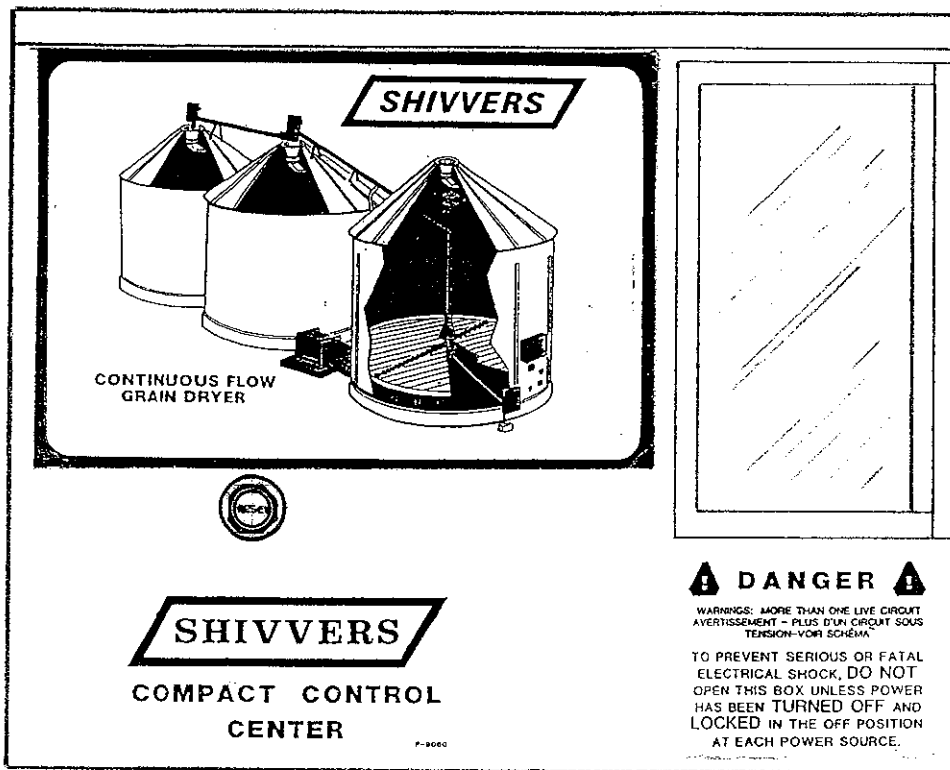


583 - series

# COMPACT CONTROL CENTER



583A-001A	1 phase	5 Hp. Max.
583B-001A	1 phase	10 Hp. Max.
583C-001A	3 phase	10 Hp. Max.

Shivers Inc. reserves the right to incorporate changes in designs or materials affecting product improvement without obligation of incorporating same on equipment of prior manufacturing.

P - 9188  
Revised 5/85



The purpose of this manual is to explain the installation, operation, and circuitry of this electric control unit.

The primary options for this unit are also detailed in this manual.

If you have any questions or comments regarding the contents of this manual, please feel free to contact us at the address below.



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## OPERATOR RESPONSIBILITY

The operator of this machinery must assume the responsibility for his own safety and that of those individuals who are working with him.

Factors that contribute to the overall safety of the operation are proper use, maintenance, and frequent inspection of the equipment. All of these are in the operator's responsibility.



Take note anytime this symbol appears. Your safety, and that of persons around you, is at stake.

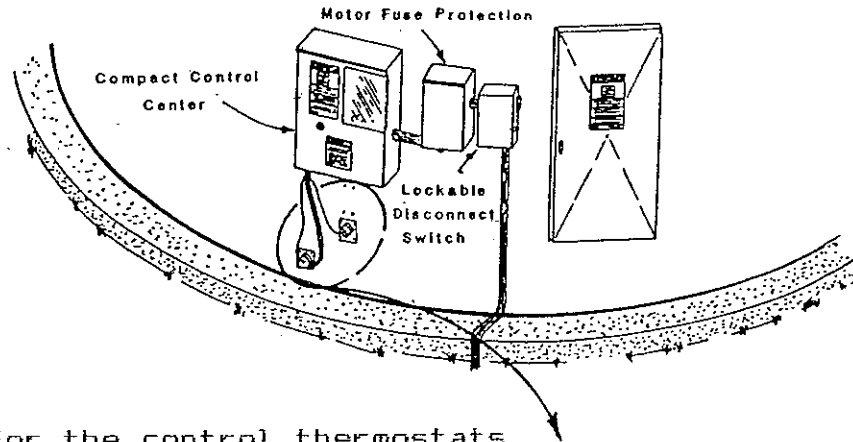
1. All units must be equipped with a master disconnect switch immediately ahead of the dryer control box. This switch must have the capability of being locked in the OFF position. It should be placed on the bin sidewall next to the bin's main entry.
2. Disconnect and lock off all electrical power before conducting any inspection, maintenance, repair, adjustment, or cleaning of this unit--and most troubleshooting.

