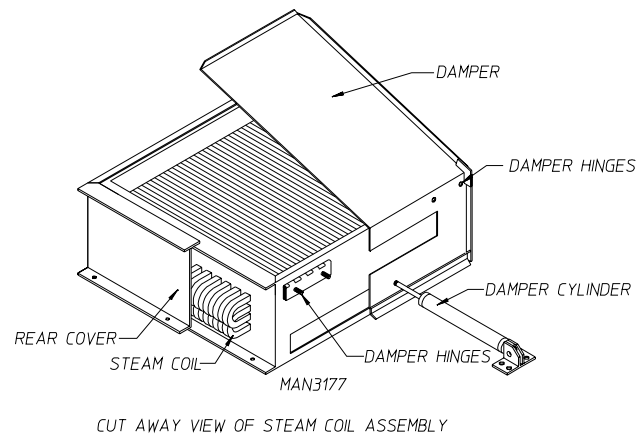
Steam Coil Replacement

Discontinue electrical service to the dryer.
Disconnect compressed air supply from the dryer.
Shut off all steam supply lines and steam return valves that feed the steam coil.
Wait a sufficient amount of time until all of the steam lines and the steam coil is cool.
Open 1/2" plug on the return line to bleed off any residual steam pressure.



CAUTION: Make certain that the entire steam system (coil, lines, valves, etc.) are cooled to avoid hot steam escaping and to avoid personal injury.

Remove steam coil damper cylinder (piston).
Remove the steam coil damper by unbolting from its hinges.
Disconnect steam supply lines and steam return lines at the unions.



Remove the remaining piping from the steam coil.
Remove all of the panels surrounding the steam coil.
Unbolt the steam coil and remove.



WARNING: The steam coil is heavy. A crane may be needed to remove (and install) the steam coil.

Remove the steam coil damper hinges from the old coil and install them on the new steam coil.
Hoist the new steam coil into place and bolt down.
Replace all of the panels removed.
Reinstall all of the piping removed from the old steam coil.

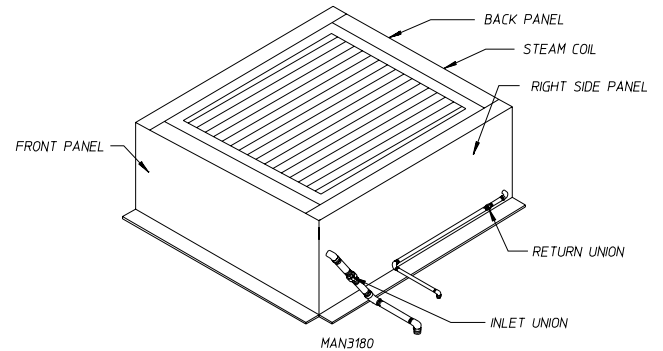
NOTE: Thread sealant certified for steam piping must be applied to the threads.

Reconnect all of the piping (supply lines and return lines) disconnected.
Reinstall steam damper cylinder (piston) removed.
Reestablish electrical service to the dryer.
Close the 1/2" plug, which was opened.



WARNING: The 1/2" plug must be closed before attempting to apply any steam pressure.

Slowly open the return line then slowly open the supply line.

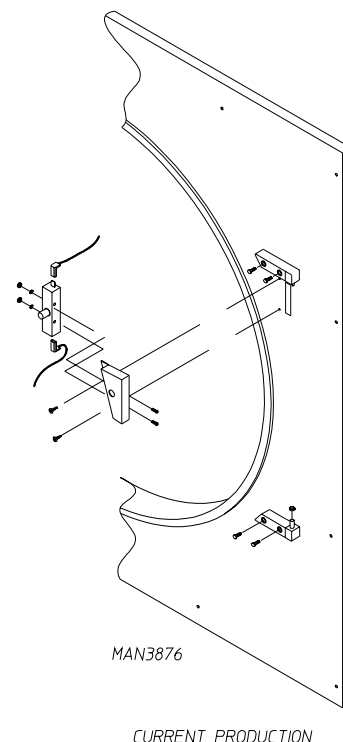


Front Panel and Main Door Assemblies

Main Door Switch Replacement

Discontinue electrical power to the dryer.
Open main door.
Remove the 2 Phillips head screws holding the main door switch bracket assembly in place.
Disconnect wiring from switch assembly.
Reverse this procedure for installing new door switch assembly.
Reestablish electrical power to the dryer.

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



Main Door Assembly Replacement

Open main door.

Holding the door upward remove the 2 screws from the top hinge block.

Lift the door up to remove.

Reverse this procedure for reinstalling new main door assembly.

To Install New Main Door Glass

Remove main door assembly from dryer (follow main door removal procedure).

Lay main door on flat surface with the back of the door facing down.

Remove the 4 #10-32 acorn nuts securing the glass to the door.

Remove glass and clean all old sealant off main door. This area must be clean for correct bonding.

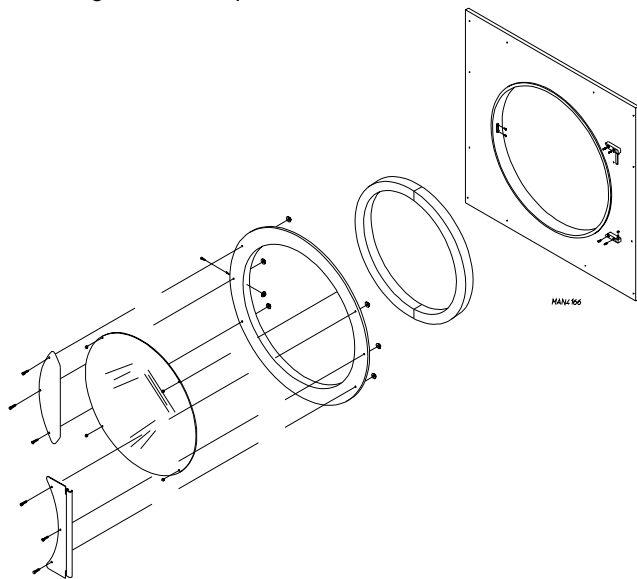
Place a bead of silicone around the edge door and lightly press glass into place.

