DELUXE COMP-U-DRY
Generation 2   *By Shivvers*
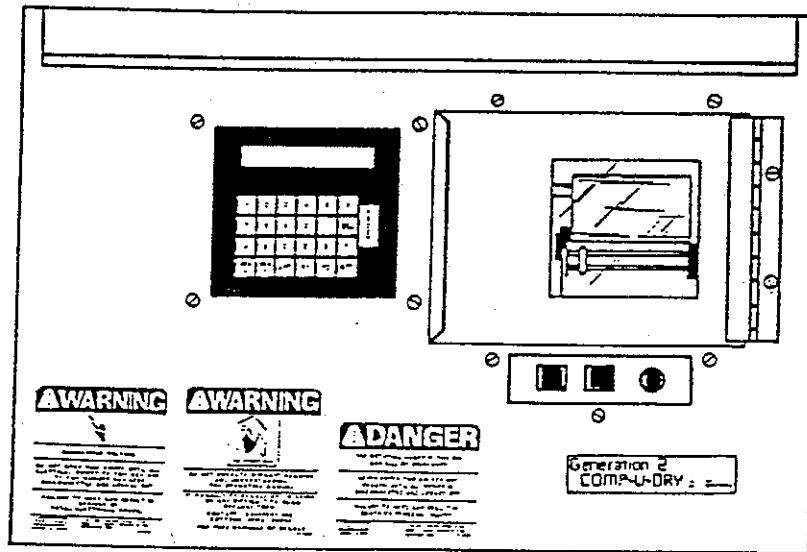
OPERATING INSTRUCTIONS

TABLE OF CONTENTS

Glossary of terms and abbreviations

There are some terms used in this manual which may be new and an
explanation of their meaning is given.

BLINKING CURSOR A mark (■) displayed on the Comp-U-Dry
display which indicates that the Comp-U-Dry
is waiting for an operator entry.

DEFAULT or DEFAULT VALUE A constant stored in the Comp-U-Dry
memory which is used if the operator
does not make an entry.

MENU A listing of the programs or subroutines available
which may be selected by the operator.

RAM Random Access Memory. The designated area of memory
used for temporary storage of data. Data stored in
this area is retained when Comp-U-Dry power is turned
off.

RET The abbreviation for the "return" key on the keyboard
This key is used by the operator to indicate the
completion of an entry.

REDO A term used by the Comp-U-Dry to indicate that the
operator has made a wrong entry and the data should
be re-entered. If Comp-U-Dry detects an error during
operation it may print "REDO" and re-try.

RESET The procedure for interrupting the Comp-U-Dry and
starting it at the beginning of the program.
A reset key is provided for this operation. All
data stored in RAM memory is retained on a reset.

ROM Read Only Memory. The designated area of memory used
for permanent storage of the programs. Also called
non-volatile memory. This area of memory is not
affected by turning Comp-U-Dry power off.

RESUME A procedure for restarting the drying operation after
a reset.

UTILITIES A set of programs or subroutines available to the
operator to allow operation of the Comp-U-Dry
control functions.

1

The Comp-U-Dry grain dryer control functions as a parallel system to the standard dryer control. Either system will control the dryer depending on how the system controls are set.

The Comp-U-Dry controls the drying process by checking the moisture content of samples of the drying grain and turning the discharge augers on when grain is at or below the desired moisture content. It also adjusts the plenum temperature to maintain the maximum drying rate while minimizing over drying of the grain.

In addition to the grain drying program, there are a number of utility programs to allow using the Comp-U-Dry as an aid in checkout and trouble shooting the dryer system.

All programs are permanently stored in ROM (Read Only Memory) memory in the Comp-U-Dry. The drying constants, such as desired moisture setting, plenum temperature, and other data are stored in RAM (Random Access Memory) memory.

Drying constants are initialized to preset default values each time the Comp-U-Dry is turned on. These values may be altered or changed by the operator and will then remain in RAM memory, each value being stored in two separate locations. During startup and operation, the Comp-U-Dry checks that the two values are the same. If not the Comp-U-Dry stops the drying operation, sounds the buzzer, and prints out a WARNING diagnostic error message. In this case, the operator should press RESET and re-enter the proper drying constants.

All drying constants are entered by the operator using the keyboard. The Comp-U-Dry will request information by printing and displaying the item requested followed by a blinking cursor (■). The operator then enters the data through the keyboard to complete the entry. If the entry is not in the required format or out of range, the Comp-U-Dry responds with REDO allowing the operator to re-enter the data. An entry mistake may be erased using the delete key. To use the values already in RAM memory, no entry is made and the return key RET is pushed. Multiple entries such as Month, Day, and Year are separated by a decimal point (.).

The drying program also runs a clock to keep track of the time and date. The time and date are entered by the operator during the start-up procedure.

Other than the warnings listed in the use of some of the Utilities, the operator will not damage the Comp-U-Dry by improperly entering data thru the keyboard.

If data is entered in the wrong format, the Comp-U-Dry will normally print "REDO" and wait for data to be re-entered. If the Comp-U-Dry continues to print "REDO", the operator should try a different format or check the operating manual for the proper format.

Most data entries are completed with a RET (return). However, in some cases, such as program selection, the Comp-U-dry will make the return automatically when the entry is complete. If you have completed your entry and the blinking cursor (█) is still on the display, push the RET .

During an entry, if a mistake is made, it may be removed one character at a time by using the DEL (delete key).

The operator may interrupt the Comp-U-Dry at any time by turning it OFF or by pushing the RESET.

If the Comp-U-Dry is turned off, it shuts down all systems immediately except the fan and returns control of the dryer to the circutrol or standard dryer control. In this case the operator should set the grain and plenum thermostats to the proper settings for the grain moisture desired.
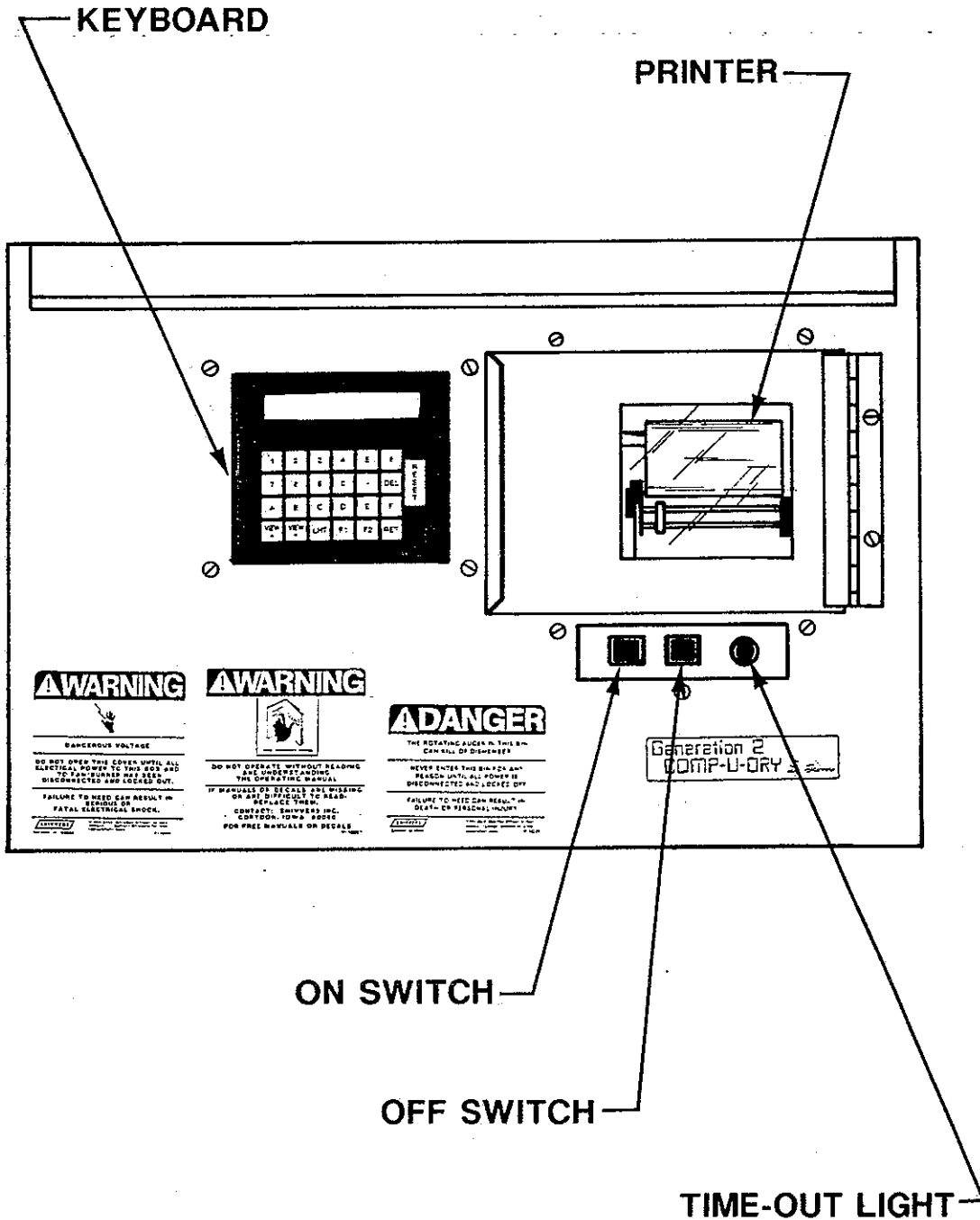
When the Comp-U-Dry is turned off, all operator entries such as meter calibration offset, number of samples to average, dry to set point, plenum temperature settings, date and time are retained in RAM memory. The date and time are not updated while power is off.

