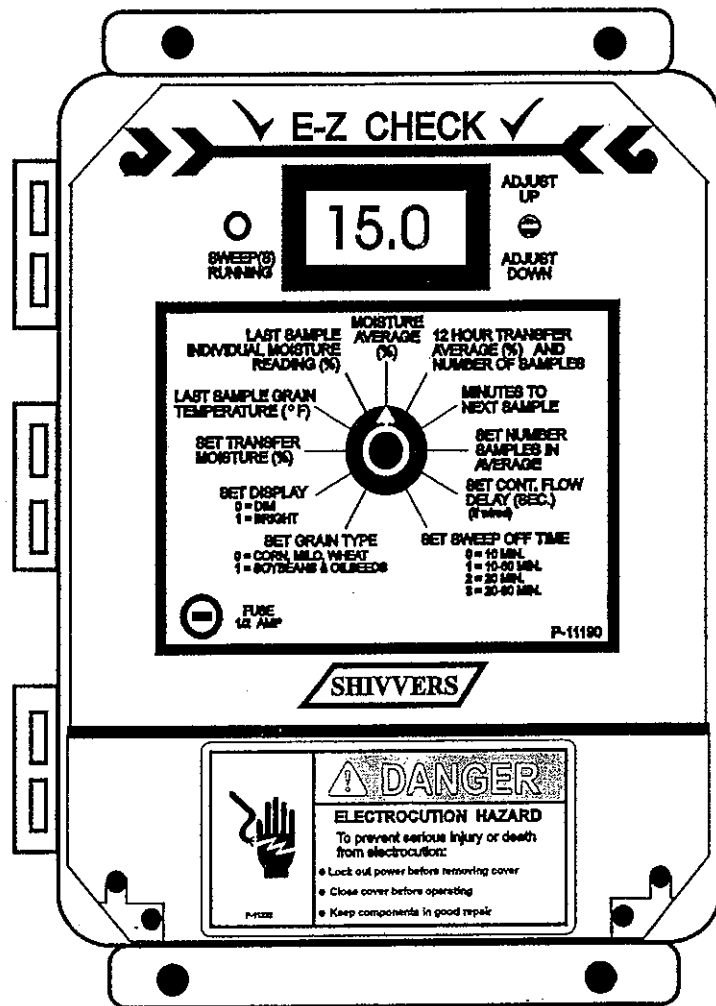


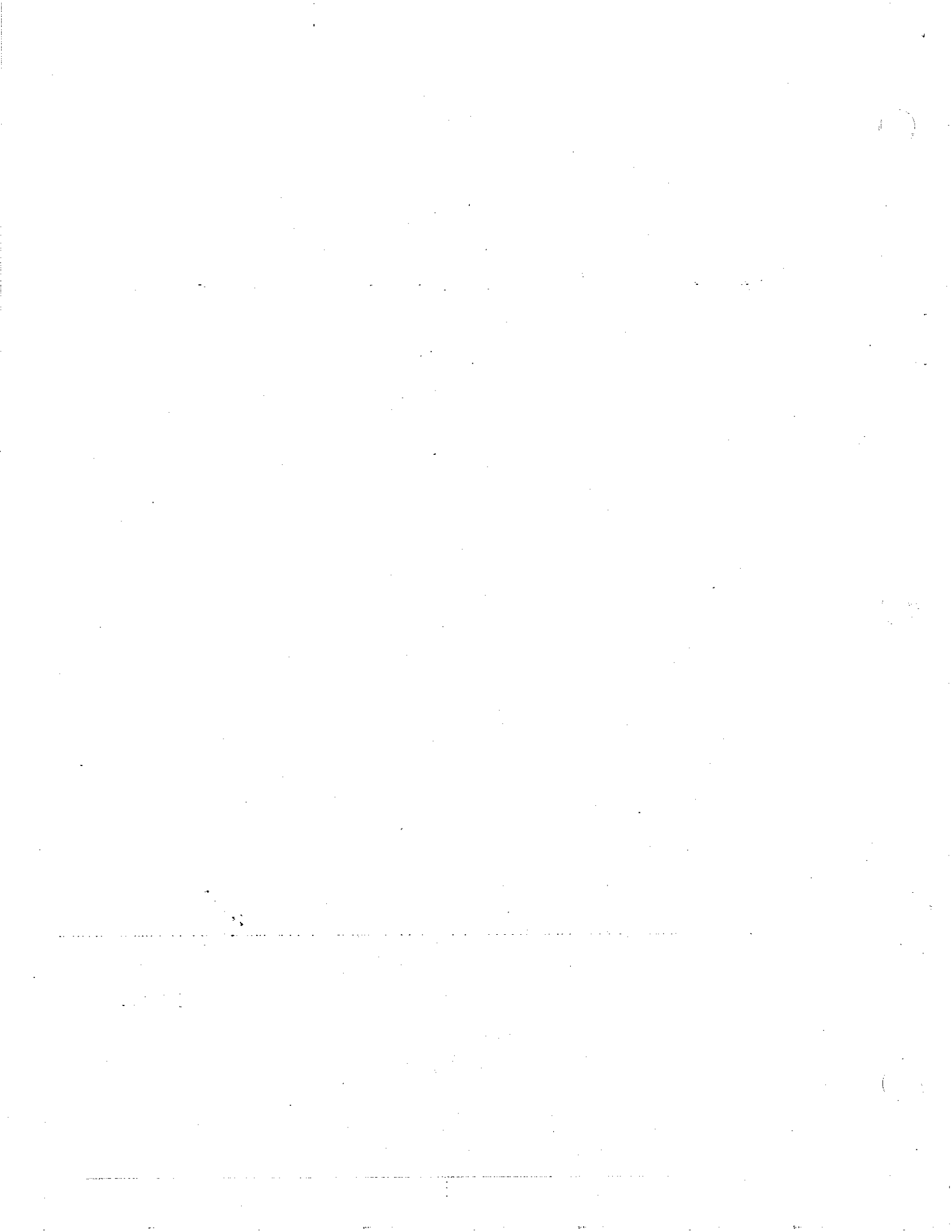
# ✓ E-Z CHECK ✓



## INSTALLATION AND WIRING INSTRUCTIONS For Model 597Y-001A



SHIVERS INCORPORATED  
614 WEST ENGLISH  
CORYDON, IOWA 50060  
515/872-1005



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## INTRODUCTION

### READ INSTALLATION MANUAL COMPLETELY BEFORE STARTING

The E-Z Check controller works as an electronic moisture tester in place of the grain thermostat. Instead of controlling by temperature, the E-Z Check controls the machine by reading a moisture sample of grain then determining if it is dry enough to transfer.

The E-Z Check can run on 110V or 230V depending on the voltage selector switch setting. The E-Z Check can be wired to operate in several different configurations. If wired to control the transfer augers, the machine type (center vertical or bottom unloading) must be selected. **See Final Configuration part of this manual for setting machine type or voltage.** Determine the E-Z Check configuration and set it up before operating. For any questions or configurations that are not covered, please contact the factory for assistance.

Since the E-Z Check does not control the plenum temperature, it is strongly recommended that Grain Hi Limits be installed over the burner transitions. They will shut the fan(s) off in case of high grain temperatures.

# **SAFETY**

The installer of this machinery must assume the responsibility for his own safety, and the safety of those working with him. He must also make sure that the equipment is installed as shown in this manual.

If any items covered in this manual are not completely understood, or there is a concern with the safety of the product, contact SHIVERS at the address shown on the front page.



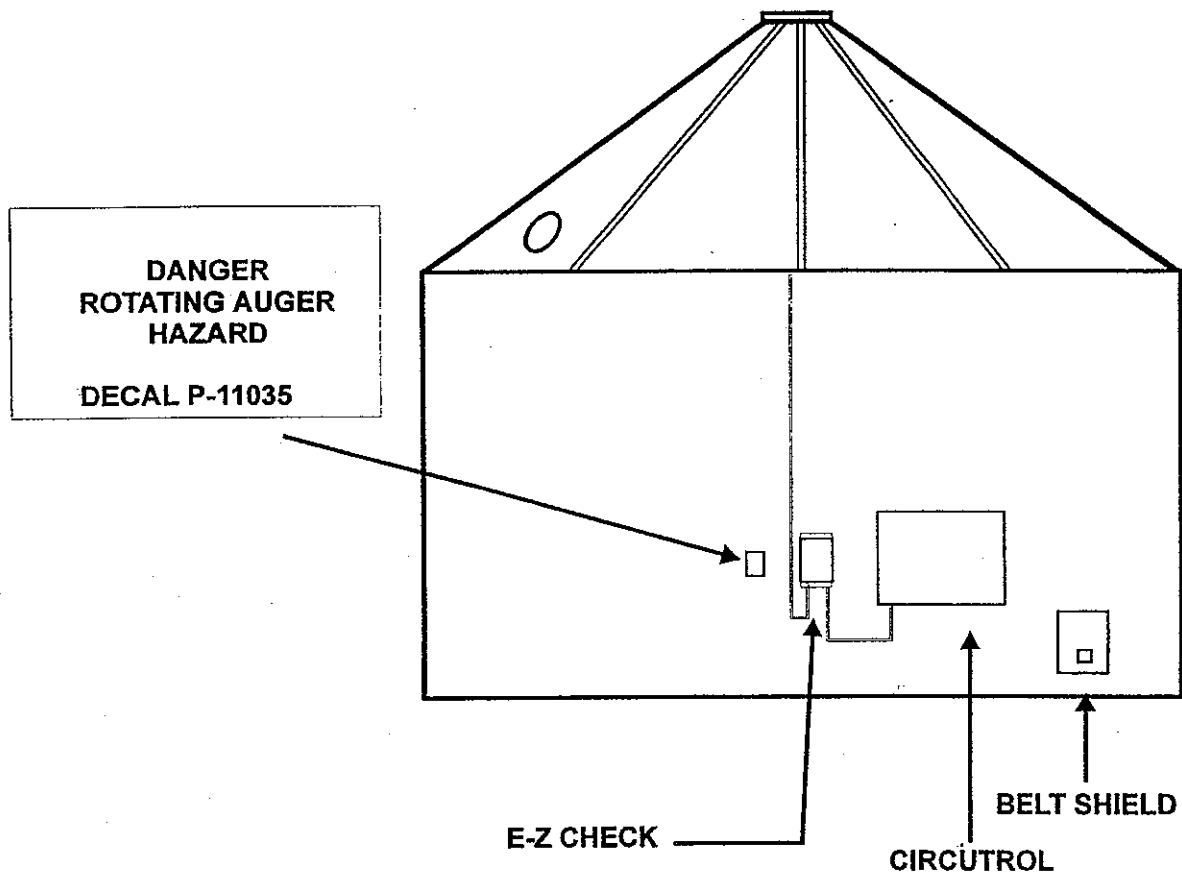
**TAKE NOTE ANYTIME THIS SYMBOL APPEARS.  
YOUR SAFETY, AND THAT OF PERSONS  
AROUND YOU IS AT STAKE.**