When you must have electrical power on to troubleshoot equipment inside the bin, do this from a safe distance--from outside the bin door.

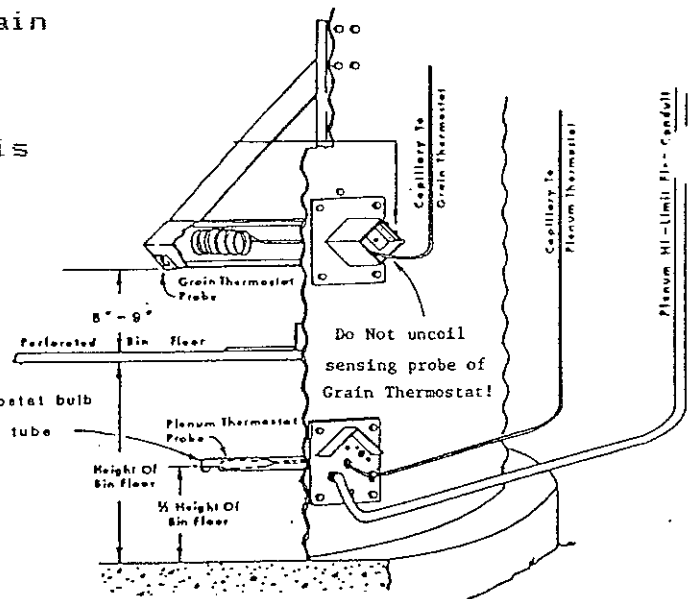
3. Never enter this drying bin unless all power has been turned off and locked out at the main disconnect switch.
4. Prior to use, inspect all equipment to insure that it is in good operating condition. Do not operate with missing, damaged, or worn parts.
5. Be sure that all warning or danger decals are in place and easily readable. Do not operate with missing or illegible decals. If replacements are needed, contact the factory for free decals.
6. Always keep all shields and guards in place. If shields or guards must be removed for inspection or maintenance purposes, replace these components before starting the machine.
7. Do not start this equipment without being sure everyone is clear of the unit.
8. Keep all children and bystanders away at all times.
9. Periodically review this safety manual with all personnel who are working with this equipment. Always train new employees before they operate this equipment. Insist that they read and understand this manual.

Shivvers is genuinely interested in providing the safest practical equipment to our customers. If you have a suggestion which you believe will enhance the safety of this product, please write us and let us know.

A main disconnect box with lockout capability and a fuse box or circuit breaker panel should be installed ahead of this electric control box. These electrical boxes should be located directly beside the main bin entry door.



The probes for the control thermostats should be mounted as shown. The grain probe should be no lower than 8" above the perforated bin floor. This is measured from the bottom edge of the probe tube. The faceplate for the probe should be used as a template for cutting the hole for the probe.



The plenum probe should be mounted with screws or by double-nutting the bolts to facilitate removal for future service. If the wiring for the plenum hi-limit has not yet been installed, it should be done at this time. These wires will later be connected to the burner thermostat circuit. Connect one end of each wire to the hi-limit before mounting the probe to the bin. Be sure to enclose these wires in conduit to the probe to protect these wires from damage or weathering.

## WIRING INSTRUCTIONS

### FOR THE COMPACT CONTROL CENTER and ELECTRIC SUPPLY

All electrical power must pass through a master disconnect box before being connected to the fuse box. This master disconnect box must have a means to be locked in the disconnected position. Motor fusing must be done in a separate fuse box as the Compact Control Center does not contain any motor fuses. Fuses (or circuit breakers) must be properly sized for the motor horsepower, and should be obtained locally. Also note that a neutral wire must be included in this wiring for the 120 volt control circuit in the Compact Control Center.