If the Comp-U-Dry program is interrupted with a RESET, it shuts down all systems immediately except for the fan and exits to the top of the MAIN MENU. In this case, all operator entries are retained in memory and the date and time are continuously updated. The drying operation may be restarted by use of the F1 RESUME key. The operator may confirm or change the meter calibration and all operator entries are then printed out during the restart process. If the operator wishes to change the other drying constants the drying process should be re-entered using the 4 DRY GRAIN function.
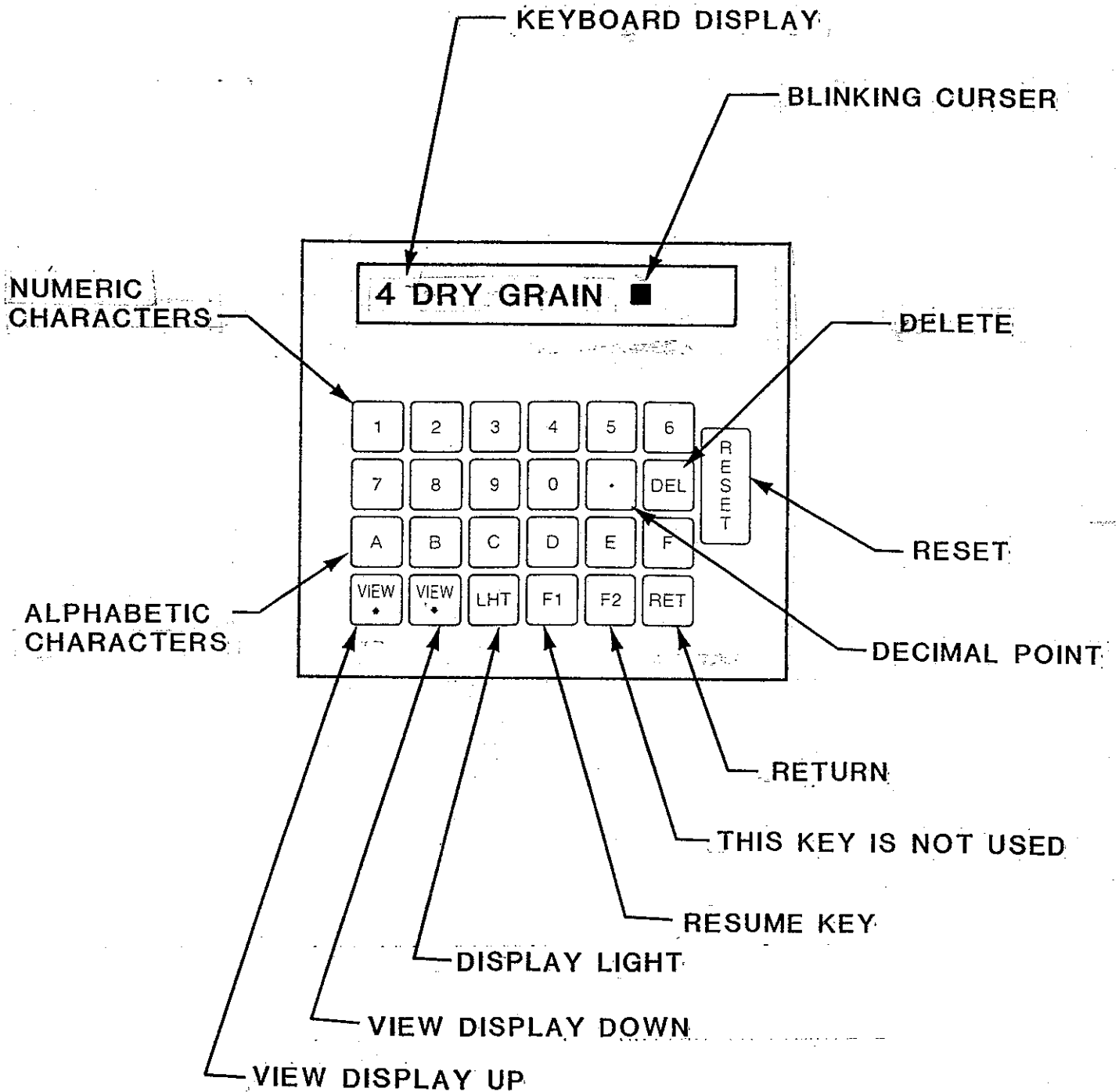
The visibility of the display varies with the angle at which it is viewed and the ambient temperature. It may be changed by pressing the VIEW up or VIEW down keys. There are 16 viewing steps. Holding the key down for approximately 1 second will change the display by 1 step. When the display reaches 16, it will roll over to step 1. The display should be adjusted for best visibility by the viewer.

A backlight is provided for viewing the display at night. Holding the LHT key down approximately one second will turn the display backlight on. Holding for another second will turn it off. The backlight will last longer if turned off when not needed.

COMP-U-DRY DRYER
CONTROL SYSTEM

KEYBOARD

PRINTER

⚠WARNING

⚠WARNING

⚠DANGER

ON SWITCH

OFF SWITCH

TIME-OUT LIGHT

KEYBOARD IDENTIFICATION

KEYBOARD DISPLAY

BLINKING CURSER

NUMERIC
CHARACTERS

4 DRY GRAIN ■

DELETE

1 2 3 4 5 6

7 8 9 0 · DEL

RESET

A B C D E F

RESET

VIEW VIEW LHT F1 F2 RET

ALPHABETIC
CHARACTERS

DECIMAL POINT

RETURN

THIS KEY IS NOT USED

RESUME KEY

DISPLAY LIGHT

VIEW DISPLAY DOWN

VIEW DISPLAY UP

TO START DRYING

Because wet grain can jam the augers, IT IS WELL TO PREDRY THE GRAIN
BEFORE STARTING AUGER SYSTEMS as follows:

> Start the fan and heater and adjust to plenum temperature normally
> used. Allow the grain to dry at least one hour for every 5
> points of moisture to be removed. If the grain is 3 points
> wet, let dry for one hour; if 7 points wet, let dry for two
> hours. DO NOT try to run the system until the grain is at
> or below 22% moisture.

TO START THE COMP-U-DRY

Because the Comp-U-Dry functions as a parallel drying system to the
standard dryer control, it is necessary to set the standard dryer
controls so they will not interfere with the Comp-U-Dry. This is done
as follows:

1) SET PLENUM THERMOSTAT TO LOWEST TEMPERATURE.

> This allows the Comp-U-Dry to control the
> heat under the floor.

2) SET THE GRAIN THERMOSTAT TO THE HIGHEST (DRIEST) POSITION.

> This allows the Comp-U-Dry to control the
> transfer of grain.

3) SET MACHINE SWITCH TO "AUTO" POSITION.

> This switch must be in automatic
> to have power at the Comp-U-Dry.

4) SET TRANSFER AUGER CONTINOUS FLOW SWITCH TO "AUTO"
POSITION.

> Unless grain is to be recirculated in the bin

5) SET LOW GRAIN SHUTOFF OR GRAIN LEVEL INDICATOR SWITCH TO "ON".

> Unless sweep has previously traversed the bin twice
> and switch has been set to AUTO.

6) HEATER CONTROL:

> Set fuel pressure high enough to maintain desired
> plenum temperature.
>
> If equipped with a modulating valve set it to the
> highest maximum desired plenum temperature.

These settings will allow the Comp-U-Dry to "override" the dryer
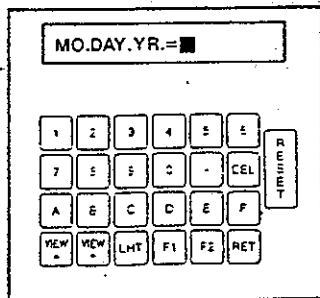control box and control the machine and transfer of grain to the
storage bin.

After completing the previous steps, push the "ON" switch of the Comp-U-Dry panel. The Comp-U-Dry should start and respond by printing the following:

| TAPE | DISPLAY | COMMENTS |

SHIVVERS G2 COMPUDRY

MO.DAY.YR.=00/00/00

MO.DAY.YR.=■

This is the last date the unit was run. On first startup the date will appear as 00/00/00. When the blinking cursor appears on the display, if the date is correct push RET . If not correct enter the current date. Two digits are always required for the day and year such as 9.09.87 or 9.17.87. Use periods to separate each number. To enter September 9, 1987

PUSH

Comp-U-Dry responds with

9   .   0   9   .   8   7   RET

ENTERED 09/09/87
TIME=00.00A

08:42A TIME=■
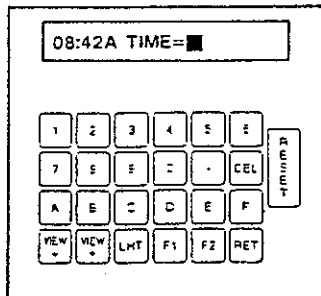
This allows entry of a starting time. A decimal point must be used between hours and minutes followed by an "A" for AM or "B" for PM, such as 8.15A or 12.22B. * Default value is 00:00A. In this case Comp-U-Dry records the elapsed time.

*   To use default value DO NOT make any entry, just push RET .

To enter 1:35 PM

PUSH

1   .   3   5   B   RET

Comp-U-Dry responds with

ENTERED 01:35P

The only time the Comp-U-Dry asks for the time and date is on initial startup. While power is on, it will continuously update the clock. To change the time and date, shut power off, wait approximately one minute for the power supply to drain down and then turn the unit back on.

Comp-U-Dry continues with:

TAPE	DISPLAY	COMMENTS

THIS MOISTURE METER IS
ADJUSTABLE. YOU CAN CAL-
IBRATE IT IF NECESSARY
TO BE CONSISTENT WITH A
CERTIFIED MOISTURE METER
OR OTHER METER WHICH YOU
CONSIDER ACCURATE. PERI-
ODICALLY CHECK METER AC-
CURACY AND YOUR DRYERS
OUTPUT GRAIN MOISTURE
THROUGHOUT YOUR DRYING
SEASON.   SEE OWNERS MAN-
UAL FOR INSTRUCTIONS.

WHEN THE DRYING IS COM-
PLETE, PROPER GRAIN MAN-
AGEMENT IS REQUIRED TO
MAINTAIN THE QUALITY AND
THE PROPER MOISTURE CON-
TENT OF THE STORED GRAIN

This paragraph is meant
to be a reminder that the
Comp-U-Dry drying system
does not remove the need
to properly care for your
grain in the storage bins.
The Comp-U-Dry system dries
the grain accurately to
your preset moisture,
using no more heat (fuel)
than is absolutely
required, and transfers
the grain at the proper
time.   This does not in-
sure trouble-free storage
unless proper care is
taken in the storage bin.

VER G2.0   COPYRIGHT 1988

This is the program
identiification in your
unit

SELECT ONE
F1 RESUME
 1 MENU
 4 DRY GRAIN

This is the main menu.

4 DRY GRAIN ■

The blinking cursor
indicates the Comp-U-Dry
is now waiting for
instructions.   The
operator may select
any item by pushing
the number of the
desired item. In some
cases, a carriage
return may be re-
quired to complete
the entry.
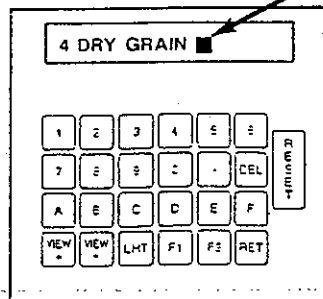
NOTE: The display shows each line as it is printed with the last
         line printed remaining on the display.

