Phase 5
DMC

(DUAL MICROPROCESSOR CONTROLLER)

USER'S MANUAL

080293

ADC Part No. 112119

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Retain This Manual In A Safe Place For Future Reference

Please read this manual carefully to thoroughly familiarize yourself with the Phase 5 Dual Microprocessor Controller (DMC) computer system features, operational instructions, and programming characteristics. This manual contains important information on how to employ all the features of your new **ADC** dryer in the safest and most economical way.

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

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

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

"IMPORTANT NOTE TO PURCHASER"

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

IMPORTANT

YOU MUST DISCONNECT AND LOCKOUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) **STANDARDS.**

FOR YOUR SAFETY

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

DO NOT DRY MOP HEADS IN THE DRYER.

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

WARNING

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

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

CAUTION

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

IMPORTANT

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

Dryer(s) ***must not be*** installed or stored in an area where it **will be** exposed to water and/or weather.

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

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SECTION I
INTRODUCTION

The Phase 5 Dual Microprocessor Controller (DMC) computer system is a fully programmable, highly sophisticated dryer control system. **American Dryer Corporation** has designed the Phase 5 DMC (computer) to be the most versatile and reliable coin-op control system available.

To eliminate as many moving parts as possible, **ALL** Phase 5 Dual Microprocessor Controller (DMC) computer programming is done through the membrane switch on the front of the control panel. The switch (PS) that puts the Phase 5 DMC computer into the program mode is a single, sealed, military specification program switch. This Program Switch (PS) eliminates the possibility of switch failure due to an accumulation of lint or moisture.

Phase 5 Dual Microprocessor Controller (DMC) Computer

PROGRAMMABLE

Changes in programs are made at the temperature keyboard (touch pad) selection and actual programs are displayed for verification.

ADJUSTABLE TIME

Programmable from a minimum of 1 minute to a maximum of 99 minutes in one minute increments.

COIN ACCEPTOR DENOMINATIONS (Coin Models **ONLY**)

Values of coin acceptors are programmable from a minimum value of 1 to a maximum value of 9999 for any U.S. or foreign coin denomination.

AMOUNT TO START (Coin Models **ONLY**)

Programmable from a minimum value of 1 to a maximum value of 9999 in increments of one (1).

ACCUMULATIVE TIME (Coin Models **ONLY**)

This program yields a specific value of time for any coin entry made after the "Amount To Start" has been inserted.

TIME FOR AMOUNT TO START (Coin Models **ONLY**)

This program retains the time the owner wishes to vend. The feature allows any additional purchase that is made to be calculated to the second. There is no calculation necessary by the owner. The Phase 5 Dual Microprocessor Controller (DMC) computer calculates the vended time.

ACCUMULATIVE COIN (Coin Models **ONLY**)

This program selection requires that a specific value of coin(s) be inserted for additional time, programmable for any minimum amount.

COIN COUNT (Coin Models **ONLY**)

The number of coins inserted (up to 9999), including a separate display program for optional dual coin acceptors, can be viewed through the Phase 5 DMC computer's light emitting diode (L.E.D.) display.

BAD COIN LOCKOUT (Coin Models **ONLY**)

Each coin entry is monitored. Should someone tamper with the coin acceptor or attempt to insert a foreign object, the Phase 5 DMC (computer) will "LOCK UP" and will not accept any entries until the reset time has elapsed (approximately 15-seconds). Once the reset time has expired, the Phase 5 DMC (computer) will automatically reset itself for the next coin entry.

TEMPERATURE CONVERSION

When the temperature conversion status is changed (i.e., from °F to °C), the Phase 5 Dual Microprocessor Controller (DMC) computer will automatically convert **ALL** temperature related programs/parameters from Fahrenheit to Celsius and vice versa. The Phase 5 DMC (computer) will perform this conversion within 2° C (Celsius). The programs affected are:

1. Temperature Display Mode
2. Temperature Selections
3. Cool Down Temperatures

DRYING TEMPERATURES

Any of the three (3) temperature selections (HI/LO/PP) are programmable from a minimum of 110° F to a maximum of 150° F in five-degree increments or from a minimum of 43° C to a maximum of 66° C in one-degree increments. Actual temperature programs are displayed at time of programming for verification.

COOL DOWN TIME

All three (3) temperature selections are programmable from a minimum of 0 to a maximum of 9 minutes in 1 minute increments.

COOL DOWN TEMPERATURES

In the automatic or free dry modes the cool down cycle termination is programmable from a minimum of 70° F to a maximum of 100° F in five-degree increments or from a minimum of 21° C to a maximum of 38° C in one-degree increments.

AUTOMATIC MODE **(Patent No. 4,827,627)**

This program selection uses **ADC's** patented Auto-Dry cycle. The Phase 5 Dual Microprocessor Controller (DMC) computer will calculate the percent of the dryness and read "donE" when complete. The Phase 5 DMC (computer) can be programmed to have a maximum time for the Auto Mode. The Automatic Cycle (Mode) can be used in either the "Free Dry" Mode or the "Coin" Mode.

ANTI-WRINKLE

This program selection helps keep permanent press items wrinkle free when they are not removed from the dryer promptly at the end of the drying and cooling cycle. The anti-wrinkle program settings are:

1. Guard Delay Time ..... 1 to 9 minutes
2. Guard On Time ..... 1 to 99-seconds
3. Active Guard Time ..... 1 to 99 minutes

FREE DRY MODE

In this program selection, the dryer can be started without the insertion of coins by simply pressing any one of the three (3) temperature selections. When set in the "Free Dry" Mode, the Phase 5 Dual Microprocessor Controller (DMC) computer can also be programmed to run with an Automatic Cycle (percent of dryness) or with a Timed Cycle. If the "Free Dry" program is utilized, the Phase 5 DMC computer's light emitting diode (L.E.D.) display will cycle back and forth between "FILL" and "FrEE," unless otherwise programmed. For O.P.L. dryer models, this program ("FrEE") is active (and the Phase 5 DMC computer is programmed to read only "FILL").

L.E.D. FLASH DISPLAY

Programmable to allow the L.E.D. readout to display a choice of "FILL" (no cycle in progress), "Amount To Start" (i.e., 25¢), or, in the case of free dry, "FrEE." This program selection also allows the L.E.D. display to flash back and forth every 2-seconds from "FILL" to "Amount To Start" or, in the case of free dry, from "FILL" to "FrEE."

AUDIBLE TONE

In this program selection, a tone (buzzer) will sound for each coin inserted, program entry, or at the end of the drying cycle and cooling cycle for a period of 5-seconds to indicate that the cycle is complete. Additionally, when in the Anti-Wrinkle program, the tone (buzzer) will sound for 5-seconds at the end of the "Guard On Time."

TEMPERATURE DISPLAY

This program selection enables the temperature in the dryer to be viewed (°F or °C) either while the dryer is off or running. This service feature shows that the dryer is maintaining the selected temperature.

DIAGNOSTICS

ALL major circuits, including door, microprocessor temperature sensor, heat, and motor circuits are monitored. There are also indicators installed on the outputs of each relay to easily identify failures, and the door switch has an indicator installed on the Phase 5 Dual Microprocessor Controller (DMC) computer to help indicate failure.

AUTOMATIC DRY TIME

This program selection allows the dryer to run up to a specific time. During the "AUtO" Mode or "FrEE" Dry Mode this program is only designed to limit the dryer's operation during the drying cycle.

ROTATIONAL SAFE GUARD (Optional)

This program monitors the rotation of the basket (tumbler). If the basket (tumbler) is not rotating, the Phase 5 Dual Microprocessor Controller (DMC) computer will disable **ALL** outputs, an audible tone (buzzer) will sound, and an error message will be displayed. This program selection can be programmed to be in the active mode or the inactive mode.

NOTE: This program can only be utilized on dryers manufactured with the Rotational Sensor option.

BATTERY BACKUP (Optional)

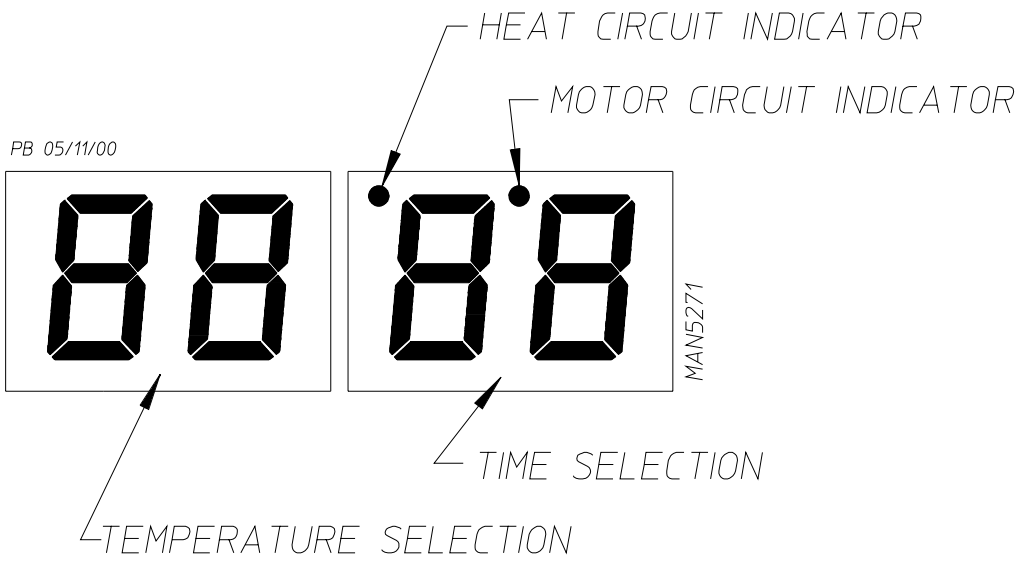
This feature allows the Phase 5 Dual Microprocessor Controller (DMC) computer to maintain its time status should a momentary power interruption occur while the dryer cycle is in progress.

DUAL USAGE (Coin/OPL)

The Phase 5 Dual Microprocessor Controller (DMC) computer board is the same computer board used for both Coin and Non-Coin (O.P.L.) applications.

SECTION II

L.E.D. DISPLAY AND CODES



A	Automatic Cycle (Slope Program Factor)
ACOn	Accumulative Coin
Adrt	Maximum Auto Dryness Time
AFAt	Amount for Additional Time
AGt	Active Anti-Wrinkle Guard Time
AtIn	Accumulative Time
AtSt	Amount to Start
AUtO	Automatic Mode (**Patent No. 4,827,627**)
b	Automatic Cycle (Heat Loss [offset] Factor)
bCLO	Bad Coin Lockout
bCrS	Bad Coin Reset
bUZ	Buzzer (Tone)
CEL	Degree in Celsius
CLCC	Clear Left Coin Count
COIn	Coin Mode
CrCC	Clear Right Coin Count
donE	Drying and Cooling Cycles Complete or Dryer is in Anti-Wrinkle Cycle

door	Door Circuit is Open*
dSFL	Dryer Sensor Circuit Failure*
FAr	Degree in Fahrenheit
FILL	No Cycle in Progress
FLS	Flash Display Active
FrEE	Free Dry Mode
GdLY	Anti-Wrinkle Delay Time
Gont	Anti-Wrinkle On Time
Grd	Anti-Wrinkle Program Active
HICd	High Cool Down
Hot	Overheating Condition*
LCC	Left Coin Count
LCdE	Left Coin Denomination
LOCd	Low Cool Down
nbUZ	No Buzzer (Tone)
nFLS	No Flash Display
nGrd	No Anti-Wrinkle
nSEn	No Rotational Sensor Selected
PdrY	Percent Dry
PL	Program Location
PLOC	Program Location Automatic Review
PPCd	Permanent Press Cool Down
PP	Permanent Press
PUSH	Amount to Start has been Inserted
	Make Temperature Selection
rCC	Right Coin Count
rCdE	Right Coin Denomination
SEFL	Rotational Sensor Circuit Failure*
SEn	Rotational Sensor Selected
tFAS	Time For Amount to Start
tInE	Timed Mode

* See **Phase 5 DMC System Diagnostics** in **Section VIII** of this manual for detailed information.

SECTION III
OPERATING INSTRUCTIONS

NOTE: Unless otherwise specified at the time of ordering, the Phase 5 Dual Microprocessor Controller (DMC) computer has been preprogrammed by the factory with the parameters shown on **page 58, page 59, and page 60**. Should program changes be found necessary, please read this Phase 5 DMC User's Manual carefully to thoroughly familiarize yourself with the Phase 5 Dual Microprocessor Controller (DMC) computer programming characteristics.

A. COIN MODELS

1. Timed Mode

   a. When turning on power or when no cycle is in progress, both light emitting diode (L.E.D.) displays will read "FILL" and/or "Amount To Start" (i.e., "25").

   b. Insert coin(s). Once the correct "Amount To Start" has been inserted, both L.E.D. displays will read "PUSH."

   c. Select the temperature for the appropriate basket/tumbler (top keys for the upper basket [tumbler] and/or lower keys for the bottom basket [tumbler]) by pushing "HI TEMP," "LO TEMP," or "PERM PRESS." The dryer will start, and the L.E.D. display for the basket/tumbler selected will read the temperature cycle selected and the drying time.

   d. The dryer will continue through the drying and cooling cycles, showing time counting downward.

NOTE: If the door is opened during a cycle, both the heat and motor will stop. However, the Phase 5 Dual Microprocessor Controller (DMC) computer will continue to count downwards in time. Continuation of the cycle will resume only after the door has been closed and any one of the three (3) temperature selection buttons for the basket/tumbler selected is again depressed.

   e. Upon completion of the drying and cooling cycles, the buzzer (tone) will sound, and the L.E.D. display will read "donE" for 5-seconds, at which time the dryer will shut off.

NOTE: If the Anti-Wrinkle Program is active ("Grd"), the L.E.D. display will remain reading "donE," and the Phase 5 Dual Microprocessor Controller (DMC) computer will proceed through the Anti-Wrinkle Program until the maximum "Guard On Time" has expired or until the door is opened, whichever comes first. The L.E.D. display will read "FILL" and/or "Amount To Start" (i.e., "25").

NOTE: If the Anti-Wrinkle Program **is not** active ("nGrd") the L.E.D. display will read "donE" until the main door is opened, at which time the L.E.D. display will read "FILL" and/or "Amount To Start" (i.e., "25").

2. Automatic Mode (Patent No. 4,827,627)

a. When turning on power or when no cycle is in progress, both light emitting diode (L.E.D.) displays will read "FILL" and/or "Amount To Start" (i.e., "25").

b. Insert coin(s). Once the correct "Amount To Start" has been inserted, both L.E.D. displays will read "PUSH."

c. Select the temperature for the appropriate basket/tumbler (top keys for the upper basket [tumbler] and/or lower keys for the bottom basket [tumbler]) by pushing "HI TEMP," "LO TEMP," or "PERM PRESS." The dryer will start, and the L.E.D. display for the basket (tumbler) selected will read the temperature cycle selected, and the drying time portion of the L.E.D. display will read "00" and count upward as time elapses.

NOTE: If the door is opened during a cycle, both the heat and motor will stop. However, the Phase 5 Dual Microprocessor Controller (DMC) computer will continue to count time. Continuation of the cycle will resume only after the door has been closed and any one (1) of the three (3) temperature selection buttons for the basket (tumbler) selected is again depressed.

d. Once the preprogrammed dryness level and cool down period have been reached or maximum automatic time has expired, whichever comes first, the buzzer (tone) will sound, and the L.E.D. display will read "donE" for 5-seconds, at which time the dryer will shut off.

NOTE: If the Anti-Wrinkle Program is active ("Grd"), the L.E.D. display will remain reading "donE," and the Phase 5 Dual Microprocessor Controller (DMC) computer will proceed through the Anti-Wrinkle Program until the maximum "Guard On Time" has expired or until the door is opened, whichever comes first. The L.E.D. display will read "FILL" and/or "Amount To Start" (i.e., "25").

NOTE: If the Anti-Wrinkle Program **is not** active ("nGrd") the L.E.D. display will read "donE" until the main door is opened, at which time the L.E.D. display will read "FILL" and/or "Amount To Start" (i.e., "25").

3. Free Dry Mode

a. When turning on power or when no cycle is in progress, both L.E.D. displays will read "FILL" and/or "FrEE."

b. Select the temperature for the appropriate basket/tumbler (top keys for the upper basket [tumbler] and/or lower keys for the bottom basket [tumbler]) by pushing "HI TEMP," "LO TEMP," or "PERM PRESS." The dryer will start, the L.E.D. display will read the temperature cycle selected, and the drying time portion of the L.E.D. display will read "00" and count upwards or downward, depending on which parameter (i.e., Auto or Timed) is programmed.

NOTE: If the door is opened during a cycle, both the heat and motor will stop. However, the Phase 5 Dual Microprocessor Controller (DMC) computer will continue to count time. Continuation of the cycle will resume only after the door has been closed and any one (1) of the three (3) temperature selection buttons for the basket (tumbler) selected is again depressed.

c. Once the preprogrammed percent dryness level and cool down period has been reached or maximum automatic time has expired, whichever comes first, the tone (buzzer) will sound, and the light emitting diode (L.E.D.) display will read "donE" for 5-seconds, at which time the dryer will shut off.

NOTE: If the Anti-Wrinkle Program is active ("Grd"), the L.E.D. display will remain reading "donE," and the Phase 5 Dual Microprocessor Controller (DMC) computer will proceed through the Anti-Wrinkle Program until the maximum "Guard On Time" has expired or until the door is opened, whichever comes first. The L.E.D. display will read "FILL" and/or "FrEE."

NOTE: If the Anti-Wrinkle Program **is not** active ("nGrd") the L.E.D. display will read "donE" until the main door is opened, at which time the L.E.D. display will read "FILL" and/or "FrEE."

SECTION IV

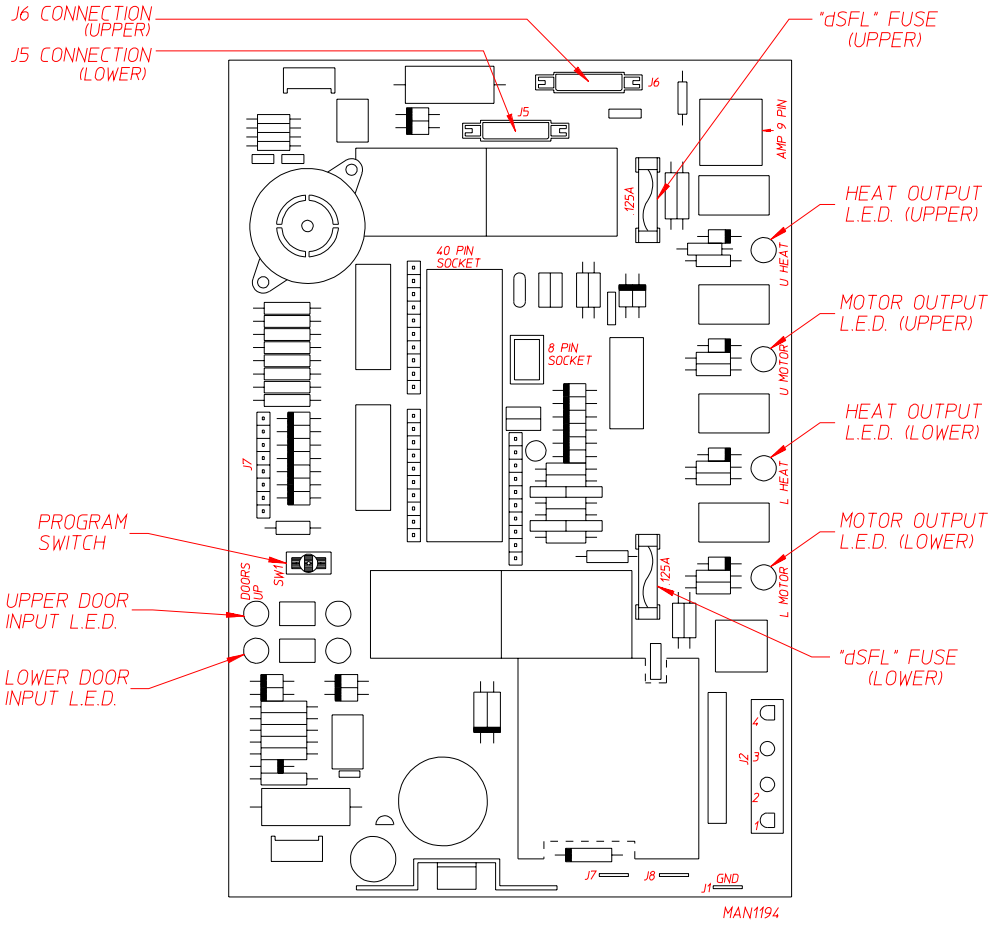
PROGRAM SELECTIONS

NOTE: Programs are stored in the Phase 5 Dual Microprocessor Controller (DMC) computer memory and are cataloged as Program Locations (PL).