Reinstall the 4 #10-32 acorn nuts that were removed.

IMPORTANT: Do not press hard or silicone thickness between the glass and door will be reduced, resulting in poor bonding.

The door assembly should now be put in an area where it will not be disturbed for at least 24 hours. Depending on the conditions, the curing time of this adhesive is 24 to 48 hours.

After the curing period, install main door on dryer by reversing the first step.



Front Panel Replacement

Discontinue electrical power to the dryer.

Remove bottom lint drawer assembly.

Remove the screws securing the front panel to the dryer.

Disconnect the 2 door switch wires located behind the front panel.

Remove the front panel.

IMPORTANT: When pulling the front panel off, the door switch harness in the upper right hand corner must be unplugged.

NOTE: The main door assembly can be removed to make the panel removal easier. Refer to "Replace Main Door Assembly" directions.

Reinstall the new front panel by reversing the first step through the fourth step.

Reestablish electrical power to the dryer.

Pulleys

Drive Shaft Pulley Replacement

Discontinue electrical power to the dryer.

Remove rear belt guard.

Loosen V-belts. Rotate pulley and roll V-belts out of grooves.

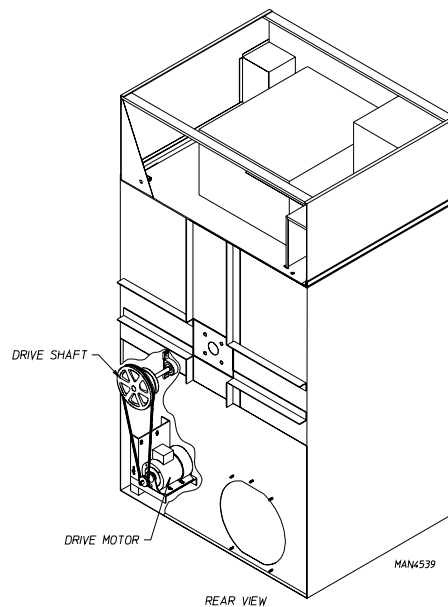
Remove setscrew from the 9-inch (22.86 cm) pulley.

Remove pulley and key.

NOTE: A gear puller may be required to remove pulley.

Reverse this procedure for replacement.

NOTE: Pulley must be aligned for proper operation.



Drive Motor Pulley Replacement

Discontinue electrical power to the dryer.

Remove rear belt guard.

Loosen V-belts. Rotate pulley and roll V-belt out of groove.

Remove setscrew from the drive motor pulley.

Remove pulley and key.

NOTE: A gear puller may be required to remove pulley.

Reverse this procedure for replacement.

NOTE: Pulleys must be aligned for proper operation.

Tumbler Wheel Replacement on Drive Assembly

Discontinue electrical power to the dryer.

Remove front panel from dryer. (Follow front panel replacement directions on page 14.)

Remove the 10 1/4-20 x 1/4" socket button head screws from the perforated basket side.

Remove wrapper assembly.

Loosen V-belt. Rotate pulley and V-belt out of the groove.

Block the tumbler assembly in position.

Remove the setscrew from the 9-inch (22.86 cm) pulley.

Remove the pulley and key.

Mark the position of pillow block bearing then remove the bolts from the pillow block bearings.

Remove the drive shaft assembly through the front of the machine.

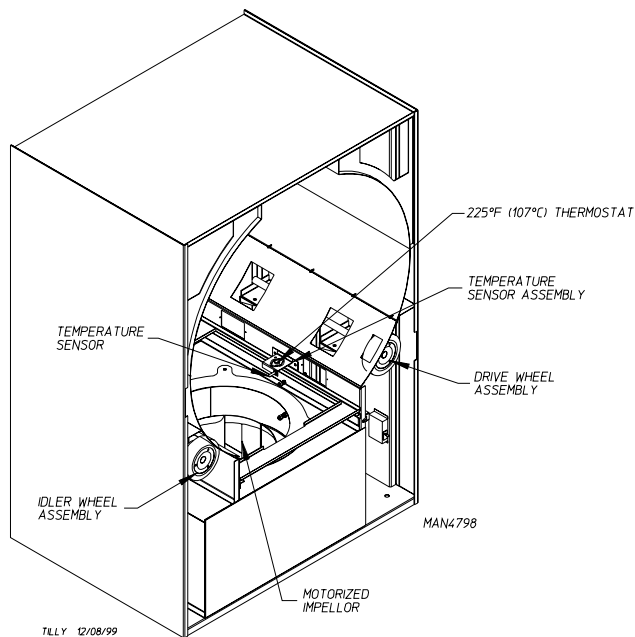
NOTE: A gear pulley may be required to remove the pulley.

Remove cap screws from bushing.

Insert cap screws in the tapped removal holes and tighten evenly until bushing becomes loose on shaft.

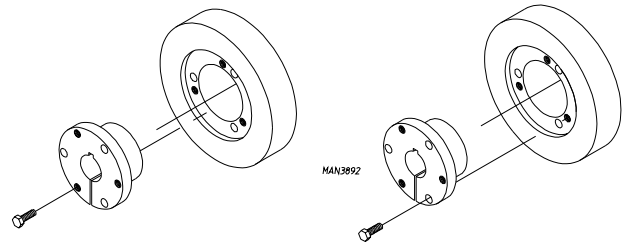
Remove the bushing, tumbler wheel, and key.

Reverse this procedure for replacement.



TUMBLER WHEEL REMOVAL

TUMBLER WHEEL INSTALLATION



IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 30 ft-lb (41 Nm). If greater tightening forces are applied, excess pressure will be created in the hub of the mounted sheave, which may cause it to crack.

Tumbler Wheel Replacement on Idler Assembly

Disconnect electrical power to the dryer.

Remove the front panel from the dryer. (Follow front panel replacement directions on page 14.)

Remove the 10 1/4-20 x 1/4" socket button head screws from the perforated basket side.

Remove the wrapper assembly.

Block the tumbler assembly in position.

Mark the position of the pillow block bearings. Then remove the bolts from the pillow block bearing.

Remove the idler shaft assembly through the front of the machine.

Remove the cap screws from bushing.