Thermal units for each motor are available from Shivers and must be sized per the motor horsepower. These thermal units do not replace the need for external fusing for each motor.

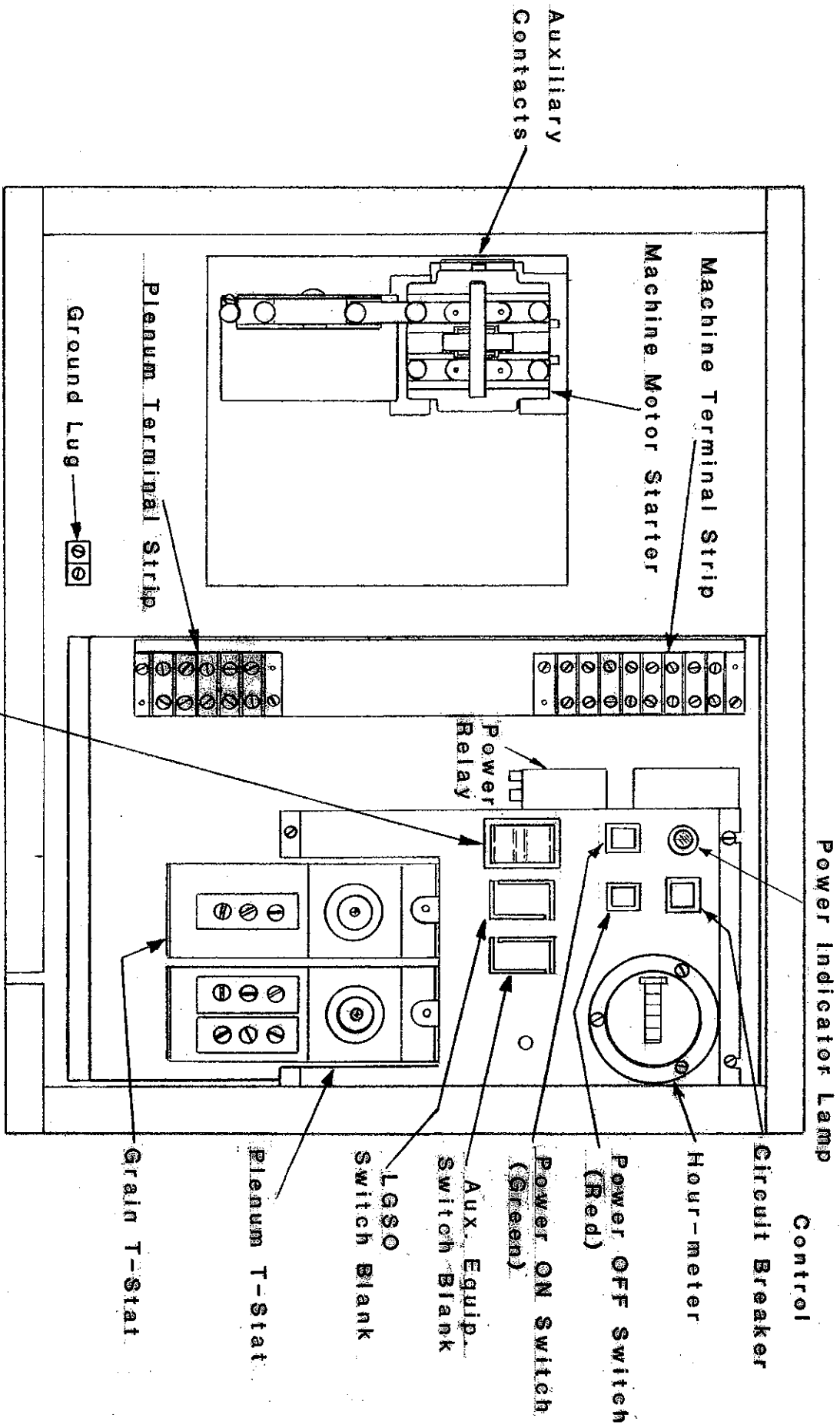
### ALL WIRING MUST BE DONE IN ACCORDANCE WITH ELECTRICAL CODES AND SHOULD FOLLOW SOUND LOCAL PRACTICES

The power supply for each motor should be connected directly to the top of each motor starter contactor. The wiring to the motor itself should be connected to the bottom of each motor starter or at the overload relay terminals.

