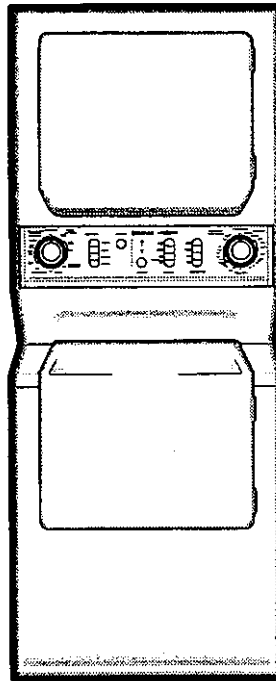


MAYTAG

Customer Service

MAYTAG
NEPTUNE™



Stacked Laundry Service Manual

16009127
Issued 7/98



CONTENTS

INTRODUCTION.....	i
CONTENTS.....	ii
SECTION 1. GENERAL INFORMATION.....	1-1
WASHER PRE-INSTALLATION REQUIREMENTS.....	1-1
UNCRATING INSTRUCTIONS.....	1-1
WASHER INSTALLATION.....	1-2
DRYER PRE-INSTALLATION CONSIDERATIONS.....	1-3
Location Considerations.....	1-4
Alcove or Closet Installation.....	1-4
Manufactured Homes.....	1-4
DRYER INSTALLATION.....	1-5
Exhausting.....	1-5
Non-Exhausted Installations (U.S. Only).....	1-6
Gas Requirements.....	1-7
Installation Codes.....	1-7
Electrical Requirements.....	1-7
SPECIFICATIONS - DRYER.....	1-9
SPECIFICATIONS - WASHER.....	1-10
WASHER CONTROLS OVERVIEW.....	1-11
INPUT DEFINITIONS.....	1-12
OUTPUT DEFINITIONS.....	1-13
CYCLE SEQUENCE DEFINITIONS.....	1-15
MISCELLANEOUS.....	1-16
Door Latch Switch Monitoring.....	1-16
Door Lock/Spin Control.....	1-16
Redistribution.....	1-17
Push-To-Start Relay Operation.....	1-17
CYCLE REVIEW.....	1-18
GENERAL COMPONENT EXPLODED VIEW WASHER.....	1-20
GENERAL COMPONENT EXPLODED VIEW DRYER.....	1-21
SECTION 2. ELECTRICAL COMPONENTS & TESTING.....	2-1
ELECTRICAL TEST EQUIPMENT.....	2-1
MANOMETERS.....	2-2
How To Use.....	2-2
ELECTRICAL TESTS - WASHER.....	2-3
Grounded Components.....	2-3
Voltage Checks.....	2-3
Wax Motor Check - Door Lock Mechanism.....	2-3
Water Valve Test.....	2-4
Timer & Console Switches.....	2-4
TIMER INPUT CHARTS.....	2-5
Machine Control.....	2-6
DRIVE MOTOR.....	2-10

MOTOR CONTROL BOARD	2-10
Motor Phase Test	2-11
MOTOR WINDINGS CHECK	2-13
Tachometer Circuit Diagnostics	2-13
UNBALANCE CONTROL SYSTEM	2-14
Tub Displacement Switch	2-15
Strut Displacement Switch	2-16
Inertial Unbalance Switch	2-16
Lower Weight Unbalance Switch	2-16
Cabinet Vibration Sensor	2-16
Cabinet Vibration Absorber	2-17
ELECTRICAL TESTS - DRYER	2-17
Voltage Checks	2-17
Voltage Check with Voltmeter	2-17
Using Voltmeter as a Continuity Tester	2-17
Door Switch	2-18
Timer & Console Switches	2-18
Drive Motor Test	2-18
Motor Test Cord	2-19
Motor Switch Test	2-19
SECTION 3. TROUBLESHOOTING	3-1
WASHER TROUBLESHOOTING	3-1
TROUBLESHOOTING FLOW CHARTS	3-4
TIMER TEMPLATE	3-13
MISCELLANEOUS	3-14
DRYER TROUBLESHOOTING - FUNDAMENTAL CHECKS	3-15
DIRECT IGNITION SYSTEM	3-17
SECTION 4. CONTROL CONSOLE AREA & COMPONENTS	4-1
ACCESS PANEL	4-1
ACCESS COVER	4-1
CONSOLE	4-2
Push-To-Start Switches	4-2
DRYER TIMER REMOVAL	4-3
WASHER TIMER REMOVAL	4-3
SECTION 5. WASHER CABINET ASSEMBLY	5-1
DOOR ASSEMBLY & HINGES	5-1
Cabinet Vibration Absorber	5-2
Door Latch Loop	5-2
FRONT PANEL	5-2
FRONT SHROUD ASSEMBLY	5-3
SHROUD SUPPORT ASSEMBLY	5-4
DOOR LOCK MECHANISM	5-5
CABINET ASSEMBLY w/REAR ACCESS PANEL	5-6

SECTION 6. WATER CARRYING COMPONENTS	6-1
WATER VALVE	6-1
WATER LEVEL PRESSURE SWITCH	6-2
AIR DOME HOSE	6-2
DISPENSER ASSEMBLY	6-3
FRONT WATER FLUME INJECTOR	6-4
PUMP ASSEMBLY	6-5
CLEANING THE PUMP	6-5
INSTALLATION - PUMP ACCESSORY KIT	6-5
DRAIN HOSE	6-6
SECTION 7. OUTER TUB & SPINNER ASSEMBLY	7-1
BAFFLES	7-1
DOOR BOOT	7-1
OUTER TUB COVER	7-2
SPIN BASKET ASSEMBLY w/BALANCE RING	7-3
DRIVE PULLEY	7-4
SPINNER TUB SUPPORT	7-5
SEAL SYSTEM	7-6
OUTER TUB ASSEMBLY	7-7
BEARINGS	7-7
COUNTER WEIGHTS	7-7
STRUT ASSEMBLY	7-8
STRUT DISPLACEMENT SWITCH	7-8
INERTIAL UNBALANCE SWITCH	7-8
TUB DISPLACEMENT SWITCH	7-9
LOWER WEIGHT UNBALANCE SWITCH	7-9
SECTION 8. MOTOR DRIVE SYSTEM (Washer)	8-1
DRIVE BELT	8-1
DRIVE MOTOR	8-1
MOTOR CONTROL BOARD	8-2
SECTION 9. DRYER CABINET ASSEMBLY COMPONENTS	9-1
DOOR ASSEMBLY & HINGES	9-1
FRONT PANEL	9-1
TOP COVER	9-2
MACHINE CONTROL BOARD	9-3
SECTION 10. DRYER TUMBLER & BULKHEADS	10-1
SHROUD & TUMBLER FRONT ASSEMBLY	10-1
Disassembly of the Outlet Duct, Shroud & Tumbler Front	10-1
LINT FILTER	10-2
BEARING & PADS	10-2
TUMBLER FRONT SEAL	10-2
TUMBLER & BELT	10-3
Installing Drive Belt	10-4

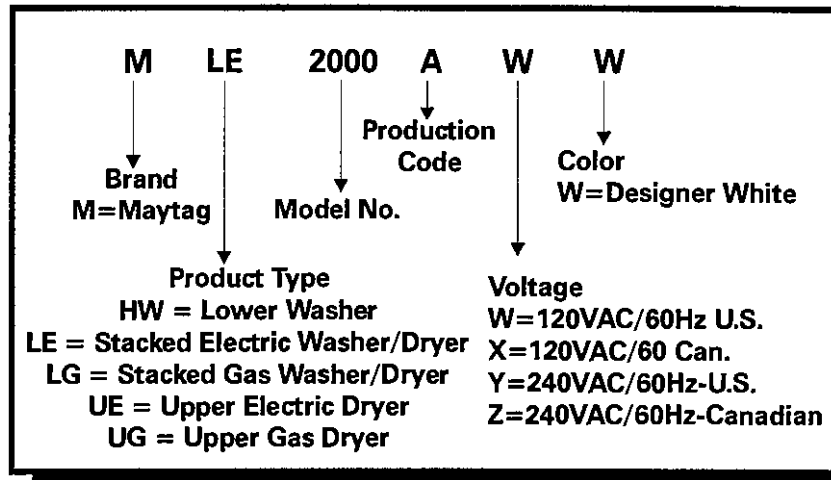
BAFFLES	10-4
TUMBLER BACK ASSEMBLY	10-4
TUMBLER BACK SEAL	10-5
ROLLER AND BEARING ASSEMBLY	10-5
SECTION 11. DRYER BLOWER & MOTOR DRIVE SYSTEM	11-1
CYCLING THERMOSTATS	11-1
HI-LIMIT THERMOSTAT	11-1
THERMAL FUSES	11-1
Checking The Thermal Fuse	11-2
BLOWER ASSEMBLY	11-2
Cover For Blower	11-2
Installing Blower Cover	11-3
Blower Wheel	11-3
Exhaust Duct Pipe	11-4
Blower & Motor Assembly	11-4
Assembly Breakdown	11-4
Motor Switch Replacement	11-5
IDLER ARM ASSEMBLY	11-5
SECTION 12. DRYER HEATING COMPONENTS	12-1
GAS VALVE ASSEMBLY	12-1
Function Of Gas Valve System	12-1
Radiant Sensor Contact Closed	12-2
Gas Conversions	12-3
Air Shutter Adjustment	12-3
Gas Chart	12-3
Coil Replacement	12-3
Igniter	12-4
Gas Valve Removal	12-4
Orifice Removal	12-4
Combusion Cone Removal	12-4
Inlet Duct	12-4
HEATING ELEMENT & RELATED COMPONENTS	12-5
Heating Element	12-5
Heater Enclosure	12-5
SECTION 13. WIRING INFORMATION	13-1
GAS MODELS	13-1
ELECTRIC MODELS	13-6

INTRODUCTION

Each model will be covered separately in a section pertaining only to its control system and internal components. Because the basic structure for all washers is the same, they will be covered generally without regard to model.

MODELS COVERED IN THIS MANUAL

MHW2000
MUE2000
MUG2000
MLE2000
MLG2000



For additional information on material covered in this manual, including safety issues:

Maytag Appliances Sales Company
240 Edwards Street, S.E.
Cleveland, TN 37311

Phone: 423.472.3333
FAX: 423.478.6722

GENERAL SAFETY PRECAUTIONS

Information contained in this manual is intended for use by a qualified service technician familiar with proper and safe procedures to be followed when repairing an electrical appliance. All tests and repairs should be performed by a qualified service technician equipped with proper tools and measuring devices. All component replacements should be made by a qualified service technician using only factory approved replacement parts.

Improper assembly or adjustment may occur if service or repair is attempted by persons other than qualified service technicians or if parts other than approved replacement parts are used. Improper assembly or adjustment can create hazardous conditions.

There can be a risk of injury or electrical shock while performing services or repairs. Injury or electrical shock can be serious or even fatal. Consequently, extreme caution should be taken when performing voltage checks on individual components of a product. **PLEASE NOTE:** Except as necessary to perform a particular step in servicing a product, the electrical power supply should **ALWAYS** be disconnected when servicing a product.

Further, this appliance **MUST** be properly grounded. Never plug in or direct-wire an appliance unless it is properly grounded and in accordance with all local and national codes. See installation instructions that accompany the product for grounding this appliance.

USE ONLY GENUINE MAYTAG APPROVED FACTORY REPLACEMENT COMPONENTS.

IMPORTANT SAFETY NOTICE AND WARNING

The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) requires the Governor of California to publish a list of substances known to the State of California to cause cancer or reproductive harm, and requires businesses to warn customers of potential exposures to such substances.

SECTION 1. GENERAL INFORMATION

WASHER PRE-INSTALLATION REQUIREMENTS

NOTE: *Proper installation is the responsibility of the purchaser.*

Checkpoints for proper installation:

- Properly grounded electrical outlet is required. Use 15 amp fuse or comparable circuit breaker for electrical service.
- Standpipe Drain System must be able to accept 1½" O.D. drain hose. Standpipe height of 36" is recommended.

NOTE: *If drain standpipe is in excess of 5 feet above floor level, install pump accessory kit, part number 22002136.*

- These units are not equipped with a siphon break, and the drain hose must be elevated to a minimum height of 24". A 36" high standpipe is recommended. For all installations, the drain hose must be supported by the drain hose strap on the back of the washer.
- Hot and Cold water faucets should be within four (4) feet of the back of the washer. This allows for quick access for immediate shut off of the water.
- Water heater should be set to deliver a minimum of 120° (49°C) hot water to the washer.
- Do not store or operate washer in temperatures below freezing. This can cause damage to the pump, hoses and other components.
- Water pressure of 20 - 120 P.S.I. is required

to fill the washer in the appropriate time frame. Pressures of less than 20 P.S.I. may cause an extended or exceptionally long fill time. Refer to the troubleshooting section for more information regarding a solution for slow fill situations.

- Best performance is obtained with the washer installed on a solid floor. Wood floor constructions may need to be reinforced to minimize vibration from unbalanced load situations. Carpets and soft tile surfaces are also contributing factors in vibration and/or movement during the spin cycle. **Never install washer on platform or weak support structure.**

UNCRATING INSTRUCTIONS

NOTE: *The following steps must be performed in the correct order to ease uncrating.*

1. Remove the carton by cutting only marked areas of the carton. **CAUTION:** *Hoses are connected to the washer.*
2. Carefully remove any packaging materials from the outside of the washer. **IMPORTANT:** *DO NOT cut the red straps securing the power cord and inlet hoses at this time.* They will be removed later during installation.
3. Remove the accessory package from inside the tub.
4. Remove the crate bottom from the washer.

WASHER INSTALLATION

1. Two separate red shipping straps are used to secure the machine for shipping purposes and secure the power cord with the water inlet hoses. Removal of the straps must be performed in the following sequence:

- A. Locate the metal buckles securing the red straps extending through slots in the rear wall of the cabinet. The buckles are positioned in the center of the red straps. Carefully cut the red straps, completely removing the metal buckles. **NOTE: Cut the straps as close to the buckles as possible.** Discard the metal buckles.

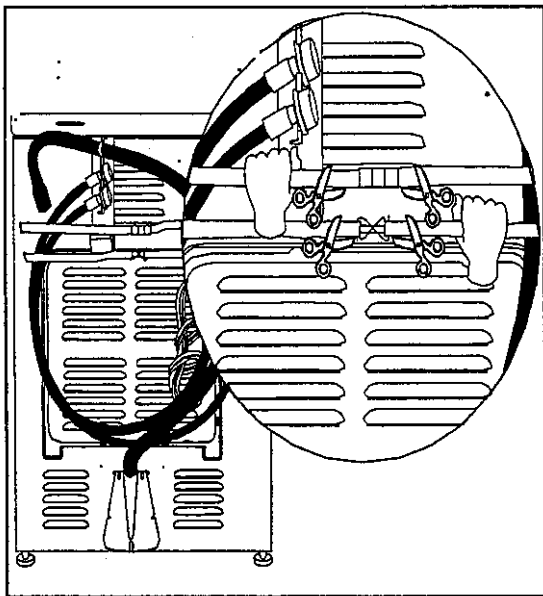


Figure 1-1

- B. Grasp each loose strap individually and pull the strap to remove it from the cabinet. Discard the strap (Figure 1-2).

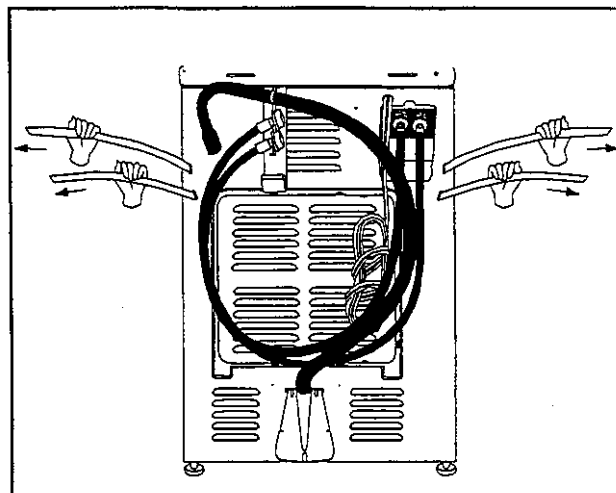


Figure 1-2

2. Tip washer slightly forward. Loosen rear leveling leg lock nuts. Tip washer back slightly to loosen front leveling leg lock nuts (Figure 1-3).

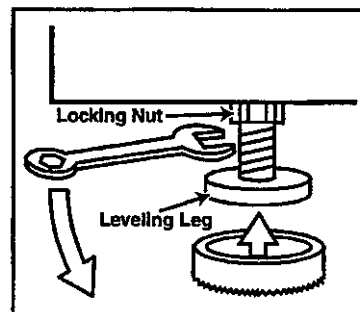


Figure 1-3

3. Locate the two (2) 1/2" hex-head shipping bolts extending up through the bottom of the base (Figure 1-4). The shipping bolts are near the center of the base toward the front of the washer. Remove both bolts, freeing the tub and suspension. Do not be alarmed should the tub assembly shift when the last bolt is removed. Some shifting of the tub is normal.

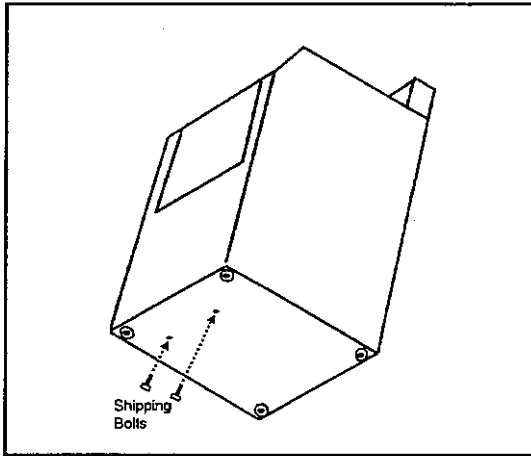


Figure 1-4

4. Slide the washer into position and check the levelness and stability of the washer. If necessary, slide the washer out of position to either raise or lower the leveling leg as required to level and stabilize the washer securely on all four legs. Slide the washer back into position to confirm levelness to the floor. When satisfied the washer is level, tighten the locking nuts up against the base of the washer. This will secure the leveling legs in place.
5. Install the rubber feet, found in the installation package, on all four (4) legs (*Figure 1-3*).
6. Pull the drain hose vertically to the drain strap. Route the drain hose through the strap on the back of the washer and snap into the plastic hook of the strap.
7. Install gooseneck end of drain hose into drain standpipe. Be sure the connection is not airtight between the drain hose and the standpipe. **Standpipe must be at least 24" high. 36" height is recommended.**
8. Connect inlet hoses to water supply using screen washers at faucet connections, with the domed screen facing the faucet. With hoses attached to both the

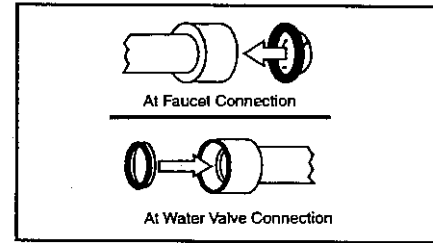


Figure 1-5

faucets and the water valve, turn on the water and check for leaks (*Figure 1-5*). **Note the H and C designations on the water valve bracket for the Hot and Cold hoses.**

NOTE: *Accessory inlet hoses are available in various lengths, up to 10 feet.*

▲ WARNING

Warning - Always shut off electrical power to the unit before beginning any service repair procedures.

DRYER PRE-INSTALLATION CONSIDERATIONS

NOTE: *Proper installation is the responsibility of the purchaser.*

However, service calls performed as a result of improper setup, adjustment and connection are the responsibility of the installer.

Checkpoints for proper installation

- **Gas Dryers** - Properly grounded electrical outlet is required. Use a 15 amp fuse or comparable circuit breaker for electrical service for gas dryers. **DO NOT USE AN EXTENSION CORD** unless the cord has met all requirements for proper grounding, polarizing (3 wire), and is at least 14 gauge wire.

1/2" gas supply line is recommended and must be reduced to connect to the 3/8" gas line of the dryer.

The National Fuel Gas Code requires an acceptable, approved manual shut off valve to be installed within six feet of the dryer.

- **Electric Dryers** - Properly grounded electrical outlet is required. Use a 30 amp fuse or comparable circuit breaker for electrical service for an electric dryer.

Location Considerations

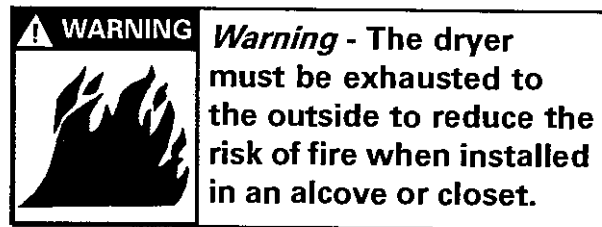
The dryer should be positioned to permit adequate room in front for loading and sufficient room behind for the exhaust system.

The dryer is factory-ready for rear exhaust. Exhausting out the bottom or left side requires accessory vent kit, part number **33001881**.

It is important that the room has adequate makeup air. The area where the dryer is located must not obstruct the flow of combustion or ventilating air.

On gas dryers, adequate clearance must be maintained to ensure adequate air for combustion and proper operation of the dryer. This information is noted on the data plate.

THE DRYER MUST NOT BE INSTALLED OR STORED IN AN AREA WHERE IT WILL BE EXPOSED TO WATER AND/OR WEATHER. THE DRYER IS TO BE KEPT CLEAR AND FREE FROM COMBUSTIBLE MATERIALS, GASOLINE AND OTHER FLAMMABLE VAPORS AND LIQUIDS. A DRYER PRODUCES COMBUSTIBLE LINT. THE AREA AROUND THE DRYER SHOULD BE KEPT FREE OF LINT.



Alcove or Closet Installation

An appliance installed in a closet should not have another fuel-burning appliance installed in the same closet. Each opening area in the door must have a minimum of 36 square inches. These openings must not be obstructed. (Louvered door with equivalent air opening is acceptable.)

Manufactured Homes

The installation of the dryer in manufactured homes must conform to the Manufactured Home Construction and Safety Standard Title 24 CFR, Part 32-80 (formerly the Federal Standard for Mobile Home Construction and Safety, Title 24, HUD (Part 280), 1975) for the United States, or C.S.A. Standards Z240 (for Canada).

All manufactured home installations must be exhausted to the outside with the exhaust duct termination securely fastened to the manufactured home structure using materials that will not support combustion. The exhaust duct may not terminate beneath the manufactured home, (*See EXHAUSTING*).

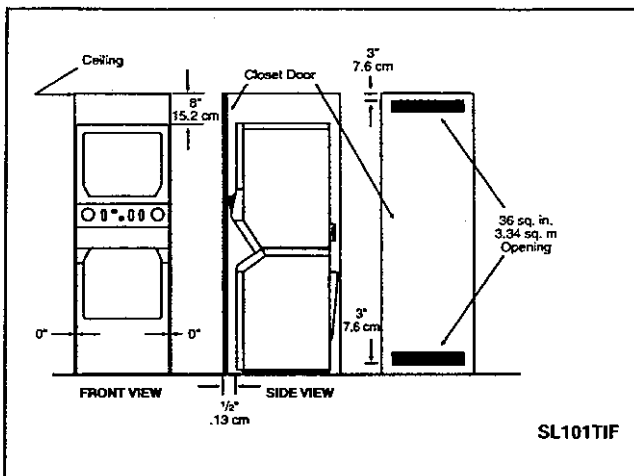


Figure 1-7

DRYER INSTALLATION

Exhausting

Exhausting the dryer to the outside will prevent large amounts of lint and moisture from being blown into the room.

In the United States:

- all gas dryers must be exhausted to the outside.
- electric dryers located in a confined area such as a bedroom, bathroom, or closet must be exhausted to the outside.
- electric dryers not located in a confined area may be exhausted to the inside (see nonexhausted installations).

In Canada:

- all gas and electric dryers must be exhausted to the outside.



Warning - Plastic or nonmetal flexible duct presents a potential fire hazard.

NEVER USE PLASTIC OR NON METAL FLEXIBLE DUCT.

If your existing ductwork is plastic, nonmetal or combustible, replace it with metal. Use only metal exhaust duct that will not support combustion to ensure the containment of exhaust air, heat and lint.

Plastic flexible duct can kink, sag, be punctured, reduce airflow, extend drying times, and affect dryer operation.

If flexible metal duct must be used, use the type with a stiff sheet metal wall. Do not use flexible duct with a thin foil wall. Serious blockage can result if flexible metal duct is bent too sharply. Never install any type of flexible duct in walls, ceilings or other concealed spaces.

Once location of the exhaust outlet is determined, a 4 1/4" hole should be cut into the outside wall to accept the exhaust hood to the outside. The exhaust duct should end with an exhaust hood with a swing out damper to prevent backdrafts and entry of wildlife. Never use an exhaust hood with a magnetic damper. The hood should have at least 12 inches of clearance between the bottom of the hood and the ground or other obstruction. The hood opening should point down. Never install a screen over the exhaust outlet.

When possible, do not exhaust the dryer directly into a basement window well to avoid lint build-up. Do not exhaust under a house or porch.

If exhaust ductwork must run through an unheated area, the duct should be insulated and sloped slightly down towards the exhaust hood to reduce condensation and lint buildup.

Keep exhaust duct as straight and short as possible. Exhaust systems longer than recommended can extend drying times, affect machine operation, and may collect lint. Secure joints with duct tape. Do not use screws. Also, the smoother the inside surface of the duct, the less friction and the greater the air flow. Friction loss can be measured with a manometer, at the point where the exhaust duct connects to the dryer, *Figure 1-8*, and should never exceed .92" of water column. Select Air Fluff, then check to ensure the dryer tumbler is empty and the lint filter is clean.

A 4" round duct has an area of approximately 12.57 square inches. The area of the duct should never be reduced below this figure.

All exhaust duct joints should be taped to prevent lint and moisture laden air from being expelled into the building. Inspect and clean the interior of the exhaust system at least once a year. Disconnect electrical service prior to cleaning. Check the gas line on gas dryers anytime the dryer is moved. Frequently check to be sure the exhaust hood damper opens and closes freely.

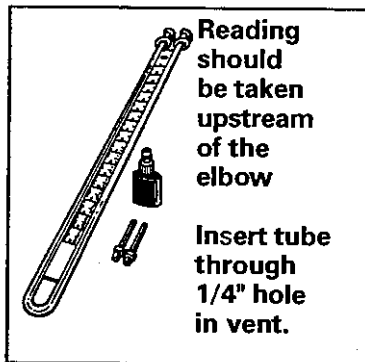


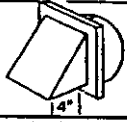

Figure 1-8

EXHAUST CHECK LIST:

- Exhaust system meets all local codes and exhaust requirements.
 - Plastic flexible duct is not used.
 - Completely inspected and clean of all lint accumulation from the interior of the duct run.
- NOTE:** Whenever hooking up a new dryer to an existing duct system, always inspect the ductwork for any lint accumulations or restrictions. Failure to do so will hinder the performance of the new dryer.
- Duct is not kinked or crushed.
 - The exhaust hood damper opens and closes freely.

Non-Exhausted Installations (U.S. Electric Dryers Only)

If the U.S. electric dryer is not exhausted to the outside, an exhaust deflector should be installed along with a dacron mesh lint bag. Maintain a 6" clearance between the back of the control panel and the wall. Although the lint screen and lint bag will retain most of the lint, a certain amount will be expelled into the laundry area.

EXHAUST HOOD TYPE		
Number of 90° Turns		
Maximum length of 4-inch diameter rigid metal duct.		
0	65 ft.	59 ft.
1	54 ft.	48 ft.
2	44 ft.	38 ft.
3	36 ft.	30 ft.
4	28 ft.	22 ft.
Maximum length of 4-inch diameter flexible stiff walled metal duct.		
0	36 ft.	28 ft.
1	32 ft.	24 ft.
2	28 ft.	20 ft.
3	25 ft.	17 ft.
4	23 ft.	15 ft.

WARNING: IF THE DRYER IS NOT EXHAUSTED TO THE OUTSIDE, SOME FINE LINT WILL BE EXPELLED INTO THE LAUNDRY AREA. AN ACCUMULATION OF DUST OR LINT IN ANY AREA OF THE HOME CREATES A FIRE HAZARD. ANY LINT ACCUMULATIONS MUST BE CLEANED FREQUENTLY.

Gas Requirements

THE INSTALLATION MUST CONFORM WITH LOCAL CODES, OR IN THE ABSENCE OF LOCAL CODES, WITH THE NATIONAL FUEL GAS CODE ANSI/Z223.1 LATEST REVISION (FOR THE UNITED STATES), OR WITH THE CAN/CGA-B149.

Installation Codes

A 1/2" gas supply line is recommended and must be reduced to connect to the 3/8" gas line on the dryer. The National Fuel Gas Code requires an approved manual shut off valve be installed within six feet of the dryer. Also a 1/8" N.P.T. (National Pipe Thread) plugged tapping should be installed immediately upstream of the gas supply connection to the dryer for test gauge connections.

The dryer must be disconnected from the gas supply piping system during any pressure testing of the gas supply lines.

DO NOT reuse old flexible metal gas line.

Flexible gas line must be design certified by American Gas Association (CGA in Canada).

NOTE: *Any pipe joint compound used must be resistant to the action of any liquefied petroleum gas.*

The dryer uses an automatic ignition system to ignite the burner. There is no constant burning pilot.

Gas dryers are equipped with a burner orifice for operation on NATURAL gas. If the dryer is to be operated on LP (liquid propane) gas, it must be converted for safe and proper per-

formance by a qualified service technician. Conversion kits from NATURAL to LP, or LP to NATURAL are available through your local Maytag dealer. If other conversions are required, check with the local gas utility for specific information concerning conversion requirements.

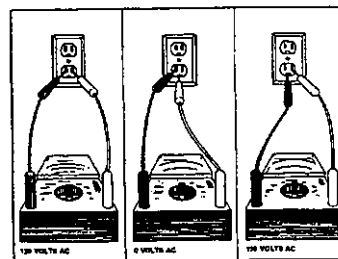
Electrical Requirements

Gas Dryer: The dryer is supplied with a power cord, which must be plugged into a grounded 120 volt approved electrical service protected by a dedicated 15 amp fuse or circuit breaker.

GROUNDING POLARITY CHECKS

Electric Dryer: U.S. electric model dryers are not supplied with a power cord. Check the data plate of the dryer to determine correct voltage requirements for the dryer.

IMPORTANT: *The dryer frame is grounded to the neutral conductor at the terminal block. If the dryer is installed in a manufactured home, or if local codes do not permit grounding through the neutral, refer to Four Wire System Connections on page 1-5.*



WARNING: For your safety and to protect the test equipment, be sure that the wall outlet is properly polarized and grounded.

NOTE: *A U.L. listed strain relief must be used with all electrical cable or power cords inserted through the hole provided in the cabinet near the terminal block.*

Three-Wire System Connections

The neutral (white or center wire on the power cord) conductor must always be connected to the center (silver colored) post of the terminal block.

The other two leads of the electrical cable or power cord should be connected to the remaining two posts on the terminal block. Check all terminal nuts for proper tightness.

Four-Wire System Connections

The ground strap should be removed from the terminal block bracket and folded back over the center (silver colored) post of the terminal block. The neutral (white or center wire on the power cord) is connected to the center (silver colored) post of the terminal block.

The green ground wire is attached to the terminal block mounting bracket by the ground strap screw removed earlier.

The other two leads of the electrical cable or power cord should be connected to the remaining two posts on the terminal block. Check all terminal nuts for proper tightness.

WARNING: *If the dryer is being converted from a four-wire system connection to a three-wire system connection, the ground strap folded over the center terminal post must be reconnected to the terminal mounting bracket ground screw. This will ensure the dryer frame is grounded to the conductor of the terminal block.*

SPECIFICATIONS - DRYER

AIR FLOW	220 cubic feet per minute
CAPACITY	6.0 cubic feet
ELECTRICAL	GAS DRYER - 120 Volts, 60 Hz; Requires 15 amp circuit breaker or fused electrical supply. ELECTRIC DRYER - 240 Volts, 60 Hz; Requires 30 amp circuit breaker or fused electrical supply. Power cord must be connected to a properly grounded outlet.
MOTOR	1/4 H.P. rated; 120 Volt AC; 60 Hz; Thermoprotected against overload; auto-reset.
HEAT SOURCE	-ELECTRIC: 240 Volt AC 3-wire; 5300 Watts; 30 Amp fuse/circuit breaker. -GAS: Single port burner; 22,000 BTU/HR; Electric ignition; Automatic shut-off
TUMBLER SPEED	50 RPM
DIMENSIONS	27"W (68.6CM) x 27.5"D (72.4CM) x 43.25"H (109.9CM)
WEIGHT (Approx.)	Crated - 144lbx. (65kg); Uncrated - 126lbx. (57kg)

SPECIFICATIONS - WASHER

CAPACITY	3.1 Cubic Feet
ELECTRICAL	120 volts, 60 Hz; Requires 15 amp circuit breaker or fused electrical supply.
MOTOR	Switched Reluctance Motor controlled by a microprocessor motor control board. Motor pulley ratio (motor to spinner RPM) 14 to 1.
POWER USAGE	<p>Motor Input: During Wash Tumble - 150 Watts During Rinse Tumble - 175 Watts Top Spin - 800 Watts</p> <p>(Wattage readings taken with no clothes in spinner.)</p>
TUMBLER SPEED	<p>Wash Tumble 47-51 RPM Rinse Tumble 47-51 RPM High Speed Spin 800 RPM (\pm 50 RPM based upon optimum spin performance.)</p>
WATER USAGE	<p>Water pressure should be 20-120 p.s.i. (1.06-8.44 kg/cm) at inlet hose connection. Total water usage is approximately 25 gallons; varies with clothes load. Water fill in the spin basket with no clothes, measured near the rear seam of the spin basket.</p> <p>WASH LEVEL 3-4 inches RINSE LEVEL 4-5 inches</p>
HOSE LENGTHS	Four-foot inlet hoses with inlet washers and attaches to water valve. Drain hose attaches to pump and will accommodate 36" drain stand pipe.
DIMENSIONS	Cabinet dimensions: 27" (68.58cm) W x 27 1/2" (69.85cm) D x 36" (91.44cm)H.
WEIGHT (Approx.)	<p>Uncartoned 190lb. (86kg.) Approx. Crated 200lb. (91kg.) Approx.</p>
SCREW & BOLT TORQUES	<p>Bolt, Counter Weight 7in. lbs. (\pm 3in. lbs) Bolt, Spin Pulley 33ft. lbs (\pm 3in. lbs) Bolt, Belt Adjuster 90in. lbs (\pm 10in. lbs) Screw, Front Baffle 25in. lbs (\pm 3in. lbs) Screw, Rear Baffle 18.5in. lbs (\pm 3in. lbs) Clamp, Hoses 15+in. lbs Nuts, Spinner Support 18in. lbs (\pm 3in. lbs) Nuts, Suspension Struts 7in. lbs (\pm 3in. lbs)</p>

WASHER CONTROLS OVERVIEW

FUNCTIONAL DESCRIPTION

The control system in the household Neptune horizontal axis washer generally consists of a timer and microprocessor-based machine control. These receive input signals and send output signals to other equipment in the washer, including the motor and motor control, user input switches, user indicator lights, the door latch and lock assembly, water valves, drain pump, unbalance switches, dispenser actuator wax motors, pressure switch, and a tub light.

The machine control has direct control of these items:

- Motor speed and direction, through signals to the motor control.
- Door lock wax motor.
- Hot and cold water valves, with an input signal from the timer and pressure switch.
- Timer motor.
- On Light.

In general, the timer dial is rotated to a desired setting, selects the cycle options using the option switches, and starts the washer. The machine control reads the inputs from the timer, the option switches and pressure switch then sends output signals to the motor control and other components based upon those inputs. When the machine control has completed its set of instructions for the specific timer setting, it energizes the timer motor output to advance the timer to the next increment, reads a new set of input signals from the timer, and acts upon them. This continues until the cycle is complete. *(See Figure 1-9 for a generic representation of the Neptune washer control system.)*

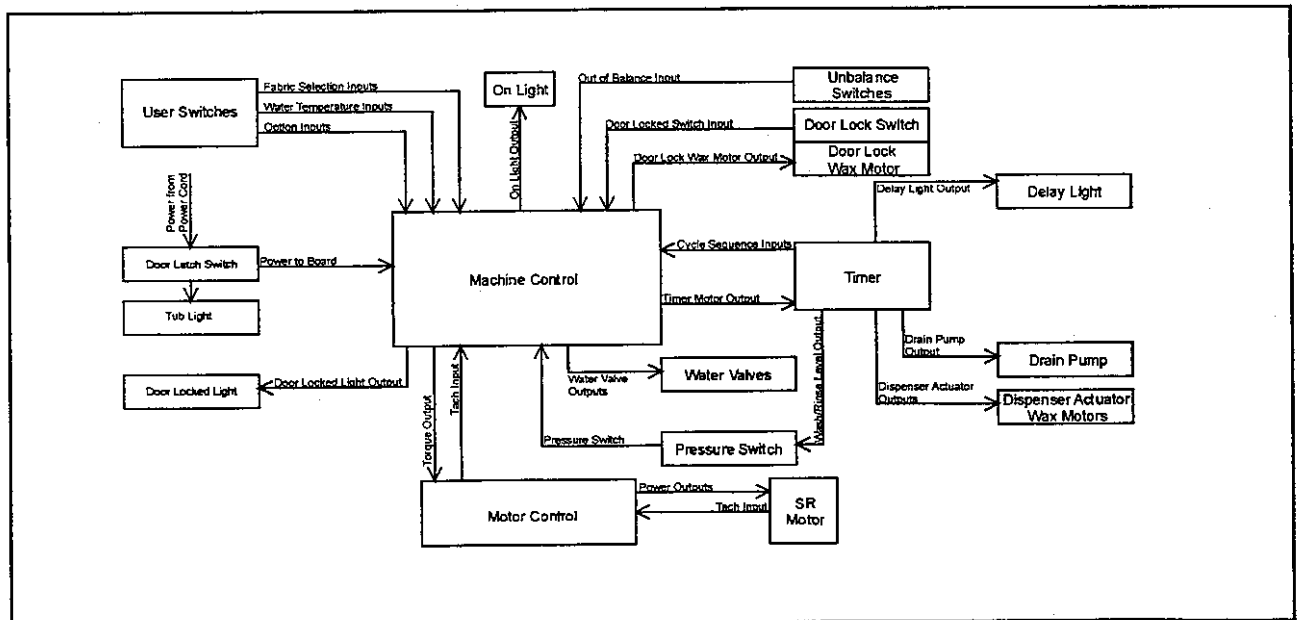


Figure 1-9

INPUT DEFINITIONS

DOOR LOCK SWITCH INPUT

When input is present, this is indication the washer door is locked. The machine controller will not command the spinner to spin faster than 50 rpm when the input is not present prior to spin.

END-OF-CYCLE SIGNAL INPUT

The End-of-Cycle Signal Input is energized through a user input switch on the control panel. When this is energized and the cycle has finished, the machine control will sound the End-of-Cycle signal (*See End-Of-Cycle Signal Output*).

FABRIC SELECTION INPUTS

The Fabric Selection Inputs are energized through a user input switch on the control panel. The machine control reads these inputs to determine which cycles should be run when the washer is started.

MAX EXTRACT INPUT

The Max Extract Input is energized through a user input switch on the control panel. When input is energized, the machine control will modify the final spin profile to the max extract profile.

NOTE: *If the user selects the Hand Washables fabric selection, all spins will follow the Max Extract profile regardless of whether the user selects the Max Extract option.*

OUT-OF-BALANCE INPUT

The Out-of-Balance Input Signal is provided by three normally-closed switches wired in sequence. If any of these switches opens due to an out-of-balance condition, the signal will be momentarily lost (*See Unbalance Control System*).

PRESSURE SWITCH INPUT

The input signal from the Pressure Switch serves two purposes. It supplies power for the water valves and provides an indication

to the machine control as to whether the commanded water level has been reached.

When the timer advances into a cycle sequence that calls for water, power is supplied through the timer to either the wash or rinse level contacts on the pressure switch. When the water level in the tub is below the full level for that setting, the pressure switch circuit is closed, supplying power for the water valves to the machine control. When the water level switch is satisfied, the pressure switch circuit is opened and power for the water valves is no longer passed to the machine control. The machine control interprets this loss of power as an indication that the water level has reached the full level.

When the washer is at the "full" level and the timer is set in a Prewash Tumble, Main Wash Tumble, Light Wash Tumble, or Rinse Tumble increment, the machine control will begin the sequence timing defined for each cycle and fabric selection setting (*See Cycle Sequence Definitions*).

During the drain and spin increments after the main wash, first rinse, second rinse, and extra rinse increments, the wash side circuit in the pressure switch is closed. When the water level drains below the wash full level, the circuit will close and energize the pressure switch input. The machine control interprets this signal (not to energize the water valve outputs) to measure how quickly the washer is draining. If the machine control commands a spin speed above 51 rpm before the pressure switch input is energized, it will drop the speed to 0 rpm and hold there until the pressure switch input is energized. An additional delay equal to the length of time elapsed will occur before the pressure switch input is energized. If four minutes elapse without the pressure switch input being energized, the machine control will energize the timer motor output to advance the timer into the next increment and continue with the cycle.

START/STOP INPUT

The start/stop input is energized by the momentary Push-to-Start/Stop Switch. If this input is energized when a cycle is in progress, the machine control will disengage the line relay, both water valve output signals, the door lock wax motor signal, the timer motor output signal, and the on-light output signal. If this input is energized when a cycle is not in progress, the machine control will energize the line relay and begin the cycle sequence as defined by the timer and user input switches (*See Push-To-Start/Line Relay Operation*).

TACH INPUT

The tach input is a feedback signal from the motor control. It provides eight pulses per revolution of the switched reluctance motor. The motor runs at 14 times the speed of the spinner (14:1 belt ratio). The tach input is used for monitoring speed and out-of-balance detection (*See Tachometer Circuit Diagnostics*).

If the machine control commands a motor speed and direction but does not sense a tach input signal within five seconds, it will disengage the line relay to stop the washer. This generally indicates a locked rotor or a malfunction in the motor control.

If the machine control senses a tach input signal when it is not commanding the motor to run, it will disengage the line relay to stop the washer.

If the machine control commands a coast down from final spin speed but is still receiving a tach input signal after two minutes, it will disengage the line relay to stop the washer.

TEMPERATURE SENSOR INPUT

A thermistor is located in the water valve to monitor the blended incoming water temperature. The machine control uses this input signal to regulate the water temperature with the warm or cold wash or warm rinse temperature selections (*See Water Valve Outputs*).

TIMER INPUTS

The Timer Input signals are energized through the cams in the timer. The timer operates with a 30 second drive cycle and a 5.8 second advance time (*See Timer Input Charts*).

WATER TEMPERATURE INPUTS

The Water Temperature inputs are two separate signals defined by a user input switch on the control panel. The machine control interprets these signals to determine what the water temperature should be for each fill (*See Water Valve Outputs*).

OUTPUT DEFINITIONS

DOOR LOCK WAX MOTOR OUTPUT

The Door Lock Wax Motor Output signal powers a wax motor in the door lock assembly. The wax motor extends to drive the door lock system for the washer.

If the washer is started with the timer set in a Prewash Tumble, Main Wash Tumble, or Light Wash Tumble increment, the machine control will wait for three minutes before energizing the Door Lock Wax Motor Output. This delay is not affected by water level. This output remains energized until the end of the cycle.

If the washer is started with the timer set in a Prewash Drain, Bleach Dispense, Spin1, Rinse Tumble, Spin2, or Spin3 increment, the machine control will energize this output immediately.

The machine control will continuously energize the Door Lock Wax Motor Output during the final (Spin3) sequence until 30 seconds before the washer begins to coast from the final speed.