Insert cap screws in the tapped removal holes and tighten evenly until bushing becomes loose on shaft.

Remove the bushing, tumbler wheel, and key.

Reverse this procedure for replacement.

Basket Assembly Adjustment

NOTE: Dryer must be level prior to tumbler alignment.

Discontinue electrical power to the dryer.

Remove the perforated tumbler panel.

Remove wrapper panel to access the drive and idler shaft.

Place a level on the shafts to verify if level.

Measure distance between tumbler and wrapper 1/2" to 3/4" gap should be derived.

Loosen the 8 bolts on the pillow block bearings and turn the adjustment screw clockwise or counterclockwise to increase or decrease the gap between the tumbler and wrapper.

Measure the length of the adjustment bolts and all should be equal.

Place a level on the shaft to verify it is level if any adjustment has been made.

Check the basket drive belt for proper tension. Adjust if necessary.

Replace the wrapper panels.

Replace the perforated tumbler panel.

1-15/16 (5 cm) Flange Bearing Replacement

Disconnect electrical power to the dryer.

Remove the 4 bolts securing the bearing cap located in the rear of the dryer. And remove.

Depress the tabs on the rotational sensor harness plug and pull apart.

Remove the retaining ring from the tumbler shaft.

Remove the 4 bolts, lock washers and flat washers securing the flange bearing to the dryer cabinet.

Loosen the setscrews from the flange bearing.

Remove the flange bearing from the tumbler shaft. (A bearing puller may be necessary.)

To replace new flange bearing reverse steps.

Reestablish electrical power to the dryer.

4-inch Support Wheel Replacement

Disconnect electrical power to the dryer

Remove the four nuts securing the rear support box to the dryer.

Remove the center allen head bolt and teflon washer.

Loosen the individual wheel bolts so the rear of the box can be removed.

Remove the damaged wheel.

Replace with new wheel.

Reverse steps to replace support box.

NOTE: make sure inner teflon disc does not fall off of center allen head bolt.

Rotational Sensor Assembly

The rotational sensor assembly is located in the rear of the dryer. It consists of a magnet. Rotational sensor switch, which is mounted to the bearing cap. The magnet is screwed into the 1-15/16" (5 cm) flange bearing on machines made with a bearing or directly attached to the shaft on machines made with 4-inch (10.16 cm) shaft support rollers.

The magnetic rotational sensor switch senses the rotation of the tumbler. If the gap between the sensor switch and the magnet is greater than a preset amount or if the tumbler stops turning, then the dryer will shut down on "SEFL" ("rotational sensor failure").

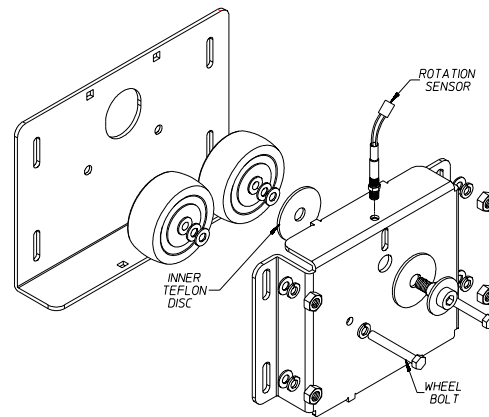
Rotational Sensor Switch Replacement

Discontinue electrical power to the dryer.

Remove the bearing cap from the dryer.

Remove the adjustment nut from the bearing cap.

Remove the magnetic rotational sensor switch from the bearing cap.



Depress the tabs on the rotational sensor harness plug and pull apart, then remove the sensor switch.

To install a new sensor switch, connect the plug of the new sensor switch to the sensor harness.

Place one adjustment nut onto the sensor switch and insert into the bearing cap.

Place the second adjustment nut on but do not tighten. The magnet on the flange bearing and the sensor switch must be in a horizontal line to one another.

The gap between the magnet and the sensor switch must be 1/8-inch.

Tighten the adjustment nuts installed.

Reestablish electrical power to the dryer.

Idler Shaft Pillow Block Bearing Replacement

Refer to tumbler wheel replacement on idler assembly page 15.

Complete all the steps.

Remove both setscrews from each pillow block bearing.

Remove pillow block bearing from shaft.

Reverse this procedure for replacement.

NOTE: Once the shaft assembly has been installed into dryer, return pillow block bearings to the marked position and tighten setscrews.

Refer to basket assembly section page 15 for shaft and basket alignment.

Drive Assembly Pillow Block Bearing Replacement

Refer to tumbler wheel replacement on drive assembly page 15.

Complete all the steps.

Remove both setscrews from each pillow block bearing.

Remove pillow block bearings from shaft.

Reverse this procedure for replacement.

NOTE: Once the shaft assembly has been installed into dryer, return pillow block bearing to the marked position and tighten setscrews.

Refer to basket assembly section page 15 for shaft and basket alignment.

V-Belt Adjustment (Motor to Drive Axle)

Discontinue electrical power to the dryer.

Remove the belt guard cover from the rear of the dryer.

Loosen the 4 bolts holding the drive motor mount to the side of the dryer.

Loosen the jam nuts on the adjustment screw on the top of the motor mount.

Turn the adjustment screw to lower the motor mount (to tighten the belts) or raise the motor mount (to loosen the belts.)

Check the vertical plane of the motor and idler pulleys for parallel adjustment.

If realignment is required, loosen motor pulley and bushing, and move motor pulley to proper position.

Retighten motor mount bolts and jam nuts.

Reestablish electrical power to the dryer.

Drive Motor V-Belts Replacement

Discontinue electrical power to the dryer.

Remove the belt guard cover from the rear of the dryer.

Loosen tension on V-belt so that it can easily be rolled off pulley. This can be done by loosening the 4 bolts holding the motor to the side of the dryer, as well as the adjustment bolt on top.

Replace V-belt.

Retighten V-belt and adjust tension and alignment per previous instructions.

Motors

Drive Motor Replacement

Discontinue electrical power to the dryer.

Remove the belt guard cover from the rear of the dryer.

Remove drive belt.

Disconnect wiring harness from motor.

Remove bolts holding motor to mount and replace with new motor. Do not tighten bolts.