The 120 volt control power should be connected from the fuse box to the Compact Control Center with the "hot" wire connected to terminal P and the neutral wire to terminal N1. This control box should also have a physical ground connected. There is a ground lug provided for this connection.

# Compact Control Center

## Physical Layout and Terminology





## CIRCUIT DESCRIPTION

This section describes the control circuit wiring, for troubleshooting and tracing purposes. Please note that all tracing of these wires should be done with a continuity tester or meter with NO live power in the control box.



DO NOT TROUBLESHOOT OR TRACE THESE CIRCUITS  
UNLESS ALL POWER HAS BEEN DISCONNECTED AND  
LOCKED OFF AT THE MASTER DISCONNECT BOX!!

Refer to figure 3, Machine Control Circuit Wiring Diagram to follow this circuits through the description.

Terminal P should be connected to the "hot" wire from the external fuse box. The neutral wire from the fuse box should be connected to the neutral terminal N1 of the Compact Control Center.

From terminal P, wire 11 should carry power to the 5 Amp Control Circuit Breaker. Wire 1 is connected from the load side of this breaker to the POWER OFF switch (Switch 1). This is a momentary switch, normally closed, so that power may pass through the switch except when the switch is activated, or held in. Wire 2 conducts power from the POWER OFF switch to terminal 1 of the machine terminal strip. From terminal 1, wire 5 carries the power to terminal 7 of the POWER RELAY. This is one of the normally open contacts of the relay. Also from terminal 1, wire 3 will conduct the power to the POWER ON switch (switch 2).

Switch 2 is a normally open momentary switch, which means that no power may pass through this switch unless it is closed. From the other side of this switch, wire 4 is connected to terminal P1 of the machine terminal strip. Wire 6 is connected from terminal P1 to terminal 4 of the POWER RELAY. Wire 19 is connected from terminal P1 to one of the leads of the Power Indicator Lamp. The other lead of this lamp is connected to terminal N1 by wire 9. Any time that the Power Relay is engaged, this indicator lamp will be lighted.

Also from terminal P1, there is a bar jumper connected to terminal P2. From terminal P2, power is supplied to terminal A (one of the coil terminals) of the POWER RELAY. The other coil terminal of this relay is connected to the neutral terminal N1 by wire 8.

In actual operation, when the POWER ON switch is activated, the power will be allowed to flow to terminal P1, then to terminal P2 and to the coil of the POWER RELAY. When the coil receives power, the relay should close, making a connection between terminals 4 and 7 of the relay. This will maintain power to terminals P1 and P2 after the momentary switch is released.



DO NOT OPEN THIS CONTROL BOX, ATTEMPT TO TROUBLESHOOT, OR TRACE THESE CIRCUITS UNTIL ALL POWER HAS BEEN DISCONNECTED AND LOCKED OFF AT THE MAIN DISCONNECT SWITCH!

Any time that the P2 terminal has power, wire 14 will carry power to the center, or common, terminal of the machine switch. This is a rocker type switch, wired so that it may control the machine to manual or automatic operation. In either case, power will enter this switch on wire 14.

#### MANUAL OPERATION

In manual operation, the power that enters the switch on wire 14 is switched to the ON terminal where wire 13 is connected. This should be the bottom terminal of this switch. Wire 13 takes the power to terminal 2, where it is connected to wire 18. Wire 18 is connected to one of the small interlock switch terminals of the overload relay. If the heater (thermal unit) should open the motor circuit at this relay, the control circuit will also be opened at the interlock switch. From the interlock switch, the power is transferred to one of the coil terminals of the motor starter contactor. At this same coil terminal, wire 30 should be connected to the elapsed time indicator (hour-meter). The other terminal of the motor starter coil and the other lead of the hour-meter should be connected to the neutral terminal N2. The motor starter should be connected to neutral by wire 12, while the hour-meter should be connected with wire 10. Terminal N2 is connected to terminal N1 by an unmarked bar jumper.

Connection of the hour-meter in this manner will allow the meter to record the number of hours that the contactor is engaged to operate the machine motor.

