CONSUMER SERVICES TECHNICAL EDUCATION GROUP PRESENTS CL-10

# EMS 1000
# COMMERCIAL LAUNDRY PRODUCTS

## Washer Model Numbers:

CAP2761, CAP2762

## Dryer Model Numbers:

CEP2760, CEP2960, CGP2761, CGP2961

JOB AID
Part No. 8178137 Rev a

# FORWARD

This Whirlpool Job Aid, "EMS 1000 Commercial Laundry Systems" (Part No. 8178137), provides the technician with information on the installation and service of EMS 1000 Commercial Laundry Products. It is to be used as a training Job Aid and Service Manual. For specific information on the model being serviced, refer to the "Literature Pack" provided with the EMS 1000 equipped Commercial Laundry product.

The Wiring Diagram and Strip Circuits used in this Job Aid are typical and should be used for training purposes only. Always use the Wiring Diagram supplied with the product when servicing the unit.

# GOALS AND OBJECTIVES

The goal of this Job Aid is to provide detailed information that will enable the service technician to properly diagnose malfunctions and repair Whirlpool EMS 1000 Commercial Laundry Product.

The objectives of this Job Aid are to:

- Understand and follow proper safety precautions
- Successfully troubleshoot and diagnose malfunctions.
- successfully perform necessary repairs.
- Successfully return the Whirlpool EMS 1000 Commercial Laundry Product to its proper operational status.


WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than Authorized Factory Service Technicians.

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# GENERAL

## SAFETY FIRST

**Your safety and the safety of others is very important.**

We have provided many important safety messages in this Job Aid and on the appliance. Always read and obey all safety messages.

This is the safety alert symbol.
This symbol alerts you to hazards that can kill or hurt you and others.
All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

**⚠ DANGER** — **You can be killed or seriously injured if you don't immediately follow instructions.**

**⚠ WARNING** — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

# MODEL & SERIAL NUMBER DESIGNATIONS

## MODEL NUMBER

| MODEL NUMBER | C | A | E | 27 | 6 | 1 | K | Q | 0 |
|---|---|---|---|---|---|---|---|---|---|

**PRODUCT GROUP**
- C = Commercial Laundry

**PRODUCT IDENTIFICATION**
- A= Automatic Washer
- E = Electric Dryer
- G = Gas Dryer
- S = Stack Dryer

**CONTROL CODE**
- E = Electronic Control
- M = Electromechanical
- P = Electronic Controlled or Stacked Pair
- W = Resource Saver

**FEATURE CODE**
- Cabinet Width in Inches (29" or 27")

**FEATURE / VARIATIONS**
- 4 = Metercase or Coinslide Equipped Stack W/O Windows
- 5 = Metercase and Coinslide Equipped
- 6 = Metercase or Coinslide Equipped Stack With Windows
- 7 = Card Reader Ready / Equipped Stacked Pair
- 9 = Full Width Console

**FEATURE CODE**
- 0 = Electric
- 1 = Single Speed or Gas
- 2 = Two Speed

**YEAR OF INTRODUCTION** A=1993, B=1994, D=1995, E=1996, F=1997, G=1998
H= 1999, J = 2000, K = 2001, L = 2002, M = 2003, P = 2004, R = 2005, S = 2006

**COLOR CODE**
- Q = White

**ENGINEERING REVISION NUMBER**
- 0 = Basic, 1 = 1st Revision, 2 = 2nd Revision, 3= 3rd Revision

## SERIAL NUMBER

| SERIAL NUMBER | C | L | 16 | 02287 |
|---|---|---|---|---|

**MANUFACTURING SITE**
- C = Clyde, OH (Washers)
- M = Marion, OH (Dryers)

**YEAR OF PRODUCTION**
- L = 2001, M = 2002, N or P = 2003,
- R = 2004, S = 2005, T = 2006

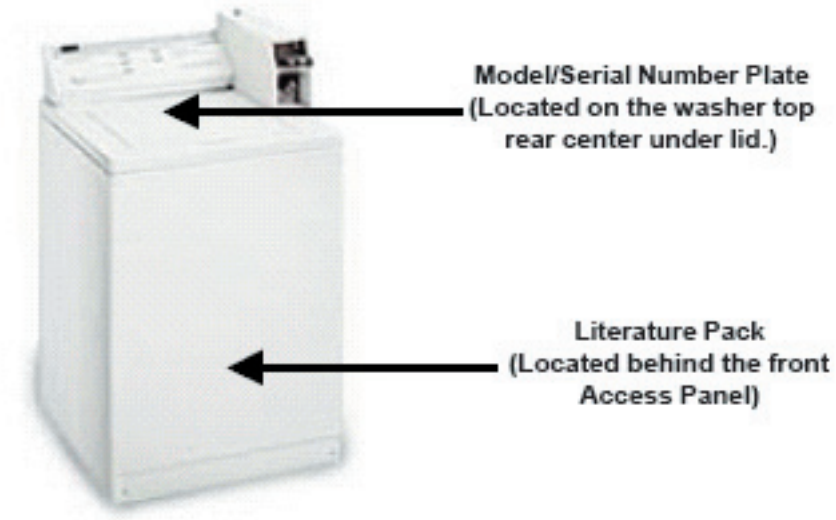
**WEEK OF PRODUCTION**

**PRODUCT SEQUENCE NUMBER**

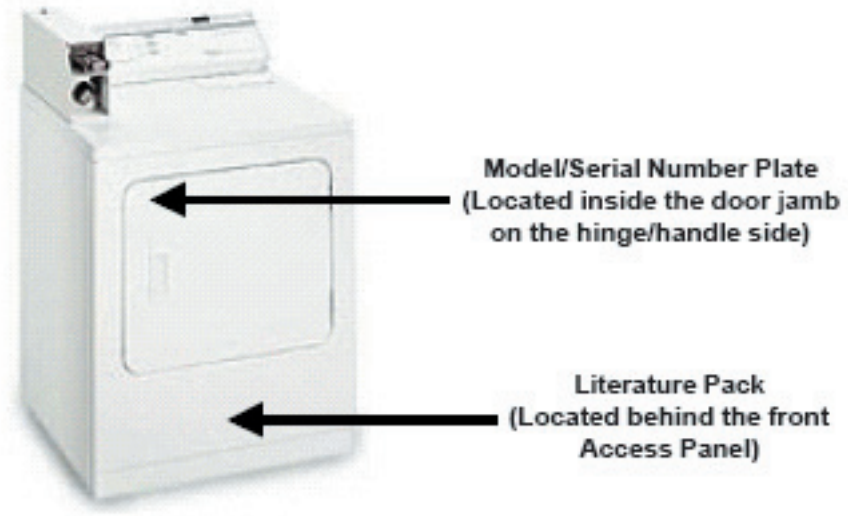
# MODEL AND SERIAL NUMBER LABEL AND TECH SHEET LOCATIONS

The Model/Serial Number label and Literature Pack (includes Wiring Diagram, Parts List and Tech Sheet) locations are as shown.

## WASHER




## DRYER 29 Inch



# EMS1000 COMMERCIAL WASHER SPECIFICATIONS

## WASHER SPECIFICATIONS

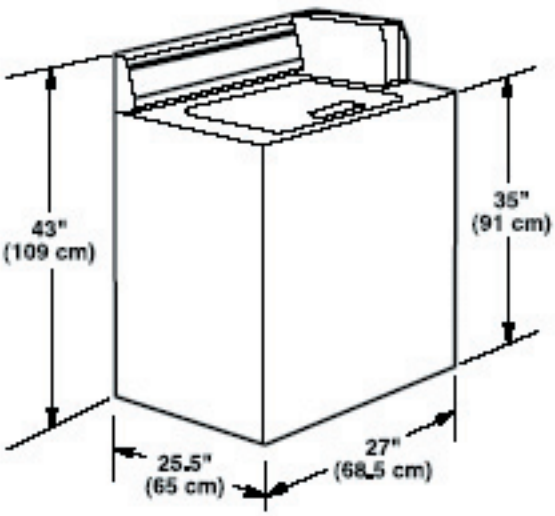
| | |
|---|---|
| **MODEL NUMBER** | CAP2762M |
| **GENERAL INFORMATION**<br>Stainless Steel Look Smooth Touch console with hidden lid switch, porcelain finish top and lid, galvanized, extra thick front panel, back and side panels, improved motor case, reliable single piece agitator, front panel lock blank factory installed. LED Display with Countdown. Commercial-Grade, Color-Coded Water Inlet hoses with Brass couplings and Rubber Drain Hose Included | Accepts the Following Payment Systems:<br>Coin Slide<br>Retrofit Coin Drop<br>Retrofit Card Reader<br>Gang Controller |
| **MOTOR**<br>120V 1/2 HP Direct-Drive with Built-In Overload Protector | Two-Speed Advantage with True Gentle Wash<br>High Speed Spin Only! |
| **AGITATION STROKES PER MINUTE/AMPERAGE** | 180 SPM/High<br>(5.0 Amps No Load)<br>120 SPM/Low<br>(5.0 Amps No Low) |
| **MAXIMUM RATED AMPERAGE** | 9.8 Amps (120V) |
| **MOTOR RPM** | 1725 High, 1140 Low |
| **SPIN RPM** | 640 High |
| **ELECTRICAL REQUIREMENTS** | 120V, 60 Hz., A.C.<br>Standard 15 Amp Breaker/Fuse Branch Circuit for Each Washer<br>(Subject to Local Codes) |
| **DIMENSIONS**<br>See Illustration Below | 43"H (at motorcase top), 35"H (at lid), 27"W, 25.5"D |
| **SHIPPING WEIGHT (EST.)** | 184 Lbs. |
| **BASKET VOLUME** | 2.5 Cu. Ft. (14 Lbs U.L.) |

Dimensions are for planning purposes only. For complete information, see installation instructions packed with product.

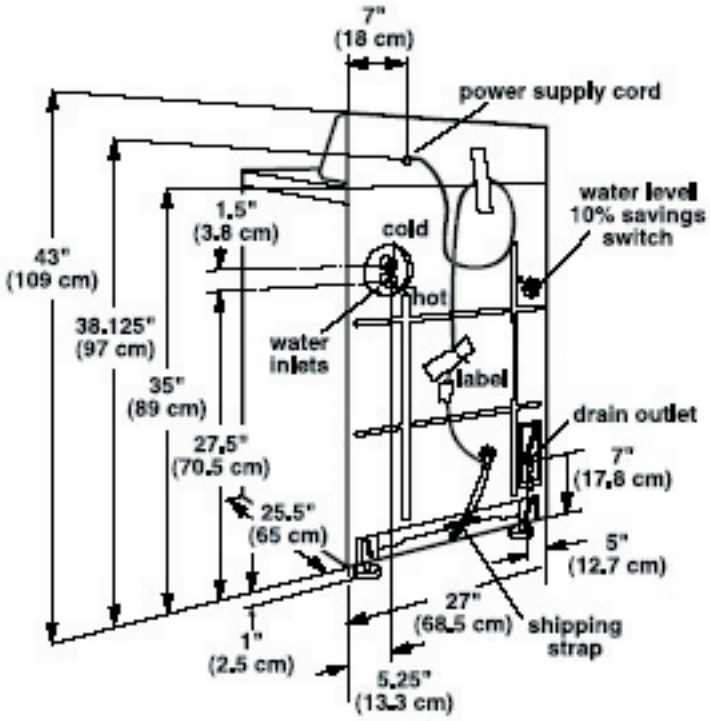
**NEW YORK CITY M.E.A.**

NOTE: CAP2761 IS NO LONGER AVAILABLE / SPECS WERE THE SAME MINUS LOW SPEED AGITATION

Energy information is available online at www.colnop.com/products, WP literature part #CWXL077




WASHER FRONT VIEW




WASHER BACK VIEW

# EMS1000 COMMERCIAL DRYER SPECIFICATIONS

## SINGLE DRYER SPECIFICATIONS

| MODEL NUMBER | CEP2760K^ | CGP2761K* |
|---|---|---|
| **GENERAL INFORMATION**<br>Stainless Steel Lock Smooth Touch console, white enamel drum, porcelain finish top, powder coat cabinet, front panel lock blank factory installed. LED Display with Countdown. Removable indoor lint filter, improved motor case, 4-Way Venting. | Motorcase Model<br>Accepts the following payment systems:<br>Coin Slide<br>Retrofit Coin Drop<br>Retrofit Card Reader<br>Gang Controller | Motorcase Model<br>Accepts the following payment systems:<br>Coin Slide<br>Retrofit Coin Drop<br>Retrofit Card Reader<br>Gang Controller |
| **ELECTRICAL REQUIREMENTS** | 3-wire Nominal<br>240/208V, 60 Hz., A.C.<br>Standard 30 Amp Breaker/<br>Fuse Branch Circuit per Dryer<br>(subject to local codes) | Nominal, 120V, 60 Hz., A.C.,<br>Standard 15 Amp Breaker/<br>Fuse Branch Circuit per Dryer<br>(subject to local codes) |
| **MOTOR** | 1/3 HP Single Speed<br>Motor with Built-In<br>Overload Protector.<br>5.9 Amps max rating | 1/3 HP Single Speed<br>Motor with Built-In<br>Overload Protector.<br>5.9 Amps max rating |
| **HEATER TYPE** | ELECTRIC | GAS** |
| **HEATER/BURNER RATING**<br>(Add 500 watts approx for motor on all dryer models) | Heater Rated at 5600 watts | 22,000 BTU<br>Natural Gas |
| **OPERATIONAL AMPERAGE**<br>(Does not include control or gas valve) | Motor - 4.0 Amps<br>No load<br>Heater - 23.33 Amps @ 240V<br>27.33 Total | Motor - 4.0 Amps<br>No load |
| **DIMENSIONS** | 43"H*, 27"W, 28.5"D | 43"H*, 27"W, 28.5"D |
| **SHIPPING WEIGHT (EST.)** | 134 Lbs | 135 Lbs |
| **DRUM VOLUME** | 7.4 Cu. Ft. | 7.4 Cu. Ft. |

* (height at meter case top) ***(height at dryer top panel)
** Burner orifices are available for manufactured, natural, mixed and LP gas with varying BTU ratings.
• LP Conversion Kit: 49572
^ Power cords on electric models sold separately
Energy information is available online at www.coinop.com/products. WP lit# CWXL077

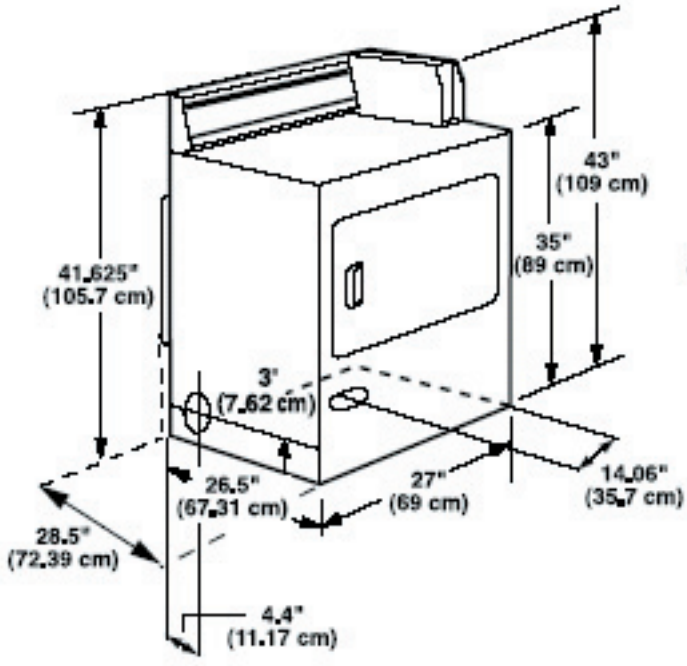
## EXHAUST INFORMATION

All dryers require the equivalent of a 4-inch diameter exhaust duct. Rigid metal duct is recommended. Failure to properly exhaust the dryer will result in improper operation.

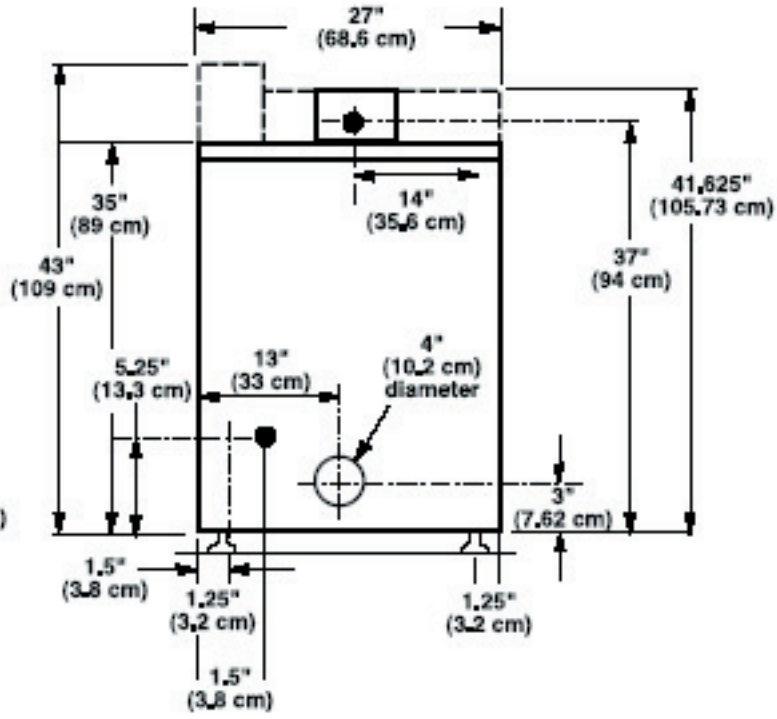
27" & 29" Dryer Venting Requirements

| # of 90° Turns | 4" Hood | 2½" Hood |
|---|---|---|
| **Maximum Length of 4" Diameter Rigid Metal Duct** | | |
| 0 | 64 Ft. | 58 Ft. |
| 1 | 54 Ft. | 48 Ft. |
| 2 | 44 Ft. | 38 Ft. |
| 3 | 35 Ft. | 29 Ft. |
| 4 | 27 Ft. | 21 Ft. |
| **Maximum Length of 4" Diameter Flexible Metal Duct** | | |
| 0 | 36 Ft. | 28 Ft. |
| 1 | 31 Ft. | 23 Ft. |
| 2 | 27 Ft. | 19 Ft. |
| 3 | 25 Ft. | 17 Ft. |
| 4 | 23 Ft. | 15 Ft. |

Dimensions are for planning purposes only. For complete information, see installation instructions packed with product.




DRYER FRONT VIEW




DRYER BACK VIEW

— NOTES —

## WASHER ELECTRICAL REQUIREMENTS

A 120 volt, AC, 60 Hz, 15 to 20 ampere fused electrical supply is required for this unit.

For the safety of the customer, this washer must be grounded. The washer is equipped with a power supply cord that has a 3-prong grounding plug. To minimize possible shock hazard the cord must be plugged into a mating 3-prong grounding-type receptacle which has been grounded in accordance with National Electrical Code (ANSI/NFPA 70) and all local and state codes. *(Fig. 1-1)*

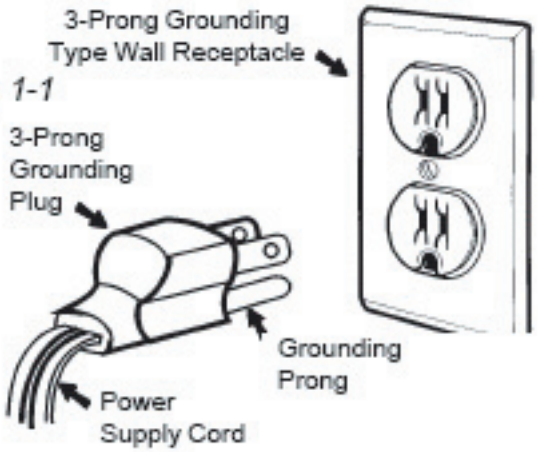



*Fig. 1-1*

## ELECTRIC DRYER ELECTRICAL REQUIREMENTS

- 3 or 4 wire (check local codes)
- single phase
- 240 volt AC
- 60 Hz
- 30 ampere

A time delay fuse or circuit breaker must be used on both sides of the line. A separate circuit for each electric dryer is recommended.

A flexible power cord or pigtail may be used where local codes permit. A minimum #10 wire size must be used between the electrical distribution panel and the receptacle. A mating receptacle of NEMA type 10, 30R, 3-wire *(Fig. 1-2)* or NEMA type 14, 30R, 4-wire *(Fig. 1-3)* must be provided.

*Fig. 2*

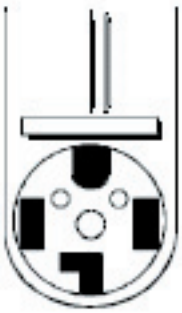


*Fig. 3*

## ELECTRICAL REQUIREMENTS FOR GAS DRYERS

- 3 wire
- 120 volt AC
- 60 Hz
- 15 ampere

A time delay fuse or circuit breaker and a separate circuit for each gas dryer is recommended.

For the safety of the customer, this dryer must be grounded. The dryer is equipped with a power supply cord that has a 3-prong grounding plug. To minimize possible shock hazard the cord must be plugged into a mating 3-prong grounding-type receptacle which has been grounded in accordance with National Electrical Code (ANSI/NFPA 70) and all local and state codes. *(Fig. 1-1)*

## GAS DRYER FUEL SUPPLY REQUIREMENTS

Gas dryers require a ½-inch gas supply line to each dryer location. Flexible metal tubing may be used to connect the dryer to the supply only where local codes permit. The dryer has a ¾ inch male pipe thread for connection to the gas supply.

Whirlpool Commercial Dryers are manufactured with burner assemblies designed for use with natural gas. An L.P. gas conversion kit (Part No. 49572) is available

# WASHER INSTALLATION INSTRUCTIONS

**Your safety and the safety of others are very important.**

We have provided many important safety messages in this manual and on the appliance. Always read and obey all safety messages.

This is the safety alert symbol.

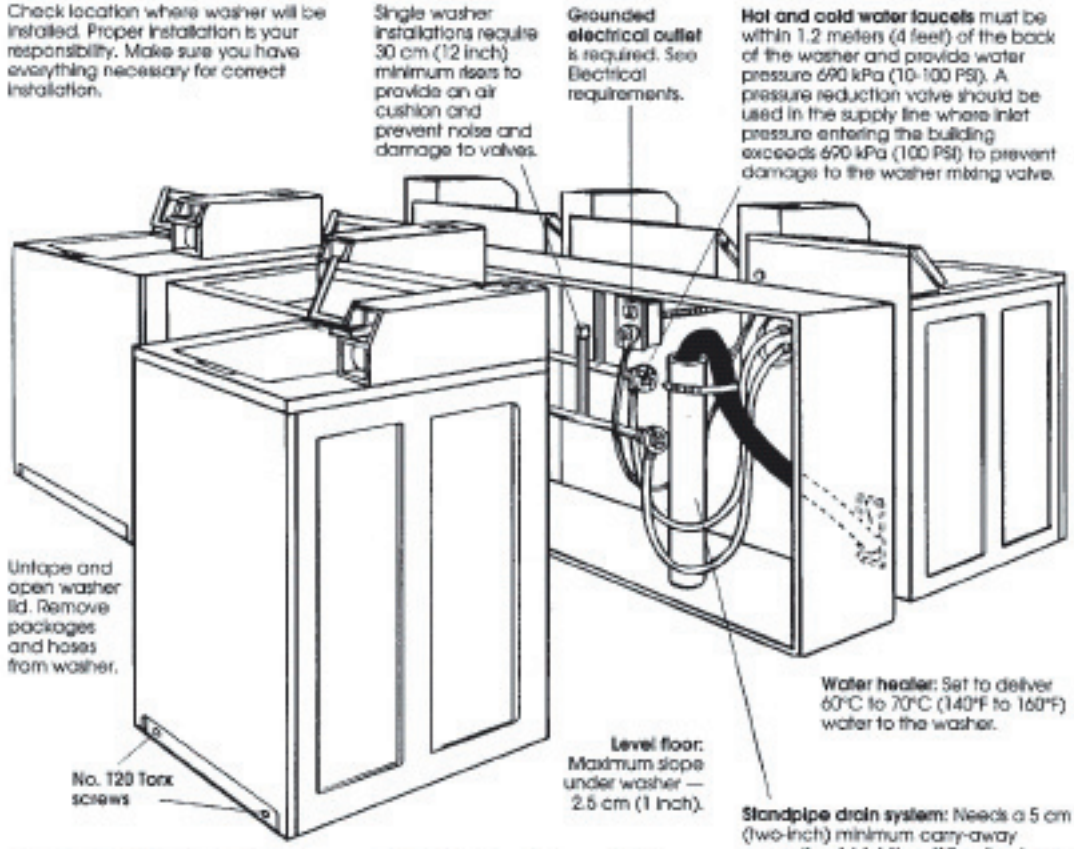
This symbol alerts you to potential hazards that can kill or hurt you and others.

All Safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

**⚠ DANGER** — **You can be killed or seriously injured if you don't immediately follow instructions.**

**⚠ WARNING** — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury and tell you what can happen if the instructions are not followed.



## Tools Needed for Installation

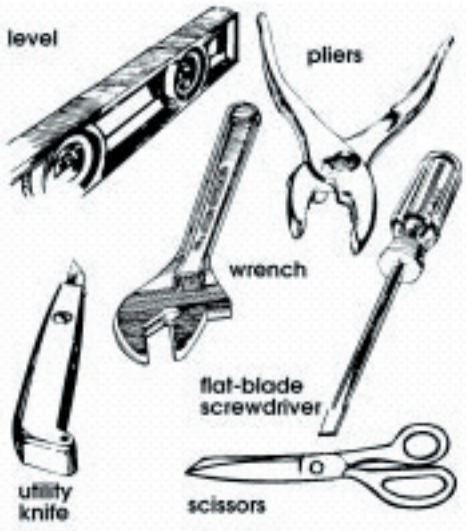
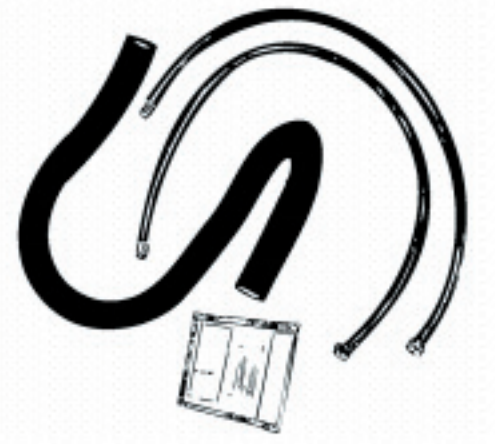



*Fig.2-1*

## Parts Supplied for Installation



1 hose clamp
2 inlet hoses
4 flat water hose washers
2 front-leveling legs with nuts
1 drain hose

*Fig.2-2*

**⚠ WARNING**

ELECTRIC SHOCK HAZARD

Plug into a grounded 3-prong outlet.

Do not remove ground prong.

Do not use adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire or electrical shock.

If codes permit and a separate ground wire is used, it is recommended that a qualified electrician determine that the ground path is adequate.

Do Not ground to a gas pipe. Check with a qualified electrician if you are not sure the washer is properly grounded.

Do Not have a fuse in the neutral or ground circuit. A 120-volt, 60-Hz, AC-only, 15- or 20-ampere fused electrical supply is required. (Time-delay fuse or circuit breaker is recommended.)

It is recommended that a separate circuit serving only this appliance be provided.

### RECOMMENDED GROUND METHOD

For your personal safety, this appliance must be grounded. This appliance is equipped with a power supply cord having 3-prong ground plug.

To minimize possible shock hazard, the cord must be plugged into a mating 3-prong ground-type outlet, grounded in accordance with local codes and ordinances. See Figure 1. If a mating outlet is not available, it is the personal responsibility and obligation of the customer to have a properly grounded 3-prong outlet installed by a qualified electrician.