END-OF-CYCLE SIGNAL OUTPUT

The End-Of-Cycle Signal Output is an internal signal on the machine control between the microprocessor and annunciator. The end-of-

cycle signal sounds when a wash cycle is finished and the End-Of-Cycle Input is energized. The End-Of-Cycle Signal sounds as six pulses in a 0.35 seconds on, 0.15 seconds off pattern (*See Timer Input Charts*).

ON LIGHT OUTPUT

The Door Locked Light Output signal powers a 1/3 watt neon indicator lamp on the control panel. This output is energized when the washer is operating in a wash or spin cycle.

TIMER MOTOR OUTPUT

The machine control energizes the Timer Motor Output to allow for variable-length timer increments. If the washer is started with the timer set in a Prewash Tumble, Main Wash Tumble, Light Wash Tumble, or Rinse Tumble increment, the machine control will not begin the cycle sequence timing until the water reaches the appropriate level. The Timer Motor Output is disengaged during this time.

The machine control will stop the washer by disengaging the line relay if the following occur:

- 1) The machine control energizes the timer motor until it senses a timer change.
- 2) The timer motor remains energized for five minutes while the timer inputs change (*See Timer Input Charts*).

The machine control counts the number of rinses during a normal wash cycle. In the first and second Rinse Tumble increments, the machine control will energize the Timer Motor Output as soon as the Pressure Switch Input is no longer energized, indicating that the water has reached the full level. In the third and fourth (if Extra Rinse is selected) Rinse Tumble increments, the machine control will energize the Timer Motor Output 30 seconds after the Pressure Switch Input is no longer asserted.

The machine control will energize the Timer Motor Output when the timer is set into a Spin1, Spin2, or Spin3 increment 30 seconds

before the end of the spin. It will remain energized until the timer inputs change.

TORQUE OUTPUT

The machine control commands motor speed and direction through the Torque Output from the machine control to the motor control. This output is a pulse width modulated (PWM) signal (*See Section 2: Machine Control*).

Vcc REFERENCE VOLTAGE OUTPUT

The Vcc Outputs are a reference voltage for many of the signal outputs. On the machine control, the Vcc outputs are 24 VDC referenced to the 120 VAC neutral line.

WATER VALVE OUTPUTS

The machine control determines whether the hot or cold Water Valve Outputs should be energized during each timer increment, but it only gates the power to the water valves, it does not directly provide that power. When the timer is in an increment calling for water, power passes from the timer to the wash or rinse level circuit in the pressure switch. When the water level is below the full level, the pressure switch circuit is closed and the power passes to the machine control. The machine control gates the power to the hot and cold Water Valve Outputs. When the pressure switch senses that the full level is reached, the circuit opens and de-energizes the Pressure Switch Input on the machine control, which de-energizes the Water Valve Outputs.

The machine control will read the Water Temperature Sensor Input to determine the blended water temperature passing through the water valve. In a warm wash fill, the machine control will first energize both the hot and cold Water Valve Outputs for five seconds then de-energize the cold Water Valve Output and monitor the water temperature. When the Water Temperature Sensor Input passes the warm threshold (approx. 20 K Ohms), the machine control will re-energize the cold output for the remainder of the fill.

In a cold wash fill, the machine control will first energize only the cold Water Valve Output for five seconds. It then energizes the hot Water Valve Output and monitors the Water Temperature Sensor Input until it passes the cold threshold (approx. 44 K Ohms), when it de-energizes the Hot Water Valve Output for the remainder of the fill.

If the user selects a warm rinse temperature, the machine control will count the rinses and allow a warm rinse fill only on the third and fourth (if the user also selects the Extra Rinse option) rinses. The first two rinses will be cold only. The machine control does not regulate water temperature during the rinses.

NOTE: *If the user chooses the Easy Care/Perm Press fabric selection, all rinse fills will be cold regardless of whether the user also selected the warm rinse temperature.*

In a Prewash Tumble increment, the machine control will de-energize the line relay if the washer continues to tumble for 15 minutes. This would only occur if the timer were to stall (*See Section 1: Timer Motor Output and Section 2: Timer Input Chart*).

CYCLE SEQUENCE DEFINITIONS

NOTE: *Refer to Section 2: Timer Input Charts for information on the timing of each cycle sequence.*

BLEACH DISPENSE

In a Bleach Dispense increment, the machine control will follow the same tumble pattern and speed as in a Main Wash Tumble increment.

EXTRA RINSE

When the user selects the Extra Rinse option, the spin increment following the third rinse will follow the Spin2 cycle sequence. The Timer Motor Output will be energized 60 seconds prior to the end of the spin cycle sequence and will remain energized to advance the timer through the "Off" increment into the Rinse Tumble increment. If the Extra Rinse option is not selected, this spin will follow the Spin3 cycle sequence and the Timer Motor Output will be energized 30 seconds prior to the end of the final spin.

IDLE

The Idle increment follows the final spin increment in each cycle. If the Door Lock Switch Input is energized when the timer advances into the Idle increment at the end of the cycle, the machine control will tumble the washer until 50 seconds after the Door Lock Switch input is no longer energized. This allows time for the Door Lock Wax Motor to fully retract. At this time, the "On" Light Output will de-energize and the End-of-Cycle Signal will sound if the user has selected the End-of-Cycle Signal option.

LIGHT WASH TUMBLE, MAIN WASH TUMBLE, and RINSE TUMBLE

The machine control will tumble the washer at the pattern and speed defined by the Fabric Selection Inputs (*See Cycle Review*). Each tumble will start only after the previous tumble has completely stopped. The machine

control will reverse the tumble direction after each pause. The machine control will continue to tumble the washer until the timer inputs change.

In a Light Wash Tumble or Main Wash Tumble increment, the machine control will de-energize the line relay if the washer continues to tumble for 29 minutes. This would only occur if the timer were to stall (*See Section 1: Timer Motor Output and Section 2: Timer Input Chart*).

PREWASH DRAIN

During a prewash drain increment, the washer will tumble at the same speed and in the same pattern as in the Prewash Tumble increment for the fabric selection. The Door Lock Wax Motor Output will be energized during this increment (*See Prewash Tumble*).

PREWASH TUMBLE

When the timer is set into a Prewash Tumble increment, the machine control will tumble at 51 rpm in the following tumble pattern:

<u>Cycle</u>	<u>Tumble-Pause Pattern</u>
Cotton/Sturdy	6 sec. - 24 sec.
Easy Care/Perm Press	6 sec. - 24 sec.
Delicates	6 sec. - 24 sec.
Hand Washables	3 sec. - 27 sec.

In a Prewash Tumble increment, the machine control will de-energize the line relay if the washer continues to tumble for 15 minutes. This would only occur if the timer were to stall (*See Section 1: Timer Motor Output and Section 2: Timer Input Chart*).

MISCELLANEOUS

Door Latch Switch Monitoring

At the end of a cycle, when the timer advances into the Idle increment, the machine control will keep the line relay energized until it loses power when the door latch switch opens. This guards against the switch contacts welding closed. In this condition, the machine control will limit what additional cycles can be run before the door is opened as follows:

The machine control will allow the washer to restart in any setting. After that cycle completes, the user must open the door before the machine control will allow a third cycle to start.

Door Lock/Spin Control

When the machine control begins a spin increment, it will not command spin speed above 51 rpm unless the Door Lock Switch Input is energized. At the start of a spin increment, the machine control will drop the speed to 0 rpm then tumble until the switch is energized. At that point, it will restart the spin sequence. If the door lock switch is not energized after 2 minutes of tumbling, the machine control will energize the timer motor output until the timer inputs change so the washer can proceed with the cycle.

At the end-of-spin sequence, if the door lock switch input is de-energized before the washer drops below 91 rpm, a hardware circuit on the machine control will interrupt the torque output signal, which forces the motor control to 0 rpm, and energize the door lock wax motor circuit to lock the door. This hardware circuit will keep the door lock wax motor circuit energized until the door lock switch input signal is energized.

Redistribution

The machine control commands a distribution profile speed ramp from 0 rpm to 85 rpm at the beginning of each high speed (above 100 rpm) spin. When the washer reaches 85 rpm, the machine control monitors the Tach Input to determine if the speed varies through one revolution of the spinner basket. If it senses a high enough variation in speed (suggesting an out-of-balance condition in the clothing load), it will drop the spinner speed to 0 rpm and force a short reverse tumble to redistribute the clothing load before resuming the spin. If any of the out-of-balance switches trip and open the out-of-balance input circuit at a speed below 500 rpm, the machine control will also drop the speed to 0 rpm and force the reverse tumble to redistribute the clothing load (*See Section 2: Unbalance Control System*).

Push-To-Start Relay Operation

STARTING THE WASHER

1. With the door closed, press the push-to start switch.
2. The red no. 28 wire sends a signal to the machine control to start running.
3. 120 VAC is supplied to the machine control board through black wire no. 27.
4. The machine control closes an internal switch to energize the line relay.
5. When the push-to-start button is released, power remains supplied to the machine control and the washer from gray wire no. 26 through the line relay.

STOPPING THE WASHER

1. With the washer running, power is supplied to the machine control and washer from gray wire no. 26 through the line relay.
2. When the user presses the push-to-start button, a signal is sent to the machine con-

trol through red wire no. 28 telling the washer to shut down.

3. The machine control opens the internal logic switch which de-energizes the line relay.
4. When the user releases the push-to-start button, power is removed from the machine control and washer (Black wire no. 27):

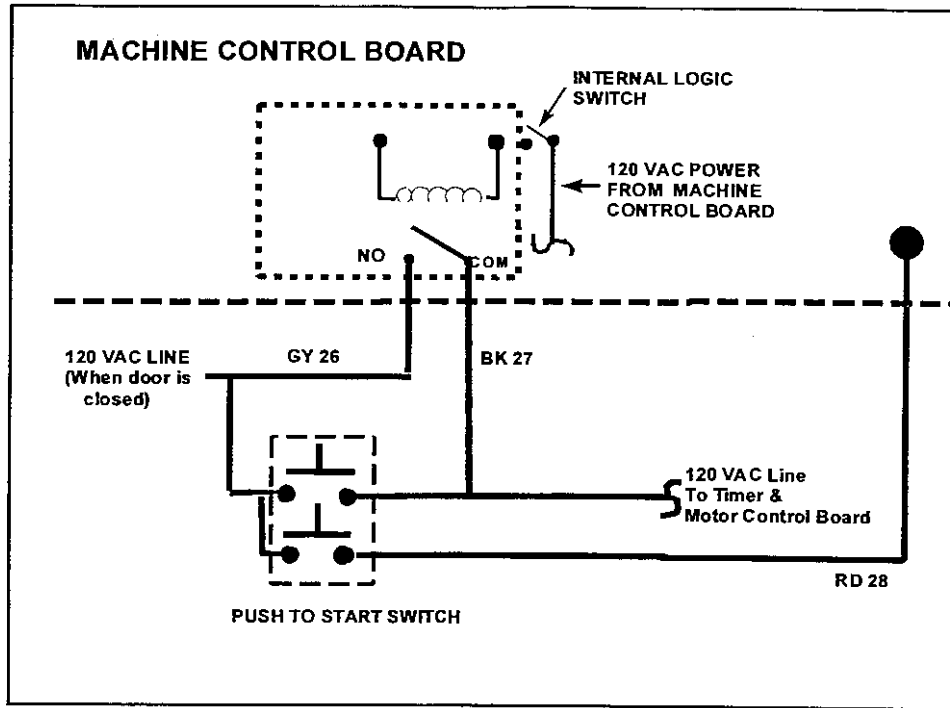


Figure 1-8

CYCLE REVIEW

Main Wash Time/Total Cycle Time - Minutes (See Notes).

Non-MaxExtract	Cotton/Sturdy	Easy Care/ Perm Press	Delicates	Hand Washables
Heavy Wash	23.0/49.0	20.0/45.5	20/46.5	Not Applicable
Normal Wash	17.0/43.0	14.0/39.5	14.0/40.5	Not Applicable
Light/Quick Wash	11.0/37.0	8.0/33.5	7.0/34.5	Not Applicable
Final Spin (RPM/Min)	800/3.5	600/3.0	500/4.5	Not Applicable

Max Extract Cycles	Cotton/Sturdy	Easy Care/ Perm Press	Delicates	Hand Washables
Heavy Wash	23.0/46.0	20.0/41.5	20.0/42.0	20.0/43.0
Normal Wash	17.0/40.0	14.0/35.5	14.0/36.0	14.0/37.0
Light/Quick Wash	11.0/34.0	8.0/29.5	8.0/30.0	8.0/31.0
Final Spin (RPM/Min)	800/4.0	600/3.5	500/5.0	500/5.0

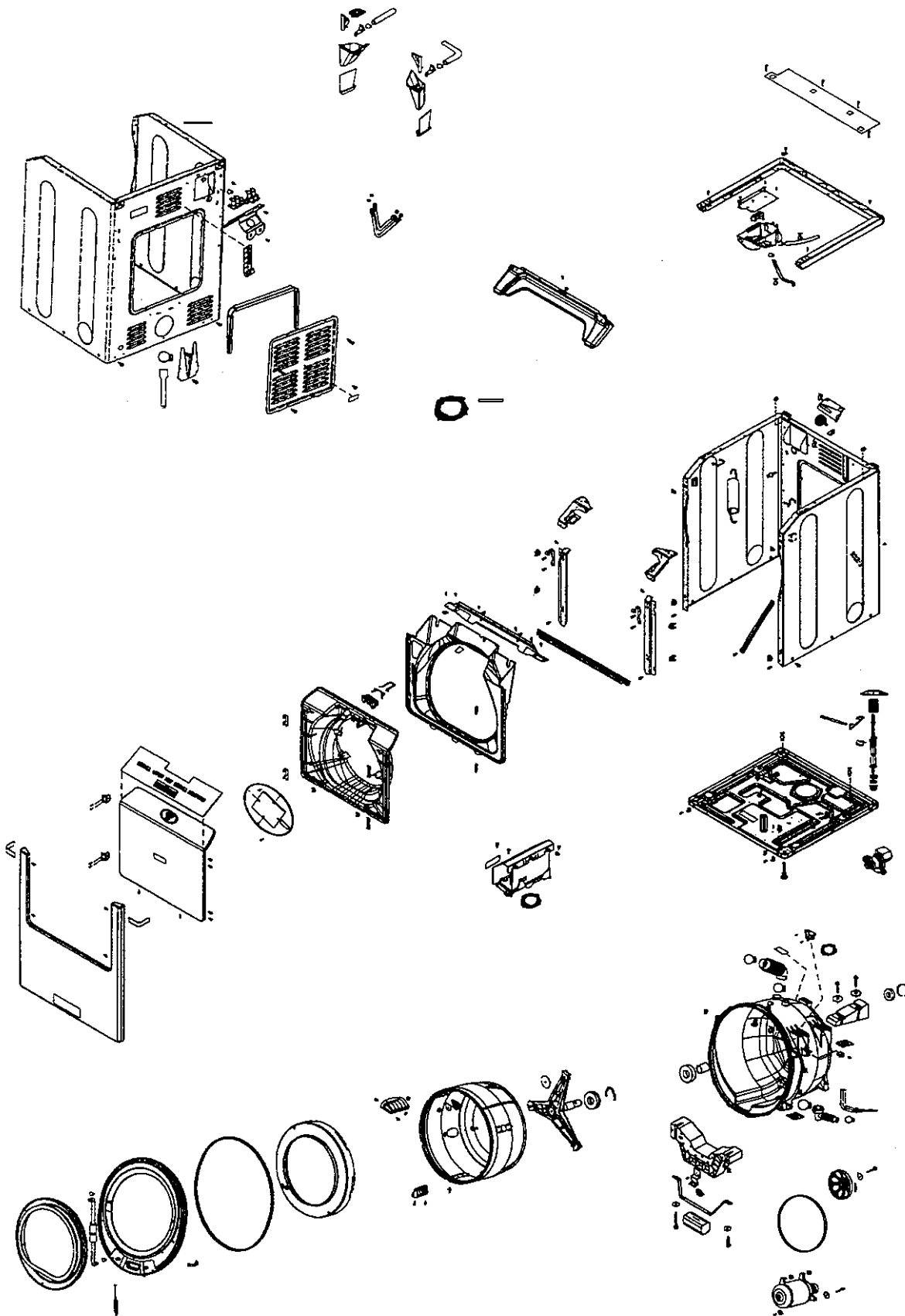
Notes:

1. The main wash times listed include 2 minutes of bleach fill and tumble time.
2. The total cycle times are approximate and will vary based on water fill times, due to types of clothing loads and the time for the door lock system to retract at the end of the cycle.
3. The main wash time is affected significantly if the machine control detects an excessive amount of suds. The washer will go into a suds reduction routine, consisting of a series of additional rinse and partial drain cycles to reduce the suds present (*See Troubleshooting & Diagnosis - Clothes Wet at End of Spin*).

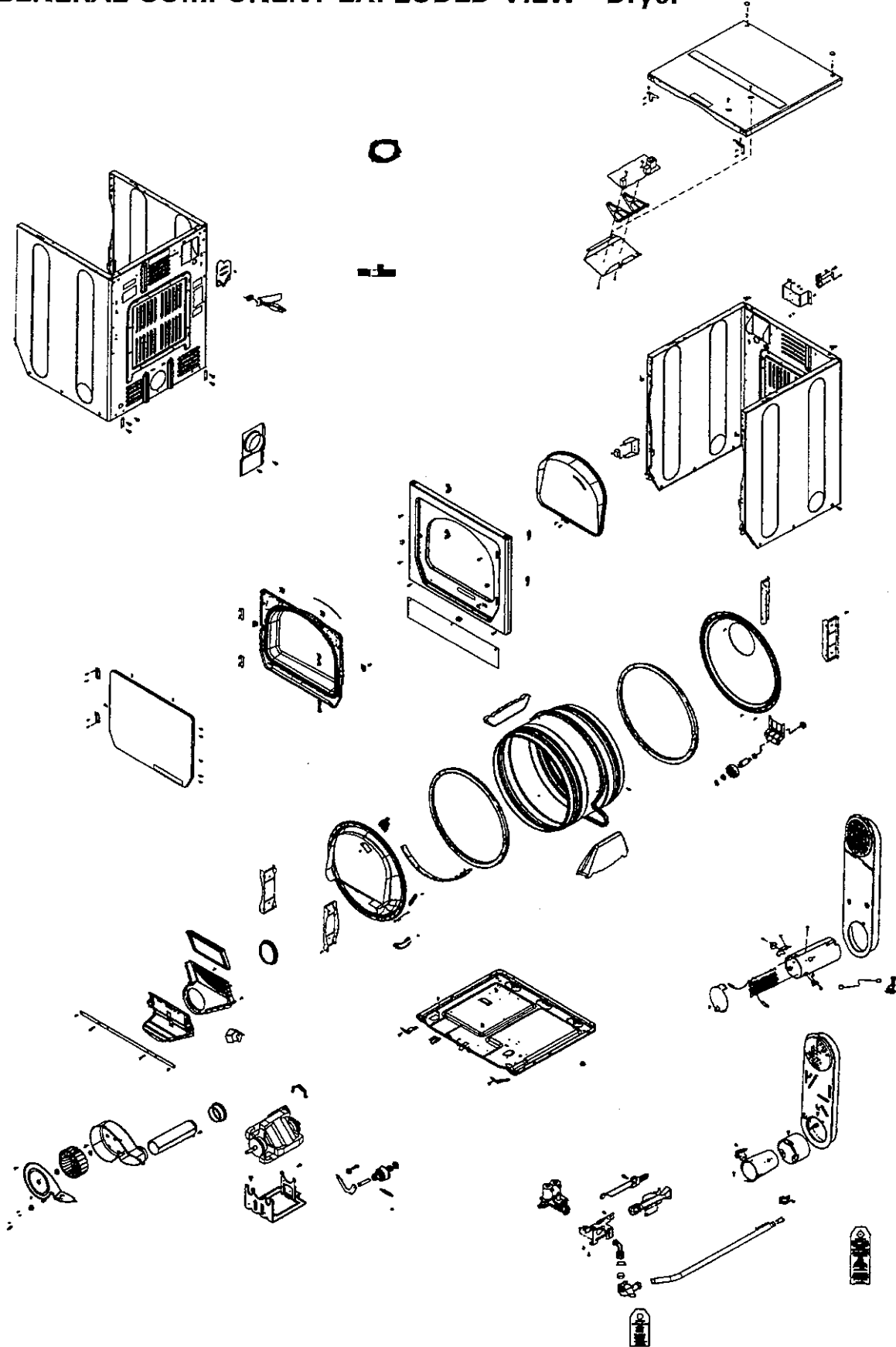
Tumble Pattern - Number of seconds tumbling/Number of seconds of pause between tumbles.

Cotton/Sturdy	Easy Care/ Perm Press	Delicates	Hand Washables
7/3	5/3	6/24	3/27

GENERAL COMPONENT EXPLODED VIEW - Washer



GENERAL COMPONENT EXPLODED VIEW - Dryer

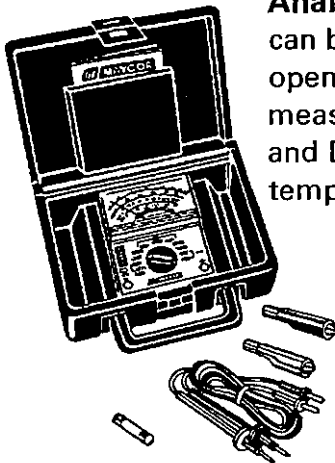


SECTION 2. ELECTRICAL COMPONENTS & TESTING

ELECTRICAL TEST EQUIPMENT

The equipment required to service Maytag products depends largely upon the conditions you encounter. Locating a malfunction will often require the use of electrical testing equipment along with other test equipment such as:

DESCRIPTION	PART NUMBER
Analog Test Meter	20000005
Digital Test Meter	20001001
Clamp-on Ammeter	20000002
AC Voltage Sensor	20000081
Air Test Meter	20000029
Water Column Manometer	038205

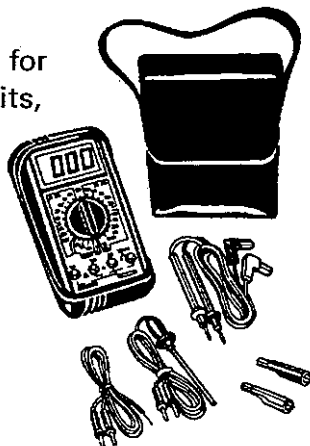


Analog Test Meter can be used to check for open or closed circuits, measure resistance, AC and DC volts, and temperature.

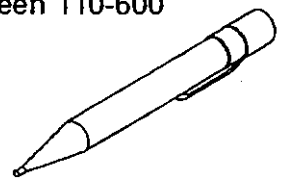
Clamp-On Ammeter can be used to detect shorts. Overloads on the circuit breaker or fuse can be traced to either the washer or circuit breaker by checking the washer current draw.

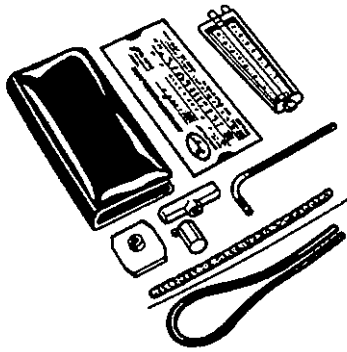


Digital Test Meter can be used to check for open or closed circuits, measure resistance, AC and DC volts, and temperature.



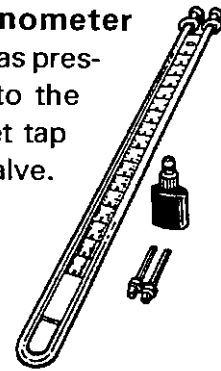
AC Voltage Sensor can be used to alert you if AC voltage is present so proper safety precautions can be observed. The tip of the sensor will glow bright red if voltage is between 110-600 volts AC.





Air Test Meter can be used to check back pressure in the exhaust duct. Vent restriction can cause back pressure and disrupt normal operations of the dryer.

Water Column Manometer can be used to check gas pressure being supplied to the dryer and at the outlet tap pressure on the gas valve.



MANOMETERS

An insufficient gas flow can cause problems. Therefore, checking the gas pressure at the time service calls are performed may prevent a call back.

Gas pressure can be checked with an instrument called a "manometer." This device can tell you if there is a "low" LP tank, restricted gas flow, bad gas valve, a malfunctioning pressure regulator, too many gas appliances operating off of a small supply line, or an improperly converted appliance from Natural to LP gas.

Other types of manometers exist; however, the type of manometer we will discuss in this manual is a "U" shaped tube in which weight is added. Both ends are open so the water can equalize and seek its own level, which will be the same in both arms of the "U" shaped tube.

A flexible rubber hose is connected to the lower open end of the manometer and to the gas source. Gas pressure is exerted on one of the water columns, pushing it down. The water level then rises in the other column. A measurement of the differential in water levels is then taken as the measure of gas pressure.

How to Use

1. Unplug dryer.
2. Remove front panel.
3. Shut off the gas to the dryer.
4. Install a 5/16" tapered fitting at the gas valve pressure tap. Use thread seal tape or compound on fitting (*Figure 2-1*).

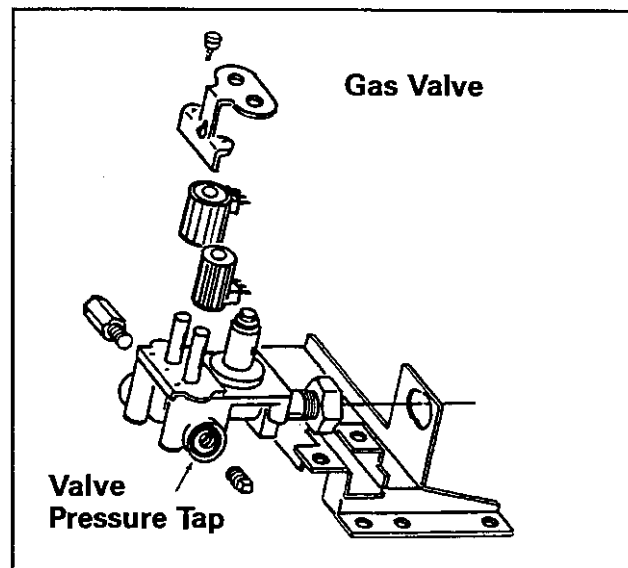


Figure 2-1

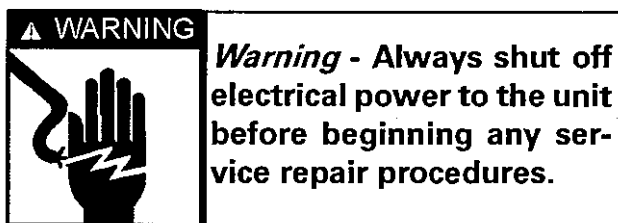
5. Fill the manometer tube with water until each side equalizes at "0" water column.
6. Push the end of the manometer hose onto the 5/16" fitting, located on the gas valve.

7. Connect hose to one end of the manometer.
8. Turn on the gas and reconnect dryer to power. Run the dryer in a heat cycle. Read the manometer with the burner ON, (check for gas leaks).
9. The amount of water column present is equal to the total amount of deflection shown in the manometer, when the gas is turned on.

NOTE: *Once the test is completed, make sure the tapered fitting is removed from the gas valve and the plug is repositioned into the gas valve and resealed with pipe seal. Check for gas leaks again. This should be done with a soap or bubble solution. NEVER USE OPEN FLAME TO CHECK FOR GAS LEAKS.*

HIGH WATER COLUMN PRESSURE can be caused by the wrong orifice, improper air mixture or high gas pressure. If pressure is as high as suspected, contact the local gas utilities company to check the outside regulator.

ELECTRICAL TESTS - WASHER



Grounded Components

When performing service diagnostics, replacements and repairs, always check to determine whether all ground wires linking panel and components are reattached if removed.

Voltage Checks

Generally, these checks will consist of taking readings at the wall receptacle to determine the availability of voltage to the product. Voltage checks on individual components of a product are not recommended due to the possibility of electrical shock. Component part testing is best accomplished through continuity checks with an Appliance Test Meter (*See Electrical Test Equipment*).

NOTE: *Use of the meter on voltage higher than the indicated range may cause permanent damage to the meter. To prevent damage, first select the highest range and then lower the range for readings which fall within the lower scale.*

Set up meter for use as follows:

1. Turn selector knob to desired meter function and appropriate range.
2. Plug black lead into socket marked black (-).
3. Plug red lead into socket marked red (+).
4. Place test leads into receptacle to determine voltage available.

Wax Motor Check - Door Lock Mechanism

Check the wax motor for proper ohms resistance. This check should be made with the electrical supply disconnected from the washer. Remove the wire harness from the wax motor terminals and place the ohm meter probes on the terminals of the wax motor. The wax motor should have a resistance of approximately 950-1100 ohms at room temperature. To check wax motors through console, see section: *Machine Control*.

Water Valve Test

Check the water valve for electrical continuity. This check should be made with the electrical supply disconnected from the washer. Remove the wire harness from the water valve terminals and place the ohm meter probes on the terminals of the water valve. The water valve solenoid coil should have a resistance between 500 - 1000 ohms. If no ohms are shown on the display of the electrical test meter, the solenoid coil has an open winding and the valve should be replaced. The thermistor in the water valve changes in resistance in direct relationship to water temperatures. To monitor the performance of thermistor, run a partial hot water fill and check the ohm resistance of the thermistor circuit. Then, run a cold water fill and measure the resistance again. There should be a notable difference in the resistance readings. To check the ohm resistance, pull the P2 wire harness connector off the machine control and locate the P2(5) and P2(6) leads in the connector (*Figure 2-3*).

Timer & Console Switches

The timer is located on the back of the control console. It is composed of a series of switches driven by an electric timer motor. The timer motor rotates a pinion gear which then rotates internal cams. As the cams rotate, they lift and drop various switch contacts which ride on the cam. The internal switches provide cycle sequence or step inputs to the machine control, to control the pump, dispenser wax motors, delay light, ON light and timer motor.

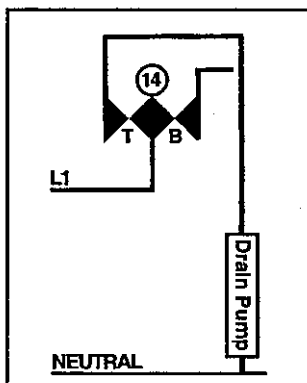


Figure 2-1

The timer wire harness connector can

be pulled and the individual contacts for the various circuits can be checked with an ohm meter. As illustrated, timer contact for the Drain Pump is 14T (*Figure 2-1*).

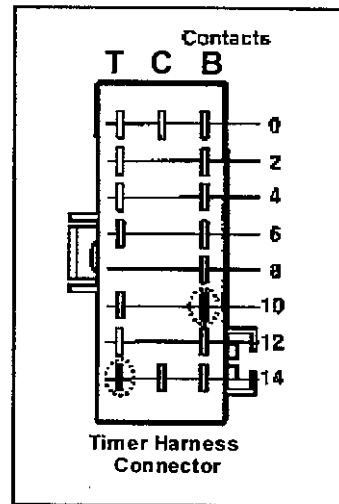


Figure 2-2

By tracing down the side of the connector to contact 14 and across to align with column T, you can identify the wire for the drain circuit (*Figure 2-2*).

Contact 10B in the connector is a direct contact to the Neutral leg of the timer. When an ohm meter probe is placed into the 14T connection and the other probe is placed into 10B, an ohm reading of the complete drain circuit can be performed. The drain circuit should have a resistance of approximately 18 ohms. This is the resistance reading of the pump motor windings. The following chart can be used for checking other components via the timer wire harness connector.

Description	Timer Harness Connector/Wire	Timer Harness Connector/Wire	Ohms
Bleach Valve	4B/PK3	10B/WH13	500-1K
Softener Valve	4T/PU2	10B/WH13	500-1K
Pump	14T/BK35	10B/WH13	18
Timer Motor	10T (Internal)	10B (Internal)	5K

TIMER INPUT CHARTS

As stated previously, the machine control board receives input from the timer monitor indicating where the timer is in the cycle. The machine control board accomplishes this by routing four circuits through the timer. Two of the circuits (1A & 1B) are supplied with 120 VAC and the other two circuits (2A & 2B) are 24 VDC. The voltages for the four circuits is shown on the timer chart of the electrical schematic enclosed in the washer console. Software in the machine control board specifically monitors the timer input circuits to determine where the timer is in all the wash cycles and will rapid advance the timer to OPEN and break contacts in the timer. The timer is solely used as an off-board set of relay switches. **Note: *The timer motor is hard wired to timer cams 10T and 10B in the timer.***

CYCLE SEQUENCE	TIMER 1A (120 VAC) PK19/P7(8)	TIMER 1B (120 VAC) YL16/P7(7)	TIMER 2A (24 VDC) PU17/P3(3)	TIMER 2B (24 VDC) BU18/P3(5)
PREWASH TUMBLE	0	1	1	0
PREWASH DRAIN	1	1	1	0
MAIN WASH TUMBLE	0	1	0	0
LIGHT WASH TUMBLE	1	1	0	0
BLEACH DISPENSE	1	0	1	0
RINSE TUMBLE	1	0	0	1
SPIN 1	0	0	1	0
SPIN 2	0	0	0	1
SPIN 3	0	1	0	1
EXTRA RINSE	1	1	0	1
IDLE	0	0	0	0

Key: 0 = Input Signal Not Asserted 1 = Input Signal Asserted

There are conditions under which the machine control will discontinue the cycle if the timer does not advance.

- During Extra Wash/Prewash: If the timer inputs do not change from Prewash Tumble for 15 minutes, the machine control will open the line relay.
- During Main Wash: If the timer inputs do not change for 29 minutes, the machine control will open the line relay.
- During any increment when the machine control energizes the timer motor until it sees the timer inputs change: If the timer inputs do not change for 5 minutes with the timer motor continuously energized, the machine control will open the line relay.

These varying delays are to allow the washer to progress through several increments where the timer inputs normally do not change. In these cases, the machine control energizes the timer motor only for 30 seconds, which is its advance time. It does not look for a timer input change.

Machine Control

The machine control microprocessor board is located in the upper right corner of the dryer. The board receives input from the timer, door latch and lock switches and unbalance and selector switches on the console. It also communicates with the motor control board to facilitate the various cycles and drive the motor for optimum performance. This is done by monitoring torque and speed of the motor through the motor control board.

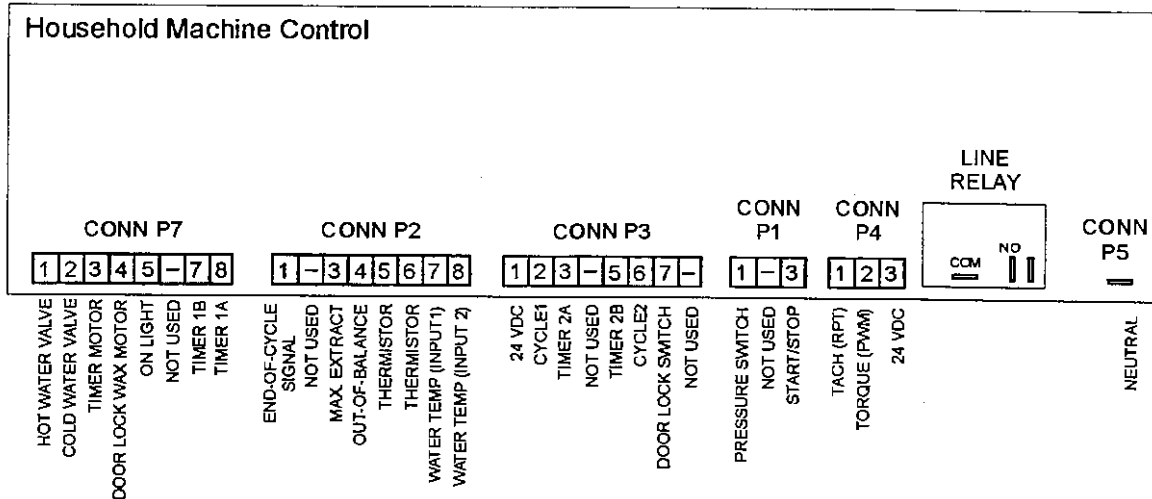
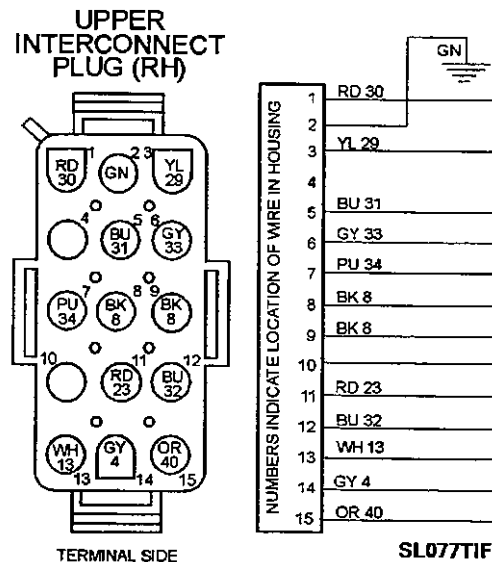
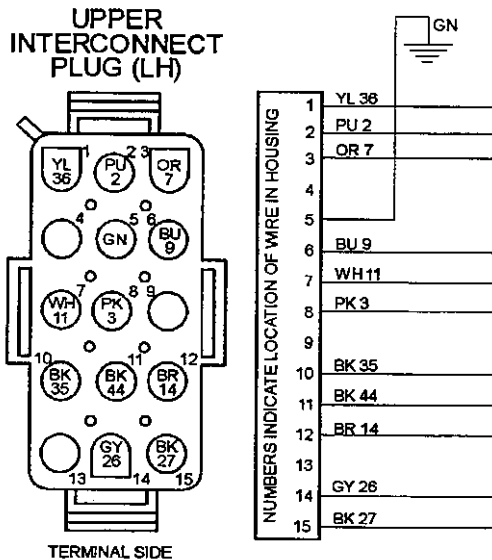


Figure 2-3

Both incoming and exiting voltage is monitored through the machine control board and the surrounding circuitry. The following table lists the voltages for the various terminals on the microprocessor board. If proper voltage is not present, check switches and wiring for possible loose connections or open circuits by disconnecting the power supply and performing continuity checks of individual circuits. NOTE: Connector P5 is Neutral input and L1 input is the Line Relay connector Comm (Gray wire), L1 output is Line Relay connector Comm (Black wire). To check voltages from the board, turn timer dial to a wash cycle and press the Start/Off button. This will activate the L1 relay board and apply power on the machine control.

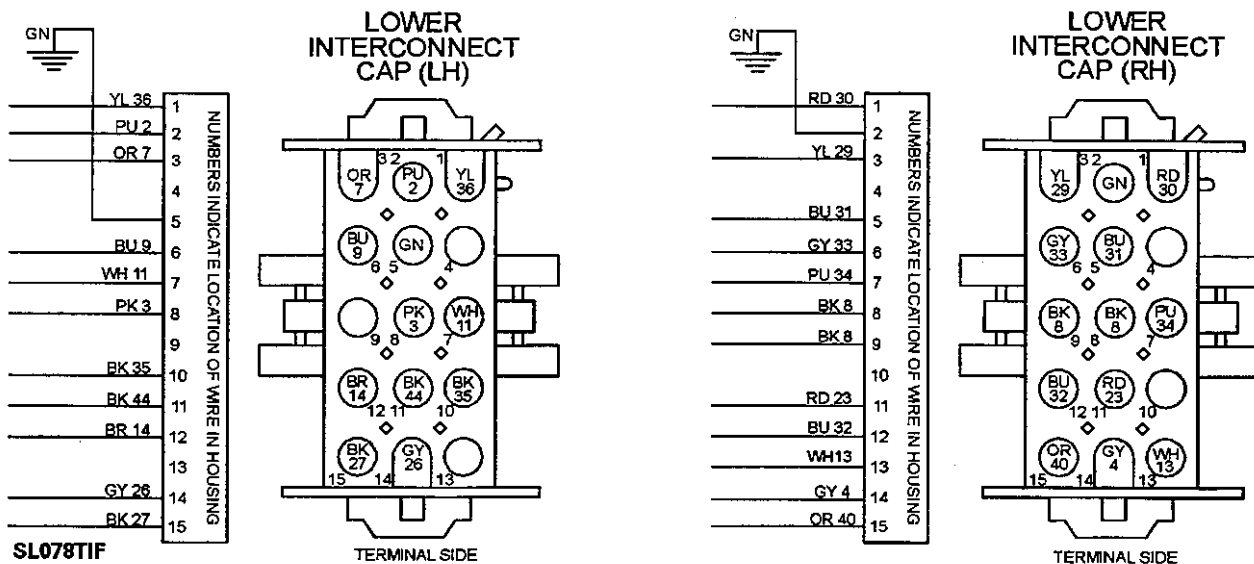


FUNCTION	MACHINE CONTROL BOARD TERMINAL/WIRE	MACHINE CONTROL BOARD TERMINAL/WIRE	VOLTAGE-APPROX. (When Activated)	TIMER CONTACT	UPPER HARNESS L.H. TERMINAL/WIRE	UPPER HARNESS R.H. TERMINAL/WIRE
Permanent Press	P5 (WH) P5 (WH)	P3/2 (BR5) P3/6 (YL6)	24 VDC 0 VDC	2B Closed 2T Open	-----	-----
Delicates	P5 (WH)	P3/2 (BR5) P3/6 (YL6)	0 24 VDC	2B Open 2T Closed	-----	-----
Cotton/Sturdy	P5 (WH) P5 (WH)	P3/2 (BR5) P3/6 (YL6)	0 VDC 0 VDC	2B Open 2T Open	-----	-----
Signal ON/OFF (Options Switch)	P5 (WH)	P2/1 (PU 21)	24VDC-ON 0 VDC -OFF	Not Involved	-----	-----
Extra Rinse (Options Switch)	P5 (WH)	P7/8 (PK 19)	120 VAC	12B, 6T,0T	-----	-----
Max Extract (Options Switch)	P5 (WH)	P2/3 (YL 20)	24 VDC	Not Involved	-----	-----
Push To Start Switch (When pressed)	P5 (WH)	P1/3 (RD 28)	120 VAC	Not Involved	-----	-----
Unbalance Control	P5 (WH)	P2/4 (OR 40)	24 VDC	Not Involved		15/OR40
Door Lock - Spin	P5 (WH)	P3/7 (YL 36)	24 VDC	Not Involved	-----	-----
Motor Control & Machine Control	P5 (WH)	LINE RELAY COM (BK1)	120 VAC	Not Involved	15/BK27	-----
Hot Water Valve	P5 (WH)	P7/1 (OR7)	120 VAC (500-1000 Ohms)	Not Involved	3/OR7	-----
Cold Water Valve	P5 (WH)	P7/2 (BU 9)	120 VAC (500-1000 Ohms)	Not Involved	6/BU9	-----
Door Lock Wax Motor	P5 (WH)	P7/4 (BR 14)	120 VAC	Not Involved	12/BR14	-----
Bleach Valve	P5 (WH)	Not Involved	120 VAC (500-1000 Ohms)	4B	8/PK3	-----
Softener Valve	P5 (WH)	Not Involved	120 VAC (500-1000 Ohms)	4T	2/PU2	-----

FUNCTION	MACHINE CONTROL BOARD TERMINAL/WIRE	MACHINE CONTROL BOARD TERMINAL/WIRE	VOLTAGE-APPROX. (When Activated)	TIMER CONTACT	UPPER HARNESS L.H. TERMINAL/WIRE	UPPER HARNESS R.H. TERMINAL/WIRE
On Light	P5 (WH)	P7/5 (RD 3)	120 VAC	Not Involved	-----	-----
Pressure Switch (Empty)	P5 (WH)	P1/1 (PU34)	120 VAC 120 VAC	12T (Wash) 6B (Rinse)	----- -----	6/GY33 7/PU34 12/BU32 7/PU34
Pump	P5 (WH)	Not Involved	120 VAC	14T 10B	10/BK35 7/WH11	-----
Spin Enable	P5 (WH)	P3/7 (YL36)	24 VDC	-----	1/YL36 11/RD23	-----

Ohm checks can be performed through the electrical connectors in the access cover area as indicated in the previous chart. Components in the washer can also be checked by using the lower harness connectors.