SELECT   4 DRY GRAIN

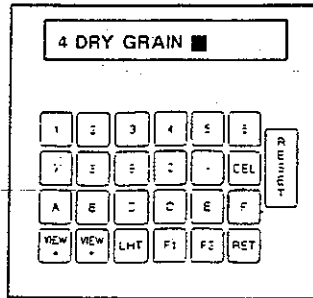| TAPE	DISPLAY	COMMENTS

SELECT ONE
F1 RESUME
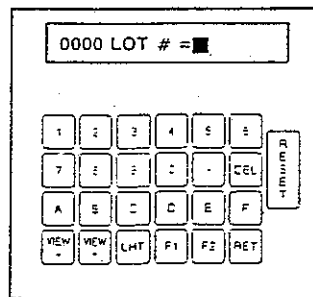 1 MENU
 4 DRY GRAIN

[4 DRY GRAIN ■]

To select drying program

PUSH

[4]

Comp-U-Dry responds with

SELECTION 4

LOT #=0000

[0000 LOT # =■]

This allows you to
identify the grain being
dried for your records.
Any combination of up to
four letters or numbers
may be entered. The
Comp-U-Dry will automa-
tically terminate after
four entries. If less
than four entries are
made push [RET] after last
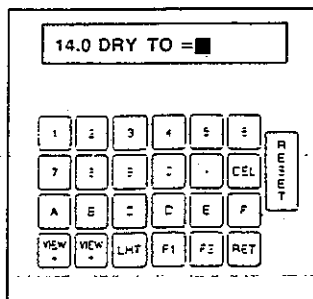entry. Default value
is last entry or 0000.

To enter LOT # = 17A

PUSH

[1] [7] [A] [RET]

NOTE: To correct errors in data
        entry, push RESET and re-enter
        the DRY GRAIN program.

Comp-U-Dry responds with

ENTERED 17A
DRY TO 14.0

[14.0 DRY TO =■]

This allows you to
select the grain
transfer moisture. A
decimal point must be
used such as 14.0 or
14.6 and push [RET] to
to complete entry.
Range is from 8.0 to
29.9. Default value is
last entry or 14.0.

To enter DRY TO = 16.9

PUSH

[1] [6] [.] [9] [RET]

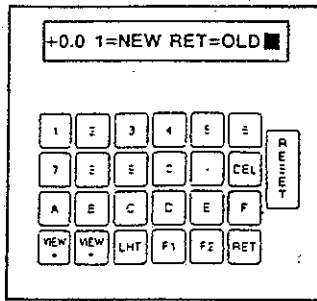NOTE: To use default value DO NOT
        make any entry, just PUSH [RET]

TAPE	DISPLAY	COMMENTS

Comp-U-Dry responds with

```
ENTERED 16.9
METER CAL=+0.0
```

Display: `+0.0 1=NEW RET=OLD ■` (keypad)

This allows confirming or changing the METER calibration. To confirm
PUSH [RET]

To change

PUSH

[1]

Display: `1=+AMOUNT 2=-AMOUNT ■` (keypad)

If you need to subtract from the Comp-U-Dry reading

PUSH

[2]

Comp-U-Dry responds with

```
SELECTION 2
-AMOUNT=
```

If you need to add to the Comp-U-Dry reading

PUSH

[1]

Comp-U-Dry responds with

```
SELECTION 1
+AMOUNT=
```

Display: `-AMOUNT =■` (keypad)

Readings up to + or – 5.9 may be added to the Comp-U-Dry readings. This entry requires a digit, a decimal point and a digit, such as 0.9 or 1.0, Or 1.6.
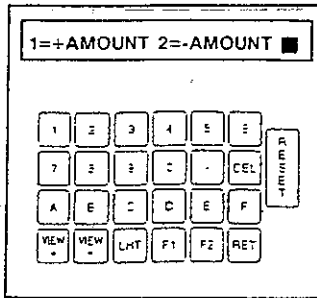To add 1.6 to the Comp-U-Dry reading

Display: `+AMOUNT =■` (keypad)
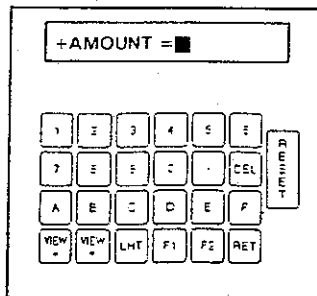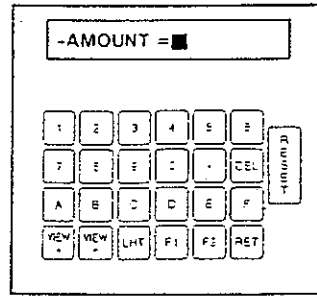
PUSH [1] [.] [6] [RET]

Comp-U-Dry responds with

```
ENTERED +1.6
```

NOTE: Meter offset readings are always from the base reading.   They are not cumulative.   For example: If the meter is calibrated to be +2.0 from the base reading and The Comp-U-Dry still reads 1 point lower than desired, instead of entering an additional +1.0 you should enter +3.0.

In most dryers the rate of grain drying will vary for different locations around the bin. The Comp-U-Dry averages the last 4 readings to smooth out these variations and control more accurately the average grain moisture content. If there is a large difference in drying rate, it may be desirable to take averages over a larger portion of the bin. The number of readings that the Comp-U-Dry averages may be changed as follows.

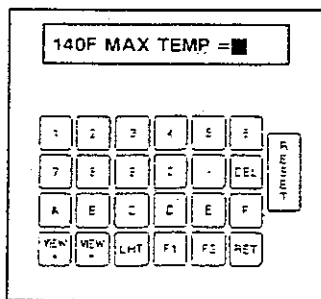| TAPE	DISPLAY	COMMENTS

```
ENTERED +1.2
RDGD TO AVE=4
```


4 RDGD TO AVE =■
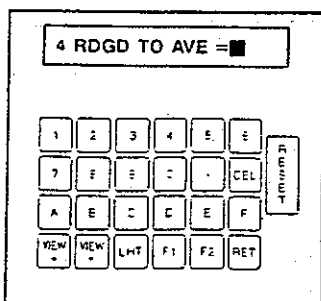
The number of readings to be included in the average can be from 2 to 9 samples. To change the number to be averaged to 7 samples

PUSH [7] [RET]

Comp-U-Dry responds with

```
ENTERED 7
MAX TEMP=140F
```
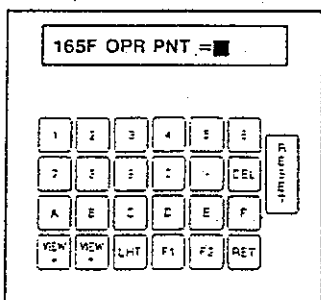

140F MAX TEMP =■

This allows entry of the maximum plenum temperature the Comp-U-Dry may use to dry the grain. The range is from 60 to 180 F. Default value is 140 F or last entry.

To enter 165

PUSH [1] [6] [5] [RET]

Comp-U-Dry responds with

```
ENTERED 165F
INITIAL OPR POINT=165F
```


165F OPR PNT =■

This allows entry of the starting plenum temperature. The Comp-U-Dry will adjust operating temperature as required. Range is 60 to 180° F but not larger than the maximum temperature. *Default is last entry or maximum temperature.

To enter 135

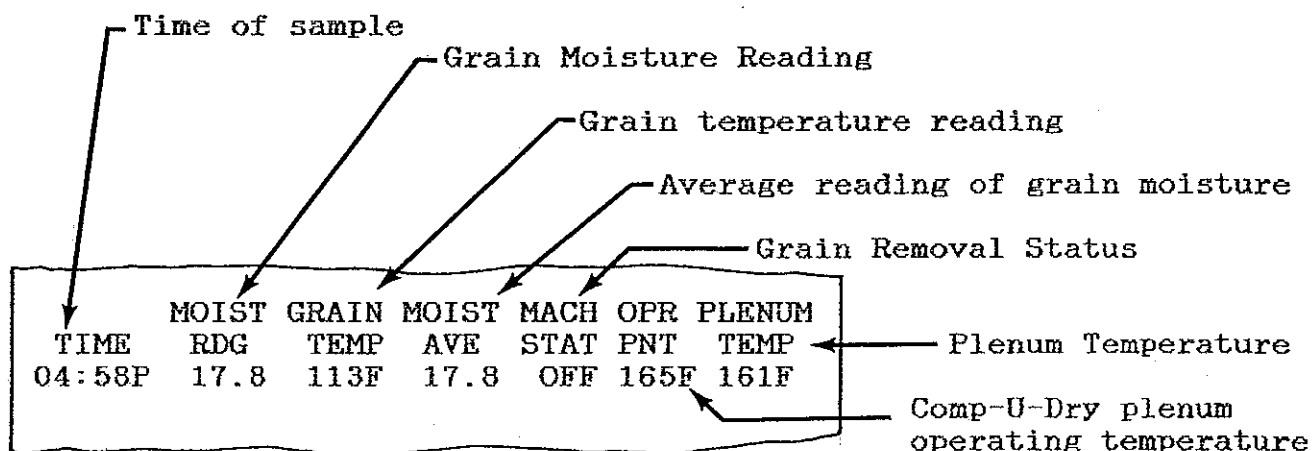PUSH [1] [3] [5] [RET]

Comp-U-Dry responds with

```
ENTERED 135F
```

11

Comp-U-Dry responds with

```
            MOIST GRAIN MOIST MACH OPR PLENUM
    TIME    RDG   TEMP  AVE   STAT PNT TEMP
```

Operator entries are now complete and Comp-U-Dry will take over the drying process. Operator should now check to be sure fan and burner are on, plenum thermostat is turned to lowest setting, and grain thermostat is turned to highest setting. After sweeps have made two passes around the bin, the grain level indicator should be set to "Auto".