TEMPERATURE DISPLAY MODE

By closing the Program Switch (PS) located on the back side of the Phase 5 DMC (computer) each light emitting diode (L.E.D.) display will read the temperature for the appropriate basket/tumbler (the upper L.E.D. display for the top basket [tumbler] and the lower L.E.D. display for the bottom basket [tumbler]) in either Fahrenheit (°F) or Celsius (°C), depending on how the temperature conversion status is set in **PL01**. The temperature display mode can be activated while the dryer is in the operating cycle, or off. While in the operating cycle, the circuit indicators are visible for troubleshooting purposes.

NOTE: The dryer **cannot** be started while the Phase 5 DMC (computer) Program Switch (PS) is closed.



LEFT COIN COUNT (LCC)/RIGHT COIN COUNT (rCC)

With the Program Switch (PS) closed (no cycle in progress...either basket/tumbler) and the light emitting diode (L.E.D.) display reading the temperature in the dryer, pressing either the "HI TEMP" or "LO TEMP" keys allows the operator to review the left coin count and the right coin count. If the operator presses the "HI TEMP" key, the Phase 5 DMC (computer) upper L.E.D. display will read "LCC" (left coin count) and the lower L.E.D. display will read the actual coin count (in units or actual number of coin inserted...not the monetary amount). To exit the left coin count leaving the existing coin count in memory, press the "PERM PRESS" key. To cancel the left coin count, while in the left coin count mode with the L.E.D. display reading "LCC," press the "HI TEMP" key twice and the coin count will be zeroed and the L.E.D. will return to the Temperature Display Mode. To view the right coin count ("rCC") which is for optional dual coin acceptor models ONLY - press the "LO TEMP" key and the upper L.E.D. display will read "rCC" (right coin count) and the lower L.E.D. display will read the actual coin count. To exit the right coin count leaving the existing coin count in memory, press the "PERM PRESS" key. To cancel the right coin count, while in the right coin count mode with the L.E.D. display reading "CC," press the "HI TEMP" key twice and the coin count will be zeroed and the L.E.D. will return to the Temperature Display Mode.

Each coin count ("LCC" and "rCC") is accumulative up to "9999". The coin counts will be retained in the Phase 5 Dual Microprocessor Controller (DMC) computer's memory up until the coin count is cleared manually, as described in the paragraph above, or if the dryer is not equipped with the optional battery backup and there is a power interruption to the Phase 5 DMC (computer).

PL01 - TEMPERATURE CONVERSION STATUS

This program controls whether the temperature-related programs will be operated in Fahrenheit (°F) or Celsius (°C). The programs affected are:

1. Temperature Display Mode
2. Selection Cycling Temperatures
3. Cool Down Temperatures

AUTOMATIC MODE (AUtO) **(Patent No. 4,827,627)**

When this parameter ("AUtO") is selected, the dryer will run for a preset level of dryness **(PL02)** or until the programmed automatic maximum time **(PL14)** has expired.

At the end of the drying cycle, the dryer will go into the Cool Down Cycle for the time period programmed **(PL04, PL06,** or **PL08)** or until the temperature has dropped to the programmed cool down temperature **(PL04, PL06,** or **PL08)**.

NOTE: Due to humidity, atmospheric pressure, percentage of extraction, etc., the desired dryness level may vary. It is suggested that the owner determine which level of dryness (90% to 100%) is best suited for his/her application by experimenting with a few test loads.

NOTE: When programming, to use the Automatic Mode ("AUtO") (**Patent No. 4,827,627**), the following parameters/programs need to be checked and/or changed accordingly:

PL01 ..... "AUtO"
..... "FrEE" or "Coin" (coins required to start)
PL02 ..... "PdrY" (Percent Dry from 90% to 100%)
PL14 ..... "Adrt" (Maximum Auto Dry Time)
PL17 ..... "A" and "B" Factors

TIMED MODE (tInE)

When this parameter is selected ('tInE") and the Phase 5 Dual Microprocessor Controller (DMC) computer has been activated, the dryer will continue to run until the preset time, including the cool down period **(PL04, PL06,** or **PL08),** has elapsed, at which time the dryer will cycle off or go into the optional Anti-Wrinkle Program.

ANTI-WRINKLE PROGRAM (Grd)

This feature can be used in conjunction with any of the three (3) operating modes (Coin Mode, Auto Mode, or the Free Dry Mode). In this program ("Grd"), when the drying and cooling cycles are completed, the dryer will shut off, the buzzer (tone) will sound, and the light emitting diode (L.E.D.) display will read "donE." If the door is not opened, the Phase 5 DMC (computer) will wait until the "Guard Delay Time" **(PL15)** has expired, at which time the clothes will be tumbled (without heat) for the programmed "Guard On Time" **(PL15)**. The Phase 5 DMC (computer) will repeat this process until the programmed "Active Guard Time" **(PL16)** has expired or until the dryer door is opened, at which time the L.E.D. display will read "FILL" and/or "Amount To Start" ("AtSt"), or "FILL" and/or "FrEE."

NOTE: When programming the use of the Anti-Wrinkle Program ("Grd"), the following parameters/programs need to be checked and/or changed accordingly:

PL01 ..... "Grd" (Anti-Wrinkle Program active)
..... "bUZ" or "nbUZ" (Buzzer [tone] active/not active)
PL15 ..... "GdLY" (Guard Delay Time)
..... "Gont" (Guard On Time)
PL16 ..... "AGt" (Active Guard Time)

BUZZ/TONE

With the Anti-Wrinkle Program active, the option is available to have the buzzer/tone ("bUZ") sound for a period of 5-seconds at the end of each "Guard On Time" Cycle, or, no buzzer/tone ("nbUZ") sound.

FREE DRY MODE (FrEE)

The Phase 5 Dual Microprocessor Controller (DMC) computer can be programmed to run without the insertion of coins. When the Phase 5 DMC (computer) is set in the "FrEE" Dry Mode, it may be programmed to run in the "AUtO" (Automatic) Mode or the "tInE" (Timed) Mode.

NOTE: When programming the use of the Free Dry Mode ("FrEE"), the following parameters/programs need to be checked and/or changed accordingly:

PL01 ..... "AUtO" (Automatic Drying Cycle) or
..... "tInE" (Timed Drying Cycle)
..... "FrEE"
PL02* ..... "PdrY" (Percent Dry)
PL11 ..... "tFAS" (Time for Amount To Start)
PL14* ..... "Adrt" (Maximum Auto Dry Time)
PL17* ..... "A" and "B" Factors

* Needs to be programmed only if **PL01** "AUtO" Cycle is chosen.

COIN MODE (Coin)

In this program mode ("Coin"), coins are required to start the dryer, even if the Phase 5 Dual Microprocessor Controller (DMC) computer is set in the Automatic Mode (**Patent No. 4,827,627**).

NOTE: When programming the use of the Coin Mode, ("Coin"), the following parameters/programs need to be checked and/or changed accordingly:

PL01 ..... "AUtO" (Automatic Drying Cycle) or
..... "tInE" (Timed Drying Cycle)
..... "Coin"
PL02* ..... "PdrY" (Percent Dry)
PL11 ..... "tFAS" (Time For Amount To Start)
PL12 ..... "AtSt" (Amount To Start)
PL14* ..... "Adrt" (Maximum Auto Dry Time)
PL17* ..... "A" and "B" Factors

*Needs to be programmed only if **PL01** "AUtO" Cycle is chosen.

FLASH DISPLAY STATUS (FLS)

When the Phase 5 Dual Microprocessor Controller (DMC) computer is set in this program status ("FLS") it allows the light emitting diode (L.E.D.) readout to display "FILL" (no cycle in progress), and the "Amount To Start" (**PL12**) or, in the case of Free Dry, "FrEE." The programming allows the L.E.D. readout to flip-flop back and forth every 2-seconds from "FILL" to "Amount To Start," or in the case of Free Dry, from "FILL" to "FrEE." If the L.E.D. display is programmed for "No Flash" ("nFLS"), the Phase 5 DMC (computer) will then prompt you on whether you would like "FILL" displayed or the "Amount To Start" ("AtSt") or, in the case of Free Dry, "FrEE."

BAD COIN LOCKOUT STATUS (bCLO)

In this program status ("bCLO"), each coin entry is monitored. Should someone tamper with the coin acceptor or attempt to insert a foreign object, the Phase 5 Dual Microprocessor Controller (DMC) computer will LOCK UP and not accept any entries until the reset time has elapsed (approximately 15-seconds). Once the reset time has expired, the Phase 5 DMC (computer) will automatically reset itself for the next coin entry.

BAD COIN RESET (bCrS)

When set in this program ("bCrS"), the Phase 5 Dual Microprocessor Controller (DMC) computer counts in milliseconds the amount of time required for a coin entry signal. If someone should tamper with the coin acceptor or attempt to insert a foreign object, the Phase 5 DMC (computer) will not accept the entry and will automatically reset itself for the next entry.

ACCUMULATIVE TIME (AtIn)

(SINGLE COIN)

In this program mode ("AtIn"), each coin inserted has a specific value in time which is determined by the "Time For Amount To Start" ("tFAS") program **(PL11)**.

Example No. 1: If the dryer is equipped with a 25¢ coin acceptor and the desired time is 30 minutes, each additional coin inserted would yield 30 minutes.

Settings: **PL09 (LCdE).....25**
PL11 (tFAS).....30
PL12 (AtSt).....25

Example No. 2: If the dryer is equipped with a 25¢ coin acceptor and the "Amount To Start" ("AtSt") is 50¢ for 30 minutes, the insertion of each additional coin would yield 15 minutes. In this application the "Time For Amount To Start" ("tFAS") is determined by a Phase 5 Dual Microprocessor Controller (DMC) computer calculation. There is no calculation required by the owner.

Formula: (LCdE/AtSt)(tFAS) = Vended Time for " LCdE"
(25¢/50¢)(30) = 15 Minutes

Settings: **PL09 (LCdE).....25**
PL11 (tFAS).....30
PL12 (AtSt).....50

(DUAL COIN)

In the time accumulation mode, when using a dual coin acceptor, once the "Amount To Start" ("AtSt") has been inserted, the addition of a coin(s) yields more time. The amount time accumulated for each additional coin inserted is determined by the "Time For Amount To Start" ("tFAS") program **(PL11).**

The "Time For Amount To Start" ("tFAS") is determined by a Phase 5 Dual Microprocessor Controller (DMC) computer calculation of additional amounts installed.

Formula: (LCdE/AtSt)(tFAS) = Vended Time

Example No. 1: Using a 10¢/25¢ dual coin acceptor with the desired "Amount To Start" ("AtSt") being 25¢ for 15 minutes, each additional 10¢ would yield the following:

Formula: (LCdE/AtSt)(tFAS) = Vended Time for "LCdE"
(10¢/25¢)(15 minutes) = 6 minutes

Settings:
PL09 (LCdE) 10
PL10 (rCdE) 25
PL11 (tFAS) 15
PL12 (AtSt) 25

Example No. 2: If the dryer is equipped with a 10¢/25¢ dual coin acceptor and the "Amount To Start" ("AtSt") is 35¢ for 14 minutes, each additional 10¢ inserted would yield 4 minutes, and each additional 25¢ would yield 10 minutes.

Formula: (LCdE/AtSt)(tFAS) = Vended Time for "LCdE"
(10¢/35¢)(14 minutes) = 4 minutes

Settings:
PL09 (LCdE) 10
PL10 (rCdE) 25
PL11 (tFAS) 14
PL12 (AtSt) 35

Example No. 3: If the dryer is equipped with a 10¢/25¢ dual coin acceptor and the desired "Amount To Start" ("AtSt") is 55¢ for 33 minutes, each additional 10¢ inserted would yield 6 minutes, and each additional 25¢ would yield 15 minutes.

Formula: (LCdE/AtSt)(tFAS) = Vended Time for "LCdE"
(10¢/55¢)(33 minutes) = 6 minutes

Settings:
PL09 (LCdE) 10
PL10 (rCdE) 25
PL11 (tFAS) 33
PL12 (AtSt) 55

NOTE: If the Total Vend Time **cannot** be divided evenly by the "Amount To Start" ("AtSt"), the "Time For Amount To Start" ("tFAS") will calculate precisely the amount of time entitled to the purchaser.

Formula: (LCdE/AtSt)(tFAS) = Vended Time for "LCdE"
(10¢/35¢)(10 minutes) = 2.85 minutes
(2 minutes and 51 seconds)

Settings: PL09 (LCdE) 10
PL10 (rCdE) 25
PL11 (tFAS) 10
PL12 (AtSt) 35

ACCUMULATIVE COIN (ACOn)

When this program mode ("ACOn") is selected, additional time can only be achieved when the "Amount For Additional Time" ("AFAt") **(PL13)** has been inserted.

NOTE: When programming, to use the Accumulative Coin Mode ("ACOn"), the following parameters/ programs need to be checked and/or changed accordingly:

Settings: PL01 ..... "ACOn" ("Accumulative Coin")
PL13 ..... "AFAt" ("Amount For Additional Time")

(SINGLE COIN ACCEPTOR)

Example No. 1: Using a 25¢ coin acceptor with the desired "Amount To Start" ("AtSt") being 50¢ for 24 minutes, the Phase 5 Dual Microprocessor Controller (DMC) computer would yield more time (24 minutes) only when an additional 50¢ is inserted. For this application, the "Time For Amount To Start" ("tFAS") program (**PL11**) is determined as follows:

Formula: (AFAt/AtSt)(tFAS) = Vended Time for "AFAt"
(50¢/50¢)(24 minutes) = 24 minutes

Settings: PL09 (LCdE) 25
PL11 (tFAS) 24
PL12 (AtSt) 50
PL13 (AFAt) 50

(DUAL COIN ACCEPTOR)

With a dual coin acceptor the "Time For Amount To Start" ("tFAS") is determined as shown below:

Formula: (AFAt/AtSt)(tFAS) = Vended Time for "AFAt"

Example No. 1: Using a 10¢/25¢ dual coin acceptor and the desired "Amount To Start" ("AtSt") is 50¢ for 20 minutes and the "Amount For Additional Time" ("AFAt") is set for 20¢, each additional 20¢ would yield 8 minutes.

Formula: (AFAt/AtSt)(tFAS) = Additional Vended Time
(20¢/50¢)(20 minutes) = 8 minutes

Settings:
PL09 (LCdE) 10
PL10 (rCdE) 25
PL11 (tFAS) 20
PL12 (AtSt) 50
PL13 (AFAt) 20

Example No. 2: If the dryer is equipped with a 10¢/25¢ dual coin acceptor and the "Amount To Start" ("AtSt") is 35¢ for 14 minutes and the "Amount For Additional Time" ("AFAt") is set for 25¢, each additional 25¢ inserted would yield 10 minutes.

Formula: (AFAt/AtSt)(tFAS) = Vended Time for "AFAt"
(25¢/35¢)(14 minutes) = 10 minutes

Settings:
PL09 (LCdE) 10
PL10 (rCdE) 25
PL11 (tFAS) 14
PL12 (AtSt) 35
PL13 (AFAt) 25

ROTATIONAL SAFE GUARD - OPTIONAL (nSEn)

This program monitors the rotation of the basket (tumbler) and works in conjunction with a special sensor (optional) located at the rear basket (tumbler) support area of the dryer. If the basket (tumbler) is not rotating (i.e., a broken belt, failed motor, etc.), the Phase 5 Dual Microprocessor Controller (DMC) computer will disable **ALL** outputs (shut the dryer down), the buzzer (tone) will sound (for time programmed), and the light emitting diode (L.E.D.) display will read a failure message "SEFL" (rotational sensor circuit failure). The failure code **must be** cancelled manually by opening and closing the Program Switch (PS). This program selection (option) can be programmed to be active ("SEn") or inactive ("nSEn").

NOTE: This parameter is programmed by the factory to be inactive ("nSEn") unless the dryer was manufactured with optional "rotational sensor."

PL02 - PERCENT DRY (PdrY)

When in the Automatic Mode, the dryer will run until the preset level of dryness has been reached or until the maximum Auto Dry Time has expired. The dryness level is programmable from a minimum of ninety percent (90%) to a maximum of one hundred percent (100%).

NOTE: Due to humidity, atmospheric pressure, water retention in the garment, etc., the desired "Percent Dry" ("PdrY") may vary. It is suggested that the owner determine which level of dryness (90% to 100%) is best suited for his/her application by experimenting with a few test loads.

PL03 - HIGH TEMPERATURE (HI°F)

The high operating temperature is programmable from a minimum of 110° F to a maximum of 150° F in five-degree increments or from a minimum of 43° C to a maximum of 66° C in one-degree increments.

PL04 - HIGH COOL DOWN TEMPERATURE/TIME (HICd)

The first part of this program controls the Cool Down Temperature when the Phase 5 Dual Microprocessor Controller (DMC) computer is used in the Automatic Mode. The Cool Down Temperature is programmable from a minimum of 70° F to a maximum of 100° F in five-degree increments or from a minimum 21° C to a maximum of 38° C in one-degree increments.

The second part of this program controls the Cool Down Time for both the Automatic Mode and Timed Mode. The Cool Down Time can be programmed from a minimum of 0 minutes to a maximum of 9 minutes.

NOTE: When the Phase 5 Dual Microprocessor Controller (DMC) computer is used in the Automatic Mode, at the end of the drying cycle, the Phase 5 DMC (computer) will start the cooling cycle for the Cool Down Time programmed or until the temperature has dropped to the programmed Cool Down Temperature, whichever of the two (2) comes first.

PL05 - LOW TEMPERATURE (LO°F)

Same as **PL03** but for Low Temperature program.

PL06 - LOW COOL DOWN TEMPERATURE/TIME (LOCd)

Same as **PL04** but for Low Cool Down Temperature/Time.

PL07 - PERMANENT PRESS (PP°F)

Same as **PL03** but for Permanent Press.

PL08 - PERM PRESS COOL DOWN TEMPERATURE/TIME (PPCd)

Same as **PL04** but for Permanent Press Cool Down Temperature/Time.

PL09 - LEFT COIN SLOT DENOMINATION (LCdE)

In the case of a single coin acceptor, this program setting is determined by the value of the coin acceptor (i.e., 25¢).

When a dual coin acceptor is used, this program setting is determined by the left coin slot coin acceptor value (lower coin value).

Program settings are from a minimum of 1 to a maximum of 9999.

PL10 - RIGHT COIN SLOT DENOMINATION (rCdE)

This program need only be set when a dual coin acceptor is used. The program setting is determined by the value of the right coin acceptor slot (higher value).

Program settings are from a minimum of 1 to a maximum of 9999.

When used in conjunction with the Left Coin Slot denomination program, the Phase 5 Dual Microprocessor Controller (DMC) computer automatically calculates the ratios necessary for coin insertion time values.

PL11 - TIME FOR AMOUNT TO START (tFAS)

This program is set for the specific value in time that will be vended for the programmed "Amount To Start" ("AtSt") the dryer. For example, if 25¢ is required to start the dryer for 10 minutes, the settings would be...

PL11 "Time For Amount To Start" ..... "tFAS" = 10
PL12 "Amount To Start" ..... "AtSt" = 25

In addition, with the "Time For Amount To Start" ("tFAS") and the "Amount To Start" (**PL12 -** "AtSt") programmed along with the type of coin acceptor (denominations) on the dryer (i.e. 10¢/25¢), the Phase 5 Dual Microprocessor Controller (DMC) computer will do **ALL** calculations and vend the correct amount of time for any coin inserted after the initial amount to start has been inserted...including both Accumulative Time and Accumulative Coin program settings. For example, if a dryer is equipped with a 10¢/25¢ dual coin acceptor and the desired "Amount To Start" ("AtSt") is 55¢ for 33 minutes ("tFAS"), with the Phase 5 DMC (computer) set for Accumulative Time, after the initial "Amount To Start" is inserted (55¢), each additional 10¢ inserted would yield 6 minutes, and each additional 25¢ inserted would yield 15 minutes.

PL12 - AMOUNT TO START (AtSt)

This program sets the "Amount To Start" the dryer and can be programmed from a minimum of 1 to a maximum of 9999.

PL13 - MINIMUM AMOUNT FOR ADDITIONAL TIME (AFAt)

This program need only be set when the Phase 5 Dual Microprocessor Controller (DMC) computer is set in the "Accumulative Coin" ("ACOn") mode **(PL01)**. The value set for this program is what will have to be inserted for more time after the "Amount To Start" ("AtSt") has been inserted.