**ALL ELECTRICAL WIRING SHALL BE INSTALLED IN COMPLIANCE WITH THE LATEST EDITION OF THE ANSI/NFPA STANDARD 70, NATIONAL ELECTRICAL CODE, AS A MINIMUM REQUIREMENT, AND IN COMPLIANCE WITH LOCAL WIRING CODES AS APPLICABLE.**

**WIRING MUST BE DONE BY A COMPETENT ELECTRICIAN. A LICENSED ELECTRICIAN IS RECOMMENDED, AND MUST BE USED WHEN REQUIRED BY LOCAL OR STATE STATUTES.**

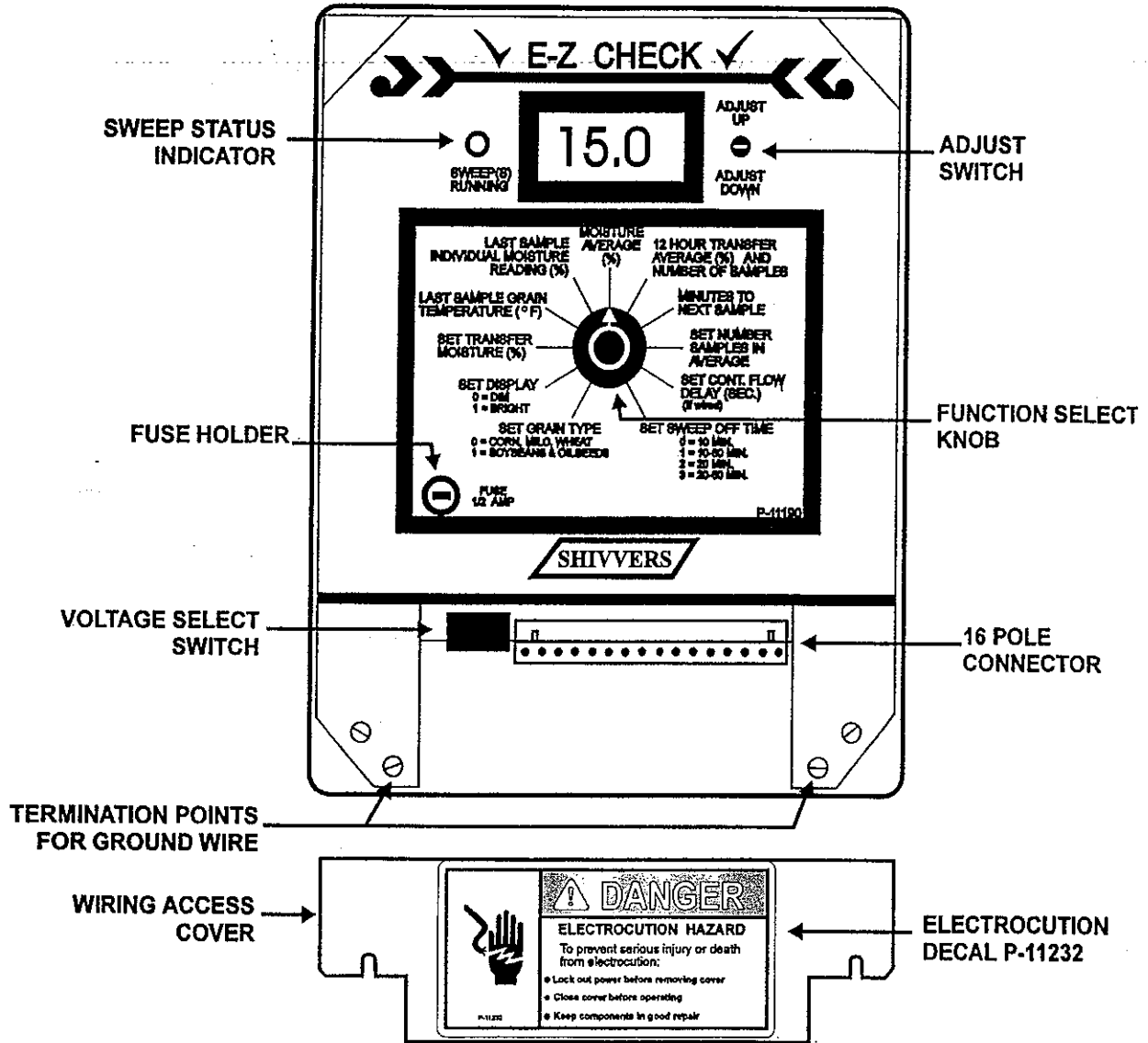
## INSTALLATION OF SAFETY DECALS

For complete instructions on where, and how to place Field Installed Safety Decals, consult the Operators Safety Manual (P-10001). If more decals are needed contact the factory for additional ones. Make sure all decals and the safety lock kit are installed on the system as shown in the Safety Manual.

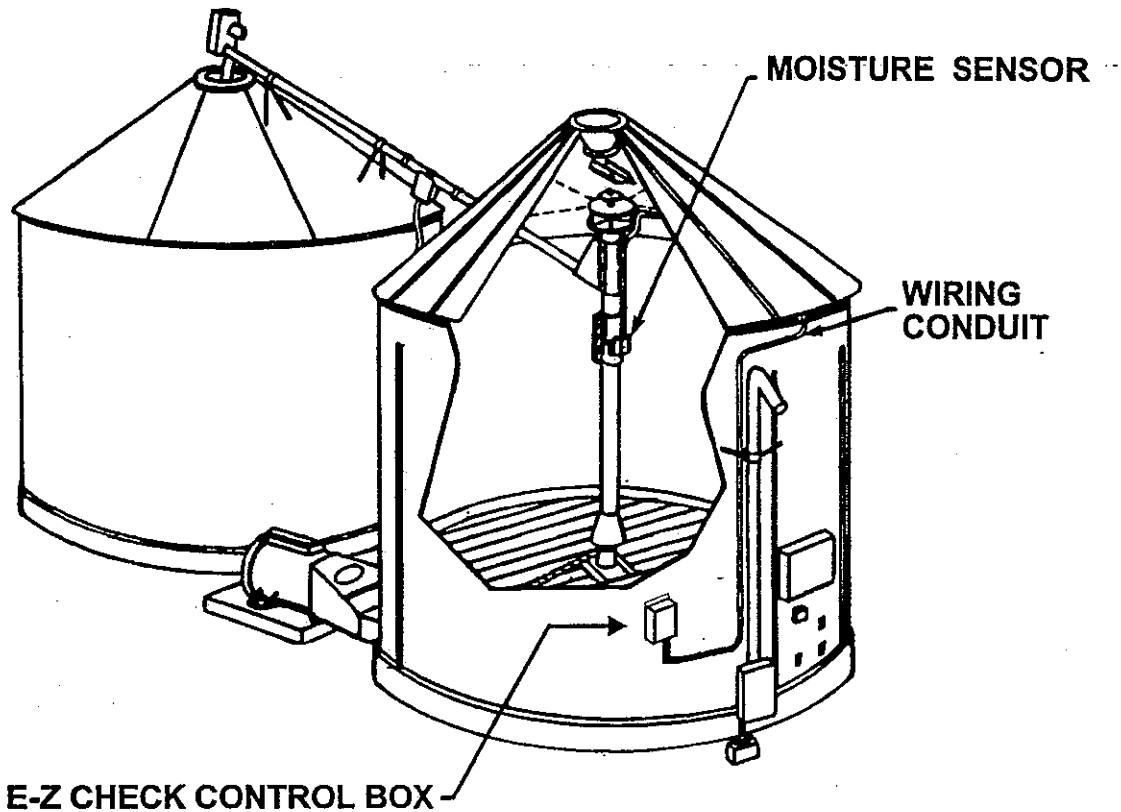


Since the P-11035 Decal is too large to go on the E-Z Check, place one in close proximity to it.

# CONTROL BOX PARTS IDENTIFICATION



# MECHANICAL INSTALLATION



Note: If possible, locate the E-Z Check control box in close proximity to the auger motor control panel (such as CIRCU-TROL).

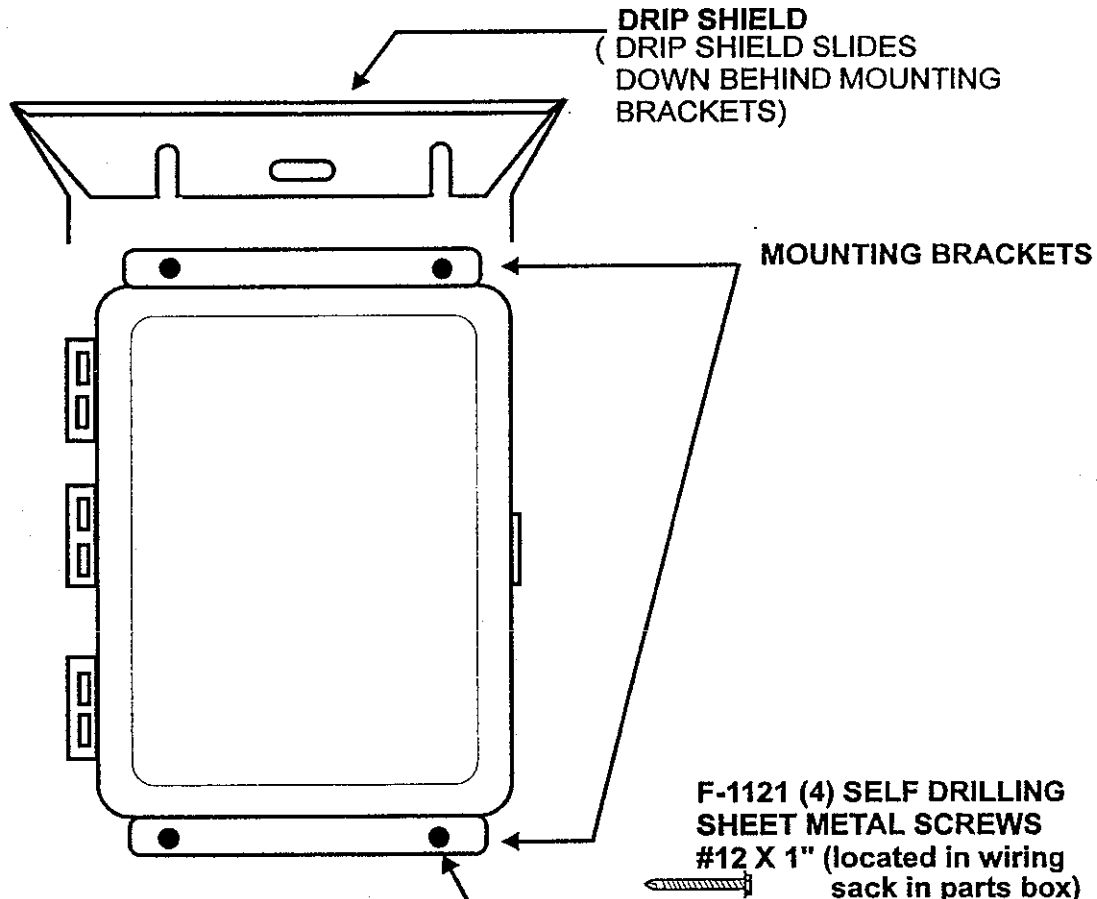
There are two items that need to be mounted on the drying system.

