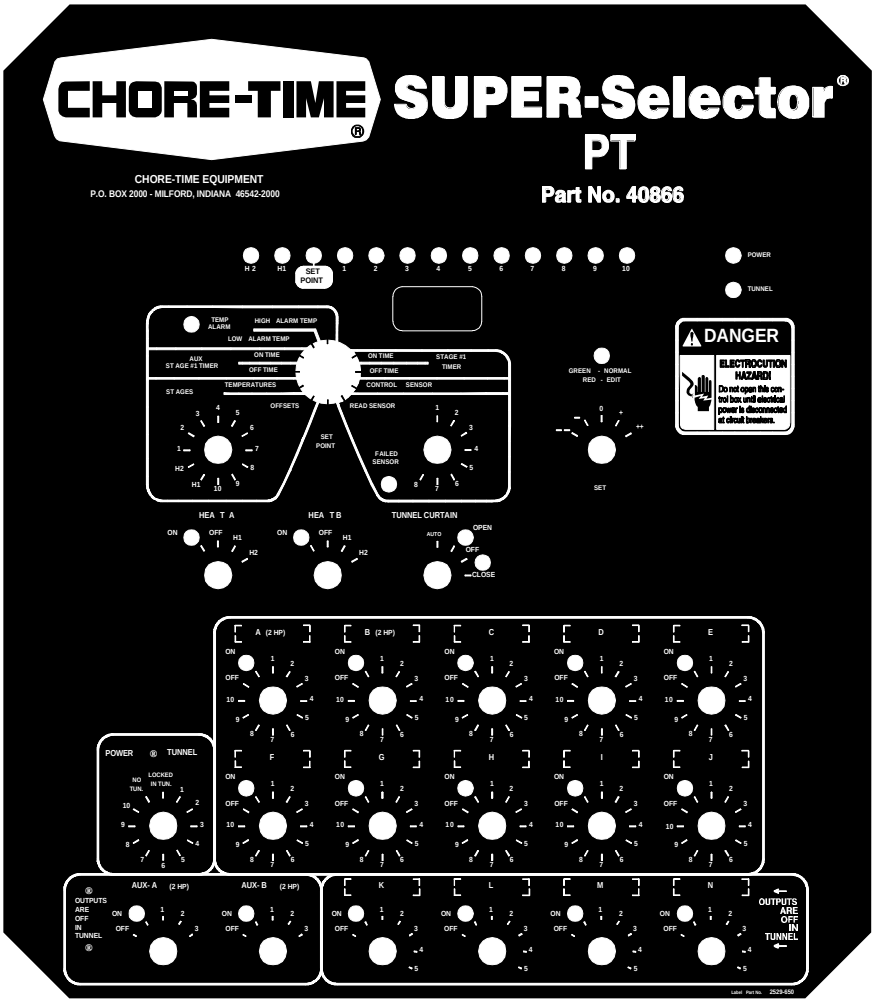
SUPER-Selector™ PT Control

Part No. 40866 and 40866C

Installation and Operation Manual



January 1998

Support Information

The Chore-Time SUPER-Selector PT Control is designed to be used as a *tool* to manage ventilation in poultry and livestock applications. 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 and/or death.

This manual is designed to provide comprehensive, wiring, 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 personal, installer, and customer (end user).

CE

(CE-mark serial number)

IMPORTANT: CE stands for *certified Europe*. It is a standard which equipment must meet or exceed in order to be sold in Europe. CE provides a benchmark for safety and manufacturing issues. CE is required only on equipment sold in Europe.

Chore-Time Equipment recognizes CE Mark and pursues compliance in all applicable products. Fill in the CE-Mark serial number in the blank space provided for future reference.

Include the names and address of your Chore-Time Distributor and installer.

Fill in the following information about your system. 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 _____

Table of Contents

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

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 signs.

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

Safety–Alert Symbol

This is a safety–alert symbol. When you see this symbol on your equipment, be alert to the potential for personal injury. Chore-Time equipment is designed to be installed and operated as safely as possible...however, hazards do exist.

Signal Words

Signal words are used in conjunction with the safety–alert symbol to identify the severity of the warning.

DANGER ..... indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

WARNING ..... indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

CAUTION ..... indicates a hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.

DANGER

WARNING

CAUTION

DANGER—ELECTRICAL HAZARD

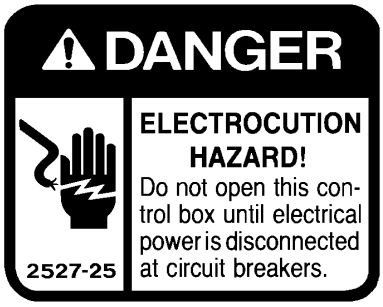
Disconnect electrical power before inspecting or servicing equipment unless maintenance instructions specifically state otherwise.

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.

With the exception of motor overload protection, electrical disconnects and over current protection are not supplied with the equipment.



Mode Definitions

Power Ventilation

Power ventilation occurs when the tunnel curtain is closed and all ventilation is caused by fans. These fans can be located in the side walls or the end walls. The SUPER-Selector PT will place the house in this mode of operation whenever the temperature drops low enough to turn off the power to Tunnel Stage.

Tunnel Ventilation

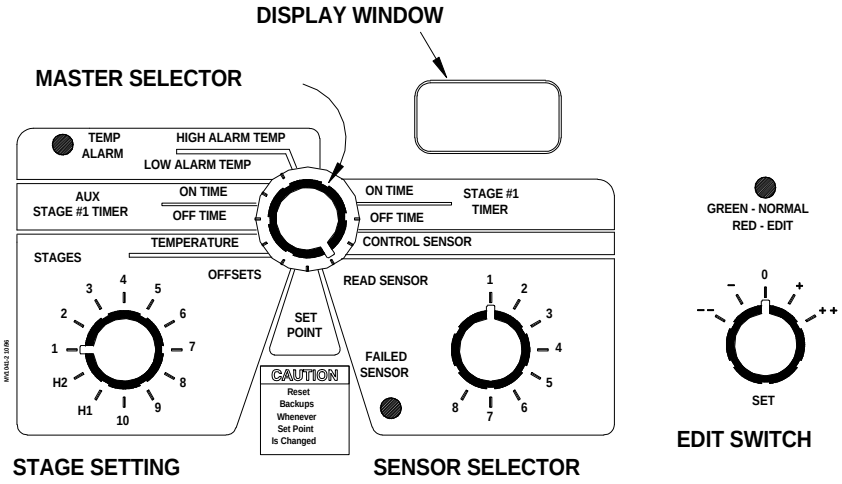
Tunnel ventilation is when the tunnel air inlet curtain is opened while multiple large fans (usually 48" fans) are running at the opposite end from the tunnel air inlet curtain. The air flow, when in tunnel mode, will be from one end of the house to the other and the air velocity helps cool the birds. The SUPER-Selector PT will place the house in this mode of operation when the temperature has risen to the stage that the SUPER-Selector PT is set to go from power to tunnel. The transition to tunnel will occur when the number of fans running prior to the stage selected to go to tunnel ventilation cannot hold the temperature below that stage's temperature.

Programming the SUPER-Selector PT

The SUPER-Selector PT front panel is divided into different areas to clarify the types of programming required. Each of the following must be properly set.

1. Setting stage temperatures, timers, and alarm limits.
2. Assigning the stage at which each output will be activated.
3. Assigning the stage that the control will go from power ventilation mode to tunnel ventilation mode.

Setting Stage Temperatures, etc.



The *master selector* determines what information is to appear in the *display window*. The *edit switch* is used to change that setting. When the *master selector* is pointing toward the *stage setting* switch or the *sensor selector* switch, those switches determine what is shown in the display.

