Chore-Tronics™

Model 16/8 Control

Chore-Tronics™ Model 16

1 CURRENT CONDITIONS
2 SET TEMP. / MIN. TIMER
3 OUTPUTS - TEMPERATURES
4 FEED CLOCK
5 LIGHT CLOCK
6 HISTORY

7 ALARMS
8 SET TEMP. CURVE
9 VARIABLE SPEED
10 STATIC PRESSURE
11 PROGRAMS
12 SETUP

CHORE-TIME

Chore-Tronics™ Model 8

1 CURRENT CONDITIONS
2 SET TEMP. / MIN. TIMER
3 OUTPUTS - TEMPERATURES
4 FEED CLOCK
5 LIGHT CLOCK
6 HISTORY

7 ALARMS
8 SET TEMP. CURVE
9 VARIABLE SPEED
10 STATIC PRESSURE
11 PROGRAMS
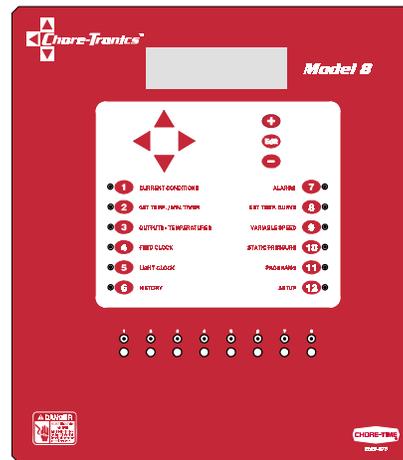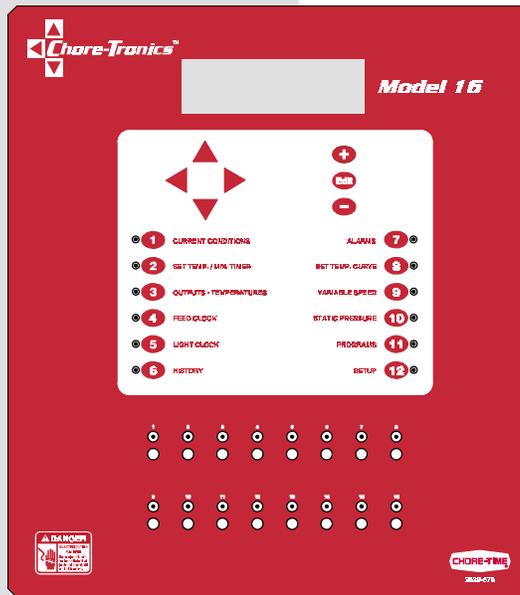12 SETUP

CHORE-TIME

MT1554-01 5/98

User / Installer Manual

MT1554A
August 1998

General

Chore - Time Warranty

Chore-Time Equipment warrants each new product manufactured by it to be free from defects in material or workmanship for one year from the date of initial installation by the original purchaser. If such a defect is found by Chore-Time to exist within the one year period, Chore-Time will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement.

Conditions and limitations:

1. The product must be installed and operated in accordance with instructions published by **Chore-Time or warranty will be void.**

2. Warranty is void if **all components** of a system are not supplied by **Chore-Time.**

3. This product must be purchased from and installed by an authorized Chore-Time dealer or certified representative thereof, or the warranty will be void.

4. Malfunctions or failure relating to or resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance, or from lightning strikes, electrical power surges or interruption of electricity, shall not be considered defects under this warranty.

5. This warranty applies only to systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this warranty.

Chore-Time shall not be liable for any **Consequential or Special Damage** which any purchaser may suffer or claim to have suffered as a result of any defect in the product. **"Consequential"** or **"Special Damages"** *as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.*

THIS WARRANTY CONSTITUTES CHORE-TIME'S ENTIRE AND SOLE WARRANTY AND CHORE-TIME EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

Any exceptions to this warranty must be authorized in writing by an officer of the company. Chore-Time reserves the right to change models and specifications at any time without notice or obligation to improve previous models.

CHORE-TIME EQUIPMENT, A Division of CTB, Inc.
P.O. Box 2000
Milford, Indiana 46542-2000 U.S.A.

Contents

Contents - continued

Topic   Page

Support Information

Using this equipment for any other purpose or in a way not within the operating recommendations specified in this manual will void the warranty and may cause personal injury.

✳ *{Note}* | **As with all electronic controls, we recommend the use of a backup system. This will provide continuous operation in the unlikely event of a control failure.**

Distributor and Installer Information

Please fill in the following information about your Product.
Keep this manual in a clean, dry place for future reference.

Distributor's Name _____

Distributor's Address _____

Distributor's Phone _____ **Date of Purchase** _____

Installer's Name _____

Installer's Address _____

Installer's Phone _____ **Date of Installation** _____

System Specifications _____

_____

Introduction

This manual is designed to provide comprehensive planning, installation, operation, and parts listing information. The Table of Contents provides a convenient overview of the information in this manual.

Read this manual before operating your Control.

If you have any questions regarding your Control, please contact your local Chore–Time dealer.

Explanation of Symbols and Special Manual Elements

⚠ *<Caution>* **Cautions alert you to potential damage to the Controller, if the procedures are not followed carefully.**

⚠ *! Danger !* **Dangers alert you to potentially hazardous situations which, if not avoided could result in death or personal injury.**

✳ *{Note}* **Notes contain additional information or "reminders" of important information you should know.**

Safety Instructions and Warnings

- Read all instructions in this manual carefully, before operating the Control.

- Ground all electrical equipment for safety.

- The installation of the Control must be done by an authorized technician / installer

- All wiring should be done by a qualified electrician in accordance with local and national electrical codes.

- Electrical current to control must be hard wired into breaker box, eliminating any receptacle.

- Control should be located in an area that is protected from the elements.

- Front cover must be kept closed at all times except when front panel is in use.

- Control should be mounted securely to an internal wall or to a board that is mounted to a wall.

- **As with all electronic controls, we recommend the use of a backup system. This will provide continuous operation in the unlikely event of a control failure.**

- It is recommended that access codes be used to avoid unintentional alterations to the settings.

- It is recommended that an audible warning device (i.e. siren, phone dialer, etc.) be used to inform grower of unacceptable conditions.

- Check the Control regularly for possible malfunctioning. Notify your local Chore-Time distributor of any problems.

- It is recommended that the control be energized year round. This will help the interior of the control to stay dry, and extend the life of the memory backup battery. If the house is empty, use the manual switches to discontinue the function of equipment wired to the control.

⚠ **<Caution>** • Check your Control regularly for proper functioning. This control is manufactured to provide reliable operation as well as an alert system to notify you of system failures. However, this cannot be 100% guaranteed because of circumstances that are beyond Chore-Time's control. Since this control is helping to provide a living environment for livestock, it is recommended that a Back-Up system be provided in the unlikely event of a system failure. Failing to provide a Back-Up will be viewed as the user's willingness to accept the risk of that loss.

• Chore-Time takes no responsibility for any possible damage as a result of improper settings and non or partially functioning installation.

• Chore-Time takes no responsibility for any possible damage due to failure, damage, or malfunction resulting from misuse, abuse, negligence, alteration, accident, lack of proper maintenance, improper or insufficient power sources or electrical connections, impact of foreign objects, tornado, hurricane, other violent storm, flood, fire, pollutants, chemicals, acts of God, or other causes outside the reasonable control of Chore-Time.

⚠ **! Danger !** • Do not use running water or high pressure washers on or around your control.

Notice to Electrician

Each relay output in this Chore-Tronics™ control is designed to control 1 H.P. for many years of service. The relays are single pole, normally open contacts and break only one line of the power to the various loads. (The control is not to be considered the disconnect device for motor loads.) If a load of more than 1 H.P. is controlled by a relay in the control, additional contactors are required and some of the basic flexibility of the control is compromised. It is very important that the owner/integrator understands that the grouping of loads compromises flexibility.

It is recommended that the installation diagram on **page 32** be used to configure the house, and the relay decal inside the box is filled out completely. If this step is completed prior to wiring, it will eliminate any unnecessary confusion. Filling out the relay position decal will help to properly group the loads.

Initial Setup

1. Referring to the drawing on **page 32** (as was mentioned in the previous section), attach the small decals that are included with the control to the numbered toggle switches on the face of the control. The names of the devices (TUN FAN, EXH FAN, HT ZONE, COOL, etc.) have to be associated with the switch numbers which in turn correspond to the relay numbers. This step cannot be avoided. The control requires that the relay numbers be associated with names. These names define what the output relays do during the various modes of operation and temperature conditions.

2. Answer all questions and adjust all settings in *Screen #12*. In this screen the relay numbers are associated with the output names in the drawing on **page 32**. This must be done first in that the other screen's contents are affected by the answers and settings of *Screen #12*.

3. Answer all questions, and adjust settings in Screens # 2,3,4,5,7,8,9, and 10.

4. Recheck all screens to verify everything is as desired.

5. Answer "yes" to the third question in *Screen #11*. This will save these settings as the installation settings.

⚠️ **! Danger !** **While going through the setup steps, place manual switches in "Off" position until the process is completed.**

✳ **{Note}** **Ignore alarms until setup process is completed. Then reset alarm system as described in *Alarms* section of this manual.**

Types of Outputs

EXH FAN, TUN FAN, COOL AND STIR FAN

(Relay contacts close, supplying power to the equipment on temperature rise).

MT1553-01 4/98
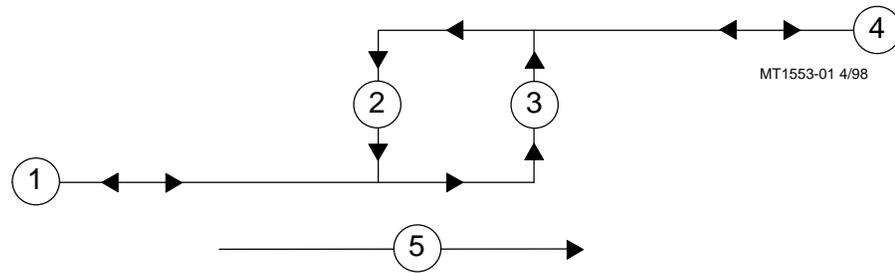
Key	Description
1	Output Off
2	Fan Off (temp falling)
3	Fan On (temp rising)
4	Output On
5	Temperature Increasing

HEAT ZONE

(Relay contacts close, supplying power to the equipment on temperature fall).