1. E-Z Check control box.
2. E-Z Check Moisture Sensor



## MECHANICAL INSTALLATION OF CONTROL BOX

The E-Z Check control box is in a weather resistant enclosure that can be mounted on the bin side wall, building, or enclosure near the drying system. 75 feet of moisture cable is supplied with the unit, as well as a drip shield. (For bin wall applications)



The E-Z Check Box will require a 12" x 14" area for mounting. Mounting flanges are on the top and bottom of the box. The drip shield should be slid on the top of the box before tightening the top mounting screws.

The E-Z Check box should be mounted at or around eye level, so you can see and operate controls the easily.

The E-Z Check printer is in the same type of enclosure so mounting is the same. The printer should be mounted close to the control box. If a printer might be added later, space should be left to accommodate it.

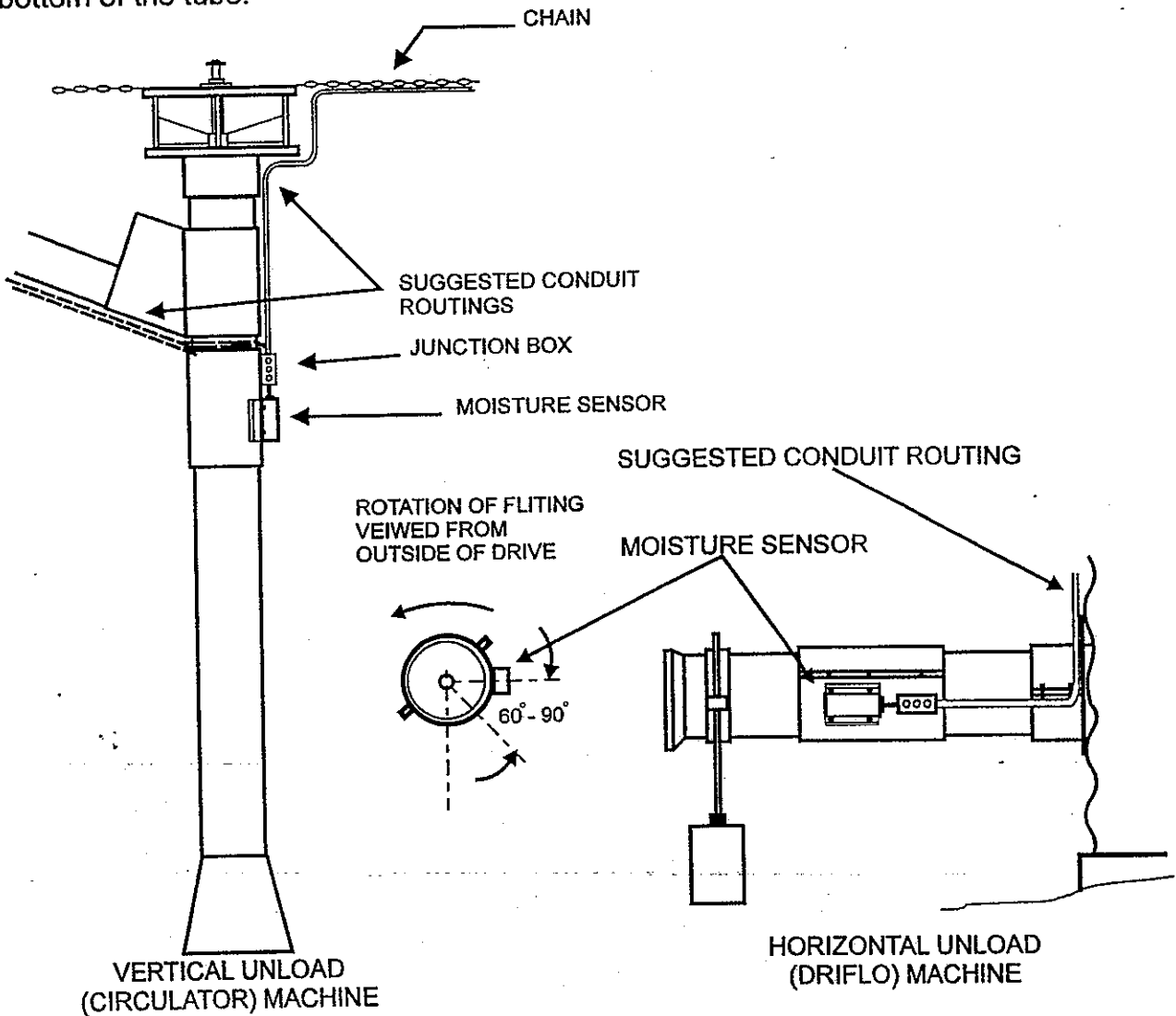
# MOISTURE SENSOR INSTALLATION



**MAKE SURE THE MAIN POWER IS DISCONNECTED AND LOCKED OFF!!!**

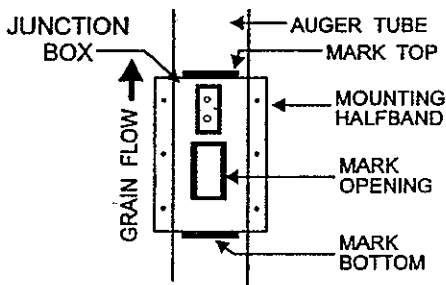
For Center Vertical machines the Moisture Sensor should be mounted below the lowest boot on the center vertical. There must be sufficient room above the moisture sensor for the wire conduit.

On bottom unloading machines the moisture sensor should be mounted on the climb side of the horizontal discharge tube at approximately 60-90 degrees from the bottom of the tube.

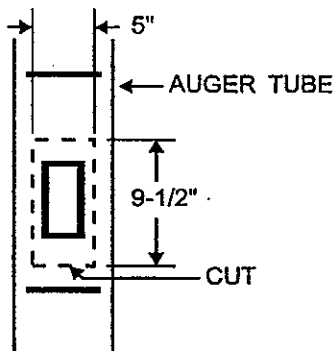


## MOISTURE SENSOR INSTALLATION

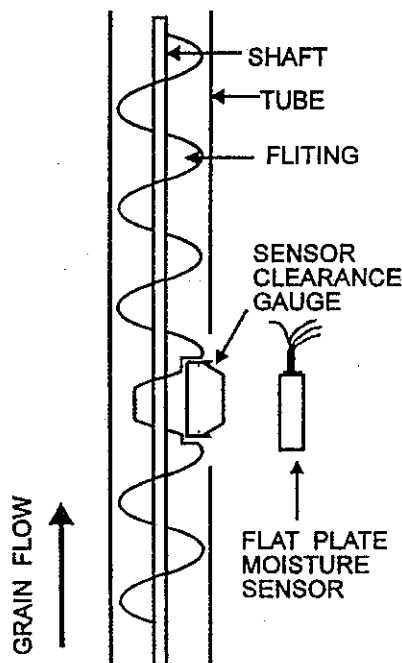
With the E-Z Check moisture sensor, only 1-1/2" of fluting needs to be trimmed off the edge of the auger. Since it is not necessary to completely remove the fluting, a welder will not be required for most installations. On bottom unloading machines, the E-Z-Check moisture sensor should be mounted 60-90° up the climb side of the horizontal discharge auger. For bottom unloading machines with an 8" auger, the fluting should be completely removed to the shaft, unless Ultra High Capacity sweeps (1000 bu/hr) are used.



1. Hold the mounting halfband on the auger in the location desired. Make sure that the junction box on half band is towards conduit. Mark the outline of the rectangular opening, and both ends of the halfband, on the tube. Remove the halfband.

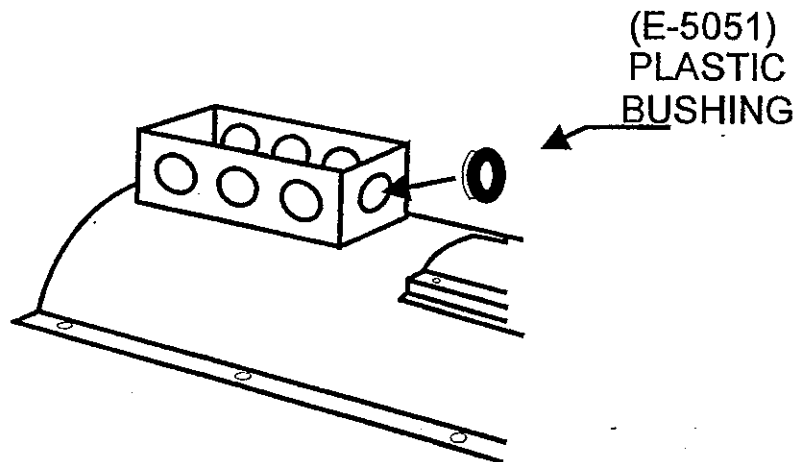


2. Cut a rectangular hole in the auger tube approximately 1 1/2" - 2" larger than marked rectangle.



3. Through this opening cut 1-1/2" off the edge of the fluting. Remove at least a 7" long strip to allow clearance for the sensor block. The cut edge can be reinforced, or hardfaced, if desired. It will wear faster than surrounding auger. For bottom unload machines with 8" augers and 500 bu/hr removal capacity, completely remove the fluting. Remember to weld the ends first.

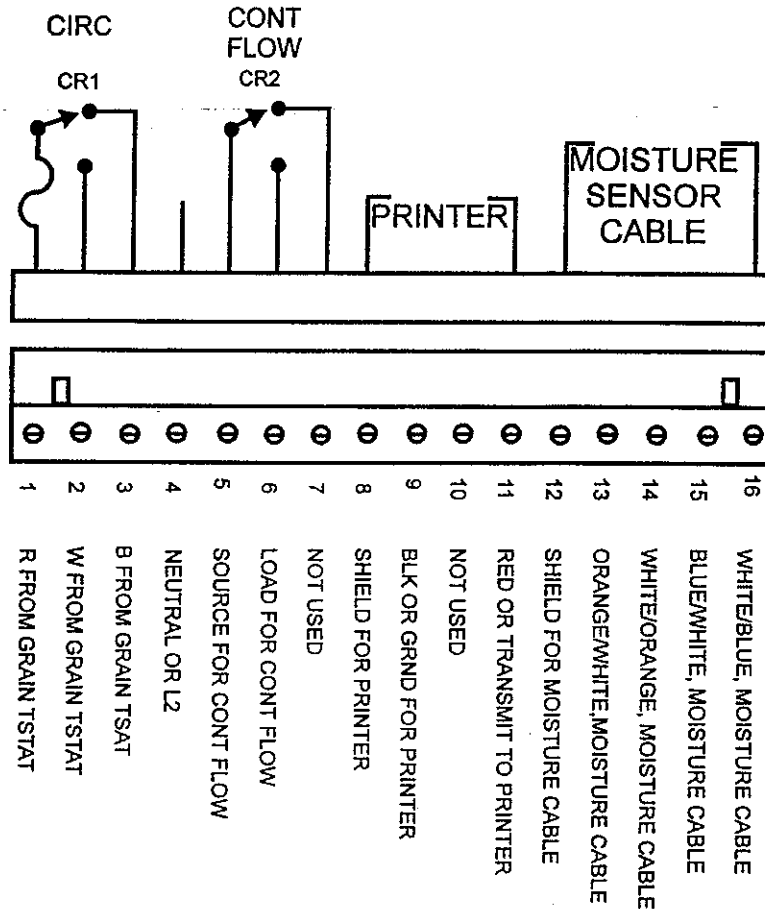
4. Mount the halfbands on the auger tube. Then insert the Sensor Clearance Gage, Flat Plate, (597-643A), and have someone rotate the auger by hand to ensure clearance.