**WARNING** – Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the appliance is properly grounded.

Do not modify the plug provided with the appliance – if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

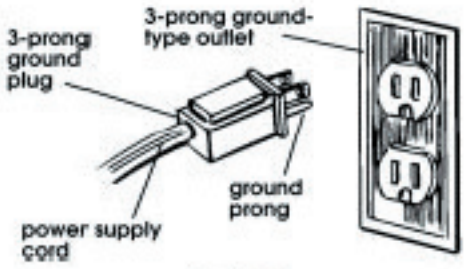



*Fig.2-3*

## ⚠ WARNING

**EXCESSIVE WEIGHT HAZARD**

Use two or more people to move and install washer.

Failure to do so can result in back or other injury.

1. Remove tape that covers shipping strap. Pull to completely remove the shipping strap with 2 cotter pins from the inside of the washer.
2. Pull firmly to remove the end of shipping strap from the back of the washer. The shipping strap plug must be completely removed from the washer for the self-leveling legs to be released. Save the shipping strap for use in Step 6.

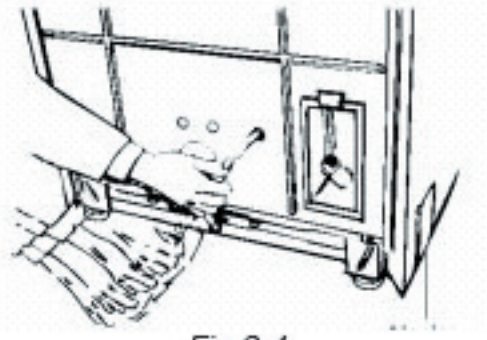


*Fig.2-4*

2. Insert a flat washer into **each** end of the inlet hoses. Check that washers are firmly seated in couplings.


*Fig.2-5*

3. Attach hose to bottom inlet valve opening first. Then second hose to top inlet. Tighten couplings by hand; then use pliers to make an additional two-thirds turn. Slide washer onto cardboard or hardboard before moving across floor.

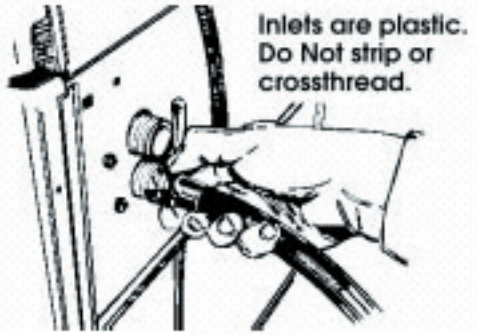



*Fig.2-6*

4. Move washer close to final position. Put "hook" end of drain hose into stand pipe. Estimate length of drain hose needed when washer is in final position. Hose must be cut exactly to length so "hook" end is held tightly over edge of stand pipe. If drain hose is too long, cut straight end of hose. **(Do Not cut "hook" shaped end of drain hose.)** DO NOT FORCE EXCESS LENGTH OF DRAIN HOSE DOWN THE STAND PIPE. THIS COULD CAUSE SIPHONING. See Step 6.

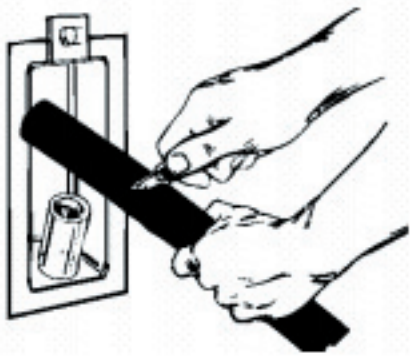


*Fig.2-7*

5. Place hose clamp over washer drain connector. Push drain hose onto washer con nector. Use pliers to open clamp and slide clamp over drain hose. Check for good fit.

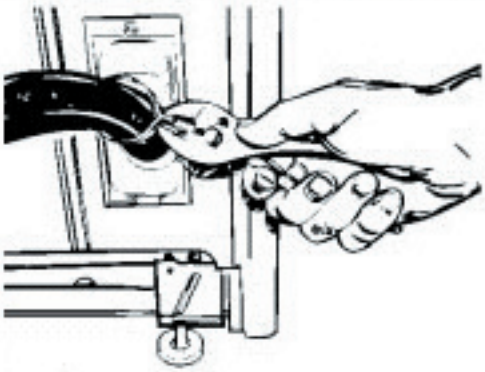


*Fig.2-8*

6. Measure and mark a point approximately 40.6 cm (16 inches) from the plug end of the shipping strap. Cut this shipping strap at this point.


*Fig.2-9*

Put "hook" end of drain hose into stand pipe. Tightly wrap the shipping strap around the stand pipe. Push plug into the nearest hole in the shipping strap. Check that hose is not twisted or kinked and is securely in place.

*Fig.2-10*

7. Before attaching water inlet hoses, run water through both faucets into a bucket. This will get rid of particles in water lines that might clog hoses. Mark which is the hot water faucet.

*Fig.2-11*

8. Attach bottom hose (inlet marked "H") to hot water faucet. Attach top (inlet marked "C") to cold water faucet. Tighten coupling to faucet by hand, then use pliers to make final two-thirds turn.

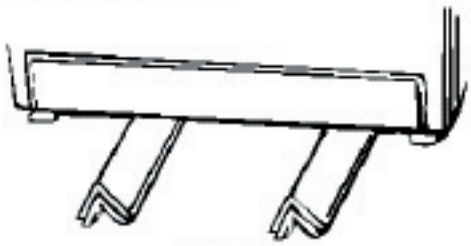


*Fig.2-12*

9. Stack two corner posts on top of each other. Tilt washer backwards and insert corner posts 7.6 cm (3 inches) in from one side of washer as shown. Repeat with other corner posts on other side of washer.
10. Use legs and nuts from parts package. Screw nut down to within 1.3 cm (1/2 inch) of base.

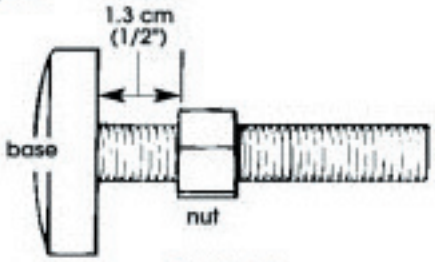



*Fig.2-13*

*Fig.2-13*

11. Insert legs into correct holes at each front corner of washer until nuts touch washer. **Do Not** tighten nuts until Step 14.
12. Tilt washer backward and remove corner posts. Gently lower washer to floor. Move washer to its permanent location. Remove cardboard or hardboard from under washer.

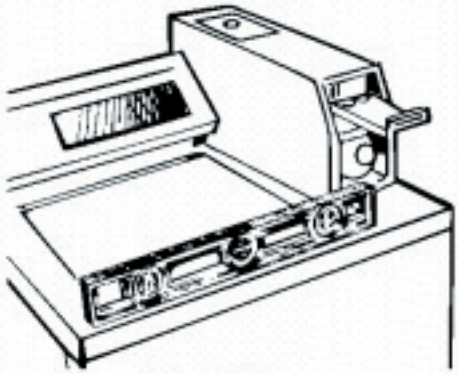


*Fig.2-14*

13. Tilt washer forward raising back legs 2.5 cm (1 inch) off of floor. To adjust rear leveling legs, gently lower washer to floor. Check for level by placing a level on top of the washer, first side to side, then front to back.

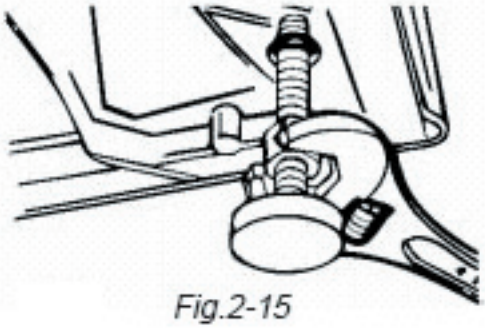


*Fig.2-15*

14. If washer is not level, adjust the front legs up or down. Make final check with level. Best results are obtained when the washer is tilted ¼ bubble toward the rear and level side to side. When washer is level, use wrench to turn nuts on front legs up tightly against washer base. If nuts are not tight against washer base, the washer may vibrate.
15. Check that all parts are now installed. If there is an extra part, go back through steps to see which step was skipped.
16. Turn on water faucets and check for leaks. Tighten couplings if there is leaking. Do Not over tighten; this could cause damage to faucets.
17. Check that you have all of your tools. Check that the shipping strap with 2 cotterpins and plug was removed from the back of the washer and used to secure the drain hose. If entire strap is not removed, washer may vibrate and be noisy.
18. Untape power supply cord and plug into grounded outlet.
19. Install the chosen money acceptor per the instructions under the appropriate money acceptor section of this manual.

## SETTING WARM WATER RINSE OPTION

# IMPORTANT

**ELECTROSTATIC DISCHARGE (ESD) SENSITIVE ELECTRONICS**

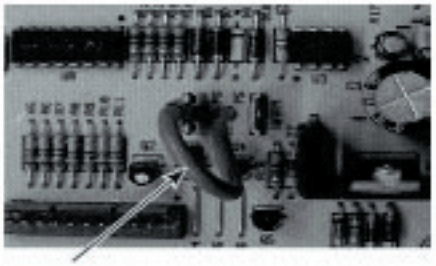
Do not open parts package until it is time to install the electronic board.

ESD problems are present everywhere. ESD may damage or weaken the electronic board. The new board may appear to work well after a repair is finished, but failure may occur at a later date due to ESD stress.

- Use an antistatic wrist strap. Connect wrist strap to green ground connection point or unpainted grounded metal in the appliance.
- If you do not have a wrist strap, touch your finger repeatedly to a green ground connection point or unpainted grounded metal in the appliance.
- Before removing the part from the antistatic bag, touch the bag to a green ground connection point or unpainted grounded metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic board by edges only.
- When repackaging failed electronic board in the antistatic bag, observe above precautions.

The Warm Rinse Option on EMS 1000 Coin Operated Washers is provided by a jumper, W1, located on the Electronic Control Board inside the console. Warm rinse can be selected by moving the jumper wire from connector P6 to P5. *(Fig. 2-16)* The option is set at cold rinse at the factory.

*Fig. 2-16*




## SETTING WATER SAVER OPTION

### MODELS PRIOR TO 2000

The water level switch on washers built prior to 2000 is located inside the console. The water level switch can be accessed by removing the control panel screws and rotating the console into the service position. Locate the white plastic tab on the water level switch and pull the tab until it locks into the water saving position. *(Fig. 2-17)*

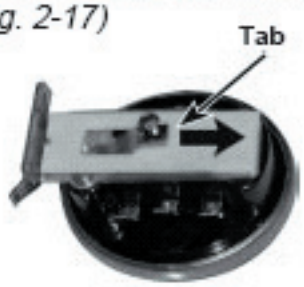
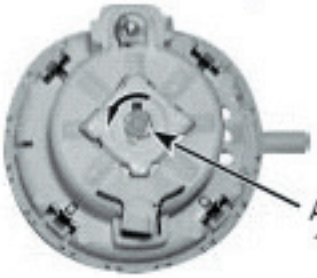



*Fig. 2-17*

### MODELS 2000 AND AFTER

The water level control on all EMS 1000 washers built from 2000 and after is mounted on the cabinet back in the upper right hand corner and can be accessed without removing the water level switch or opening the product. The Water Saver Option can be selected by turning the square shaft that extends from the center of the water level control in a counterclockwise direction approximately 1/4 turn or until a click is heard. *(Fig. 2-18)*

Fig. 2-18



# DRYER INSTALLATION INSTRUCTIONS

## DRYER DOOR SWING REVERSAL

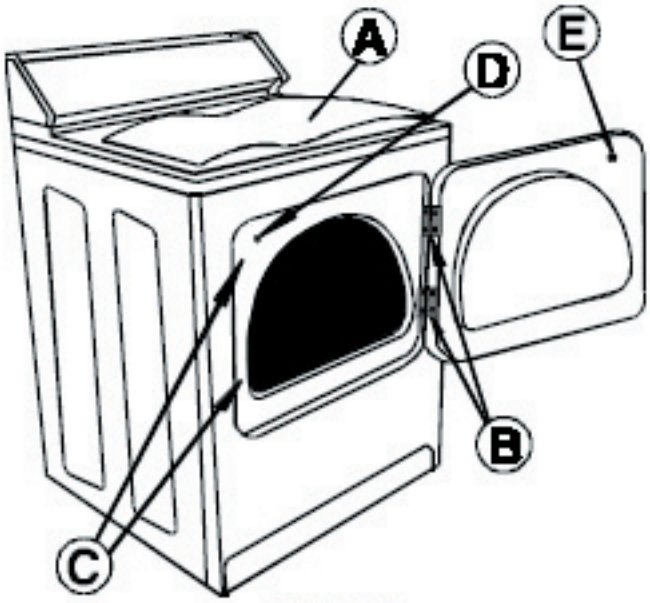



*Fig. 2-19*

Dryer door reversal is possible on 29" models only. Refer to Figure 2-19 for the locations of the various components referred to in the following procedure.

1. Place a large towel or soft cloth (A) on top of the dryer.
2. Open the dryer door and remove the bottom screws from the cabinet side of the hinge (B).
3. Loosen, but do not remove, the top screws from the cabinet side of the hinge.
4. Lift the door until the top screws in the cabinet are in the large part of the hinge keyhole and pull the door forward and off the screws.
5. Set the door, handle side up, on top of the dryer.
6. Remove the remaining hinge screws from the cabinet.
7. Remove the screws securing the hinges to the door.
8. Remove the screws at the top, bottom and side of the door that secure the inner and outer door panels together.
9. Place the door over the towel on the dryer top. Grasp the sides of the outer door panel and carefully separate the door panels. DO NOT PRY THESE PANELS APART WITH ANY TOOL. DO NOT PULL ON THE DOOR SEAL OR DOOR CATCHES.
10. Turn the outer door panel 180° so the handle is on the side where the hinges were just removed. *(Fig. 2-20)*

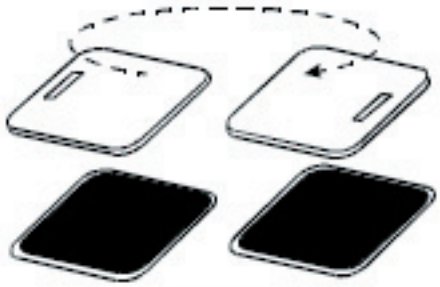


*Fig. 2-20*

11. Reassemble the inner and outer door panels with the three screws removed earlier. Be sure the cardboard spacer is centered properly between the door panels.
12. Reattach the hinges to the door so the key hole slot is at the bottom of the hinge. *(Fig. 2-21)*
13. Carefully remove the four hinge hole plugs (C) in the left side of the cabinet and insert them in the hinge holes on the right side of the cabinet.

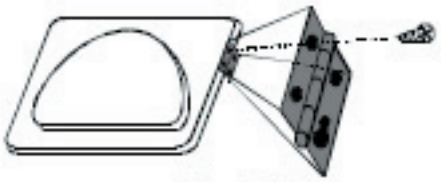


*Fig. 2-21*

14. Install two screws in the bottom holes on the left side of the cabinet. Tighten the screws about half way.
15. Place the hinge over the screws and slide it up so the screw head fits into the smaller part of the keyhole and tighten the screws. *(Fig. 2-22)*

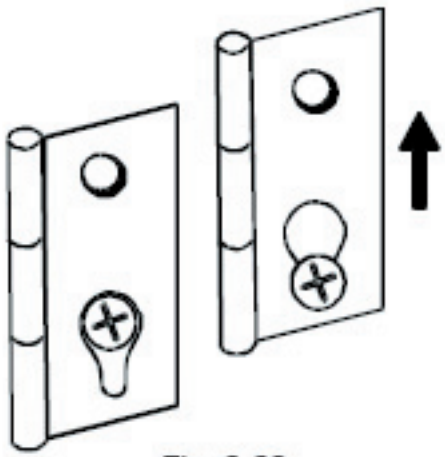


*Fig. 2-22*

16. Install the remaining screws in the top holes in the hinges.
17. Remove the door strike (D) from the cabinet. Remove the door strike plug from the other side of the cabinet and insert the door strike on the new hole and secure it with a screw. Install the door strike plug in the original door strike hole and secure it with a screw.
18. Close the door and check to make sure the door strike aligns with the door catch (E). If the door does not close completely, slide the door catch left or right within the slot until the strike snaps into the catch.

# GAS DRYER INSTALLATION

Post this warning in a prominent location. It is recommended that the operator post, in a prominent location, instructions for the customer's use in the event the customer smells gas. This information should be obtained from your local gas supplier.

**Your safety and the safety of others are very important.**

We have provided many important safety messages in this manual and on the appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All Safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

**⚠DANGER**

**You can be killed or seriously injured if you don't immediately follow instructions.**

**⚠WARNING**

**You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury and tell you what can happen if the instructions are not followed.

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

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

— WHAT TO DO IF YOU SMELL GAS:

- Do not try and 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 done by a qualified installer, service agency or the gas supplier.

# ⚠ WARNING

**EXPLOSION HAZARD**

Keep flammable materials and vapors such as gasoline, away from dryer.

Place dryer at least 18 inches (45.8 cm) above the floor for a garage installation.

Failure to do so can result in death, explosion or fire.

## IF INSTALLING A GAS DRYER

Observe all governing codes and ordinances. Check code requirements: Some codes limit or do not permit installation of clothes dryers in garages, closets, mobile homes or sleeping quarters. Contact your local building inspector. Comply with the installation specifications and dimensions. Consider spacing requirements for companion appliances. Make sure you have everything necessary for proper installation. Properly install dryer. Contact a qualified installer to insure that the electrical and gas installations meet all national and local codes and ordinances. Exhaust to outdoors: Dryer must be exhausted outdoors to prevent exposure to harmful substances in the gas fuels. Note: The dryer must not be installed in an area where it will be exposed to water and/or weather.

## IT IS YOUR RESPONSIBILITY TO:

- Observe all governing codes and ordinances.
- Check code requirements: Some codes limit or do not permit installation of clothes dryers in garages, closets, mobile homes or sleeping quarters.
- Contact your local building inspector. Comply with the installation specifications and dimensions. Consider spacing requirements for companion appliances.
- Make sure you have everything necessary for proper installation. Properly install dryer.
- Contact a qualified installer to insure that the electrical and gas installations meet all national and local codes and ordinances.
- Exhaust to outdoors: Dryer must be exhausted outdoors to prevent exposure to harmful substances in the gas fuels. Note: The dryer must not be installed in an area where it will be exposed to water and/or weather.

## IMPORTANT SAFETY INSTRUCTIONS

**WARNING** — To reduce the risk of fire, electric shock, or injury to persons when using your appliance, follow basic precautions, including the following:

1. Read all instructions before using the appliance.
2. Do not dry articles that have been previously cleaned in, washed in, soaked in, or spotted with gasoline, dry-cleaning solvents, or other flammable or explosive substances, as they give off vapors that could ignite or explode.
3. Do not allow children to play on or in the appliance. Close supervision of children is necessary when the appliance is used near children.
4. Before the appliance is removed from service or discarded, remove the door to the drying compartment.
5. Do not reach into the appliance if the drum is moving.
6. Do not install or store this appliance where it will be exposed to the weather.
7. Do not tamper with controls.
8. Do not repair or replace any part of the appliance or attempt any servicing unless specifically recommended in the user maintenance instructions or in published user-repair instructions that you understand and have the skills to carry out.

9. Do not use fabric softeners or products to eliminate static unless recommended by the manufacturer of the fabric softener or product.
10. Do not use heat to dry articles containing foam rubber or similarly textured rubber-like materials.
11. Clean lint screen before or after each load.
12. Keep area around the exhaust opening and adjacent surrounding areas free from the accumulation of lint, dust, and dirt.
13. The interior of the appliance and exhaust duct should be cleaned periodically by qualified service personnel.
14. Do not place items exposed to cooking oils in your dryer. Items contaminated with cooking oils may contribute to a chemical reaction that could cause a load to catch fire.

Post this warning 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.**

## EXHAUST REQUIREMENTS

**⚠ WARNING**

**FIRE HAZARD**

Use heavy metal vent.

Do not use a plastic vent.

Do not use a metal foil vent.

Failure to do so can result in death or fire.

Do not use nonmetal flexible vent, metal vent that is smaller than four inches in diameter or exhaust hoods with magnetic latches. The dryer must be exhausted outdoors. Do not exhaust dryer into a gas vent, chimney, wall, ceiling, or concealed space of a building. Do not install flexible vent in enclosed walls, ceilings or floors. If using an existing exhaust system, clean lint from entire length of exhaust system. Make sure exhaust hood is not plugged with lint. The exhaust system should be inspected and cleaned yearly. Replace any plastic or metal foil exhaust vent with rigid metal or flexible metal vent.

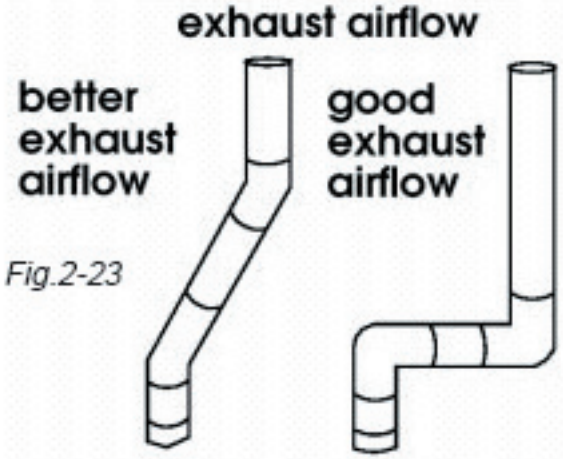
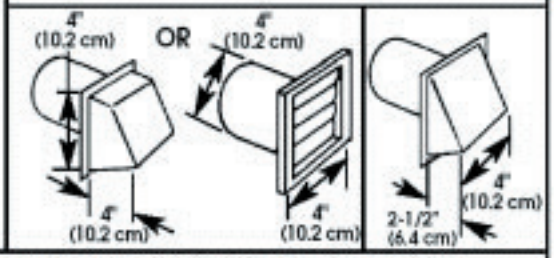



*Fig.2-23*

Four-inch (10.2 cm) metal exhaust vent is required. Plan installation to use the fewest number of elbows and turns. Use 4" (10.2 cm) vent clamps to secure vent system. Metal flexible vent must be fully extended and supported when the dryer is in its final position. DO NOT KINK OR CRUSH THE VENT. The metal flexible vent must be completely open to allow adequate exhaust air to flow. Allow as much room as possible when using elbows or making turns. Bend vent gradually to avoid kinking. Remove excess flexible vent to avoid sagging and kinking that may result in reduced air flow. The exhaust outlet is located at the center of the bottom dryer back. The exhaust vent can be routed up, down, left, right, behind the dryer or straight out the back of the dryer. Maximum length of exhaust system depends upon the type of vent used, number of elbows and type of exhaust hood. The maximum length for both rigid and flexible vent is shown in the chart.

| No. of 90° turns | EXHAUST HOOD TYPE | |
|---|---|---|
| |   | |
| MAXIMUM LENGTH OF 4-INCH (10.2 cm) DIAMETER RIGID METAL VENT | | |
| 0 | 64 FT. (19.5 m) | 58 FT. (17.7 m) |
| 1 | 54 FT. (16.5 m) | 48 FT. (14.6 m) |
| 2 | 44 FT. (13.4 m) | 38 FT. (11.6 m) |
| 3 | 35 FT. (10.7 m) | 29 FT. (8.8 m) |
| 4 | 27 FT. (8.2 m) | 21 FT. (6.4 m) |
| MAXIMUM LENGTH OF 4-INCH (10.2 cm) DIAMETER FLEXIBLE METAL VENT | | |
| 0 | 36 FT. (11.0 m) | 28 FT. (8.5 m) |
| 1 | 31 FT. (9.4 m) | 23 FT. (7.0 m) |
| 2 | 27 FT. (8.2 m) | 19 FT. (5.8 m) |
| 3 | 25 FT. (7.6 m) | 17 FT. (5.2 m) |
| 4 | 23 FT. (7.0 m) | 15 FT. (4.6 m) |

For exhaust systems not covered by the exhaust chart, see Whirlpool Service Manual, "Exhausting Whirlpool Dryers," Part No. 603197, available from your Whirlpool parts distributor.

If dryer is installed in a confined area, such as a bedroom, bathroom or closet, it must be exhausted to the outside and provision made for enough air for combustion and ventilation. (Check governing codes and ordinances.) See "Recessed area and closet installation instructions". Four-inch outlet hood is preferred. However, a 2½-inch (6.4 cm) outlet exhaust hood may be used. A 2½-inch (6.4 cm) outlet creates greater back pressure than other hood types. For permanent installation, a stationary exhaust system is required. A main exhaust vent can be used for exhausting a group of dryers. Main exhaust vent should be sized to remove 200 CFM of air per dryer. Large-capacity lint screens of proper design may be used in the main exhaust vent if checked and cleaned frequently. The room where the dryers are located should have make-up air equal to or greater than the CFM of all the dryers in the room. An exhaust hood should cap the exhaust vent to prevent exhausted air from returning into the dryer. The outlet of the hood must be at least 12 inches (30.5 cm) from the ground or anything else that may be in the path of the exhaust.

Back-draft Damper Kits, Part No. 3391910, are available from your Whirlpool dealer and should be installed in each dryer' exhaust vent to prevent exhausted air from returning into the dryers and to keep the exhaust in balance within the main exhaust vent.

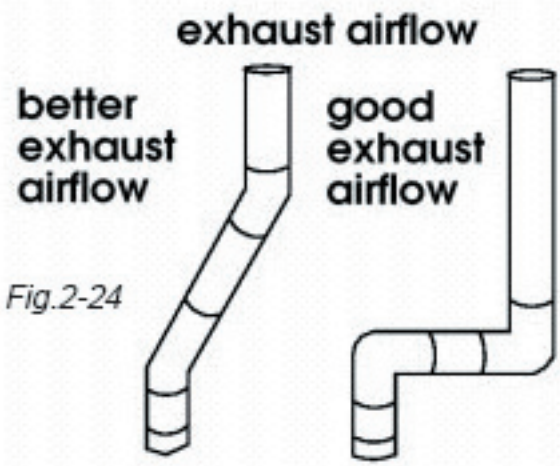



*Fig.2-24*

Unobstructed air openings are required. Each exhaust vent should enter the main vent at an angle pointing in the direction of the airflow. Vents entering from the opposite side should be staggered to reduce the exhausted air from interfering with the other vents. The maximum angle of each vent entering the main vent should be no more than 30°. Keep air openings free of dry cleaning fluid fumes. Fumes create acids which, when drawn through the dryer heating units, can damage dryers and loads being dried. A clean-out cover should be located on the main exhaust vent for periodically cleaning of the exhaust system. An exhaust hood should cap the outside end of the main vent to prevent exhausted air from returning to the dryers. If an exhaust hood cannot be used, the outside end of the main vent should have a sweep elbow directed downward. If the main vent travels vertically through the roof, rather than through the wall, Install 180° sweep elbow on the end of vent at least 2 feet (61 cm) above the highest part of the building. The opening wall or roof shall have a diameter 1/2 inch (1.3 cm) larger than the exhaust vent diameter. The exhaust vent should be centered in the opening.

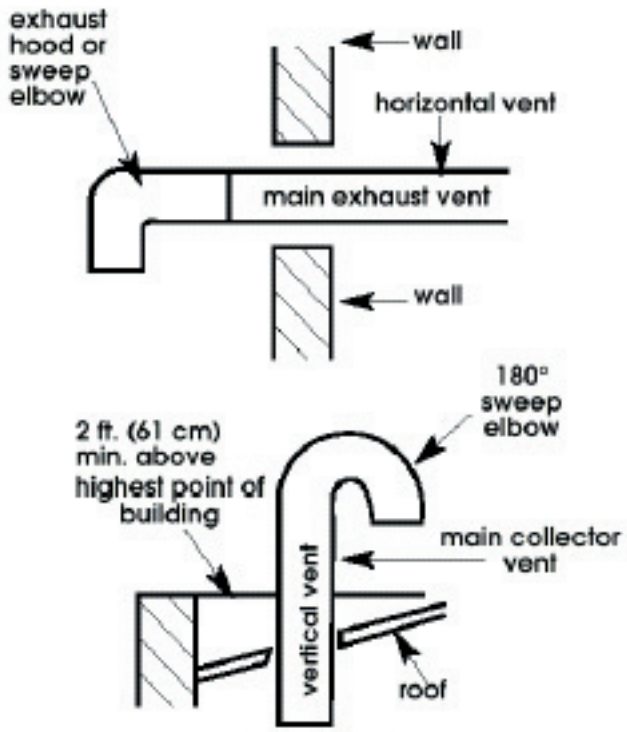



*Fig.2-25*

DO NOT install screening or cap over end of vent

**⚠ WARNING**

**FIRE HAZARD**

Use a new AGA or CSA approved gas supply line.