Example No. 1: "Amount To Start" ("AtSt") is 50¢ for 30 minutes and an additional 50¢ is required for more time. In this example **PL13 should be** set for 50¢.

PL14 - MAXIMUM TIME FOR AUTOMATIC DRY (Adrt)

This program is used only when the Phase 5 Dual Microprocessor Controller (DMC) computer is set in the Automatic Mode. This program controls the maximum time the dryer will run even if the Dryness Level program **(PL02)** has not been reached.

PL15 - ANTI-WRINKLE TIMING

1. Guard Delay Time (GdLY)

   This program controls the Dwell (stop) Time and activation of the Anti-Wrinkle "Guard On Time" ("Gont"). The Dwell (stop) Time can be programmed from a minimum of 1 minute to a maximum of 9 minutes in 1 minute increments.

2. Guard On Time (Gont)

   This setting controls the amount of time that the basket (tumbler) will turn, without heat, when the Anti-Wrinkle is active ("Grd"). The "Guard On Time" ("Gont") is programmable from a minimum of 1-second to a maximum of 99-seconds in 1-second increments.

PL16 - ACTIVE GUARD TIME (AGt)

This program controls the maximum time that the Anti-Wrinkle Program will be active and is programmable from a minimum of 1 minute to a maximum of 99 minutes in 1 minute increments.

PL17 - "A" FACTOR AND "B" FACTOR

This location will include the Auto-Cycle parameters. These parameters are necessary to allow the Phase 5 Dual Microprocessor Controller (DMC) computer to calculate the percentage of dryness in the basket (tumbler). The "A" Factor is adjustable from 1 to 9. The "B" Factor is adjustable from 1 to 99.

These parameters are the factors that the Phase 5 Dual Microprocessor Controller (DMC) computer utilizes when programmed for an "Automatic Drying Cycle." The "A" Factor slope program pertains to the thermal characteristic of each model dryer. The "B" Factor, heat loss (offset) program, also pertains to the thermal characteristics of each model dryer. This factor setting is dependent upon the model dryer and type of heating unit.

The "A" Factors and "B" Factors have not been preprogrammed by the factory and **must be** programmed if the Phase 5 DMC (computer) programming is changed to be used in the Automatic Mode. The "A" Factor and "B" Factor **must be** programmed for the particular dryer model and heating unit as shown in the "A" and "B" Factor table on **page 58** of this manual.

SECTION V
PROGRAMMING INSTRUCTIONS

A. INTRODUCTION TO PROGRAMMING

The various program selections or parameters are stored in the computer memory and are cataloged as "Program Locations" (PL) 01 through 17. These parameters (programs) have been preprogrammed by the factory as noted on **page 52, page 53,** and **page 54** of this manual. The various program selections available are outlined in **Section IV** of this manual.

ALL programming is done through the keyboard (touch pad) selection buttons on the front of the control panel. To change the programs (parameters) or to put the Phase 5 Dual Microprocessor Controller (DMC) computer in the Temperature Display Mode or the Coin Count Display Mode, the Program Switch (PS), located on the back side of the Phase 5 DMC (computer) **must be** put into the closed (flipped to the right) position (PSC).

First make sure there is no cycle in progress (in either the upper basket [tumbler] or the lower basket [tumbler]) and that the light emitting diode (L.E.D.) display reads "FILL" and/or "Amount To Start," or "FILL" and/or "FrEE." Close the Program Switch (PSC). Both L.E.D. displays will now read the temperature in each basket/tumbler (i.e., 72° F). From this point, any of the 17 Program Locations can be accessed by pressing the upper keyboard (touch pad) "PERM PRESS" key once, at which time the upper L.E.D. display will read **"PL01"** and the lower L.E.D. display will be blank.

To alter the programming, the operator must first locate the program location or parameter to be changed. To advance to the specific program (parameter) location press the "HI TEMP" key until the desired program location is displayed (i.e. **PL01, PL02,** etc.). The "LO TEMP" key will advance the program locations downward (i.e., **PL11, PL10,** etc.). Once the correct program location is displayed and access to change is desired, press the "PERM PRESS" key. The "PERM PRESS" key provides two (2) functions:

1. Allows access into a Program Location.

2. Advances to next bit (part of program location) or next location.

NOTE: When in the program locations, the lower keyboard (touch pad) "PERM PRESS" functions the same as the upper "PERM PRESS" key.

Once the "PERM PRESS" key is pressed to gain access into a specific program location, the lower L.E.D. display will read (show) the parameter (program) set (i.e., the upper L.E.D. display reads **PL01** and the lower L.E.D. display reads "FAr").

IMPORTANT: When in a Program Location and either "PERM PRESS" key is pressed, whatever parameter is displayed in the lower L.E.D. display **will be** stored in the computer's memory and programming is advanced to the next step (bit) or Program Location.

The "HI TEMP" or "LO TEMP" keys (either upper or lower while in a Program Location) provide the following functions:

1. Change numeric values..."HI TEMP" increases values (i.e, 1, 2, 3, etc.) and "LO TEMP" decreases values (i.e., 3, 2, 1).

2. Flip-flop for status changes...by pressing either the upper or lower "HI TEMP" or "LO TEMP" keys, a status (non-numeric parameter) will revert back and forth no matter which of the "HI TEMP" or "LO TEMP" keys are pressed.

If the change is a numerical one (i.e., time or temperature), the operator must now press the "HI TEMP" key to increase the number value, or press the "LO TEMP" key to lower/decrease the number value. Pressing the "PERM PRESS" key will store the change and advance to the next step (bit) or Program Location.

NOTE: To accelerate increase/upward value, press and hold in the "HI TEMP" key. To accelerate decrease/downward value, press and hold in the "LO TEMP" key.

NOTE : When making numerical changes, please keep in mind to stay within the programming limits shown.

If the change to be made is a status change (i.e., to change from "FAr" to "CEL") simply press either the "HI TEMP" key or "LO TEMP" key and the L.E.D. display will revert back and forth between status choices (i.e., "Grd" and "nGrd"). Once the correct status is displayed, pressing either of the "PERM PRESS" keys will store the change and advance you to the next step (bit) or Program Location.

NOTE: While in a Program Location and an error is made where the parameter shown was incorrect and the "PERM PRESS" key was pressed whereby the display advanced to the next step (bit)...you **cannot** go backwards. To change the incorrect parameter, the operator must either exit and re-enter the programming mode (open and close the Program Switch [PS]) and start the programming again or...continue through the steps (bits) in that location by pressing the "PERM PRESS" key until the next Program Location is displayed (i.e., **PL02**) and then go back to the beginning of the original errored location (i.e., press "LO TEMP" key **to PL01**) and re-enter (press the "PERM PRESS" key) that location and start over again.

Once the change or changes desired are made, to exit the Program Mode open the Program Switch (PS).

NOTE: You can exit the programming mode at any time (even if you are in the middle of a program location) by simply opening the Program Switch (PS). However, if a change was made be sure the "PERM PRESS" key is pressed before opening the Program Switch (PS) to insure the change was stored in the computer's memory.

B. PROGRAMMING (FLOWCHARTS)

This section explains the programming through the use of flowcharts. A flowchart is nothing more than a diagram of the programming process.

Represents the microprocessor L.E.D. display. For example, if the flowchart shows the symbol "FILL," the computer L.E.D. display will read the same.

Represents the key on the label that is to be pressed. For example, if flowchart shows "HI TEMP," you would press that key on the label.

Represents the program path.

On the side of each flowchart is an explanation of the chart procedure and, in some cases, the programming limits.

Listed below, is an index of the flowcharts on the following pages.

Flowchart Titles — Page

Entering and Exiting Program Mode 26
Programming
A. Temperature Display Mode 28
B. Left Coin Count 29
C. Right Coin Count 30
D. Program Location 01 (PL01) 31
E. Program Location 02 (PL02) 35
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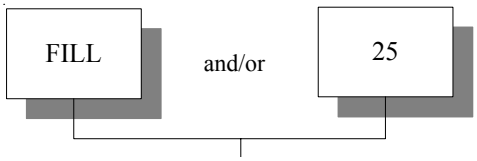
G. Program Location 04 (PL04) 37
H. Program Location 05 (PL05) 38
I. Program Location 06 (PL06) 39
J. Program Location 07 (PL07) 40
K. Program Location 08 (PL08) 41
L. Program Location 09 (PL09) 42
M. Program Location 10 (PL10) 43
N. Program Location 11 (PL11) 44
O. Program Location 12 (PL12) 45
P. Program Location 13 (PL13) 46
Q. Program Location 14 (PL14) 47
R. Program Location 15 (PL15) 48
S. Program Location 16 (PL16) 49
T. Program Location 17 (PL17) 50

C. ENTERING AND EXITING PROGRAM MODE

(No Cycle In Progress)

Dryer off
Displays read...



(Amount To Start)

(Close Program Switch)

To enter temperature display

Displays reads...

74 F

(Dryer tumbler temperature)

To enter program locations press the "PERM PRESS" keyboard (touch pad) selection key.

PERM PRESS

Upper display reads...
(lower display is blank)

PL01

To advance to next program location press the "HI TEMP" selection key.

HI TEMP

Upper display reads...
(lower display is blank)

PL02

To accelerate advance, press and hold in the "HI TEMP" selection key.

HI TEMP

PL03

PL04

PL05

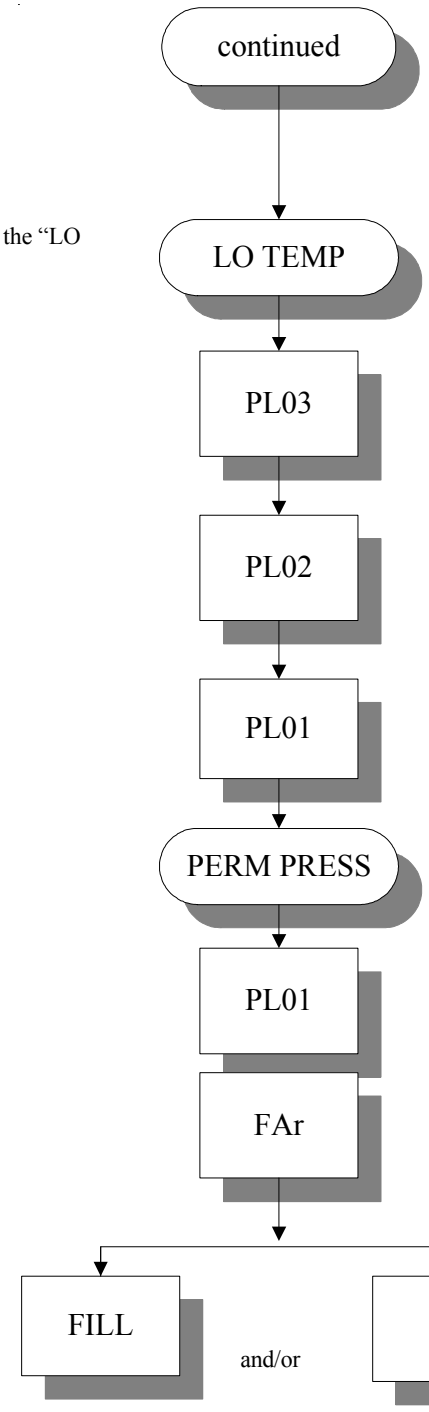
To revert back to lower program locations push the "LO TEMP" selection key.

LO TEMP

Upper display reads...

PL04

continue to next page



To accelerate advance, press and hold in the "LO TEMP" selection key.

Upper display reads program locations and will advance downward until the "LO TEMP" selection key is released.

To enter a specific program location (i.e. **PL01**) press the "PERM PRESS" selection key.

Upper display will read program location selected (i.e., PL01) and lower display will read specific program location parameter called up.

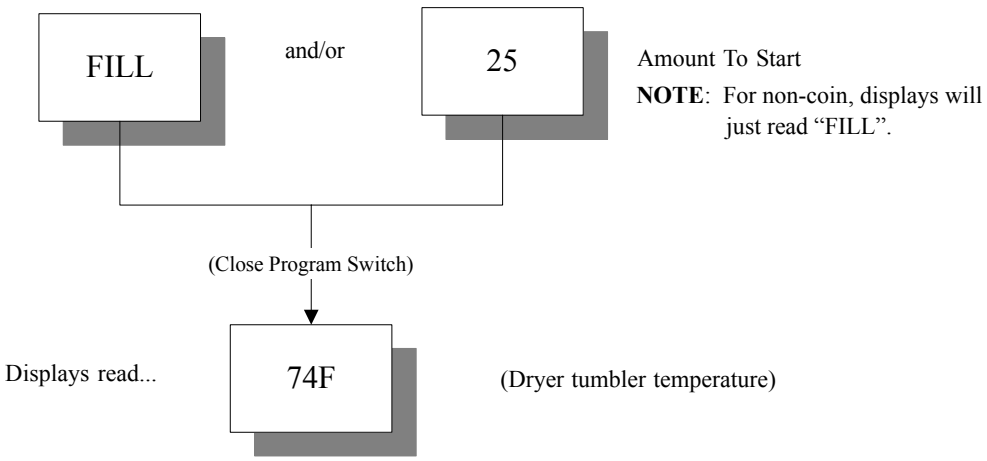
To exit program mode, open program switch. Display reads...

(i.e., Amount To Start)

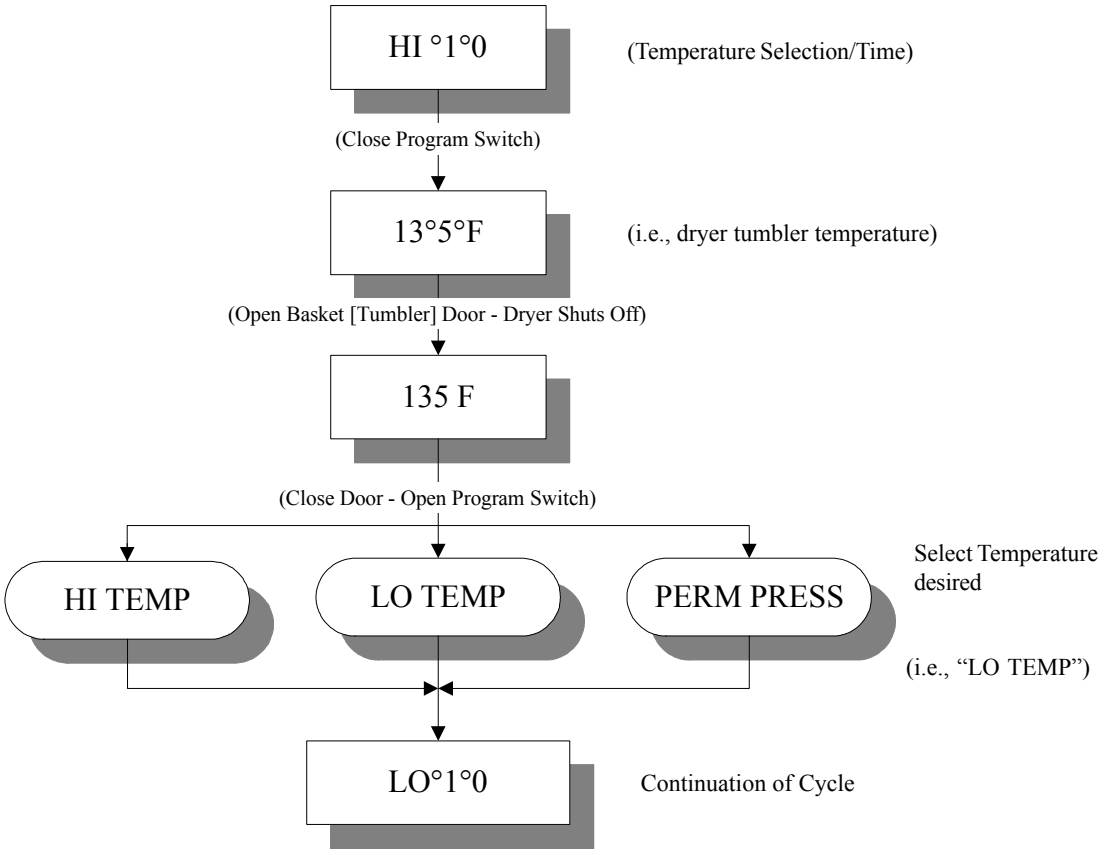
SECTION VI
PROGRAMMING

A. TEMPERATURE DISPLAY MODE

(No Cycle In Progress)

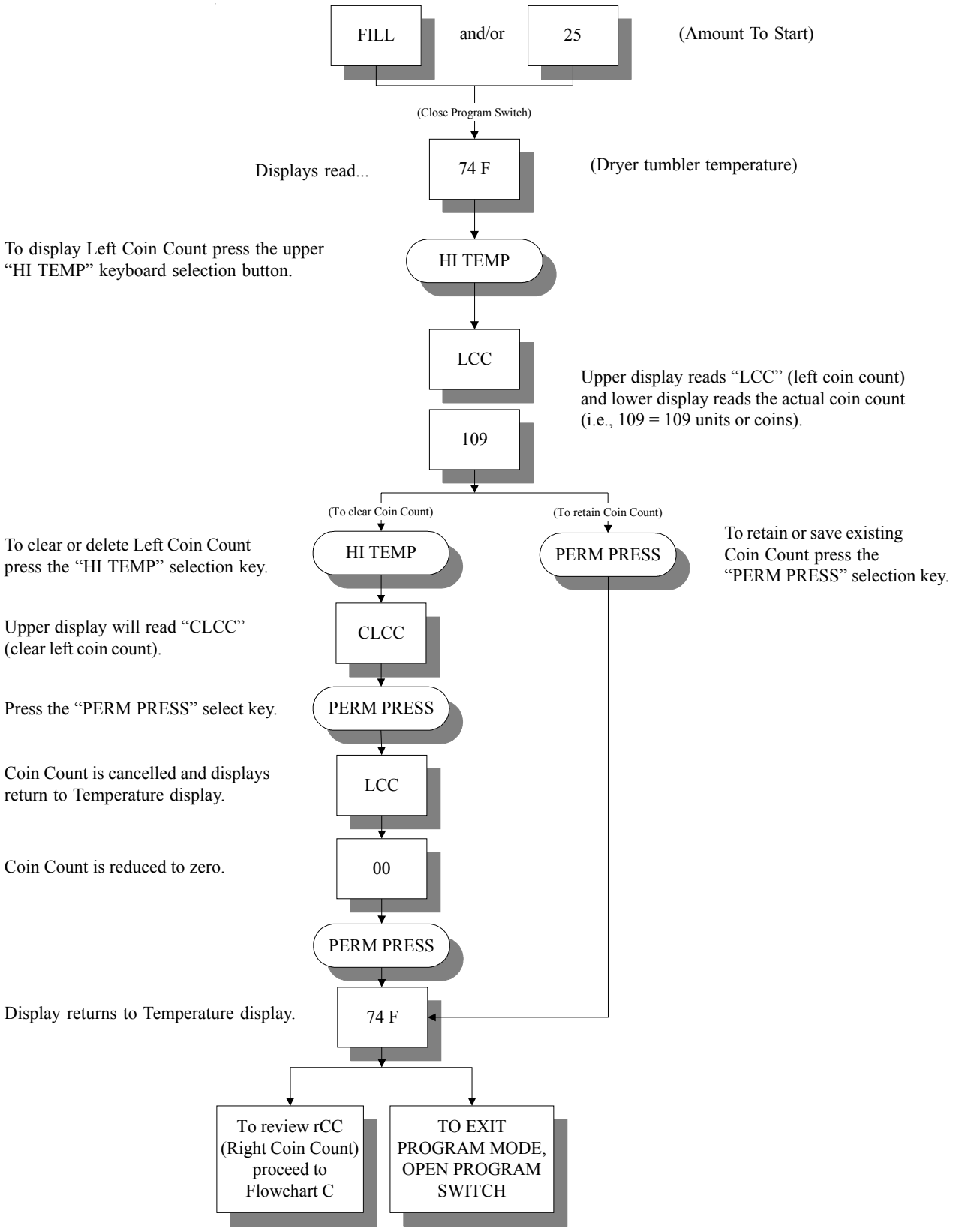


(Cycle In Progress)