The following table can be used for performing Ohm checks using the lower harness connectors located in the access cover area.



FUNCTION	LOWER HARNESS L.H. TERMINAL/WIRE	LOWER HARNESS R.H. TERMINAL/WIRE	OHMS CHECK
Water Valve - HOT	3/OR7 7/WH11	-----	500-1000
Water Valve - Cold	6/BU9 7/WH11	-----	500-1000
Water Valve - Bleach	8/PK3 7/WH11	-----	500-1000
Water Valve - Softener	2/PU2 7/WH11	-----	500-1000
Thermister - Water Valve	-----	8/BK8 7/BK8	52.5K ± 300 @ 75°F.
Pump	10/BK35	13/WH13	18
Wax Motor - Door Lock	12/BR14	-----	1900
Pressure Switch - Wash Level	-----	12/BU32 7/PU34	Empty - Closed Full - Open
Pressure Switch - Rinse Level	-----	6/GY33 7/PU34	Empty - Closed Full - Open
Unbalance & Inertial Switches	-----	11/RD23 15/OR40	CLOSED - 0
Door Lock Light Switch	14/GY26	14/GY4	OPEN - Infinite
Spin Enable Switch	1/YL36	11/RD23	Unlocked - Open Locked - Closed

DRIVE MOTOR

The drive motor is a switched reluctance type motor. The basic operating principle of the switched reluctance motor is direct magnetic attraction between the stationary electromagnetic coils (stator) and a specially configured rotor or armature (*Figure 2-4*). The rotor is made up of stacked plates or laminations

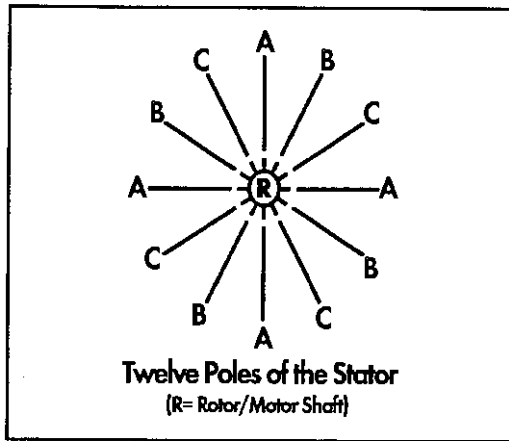


Figure 2-4

mounted on a center shaft. The shape of these laminations are characteristic of the switched reluctance motor. The rotor, when viewed from the end of the rotor, has "teeth" much like a gear. These "teeth", or pole pieces, are pulled as the result of direct current power through the stator coils.

Multiple stator coils are positioned around the rotor and are connected in three different phased "sets" of paired coils.

Magnetic attraction causes the rotor poles to turn toward the coils. The electronic motor control board switches the magnetic field off just as the rotor pole piece approaches and then turns on another set of coils further ahead. It is this switching action of motor phases that determines direction and rotational speed of the rotor (and shaft). The motor control board changes the 120 VAC voltage line input to 170 VDC, and distributes the current phases to the stator coil sets in sequence to the drive motor.

The following illustration shows the motor terminals for each of the coils involved. The letters with positive and negative symbols indicate the motor phase circuitry of the terminals.

Refer to section titled Motor Control for board identification of A, B and C terminal/harness identification (*Figure 2-6*). Also, see the wiring schematic for harness identification.

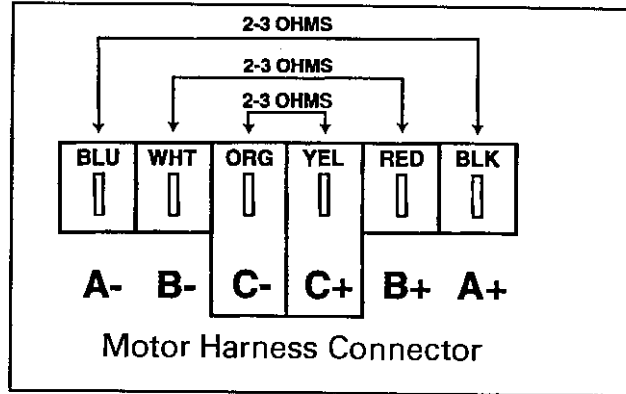


Figure 2-5

MOTOR CONTROL BOARD

The motor control board receives 120 VAC voltage from the dryer line cord and distributes DC voltage to the drive motor. The motor control converts the voltage from single phase to 3 phase for the drive motor.

Another purpose of the motor control is to monitor the drive motor speed through a tachometer circuit linking the motor control board to a tachometer on the drive motor. This is a 3-wire circuit comprised of a Black, Blue and White wire harness. Failure of this circuit will cause the motor to start jerking in place or accelerate rapidly for up to 5 seconds. This occurs whenever the tachometer in the drive motor is trying to locate the proper shutter and sensor sequence. For example, if the tachometer signal is lost from the motor control to the machine control just prior to spin, the motor will ramp up for 5 seconds then stop.

Motor & Motor Control Test

1. Disconnect power to the machine & connect a power test cord to the Line & Neutral terminals of the Motor Control board. (*Figure 2-6*).
2. Remove JP4 Interface connector wire harness on front end of motor control board.
3. Plug in the power test cord to a 120 VAC power source. The motor control will immediately execute a test routine and the motor should run, rotating the spinner at 50 rpm.

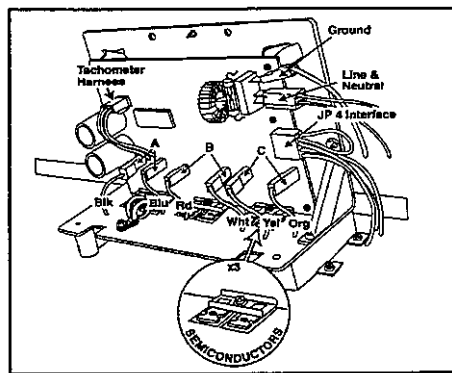


Figure 2-6

8. If the motor runs, and the spinner rotates at the proper RPM speed, the problem lies outside of the motor and motor control circuit. Disconnect power to the washer and reconnect the JP4 Interface connector to the motor control.
9. If the motor does not run:
 - A. Check the 10 amp fuse located on the control board, either visually or with an ohm meter. If bad, replace motor control/wire harness assembly completely (*Figure 2-6*).
 - B. If the fuse is functioning, check the six semiconductors on the heat sink visually for any damage. If damaged, replace motor control/wire harness assembly complete and check motor windings for damage (*See DRIVE MOTOR*). Replace motor if necessary (*Figure 2-6*).

C. If fuse and semiconductors show no visible damage, perform the Motor Phase Test.

10. Unplug the washer power cord and replace Motor Control Board connector JP4 when finished.

Motor Phase Test

It is possible for the motor to still run, under light loads, when one of the phases of the motor is nonfunctional. A symptom would be the motor being noisier, possibly creating a growling noise. Also, because it is out of phase, the motor torque is less. This could result in a customer complaint that the load is not spinning out properly or it does not tumble consistently with a large load. (*See also Section 3: TROUBLESHOOTING, page 3-4*)

To gain access to the Motor Control Board terminals: (*Figure 2-6*)

1. Disconnect power to the washer prior to testing.
2. Remove the two screws securing the Motor Control Assembly to the base and un-snap the two twist lock wire ties restraining the motor to motor control board harness base.
3. Remove the green ground wire, Line & Neutral wires and the JP4 connector from the Motor Control Board.
4. Carefully lift the front end of the motor control board to disengage the rear locking tabs from the slots in the base. Slowly drag the Motor Control Board with motor harness attached, toward the front of the washer and lay in front of the washer.

5. Remove the screw securing the splash shield covering the face of the Motor Control Board. Pivot the splash shield with top screw in the Motor Control Board metal frame, allowing the plastic shield to become an electrical shield between the Motor Control board and the base.
6. Connect the power test cord to the Ground wire, Line 1 and Neutral wires. (Leave the JP4 connector off the board.) *(Figure 2-6)*
7. **Check Phase C** by disconnecting the yellow or orange wire at the Motor Control board. Plug in the motor test cord into the wall socket. If the motor operates with a slight growling sound, phases A and B are operating correctly. Reconnect Phase C and test with phase B disconnected. If the motor does not run properly, Phase A or B is not functioning. Perform the motor windings check. *(See section MOTOR WINDINGS CHECK)*
9. **Check Phase B** by disconnecting the white or red wire at the Motor Control board. Plug in the motor test cord into the wall socket. If the motor operates with a slight growling sound, phases A and C are operating correctly. Reconnect Phase B and test with phase A disconnected. If the motor does not run properly, Phase A or C is not functioning. Perform the motor windings check *(See MOTOR WINDINGS CHECK)*.
10. **Check Phase A** by disconnecting the black or blue wire at the Motor Control board. Plug in the motor test cord into the wall socket. If the motor operates with a slight growling sound, phases B and C are operating correctly. Reconnect Phase A and test with phase B disconnected. If the motor does not run properly, Phase A or B is not functioning. Perform the motor windings check *(See MOTOR WINDINGS CHECK)*.

PHASE	WIRE COLORS	MOTOR CONDITION	RESULT/SOLUTION
C	Yellow or Orange	Runs Does Not Run	-Phases A&B are operating correctly. (Check Phase A and B) -Phase A or B is non-functional. (See Step 10)
B	White or Red	Runs Does Not Run	-Phases A&C are operating correctly. (Check Phase A and C) -Phase A or C is non-functional. (See Step 10)
A	Black or Blue	Runs Does Not Run	-Phases B&C are operating correctly. (Check Phase B and C) -Phase B or C is non-functional. (See Step 10)

MOTOR WINDINGS CHECK

1. Unplug the washer power cord.
2. Remove each pair of phase wires from the motor control and perform an ohms check of each wire leading to the motor. Each wire pair should show 2-3 ohms resistance. *(Figure 2-5)*
2. There should be no continuity between any of the terminals and the frame of the motor.
3. Check that all six motor terminals are secure and at the same height in the connector housing. Replace motor if terminals are pressed into the motor.
4. Remount the six-position motor connector onto the motor, reassemble the drip shield cover onto the motor control.
5. Reposition the motor control into the washer when finished. Make sure the two screws and the twistlock wire ties are fastened properly to the wire harness.

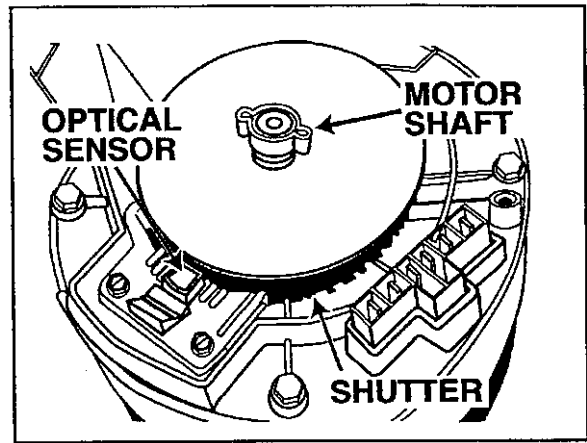


Figure 2-9

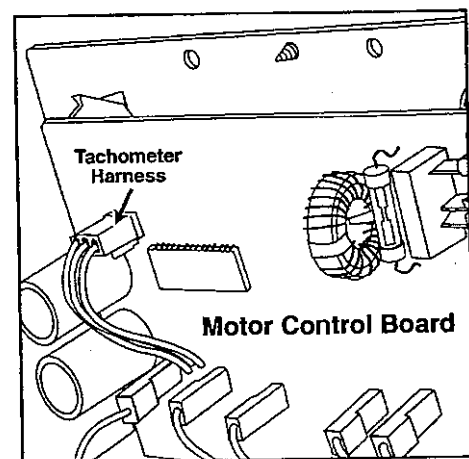


Figure 2-10

Tachometer Circuit Diagnostics

The tachometer system of the motor is comprised of a plastic wheel, called a shutter, and an optical sensor *(Figure 2-9)*. The shutter is mounted to the end of the motor shaft under the plastic endbell covering of the motor. The edge of the shutter resembles a "picket fence" with different size "pickets." The pattern consists of six different "pickets" which are repeated eight times. An optical sensor is mounted to one side of the shutter and monitors the "pickets" as they pass through the sensor.

As the "pickets" pass through the sensor field, signals are generated and are transmitted to the motor control board through the tachometer wire harness *(Figure 2-10 and 2-11)*.

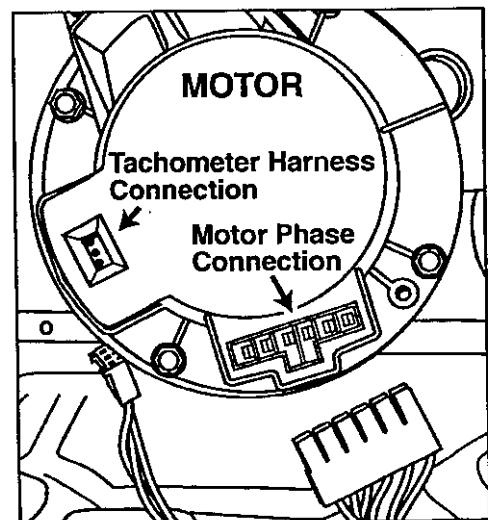


Figure 2-11

The motor control monitors the signals and communicates this information to the machine control. The purpose of this signal is to tell the motor when to energize each winding in the motor and to tell the machine control the actual motor speed.

Note: *If the machine control board does not receive an input signal from the motor control/tachometer circuit (JP4 connector), the motor speed will rapidly accelerate for 5 seconds then shut down. The machine control will sense a "locked rotor" condition and the motor will stop. If the motor control does not receive an input signal from the motor, the motor will "jerk" for 5 seconds then shut down.*

1. Inspect the motor control wire harness for integrity of the connections on both ends. The harness is comprised of a White, Blue and Black wire.
2. **Disconnect power to the machine** & connect a power test cord to the Line & Neutral terminals of the Motor Control board (*Figure 2-6*).
3. Press the Start/Off button. The unit will be powered up without activating the motor. Leave the tachometer harness on the motor control and insert the meter probes into the backside of the tachometer harness.

The following table indicates voltage checks of the tachometer harness between the motor and motor control board.

Tachometer Wire Checks	Voltage Found	Condition Of Component
White to Black (From Motor Control)	11 VDC (± 2.5 VDC)	Good Motor Control Board
White To Black (From Motor Control)	0 VDC	Bad Motor Control Board
White To Black (From Motor Control)	+ 13 VDC or <9 VDC	Bad Motor
Blue to Black (From Drive Motor)	No change in DC volts as motor is turned slowly	Bad Motor
Blue to Black (From Drive Motor)	Voltage changes from 0 - 5 VDC volts as motor is turned slowly.	Good Motor

UNBALANCE CONTROL SYSTEM

The unbalance control system is comprised of the inertial switch, outer tub displacement switch, strut displacement switch and a cabinet vibration sensor mounted to the machine control board. The three switches are wired in series on a 24 VDC circuit, monitored by the machine control board. The sensor is mounted on the machine control board.

Software in the machine control board will begin monitoring the switches when the spin speed reaches 90 rpm. The inertial unbalance switch monitors outer tub vibrations above 150 rpm.

Inside the door is a cabinet vibration absorber designed to counter the vibration of the tub and serve as a tuned absorber for the whole washer.

Whenever a displacement switch is tripped, the machine stops and redistributes the clothes load. This involves a three (3) second pause, followed by a five (5) second reverse tumble (47-49 rpm) to redistribute the clothes load. The washer will pause again for three (3) seconds, then start the Distribution Profile again. To redistribute the load, the machine tumbles the load (50-90 rpm) and again attempts to pass through critical (about 150 rpm). The machine will try to redistribute twice as the washer attempts to spin at 800 rpm.

Once the load is properly redistributed and the speed reaches above 500 rpm, the inertial switch and cabinet vibration sensor are used. If the inertial switch or sensor is activated, the washer will drop in spin speed, based upon which level of spin speed the switch activation takes place. See *Figure 2-12* outlining the spin speed categories and the corresponding reduced speeds. If the switches are not activated, the final spin speed will reach a maximum speed of approximately 850 rpm and then drop down to find the optimum performance level, based upon readings taken by the cabinet vibration sensor. The up and down cycling of the motor may confuse the consumer, however, the machine is searching for the optimum spin speed for optimum performance.

<u>RPM</u>	<u>FUNCTION</u>
47	Tumble
47-85	Distribution
90-250	Accelerate Through Critical
250-499	Accelerate Through Critical
500-575	High Speed Acceleration - WILL DROP TO 450 RPM
600-675	High Speed Acceleration - WILL DROP TO 555 RPM
>675	High Speed Acceleration - WILL DROP TO 650 RPM
750-800	TOP SPIN SPEED

Figure 2-12

Tube Displacement Switch

The tub displacement switch is located on the upper right hand side of the outer tub, below the top concrete weight, between the outer tub and the cabinet. The switch senses the outer tub touching the cabinet side as the machine passes through critical. When this switch is tripped, the machine stops and redistributes the load.

Testing the Tub Displacement Switch

- 1. Discontinue power to the machine.**
- 2. Place ohm meter leads across the two terminals of the switch. Depress the button on the switch. If the contacts open, the switch is good. If not, replace the switch.**

Strut Displacement Switch

The strut displacement switch is clipped to the top of the left rear strut. The switch senses the outer tub bottoming out on the strut as the machine accelerates above 90 rpm. This is caused by the twisting motion of the outer tub. This switch is needed in addition to the tub displacement switch because the twisting motion may not trip the outer tub displacement switch. Primary cause for activation would be an unbalance at the front and rear of the spinner on opposite sides.

The strut displacement switch is wired in series with the tub displacement switch and causes the same type of redistributions.

Testing the Displacement Switch

1. Discontinue power to the machine.
2. Place ohm meter leads across the two terminals of the switch. Depress the button on the switch. If the contacts open, the switch is good. If not, replace the switch.

Inertial Unbalance Switch

The inertial unbalance switch is located on the upper right hand side of the outer tub, in front of the top concrete weight. The switch consists of a moving weight in the switch body, pressing against switch contacts. If unbalance of the outer tub becomes too erratic, the moving weight will open the contacts in the switch. When the machine controller senses the switch opening, the machine controller will reduce the spin speed to 650, 550, or 450 rpm depending on the current speed closest to the level spin speed (i.e. 625 rpm trip would drop to 550 rpm *See Figure 2-12*).

Testing the Inertial Unbalance Switch:

Testing of the switch may prove difficult. The switch will not open unless the switch is jerked side to side creating a "G" force of 8 - 9 Ft. lbs.

1. Discontinue power to the machine.
2. Place ohm meter leads across the two terminals of the inertial switch. Jerk the switch side to side. If the contacts do not open easily, the switch is good. If the switch contacts are open or easily tripped, replace the switch.

Lower Weight Unbalance Switch

The switch is located on the lower right front corner of the lower weight. The switch consists of a push-button, normally closed, switch wired in series with the outer tub displacement and inertial unbalance switches.

Testing the Weight Unbalance Switch

1. Disconnect power to the machine.
2. Place ohmmeter leads across the two terminals of the switch. Depress the button on the switch. If the contacts open, the switch is good. If not, replace the switch.

Cabinet Vibration Sensor

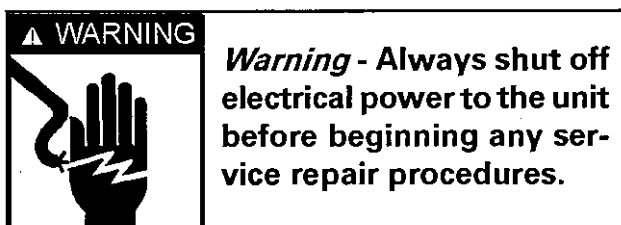
The cabinet vibration sensor is a piezo electric strip mounted to the lower left corner of the machine control board. With a mass attached to the end of the strip, the machine controller monitors the cabinet vibration as the machine reaches top speed. The machine controller uses the vibration sensor to attempt to spin the washer at the optimum speed with the least amount of vibration. Optimum speed changes from machine to machine due to: changes in mass of the absorber; changes in

spring rate of the absorber; and changes in the pulley - belt ratio. It can also change from run to run due to the size of the clothes load and type of floor. The sensor finds the optimum speed on every run. The optimum speed will be between 750 and 850 rpm.

Cabinet Vibration Absorber

This is a tuned absorber mounted in the door. The tuned absorber consists of a mass suspended by springs tuned to vibrate at approximately 800 rpm. The mass vibrates 180 degrees out of phase with the vibration of the cabinet. This cancels out much of the vibration caused by the clothes load at 800 rpm (*See Section 5: Cabinet Assembly*).

ELECTRICAL TESTS - Dryer



Voltage Checks

Generally, these checks will consist of taking readings at the wall receptacle in order to determine the availability of voltage to the product. Voltage checks on individual components of a product are NOT recommended due to the possibility of electrical shock. Component part testing is accomplished through continuity checks with an appliance test meter.

NOTE: *Use of the meter on voltage higher than the indicated range may cause permanent damage to the meter. To prevent damage, first select the highest range and then lower the range for readings which fall within the lower scale.*

Set up meter for use as follows:

1. Turn selector knob to desired meter function and appropriate range.
2. Plug black lead into socket marked (-) negative.
3. Plug red lead into socket marked (+) positive.
4. Place test leads into receptacle in order to determine voltage available.

Voltage Check with Voltmeter

Voltage readings may be taken by using the leads supplied with the meter. The meter is preset to read on the 0-300 VAC scale but can be dropped down to 0-150 VAC range by depressing the red button on the side of the meter.

Using Voltmeter as a Continuity Tester

Continuity testing is usually an ohmmeter function, but a voltmeter can also be used, particularly when testing switch contacts. The primary difference is that power is applied to the circuit under test and appropriate caution **MUST** be exercised.

The voltmeter is connected across the component terminals with the wires still in place and with power disconnected. The meter is set for the 300 volt range and power is reconnected. A voltage reading indicates a voltage drop across the component. There should be no voltage drop across closed switch contacts or fuses.

The voltmeter connected across thermostat terminal, as an example, will show no reading when the thermostat is calling for heat and will show line voltage when the thermostat cycles, if the timer is in heat cycle.

This type of continuity testing is an excellent method of locating questionable switch contacts. Any voltage drop across closed switch contacts indicates poor electrical contact. The resulting internal heating can shorten component life.

Door Switch

The door switch is in series with both the motor and the inner tumbler light. When the door is closed, the switch completes a neutral circuit to the motor and opens the circuit to the tumbler light. With the door open, the light circuit is completed and the neutral circuit to the motor is discontinued, thus shutting down, the motor.

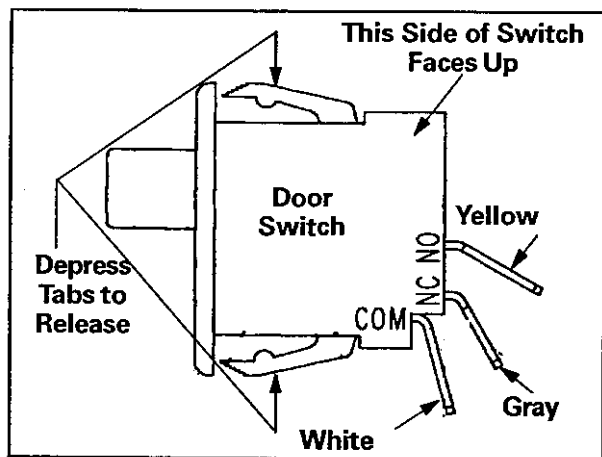


Figure 2-13

To test the door switch, use an ohm meter and check for continuity from the COM terminal to the NO and the NC terminals. "NO" means normally OPEN and with the door switch button not depressed, there should not be any continuity until the button is pushed. By having the switch button out, such as having the door OPEN, the dryer cannot be started.

The "NC" means there should be continuity across the terminals without depressing the button. This occurs when the door is opened, turning the tumbler light ON. When the door is closed, the switch will turn OFF the tumbler light.

Timer & Console Switches

The timer is a series of switches driven by an electric motor. The timer motor rotates a pinion gear which in turn rotates internal cams. As the cams rotate, they lift and drop various switch contacts which ride on the cam. The internal switches control power flow to the motor and the heating element. A timing chart is illustrated on the electrical schematic, found in the control console of the dryer.

Using the timer chart at the top of the electrical schematic, you can identify the timer terminals on the back of the timer, which are involved in various parts of the dryer cycle. With the power OFF and placing the terminals of the ohm meter across the terminals, you can check for continuity across the internal timer contacts.

Drive Motor Test

The motor features a leadless motor connection, comprised of a quick connector wire harness which connects directly to the motor. The connector has two locking tabs securing the connector to the motor switch. Press on both locking tabs to release the connector from the motor switch (*Figure 2-14*).

With the wire harness connector removed press inward on the brown actuator disc in the motor. The start and run winding can now be checked for proper ohms.

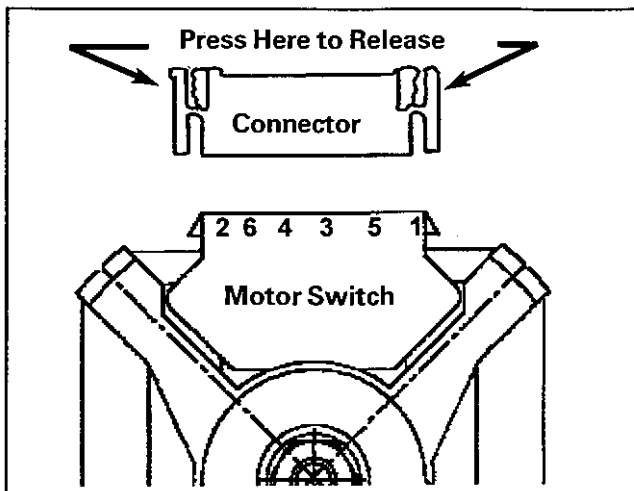


Figure 2-14

Place the leads from an ohm meter on the proper terminals as listed in the following chart.

Using an ohm meter, you can also check the wiring harness for continuity from the timer to the motor.

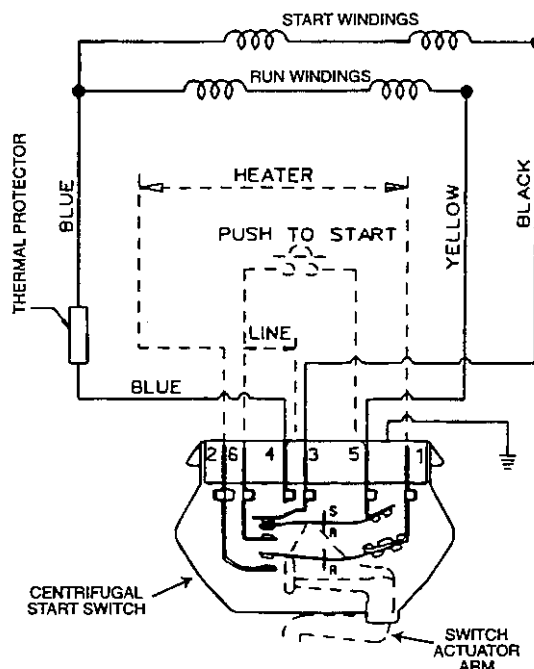


Figure 2-15

Winding	Terminal	Terminal	Ohms
Start	3	4	3.00
Run	5	4	2.25

Motor Test Cord

A motor test cord may be used to electrically check operation of the various electrical components without removing them from the unit. Testing in this manner determines whether or not the part will function independently of other electrical components. In order to make an accurate test, proper connection of the motor test cord is important.

Drive Motor Test

The motor may be checked in the dryer or removed and checked.

Two test leads are required to check operation of the dryer drive motor. To check the motor for operation, hook up the test cord to terminals 4 and 5, (See Figure 2-15).

Motor Switch Test

Checking heater/gas valve-motor:

1. Disconnect the wire harness from the motor.
2. Place ohm meter leads to terminals 1 and 2 (Figure 2-15).
3. With your thumbs, press the BROWN disc located behind the motor switch on the motor shaft, (Figure 2-16). The BROWN disc actuates the lever of the motor switch when the motor is at rest. At optimum motor speed, the disc moves away from the switch lever. When the disc is pressed inward toward the windings, the actuator arm of the centrifugal switch will be relaxed. This allows the contacts to close, completing the heater circuit. If no continuity is found when the disc is depressed, change the centrifugal switch.

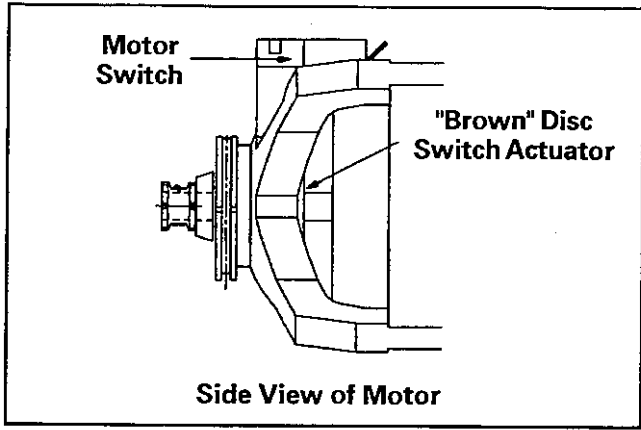


Figure 2-16

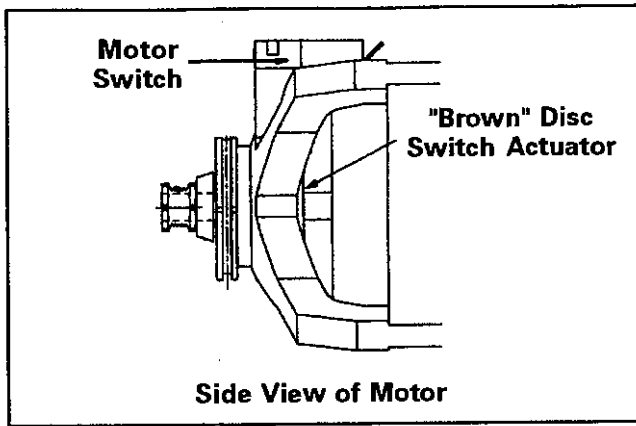
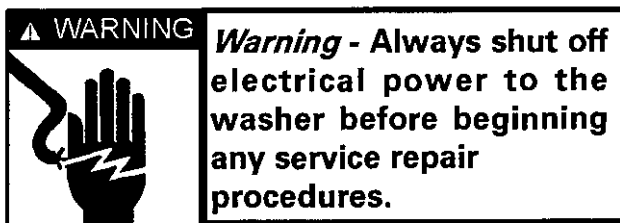


Figure 2- 16

SECTION 3. TROUBLESHOOTING



WASHER TROUBLESHOOTING

Shuts OFF When Push-To-Start Button Released:

Check for proper wiring of BK 27 to COMM and GY 26 to NO. If reversed, the washer will shut off when button is released. If proper, replace machine control board. Possible bad line relay. *(See Section 1: Push-To-Start Line Relay Operation)*

Runs For Five Seconds Then Shuts OFF:

Suspect a communication problem between motor, the motor control board and the machine control board. Check the motor and motor control system *(See Motor & Motor Control Test Page 2-11)*. If the motor operates and the washer goes into a 50 rpm tumble, then the source of the problem is the RD 30 wire leading from the motor control to the P4(2)/RD 30 connector on the machine control board. When the machine control tells the motor control to run the motor, the machine control board monitors the Red wire to determine if the motor is actually running. If the board does not see a return signal, the washer will shut down.

If RD 30 wire is making good contact, then suspect possible problem with timer input circuits. (See the following section on **Machine Operation Does Not Match Cycle Description**.)

Washer Runs Five Minutes Then Shuts OFF:

During the wash cycle, the machine control communicates with the timer, via the timer input circuits. If the machine control board does not see a change in timer inputs after supplying a continuous feed to the timer for 5 minutes, the machine control board will open the line relay. Which in turn, shuts the washer off. Check the timer input circuits for poor connections at the timer and the machine control board. Replace timer if necessary. *(See Section 2: Timer Input Circuits)*

Shuts OFF At The Beginning Of The Spin Cycle:

Prior to the beginning of the spin cycle, the machine control board checks the state of the unbalance circuit. If the circuit is OPEN, the board will open the line input relay, shutting the washer OFF. Check all wiring for loose or broken connections. Perform continuity checks of all unbalance switches.

Shuts OFF In The Middle Of The Spin Cycle:

During the Spin Cycle the machine control monitors the door lock mechanism via the door lock enable switch. When the shaft of the door lock mechanism is pressed forward by the door lock wax motor during the "lock mode", the shaft presses in the button of the door lock enable switch. If the machine control board sees the switch OPEN during the Spin cycle, the machine control board will automatically shut the washer OFF. This is caused by a weak door lock wax motor spring in the door lock mechanism. Change the complete door lock mechanism.

Shuts OFF During Final Rinses:

The machine control board is programmed to allow a maximum continuous fill time of six minutes or an accumulated fill time of 8 minutes for each full wash cycle. If the required fill time exceeds the time limit, the washer will shut down. This is to prevent flooding in the event there is a loose hose clamp or damaged

air dome hose. Check the incoming water lines for a minimum pressure of 20 psi. If lower, the customer can use smaller clothes loads with pressure as low as 10 psi. An alternative is to change the plastic inlet screens to metal screened washers. For additional assistance, call the Technical assistance toll-free line (1-800-756-2926).

Tumbles Only:

When the door lock mechanism is in the "locked" mode, the wax motor has extended, forcing the latch axle to engage the door lock enable switch. This ensures the door is fully locked and the switch can then complete the signal back to the machine control board indicating the door is locked. Check connector P3(7)/YL 36 wire to verify that the terminal is making good contact to the board terminal. Check the door lock enable switch for continuity when the button is depressed. Replace door lock mechanism if necessary.

Continues To Tumble After The Wash Cycle Is Finished:

Check for a stuck button on the door lock enable switch in the door lock mechanism. You can check this at the machine control board, by checking for continuity across P3(7)/YL 36 to P3(1)/RD23. If the door is unlocked and there is continuity, the switch button is stuck. At the end of the Wash cycle, the machine control monitors the door lock enable switch to see when the lock is disengaged. If the switch is stuck, the washer will continue to tumble till the door unlocks, even though the door is actually unlocked. Replace the door lock mechanism.

Third Rinse Cycle Is Always Cold:

If the servicer rotates the timer dial to the third or fourth rinse, the water will always be cold regardless of temperature selection. The machine control board counts the number of rinses through the wash cycle. When the third and fourth rinse are reached, the board will check the rinse temperature selection for proper fill temperature (*See Section 1: Water Temperature Inputs*).

Excessive Vibration:

Check to see if the shipping bolts and straps were removed from the washer. Check the levelness of the washer and ensure the leveling leg nuts are tightened up against the cabinet. Check the tightness of the upper and lower weights on the outer tub. Check for loose cabinet screws. Place hand on side of cabinet to determine if vibration noise due to cabinet flex. Apply sound dampening pad to inner cabinet wall if necessary. Check the unbalance circuit and wiring for continuity at the machine control. (P2(4) to P3(1)) You should see continuity. If not, check the wiring connections at the strut, outer tub and inertial unbalance switches. If a switch is bad or a wire off, the machine control will not know when an unbalance will occur.

Machine Operation Does Not Match Cycle Description:

The machine control board monitors where the timer is in the cycle and then uses this information to start different operations, such as draining, filling, tumbling and spin. Four input wires from the timer to the machine control board inform the machine control board where the timer is in the wash cycle. However, if one or more of these wires are making an intermittent contact with the machine control board, the board can be "misinformed" and will not respond properly.

Check the connections of the timer input wires leading from the timer to the machine control board (*See Section 2: Timer Input Charts*). Also, check wiring of all console switches to ensure no cross-wiring of 24 VDC and 120 VAC circuits.

Door Leaks:

Usually this occurs when the door is remounted into the shroud and the technician fully tightens the top hinge screw prior to inserting the lower screw. The technician should fully seat the door into the shroud evenly prior to tightening the hinge bracket screw into the shroud. Another check would be for excess plastic flashing in the tab area of the plastic shroud. Carefully remove the excess flash and remount the boot gasket.

"Thumping" Noise In Spin:

The noise could be from loose lower front weight mounting bolts or a loose bolt securing the driven pulley. Check the belt for a weak seam and replace if necessary. Check the motor adjustment bolt for tightness.

"Ticking or Knocking" Noise In Spin:

The noise could be from a loose wire harness, plastic purse-lock wire harness retainer on upper hose hitting the top cover, or a plastic injection mold standoff on the outer tub bearing housing interfering with the drive pulley.

Also, check the drive belt for a weak spot on the belt. Usually felt on the backside of the belt as a "flat" spot. Replace the belt.

RF (Radio Frequency) Interference:

This may occur if the RPT shutter on the motor is misaligned or a motor terminal was pushed inward slightly when the motor harness connector was placed on the motor. Remove the motor phase harness connector and check the motor terminals. Replace the motor if the motor terminals are loose.

Dispenser Does Not Dispense

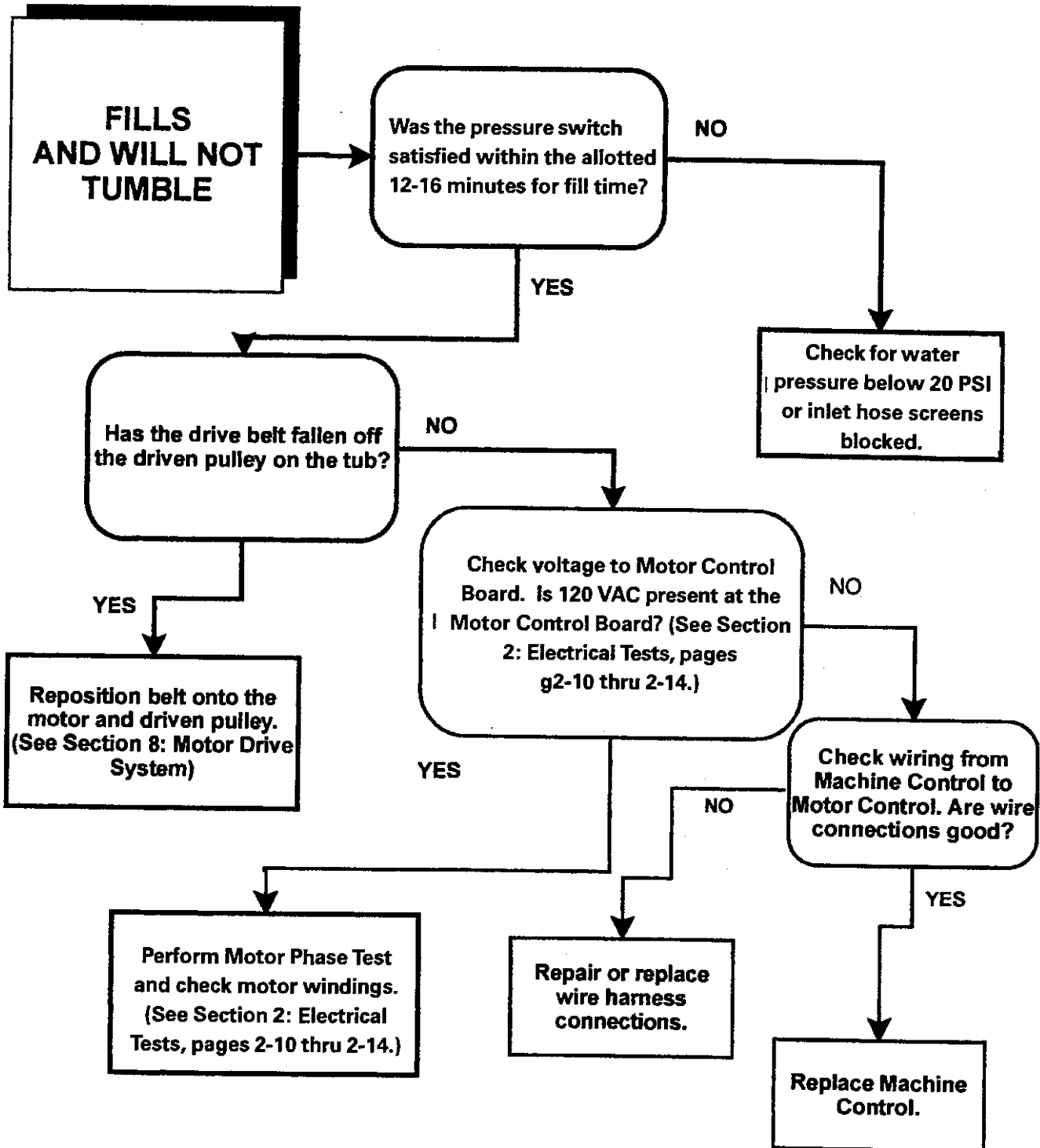
Check for obstruction in dispenser outlet.