The machine should start (the burners come on if the plenum is below the operating temperature) and run for a short time (50 seconds) before a reading is taken. This allows the tapered sweep to bring "fresh" grain off the floor to read. The Comp-U-Dry will take ten moisture readings in this grain over a period of 30 seconds and show the average of these reading at the left side of the display and the temperature compensated moisture reading on the right side of the display. The printer will show the information on the tape as follows.

```
  ┌Time of sample
  │      ┌Grain Moisture Reading
  │      │     ┌Grain temperature reading
  │      │     │    ┌Average reading of grain moisture
  │      │     │    │    ┌── Grain Removal Status
  │      │     │    │    │
            MOIST GRAIN MOIST MACH OPR PLENUM
    TIME    RDG   TEMP  AVE   STAT PNT TEMP  ◄──── Plenum Temperature
    04:58P  17.8  113F  17.8  OFF  165F 161F
                                    │      Comp-U-Dry plenum
                                    └──    operating temperature
```

The average moisture content will be identical to the individual moisture sample on the first grain test. On subsequent samples, the average moisture content will reflect the average of the last four (4) or the operator selected number of sample readings to be averaged.
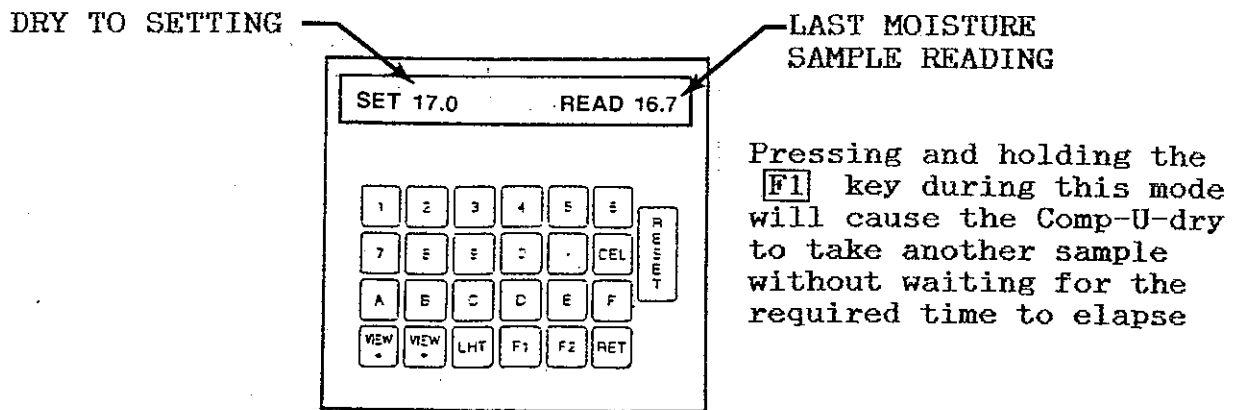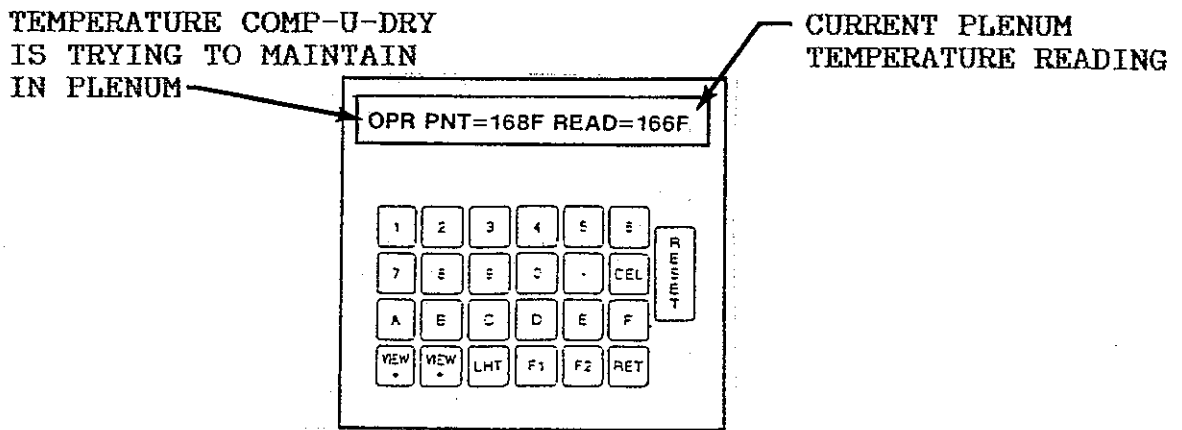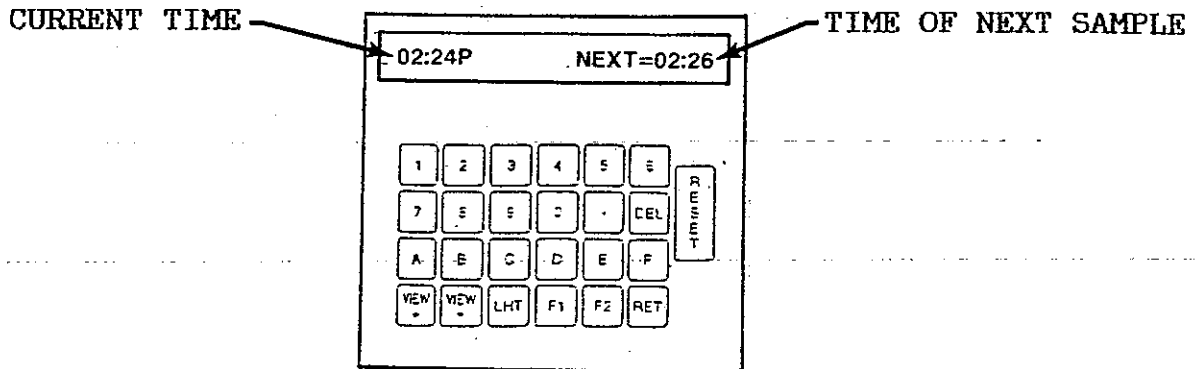
The machine will be "ON" ie, transferring grain anytime the individual sample, or the average of the last 4 samples is at or below the set point. An individual reading above the set point will not turn the machine OFF as long as the average is below the set point. The subsequent blending and moisture migration in the storage bin will tend to equalize the grain moisture to the average content.

When the machine is ON, the Comp-U-Dry will take a new grain moisture sample every five minutes, turning the grain removal augers ON or OFF and adjusting the plenum temperature operating point as appropriate.
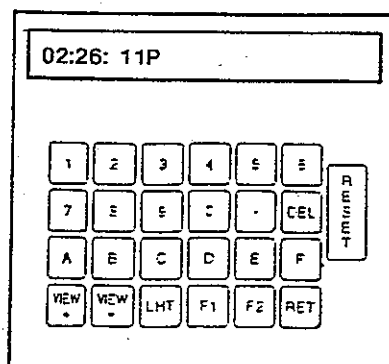
When the machine is OFF, the Comp-U-Dry will keep the machine off a time proportional to how much wetter the grain is than the set point. The minimum off-time will be 10 minutes. The maximum off-time is one hour.

The Comp-U-Dry will adjust the plenum temperature operating point up or down depending on whether the grain is dryer or wetter than the set point. The amount will depend upon the difference between the set point and the actual grain moisture.

Between samples the operating condition of the dryer is shown on the display. This information is rotated and updated about every 4 seconds as follows.

CURRENT TIME ————

———— TIME OF NEXT SAMPLE

Display shows: `02:24P          NEXT=02:26`

TEMPERATURE COMP-U-DRY
IS TRYING TO MAINTAIN
IN PLENUM ————

———— CURRENT PLENUM
TEMPERATURE READING

Display shows: `OPR PNT=168F READ=166F`

DRY TO SETTING ————

———— LAST MOISTURE
SAMPLE READING

Display shows: `SET 17.0          READ 16.7`

Pressing and holding the F1 key during this mode will cause the Comp-U-dry to take another sample without waiting for the required time to elapse

When it is time to read the next moisture sample the display will show the clock time.

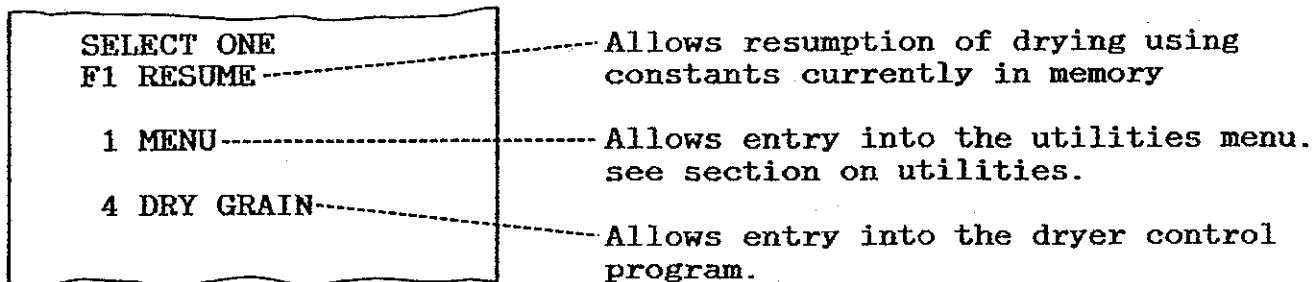Display shows: `02:26: 11P`

13

TO CALIBRATE METER

1) On startup the Comp-U-Dry will run the sweep and center
   vertical auger approximately 50 seconds to bring grain
   off the drying floor and up the center vertical to the
   slip plate moisture measuring unit. Moisture readings
   are taken every 3 seconds for a total of 10 readings to
   obtain a representative average of the grain moisture.
   When each reading is taken, the time which is presented on
   the display will "blink".

2) If the discharge augers are running when the Comp-U-Dry
   starts a read cycle then the time will be displayed and
   the readings will start without the 50 seconds wait for
   the grain to be brought up from the drying floor.

3) While the Comp-U-Dry is in a read moisture cycle, take a
   grain sample from the continous flow moisture sample valve.
   Allow enough time for the grain being read by the Comp-U-Dry
   to reach the continous flow sample valve.

4) Measure this sample with your reference meter and record this
   reading.

5) Subtract the Comp-U-Dry moisture reading from the reference
   meter reading. If the Comp-U-Dry reading is smaller the
   difference should be added to the Comp-U-Dry reading. This
   will allow the two meters to read the same.

NOTE: Due to variations in grain moisture and meter readings it is
       desirable to take the average of five or more readings. For
       best correlation these readings should be in the range that
       you would like the Comp-U-Dry to discharge the grain from
       the drying floor.