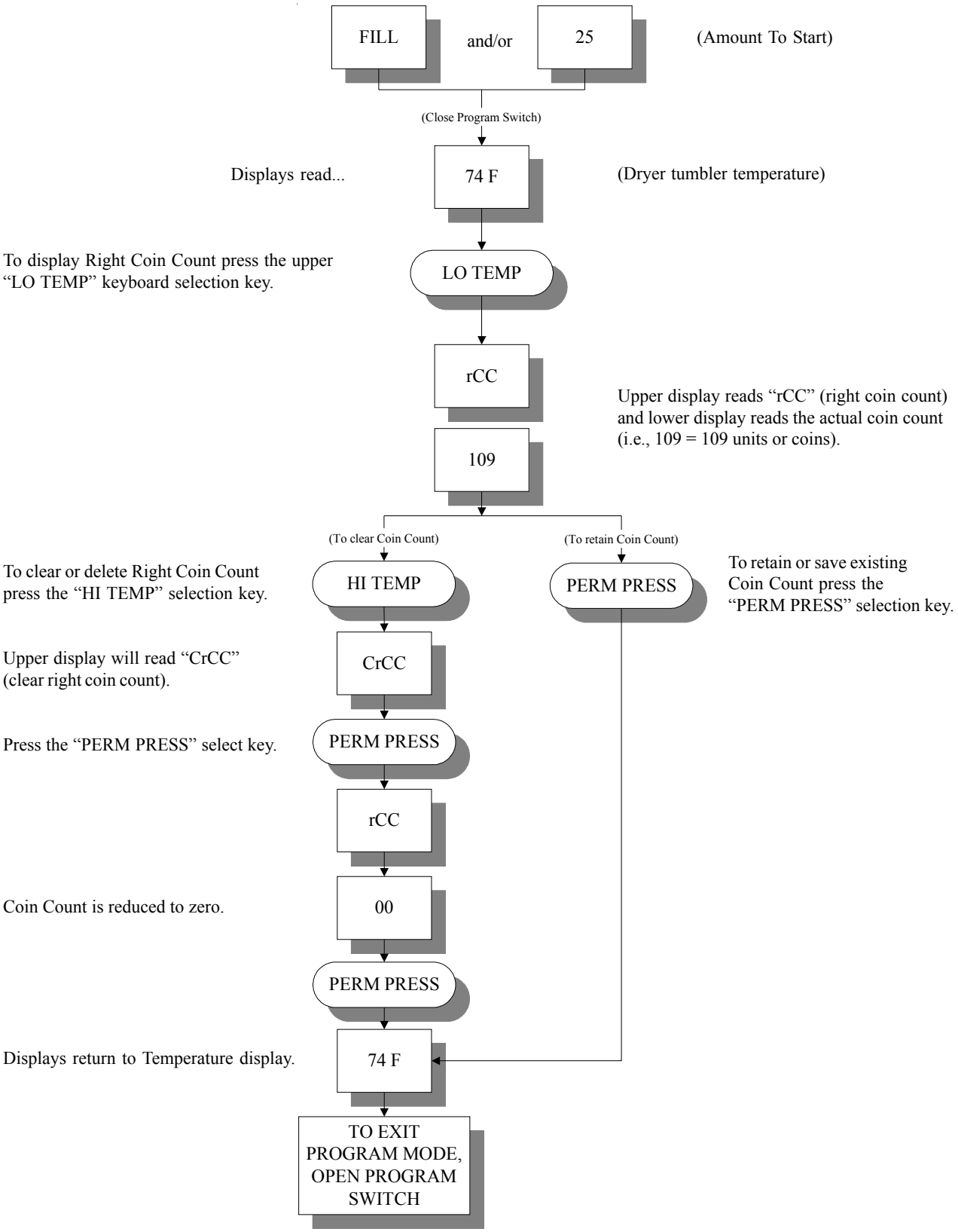
B. LEFT COIN COUNT

(No Cycle In Progress)

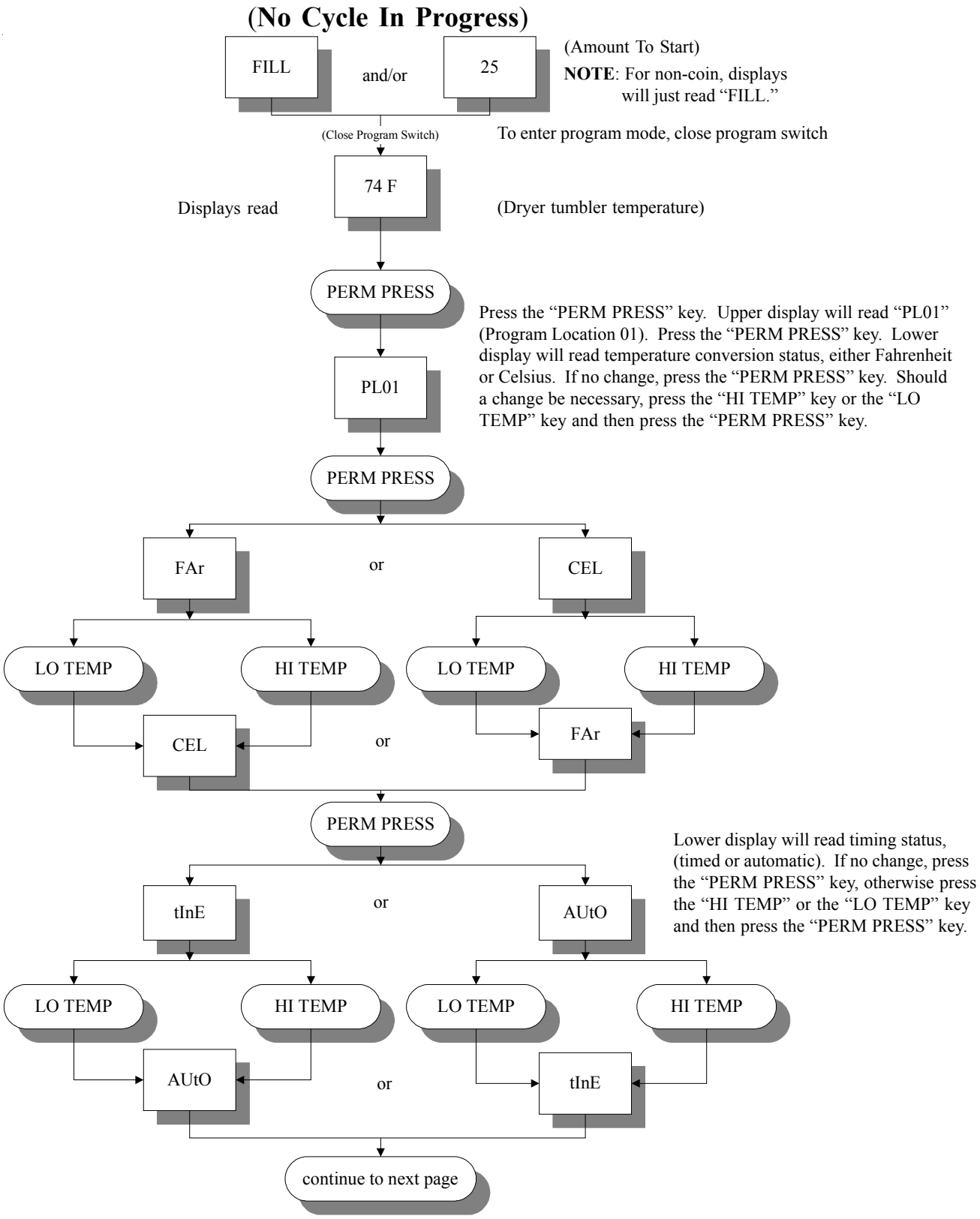


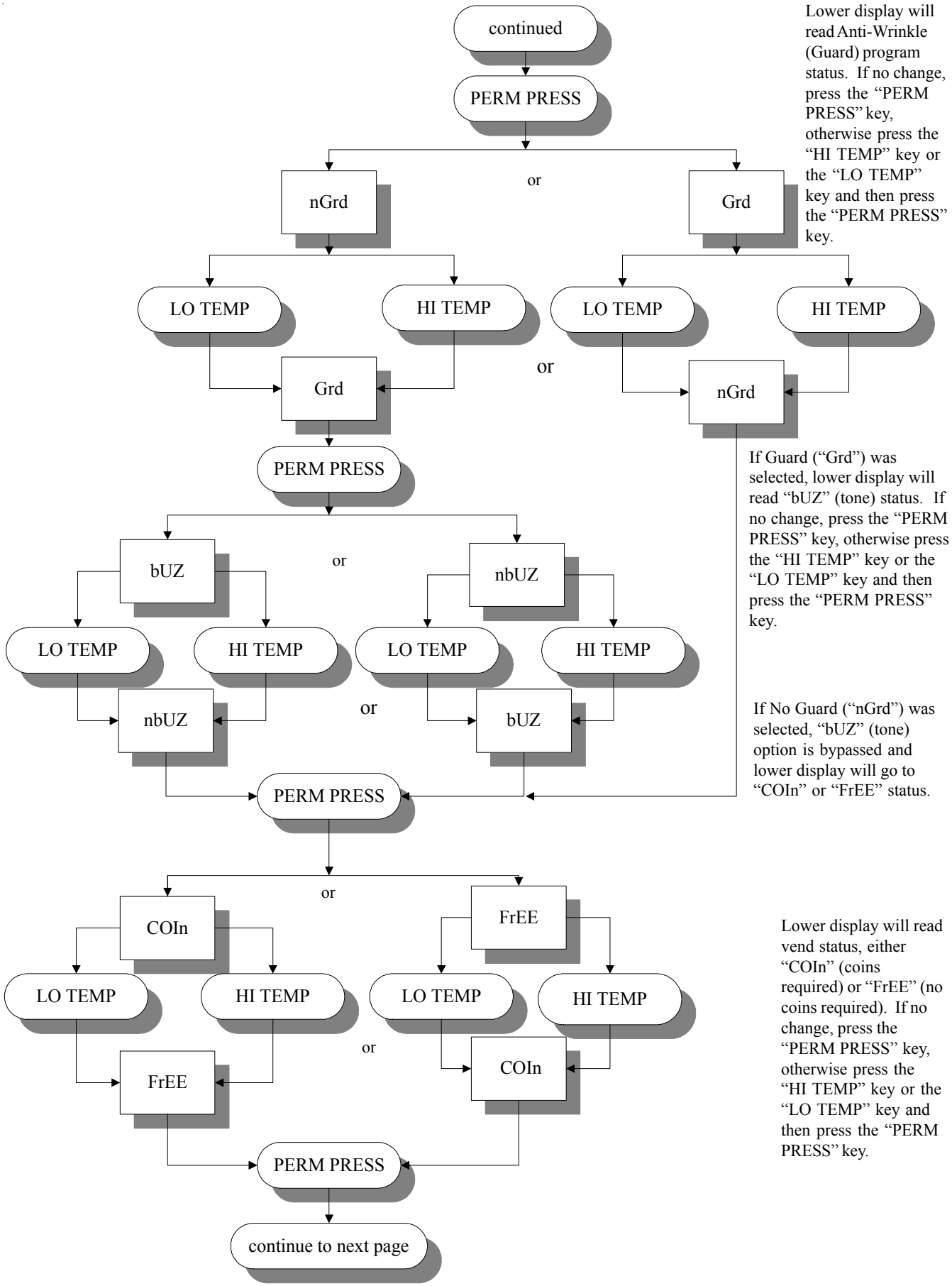
C. RIGHT COIN COUNT

(No Cycle In Progress)



D. PROGRAM LOCATION 01 (PL01)





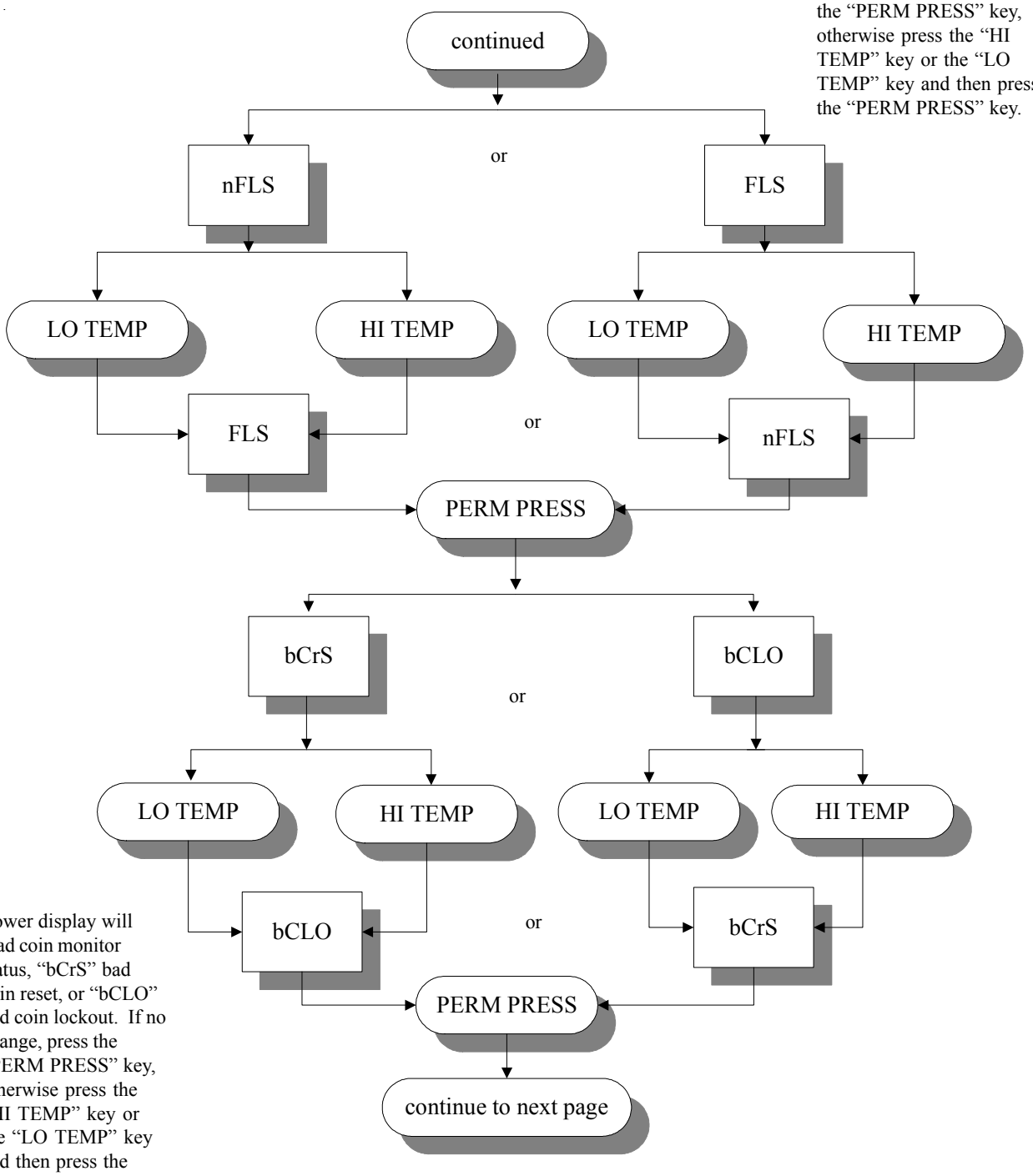
Lower display will read Anti-Wrinkle (Guard) program status. If no change, press the "PERM PRESS" key, otherwise press the "HI TEMP" key or the "LO TEMP" key and then press the "PERM PRESS" key.

If Guard ("Grd") was selected, lower display will read "bUZ" (tone) status. If no change, press the "PERM PRESS" key, otherwise press the "HI TEMP" key or the "LO TEMP" key and then press the "PERM PRESS" key.

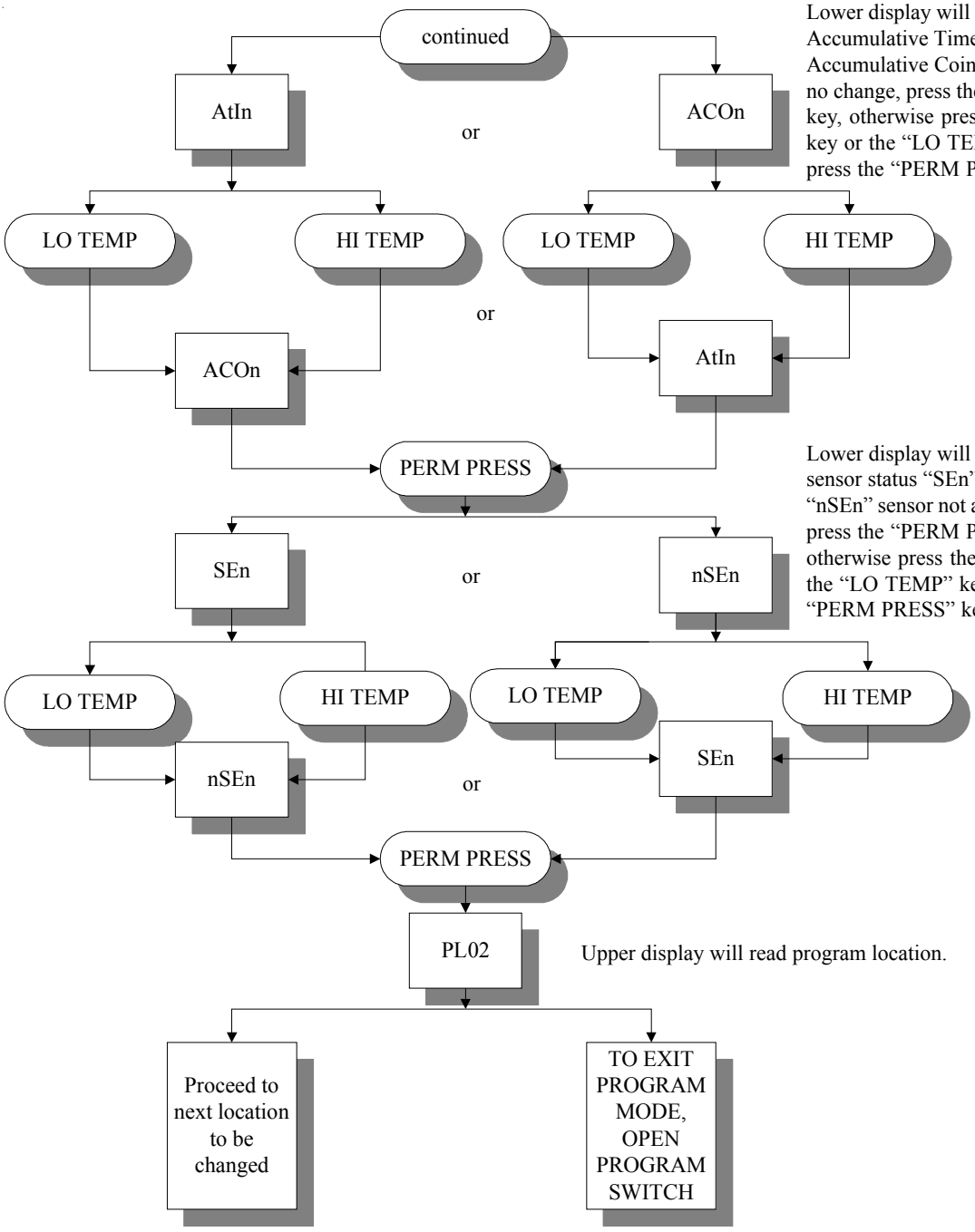
If No Guard ("nGrd") was selected, "bUZ" (tone) option is bypassed and lower display will go to "COIn" or "FrEE" status.

Lower display will read vend status, either "COIn" (coins required) or "FrEE" (no coins required). If no change, press the "PERM PRESS" key, otherwise press the "HI TEMP" key or the "LO TEMP" key and then press the "PERM PRESS" key.

Lower display will read L.E.D. display status, either no flash (“nFLS”) or flash (“FLS”). If no change, press the “PERM PRESS” key, otherwise press the “HI TEMP” key or the “LO TEMP” key and then press the “PERM PRESS” key.



Lower display will read coin monitor status, “bCrS” bad coin reset, or “bCLO” bad coin lockout. If no change, press the “PERM PRESS” key, otherwise press the “HI TEMP” key or the “LO TEMP” key and then press the “PERM PRESS” key.