5. Remove knockout in junction box nearest sensor opening and install plastic bushing into knockout. For bottom unload machines replace the plastic bushing with a cord grip or 2 screw connector to keep mice out of junction box. Put sensor wires through bushing in junction box. Attach the Moisture Sensor to the halfband with four 1/4-20x1/2" hex head cap screws and lock washers.

# E-Z CHECK

## 16 POLE CONNECTOR DESCRIPTION



Terminal 1 of the E-Z Check receives what was grain thermostat power and is where the E-Z Check gets its power. Grain thermostat terminal R or common.

Terminal 2 is the machine control wire that is from W on the grain thermostat. It turns the machine on and off.

Terminal 3 uses the wire from terminal B of the grain thermostat. It is used to control the delay timer for continuous flow auger clean out on some control panels. It is the normally closed side of CR1.

Terminal 4 is for the E-Z Check neutral, or for L2 or L3 for 230V applications.

## E-Z CHECK

### 16 POLE CONNECTOR DESCRIPTION

Terminal 5 is the source side for continuous flow applications where dry grain only is to be transferred, (no transfer during samples) and is also used for some pneumatic systems. The wiring of terminal 5 and 6 is optional.

Terminal 6 is the load side of the continuous flow circuit and is connected to a normally open contact on CR2.

Terminal 7 is the normally closed side of the continuous flow circuit and isn't used.

Terminal 8 is for the shield wire going to the printer.

Terminal 9 is for the black or ground wire going to the printer.

Terminal 10 is the data receive line and isn't used.

Terminal 11 is for the data transmit line, or the red wire going to the printer.

Terminal 12 is for the moisture cable shield.

Terminal 13 is for the orange/with white stripe wire which is a switched 12V DC line to the moisture sensor.

Terminal 14 is for the white/with orange stripe wire and is a DC neutral wire.

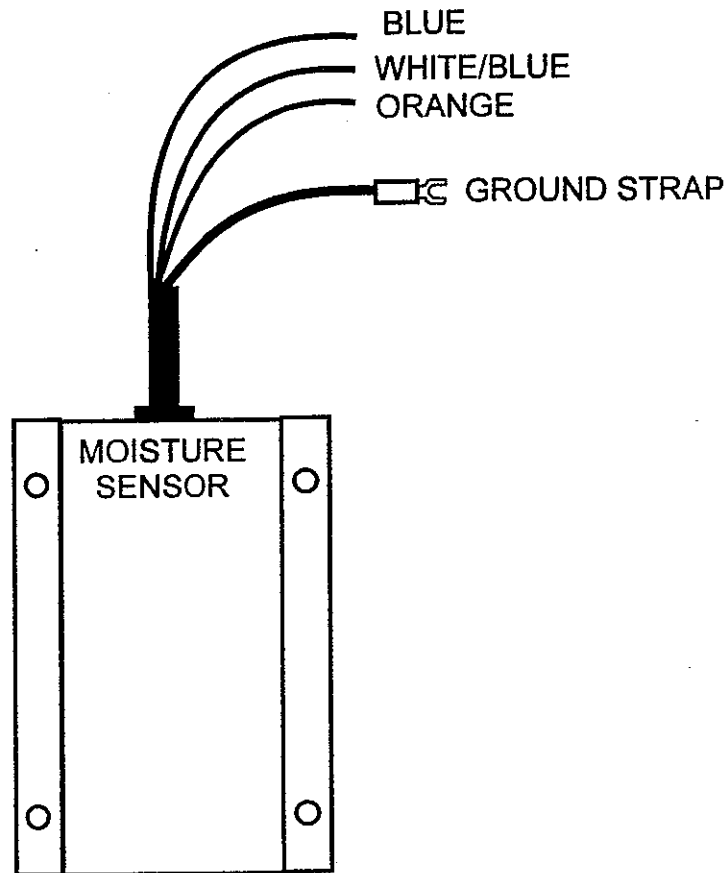
Terminal 15 is for the blue/with white stripe wire which is a data line for the moisture sensor.

Terminal 16 is for the white/with blue stripe wire and is the other data line for the moisture sensor.

**Notice:** E-Z Check relays have noise suppression capacitors across the contacts. This causes up to 5 mA of leakage current. When not connected to a sufficient load, most meters will read voltage present on open contacts.

Do not connect E-Z Check relay outputs to small 1 or 2 pole relays with current draw less than 20 mA because they may not release.

## SENSOR WIRING DESCRIPTION



The Blue wire on the moisture sensor is a data line and connects to the blue/with white stripe wire from the moisture cable.

The white/with blue stripe wire is also a data line and connects to the white/with blue stripe wire from the moisture cable.

The orange wire is the 12V DC line to power the moisture sensor and is switched on by the E-Z Check during samples. It connects to the orange/with white stripe wire on the moisture cable.

The Ground Strap comes with a spade connector on it. It connects to the white/with orange stripe and to the shield on the moisture cable, which are tied together in a spade terminal (E-5012-02). All three wires connect to a ground lug in the junction box located on the sensor mounting halfband.

# ELECTRICAL INSTALLATION



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WIRING MUST BE DONE BY A COMPETENT ELECTRICIAN. A LICENSED ELECTRICIAN IS RECOMMENDED, AND MUST BE USED WHEN REQUIRED BY LOCAL OR STATE STATUTES.

There are two systems which need to be connected to the E-Z Check. They are as follows:

- 1) MOISTURE SENSOR.. Requires a 2 pair shielded cable. 75 feet is provided with the unit. Wire should be installed in conduit or otherwise protected from the elements. Do not run any high voltage wires(110V) in the sensor conduit. Order longer lengths of wire under part # E-6251, by the foot.
  
- 2) CIRCU-TROL..... Will require from 4 to 7 wires depending on configuration desired. Supplied by the customer, these should be 16 gauge insulated stranded wires.

Note 1.) Use of the conduit for ground is not advisable. A ground wire should be run inside each high voltage (110V) conduit.

Note 2.) The E-Z Check comes preset for 110V AC which is supplied by the CIRCU-TROL. It can be switched to use 230V AC by a voltage select switch located on the E-Z Check control board.

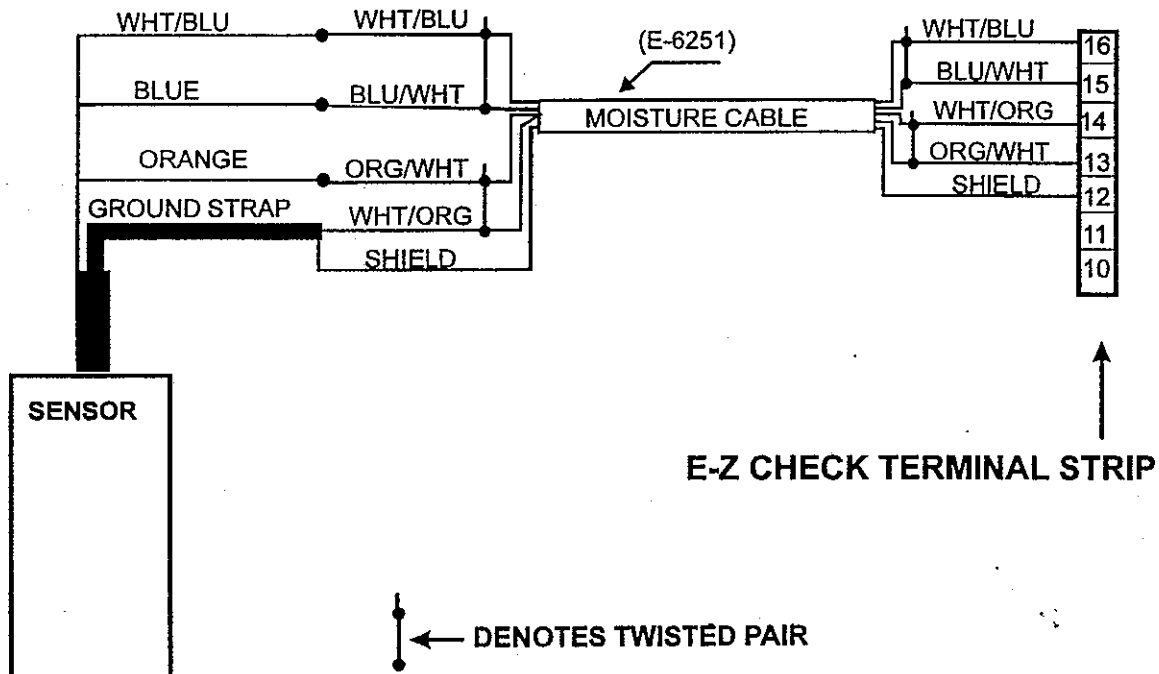


# ELECTRICAL INSTALLATION

## WIRING THE MOISTURE SENSOR

1.) Pull moisture cable through junction box on mounting halfband into the E-Z Check control box. Cut wire to length making sure to leave enough to make connections easy. Do not leave excess cable coiled in the E-Z Check control box.