Install a shut-off valve.

Securely tighten all gas connections.

If connected to LP, have a qualified person make sure gas pressure does not exceed 13" (33 cm) water column. Examples of a qualified person include licensed heating personnel, authorized gas company personnel and authorized service personnel.

Failure to do so can result in death, explosion or fire.

**OBSERVE ALL GOVERNING CODES AND ORDINANCES.**

1. This installation must conform with local codes, or in absence of local codes with the National Fuel Gas Code ANSI Z223.1/ NFPA 54 or the CAN/CGA- B149 installation codes.
2. The design of this dryer has been certified by the CSA International for use at altitude up to 10,000 feet (3048 m) above sea level at the B.T.U. rating indicated on the model/ serial plate. Burner input adjustments are not required when the dryer is operated up to this elevation. When installed above 10,000 feet (3048 m), a four percent (4%) reduction of the burner B.T.U. rating shown on the model/serial plate is required for each 1,000 foot (305 m) increase in elevation. For assistance when converting to other gas types and/or installing above 10,000 feet (3048 m) elevation, contact your local service company.
3. Check that dryer is equipped with the correct burner for the particular type of gas used. Burner information can be found on the serial/rating plate in the door well of the appliance. If this information does not agree with the type of gas available, see your dealer.
4. This dryer is equipped for use with NATURAL GAS. It is certified by CSA International for manufactured, mixed and L.P. (propane and butane) gases with appropriate conversion. No attempt shall be made to convert the appliance from the gas specified on the serial/rating plate for use with a different gas without consulting the serving gas supplier. Conversion must be done by a qualified service technician. Gas conversion kit part numbers are listed on the gas valve burner base.
5. Provide a rigid gas supply line of ½-inch IPS pipe to the dryer location. If the total length of the supply line is more than 20 feet (6.1 m), larger pipe will be needed. For L.P. gas usage, 3/8-inch, approved copper tubing may be used. Pipe-joint compounds

suitable for use with L.P. gas should be used.

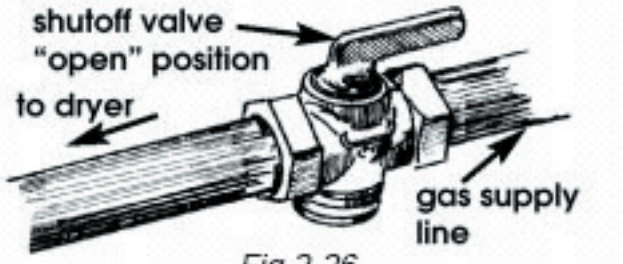



*Fig.2-26*

6. The supply line shall be equipped with a shut-off valve installed within 6 ft. (1.8 m) of dryer in accordance with the National FuelGas Code, ANSI Z223.1 — latest edition*.In Canada, an individual manual shut-off valve must be installed in accordance with the B149 installation codes CAN/CGA B149.1 and CAN/CGA B149.2*. This valve should be located in the same room as the dryer and should be in a location that allows ease of opening and closing. Do Not block access to the shut-off valve.
7. If the dryer is installed in a confined area such as a bathroom or closet, provision must be made for enough air for combustion and ventilation. (Check governing codes and ordinances, or refer to the section of this instruction covering recessed and closet installations.)
8. If local codes and ordinances permit, it is recommended that new flexible metal tubing, design-certified by the AGA or CSA, be used for connecting the dryer to the gas supply line. (The gas feed pipe which extends through the lower rear of the dryer is provided with 3/8-inch metal pipe thread.)
9. If rigid pipe is used as a gas supply line, a combination of pipe fittings must be used

*Fig.2-27*

10. Make sure that lower edges of the cabinet, plus the back and bottom sides of the dryer are free of obstructions to permit adequate clearance of air openings for combustion air. See "Recessed area and closet installation instructions," page 12, for minimum spacing requirements.
11. For ease of installation, operation and servicing (if ever needed) adequate space should be provided around the dryer.
12. A 1/8-inch NPT plugged tapping, accessible for gauge testing, must be installed immediately upstream of the gas supply connection to the dryer. The dryer must be disconnected from the gas supply piping system during any pressure testing of the system at test pressures in excess of 1/2 psig. The dryer must be isolated from the gas supply piping system by closing the equipment shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.45 kPa).

**⚠ WARNING**

**EXCESSIVE WEIGHT HAZARD**

Use two or more people to move and install dryer.

Failure to do so can result in back or other injury.

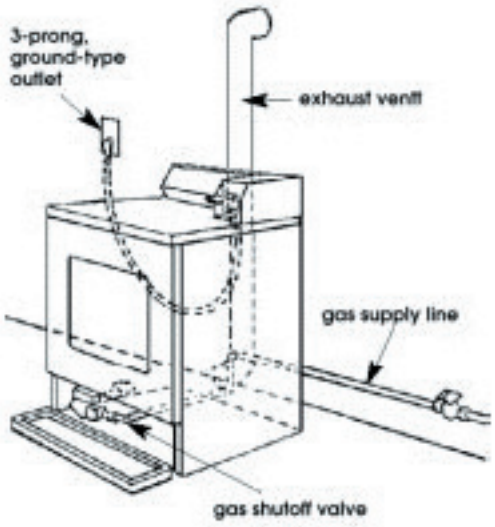



*Fig.2-28*

**⚠ WARNING**

**ELECTRIC SHOCK HAZARD**

Plug into a grounded 3-prong outlet.

Do not remove ground prong.

Do not use adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire or electrical shock.

## ELECTRICAL REQUIREMENTS

**Important:** Observe all governing codes and ordinances. If codes permit and a separate ground wire is used, it is recommended that a qualified electrician determine that the ground path is adequate. A 120-volt, 60-Hz, AC-only, 15- or 20-ampere fused electrical supply is required. A time-delay fuse or circuit breaker is recommended. It is recommended that a separate circuit serving only this appliance be provided. Recommended ground method The dryer, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70**, or the Canadian Electrical Code, CSA C22.1*.

### GROUNDING INSTRUCTIONS

This appliance must be grounded. In the event of malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. The power supply cord plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

**WARNING** - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the appliance is properly grounded. Do not modify the plug provided with the appliance - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

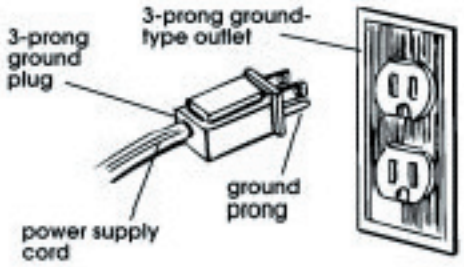



*Fig.2-29*

**⚠ WARNING**

**EXPLOSION HAZARD**

Keep flammable materials and vapors such as gasoline, away from dryer.

Place dryer at least 18 inches (45.8 cm) above the floor for a garage installation.

Failure to do so can result in death, explosion or fire.

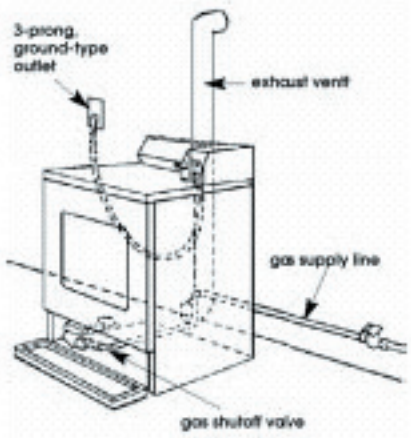
Copies of the standards listed above may be obtained from:

- CSA International
  8501 East Pleasant Valley Road
  Cleveland, Ohio 44131-5575
- ** National Fire Protection Association
  One Battery March Park
  Quincey, Massachusetts 02269

1. With dryer in laundry area. Take tape off front corners of dryer. Open dryer and re move the literature and parts packages. Wipe the interior of the drum thoroughly with a damp cloth.

2. Take two of the cardboard corners from the carton and place them on the floor in back of the dryer. Firmly grasp the body of the dryer and gently lay it on its back on the cardboard corners.
3. With one of the legs in hand, check the ridges for a diamond marking. That's how far the leg is supposed to go into the hole.
4. Start to screw the leveling legs into the holes by hand. (Use a small amount of liquid detergent to lubricate the screw threads so it is easier to turn the legs.) Use a 1-inch wrench or socket wrench to finish turning the legs until you reach the diamond mark. Now stand the dryer up. Slide dryer onto cardboard or hardboard before mov ing across floor to avoid damaging floor covering.
6. Move dryer close to final position. Remove cardboard or hardboard from under dryer.
7. Remove red cap from gas pipe. Carefully move dryer into final position. Place level on top of the dryer, first side to side; then front to back. If the dryer is not level, adjust the legs of the dryer up or down until the dryer is level.

*Fig.2-30*




8. Connect gas supply to dryer. Use pipe-joint compound resistant to the action of L.P. gas for gas connections. If flexible metal tubing is used, be certain there are no kinks.

   If necessary for service, open the toe panel, use a putty knife to press on the toe panel lock located at the center top of the toe panel. Pull downward on the toe panel to open. Toe panel is hinged at the bottom.
9. Open the shut-off valve in the gas supply line.
10. Use a noncorrosive leak detection fluid to check for leaks. Bubbles around connections will indicate a leak. NEVER TEST FOR GAS LEAKS WITH A FLAME. If a leak appears, shut off gas valve controls and adjust connections. Then check connections again. Close toe panel. All connections must be wrench tightened.

**Note:** Dryer door must be closed for dryer to operate. When door is open, dryer stops, but timer continues to run. To restart dryer, close door and push START/RESTART button.

11. To exhaust dryer, see Exhaust requirements, Pages 3-4. Connect exhaust vent system to dryer exhaust outlet and exhaust hood using 4" (10.2 cm) clamps. Use caulking to seal exterior wall opening around exhaust hood.
12. Carefully move dryer into final position. Place level on top of the dryer, first side to side; then front to back. If the dryer is not level, adjust the legs of the dryer up or down until the dryer is level.
13. If the burner does not ignite and you can feel no heat inside the dryer, shut off dryer for five minutes. Check that all supply valve controls are in "ON" position and that the electrical cord is plugged in. Repeat five-minute test.
14. If drying time is too long, make sure lint screen is clean.
15. Remove the service door of the meter case. Lift the service door up at the back and re move. Install the chosen money acceptor per the instructions under the appropriate money acceptor section of this manual.

# ELECTRIC DRYER INSTALLATION

Electrical requirements If codes permit and a separate ground wire is used, it is recommended that a qualified electrician determine that the ground path is adequate.

**Important:** Observe all governing codes and ordinances. A four-wire or three-wire (Canada: four-wire only), single-phase, 120/240- volt, 60-Hz, AC-only electrical supply (or four-wire or three-wire, 120/208- volt, if specified on the model/serial rating plate) is required on a separate, 30-ampere circuit, fused on both sides of the line. A time-delay fuse or circuit breaker is recommended.

**Recommended ground method In U.S.:**

It is the personal responsibility and obligation of the customer to contact a qualified electrician to assure that the electrical installation is adequate and in conformance with the National Electrical Code, ANSI/NFPA 70*, and all local codes and ordinances.

**Recommended ground method In Canada:**

It is the personal responsibility and obligation of the customer to install the dryer in accordance with CAN 1-B149 installation codes** and all national or local codes. Canadian models are equipped with a four-wire, 30-amp rated flexible-type power cord. The power cord must be plugged into a mating 30- amp receptacle. (NEMA type 14-30R). Copies of the standards listed above may be obtained from:

- National Fire Protection Association
  One Battery March Park
  Quincy, Massachusetts 02269
- •• CSA International
  8501 East Pleasant Valley Road
  Cleveland, Ohio 44131-5575

1. Take tape off front corners of dryer. Open dryer and remove the literature and parts packages. Wipe the interior of the drum thoroughly with a damp cloth.
2. Take two of the cardboard corners from the carton and place them on the floor in back of the dryer. Firmly grasp the body of the dryer and gently lay it on its back on the cardboard corners.
3. With one of the legs in hand, check the ridges for a diamond marking. That's how far the leg is supposed to go into the hole.
4. Start to screw the leveling legs into the holes by hand. (Use a small amount of liquid detergent to lubricate the screw threads so it is easier to turn the legs.) Use a 1-inch wrench or socket wrench to finish turning the legs until you reach the diamond mark. Now stand the dryer up. Slide dryer onto cardboard or hardboard before moving across floor to avoid damaging floor covering.
5. Move dryer close to final position. Remove cardboard or hardboard from under dryer.
7. Install the chosen money acceptor per the instructions under the appropriate money acceptor section of this manual.

## GROUNDING INSTRUCTIONS

**For a grounded, cord-connected appliance -**

**⚠ WARNING**

FIRE HAZARD

Use a new UL approved 30 ampere power supply cord.

Use a UL approved strain relief.

Disconnect power before making electrical connections.

Connect neutral wire (white or center wire) to center terminal (silver).

Ground wire (green or bare wire) must be connected to green ground terminal.

Connect remaining 2 supply wires to remaining 2 terminals (gold).

Securely tighten all electrical connections.

Failure to do so can result in death, fire or electrical shock.

**WARNING** - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the appliance is properly grounded. Do not modify the plug provided with the appliance - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

This appliance must be grounded. In the event of malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. If using a power supply cord, the plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

This dryer is manufactured with the cabinet-ground conductor connected to the NEUTRAL (center) or the wiring harness at the terminal block. If local codes DO NOT permit this type of connection, use "Four-wire Connections" instructions.

**For a permanently connected appliance -**

**⚠ WARNING**

FIRE HAZARD

Use 10 gauge solid copper wire.

Use a UL approved strain relief.

Disconnect power before making electrical connections.

Connect neutral wire (white or center wire) to center terminal (silver).

Ground wire (green or bare wire) must be connected to green ground terminal.

Connect remaining 2 supply wires to remaining 2 terminals (gold).

Securely tighten all electrical connections.

Failure to do so can result in death, fire or electrical shock.

This appliance must be connected to a grounded metal, permanent wiring system; or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance.

## WIRING INSTRUCTIONS

1. Disconnect the power supply.

2. Remove hold-down screw securing wiring terminal block cover to back panel of dryer and remove terminal block cover.

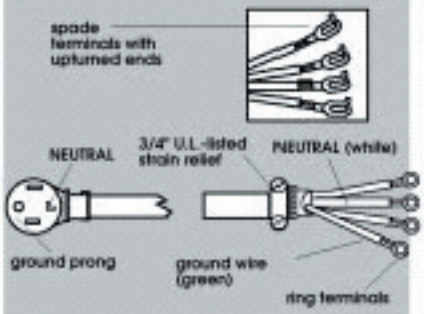
3. Assemble ¾" UL-approved strain relief (UL marking on strain relief) into hole below terminal block opening. Tighten strain relief screws just enough to hold the two clamp sections together. Install power supply cord/cable through the strain relief. Complete installation, following instructions for type of connection:

- Four-wire (recommended method)
- Three-wire (if four-wire is not available)

## Four-wire connection...

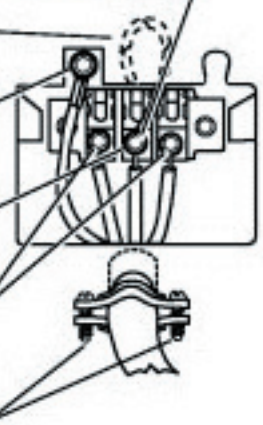
Four-wire receptacle (required for mobile homes)

### POWER SUPPLY CORD



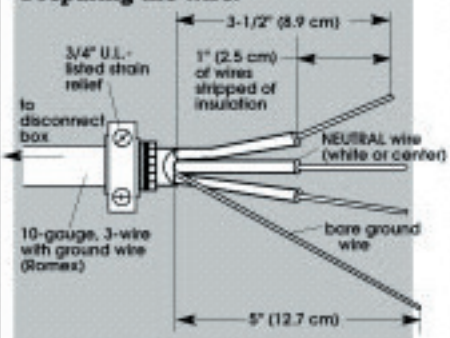

Four-wire power supply cord must have four, No.-10 copper wires and match a four-wire receptacle of NEMA Type 14-30R. The fourth wire (ground conductor) must be identified with a green cover and the neutral conductor by a white cover.

4. Remove center terminal block screw.
5. Remove appliance ground wire (green with yellow stripes) from external ground connector screw. Fasten under center, silver-colored terminal block screw.
6. Connect ground wire (green) of power supply cord to external ground conductor screw. Tighten screw.
7. Connect neutral wire (white or center) of power supply cord under center screw of the terminal block. Tighten screw.
8. Connect the other wires to outer terminal block screws. Tighten screws.
9. Tighten strain relief screws.
10. Insert tab of terminal block cover into slot of the dryer rear panel. Secure cover with hold-down screw.



### DIRECT WIRE

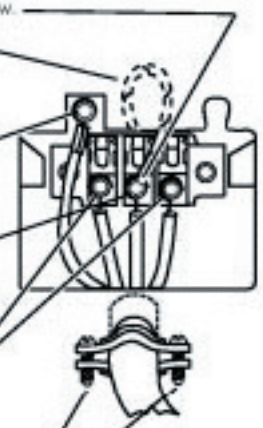
**Preparing the wire:**




Strip 5" (12.7 cm) of outer covering from end of cable. Leave bare ground wire at 5 inches (12.7 cm). Cut 1-1/2" (3.8 cm) from 3 remaining wires. Strip insulation back 1 inch (2.5 cm).

Shape ends of wires into a hook.

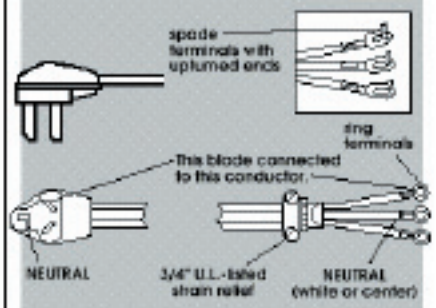
4. Remove center terminal block screw.
5. Remove appliance ground wire (green with yellow stripes) from external ground connector screw. Fasten under center, silver-colored terminal block screw.
6. Connect the ground wire (bare) of the power supply cable to the external ground conductor screw. Tighten screw.
7. Place the hooked end of the neutral wire (white or center) of power supply cable under the center screw of terminal block (hook facing right). Squeeze hook end together. Tighten screw.
8. Place the hooked ends of the other power supply cable wires under the outer terminal block screws (hook facing right). Squeeze hooked ends together. Tighten screws.
9. Tighten strain relief screws.
10. Insert tab of terminal block cover into slot of dryer rear panel. Secure cover with hold-down screw.



# Three-wire connection...

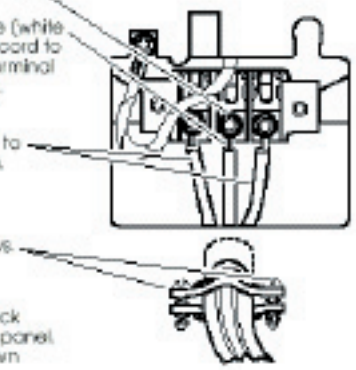
Three-wire receptacle

## POWER SUPPLY CORD




Three-wire power supply cord must have three, No. 10 copper wires and match a three-wire receptacle of NEMA Type 10-30R.

### Where local codes permit
**connecting cabinet-ground conductor to neutral wire:**



**4.** Loosen or remove center terminal block screw.

**5.** Connect the neutral wire (white or center) of power supply cord to the center, silver-colored terminal screw of the terminal block. Tighten screw.

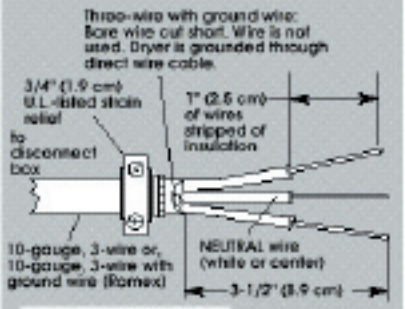
**6.** Connect the other wires to outer terminal block screws. Tighten screws.

**7.** Tighten strain relief screws.

**8.** Insert tab of terminal block cover into slot of dryer rear panel. Secure cover with hold-down screw.

## DIRECT WIRE

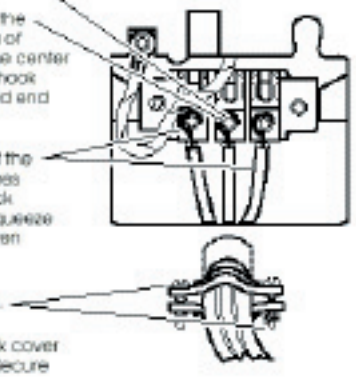
### Preparing the wire:




Strip 3-1/2" (8.9 cm) of outer covering from end of cable. Strip insulation back 1" (2.5 cm). If using 3-wire cable with ground wire, cut bare wire even with outer covering.

Shape ends of wires into a hook.

### Where local codes permit
**connecting cabinet-ground conductor to neutral wire:**



**4.** Loosen or remove center terminal block screw.

**5.** Place the hooked end of the neutral wire (white or center) of power supply cable under the center screw of the terminal block (hook facing right). Squeeze hooked end together. Tighten screw.

**6.** Place the hooked ends of the other power supply cable wires under the outer terminal block screws (hook facing right). Squeeze hooked ends together. Tighten screws.

**7.** Tighten strain relief screws.

**8.** Insert tab of terminal block cover into slot of dryer rear panel. Secure cover with hold-down screw.

## Three-wire connection...

Three-wire receptacle

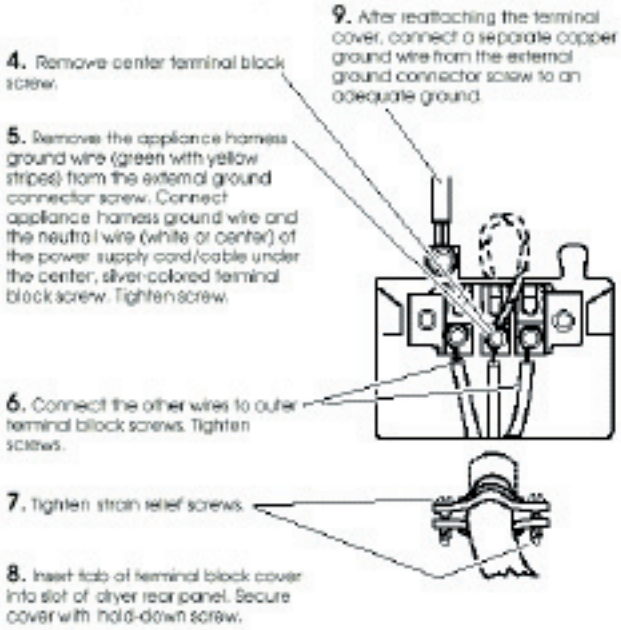
### DIRECT WIRE OR POWER SUPPLY CORD

**Three-wire power supply cord** must have three, No.-10 copper wires and match a three-wire receptacle of NEMA Type 10-30R.

**Direct wire power supply cable** must be prepared as shown in "Preparing the wire" of the three-wire connection direct-wire steps above.

**If codes permit and a separate ground wire is used, it is recommended that a qualified electrician determine that the ground path is adequate.**

### Where local codes Do Not permit
**connecting cabinet-ground conductor to neutral wire:**




## RECESSED AREA AND CLOSET INSTALLATION INSTRUCTIONS

The commercial single or stack dryer may be installed in a recessed area or closet. For recessed area and closet installations, minimum clearances can be found on the serial tag on the dryer. The installation spacing is in inches and is minimum allowable. Additional spacing should be considered for ease of installation, servicing and compliance with local codes and ordinances. If closet door is installed, the minimum unobstructed air openings in top and bottom is required. Louvered doors with equivalent air openings are acceptable. Companion appliance spacing should be considered. The dryer must be exhausted outdoors. No other fuel-burning appliance may be installed in the same closet.

* Additional clearances for wall, door and floor moldings may be required or if external exhaust elbow is used.

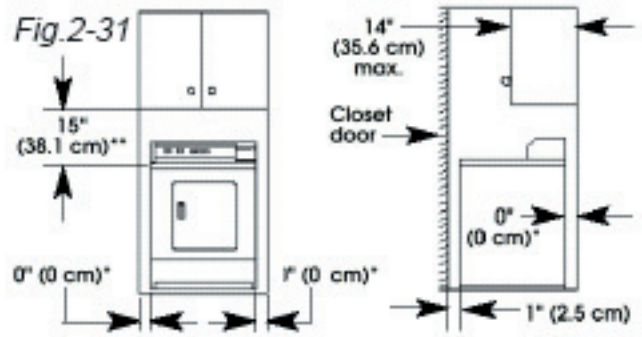
** Opening is minimum for closet door. Louvered door with equivalent air opening is acceptable.

**NOTE:**

- Clean lint screen after each cycle.
- Keep dryer area clear and free from combustible materials, gasoline and other vapors and liquids.
- Do not obstruct the flow of combustion and ventilation air.

### MINIMUM CLOSET INSTALLATION

*Fig.2-31*




**Recessed front view** **Closet side view**

## CLOSET FRONT VIEW

Opening is minimum for closet door. Louvered door with equivalent air openings is acceptable. Companion appliance spacing should be considered.

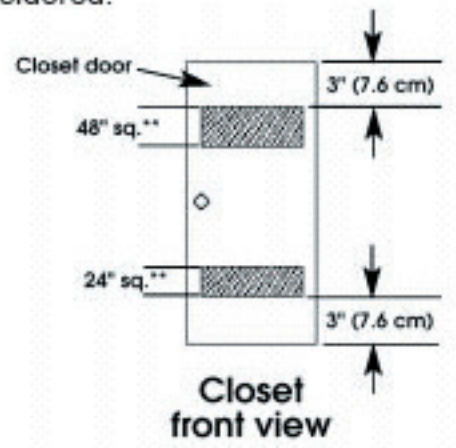



*Fig.2-32*

## MOVING THE DRYER TO A NEW LOCATION

Before the appliance is removed from service or discarded, remove the door to the dryer compartment. Slide dryer onto cardboard or hardboard before moving across floor to avoid damaging floor covering.

### GAS DRYERS:

1. Disconnect electrical cord. Tape securely to dryer.
2. Shut off the gas supply valves in the gas supply line.
3. Disconnect gas pipe and fittings from dryer and cap gas supply line. Tape end of dryer gas pipe.

### GAS AND ELECTRIC DRYERS

4. Make sure leveling legs are secure in dryer base.
5. Tape dryer door, lint screen and end of gas pipe.

### ELECTRIC DRYERS

6. Shut off electrical supply to dryer.
7. Disconnect the power supply cord or cable from the dryer terminal block.

### MAINTENANCE INSTRUCTIONS

- Clean lint screen after each cycle. Keep dryer area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

- Do not obstruct the flow of combustion and ventilation air. From Inside the Dryer Cabinet.

### REMOVING ACCUMULATED LINT

Lint should be removed from the exhaust vent once every year or more often, depending on dryer usage. Cleaning should be done by a qualified service technician.

**⚠ WARNING**

**ELECTRICAL SHOCK HAZARD**

Disconnect power before servicing.

Replace all panels before operating.

Failure to do so could result in death or electrical shock.

## MONEY ACCEPTOR INSTALLATION

A money acceptor is a mechanical or SMART-Card device that allows the washer or dryer to start after value in the form of coins or card debit is input into the acceptor. ALL EMS 1000 models come from the factory without any money acceptors installed. The end user must install the money acceptor of their choice from a manufacturer of these devices. Money acceptors are available in three basic varieties, coinslides, coindrops and SMART cards. Current EMS 1000 models can accept any of these three types. The factory installed wiring harness provides 2 female harness connectors to connect to an end user supplied microswitch or relay.