Clothes Wet:

Possibly due to the washer shutting down too soon or excessive suds present. Did the timer advance to OFF? If yes, the excessive suds may be the cause or the inertial unbalance switch tripped too soon, resulting in lower spin

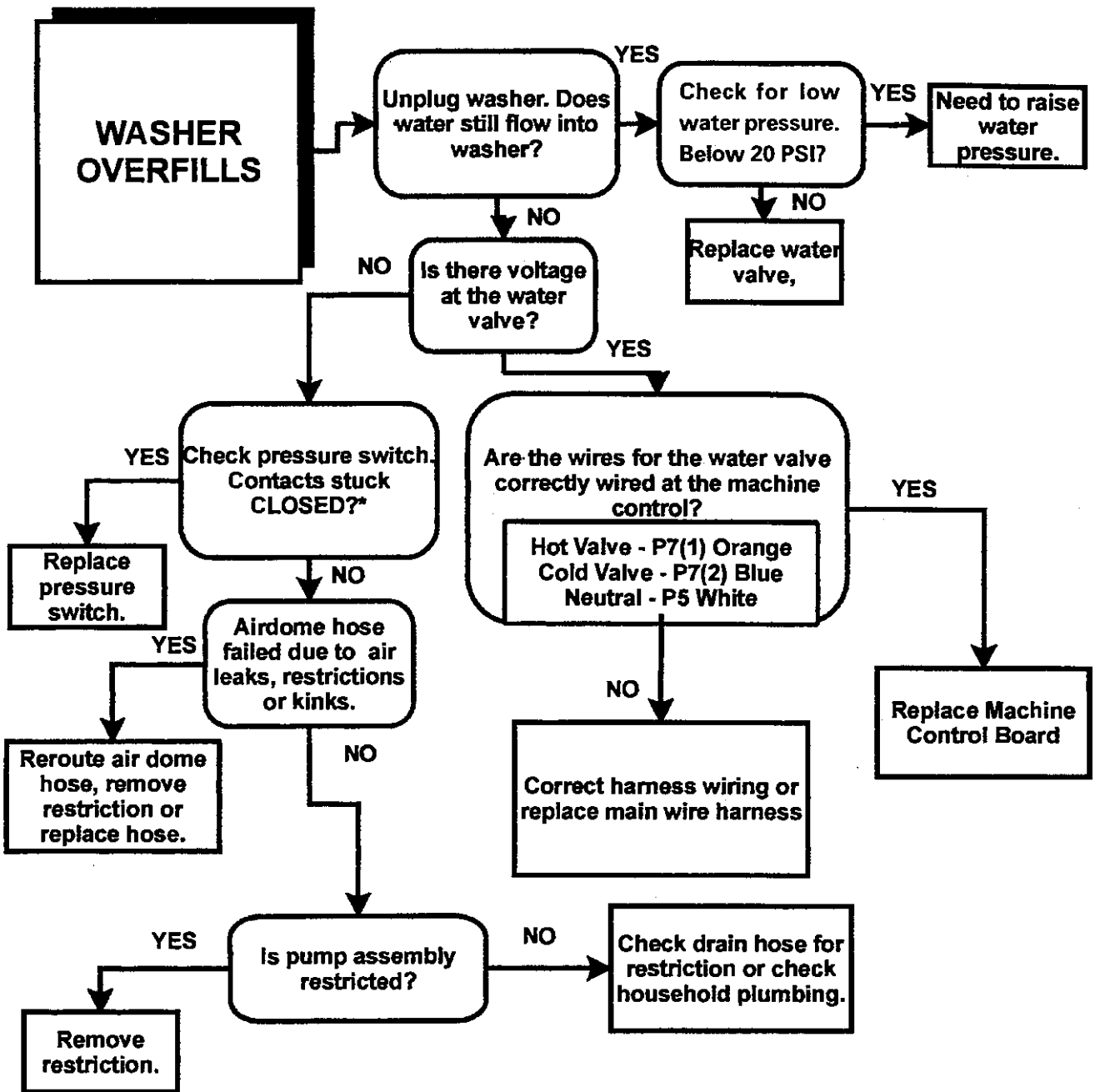
speeds. Change the inertial switch if suds were not detected. **NOTE: *If the timer motor is energized for five minutes without the cycle inputs changing, the machine control board will drop the line voltage relay.***

TROUBLESHOOTING-FLOW CHARTS



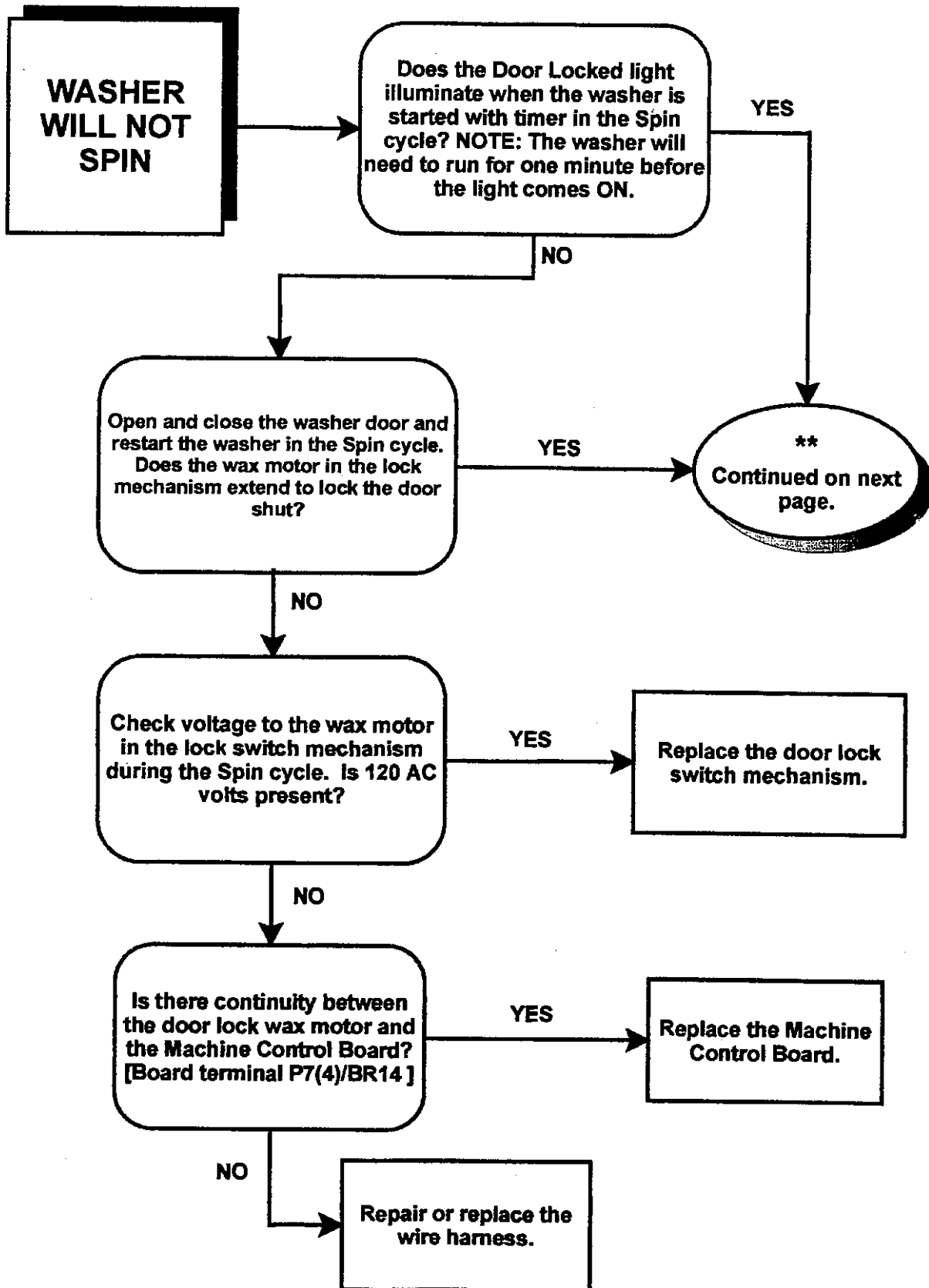
NOTE: The Machine Control Board will attempt to fill the washer and satisfy the pressure switch during an accumulated period of 12-16 minutes. If the time exceeds this time frame, the washer will shut down.

TROUBLESHOOTING-FLOW CHARTS

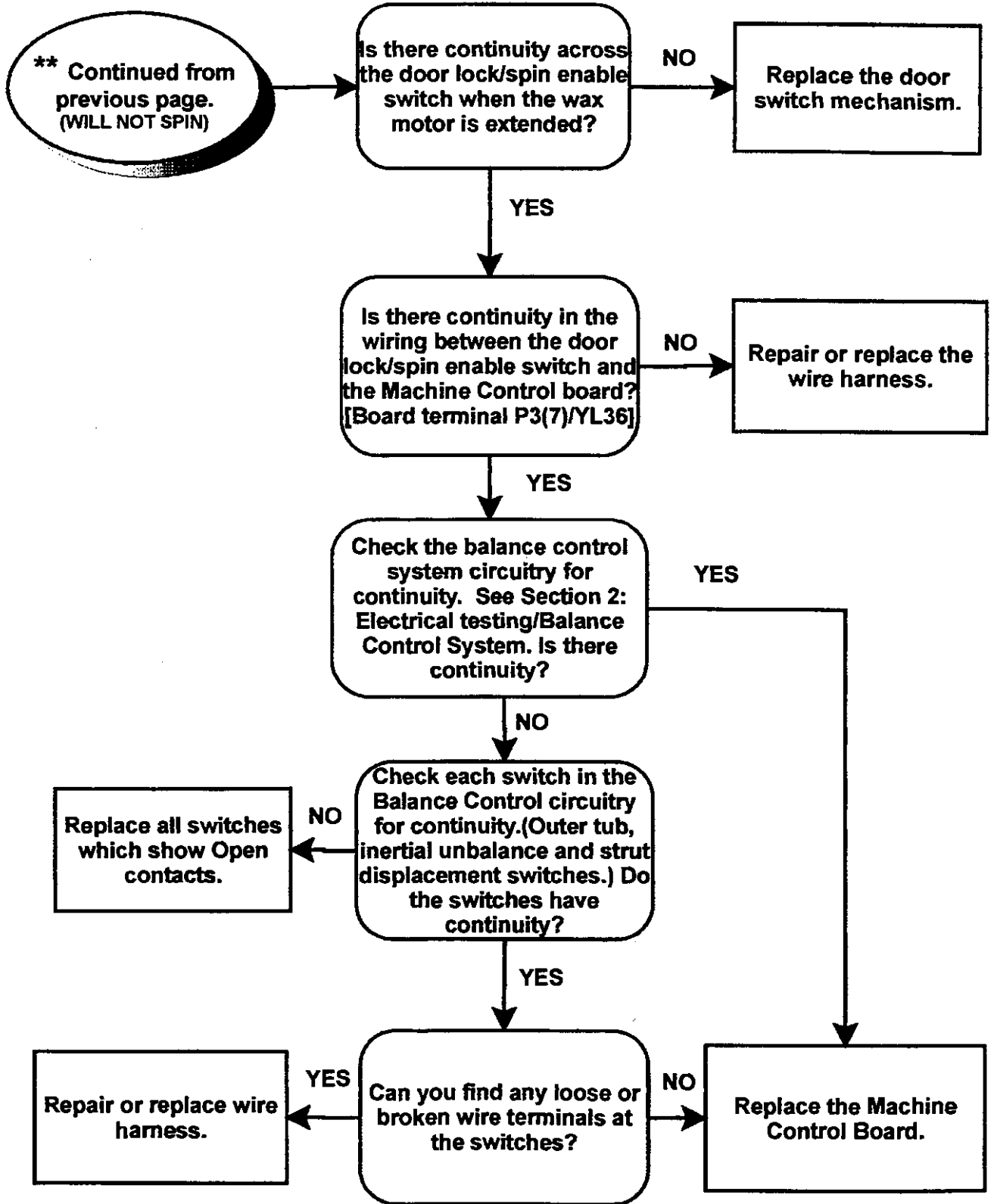


NOTE: The Machine Control Board will attempt to fill the washer and satisfy the pressure switch during an accumulated period of 12-16 minutes. If the time exceeds this time frame, the washer will shut down. However, the consumer can reactivate the washer and the washer will add another 6-8 minutes of fill time.

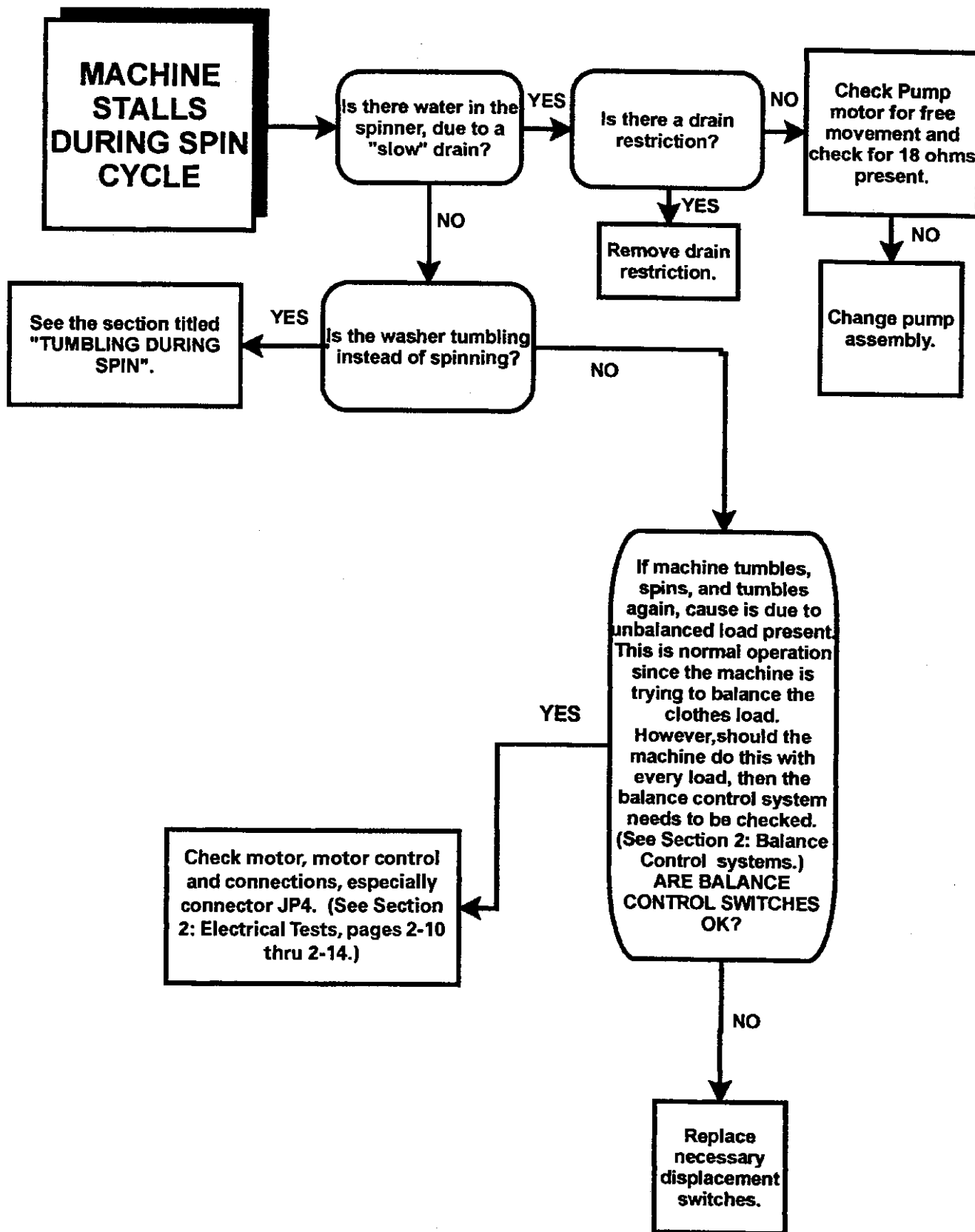
TROUBLESHOOTING-FLOW CHARTS



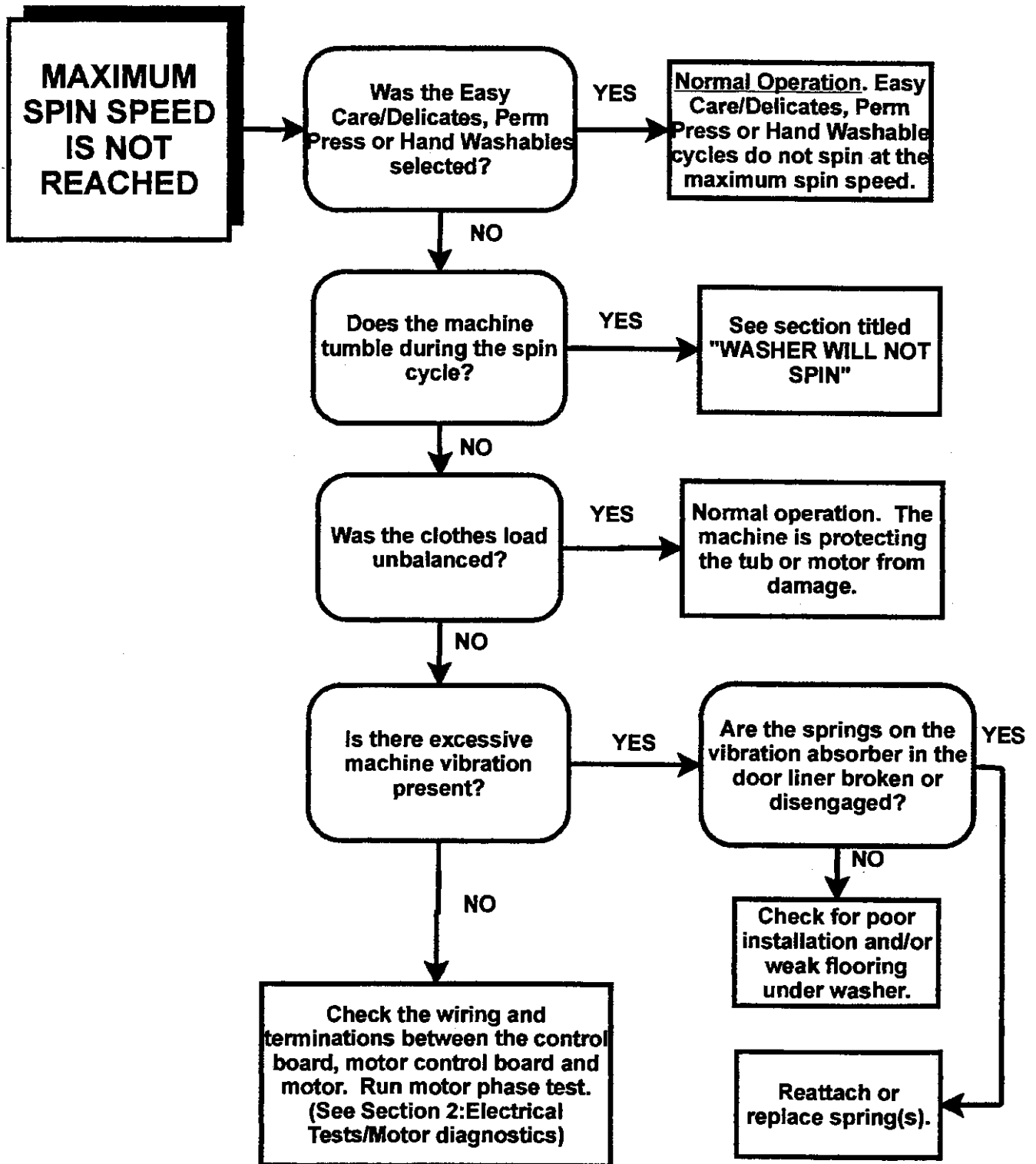
TROUBLESHOOTING-FLOW CHARTS



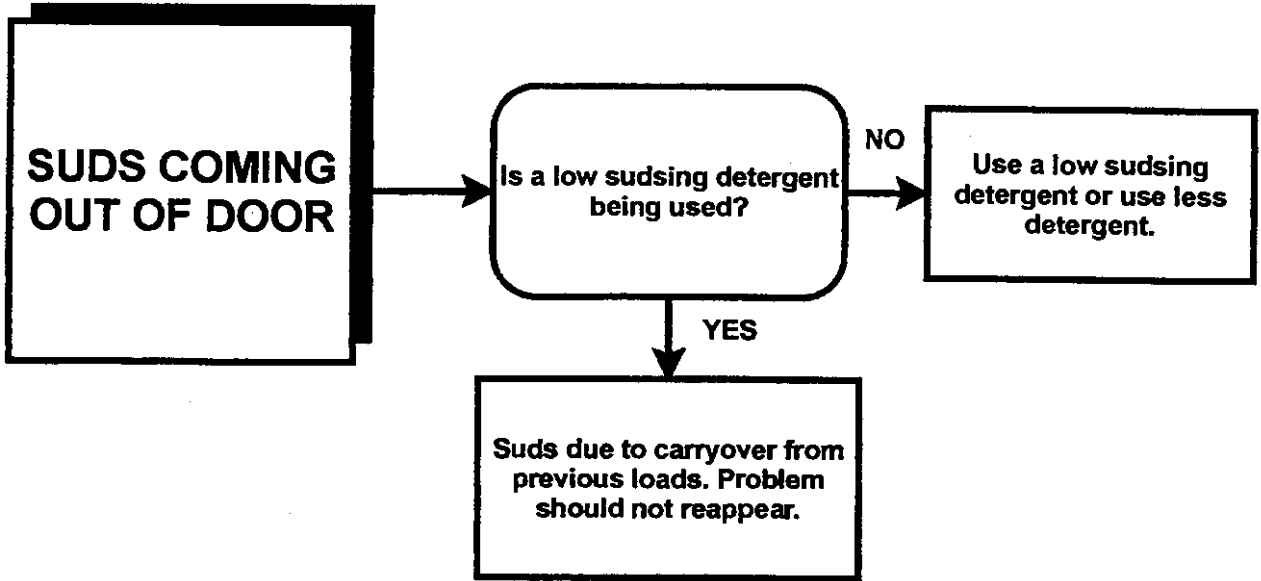
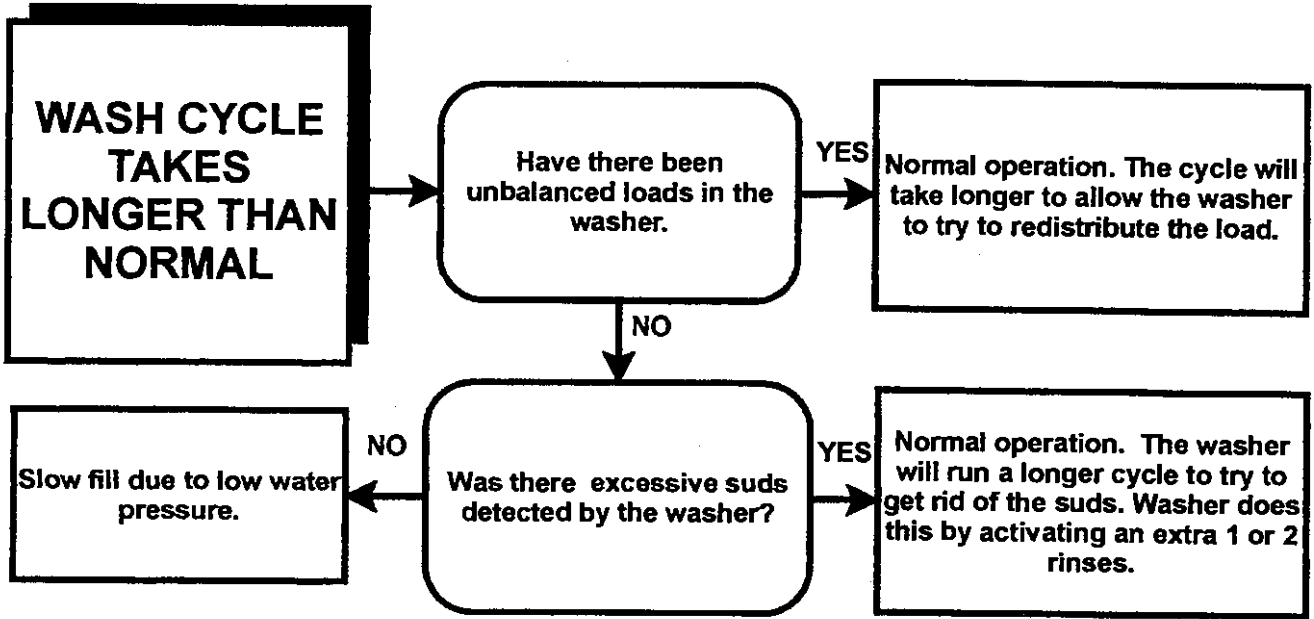
TROUBLESHOOTING-FLOW CHARTS



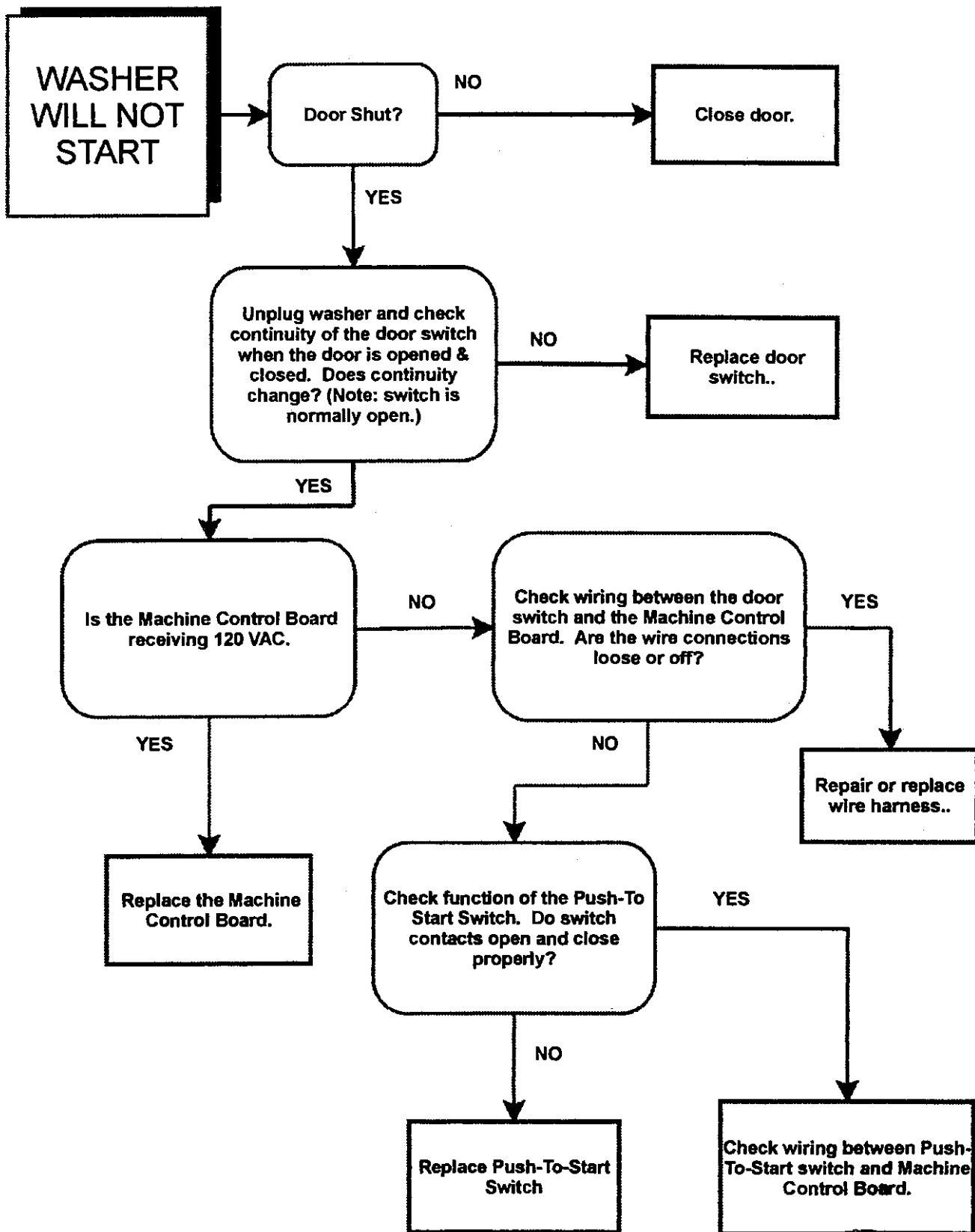
TROUBLESHOOTING-FLOW CHARTS



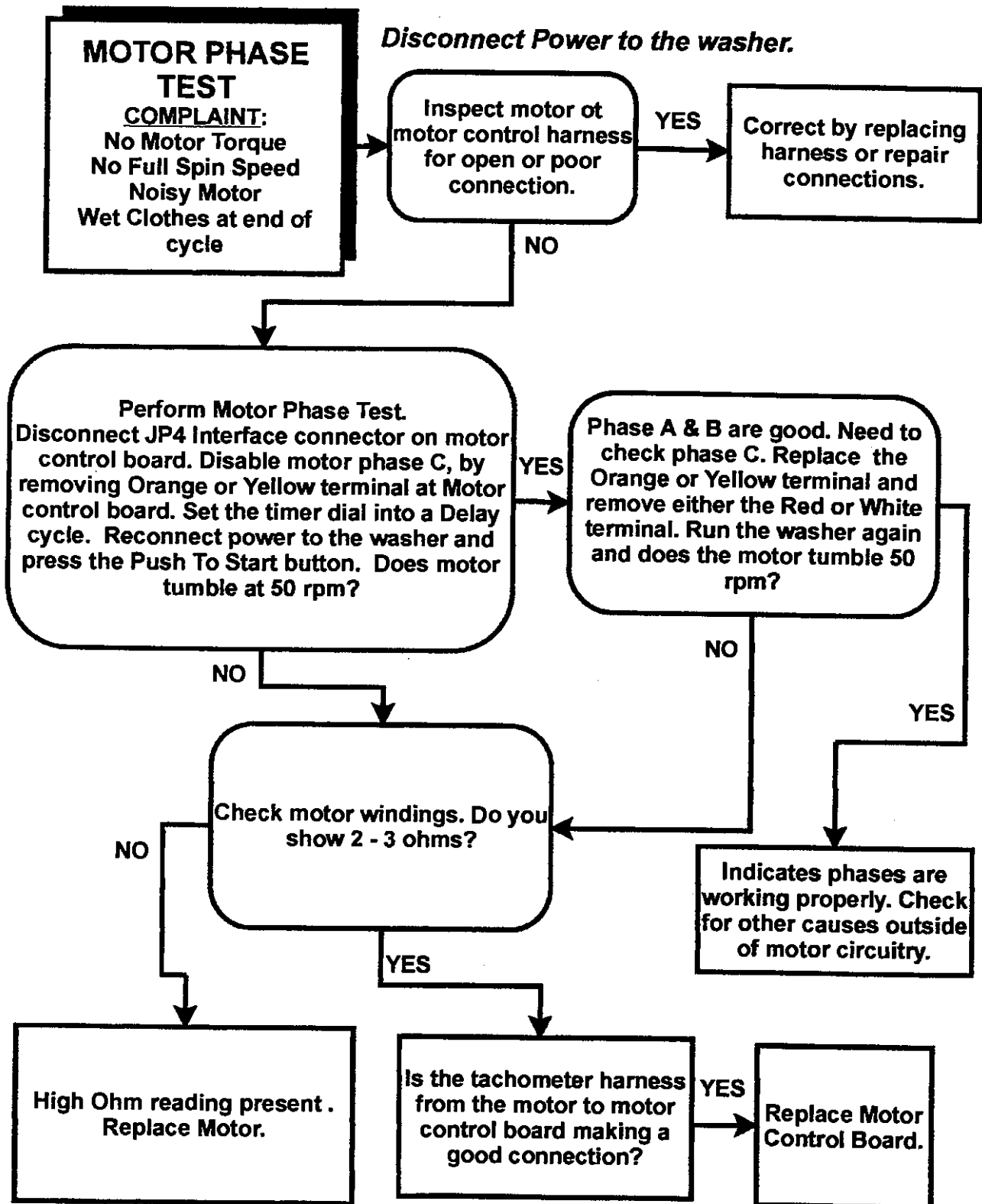
TROUBLESHOOTING-FLOW CHARTS



TROUBLESHOOTING-FLOW CHARTS



TROUBLESHOOTING-FLOW CHARTS



MISCELLANEOUS

Energy Usage:

The energy usage averages up to 0.10 Kwh per cycle, when using the Regular cycle with Normal wash. Peak amperage is 7.5 amps during acceleration to high speed spin, with nominal running amperage at a maximum of 5.0 amps.

Washer Wattages:

The following wattages are with no load:

<u>Function:</u>	<u>Wattages:</u>
Tumbling (empty) & water fill	50-70
Tumbling (Full-Wash level)	110-120
Tumbling (Full-Rinse Level)	140-150
Draining (No tumble) with water	45-50
Draining (No tumble) no water	30-35
Spinning (100 rpm)	85-90
Spin Acceleration (100-200 rpm)	130-150
Spinning (400 rpm)	160-170
Spinning (850 rpm)	400-410

DRYER TROUBLESHOOTING - FUNDAMENTAL CHECKS

Will Not Run

If dryer will not start or run, check the following:

- All wires are hooked up to their corresponding terminals.
- Dryer is plugged in.
- Blown fuse or circuit breaker.
- Door switch functional...door closed.
- Push-to-start switch functional.
- Timer functional...set in a cycle.
- Drive motor functional.
- Blown thermal fuse.

If drive motor runs, but the tumbler will not turn, check the following:

- Belt off or broken/damaged.
- Idler tension spring too weak or stretched.
- Idler pulley jammed or stuck.

If dryer runs a few minutes and then stops - motor overload protector opens, check the following:

- Lint buildup around drive motor.
- Low voltage present.
- Blower impeller blocked in blower housing.
- Drive motor - start switch contacts stuck closed.

If dryer blows fuses or trips circuit breaker, check the following:

Electric Models

- The amperage readings are at 240 volts (U.S. only). One line will be 25 amps and other line will be 21 amps. The neutral line will be at 3 amps. If the above amperages are present, then the house wiring, fuse box or circuit breaker should be suspected.

- Shorted heating element to housing.
- Incorrect wiring or a wire shorting to ground.
- Drive motor winding shorting to ground.

Gas Models

- During ignition, the dryer will draw 7 amps. With the burner ON, the dryer will draw 3 amps. If the dryer is drawing amperages at or below this, then the house wiring, fuse box or circuit breaker are suspected to be at fault.
- Igniter harness loose and shorted to base.
- Incorrect wiring or wire shorted to ground.
- Drive motor winding shorting to ground.

Will Not Dry

If dryer will not heat (motor runs), check the following:

- Restricted exhaust caused by plastic or thin foil flexible duct.
- Open heating element.
- Hi-Limit thermostat trips too soon or is open.
- Cycling thermostat trips too soon or is open.
- Temperature selector switch mis-wired or contacts open.
- Timer functional.
- Drive motor centrifugal start switch not allowing voltage to gas valve or heating element.

If improper drying/clothes wrinkled/rough texture/taking too long to dry, check the following:

- Restricted exhaust caused by plastic or thin foil flexible duct.

- Lint filter is not clean.
- Restriction in exhaust.
- Outside exhaust hood damper door stuck closed.
- Exhaust too long, too many elbows, flex ductwork installed.
- Poor makeup air available for the dryer.
- Incorrect tumbler speed. Tumbler belt slipping.
- Blower impeller bound; check for foreign material in blower area.
- Customer overloading dryer.
- Check clothing labels for fabric content and cycle selected.
- Gas valve coil opens - weak point in coil opens when stressed under heated conditions.
- Clothes too wet due to insufficient spin out by washer.

Will Not Shut-Off

On time dry settings, check the following:

- Timer motor receiving proper voltage.
- Check timer motor connections.
- Timer functional.

On Intelli-Dry settings, check the following:

Function of dryer's electronic control unit with a:

Wet Load- Wet clothes making contact across sensor bars allows current path to ground. This allows current to pass through the electronic control unit. This in turn causes the control unit to reduce the voltage to the timer motor. The timer stops and cannot run.

Dry Load - Since dry clothes do not conduct electricity, current path to ground is inhibited. This causes the control unit to increase voltage to the timer motor. Timer will now run.

Troubleshooting the electronic control circuit:

- Check for mis-wiring of the edge board connector at the electronic control board.
- If the dryer does not shut off, the problem is in the electronic control unit. Disconnect the sensor wire from the sensor bar. If the dryer runs for about 20 minutes then shuts down or the timer advances, the electronic control unit is good and the problem lies in the sensor bar.
- Check sensor for continuity. If found, replace sensor bar or clean with alcohol. Some fabric softener sheets will coat the sensor bars.

Noisy and/Or Vibration

- *Thumping.* Check for loose tumbler baffle, rear tumbler roller(s) worn or misaligned, out-of-round tumbler or high weld seam on tumbler.
- *Ticking.* Check for loose wire harness or object caught in blower wheel area.
- *Scraping.* Check for front or rear bulk head felt seal out of position or worn tumbler front **Rulon™** bearings.
- *Popping or squealing sound.* Check for a sticky or frayed belt.

DIRECT IGNITION SYSTEM

Testing and observation of the gas controls system can be performed with the front panel removed and the door assembly mounted and secured to the front shroud.

When the dryer is operated on a heat setting, the igniter should be energized and burner shall fire within 45 seconds at 120 VAC. Check for a flame. De-energize the gas control and reenergize. The flame should reappear within one minute.

The failure of a component in this system will usually be indicated by one of three symptoms:

1. The igniter does not glow. If the igniter does not heat up, remove power. Using an ohmmeter, check the following:
 - Open radiant sensor
 - Open igniter
 - Shorted booster coil
 - Open wiring

2. Igniter glows - No gas ignition. If the igniter heats but the main burner flame is not ignited, remove power and using an ohmmeter, check the following:
 - Open secondary coil
 - Open holding coil
 - Open wire harness

3. If a normal ignition takes place and after a short while the flame goes out, check for the following:
 - Radiant sensor contacts open prematurely.
 - Weak gas valve coil may lose continuity when stressed by higher temperatures.

SECTION 4: CONTROL CONSOLE AREA & COMPONENTS

▲ WARNING



Warning - Always shut off electrical power to the unit before beginning any service repair procedures.

ACCESS PANEL

Removal

1. Disconnect power to the machine.
2. Remove the two screws securing the access panel to the washer/dryer (*Figure 4-1*).

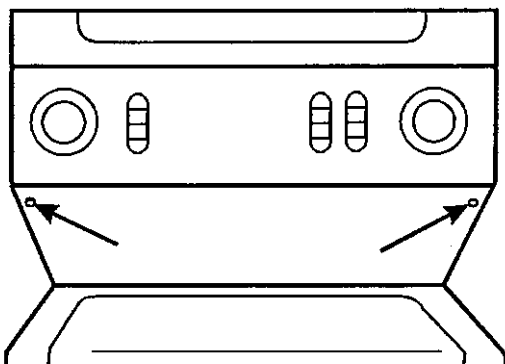


Figure 4-1 SL011TIF

3. Roll the top of the access panel toward you and lift away from the machine (*Figure 4-2*).

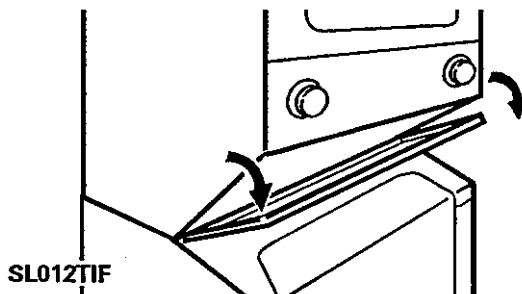


Figure 4-2

ACCESS COVER

1. Disconnect power to the machine.
2. Remove the Access Panel.
3. Locate and remove the 5/16" hex head screw located in the front of the dryer base frame (*Figure 4-3*). This screw secures the access cover to the base frame.

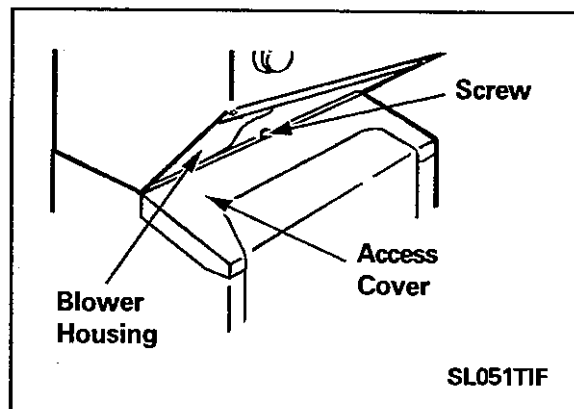


Figure 4-3

4. Open the door.
5. Carefully slide the access cover down and away from the machine to disengage the cover from retaining clips on the front shroud located above the front panel goalposts (*Figure 4-4*).

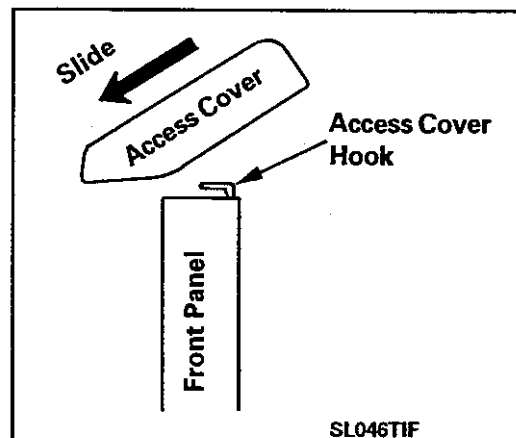


Figure 4-4

CONSOLE

1. Disconnect power to the machine.
2. Remove the Access Panel.
3. Remove two screws under the console. *(Figure 4-5)*

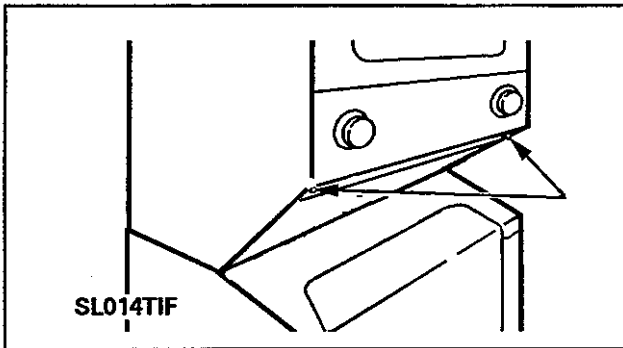


Figure 4-5

4. To disengage clips from the slots in the lower flange of the dryer front panel, tilt the bottom of the console away from the cabinet. Carefully lower the console away from the cabinet.
5. Slide the lower flange of the console assembly between the console mounting bracket and the dryer cabinet flange *(Figure 4-6)*.

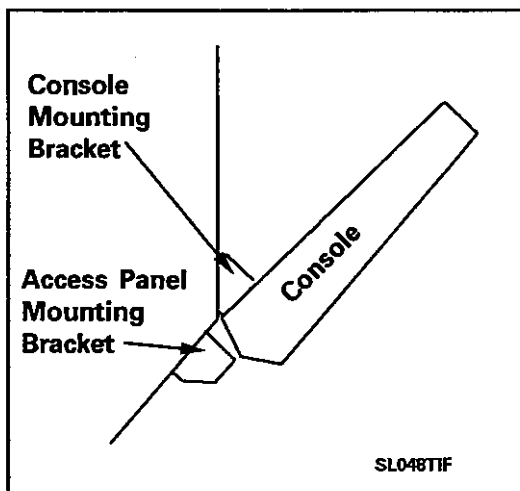


Figure 4-6

5. With the console removed, you now have access to the switches and timers in the control console *(Figure 4-7)*.

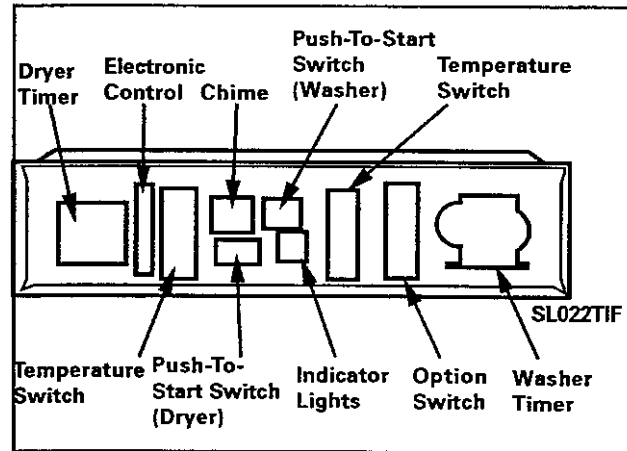


Figure 4-7

Push-To-Start Switches

1. **To remove** - Depress the locking tab on the switch to disengage the switch from the locking tab on the console. Pivot the switch from the console *(Figure 4-8)*.
2. **To replace** - Position one side into the console and pivot the other tab into the console. Apply enough pressure to engage the tab into the console.

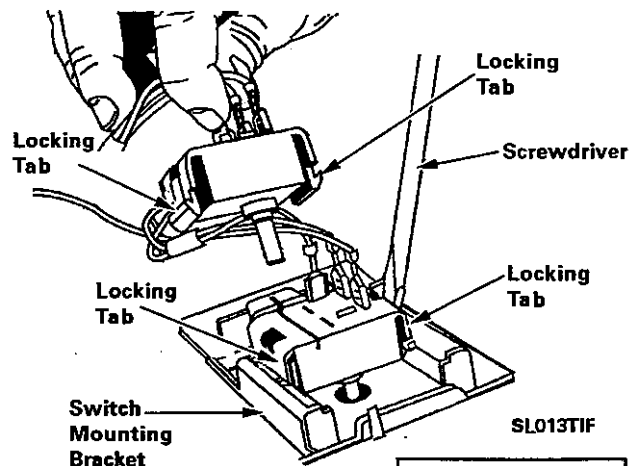


Figure 4-8

Carefully depress locking tabs on switch to disengage

DRYER TIMER REMOVAL

1. Disconnect power to the machine.
2. Carefully lift the timer knob and dial off the timer shaft by pulling the knob away from the face of the control console.