Stage #1 Timer

All outputs (except AUX-A and AUX-B) will time ON and OFF with the STAGE #1 timer if the output knob is pointing towards 1. Above STAGE #1 the output will be on steady as with a thermostat override.

The ON and OFF timers are in seconds and can be adjusted from 0 to 2000. The appropriate amount of time to program depends on bird age, litter condition, and the number of fans assigned to stage 1

Aux Stage #1 Timer

The AUX STAGE #1 TIMER applies to the AUX A and AUX B outputs. If an AUX A or AUX B output is set on 1, it will turn on and off per the AUX STAGE #1 TIMER settings when the temperature is below stage #1, and on constantly for temperatures at or above stage #1.

Outputs I and J are also affected by the AUX STAGE #1 TIMER in a different manner intended for running cooling pads or foggers through a timer. For instance, if Output I were set on 7, it would be off below stage #7 and ON and OFF per the AUX STAGE #1 TIMER at or above STAGE #7.

The AUX STAGE #1 TIMER ON and OFF time can be set between 0 and 2000 seconds. If Output I and/or Output J are not to be timed, set the AUX TIMER OFF TIME to 0 with the on time set to any number other than 0.

CAUTION

The Control Sensor must be located in the bird or animal area being controlled.

Control Sensor

The Control Sensor reads the temperature and determines which stage the control is in.

When the *master selector* is pointed toward CONTROL SENSOR, the display window will reflect which sensor is serving as the Control Sensor (any of the sensors may be chosen as the CONTROL SENSOR). Use the edit switch to choose which sensor is to be the Control Sensor.

One to eight sensors may be installed. Refer to the section titled "Telling the Control the Number of Sensors Installed" on page 9. The positions used on the terminal strip must be in numerical order (i.e. 1, 2, 3, not 1, 3, 6, etc.).

Room Temp

When the *master selector* switch points toward READ SENSOR, the display will show the temperature reading of the sensor chosen. The reading cannot be edited by the *edit switch*. It is a reading of the temperature at that sensor and is not subject to being edited.

Whenever any of the sensors fail, the alarm relay will be energized and the FAILED SENSOR light will flash. Use the *sensor selector* knob to determine which sensor has failed.

If the CONTROL SENSOR fails, the control will lock itself into the stage and mode it is in at the moment the sensor failure occurs.

For instance, if the control is at set temp and in power ventilation with the exhaust fans cycling on and off, and the CONTROL SENSOR fails, the control will continue operating in that mode. Replacing the sensor, or simply changing the CONTROL SENSOR to a good sensor position will return the control to automatic operation.

Set Point

The set point (desired temp) is edited when the *master selector* is pointing at the SET POINT position. The set point can be set from 0.0 to 200.0

Stages: Temperatures & Offsets

When the *master selector* switch is pointed toward OFFSETS the *edit switch* will set the temperature difference between the previous stage and the stage that is selected. For instance, if the offset for stage 1 = 2.0, the offset for stage 2 = 3.0, and the offset for stage 3 = 4.0, then the STAGE 3 absolute temperature will be Set Temp + 2.0 + 3.0 + 4.0. Changing a temperature difference will affect the absolute temperature of that stage and all stages above that stage. It will not affect the absolute temperature of any stages below that stage.

Heat Stage 1 and Heat Stage 2 behave in a similar manner except that they are heat stages and are below the set temperature instead of above. The heat stages turn on at the stage’s temperature when the temperature is falling and then off when the temperature raises .3° from it’s turned on temperature.

The cool stages (stages 1 through 10) turn on at the stages temperature when the temperature is rising and turn off at the previous stages temperature when the temperature is falling.

Pointing the *master selector* switch to TEMPERATURES causes the display to indicate

the absolute temperature of the stage selected by the *stage setting* knob. These absolute temperatures cannot be edited. The intent of this feature is to aid the user in determining the absolute temperature of each stage. To change the absolute temperatures of the stages, it is necessary to change the temperature offsets between stages.

The stage offsets can be set from 0.0 to 200.0 degrees.

High and Low Alarm Temp

The ALARM relay will be energized if temperatures exceed the HIGH ALARM TEMP or drops below the LOW ALARM TEMP or any sensor fails.

In addition, both heat outputs will be turned on whenever the temperature goes below the low alarm temperature (unless that heat output is turned off). This happens regardless of whether the control is in power or tunnel.

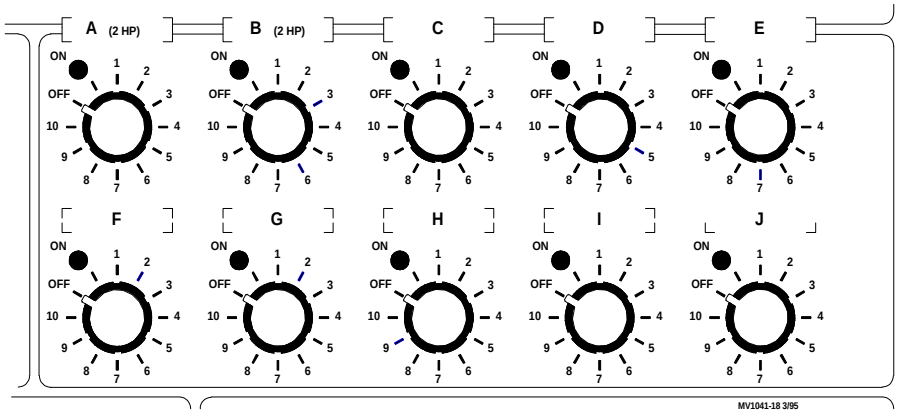
If the high or low alarm is activated, the Temperature Alarm Light will flash.

Power, and Tunnel Mode Outputs

There are two relays that are energized to indicate which mode the control is in. Obviously, only one of these relays can be energized at a time since the control can only be in one mode at a time (power, or tunnel). These relays can be used to create special functions.

If it is desired to have the tunnel curtain’s opening governed by static pressure while in tunnel mode, the tunnel output mode relay exists which is energized whenever the control is in the tunnel mode. This relay can be used to power a static pressure controller that would control the tunnel curtain power units. If there are powered inlets for power ventilation which are controlled by a static pressure controller, that same static pressure controller can be used for the tunnel curtain power unit by adding an external relay to transfer the outputs of the static pressure controller to the tunnel curtain power unit when in tunnel mode.

Assigning Stages to Outputs



HEAT A, HEAT B, Outputs A through N, AUX A, and AUX B must be assigned to a stage if the output is used. Also each of these outputs may be manually turned on or off with its switch by using the on or off position.

Heat A and Heat B

There are 2 heat stages, H1 and H2. If both brooders and space heaters were used, a good approach would be to attach the brooders to the HEAT A output and set its stage to H1 and the space heaters to HEAT B with its stage H2. This would allow changing the primary heat from brooders to space heaters by merely changing HEAT A to stage H2 and HEAT B to H1.

Outputs A thru H

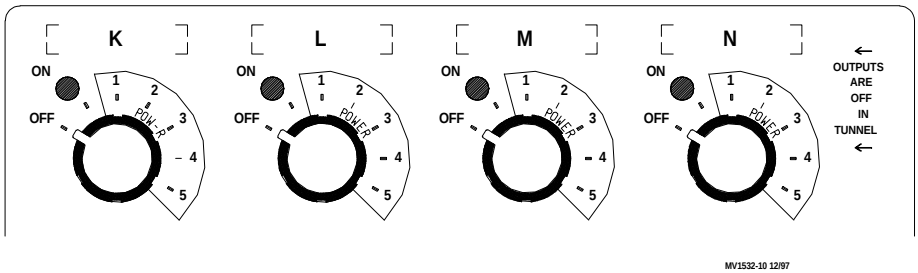
These outputs are allowed to operate during both power and tunnel mode of operation. These outputs are mainly intended for tunnel fans and would be normally set at or above the stage that the control is set to go from power to tunnel ventilation. These outputs may also be used to control a fan for both power and tunnel mode if the output’s stage is set to be lower than the stage set to go from power to tunnel mode.