See page 10 of the manual for instructions on changing the meter
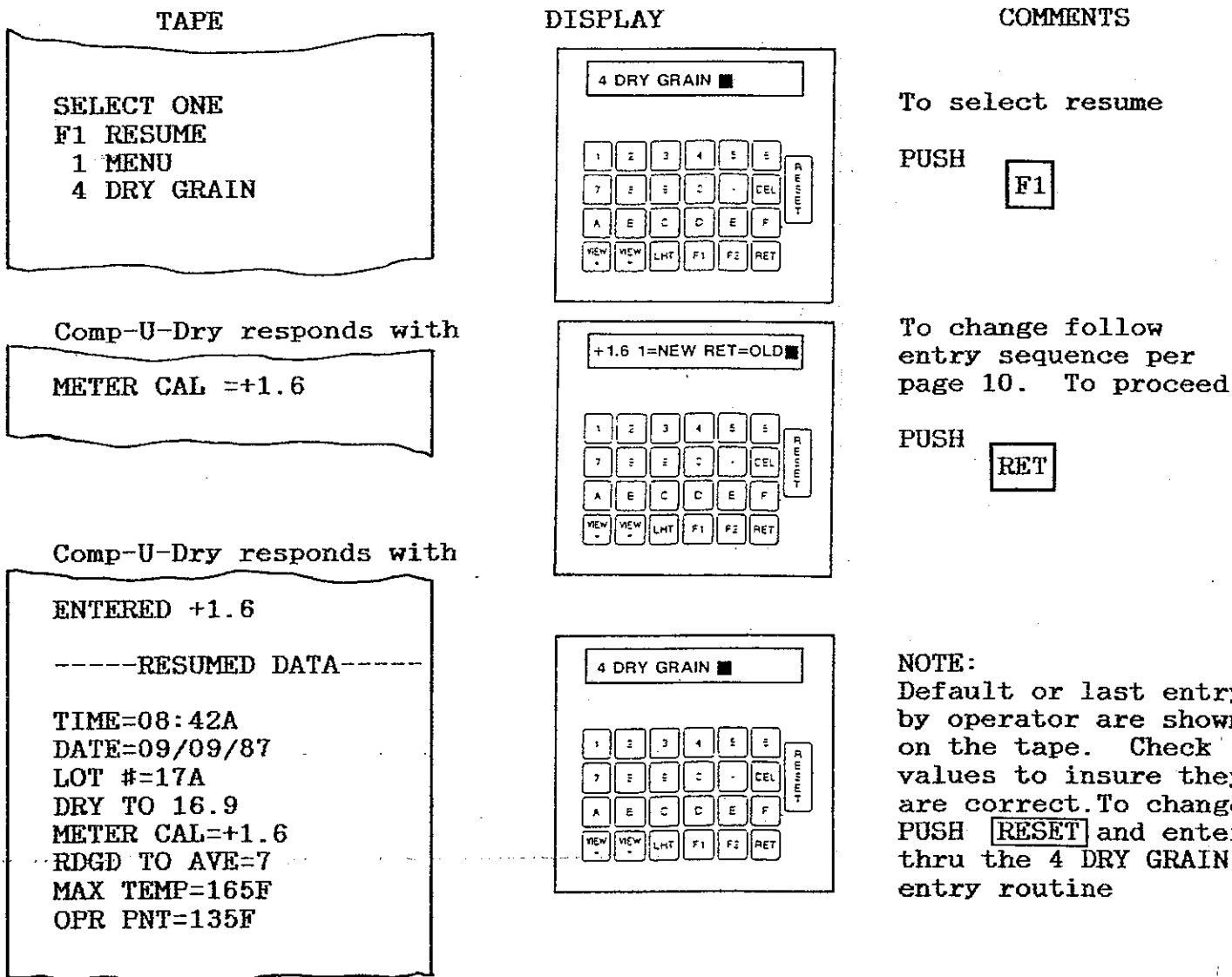calibration.

The Comp-U-Dry may be returned to the main menu at any time by pushing
RESET. There are three program selections available from the main menu.

```
 SELECT ONE
 F1 RESUME ------------- Allows resumption of drying using
                         constants currently in memory

    1 MENU ------------- Allows entry into the utilities menu.
                         see section on utilities.

    4 DRY GRAIN -------- Allows entry into the dryer control
                         program.
```

F1 RESUME

This feature allows confirming the moisture meter calibration and skipping
over the 4 DRY GRAIN drying constants entry sequence. On initial startup
the drying constants will be the default values. Otherwise they will be
the operator entered drying constants. The F1 RESUME key may be used on
startup or after a reset as follows:

TAPE	DISPLAY	COMMENTS
SELECT ONE F1 RESUME 1 MENU 4 DRY GRAIN	4 DRY GRAIN ■	To select resume PUSH F1
Comp-U-Dry responds with METER CAL =+1.6	+1.6 1=NEW RET=OLD■	To change follow entry sequence per page 10. To proceed PUSH RET
Comp-U-Dry responds with ENTERED +1.6 -----RESUMED DATA----- TIME=08:42A DATE=09/09/87 LOT #=17A DRY TO 16.9 METER CAL=+1.6 RDGD TO AVE=7 MAX TEMP=165F OPR PNT=135F	4 DRY GRAIN ■	NOTE: Default or last entry by operator are shown on the tape. Check values to insure they are correct.To change PUSH RESET and enter thru the 4 DRY GRAIN entry routine

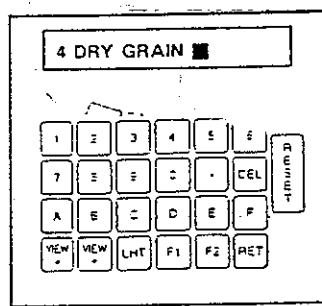The Comp-u-dry will now continue with the drying program

UTILITIES

There are a number of Utility programs available which are useful in
checking out and trouble shooting the grain drying system. They are
accessed from the Menu selection of the Main Menu as follows:

TAPE	DISPLAY	COMMENTS

SELECT ONE
F1 RESUME
 1 MENU
 4 DRY GRAIN

`4 DRY GRAIN ■`

To select Utility
programs

PUSH `1`

Comp-U-Dry responds with

SELECTION 1

MENU
 1 READ TEMP ----------------------- Allows reading plenum
                                       and grain temperatures.

 2 READ METER ---------------------- Allows reading of grain moisture meter

 3 MACHINE ------------------------- Allows turning Circulator motor on or off.

 4 CONT FLOW ENABLE ---------------- Allows interrupting continuous flow auger.

 5 FAN ENABLE ---------------------- Allows operation of fan interrupt circuit.

 6 BUZZER -------------------------- Allows turning buzzer on or off.

 7 HI FIRE ------------------------- Allows energizing of burner Hi Fire circuits.

 8 LO FIRE ------------------------- Allows energizing of burner Lo Fire circuits.

 E EXIT ---------------------------- Allows exiting from utilities program back to
                                       main menu.

TAPE	DISPLAY	COMMENTS

MENU
  1 READ TEMP
  2 READ METER
  3 MACHINE
  4 CONT FLOW ENABLE
  5 FAN ENABLE
  6 BUZZER
  7 HI FIRE
  8 LO FIRE
  E EXIT

E EXIT ■
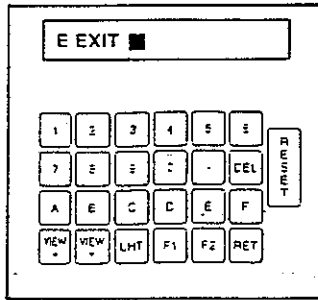
To read plenum and grain temperature

PUSH

[1]

Comp-U-Dry responds with

SELECTION 1

PLENUM=165F GRAIN=095F

PLENUM=165F GRAIN=095F

To print reading and get another reading
PUSH

[RET]

To EXIT
PUSH

[E]
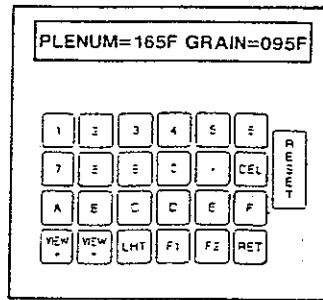
Comp-U-Dry responds with

PLENUM=165F GRAIN=095F

SELECTION E

E EXIT ■
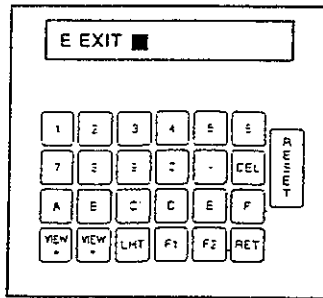
To enter any other utility PUSH the number of that subroutine.

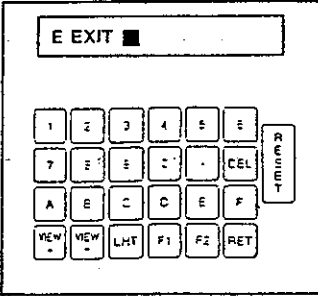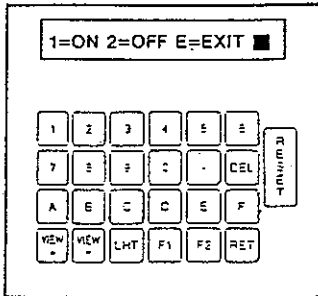To EXIT to the main menu

PUSH

[E]

Comp-U-Dry responds with

SELECT ONE
F1 RESUME
  1 MENU
  4 DRY GRAIN

4 DRY GRAIN ■
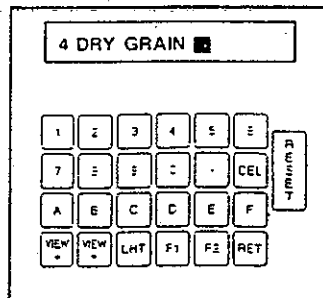
Selections are now available from MAIN MENU.

TAPE	DISPLAY	COMMENTS

TAPE

```
MENU
  1 READ TEMP
  2 READ METER
  3 MACHINE
  4 CONT FLOW ENABLE
  5 FAN ENABLE
  6 BUZZER
  7 HI FIRE
  8 LO FIRE
  E EXIT
```

DISPLAY

```
E EXIT ■
```
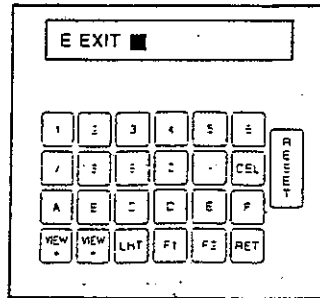
COMMENTS

To read moisture meter

PUSH   [2]

Comp-U-Dry responds with

```
SELECTION 2

METER CAL = +1.6
```

```
0D5D 14.9 16.5 044F
```
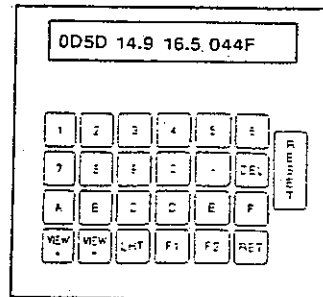
To print reading and get another reading
PUSH   [RET]

To exit

PUSH   [E]

Comp-U-Dry responds with

—RAW HEX DATA   ┌GRAIN TEMP

```
0D5D  14.9  16.5  044F
```

MOISTURE ┘   TEMPERATURE
READING   └COMPENSATED
                   READING

```
E EXIT ■
```
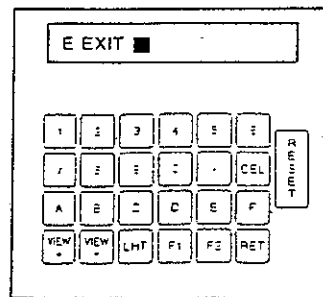
To enter any other utility PUSH the number of that subroutine.