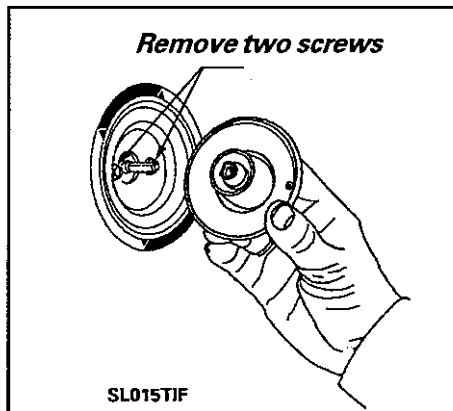


Figure 4-9

3. Remove the two timer mounting screws (now exposed on the control console) when the timer dial skirt is removed (Figure 4-9).

WASHER TIMER REMOVAL

1. Disconnect power to the machine.
2. Carefully lift the timer knob and dial off the timer shaft by pulling the knob away from the face of the control console. **Do not remove the screws.**
3. On the backside of the timer is a 1/4" hex head screw securing the timer to the metal mounting bracket. Remove the screw and slide the timer to the left to disengage the timer from the mounting bracket.

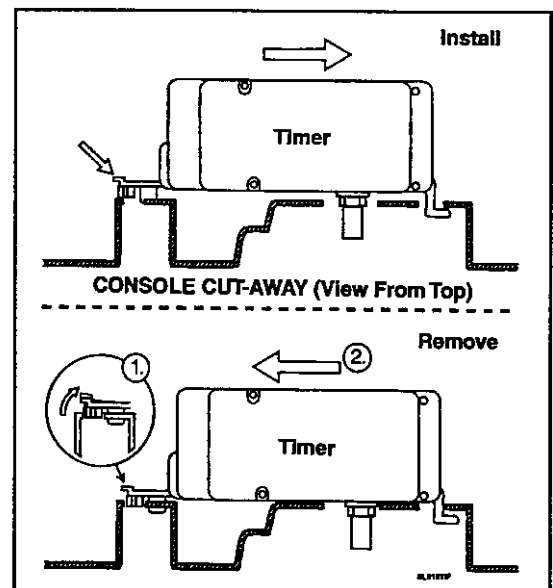
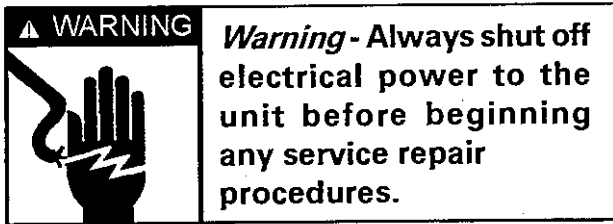


Figure 4-10

SECTION 5. WASHER CABINET ASSEMBLY



DOOR ASSEMBLY & HINGES

The door assembly is reversible. It contains an inertial vibration damper comprised of a steel plate suspended with springs. The damper is designed to tune out excessive vibrations generated by the machine during the spin cycle. Replacement inner door liners will be shipped with the vibration damper in place.

Removal

1. Open the door and remove the center screw of each hinge secured to the inner flange of the front panel in the door opening.
2. Grasp the door with both hands and lift the hinge area slightly. Draw the door assembly away from the machine. This will disengage the hinges from the slots in the front shroud (*Figure 5-1*). If the hinges bind, press in on the plastic shroud near the hinge toward the cabinet.

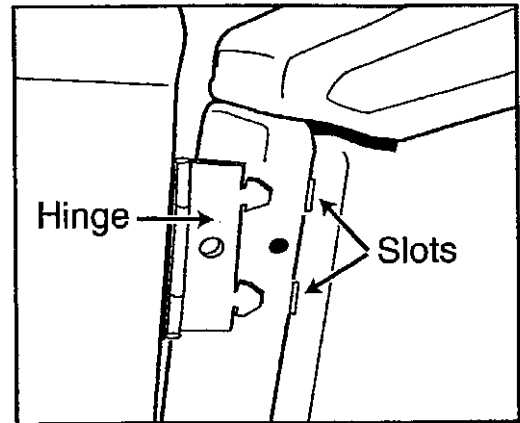


Figure 5-1

SL017TIF

Reversal

1. Repeat the above steps plus, remove the corresponding sheet metal spacers on the opposite side of the door opening.
2. Remove the hinges from the door and relocate them to the other side of the door.
3. Remount the door into the new slots and secure with one screw into each hinge.
4. Mount the sheet metal spacers onto the side the hinges previously were to cover the hinge slots in the front shroud.

Disassembly

1. Remove ten screws located across the bottom and along the sides of the door panel. The top edge of the outer panel is folded over the inner door plug.
2. With the outer door panel removed, the stabilizer is exposed and is attached to the inner door plug.

Cabinet Vibration Absorber

The purpose of the cabinet vibration absorber is to provide a dampening effect to the washer during the spin cycle. By dampening the machine vibration, the washer is able to maintain and achieve optimum spin performance. The stabilizer is attached to the inner door plug with two screws (*Figure 5-2*).

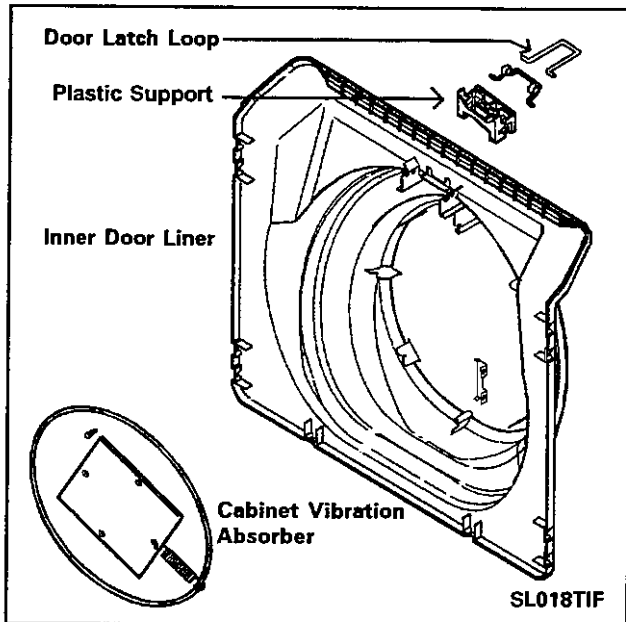


Figure 5-2

Door Latch Loop

The door latch loop is secured to the inner door plug by a plastic spacer snapped into the door liner. A spring retains the loop in the proper position to align with the door lock mechanism when the door is closed.

FRONT PANEL

Removal

1. Disconnect power to the machine.
2. Open the door and remove the four screws along the inside lip of the door opening. The two that are located vertically, on either side of the door opening, secure the front panel to the front shroud assembly (*Figure 5-3*). Care should be taken when opening and closing the door with the screws removed.

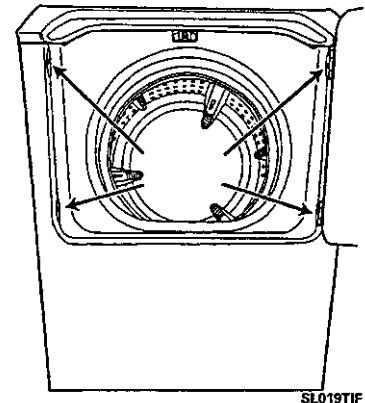


Figure 5-3

3. Remove the door.
4. To remove the front panel, open the door, twist the upper right and left panel extensions inward by pressing in on the outer upper edges of the front panel posts. This will disengage the front panel posts from clips located on the face of the cabinet flange (*Figure 5-4*).
5. Tilt the top of the front panel away from the washer. Remove the front panel (*Figure 5-4*).

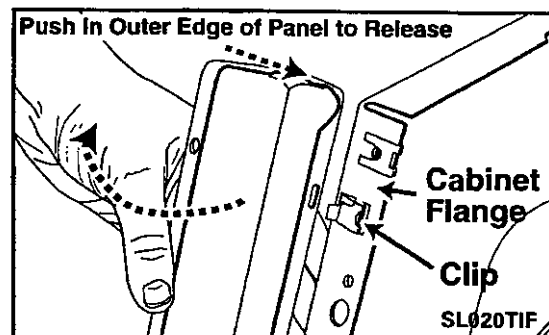


Figure 5-4

FRONT SHROUD ASSEMBLY

The shroud assembly ties the sides of the cabinet together across the front for stability and provides support for mounting of the door assembly, front panel and door lock mechanism. To gain access to components behind the front shroud, the assembly can be removed as a whole assembly and lifted onto the top of the washer. This will allow access to the tub cover, spin basket, sump area, etc...

REMOVAL

1. Disconnect power to the machine.
2. Remove the access panel, access cover, front panel and door to expose the front shroud assembly.
3. Disconnect the electrical connectors, by squeezing the retaining clips on the connectors and gently work the connectors out of the sockets (*Figure 5-5*).

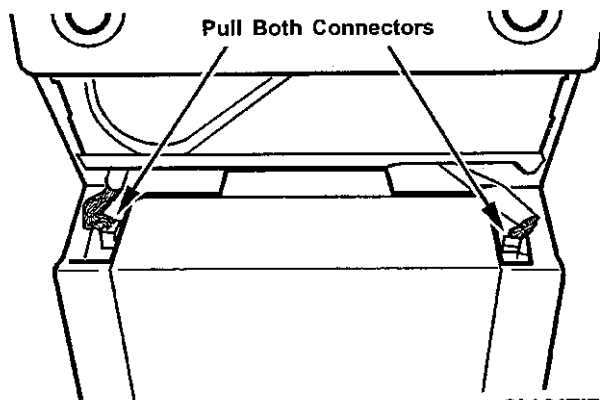


Figure 5-5

6. Unsnap the boot gasket from around the inside perimeter of the door opening by pulling outward on the sealing lip of the gasket (*Figure 5-6*).

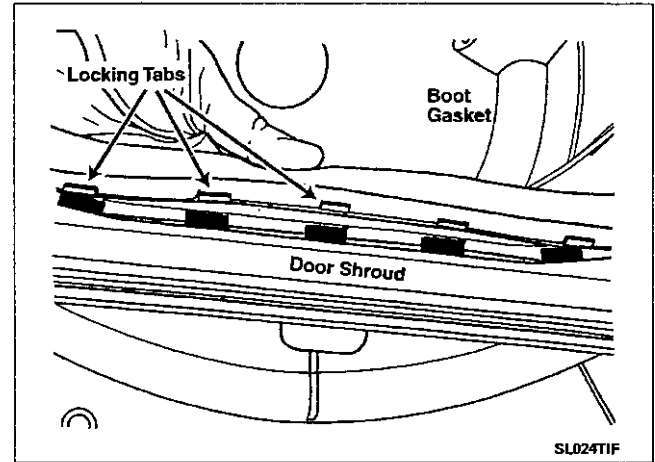


Figure 5-6

7. Reach up between the plastic shroud and the outer tub cover and locate the fabric softener inlet hose positioned into two clips on the front shroud support. Unhook the hose from the clips. Locate the suds well and unhook the hoses from the retaining clips on the well (*Figure 5-7*).

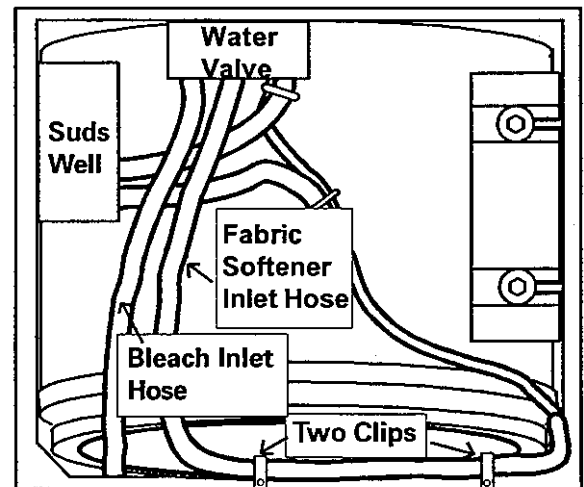


Figure 5-7

8. Carefully press in on the sides of the plastic shroud to allow the hose clamps on the dispenser outlet hoses to clear the metal bridge support surrounding the shroud (*Figure 5-9*).
9. Tilt the plastic shroud forward and remove the fabric softener and bleach dispenser inlet hoses by sliding the spouts up (*Figure 5-8*).

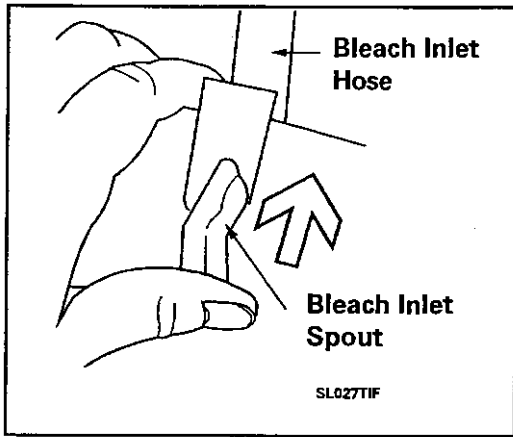


Figure 5-8

9. Tilt the top of the plastic shroud forward at a 40 degree angle and slide the shroud to the right approximately one inch. Note: You may have to lightly press in on the the upper sides of the plastic shroud to enable the lower dispenser outlet hose clamps enough clearance to pass the metal side supports (Figure 5-9). Lift the shroud from the shroud support bridge.

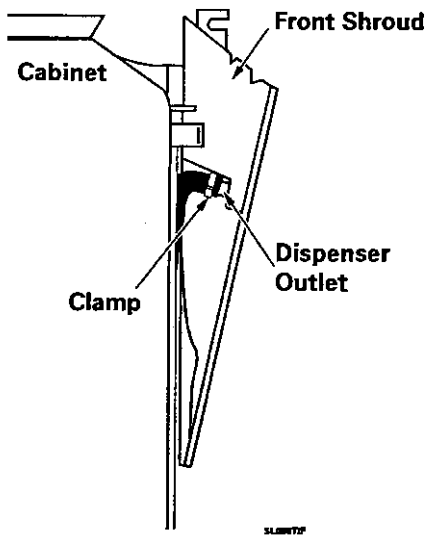


Figure 5-9

SHROUD SUPPORT ASSEMBLY

Removal

1. Disconnect power to the machine.
2. Remove the access panel, access cover, front panel and door to expose the front shroud assembly.

3. Disconnect the electrical connectors by squeezing the retaining clips and gently working the connectors out of the sockets (Figure 5-5).
4. Remove the six screws across the lock support (Figure 5-10).

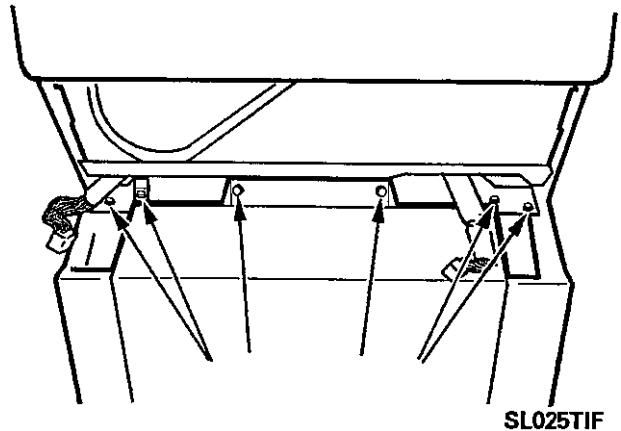


Figure 5-10

5. Remove the door.
6. Unsnap the boot gasket from around the inside perimeter of the door opening by pulling outward on the sealing lip of the gasket (Figure 5-6).
6. Remove eight hex-head screws around the front shroud assembly (Figure 5-11).

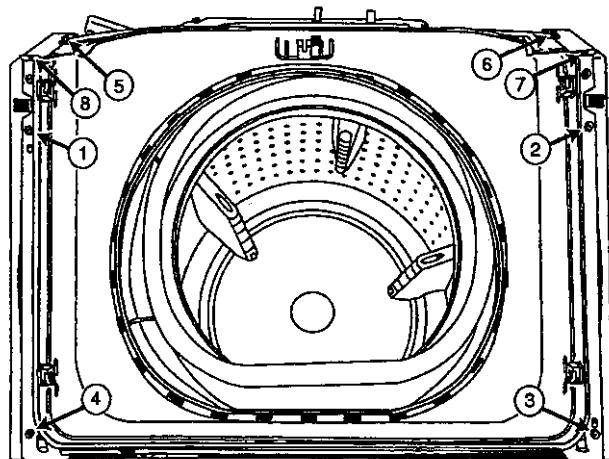


Figure 5-11

7. Removal and replacement of the screws in the following order, as illustrated, will aid in the removal and reinstallation of the assembly to the cabinet. Failure to do so will hinder removal and replacement of the shroud onto the cabinet (*Figure 5-11*).
8. Loosen the dispenser outlet hose clamps at the tub cover and remove the front shroud dispenser assembly.

DOOR LOCK MECHANISM

The purpose of the door lock mechanism is to secure the door during the spin cycle. When the door is shut, the wire loop on the door engages the rotating gear in the door lock mechanism (*Figure 5-12*). When the proper water level is reached and the pressure switch is satisfied, 120 VAC is applied to the wax motor. The piston in the wax motor will extend, pushing the latch axle and sliding gear from left to right. Teeth on the face of the sliding gear will intermesh with the teeth on the side of the rotating gear (normally takes about 45-60 seconds). This interlocking of teeth provides the locking action of the lock mechanism.

At the end of the spin cycle, when tumbler speed drops below 90 RPM, voltage is no longer applied to the wax motor. The wax motor will cool and relax the piston on the wax motor. The latch axle and sliding gear are then pulled from right to left, disengaging the teeth of the sliding gear from the rotating gear (normally takes 1 - 1½ minutes). This allows the rotating gear to be in a position to rotate if necessary, should the door be opened.

Two switches in the door lock mechanism inform the machine microprocessor control when the door is latched shut and when the door is securely locked. For more information, refer to section on *Electrical-Mechanical Troubleshooting*.

An Emergency Access Cord (filament) is attached to the sliding gear, should the wax motor fail in the extended position and entry into the washer is necessary. To gain access to the cable, remove the dispenser bezel. Once this is removed, the cable is exposed. By carefully applying both a steady pull to the access cord and opening force to the door, the wax motor is overridden and the sliding gear is pulled from right to left, away from engagement with the rotating gear. This allows the rotating gear to release the wire loop of the door.

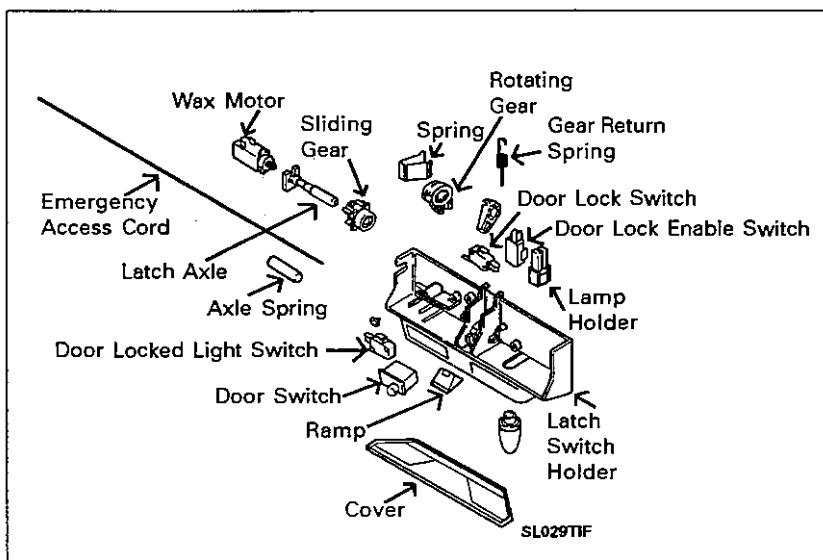


Figure 5-12

NOTE: *When the cord is released, the lock will go back into a locked position (Figure 5-8).*

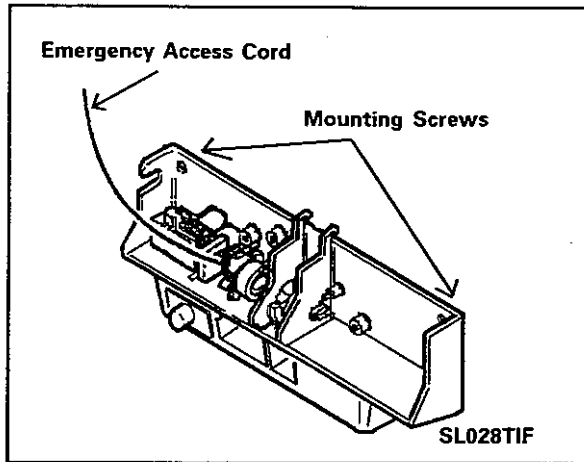


Figure 5-13

Removal

1. Disconnect power to the machine.
2. Remove the access panel, access cover, door and front panel to expose the door lock mechanism (See *Front Panel Removal*).
3. Remove light cover.
4. Remove the wires from the lock switches, wax motor and light fixture.
5. Remove two 5/16" hex-head screws securing the switch support to the metal shroud support (Figure 5-13).
6. Lean plastic shroud forward. Roll the top of the lock mechanism forward and out of the shroud.

CABINET ASSEMBLY w/REAR ACCESS PANEL

Removal of the access panel, allows access to the rear components of the washer (Figure 5-14).

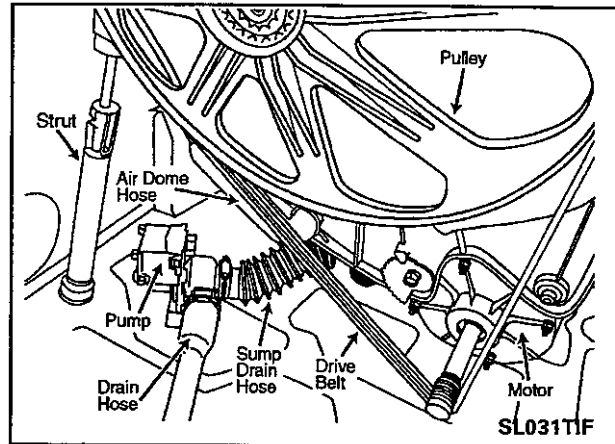


Figure 5-14

Removal

1. Remove the four hex-head screws surrounding the access panel (Figure 5-15).

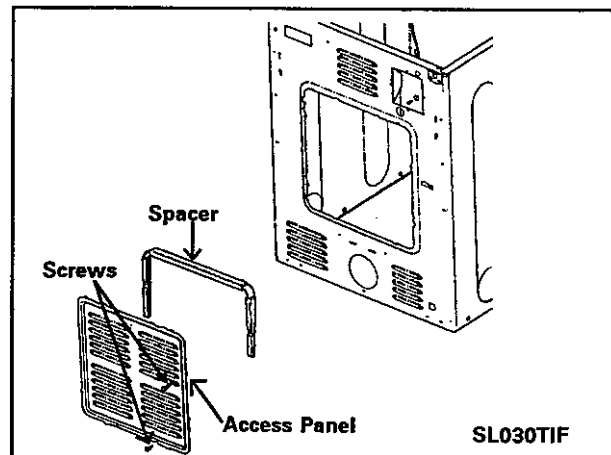


Figure 5-15

SECTION 6. WATER CARRYING COMPONENTS

▲ WARNING



Warning - Always shut off electrical power to the unit before beginning any service repair procedures.

WATER VALVE

The water valve is accessible from the front of the machine or by removing the dryer.

Removal From Front

1. Discontinue power and water to the washer.
2. Remove the access panel, access cover, front panel, door and drop the plastic front shroud to expose the top of the outer tub assembly (See Section 5: Front Shroud Assembly).
3. Allow the front shroud to suspend down in front of the washer to expose the front suspension springs (Figure 6-1).
4. Remove the four screws across the lock support. Place the lock support aside.

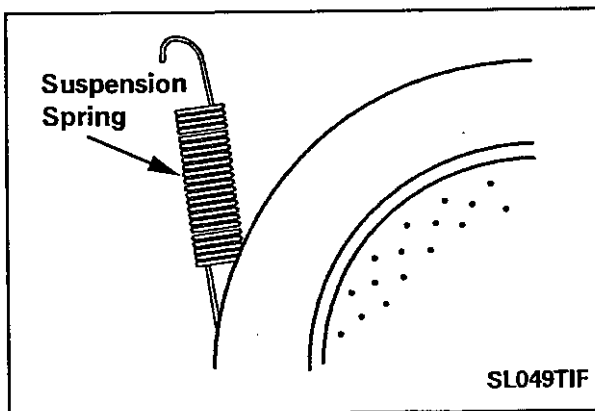


Figure 6-1

SL049TIF

5. Remove the mounting screw holding the suds well into position. Slide the suds well forward and lower out of the way (Figure 6-2).

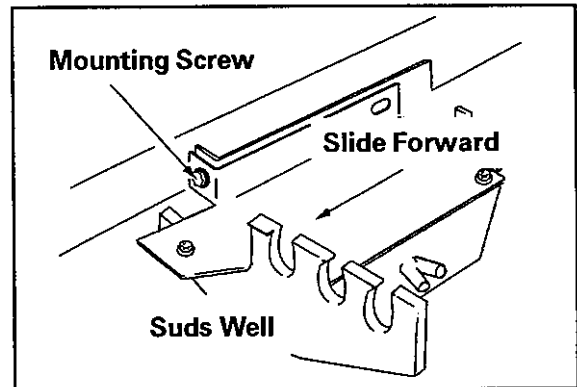


Figure 6-2

SL052TIF

6. Remove the wire harness connections to the water valve solenoids.
7. Locate and loosen the valve mounting screw by turning the screw at least three full turns. Note, the mounting screw serves as a locating pin to hold the valve in position on the mounting bracket. By partially removing the screw, the water valve can now be slid to the left and removed from the bracket (Figure 6-3).
8. Carefully lift the valve with the inlet hoses attached and direct the inlet hoses through the openings in the valve mounting bracket.

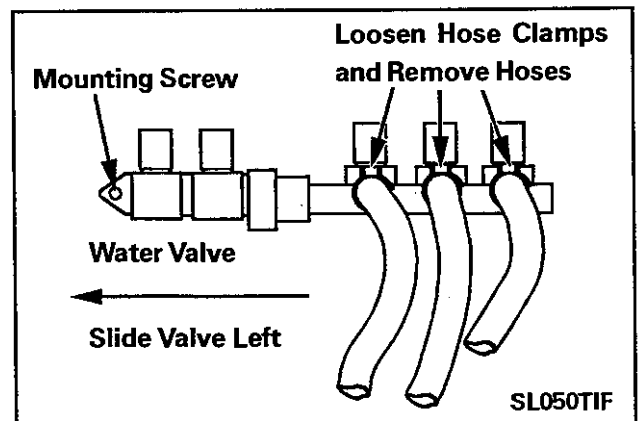


Figure 6-3

SL050TIF

9. Remove the inlet hoses from the water valve connections. **If possible, clamp the hoses shut and/or have a towel handy in case of overspray when water pressure is relieved.**
10. Place a towel under the water valve and loosen the hose clamps to the valve. Carefully remove each hose from the valve. Note the hose orientation for later reinstallation.
11. Reinstall by reversing the previous steps. Check for proper hose orientation and kinked hoses.

WATER LEVEL PRESSURE SWITCH

The water pressure switch is located along the rear upper cabinet flange of the washer and mounted to a galvanized bracket secured to the flange. The air dome hose is inserted into the lower end of the mounting bracket (*Figure 6-4*). The nipple of the pressure switch is inserted into the end of the air dome hose which is secured by the lower mounting bracket.

Removal

1. **Discontinue power and water to the washer.**
2. Remove the Access Panel, Access Cover, Front Panel, Door and drop the plastic Front Shroud to expose the top of the outer tub assembly (*See Section 5: Front Shroud Assembly*).
3. Follow steps 1 through 5 outlined under Water Valve removal to further gain access to the water level pressure switch.
4. Slide the pressure switch up, away from the air dome hose (*Figure 6-4*).

5. Remove wire harness from the pressure switch.
6. Rotate the pressure switch 90 degrees to disengage locking tabs on the back of the switch from the mounting bracket (*Figure 6-4*).
7. The mounting bracket for the pressure switch is secured to the rear console panel with one screw.
8. To replace, insert air dome hose into the bracket. Insert the pressure switch nipple into the air dome hose. Push the pressure switch into the bracket until it "snaps" into place.

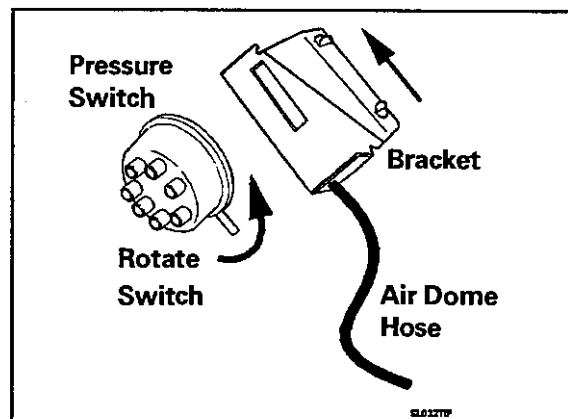


Figure 6-4

AIR DOME HOSE

The air dome hose connects the pressure switch to the air dome located in the sump area of the outer tub. Routing of the air dome hose passes from the console down the rear wall of the cabinet to the rear sump area of the outer tub. Two holding clips retain the air dome hose to the cabinet away from the belt and pulley.

Removal From Console

1. **Disconnect power to the machine.**
2. Remove the console (*See Console Removal*).

- Slide the pressure switch up on the mounting bracket, away from the air dome hose. The mounting bracket for the pressure switch is secured to the rear cabinet flange of the washer cabinet (*Figure 6-4*).
- Pull the air dome hose down through the "P" clip mounted to the rear wall of the washer cabinet.

Removal From Outer Tub

- Disconnect power to the machine.
- From behind the outer tub, slide off the retainer clip securing the air dome hose to the rear spout of the outer tub.
- Remove one of the rear baffles.
- Grasp and lift the airdome hose from the sump area (*Figure 6-5*).
- Pull the air dome and hose out through the sump opening in the spin basket (*Figure 6-5*).

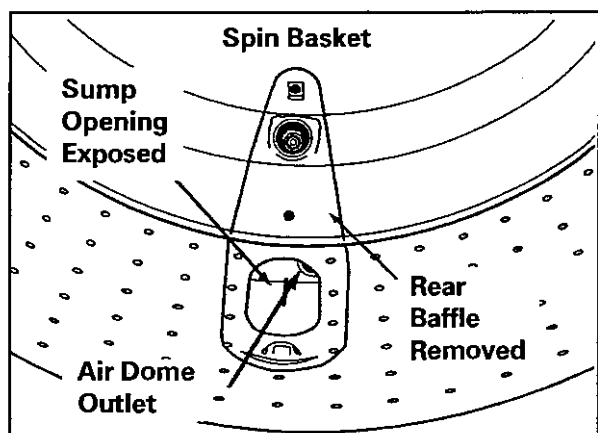


Figure 6-5

Replacement/Routing

- Thread the narrow end of the hose through the air dome outlet in the rear of the outer tub (*Figure 6-5*). Apply alcohol to lubricate the hose to ease insertion into the outer tub air dome outlet.

NOTE: *Using soap and water may lead to a potential leak.*

- Secure the retainer clip on the outside ridge of the air dome hose.
- Push the bent end of the air dome down into the sump area, below the spin basket, making sure the flat rubber tab on the air dome is down inside the drain sump opening.
- The air dome hose is retained to the rear wall of the cabinet with two clips.

NOTE: *A silver indicator mark is located approximately 20 inches away from the air dome. The indicator mark must be located under the lower clip to allow the correct amount of slack in the hose.*

- Remove all slack in the hose between the upper and lower clips holding the air dome hose. This reduces the potential for noise.
- Route the air dome hose into the center rear hole in the top cover. Route toward the pressure switch and secure the hose to the pressure switch.

DISPENSER ASSEMBLY

The dispenser assembly is located in the plastic front shroud. Two bays dispense the fabric softener and bleach into the wash load. A water valve solenoid coil directs the flow of water into each specific bay when required for disbursement into the wash load. When the specific fluid is required, the water is directed into the specific bay. As water fills the bay, the fluid level rises. When the fluid reaches a specific height, the fluid is then siphoned out into the dispenser injector hose to the wash load (*Figure 6-6*).

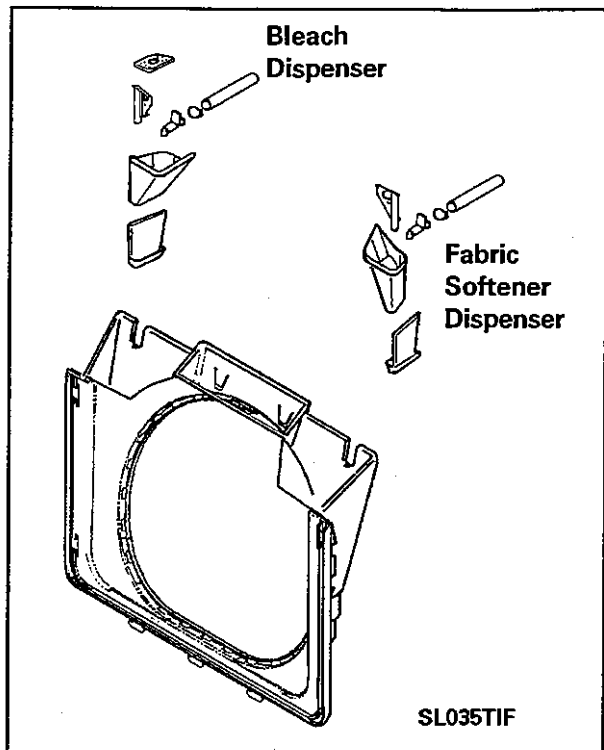


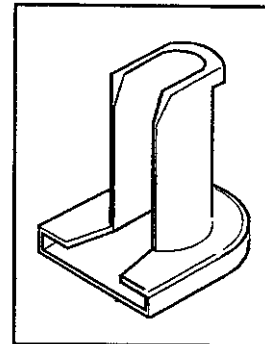
Figure 6-6

Remvoal

1. Disconnect power to the machine.
2. Follow the same procedures outlined for removal of the plastic front shroud (*See Section 5: Front Shroud Assembly*).
3. Disconnect the hoses attached to the dispenser assembly.
4. Reverse the procedure for reinstallation.

FRONT WATER FLUME INJECTOR

As water is filling the dispenser assembly, water is also diverted to a hose leading to the front of the outer tub. As the water enters the top of the outer tub through the hose, it passes through a water flume. The flume directs the water toward the front of the tub to saturate the clothes load.



Removal

1. Disconnect power to the machine.
2. Remove the front panel (*See Front Panel Removal*).
3. Remove the front shroud assembly (*See Front Shroud Assembly Removal*).
4. Remove the outer tub cover (*See Outer Tub Cover Removal*).
5. Remove the hose clamp and injector hose from the spout on the front upper area of the outer tub.
6. In order to provide sufficient space to remove the injector, place a 5/8" - 3/4" wedge between the spinner and the outer tub.
7. Pinch the two tabs exposed on the outer edge of the outer tub spout and press the injector into the tub. Reverse the previous steps to replace the injector.

PUMP ASSEMBLY

The pump assembly is mounted to the right rear area of the base.

Removal

1. Disconnect power to the machine.
2. Spread a towel below the drain hoses prior to loosening the hose clamps. This will catch any residual water left in the hoses and sump area.
3. Remove the hose clamps and hoses from the pump.
4. Remove the wiring harness from the pump motor terminals.
5. Rotate the pump assembly in a counter-clockwise direction. The support legs of the pump are slotted to engage in keyed slots in the base. Reverse the steps to re-mount the pump (*Figure 6-7*).

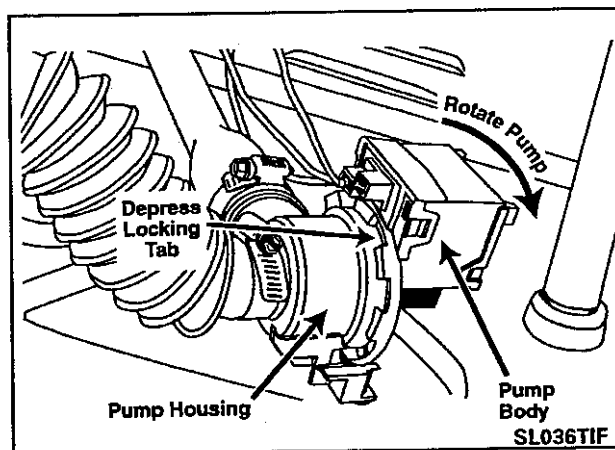


Figure 6-7

CLEANING THE PUMP

The pump assembly can also be disassembled without removing the hoses from the pump (*Figure 6-8*).

1. Depress the locking tab on the face of the pump housing.
2. Rotate the block portion of the pump containing the motor windings toward the front of the washer. This will disengage the locking tabs of the pump housing from the pump face.
3. Carefully remove the pump body away from the housing. Now, the drain impeller is exposed for cleaning.

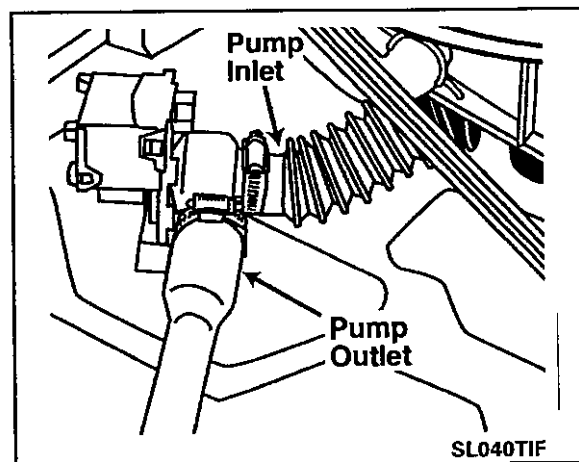


Figure 6-8

INSTALLATION - PUMP ACCESSORY KIT

1. Disconnect power to the machine.
2. Disconnect the drain hose from the existing pump in the washer (*Figure 6-8*).
3. Attach the accessory connector to the pump drain outlet and secure with the clamp found in the kit.
4. Position the second pump near the first

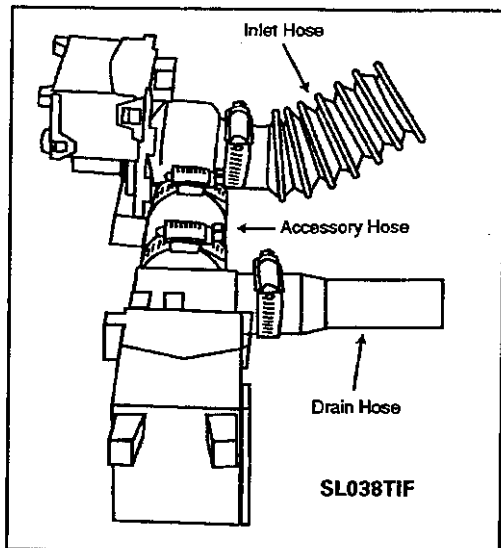


Figure 6-9

pump and connect the accessory connector to the sump intake of the second pump. Secure with the clamp in the kit (Figure 6-9).

5. Connect the drain hose to the drain outlet of the second pump. Secure with a clamp.
6. The second pump assembly is not secured to the washer's base frame.
7. Installation is complete.

DRAIN HOSE

The drain hose attaches to the pump and is routed through the lower rear wall of the cabinet. The drain hose is protected externally by a shield.

Removal

1. Disconnect power to the machine.
2. Remove the four 1/4" hex-head screws securing the access panel to the rear wall of the cabinet.
3. Remove the 1/4" hex-head screw securing the drain hose shield. Remove shield (Figure 6-10).

4. With access into the machine compartment, spread a towel under the connection of the drain hose to the pump. Loosen the clamp and remove the drain hose (Figure 6-11).
5. Reverse the previous steps for replacement.

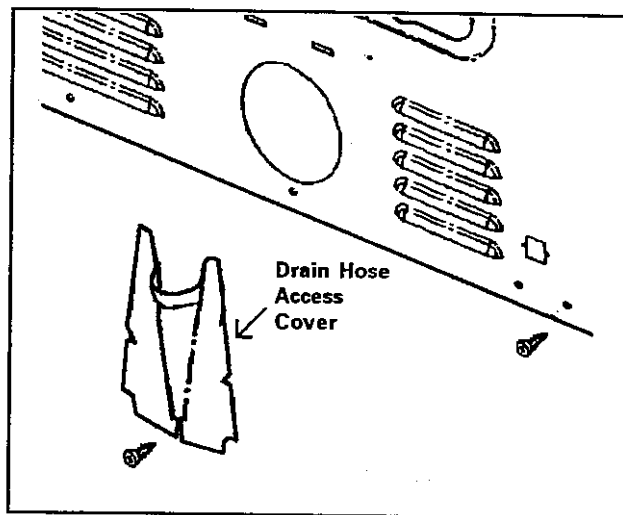


Figure 6-10

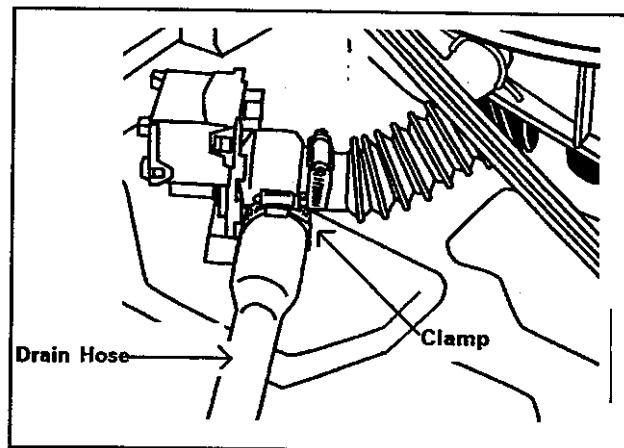


Figure 6-11

SECTION 7. OUTER TUB & SPINNER ASSEMBLY

▲ WARNING



Warning - Always shut off electrical power to the washer before beginning any service repair procedures.

BAFFLES

The baffles in the spin basket distribute the clothes during the tumbling action of the washer.

Removal

1. Disconnect power to the machine.
2. The three rear baffles within the spin basket are removed by removing the two crosshead screws securing each baffle from inside the spin basket.
3. The three front baffles within the spin basket are removed by removing the two ¼" hex head screws from outside of the spin basket. To gain access, remove the outer tub cover. The front baffle mounting screws can now be reached through the sump area, using a flat ratchet with a ¼" drive socket.

DOOR BOOT

The door boot rubber gasket provides a seal between the outer tub assembly and the front shroud. The boot seal is secured to the front shroud by locking tabs on the boot seal, which engage with slots in the shroud. Attachment to the outer tub is by a wire loop stretched around the perimeter of the opening in the outer tub cover and secured with a spring.

Removal

1. Disconnect power to the machine.
2. Remove the front shroud (*See Section 5: Front Shroud Assembly Removal*).
3. Using one of the two front support suspension springs, grasp the hook of the boot clamp spring. With the other hand, press the wire loop into the door boot. This will brake the wire into the door boot and not allow the wire to slip.

NOTE: *Be careful not to bend or crease the wire loop. If the wire loop becomes bent, the result will be a potential leak upon replacement of the boot seal onto the outer tub cover.*

4. Pull the boot clamp spring hook toward the wire loop and disengage the spring from the wire loop.
5. Carefully remove the wire loop from the lip of the outer tub cover.