Outputs I and J

Outputs I and J are the same as outputs A thru H except that they are routed through the AUX TIMER. This feature is intended for foggers or cooling pads where it is desired to run them with a timer above the stage temperature.

If timing of these outputs is not desired, program the OFF TIME of the AUX TIMER to 0. Program the ON TIME to be anything other than 0.

Outputs K thru N

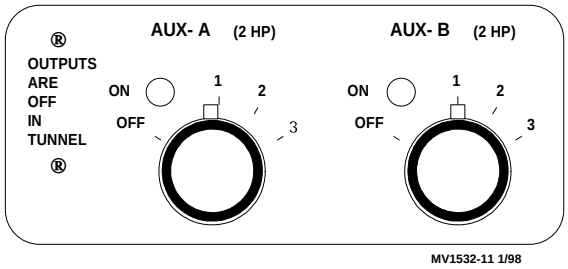


Outputs K through N are intended for exhaust fans. They are turned off during tunnel operation.

Aux A and B

Aux A and B have two output relays with each switch and are intended for controlling center or circulating fans. The Stage #1 Timer is intended to be the minimum ventilation timer for the exhaust fans while the Aux Stage #1 Timer is for the circulating fans with quite different considerations. Like the Stage #1 Timer, the Aux Stage #1 Timer is attached to the Stage #1 only.

Aux A and B are off in the tunnel mode similar to Outputs K through N.



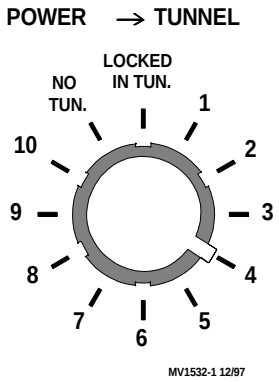
Assigning Stages to Mode Changes

On the left of the control panel is a switch which sets the stage that the control goes from power to tunnel mode.

Using this switch, it is possible to force the control to stay in power mode (no tunnel), or force the control into tunnel mode (locked in tunnel).

If locked in tunnel, the minimum number of fans allowed to run when in tunnel must be locked on. (switches set in the on position).

The (2) lights in the upper right corner of the control indicate the mode the control is in.



Mode Transitions

Power to Tunnel

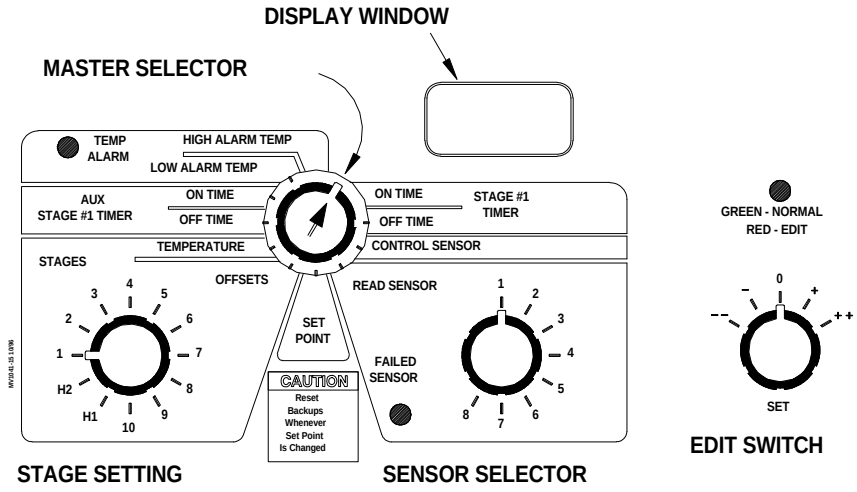
It is important that the sensor chosen to be the *control sensor* is located in a position where the temperature does not decrease very much during the process of converting from the power mode to the tunnel ventilation mode. In general, the temperature will fall the most at the tunnel inlet curtain end of the house during this transition and fall the least, if at all, at the tunnel fan end of the house.

There needs to be at least four (preferably five) 48" fans running *prior* to going to Tunnel Mode.

Tunnel to Power

The transition from tunnel to power occurs at the stage temperature directly below the stage temperature set to go from power to tunnel.

Unlabeled Master Selector Position



The unlabeled position (see the figure above) performs the following special setup functions.

1. Telling the Control the number of sensors installed.

2. Calibrating the Sensors.

Do not attempt to perform these functions until you fully understand these procedures.

Telling the Control the number of sensors installed.

1. Set the *master selector* switch to the unlabeled position. The *display window* will show (- - - -) do not attempt to edit the display while (- - - -) is displayed. Set the *HEAT A* switch one position left of ON. The display window will now show **1** for a 40866 control and **0** for a 40866C control.

2. Use the Edit Switch to change the display to any number from 64 to 127.

3. The *display window* will then change to the number "3". This represents the factory setting of 3 sensors. This number may be increased up to 8 using the edit switch. When the desired number of sensors is displayed, turn the edit switch to the vertical "0" position.

4. The control has just been programmed for the number of sensors to be used.

   To exit this function, turn the *master selector* switch to any setting outside the unlabeled position and **return the *HEAT A* switch to its appropriate setting.**

Calibrating the Sensors

Note: This procedure is not normally required.

In order to calibrate a sensor, it will be necessary to attach an accurate calibration thermometer directly to that sensor for several minutes. Use the same calibration thermometer for each sensor calibrated. From the factory the sensors should be accurate within ± 1.5 degrees F. (± .8 degrees C.).

1. Set the *master selector* switch to the unlabeled position. The *display window* will show (- - - -) do not attempt to edit the display while (- - - -) is displayed. Set the HEAT A switch one position left of ON. The display window will now show **1** for a 40866 control and **0** for a 40866C control.

2. Use the Edit Switch to change the display to any number from 128 to 255.

3. The *display window* will now show the temperature being read by the sensor selected by the *sensor selector*.

4. Use the edit switch to change the reading to be the temperature shown by the calibration thermometer. **The selected sensor has just been calibrated.**

5. Turn the sensor selector to the next sensor to be calibrated and move the calibration thermometer to the next sensor to be calibrated.

   Perform steps 4 on this sensor.

6. Perform steps 4 & 5 on each of the remaining sensors to be calibrated.

7. To exit this function, turn the *master selector* switch to any setting outside the unlabeled position and **return the HEAT A switch back to its appropriate position.**

   All the sensors can be calibrated at once prior to installation by placing them all in a bucket of water along with an accurate calibration thermometer. The water must be stirred as you perform the calibration. Failure to do this might actually degrade the accuracy.

Alarm Output

The alarm output relay is energized whenever the control sensor reads higher than the high alarm setting, lower than the low alarm setting, or any of the installed sensors fail. If the CONTROL SENSOR fails, the control also locks itself into the stage that the control was in at the moment of failure and continues to operate in that stage and mode.

Powered Inlets

Chore-Time recommends using a separate, independent, static pressure monitor controlled, power inlet system as part of the total ventilation system to most fully realize the benefits of staging fans while in power ventilation mode.