Remove pulley from old motor and install on new motor. By removing the setscrew from the drive motor pulley.

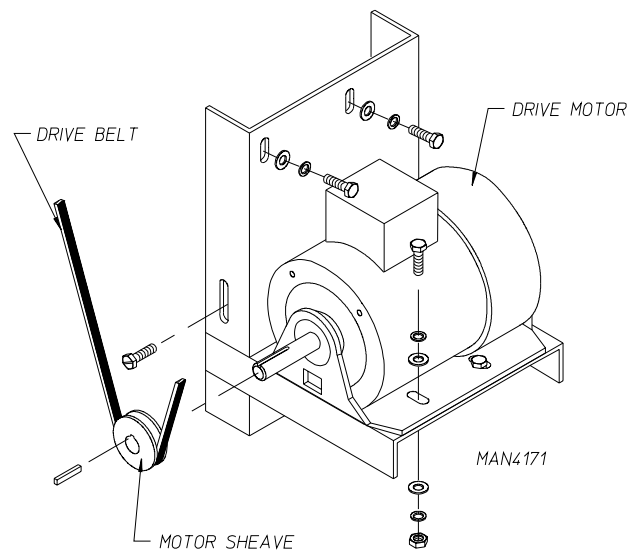
NOTE: A gear puller may be required to remove pulley.

Align motor pulley with drive assembly pulley and tighten setscrew holding motor pulley.

Replace belts and adjust belt tension.

Retighten bolts.

Reestablish electrical power to the dryer.



Motorized Impellor (Blower) Replacement

Discontinue electrical power to the dryer.

Remove lint draw.

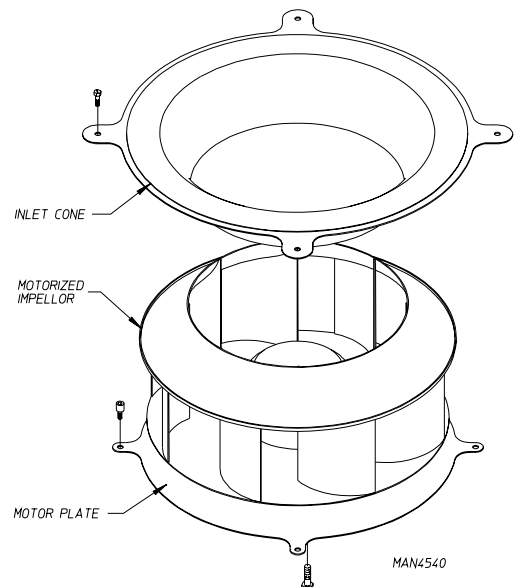
Remove the perforated panel inside the tumbler.

Remove the bolts securing the inlet cone.

Remove the inlet cone.

Remove the bolts securing the motor plate to the dryer cabinet.

Remove the motorized impellor along with the motor plate.



NOTE: The motorized impellor assembly will not be able to be removed due to the wiring harness still connected.

Disconnect the wiring harness from motor.

Remove the motor plate from the motorized impellor and install it on the new motor.

Reconnect the wiring harness to the motor.

To replace new motorized impellor assembly, reverse steps.

Reestablish electrical power to the dryer.

Lint Door Switch Replacement

Discontinue electrical power to the dryer.

Remove the lint door panel. (For the ML-122.)

Remove the front panel. (For the ML-96.)

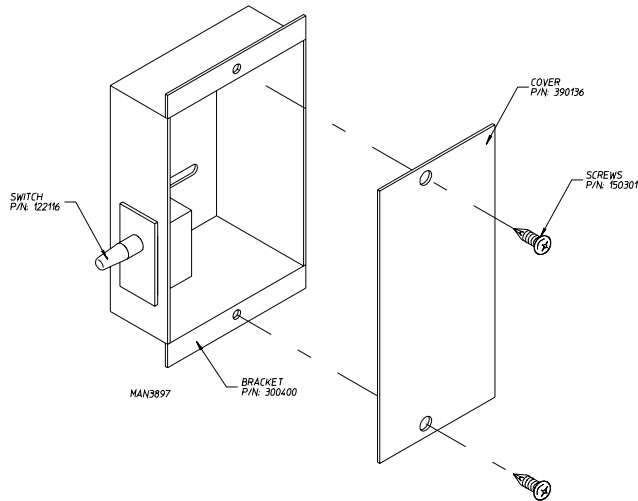
Disconnect both 4-pin connectors at the rear of the lint switch cover.

Remove the 2 screws holding the lint switch cover on.

Remove the lint switch cover and disconnect the 2 terminals of the switch.

Remove switch by pressing tabs together and pushing switch out.

Install new switch by reversing these procedures.



Troubleshooting

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

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/shorted wire may be at fault where electrical components are concerned...and not necessarily the suspected component itself.

IMPORTANT: When replacing blown fuses, the replacement must be of the exact rating as the fuse being replaced. The information provided should not be misconstrued as a handbook for use by an untrained person in making repairs.



WARNING: All service and troubleshooting should be performed by a qualified professional or service agency.

While making repairs, observe all safety precautions displayed on the dryer or specified in this manual.

No L.E.D. display on microprocessor controller (computer)...

Open circuit breaker switch or blown fuse.

Tripped blower motor overload.

Faulty wiring connection.

Faulty transformer.

“Emergency Stop” (E-Stop) button is depressed.

Faulty microprocessor controller (computer).

Computer will not accept keypad entries...

Keypad ribbon is not plugged into computer securely.

Faulty keypad.

Faulty microprocessor controller (computer).

Dryer will not start, but computer L.E.D. indicators are on...

Failed contactors.

Failed arc suppressor board.

Failed microprocessor controller (computer).

Failed motors.

Blower motor runs, burner is on, but tumbler will not turn...

Broken, damaged or loose V-belt.

Damaged or misadjusted drive wheels.

Loose or broken pulley.

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

Improperly programmed microprocessor controller (computer).

An inadequate exhaust ductwork system.

Restriction in exhaust system.

Insufficient make-up air.

Dirty or clogged lint screen.

Washing machine extractors are not performing properly.

The supply gas may have a low heating value, check with local gas supplier.