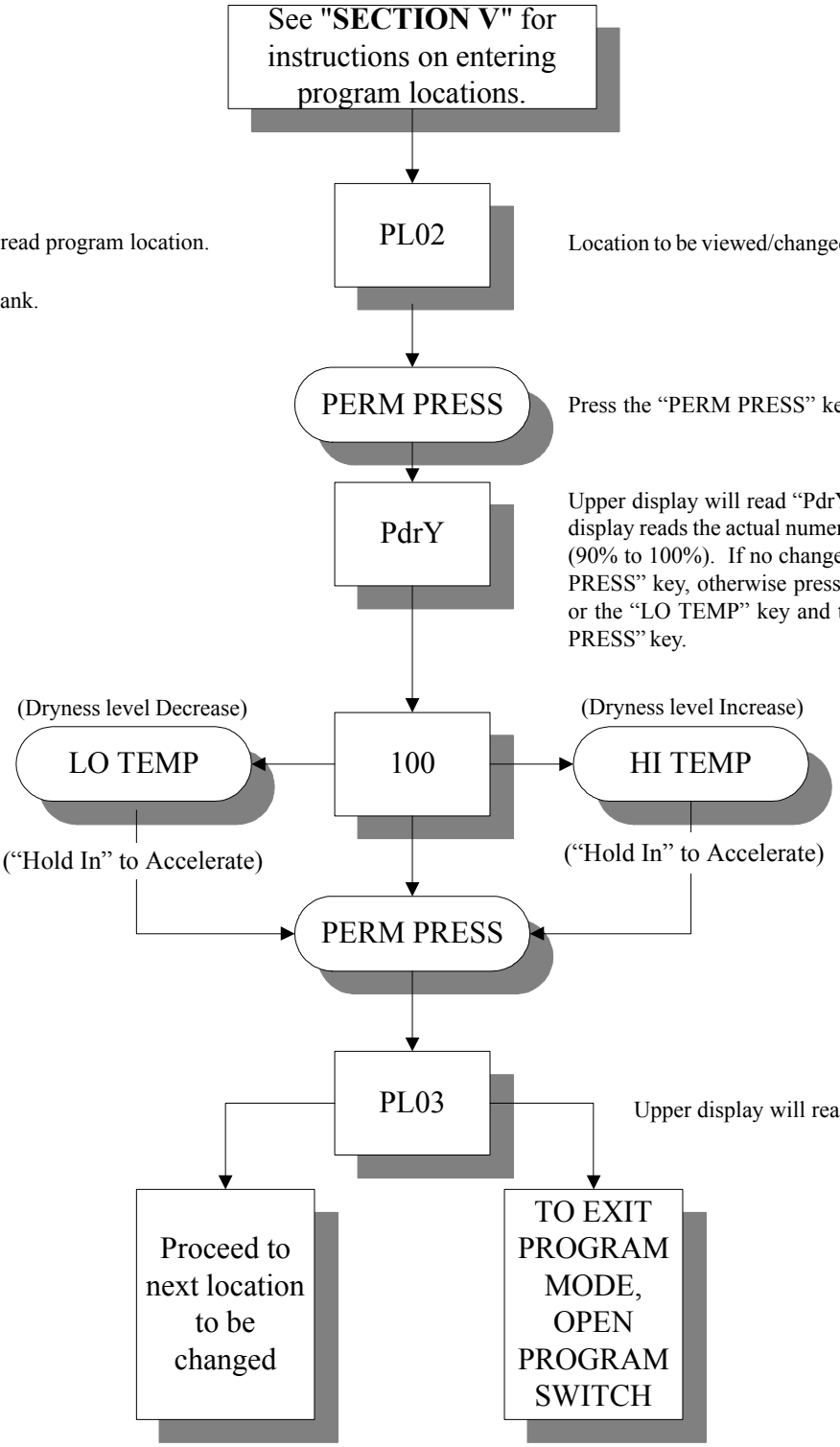
Lower display will read either Accumulative Time ("AtIn") or Accumulative Coin ("ACOn") status. If no change, press the "PERM PRESS" key, otherwise press the "HI TEMP" key or the "LO TEMP" key and then press the "PERM PRESS" key.

Lower display will read basket rotational sensor status "SEn" sensor active or "nSEn" sensor not active. If no change, press the "PERM PRESS" key, otherwise press the "HI TEMP" key or the "LO TEMP" key and then press the "PERM PRESS" key.

Upper display will read program location.

E. PROGRAM LOCATION 02 (PL02)

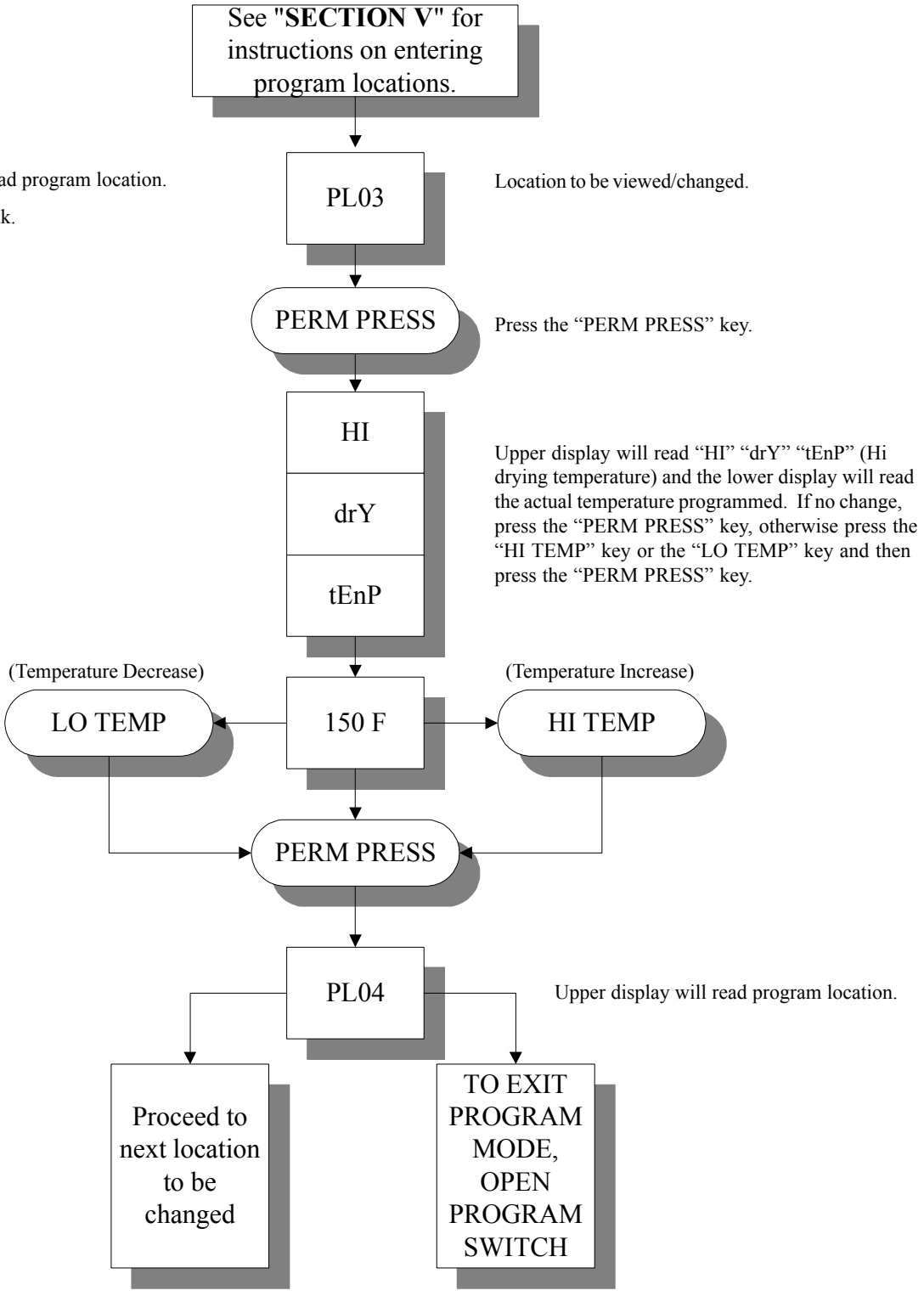
(Percentage of Dryness)



Summary: The percent dryness is programmable from a minimum of 90% to a maximum of 100%.

F. PROGRAM LOCATION 03 (PL03)

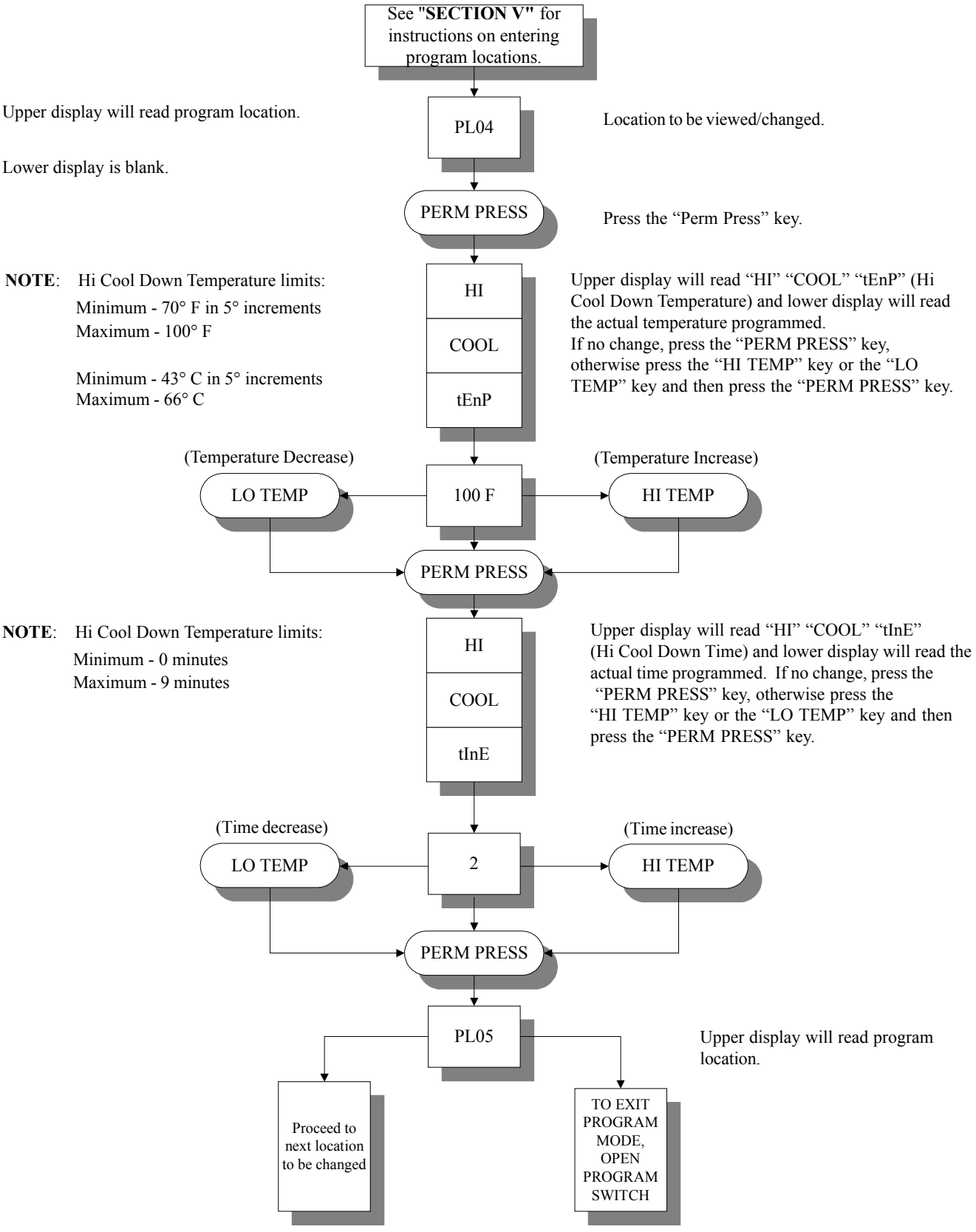
(Hi Dry Temperature)



Summary: HI Temp is programmable from a minimum of 110° F to a maximum of 150° F in 5° increments or from a minimum of 43° C to a maximum of 66° C in 1° increments.

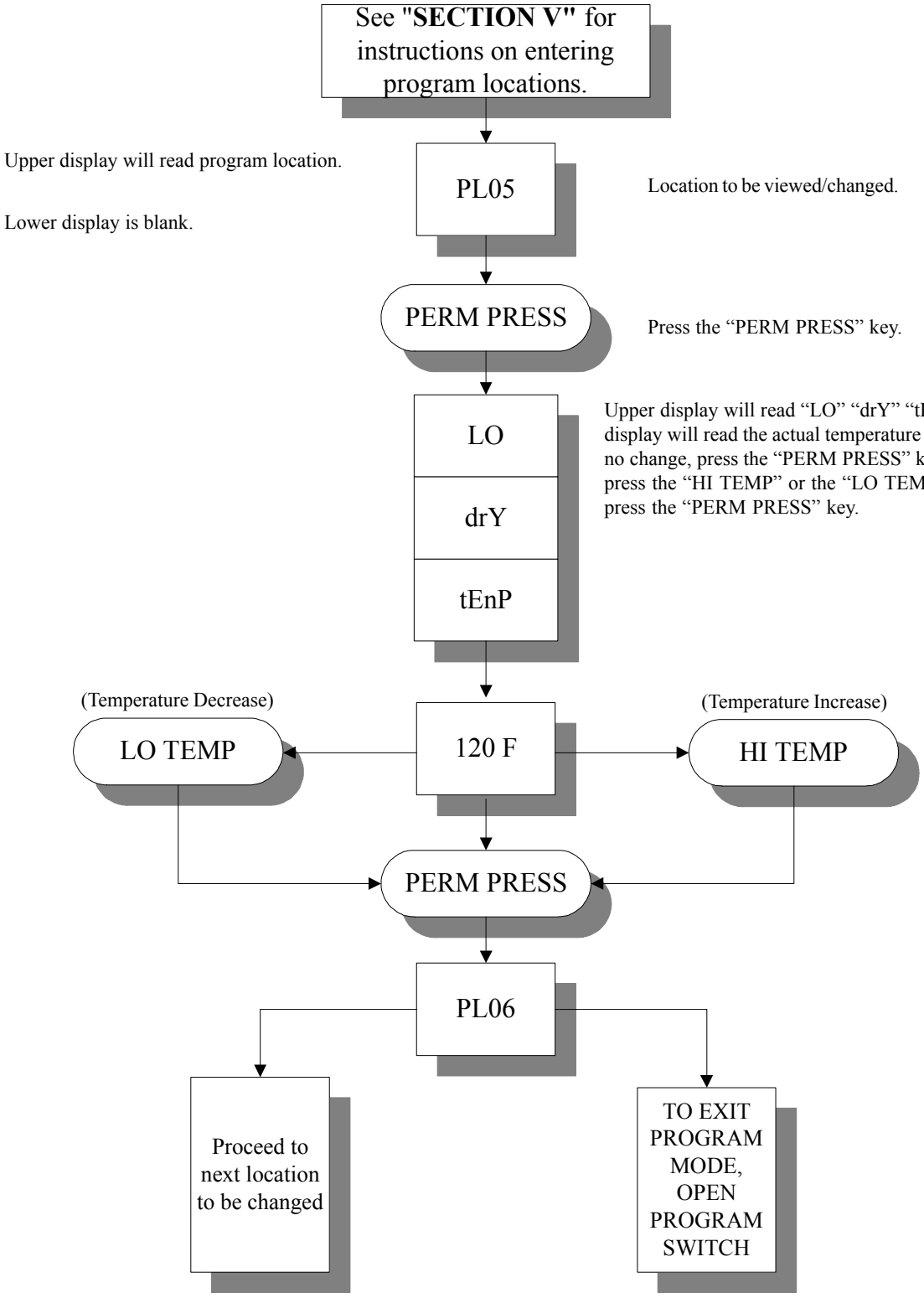
G. PROGRAM LOCATION 04 (PL04)

(Hi Cool Down Temperature and Time)



H. PROGRAM LOCATION 05 (PL05)

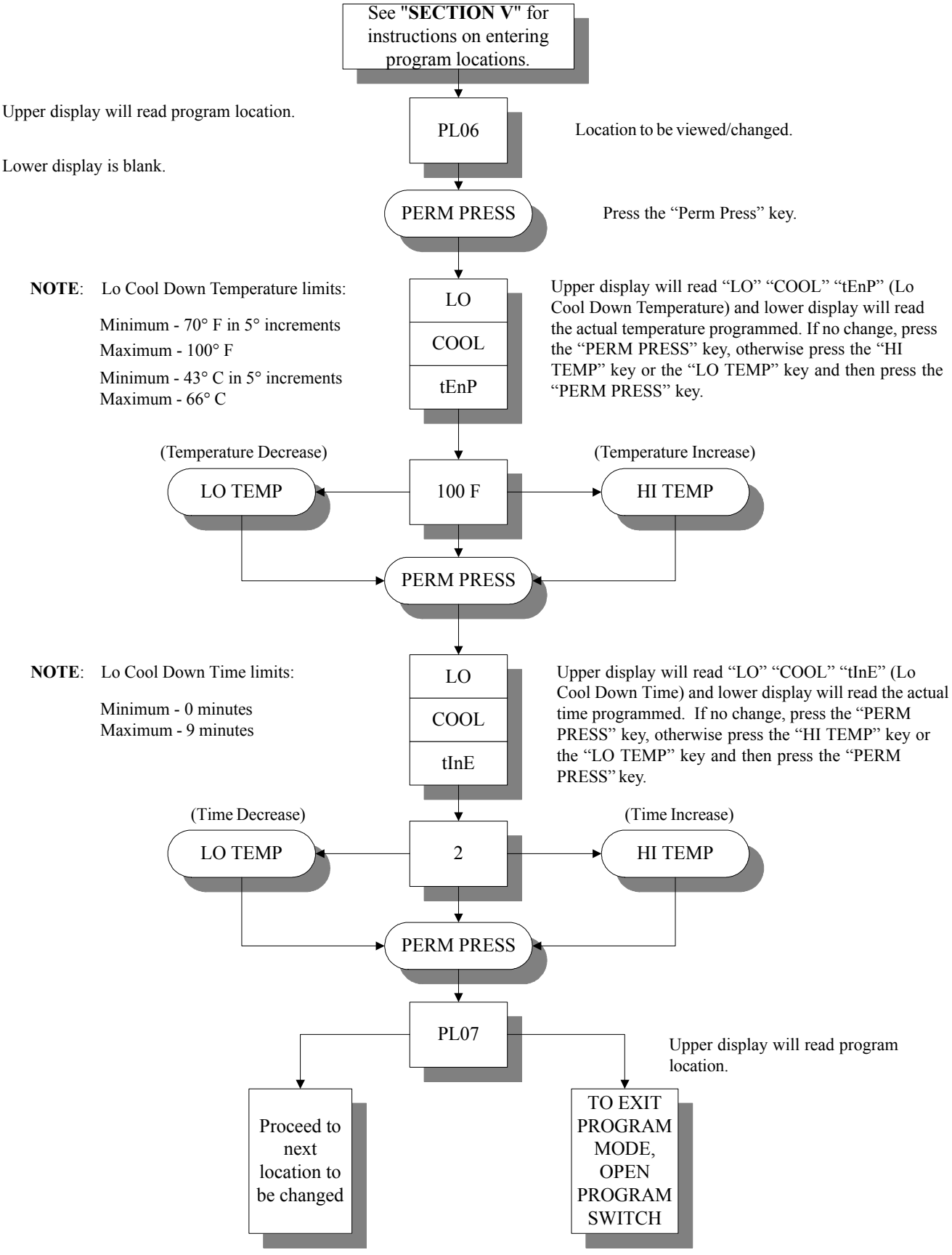
(Lo Dry Temperature)



Summary: LO TEMP is programmable from a minimum of 110° F to a maximum of 150° F in 5° increments or from a minimum of 43° C to a maximum of 66° C in 1° increments.

