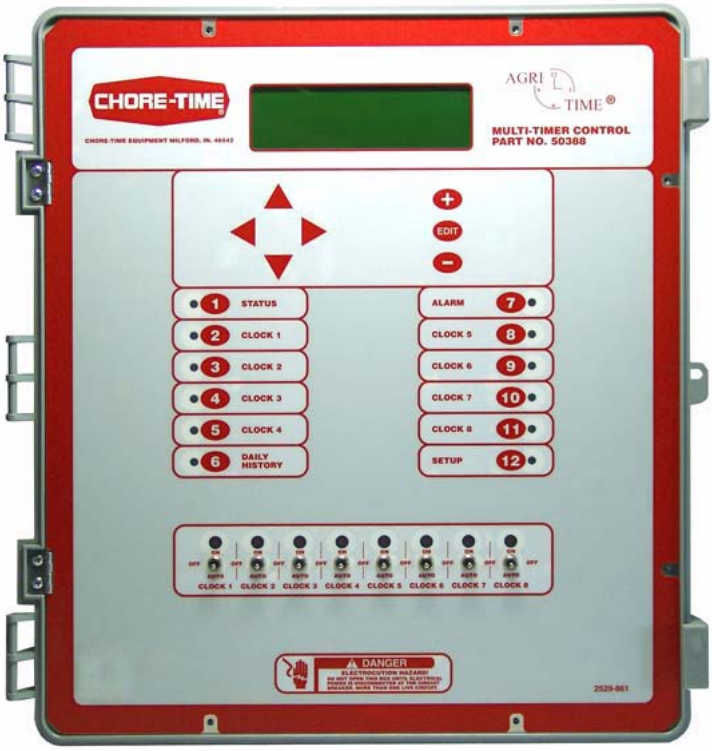
Agritime Multi-Timer Control

Installation & Operator's Instruction Manual



October 2006 MT1909A

Chore-Time Warranty

Chore-Time Equipment ("Chore-Time") warrants each new Chore-Time product manufactured by it to be free from defects in material or workmanship for one year from and after the date of initial installation by or for the original purchaser. If such a defect is found by the Manufacturer to exist within the one-year period, the Manufacturer 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. Labor costs associated with the replacement or repair of the product are not covered by the Manufacturer.

Conditions and Limitations

1. The product must be installed by and operated in accordance with the instructions published by the **Manufacturer or Warranty will be void**.
2. Warranty is void if **all components** of the system are not original equipment supplied by the **Manufacturer**.
3. This product must be purchased from and installed by an authorized distributor or certified representative thereof or the Warranty will be void.
4. Malfunctions or failure 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 the 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.

The **Manufacturer** shall not be liable for any **Consequential or Special Damage** which any purchaser may suffer or claim to suffer 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 THE MANUFACTURER'S ENTIRE AND SOLE WARRANTY AND THIS MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

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Effective: **October 2006**

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Thank You

The employees of Chore-Time Equipment would like to thank your for your recent Chore-Time purchase. If a problem should arise, your Chore-Time distributor can supply the necessary information to help you.

Contents

* Legend: C = Customer (end user), D = Distributor (sales), I = Installer of equipment

Contents - continued

General

Support Information

The Chore-Time Agri-Time Multi-Timer Control is a 24-h 8 channel timeclock used to control feed, light, or other outputs in a livestock operation. 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.

This manual is designed to provide comprehensive planning, installation, safety, operation, and parts listing information. The Table of Contents provides a convenient overview of the information in this manual. The Table of Contents also specifies which pages contain information for the sales personnel, installer, and consumer (end user).

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 _____

_____

About This Manual

The intent of this manual is to help you in two ways. One is to follow step-by-step in the order of assembly of your product. The other way is for easy reference if you have questions in a particular area.

Important ! **Read ALL instructions carefully before starting installation.**

Important ! **Pay particular attention to all SAFETY information.**

- *Metric measurements are shown in millimeters and in brackets, unless otherwise specified.* “ " ” equals inches and “ ' ” equals feet in English measurements.
  Examples:
  1" [25.4]
  4' [1 219]
- Optional equipment contains necessary instructions for assembly or operation.
- Major changes from the last printing will be listed on the back cover.
- Very small numbers near an illustration (*i.e.,* 1257-48) are identification of the graphic, not a part number.

Safety Information

Caution, Warning and Danger Decals have been placed on the equipment to warn of potentially dangerous situations. Care should be taken to keep this information intact and easy to read at all times. Replace missing or damaged safety decals immediately.

Using the equipment for purposes other than specified in this manual may cause personal injury and/or damage to the equipment.

Follow Safety Instructions

Carefully read all safety messages in this manual and on your equipment safety signs. Follow recommended precautions and safe operating practices.

Keep safety signs in good condition. Replace missing or damaged safety signs.

Decal Descriptions

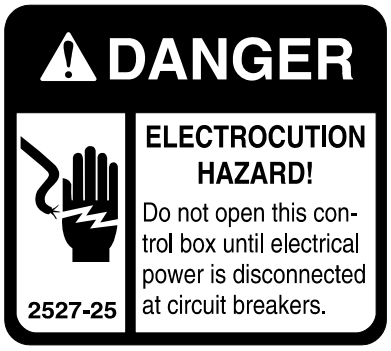
DANGER: Electrical Hazard

Disconnect electrical power before inspecting or servicing equipment unless maintenance instructions specifically state otherwise.

Ground all electrical equipment for safety.

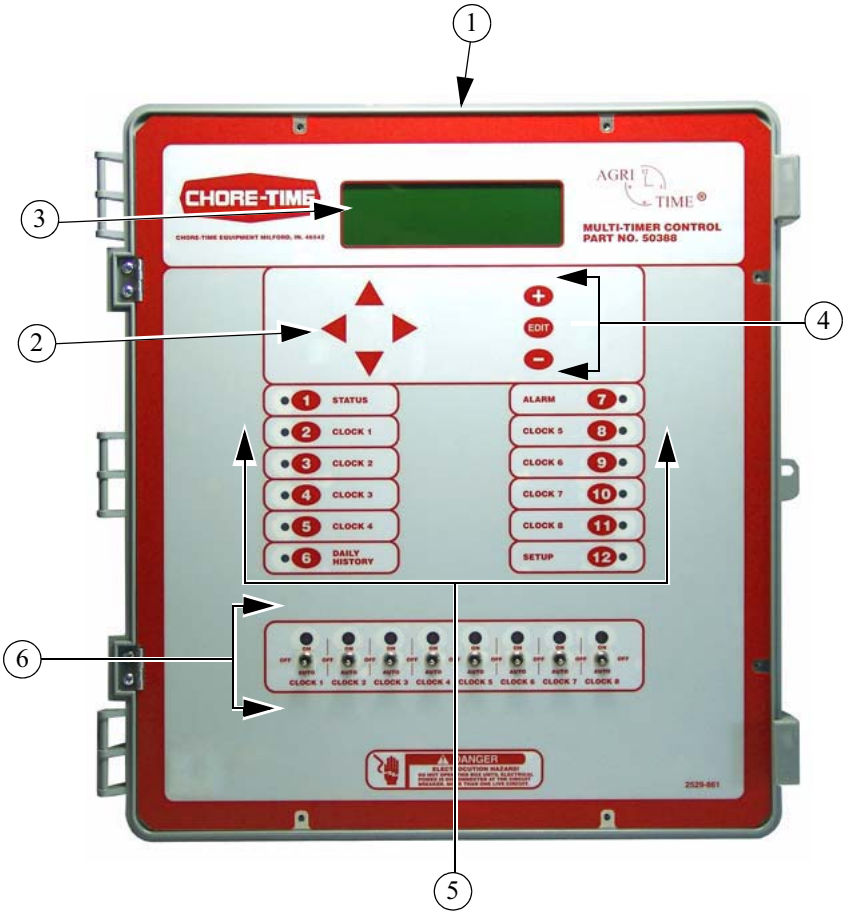
All electrical wiring must be done by a qualified electrician in accordance with local and national electric codes.

Ground all non-current carrying metal parts to guard against electrical shock.



Introduction to Control

Description of Control Front Panel



Item	Description
1	TC8 Main Box
2	Navigation Buttons
3	Viewing Screen
4	Edit Buttons
5	Subject Buttons
6	Relay Switches

Figure 1. Description of Front Panel

Viewing Screen

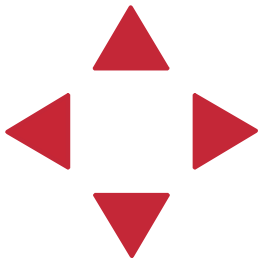
The viewing screen has a display which has 8 lines, each containing 40 characters. This is the area that will display the requested information when a subject button is pressed. The viewing screen always remains lit. Normally the *Current Conditions screen* shows **(Figure 2)**.

```
Clock     Start Time      Clock     Start Time
 1        Mon 10:00p       5        Sat 11:00a
 2        Mon 10:00p       6        Sat 11:00a
 3        Mon 10:00p       7        Sat 11:00a
 4        Mon 10:00p       8        Sat 11:00a
Today's Water 12345        Today's Feed 12345
CHECK SWITCHES             CHECK ALARMS
DAY  49          Tue 15 Sep 2006  10:05p
```

Figure 2. Current Conditions Screen.

Navigation Buttons

These buttons allow you to scroll up and down in the screens that have more than 8 lines. Continuously pressing the up or down arrow button increases the scrolling speed. When you are in the *Edit Mode* the left and right arrow keys move the cursor to editable (changeable) positions. The cursor highlights the areas that can be changed.



Edit Buttons

When the button labeled **EDIT** is pressed and you are looking at a screen that has editable fields, the cursor appears. With the *Navigation Buttons*, you can move the cursor to the parameter on the screen that you want to edit. By pressing the “+” or “–” buttons, the numerical values are changed. If you are changing text (i.e. “yes” or “no”), the "+" and "–" keys scroll through the possible text choices. Pressing the **EDIT** button a second time exits the edit mode.

Fast Edit

While editing a number on the screen, you will notice that the digit you are changing is underlined. For example: (72.0). If you wish you can move to different digits of the number in order to change the number more rapidly. To do this **See Figure 3 below.** Fast Edit is very useful when making large changes to numbers.

Action	Result
Press the Edit button	72.0
Press "+" followed by "-"	72.0
Within 3 seconds, Press the Left arrow twice	72.0
Press "+" twice arrow	92.0

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Figure 3. Fast Edit.

Security

To provide for security in setting your Controls, there is a security feature that appears when you press the *Edit* button. The Control automatically asks for an access code at that time, The access code is a four digit number that you have selected while setting up the Control and is explained under the "**Changing the Access Code**" section of this manual. Once you have inserted the correct code, the Control allows you to make changes. If five minutes pass since your last change, the access code has to be re-entered.

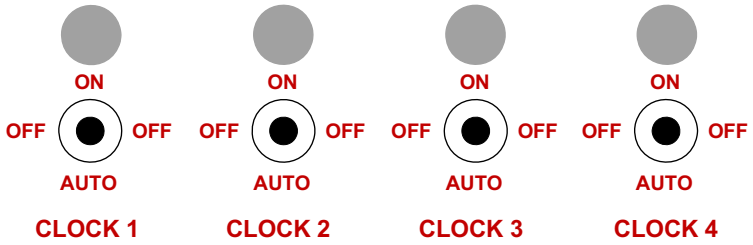
Subject Buttons

On the front of the Control are 12 subject keys. As each subject button is pressed, the light beside that button turns on and the subject that is described beside the button appears on the screen. If no other buttons are pressed for 5 minutes, the Control automatically returns to the *Current Conditions screen.*

Indication Lights and Auto/Manual Switches

Each Relay Output has its own three position Switch that allows the user to manually control each Relay. Each switch is labeled according to the output function that is assigned to that Switch. The Switches can be placed in three positions — “on”, “off”, or “auto”. The “auto” position is for normal automatic operation. Changing a Switch to “on” or “off” overrides "auto" operations. When a switch that is assigned is placed in a position other than “auto”, a message will appear in the *Current Conditions* screen advising you to “Check Switches”.