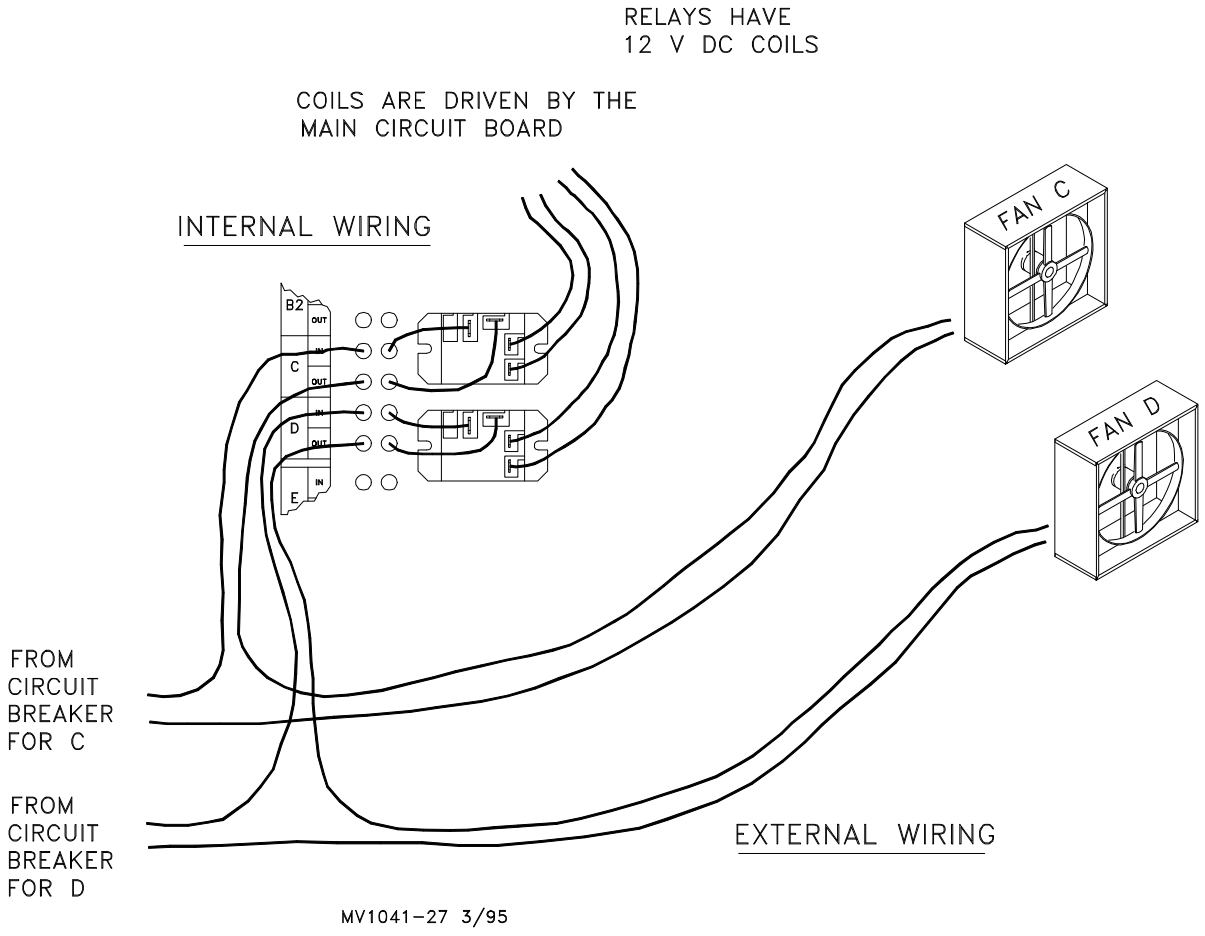
Wiring the System

Chore-Time recommends limiting the load for each relay to 1 H.P. This is to help insure years of trouble-free operation from your control.

There are enough relays that no external contactors are required. Because of the concentration of wires into one box, it is recommend that the wire entry into the box be through conduits(s) as opposed to romex connectors.

A ground lug is provided in the lower center of the box and must be used. It is a very important part of the lightning protection.

All outputs on the terminal strips are from SPST relays. Each input is connected to the common terminal of the SPST Relay and the output is the normally open terminal of that same relay.



Backup Considerations

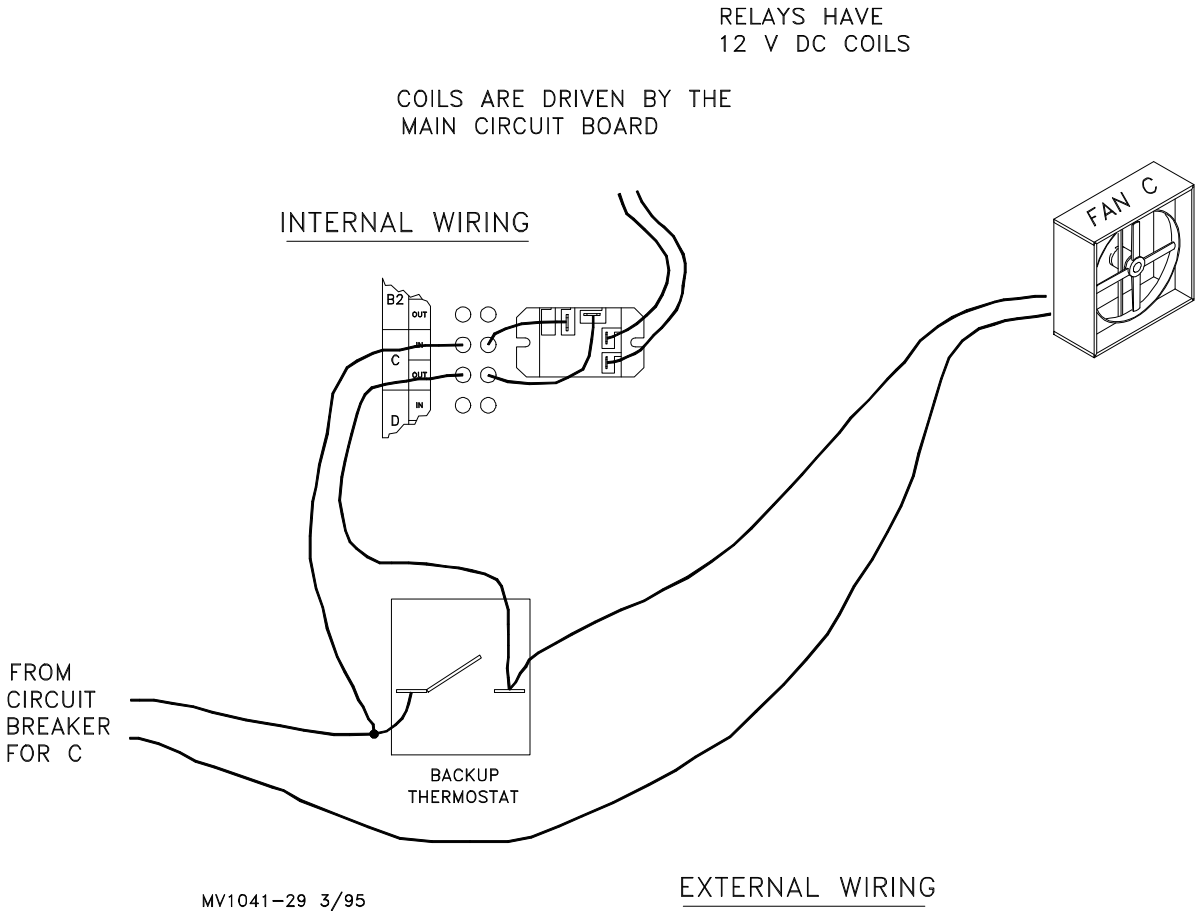
While there are differing backup devices and philosophies, there is one indisputable fact. This control is made from mechanical and electrical devices that have a finite lifetime. The question is not "if", but rather "when", will this control stop functioning correctly. If inadequate measures are taken to deal with this fact, poultry and livestock may die as a result. IT IS ABSOLUTELY MANDATORY THAT A REASONABLE LEVEL OF SAFETY DEVICES AND ALARMS BE INSTALLED. The alarm output of the SUPER-Selector PT can be a part of these, but should never be considered as the total backup system. Obviously, if the SUPER-Selector PT alarm output is not functional, it would be unable to send an appropriate signal to an alarm or other backup device(s). The only possible useful output of a non-functioning SUPER-Selector PT is the fused 230V pair of terminals. A blown fuse caused by a nearby lightning strike will remove the presence of 230 volts from these two terminals even though power is still available at the input to the control. A device must be connected to these two terminals that is designed to detect the absence of 230VAC, and take appropriate action. On a regular basis, all backup devices should be exercised and tested.