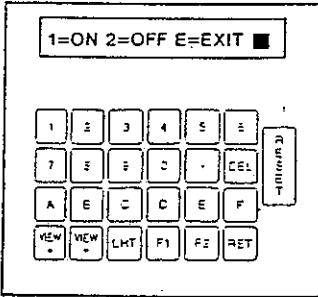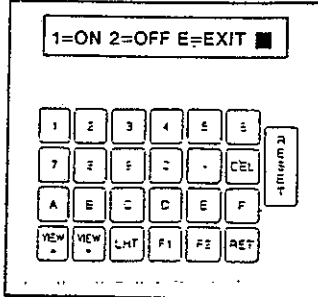To exit to main menu

PUSH   [E]

Comp-U-Dry responds with

```
SELECTION E


SELECT ONE
F1 RESUME
  1 MENU
  4 DRY GRAIN
```

```
4 DRY GRAIN ■
```
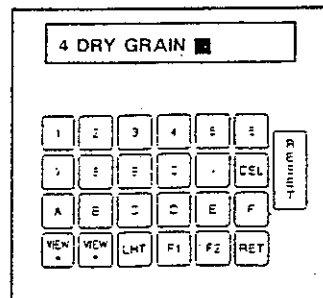
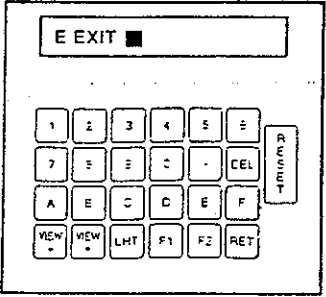NOTE: Moisture readings will not be valid unless grain is moving through the auger.
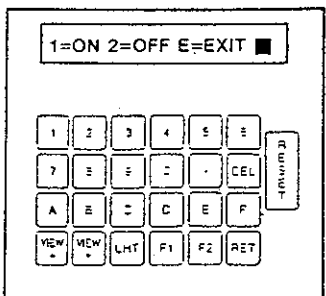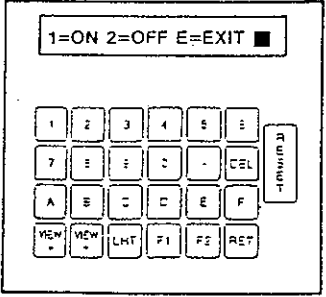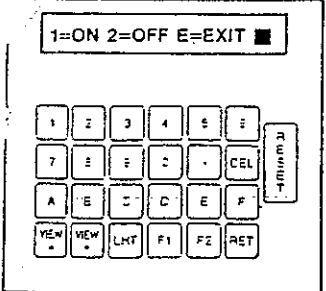
When the Comp-U-Dry activates the Circulator to transfer grain it does so by feeding power to terminal 5 of the 16 point "F" terminal strip in the Comp-U-Dry. This function may be checked as follows.

TAPE	DISPLAY	COMMENTS

TAPE

```
MENU
1 READ TEMP
2 READ METER
3 MACHINE
4 CONT FLOW ENABLE
5 FAN ENABLE
6 BUZZER
7 HI FIRE
8 LO FIRE
E EXIT
```

DISPLAY

E EXIT ■

COMMENTS

To select circulator

PUSH   [3]

Comp-U-Dry responds with

```
SELECTION 3

1=ON 2=OFF E=EXIT
```

1=ON 2=OFF E=EXIT ■

To turn the circulator on (ie put power on terminal 5)

PUSH   [1]

Comp-U-Dry responds with

```
SELECTION 1
```

1=ON 2=OFF E=EXIT ■

Circulator should start. Power should be available at terminal 5.
To turn circulator off

PUSH   [2]

Comp-U-Dry responds with

```
SELECTION 2
```

1=ON 2=OFF E=EXIT ■

Circulator should stop There should be no power at terminal 5

To EXIT

PUSH   [E]

Comp-U-Dry is now at the top of the utilities menu. Any of the UTILITY programs may be addressed by pushing the corresponding number or letter. To EXIT to the top of the main menu PUSH [E] .

A set of normally closed contacts are wired between terminal 12 and 13 of the Comp-U-Dry 16 point "F" terminal strip to allow interruption of the continuous flow auger during the sample cycle. This function may be checked as follows:

TAPE	DISPLAY	COMMENTS

TAPE

```
MENU
1 READ TEMP
2 READ METER
3 MACHINE
4 CONT FLOW ENABLE
5 FAN ENABLE
6 BUZZER
7 HI FIRE
8 LO FIRE
E EXIT
```

Comp-U-Dry responds with

```
SELECTION 4

1=ON  2=OFF  E=EXIT
```

Comp-U-Dry responds with

```
SELECTION 2
```

Comp-U-Dry responds with

```
SELECTION 1
```

DISPLAY

`E EXIT ■`

`1=ON 2=OFF E=EXIT ■`

`1=ON 2=OFF E=EXIT ■`

`1=ON 2=OFF E=EXIT ■`

COMMENTS

1. Set continuous flow switch to "AUTO"
2. Set grain thermostat to lowest (wettest) setting
Circulator & continuous flow should turn ON

PUSH **4**

Contacts between terminals 12 & 13 are normally closed.
To turn continuous flow OFF

PUSH **2**

Contacts between terminals 12 & 13 will be open. Continuous flow will turn OFF.

To turn ON

PUSH **1**

Contacts between terminals 12 & 13 will be closed. Continuous flow will be ON
To exit

PUSH **E**

Comp-U-Dry is now at the top of the utilities menu. Any of the UTILITY programs may be addressed by pushing the corresponding number or letter. To EXIT to the top of the main menu PUSH E .

To turn OFF machine and continuous flow, set grain thermostat to highest (driest) setting.

The normal mode for the Comp-U-Dry setting of the continuous flow enable is ON. If left in the wrong mode it will correct itself upon RESET or during the first sample cycle.

A set of normally closed contacts are wired between terminals 6 and 7 of
the Comp-U-Dry 16 point "F" terminal strip to allow interruption of the
Fan Contactor Lock-in Circuit.   See installation instructions for wiring
details.   One hour after receiving the signal from the low grain shutoff
that the bin is out of grain, the Comp-U-Dry automatically interrupts the
normally closed contacts for a few seconds to turn off the fan. The FAN
ENABLE subroutine allows the opening and the closing of these contacts as
follows.

TAPE	DISPLAY	COMMENTS
MENU 1 READ TEMP 2 READ METER 3 MACHINE 4 CONT FLOW ENABLE 5 FAN ENABLE 6 BUZZER 7 HI FIRE 8 LO FIRE E EXIT	E EXIT ■	To select Fan enable PUSH 5
Comp-U-Dry responds with SELECTION 5 1=ON 2=OFF E=EXIT	1=ON 2=OFF E=EXIT ■	Contacts between terminals 6 & 7 are normally closed. To open fan enable PUSH 2
Comp-U-Dry responds with SELECTION 2	1=ON 2=OFF E=EXIT ■	Contacts between terminals 6 & 7 will be open. If fan is running it should stop. To close PUSH 1
Comp-U-Dry responds with SELECTION 1	1=ON 2=OFF E=EXIT ■	Contacts between terminals 6 & 7 will be closed. Fan is now enabled and may be restarted manually To EXIT PUSH E

Comp-U-Dry is now at the top of the utilities menu. Any of the UTILITY
programs may be addressed by pushing the corresponding number or letter.
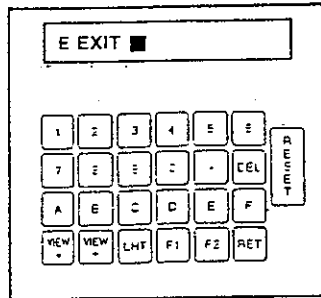To EXIT to the top of the main menu PUSH E .

If the Comp-U-Dry detects a malfunction in any of the drying system components which it monitors, it will print an error message on the tape and turn the BUZZER on. It may also shut down the drying process depending upon the seriousness of the malfunction. The operation of the buzzer may be checked as follows.

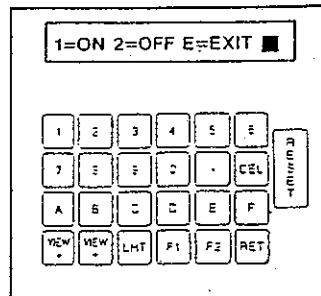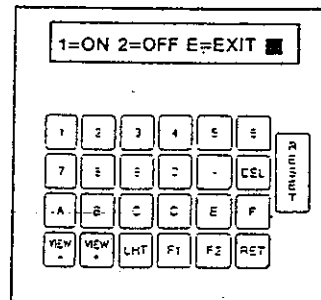| TAPE	DISPLAY	COMMENTS
MENU 1 READ TEMP 2 READ METER 3 MACHINE 4 CONT FLOW ENABLE 5 FAN ENABLE 6 BUZZER 7 HI FIRE 8 LO FIRE E EXIT	E EXIT ■	To select BUZZER PUSH 6
Comp-U-Dry responds with SELECTION 6 1=ON 2=OFF E=EXIT	1=ON 2=OFF E=EXIT ■	To turn Buzzer on PUSH 1
SELECTION 1	1=ON 2=OFF E=EXIT ■	To turn Buzzer off PUSH 2
SELECTION 2	1=ON 2=OFF E=EXIT ■	To exit PUSH E
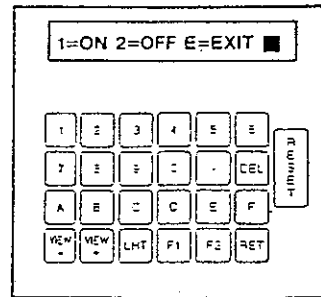
Comp-U-Dry is now at the top of the utilities menu. Any of the UTILITY programs may be addressed by pushing the corresponding number or letter. To EXIT to the top of the MAIN MENU PUSH E .
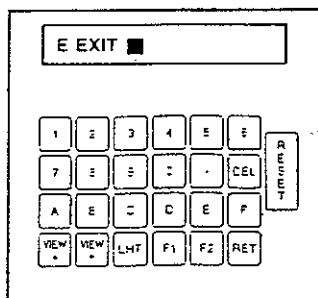
To operate the burner LO FIRE the Comp-U-Dry closes contacts between terminals 8 and 10 of the 16 point "F" terminal strip in the Comp-U-Dry. To operate the burner HI FIRE the Comp-U-Dry closes contacts between terminals 8 and 10 as well as 8 and 11 of the 16 point "F" terminal strip in the Comp-U-Dry.