The light above each Switch indicates that the Switch’s Relay is activated.



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.*

•Screen 12, Setup is used for this example.

Using the Navigation Buttons

1. Press BUTTON 12. **Figure 4** appears in the display.

Control number	1
Units of measurements	NON-METRIC
Clock type	12 HR
Time of day	10:03a

Figure 4. Setup Screen.

2. Press the **DOWN ARROW** once.
The view shown on the screen will scroll down one line as shown in **Figure 5.** If you push the **UP ARROW** once the text scrolls back to where it was.

Units of measurements	NON-METRIC
Clock type	12 HR
Time of day	10:03a

Figure 5. Setup Screen.

3. The left and right arrow keys are used during the Edit Mode.

Using the Edit Buttons

The Edit Mode is entered by pressing the Edit Button. Pressing the Edit Button a second time exits the Edit Mode.

1. Press **BUTTON 12**.
The *Setup* screen appears **(Figure 6).**

Control number	1
Units of measurements	NON-METRIC
Clock type	12 HR
Time of day	10:03a

Figure 6. Setup Screen.

2. Press the **EDIT** button.
This activates the cursor which allows settings to be edited. **Figure 7** shows what the cursor looks like. If the Control asks you for an "Access Code", enter it at this time **(See Page ??)**.

Control number	1
Units of measurements	NON-METRIC
Clock type	12 HR
Time of day	10:03a

CURSOR

Figure 7. Setup Screen in Edit Mode.

3. Press the (+) or (–) buttons to edit the Control #. The (+) key increases the value and the (–) key decreases the value.

4. Press the **DOWN ARROW (Figure 8).**

Control number	1
Units of measurements	NON-METRIC
Clock type	12 HR
Time of day	10:03a

Figure 8. Setup Screen in Edit Mode.

5. Press the (+) or (–) buttons to change from Non-metric to Metric.
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 are used to move between those positions.

When a value or text is edited, it is saved in the memory within a few seconds. If you make a mistake, rechange it to what you really want.

Glossary of Terms

Day Number

The intention is that the day # is the age of the animals. Day # 0 does not exist. Negative days (down to – 7) are allowed. Changing the day # in any screen that shows the day number, will change the day # in all the other screens that show the day #.

Event

This term applies to all time clock outputs. An “event” is an “on at” time combined with an “off at” time. Each clock output can have up to 24 events.

Noticing an Alarm

“Noticing” an alarm is a very important part of using the alarm system. With button presses, you can tell the Control that you have “seen” the alarm message. The simplest way to do this is to first press the alarm button to read the alarm message(s) at the top of the alarm screen. Each additional press of the alarm button (while you’re still looking at the alarm screen) “notices” the alarm(s), one at a time.

Offset

The term “offset” applies to the Set Temperature and Minimum Ventilation Timer curves only. If you manually adjust either the Set Temperature or the Minimum Ventilation Timer settings, while the curve is on, you create an “offset” to that curve relative to it’s “curve value”. The “curve value” is not changed. (see the “curve value” definition above.) The curve value is shown as a convenience so that you know what you have to change it back to in order to get back on the actual curve’s table listing. While an “offset” is in effect, the parameter of the curve is still modified versus time. However, the actual parameter value is the “curve value” modified by the “offset”.

Program

A “program” is a complete set up of all the screens of a Control. In screen 11, five different “programs” can be saved and later activated. This can be very convenient when it is desired to change the set up at different points during the grow out or barn cycle, or times of the year.

Overview of Screens

Screen 1: Current Conditions

Screen 1, (Figure 9) shows a brief summary of the current conditions of the house. There are no editable values in this screen; it is for viewing only.

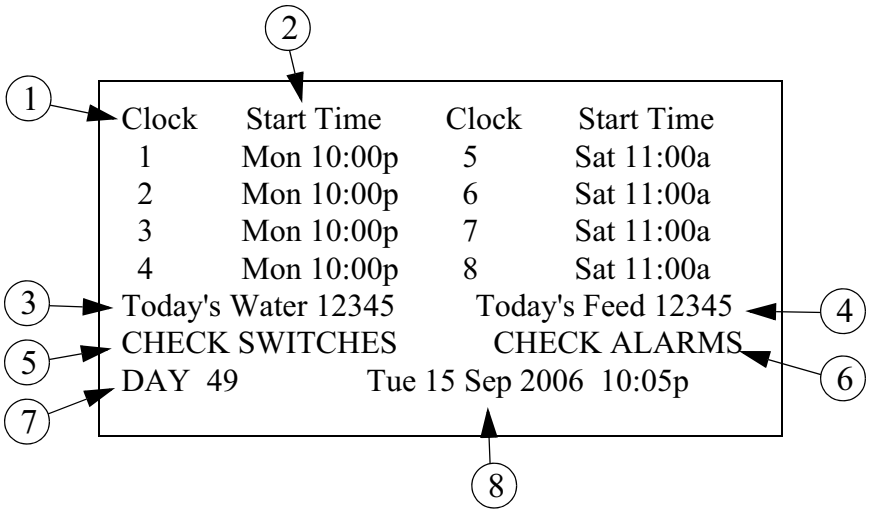


Figure 9. Current Conditions Screen

1. **Clock**- Indicates the Clock number.
2. **Start Time**- Indicates the next start day and start time for a particular clock.
3. **Today's Water**- Indicates today's total water consumed (requires connection of a water meter to the Control).
4. **Today' Feed**- Indicates today's total feed consumed (requires connection of a feed scale to the Control).
5. **Check Switches**- this will appear (flashing) if any of the manual switches are in a position other than "auto". It can be DANGEROUS to operate with switches in the "Off" position.
6. **Check Alarms**- this will appear (flashing) if the Control detects an alarm condition. This will appear until the condition is corrected.
7. **Day**- Today's day number (age of animals).
8. **Date and Time**- Current time and date

Screens 2-5 and 8-11 (Clocks 1-4, 5-8):

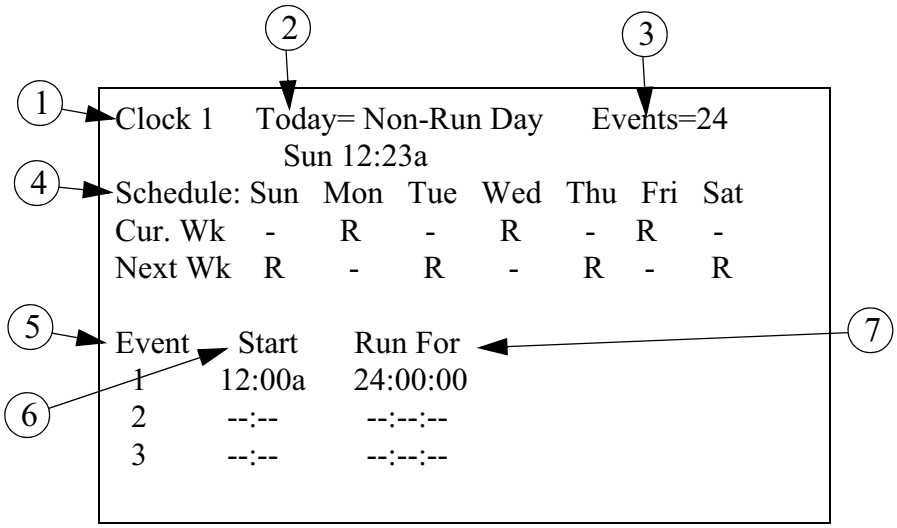


Figure 10. Screens 2-5 and 8-11

1. **Clock #**- What Clock number settings are currently on the screen.
2. **Today=** This indicates whether today is a Run Day (listed Events will be executed), or a Non-Run Day (listed Events will not run today).
3. **Events**- Indicates the total number of events for a given clock. The maximum number of events is 24.
4. **Schedule**- This is where the Run and Non-Run day schedule is set. If a day of the week is set to R than the events listed in the clock will happen that day. If a day of the week is set to a - then the events listed in the clock will NOT happen that day. The first line of the schedule indicates the Run and Non-Run days of the current week. The second line of the schedule indicates the Run and Non-Run days of the next week. The schedule will be repeated every two weeks.
5. **Event**- Indicates the event number
6. **Start**- Indicates the Start time for a particular event
7. **Run For**- Indicates the amount of time an event will run in hours:minutes:seconds (hh:mm:ss).

This screen layout and operation is the same for all 8 clocks.

Screen 6: Daily History

The History screen shows historical data for the most recent 99 full days plus today. Today's data is placed in the top line of the list. The second line has yesterday's data, etc.

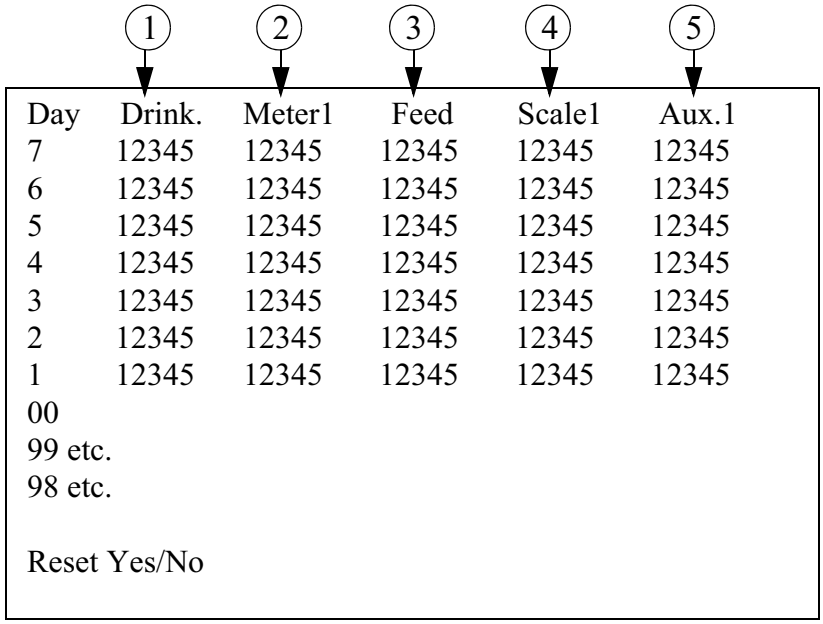


Figure 11. Daily History Screen

1. **Drink**.- This indicates the total amount of drinking water consumed. It is the sum of all other water meters connected to the control as a water meter.

2. **Meter(x)**- This is an index lists the usage of every water meter individually. To view a different water meter, move the cursor to highlight this field. Use the + or - key to change what water meter is displayed.

3. **Feed**- This indicates the total amount of feed consumed. It is the sum of all other feed scales connected to the control as a feed scale.

4. **Scale(x)**- This is an index lists the usage of every feed scale individually. To view a different feed scale, move the cursor to highlight this field. Use the + or - key to change what feed scale is displayed.

5. **Aux. (x)**- This index lists the usage of every auxiliary digital input. An auxiliary digital input can consist of water meters not connected to drinking water lines (for example a cool pad meter), pulsed output gas meters, pulsed output electric meters, etc. To view a different auxiliary digital input, move the cursor to highlight this field. Use the + or - key to change what auxiliary digital input is being displayed.

Note: If one or more of the items listed above is not used, then it will not appear in the Daily History screen. If none of the above items are connected to the Control, then "Not setup" will appear in the Daily History screen.