Backup Wiring

The two figures (below and on page 13) reflect possible ways of implementing backup thermostats.

Case #1

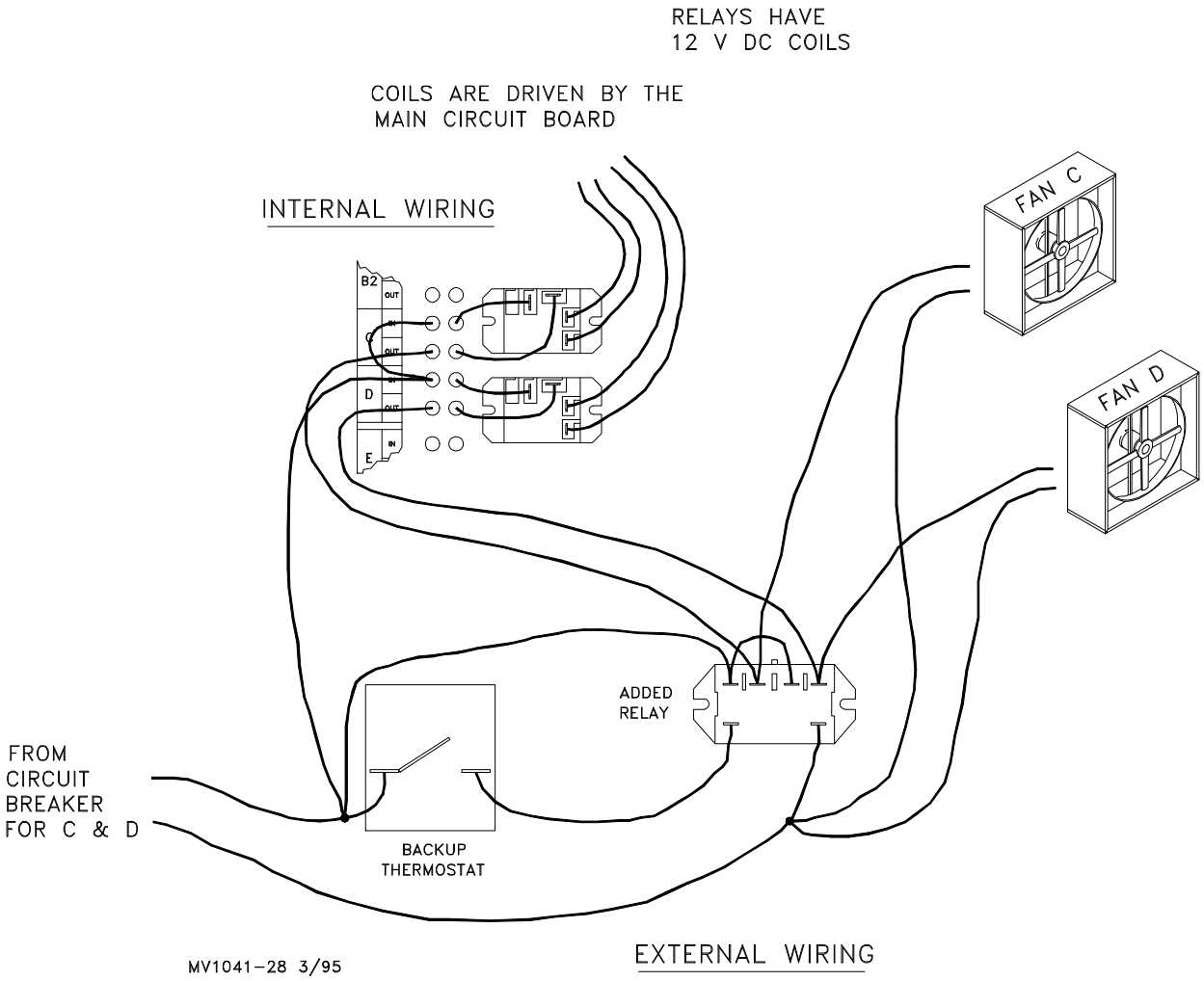
One thermostat per output backed up is used in this application.



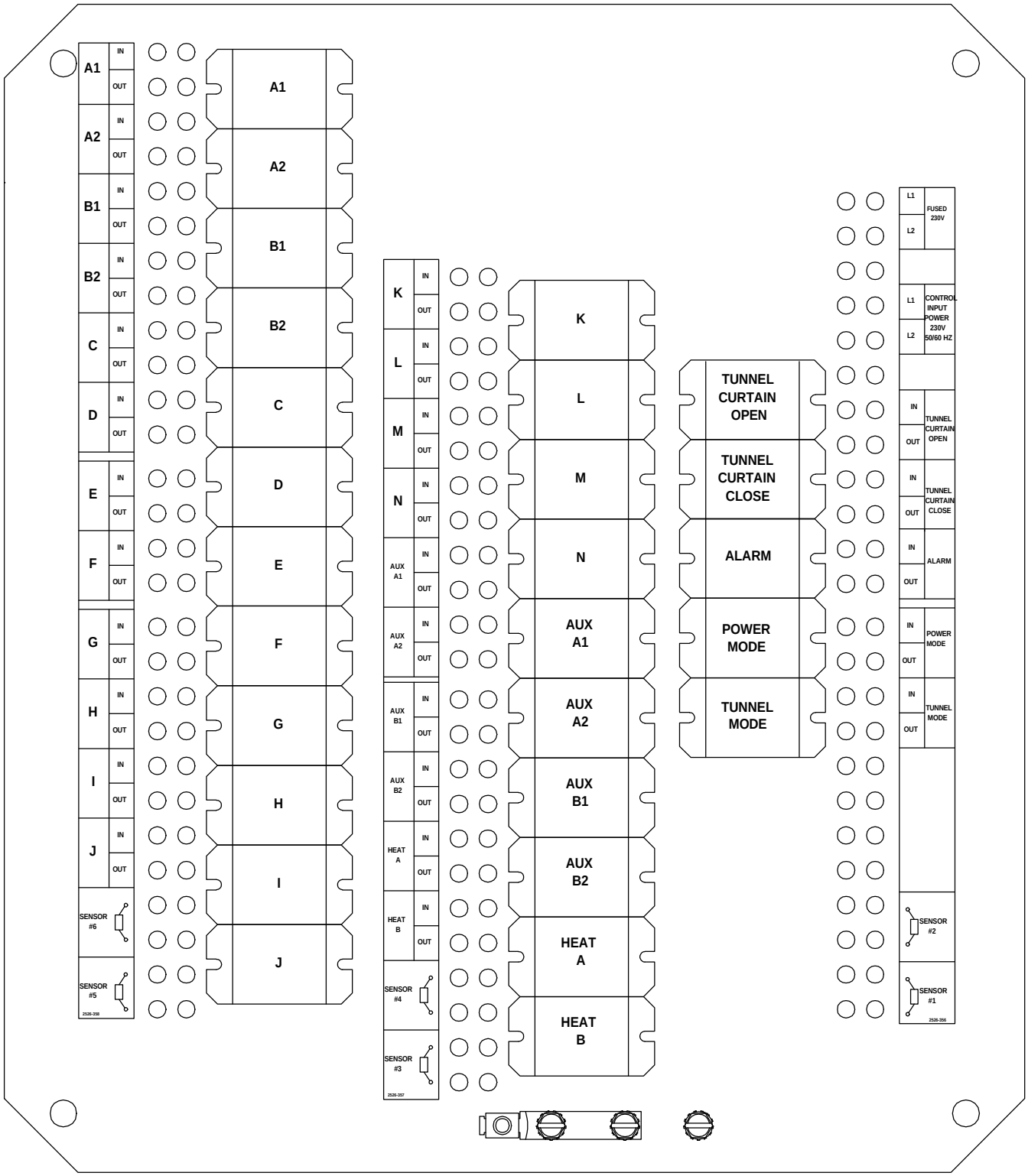
Case #2

To back up more than one output with a single thermostat, it is necessary to add a relay contact for each output backed up and drive the relay coil(s) from a single thermostat.