Failed temperature sensor (temperature calibration is incorrect).

Failed microprocessor controller (computer).

Thermal overload for drive motor is tripping...

Either an exceptionally low or high voltage supply.

Motor bearing failure.

Motor vents are blocked with lint.

Failed motor.

Failed overload.

Insufficient make-up air.

Overload for impellor (fan) motor is tripping...

Either an exceptionally low or high voltage supply.

Motor bearing failure.

Motor vents are blocked with lint.

Failed motor.

Failed overload.

Out of balance impellor (fan).

Insufficient make-up air.

Burner hi-limit safety thermostat is tripping...

Insufficient exhaust ductwork, size or restriction in exhaust system.

Insufficient make-up air.

Lint screen needs cleaning.

Damaged impellor.

L.E.D. display reads "Temp Sensor Failure Check Temp Sensor Fuse." or "Open Exhaust Temperature Probe." ...

Check 1/8-amp fuse on microprocessor controller (computer). (Phase 6 units only.)

Faulty microprocessor controller (computer) temperature sensor probe.

Open circuit or short in either one of two wires leading from the sensor probe to the computer...

Faulty microprocessor controller (computer).

Dryer does not start.

Display reads "main door" or "lint door" with an audio indication...

Main door is open.

Lint drawer is open.

Faulty main door or lint door switch.

Open circuit in either main door or lint drawer switch harnesses.

Faulty 24 VAC transformer.

There is excessive vibration coming from the tumbler...

Tumbler is out of adjustment.

Drive shaft or idler shaft is out of alignment.

Faulty pillow block bearing or 4-inch (10.16 cm) rear wheel.

Faulty tumbler wheel.

Drive motor and shaft not aligned.

Phase 6 OPL System Diagnostics _____

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

All major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 6 OPL microprocessor controller (computer) will inform the user, via the L.E.D. display of certain failure codes, along with indicators both in L.E.D. display and at the output of each relay (and door switch circuit) to easily identify failures.

Diagnostic (L.E.D. Display) Failure Codes

SAIL SWITCH FAIL – This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is closed prior to start up the display will read "SAIL SWITCH FAIL" along with an audio indication.

No AIRFLOW – If the sail switch opens during cycle operation the display will read "No AIRFLOW" along with an audio indication. The machine will continue to run with no heat for 3 minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "No AIRFLOW" with an audio indication.

BURNER SAFETY FAIL – Routine monitors the temperature above the burner. If the burner hi-limit switch opens the display will read "BURNER SAFETY FAIL." The machine will run with no heat for 3 minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "BURNER SAFETY FAIL" with an audio indication.

DRUM SAFETY FAIL – This routine monitors the tumbler temperature if the tumbler hi-limit switch opens prior or during the cycle while the heat was on the machine will display "DRUM SAFETY FAIL." The machine will continue to run with no heat for 3 minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "DRUM SAFETY FAIL" with an audio indication.

No HEAT – This routine monitors the burner ignition. If the burner misignites (does not light) the ignition module will check to see if the microprocessor program has any retries left. The standard retry count is 2. If the module notices that there are retries left it will purge for 1 minute then try to ignite the burner again. The ignition module will try this for a total of 3 times or until there are no retries left. If the burner does not ignite after 3 attempts the L.E.D. display will display the error code "no heat" with an audio indication. When this occurs the machine will run with no heat for 3 minutes or until the temperature drops below 100° F (38° C).

IMPORTANT: For other countries, such as Australia, the retry count may not apply due to local approvals.

bURNER CONTROL FAIL – This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the Phase 6 microprocessor controller (computer) determines the ignition control has failed. If this occurs when the cycle is active the machine will display "bURNER CONTROL FAIL." If the tumbler temperature is above 100° F (38° C) the machine will continue to display "bURNER CONTROL FAIL." The machine will run with no heat for 3 minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure the machine will shut down and display "bURNER CONTROL FAIL" with an audio indication.

bURNER FLAME FAIL – This routine allows 2 flame out retries to occur before proceeding into the error. The count of 2 will be established every time the call for heat was to occur. Only if it reaches the count of 2 before the tumbler temperature has reached the set temperature will this error be triggered. The machine will run with no heat for 3 minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure, the machine will shut down and display "bURNER FLAME FAIL" with an audio indication. This process will occur every time the heat output is active.

MAIN DOOR – This monitors the door circuit. If the machine was not active and the main door was opened the display would read "REAdY." If a program attempt was made with the main doors open the display will read "MAIN dOOR" with an audio indication. If the machine is active and the main door was opened the display would read "MAIN dOOR" with no audio indication and the dryer will shut down. Once the main door has closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

LINT dOOR – This monitors the lint drawer and door circuit. If the machine was not active and the lint drawer and door was opened the display would read "REAdY." If a program attempt was made with the lint drawer and door open the display would read "LINT dOOR" with an audio indication. If the machine is active and the lint drawer and door was opened the display would read "LINT dOOR" with no audio indication and the dryer will shut down. Once the lint door was closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE – This routine monitors the tumbler temperature. When the temperature sensor or fuse opens with the machine not active the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the machine was active at the time that the temperature sensor or fuse opened the display would read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE." The display will continue to read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" an audio indication will sound for approximately 5-seconds, every 30-seconds until the problem is corrected or the power to the dryer is disconnected (and the problem is corrected).

NOTE: Once the Phase 6 microprocessor controller (computer) detects a problem in the heat circuit, it updates every 30-seconds, so that if the problem was a loose connection in the circuit, which corrected itself, the "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" condition would automatically be cancelled and the display will return to "REAdY."

ROTATE SENSOR FAIL – Indicates a rotational sensor circuit failure meaning that there is a fault somewhere in the tumbler rotating circuit, or the Phase 6 OPL microprocessor controller (computer) program related to this circuit (program location 2) is set incorrectly. In the active mode it should be (ROTATE SENSOR ACTIVE), if the dryer is not equipped with the optional rotational sensor it should be set in the nonactive mode (No ROTATE SENSOR).