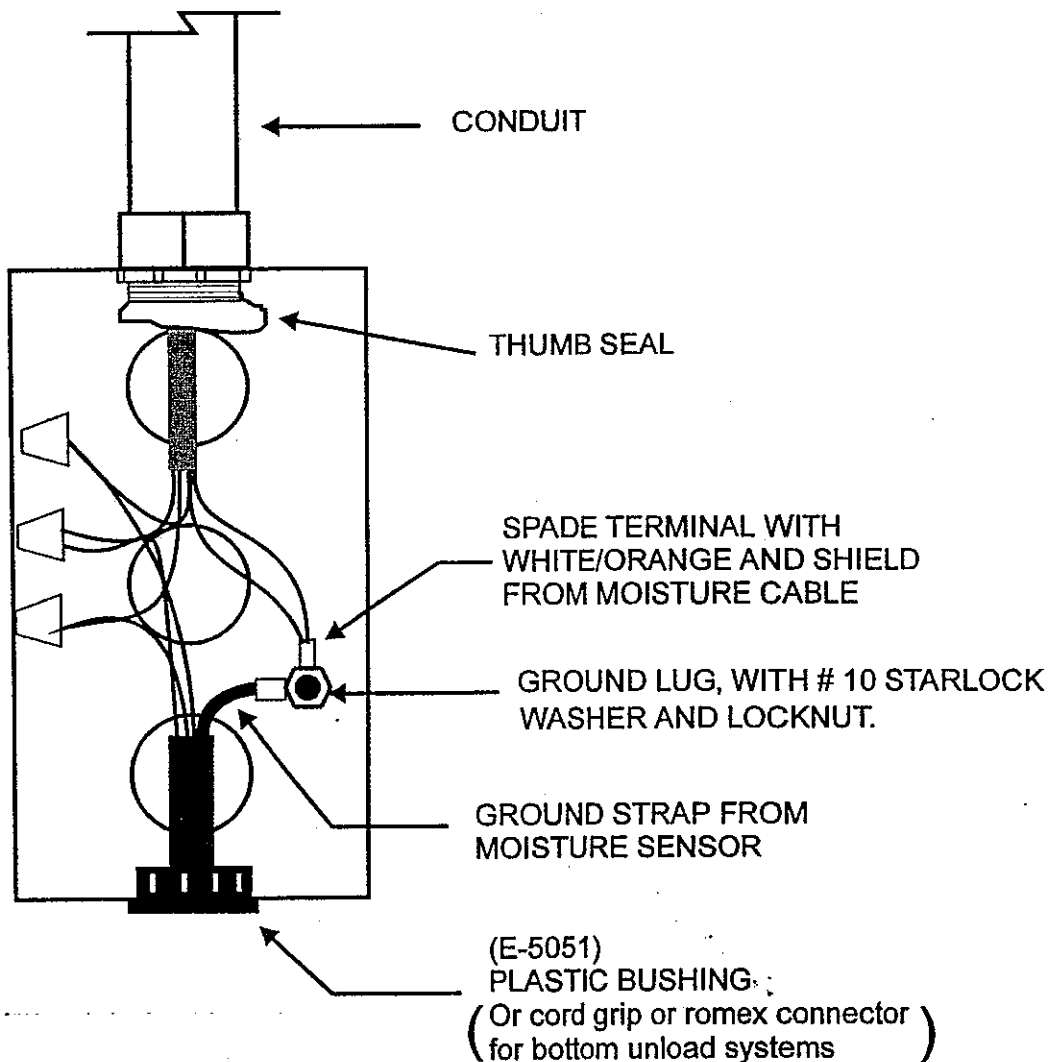
2.) Using the wiring diagram below, strip the wires and connect them inside the junction box using the silicone filled wire nuts (E-6250) provided. The white/with orange stripe wire and the shield wire from the moisture cable (E-6251) connect together inside spade terminal (E-5012-02) provided. The moisture cable wires in the spade terminal, and the ground strap from the moisture sensor, connect to a ground lug inside the junction box on the mounting halfband using a star washer and locknut provided.



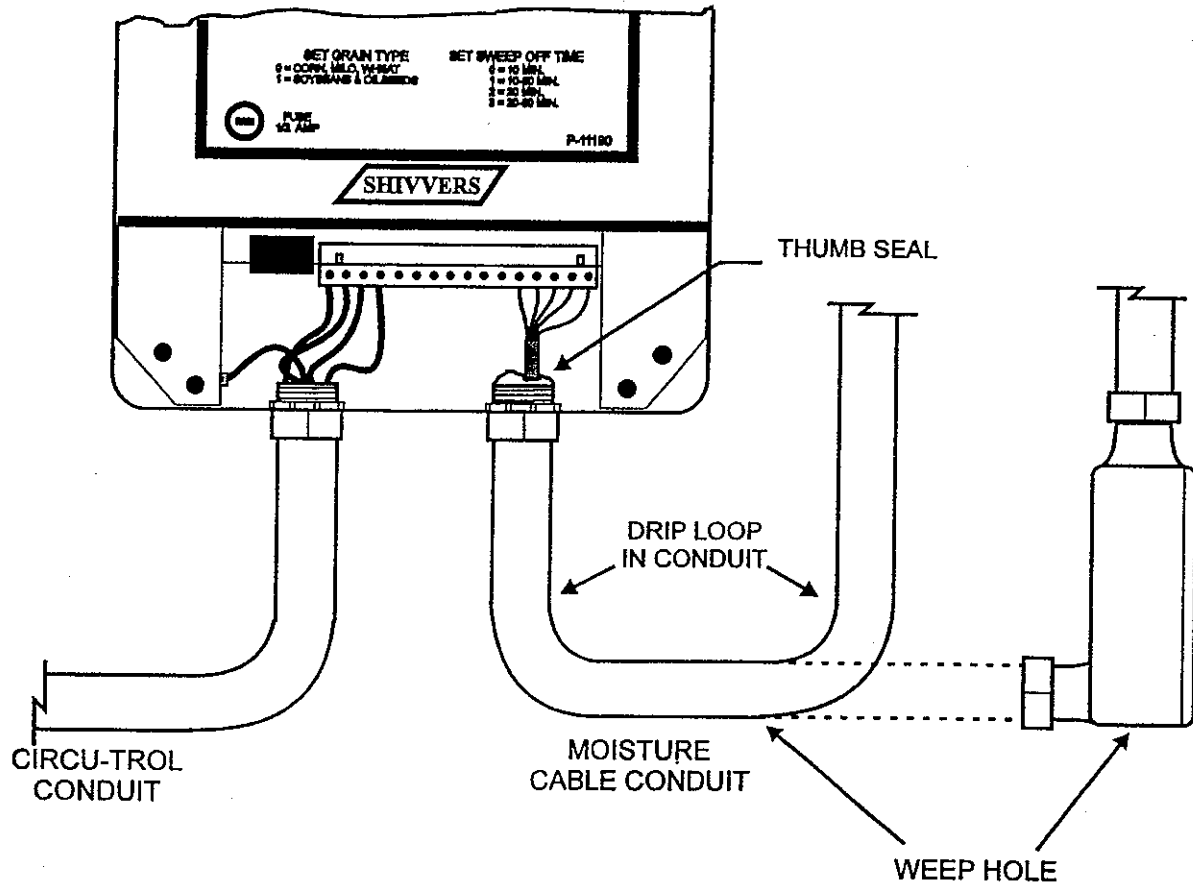
# WIRING THE MOISTURE SENSOR

(CONTINUED)

3.) Before installing the cover on the halfband junction box put some thumb seal around the moisture cable where it enters the conduit (to prevent moisture from getting into the conduit and fogging up the clear door of the E-Z Check). After double checking all connections install junction box cover.



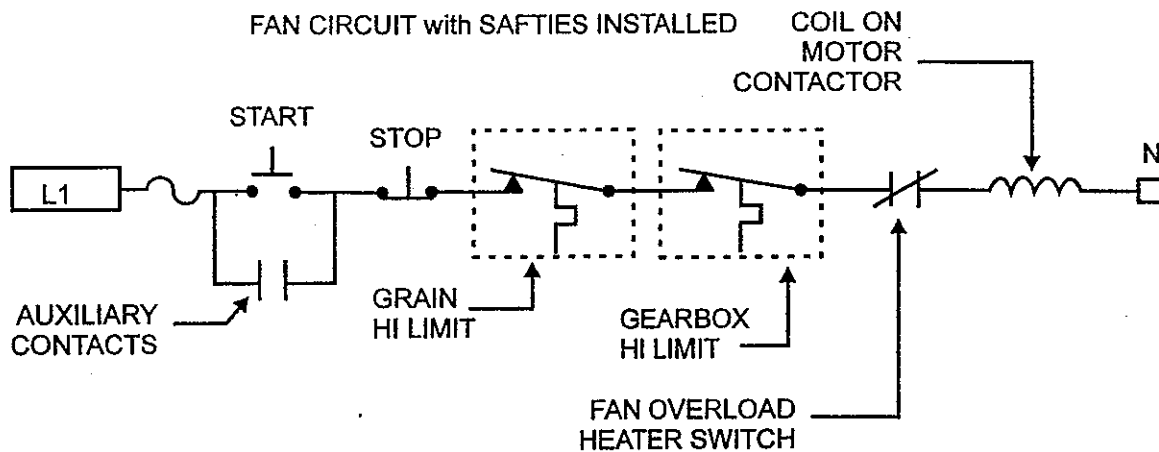
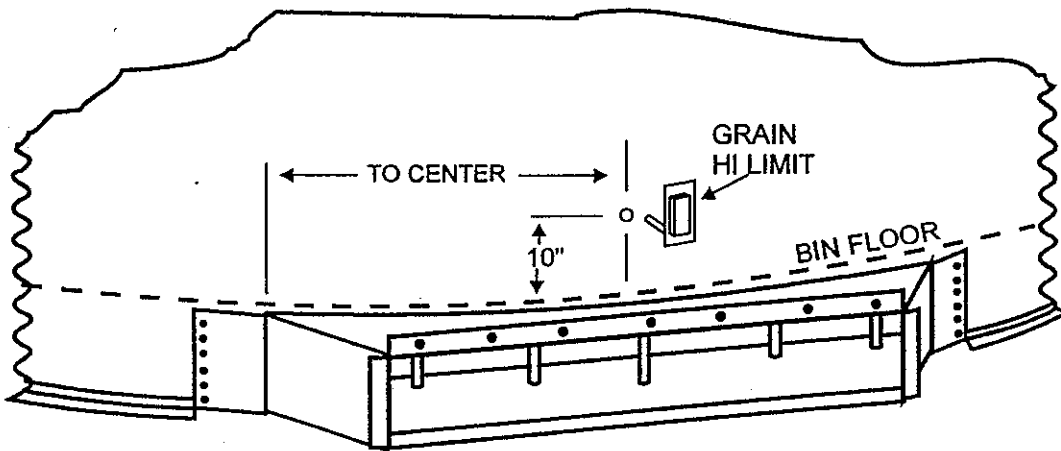
The diagram below gives some suggestions on how to run the conduit into the E-Z Check control box. Put thumb seal around the moisture cable where it enters the conduit, and a drip loop with weep holes is advisable.



## INSTALLING GRAIN HI-LIMIT

Since the E-Z Check doesn't control the plenum temperature, Grain Hi Limits (part# 527C-001A) should be installed over burner transitions to shut fans down in case of high grain temperatures.

The diagrams below show where the Grain Hi Limit should be mounted, and how it should be wired into the fan circuit.