When the coin slide is pushed in, a normally open SPST switch or relay contact is closed. The switch or relay should remain closed until the slide mechanism is allowed to return to the resting position.

The coin slide switch must be closed for a minimum of 180 milliseconds (0.18 seconds) before the control knows to start a new cycle. The coin slide switch must show that the contact is open for at least one (1) second before another cycle request is accepted. Both of these times are designed to prevent unauthorized tampering.

Dryer run time is additive. For every coin slide push an additional run time unit is added to the current run time. For example: if the run time increment has been set to 20 minutes and the timer is showing 15 minutes remaining in the cycle, additional coin slide push now yields 35 minutes of run time.

Washer run time is not additive. Once the wash cycle begins no additional time can be added. Any coin slide activity during the wash cycle is wasted.

The Control can have a only one money acceptor connected at a time.

**NOTE:** Whirlpool does warranty the proper operation of the control system when external connections are made as described within this document. External circuits may induce EMI (electromagnetic Interference) which could result in improper operation of the control system. Product modifications void the Whirlpool Warranty.

**NOTE:** sharp edges may be present.

## COIN SLIDE INSTALLATION

Follow these instructions to ensure proper electrical grounding of the coin slide unit. Failure to do so can result in death or electrical shock.

1. Unplug or disconnect EMS 1000 unit from electrical power.
2. Remove coin box top access panel.
3. Remove any existing money acceptor if currently installed.
4. Unscrew green ground wire screw just inside of the meter case. Keep screw for later use.
5. Unpack the coinslide and extension and if necessary assemble the coinslide extension onto the coinslide. Coinslides and extensions are available from manufacturers of these devices. Pictured is typical for use on all EMS 1000 models. *(Fig. 2-33)*

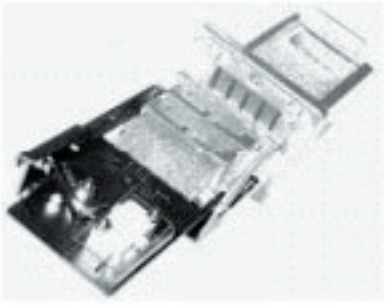


*Fig. 2-33*

6. Set the coinslide to the desired vend price using the instructions provided with the coinslide. Record the vend price in order to program the control to match the mechanical setting of the coinslide.
7. Unscrew one of the two screws on under side of coinslide which secure the slide extension.
8. Insert screw from step 4 through ground wire ring terminal and reattach to slide extension.
9. Connect the two harness wires in the meter case to the coin slide switch. *(Fig. 2-34)*
10. Insert coin slide and switch assembly into the meter case. *(Fig. 2-35)*

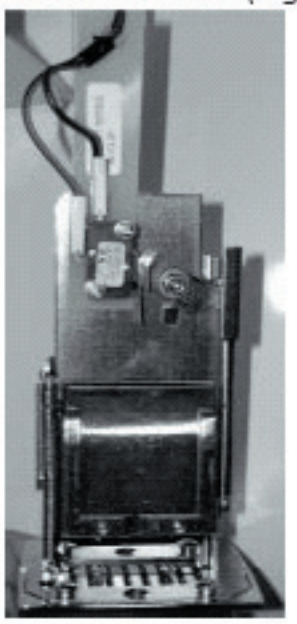


*Fig. 2-34*

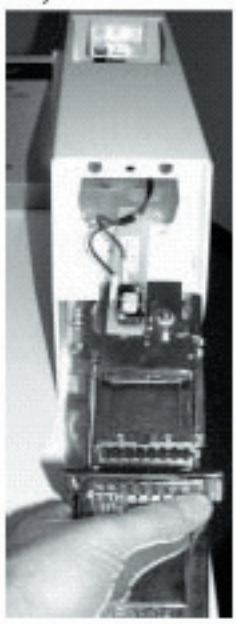
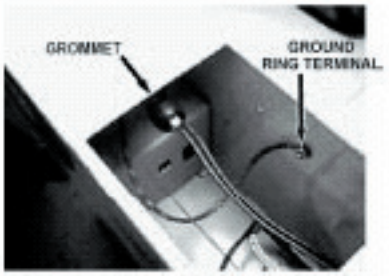


*Fig. 2-35*

11. Secure the coinslide to the meter case with coin slide mounting bolt.
12. Use screw from step 3 to attach ground wire ring terminal to side of coin box. *(Fig. 2-36)*
13. Place rubber grommet of harness over end of the mounting bolt. *(Fig. 2-36)*

*Fig. 2-36*




14. Replace coin box top access panel.
15. Reconnect electrical power to machine.
16. Set the vend price on the EMS 1000 control per the set vend price procedure on page 3-4. The control and coinslide vend prices must match.
17. Insert coins to verify proper operation.

## COINDROP INSTALLATION

The redesign of the meter case assembly starting with the 2000 model year j line products allows for installation of a coindrop for the first time . For both electronic and mechanical coin drops, the switch or relay must be actuated long enough to meet the minimum requirements as specified at the beginning of the installation instructions in order for the control to recognize a vend.

1. Unplug or disconnect EMS 1000 unit from electrical power.
2. Remove the timer access panel.
3. Remove any existing money acceptor if currently installed.
4. Remove the coinslide adapter plate from the meter case by removing the three hex mounting nuts, one from the top on the coin vault opening and two from the front top of the timer access opening.
5. Release the coin funnel from the meter case by releasing the plastic retaining clips and turning the funnel up as shown, then remove the funnel through the timer access panel. *(Fig. 2-37)*

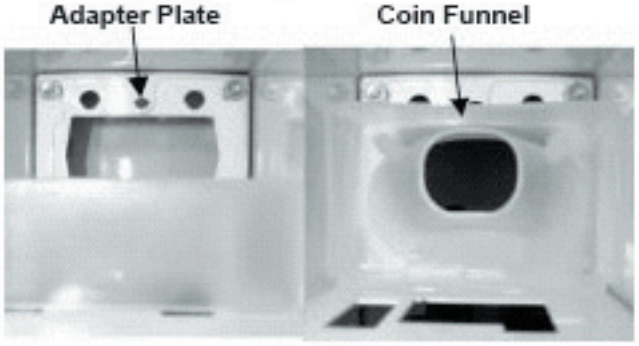



*Fig. 2-37*

6. Connect the two harness wires in the meter case to the coin drop switch or relay.

7. Set the vend price on the coin drop per the set vend price procedure included in the coin drop instructions.
8. Install the coindrop into the meter case using the 2-4 nuts supplied with the coindrop kit. Install the coindrop power supply per the instructions included with the coindrop.
9. Set the vend price on the EMS 1000 control per the set vend price procedure on page 3-4. The control and coin drop vend prices must match. Insert coins to verify proper operation. No top-off feature!

## SMART CARD INSTALLATION

1. Unplug or disconnect EMS 1000 unit from electrical power.
2. Remove coin box top access panel.
3. Remove any existing money acceptor if currently installed.
4. Release the coin funnel from the meter case by releasing the plastic retaining clips and turning the funnel up as shown, then remove the funnel through the timer access panel. *(Fig. 2-38)*

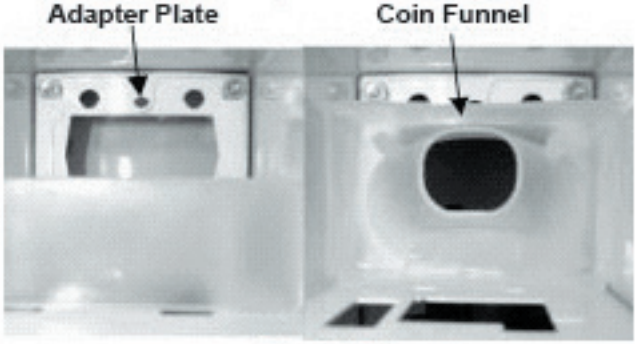



*Fig. 2-38*

5. Remove the two T-15 Torx control panel retaining screws from the bottom of the console and flip the console up into the service position. *(Fig. 2-39)*

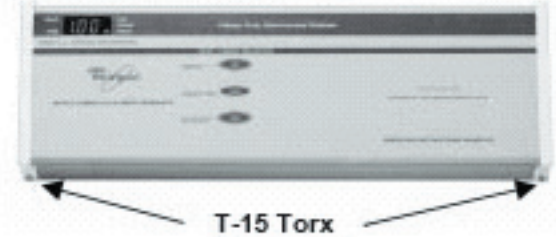



*Fig. 2-39*

6. Unpack the SMARTCard reader and wiring harness included with the card reader kit.
7. Thread the wiring harness from the console into the meter case through the harness opening in the rear of the meter case.
8. Attach the power supply wiring harness to the card reader, then to the power supply as specified in the manufacturers instructions.

**NOTE:** The card reader wiring should be isolated from the washer wiring harness to prevent electromagnetic interference (EMI) between the washer and card reader system. Failure to isolate the harnesses can result in product malfunction.

9. Install the SMARTCard power supply in the console as specified in the manufacturers installation instructions.
10. Close the console and replace the two Torx T-15 screws.
11. Install the card reader into the upper meter case opening. Push the card reader into the meter case, then lock it by pushing down slightly. *(Fig. 2-40)*

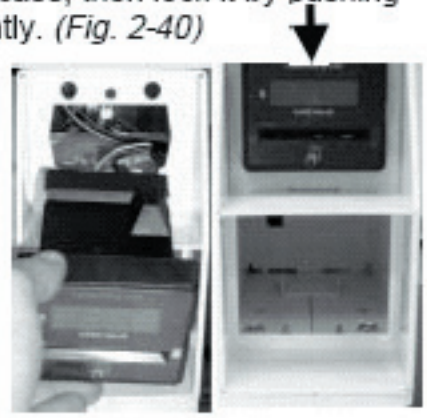


*Fig. 2-40*

12. Install the card reader retaining screw included with the kit, or a standard coinslide-retaining bolt.
13. Reconnect power and set the vend price on the EMS 1000 control per the set vend price procedure on page 3-4. Set the vend price on the set up card to match the vend price in the EMS 1000 control. No top-off!
14. Insert the set up card into the card reader and verify vend settings match on the washer display and the card reader display.
15. Insert user card to verify proper operation.

# VERTICAL 8 PRICE CHANGE INSTRUCTIONS

The following procedure will guide the user through changing the coinslide vend amount for a factory equipped or ESD vertical 8 coinslide. The procedure will be similar for other coinslides, consult the manufacturers instructions for other models. If the coinslide is installed in the washer or dryer, it must be removed prior to changing the vend price. If the coinslide has yet to be installed, skip to step #6.

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1. Unlock the service door lock and remove the service door of the metercase.
2. Lift the service door up at the back and remove.
3. Unscrew the coinslide retaining bolt with a 5/16" socket by turning counter clockwise and remove the bolt.

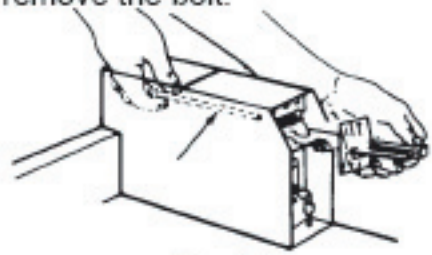


*Fig. 41*

4. Push the coinslide up, and then remove from the metercase.
5. Disconnect the wiring harness spade connectors from the coinslide switch.

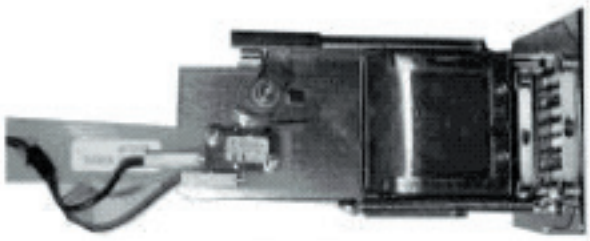


*Fig. 42*

**NOTE:** The switch pictured is typical. There are currently several companies that manufacture coinslide extensions and switches for EMS1000.

6. Set the coinslide and extension assembly on a level surface and remove the return spring(s) from the spring bracket.

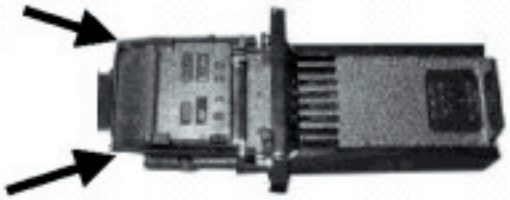


*Fig. 43*

7. Place coins in the coinslide of the proper vend amount (factory preset on coin equipped models is $1.00) and push the coinslide all the way in until the coins drop through the coinslide.

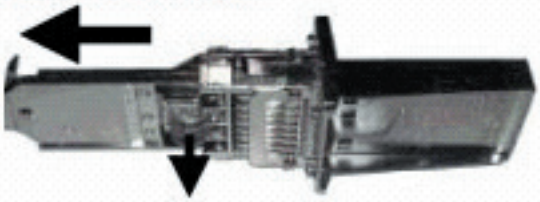


*Fig. 44*

8. With the coinslide still all the way inserted, remove the spring bracket screw and spring bracket

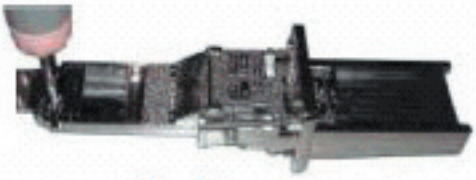
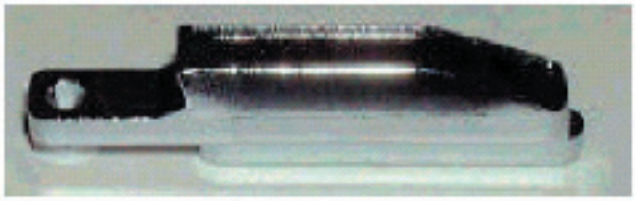


*Fig. 45*

9. Remove the coin inserts (2 blank, 2 functional from the coinslide area shown.

*Fig. 46*

The coinslide comes with enough inserts to increase or decrease the vend price by $.50. If a higher or lower vend price is desired, more functional or blank inserts are necessary. Inserts may be ordered from Whirlpool Corporation only for models that come factory coinslide equipped. If the coinslide is other than Whirlpool factory equipped, additional inserts must be ordered from the coinslide manufacturer.



**$.25 US insert (Whirlpool Corp. part #8316265)**

**Insert blank (Whirlpool Corp. part # 8316264)**

*Fig. 47*

10. Turn the coinslide upside down and remove the three screws in the insert retaining plate.

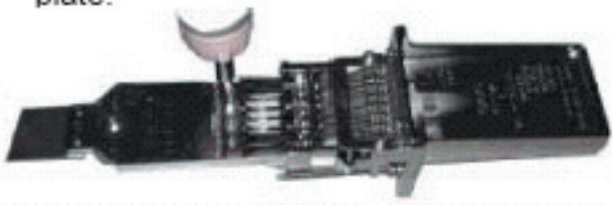


*Fig. 48*

11. To increase the vend price, remove blank inserts and insert the metal functional inserts. To decrease the vend price, remove functional inserts and add blank inserts.

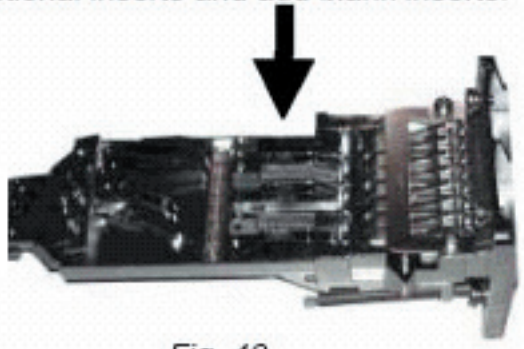


*Fig. 49*

12. Reinstall the three insert retaining plate screws, flip the coinslide over and reinstall unused inserts (up to 4 count). Reinstall the spring bracket and retaining screw.

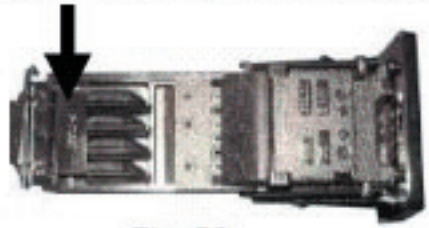


*Fig. 50*

13. Release the coinslide and reinstall the coinslide return spring(s) onto the spring bracket.
14. Insert coins into the coinslide and test prior to reinstallation of the coinslide into the washer or dryer.
15. On reconnect the wiring harness spade connectors to the coinslide switch as referenced in step 5.
16. The coin slide may need to be partially pushed in to install it into the metercase *(Fig. 1)*.
17. Insert the coinslide into the metercase and push down slightly to lock into place *(Fig 2)*.

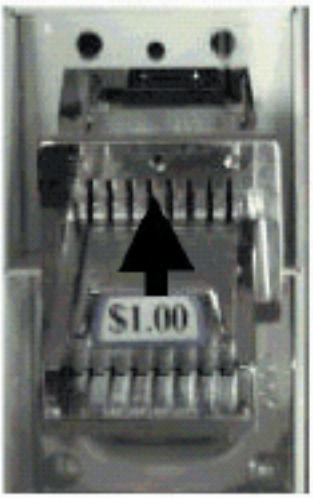



*Fig. 51*

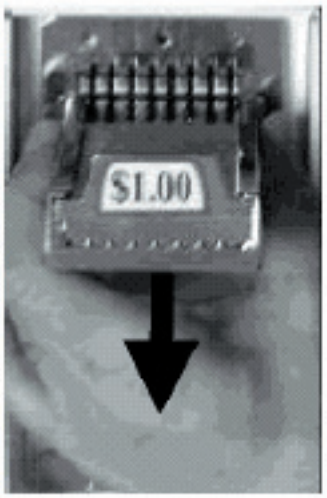



*Fig. 52*

18. Insert the coinslide retaining bolt from the timer access panel into the back of the coinslide and hand tighten to start the threads prior to using any tools to avoid stripping the coinslide or retaining bolt threads.

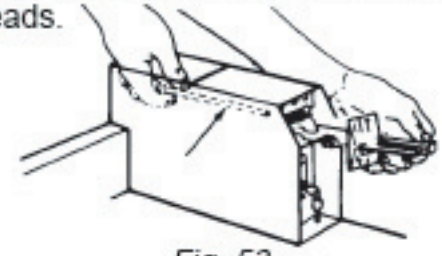


*Fig. 53*

19. Affix the proper new vend price sticker to the front of the coinslide.
20. Reinsert the timer access panel and lock.
21. Reconnect to electrical power and insert coins to insure the cycle starts.

# MONEY ACCEPTOR PARTS CROSS REFERENCE

| KEY | PART NAME | WHIRLPOOL PART NO. | ESD PART NO. | GREENWALD PART NO. | SET-O-MATIC PART NO. | DIEBOLD PART NO. | MONARCH PART NO. |
|---|---|---|---|---|---|---|---|
| 1 | FUNNEL COIN | 385421 | N/A | N/A | N/A | N/A | N/A |
| | METERCASE CONVERSION KIT (Includes Item 1 & 9) | 8316238 | N/A | N/A | N/A | N/A | N/A |
| 2 | DOOR SERVICE | 3351138 | N/A | N/A | N/A | N/A | N/A |
| 3 | VERTICAL 8 COIN KIT* (WASHER AND DRYER) (Includes 5, 6, 8, 10, 17) | 3954807 | 72093 | N/A | N/A | N/A | N/A |
| 4 | KEY FRONT LOCK OR TOP LOCK | 358288 | MULTIPLE OPTIONS | GR-777 | MULTIPLE OPTIONS | N/A | N/A |
| 5 | MONEY BOX WITH KEY | 8316525 | 72101-XD | UG800B | N/A | N/A | GBX-(LOCK CODE LETTER A, H, T, D OR M) |
| 6 | COIN DROP* CAP2762MQ CEP2760KQ CGP2761KQ | N/A N/A N/A | N/A N/A N/A | N/A N/A N/A | 54WU1-WPL-CAP 54WU1-WPL-CEP 54DU1-WPL-CGP | N/A N/A N/A | N/A N/A N/A |
| 7 | BOLT SLIDE MECHANISM | 8316521 | 21749 | 77-83-8 | N/A | N/A | N/A |
| 8 | COIN SLIDE ADAPTER PLATE | 279950 | N/A | N/A | N/A | N/A | N/A |
| 9 | DECAL KIT | 8316524 | 72097 | 1711 | N/A | N/A | N/A |
| 10 | INSERT, BLANK | 8316264 | 21216 | N/A | N/A | N/A | N/A |
| 11 | INSERT, $.25 | 8316265 | 21193 | N/A | N/A | N/A | N/A |
| 12 | CARD READER KIT WASHER | N/A | 11-000-258 | 2001-WP-EMW | N/A | N/A | N/A |
| 13 | CARD READER KIT DRYER | N/A | 11-000-258 | 2001-WP-EMD | N/A | N/A | N/A |
| 14 | FRONT LOCK ASSEMBLY | 358290 | 0300-ETWH | 8-11181-33-777 | EXT030-A FOR MOST APPLICATIONS | N/A | N/A |
| 15 | FRONT LOCK BLANK | 38731 | N/A | N/A | N/A | N/A | N/A |
| 16 | TOP LOCK | 8316526 | 040CET | 68-117432-777 | N/A | N/A | N/A |
| 17 | DUAL PAY KIT | N/A | 11-000-264 Wash 11-000-233 Dry | N/A | N/A | N/A | N/A |
| | CAMPUS INTERFACE DEVICE | N/A | N/A | N/A | N/A | GR677-1744-000† | N/A |
| 18 | READER | N/A | N/A | N/A | N/A | LR3000TS† | N/A |
| | ADAPTER HARNESS | N/A | N/A | N/A | N/A | GR674-1792-000† | N/A |
| | TERMINAL KIT | N/A | N/A | N/A | N/A | GR-676-1793-000† | N/A |
| 19 | COINSLIDE MOUNT SWITCH (VERTICAL 8) INCLUDES EXTENSION | N/A | 21921-21755 | KIT1818 | N/A | N/A | N/A |
| 20 | METERCASE MOUNT SWITCH | N/A | 72119 INCLUDES ACTUATOR | N/A | N/A | N/A | 16A-KIT-01 UNIVERSAL SWITCH KIT FOR ALL CHUTES |
| 21 | VERT 8 COIN SLIDE | 4396665** | V8-200* | 20-3020* | | | V8L-001* CHROME V8L-005* Black |

| KEY | PART DESCRIPTION | GENERAL METERS CORP. PART NO. |
|---|---|---|
| | LAUNDRY CONTROLLER (Same as Remote Card Reader above) | GMC P/N RTSDCT2IPBNET† |
| | LAUNDRY CONTROLLER SETUP | GMC P/N RTSLNDCNCT08/16/24 or 32 (Last 2 digits indicate number of machines controlled)† |

** Complete kit with box, decals, top lock. Order coin slide switch separately

* STATE COINAGE TYPE (US QUARTER, US DOLLAR, CANADIAN DOLLAR, CANADIAN QUARTER, CANADIAN DOLLAR, ETC.)
THE LISTED MONEY ACCEPTORS ARE NOT TESTED AND APPROVED FOR USE BY WHIRLPOOL CORPORATION. IT IS THE RESPONSIBILITY OF THE MONEY ACCEPTOR MANUFACTURER TO ENSURE COMPATIBILITY AND OPERATION WITH THE WHIRLPOOL CORPORATION PRODUCTS. MODIFICATIONS MAY VOID THE WHIRLPOOL CORPORATION PRODUCT WARRANTY.

† Components necessary to connect Whirlpool® products to Diebold/General Meters University Systems also fit Advantech™ models.

## MONEY ACCEPTOR MANUFACTURER CONTACT INFORMATION

| MANUFACTURER | ESD | GREENWALD | SET-O-MATIC |
|---|---|---|---|
| ADDRESS | 270 New Jersey Drive<br>Fort Washington, PA 19034 | 212 Middlesex Ave.<br>Chester, CT 06412-1254 | 291 Adams Blvd.<br>Farmingdale, NY 11735 |
| PHONE | 1-800-523-1510 | 1-800-221-0982 | (516) 752-8008 |
| EMAIL | info@esdcoin.com | sales@greenwald<br>industries.com | http://www.setomatic<br>.com/form.html |

| MANUFACTURER | WHIRLPOOL | DIEBOLD CARD SYSTEMS | MONARCH COIN AND SECURITY INC. | GENERAL METERS GROUP |
|---|---|---|---|---|
| ADDRESS | 150 Hilltop Rd.<br>St. Joseph, MI 49085 | 5995 Mayfair Road<br>P.O. Box 3077<br>North Canton, OH USA<br>44720-8077 | P.O. Box 427<br>Covington, KY 41012 | 1936 Dominion Way<br>Colorado Springs, CO 80918 |
| PHONE | 1-800-662-3587,<br>Option 1 | 1-800-423-5540 | 1-800-462-9460 | (719) 522-9222 |
| EMAIL | Byron_W_Hatch@whirlpool.com | Campus@diebold.com | sales@monarchcoin.com | www.1card.com |

EMS1000 systems are the central component of an overall business solution.
Additional components supplied by other manufacturers are necessary depending on your business need.

## WARRANTIES

Whirlpool® warranties are among the strongest warranties in the industry

| WASHER WARRANTIES | |
|---|---|
| 3-YEAR LIMITED (Parts Only) | Entire Product Including Electronic Control |
| 7-YEAR LIMITED (Parts Only) | Cabinet (Against Rust-Through) (Center Post Bearings and Seals) |
| 10-YEAR LIMITED (Parts Only) | Wash Basket and Outer Tub |
| **DRYER WARRANTIES** | |
| 3-YEAR LIMITED (Parts Only) | Entire Product Including Electronic Control |
| 7-YEAR LIMITED (Parts Only) | Cabinet (Against Rust-Through) |

For important information regarding warranty inclusions, exclusions and limitations, please call 1-800-NO-BELTS.

# WASHER THEORY OF OPERATION

## CUSTOMER OPERATING INSTRUCTIONS

The Whirlpool Direct Drive Commercial Washer provides easy to read, step-by-step customer operating instructions under the washer lid. Customers are directed to these instructions on the console.. *(Fig 3-1 & 3-2)*

**CAE2751**

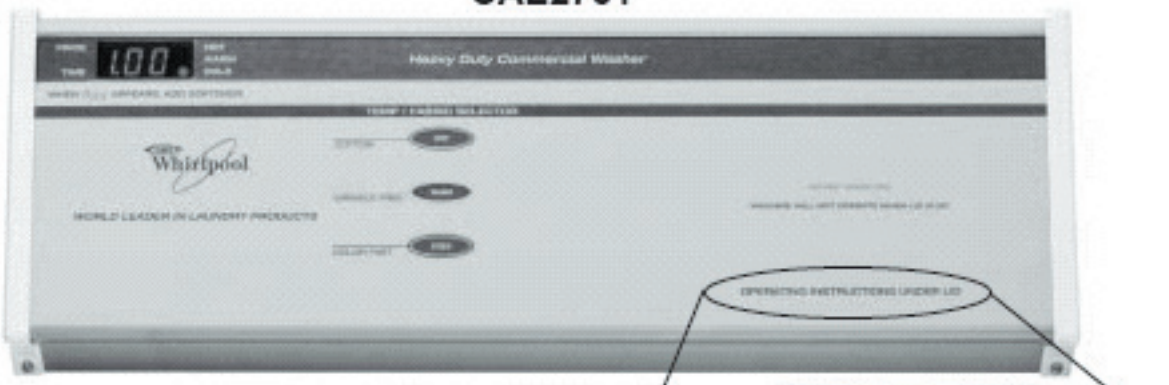



*Fig. 3-1*

**CAE2752**

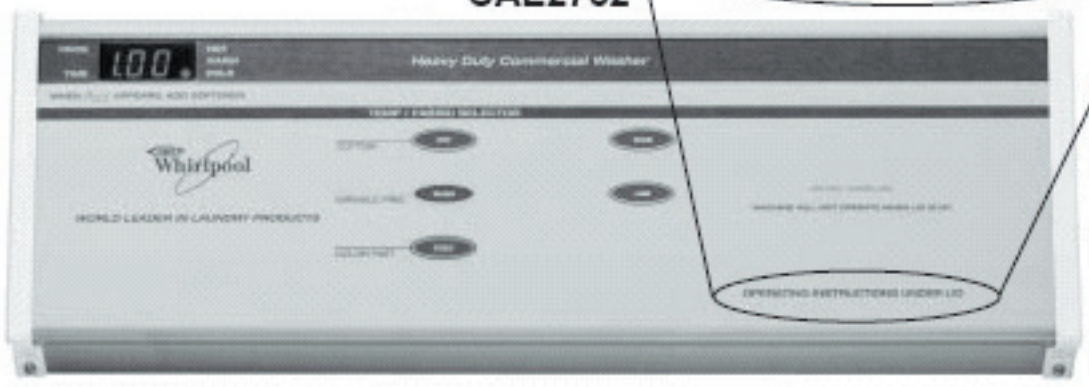


*Fig. 3-2*

The washer will not fill, agitate or spin if the lid is opened at any time during the wash/rinse cycle.