Screen 7: Alarms

At the top of Screen 7 the current alarm condition(s) will be listed. If there are no alarm conditions, the status of the alarm system will show at the top of the screen. The three possible statuses are ENABLED, DISABLED, and TEST. The status field is editable. See the "Alarm" section on page **xx** of the manual for more alarm information.

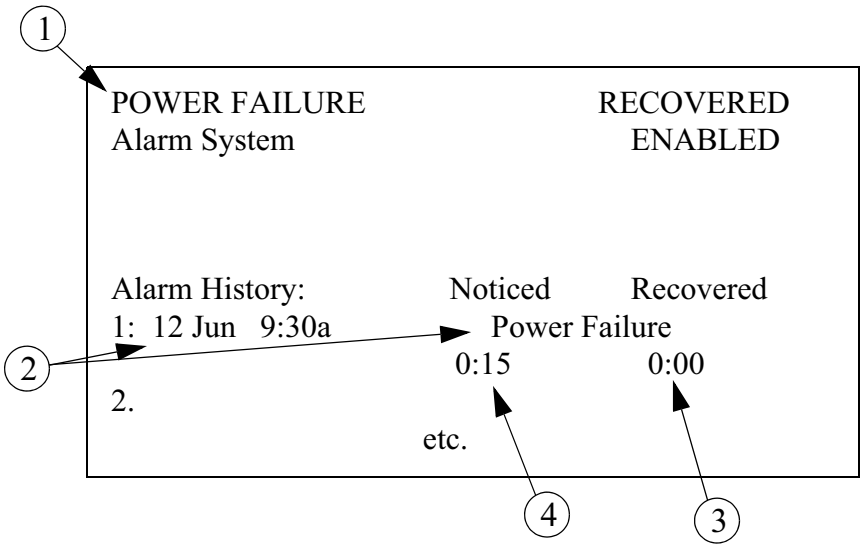


Figure 12. Alarms Screen

1. **Current Alarm**- If a current alarm condition exists or has not been noticed it will appear in the first line of the display. In the above example, a power failure has occurred and has recovered. The current alarm condition will remain there until it is NOTICED.
2. **Time and Date and Alarm Type**- The time, date, and type of alarm of the most recent 10 alarms are listed in the lower part of the screen.
3. **Recovered Time**- The amount of time (hh:mm) it took for the alarm to recover is shown here. 0:00 means the alarm recovered within the first minute.
4. **Noticed Time**- The amount of time that elapsed (hh:mm) from the time the alarm condition occurred, until the alarm is NOTICED is also shown. For this example the alarm was noticed between the 15th and 16th minute after the alarm occurred.

Screen 12: Setup

Screen 12 is where the initial setup of the Control is done. The user tells the Control what (if any) optional hardware is used, how many clocks are to be used and what is connected to the digital input(s) of the Control. The bottom of the setup screen shows the current switch status of all clocks used.

Control number	1
Units of measurements	NON-METRIC
Clock type	12 HR
Time of day	10:03a
Date	10 May 2000
Day	999
OPTIONAL HARDWARE USED:	
Digital input board (IDM-16)	YES
HOUSE EQUIPPED FOR:	
Number of Clocks used	4
Water meter	YES
Feed scale	YES
Auxiliary digital input	YES

WATER MTR	BOARD	INPUT	GAL/PLS	TODAY
Meter 1	0	1	1.00	12345
Meter 2	1	1	1.00	12345
Meter 3	1	2	1.00	12345
Meter 4	-	-	1.00	12345

FEED SCL	BOARD	INPUT	LBS/PLS	TODAY
Scale 1	1	3	1.00	12345
Scale 2	1	4	1.00	12345
Scale 3	1	5	1.00	12345
Scale 4	-	-	1.00	12345

DIG. INPUT	BOARD	INPUT	UNIT/PLS	TODAY
Input 1	1	6	1.00	12345
Input 2	1	7	1.00	12345
Input 3	1	8	1.00	12345
Input 4	-	-	1.00	21345

OUTPUT	STATUS
Clock 1	M-ON
Clock 2	M-OFF
Clock 3	A-OFF
Clock 4	A-OFF

Figure 13. Setup Screen

Initial Setup Procedure

Once the Control has been properly installed and all outputs have been tested manually, the Control is now ready to be set up. The following section should be used only as guide to setting up the Control. This section will provide a general overview and procedures for programming and setting up the Control.

Before beginning to set up the Control, make sure that all of the Toggle Switches have been placed in the manual “off” position **(See Figure 14).** This will insure that no outputs will accidentally turn on during setup.

Special Note: When first powering up and setting up the Control, the light next to the alarms button (button #7) may flash. Ignore this flashing light until the Control is fully set up.

Item	Description
1	Control Box. Door (Front)
2	Toggle Switches in "Off" Position

Figure 14. Toggle Switches in "Off" Position

Setup Screen (Button #12)

Begin setting up the Control by going to the setup screen (button #12). The following screen should appear.

Control number	1
Units of measurements	NON-METRIC
Clock type	12 HR
Time of day	10:03a

Figure 15. Setup Screen

Change the Control number so it matches the house number. (This is especially important if C-Central is being used or might be used). Continue scrolling down the screen setting up the units of measurement, time of day, date, etc.

The next section of the setup screen tells the Control what the house is equipped for and what equipment is present in the house.

HOUSE EQUIPPED FOR:	
Natural	NO
Main 1 curtain	NO
Main 2 curtain	NO
Tunnel	NO
Water meter	NO
Low water pressure switch	NO
Humidity sensor	NO

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Figure 16. House Equipped for Screen

Continue to answer the “House equipped for:” questions until all questions have been answered. Once all of the “House equipped for:” questions have been answered the Control may ask for additional information depending how the questions were answered. For example, if Water Meter was answered “Yes” then there will be information needed for the Water Meter input assignment. For details on what can appear in this part of the set up screen, please see the "**Screen 12"** section of this manual.

Optional Hardware

The next section of the setup screen tells the Control if a digital input board (IDM-16) is connected to the Control. The IDM-16 is used if more than one digital input is to be connected to the Control (for example 2 water meters, or 1 one meter and one feed scale, etc.). Answer YES to this line if an IDM-16 board is connected to the Control. For more information on connecting the IDM-16 board to the control see manual MT1820.

Digital Input assignment

The last section of the setup screen deals with assigning water meters, feed scales, and/or auxiliary digital inputs to a digital input on the IO board or the IDM-16 board. Both the board number (IO board is always board #0 and the IDM-16 board is always board #1) and the input number must be entered. For example, if water meter 1 was connected to the D1 input of the IO board, then under water meter 1, 0 would be entered for the board number and 1 would be entered for the input number. The IO board can only have one digital input connected to it. The IDM board can have a maximum of 16 digital inputs connected to it.

Changing the Access Code

Change access code ? NO

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Figure 17. Changing the Access Code

The Control comes set from the factory with no access code required to make changes. If an access code is desires first change the “NO” to a “YES” at the change access code line of setup screen. The Control will then ask for the old password. From the factory the old password is 1111. This is entered by pushing the number 1 (Current Conditions) button 4 times. You can then enter a new access code by using the subject buttons as the numbers that you want to use. For example, an access code of 1952 would be entered by pressing in succession the Current Conditions button (button #1), the Clock 6 button (button #9), the Clock 4 button (button #5), and the Clock 1 button (button #2). The Control will then ask you to confirm your access code. Once an access code has been entered, the Control will ask for that code any time the Control has set idle, (no buttons pressed), for more than 5 minutes, and the edit button is pushed. If an access code is no longer desired, change the access code back to the factory setting of 1111, and no code will be required to make changes.

After screen 12 is set up, use the "**Overview of Screens**" section of this Manual as a reference to set up the other screens.

Alarms

At the top of screen 7 a current alarm condition(s) will be listed. If there are no alarm conditions, the status of the alarm system will show at the top of the screen. The three possible statuses are ENABLED, DISABLED, and TEST. The status field can be changed.

Enabled

If the alarm system is ENABLED and one or more alarms arise, there will be alarm message(s) at the top of the screen. After pressing the screen 7 button the first time, the alarm Relay will be changed to the non alarm state for one minute and the alarm-screen will be shown. By pressing the screen 7 button a second time the alarm message will change from ALARM to the status NOTICED. This second button press is the manner that you tell the Control that you are aware of the alarm condition and, in so doing, NOTICE the alarm condition. If there is more than one alarm condition, you NOTICE each additional alarm condition with an additional button press for each additional alarm condition. If you fail to NOTICE an alarm with the additional button press(s), the alarm Relay will return to the alarm state one minute after the initial screen 7 button press. If the alarm condition is still present when you NOTICE the alarm, the word ALARM to the right of the condition will (for most alarm conditions) change to OFF FOR 24:00. The time setting is editable. It gives you time to deal with the problem. If you do not fix the problem, the alarm Relay will once again trigger your alarm system at the end of the time period. If the alarm condition has RECOVERED by the time you NOTICE the condition, the alarm message disappears when you NOTICE it and it is added to the alarm history at the bottom of the alarm screen.

Disabled

It is possible, but not recommended, to DISABLE the alarm system of the Control. One reason for this could be that the house is empty. The light beside the screen 7 button will flash slowly to remind you that the alarm system is disabled, but the alarm Relay will not change to the alarm state. The alarm history shown at the bottom of screen 7 does list that the alarm system was disabled, when, and for how long.

Test

If the user chooses TEST, the alarm Relay will immediately change to the alarm state. This allows testing the alarm system that is external to the Control (telephone dialer, for instance.) NOTICING the ALARM TEST, as you would a normal alarm, erases the alarm message and returns the alarm Relay to the non alarm state. Also, an ALARM TEST notification will be listed in the alarm history.

Warning

There also is an alarm message status called WARNING. This does not change the state of the alarm Relay, but alerts you that something isn’t right. It needs to be NOTICED in the same way as a “hard” alarm in order to turn off the flashing lights, etc. An example is a failed Sensor.

Alarm History

At the bottom of the alarm screen is a listing of the most recent 10 alarms. The date and time of each alarm is shown. The amount of time elapsed (hh:mm) from the time the alarm occurs until the alarm is noticed and recovers is also show.

Alarm Messages

IDM I/O Net Error

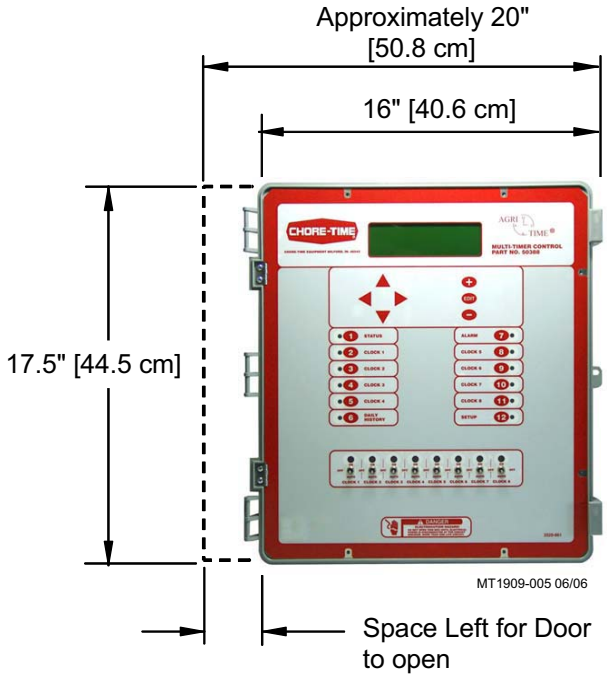
If the Multi-Timer Control fails to communicate with the optional IDM Board this alarm will appear.