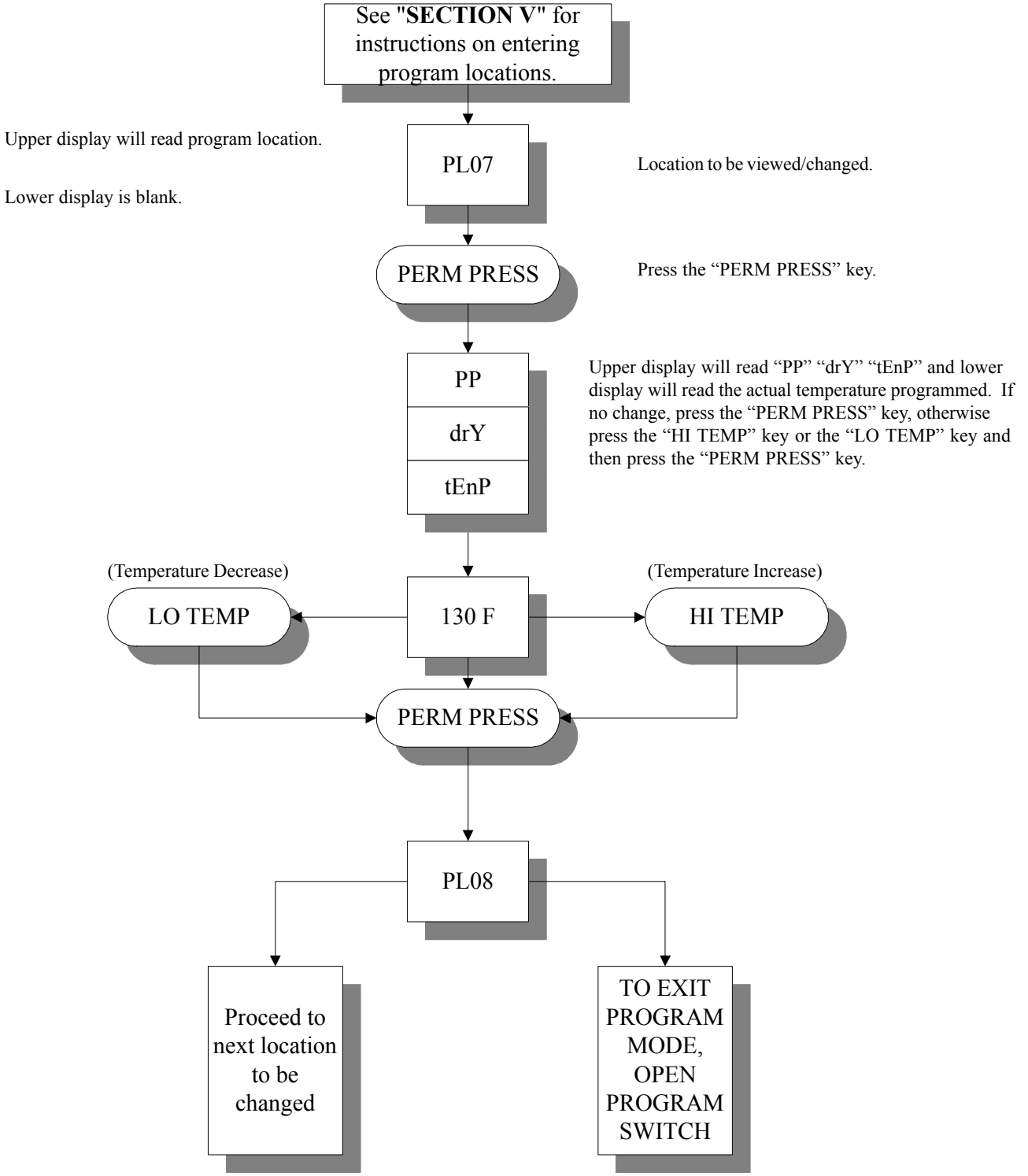
I. PROGRAM LOCATION 06 (PL06)

(Lo Cool Down Temperature and Time)



J. PROGRAM LOCATION 07 (PL07)

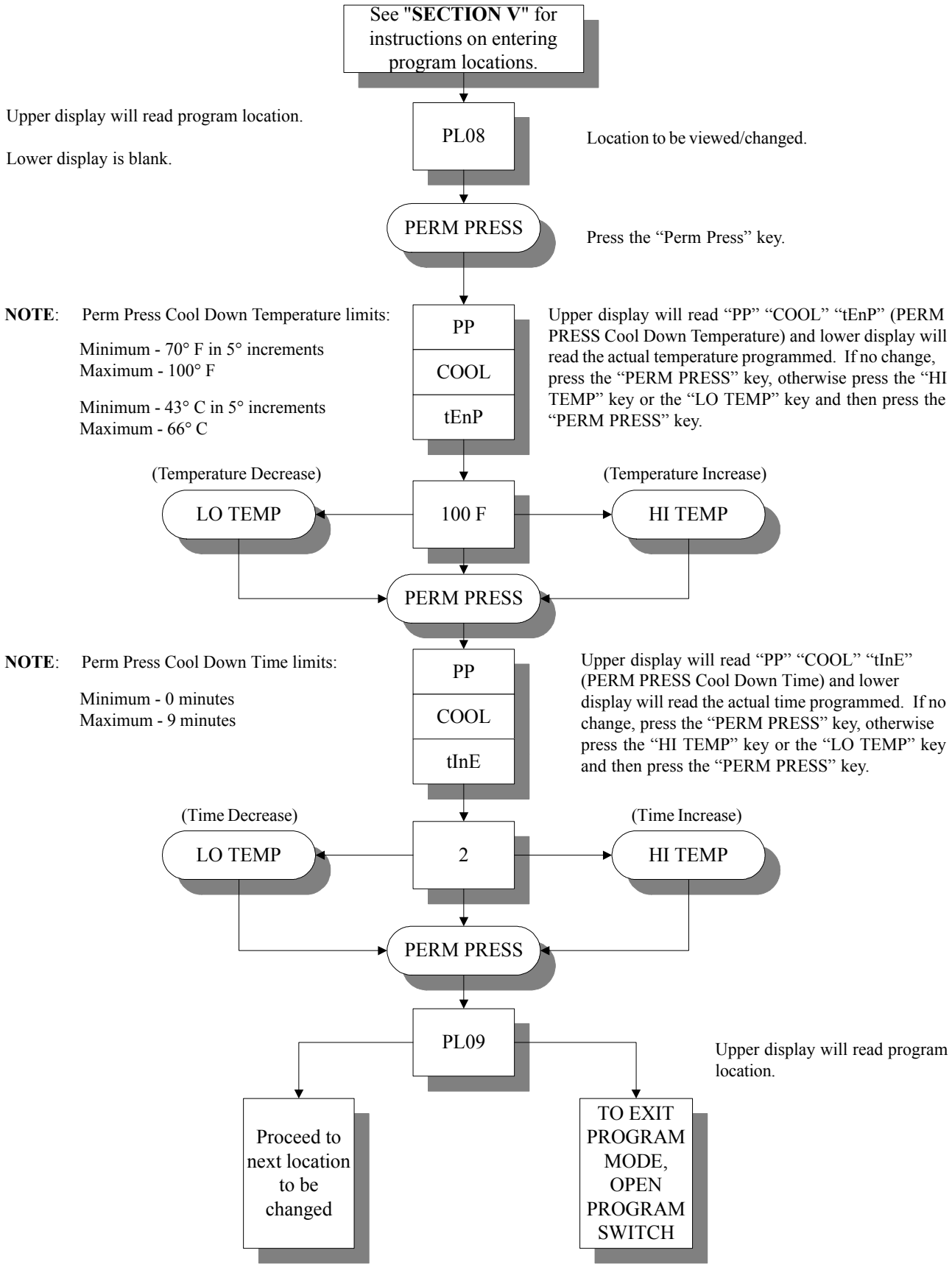
(Perm Press Dry Temperature)



Summary: PERM PRESS DRY TEMP is programmable from a minimum of 110° F to a maximum of 150° F in 5° increments or from a minimum of 43° C to a maximum of 66° C in 1° increments.

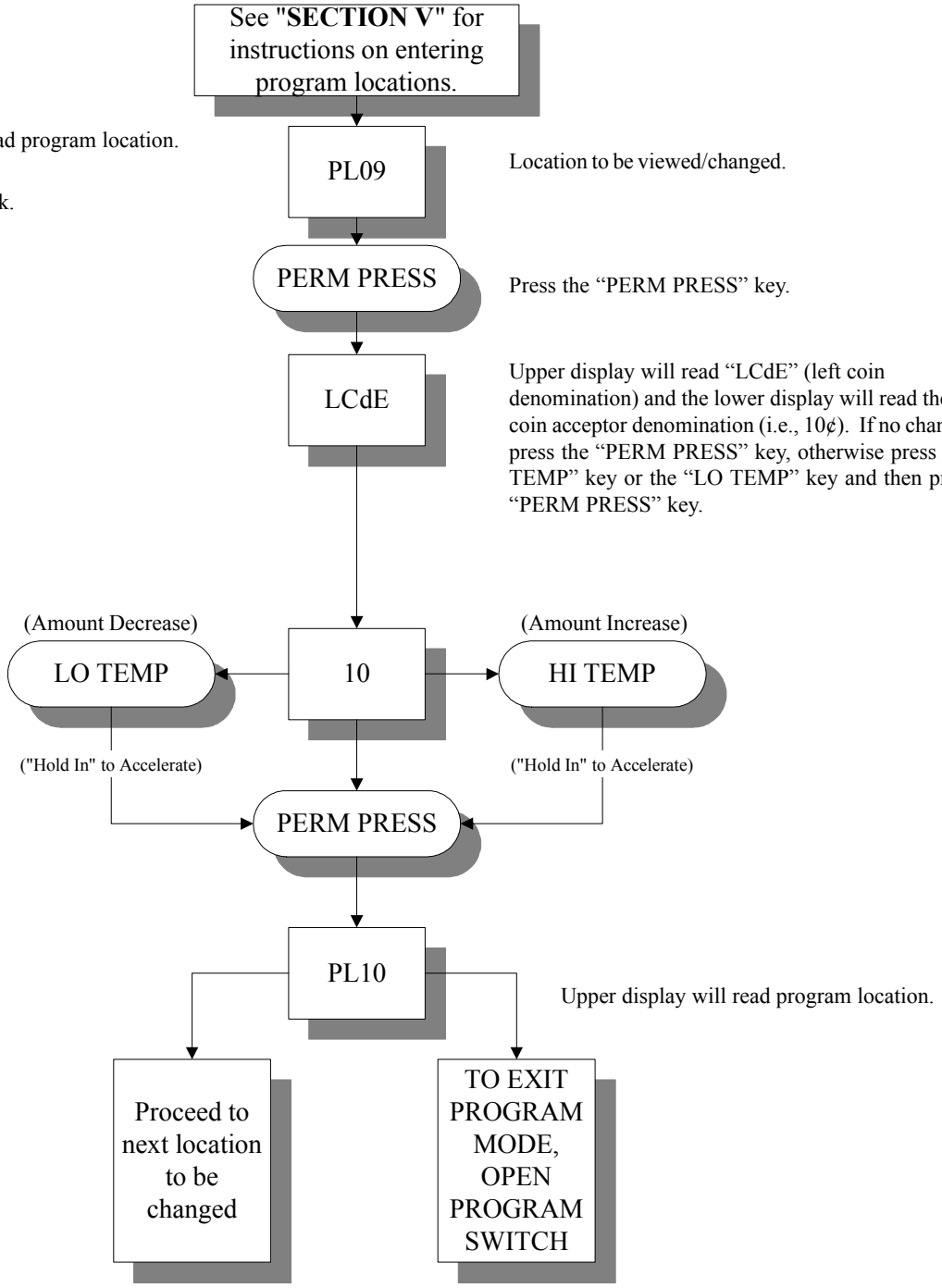
K. PROGRAM LOCATION 08 (PL08)

(Perm Press Cool Down Temperature and Time)



L. PROGRAM LOCATION 09 (PL09)

(Left Coin Denomination)



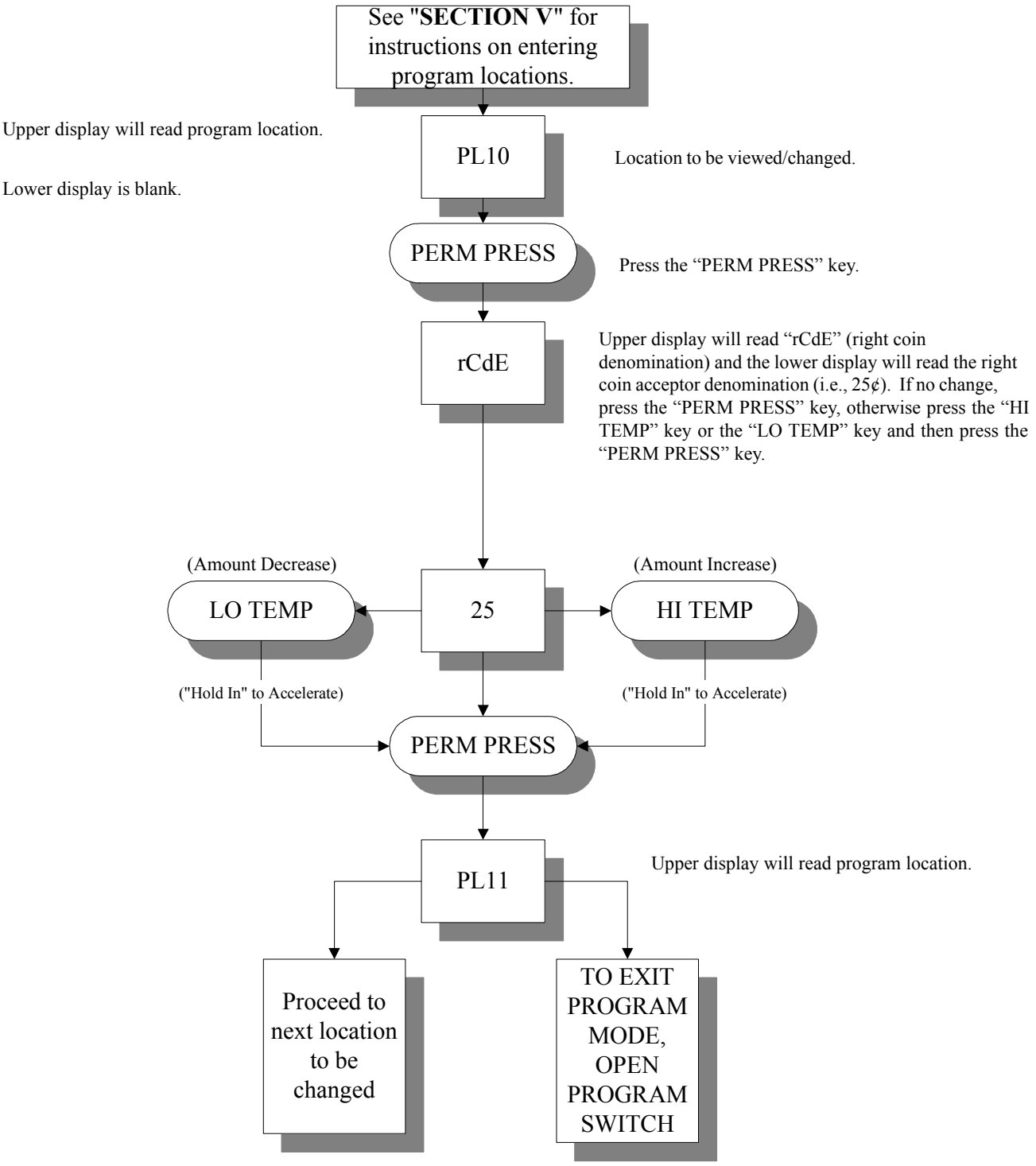
Summary: The Left Coin Denomination is programmable from 1 to 9999.

IMPORTANT: When the dryer is equipped with a dual coin acceptor, the value set here is the lower value denomination which **is not** necessarily the left coin portion of the acceptor.

NOTE: For single coin models, this parameter ***must be*** set for the value of the acceptor. (i.e., 25¢ acceptor = 25).

M. PROGRAM LOCATION 10 (PL10)

(Right Coin Denomination)



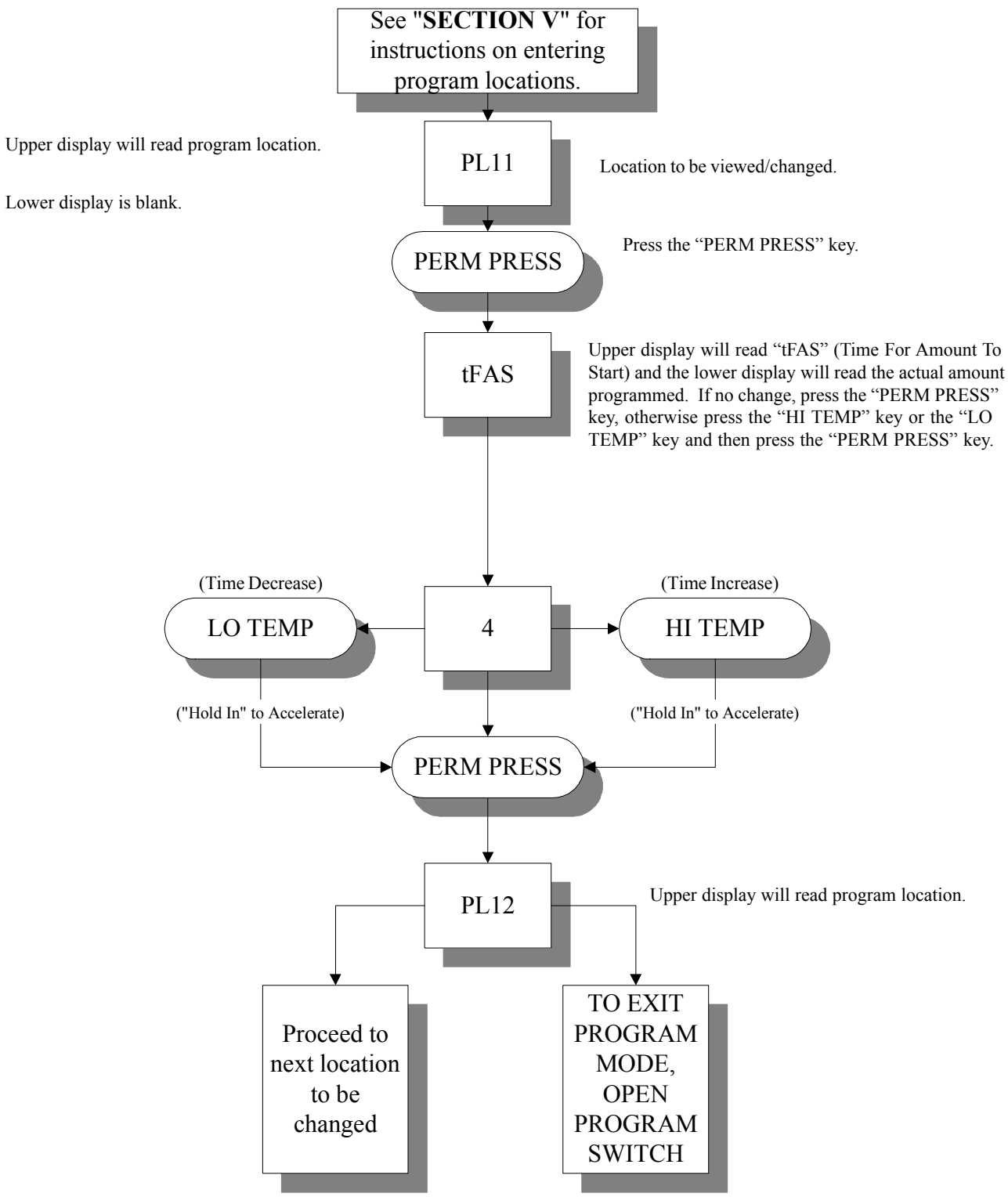
Summary: The Right Coin Denomination is programmable from 1 to 9999.

IMPORTANT: When the dryer is equipped with a dual coin acceptor, the value set here is the higher value denomination which **is not** necessarily the right coin portion of the acceptor.

NOTE: For single coin models, this parameter need not be set.