NOTE: *Note the orientation ribs on the outer tub cover and the locating notches in the door boot seal lip.*

6. Unsnap the locking tabs of the door boot around the inside perimeter of the door shroud (*Figure 7-1*).

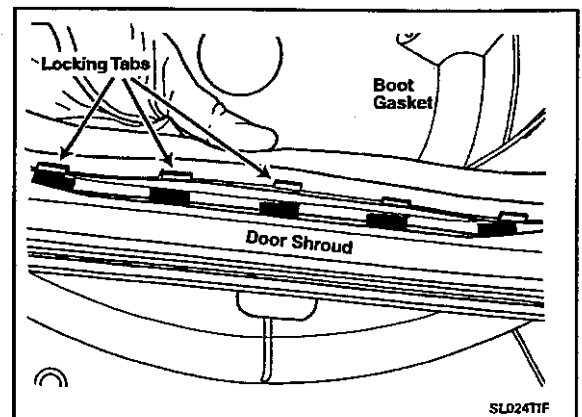


Figure 7-1

Replacement

1. Align the door boot with the D-shape toward the front with the flat of the D toward the bottom. Also, locate the large tab toward the top center of the shroud.
 2. Stretch the rear lip of the door boot onto the tub cover.
 3. Move the rear door boot lip along the face of the tub cover until the locator notches in the door boot align with the locator ribs in the tub cover. Check alignment of the six rib marks and reposition if necessary. This is necessary in order to have the locking tabs on the inside perimeter of the door boot align with the corresponding tabs on the front shroud.
 4. Carefully loop the wire loop with spring around the lip of the outer tub cover and place the spring at the 11:00 o'clock position, just left of the top rib of the outer tub cover. Hook the end of the spring over the nearest tub cover clip to hold the spring and wire in position for final hookup to the other end of the wire loop.
 5. Using either the hold down bracket or the outer tub spring, grasp the hook end of the spring and apply pressure on the clamp wire into the door boot.
 6. Pull the spring hook toward the wire loop, to engage the spring with the wire loop.
- NOTE:** *Be careful not to bend or crease the wire loop. If the wire loop becomes bent, the result will be a potential leak upon replacement of the boot seal onto the outer tub cover.*
7. Reposition the front shroud on the front of the washer and secure (*See Front Shroud*).
 8. Pull the front edge of the door boot and locate the widest locking tabs, located at the 12, 4 & 8 o'clock positions. Insert the locking tabs into the large interlocking slots in the shroud. (Spraying the surface with window cleaner or a soap solution aids reinsertion of the tabs into the plastic front shroud.) Press the thick rubber section of the door boot into the groove in the shroud so the locking tabs engage in the slots.
 9. Press the remaining locking tabs into the perimeter of the shroud.

OUTER TUB COVER

The outer tub cover has a gasket seal embedded in the outer flange of the cover to seal the cover to the outer tub. The cover is secured to the outer tub by means of twelve (12) locking clips evenly spaced around the perimeter of the cover. When the outer tub cover is removed, access to the sump area and the front injector flume is possible.

Removal

1. **Disconnect power to the machine.**
2. Remove the front shroud and shroud bridge support assembly (*See Section 5: Front Shroud Assembly Removal*).
3. Using a flat-bladed screwdriver, slide under the clip and pry to remove. Remove the remaining clips from the outer tub cover (*Figure 7-2*).
4. Remove the cover from the outer tub. This exposes the sump area on the floor of the outer tub and the water injector flume on top of the outer tub.

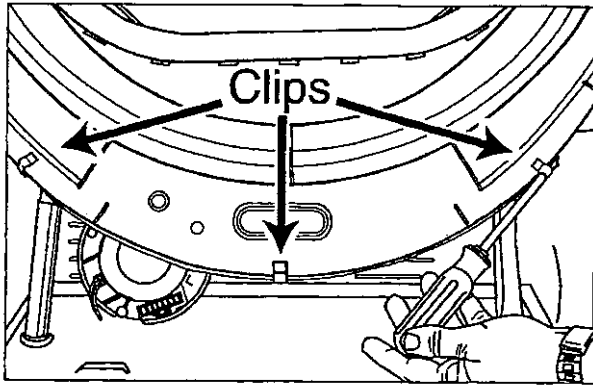


Figure 7-2

SPIN BASKET ASSEMBLY w/ BALANCE RING

The balance ring is securely fastened to the spin basket and cannot be obtained as a separate repair part. To obtain, order spin basket assembly complete. The balance ring is filled with a calcium chloride solution and baffles within the ring allow the fluid to disperse within the ring evenly. By rotating the spin basket, you can hear the fluid dispersing within the baffles of the balance ring. This sound is normal (Figure 7-3).

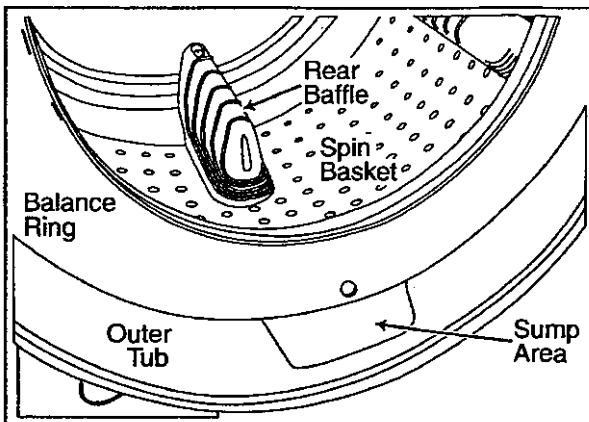


Figure 7-3

The spin basket is mounted to the spinner support by means of threaded studs on the support extending through the spin basket and secured with nuts. The mounting nuts are concealed under the rear baffles (Figure 7-4).

Removal

1. Disconnect power to the machine.
2. Remove the front panel, top cover, front shroud, outer tub cover and rear baffles (See *Front Panel, Top Cover, Front Shroud, Outer Tub Cover and Rear Baffle Removal*).
3. To separate the spinner tub support from the spinner, remove the three rear baffles within the spin basket by removing the two screws securing each baffle (See *Baffle Removal*).
4. Remove the three locking type nuts ($\frac{1}{2}$ " socket) securing the spin basket to the spider assembly (Figure 7-5).

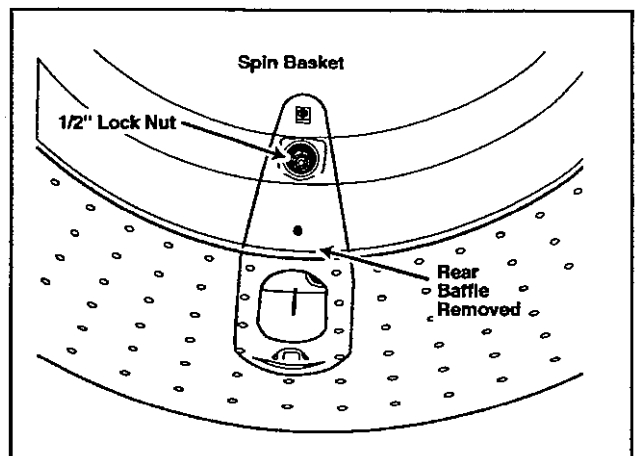


Figure 7-4

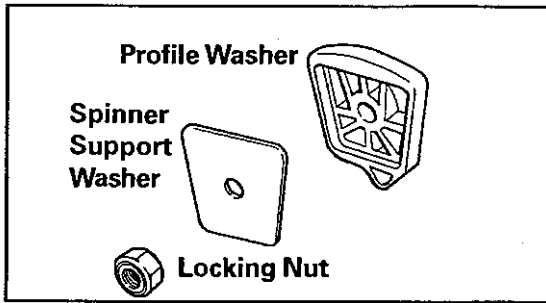


Figure 7-5

5. Remove the spin basket by lifting it off the threaded bolts of the spinner support.
6. When replacing the spin basket onto the spinner support, replace the washers under the three locking type nuts. Secure the 1/2" nuts firmly (18 in. lbs. torque).

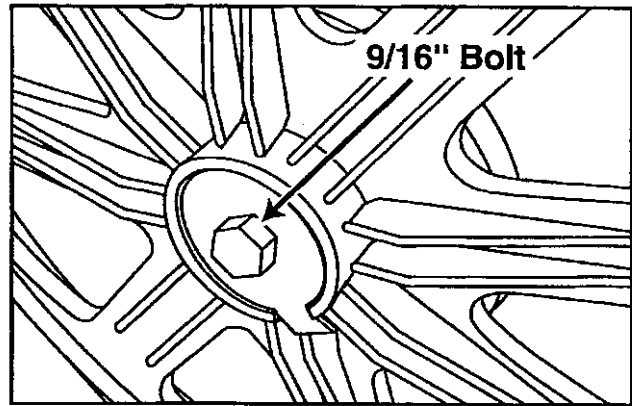


Figure 7-6

Replacement

1. Slide pulley on shaft.
2. Insert new tabbed washer and secure the bolt with a 9/16" socketed ratchet wrench (33 ft. lbs. torque).

NOTE: *If the washer is cupped, flip the washer on the pulley so the cupped portion extends away from the shaft. Failure to do so can result in a binding of the spinner support shaft and seals.*

DRIVE PULLEY

The drive pulley can be reached from behind the rear access panel of the washer. The pulley is secured to the shaft of the spider assembly by a bolt. The direction of pulley rotation controls the spin action of the spin basket.

Removal

1. Disconnect power to the machine.
2. Remove the rear access panel from the washer to access the pulley area.
3. Remove the bolt and the spider shaft will be exposed. Carefully slide the pulley off the spider shaft, using a "rocking/side-to-side" motion. If the pulley has a snug fit, use your Spanner Wrench to apply enough leverage to pry the pulley off the shaft (*Figure 7-6*).

SPINNER TUB SUPPORT

The spinner tub support attaches to the spin basket and the shaft of the spider extends through a seal system to the exterior of the outer tub with a pulley attached to the end of the shaft (*Figure 7-7*). This assembly supports the spin basket and transfers the rotation of the drive pulley directly to the rotation of the spin basket.

NOTE: *When the spinner tub support is removed, the shaft seal system should be replaced.*

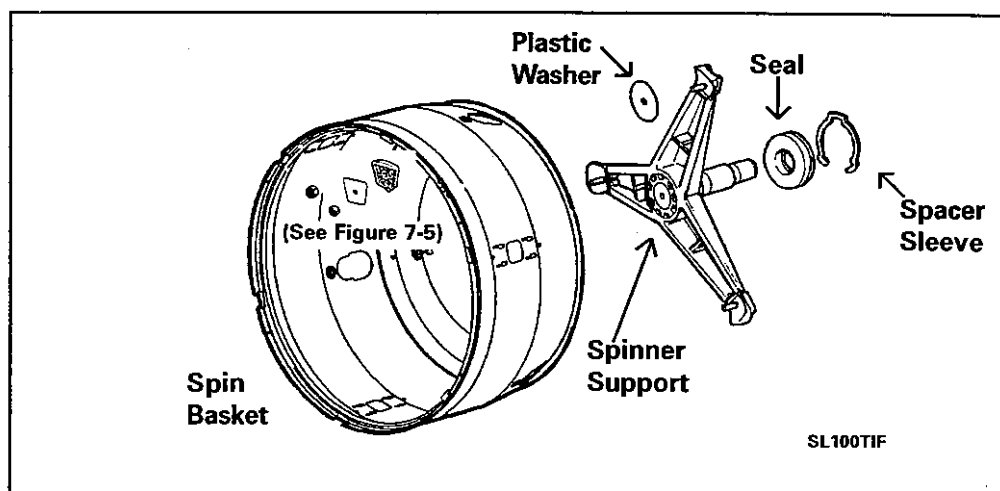


Figure 7-7

Removal

1. Disconnect power to the machine.
2. Remove the front panel, top cover, front shroud and outer tub cover (*See Front Panel, Top Cover, Front Shroud and Outer Tub Cover Removal*).
3. Remove the drive pulley (*See Pulley Removal*).
4. With the pulley removed, the spin basket with the spider shaft can be pulled from the front of the outer tub assembly.
5. To separate the spinner tub support from the spinner, remove the three rear baffles within the spin basket by removing the two screws securing each baffle (*See Baffle Removal*).
6. Remove the three locking nuts ($\frac{1}{2}$ " socket) securing the spin basket to the spider assembly.
7. Remove the shaft seal (*Figure 7-8*).

Replacment

1. Reverse the previous steps.
2. **IMPORTANT:** *Secure the three locking nuts ($\frac{1}{2}$ " socket) on the spinner tub support studs (18 in. lbs. torque).*

SEAL SYSTEM

A multi-lipped water seal is positioned on the tub support shaft leading to the outer tub bearing. This prevents water inside the tub from reaching the bearings. The water seal is accessed by removing the tub support shaft. It is comprised of a stainless steel seal face positioned on the tub support shaft, which mates with a rubber gasket. Grease on the face of the rubber gasket provides lubricant for the steel seal face. The steel seal face provides the rotating seal surface against the circular rubber ribs in the face of the rubber seal. This makes for three rib contacts at various diameters, providing three seals.

Removal

1. Disconnect power to the machine.
2. Remove the spinner tub support with spinner (See *Spinner Tub Support Removal*).

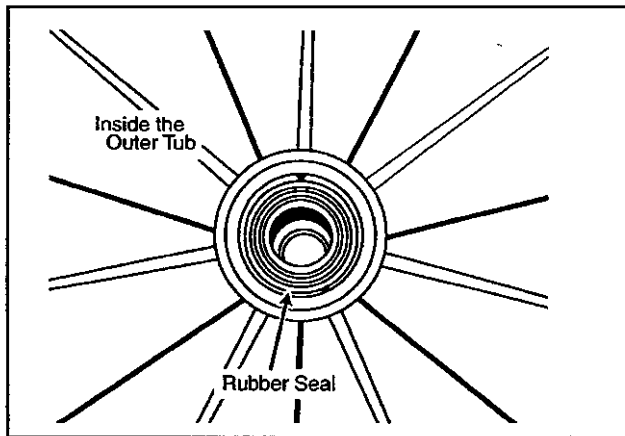


Figure 7-8

3. With a flat bladed screwdriver, pry the seal carefully off the tub support shaft (Figure 7-9).
4. Reach into the inside of the outer tub bearing area and remove the rubber seal. Discard both the steel seal washer and the rubber seal (Figure 7-8).
5. Position the spacer, replacement rubber seal and steel seal washer into the outer tub bearing area (Figure 7-8).

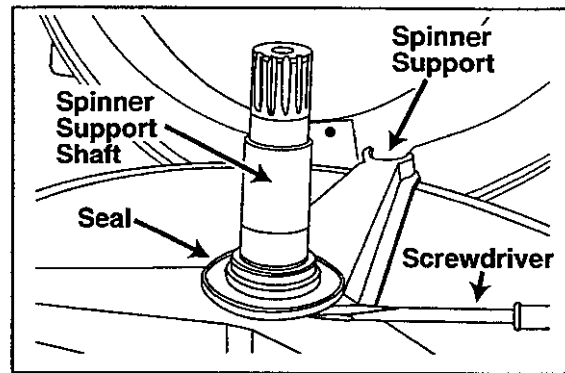


Figure 7-9

6. Position the spinner with spinner support shaft into the outer tub and insert the shaft through the seal in the rear of the outer tub until the spinner support shaft seats into place.
7. Reposition the drive pulley with tabbed washer onto the spinner support shaft. Insert the retaining bolt and tighten securely (33 ft. lbs. torque). This will draw the shaft and seals into proper alignment.

OUTER TUB ASSEMBLY

The outer tub assembly is suspended from two springs positioned toward the upper front of the cabinet and supported in the rear by two struts which are secured to the base frame. Two counter weights are mounted to the outer tub from above and below the tub. The aluminum bearing housing retains both inner and outer bearings for the spinner tub support shafts (Figure 7-10).

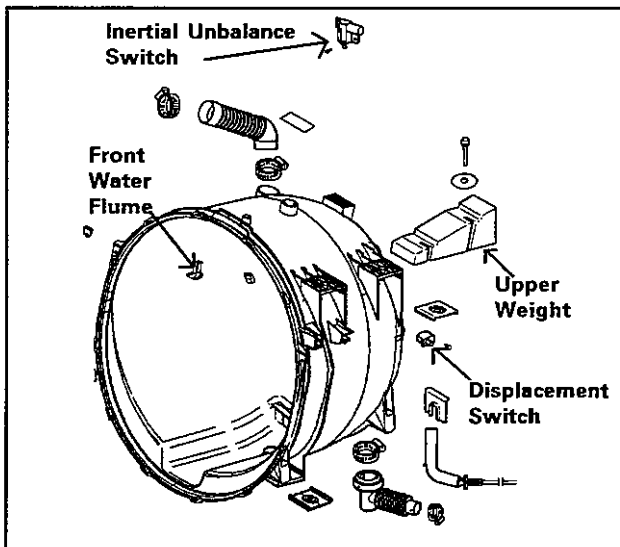


Figure 7-10

BEARINGS

The bearings are not repairable or replaceable. Replacement of the complete outer tub assembly is required.

COUNTER WEIGHTS

Two counter weights are secured to the outer tub assembly. One is secured to the top of the tub assembly and the other is secured to the bottom of the tub assembly.

Removal of Upper Weight

1. Disconnect power to the machine.
2. Lift top cover (See Top Cover).
3. Remove the two ½" counter balance bolts securing the weight to the top of the outer tub assembly.

NOTE: The bolts screw into two nuts below the weight, under the tub mounting pad (Figure 7-11).

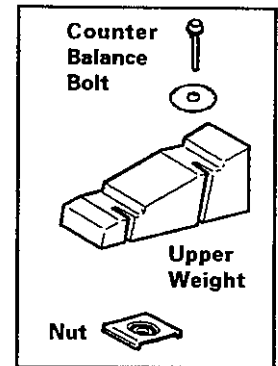


Figure 7-11

Removal of Lower Front Weight

1. Remove the front panel (See Front Panel).
2. Remove the two bolts securing the weight to the outer tub assembly. Use a 9/16" socket (Figure 7-12).
3. Lower the front weight and guard against hitting the motor control microprocessor board mounted to the base assembly.

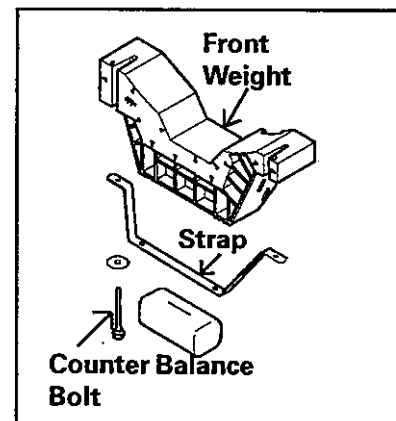


Figure 7-12

STRUT ASSEMBLY

Two struts are mounted to the base and inserted into rubber isolators in the rear of the outer tub assembly. The struts provide suspension support to the outer tub assembly.

Removal

1. **Disconnect power to the machine.**
2. Remove the front panel, top cover and front shroud (*See Front Panel and Front Shroud Removal*).
3. Disconnect dispenser hoses and injector hose connections to the outer tub.
4. Lean the cabinet of the washer forward to access the two locking nuts that secure the struts to the bottom of the base frame assembly. Use an 8mm or 1/2" socket. Remove the locking nuts and lower strut washers.
5. With the washer standing upright, roll the washer forward and off the struts, which mount into the rubber isolators inserted into the rear of the outer tub.
6. **To Reinstall:** Reverse the previous steps.

STRUT DISPLACEMENT SWITCH

1. **Disconnect power to the machine.**
2. Remove the rear access panel for immediate access or remove the front panel.
3. Remove the wires to the switch.
4. Release the small locking tab on top of the switch and rotate the switch to disengage the switch from the strut.
5. **To Reinstall:** Reverse the aforementioned steps.

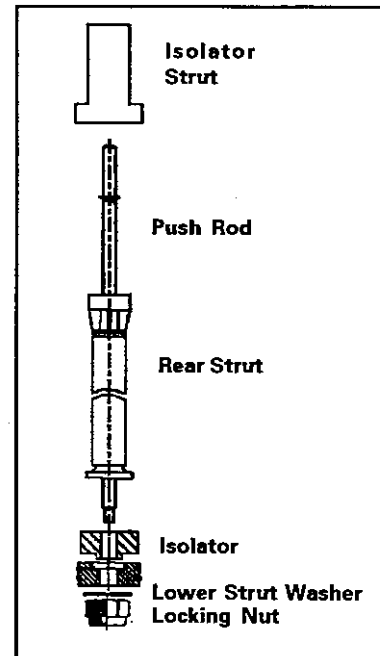


Figure 7-13

INERTIAL UNBALANCE SWITCH

The purpose of the switch is to monitor the lateral horizontal movement of the outer tub during spin (above 500 RPM), versus the vertical movement. When a severe amount of motion is detected, the machine control will implement a reduction in speed or start a redistribution of the clothes load. This is done by gradually stopping the motor. After the motor stops, the tumbler will alternately tumble, first one direction then another. After a brief time, the machine will again work up to a full spin. If sensed again, the machine control will implement another redistribution of the load.

Removal

1. **Disconnect power to the machine.**
2. Remove the front panel and lift the top cover (*See Front Panel Removal*).
3. The switch is located on the upper right hand side of the outer tub assembly (*Figure 7-14*).

- Remove the two screws securing the switch to the outer tub assembly.

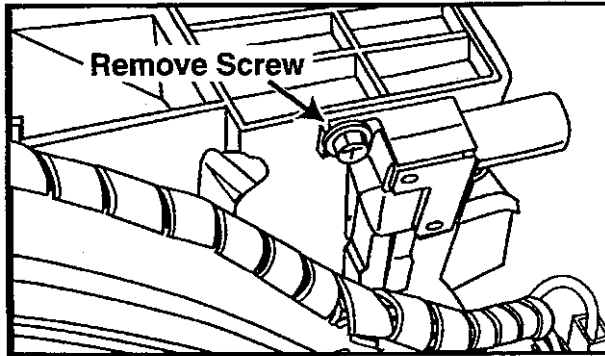


Figure 7-14

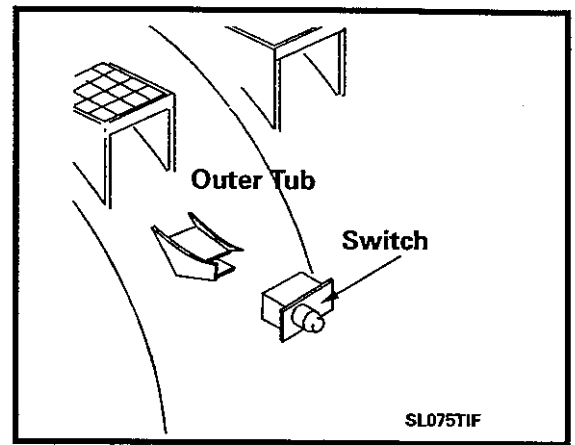


Figure 7-15

TUB DISPLACEMENT SWITCH

The displacement switch is located on the right hand side of the outer tub assembly, below the upper weight. Location of the switch on the outer tub will activate the switch whenever the outer tub assembly makes contact with the wall of the cabinet. Should contact with the cabinet occur before the machine reaches 500 rpm, the machine control is alerted and will reduce speed to implement a redistribution program.

Removal

- Disconnect power to the machine.
- Remove the front panel and lift the top cover (*See Front Panel Removal*).
- The switch is located on the upper right hand side of the outer tub assembly, directly behind the right upper front suspension spring (*Figure 7-15*).
- Remove the screw and flat washer securing the switch in place.
- Using a flat-bladed screwdriver, pry the switch body from the outer tub.

LOWER WEIGHT UNBALANCE SWITCH

The unbalance switch is located on the lower front face of the lower weight. Location of the switch will activate if the tub begins a forward to back motion and will trip, causing the machine to reduce spin speed and implement a redistribution program to balance the clothes load. The switch is wired in series between the outer tub displacement switch and the inertial unbalance switch (*Figure 7-16*).

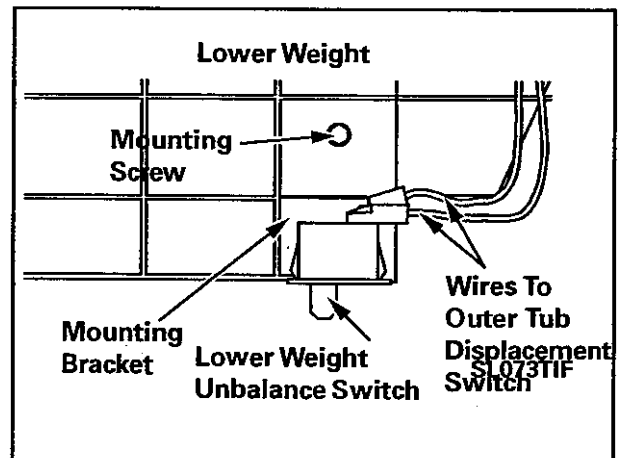
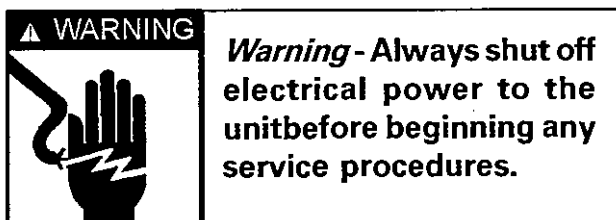


Figure 7-16

SECTION 8. MOTOR DRIVE SYSTEM (Washer)



The motor drive system tear down procedure covers all components related to the drive system, such as the drive motor, motor control, drive belt, machine control and accelerometer switch.

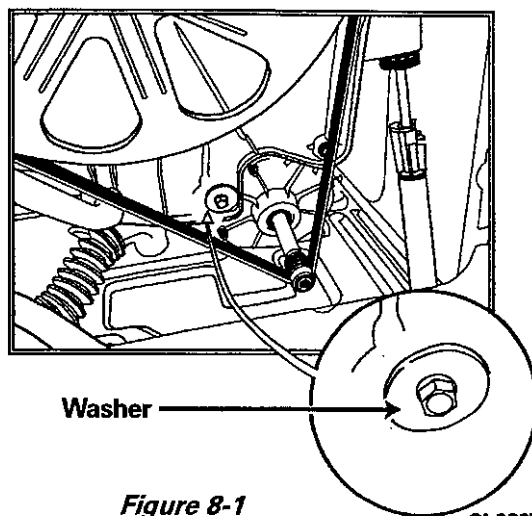


Figure 8-1

SL080TIF

DRIVE BELT

The drive belt has six (6) ribs which mate with the face of the motor pulley. The belt encircles the motor pulley and also the drive pulley of the spinner (*Figure 8-1*).

Removal

1. Disconnect power to the machine.
2. Roll the belt off the drive pulley and remove from the motor pulley.

Adjustment

1. No adjustment is necessary. The belt is designed to stretch and adapt to proper adjustment between the drive pulley and the motor pulley.

DRIVE MOTOR

The drive motor is hinged into the left bottom area of the outer tub and secured to the outer tub by the bolt on the belt adjustment wheel. A slot in the mounting bracket of the outer tub allows the motor to pivot and allows adjustment of the drive belt tension.

Removal

1. Disconnect power to the machine.
2. Remove the front panel, rear access panel and the front weight (*See Front Panel & Rear Access Removal*).
3. From the rear, locate and remove the motor mounting bolt securing the washer to the outer tub (*Figure 8-2*).

- Lift the motor slightly to disengage the belt from the motor pulley. Grasp the motor and slide it carefully from the pivot hang holes in the outer tub. Place motor on the base frame (*Figure 8-3*).

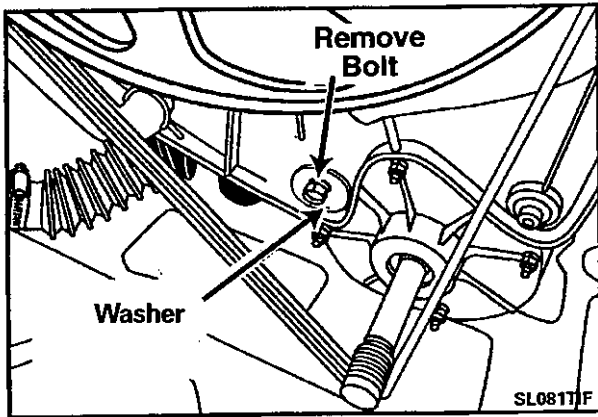


Figure 8-2

- From the front, remove the wire harnesses from the back of the motor.

Replacement

- Reverse the previous procedures to re-mount the motor.

NOTE: *Prior to hanging the motor, reconnect motor wire harnesses and ground wire.*

- Prior to hanging the motor on the outer tub, check the positioning of the rubber motor mounts.

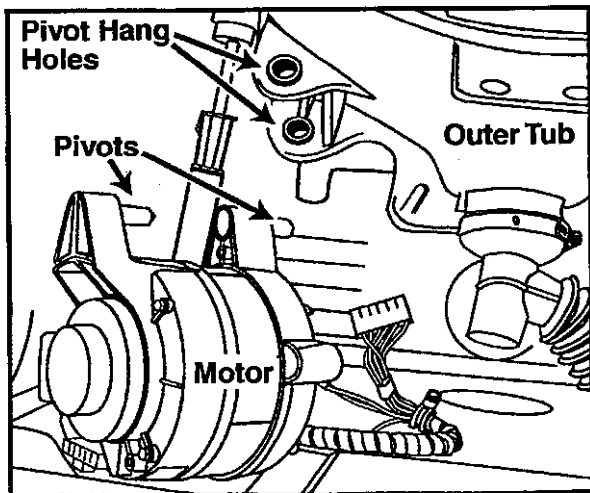


Figure 8-3

MOTOR CONTROL BOARD

The motor control is located behind the front panel in the lower right hand side of the cabinet. The assembly comprises of the circuit board, control cover, mounting plate and motor wire harness.

Removal

- Disconnect power to the machine.
- Remove the front panel (*See Front Panel Removal*).
- Remove the shield/cover from the motor control board by depressing the locking tab found along the lower left side of the motor control base plate.

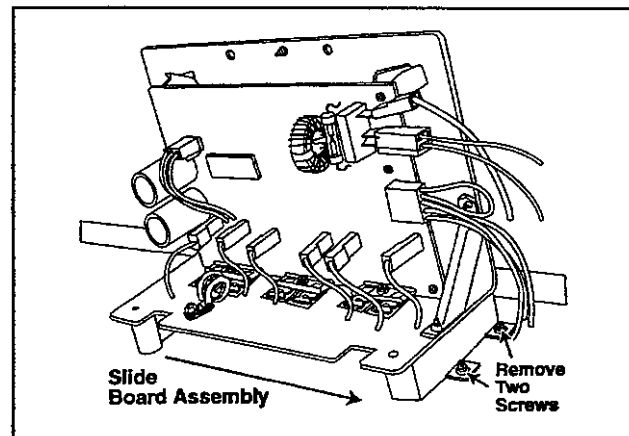


Figure 8-4

- Remove the wire harness leading to the control console (*Figure 8-4*).
- Remove the wire harness from the motor.
- Remove two mounting screws in front of the motor securing the assembly to the base. A rear locating tab on the motor control base engages with a slot in the base frame.
- To replace, reverse the previous steps.

SECTION 9. DRYER CABINET ASSEMBLY COMPONENTS



WARNING

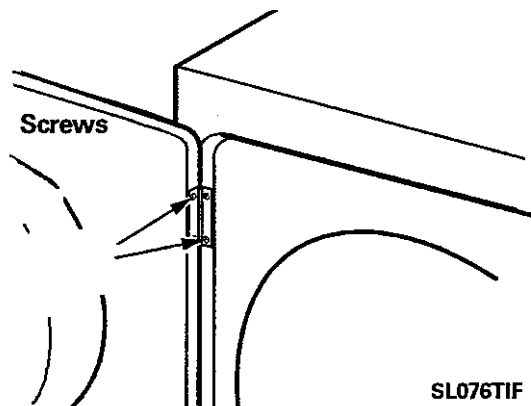
Warning - Always shut off electrical power to the unit before beginning any service repair procedures.

DOOR ASSEMBLY & HINGES

The door assembly is reversible.

Removal

1. Open the door and remove the screws in each hinge secured to the inner flange of the front panel in the door opening (*Figure 9-1*).



SL076TIF

Figure 9-1

Reversal

1. Remove the door assembly from the dryer. Remove the plastic hinge hole covers on the opposite side of the door opening.
2. Remove the hinges from the door itself and relocate them to the other side of the door.

3. Remount the door on the opposite side of the door opening in the front shroud. Secure with two screws into each hinge.
4. Mount the plastic hinge hole covers onto the side where the hinges were previously on to cover the screw holes in the front shroud.

Door Disassembly

1. Remove ten screws located across the bottom and along either side of the door panel. The top edge of the outer door is folded over the inner door plug.

FRONT PANEL

Removal

1. Disconnect power to the machine.
2. Remove the access panel and console assembly (*See Section 4: Console Removal*).
3. Remove two T-20 screws secured into the lower flange of the dryer front panel.

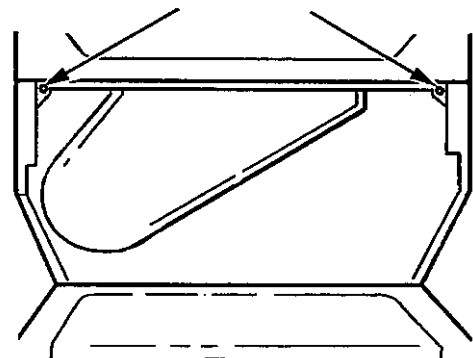


Figure 9-2

SL099TIF

- Remove the two 5/16" hex head screws located in the top right and left front corners of the front panel (*Figure 9-4*).

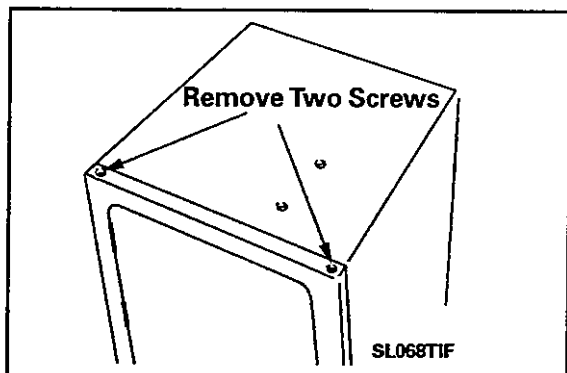


Figure 9-3

- located in the front right corner of the dryer top cover (*Figure 9-5*).

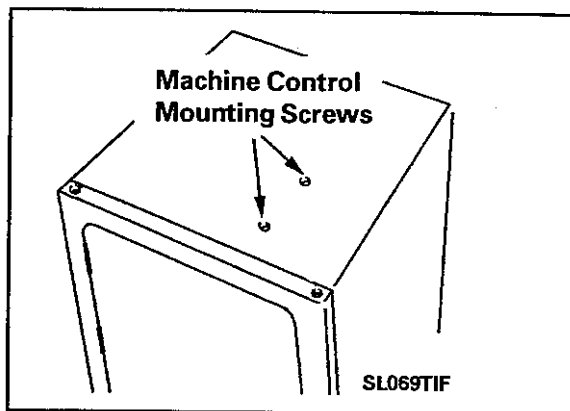


Figure 9-5

- Tip the top of the front panel forward and slightly lift the front panel at the same time. Then remove the wires from the door switch (*Figure 9-4*).

- Remove two 5/16" hex head screws in upper front cabinet flange (*Figure 9-6*).

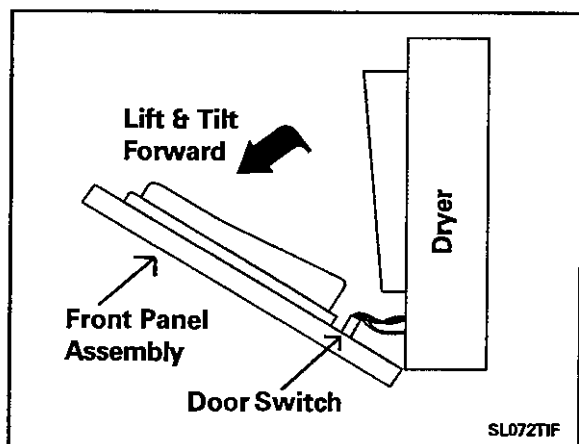


Figure 9-4

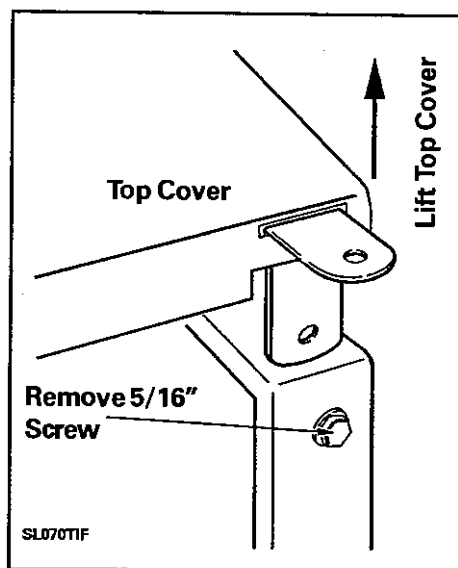


Figure 9-6

- With the wiring removed from the door switch, continue to tilt the front panel forward while lifting the panel to clear the two lower mounting brackets.

- Remove plastic hole plugs located on top of top cover in rear.
- Remove two 3/8" hex head screws securing the top cover to the rear cabinet flange (*Figure 9-7*).
- Lift rear of top cover and slide top cover forward.

TOP COVER

Removal

- Remove the dryer front panel (*See Front Panel Removal*).
- Locate and remove two 5/16" hex-head

16009127

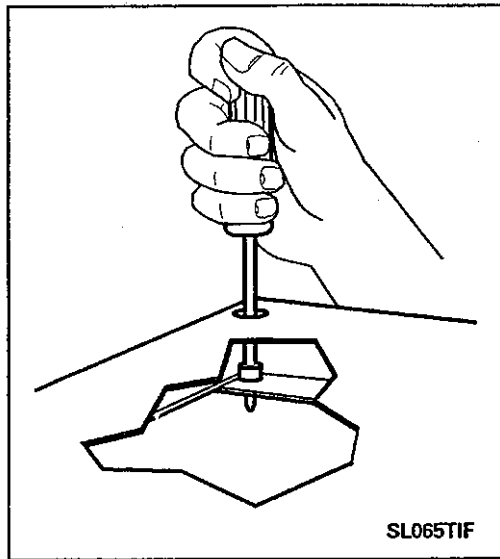


Figure 9-7

MACHINE CONTROL BOARD

The machine control is located in the upper right hand corner of the dryer cabinet.

Removal

1. Disconnect power to the machine.
2. Remove the control console and dryer front panel assembly.
3. Remove two 5/16" hex head screws securing the machine control board bracket to the top cover (Figure 9-5).
4. Remove the lower 5/16" hex head screw in the upper right hand top cover cabinet bracket (Figure 9-6).
5. Raise the front right corner of the top cover with bracket attached till the bracket clears the front cabinet flange (Figure 9-6).
6. Raise machine control board bracket to disengage the locating tab on the bracket from the locator notch in the dryer cabinet flange (Figure 9-8).

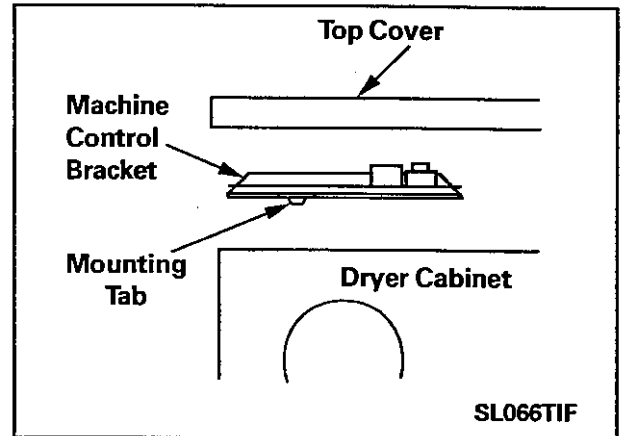


Figure 9-8

7. Remove the machine control with bracket and attached wire harness.
8. Rotate the assembly and position the slot in the backside of the mounting bracket with the protruding flange of the the upper right top cover to the cabinet bracket (Figure 9-9).

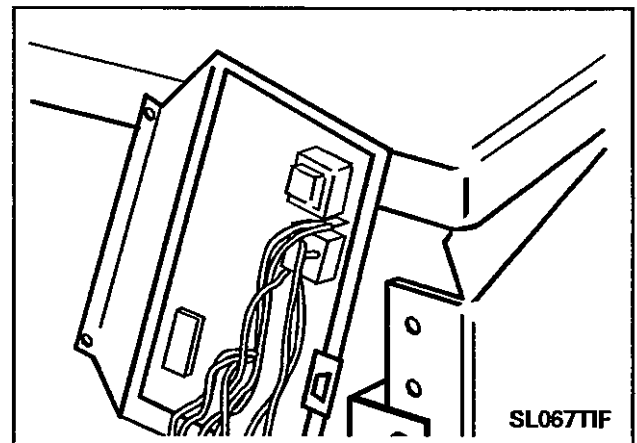


Figure 9-9

9. To secure the machine control board assembly in place for testing purposes, place a screw through the cabinet bracket flange after the control board assembly is positioned onto the cabinet bracket flange (*Figure 9-10*).

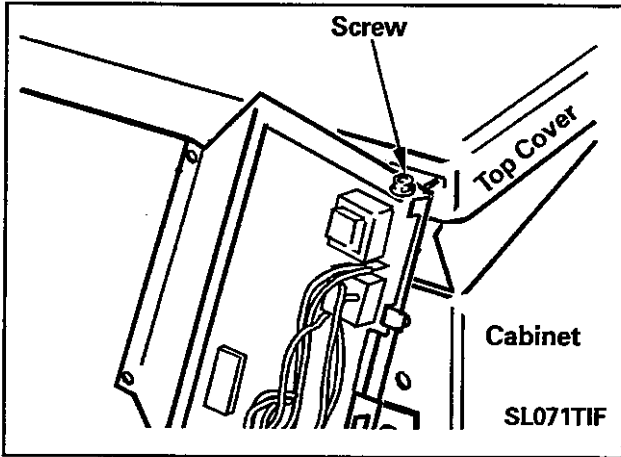
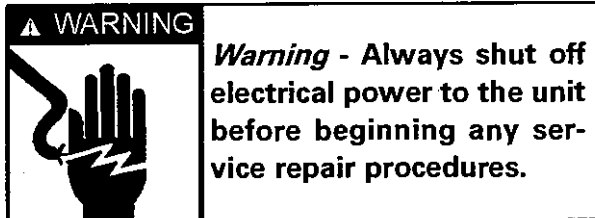


Figure 9-10

SECTION 10. DRYER TUMBLER & BULKHEADS



SHROUD & TUMBLER FRONT ASSEMBLY

The shroud and tumbler front assembly hold the front of the tumbler in the correct position and provides support for the *Rulon™* bearing surfaces for the front of the tumbler to ride on. The air outlet duct with lint filter is located in the assembly and channels the air from the tumbler into the blower assembly.

Removal

1. Disconnect power to the machine.
2. Remove dryer front panel assembly.
3. Remove wires from door switch and sensor bar.
4. Remove six outer screws holding shroud and tumbler front assembly to the cabinet (*Figure 10-1*). The inner screws on the shroud will aid in reinstallation of shroud.
6. Lift up and pull shroud and tumbler front assembly out and away from tumbler.