## WASHER CYCLE SEQUENCE CHART

| LED DISPLAY | DESCRIPTION |
|---|---|
| 21 | FILL COLD / WARM / HOT |
| 21 TO 12 | AGITATE AT SELECTED SPEED |
| 12 TO 11 | DRAIN HIGH SPEED |
| 10 TO 09 | SPIN HIGH SPEED |
| 09 | FILL COLD / WARM RINSE |
| 08 (Fabric softener) | AGITATE AT SELECTED SPEED |
| 07 | AGITATE AT SELECTED SPEED |
| 06 TO 05 | DRAIN HIGH SPEED |
| 05 | SPIN & SPRAY SEVEN SECONDS |
| 04 TO 01 | SPIN HIGH SPEED |
| LED DISPLAY SHOWS PRICE | OFF |

*Table 3-1*

## BASIC OPERATION

When the coin slide is pushed in, the electronic control board initiates a timed program that allows:

1. The washer to fill with water.
2. When the water has reached a predetermined level, the washer will begin to agitate.
3. The washer will agitate for 9½ minutes and then pause.
4. The drive motor will reverse direction and water will be pumped from the tub.
5. Once the tub is drained, the motor will pause and set the gearcase up for the spin cycle.
6. The washer will spin for 1½ minutes.
7. The washer will then fill with water and agitate for two minutes.
8. The drive motor will reverse direction again and pump water from the tub.
9. The drive motor will pause to set up the gearcase for a final high-speed spin for four minutes.

The cycles and timings described above are typical.

## TYPICAL WASH CYCLE OPERATION

When the WARM temperature and (on two-speed washers) the NORMAL agitation speed are selected and the coin slide is pushed in, the following occurs (Single speed Strip Circuits shown):

1. The coin slide switch sends 120 VAC to the electronic control board which begins the cycle countdown and the washer begins the fill cycle by switching 120 VAC to the hot and cold solenoids which open the hot and cold water valves. *(Fig. 3-3)*

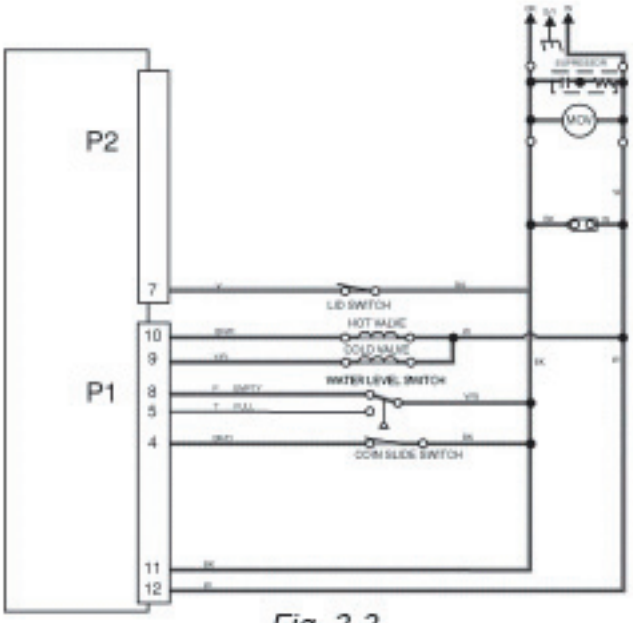



*Fig. 3-3*

2. When the pressure switch senses a full condition (pin#5 of P1), the fill valves are de-energized.
3. The drive motor is energized through pin 4 of P2 and begins agitation. The current flow through the start winding is opposite the current flow of the run winding in the agitation mode. Because the drive motor is not up to full run speed, the centrifugal switch contact in series with the motor reversing relay is closed which allows 120 VAC to energize the start winding. *(Fig. 3-4)*
4. When the drive motor has reached full

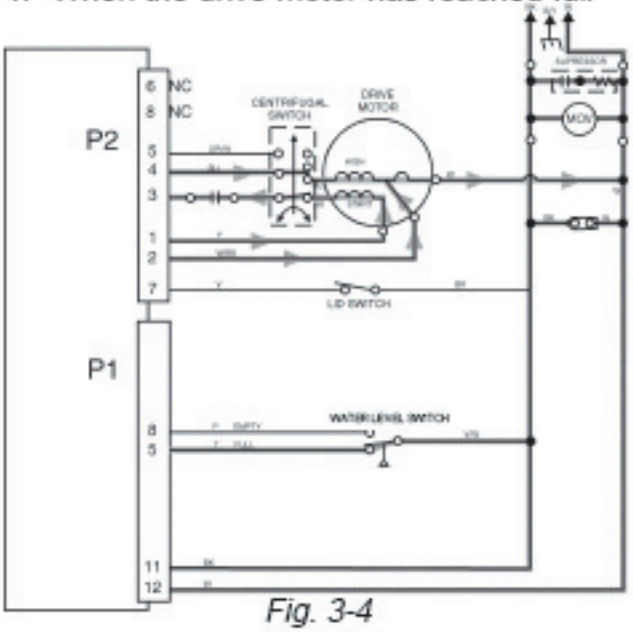



*Fig. 3-4*

speed the centrifugal switch is opened and the start winding is de-energized.

5. Drain is initiated by reversing the current flow through the motor start winding. Because the start winding of the drive motor in energized in the reverse direction, the drive motor runs in reverse direction and operates the water pump. *(Fig. 3-5)*

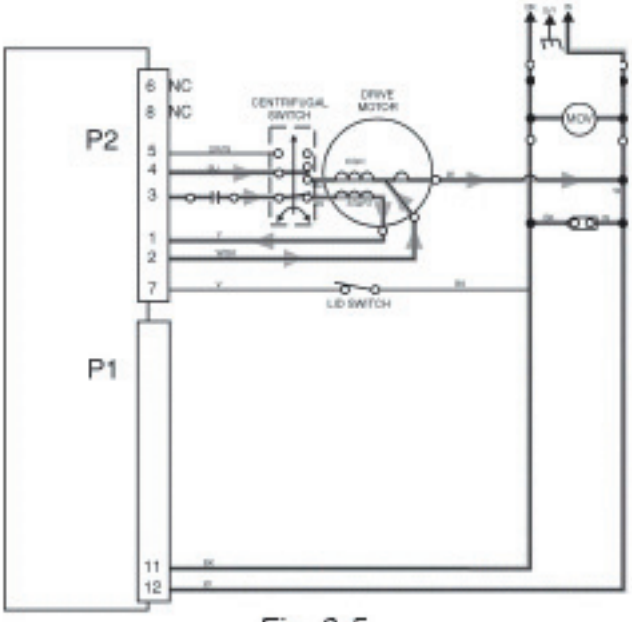



*Fig. 3-5*

6. Once the drive motor is up to full speed the centrifugal switch opens and de-energizes the start winding and the drive motor will continue to run in the opposite direction.
7. After two (2) minutes of drain the micro processor momentarily de-energizes the drive motor which allows the gearcase to reset for Spin. Because the start winding of the drive motor is energized in the reverse direction, the drive motor will run in reverse direction and spin the tub. *(Fig. 3-6)*

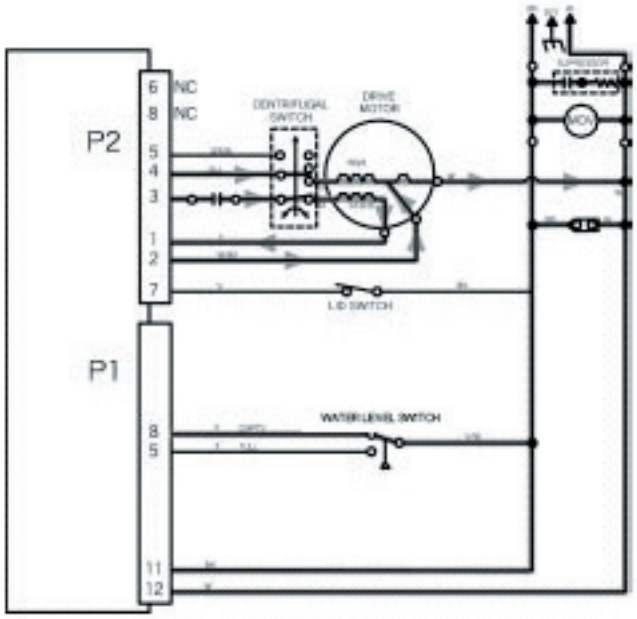



*Fig. 3-6*

8. Once the drive motor is up to full speed the centrifugal switch opens and de-energizes the start winding and the drive motor will continue to run in the opposite direction.

## EMS 1000 WASHER SETUP ROUTINES

### Keypad Positions


**NOTE:** Model CAP2761EW does not show keypads 4 & 5. All models have keypad 6 hidden.

## Access Mode

Perform the following steps to access all set-ups and routines:

A. Remove the access door on the top of the meter case.

B. Push the rocker switch just inside the access door and release it.

C. The **HOT** LED starts blinking to confirm the rocker switch has been pushed. Cycle count now shows. Continue with the following routines.

## Read Cycle Count

A. Perform all steps under **Access Mode** (above).

B. Cycle count is displayed for 1 minute. After 1 minute the display automatically returns to showing vend price and is ready for use. Before 1 minute automatic time out, keypad position 6 can be pushed to exit this routine.

Do not push any other keypads unless actions, such as SET VEND PRICE are to be performed.

C. Replace access door on top of the meter case.

**NOTE:** On Model CAW2762EW removing the coin box does the same as pushing the rocker switch in step B above. Coin box must be reinstalled to run tests.

## Changing Cycle Count

The cycle count number ***cannot*** be set or reset to a different number. When the number reaches 999 the next count number is 000, and the next is 001.

## Set Vend Price

The displayed vend price is independent of the mechanical coin acceptance unit. When the mechanical coin acceptance unit price is changed the displayed vend price must be changed to match.

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S1**. The COLD LED starts blinking to indicate keypad **S1** was pushed and that it is in the price setting mode.

| KEYPAD | FUNCTION |
|---|---|
| S1 | Vend price UP by $.10 |
| S2 | Vend price DOWN by $.10 |
| S3 | No action |
| S4 | Vend price UP by $.01 |
| S5 | Vend price DOWN by $.01 |
| S6 | First push - Return to Cycle count<br>Second push - Exit |

## Running Washer without Use of Coin Slide

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S3**. The machine will start running. Cycle count does not increment.

# ⚠ WARNING

ELECTRICAL SHOCK HAZARD

Disconnect power before servicing.

Replace all panels before operating.

Failure to do so can result in death or electrical shock.

# WASHER CONSOLE COMPONENT ACCESS

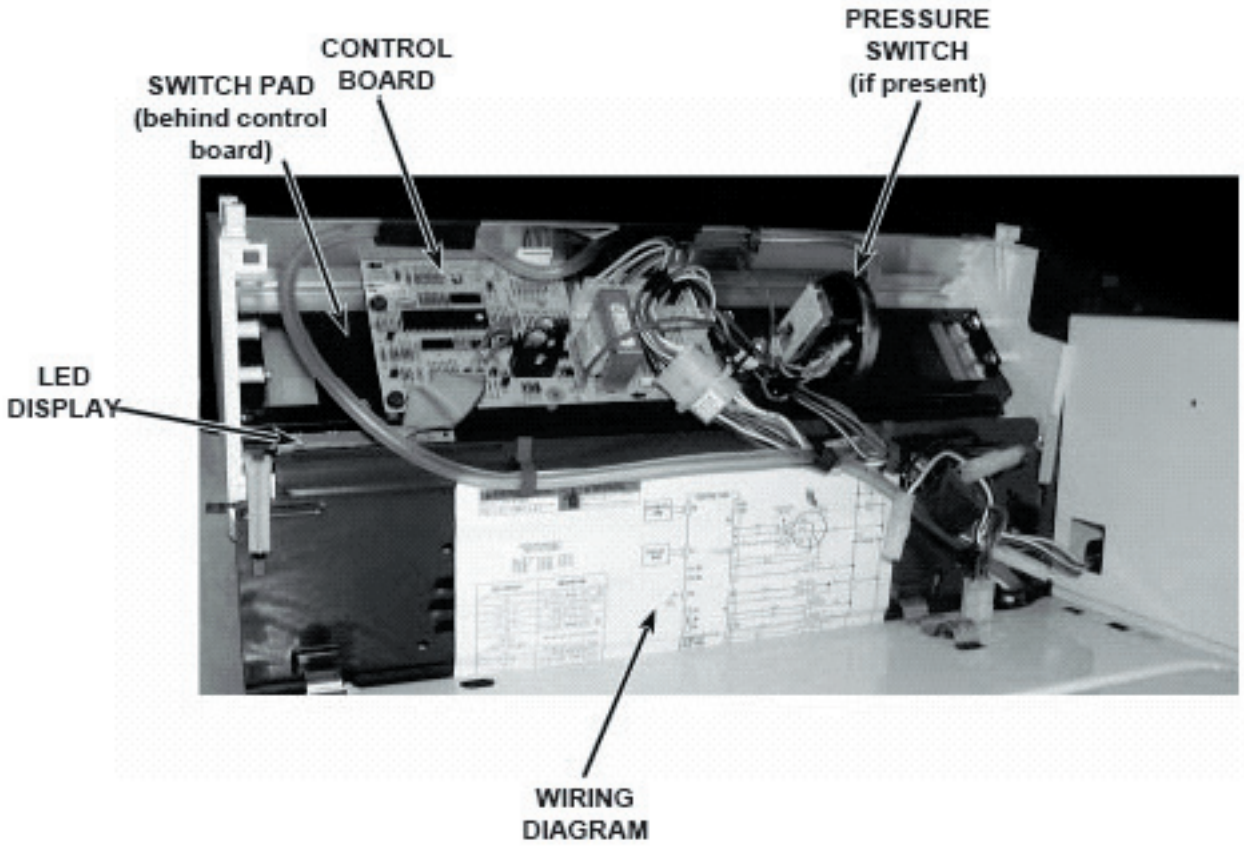



*Fig. 4-1*

## ACCESSING COMPONENTS INSIDE THE CONSOLE

The Whirlpool Commercial Washer is designed to allow access to all major components from the front of the unit. Most maintenance and repairs can be accomplished with the washer in its installed position.

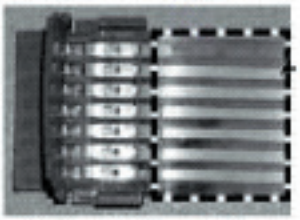
To access components in the console, remove the two screws found in the lower corners of the console and tilt the console to its service position *(Fig. 4-1)*.

Components accessible inside the console include:

- LED Display
- Control Board
- Pressure Switch (if present)
- Key Pad Membrane

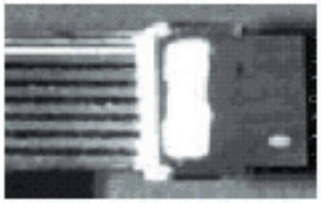
The wiring diagram can be found under the Control Panel on the back panel of the washer.

## Replacing the Membrane Switch



Original Blue Ribbon

*Fig. 4-2*



Updated Green Ribbon

1. Disconnect power to the washer.
2. Remove the control panel retaining screws at the base of the console and tilt the console back.
3. Remove the right control panel end cap from the console, then remove the display and control boards.
4. Remove the left end cap from the console and separate the console support from the console.
5. Remove the backer plate and membrane switch from the console support by carefully pulling the backer plate away from the console support.
6. Remove the membrane switch from the backer plate by releasing the 2 locking tabs.
7. The locking tabs on the replacement membrane switch **must be creased** for insertion into the backer plate, or the membrane switch will not lay flat against the plate. This can cause the washer to not accept commands. *(Fig. 4-3)*

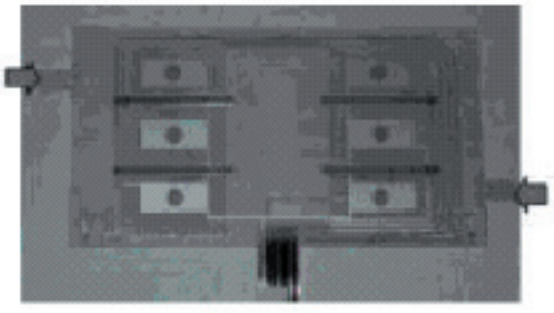


*Fig. 4-3*

8. Insert the tabs into the backer plate and lock the membrane switch to the console by turning the tabs 90 degrees. *(Fig. 4-4)*

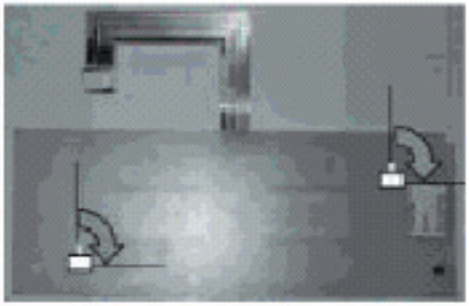


*Fig. 4-4*

9. Secure the side backer plates to the console support *(Fig. 4-5 and 4-6)* so that the proper distance between the membrane switch and the console is maintained. Failure to insure the proper installation of these backer plates will result in the washer not accepting commands.

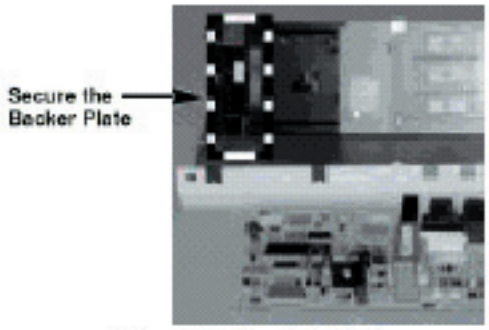



*Fig. 4-5 (Left Side)*

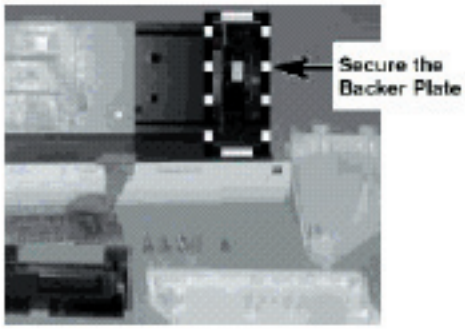



*Fig. 4-6 (Right Side)*

5. Inspect the console. Make sure there are no dents in the console over the membrane switch contact points. If the console is dented, replace the console with the part number specified in the parts break down.
6. Inspect the routing of the pressure switch hose on models with the pressure switch in the console. *(Fig. 4-7)* Make sure that all of the hose brackets are in place to prevent the hose from kinking.

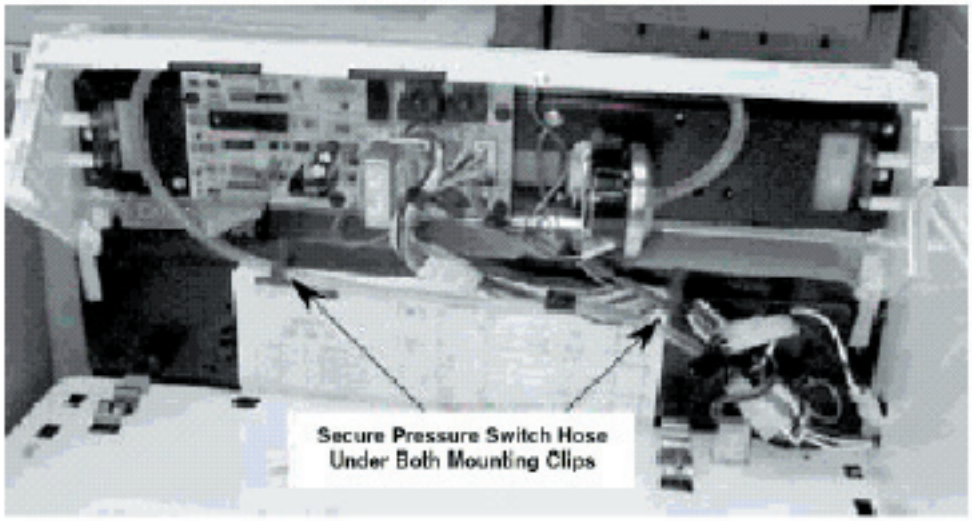



*Fig. 4-7*

## Replacing the Quencher

1. Disconnect power to the washer.
2. Disconnect the violet wire with the white stripe from the pressure switch.
3. Connect either quencher wire into the pressure switch where the violet wire with the white stripe was removed.
4. Reconnect the violet wire with the white stripe to the piggyback connector on the quencher wire.
5. Disconnect the pink wire from the pressure switch.
6. Connect the remaining quencher wire in place of the pink wire on the pressure switch.
7. Connect the pink wire to the piggyback connector on the quencher wire.
8. Route the black quencher wires, along with the pink and tan wires, and use a wire tie to tie them together near the quencher body. *(Fig. 4-8)*
9. Close and secure the console.
10. Reconnect power to the washer.

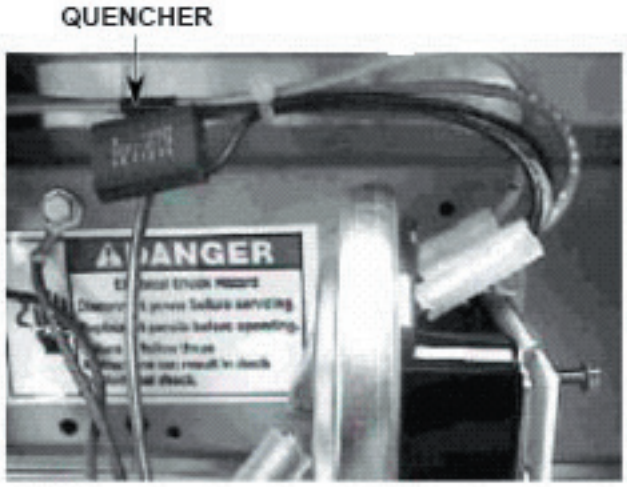



*Fig. 4-8*

-- NOTES --

# WASHER COMPONENT TESTING

## ⚠ WARNING

**ELECTRICAL SHOCK HAZARD**

Disconnect power before servicing.

Replace all panels before operating.

Failure to do so could result in death or electrical shock.

**Before beginning any test procedures, read the following:**

- Unplug machine from AC outlet before opening or closing the console.
- After replacing any component or wire harness, ensure all ground wires or connections are reconnected.
- Check all connections before replacing components. Broken or loose wires and defective terminals may cause the same failure symptoms as a defective component or control board.
- Connectors: Look at the top of the connector. Check for broken or loose wires. Check for wires not pressed into the connector far enough to engage metal barbs. Check for bad wire crimping to connector.
- All tests & checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms per volt DC or greater.
- Voltage checks **must** be made with all connectors **attached** to the boards. Observe voltage range and setting of AC or DC on the meter as indicated.
- Resistance checks **must** be made with wiring harness or connectors **disconnected**. Observe resistance setting for proper range of measurement.

## IMPORTANT

**ELECTROSTATIC DISCHARGE (ESD) SENSITIVE ELECTRONICS**

Do not open parts package until it is time to install the electronic board.

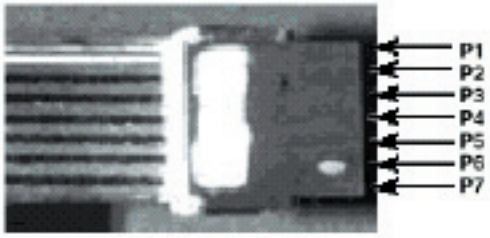
ESD problems are present everywhere. ESD may damage or weaken the electronic board. The new board may appear to work well after a repair is finished, but failure may occur at a later date due to ESD stress.

- Use an antistatic wrist strap. Connect wrist strap to green ground connection point or unpainted grounded metal in the appliance.
- If you do not have a wrist strap, touch your finger repeatedly to a green ground connection point or unpainted grounded metal in the appliance.
- Before removing the part from the antistatic bag, touch the bag to a green ground connection point or unpainted grounded metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic board by edges only.
- When repackaging failed electronic board in the antistatic bag, observe above precautions.

## TESTING THE MEMBRANE SWITCH

If the ribbon cable is green and the end is sealed, *(Fig. 5-1)* check the resistance on the membrane switch ribbon, as follows:

1. Disconnect power to the washer.
2. Set the ohmmeter to the R x 1 scale.




**Updated Green Ribbon Production Part**

*Fig. 5-1*

3. With no keypad depressed, touch the meter test leads to the "Check Resistance" points indicated in *Table 5-1*. At each of the test points, you should obtain a resistance reading of 100,000 ohms, or greater.

| PRESS | RESISTANCE |
|---|---|
| HOT | P1 TO P4 |
| WARM | P1 TO P3 |
| COLD | P1 TO P2 |
| NORMAL | P1 TO P5 |
| GENTLE | P1 TO P6 |
| EXIT | P1 TO P7 |

*Table 5-1*

4. With the keypad depressed, as indicated in Figure *5-2*, measure the ribbon cable test points, and you should obtain a reading of between 0 to 100 ohms.