N. PROGRAM LOCATION 11 (PL11)

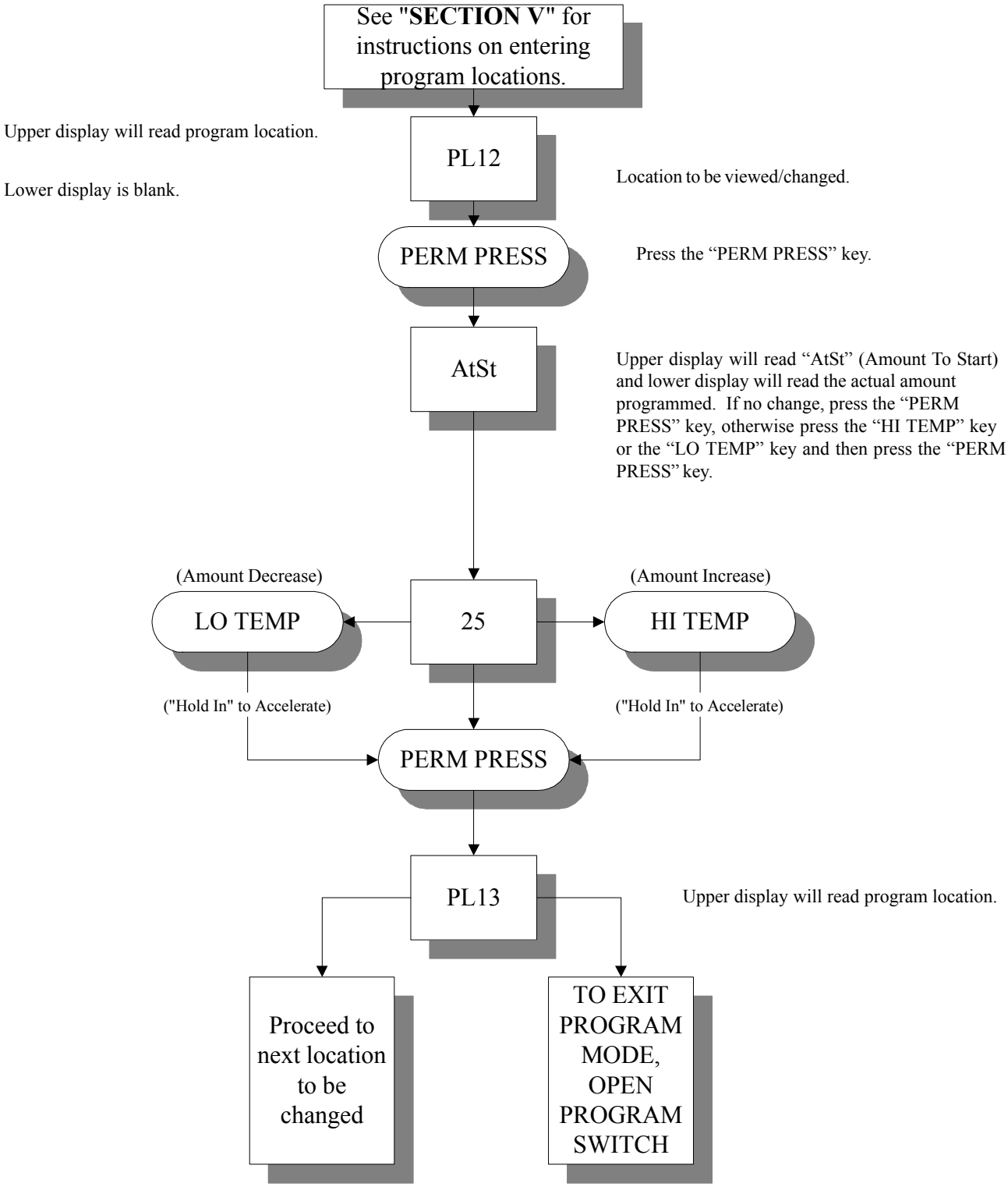
(Time For Amount To Start)



Summary: The Time For Amount To Start is programmable from 1 to 99 minutes.

O. PROGRAM LOCATION 12 (PL12)

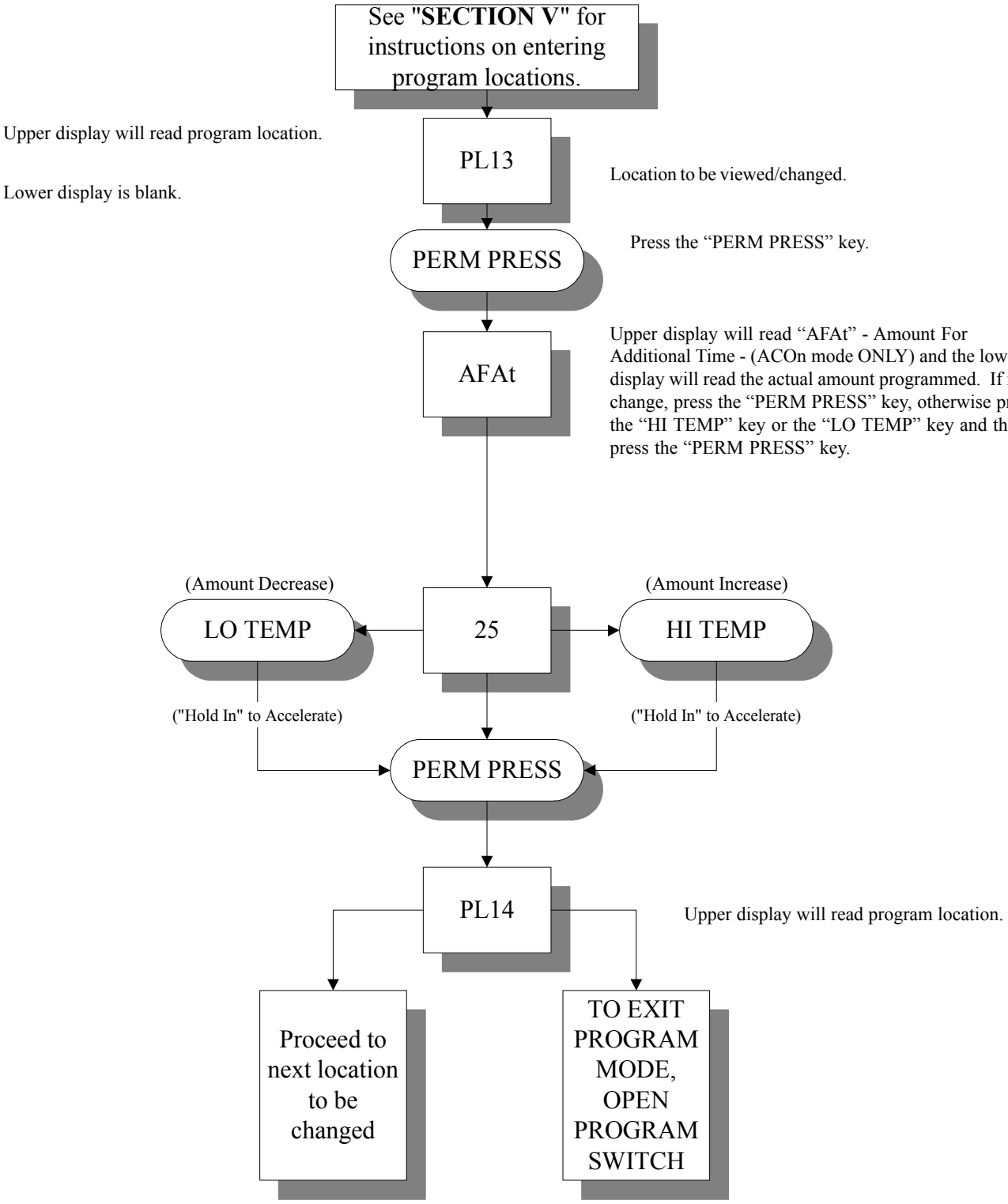
(Amount To Start)



Summary: The Amount To Start is programmable from 1 to 9999.

P. PROGRAM LOCATION 13 (PL13)

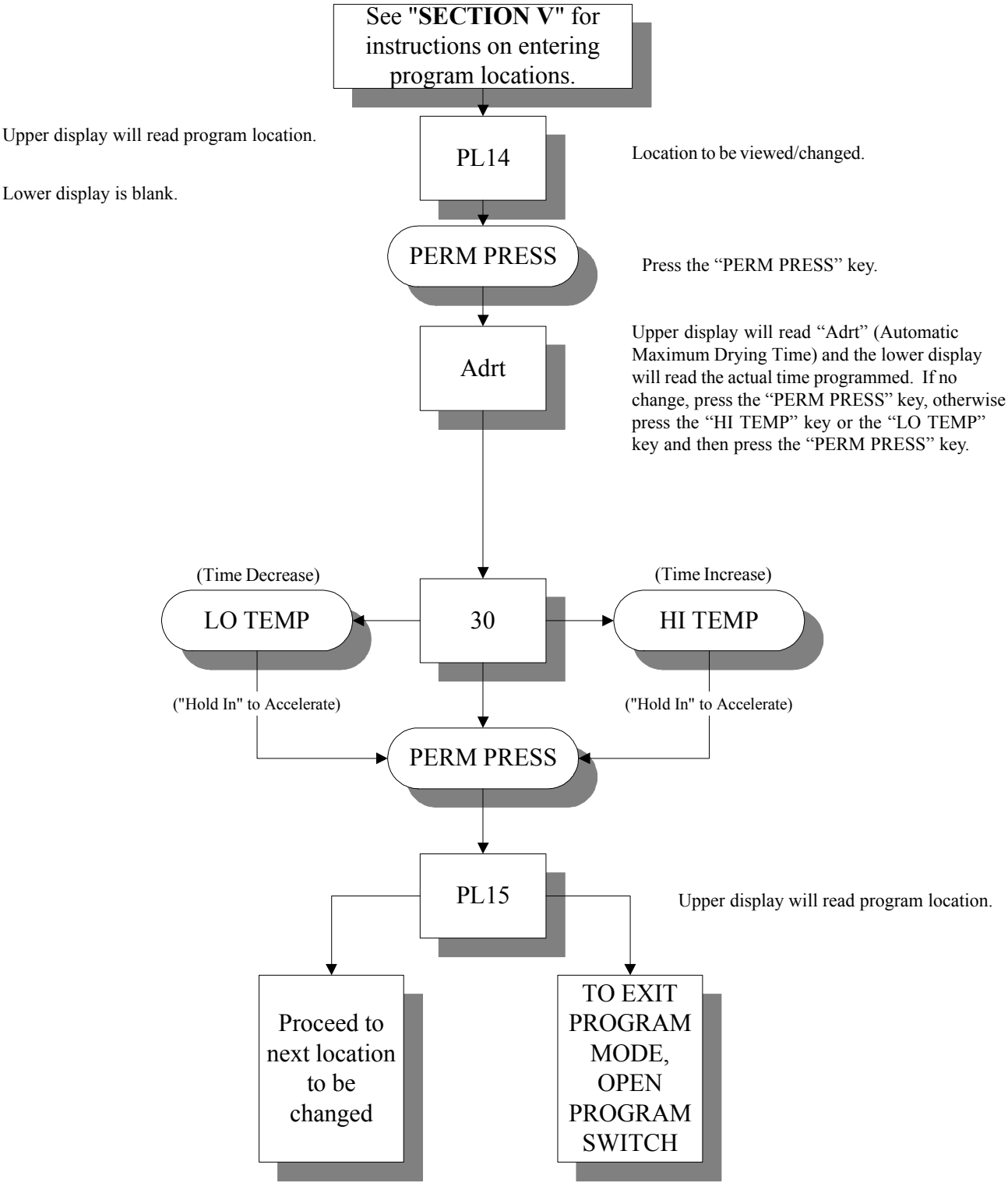
(Coin Accumulation Minimum Amount For More Time)



Summary: The Amount For Additional Time is programmable from 1 to 9999.

Q. PROGRAM LOCATION 14 (PL14)

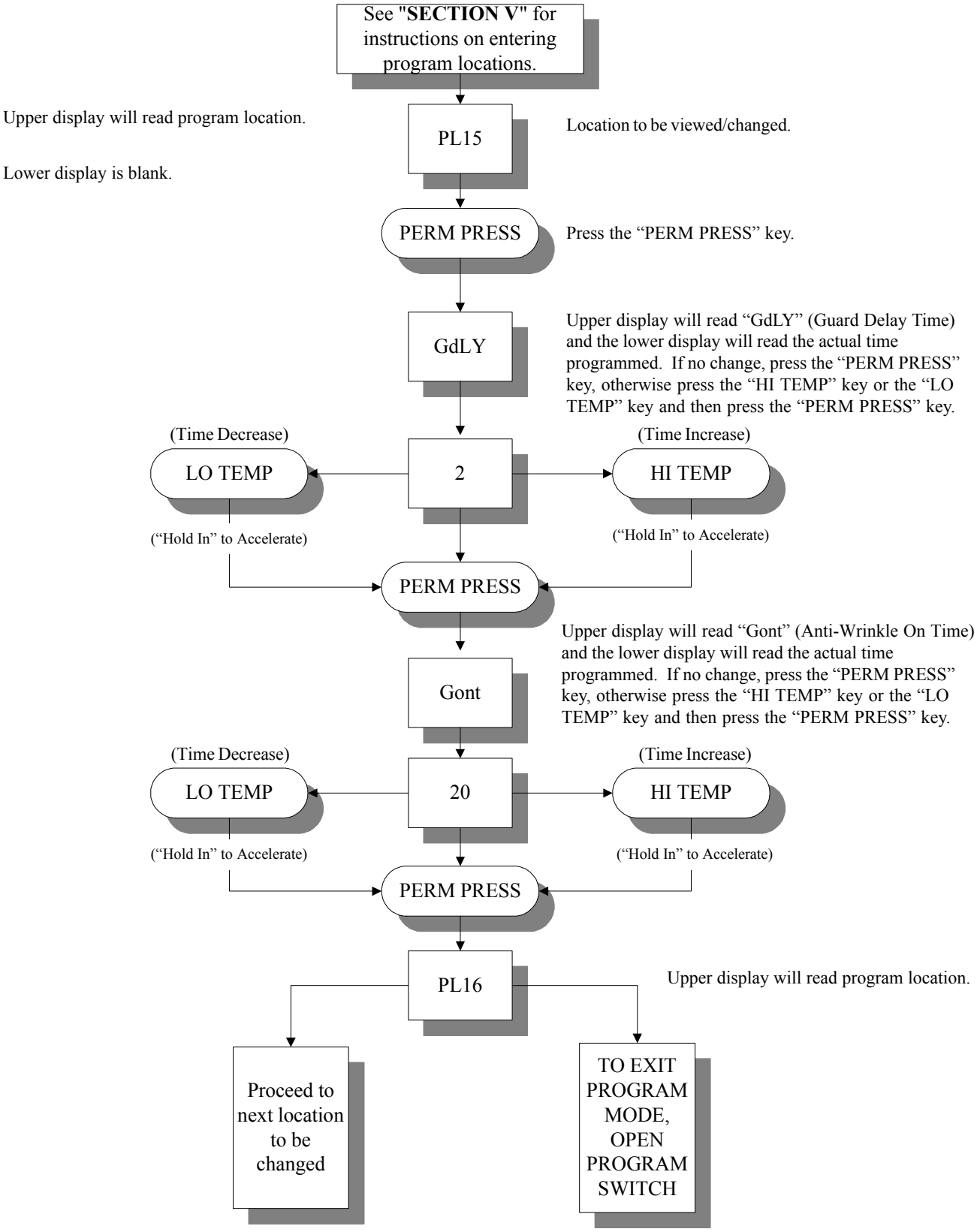
(Maximum Time For Auto Dry)



Summary: The Maximum Auto Dryness Time is programmable from 1 to 99 minutes.

R. PROGRAM LOCATION 15 (PL15)

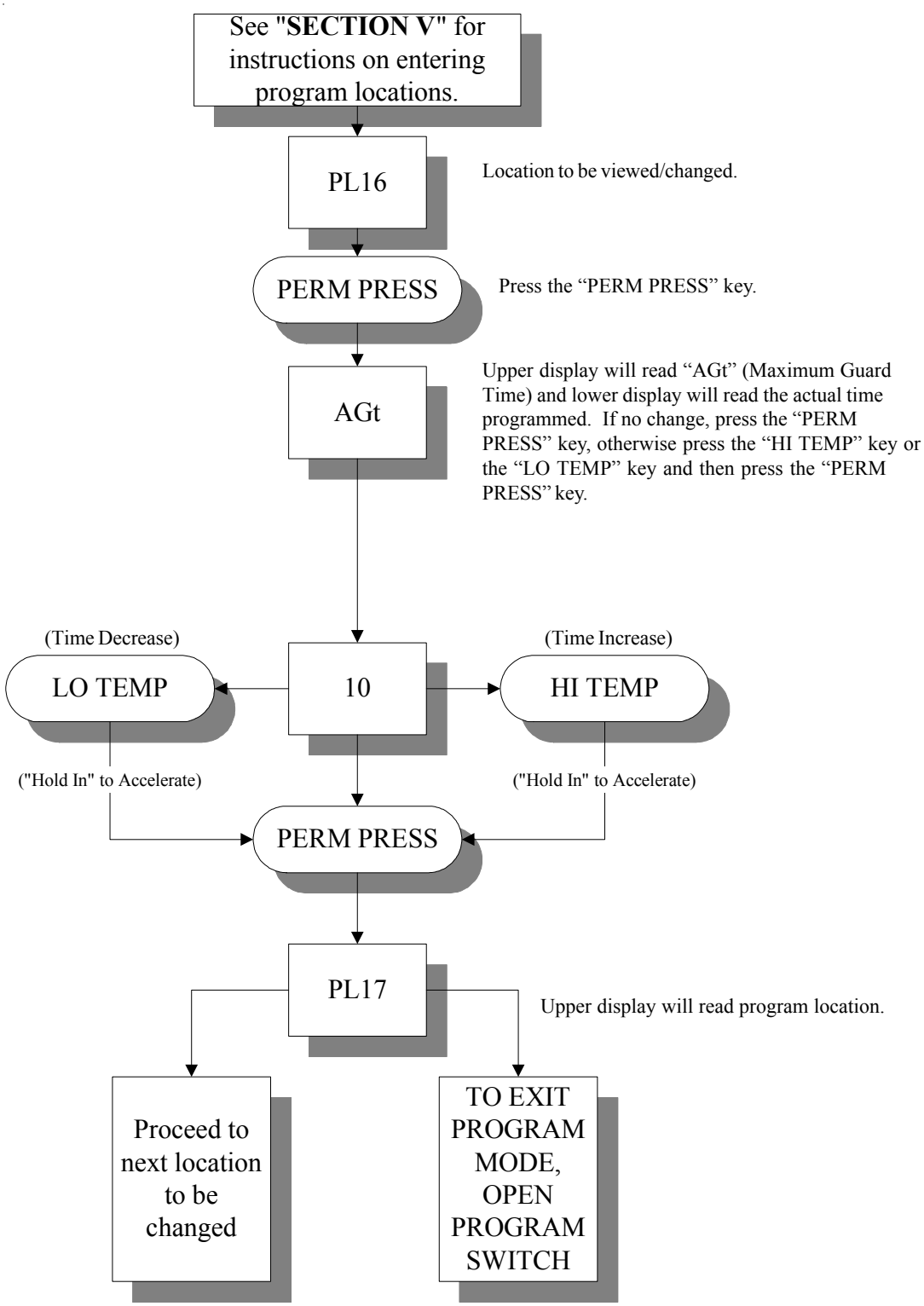
(Anti-Wrinkle Timing)



Summary: Guard Delay Time is programmable from 1 to 9 minutes.
Guard On Time is programmable from 10 to 99 seconds.

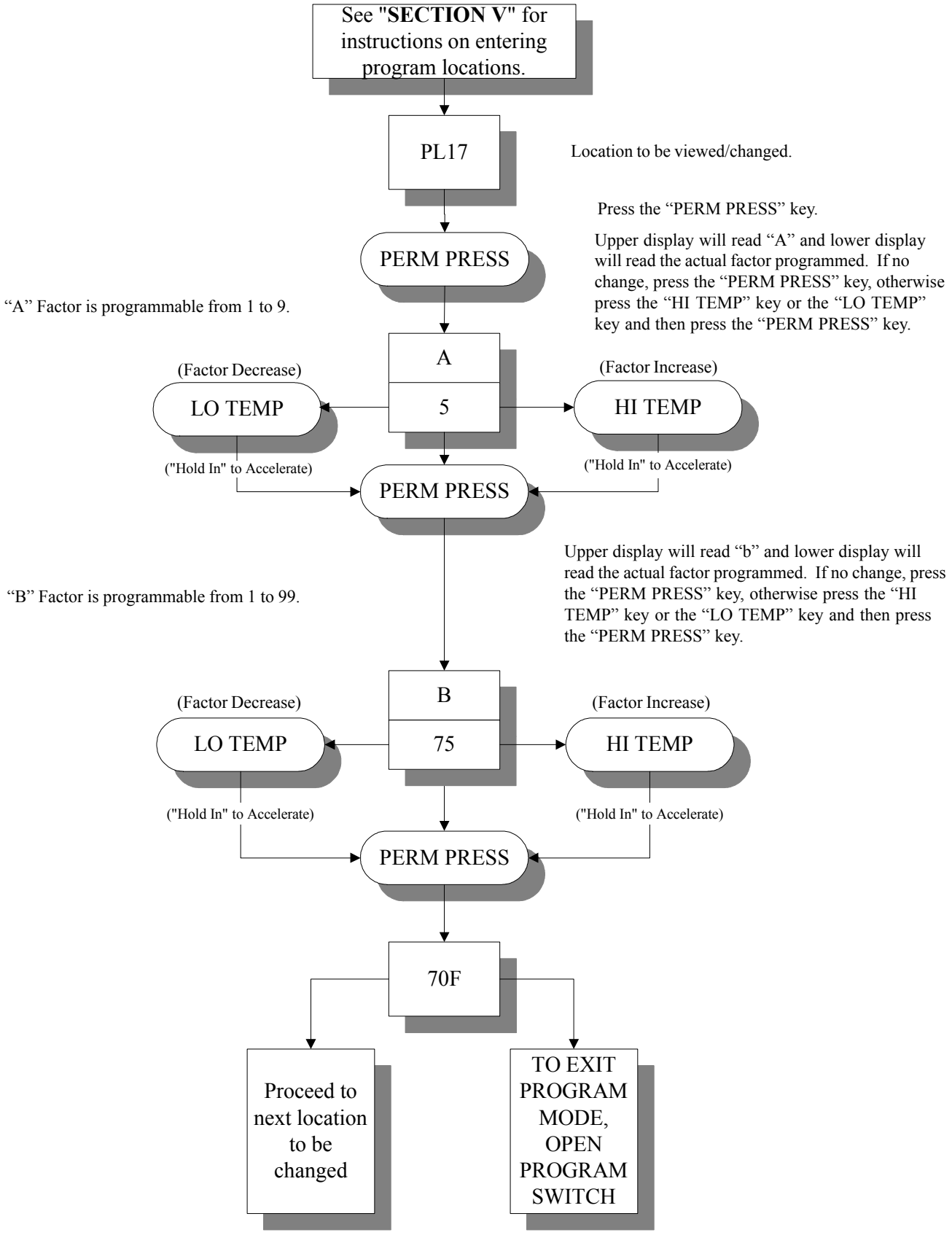
S. PROGRAM LOCATION 16 (PL16)

(Maximum Active Anti-Wrinkle Time)



T. PROGRAM LOCATION 17 (PL17)

("A" Factor and "B" Factor)



SECTION VII

FACTORY PRESET PROGRAMS/PARAMETERS

Unless otherwise specified at the time of ordering, the Phase 5 Dual Microprocessor Controller (DMC) computer has been preprogrammed by the factory with the following programs/parameters. Should changes be found necessary, please read this Phase 5 DMC User's Manual carefully to thoroughly familiarize yourself with the Phase 5 (DMC) Microprocessor Controller's programming characteristics.