Reinstall

1. Reverse the previous steps.
2. Make sure the machine control board wire harness is in front of the shroud bracket.

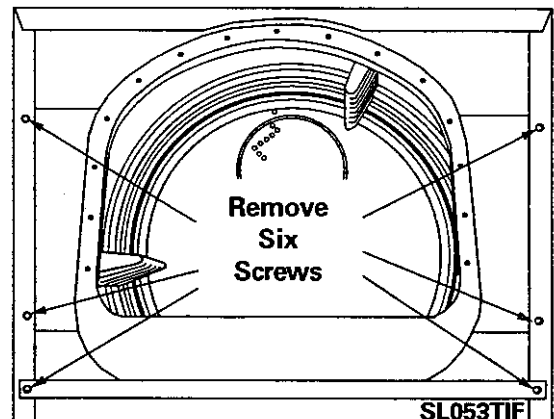


Figure 10-1

*Note: When reinstalling the shroud and tumbler front assembly, lift the front inner edge of the tumbler to allow the front of the tumbler to rest on the teflon (*Rulon™*) bearings on the shroud and tumbler front assembly. Also, check the front felt seal to ensure the felt seal is outside the lip of the tumbler.*

Disassembly of the Outlet Duct, Shroud and Tumbler Front

1. Remove the shroud and tumbler front assembly from the dryer.
3. Remove the four 1/4" hex head screws and the one cross recess countersunk screw securing the outlet duct to the tumbler front. *Note: Two of the hex head screws are hidden under the felt seal. Pull the outlet duct free from the tumbler front, (*Figure 10-2*).*

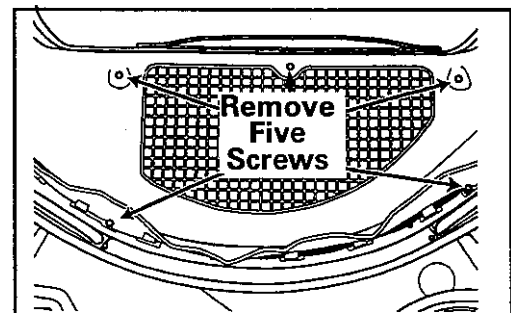


Figure 10-2

- When reattaching the outlet duct assembly to the tumbler front, install the center screw (found above the grid area) first, followed by the four outside screws in any order (Figure 10-3).

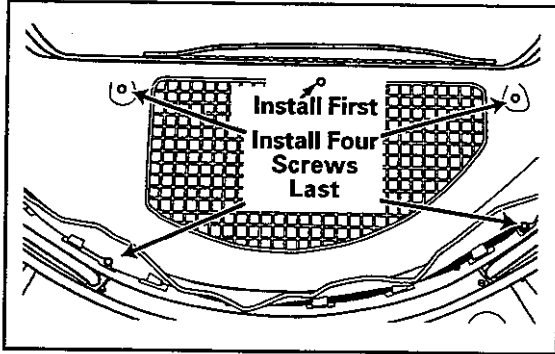


Figure 10-3

LINT FILTER

The lint filter is one piece and can be removed for cleaning (Figure 10-4).

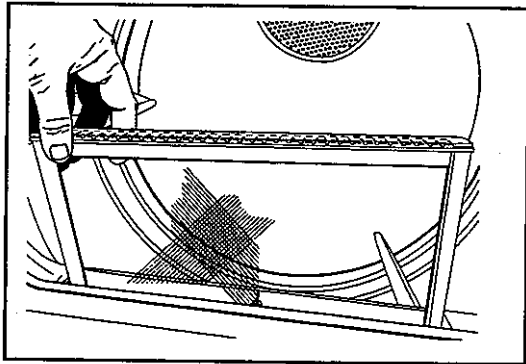


Figure 10-4

BEARING & PADS

At the bottom inside of the shroud and tumbler front assembly there are two teflon (Rulon™) bearings which rest on cork pads. These bearings provide a surface for the front of the tumbler to ride.

Removal & Replacement:

- Disconnect power to the machine.
- Remove the front panel and shroud/tumbler front assembly.
- Drill out the old rivets and rivet new bearings in place. In positioning the bearing and cork pad, the face of the bearing should ride against the tumbler (Figure 10-5).

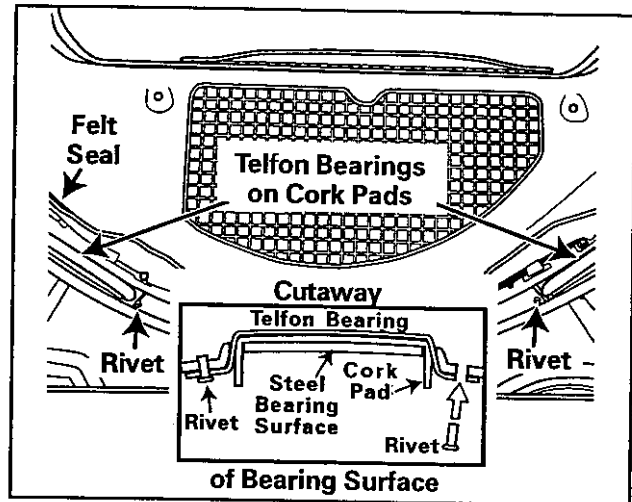


Figure 10-5

TUMBLER FRONT SEAL

The seal fits around the back circumference of the shroud/tumbler front assembly. It is a natural felt seal which is doubled over in order to spring load the seal against the tumbler. The surface which comes in contact with the revolving tumbler is coated with a layer of teflon to provide a slick, durable wear surface.

Removal

- Disconnect power to the machine.
- Remove the front panel and shroud/tumbler front assembly.

3. Remove the old felt seal by prying the locking tabs up with a flat blade screwdriver, (See Figure 10-6).

NOTE: Pay close attention to the location of the seal overlap. This will be important as you reinstall the new seal.

Reinstall

The seal will be mounted to the tumbler front in a counter clockwise rotation. Start at the 3:00 position and place under the locking tabs. The seal will overlap 1 1/4". The coated side (which is the lighter of the two colors) goes against the tumbler. The felt seal is then looped in a "U" shape so that the lighter colored side is against the tumbler front as it is slid in place under the tabs.

Bend tabs back over the felt seal with a flat blade screwdriver.

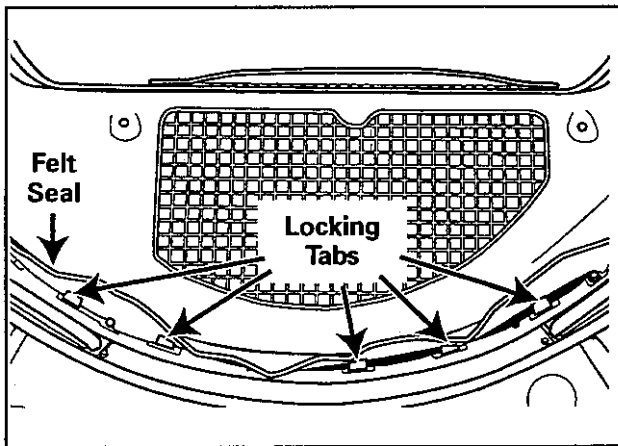


Figure 10-6

TUMBLER & BELT

The tumbler is a cylinder with no attached front or back. Tumbler speed is 52 R.P.M. Installation can be made without regard to which way it came out of a dryer.

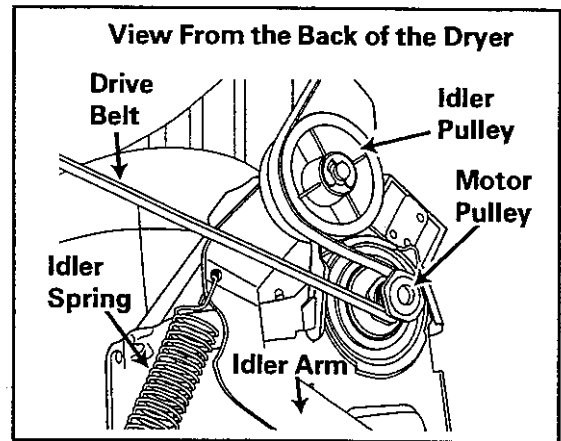


Figure 10-7

Tumbler and Drive Belt Removal

1. Disconnect power to the machine.
2. Remove front panel and door.
3. Remove shroud/tumbler front assembly.
4. Insert left hand along side of tumbler at the 8 o'clock position. Insert right arm under tumbler (as close to blower as possible).
5. Grasp the idler pulley in left hand, pull idler upward and to the left. **Note: There is a built-in stop to prevent overstressing of the idler arm spring.** Slip belt off the motor pulley (Figure 10-8).
6. Slip the belt off the back of the tumbler.
7. Pull tumbler out of cabinet while lifting top cover.

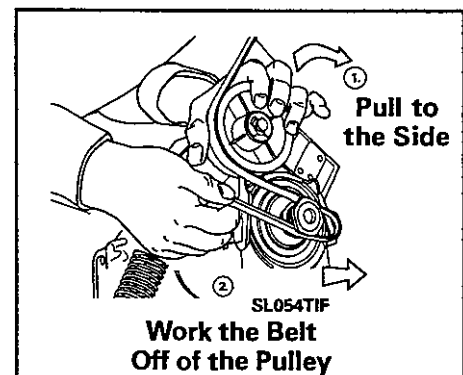


Figure 10-8

Installing Drive Belt

1. Disconnect power to the machine.
2. Place belt onto the outside of the tumbler and position the belt 1 1/2" in front of rear baffle mounting screws with ribbed side against tumbler (*Figure 10-9*).
3. Position tumbler into the rear felt seal, resting the tumbler onto the rear rollers. Lower the front of the tumbler onto the blower housing.
4. Insert left hand along side of tumbler at 8 o'clock. Insert right arm under tumbler (as close to blower as possible).
5. Locate the belt and create a small loop with your right hand, ensuring the belt is free of twist.
6. Position the open end of the loop (ribbed side down) onto the motor pulley with your right hand.
7. To clear the drive belt, grasp the idler pulley in left hand, pull idler upward and to the left. **NOTE: There is a built-in stop to prevent overstressing of the idler arm spring.**
8. Relax your left hand and allow the idler pulley to rest down onto the belt.
9. Grasp baffles with both hands and rotate tumbler 1 or 2 turns clockwise to allow the belt to align itself.

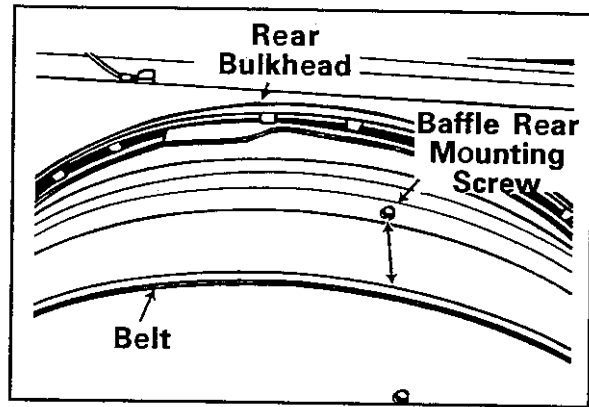


Figure 10-9

Removal

1. Disconnect power to the machine.
2. Remove door and front panel.
3. Lift the top cover.
4. Rotate the tumbler until the baffle screws of the baffle to be removed appear at the top of the tumbler.
5. Remove two screws holding the baffle to the tumbler.

TUMBLER BACK ASSEMBLY

The inner wall of the tumbler back or rear bulkhead is coated with an epoxy powder coat which is a very smooth surface, resistant to scratches and abrasion.

The tumbler back assembly acts as a support for two roller assemblies which support the tumbler and weight of the load.

Removal

1. Disconnect power to the machine.
2. Remove front panel and door.
3. Remove shroud/tumbler front assembly.

BAFFLES

There are three tumbler clothes baffles used to aid in tumbling the clothes. Two of the baffles are 1" higher than the other. Location makes no difference.

4. Remove tumbler and belt.
5. Remove burner and igniter on gas models. (Caution, the igniter is fragile.)
6. Remove heat enclosure.
7. From back of dryer, remove four screws holding tumbler back assembly and remove assembly (*Figure 10-10*).

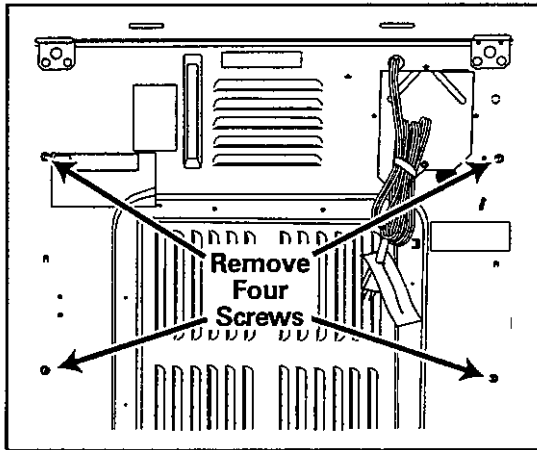


Figure 10-10

TUMBLER BACK SEAL

The felt seal fits around the front circumference of the tumbler back. It is a natural felt seal which is doubled over in order to spring load the seal against the tumbler. The surface which comes in contact with the revolving tumbler is coated with a layer of teflon to provide a slick, durable wear surface.

Removal

1. Disconnect power to the machine.
2. For ease in servicing, we recommend removal of the tumbler back assembly from the dryer. This will ensure the felt seal is secured properly.

3. Remove the old felt seal by prying the locking tabs out with a flat blade screwdriver. Pay close attention to the location of the seal overlap. This will be important as you install the new seal.

Reinstall

The seal will be mounted to the tumbler back in a clockwise rotation. Start at the 11:00 position and place under the locking tabs. The seal will overlap 1 1/4". The coated side (which is the lighter of the two colors) goes against the tumbler. The seal is then looped in a "U" shape so the lighter colored side is against the tumbler back as it is slid in place under the tabs. Bend tabs back over seal with a flat bladed screwdriver (*Figure 10-11*).

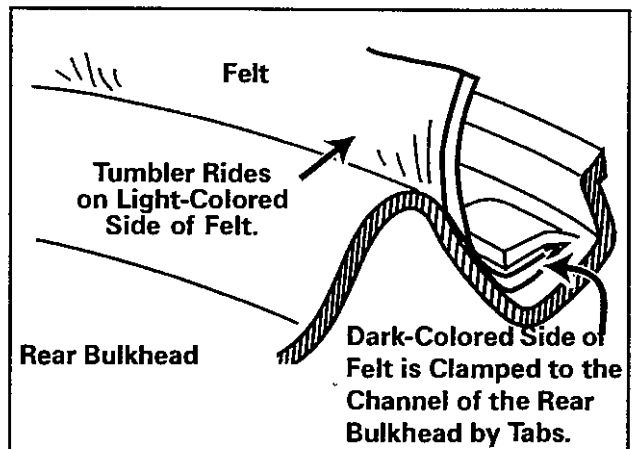


Figure 10-11

ROLLER AND BEARING ASSEMBLY

The tumbler roller consists of a rubber tire bonded to a plastic hub. There are two roller and bearing assemblies attached to the tumbler rear. If the rollers are riding up on the tumbler radius, check for bent rear roller brackets. If a bracket is bent, replace the tumbler back assembly. Rear rollers have self lubricated sintered bearings (lubricate using Maytag SBL oil, P/N 055975).

Removal

1. Disconnect power to the machine.
2. Remove front panel and door.
3. Remove shroud/tumbler front assembly.
4. Remove tumbler.
5. Remove retaining ring from groove in shaft.
6. Remove fiber washer.
7. Remove roller.
8. Remove roller shaft by removing nut on back.

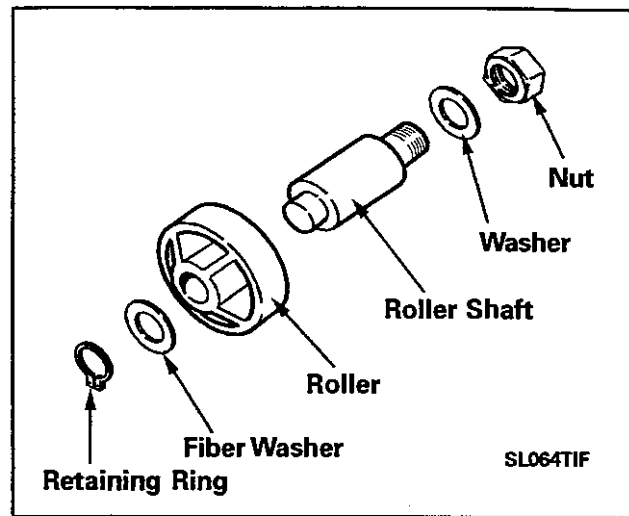
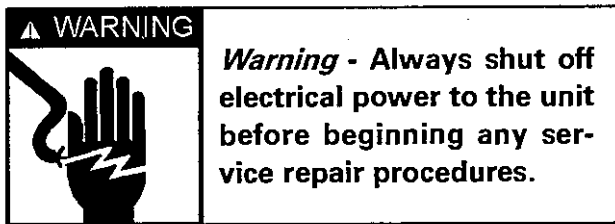


Figure 10-12

NOTE: *There is a spacer washer behind the roller. When replacing parts be certain of the order of the replacement (Figure 10-12).*

SECTION 11. DRYER BLOWER & MOTOR DRIVE SYSTEM



CYCLING THERMOSTATS

The cycling temperature thermostat is located on the blower housing cover. This thermostat cycles at approximately 150°F (Figure 11-1).

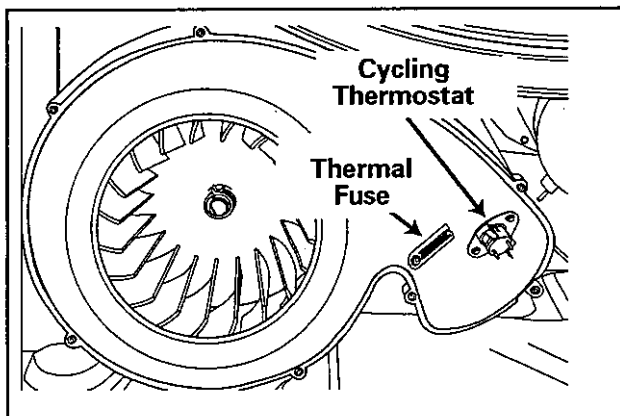


Figure 11-1

Removal

1. Disconnect power to the machine.
2. Remove front panel and close the door.
3. Remove the screws securing the thermostat to the cover.
4. Remove wires from thermostat.
5. Remove thermostat and replace.

HI-LIMIT THERMOSTAT

The hi-limit thermostat in the dryer is located on the heater enclosure. The thermostat is located close to the heating source and in the event of an overheating condition, will quickly shut off the heat. If the dryer is found to be cycling on the hi-limit, check for an air flow restriction. Gas hi-limit thermostats are rated at 220°F and the electric dryer hi-limit is rated at 200°F.

Removal

1. Disconnect power to the machine.
2. Remove front panel.
3. Remove wires from the thermostat.
4. Loosen the rear mounting screw and remove the front screw. The mounting tabs of the thermostat are open-slotted for easy replacement.
5. Slide thermostat out and replace.

THERMAL FUSES

The function of the thermal fuse is to stop the dryer in an overheating condition. The electric dryer has two thermal fuses; one fuse is mounted on the blower cover and is rated at approximately 180°F (84°C) and the other fuse is mounted on the left side of the heater enclosure and is rated at approximately 240°F (117°C). The gas dryer has one thermal fuse rated at approximately 180°F (84°C) and mounts to the blower cover. The thermal fuses for both dryer types are placed in series with the drive motor. If any of the fuses should

open, the drive motor will stop and the circuit through the centrifugal switch for the gas valve/heating element will also open breaking the heat circuit. The fuses will not reset and must be replaced after the overheating problem is corrected. Check for welded contacts in either the cycling or hi-limit thermostats.

Removal

1. Disconnect power to the machine.
2. Remove front panel.
3. Disconnect the wires from the fuse.
4. Remove the screw, attaching the fuse to the blower cover.
5. For the fuse mounted on the heater enclosure (electric only):
 - Remove the screw that secures the fuse bracket to the heater enclosure.
 - Remove wires and the two screws that attach the fuse to the bracket.

Checking the Thermal Fuse

1. Disconnect power to the machine.
2. Remove front panel.
3. Remove wires from the thermal fuse.
4. Check for continuity. Attach meter across the terminals of the fuse. If there is no continuity, replace fuse.

BLOWER ASSEMBLY

Seal for Blower

This rubber seal is secured to the outlet duct opening. The seal is fitted around the outer circumference lip of the outlet duct with the flange of the seal facing the blower cover. When installing the shroud/tumbler front assembly, be sure the seal is in place (*Figure 11-2*).

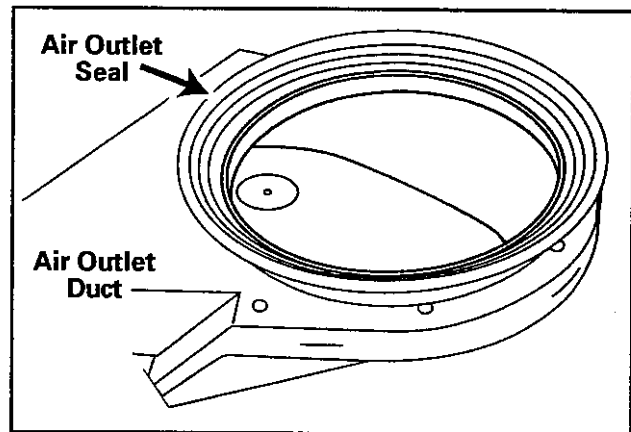


Figure 11-2

Cover for Blower

Removal

1. Disconnect power to the machine.
2. Remove eight screws holding cover to blower housing (*Figure 11-3*).
3. Remove one screw holding cover to base.
4. It is not necessary to remove wires from thermostats to gain access to blower wheel. Lay the blower cover aside.

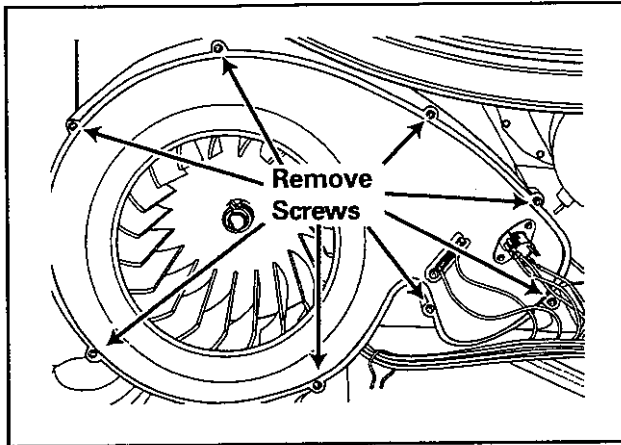


Figure 11-3

Installing Blower Cover

1. Disconnect power to the machine.
2. Set the blower cover in place.
3. Install the first screw closest to the exhaust duct (right-most screw, *Figure 11-4*).
4. Continue to assemble, moving to the next screw in a counter-clockwise motion around the blower.
5. Install the screw for the blower cover tab to the base frame last.

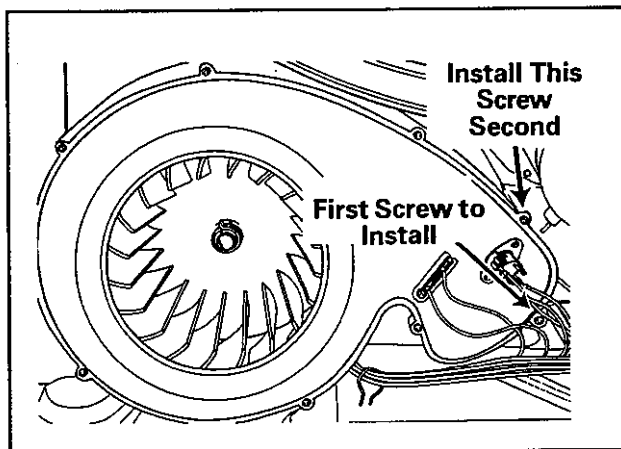


Figure 11-4

Blower Wheel

The blower wheel is attached directly to the motor shaft behind the blower cover. When replacing a blower wheel, always replace the clamp (*Figure 11-5*).

Removal

1. Disconnect power to the machine.
2. Remove front panel and close door.
3. Remove shroud/tumbler front assembly.
4. Remove blower cover.
5. Remove clip retaining ring (*Figure 11-5*).
6. Compress and remove clamp around hub of impeller.
7. Work blower wheel back and forth while pulling off shaft. Considerable effort may be required to remove the blower wheel.

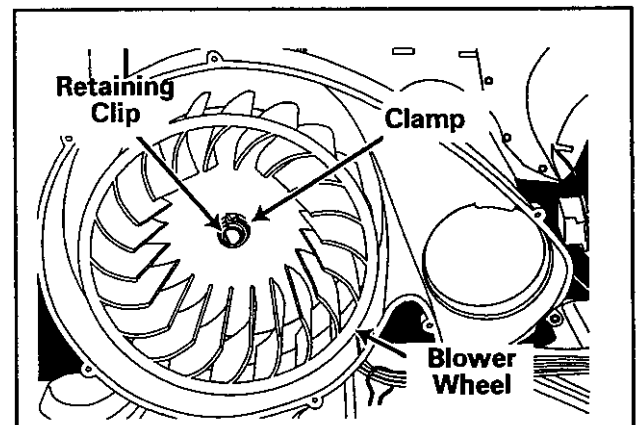


Figure 11-5

Exhaust Duct Pipe

One end of the exhaust pipe is held to the back of the cabinet by one screw. The duct fits over the blower housing on the opposite end (*Figure 11-6*).

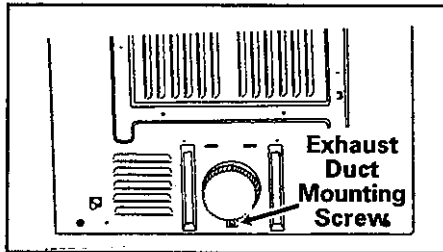


Figure 11-6

Blower & Motor Assembly

The entire blower and drive motor assembly can be removed for servicing.

Removal

1. Disconnect power to the machine.
2. Remove front panel and door.
3. Remove shroud/tumbler front assembly.
4. Remove the belt.
5. Disengage the idler pulley spring from the base.
6. Remove tumbler.
7. Remove the screw in front of the blower assembly that secures the assembly to the base frame.
8. Remove wire harness from drive motor and thermostats on blower cover.
9. Remove two screws securing motor to base frame. An extension is required to reach the screws. Screws are behind the blower housing (*Figure 11-7*).

10. Carefully lift the front half of the blower assembly and slide the assembly forward to disengage the motor base rear tab from the slot in the base frame.

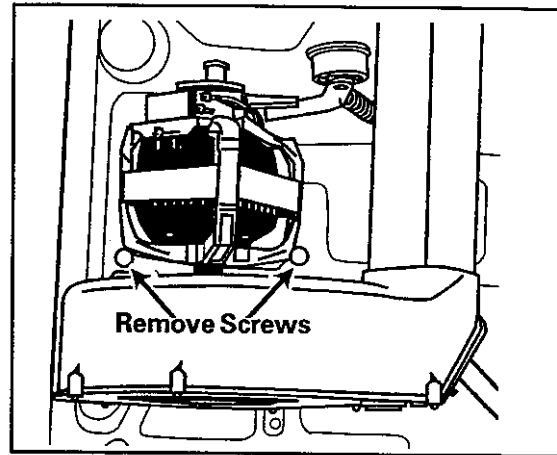


Figure 11-7

Assembly Breakdown

1. Remove blower cover screws.
2. Remove blower wheel.
3. Remove retaining ring clip from motor shaft, positioned behind the blower impeller.
4. Remove the motor support clips which retain the motor to the motor base. Use a nut driver large enough to accept the hook-end of the clip. With a downward push of the driver onto the clip, tilt the driver handle toward the motor to unhook the clip from the support.
5. Remove motor from motor base.

Motor Switch Replacement

A switching device in the motor is used to change the path of electricity from both start and run windings to run windings only. It also completes the circuit to the heat source when the motor reaches proper speed. The external motor switch is secured to the motor with two screws.

Removal

1. Disconnect power to the machine.
2. Remove front panel and door.
3. Remove shroud/tumbler front assembly.
4. Remove belts.
5. Remove tumbler.
6. Remove wire harness from motor switch by depressing tabs on either side of the harness connector and lift the connector from the switch.
7. Remove two screws holding switch to drive motor.
8. Disengage the thermal protector switch from the motor switch body. This can be done by either inserting a small flat blade screw driver into the slot near the switch terminals or breaking the switch body. The thermal protector switch is not replaceable and is part of the motor assembly.

IDLER ARM ASSEMBLY

The motor turns clockwise, as viewed from the front. The sleeve for the idler arm acts as a spacer so that the idler can float and aid in alignment of the belt. The idler arm spring maintains proper belt tension, keeping it in alignment with the drive pulley.

Removal

1. Disconnect power to the machine.
2. Remove front panel and door.
3. Remove shroud/tumbler front assembly.
4. Remove belt and tumbler.
5. Unhook idler spring from the base frame and remove the screw securing the assembly to the motor support bracket (*Figure 11-8*).

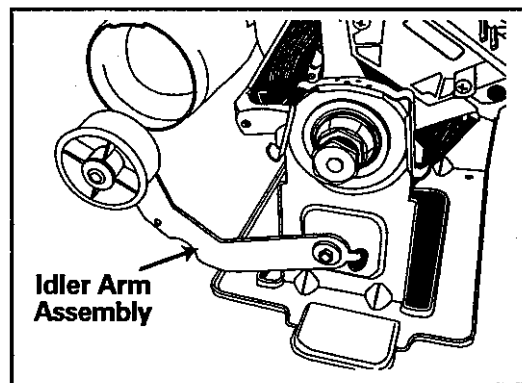


Figure 11-8

Disassembly

1. Remove retaining clip from groove in shaft.
2. Remove fiber washer.
3. Remove idler pulley and bearing.
4. Remove second fiber washer.

NOTE: *There is a fiber washer between the pulley and the idler arm. When replacing parts, be certain the order of replacement is correct (Figure 11-9).*

IMPORTANT: *The position of the flange of the idler pulley is important. The flange should be positioned on the side opposite the idler arm.*

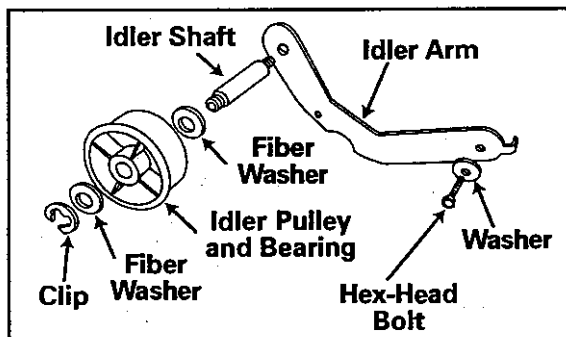
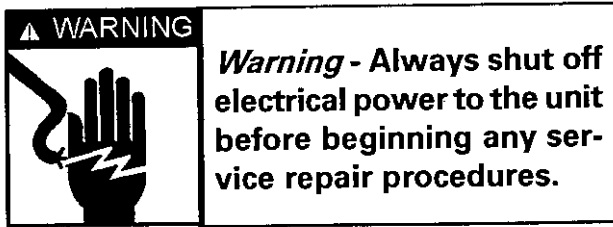


Figure 11-9

SECTION 12. DRYER HEATING COMPONENTS



GAS VALVE ASSEMBLY

The gas controls utilize a hot surface ignition system. The three major components of the gas ignition system are: Igniter, Radiant Sensor and Gas Valve (*Figure 12-1*).

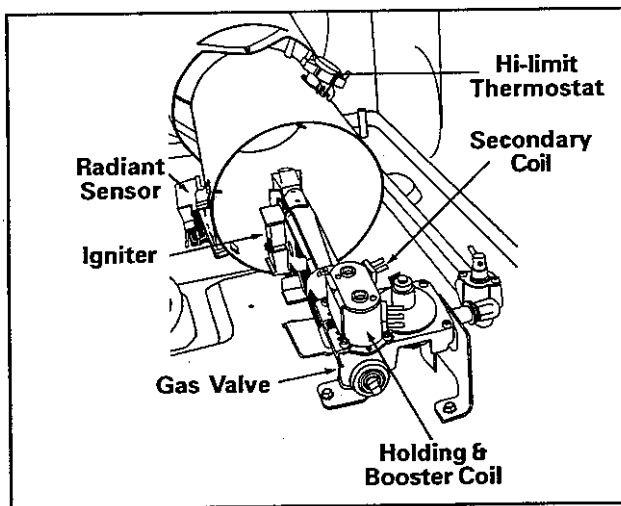


Figure 12-1

Igniter - When the controls call for heat, line voltage is applied to the igniter. This causes the igniter to heat up and glow. It can reach a temperature of approximately 2200° F in about 30 seconds. Gas contacting the igniter at this temperature will ignite immediately.

Radiant Sensor - The radiant sensor operates much like a regular thermostat. It is mounted to the side of the combustion cone over an opening which exposes the sensor to the heat of the igniter and burner flame.

In its normal condition, the contacts in the radiant sensor are closed and the circuit is completed to the igniter. The igniter glow causes the radiant sensor contacts to open, thus breaking the circuit to the igniter.

Gas Valve - The gas valve is actually two gas valves, one in series with the other (*Figure 12-2*).

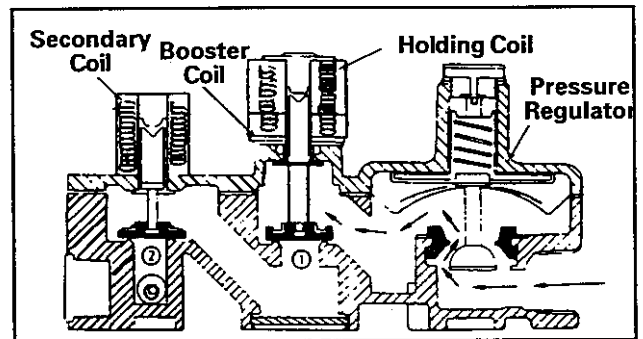


Figure 12-2

The first valve is opened by a solenoid which has two separate coils built into one solenoid. This solenoid uses split coils; referred to as the **Holding Coil** and the **Booster Coil**.

Both coils are needed to lift the armature and open the valve. The holding coil is strong enough to keep the valve open once the armature has been lifted.

The second of the two valves is operated by a one-coil solenoid. This is called a **Secondary Coil**.

Function of Gas Valve System

The sensor, igniter and gas valve are interrelated and function as ignition and heat source. At the start of the cycle, the radiant sensor contacts are closed, the igniter is at room temperature and the gas valve is closed, blocking the flow of gas.

NOTE: *On the wiring diagram the radiant sensor contacts are wired in parallel with the secondary coil (Figure 12-3). This bypasses current around the secondary coil when the radiant sensor contacts are closed. Valve 2 cannot open with the radiant sensor contacts closed.*

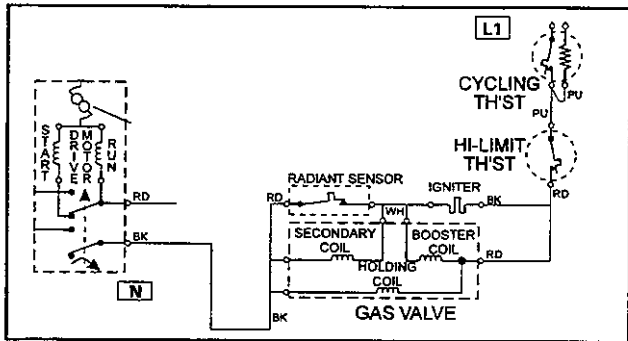


Figure 12-3

The booster coil and the igniter are wired in parallel. **NOTE:** *While these two components are in parallel with each other, they are wired in series with both the radiant sensor and secondary coil combination.*

When the radiant sensor contacts are closed, full line voltage is available to the booster coil and to the igniter.

When the radiant sensor contacts open, current has to flow through the secondary coil on Valve 2 in order to get to the booster coil and igniter. A significant voltage drop develops across the secondary coil. While the parallel booster coil and igniter are still in the circuit, they become ineffective due to their low resistance and the resulting reduced voltage available to them.

Step 1: Operation: Dryer Controls calling for heat:

The red wire in the gas valve harness is normally the "hot" side of the line. Voltage is routed to the gas valve assembly through the cycling thermostat located on the blower cover and the hi-limit thermostat on the heater cone. The black wire to the gas valve is normally the neutral side of the line and is completed through the motor centrifugal switch.

16009127

Radiant Sensor Contact Closed

The holding coil, booster coil and igniter all receive line voltage (Figure 12-4). The holding coil and booster coil open Valve 1. Valve 2 is still closed, prohibiting gas flow to the burner. The igniter, operating at line voltage, begins to get very hot. (As the igniter gets hotter, the resistance of the igniter drops.) The igniter glow radiates heat to the radiant sensor. The secondary coil on Valve 2 is bypassed by the radiant sensor contacts.

Step 2: Radiant Sensor Contact Open:

The igniter is now hot and valve one (1) is open. The heat from the igniter causes the radiant sensor switch contacts to open.

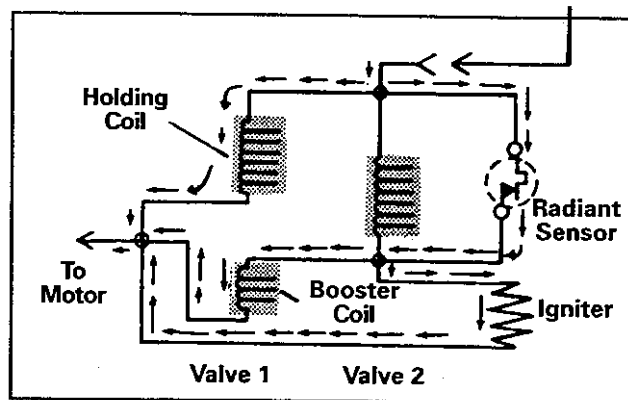


Figure 12-4

With the radiant sensor contacts open, the secondary coil is no longer bypassed. The secondary coil is now in series with the parallel circuit combination of the booster coil and the igniter.

Because of the relatively low resistance of the hot igniter, most of the line voltage is dropped across the secondary coil. The remaining voltage is dropped across the booster coil and igniter.

The secondary coil now opens the second valve, releasing gas across the still hot igniter. The gas ignites immediately and the burner flame is established.

NOTE: *Since the igniter will cool, the tip is positioned in the burner flame which keeps it hot and resistance low.*

The ignition cycle is now completed and the drying cycle begins.

Gas Conversions

The gas valve is set for use with natural gas when shipped from the factory. Because of differences in operating pressure and heat content of gases, the valve must be converted to use fuels other than natural gas.

Conversion kits are available to convert from natural to L.P. and back to natural. Check parts catalog for correct part number.

Air Shutter Adjustment

The air shutter has been stamped "LP" (Liquid Propane) and "N" (Natural). Loosen the screw holding the shutter, rotate the shutter until the end of the slot (labeled for the gas to be used) contacts the screw. Tighten the screw to lock the shutter in place (*Figure 12-5*).

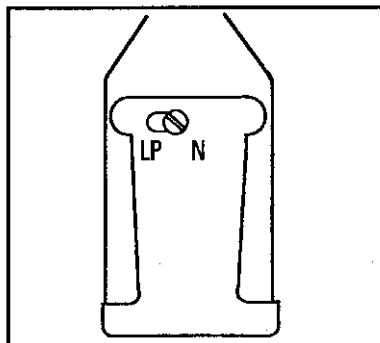


Figure 12-5

Gas Chart

Gas Type	Natural	L.P.
BTU Per Cu. Ft.	1025	2500
Pressure Inches	3.5	11
Specific Gravity	0.65	1.53
Size	43	54

Coil Replacement

To replace the coils on this valve, disconnect electrical power supply. Remove the front panel and unplug the wire harness from the gas valve coils. Once the coils have been unplugged, remove the two screws that secure the coil holding bracket.

Remove the bracket and lift the coils off (*Figure 12-6*). Replace coils, bracket and wire harness.

NOTE: *When repositioning the coils onto the valve, align the coil positioning tabs and matching holes in the coil holding bracket for each coil.*

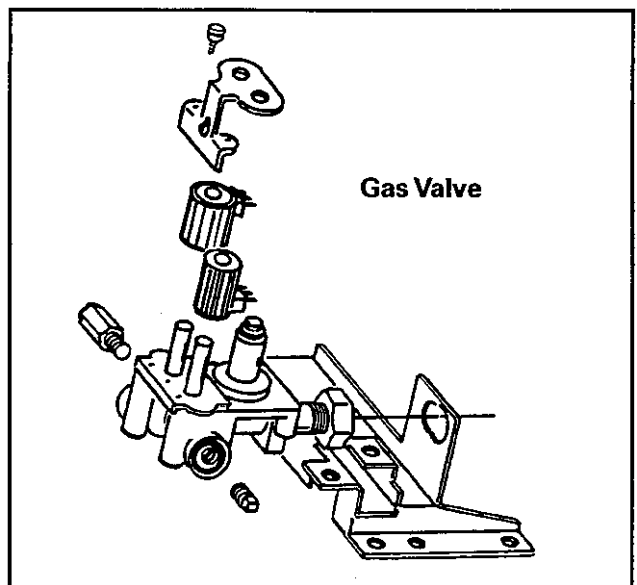
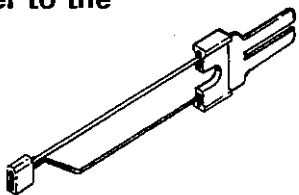


Figure 12-6

Igniter

The igniter is used to ignite the gas as it comes from the gas valve. It is located on the left side of the burner (as viewed from the front of the dryer). The igniter is very fragile and must be handled carefully. Should you find a broken igniter, replace it. Operate dryer and see if igniter stays ON. If igniter stays ON longer than 40 seconds, replace radiant sensor.

1. **Disconnect power to the machine.**
2. Remove front panel and close the door.
3. Unplug igniter from gas valve.
4. Remove screw holding igniter to burner.



Gas Valve Removal

1. **Disconnect power to the machine.**
2. Remove access panel.
3. Shut off gas supply and disconnect supply line to valve.
4. Disconnect wire harness at valve coils.
5. Disconnect wires from igniter.
6. Loosen brass nut attaching angle connector to gas valve.
7. Remove two screws holding valve and burner assembly to base.
8. Slide valve bracket out of slot in base and remove valve and burner assembly.
9. Remove two screws holding gas valve to bracket on underside.

Orifice Removal

Remove the burner assembly. The orifice can be removed with a 3/8" wrench.

Combustion Cone Removal

1. **Disconnect power to the machine.**
2. Remove front panel and close the door.
3. Remove burner and igniter. Be careful, igniter is fragile.
4. Remove wires from high limit thermostat.
5. Remove screw in front of cone holding it to base.
6. Remove screw at back of combustion cone holding cone tab to inlet duct.
7. Pull combustion cone out of dryer.

Inlet Duct

This duct serves to channel heated air into dryer tumbler (*Figure 12-7*).

1. **Disconnect power to the machine.**
2. Remove front panel and the door.
3. Removal shroud/tumbler front assembly, tumbler and belt.
4. Remove screws securing heat cone to base and to inlet duct.
5. Remove tumbler back assembly accessible from behind the dryer.

- Remove three screws securing inlet duct to the tumbler back assembly. The two lower screws are under the felt seal of the tumbler back assembly.

NOTE: For proper inlet duct to tumbler back assembly alignment when reinstalling, align inlet duct to large hole in the tumbler back assembly and fasten top screw first.