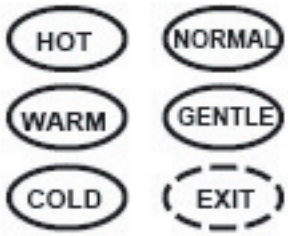



*Fig. 5-2*

**NOTE:** Gentle & Exit are both hidden on single speed washers. Exit only is hidden on 2-speed washers.

## CONNECTOR PIN-OUT SCHEMATIC

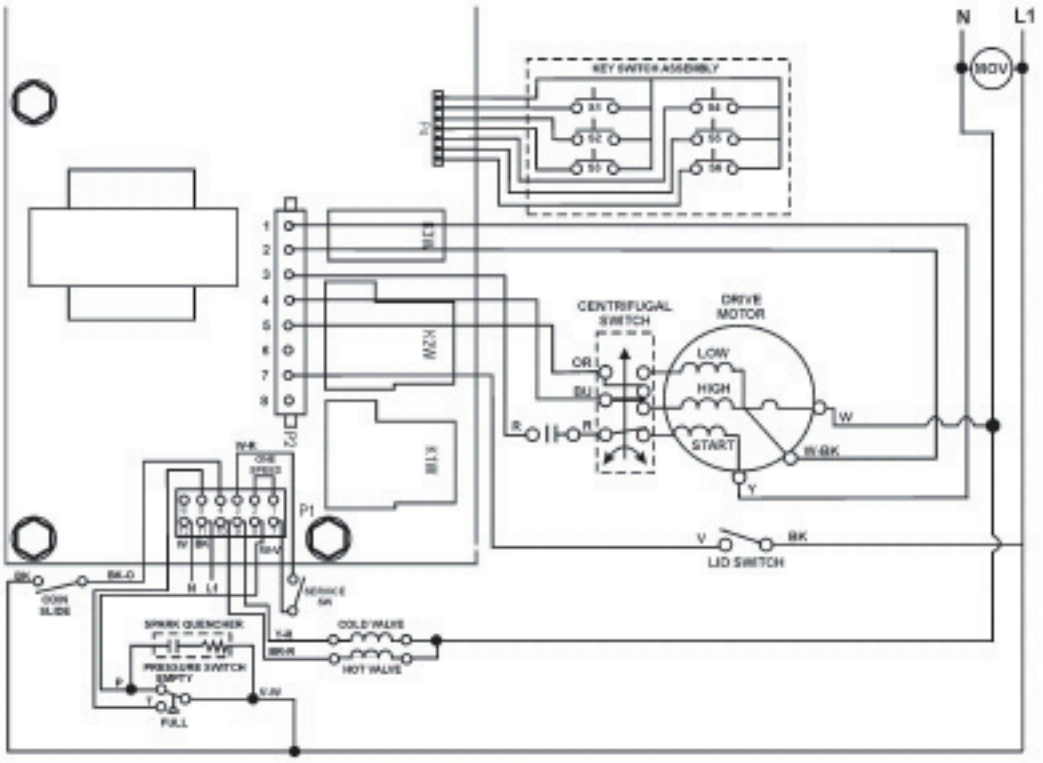



*Fig.5-3*

# CONNECTOR PIN-OUT TABLE

| CONNECTOR NUMBER/FUNCTION AND TYPE | CONNECTOR IMAGE | PIN NUMBER | WIRE COLOR | PIN FUNCTION DESCRIPTION/ VOLTAGE | TEST TYPE AND TERMINALS | VOLTAGE TEST RESULTS | NOTES |
|---|---|---|---|---|---|---|---|
| P1<br>AC INPUT/OUTPUT<br>12 PIN FEMALE |  | 1 | | MOTOR SPEED SELECT JUMPER | ? | ? | |
| | | 2 | | MOTOR SPEED SELECT JUMPER | ? | ? | |
| | | 3 | W-R | SERVICE SWITCH | ? | ? | |
| | | 4 | BK-O | COIN SLIDE | ? | ? | |
| | | 5 | T | WATER LEVEL (FULL) | ? | ? | |
| | | 6 | | NOT USED | | | |
| | | 7 | W-V | SERVICE SWITCH | ? | ? | |
| | | 8 | P | WATER LEVEL (EMPTY) | ? | ? | |
| | | 9 | Y-R | COLD WATER VALVE | ? | ? | |
| | | 10 | BR-R | HOT WATER VALVE | ? | ? | |
| | | 11 | BK | L1 | ? | ? | |
| | | 12 | W | NEUTRAL | ? | ? | |
| P2<br>MOTOR<br>8 PIN FELMALE |  | 1 | Y | START WDING | ? | ? | |
| | | 2 | W-BK | LOW SPEED WINDING | ? | ? | |
| | | 3 | R | START WINDING | ? | ? | |
| | | 4 | BU | HIGH SPEED WINDING | ? | ? | |
| | | 5 | OR | COLD VALVE POWER | ? | ? | |
| | | 6 | NOT USED | | | | |
| | | 7 | V | LID SWITCH | ? | ? | |
| | | 8 | NOT USED | | | | |
| P4<br>MEMBRANE<br>SWITCH<br>7 PIN MALE<br>(UNKEYED) |  | 1 | SILVER | RETURN | ? | ? | |
| | | 2 | BLUE | S 1 - HOT WASH | ? | ? | |
| | | 3 | BLUE | S2 - WARM WASH | ? | ? | |
| | | 4 | BLUE | S3 - COLDWASH | ? | ? | |
| | | 5 | BLUE | S4 - AGITATE HIGH | ? | ? | |
| | | 6 | BLUE | S5 - AGITATE LOW | ? | ? | |
| | | 7 | BLUE | S6 - HIDDEN | ? | ? | |

*Table 5-2*

-- NOTES --

# DIAGNOSIS AND TROUBLESHOOTING

## ⚠ WARNING

**ELECTRICAL SHOCK HAZARD**

Disconnect power before servicing.

Replace all panels before operating.

Failure to do so could result in death or electrical shock.

**Before beginning any test procedures, read the following:**

- Unplug machine from AC outlet before opening or closing the console.
- After replacing any component or wire harness, ensure all ground wires or connections are reconnected.
- Check all connections before replacing components. Broken or loose wires and defective terminals may cause the same failure symptoms as a defective component or control board.
- Connectors: Look at the top of the connector. Check for broken or loose wires. Check for wires not pressed into the connector far enough to engage metal barbs. Check for bad wire crimping to connector.
- All tests & checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms per volt DC or greater.
- Voltage checks **must** be made with all connectors **attached** to the boards. Observe voltage range and setting of AC or DC on the meter as indicated.
- Resistance checks **must** be made with wiring harness or connectors **disconnected**. Observe resistance setting for proper range of measurement.

## IMPORTANT

**ELECTROSTATIC DISCHARGE (ESD) SENSITIVE ELECTRONICS**

Do not open parts package until it is time to install the electronic board.

ESD problems are present everywhere. ESD may damage or weaken the electronic board. The new board may appear to work well after a repair is finished, but failure may occur at a later date due to ESD stress.

- Use an antistatic wrist strap. Connect wrist strap to green ground connection point or unpainted grounded metal in the appliance.
- If you do not have a wrist strap, touch your finger repeatedly to a green ground connection point or unpainted grounded metal in the appliance.
- Before removing the part from the antistatic bag, touch the bag to a green ground connection point or unpainted grounded metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic board by edges only.
- When repackaging failed electronic board in the antistatic bag, observe above precautions.

# TROUBLESHOOTING EMS 1000 COMMERCIAL WASHERS

These test procedures must be used **ONLY AS SPECIFIED AND IN THE SEQUENCE SHOWN.**

| PROBLEM | PROBABLE CAUSE |
|---|---|
| SERVICE SWITCH DOES NOT WORK | 1. Check for 120VAC at outlet.<br>2. Check wire harness connections.<br>3. Perform Test #1 - 120VAC Test<br>4. Perform Test #7 - Service Switch Test |
| OPTIONAL VAULT SWITCH WON'T WORK | See SERVICE SWITCH above. |
| WON'T POWER UP | 1. Check for 120VAC at outlet.<br>2. Check wire harness connections.<br>3. Perform Test #1 - 120VAC Test.<br>4. Perform Test #2 - Display Test. |
| DISPLAY DOES NOT LIGHT UP | 1. Check for 120VAC at outlet.<br>2. Check wire harness connections.<br>3. Perform Test #1 - 120VAC Test.<br>4. Perform Test #2 - Display Test. |
| SOME LED's OR DIGIT BARS DO NOT LIGHT UP | 1. Check wire harness connections.<br>2. Perform Test #2 - Display Test. |
| WON'T START WHEN COIN SLIDE IS USED | 1. Lid must be closed for water or motor to run.<br>2. Check wire harness connections.<br>3. Perform Test #3 - Coin Slide Test. |
| CONTROL WON'T ACCEPT SELECTIONS<br>Keypad does not work | 1. Check keyswitch connections.<br>2. Perform Test #4 - Keyswitch Test. |
| WON'T AGITATE, DRAIN or SPIN BUT MOTOR RUNS | 1. Check motor coupler. |
| MOTOR WON'T RUN<br>Does not agitate, drain or spin | 1. Lid must be closed for motor to run.<br>2. Check wire harness connections.<br>3. Perform Test #8 - Lid Switch Test<br>4. Perform Test #5 - Motor Test. |
| MOTOR WON'T SHUT OFF | 1. Perform Test #5 - Motor Test. |
| WON'T AGITATE | 1. Lid must be closed to agitate.<br>2. Check wire harness connections.<br>3. Check motor coupler.<br>4. Perform Test #8 - Lid Switch Test.<br>5. Perform Test #5 - Motor Test.<br>6. Perform Test #6 - Pressure Switch Test. |
| WONT AGITATE AT SELECTED SPEED<br>(Two speed models only - one of the two speeds works, other does not) | 1. Perform Test #5 - Motor Test. |
| WON'T DRAIN<br>Motor does not run. | 1. Lid must be closed for motor to run.<br>2. Check wire harness connections.<br>3. Perform Test #5 - Motor Test. |

| PROBLEM | PROBABLE CAUSE |
|---|---|
| WON'T DRAIN or WON'T STOP DRAINING<br>Motor is running. | 1. Check drain hose installation.<br>2. Pressure switch hose is block or kinked. |
| WON'T DRAIN OR SPIN<br>Motor does not run. | 1. Lid must be closed for motor to run.<br>2. Check wire harness connections.<br>3. Check coupler between motor and gear case.<br>4. Perform Test #5 - Motor Test. |
| WON'T DRAIN OR SPIN<br>Motor runs. | 1. Check pump or gearcase.<br>2. Check motor coupler. |
| WON'T FILL<br>Neither Hot or Cold water runs. | 1. Check water supply.<br>2. Check valve screens.<br>3. Perform Test #6 - Pressure Switch Test.<br>4. Perform Test #9 - Water Valve Test |
| WATER WON'T SHUT OFF | 1. Check drain hose for siphoning.<br>2. Check for foreign material in valve.<br>3. Check pressure switch hose for leaks or kinks.<br>4. Perform Test #9 - Water Valve Test |
| OVER FILLS | See WATER WON'T SHUT OFF above. |
| WATER LEVEL TOO HIGH | 1. Pressure switch 'plastic pull' in high position.<br>2. Pressure switch hose blocked or kinked.<br>3. Pressure dome hose on tub blocked.<br>4. Perform Test #6 - Pressure Switch Test. |
| WATER LEVEL TOO LOW | 1. Pressure switch 'plastic pull' in low position.<br>2. Pressure switch hose blocked or kinked.<br>3. Pressure dome hose on tub blocked.<br>4. Perform Test #6 - Pressure Switch Test. |
| RINSE TEMPERATURE IS WRONG | 1. Hot or cold water supply temp. not proper.<br>2. Hot or cold water valve screen dirty.<br>3. Cold/Warm rinse option jumper **W1** on control board is in wrong position. |
| INCORRECT WARM WATER TEMPERATURE | 1. Hose connected to correct supply?<br>2. Hot or cold water supply temp. not proper.<br>3. Hot or cold water valve screen dirty. |
| HOT or WARM FILLS FASTER THAN OTHER | 1. Check installation.<br>2. Screen on valve is dirty. |
| MACHINE VIBRATES | 1. Check installation, shipping strap removed?<br>2. Check leveling feet. |

# DIAGNOSTIC TEST ROUTINES

## EMS 1000 Coin Operated Commercial Washer

**Service Routine Initiation:**

1. Open the access lid in the meter case.
2. Push the momentary service switch found just inside the meter case "ON" then release it.
3. The LED *(Fig. 6-2)* will display the cycle count and the red LED will blink at ¼ second intervals. If no further action is taken after 60 seconds, the unit will return to normal operating mode and the red LED will stop blinking.
4. To initiate the diagnostic test routine press **S2** on the console. The yellow LED will turn ON. This indicates that the service routine is running. The red LED will turn OFF or stop blinking.

Each of the six key pad positions on the console, **S1** - **S6**, *(Fig. 6-1)* provide for direct operation of a corresponding electromechanical component. When a particular key pad is pressed the associated component will remain ON for five minutes and then turn OFF. Pressing the key pad a second time terminates the countdown.


*Fig. 6-1*

The LED will show specific seven segment letters when reading the following switch inputs:

**Coin Slide Switch:** Position "A" will display S when coin slide is pushed in.

**Lid Switch:** Position "B" will display L when the lid is closed.

**Water Level Switch:** Position "C" will display P when water level is at trip level.


*Fig. 6-2*

| KEYPAD | MODE | FUNCTION |
|---|---|---|
| S1 | HOT | Hot water On/OFF<br>• First push - Hot Water valve ON<br>• Second push - Hot water valve OFF |
| S2 | WARM | Cold water valve ON/OFF<br>• First Push - Cold water valve ON<br>• Second push - Cold water valve OFF |
| S3 | COLD | Agitation ON/OFF (water turns off)<br>• First push - agitates at high speed<br>• Second push - agitates at low speed (CAP2762)<br>• Second push - motor turns off (CAP2761)<br>• Third push - motor turns off (CAP2762) |
| S4 | NORMAL | Drain/spin operation (water turns off)<br>• First push - drain (high speed spin only)<br>• Second push - motor turns OFF<br>• Third push - spin (high speed spin only)<br>Fourth push - motor turns OFF |
| S5 | GENTLE | No action |
| S6 | (hidden keypad) | Exit Service Routine |

### LED Test Routine

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S5**. All LED segments light.

C. This LED Test Routine automatically turns off after 5 minutes.

D. Push and release keypad position **S6** to return to cycle count. Push keypad position **S6** again to exit testing.

# DIAGNOSTIC TESTS - EMS 1000 COMMERCIAL WASHERS

## TEST #1 - 120VAC ELECTRICAL SUPPLY

1. Check for 120VAC between pins 11 and 12 on **P1** on control board.
   - If voltage is present return to check list.
   - If voltage is not present, check wiring connectors, line cord, AC service fuse and AC circuit breaker.

## TEST #2 - DISPLAY TEST

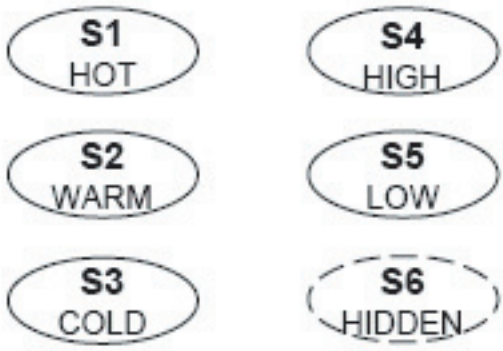
1. Unplug machine from AC outlet.
2. Unplug and reset connector **P3**.
3. To confirm display operation:
   a) Remove access door on top of meter case.
   b) Push service rocker switch just inside meter case and release.
   c) Cycle count is normally showing along with HOT LED blinking.
   d) Push and release keypad position 5. All LED segments should light up. Automatically turns off after 5 minutes.
   e) Push and release keypad 6 to return to cycle count.
   f) Push and release keypad 6 a second time to exit test cycle.
4. If still not functioning, replace display board. Repeat step 3.
5. If still not functioning, replace control board. Repeat step 3.

## TEST #3 - COIN SLIDE TEST

1. Unplug machine from AC outlet.
2. Disconnect wires from coin slide and remove coin slide from machine.
3. With slide in normal position (slide out) switch contacts are open (no continuity).
   a) If not open, replace switch
   b) If open, go to step 4.
4. With slide pushed and held in (may require use of coins), switch contacts are closed (continuity).
   a) If not closed, replace switch.
   b) If closed go to step 5.
5. Reinstall coin slide and reconnect wires. **Reconnect ground wire.**
6. Replace control board.

## TEST #4 - KEYSWITCH TEST

1. Unplug machine from AC outlet.
2. Unplug connector **P4** from control board.
3. Measure resistance between pins as listed in chart below:




| SWITCH NO. | CONNECTOR PIN | TO | PIN |
|---|---|---|---|
| 1 | 1 | → | 4 |
| 2 | 1 | → | 3 |
| 3 | 1 | → | 2 |
| 4 | 1 | → | 5 |
| 5 | 1 | → | 6 |
| 6 | 1 | → | 7 |

   a) When switch is not pushed, resistance between pins should show open circuit (greater than 100,000 ohms).
   b) When switch is pushed, resistance between pins should show closed circuit. (less than 100 ohms).
   c) If resistance is out of range, replace membrane switch assembly.

## TEST #5 - MOTOR TEST

1. During agitation measure 120VAC between pin 7 of **P2** and pin 12 of **P1**.
   a) If voltage is not present, go to TEST #8 - LID SWITCH TEST.
   b) If voltage is present go to step 2.
2. At motor start, measure 120VAC pulse between pins 1 and 3 of **P2**
   a) If voltage pulse is not present, replace control board.
   b) If voltage pulse is present go to step 3.
3. During agitation, measure 120VAC between pin 12 of **P1** and pin 4 of **P2** for high speed or pin 12 of **P1** and pin 5 of **P2** for low speed.

(For single speed units measure only high speed. All drains and spins are high speed.)

a) If voltage is not present, replace control board.
b) If voltage is present, go to step 4.

4. Unplug machine from AC outlet.
5. Unplug connector **P2**.
6. Measure resistance between pin 4 of **P2** and pin 12 of **P1**. Should be within 1 ohm.
   a) If resistance shows open circuit, centrifugal switch is bad or thermal protector is open.
   b) If resistance is correct, go to step 7.
7. Replace start capacitor. Check operation.
8. Replace motor. Check Operation.

**Motor Operation Check:**

a) Remove access door on top of meter case.
b) Push rocker switch just inside meter case.
c) Cycle count is showing along with RED LED blinking.
d) Push and release keyswitch position **S2**.
e) Keyswitch Functions:
   **S1** - Hot Water On and Off (also motor on and off)
   **S2** - Cold Water On and Off (also turns motor on and off)
   **S3** - Agitate (Also turns water on and off)
   **Model CAP2761EW0 Single Speed:** Motor On and Off
   **Model CAP2762EW0 Two Speed:** Hi Speed and Low Speed and Off
   **S4** - Drain On and Spin On and Off
   **S5** - No Action
   **S6** - Shows Cycle Count and Exit Testing.
   LED shows:
   **S** - Coin slide pushed in
   **L** - Lid switch closed
   **P** - Water full

Service routine terminates after 5 minutes of no use.

## TEST #6 - PRESSURE SWITCH TEST

1. When empty, measure 120VAC between pins 12 and 8 of **P1**.
   a) If voltage is not present, replace pressure switch.
   b) If voltage is present go to step 2.
2. When full, measure 120VAC between pins 12 and 5 of **P1**.

*TEST #6 (continued)*

a) If voltage is not present, replace pressure switch.
b) If voltage is present, pressure switch is working, replace control board.

**Pressure Switch Operation Test:**

a) Remove door on top of meter case.
b) Push rocker switch just inside meter case.
c) Cycle count is showing along with RED LED blinking.
d) Push and release keyswitch S2. YELLOW LED blinks.
e) LED digits show:
   **S** - When coins slide is pushed in
   **L** - When lid switch is closed
   **P** - When water is full

Service routine terminates after 5 minutes of no use or push **S6** twice to exit testing.

## TEST # 7- SERVICE SWITCH TEST

1. Unplug machine from AC outlet.
2. Disconnect wires from service switch and remove switch.
3. With switch in normal position, contacts should be open (no continuity).
   a) If not open, replace switch.
   b) If open, go to step 4.
4. With switch pushed and held down, contacts should be closed (continuity).
   a) If not closed, replace switch.
   b) If closed go to step 5.
5. Reinstall switch and reconnect wires.
6. Replace control board.

**Service Switch Operation Test:**

a) Remove door on top of meter case.
b) Push rocker switch just inside meter case.
c) Cycle count is showing and RED LED is blinking.
d) Push and release keyswitch **S2**. YELLOW LED starts blinking.

Service routine terminates after 5 minutes of no use or push **S6** twice to exit testing.

## TEST #8 - LID SWITCH TEST

1. With lid closed, measure 120VAC between pin 7 of **P2** and pin 12 of **P1**.
   a) If no voltage present, replace lid switch.
   b) If voltage present, return to check list.

*TEST # 8 (continued)*

2. With lid open, measure 120VAC between pin 7 of **P2** and pin 12 of **P1**.
   a) If 120VAC present, replace lid switch.
   b) If voltage not present, return to check list.

**Lid Switch Operation Test:**

a) Remove access door on top of meter case.
b) Push rocker switch just inside meter case.
c) Cycle count is showing along with RED LED blinking.
d) Push and release keyswitch **S2**. YELLOW LED starts blinking.
e) The second LED digit shows L when lid is closed. Second digit is blank when lid is open.

Service routine terminates after 5 minutes of no use or push **S6** twice to exit testing.

## TEST #9 - WATER VALVE TEST

1. When HOT water valve is to be On, measure 120VAC between pins 10 and 12 of **P1**.
   a) If voltage is present, replace water valve.
   b) If voltage is not present, replace control board.
2. When COLD water valve is to be On, measure 120VAC between pins 9 and 12 of **P1**.
   a) If voltage is present, replace water valve.
   b) If voltage is not present, replace control board.

**Water Valve Operation Test:**

a) Remove access door on top of meter case.
b) Push rocker switch just inside meter case.
c) Cycle count is showing along with RED LED blinking.
d) Push and release keyswitch **S2**. YELLOW LED starts to blink.
e) Keyswitch function:
   **S1** - Hot water On and Off
   **S2** - Cold Water On and Off

Service routine terminates after 5 minutes of no use or push **S6** twice to exit testing.

--NOTES --

# DRYER THEORY OF OPERATION

## CUSTOMER OPERATING INSTRUCTIONS

The Whirlpool Commercial Dryer provides easy to read, step-by-step customer operating instructions on the left side of the dryer console. *(Fig. 7-1 & 7-2)*

### CEP2760/CGP2761 DRYERS

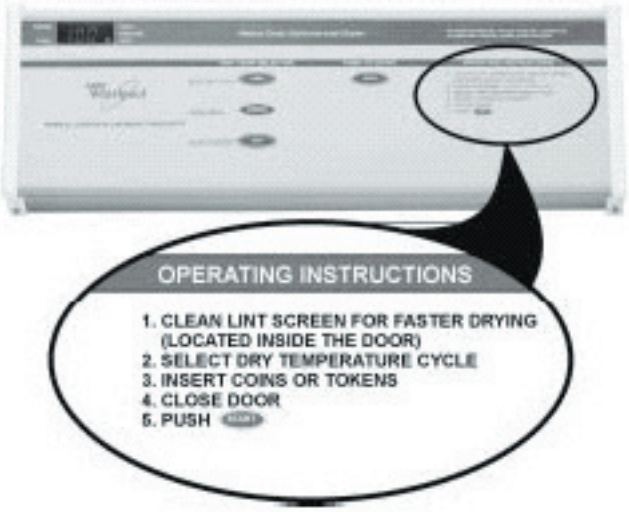



*Fig. 7-1*

### CEP2960/CGP2961 DRYERS

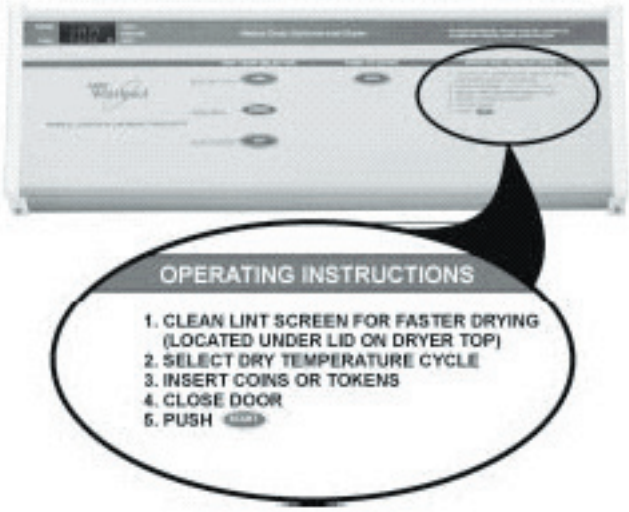



*Fig. 7-2*

## BASIC OPERATION

### EMS 1000 Coin Operated Gas and Electric Dryers

By following the instructions on the console, the customer can select one of three drying temperatures and insert the proper coins into the coin slide. When the coin slide is pushed in, a microswitch, located in the metercase, closes and the electronic control board is initialized and ready to operate the dryer once the Push-To-Start pad is pressed. The LED will indicate a countdown of the time remaining in the drying cycle.

### Air Intake and Exhaust-29" Cabinet

1. The blower wheel draws dry air across the electric heating element or the gas burner. (Fig. 7-3)
2. The warmed dry air enters the dryer drum through the inlet port in the upper left and circulates through the laundry. The warm moist air is pulled through the outlet port in the upper right and passes through the lint screen in the lint chute.
3. The moisture laden air is then discharged through the 4-inch exhaust pipe to an outside vent.
4. Figure 7-3 shows the air path. The air system is similar in gas and electric dryers. A gas dryer is shown.

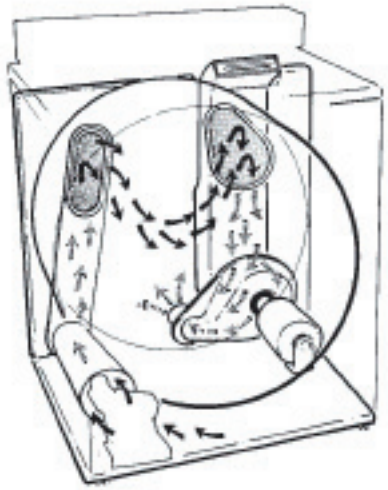


*Fig. 7-3*

## Air Intake and Exhaust-27" Cabinet

Room temperature air (white arrows) enters the lower portion of the dryer cabinet underneath the toe panel and is drawn through the heating system (electric heating element or gas burner assembly).

Heated air (dark grey arrows) is then drawn up the heat duct mounted to the rear bulkhead and into the dryer drum.

As the heated air circulates in the drum it picks up moisture (lighter grey arrows).

Moist air is then drawn down through the lint filter, through the blower and the exhaust duct and vented out of the dryer. *(Fig. 7-4)*

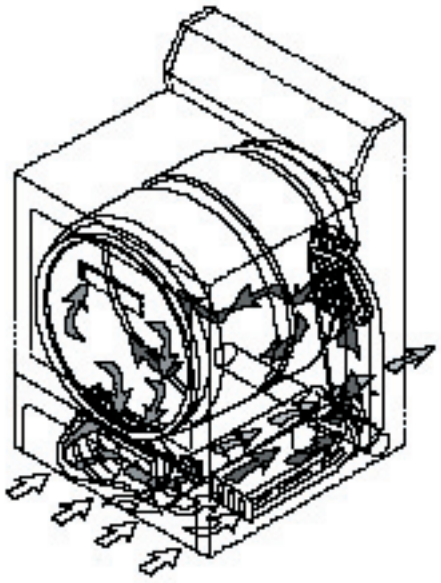


*Fig. 7-4*

## Example of a Typical Cycle Operation - MEDIUM TEMPERATURE SELECTED

When the MEDIUM temperature is selected and the Push-To-Start button is pressed, the following occurs:

1. The MEDIUM select button sends a low-voltage control signal to the electronic control board, which sets the thermostat heater control circuit to the MEDIUM setting.
2. The Push-To-Start button sends a low-voltage control signal to the electronic control board, which closes the motor relay and the heater (or burner) relay.