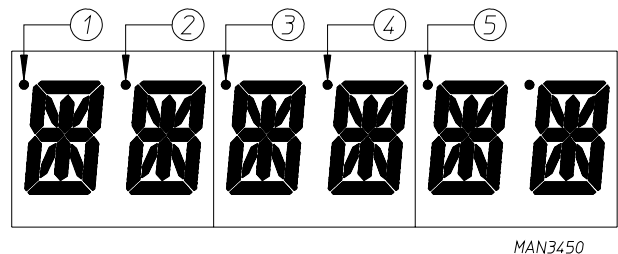
NOTE: RPM – This routine monitors the timing response from the existing rotational sensor input and derives a RPM measurement. To display this RPM measurement (press the "ENTER/START" key once and release, then press the "ENTER/START" key a second time and hold. This will display the RPM measurement). The rotational sensor must be active for operation of this feature.

CHECK MAIN FUSE – Indicates that the circuit fuse protection, which is located on the back side of the Phase 6 microprocessor controller (computer) the display would read "CHECK MAIN FUSE." If the display continues after the fuse has been replaced then it is the fault of the Phase 6 microprocessor controller (computer).

L.E.D. Display Indicators

The L.E.D. indicator dots located on the top portion of the display indicates various Phase 6 OPL computer output functions while a cycle is in progress. These indicator dots (as shown in the illustration below) do not necessarily mean that the outputs are functioning. They are only indicating that the function output should be active (on).

L.E.D. Display Indicator Number 1



For Optional Reversing Models: This indicator dot is on when the drive (tumbler) motor is operating in the forward mode (clockwise direction).

L.E.D. Display Indicator Number 2

For Optional Reversing Models: This indicator dot is on when the drive (tumbler) motor is operating in the reverse mode (counterclockwise direction).

L.E.D. Display Indicator Number 3

Heat Circuit Indicator: This indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating circuit to be active (on).

L.E.D. Display Indicator Number 4

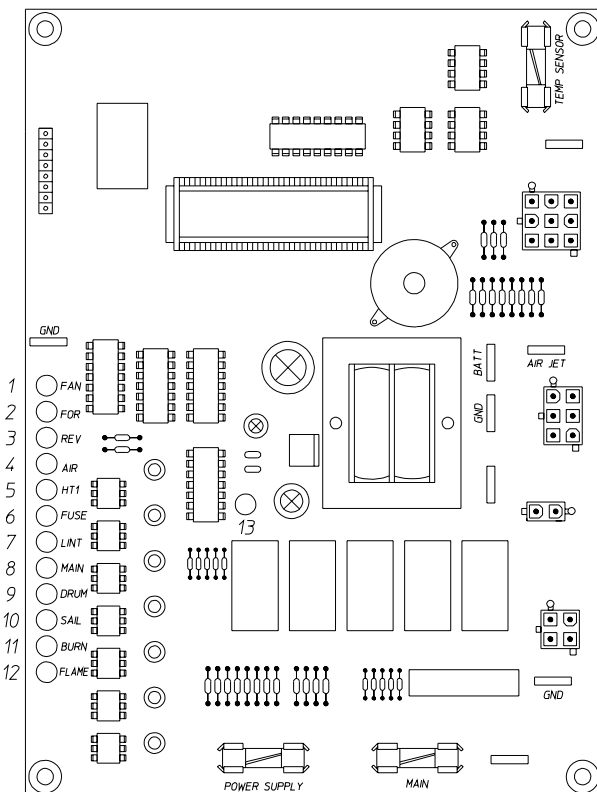
On Indicator: This indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle program is active, the indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time program.

L.E.D. Display Indicator Number 5

Air Jet Circuit – OPTIONAL: This indicator dot is on at the end of the dryer cycle for approximately 60-seconds.

Phase 6 OPL Microprocessor Controller (Computer) Relay Output L.E.D. Indicators

There are a series of 5 L.E.D. indicators (ORANGE LIGHTS) located at the backside of the Phase 6 OPL microprocessor controller (computer). These are identified or labeled (from top to bottom in the illustration below as: FAN-BLOWER, FOR-FORWARD, REV-REVERSE, AIR-AIR-JET, HT1-HEAT OUTPUT. There are a series of 7 L.E.D. indicators (red lights) FUSE-MAIN FUSE, LINT-LINT DOOR, MAIN-MAIN DOOR, DRUM-TUMBLER HI-LIMIT, SAIL-SAIL SWITCH, BURN-BURNER HI-LIMIT, FLAME-FLAME PROBE). The L.E.D. in the center of the board (red light) indicates power supplied to the Phase 6 OPL microprocessor controller (computer). These L.E.D.'s indicate the inputs and outputs of the Phase 6 OPL microprocessor (computer) as it monitors the safety circuits.



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“FAN” (BLOWER) Output L.E.D. Indicator

If the dryer is started and the blower motor is not operating, yet the Phase 6 OPL microprocessor controller (computer) display fan indicator dot and power supply input L.E.D. are on, but the fan output L.E.D. is off, then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

If the motor is not operating. The fan indicator dot and output L.E.D. are also on, then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

“FOR” (FORWARD) Output L.E.D. Indicator (for optional reversing model ONLY)

If the dryer is started and the blower motor is operating, but the drive (tumbler) motor is not, yet the Phase 6 OPL microprocessor controller (computer) display “FORWARD” indicator dot is on, the “FOR” (FORWARD) motor output L.E.D. is off; then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

If the drive tumbler motor is not operating and the forward indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

“REV” (REVERSE) Output L.E.D. Indicator (for optional reversing models ONLY)

If the dryer is started and the blower motor is operating but the drive tumbler motor is not, yet the Phase 6 OPL microprocessor controller (computer) displays “REVERSE” indicator dot is on but the “REV” (REVERSE) motor output L.E.D. is off; then the fault is of the Phase 6 OPL microprocessor controller (computer) itself.

If the drive tumbler motor is not operating and reverse indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

“AIR” (AIR JET) Output L.E.D. Indicator – OPTIONAL

“AIR” is on with the display dot at the end of the dry cycle once the display reads “dONE,” it is on for approximately 60-seconds and the output L.E.D. indicator and the display dot go out. If the air jet does not energize it is not the fault of the Phase 6 OPL microprocessor controller (computer). If the output L.E.D. or dot do not go on it is the fault of the Phase 6 OPL microprocessor controller (computer).