Control Installation

Mounting the Control

The Agri-Time Multi-Timer Control requires a minimum mounting area of approximately 21" x 21" [55.9 cm x 55.9 cm] This dimension is allowing extra room for the Control Door to open. **(See Figure 18 below)**. If one 20 amp Variable Speed Kit is used the approximate minimum mounting area becomes 30" x 25"[76.2 cm x 63.5 cm] and if two 20 amp Variable Speed Kits are used the mounting area becomes approximately 30" x 36"[76.2 cm x 91.4 cm] The box should be mounted level on a solid backing using the mounting holes provided.

No other electrical equipment (transformers, light dimmers, additional relays, etc.) should be mounted inside the control box.



Note: Cover Not Shown for Clarity.

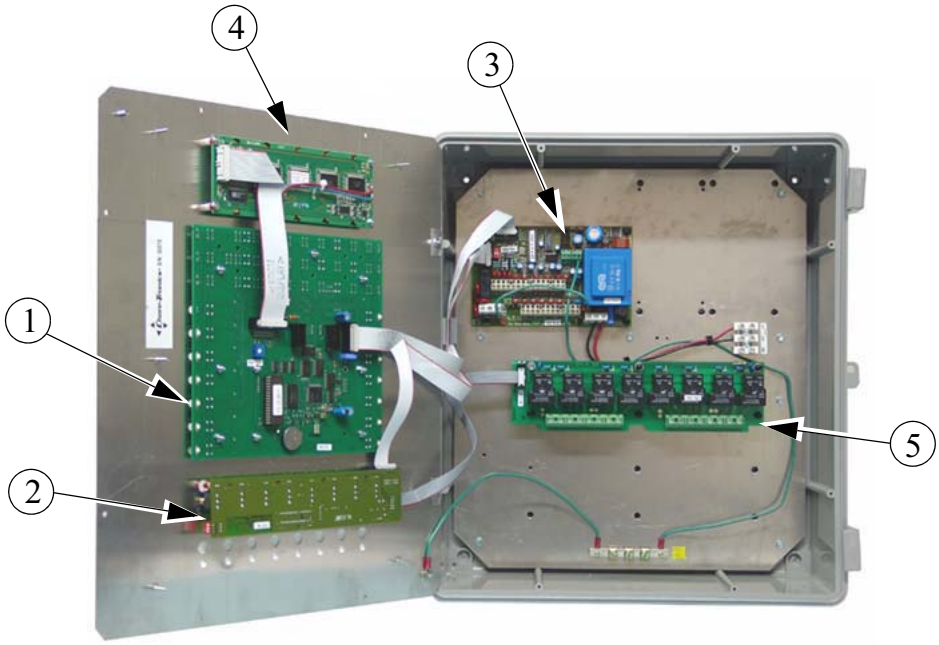
Figure 18. Mounting Area

Wiring the Control

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

Use the current Back Up Box Manual for wiring instructions

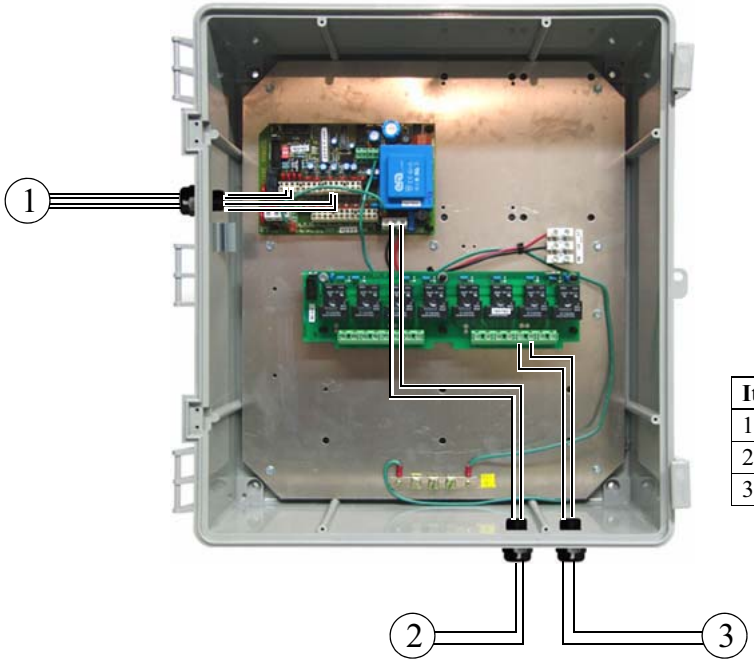
The Chore-Tronics Agri-Time Multi-Timer Control consists of five different types of boards shown in **Figure 19**. The Boards involved in wiring the Controls are the I/O Board, **(Item 3),** and the Relay Module *RM Board* **(Item 5)**.



Item	Description
1	KD Board
2	Manual Switch (MS)Board
3	I/O Board
4	Display Board
5	RM Board (Relay Module)

Figure 19. Different Types of Boards

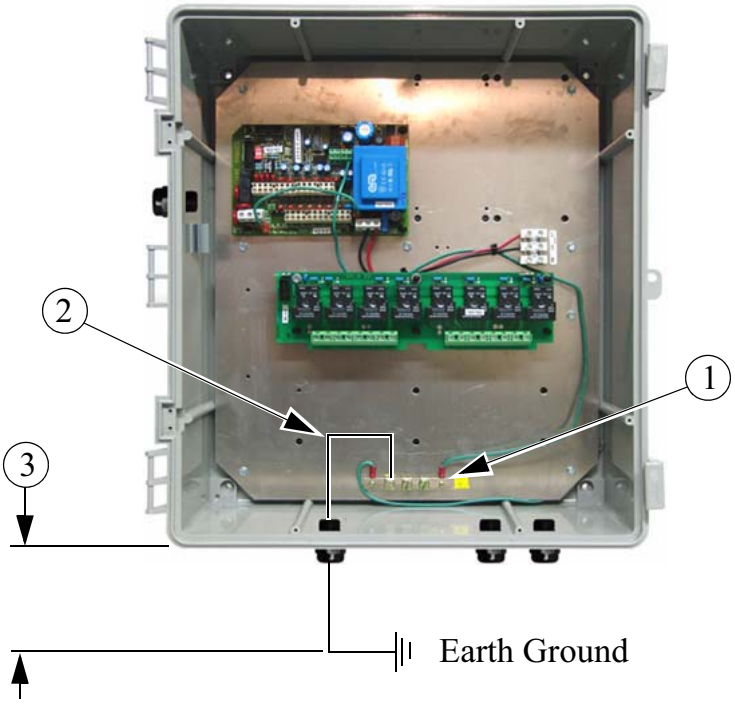
When wiring the Agritime Control it is recommended that the line voltage wires be brought into the bottom of the Control Box and the low voltage wires (Water Meter for example) be brought in from the side **(See Figure 20)**.



Item	Description
1	Water Meter wires (Low Voltage)
2	Line Voltage Wires
3	Input/Output wires (High Voltage)

Figure 20. Low Voltage Wire Routing

The Ground Rail, **(Item 1, Figure 21)**, is only to be used to connect the Control to Earth Ground. It is recommended that a ground rod be located no more than 8’-10’ (2.438 m-3.048 m) away from the Control. The Control should be connected to ground using a 12 gauge wire or larger. As always, check the local electric code for additional requirements.

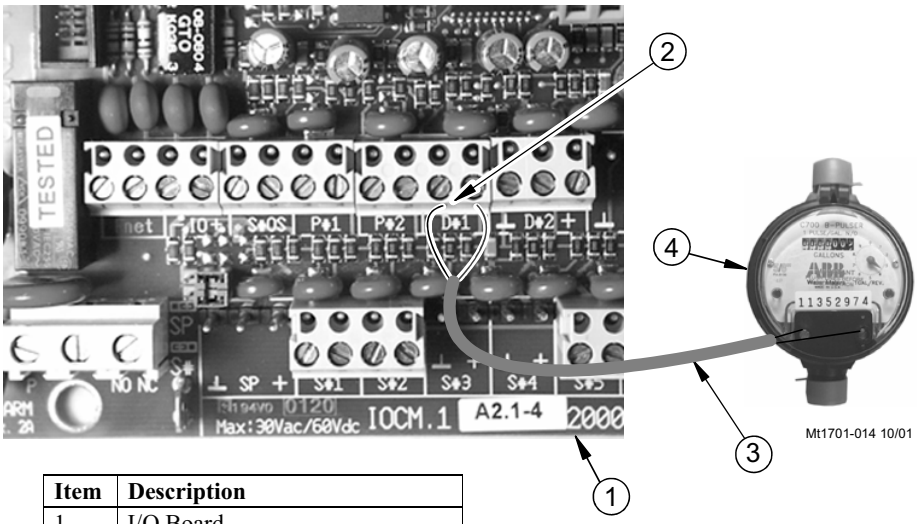


Item	Description
1	Ground Rail
2	Ground Wire
3	8’-10’[2.438 m-3.048 m] Max.

Figure 21. Ground Wire Routing

Pulsed Water Meter and Water Pressure Switch Wiring

If the optional Pulsed Water Meter is used, it needs to be connected to the D1 terminals on the I/O Board **(See Figure 22)**. Use Twisted Pair Wire to connect the terminals on the Water Meter with the Control. If a Water Meter not sold by Chore-Time is used make sure that it has a dry contact output. **Do not** use a Water Meter that sends voltage out with every pulse.



Item	Description
1	I/O Board
2	D2 Terminals
3	Non Shielded Twisted Pair Wire
4	Water Meter

Figure 22. Pulse Water Meter

Starting the Control

Once the Control, Back Up Box, and all outputs have been installed and wired properly, power should be turned on to the Control. When power is first turned on to the Control the screen should look like **Figure 23**.

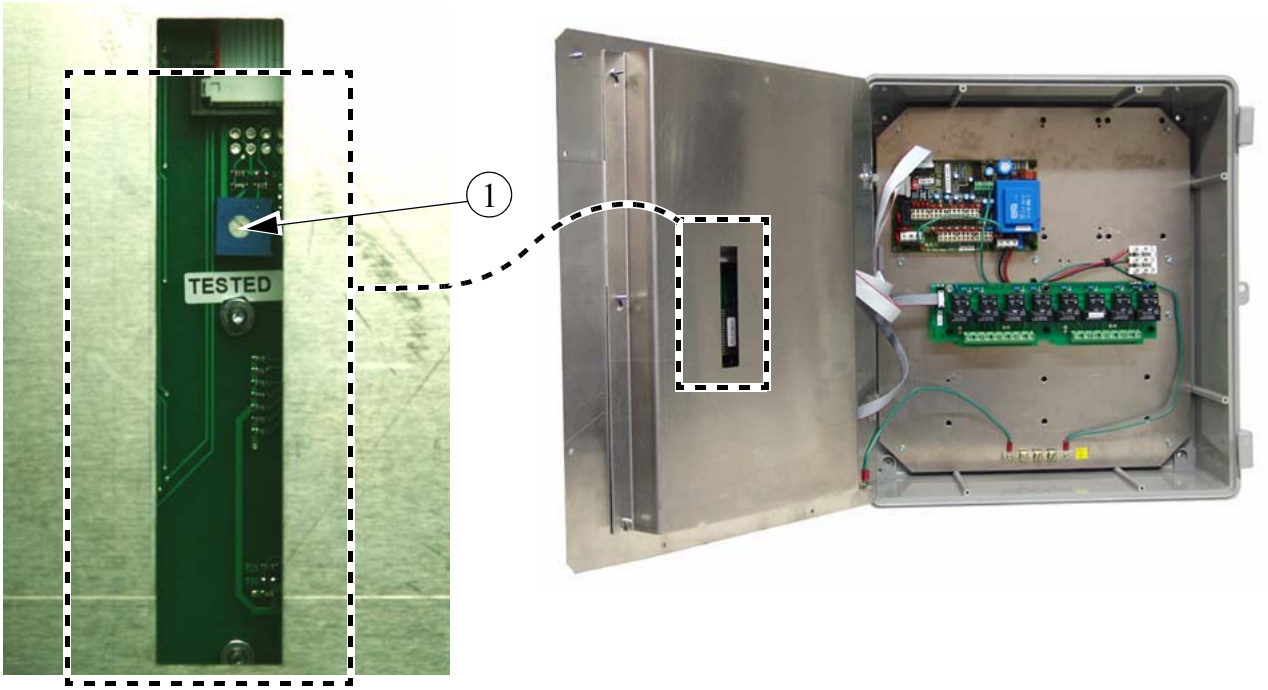
Chore-Tronics

TC8 (Software Version)
press any key to continue

Figure 23. Power on Screen

The light next to the alarms button (Button 7) should be flashing. If the screen is hard to read, open the door of the main box and look for a slot cut in the left-center portion of the back cover **(Figure below).** In the slot is a blue Potentiometer with a white adjustment screw. Turning the screw clockwise darkens the screen, turning the screw counter-clockwise lightens the screen. Adjust the screw until the screen is clear and easy to read. If the Control is mounted in a non-insulated area the screen may need to be adjusted periodically because temperature can effect the readability of the screen.