See the installation instructions for the proper wiring details. With fan and burner running, burner power on, and thermostat set below plenum temperature this function may be checked using the HI FIRE program as follows.

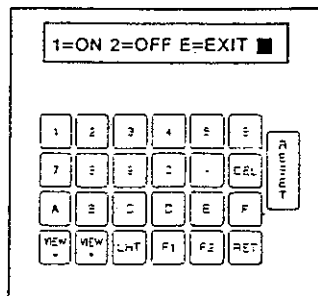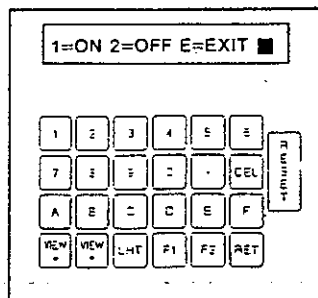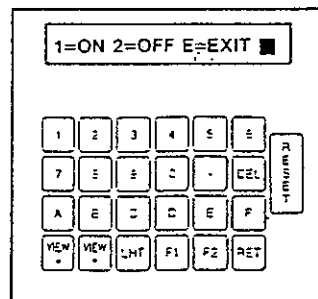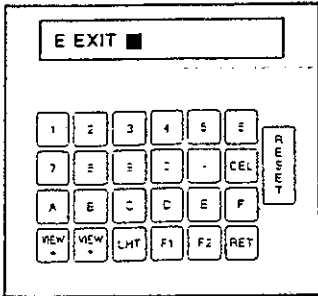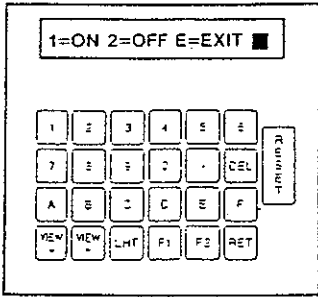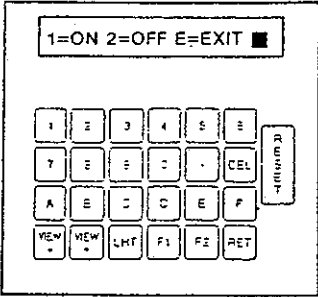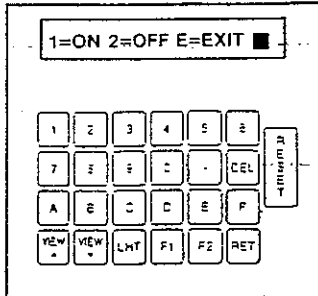| TAPE	DISPLAY	COMMENTS
MENU 1 READ TEMP 2 READ METER 3 MACHINE 4 CONT FLOW ENABLE 5 FAN ENABLE 6 BUZZER 7 HI FIRE 8 LO FIRE E EXIT	E EXIT ■	To select HI FIRE PUSH 7
Comp-U-Dry responds with SELECTION 7 1=ON 2=OFF E=EXIT	1=ON 2=OFF E=EXIT ■	Contacts between Comp-U-Dry terminals 8 & 10 and 8 & 11 are open To operate PUSH 1
Comp-U-Dry responds with SELECTION 1	1=ON 2=OFF E=EXIT ■	Contacts between terminal 8 & 10 and 8 & 11 will be closed. To turn off HI FIRE PUSH 2
Comp-U-Dry responds with SELECTION 2	1=ON 2=OFF E=EXIT ■	Contacts between terminal 8 & 10 and 8 & 11 will be open. HI FIRE will be off. To EXIT PUSH E

To operate the burner LO FIRE the Comp-U-Dry closes contacts between terminals 8 and 10 of the 16 point "F" terminal strip in the Comp-U-Dry.

See the installation instructions for the proper wiring details. With fan running, burner on, and thermostat set below plenum temperature this functions may be checked using the LO FIRE program as follows.

TAPE	DISPLAY	COMMENTS

TAPE

```
MENU
1 READ TEMP
2 READ METER
3 MACHINE
4 CONT FLOW ENABLE
5 FAN ENABLE
6 BUZZER
7 HI FIRE
8 LO FIRE
E EXIT
```

DISPLAY

E EXIT ■

COMMENTS

To select LO FIRE

PUSH   8

Comp-U-Dry responds with

```
SELECTION 8

1=ON 2=OFF E=EXIT
```

DISPLAY

1=ON 2=OFF E=EXIT ■

COMMENTS

Contacts between Comp-U-Dry terminals 8 & 10 are open
To operate

PUSH   1

Comp-U-Dry responds with

```
SELECTION 1
```

DISPLAY

1=ON 2=OFF E=EXIT ■

COMMENTS

Contacts between terminal 8 & 10 will be closed and LO FIRE will be ON.
To turn off LO FIRE

PUSH   2

Comp-U-Dry responds with

```
SELECTION 2
```

DISPLAY

1=ON 2=OFF E=EXIT ■

COMMENTS

Contacts between terminal 8 & 10 will be open and   LO FIRE off
To EXIT

PUSH   E

Comp-U-Dry is now at the top of the utilities menu. Any of the UTILITY programs may be addressed by pushing the corresponding number or letter. To EXIT to the top of the MAIN MENU   PUSH   E .

A program execution monitor is installed in the G2 Comp-U-Dry which checks approximately every minute to see if the program is executing. If not it turns off all output control circuits which shuts off the burners, the circulator sweep augers and the transfer augers. This prevents the transfer of wet grain if the drying program is interrupted by power surges or other malfunctions of the Comp-U-Dry.

The functioning of the program execution monitor is checked at 6:00 & 12:00 o'clock. During the monitor check, CONTROL CHECK will be shown on the display. The control check takes about 2 minutes to execute. If the program execution monitor malfunctions then a CAUTION message is printed out. The Comp-U-Dry will continue in the drying program and the buzzer will sound periodically between sample cycles to remind the operator that a vital program control is malfunctioning and should be corrected as soon as possible.
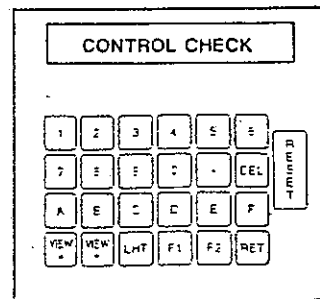
TAPE	DISPLAY	COMMENTS

```
       ----- CAUTION -----
COMPUDRY CONTROL INTERUPT INOPERATIVE
SEE OWNERS MANUAL. SERVICE IMMEDIATELY
       ----- CAUTION -----
```

CONTROL CHECK

If control check is O.K. then message is not printed on tape.

If the control check fails PUSH [RESET] to clear the error flag and try drying again. If the error occurs again correct the malfunction.

OTHER UTILITIES

Available in the utilities but not listed in the menu are a set of programs used by factory personnel, in the manufacture and check-out of the Comp-U-Dry. These programs are accessed by the [E] key when you are in the utilities menu. If this section is inadvertently entered the Comp-U-Dry data is as follows.

TAPE	DISPLAY

```
WARNING..AUTHORIZED USE ONLY. E=EXIT
```

E EXIT
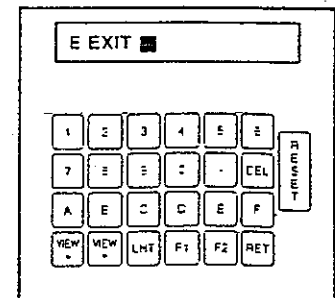
As damage may occur to the Comp-U-Dry or some of its subsystems by furth(entry into these programs, [E] must be pushed to exit to the top of the MAIN MENU.

INSTALLING MEMORY RAM AND PROGRAM ROM CHIPS

1) TURN OFF ALL POWER TO FANS AND DRYER CONTROLS.

2) Make sure top of Comp-U-Dry control box is clean and open the front cover. Loosen 4 screws which hold cover on control board box. Slide cover up and out to remove.

3) Remove old memory RAM or program ROM chip. A small screwdriver prying up lightly on the end of the chip will help. Do not pry up on the chip socket.

****** CAUTION ******
Chips may be damaged by static electricity.
Leave chip in carrying container until ready to install.
Ground both hands to metal box before handling chip.
Hold ROM or RAM from ends. Do not touch pins.
Chip should be set with pins touching a metal surface
Place removed ROM or RAM in carrying container and return to SHIVVERS.
****

3) Install new memory RAM or program ROM chips. There is a small notch or dot on the end of each chip. This notch or dot should face toward the bottom of the control box. Be careful that all pins are engaged in the socket before seating the chip.

4) Reinstall the cover to the control board box.