MT1553-02 4/98
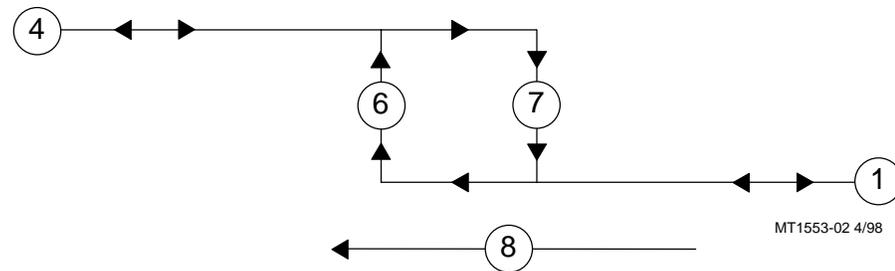
Key	Description
1	Output Off
4	Output On
6	Heat On (temp falling)
7	Heat Off (temp rising)
8	Temperature Decreasing

VAR FAN 1 & 2
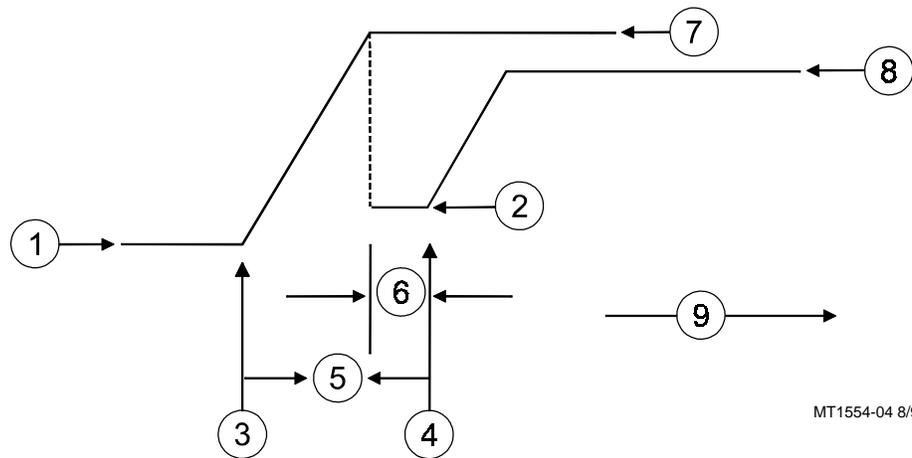
MT1554-04 8/98

Key	Description
1	Minimum Speed 1
2	Minimum Speed 2
3	*Variable Fan 1 – on
4	*Variable Fan 2 – on
5	2.5° Fahrenheit – minimum allowed
6	.5° Fahrenheit – fixed
7	Variable Fan #1 – Full Speed
8	Variable Fan #2 – Full Speed
9	Increase Temperature

*See *Outputs-Temperatures* BUTTON 3

✳ *{Note}* —— **1, 2 ,3, and 4 are the only values that can be edited. If the variables are to function independently of each other, the "On" for variable 2 has to be set at 2.5°F above the "On" for variable 1.**

If the "on" for both variables are the same, then they will function identically.

Types of Timers

There are two types of timers.

1. The first type is only used for COOL outputs. It modulates (turns on and off) a COOL output above the COOL output's "on temperature".

2. The second type of timer is used on EXH FAN, STIR FAN, TUN FAN (Model 16) and VAR FAN 1 outputs. It modulates an output below these output's "on temperature".

Modes of Operation

Power Mode

POWER 5/98

Natural Mode

NATURAL 5/98

Tunnel Mode

TUNNEL 5/98
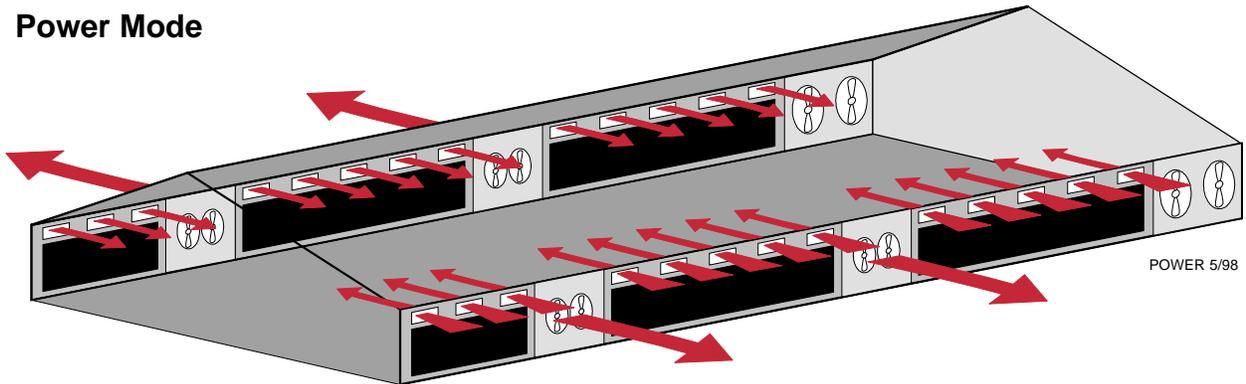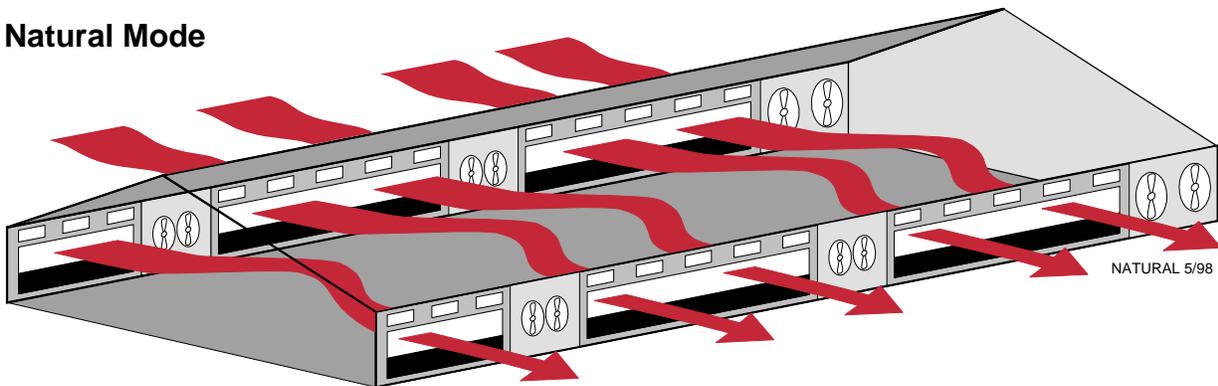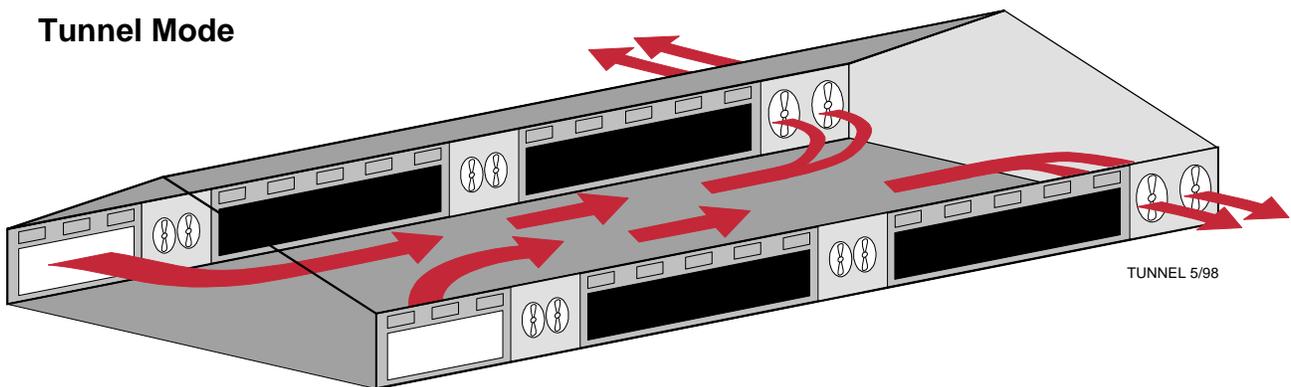
Introduction to Control

Description of Control Front Panel

MT1554-02 5/98
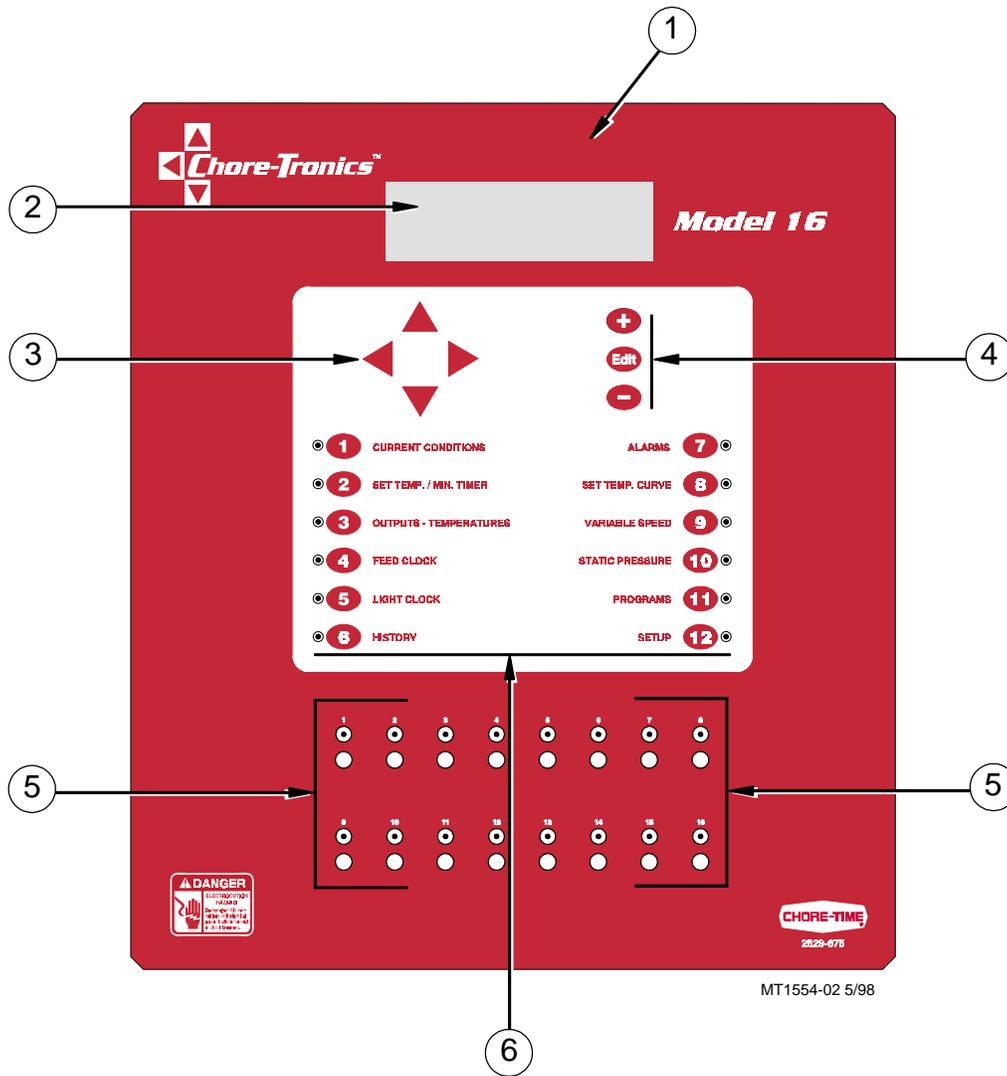
Item	Description
1	Model 16 Control Shown
2	Viewing Screen
3	Navigation Buttons
4	Edit Buttons
*5	Relay Switches
6	Subject Buttons