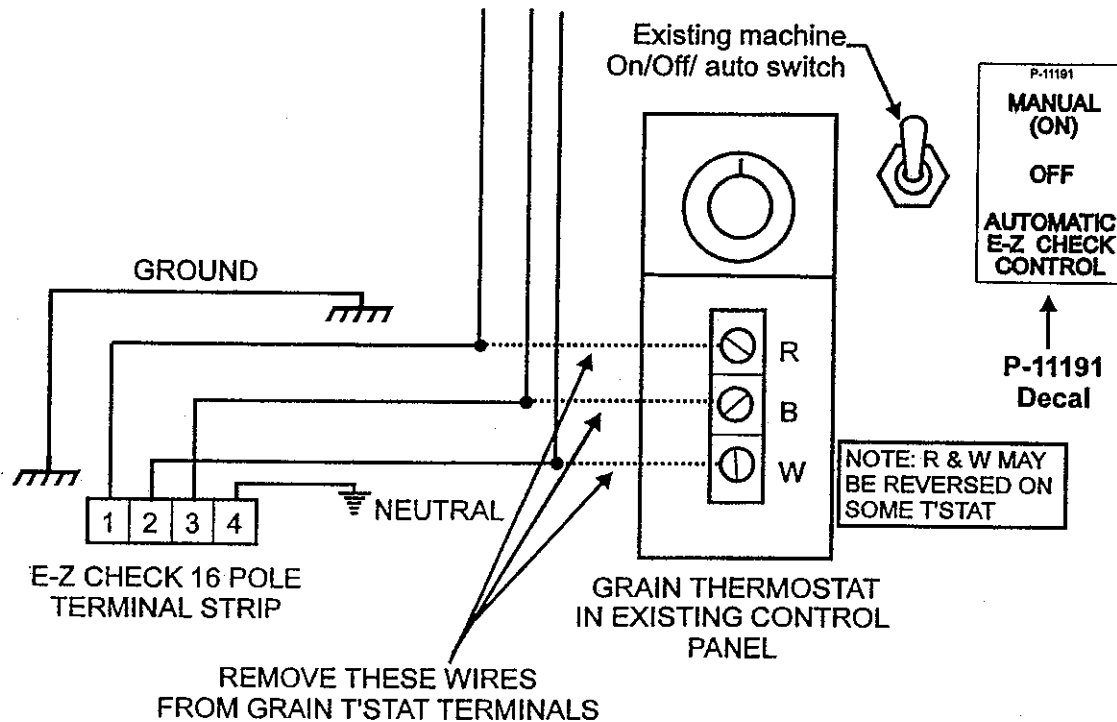


Each burner should have a Grain Hi Limit over it and should be wired so that any Grain Hi Limit will shut down all fans. Contact SHIVERS at the address on front cover for wiring assistance if needed.

# ELECTRICAL INSTALLATION

## E-Z INSTALLATION

Below is the simplest way to wire the E-Z Check to a drying system. See the next section for other options. When wired as shown, the E-Z Check will transfer grain for 90 seconds when sampling. The grain thermostat is disconnected from the circuit and cannot be used.



The wiring for the E-Z Check is tied in to the wiring that used to be on the thermostat.

Terminal 1 connects to the wire that used to be on grain t'stat terminal R or common.

Terminal 2 connects to the wire that used to be on grain t'stat terminal W or cooling.

Terminal 3 connects to the wire that used to be on grain t'stat terminal B or heat, if there is a wire present. If no wire was originally on B, leave terminal 3 disconnected.

Terminal 4 connects to neutral for 110V operation or L2 or L3 for 230V operation. If using the E-Z Check in 230V applications be sure to set the voltage selector switch in the E-Z Check to 230V. Also make sure terminal 4 isn't wired to the wild leg.

Install the P-11191 switch label next to the on/off/auto machine switch, to indicate E-Z Check automatic control.

## **OPTIONAL INSTALLATION PROCEDURES**

If grain thermostat backup is desired, or if the E-Z Check is to control the transfer augers, find your specific application in the following sections. Any applications that aren't covered contact the factory for assistance.



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OFF!!!**

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# WIRING THE E-Z CHECK TO THE 295 - 74C CIRCU-TROL

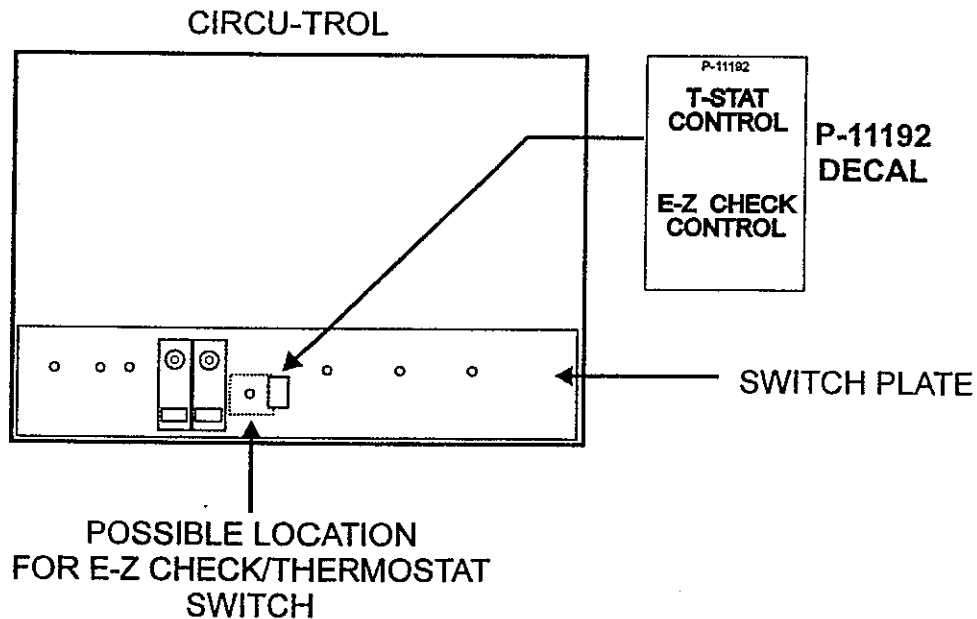
Option 1 of 2

## WITH GRAIN THERMOSTAT BACKUP

This wiring configuration will transfer grain while samples are taken, but allows thermostat operation by changing a switch. The Zenith timer in the CIRCU-TROL times out the transfer augers.

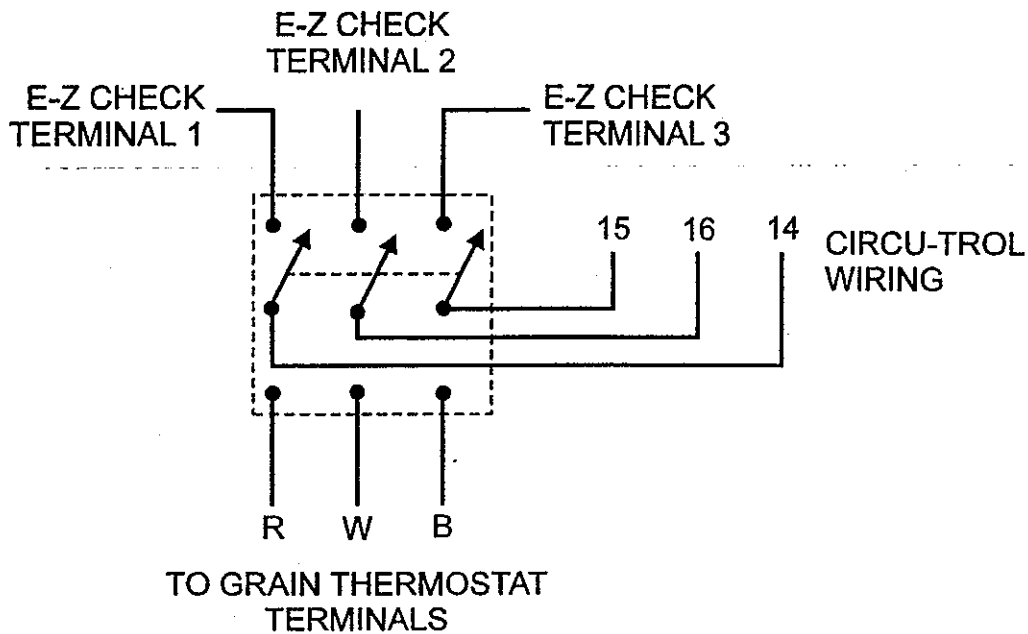
An additional AUTO/MANUAL switch should be installed to allow E-Z Check operation, or grain thermostat operation. By installing a 3PDT switch (E-5006-04 not provided), operation can be switched between E-Z Check or grain thermostat control.

First install switch by locating a spot on the CIRCU-TROL switch plate.



Drill a 1/2" hole in switch plate where switch is to be located. Make sure that switch is placed low enough on switch plate to allow inner door assembly to close properly. While installing the switch, the switch plate can be laid forward to make installation easier. The switches may be removed temporarily if necessary.

The diagram below shows how the switch should be wired.



The center row of terminals on the switch comes from the CIRCU-TROL. Wire 14 was removed from the grain thermostat terminal R, and placed on the left center switch terminal.

Wire 15 was removed from grain thermostat terminal B and placed on the right center switch terminal.

Wire 16 was removed from the grain thermostat terminal W and placed on the middle switch terminal.

These wires may need to be extended to reach the switch.

The bottom row of terminals connect to the grain thermostat as indicated above.

The top row of terminals connect to the corresponding wires going to the E-Z Check control box.

After double checking the wiring and connections, reassemble switch plate in CIRCU-TROL. Be careful not to pinch any wiring while putting switch plate back into panel. Check for proper operation. After reassembly be sure to place E-Z Control label (P-11192) next to the newly installed switch.

This completes wiring of 295 DELUXE CIRCU-TROL with thermostat backup and no control of continuous flow. Go to Final Configuration section.