5) Close Comp-U-Dry control box front cover making sure signal cables do not get pinched.
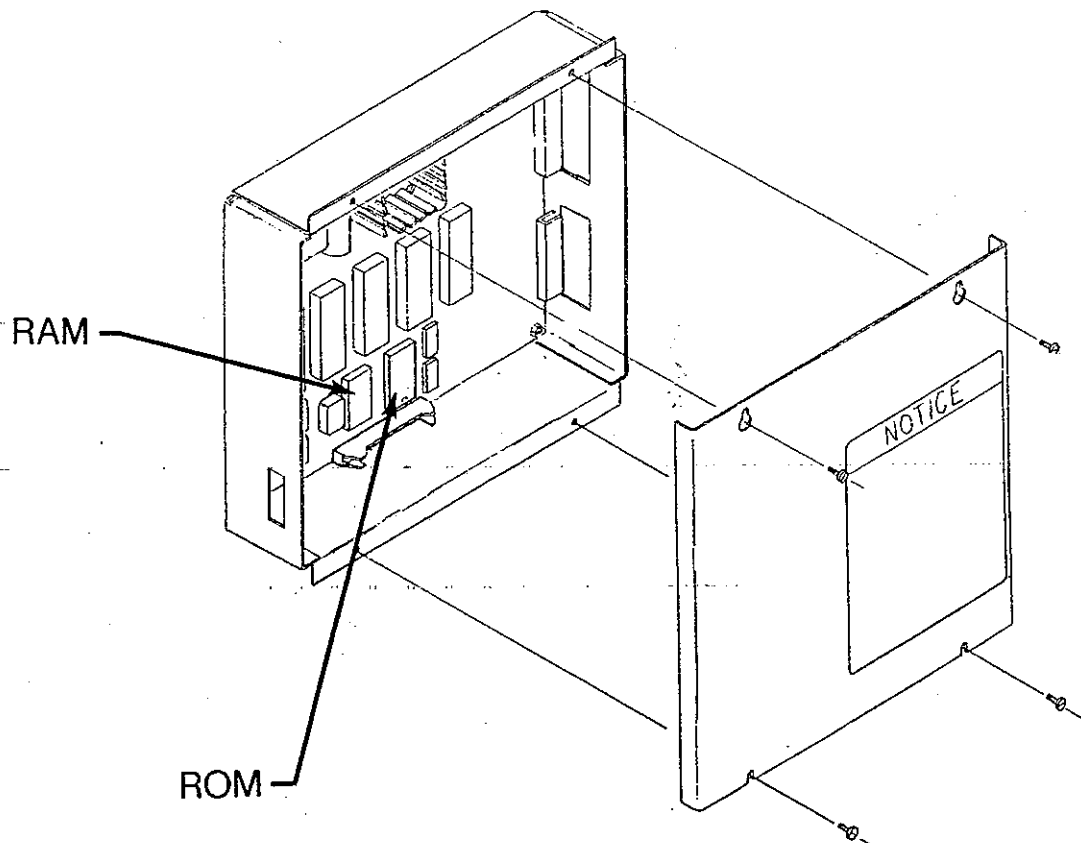
TO LOAD PAPER:

1) Place the paper roll on the paper bail, making sure the paper is feeding from under the roll. (As shown)
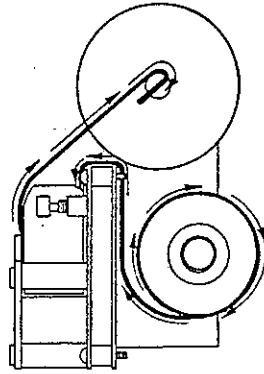
2) Insert paper behind the printer mechanism turning the paper advance knob in a downward direction. This threads the paper through the mechanism to the front of the printer.

3) Pull paper up and hook through the slot of the spindle, manually turning the spindle clockwise a few turns to start the wrap of the paper. Push the red rewind button after the paper is started to take up the slack.

   NOTE: DO NOT pull the paper backwards through the printer. Always pull the paper out from the front of the printer.
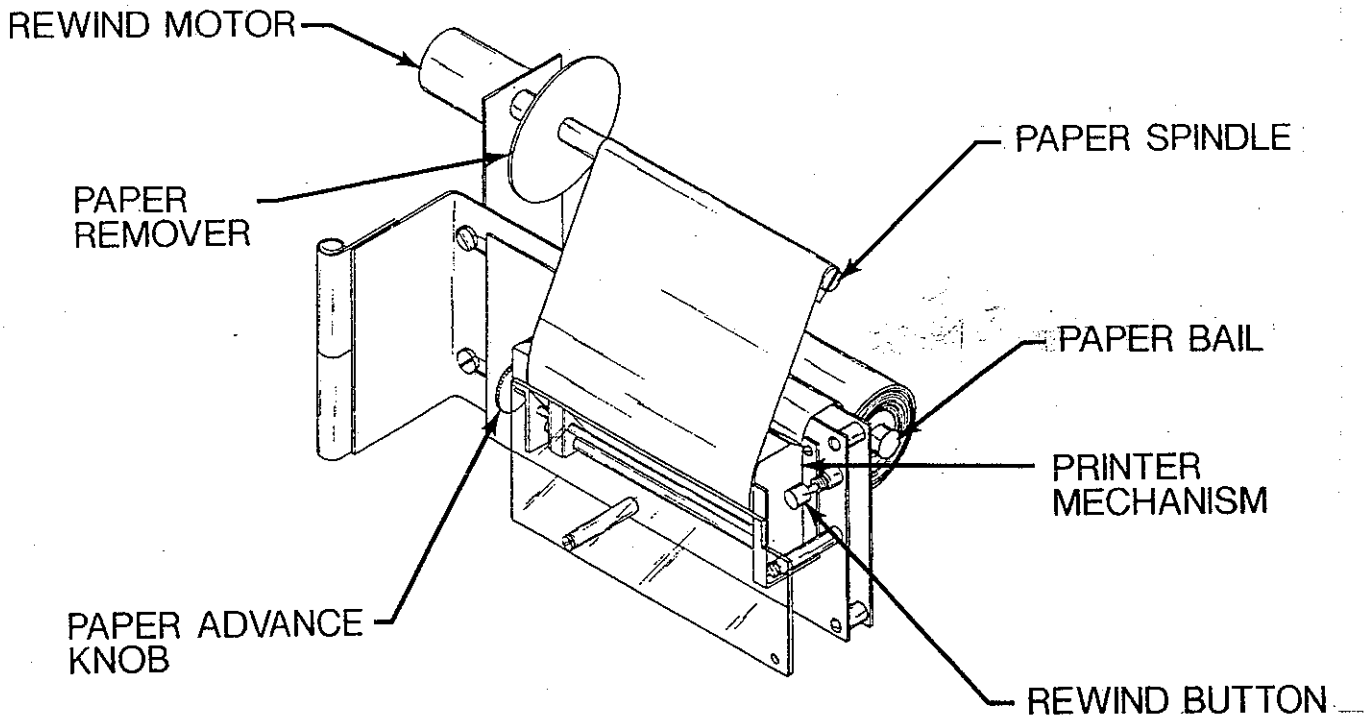
REPLACEMENT PAPER: This unit requires Seiko paper #TP401-25. You can obtain this by ordering from your dealer or from Shivvers Inc. Shivvers Part Number C-6144. Do not store paper in direct sunlight or high temperatures.

ERROR MESSAGES

If the G2 Comp-U-Dry recognizes an error condition, it will usually try at least twice to clear the error before shutting the system down and turning the buzzer on. There will usually be some type of extra printing indicating that an error has occurred. Generally, if there is an error shutdown, press RESET or power off and try drying again. If the error persists, try to observe when the error is occurring and save all information printed on the tape before calling for service.

MESSAGE	MEANING	PROBABLE CAUSE and ACTION
COUNTER NOT CLEAR	Counter on control board not resetting to accept new data.	Replace 597-350A Control board box assembly.
METER SENDING DATA	Moisture meter keeps sending data after it should have stopped.	Replace 597-375A Moisture Sensor Assembly
READINGS NOT CHANGING	Data the Moisture Sensor sends is the same on all 10 readings. 1. Moisture Sensor auger may not be turning.	1. Check for stuck sweep, blown fuse or heater, loose belts, drive pulley not engaged. If auger turns using manual mode, try running auger in the Comp-U-Dry Utility menu. If auger does not turn in Utility check relay & Comp-U-Dry wiring.
	2. Moisture Sensor plugged.	2. Clean Moisture Sensor
READING OUT OF RANGE usually will print ERROR READ= XXXX	Moisture reading is outside normal range. 1. Moisture Sensor calibration off. 2. Moisture Sensor wet or plugged. 3. Moisture Sensor bad. 4. Moisture cable damaged.	1. Check grain sample moisture to compare. Re-calibrate moisture meter if required. 2. Clean out Moisture Sensor. 3. Replace 597-375A Moisture Sensor. 4. Repair or replace 597-389A Moisture Cable Assembly.
NO TEMP READING	Plenum temperature probe reads 000. 1. Plenum temperature probe damaged.	1. If grain temperature & Moisture readings are OK replace 597-378A Plenum Temperature Probe Assembly If not, replace 597-350A Control board box assembly.
	2. Very cold out & burners not running.	2. Run burners manually until probe heats up.

MESSAGE	MEANING	PROBABLE CAUSE and ACTION
BAD GRAIN TEMPERATURE	Grain temperature reading over 160 F or below 3 F . 1. Grain could be that hot. 2. Moisture Sensor cable or probe damaged.	1. Reset Comp-U-Dry & run some grain thru manually. Lower maximum plenum temperature. Level grain in the bin. 2. If plenum temperature & moisture readings are OK then repair or replace 597-389A Moisture Cable or 597-375A Moisture sensor. If not replace 597-350A Control board box assembly.
PLENUM TOO HOT	Plenum temperature reading is 20 F above operating point. 1. Burner thermostat not at lowest setting. 2. Gas pressure too high causing overshoot. 3. Manual control or modulating valve over-riding Comp-U-Dry. 4. Stuck gas solonoid 5. Comp-U-Dry not turning burners off.	1. Turn plenum thermostat to lowest setting. 2. Reset gas pressure. 3. Check & correct. 4. Repair or replace. 5. Check relay board. Replace 597-350A Control board box assembly.
PLENUM TOO HOT (1 hour after bin out of grain)	Plenum is over 100 F after 1 hour cool-down.	Burner not off due to manual contol over-riding the Comp-U-Dry. Turn plenum thermostat to lowest setting.
RAM BATTERY LOW	Could occur occasionally.	If it occurs every time unit is turned off and on, replace E-5897 RAM
RAM VALUES CHANGED	Drying constants which are stored in 2 places in RAM memory are not the same.	Can happen if unit shut off at wrong time. Re-set unit and re-enter drying constants. If it keeps occuring, replace E-5897 RAM.
DRYING PARAMETERS SET TO DEFAULT VALUES		Occurs in association with above two errors. Re-enter drying constants if different from default values.

MESSAGE	MEANING	PROBABLE CAUSE and ACTION
PRINTER DOWN	Printer doesn't pass initialization on startup.	Check printer mechanism gears for dirt. Paper not feeding properly. Check cable connection at both ends. Bad printer. Replace 597-399A Printer Rewind Assembly. Press any key to continue drying without printer.

NOTE: Other printer errors:

	MEANING	PROBABLE CAUSE and ACTION
	Head going back and forth but not printing.	Paper in backwards or wrong paper.
	Leaving horizontal space in characters.	Thermal head element burned out.
	Leaving vertical space in characters.	Dirt on paper platen.
	Rewind not working.	Shim stop too tight. Motor rewind bearing out of place. Pull out and up on rewind shaft to reseat bearing.
BIN OUT OF GRAIN DRYER STOPPED 7:13AM SHUT FAN OFF 8:13AM	Low grain shut-off signals bin is out of grain.	Bin is out of grain. Fill bin. Grain Level Indicator turned off. Turn Grain Level Indicator on. Check Grain Level Indicator light on electrical panel.