Warning: Voltage present in back of Box Line

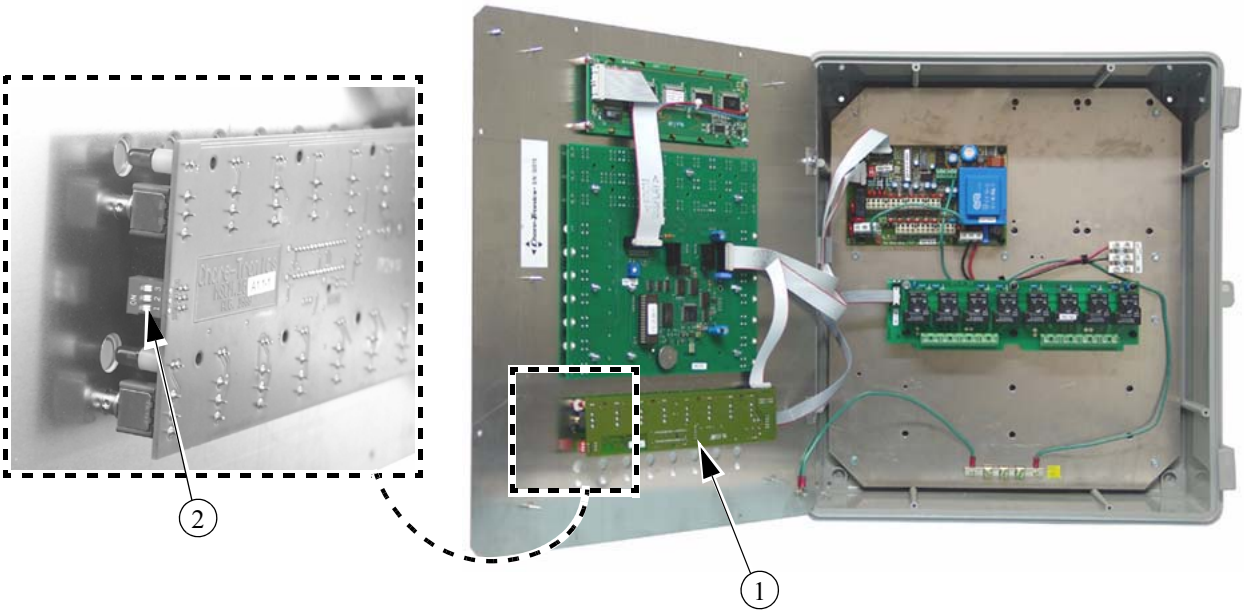


Item	Description
1	White Adjustment Screw

Figure 24. Adjusting Screen Intensity

MS Board Dip Switch Positions

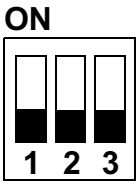
The MS Board Dip Switch is located at the end of the Manual Switch Board as shown in **Figure 25.** below.



Item	Description
1	Manual Switch (MS) Board
2	Dip Switch

Figure 25. Changing the Access Code

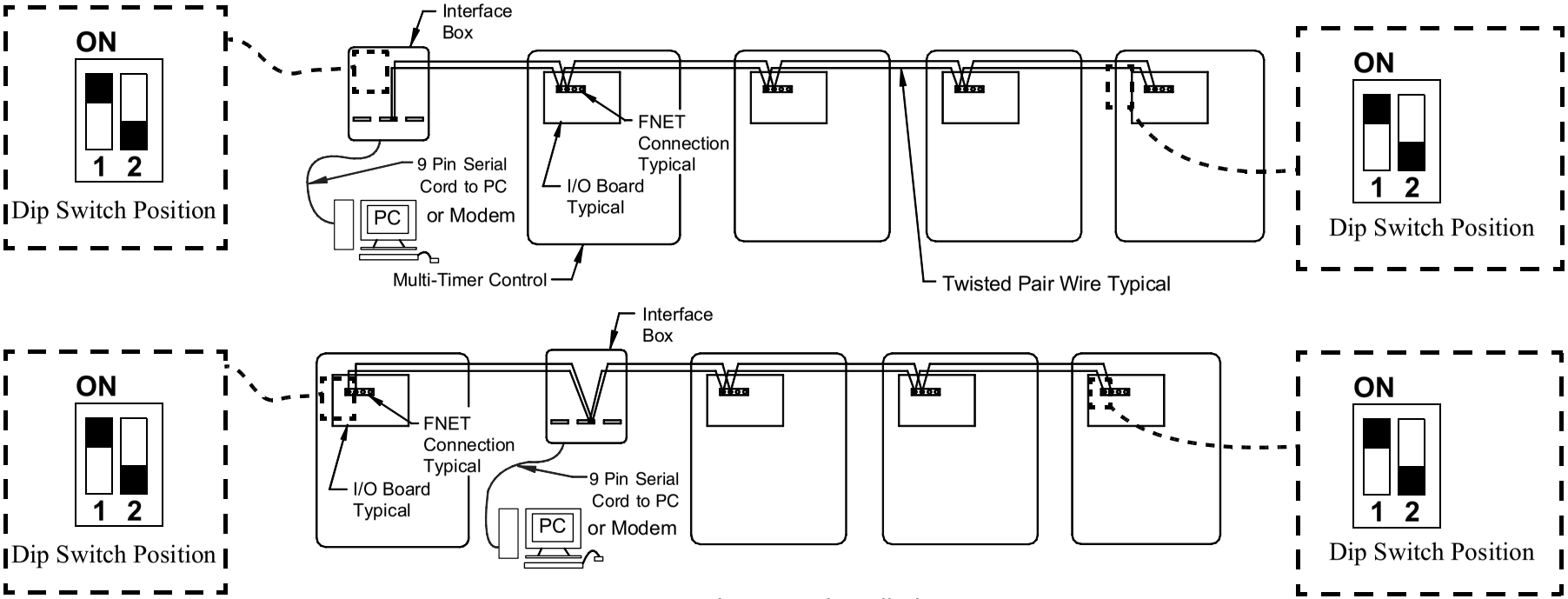
1. Manual Switch position on the board — one board being used

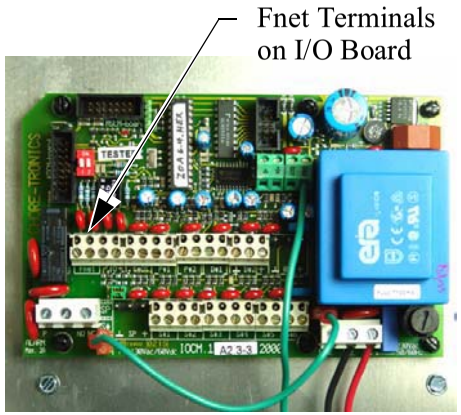


New Controls will come from the factory pre-set. This information is provided only when a replacement board is used.

PC Connection

The Controls in each house are connected together at the FNET Terminal Connectors as shown below. See **Figure 26** below for location of the Fnet Terminals on the I/O Board. Use only Twisted Pair Wire (Chore-Time Part No. 42208). The Interface Box can be wired in anywhere either at the beginning of your string, at the end, or between Controls; but not to more than one Control as shown in the **Figure 26.** below.





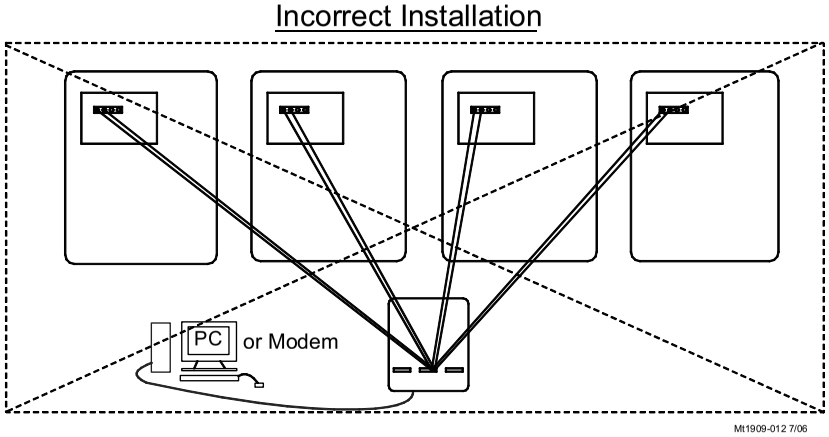


Figure 26. PC Connection

Technical Specifications

Ambient Operating Temperature Range… -10°C to 50°C/14°F to 122°F

Set Temperature Range….4.4°C to 48.9°C/ 40°F to 120°F

Timer Ranges....
Timer 1, Timer 2: 0 to 2000 seconds on/0 to 2000 seconds off.
Min Vent Timer: 30-2000 or 0 seconds on/60-2000 or 0 seconds off.
Stir On timer: 0-Min Vent off time.

Supply Voltage……200-240 Vac 50-60 Hz

Supply Current……100 mA

Output Relays
Contacts……..SPST Normally Open contacts
Voltage……250 Vac max
Load……2 HP @ 240 Vac (Feed Motor Load only)
1000 W Incandescent Light Load @ 120 Vac Coil...24vdc

FNET Data Voltage Range(C-Central)…….$^{+}$/-5 V

Alarm Relay
Voltage…..250 Vac 125 Vdc
Current……8.0 A @ 250 Vac, 5.0 A @ 30 Vdc

Improving Lightning Surge Suppression

Lightning can be a very destructive and expensive phenomenon. It does not always take a direct “hit” for lightning to cause extensive damage to electrical equipment. The Chore-Tronics controls do have components that help suppress and/or isolate power surges such as lightning. These components many times will protect the controls from the power surge or at least keep the damage isolated to one board on the control. However, more direct strikes or strikes that hit network wires such as alarm wires to phone dialers or the C-Central network can cause damage to numerous boards in numerous controls. If the farm is located in a lightning prone area or if there is a network of wires connecting all Chore-Tronics controls together (such as C-Central or an alarm system), then additional lightning protection should be considered. These products are available from Chore-Time. The products available will be discussed later in this section. It should also be noted that a back-up system consisting of mechanical back-up thermostats be installed in the event of a control failure. Chore-Time has a back-up box available (Part Number 40727).

Before obtaining lightning suppression devices, first check the system grounding of each house/room. Every building needs to have its own ground rod and that ground rod must be driven deep enough into the ground that it will have good contact year round. Please check with the local electrician and/or electrical inspector for specific ground rod requirements in your area. In some areas one ground rod may not be sufficient to provided a good ground to earth, in that case an electrician should be consulted to find alternate ways of obtaining a good Earth ground. Again, be sure to check with a qualified electrician for grounding requirements.