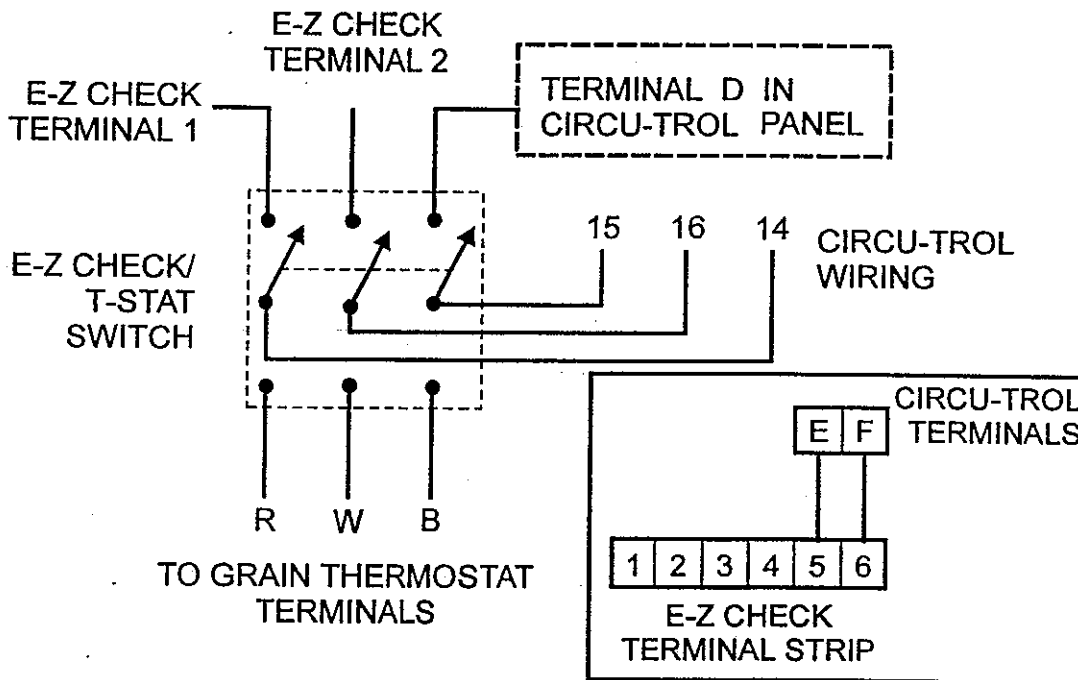


# WIRING THE E-Z CHECK TO THE 295 - 74C CIRCU-TROL

Option 2 Of 2

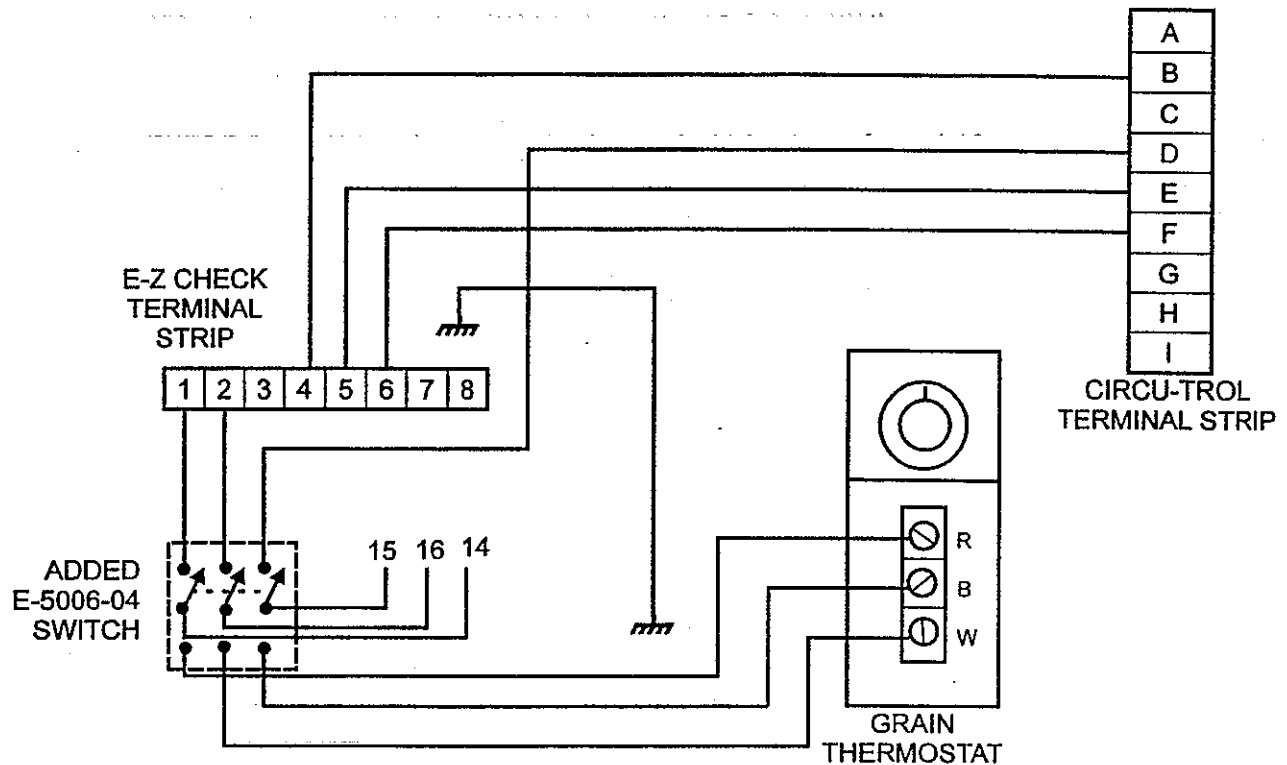
## CONTROL OF TRANSFER AUGER AND GRAIN THERMOSTAT BACKUP

The following procedure will allow the E-Z Check to keep the transfer augers off during samples, allowing only dry grain to be transferred (Center vertical machines only). The E-Z Check will also time out the transfer augers. This will require 6 wires, including ground, connecting the E-Z Check control to the CIRCU-TROL. These wires are to be supplied by customer and must be 16 gauge stranded wire. The "T-STAT/E-Z CHECK" switch should be installed as in the previous section with one change being made to the switch wiring. (See diagram.)



The switch terminal on the top right, should be connected to CIRCU-TROL terminal D. This will keep the zenith timer energized during E-Z Check operation, keeping the timer contacts open. This will allow the E-Z Check to control transfer auger functions.

After the switch is wired, two wires must be connected from E-Z Check terminals 5 & 6 to CIRCU-TROL terminals E & F. Terminals E & F connect directly to the Zenith timer contacts. The step above keeps the contacts open so the E-Z Check can control the transfer augers when needed. The diagram on the next page illustrates the completed wiring for this procedure.



Wires 14,15, and 16 were originally on the grain thermostat, but now connect to the newly installed AUTO/MANUAL switch. Terminal 4 on the E-Z Check is neutral and should be connected to terminal B in the CIRCUTROL. A ground wire should also be connected from the ground lug in the CIRCUTROL to the front cover plate on the E-Z Check.(See Control Box Parts Identification section for E-Z Check ground termination points.)

Double check all connections, replace all wiring covers or guards, and check for proper operation.

Place the E-Z Control Label (P-11192) next to the newly installed switch.

This completes wiring of 295 DELUXE CIRCUTROL with thermostat backup and control of continuous flow. Go to Final Configuration section.

# WIRING THE E-Z CHECK TO THE 74 - 77 CIRCU-TROL

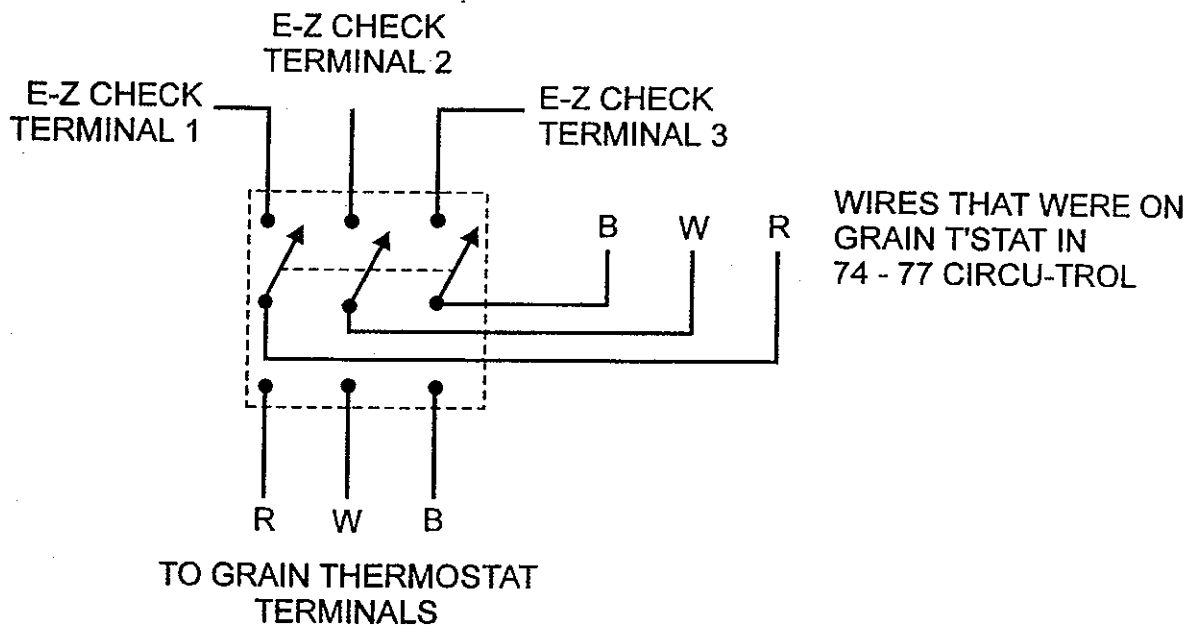
Option 1 of 2

## WITH GRAIN THERMOSTAT BACKUP

When wiring the E-Z Check to the 74 - 77 Circu-trol, the E-Z Installation part of this manual can be used. If thermostat backup is desired, the following procedures should be followed. This configuration will allow the Zenith timer in the Circu-trol to time out the transfer auger, and will transfer grain while sampling.

Find a convenient location for mounting the "E-Z Check/T-STAT" switch (E-5006-04). A field fabricated bracket may be required for mounting the switch.

The following diagram shows how the switch should be wired.



The center row of terminals on the switch come from the CIRCU-TROL. Wire R was removed from the grain thermostat terminal R, and placed on the left center switch terminal.

Wire B was removed from grain thermostat terminal B, and placed on the right center switch terminal.

Wire W was removed from the grain thermostat terminal W, and placed on the middle switch terminal.

These wires may need to be extended to reach the switch.

The bottom row of terminals wire to the grain thermostat as indicated on the previous page. The top row of terminals connect to the corresponding wires going to the E-Z Check control box. A neutral wire should be connected from the Circu-trol panel to E-Z check terminal 4. A ground wire should also be connected from the Circu-trol panel to the E-Z Check (see Control Box Parts Identification section for ground termination points).

After double checking all wiring and connections, place E-Z control label (P-11192) next to newly installed switch.

This completes the wiring of the 74 -77 Circu-trol with thermostat backup and no control of continuous flow. Go to Final Configuration section.

# **WIRING THE E-Z CHECK TO THE** **74 - 77 CIRCU-TROL**

Option 2 of 2

## **CONTROL OF TRANSFER AUGER AND GRAIN THERMOSTAT BACKUP**

The following procedure will allow the E-Z Check to keep the transfer augers off during samples, allowing only dry grain to be transferred. (Center vertical machines only.) The E-Z Check will also time out the transfer augers. This procedure will require changes to the wiring in the Circu-trol panel.

Find a convenient place to mount the "T-STAT/E-Z Check" switch in the Circu-trol panel. Figure 1 shows the 3 wires that need to be changed.

The wire going to grain thermostat terminal R, must be removed and placed on the left center terminal of the newly added switch (S3). The bottom left terminal of switch S3 should be wired to terminal R of the grain thermostat. The top left terminal of switch S3 should be wired to E-Z Check terminal 1. This procedure will allow the switch to supply power to the E-Z Check, or to the grain thermostat.

Next a short jumper wire should be installed between E-Z Check terminals 1 and 5. This will allow the E-Z Check to supply power to the continuous flow circuit when the E-Z Check is on.