“HT1” (HEAT) Output L.E.D. Indicator

If the dryer is started and there is “No Heat” yet the Phase 6 OPL microprocessor controller (computer) display heat circuit indicator dot is on, but the “HT1” output L.E.D. indicator is off; then the fault is in the Phase 6 OPL microprocessor controller (computer) itself.

If the dryer is started and there is “No Heat” yet both the Phase 6 OPL microprocessor controller (computer) display indicator dots and the “HT1” output L.E.D. indicator are on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

“FUSE” (MAIN FUSE) Input L.E.D. Indicator

Should be on all the time (even if the dryer is not running). If the L.E.D. is not on; then the display will read “CHECK MAIN FUSE.” If the main fuse is good then the fault is on the Phase 6 microprocessor controller (computer).

“LINT” (LINT DOOR) Input L.E.D. Indicator

Should be on all the time (unless the lint door is opened then the “LINT” L.E.D. indicator will go out).

If the dryer is active (running) and the lint door is opened the "LINT" L.E.D. indicator will go out and the display will read "LINT dOOR." The dryer will stop until the lint drawer has been closed, at which time the L.E.D. display will read "PRESS START." At this time, to resume the drying cycle press "ENTER/START" key.

"MAIN" (MAIN DOOR) Input L.E.D. Indicator

Should be on all the time (unless the lint door is open or the main door is opened then the "MAIN" L.E.D. indicator will go out).

If the dryer is active (running) and the main door is opened the "MAIN" L.E.D. indicator will go out and the display will read "MAIN dOOR." The dryer will stop until the main door has been closed, at which time the L.E.D. display will read "PRESS START." At this time, to resume the drying cycle press "ENTER/START" key.

"DRUM" (TUMBLER HI-LIMIT) Input L.E.D. Indicator

Should be on at all times (unless the tumbler hi-limit switch opens prior during the cycle while the heat was on the display would read "dRUM Safety FAIL"). The machine will run with no heat for 3 minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying "dRUM SAFETY FAIL" with an audio indication.

"SAIL" (SAIL SWITCH) Input L.E.D. Indicator

This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is in the closed position prior to start, the "SAIL" output L.E.D. indicator will be off, the machine will not start and the display will read "SAIL SWITCH FAIL" along with an audio indication.

If the sail switch opens during the cycle the "SAIL" output L.E.D. will go out and the display will read "NO AIRFLOW." The machine will run with no heat for 3 minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying "NO AIRFLOW" along with an audio indication.

"BURN" (BURN HI-LIMIT) Input L.E.D. Indicator

This routine monitors the temperature of the burner. If the burner hi-limit opens during the cycle while the heat was on the "BURN" output L.E.D. indicator goes out and the display reads "bURNER SAFETY FAIL." The machine will run with no heat for 3 minutes or until the temperature drops below 100° F (38° C) then the machine will shut down still displaying "bURNER SAFETY FAIL" with an audio indication.

"FLAME" (bURNER CONTROL FAIL) Input L.E.D. Indicator

This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the microprocessor determines the ignition control has failed. If this occurs when the cycle is active the "FLAME" output L.E.D. indicator will go out and the display will read "bURNER CONTROL FAIL." The machine will run with no heat for 3 minutes or until the temp drops below 100° F (38° C). Then the machine will shut down still displaying "bURNER CONTROL FAIL" with an audio indication.

"POWER SUPPLY" Input L.E.D. Indicator

Should be on at all times (even if the dryer is not running). The power supply L.E.D. output indicator will not be on if the power supply fuse to the Phase 6 OPL microprocessor is not present. If the power supply fuse is faulty the L.E.D. output will be off and there will be no display or keypad function. The "FUSE," "LINT," and "DRUM" output L.E.D. indicators will remain on.

Phase 7 OPL System Diagnostics _____

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

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

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

MAIN DOOR OPENED – A main door is open, when it should be closed.

EXHAUST HIGH TEMP FAULT – Indicates the temperature in the tumbler is above 220° F (104° C).

LINT ACCESS OPEN – Indicates the lint drawer is open and needs to be closed.

EXHAUST HIGH LIMIT FAULT – Indicates the temperature disk in the exhaust has opened.

SAIL SWITCH CLOSED FAULT – Sail switch is closed and should be opened.

SAIL SWITCH OPEN FAULT – Sail switch is open and should be closed.

BURNER HIGH LIMIT FAULT – Indicates the temperature disk in the burner has opened.

BURNER IGNITION CONTROL FAULT – No signal to gas valve from DSI module during trial for ignition time.

IGNITION FAULT – Gas valve did not remain open after trial for ignition. Indicates that no flame was detected.

FLAME FAULT – Indicates flame was detected during trial for ignition, but failed sometime after. This condition must reoccur for 5 retries before fault occurs.

ROTATION FAULT – Indicates the tumbler is not rotating.

OPEN EXHAUST TEMPERATURE PROBE – Indicates the exhaust temperature probe is open or shorted.

OPEN S.A.F.E. SYSTEM PROBE FAULT – Indicates the temperature probe for the S.A.F.E. system is open or shorted.

LOW VOLTAGE FAULT – Indicates power has dropped below the operating values and will shutdown.

BURNER PURGE FAULT – The gas valve signal is present during the prepurge time.

MODEL ERROR, ENTER CORRECT MODEL – The wrong model was selected for the dryer.

EE PROM FAULT ### – Error in memory location. The ### indicates the location of the fault.

Input/Output Board L.E.D. Indicators

Inputs

ESTOP – (RED L.E.D.): This L.E.D. will indicate the status of the E-STOP. If the E-STOP has been pressed, then the L.E.D. is on.

GAS_V – (RED L.E.D.): This L.E.D. will indicate the status of the gas valve. If the gas valve is open (ON), then the L.E.D. is on.

BRHL – (RED L.E.D.): This L.E.D. will indicate the status of the burner high limit disk. If the disk is closed (temperature below 330° F [166° C]), then the L.E.D. is ON.

SAIL – (RED L.E.D.): This L.E.D. will indicate the status of the sail switch. If the switch is closed, then the L.E.D. is ON.