The drive motor will begin to turn the dryer drum. Because the drive motor is not up to full run speed at the beginning of the cycle, the centrifugal switch contacts in series with the heater (gas burner) are open and the heater (or burner) is not energized. The switch contacts to the start winding are closed. *(Fig. 7-5)*

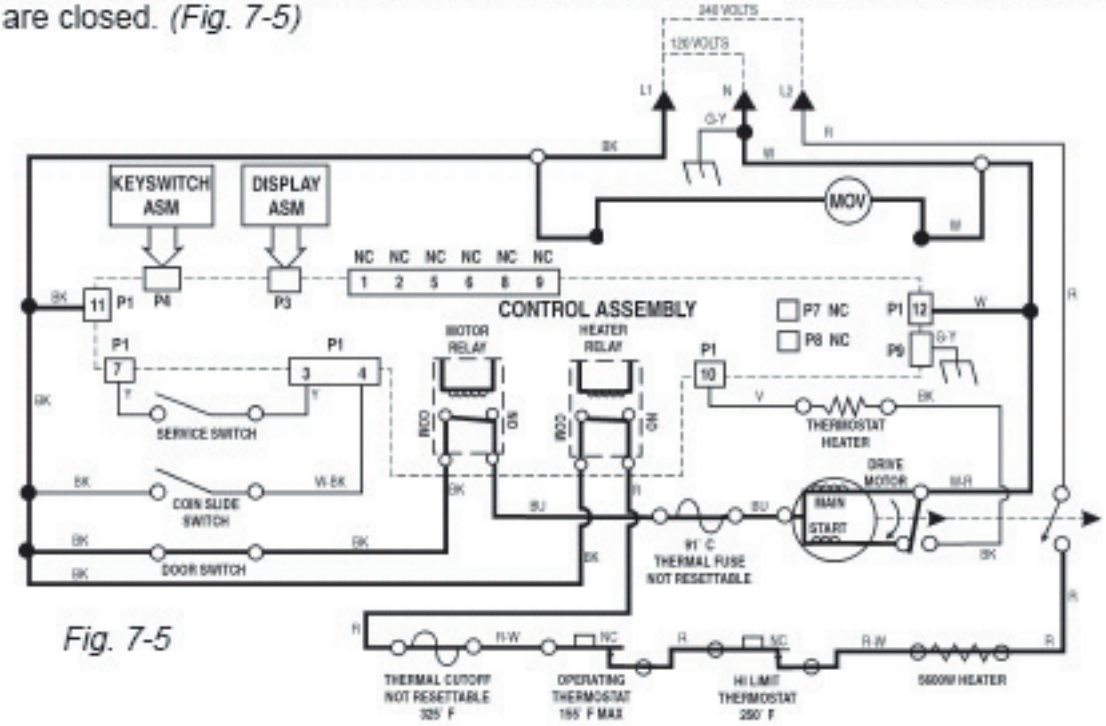



*Fig. 7-5*

When the drive motor reaches full run speed, the contacts in series with the heater on the centrifugal switch close, allowing 240VAC to energize the electric heating element. On gas dryers, the centrifugal switch contacts provide 120VAC to the ignitor and gas valve. The contacts controlling the start winding in the drive motor open. *(Fig. 7-6)*

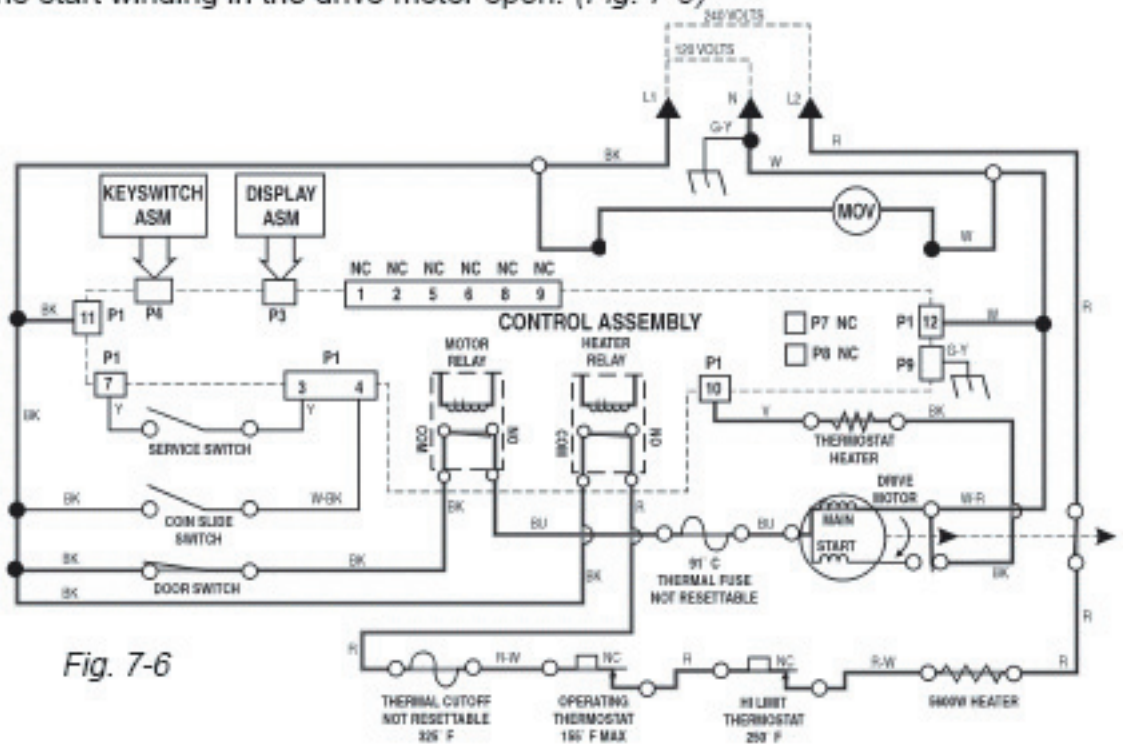



*Fig. 7-6*

During the last five minutes of the dry cycle, the electronic control board will de-energize the heater (burner) relay, opening the circuit. The dryer will now run and tumble the laundry load with no heat. This allows a cool down before the dryer stops. *(Fig. 7-7)*

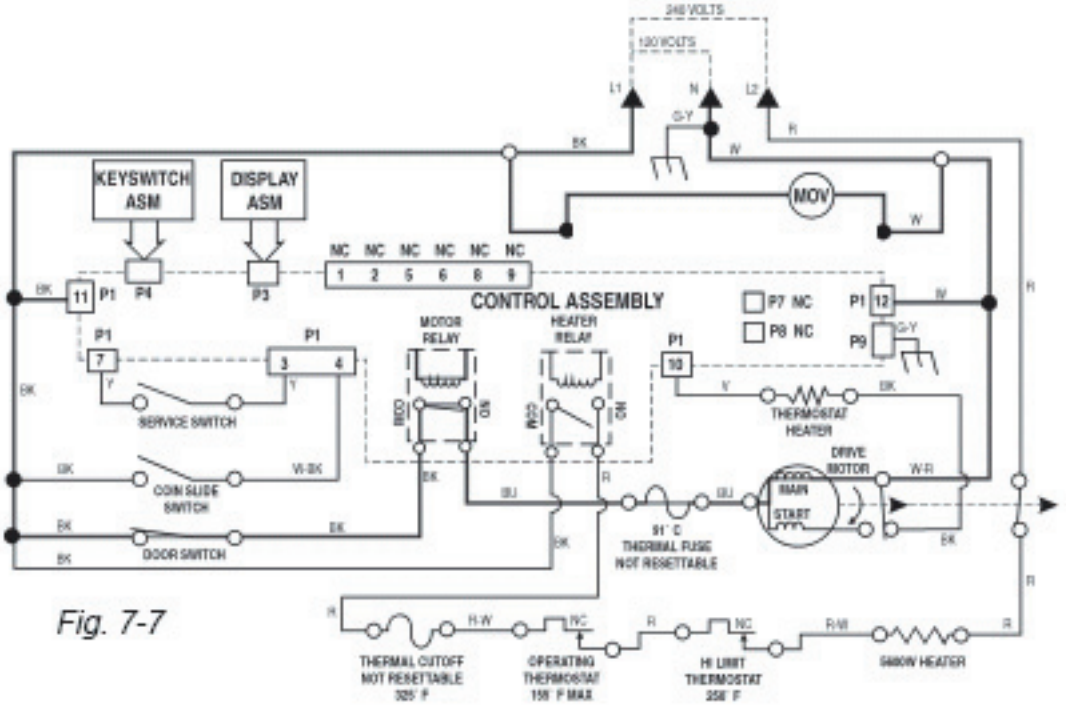



*Fig. 7-7*

# EMS 1000 WASHER SETUP ROUTINES

## KEYPAD POSITIONS


## ACCESS MODE

Perform the following steps to access all set-ups and routines:

A. Remove the access door on the top of the meter case.

B. Push the rocker switch just inside the access door and release it.

C. The **HIGH** (red) LED, see page 10-3, *Fig. 10-2*, starts blinking to confirm the rocker switch has been pushed. Cycle count now shows. Continue with the following routines.

## READ CYCLE COUNT

A. Perform all steps under **Access Mode** (above).

B. Cycle count is displayed for 1 minute. After 1 minute the display automatically returns to showing vend price and is ready for use. Before 1 minute automatic time out, keypad position **S6** can be pushed to exit this routine.

Do not push any other keypads unless actions, such as SET VEND PRICE, are to be performed.

C. Replace access door on top of the meter case.

**NOTE:** On Models CGW2761EW & CEW2760EW removing the coin box does the same as pushing the rocker switch in step B above. Coin box must be reinstalled to run tests.

### Changing Cycle Count

The cycle count number ***cannot*** be set or reset to a different number. When the number reaches 999 the next count number is 000, and the next is 001.

## SET VEND PRICE

The displayed vend price is independent of the mechanical coin acceptance unit. When the mechanical coin acceptance unit price is changed the displayed vend price must be changed to match.

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S1**. The **LOW** LED (green) LED, see page 33, *Fig. 38*, starts blinking to indicate keypad S1 was pushed and that it is in the price setting mode.

C. New keypad functions:

| KEYPAD | FUNCTION |
|---|---|
| S1 | Vend price UP by $.10 |
| S2 | Vend price DOWN by $.10 |
| S3 | No action |
| S4 | Vend price UP by $.01 |
| S5 | Vend price DOWN by $.01 |
| S6 | First push - Return to Cycle count<br>Second push - Exit |

## SET RUN TIME

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S4**. The **LOW** LED starts blinking to indicate keypad **S4** was pushed.

C. New keypad functions:

| KEYPAD | FUNCTION |
|---|---|
| S1 | Run time UP by 10 min. (Max run time: 599 min.) |
| S2 | Run time DOWN by 10 minutes. |
| S3 | No action |
| S4 | run time UP by 1 minute. |
| S5 | Run time DOWN by 1 minute. |
| S6 | First push - Return to Cycle count<br>Second push - Exit |

## RUNNING DRYER WITHOUT USE OF COIN SLIDE

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S3**.

C. Push **START** keypad **S4**. The machine will start running. Cycle count does not increment.

## SERVICE ROUTINE

A. Perform all steps under Access Mode.

B. Push and release keypad **S2**. The **MED** LED starts blinking to confirm keypad push.

C. New keypad functions:

| KEYPAD | MODE | FUNCTION |
|---|---|---|
| S1 | HIGH | High thermostat heater setting |
| S2 | MEDIUM | Medium thermostat heater setting |
| S3 | LOW | Low thermostat heater setting |
| S4 | START | Drive motor ON/OFF (Heater OFF)<br>• First push - Motor turns ON<br>• Second push - Motor turns OFF |
| S5 | (hidden) | Heater ON/OFF<br>• First push - Heater ON<br>• Second push - Heater OFF |
| S6 | (hidden) | Exit Service Routine<br>• First push - Return to cycle count<br>• Second push - Exit test. |

**NOTE:** Heater and Thermostat Heater do not work without motor running.

While at step C above, the LED digits show:

**S** when coin slide is pushed in.

D when door switch is closed.

This service routine turns itself off after 5 minutes of no use.

## LED TEST ROUTINE

A. Perform all steps under Access Mode.

B. Push and release keypad **S5**. all LEDs light.

C. This LED Test Routine automatically turns off after 5 minutes.

D. Push and release keypad **S6** to return to cycle count. Push keypad **S6** a second time to exit testing.

-- NOTES --

# ⚠ WARNING

ELECTRICAL SHOCK HAZARD

Disconnect power before servicing.

Replace all panels before operating.

Failure to do so can result in death or electrical shock.

# DRYER CONSOLE COMPONENT ACCESS

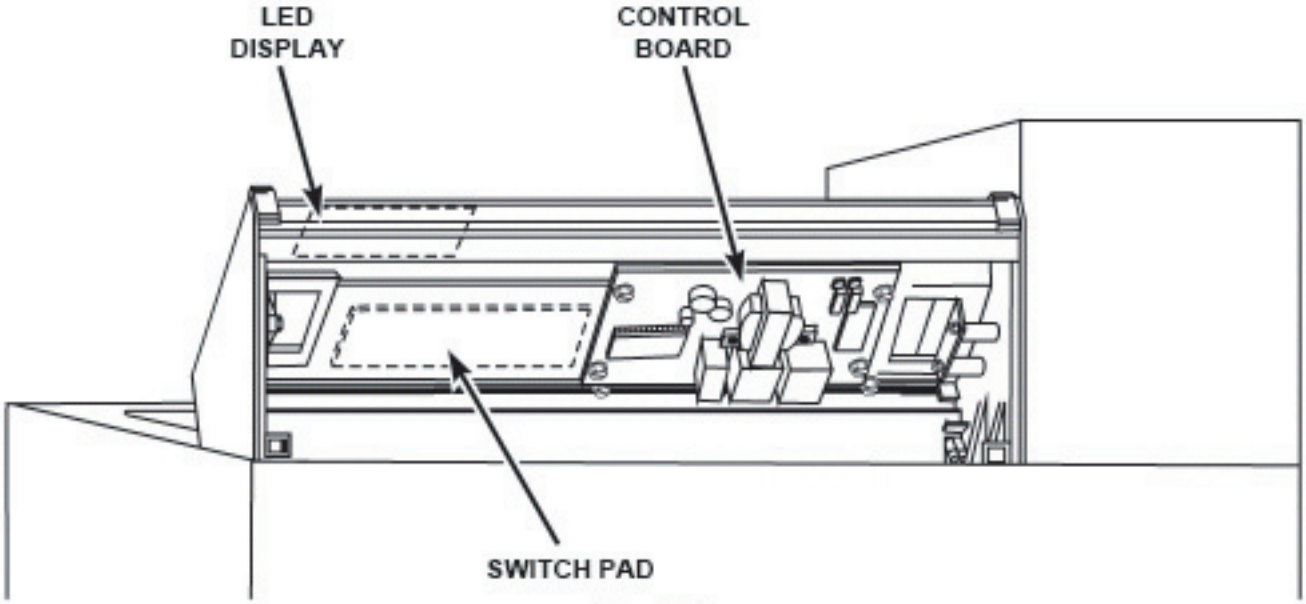



*Fig. 8-1*

## COMPONENTS INSIDE THE DRYER CONSOLE

To access components in the console remove the six screws securing the console cover to the back of the console. Place a protective covering on the top of the dryer and remove the two Phillips head screws securing the lower front corners of the console to the dryer top. The console can now be rotated forward to expose the components inside. *(Fig. 8-1)*

## Replacing the Membrane Switch

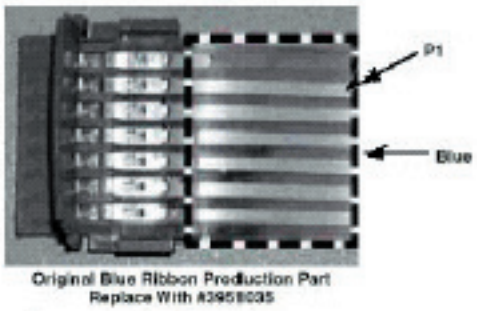



*Fig. 8-2*

1. Disconnect power to the dryer.
2. Remove the six screws securing the console cover to the back of the console. Place a protective covering on the top of the dryer and remove the two Phillips head screws securing the lower front corners of the console to the dryer top. The console can now be rotated forward to expose the components inside.
3. Remove the right control panel end cap from the console, then remove the display and control boards.
4. Remove the left end cap from the console and separate the console support from the console.
5. Remove the backer plate and membrane switch from the console support by carefully pulling the backer plate away from the console support.
6. Remove the membrane switch from the backer plate by releasing the 2 locking tabs.
7. The locking tabs on the replacement membrane switch **must be creased** for insertion into the backer plate, or the membrane switch will not lay flat against the plate. This can cause the washer to not accept commands. *(Fig. 8-3)*

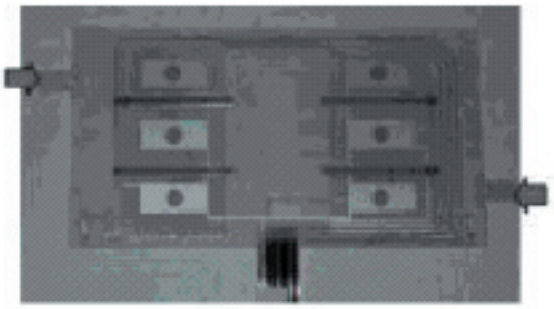


*Fig. 8-3*

8. Insert the tabs into the backer plate and lock the membrane switch to the console by turning the tabs 90 degrees. *(Fig. 8-4)*

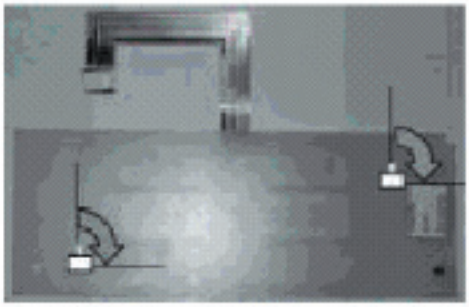


*Fig. 8-4*

9. Secure the side backer plates to the console support *(Fig. 8-5 and 8-6)* so that the proper distance between the membrane switch and the console is maintained. Failure to insure the proper installation of these backer plates will result in the washer not accepting commands.

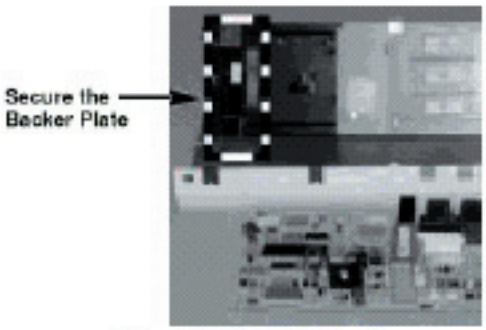



*Fig. 8-5 (Left Side)*

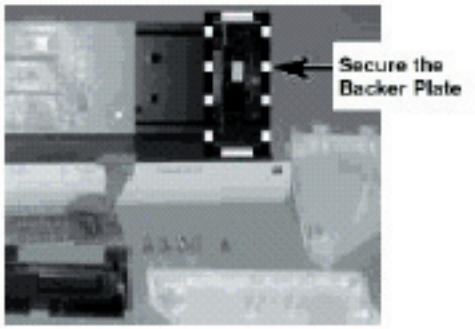



*Fig. 8-6 (Right Side)*

10. Inspect the console. Make sure there are no dents in the console over the membrane switch contact points. If the console is dented, replace the console with the part number specified in the parts break down.

# DRYER COMPONENT TESTING

## ⚠ WARNING

**ELECTRICAL SHOCK HAZARD**

Disconnect power before servicing.

Replace all panels before operating.

Failure to do so could result in death or electrical shock.

**Before beginning any test procedures, read the following:**

- Unplug machine from AC outlet before opening or closing the console.
- After replacing any component or wire harness, ensure all ground wires or connections are reconnected.
- Check all connections before replacing components. Broken or loose wires and defective terminals may cause the same failure symptoms as a defective component or control board.
- Connectors: Look at the top of the connector. Check for broken or loose wires. Check for wires not pressed into the connector far enough to engage metal barbs. Check for bad wire crimping to connector.
- All tests & checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms per volt DC or greater.
- Voltage checks **must** be made with all connectors **attached** to the boards. Observe voltage range and setting of AC or DC on the meter as indicated.
- Resistance checks **must** be made with wiring harness or connectors **disconnected**. Observe resistance setting for proper range of measurement.

## IMPORTANT

**ELECTROSTATIC DISCHARGE (ESD) SENSITIVE ELECTRONICS**

Do not open parts package until it is time to install the electronic board.

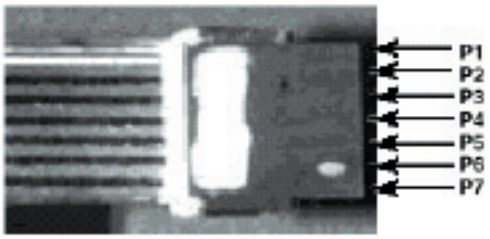
ESD problems are present everywhere. ESD may damage or weaken the electronic board. The new board may appear to work well after a repair is finished, but failure may occur at a later date due to ESD stress.

- Use an antistatic wrist strap. Connect wrist strap to green ground connection point or unpainted grounded metal in the appliance.
- If you do not have a wrist strap, touch your finger repeatedly to a green ground connection point or unpainted grounded metal in the appliance.
- Before removing the part from the antistatic bag, touch the bag to a green ground connection point or unpainted grounded metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic board by edges only.
- When repackaging failed electronic board in the antistatic bag, observe above precautions.

# TESTING THE MEMBRANE SWITCH

If the ribbon cable is green and the end is sealed, *(Fig. 9-1)* check the resistance on the membrane switch ribbon, as follows:

1. Disconnect power to the washer.
2. Set the ohmmeter to the R x 1 scale.




**Updated Green Ribbon Production Part**

*Fig. 9-1*

3. With no keypad depressed, touch the meter test leads to the "Check Resistance" points indicated in *Table 9-1*. At each of the test points, you should obtain a resistance reading of 100,000 ohms, or greater.

| PRESS | RESISTANCE |
|---|---|
| HIGH | P1 TO P4 |
| MEDIUM | P1 TO P3 |
| LOW | P1 TO P2 |
| START | P1 TO P5 |
| N/A | P1 TO P6 |
| EXIT | P1 TO P7 |

*Table 9-1*

4. With the keypad depressed, as indicated in Figure *5-2,* measure the ribbon cable test points, and you should obtain a reading of between 0 to 100 ohms.

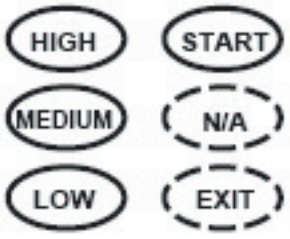



*Fig. 9-2*

**NOTE:** N/A and Exit are hidden.

# CONNECTOR PIN-OUT SCHEMATIC

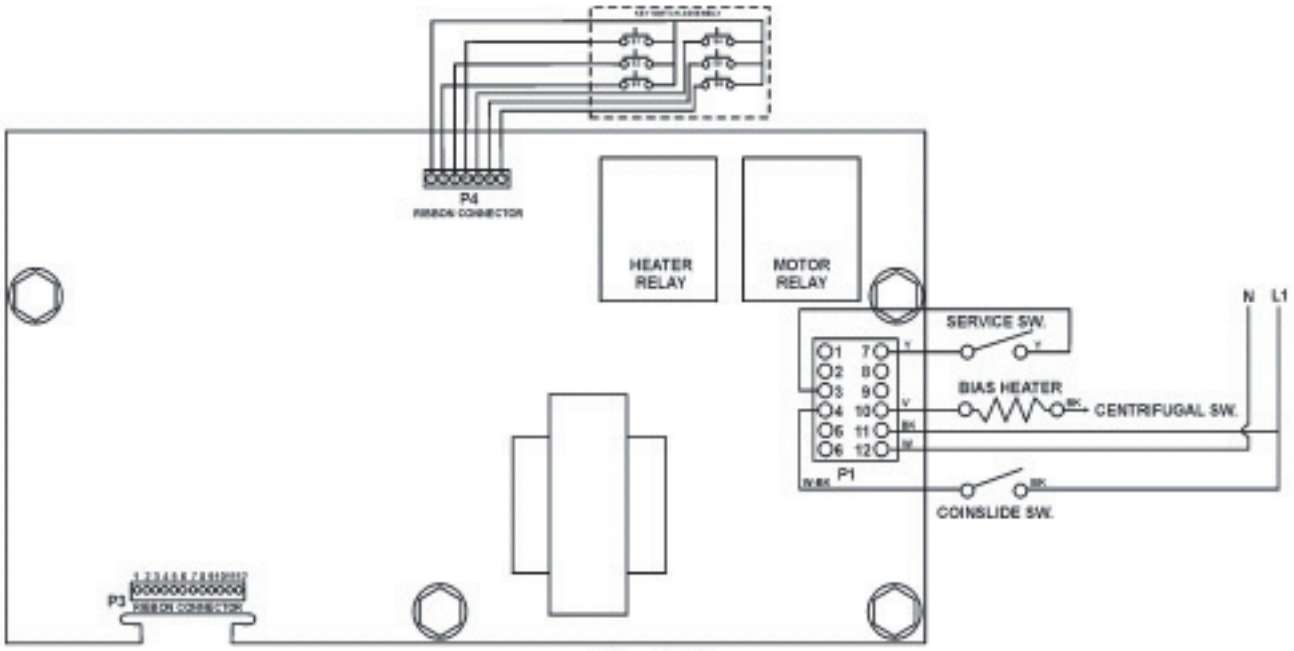



*Fig. 9-3*

# CONNECTOR PIN-OUT TABLE

| CONNECTOR NUMBER/FUNCTION AND TYPE | CONNECTOR IMAGE | PIN NUMBER | WIRE COLOR | PIN FUNCTION DESCRIPTION/ VOLTAGE | TEST TYPE AND TERMINALS | VOLTAGE TEST RESULTS | NOTES |
|---|---|---|---|---|---|---|---|
| P1 AC INPUT/OUTPUT 12 PIN FEMALE |  | 1 | | NOT USED | ? | ? | |
| | | 2 | | NOT USED | | | |
| | | 3 | Y | SERVICE SWITCH | ? | ? | |
| | | 4 | W-BK | COINT SLIDE | | | |
| | | 5 | | NOT USED | ? | ? | |
| | | 6 | | NOT USED | ? | ? | |
| | | 7 | T | SERVICE SWITCH | ? | ? | |
| | | 8 | | NOT USED | | | |
| | | 9 | | NOT USED | ? | ? | |
| | | 10 | V | BIAS HEATER | ? | ? | |
| | | 11 | BK | L1 | ? | ? | |
| | | 12 | W | NEUTRAL | ? | ? | |
| P3 DISPLAY 10 PIN MALE | | 1 | RED | ? | ? | ? | |
| | | 2 | GREY | ? | ? | ? | |
| | | 3 | GREY | / | ? | ? | |
| | | 4 | GREY | ? | ? | ? | |
| | | 5 | GREY | ? | ? | ? | |
| | | 6 | GREY | ? | ? | ? | |
| | | 7 | GREY | ? | ? | ? | |
| | | 8 | GREY | ? | ? | ? | |
| | | 9 | GREY | ? | ? | ? | |
| | | 10 | GREY | ? | ? | ? | |
| | | 11 | GREY | ? | ? | ? | |
| | | 12 | GREY | ? | ? | ? | |
| P4 MEMBRANE SWITCH 7 PIN MALE (UNKEYED) |  | 1 | SILVER | RETURN | ? | ? | |
| | | 2 | BLUE | S1 - HOT | ? | ? | |
| | | 3 | BLUE | S2 - WARM | ? | ? | |
| | | 4 | BLUE | S3 - COOL | ? | ? | |
| | | 5 | BLUE | S4 - START | ? | ? | |
| | | 6 | BLUE | S5 - HIDDEN | ? | ? | |
| | | 7 | BLUE | S6 - HIDDEN | ? | ? | |

*Table 9-2*

# DIAGNOSIS AND TROUBLESHOOTING

## ⚠ WARNING

**ELECTRICAL SHOCK HAZARD**

Disconnect power before servicing.

Replace all panels before operating.

Failure to do so could result in death or electrical shock.

Before beginning any test procedures, read the following:

- Unplug machine from AC outlet before opening or closing the console.
- After replacing any component or wire harness, ensure all ground wires or connections are reconnected.
- Check all connections before replacing components. Broken or loose wires and defective terminals may cause the same failure symptoms as a defective component or control board.
- Connectors: Look at the top of the connector. Check for broken or loose wires. Check for wires not pressed into the connector far enough to engage metal barbs. Check for bad wire crimping to connector.
- All tests & checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms per volt DC or greater.
- Voltage checks **must** be made with all connectors **attached** to the boards. Observe voltage range and setting of AC or DC on the meter as indicated.
- Resistance checks **must** be made with wiring harness or connectors **disconnected**. Observe resistance range setting for proper range of measure ment.

## IMPORTANT

**ELECTROSTATIC DISCHARGE (ESD) SENSITIVE ELECTRONICS**

Do not open parts package until it is time to install the electronic board.

ESD problems are present everywhere. ESD may damage or weaken the electronic board. The new board may appear to work well after a repair is finished, but failure may occur at a later date due to ESD stress.

- Use an antistatic wrist strap. Connect wrist strap to green ground connection point or unpainted grounded metal in the appliance.
- If you do not have a wrist strap, touch your finger repeatedly to a green ground connection point or unpainted grounded metal in the appliance.
- Before removing the part from the antistatic bag, touch the bag to a green ground connection point or unpainted grounded metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic board by edges only.
- When repackaging failed electronic board in the antistatic bag, observe above precautions.