The figure below reflects a control with two outputs backed up by one thermostat and one DPST added relay.



Output Relay Layout



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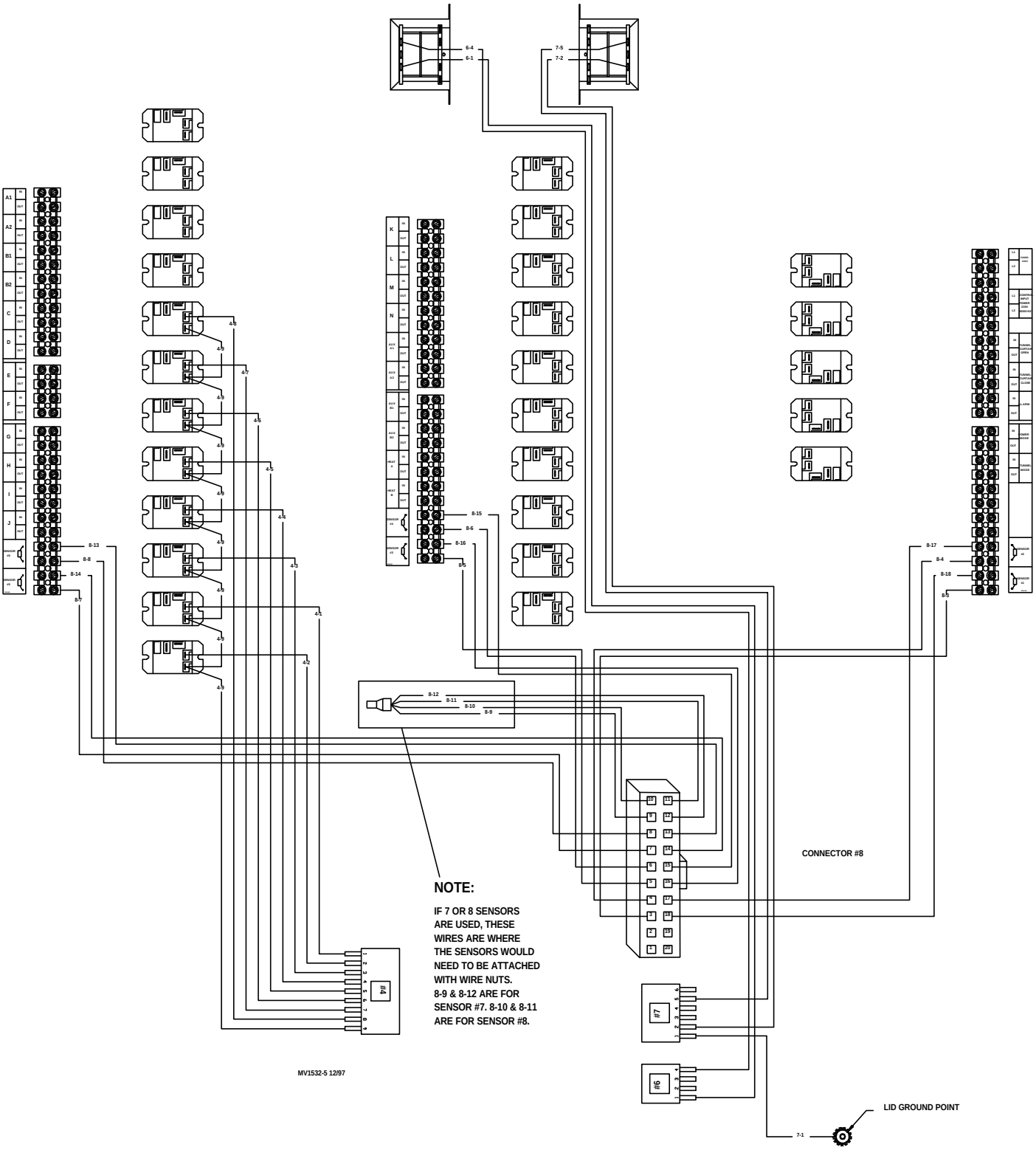
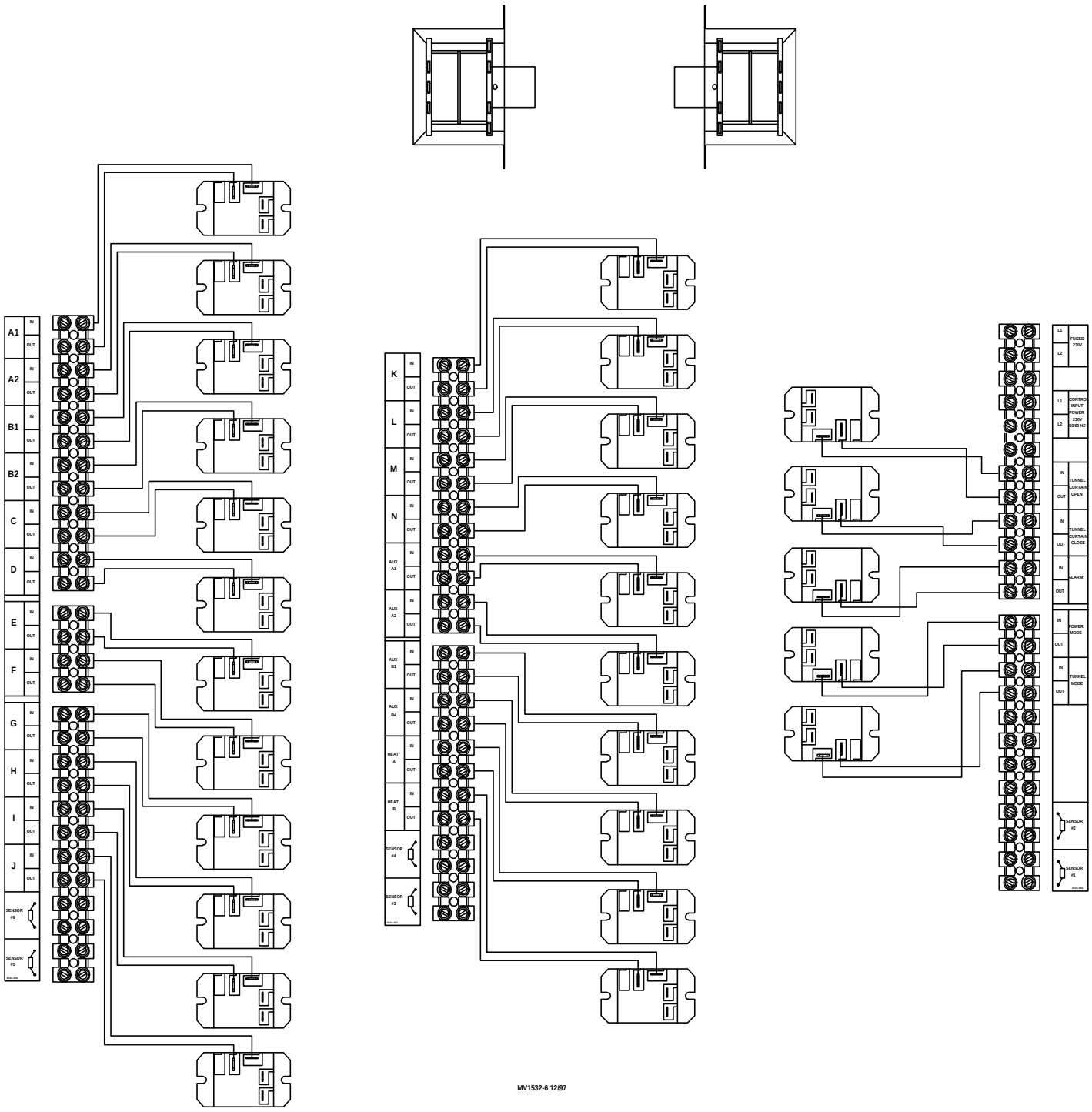
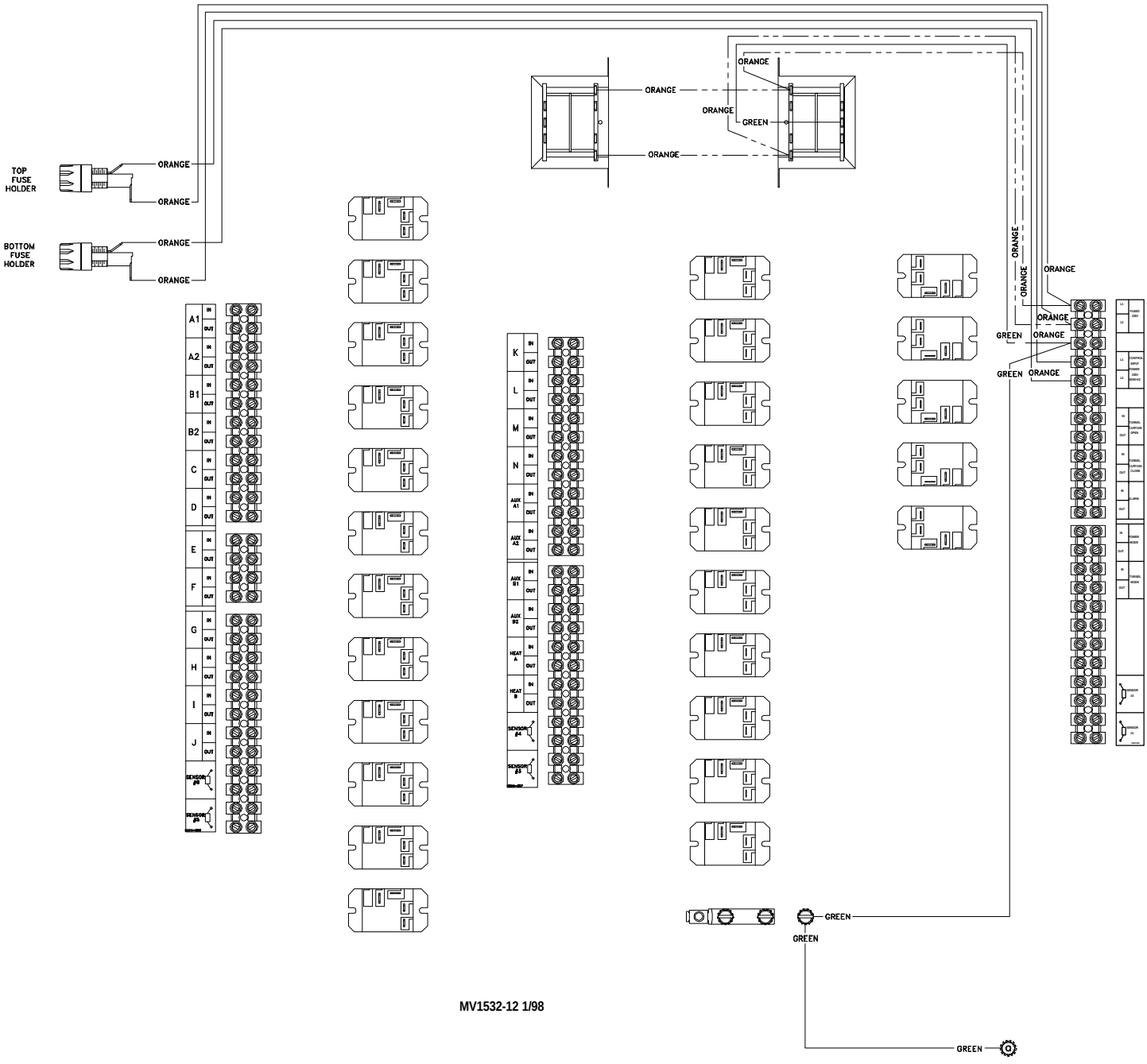
SUPER-Selector PT Internal Wiring Diagram (sheet 1 of 4)