HEATING ELEMENT & RELATED COMPONENTS

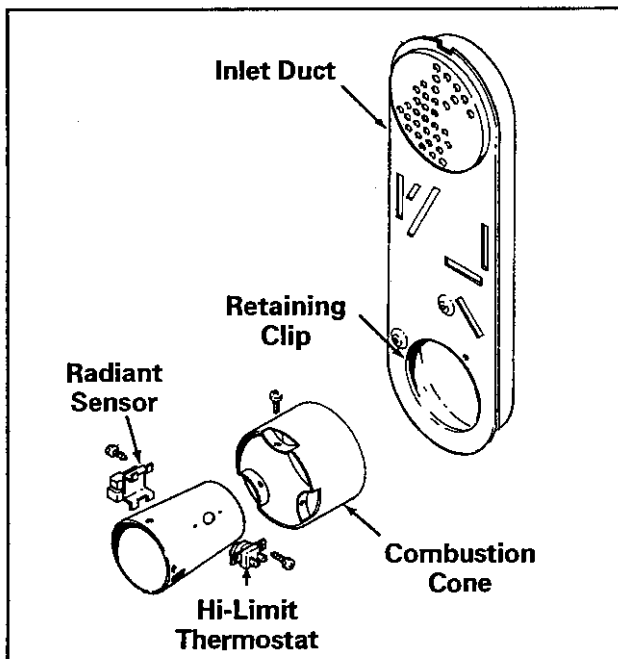


Figure 12-7

Heating Element

Electric dryers are equipped with a heating element to provide approximately 5300 watts when operated on 240 volts (Figure 12-8). The element is divided into six segments on each side of a support plate. This design exposes the element to more airflow and results in a lower maximum coil temperature. Terminal insulators are used on each end of the element which attaches to spade connectors. These

spade connectors are "crimped" to the wire and held in the insulator by small barbs on each side of the terminal. The barbs must be bent parallel with each terminal before element package can be removed from the enclosure. Three screws hold the element package to the enclosure.

Heater Enclosure

- Disconnect power to the machine.
- Remove access panel.
- Remove screw holding heater enclosure shield to base. Remove shield from dryer.
- Remove screw in back of enclosure holding tab to inlet duct.
- Remove wires from the thermal fuse and heater terminal on left side of enclosure. Remove purple wire from high-limit thermostat.
- Pull heater assembly out of dryer.

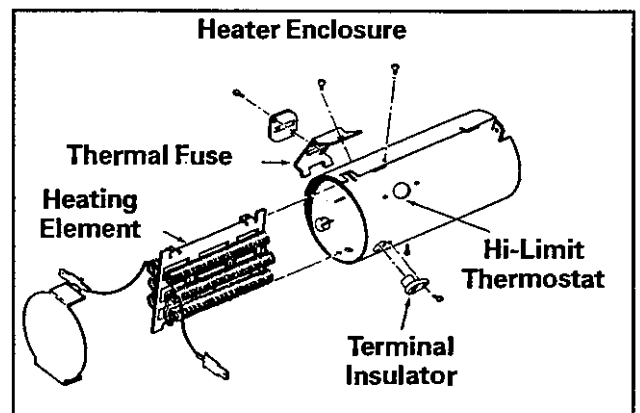
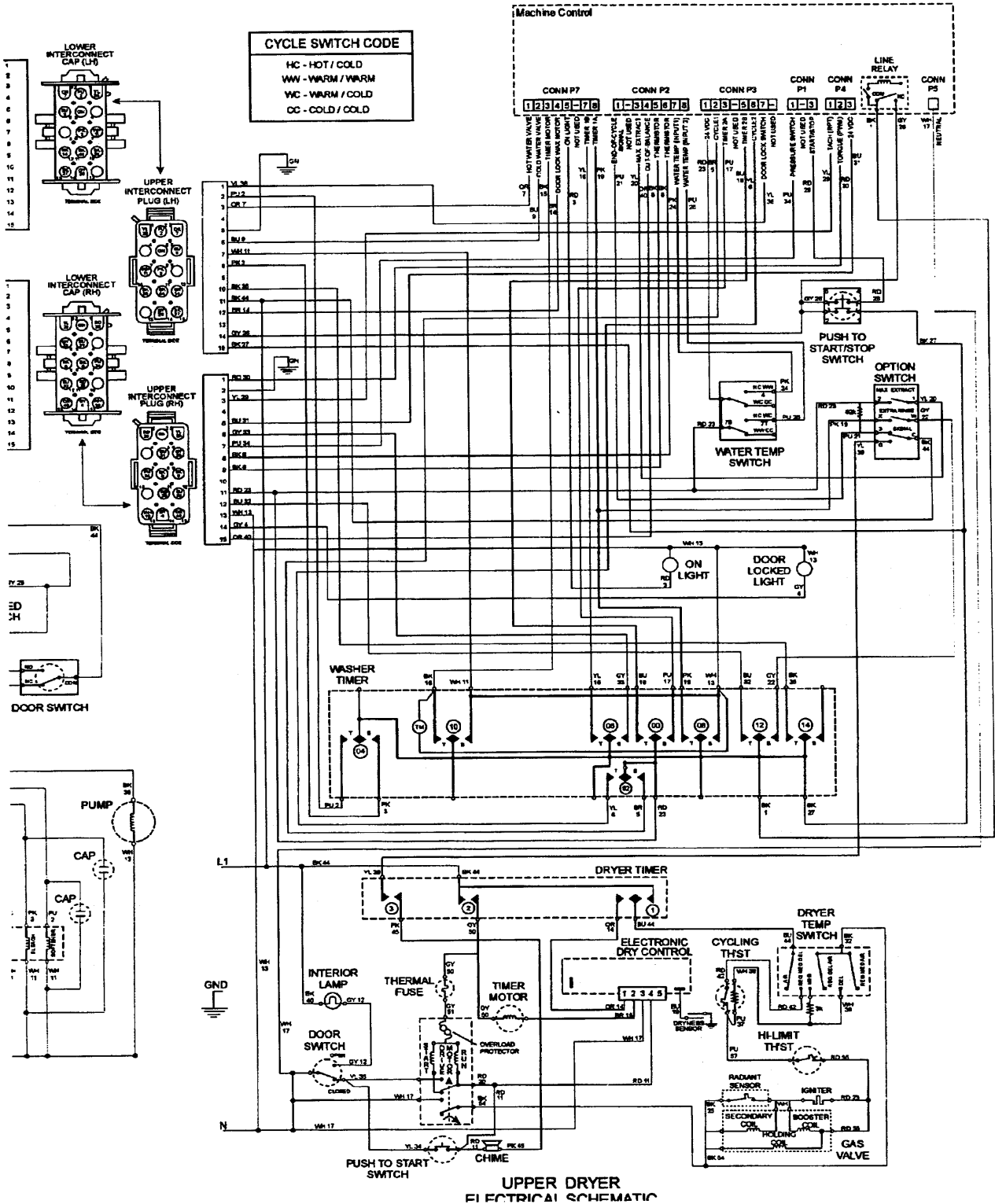
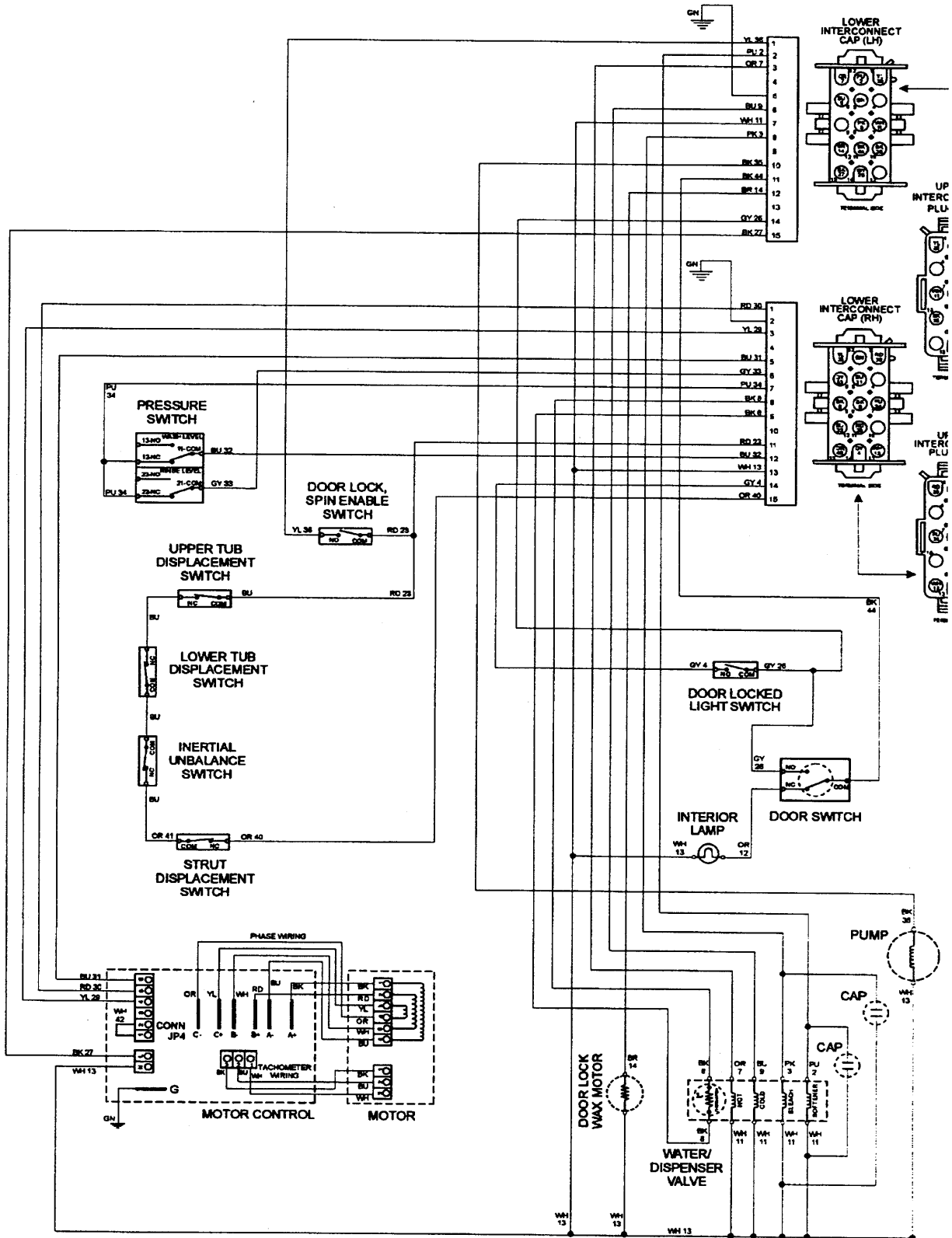


Figure 12-8

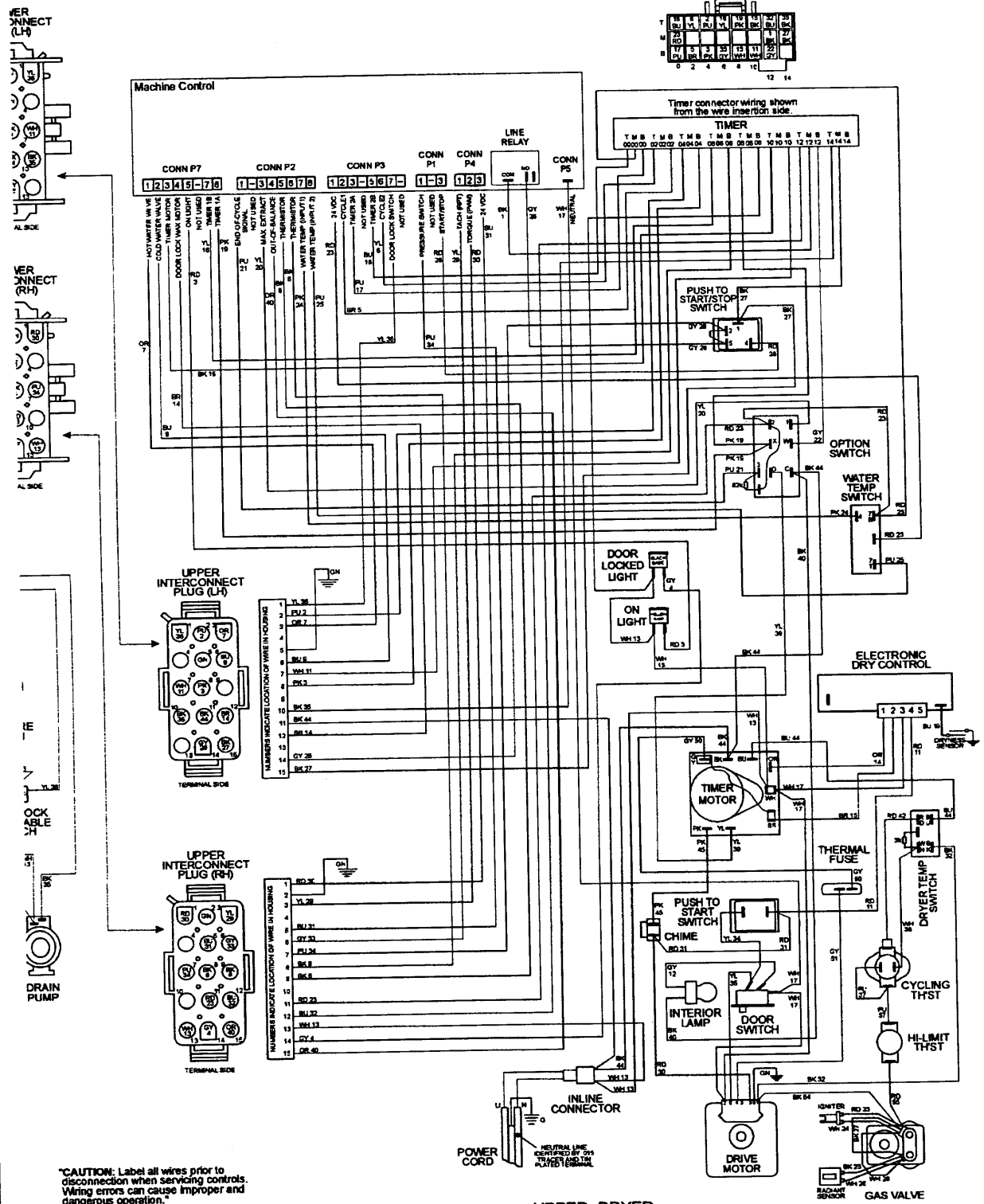
SECTION 13. WIRING INFORMATION - Gas Models



WIRING INFORMATION - Gas Models



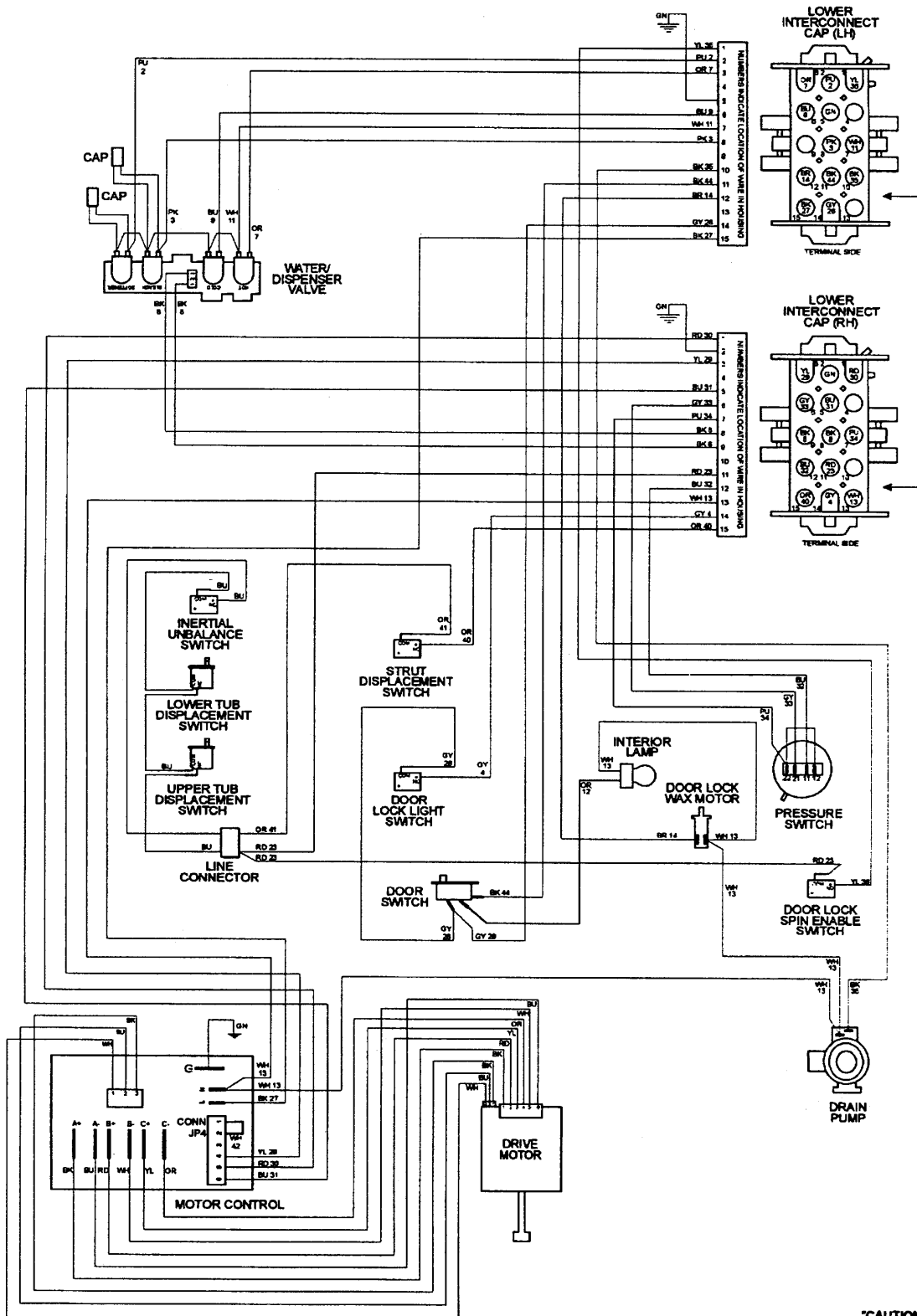
WIRING INFORMATION - Gas Models



***CAUTION:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.
 Verify proper operation after servicing.

UPPER DRYER
 WIRING CONNECTION DIAGRAM

WIRING INFORMATION - Gas Models



LOWER WASHER
WIRING CONNECTION DIAGRAM

*CAUTION:
disconnect
Wiring erro
dangerous
*Verify prop

WIRING INFORMATION - Gas Models

WASHER TIMER

CAM NO.	CAM THROW	FUNCTION	CONTACT VOLTAGE	CAM INFORMATION AND CONTACT DATA												
				TIME CHART - 30 SECOND INCREMENTS												
				5	10	15	20	25	30	35	40	45	50	55	60	65
0	T	MICRO INPUT 2B	24 VDC													
	B	MICRO INPUT 2A	24 VDC													
2	T	CYCLE 2 INPUT	24 VDC													
	B	CYCLE 1 INPUT	24 VDC													
4	T	SOFTENER DISPENSER	120 VAC													
	B	BLEACH DISPENSER	120 VAC													
6	T	MICRO INPUT 1B	120 VAC													
	B	RINSE	120 VAC													
8	T	MICRO INPUT 1A	120 VAC													
	B															
10	T	TIMER MOTOR	120 VAC													
	B															
12	T	WASH	120 VAC													
	B	EXTRA RINSE	120 VAC													
14	T	DRAIN PUMP	120 VAC													
	B															
				INCREMENT ANGLE												
				FUNCTION												
				COTTON/STURDY												
				DELICATES												
				EASY CARE / PERM PRESS												

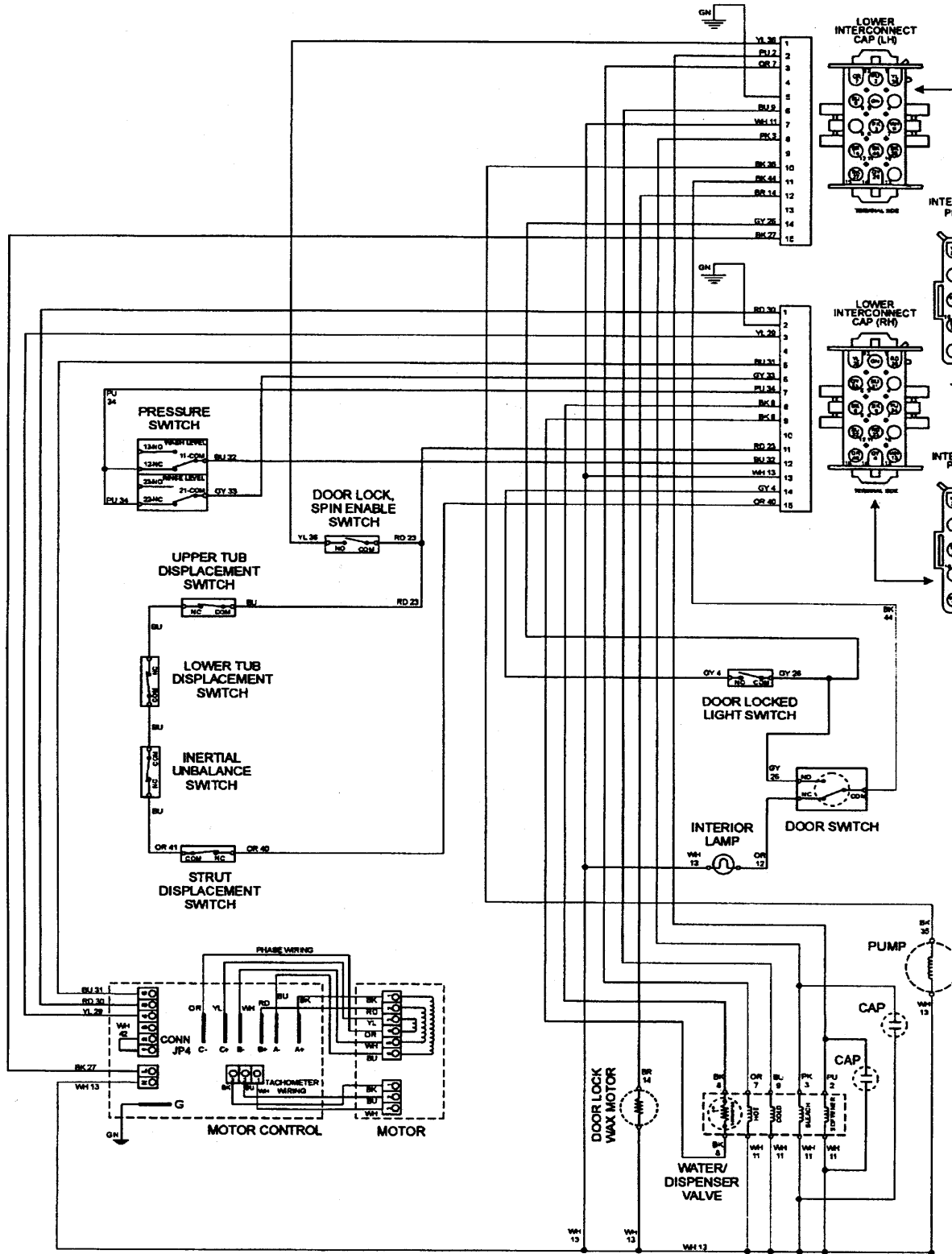
THE TIMER MOTOR, WHEN CONTROLLED BY THE MICROPROCESSOR, MUST ALWAYS COMPLETE THE ADVANCE WHEN HAND-SET OR TIMER-DRIVEN INTO THE ADVANCE PORTION OF THE 30 SECOND INTERVAL. ALL OTHER CONTACTS MUST ALSO MAKE AND BREAK DURING THE 5.8 SECOND ADVANCE.

IF EXTRA RINSE IS SELECTED, THE MICROPROCESSOR CONTROL WILL ADVANCE THE TIMER THROUGH THE OFF / EXTRA RINSE INCREMENT. IF EXTRA RINSE IS NOT SELECTED, THE TIMER WILL STOP AT THE OFF / EXTRA RINSE INCREMENT.

INTERNAL BUSSING: 0C - 2C, 4C - 6C - 8C - 10C - 12C - 14C, AND 8B - 10B

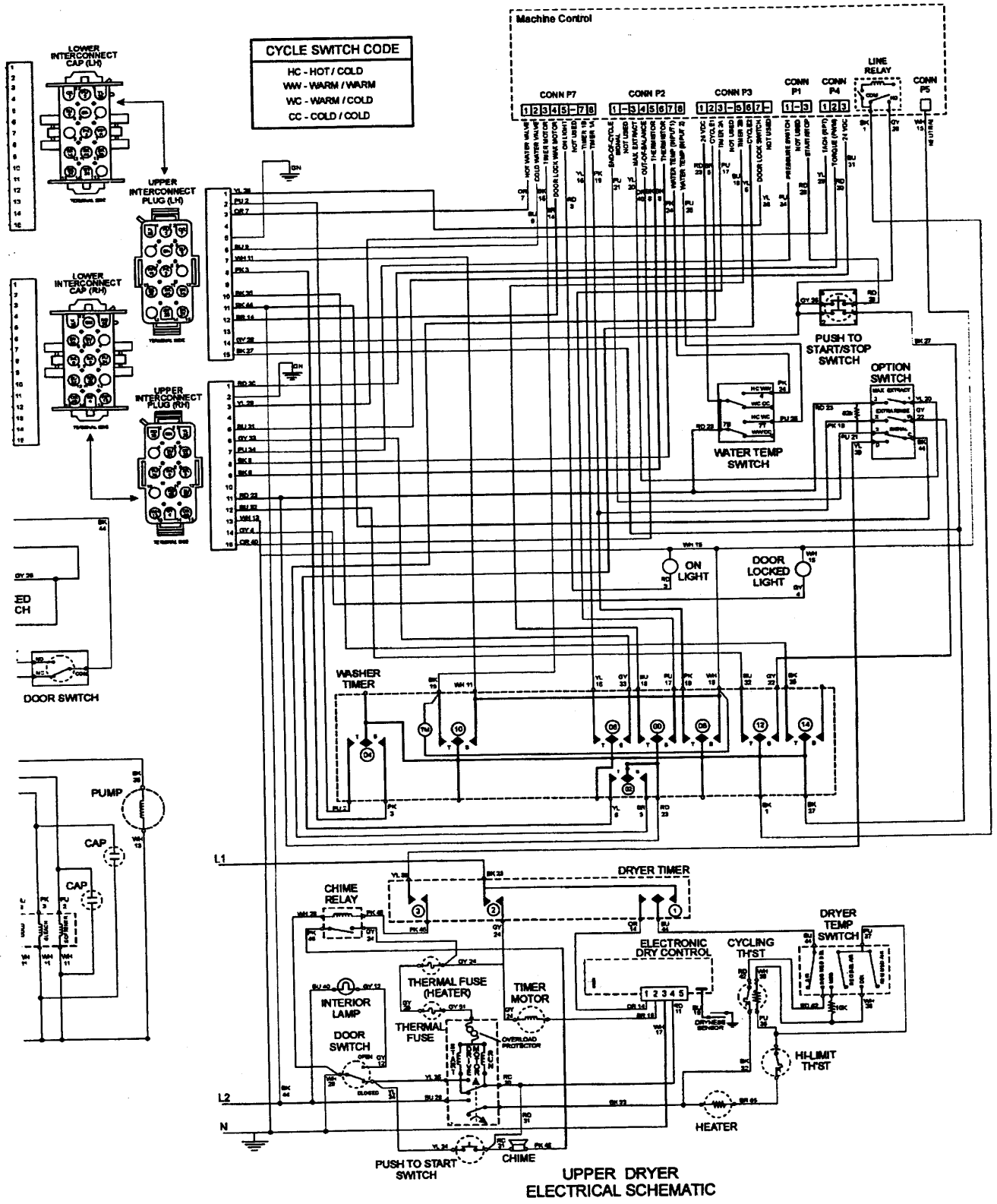
CONTACT 6-TOP MUST BREAK BEFORE CONTACT 14-BOTTOM MAKES IN INCREMENTS 9, 24, AND 39.

WIRING INFORMATION - Electric Models

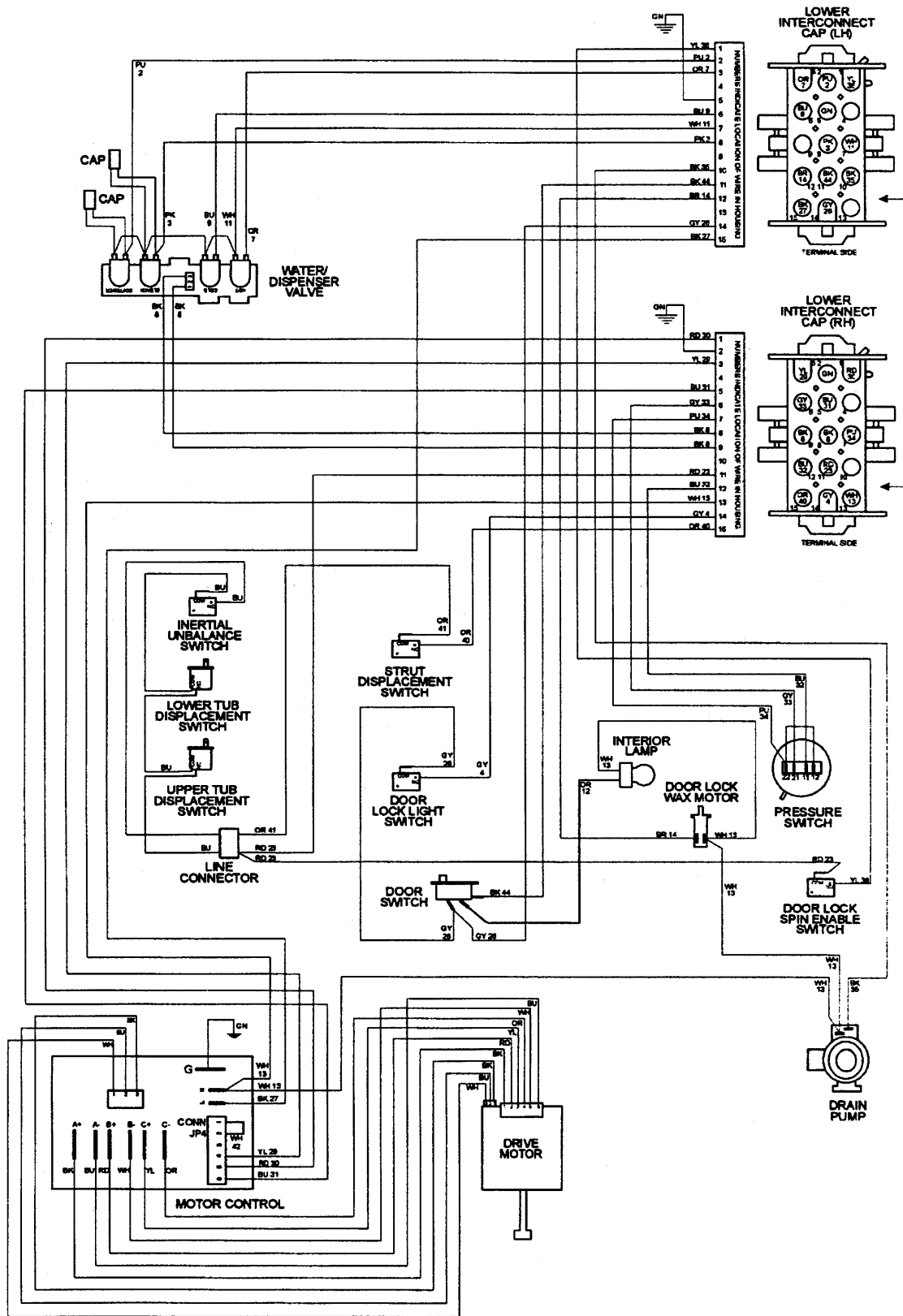


LOWER WASHER ELECTRICAL SCHEMATIC

WIRING INFORMATION - Electric Models



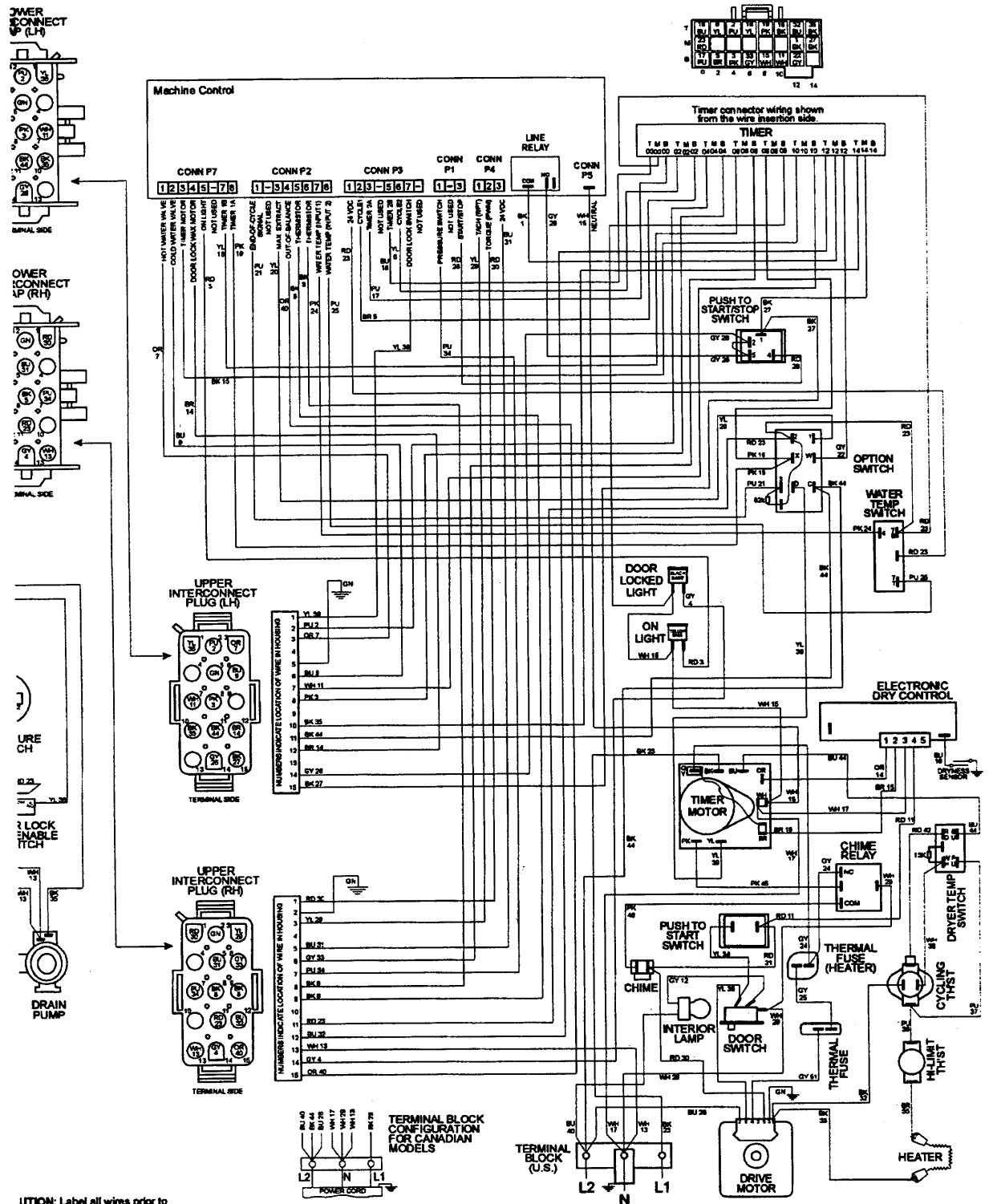
WIRING INFORMATION - Electric Models



LOWER WASHER
WIRING CONNECTION DIAGRAM

*CAUTION: Label all
disconnection when
Wiring errors can cau
dangerous operation.
*Verify proper operatk

WIRING INFORMATION - Electric Models



CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.*

UPPER DRYER WIRING CONNECTION DIAGRAM

WIRING INFORMATION - Electric Models

WASHER TIMER

CAM NO.	CAM THROW	CIRCUIT FUNCTION	CONTACT VOLTAGE	CAM INFORMATION AND CONTACT DATA												
				TIME CHART - 30 SECOND INCREMENTS												
				5	10	15	20	25	30	35	40	45	50	55	60	65
0	T	MICRO INPUT 2B	24 VDC													
	B	MICRO INPUT 2A	24 VDC													
2	T	CYCLE 2 INPUT	24 VDC													
	B	CYCLE 1 INPUT	24 VDC													
4	T	SOFTENER DISPENSER	120 VAC													
	B	BLEACH DISPENSER	120 VAC													
6	T	MICRO INPUT 1B	120 VAC													
	B	RINSE	120 VAC													
8	T	MICRO INPUT 1A	120 VAC													
	B															
10	T	TIMER MOTOR	120 VAC													
	B															
12	T	WASH	120 VAC													
	B	EXTRA RINSE	120 VAC													
14	T	DRAIN PUMP	120 VAC													
	B															
		SOFT SET DETENTS														

CAM OPEN
 CAM CLOSED
 TIMER MOTOR MAKE/BREAK - SEE NOTE BELOW
 SOFT SET DETENT

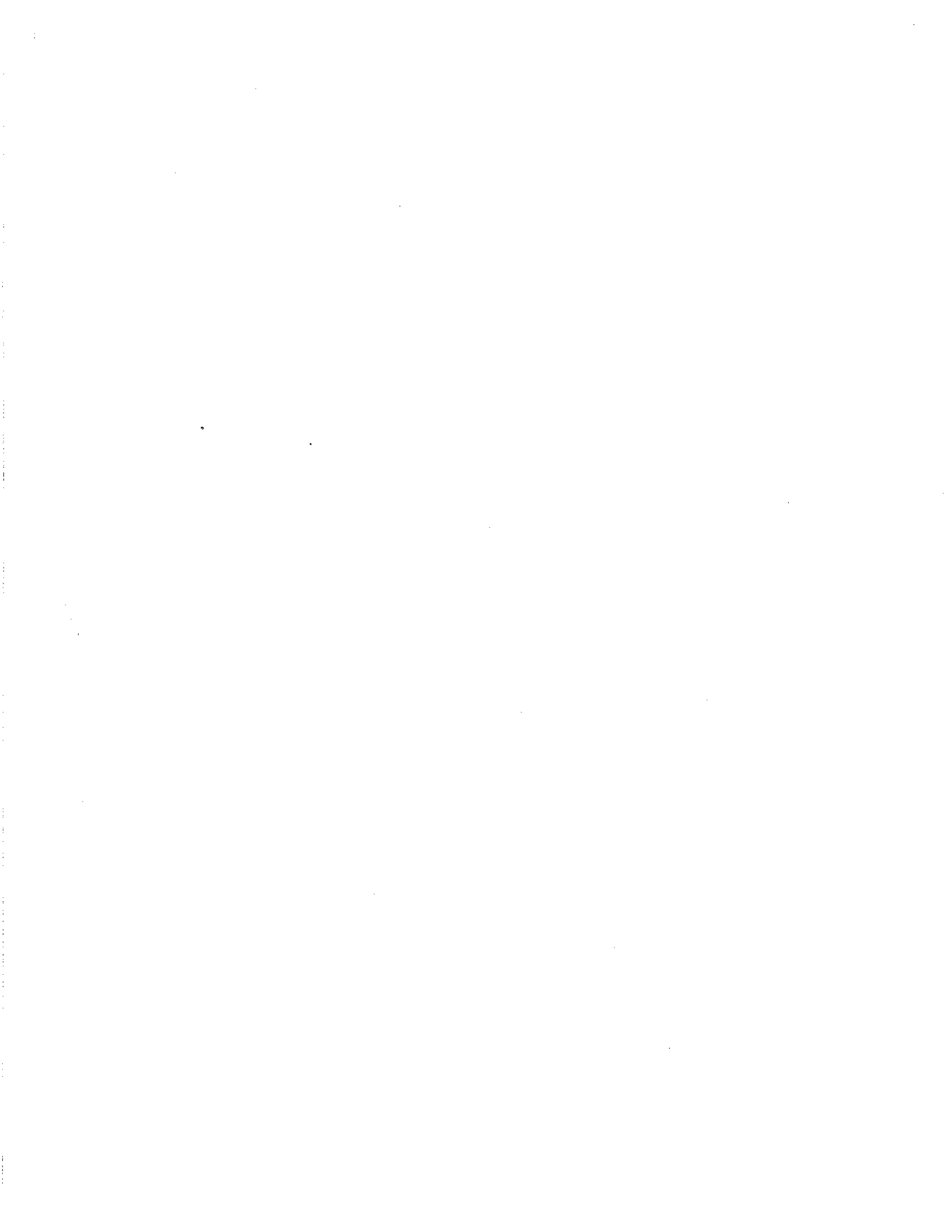
FUNCTION
 COTTONS/TURBO
 OFF
 WASH LEVEL/FILL & TUMBLE
 WASH LEVEL/FILL AND LIGHT WASH TUMBLE
 RINSE LEVEL/FILL AND BLEACH DISPENSE
 DRAIN AND SPIN 1
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 RINSE LEVEL/FILL AND TUMBLE & SOFTEN
 DRAIN AND SPIN 3
 OFF EXTRA RINSE
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 OFF
 WASH LEVEL/FILL & TUMBLE
 WASH LEVEL/FILL AND LIGHT WASH TUMBLE
 RINSE LEVEL/FILL AND BLEACH DISPENSE
 DRAIN AND SPIN 1
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 RINSE LEVEL/FILL AND TUMBLE & SOFTEN
 DRAIN AND SPIN 3
 OFF EXTRA RINSE
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 OFF
 WASH LEVEL/FILL AND TUMBLE
 WASH LEVEL/FILL AND LIGHT WASH TUMBLE
 RINSE LEVEL/FILL AND BLEACH DISPENSE
 DRAIN AND SPIN 1
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 RINSE LEVEL/FILL AND TUMBLE & SOFTEN
 DRAIN AND SPIN 3
 OFF EXTRA RINSE
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 OFF

DELICATES
 WASH LEVEL/FILL & TUMBLE
 WASH LEVEL/FILL AND LIGHT WASH TUMBLE
 RINSE LEVEL/FILL AND BLEACH DISPENSE
 DRAIN AND SPIN 1
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 RINSE LEVEL/FILL AND TUMBLE & SOFTEN
 DRAIN AND SPIN 3
 OFF EXTRA RINSE
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 OFF

EASY CARE/
 PERM PRESS
 WASH LEVEL/FILL AND TUMBLE
 WASH LEVEL/FILL AND LIGHT WASH TUMBLE
 RINSE LEVEL/FILL AND BLEACH DISPENSE
 DRAIN AND SPIN 1
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 RINSE LEVEL/FILL AND TUMBLE & SOFTEN
 DRAIN AND SPIN 3
 OFF EXTRA RINSE
 RINSE LEVEL/FILL AND TUMBLE
 DRAIN AND SPIN 2
 OFF

INCREMENT ANGLE

THE TIMER MOTOR, WHEN CONTROLLED BY THE MICROPROCESSOR, MUST ALWAYS COMPLETE THE ADVANCE WHEN HAND-SET OR TIMER-DRIVEN INTO THE ADVANCE PORTION OF THE 30 SECOND INTERVAL. ALL OTHER CONTACTS MUST ALSO MAKE AND BREAK DURING THE 5.8 SECOND ADVANCE.
 IF EXTRA RINSE IS SELECTED, THE MICROPROCESSOR CONTROL WILL ADVANCE THE TIMER THROUGH THE OFF / EXTRA RINSE INCREMENT. IF EXTRA RINSE IS NOT SELECTED, THE TIMER WILL STOP AT THE OFF / EXTRA RINSE INCREMENT.
 INTERNAL BUSSING: 0C - 2C, 4C - 6C - 8C - 10C - 12C - 14C, AND 8B - 10B
 CONTACT 6-TOP MUST BREAK BEFORE CONTACT 14-BOTTOM MAKES IN INCREMENTS 9, 24, AND 39.



MAYTAG

Maytag Appliances Sales Company

Customer Service
240 Edwards St.
Cleveland, TN 37311