* Model 8 has only 8 Relay Switches

Viewing Screen

The viewing screen has a display which can show 8 lines, each containing 40 characters. This is the area that will display the requested information when a subject button is pressed. The viewing screen will always remain lit. When other subjects are not shown, the *Current Conditions* screen will be displayed

```
        POWER mode sensor   71.8
         Set temperature   72.0
  Sensor #1  71.9      Sensor #4  72.4
 *Sensor #2  71.8      Sensor #5  71.5
  Sensor #3  72.0      Sensor #6  72.2
Static pressure  0.05      Humidity  62
(CHECK SWITCHES)        (CHECK ALARMS)
Date: 11 May 1998         Time: 8:05a
```

Navigation Buttons

These buttons allow you to scroll up and down in those few screens that have more information than will fit on the screen. When **HOLDING DOWN** an *up* or *down* arrow button, this will activate "auto repeat", which accelerates the scrolling process. The *left* and *right* arrows are used only when you are in the *Edit Mode* (explained below) and will move a cursor to an editable (changeable) position. This will highlight the area you want to change.
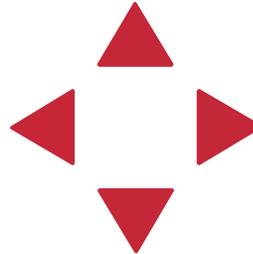
Edit Buttons

When the button labeled **Edit** is pressed and you are looking at a screen that has editable fields, a cursor will appear. With the *Navigation Buttons*, you can move the cursor to the position on the screen you want to edit. By pressing the **"+"** or **"–"** button, it will change the numerical value up or down, or if you are changing text (i.e. "yes" or "no") it will select the possible text choices. These buttons also have "auto repeat" which will accelerate the changing of numbers.

Security

To provide for security in setting your controls, there is an optional security feature that will appear only when you initiate the *Edit* process. When you press the **EDIT** button, the control will automatically ask for an access code. This is a four digit number that you have selected while setting up the control and is explained under the "**Set-Up and Calibration***"* section. Once you have inserted the correct code, the control will allow you to make all the edits you need. However, if five minutes have passed since your last edit, and you would like to make further edits, you will have to reinsert your access code. As long as you are working with the settings and the five minutes have not elapsed, you can make as many edits as you need without re-inserting the code.

✳ {Note} ———— | **An example of using the *Edit Buttons* and the *Navigation Buttons* are discussed later in this section.**
See "How to Maneuver in the Viewing Screen"

Subject Buttons

On the front of the Controller are 12 subject keys each with an indicator light.

As each subject button is pressed, the subject that is described beside the button will appear on the screen and the light on the other side of the button will be lit. After viewing that subject for five minutes, and if no other buttons are pressed, the control will automatically return to the *Current Conditions* screen.

An explanation of each subject is described in the following section entitled "**Operation".**

Indication Lights and Auto/Manual Switches

Each relay output has its own three position switch that allows the user to manually control the relay. Each switch is labeled showing what function it controls and can be placed in three positions — "on", "off", or "auto". The "auto" position is for normal operation and allows the control to perform all the functions. Changing the switches to "on" or "off" will either enable or disable (an enabled relay allows current to flow to the equipment wired to it) that particular relay. When a switch is in a position other than "auto", a message will appear in the *Current Conditions* screen advising to "check switches". The software provided for off-sight monitoring will also inform the user of the switch positions. **This does not apply to unused relays.**

The light above the switch indicates that the relay is activated. This light will stay off if the switch is in the "off" position.

These mechanical switches are part of the system so the operator has full control, if needed, of the functions within the house. It also allows the operator advantages such as being able to turn a device on or off for testing.
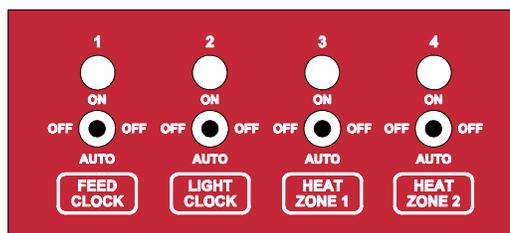
MT1553-08 5/98

How to Maneuver in the Viewing Screen

- The procedures below give a brief overview on the use of the *Navigation Buttons* and the *Edit Buttons.*

- For this example we will be looking at the *Setup and Calibration* Screen. (*Button 12* on the Control front panel).

Using the Navigation Buttons

1. Press **BUTTON 12**.
   Setup and Calibration screen for viewing appears (**Figure 1**)**.**

```
House number                          1

Temperature units            FAHRENHEIT
Units of measurement         NON-METRIC
Clock type                        12 HR

Time of day                        8:05a
Date                         11 May 1998
```
Figure 1. Setup and Calibration Screen.

At this point you can move from line to line by pushing the **DOWN ARROW** or the **UP ARROW**. This will cause the text to either scroll up or down one line at a time**.**

2. Press the **DOWN ARROW** once.
   The text will scroll one line **(Figure 2).** If you push the **UP ARROW** once the text will scroll back to the previous line.

```
Temperature units            FAHRENHEIT
Units of measurement         NON-METRIC
Clock type                        12 HR

Time of day                        8:05a
Date                         11 May 1998
```
Figure 2. Setup and Calibration Screen.

✳ *{Note}* | **The LEFT and RIGHT arrow keys are only functional in the *Edit Mode.***

See following page on the use of the *Edit Buttons.*

Using the Edit Buttons

- This example gives you a brief summary on how to use the *Edit Buttons* in conjunction with the *Navigation Buttons* to edit values.

- For this example we will be looking at the *Setup and Calibration* Screen. (*BUTTON 12* on the Control front panel).

1. Press **BUTTON 12**.
   Setup and Calibration screen for viewing appears **(Figure 3).**

```
House number                           1

Temperature units             FAHRENHEIT
Units of measurement          NON-METRIC
Clock type                        12 HR

Time of day                        8:05a
Date                         11 May 1998
```

Figure 3. Setup and Calibration Screen.

2. Press the **EDIT** button.

✳ *{Note}* *(If a screen comes up asking you for an "Access Code", enter it at this time. If more information is needed please turn to the operation section page 36.)* **This activates the cursor and allows you to edit certain settings. Figure 4 shows what the screen looks like.**

- **Notice that the settings are highlighted when they can be edited.**

The white text with black background designates those areas that can be edited to the individual growers specifications. When viewing the actual Control Display, the text will be black with a shaded green background.

```
House number                           1

Temperature units             FAHRENHEIT
Units of measurement          NON-METRIC
Clock type                        12 HR

Time of day                        8:05a
Date                         11 May 1998
```

Figure 4. Setup and Calibration edit Screen.

3. Press the (+) or (–) buttons to edit the House #.
   The (+) key will increase the value and the (–) key will decrease the value.

4. Press the **DOWN ARROW (Figure 5).**

```
House number                              1

Temperature units               FAHRENHEIT
Units of measurement            NON-METRIC
Clock type                           12 HR

Time of day                           8:05a
Date                           11 May 1998
```

Figure 5. Setup and Calibration edit Screen.

5. Press the (+) or (–) buttons to change from Fahrenheit to Celsius.
    In this case the (+) and (–) buttons select different text choices.

6. If two or more editable settings are on the same line, the *left* and *right* arrow
    buttons will be used to move between those positions.

✳ *{Note}*
To exit the *Edit Mode* — Press the EDIT key. This will take you out of
the edit mode and turn off the cursor.

When a value or text is edited, it is immediately saved in the control.
This eliminates the need for an enter key.

Operation and Description of Function Settings

1

Current Conditions Screen

- This screen shows a brief summary of the current conditions of the house. There are no editable values in this screen—it is for viewing only.

```
 POWER mode sensor        71.8
      Set temperature     72.0
 Sensor 1  71.9     Sensor 4  72.4
+Sensor 2  71.8     Sensor 5  71.5
 Sensor 3  72.0     Sensor 6  72.2
Static pressure  .05        Humidity 62
(CHECK SWITCHES)        (CHECK ALARMS)
Date: 11 May 1998        Time: 8:05a
```
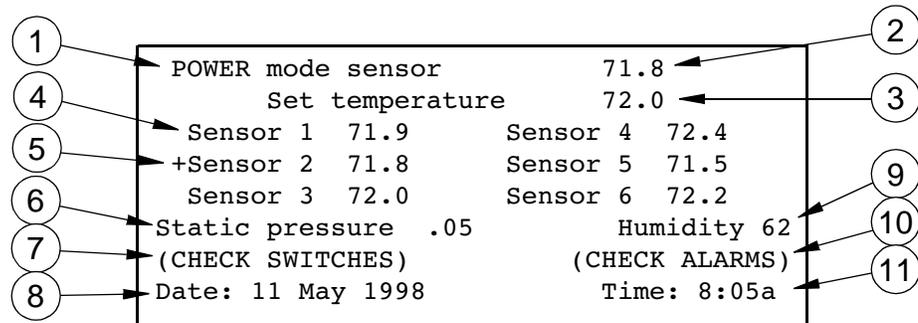
Figure 6. Model 16 Current Conditions Screen

1. **Operating Mode -** this indicates the current mode of the control.

2. **Control Temperature** - this is the current reading of the control sensor (or sensors) that are assigned to the current mode of the control. The current control sensor is indicated by a (+) in the list of sensors.

3. **Set Temperature** - this is the temperature you want to achieve in your house through the use of heating, cooling, and ventilation.

4. **Sensors** *(Model 16 has a maximum of 6 sensors, 4 are included; Model 8 has a maximum of 4 sensors; 2 are included)* - each sensor that is being used in the house will show a current temperature. If a sensor is not used, the temperature will be blank. If a sensor is out of range, it will be indicated by "#" in place of a temperature.