# Compact Control Center

## Machine Control Circuit

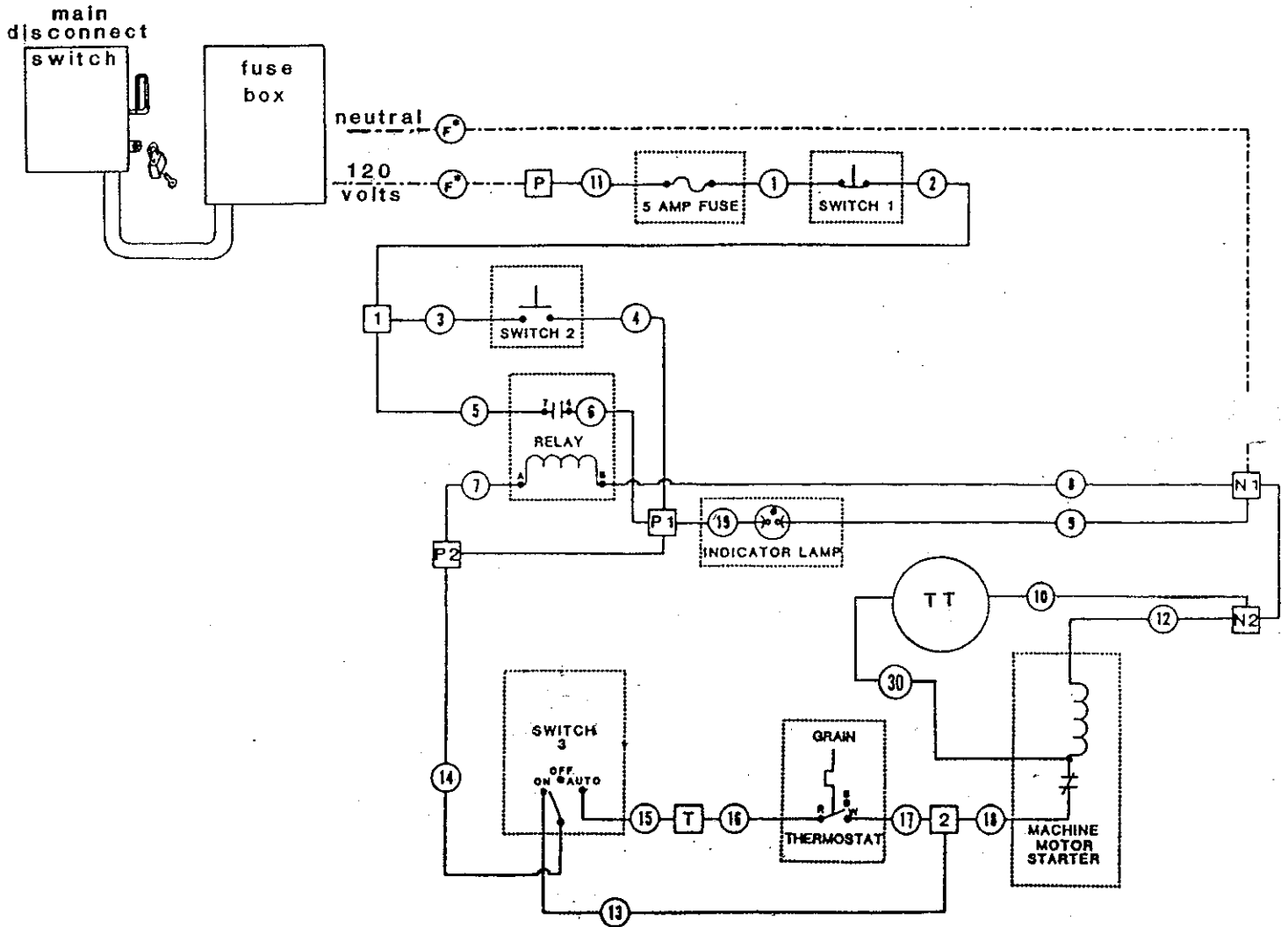


Figure 3

## AUTOMATIC OPERATION

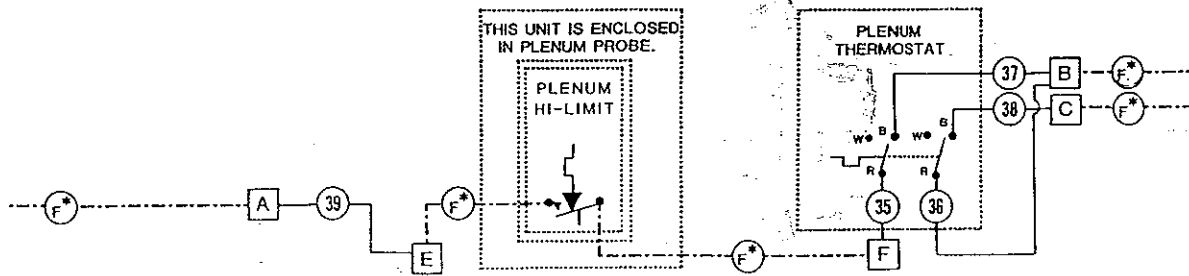
In automatic operation, the power will still enter the machine switch at the common terminal of the switch on wire 14. When the switch is put into the automatic position, the power will be connected to the terminal at the top of the switch, where wire 15 is connected. Wire 15 is also connected to terminal T of the main terminal strip. Wire 16 is connected between terminal T and the Grain thermostat, at terminal R of the thermostat. When the temperature of the air exhausting through the grain probe is less than the setting of the thermostat, the thermostat will make connection between terminals R and B of the thermostat. There should be no wire on terminal B of this thermostat. When the air reaches the temperature set on the thermostat, connection will be made between terminals R and W of the grain thermostat. Wire 17 is connected from terminal W of the thermostat to terminal 2 of the main terminal strip. From terminal 2, the power will flow in exactly the same path as used in manual operation, through the interlock switch of the overload relay to the motor starter coil to engage the contactor to operate the machine motor.

This completes the wiring for the machine control circuit of the Compact Control Center.

# Plenum Thermostat Circuit

without

Low Grain Shut Off



## PLENUM THERMOSTAT CIRCUIT

The plenum thermostat circuit receives all power FROM THE BURNER. It is important to remember this, as shutting off the power in the Compact Control Center will not shut off the power in the thermostat circuit. When working with this circuit, be sure all power is shut off to the fan and heater unit as well as to the Compact Control Center.



ALWAYS DISCONNECT ALL POWER IN THE MAIN  
DISCONNECT BOX AND LOCK OFF!

The heater will be connected to this circuit by field installed wires, supplied and connected by the installing electrician. A Shivvers heater with Hi-Low-Off burner control will connect with 3 wires in the following manner:

BURNER TERMINAL	to	COMPACT CONTROL CENTER TERMINAL
A .....		A
B .....		B
C .....		C

A heater featuring only On-Off heater control will connect with one of the thermostat wires from the heater to terminal A and the other wire from the heater to terminal B in the Compact Control Center. Connection in this manner will maintain the safeties designed into this circuit and will allow connection of the Low Grain Shut-Off option.

## PLENUM THERMOSTAT CIRCUIT DESCRIPTION

without

### LOW GRAIN SHUT-OFF

In operation, the power from the burner will enter this circuit at terminal A from the heater unit. Wire 39 will conduct the power to terminal E on the Plenum Terminal Strip. From terminal E, one of the field installed wires will carry the power to the Plenum Hi-Limit, mounted on the Plenum Thermostat Probe. The other field installed wire will carry the power back to the terminal strip to terminal F. At terminal F, wire 35 will carry the power to the left hand terminal R of the plenum thermostat. The left side of this thermostat will control the low fire side of the thermostat circuit.

When the thermostat calls for heat under the floor, the left side of the thermostat closes first and makes connection to terminal B on the left side. Wire 37 is connected from this left B to terminal B of the Plenum Terminal Strip. At B of the Plenum Terminal Strip, wire 36 is connected to carry the power back to the Hi-Fire switch of the plenum thermostat. If a larger amount of heat is required than can be obtained by the low fire of the heater, the right hand switch will close, making connection between the right R terminal and the right B terminal. Wire 36 is connected to the R terminal from terminal B of the Plenum terminal strip. Wire 38 is connected from the right B terminal of the thermostat to terminal C of the Plenum terminal strip.

Power from the heater unit will enter this circuit at terminal A and leave the thermostat at terminal B for Low Fire and terminals B and C for High Fire.



# COMPLETED CONTROL WIRING

## COMPACT CONTROL CENTER

with

### Auxiliary Equipment Kit