Once a good grounding system has been established, if lightning is still a concern, surge suppressors should be considered. It is recommended that there be a suppressor installed at the main distribution panel for the farm (Chore-Time Part Number 47663) and a suppressor installed on the service panel of each house/room (Part Number 47662). If C-Central and/or an alarm system is used then there should be a low voltage suppressor (Part Number 47660) installed at every control and a telephone line suppressor (Part Number 47661) installed at the phone line on the farm. **See the Figures on the following pages** for the wiring diagrams and more information on location and installation of these devices.

Installing these devices does not guarantee that the farm will not be struck by lightning or that equipment will not be damaged from lightning strikes. However, they will greatly increase the amount of protection already there, and thus will reduce the chances of having lightning damage occur.

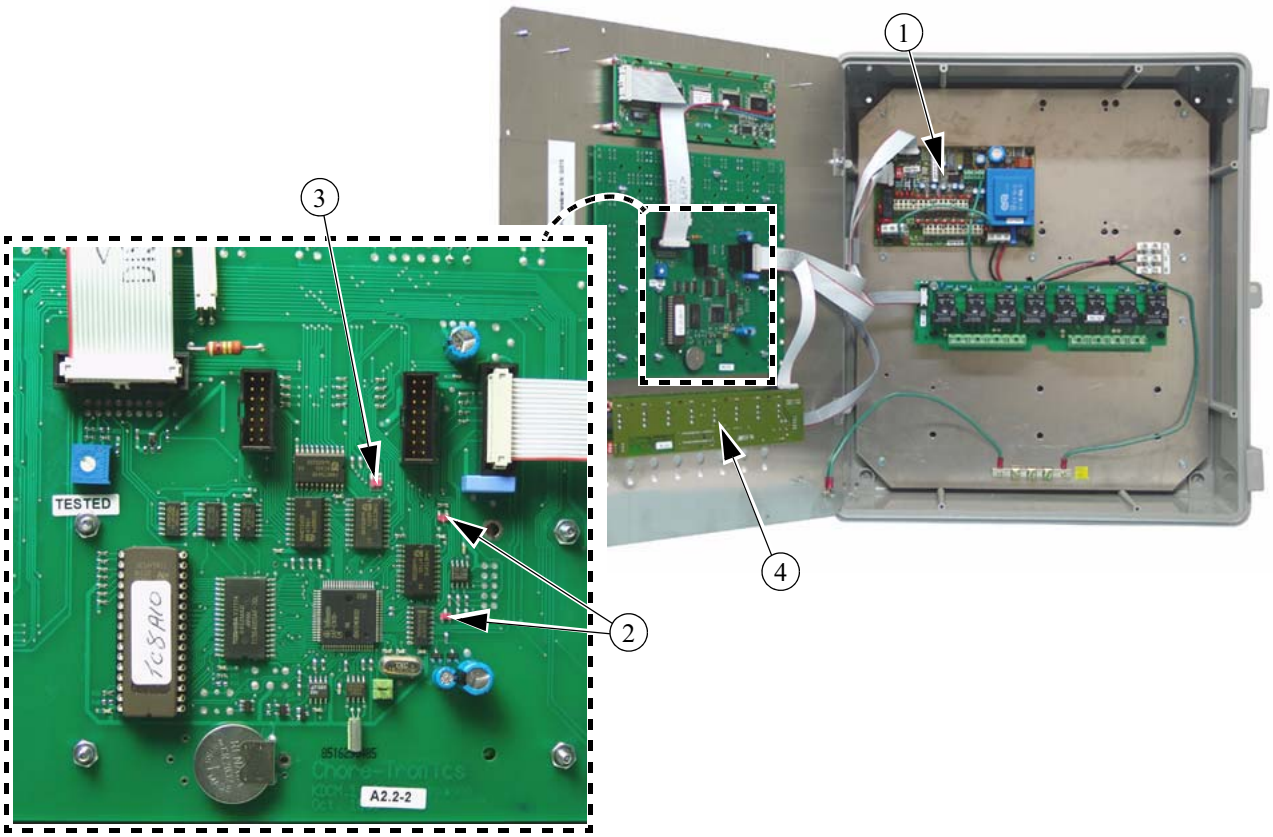
Troubleshooting after a Lightning Strike

On **the following page** there is a flow chart to help trouble shoot a Control that has taken a lightning strike. Keep in mind that the flow chart represents what can happen when lightning strikes a Control. Before using the chart please **see the Figures below** to become familiar with terms and location of equipment discussed in the chart. If after using the chart the Control still does not function please contact your Chore-Time distributor or Chore-Time Technical Service Department.

If the Control(s) located on the farm are taking multiple hits a year, please see the section following the trouble shooting chart on suggestions for improving lightning suppression on the farm. Look at this section particularly if you have C-Central installed on the farm and/or a telephone dialer system where all controls are connected to one dialer.

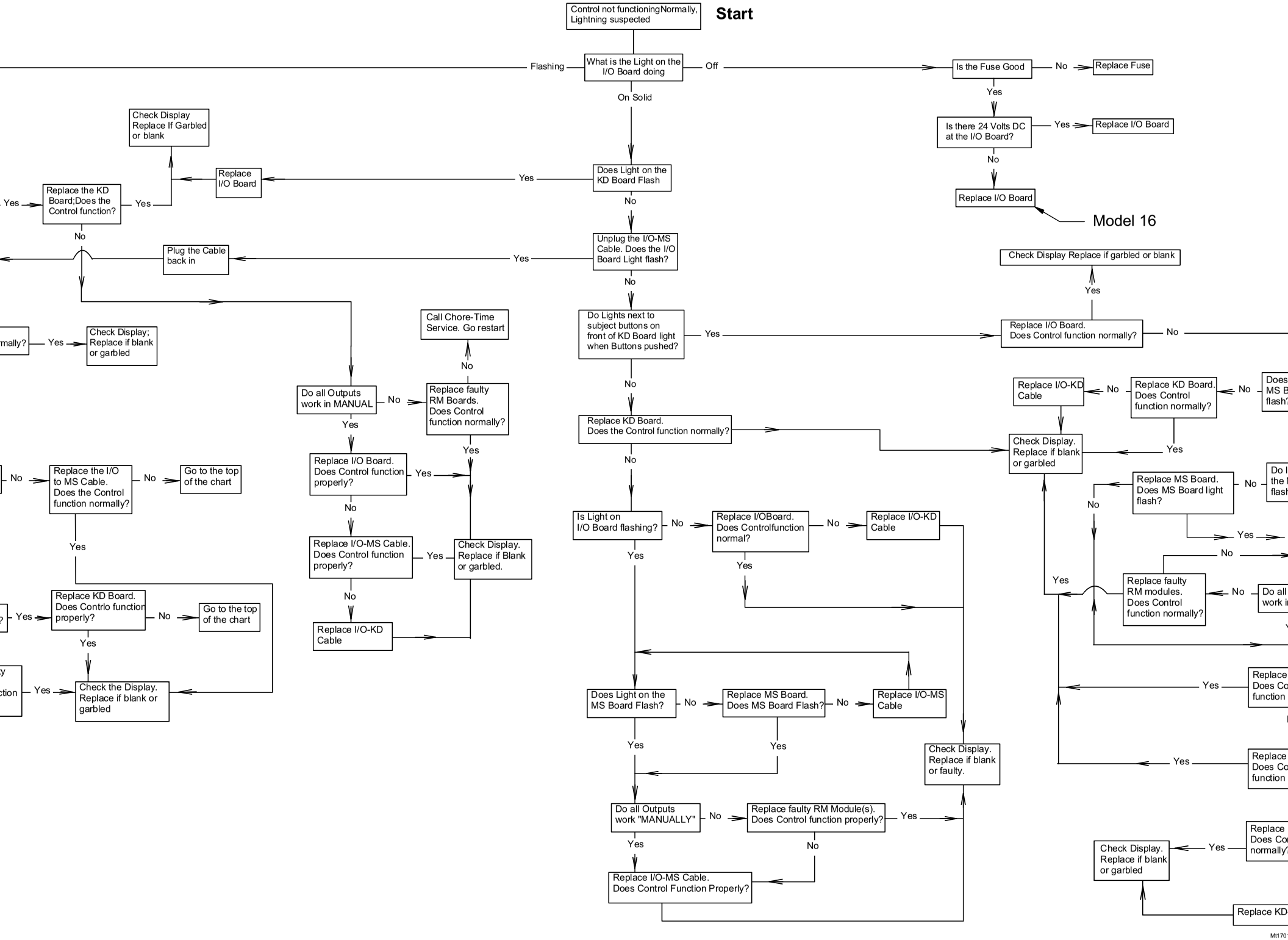
NOTE: If the display at the control is not functional (unreadable or no display), troubleshoot the other boards first because the display may not be bad.

If you think your Control has been subject to a lightning strike check to see if the Indicator Lights on each Board are either on or Flashing on and off. **(Figure 27)**. If an Indicator Light is not on then that is an indication that that Board has been damaged.



Item	Description
1	I/O Board Indicator Light (Should be Flashing)
2	KD Board Indicator Lights
3	KD Board Indicator Light (Should be Flashing)
4	Manual Switch (MS) Board Lights (Should be Flashing)

Figure 27. Board Indicator Lights


Control not functioningNormally, Lightning suspected
Start
What is the Light on the I/O Board doing
Flashing
Off
On Solid
Is the Fuse Good
No
Replace Fuse
Yes
Is there 24 Volts DC at the I/O Board?
Yes
Replace I/O Board
No
Replace I/O Board
Model 16
Does Light on the KD Board Flash
Yes
Replace I/O Board
Check Display Replace If Garbled or blank
Replace the KD Board;Does the Control function?
Yes
Yes
No
Unplug the I/O-MS Cable. Does the I/O Board Light flash?
Yes
Plug the Cable back in
No
Do Lights next to subject buttons on front of KD Board light when Buttons pushed?
Yes
Replace I/O Board. Does Control function normally?
No
Check Display Replace if garbled or blank
Yes
Check Display; Replace if blank or garbled
Call Chore-Time Service. Go restart
No
Do all Outputs work in MANUAL
No
Replace faulty RM Boards. Does Control function normally?
Yes
Yes
Replace I/O Board. Does Control function properly?
Yes
No
Replace I/O-MS Cable. Does Control function properly?
Yes
Check Display. Replace if Blank or garbled.
No
Replace I/O-KD Cable
No
Replace KD Board. Does the Control function normally?
No
Replace the I/O to MS Cable. Does the Control function normally?
No
Go to the top of the chart
Yes
Replace KD Board. Does Contrlo function properly?
Yes
No
Go to the top of the chart
Yes
Check the Display. Replace if blank or garbled
Yes
Replace KD Board. Does the Control function normally?
No
Is Light on I/O Board flashing?
No
Replace I/OBoard. Does Controlfunction normal?
No
Replace I/O-KD Cable
Yes
Yes
Does Light on the MS Board Flash?
No
Replace MS Board. Does MS Board Flash?
No
Replace I/O-MS Cable
Yes
Yes
Check Display. Replace if blank or faulty.
Do all Outputs work "MANUALLY"
No
Replace faulty RM Module(s). Does Control function properly?
Yes
Yes
No
Replace I/O-MS Cable. Does Control Function Properly?
Replace I/O-KD Cable
No
Replace KD Board. Does Control function normally?
No
Check Display. Replace if blank or garbled
Yes
Yes
Replace MS Board. Does MS Board light flash?
No
Yes
No
Yes
Replace faulty RM modules. Does Control function normally?
No
Yes
Yes
Yes
Check Display. Replace if blank or garbled
Yes