5. **(+)** - this indicates that the sensor is a control sensor. If more than one (+) appears, the control temperature will be the average of those sensors.

6. **Static Pressure** - indicates the current static pressure in the house. If static pressure is not being used this area will be blank. If there is a reading that is out of range, it will be indicated by "#" in place of a static pressure.

7. **Check Switches** - this will appear (flashing) if any of the manual switches are in a position other than "auto", except for unassigned switches

8. **Date** - shows the current date.

9. **Relative Humidity** *(Model 16 only)* - indicates the current relative humidity in the house. If relative humidity is not being used this area will be blank. If there is a reading that is out of range, it will be indicated by "#" in place of a relative humidity.

10. **Check Alarms** - this will appear (flashing) if the control detects an alarm condition. This will continue to appear until the condition is corrected.

11. **Time** - shows the current time using either a twelve or twenty-four clock.

2

Set Temperature and Minimum Timer

```
①  ──────────────▶  Set temperature   72.0
②  ─────────────▶  Set temp curve on

TIMER SETTINGS(sec):      ON      OFF
  Min ventilation         60      240
  Timer 1                200◀─    100 ◀─────  ③
  Timer 2                120      480
```
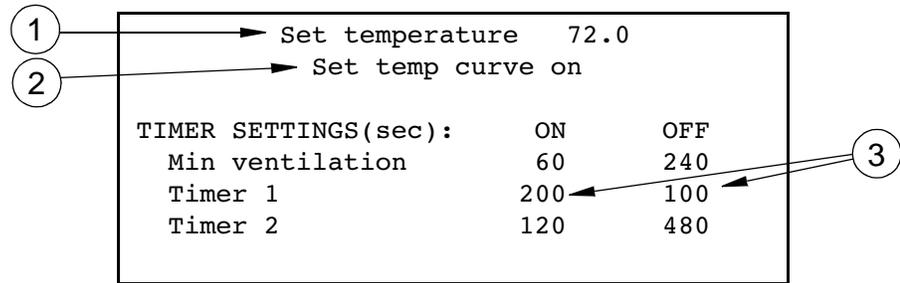
Figure 7. Model 16 Set Temp./Min. Timer Screen

1. **Set Temperature -** this is the temperature that you chose to operate your house at and the control will do its best to maintain. This value can be changed by using your edit procedure discussed earlier.

2. **Set temperature curve on** - this indicates if the set temperature curve is activated, (this function is activated in the *Set Temp Curve* screen—*Button 8*). If "on", then the curve will make adjustments automatically to your temperature. If not, then any changes to set temp must be done manually in this screen.

3. **Timer Settings** - this is where you set your on and off values (in seconds) for the different timers that can be used. *The Timer 2 is available only on the Model 16.*

✳ *{Note}* ───── | **If the Set Point Curve is off, there is nothing shown.**

3

Outputs–Temperatures

• This Output Temperature screen describes how your control is set to operate.

```
       ON      OFF     OUTPUT         TIMER
      83.0    80.0    Cool 1          ---
      81.0            Tun Fan 6
      80.0            Tun Fan 5
      79.0            Tun Fan 4
      79.0            Tun Fan 3
      79.0            Tun Fan 2
      79.0            Tun Fan 1
      79.0    72.0    Tunnel   ALLOWED
      77.0            Natural  ALLOWED
      76.0            Exh Fan 3       ---
      75.0            Exh Fan 2       ---
      74.0            Exh Fan 4       ---
      73.0            Exh Fan 1       ---
      72.0            Set temperature
      70.0            Ht Zone 1
      70.0            Ht Zone 2
      70.0            Ht Zone 3
      40.0            Ht Zone 4
```

Figure 8. Model 16 Output Temperature Screen

1   **Output** - This gives a complete list of each piece of equipment that is hard wired into the control through the relay panel and indicated in the *Setup and Calibration — BUTTON 12*. This allows you to see what will happen in the house as the temperature moves away from set temperature.

2. **On Temperature** - These are the temperatures you will assign to turn a particular device on. With the exception of cooling and tunnel, the off temperature will be the next temperature closet to set temperature you have assigned (the minimum on/off difference is 0.5° F (.3 C). These temperatures can be re-assigned, for example if you feel a particular fan is coming on too frequently due to its position in the temperature order.

3. **Off Temperature** - Here is where you enter the off values for cooling and tunnel *(tunnel available on Model 16 only)*. This helps to prevent the rapid cycling of those functions.

4. **Timer** - This is where you assign a Timer to outputs as described in screen "2". You can designate as many fans to be on timers as you wish.

5. **Temporary Tunnel/Natural Mode Override** *(tunnel available on Model 16 only)* - Here you can temporarily disallow tunnel or natural modes without having to alter your set up screen. This can be convenient when the age of the birds is a factor as to whether a mode is used (i.e. not going into natural with baby chicks). While in *Edit*, pressing the (+) button will alternate between "ALLOWED" and "NOT ALLOWED".

4

Feed Clock

```
FEED CLOCK:          Number of events  5

Start at hh:mm      Run for hh:mm:ss
         08:00a              00:00:00
         08:00a              00:00:00
         08:00a              00:00:00
         08:00a              00:00:00
         08:00a              00:00:00
```

1

2

3
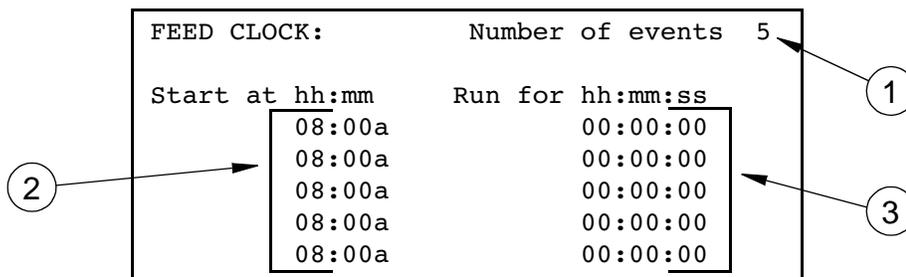
Figure 9. Feed Clock Screen

1. **Number of Events** - here you determine the number of feeding events you want by placing a number (up to 24) in this position. Whatever you choose will then show on the screen so you can put in the start and run times.

2. **Start Time** - here you enter the start time that you want that particular feeding cycle to begin. This can be shown in twelve or twenty-four hour time (see Setup screen, button 12).

3. **Run Time** - this is where you enter the run time for the feeding cycle. This is done in hours, minutes, and seconds. If a time segment is not needed such as seconds, then place zeros in these positions.

✻ {Note}

A run time of all zeros will prevent an event from happening.

5

Light Clock
The light clock functions in the same manner as the Feed Clock

6

History

```
  MAX TEMP        MIN TEMP         WATER
  79.6  7:06p     66.2  6:12a        66
  82.4  4:22p     64.0  3:05a        72
  80.7  5:27p     65.9  4:08a        85
  78.5  6:13p     62.7  5:15a        61
  84.1  5:51p     61.4  3:21a        76
  81.9  3:02p     65.9  3:53a        70
  79.2  5:48p     67.0  4:09a        72
```

Figure 10. History Screen

Temperature Readings

1. These are the maximum/minimum temperatures of the mode control sensor(s) recorded in your house for the current day since last midnight. The time at which the temperature occurred is also shown.

2. This shows the maximum/minimum temperatures of the mode control sensor(s) recorded in your house for each of the past six days. The time at which these temperatures occurred is also shown.

Water Usage

3. This is the water usage for the current day since last midnight.

4. This is the water usage for each of the past six days.

� *{Note}* | This input can be received from any water meter that has electrical output. Check with your Chore-Time distributor for compatible meters. This communication is established in the *Setup and Calibration — BUTTON 12*

7

Alarms

```
Alarm System ENABLED
        (Shows alarm message)
Max relative to set temp    +10.5 (82.5)
     Max actual alarm temp           90.0
Min relative to set temp    -10.0 (62.0)
     Min actual alarm temp           40.0
High static pressure alarm            .13
     Low static pressure alarm        .02
```
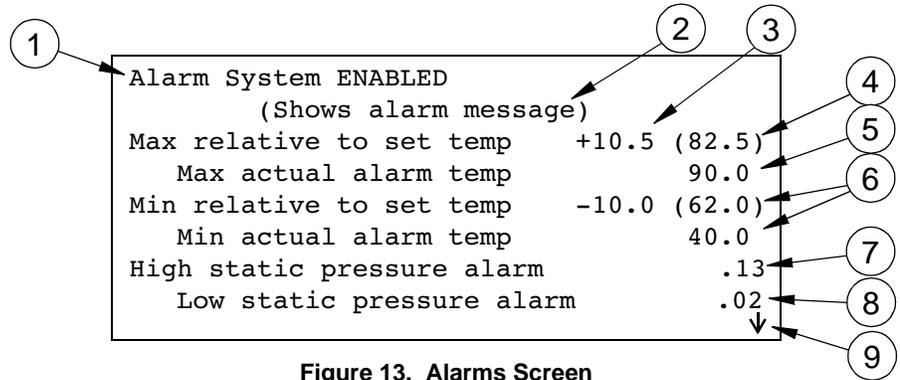
Figure 13. Alarms Screen

✳ *{Note}* **The alarm output can be connected to external devices such as sirens or dialers. The control itself will present a visual display in screen "1" and screen "7".**

1. This will advise as to the status of the alarm system. The cursor will allow you to make one of three choices:
    • Enabled (or on)
    • Disabled (or off)
    • Test (which will sound your audible system and activate the visual indicators

✳ *{Note}* **The statuses mentioned above refer to all alarms.**

2. If there is an alarm present, this area will advise you as to what the alarm condition is. The alarm possibilities are as follows:
    • Maximum relative temperature
    • Maximum temperature
    • Minimum relative temperature
    • Minimum temperature
    • Sensor failure
    • Failed potentiometer
    • Maximum static pressure
    • Minimum static pressure
    • Static pressure sensor failure
    • Power Off

✳ *{Note}* **If the alarm message is a group of number's, the problem deals with the internal workings of the control and does not reflect problems within your house. If an alarm code appears in this space, notify your local distributor and advise him of the code.**

3. This is temperature difference relative to set temperature that you want to be the high temp alarm.

4. This the result of adding the above value to your current set temperature. This value is calculated automatically and is not editable.

Alarms - continued

5. The maximum temperature limit is a backup to the limit established above, and not relative to set point. If the first limit due to the fact it is a relative limit is beyond an acceptable range, then the maximum temperature limit will activate the alarm.