# TROUBLESHOOTING EMS 1000 COMMERCIAL DRYERS

These test procedures must be used **ONLY AS SPECIFIED AND IN THE SEQUENCE SHOWN.**

| PROBLEM | PROBABLE CAUSE |
|---|---|
| SERVICE SWITCH DOES NOT WORK | 1. Check for 120VAC at outlet.<br>2. Check wire harness connections.<br>3. Perform Test #1 - 120VAC Test.<br>4. Perform Test #7 - Service Switch Test. |
| OPTIONAL VAULT SWITCH WON'T WORK | See SERVICE SWITCH above. |
| WON'T POWER UP | 1. Check for 120/240VAC at outlet.<br>2. Check wire harness connections.<br>3. Perform Test #1 - 120VAC Test.<br>4. Perform Test #2 - Display Test. |
| DISPLAY DOES NOT LIGHT UP | 1. Check for 120/240VAC at outlet.<br>2. Check wire harness connections.<br>3. Perform Test #1 - 120VAC Test.<br>4. Perform Test #2 - Display Test. |
| SOME LED's OR DIGIT BARS DO NOT LIGHT UP | 1. Check wire harness connections.<br>2. Perform Test #2 - Display Test. |
| WON'T START WHEN COIN SLIDE IS USED | 1. Door must be closed for motor to run.<br>2. START keyswitch must be pushed to run.<br>3. Check wire harness connections.<br>4. Perform Test #3 - Coin Slide Test. |
| CONTROL WON'T ACCEPT SELECTIONS<br>Keypad does not work | 1. Check keyswitch connections.<br>2. Perform Test #4 - Keyswitch Test. |
| WON'T STOP WHEN DOOR OPENS | 1. Perform Test #8, Door Switch. |
| MOTOR WON'T SHUT OFF<br>Does turn off when door opens | 1. Perform Test #5 - Motor Test. |
| MOTOR WON'T RUN | 1. Push START keyswitch to start cycle.<br>2. Check wire harness connections.<br>3. Check drum belt.<br>4. Check belt switch (not all models).<br>5. Perform Test #8, Door Switch Test.<br>6. Perform Test #5 - Motor Test. |
| NO HEAT BUT MOTOR RUNS | 1. Check harness connections.<br>2. Check drum belt.<br>3. Check gas supply (gas models).<br>4. Check one time use thermal fuse(s).<br>5. Check Hi-Limit Thermostat.<br>6. Check Operating thermostat.<br>7. Perform Test #1 - Voltage Test. |

| PROBLEM | PROBABLE CAUSE |
|---|---|
| HEAT IS LOW FOR SETTING | 1. Check gas supply (gas models).<br>2. Check Bias Thermostat Heater.<br>3. Perform Test #9 - Bias Thermostat Heater. |
| HEAT IS HIGH FOR SETTING | 1. Check lint screen.<br>2. Check for vent restrictions.<br>3. Perform Test #9 - Bias Thermostat Heater. |
| HEATER ON DURING COOL DOWN TIME<br>Last two minutes of cycle only. | 1. Perform Test #6 - Heat Test |
| HEAT STAYS ON WHEN DOOR IS OPEN | 1. Check door switch.<br>2. Check centrifugal motor switch. |

# DIAGNOSTIC TEST ROUTINES

**Service Routine Initiation:**

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S2**. The MEDIUM LED starts blinking to confirm keypad push.

C. New keypad functions:

| KEYPAD | MODE | FUNCTION |
|---|---|---|
| S1 | HIGH | High thermostat heater setting |
| S2 | MEDIUM | Medium thermostat heater setting |
| S3 | LOW | Low thermostat heater setting |
| S4 | START | Drive motor ON/OFF (Heater OFF)<br>• First push - Motor turns ON<br>• Second push - Motor turns OFF |
| S5 | (hidden) | Heater ON/OFF<br>• First push - Heater ON<br>• Second push - Heater OFF |
| S6 | (hidden) | Exit Service Routine<br>• First push - Return to cycle count<br>• Second push - Exit test. |

At step C above, the LED digits will show:

**Coin Slide Switch** - Position "A" will display S when coin slide is pushed in.

**Door Switch** - Position "B" will display d when the door is closed.

## LED Test Routine

A. Perform all steps under **Access Mode**.

B. Push and release keypad position **S5**. All LED segments light.

C. This LED Test Routine automatically turns off after 5 minutes.

D. Push and release keypad position **S6** to return to cycle count. Push keypad position **S6** again to exit testing.


*Fig. 10-1*

# DIAGNOSTIC TESTS - EMS 1000 COMMERCIAL DRYERS

### TEST #1 - 120VAC VOLTAGE CHECK

1. Check for 100 - 130VAC between pins 11 and 12 on **P1** on control board.
   a) If voltage is present return to check list.
   b) If voltage is not present, check wiring connectors, line cord, AC service fuse and AC circuit breaker.

### TEST #1 - 240VAC VOLTAGE TEST

1. Check for 100 - 130VAC between L1 and Neutral on terminal block on back of unit.
2. Check for 100 - 130VAC between L2 and Neutral on terminal block on back of unit.
   a) If voltage is within range, return to check list.
   b) If voltage is not within range, check wiring connectors, line cord, AC service fuse and AC circuit breaker.

### TEST #2 - DISPLAY TEST

1. Unplug machine from AC outlet.
2. Unplug and reset connector **P3**.
3. To confirm display operation:
   a) Remove access door on top of meter case.
   b) Push service rocker switch just inside meter case and release.
   c) Cycle count is normally showing along with HOT LED blinking.
   d) Push and release keypad position 5. All LED segments should light up. Automatically turns off after 5 minutes.
   e) Push and release keypad 6 to return to cycle count.
   f) Push and release keypad 6 a second time to exit test cycle.
4. If still not functioning, replace display board. Repeat step 3.
5. If still not functioning, replace control board. Repeat step 3.

### TEST #3 - COIN SLIDE TEST

1. Unplug machine from AC outlet.
2. Disconnect wires from coin slide and remove coin slide from machine.
3. With slide in normal position (slide out) switch contacts are open (no continuity).
   a) If not open, replace switch
   b) If open, go to step 4.
4. With slide pushed and held in (may require use of coins), switch contacts are closed (continuity).
   a) If not closed, replace switch.
   b) If closed go to step 5.
5. Reinstall coin slide and reconnect wires.
   **Reconnect ground wire.**
6. Replace control board.

## TEST #4 - KEYSWITCH TEST

1. Unplug machine from AC outlet.
2. Unplug connector **P4** from control board.
3. Measure resistance between pins as listed in chart below:


| SWITCH NO. | CONNECTOR PIN | TO | PIN |
|---|---|---|---|
| 1 | 1 | → | 4 |
| 2 | 1 | → | 3 |
| 3 | 1 | → | 2 |
| 4 | 1 | → | 5 |
| 5 | 1 | → | 6 |
| 6 | 1 | → | 7 |

   a) When switch is not pushed, resistance between pins should show open circuit (greater than 100,000 ohms).

   b) When switch is pushed, resistance between pins should show closed circuit (less than 100 ohms).

   c) If resistance is out of range, replace membrane switch assembly.

## TEST #5 - MOTOR TEST

1. Close the door.
2. Measure 120VAC between Motor Relay Com (black wire at back of relay) and pin 12 of **P1** (white wire, AC neutral).
   a) If voltage is not present, Perform Test # 8 - Door Switch Test.
   b) If voltage is present, go to step 6.
3. When motor is to be running, measure 120VAC between Motor Relay No (blue wire at back of relay) and pin 12 of **P1** (white wire, AC neutral).
   a) If voltage is not present, replace control board.
   b) If voltage is present, go to step 6.
4. Return to check list.

## TEST #6 - HEAT TEST

### ELECTRIC MODELS

1. Unplug machine from AC power.
2. Measure resistance between Heater Relay Com and No (on back of relay).
   a) If very low resistance (short circuit), re place control board.
   b) If resistance shows open circuit (infinite reading), go to step 3.
3. Plug machine into AC power.
4. Turn heater Off, measure 120VAC between Heater Relay Com (on back of relay) and cabinet common ground (Neutral green wire).
   a) If voltage is present, got to step 6.
   b) If voltage is not present, go to step 5.
5. Turn heater On, measure 240VAC between Heater Relay No (on back of relay) and cabinet ground (Neutral green wire).
   a) If voltage is not present, replace control board.
   b) If voltage is present, return to check list.
6. Turn heater on, measure 240VAC between Heater Relay Com (on back of relay) and cabinet ground (Neutral green wire).
   a) If voltage is not present, replace control board.
   b) If voltage is present, return to check list.

### GAS MODELS

1. Unplug machine from AC power.
2. Measure resistance between Heater Relay Com and No (on back of relay).
   a) If very low resistance (short circuit), replace control board.
   b) If resistance shows open circuit (infinite reading), go to step 3.

3. Plug machine into AC power.
4. Turn heater Off, measure 120VAC between Heater Relay Com (on back of relay) and pin 12 of P1 (white wire - AC neutral).
   a) If voltage is present, go to step 6.
   b) If voltage is not present, go to step 5.
5. Turn heater On, measure 120VAC between Heater Relay No (on back of relay) and pin 12 of P1 (white wire - AC neutral).
   a) If voltage is not present, replace control board.
   b) If voltage is present, return to check list.
6. Turn heater on, measure 240VAC between Heater Relay Com (on back of relay) and pin 12 of P1 (white wire - AC neutral).
   a) If voltage is not present, replace control board.
   b) If voltage is present, return to check list.

**TEST # 7- SERVICE SWITCH TEST**

1. Unplug machine from AC outlet.
2. Disconnect wires from service switch and remove switch.
3. With switch in normal position, contacts should be open (no continuity).
   a) If not open, replace switch.
   b) If open, go to step 4.
4. With switch pushed and held down, contacts should be closed (continuity).
   a) If not closed, replace switch.
   b) If closed go to step 5.
5. Reinstall switch and reconnect wires.
6. Replace control board.

**Service Switch Operation Test:**

   a) Remove access door on top of meter case.
   b) Push rocker switch just inside meter case.
   c) Cycle count is showing and RED LED is blinking.
   d) Push and release keyswitch **S2**. YELLOW LED starts blinking.

Service routine terminates after 5 minutes of no use or push **S6** twice to exit testing.

**TEST # 8 - DOOR SWITCH TEST**

1. With door closed, measure 120VAC between Motor Relay Com (black wire) and pin 12 of **P1** (white wire).
   a) If no voltage present, replace door switch.
   b) If voltage present, return to check list.
2. With door open, measure 120VAC between Motor Relay Com (black wire) and pin 12 of **P1** (white wire).
   a) If voltage present, replace door switch.
   b) If no voltage present, return to check list.

**Door Switch Operation Test:**

   a) Remove access door on top of meter case.
   b) Push rocker switch just inside meter case.
   c) Cycle count is showing along with RED LED blinking.
   d) Push and release keyswitch **S2**. YELLOW LED starts to blink.

The second digit on LED shows L when door is closed. Second digit is blank when door is open.

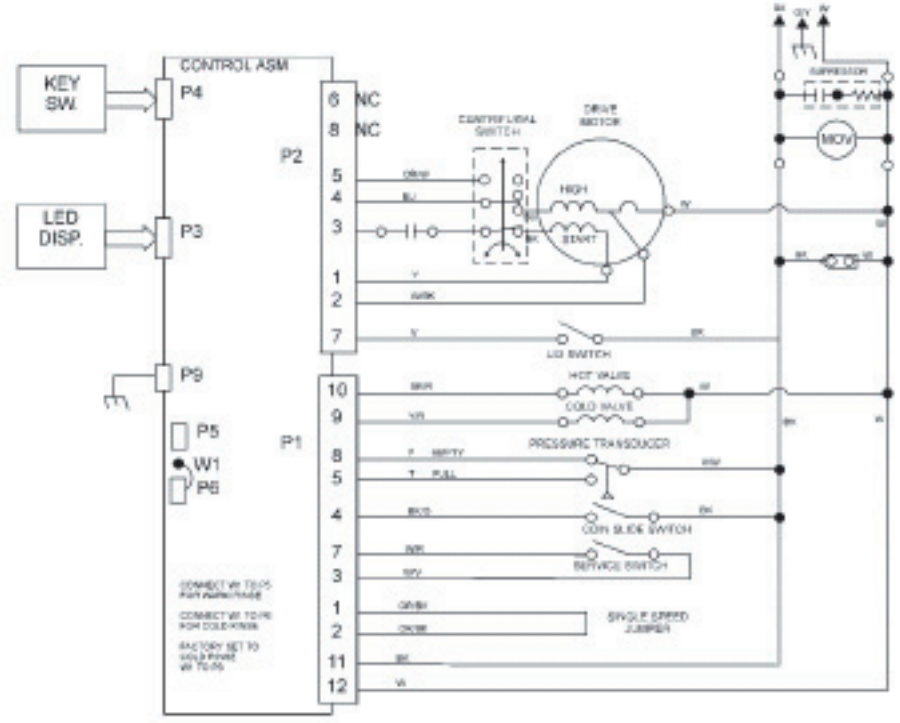
Service routine terminates after 5 minutes of no use or push **S6** twice to exit testing.

TEST #9 - BIAS THERMOSTAT HEATER TEST

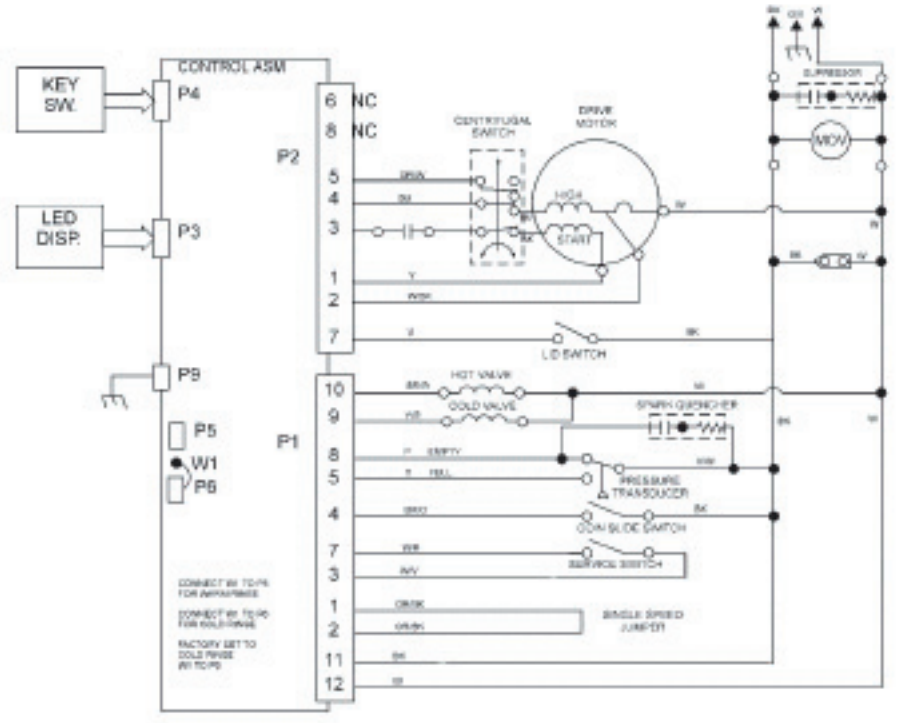
1. Start dryer.
2. Measure 120VAC between pin 10 of **P1** and pin 12 of **P1**.
   a) HIGH SETTING - reading about 0VAC.
   b) MEDIUM SETTING - reading about 80VAC.
   c) LOW SETTING - reading about 120VAC.
3. If any of the three readings are out of range, replace the control board.
4. If voltages are proper, return to check list.

# WIRING DIAGRAMS
## WASHERS

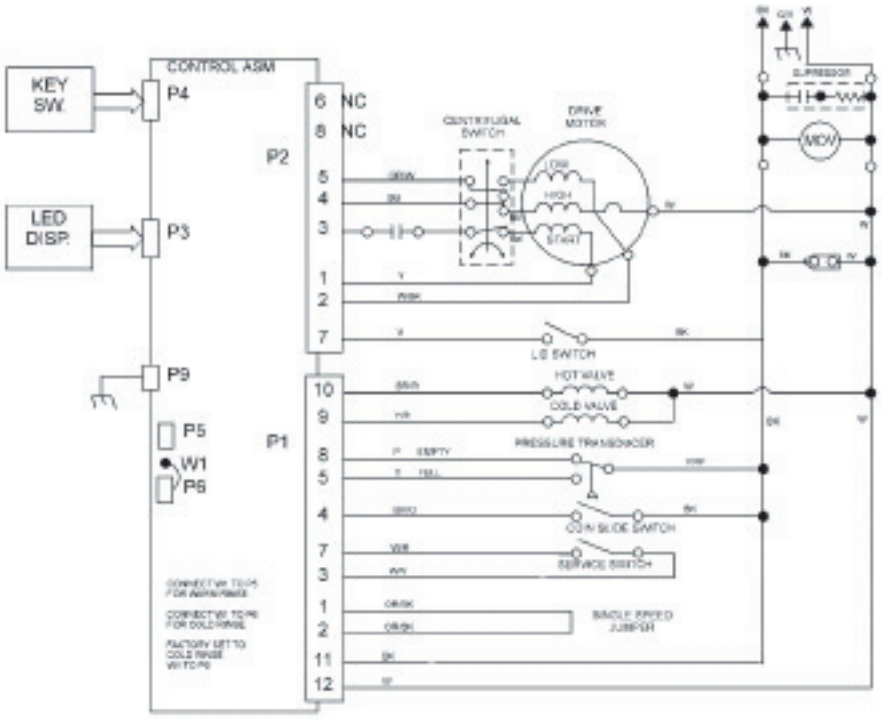
### CAP2761 (Prior to 2000)




### CAP2761 (2000 and After)



## CAP2762 (Prior to 2000)

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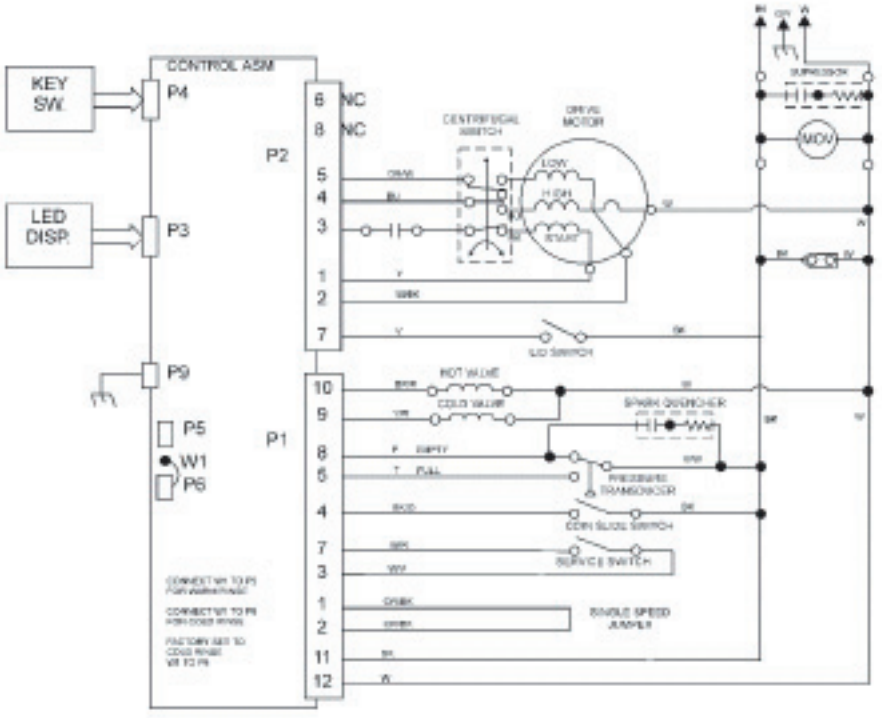
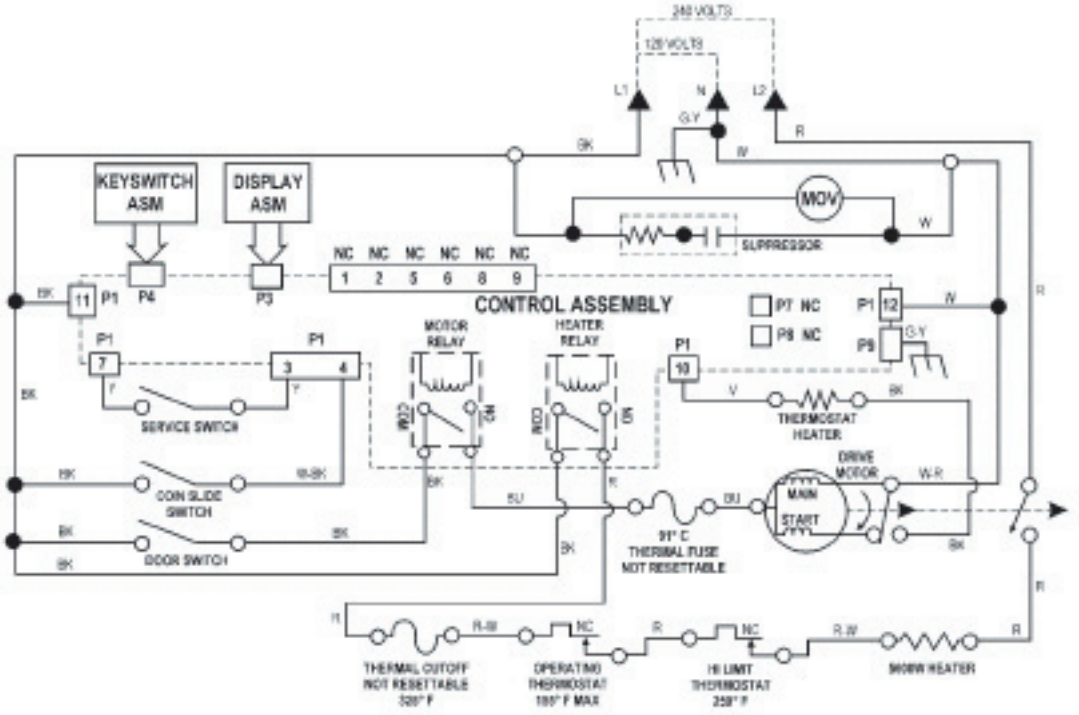
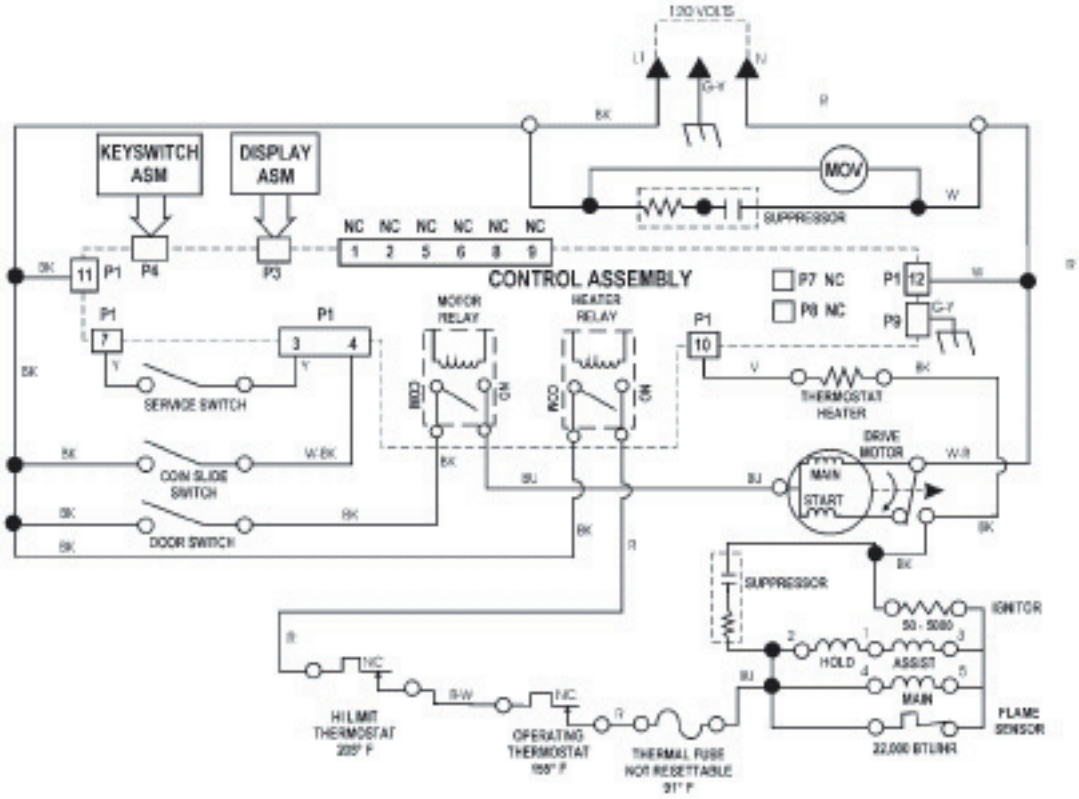


# DRYERS

## CEP2960/CEP2760




## CGP2961/CGP2761



# Literature Reference

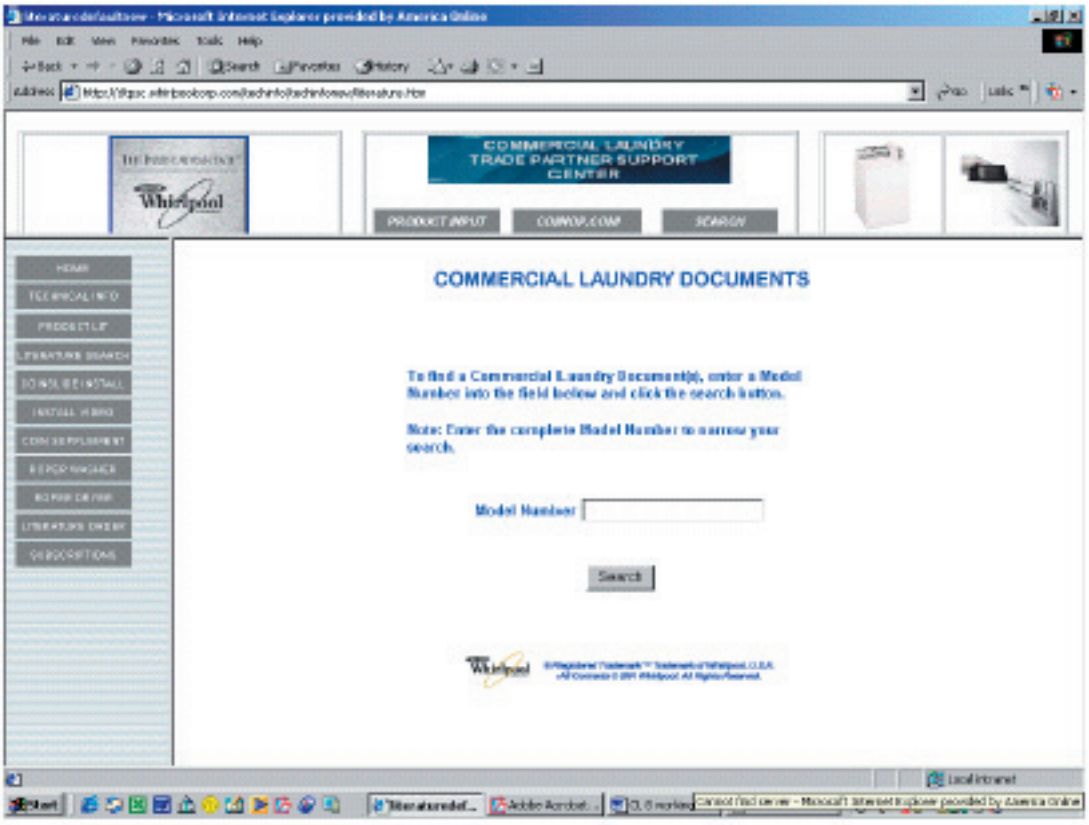
For on-line access to all pertinent Whirlpool commercial laundry service information, go to:

http://cltpsc.whirlpoolcorp.com/techinfo/techinfonew/literature.htm

Enter as complete a model number as possible and then click search

Note: Canadian model numbers begin with a "Y"
Government models begin with a "G"

Wiring diagrams, Parts lists, Warranty information, aand Tech Sheets are posted



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