47663 Farm Main Service Panel Surge Suppressor Wiring Diagram

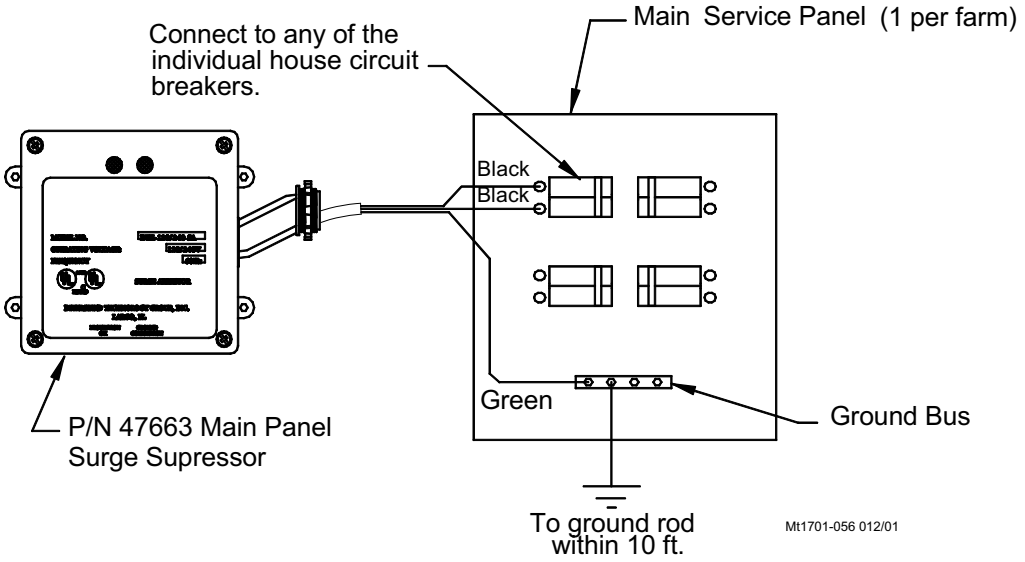


Figure 29. Service Panel Surge Supressor Wiring

47662 House Main Service Panel Surge Suppressor Wiring

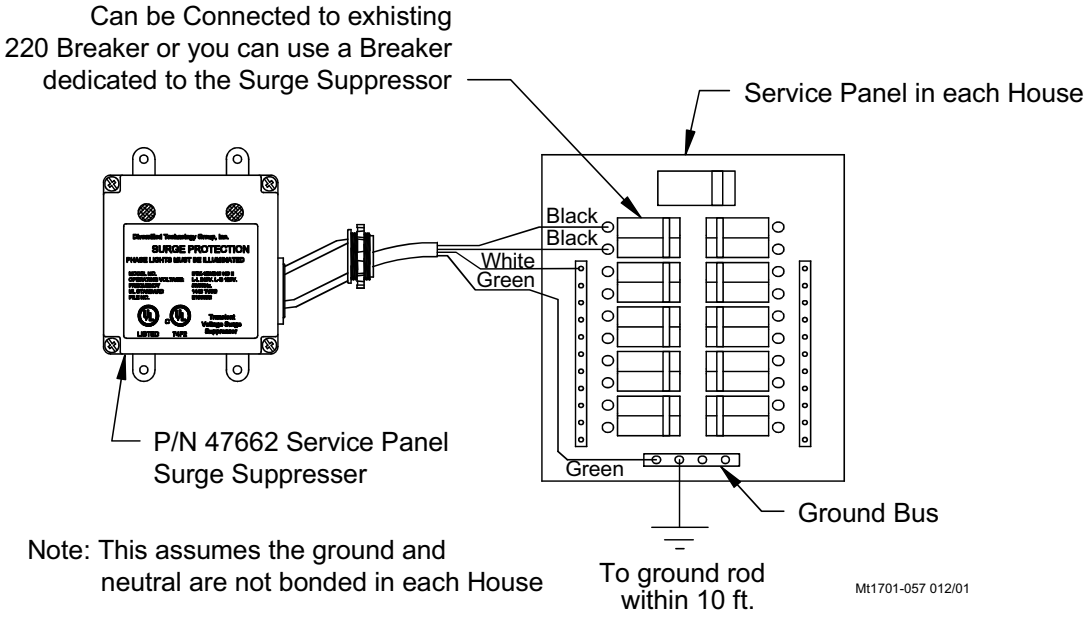
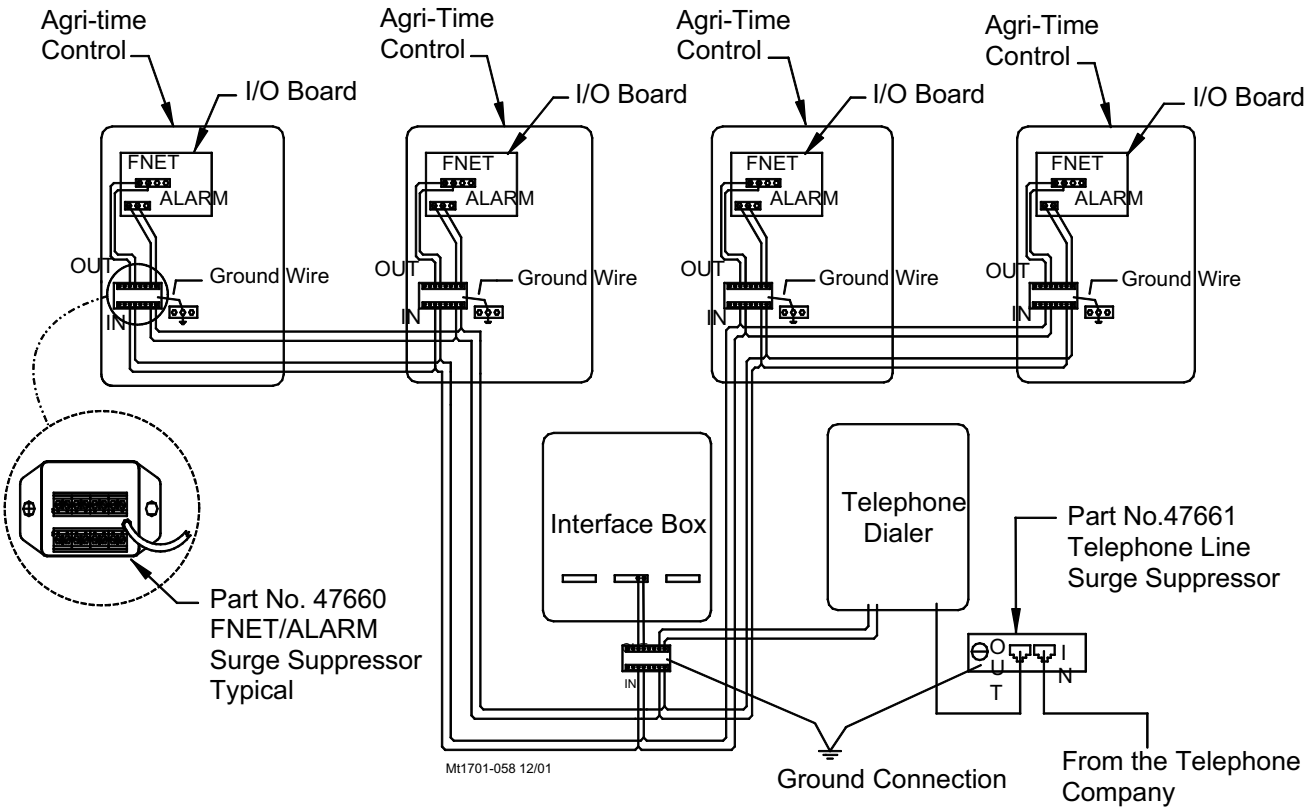


Figure 30. Main Service Panel Surge Supressor Wiring

47660 FNET/ALARM & 47661 Telephone Line Surge Suppressor Wiring

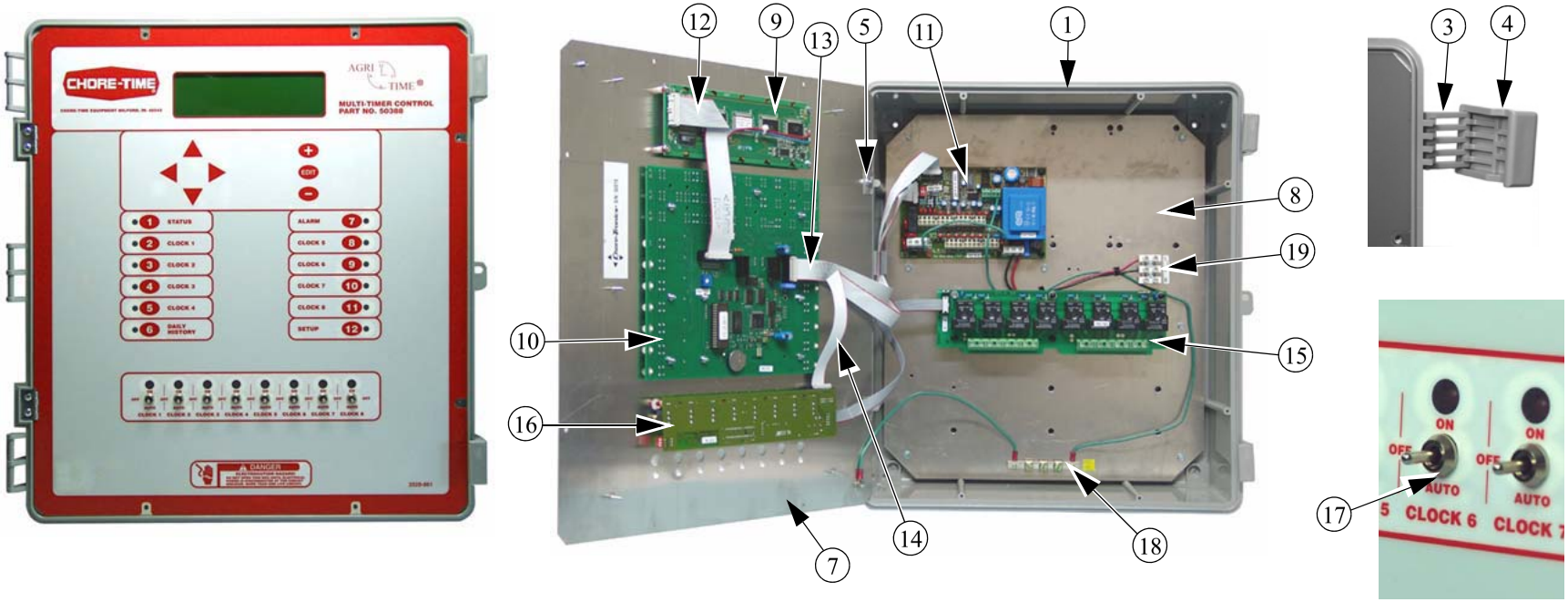


Note: There must be a ground rod within 10 ft. of the ground terminal of each surge suppressor. The wire size from the suppressor to the ground rod should be 12 gauge or larger.