6. The relative low temperature and minimum temperature limits work in the same way as the maximum limits.

7. High static pressure is the upper limit that you set to activate the alarm.

8. Low static pressure is the lower limit that you set to activate the alarm.

✻ *{Note}*   **Both high and low limits must be exceeded for 30 seconds, and in natural mode low static pressure alarm is disabled.**

9. Alarm History will inform you of what the last 20 alarms were, and give you the date and time the alarm was activated and the date and time the alarm situation ceased (recovered).

To view the history information, use your down arrow.

8

Set Temperature Curve

```
 ①                                                    ④                        ②
   ┌────────────────────────────────────────────────────────────┐
   │ Today's day =  6                           Curve ON         │
 ③ │ Curve value = 85.8                                         │
   │    DAY  SET TEMP            DAY   SET TEMP                  │
   │  1.   1    88.0         6.   25    78.0                     │
   │  2.   5    86.0         7.   30    76.0                     │
 ⑤ │  3.  10    84.0         8.   35    74.0          ⑥         │
   │  4.  15    82.0         9.   40    72.0                     │
   │  5.  20    80.0        10.   45    70.0                     │
   └────────────────────────────────────────────────────────────┘
```
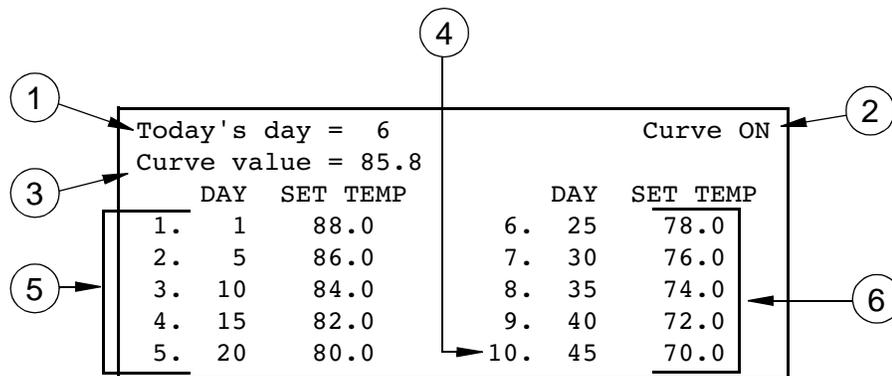
Figure 12. Set Temperature Curve Screen

1. **Today's Day** - usually this would be the age of the birds or livestock at this moment. This also determines the position on the curve.

2. **Curve on/off** - shows whether curve is on or off, this area is editable.

3. **Curve Value** -the set temperature at this moment according to the curve. The curve's set temperature is continuously calculated and is updated in .1 degree increments.

   The set temp in *screen #2* can be changed while the curve is on. This shifts the curve by the amount of change. Changing the set temp back to the curve value at a later time will return the set temp to the curve's listed value in this screen.

4. **Curve Bend Points** - the curve has a maximum of ten points which define the curve.

5. **Day** - these are the days you pick to correspond with each of the ten bend points.

6. **Set Temperatures** - these are the set temperatures at midnight of the assigned days of the curve.

9

Variable Speed

```
Variable speed #1
  Minimum speed = 30   Current speed = 85

Variable speed #2
  Minimum speed = 40   Current speed =  0
```

Figure 13. Variable Speed Screen

1. **Current Speed** - this tells you the current speed of each variable speed output.

2. **Minimum Speed** - this allows you to set the minimum speed allowed for each variable speed output. **See Page 11.**

10

Static Pressure - optional

```
┌─────────────────────────────────────────────────┐
│  Current static pressure              .05         │──① 
│                                                   │
│                          POWER      TUNNEL        │
│  High control limit       .06         .06         │
│  Low control limit        .04         .04         │
│                                                   │
│  Wind delay (sec)          12                     │──④
└─────────────────────────────────────────────────┘
```
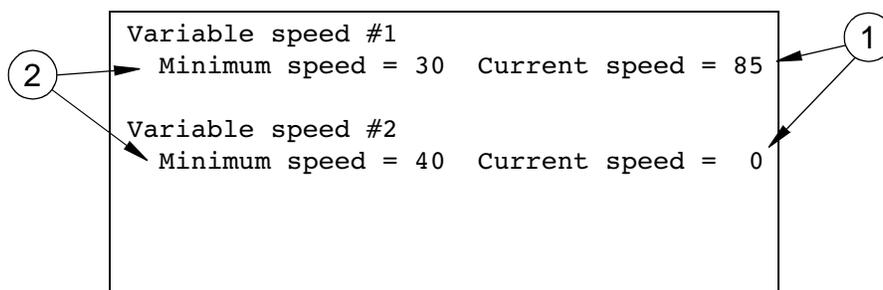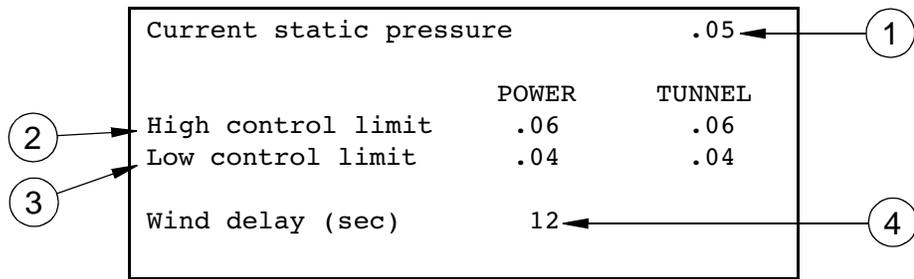
②
③

Figure 14. Static Pressure Screen

✷ *{Note}* **If you have elected not to use the optional static pressure control device, when you press this button it will advise you that static pressure is not in use.**

1. **Current Static Pressure** - This tells you the current static pressure. This is not an editable field.

2. **High Pressure Limits -**
   Power Mode - the control will open the air inlets if the static pressure increases above this value while in power mode.

   Tunnel Mode - the control will open the tunnel curtain if the static pressure increases above this value while in tunnel mode.

3. **Low Pressure Limits** -
   Power Mode - the control will close the air inlets if the static pressure decreases below this value while in power mode.

   Tunnel Mode - the control will close the tunnel curtain if the static pressure decreases below this value while in tunnel mode.

✷ *{Note}* **In all cases, the control opens or closes the air inlets or tunnel curtains until the static pressure is corrected back into the acceptable static pressure range.**

4. **Wind Delay** - this is the amount of time in seconds that the static pressure needs to be outside of the defined limits before the control reacts by opening or closing inlets. This delay does not occur if a fan or fans have just turned on or off. In fact, if a fan or fans turn on after no fans have been running, (minimum ventilation timer situation) the air inlets will open first.

✷ *{Note}* **Inlet anticipation - the control opens the air inlets before it turns on the fan(s) when conditions first call for a fan(s) to run. This feature results in more stable static pressure.**

11

Programs

This subject area provides you with two backup programs. A program is defined as all the settings of all 12 screens.

```
Do you wish to go back to
yesterday's setup ?                NO          1

Do you wish to go back to
the installation setup ?           NO          2

Do you wish that all present settings
become the installation setup?     NO          3
```
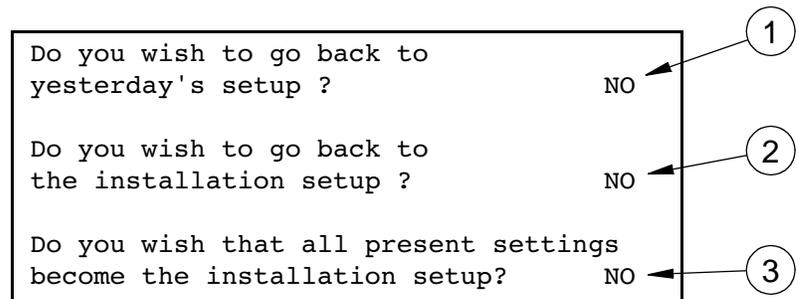
Figure 15. Program Screen

✳ *{Note}*

Important!

Once step 3 below is done, you will not be able to retrieve the original installation setup. You will have defined a new "installation" setup.

1. This allows you to change every setting of every screen to what it was at the most recent midnight (yesterday's settings). Edit the no to yes and confirm your choice as the screen will direct you.

2. This allows you to change every setting of every screen to what has been previously stored as the "installation". Edit the no to yes and confirm your choice as the screen will direct you.

3. This allows you to store a new "installation" setup. This is to be done by the original installer, but can be changed at any time. At the moment you change no to yes and confirm, all settings in all screens will become the new "installation" setup. It is most advisable to record all these settings for future reference.

12

Setup and Calibration

- This is probably the most important screen in your control. This is the area that configures your control to meet the needs of your specific house management style. This setup should be done by a certified installer or distributor technician. **Figure 15.**

✳ *{Note}*

Important!

A full understanding of what this screen does is essential before modifying it.