EXHL – (RED L.E.D.): This L.E.D. will indicate the status of the exhaust high limit disk. If the disk is closed (temperature below 225° F [107° C]), then the L.E.D. is ON.

MAIN – (RED L.E.D.): This L.E.D. will indicate the status of the main door. If the door is closed, then the L.E.D. is ON.

LINT – (RED L.E.D.): This L.E.D. will indicate the status of the lint drawer. If the drawer is closed, then the L.E.D. is ON.

FUSE – (RED L.E.D.): This L.E.D. will indicate the status of the control voltage.

Outputs

STEAM – (GREEN L.E.D.): This L.E.D. will indicate the status of the steam injection output. If the request to turn on the steam injection is made, then the L.E.D. is ON.

_HEAT – (GREEN L.E.D.): This L.E.D. will indicate the status of the heat output. If the request to turn on the heater is made, then the L.E.D. is ON.

AIR – (GREEN L.E.D.): This L.E.D. will indicate the status of the air jet output. If the request to turn on the air jet is made, then the L.E.D. is ON.

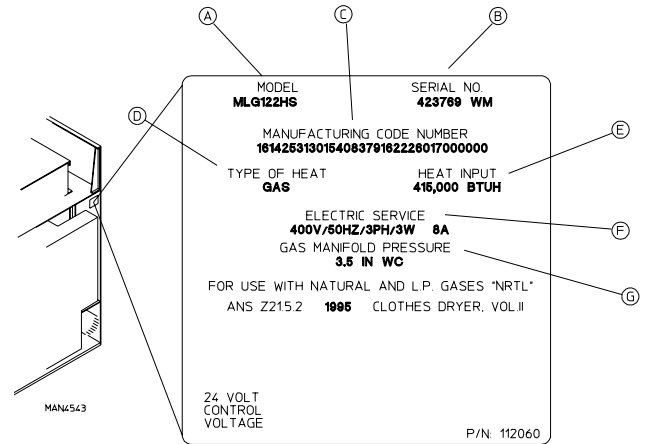
REV – (GREEN L.E.D.): This L.E.D. will indicate the status of the tumbler reverse direction output. If the request to tumble the drum in the reverse direction is made, then the L.E.D. is ON.

FWD – (GREEN L.E.D.): This L.E.D. will indicate the status of the tumbler forward direction output. If the request to tumble the drum in the forward direction is made, then the L.E.D. is ON.

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

Data Label

Contacting American Dryer Corporation



When contacting ADC, certain information is required to ensure proper service and parts information. This information is on the data label, located on the top right corner of the dryer, viewed from the rear (refer to illustration). When contacting ADC, please have the model number and serial number readily accessible.

Information on the Data Label

- Model Number** – The model number is an ADC number, which describes the size of the dryer and the type of heat (gas or steam).
- Serial Number** – The serial number allows ADC to gather information on your particular dryer.
- Manufacturing Code Number** – The manufacturing code number is a number issued by ADC, which describes all possible options on your particular model.
- Type of Heat** – Describes the type of heat; gas (natural or L.P.), steam or electric.
- Heat Input** (For gas dryers) – Describes the heat input in British Thermal Units.
- Electric Service** – Describes the electric service for your particular models.
- Gas Manifold Pressure** – Describe the manifold pressure as taken at the gas valve pressure tap (refer to "Using a Manometer").

How to Use a Manometer

With dryer in nonoperating mode, remove plug on the gas valve pressure tap.

Attach plastic tubing to pressure tap. Fitting is supplied with manometer (refer to illustration).

Attach manometer to dryer using magnet.

NOTE: Place manometer in a position so that readings can be taken at eye level.

Fill manometer with water, as shown in illustration to the zero level.

Start dryer. With burner on, take a reading.

Read water level at the inner tube. Readings should be taken at eye level.

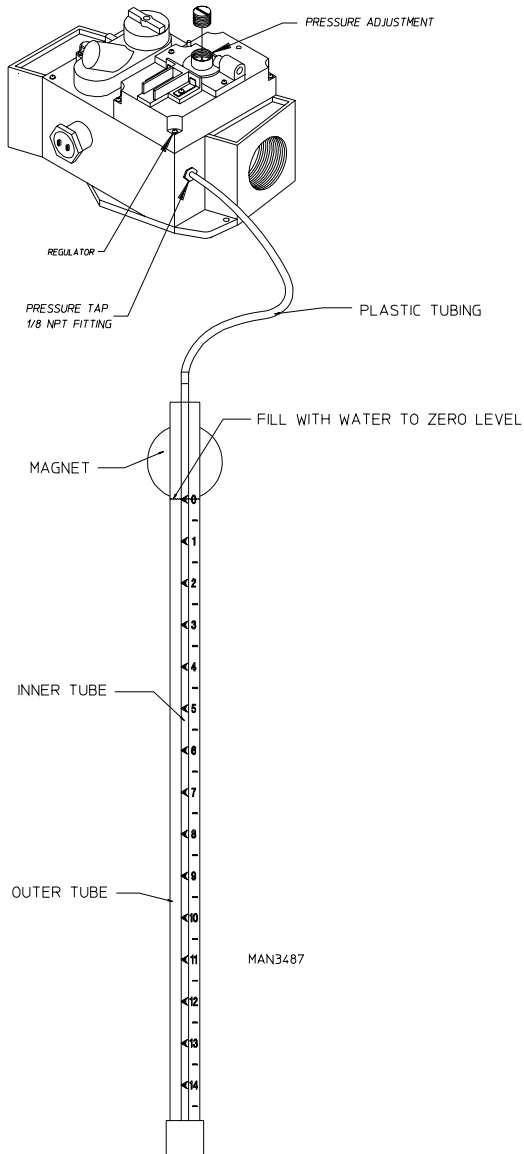
Correct readings should be:

Natural Gas: _____ 3.5 in wc (8.7 mb).

L.P. Gas: _____ 10.5 in wc (26.1 mb).

If water column pressure is incorrect refer to "TO ADJUST GAS PRESSURE."

Reverse procedure for removing manometer.



Notes _____

Notes _____