Figure 31. FNET Alarm and Telephone Line Surge Supressor Wiring

Parts Lists and Kits

Parts Listing



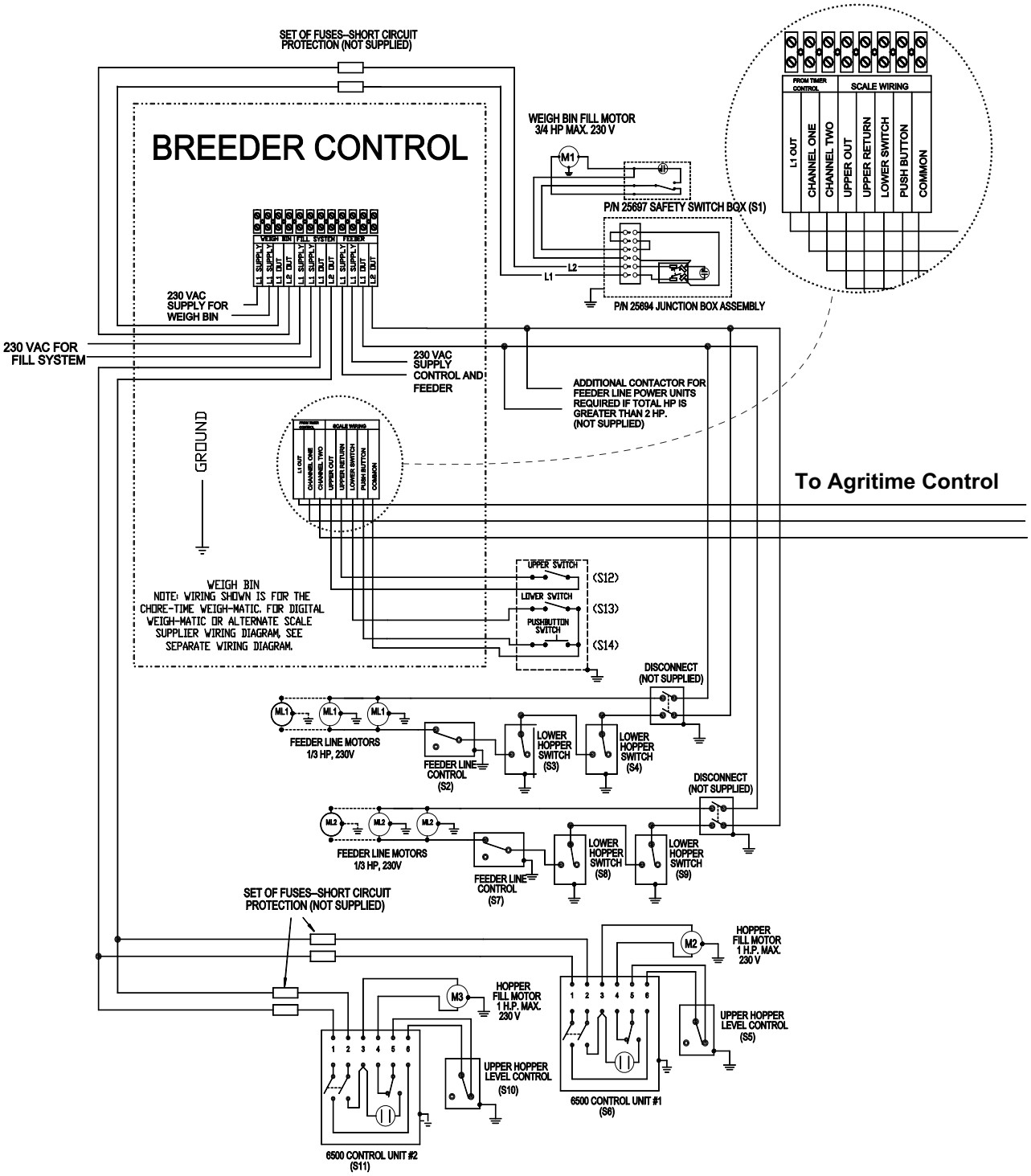
Item	Description	Part No.
1	Enclosure Body	42684
2*	Enclosure Lid	42683
3	Hinge Pivot	30863
4	Hinge Latch	30862
5	Aluminum Hinge	41016
6*	Cover Plate	41323
7	Top Plate	49492
8	Plate, 4,8,16	48347
9	Display 8 x 40	41317
10	KD Board	41315
11	IO.3 Board	41312

Item	Description	Part No.
12	KD-Display Flat Cable	41975
13	KD-I/O Flat Cable	41977
14	IO-MS Flat Cable	41980
15	RM8 Board	41306
16	Manual 8 Switch Board	41308
17	Decorative 9mm Nut	42803
18	Grounding Rail	43384-2
19	3-Pole Terminal Strip	34925-3
* Not shown (Removed for Picture)		

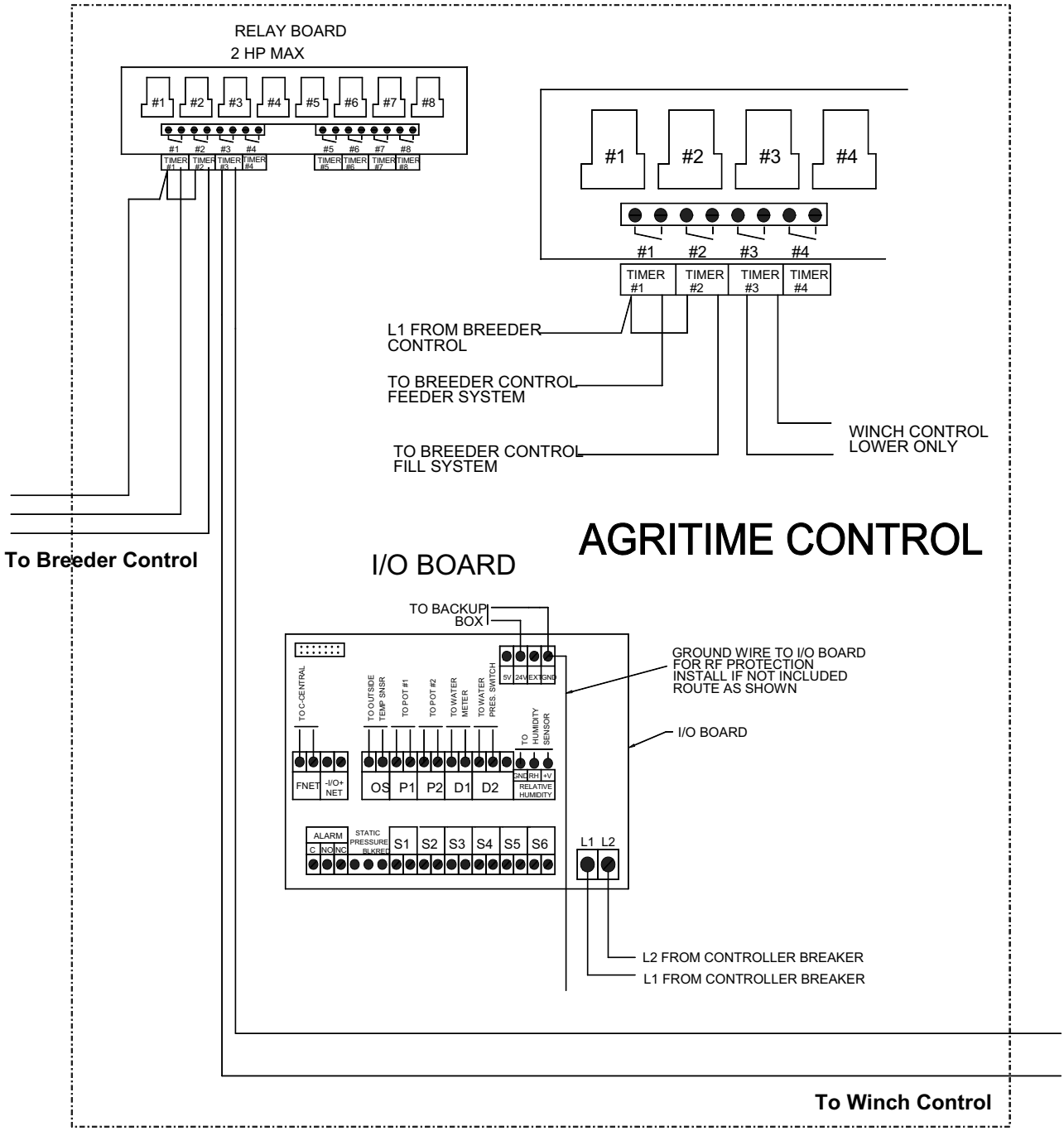
Figure 32. Parts Listing

Wiring Diagrams

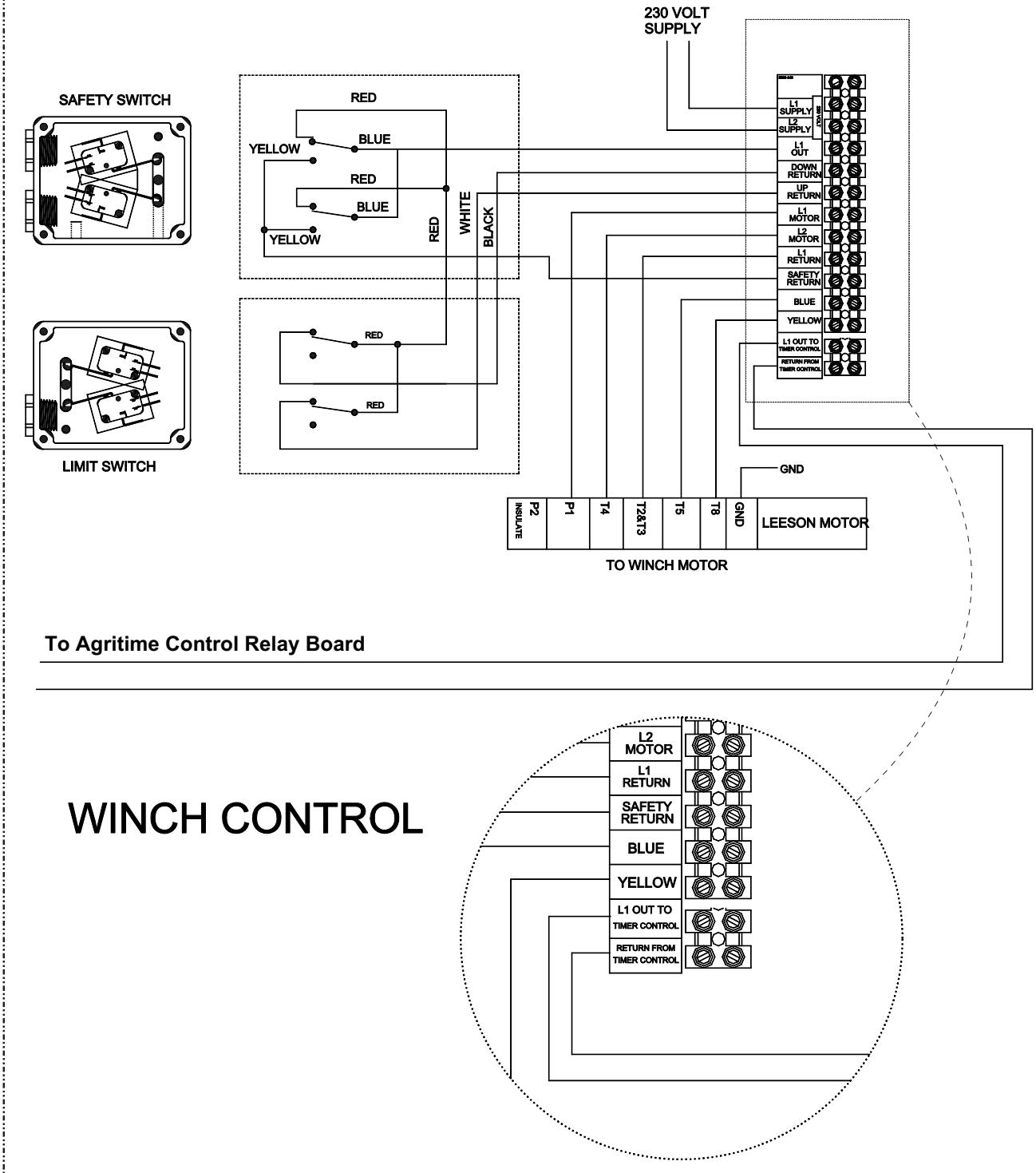
Breeder Control Wiring (Part No. 50360)



Agritime Control Wiring (Part No. 50388)



Rooster Winch Control (Part No. 50359)



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Made to work.
Built to last.

Revisions to this Manual

Page No.	Description of Change
	New Book

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

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