All values below indicate a possible sample situation

```
①  House number                        1

②  Temperature units          FAHRENHEIT
③  Units of measurement        NON-METRIC
   Clock type                     12 HR

④  Time of day                    8:05a
   Date                     11 May 1998

   HOUSE EQUIPPED FOR:
     Natural                       YES
     Main 1 curtain                YES
     Main 2 curtain                YES
⑤   Tunnel                        YES
     Static pressure               YES
     Water meter                   YES
     Variable speed #1             YES
     Variable speed #2             YES
     Humidity sensor               YES


   CURTAIN SPEED:
     Main 1 speed       18" per 60 sec
     Main 2 speed       18" per 60 sec
⑥   Tunnel speed       18" per 60 sec
          (Pot1 readout    1234)
          (Pot2 readout    1234)

   MAIN 1 CURTAIN:
     Desired full curtain movement  48"
     Desired first curtain movement 12"
⑦
   MAIN 2 CURTAIN:
     Desired full curtain movement  48"
     Desired first curtain movemen  12"

   TUNNEL MODE:                          ⑧
     Minimum # of tunnel fans on      4

   WATER METER:
     Gallons per pulse             1.00  ⑨
```
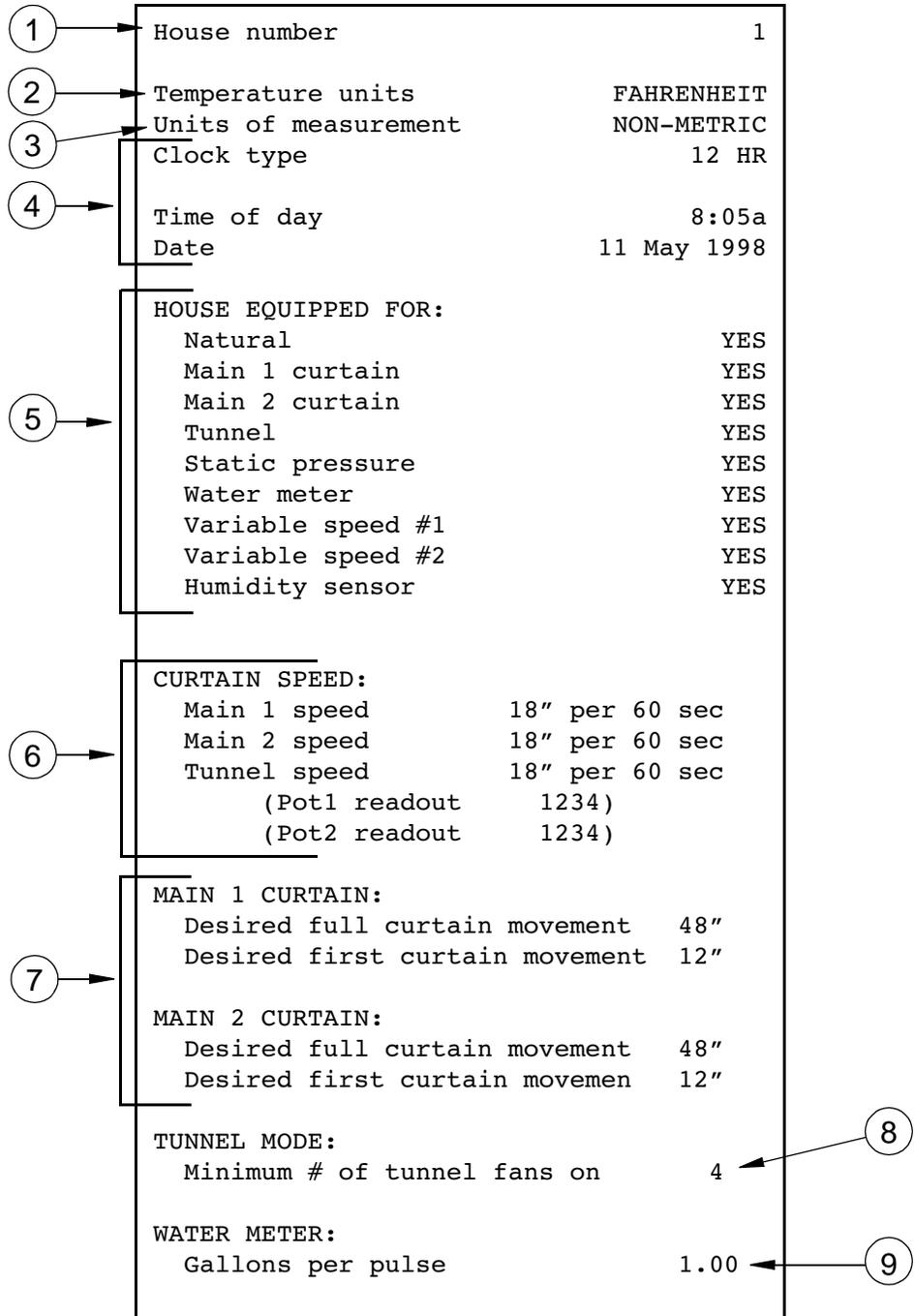
Figure 16. System Setup and Calibration Screen.

Setup and Calibration - continued

✳ *{Note}* — All setups are performed in the *Edit Mode* with the use of the *Navigation Buttons* to move you around to editable positions and the **(+) and (−) buttons to make changes and to answer questions.**

1. **House #** - this is where you identify the house (barn) that the control is being setup.This is important when a PC is part of your system.

2. **Temperature Units** - choose between Fahrenheit or Celsius temperature readings.

3. **Units of Measurement** - metric or nonmetric

4. **Clock Type** - if you want to have time of day represented in a 12 hour clock (a.m. and p.m.), or a 24 hour clock format.

5. **House Equipped For** - answer the following questions by choosing "yes" or "no". These answers will configure your house and inform the control what it has to do. For instance, if you answer "no" to natural, then all references to natural ventilation will be removed from the screens. If your management practices and equipment is changed in the future, you can always reinstate natural by changing the "no" to "yes".

6. **Curtain Speeds** - if you have answered "yes" to natural, then you will have to tell the control the curtain speed(s). To do so, with the open switch, time how long it takes for the curtain to travel 18 inches. Insert this number by using the *Edit* buttons. Repeat the same steps if you have a separate control for your number 2 main curtain, or tunnel curtain.

✳ *{Note}* — **The actual curtain opening will be the movement *less* the full closed curtain overlap.**

7. **Curtain Movement** - now that your main curtain speed(s) are entered, you can choose where you want your first curtain opening movement, and you can adjust what you want the full opening movement to be. This is done by simply inserting the number of inches you have chosen.

8. **Number of Fans** - insert the minimum number of fans you want to operate while in the tunnel mode *(available only on Model 16)*.

9. **Water Meter Calibration** - enter the volume of water represented by each electrical signal received from your water meter (if used).

✳ *{Note}* — **From this point on, we recommend that you use the accompanying house diagram to layout the equipment and assign them numbers. This will coincide with how these devices are wired into the relay panel.**

Setup and Calibration - continued

Actual House Layout

1. Indicate position of Main 1 and Main 2 curtains if used.

2. Indicate position of Sensors.

3. Fill in the list of relay numbers with device(s) each is controlling.

Relay   Device Controlled

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.

Suggested abbreviations for House Layout	
H1	HT Zone 1
X1	EXH Fan 1
ST1	STIR Fan 1
T1	TUN Fan 1
C1	COOL 1
S1	Sensor 1
V1	VAR Fan 1
V2	VAR Fan 2

Setup and Calibration - continued

```
MODE SENSORS:
  Power mode sensor                  - 2 - - - -
  Natural mode sensor                - - 3 - - -
  Tunnel mode sensor                 - - - - - 6

WHILE IN NATURAL MODE:
  Main 1 curtain sensor              - - 3 - - -
  Main 2 curtain sensor              - - - 4 - -
  Tunnel curtain sensor              1 - - - - -

OUTPUT NAME    RELAY   MODE(S)    SENSOR(S)
  Cool 1          1                - - 3 - - -
  Cool 2          -                - - 3 - - -
  Tun fan 1       2       T        - - - - - 6
  Tun fan 2       3       T        - - - - - 6
  Tun fan 3       4       T        - - - - - 6
  Tun fan 4       5       T        - - - - - 6
  Tun fan 5       -       T        - - - - - 6
  Tun fan 6       -       T        - - - - - 6
  Stirfan 1       6
  Stirfan 2       7
  Stirfan 3       -
  Stirfan 4       -
  Exh Fan 1       8       p        - 2 - - - -
  Exh Fan 2       9       p        - - 3 - - -
  Exh Fan 3       -       p        - - - 4 - -
  Exh Fan 4       -       p        - - - - - 6
  Ht zone 1      10       P        1 - - - - -
  Ht zone 2      11       P        - 2 - - - -
  Ht zone 3       -       P        - - 3 - - -
  Ht zone 4       -       P        - - - - - 6
  Feed Clk       12
  Lite Clk        -
  Inlet OP        -
  Inlet CL        -
  Tunnel OP      13
  Tunnel CL      14
  Main 1 OP      15
  Main 1 CL      16
  Main 2 OP       -
  Main 2 CL       -

BACKUP SENSORS:
            ASSIGNED    BACKUP
               1  - - -   2
               2  - - -   1
               3  - - -   4
               4  - - -   3
               -  - - -   -
               6  - - -   5
```
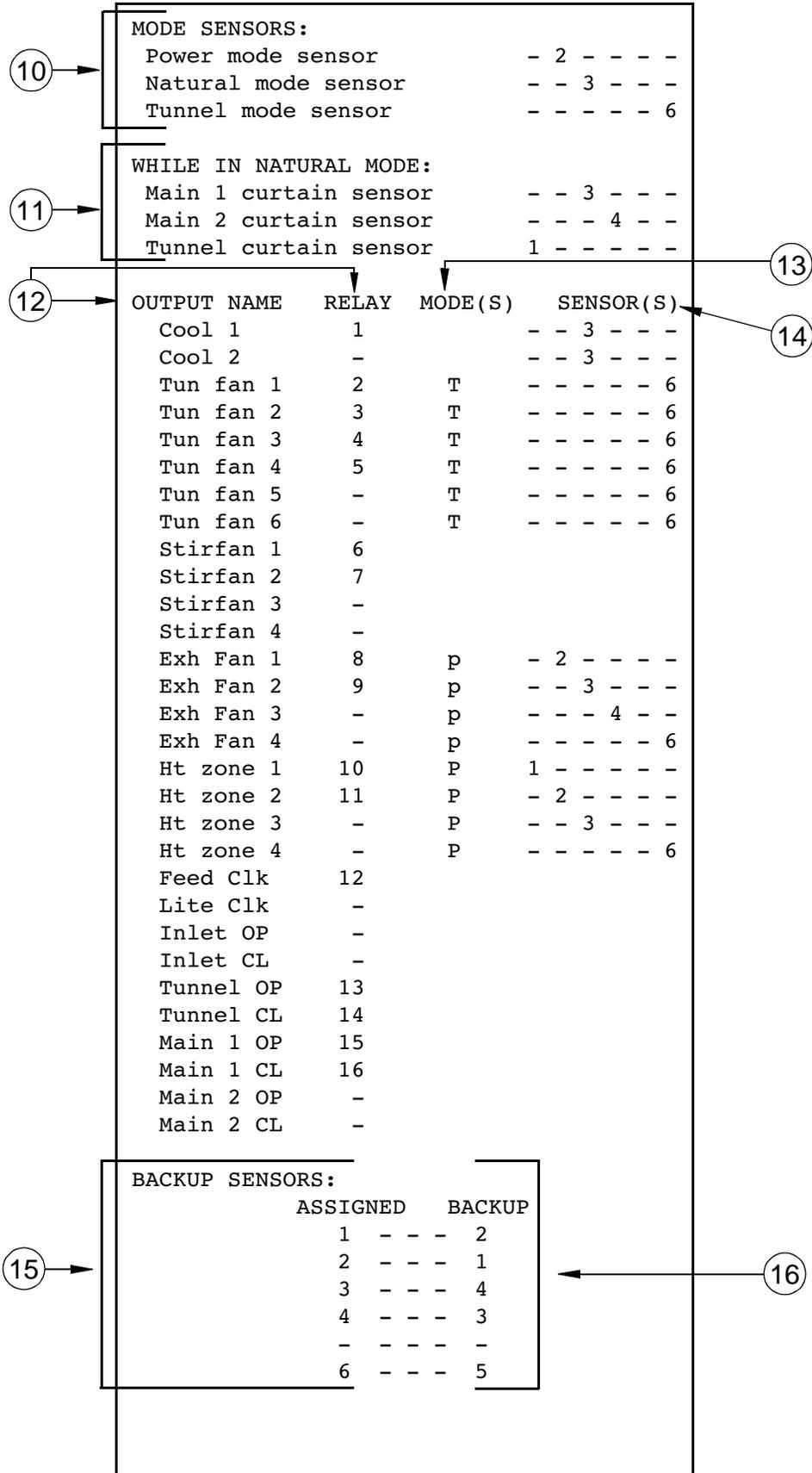
10 11 12 13 14 15 16

Figure 16. System Setup and Calibration Screen.