SUPER-Selector PT Internal Wiring Diagram (sheet 2 of 4)



SUPER-Selector PT Internal Wiring Diagram (sheet 3 of 4)



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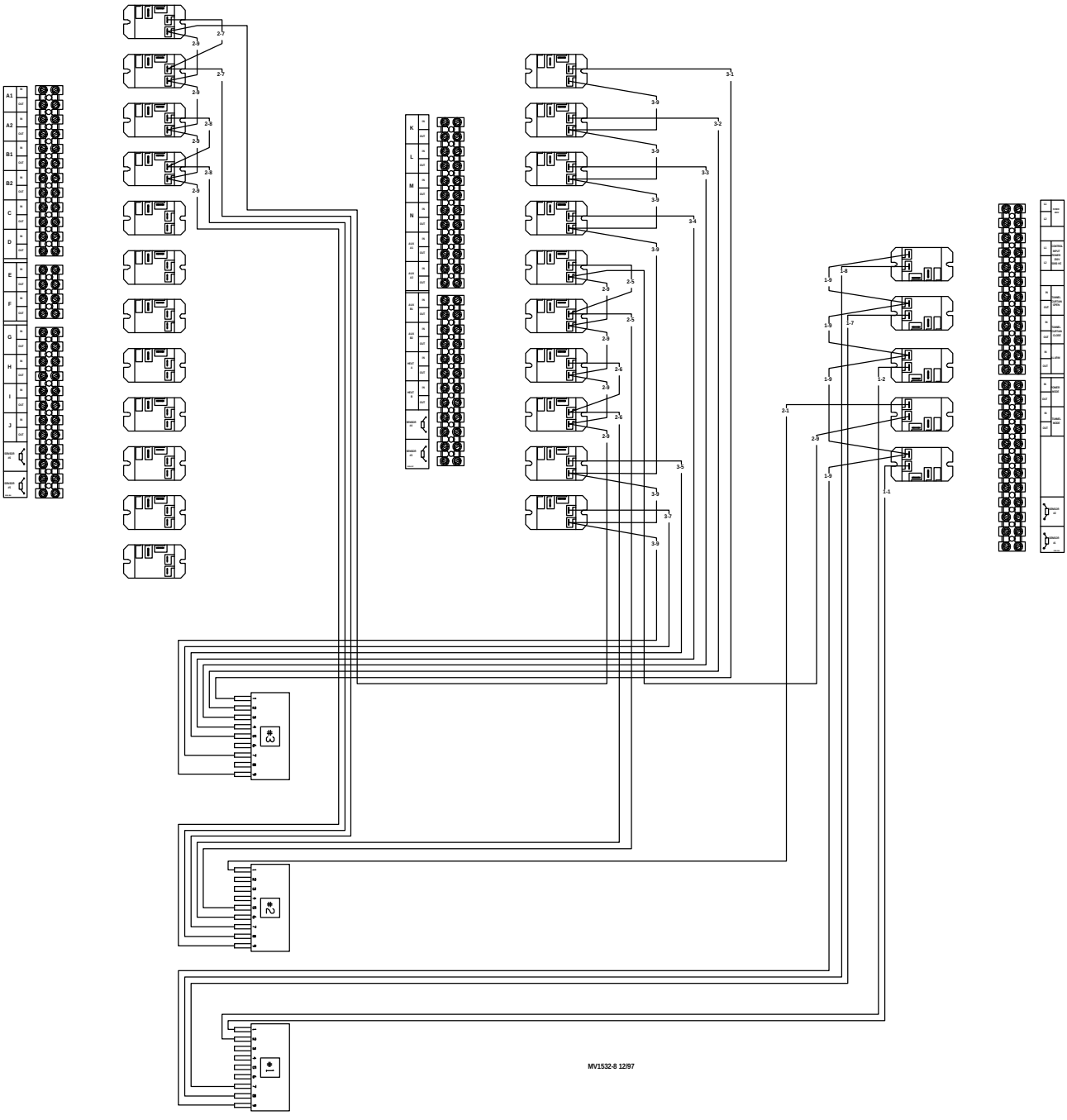
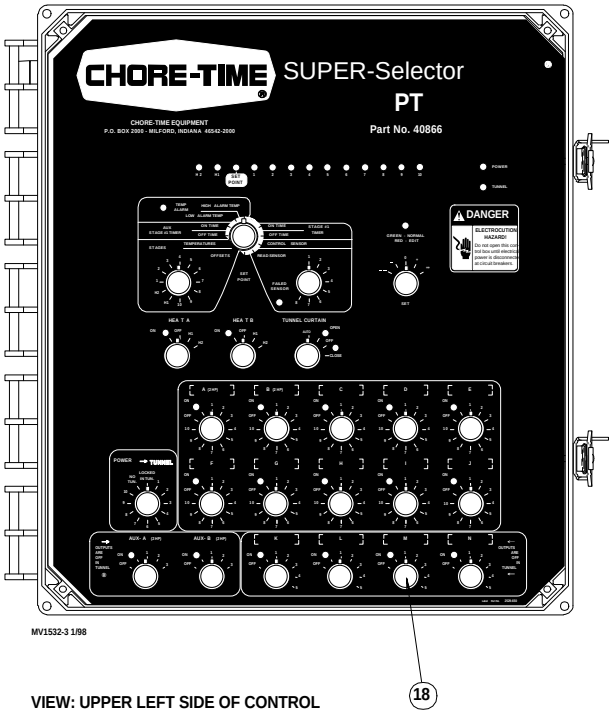
SUPER-Selector PT Internal Wiring Diagram (sheet 4 of 4)

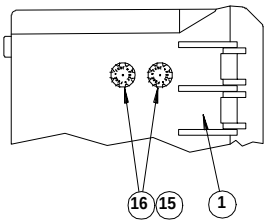


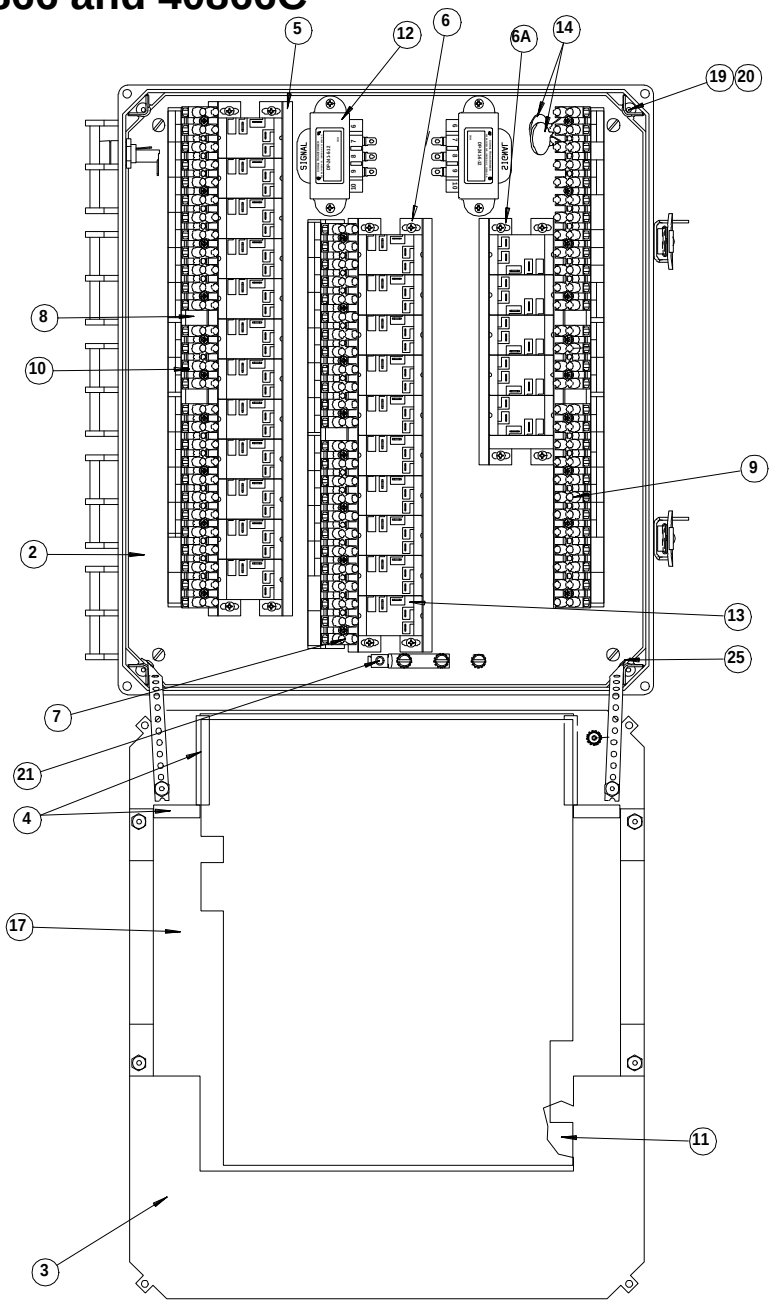
SUPER-Selector PT Control

Part No. 40866 and 40866C



VIEW: UPPER LEFT SIDE OF CONTROL





Item	Description	Part No.
1	Control Box	34930
2	Bottom Plate	35448
3	Front Plate	33922
4	Extruded Wear Strip	36512-1
	Extruded Wear Strip (4')	36512-2
5	Relay Bracket	35446-1
6	Relay Bracket	35446-2
6A	Relay Bracket	35446-3
7	Bottom (short) Bridge	33924
8	Bottom (long) Bridge	33927
9	Terminal Strip	34925
10	Terminal Strip	34925-4
11	Circuit Board (40866)	34928PT
	Circuit Board (40866C)	34928PTC
12	Transformer	34743
13	P&B SPST 12V Relay	35444
14	MOV	14063-1
15	Slow Blow Fuse	20472
16	Fuse Holder	24431
17	PC Board Cover	34854
18	Knob	35877
19	Corner Bracket	29013-3
20	Sheet Edge Insert	29878
21	Copper Lug	28822
Not Shown	Thermistor Probe Assembly	29968

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