A. Single Coin Only ..... (**page 52**)

B. Dual Coin Only ..... (**page 53**)

C. Non-Coin (O.P.L.) Only ..... (**page 54**)

A. PHASE 5 DMC FACTORY PRESET PROGRAMS/PARAMETERS

25¢ Single Coin (US and Canada)		
PL01	FAr tInE Grd bUZ COIn FLS bCrS AtIn nSEn	Temperature in Fahrenheit Timed Mode Anti-Wrinkle Guard On Anti-Wrinkle Guard Buzzer (tone) On Coin(s) required to start Displays will flash in intervals between "FILL" and "Amount To Start" Bad Coin Reset Accumulative Time Rotational Sensor not selected
PL02	PdrY	Percent Dry - 97%
PL03	HI-drY-tEnP	150F
PL04	HI-COOL-tEnP HI-COOL-tInE	100F 2
PL05	LO-drY-tEnP	120F
PL06	LO-COOL-tEnP LO-COOL-tInE	100F 2
PL07	PP-drY-tEnP	130F
PL08	PP-COOL-tEnP PP-COOL tInE	100F 2
PL09	LCdE	Left Coin denomination - 25
PL10	rCdE	Right Coin denomination - 25
PL11	tFAS	Time For Amount To Start - 10
PL12	AtSt	Amount To Start - 25
PL13	AFAt	Amount For Additional Time - 25
PL14	Adrt	Maximum Auto Dry Time - 30
PL15	GdLY Gont	Anti-Wrinkle Guard Delay Time - 2 Anti-Wrinkle Guard On Time - 20
PL16	AGt	Anti-Wrinkle Active Guard Time - 10
PL17	A b	Auto Cycle Factor (refer to "A" Factor listing on **page 58)** Auto Cycle Factor (refer to "B" Factor listing on **page 58)**

B. PHASE 5 DMC FACTORY PRESET PROGRAMS/PARAMETERS

10¢/25¢ Dual Coin Acceptor (US and Canada)		
PL01	FAr tInE Grd bUZ COIn FLS bCrS AtIn nSEn	Temperature in Fahrenheit Timed Mode Anti-Wrinkle Guard On Anti-Wrinkle Guard Buzzer (tone) On Coin(s) required to start Displays will flash in intervals between "FILL" and "Amount To Start" Bad Coin Reset Accumulative Time Rotational Sensor not selected
PL02	PdrY	Percent Dry - 97%
PL03	HI-drY-tEnP	150F
PL04	HI-COOL-tEnP HI-COOL-tInE	100F 2
PL05	LO-drY-tEnP	120F
PL06	LO-COOL-tEnP LO-COOL-tInE	100F 2
PL07	PP-drY-tEnP	130F
PL08	PP-COOL-tEnP PP-COOL tInE	100F 2
PL09	LCdE	Left Coin denomination - 10
PL10	rCdE	Right Coin denomination - 25
PL11	tFAS	Time For Amount To Start - 10
PL12	AtSt	Amount To Start - 25
PL13	AFAt	Amount For Additional Time - 10
PL14	Adrt	Maximum Auto Dry Time - 30
PL15	GdLY Gont	Anti-Wrinkle Guard Delay Time - 2 Anti-Wrinkle Guard On Time - 20
PL16	AGt	Anti-Wrinkle Active Guard Time - 10
PL17	A b	Auto Cycle Factor (refer to "A" Factor listing on **page 58)** Auto Cycle Factor (refer to "B" Factor listing on **page 58)**

C. PHASE 5 DMC FACTORY PRESET PROGRAMS/PARAMETERS

Non-Coin Controls (US and Canada)		
PL01	FAr AUtO Grd bUZ FrEE nFLS FlLL bCrS Atln nSEn	Temperature in Fahrenheit Automatic drying cycle Mode Anti-Wrinkle Guard On Anti-Wrinkle Guard Buzzer (tone) On No Coin(s) required to start No Flash display Bad Coin Reset Accumulative Time Rotational Sensor not selected
PL02	PdrY	Percent Dry - 97%
PL03	Hl-drY-tEnP	150F
PL04	Hl-COOL-tEnP Hl-COOL-tlnE	100F 2
PL05	LO-drY-tEnP	120F
PL06	LO-COOL-tEnP LO-COOL-tlnE	100F 2
PL07	PP-drY-tEnP	130F
PL08	PP-COOL-tEnP PP-COOL tlnE	100F 2
PL09	LCdE	Left Coin denomination - 25
PL10	rCdE	Right Coin denomination - 25
PL11	tFAS	Time For Amount To Start - 10
PL12	AtSt	Amount To Start - 25
PL13	AFAt	Amount For Additional Time - 25
PL14	Adrt	Maximum Auto Dry Time - 30
PL15	GdLY Gont	Anti-Wrinkle Guard Delay Time - 2 Anti-Wrinkle Guard On Time - 20
PL16	AGt	Anti-Wrinkle Active Guard Time - 10
PL17	A b	Auto Cycle Factor (refer to “A” Factor listing on **page 58)** Auto Cycle Factor (refer to “B” Factor listing on **page 58)**

SECTION VIII

PHASE 5 DMC SYSTEM DIAGNOSTICS

ALL major circuits, including door, lint drawer, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 5 Dual Microprocessor Controller (DMC) computer will inform the user, via the light emitting diode (L.E.D.) display and at the outputs of each relay (and door switch circuit) to easily identify failures.

A. DIAGNOSTIC (L.E.D. DISPLAY) FAILURE CODES

1. "**door**" - indicates door or lint drawer switch circuit is open.

   a. Keyboard (touch pad) entry was made while main door is open
   or
   b. There is a fault in the door switch circuit, external of the Phase 5 DMC (computer).

2. "**dSFL**" - Indicates a fault in the microprocessor temperature sensor circuit.

   a. If a fault is detected in the microprocessor heat sensor circuit, the L.E.D. display will read "dSFL" and the buzzer (tone) will sound for approximately 5-seconds every 30-seconds until...

      1) Problem is corrected
      or
      2) Power to dryer is discontinued...and the problem is then corrected.

IMPORTANT: The Phase 5 DMC (computer) has its own internal heat sensing circuit fuse protection located on the back side of the Phase 5 DMC (computer), refer to the illustration on **page 57**. If a "dSFL" condition occurs, check to see if this fuse has blown. If it has, ***DO NOT*** replace the entire microprocessor controller (computer); replace only the fuse and do so only with a 1/8-Amp (slo blo) fuse Only.

NOTE: Once the Phase 5 Dual Microprocessor Controller (DMC) computer detects a problem in the heat circuit, it updates every 30-seconds, so if a problem was a loose connection in this circuit which corrected itself, the "dSFL" condition would automatically be cancelled.

3. "**SEFL**"

   a. Indicates rotational sensor circuit failure meaning that there is a fault somewhere in the basket (tumbler) rotation detection circuit or, the Phase 5 DMC (computer) program related to this circuit **(PL01)** is set incorrectly in the active mode ("SEn"), where the dryer is not equipped with optional rotation sensor and **should be** set in the inactive mode ("nSEn").

NOTE: If the dryer is equipped with the rotational sensor circuit and the display reads "SEFL," reset by closing and opening the Program Switch (PS). Restart the dryer and if the "SEFL" code appears again, investigate further.

4. "**Hot**"

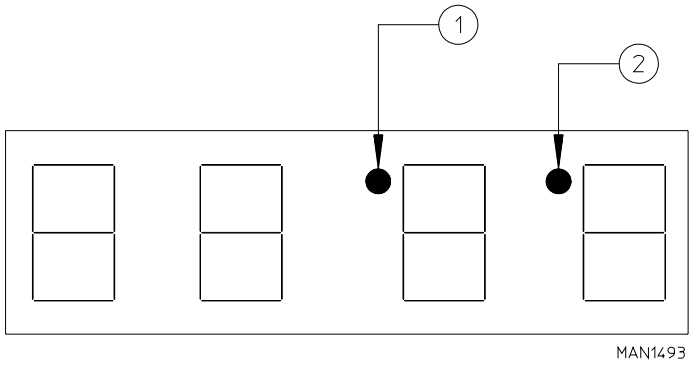
   a. Indicates a possible overheating condition. The Phase 5 DMC (computer) monitors the temperature in the dryer at **ALL** times. If the Phase 5 DMC (computer) detects that the temperature in the dryer has exceeded 170° F (77° C), it will disable **ALL** the outputs (shut the dryer down), the tone (buzzer) will sound for approximately 5-seconds, and the display will read "Hot." The light emitting diode (L.E.D.) display will continue to read "Hot" until the temperature sensed has dropped to 170° F (77° C) or lower and the Phase 5 DMC (computer) is manually reset by closing and opening the Program Switch (PS).

B. L.E.D. DISPLAY INDICATORS (DOTS)

The L.E.D. indicator dots located at the top portion of the display (refer to the illustration below) indicate the various microprocessor controller (computer) output functions while a cycle is in progress. These dots **DO NOT** necessarily mean that the outputs are functioning. They are only indicating that the function (output) **should be** active (on).

1. Heat Circuit Indicator - This indicator dot is on whenever the Phase 5 Dual Microprocessor Controller (DMC) computer is calling for the heating circuit to be active (on).

2. Motor Circuit Indicator - This indicator dot is on whenever a cycle is in progress.



C. PHASE 5 DUAL MICROPROCESSOR CONTROLLER (DMC) COMPUTER RELAY OUTPUT L.E.D. INDICATORS

There are six (6) L.E.D. indicators (red lights) located at the lower back side area of the Phase 5 Dual Microprocessor Controller (DMC) computer (refer to the illustration on **page 57**) which are identified or labeled U (upper) and L (lower) for the appropriate circuit (i.e., door, motor, or heat). These L.E.D.'s indicate that the outputs of the Phase 5 DMC (computer), or in the case of the door/lint drawer circuit, the inputs are functioning.

1. "**DOORS**" - L.E.D. Indicator

   a. **Should be** on **ALL** the time **(**even if the dryer is not running) unless the main door or lint drawer is open or there is a problem (open circuit) in either of these circuits.

NOTE: If the dryer is started (the display L.E.D. indicator dots are on) and there are no outputs (heat and/or motor output L.E.D.'s are off) and the appropriate "DOORS" input L.E.D. is on, the fault is in the Phase 5 Dual Microprocessor Controller (DMC) computer itself.

NOTE: If the failure was elsewhere (i.e. dryer's door/lint drawer circuit) the display would read "door" if a keyboard (touch pad) entry was attempted. If the display light emitting diode (L.E.D.) indicators are on, and the door L.E.D. input and motor/heat output L.E.D.'s are on and yet the motor and/or heat **is not** active (on); then the problem **is not** the door switch circuit or the Phase 5 Dual Microprocessor Controller (DMC) computer, the problem is elsewhere in the dryer.

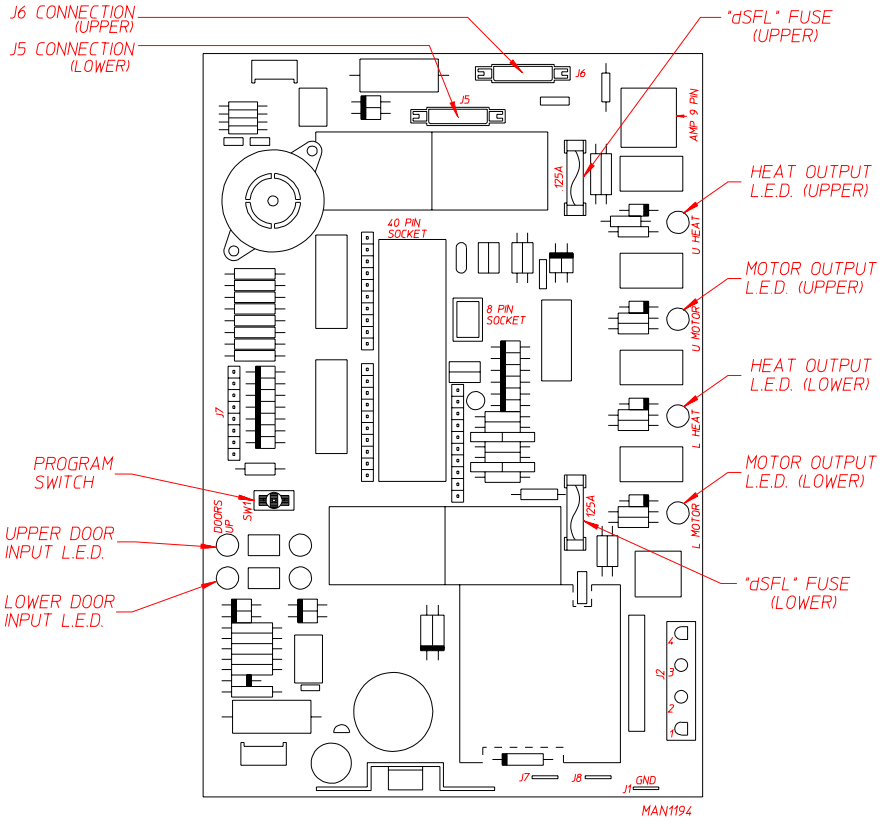
2. "**HEAT**" Output L.E.D. Indicator

   a. If the dryer is started and there is no heat, yet the Phase 5 DMC (computer) display heat circuit indicator dot is on, but the "HEAT" output L.E.D. indicator is off, then the fault is in the Phase 5 Dual Microprocessor Controller (DMC) computer itself. If both the heat indicator dot and the "HEAT" output L.E.D. indicator dot are on, then the problem is elsewhere (i.e., external of the Phase 5 Dual Microprocessor Controller [DMC] computer).

3. "**MOTOR**" Output L.E.D. Indicator

   a. If the dryer is started and the motor is not operating, yet both the Phase 5 DMC (computer) display motor circuit indicator dot and "DOOR" input L.E.D. indicator are on, but the motor output L.E.D. indicator is off; then the fault is in the Phase 5 Dual Microprocessor Controller (DMC) computer itself. If the motor is not operating and the "MOTOR" output L.E.D. indicator is on, then the problem is elsewhere (i.e., external of the Phase 5 Dual Microprocessor Controller [DMC] computer).

D. PHASE 5 DUAL MICROPROCESSOR CONTROLLER (DMC) COMPUTER INPUT/OUTPUT L.E.D. INDICATORS



SECTION IX

PHASE 5 AUTO CYCLE (**Patent No. 4,827,627**)

"A" and "B" Factor Parameters

GAS			ELECTRIC				STEAM		
Model	**"A"**	**"b"**	**Model**	**Kw**	**"A"**	**"b"**	**Model**	**"A"**	**"b"**
ADG-320	5	75	ADE-320	N/A*			ADS-330	N/A*	
ADG-330	5	75	ADE-330				ADS3-320		

* "A" and "B" Factors are not available at the time of printing.

IMPORTANT: Factor "A" and Factor "B" have been preprogrammed by the factory and ***should not be*** changed in the field unless the Phase 5 Dual Microprocessor Controller (DMC) computer should fail and is being replaced. **THE REPLACEMENT PHASE 5 DMC COMPUTER *MUST BE* REPROGRAMMED FOR THE SPECIFIC MODEL DRYER AND HEATING UNIT AS SHOWN IN THE CHART ABOVE.**

SECTION X

PHASE 5 DMC PROGRAMMING LIMITS

Phase 5 Dual Microprocessor Controller Programming Limits			
Program Location	**Parameter**	**Range**	**Increments**
PL02	"PdrY" Auto Cycle Percentage of Dryness	90% to 100%	1
PL03	"HI" Drying Temperature	110ºF to 150ºF 43ºC to 66ºC	5 degrees 1 degree
PL04	"HI" Cool Down Temperature "HI" Cool Down Time	70ºF to 100ºF 21ºC to 38ºC 0 to 9	5 degrees 1 degree 1 minute
PL05	"LO" Drying Temperature	110ºF to 150ºF 43ºC to 66ºC	5 degrees 1 degree
PL06	"LO" Cool Down Temperature "LO" Cool Down Time	70ºF to 100ºF 21ºC to 38ºC 0 to 9	5 degrees 1 degree 1 minute
PL07	"PP" Drying Temperature	110ºF to 150ºF 43ºC to 66ºC	5 degrees 1 degree
PL08	"PP" Cool Down Temperature "PP" Cool Down Time	70ºF to 100ºF 21ºC to 38ºC 0 to 9	5 degrees 1 degree 1 minute
PL09	"LCdE" Left Coin Denomination	1 to 9999	1
PL10	"rCdE" Right Coin Denomination	1 to 9999	1
PL11	"tFAS" Time For Amount To Start	1 to 99	1 minute
PL12	"AtSt" Amount To Start	1 to 9999	1
PL13	"AFAt" Amount For Additional Time	1 to 9999	1
PL14	"Adrt" Maximum Auto Dry Time	1 to 99	1 minute
PL15	"GdLY" Anti-Wrinkle Guard Delay Time "Gont" Anti-Wrinkle Guard On Time	1 to 9 10 to 99	1 minute 1 second
PL16	"AGt" Anti-Wrinkle Guard Active Time	1 to 99	1 minute
PL17	"A" Auto Cycle Factor "B" Auto Cycle Factor	1 to 9 1 to 99	1 1

SECTION XI

OPTIONAL 9 VOLT BATTERY BACKUP

Dryers ordered from the factory with the 9 volt battery backup option (battery not included) allow the Phase 5 Dual Microprocessor Controller (DMC) computer to maintain its coin count(s) and operating status should a momentary power interruption occur while the dryer cycle is in progress.

NOTE: Should a momentary power interruption occur while a cycle is in progress, whatever time was left **will not be** lost. However, for safety reasons - and as required by governing agencies - the dryer ***must be*** restarted manually by pressing the appropriate basket (tumbler) selection key.

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

IMPORTANT: For proper operation use alkaline batteries ONLY. Suggest Eveready, Energizer, Duracell, or its equivalent. **DO NOT USE CARBON TYPE BATTERIES.**

ADC 112119

1 - 08/02/93-200	**2** - 08/30/93-500	**3** - 11/04/93-500
4 - 01/11/94-500	**5** - 07/20/94-500	**6** * 04/18/94-500
7 * 07/20/94-500	**8** - 10/21/94-1,000	**9** - 04/10/95-500
10 * 06/27/95-500	**11** * 11/14/95-500	**12** * 04/11/96-500
13 - 07/16/96-500	**14** * 09/13/96-1,000	**15** - 05/27/97-1,000
16 - 11/19/97-1,000	**17** * 06/24/98-1,000	**18** - 12/08/98-1,000
19 - 03/29/99-1,000	**20** - 10/28/99-1,000	**21** - 03/29/00-1,000
22 - 09/11/00-500	**23** - 11/20/00-500	**24** - 02/21/01-500
25 - 04/11/01-500	**26** - 07/16/01-500	**27** - 09/19/01-500
28 * 03/07/02-500	**29** - 04/26/02-500	**30** - 07/29/02-500
31 - 01/08/03-100	**32** - 02/04/03-100	**33** * 03/21/03-100
34 * 03/28/03-500	**35** * 07/16/03-150	

American Dryer Corp.