Setup and Calibration - continued

```
TEMPERATURE SENSOR CALIBRATION:
                 TEMPERATURE    CORRECTION
    Sensor 1        70.0          (0.0)
    Sensor 2        70.0          (0.0)
    Sensor 3        70.0          (0.0)
    Sensor 4        70.0          (0.0)
    Sensor 5        70.0          (0.0)
    Sensor 6        70.0          (0.0)


STATIC PRESSURE SENSOR CALIBRATION:
                 PRESSURE      CORRECTION
    Zero level      .05         ( 0.00)
    High level      .05         ( 0.00)


HUMIDITY SENSOR CALIBRATION:
                 HUMIDITY      CORRECTION
                   40            ( 0)

Change access code?                     NO
```

(17)   (18)   (19)   (20)   (21)

Figure 16. System Setup and Calibration Screen.

Setup and Calibration - continued

10. **Mode Sensors** - assign those sensors you wish to be each mode's control sensor. These sensors determine when the control changes to a different mode.

11. **While in Natural Mode** - the curtain outputs will try to satisfy these sensors.

12. **Assign Relay Numbers** - from your drawing, list the equipment in the house and assign relay numbers as they have been wired in the relay box.

13. **Assign Modes** - some modes (P, N, or T) will be automatically assigned, for instance "Heat Zone" will automatically be assigned power mode. Those that are not automatically assigned you will have to assign. A combination of modes can also be used such as when tunnel fans *(tunnel available only on Model 16)* are also used as power fans. This would be indicated by "PT" next to that particular fan

14. **Assign Sensors to Outputs** - you will also need to assign a sensor or sensors to each output. This allows you to zone all outputs. If more than one sensor is assigned, the average of those assigned will control that output

15. **Assigned Sensors** - after the above is completed and you have assigned sensors to all outputs, this list will be automatically produced. If a sensor is not assigned it will be indicated by "–". Sensors can be assigned to more then one output.

16. **Assign Backup** - you now have to assign a backup sensor to the assigned sensors in the event of a sensor failure. This is especially important if the sensor is a mode sensor. This is accomplished by placing another sensor number in the "backup" column. A rule of thumb is to chose a nearby sensor as a backup sensor.

17. **Sensor Calibration** - sensors should not require calibration. You can define the readings if desired by using an accurate device to check the sensors. If you find that there is a discrepancy, simply insert the temperature your accurate device is reading.

18. **Offset Value** - this value is not editable and is used for troubleshooting purposes.

19. **Static Pressure Control (optional)** - the static pressure control comes calibrated from the factory, but if there is a need to re-calibrate, use the following steps:

    Zero Level:
    1. Turn off all the fans
    2. Disconnect hoses to control
    3. If you are not getting a ".00" reading, then edit the value to read.00

    High Level Reading:
    1. Attach a separate accurate static pressure measuring device to the hose.
    2. Build static pressure in the house to a value between .1 and .2 and compare the reading of the control with the accurate device and edit the value to read accordingly.

✳ {Note} ——— **The zero and high corrections for the static pressure sensor can be edited to zero when a new sensor is installed. The corrections listed for the other sensors are not editable.**

Setup and Calibration - continued

20. **Humidity Indicator (optional)** *available only Model 16* - this comes from the factory pre-calibrated. If further calibration is required, use a reliable separate device and compare readings. If an adjustment is required, edit the reading as needed. Here again, the "offset" is for troubleshooting purposes and is not editable.

21. **Access Code (security)** - an access code is available for added security if needed. The access code is a four (4) digit number. This number is entered by using the numbers of the **Subject** buttons.

    For example:
    *If the access code were "1234", you would press the **Current Conditions** button, **Set Temperature-Timer** button, **Outputs Temperatures** button, and the **Feed Clock** button when asked for the access code.*

    From the factory, the Access Code is "1111". This is a special number which causes the control to not ask you for the access code when you first press the **Edit** button.

    If you decide to define your own access code, it is done in this area of the setup screen. Answer "yes" to the question, "change access code", and respond to the screen's question.

    If you later decide you don't want to use an access code, you simply change the access code back to "1111". If you forget your access code, call Chore-Time. It is certainly recommended that you write down your access code in a safe place.
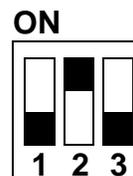
MS Board Dip Switch Positions

1. Manual Switch position on first board — one board being used

ON

| 1 | 2 | 3 |
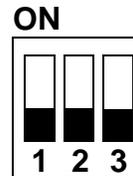
2. Manual Switch position on second board — two boards being used

ON

| 1 | 2 | 3 |
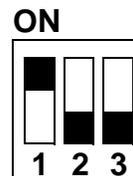
3. Manual Switch position on third board — three boards being used
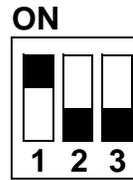
ON

| 1 | 2 | 3 |

✳ *{Note}* | **New controls will come from the factory pre-set. This information is provided only when a replacement board is used.**

Variable Speed Dip Switch Positions

1. Switch position for first variable speed module.

ON

```
┌───────────┐
│ ■  □  □   │
│ □  ■  ■   │
├───────────┤
│ 1  2  3   │
└───────────┘
```

2. Switch position for second variable speed module.

ON

```
┌───────────┐
│ □  ■  □   │
│ ■  □  ■   │
├───────────┤
│ 1  2  3   │
└───────────┘
```

✳ *{Note}*————— **Since variable speed modules are added in the field, they will NOT come preset from the factory.**

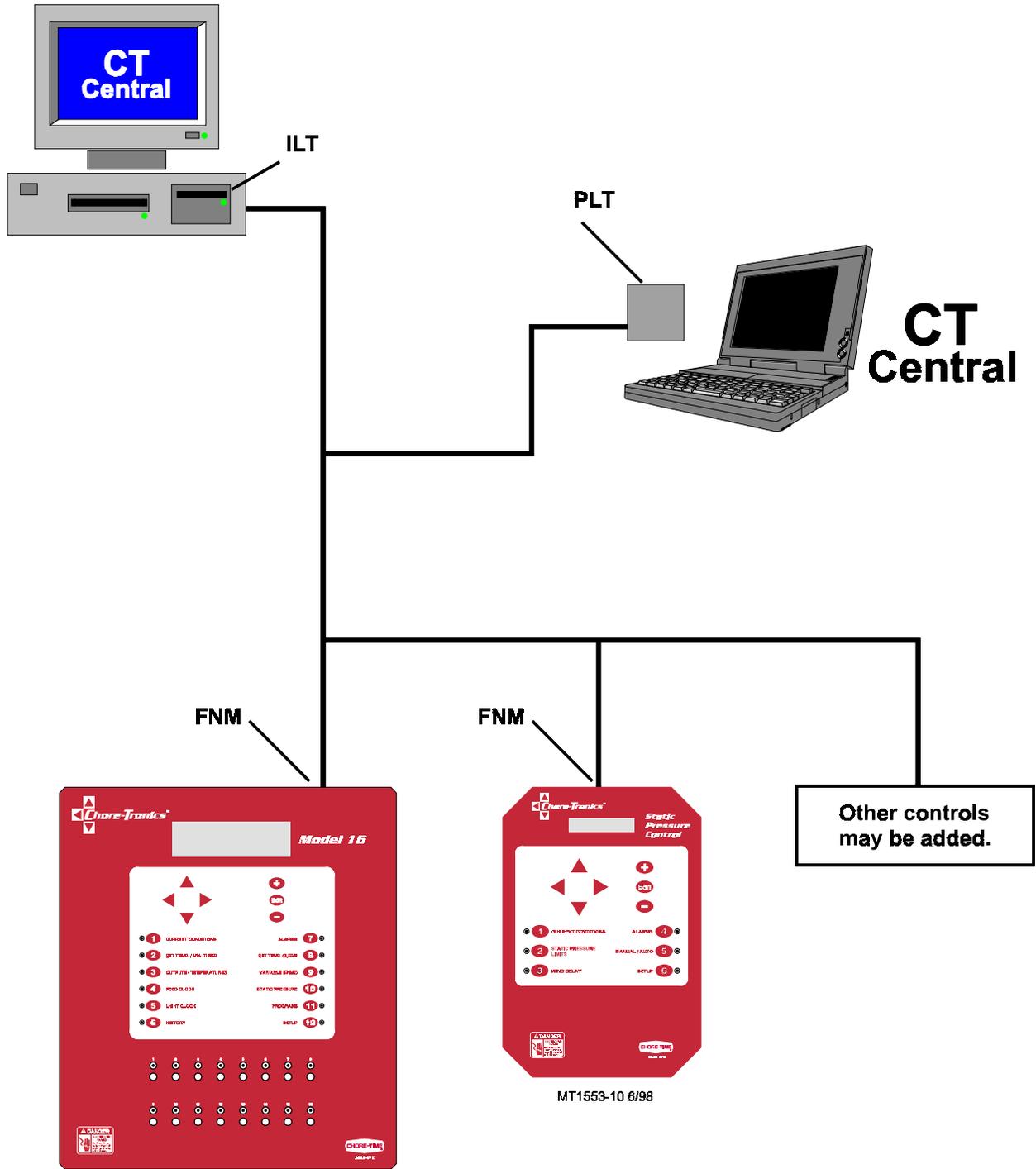# Technical Specifications   MT1554A 9/9/98
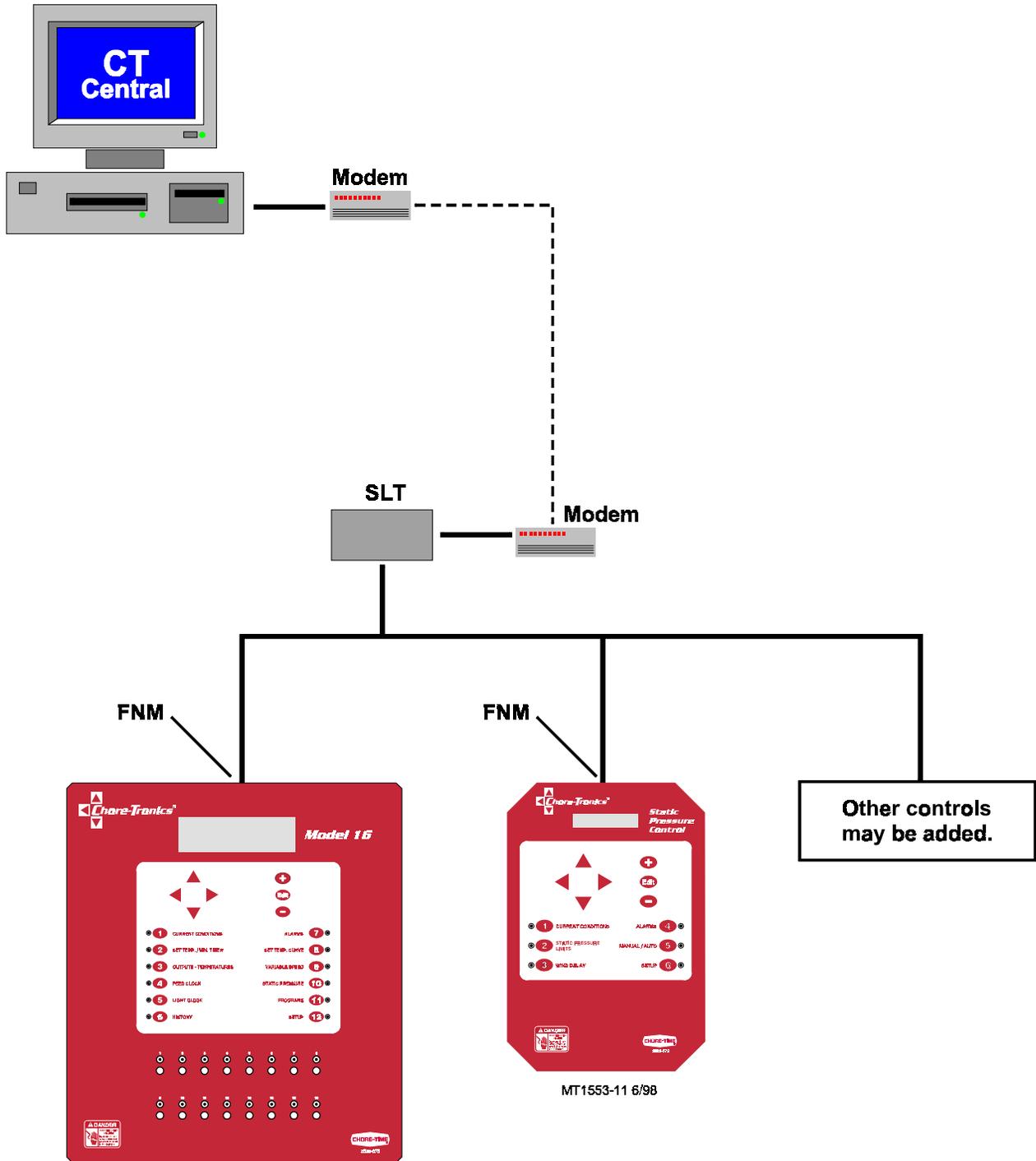
This Information is to follow.

PC Connection Overview

Off-Site PC Connecting to On-Site PC with Controls

On-Site PC with Controls

CT Central

ILT

PLT

CT Central

FNM

FNM

Model 16

Other controls
may be added.

MT1553-10 6/98
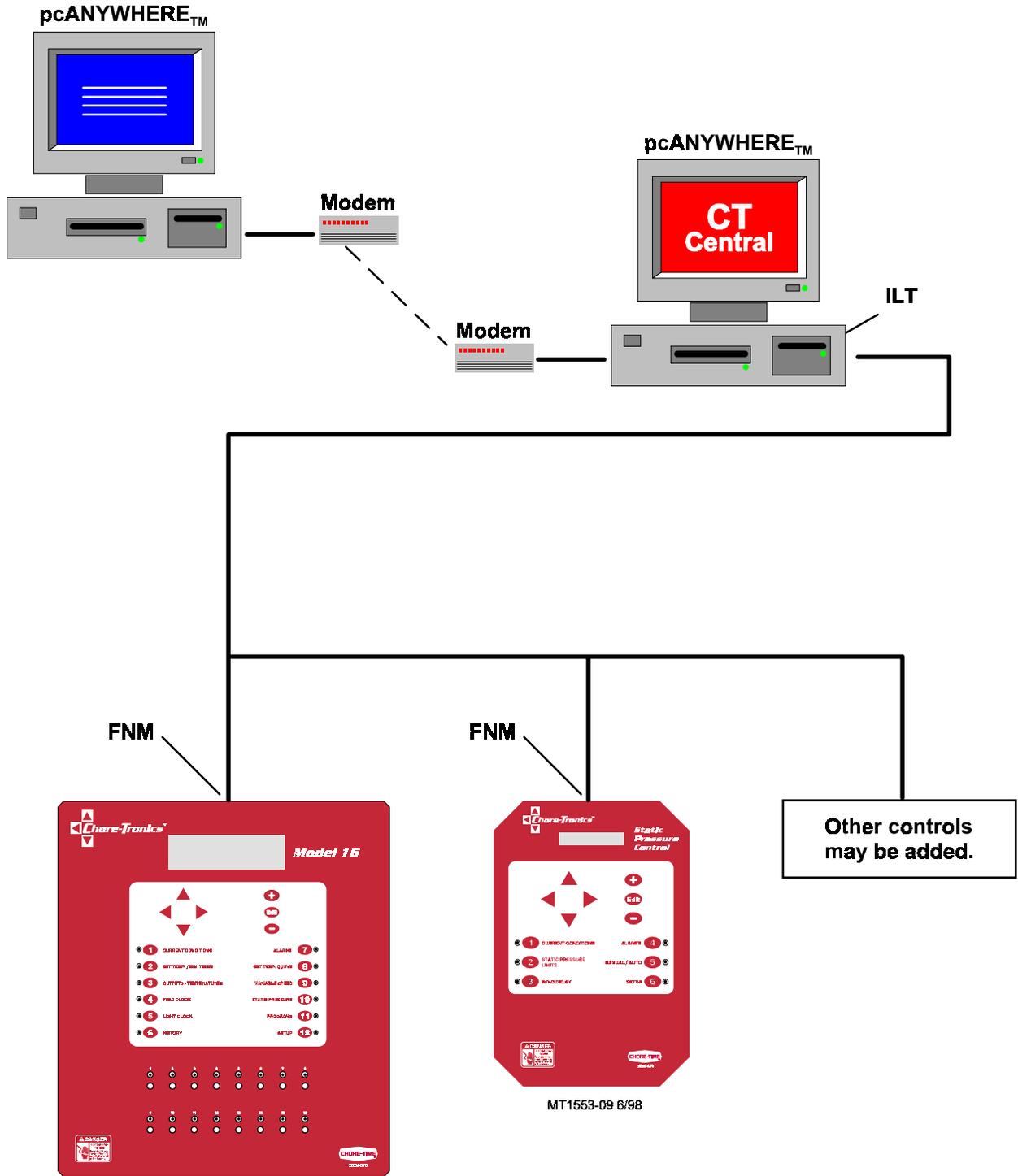
Off-Site PC with Controls

MT1553-11 6/98

Trouble Shooting

| Problem	Possible Cause	Solution
The Screen is blank, but outputs appear to be operating normally.	The screen is defective.	Replace the display.
	The flat cable between the KD board and the screen is defective, loose or disconnected.	Readjust connections or replace cables.
The screen does not respond when pressing any of the Subject Buttons	The KD board is defective.	Replace the KD board.
An output does not respond to its toggle switch or an output does not work under any condition	The relay board is defective.	Replace the relay board.
	The MS board is defective.	Replace the MS board.
	The flat cable between the KD board and the MS board or MS relay board has a problem.	Readjust connections or replace cable.
The control seems completely dead — the screen shows nothing under any condition, and the indicator lights are off	The fuse for incoming power is blown.	Replace the fuse.
	The circuit breaker supplying power to the control is tripped.	Reset the breaker.
	The power supply or I/O board is bad.	Replace the power supply or I/O board.
	The KD board is defective.	Replace
	The flat cable from the power supply board to the IO board or IO board to the KD board is defective.	Readjust or replace.
Relays 1-8, or 1-16, are completely non-functional.	The associated MS board has the wrong address set in its dip switches.	Reset the switch setting.
	The flat cable between the KD board and the associated MS board or that MS board and its relay board is defective or not connected properly.	Readjust or replace.
	The associated MS board is defective.	Replace
The failed temp. sensor or failed static pressure alarm is on, or the readings are clearly wrong.	Bad connections between the temperature sensor and the Model 16 or 8 controls IO board.	Correct the bad connection.
	Defective or damaged sensor.	Replace
	Bad connection or improper installation of static pressure hoses.	Correct
	Defective IO board.	Replace

Wiring Diagram 43

This information is to follow.

Wiring Diagram - continued

This information is to follow.

Parts Listing

Opened Control Box Lid   Control Box Base
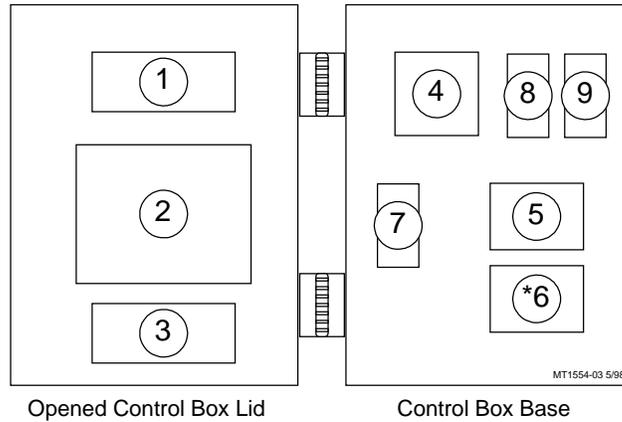
Item	Description	Part No.
1	8x40 Display	41317
2	KDCM.1 Keyboard Display Module	41315
3	MSCM.16-1 Switch circuit Board (Model 16)	41309
	MSCM.8-2 Switch Circuit Board (Model 8)	41308
4	IOCM.1-3 Control Module (Model 16)	41321
	IOCM.1-2 Control Module (Model 8)	41311
5	RM.8 Relay Circuit Board (8 relays)	41306
6	*RM.8 Relay Circuit Board (Model 16)	41306
7	Static Pressure Sensor (optional)	41320
8	Variable Speed #1 (optional)	40729
9	Variable Speed #2 (optional)	40729

Chore-Tronics™

Contact your nearby Chore-Time distributor or representative for additional parts and information.