Next the wire going to Time Delay Relay terminal 2 must be removed, and a wire ran from relay terminal 2 to the bottom right terminal of switch S3. The right center terminal of switch S3 needs to be wired to Circu-trol terminal 4. Then connect a wire from the top right terminal of switch S3 to E-Z Check terminal 6. This procedure must be performed because the 74-77 Circu-trol transfers through the normally closed contacts of the delay relay, and times out through the normally open contacts. For the E-Z Check to have control over the continuous flow circuit, both these contacts must be temporarily disabled. When switch S3 is in E-Z Check mode, the E-Z Check controls the circuit, when switch S3 is in T-STAT mode, relay terminal 2 is reconnected to Circu-trol terminal 4 restoring this part of the circuit to its original configuration.

Next connect a wire from E-Z Check terminal 2, to grain thermostat terminal W. The existing wire on terminal W shouldn't be removed.

Terminal 4 of the E-Z check is a neutral and should be wired to terminal 1 in the Circu-trol panel. A ground wire should also be wired to the E-Z Check. (See Control Box Parts Identification section for ground termination points).

The continuous flow switch S2 will need to have the wire going from the bottom left terminal to the top center terminal removed, and a jumper installed between the bottom left and the bottom right terminal of switch S2. This will allow manual operation of the transfer augers when the E-Z Check is running. Any add on panels in the Circu-trol will also need this change made to them. Figure 3 shows a wiring diagram of an add on panel before and after the changes are made.

Figure 2 shows the completed wiring of the 74 - 77 Circu-trol panel for this wiring procedure.

Double check all wiring and connections, place E-Z Control label (p-11192) next to newly installed switch, and then proceed to Final Configuration Section of this manual.

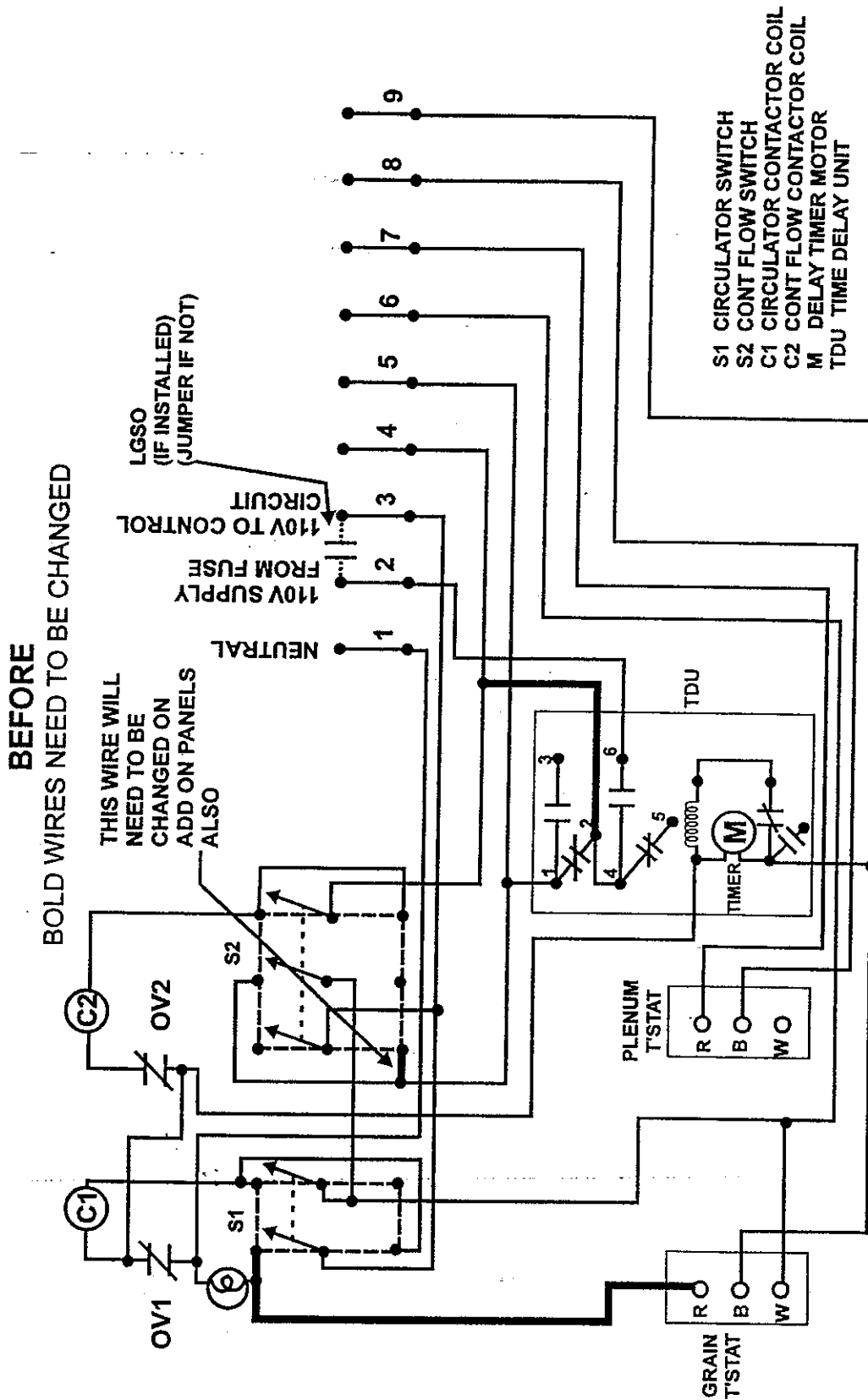


FIGURE 1

**AFTER**  
**BOLD WIRES ARE FINAL CONFIGURATION**

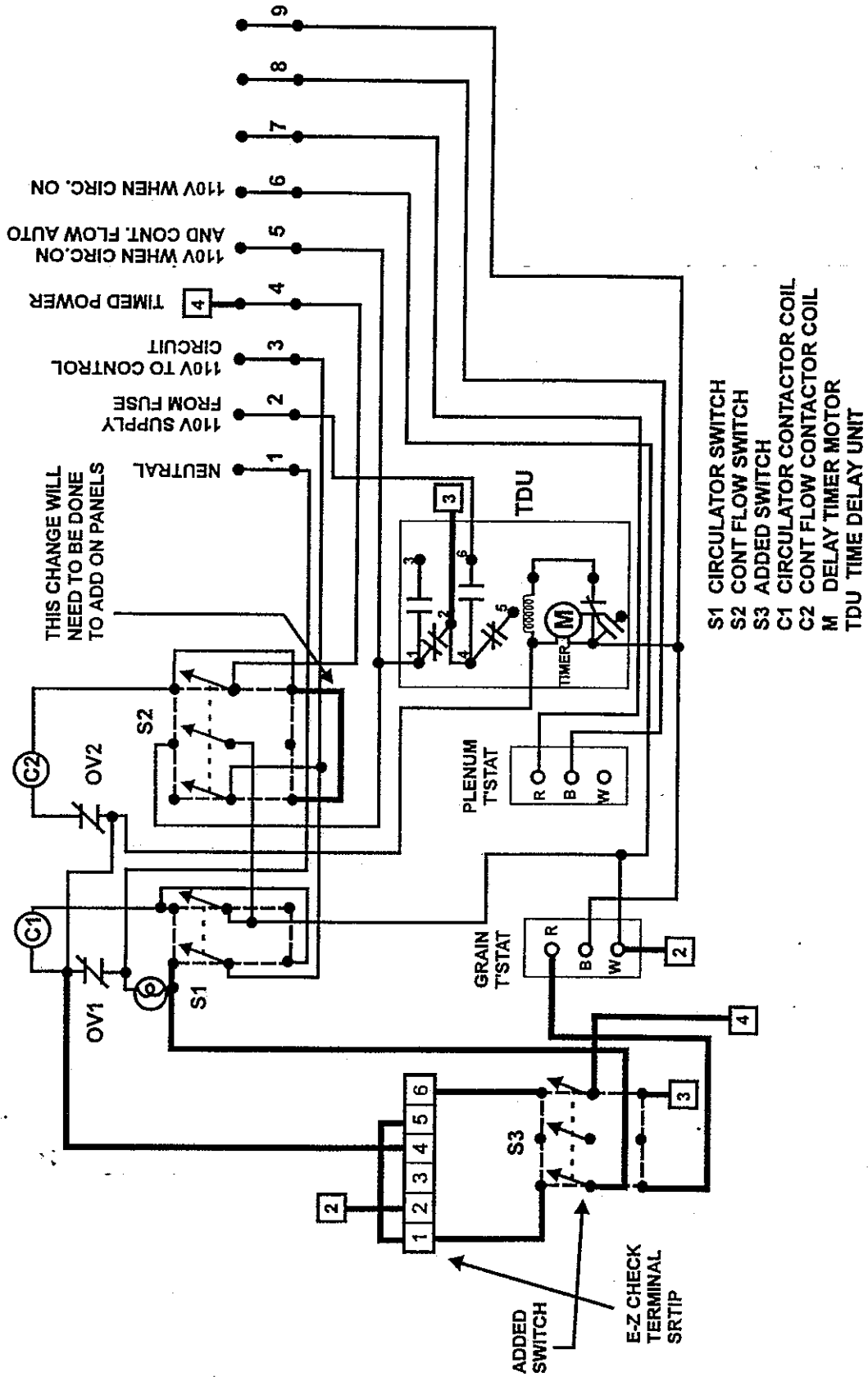
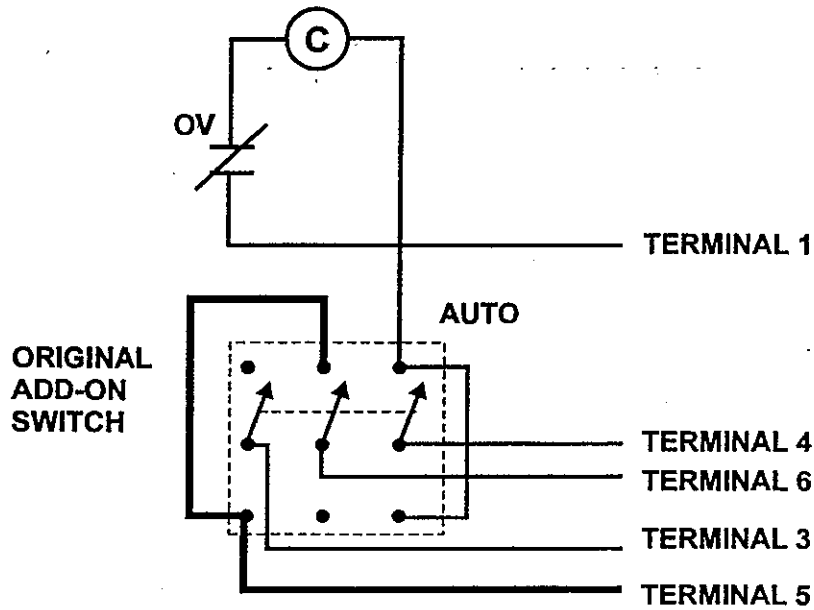


FIGURE 2



# 74-77 ADD ON PANEL

**BEFORE**  
BOLD WIRES NEED  
TO BE CHANGED



**AFTER**  
BOLD WIRES FINAL  
CONFIGURATION

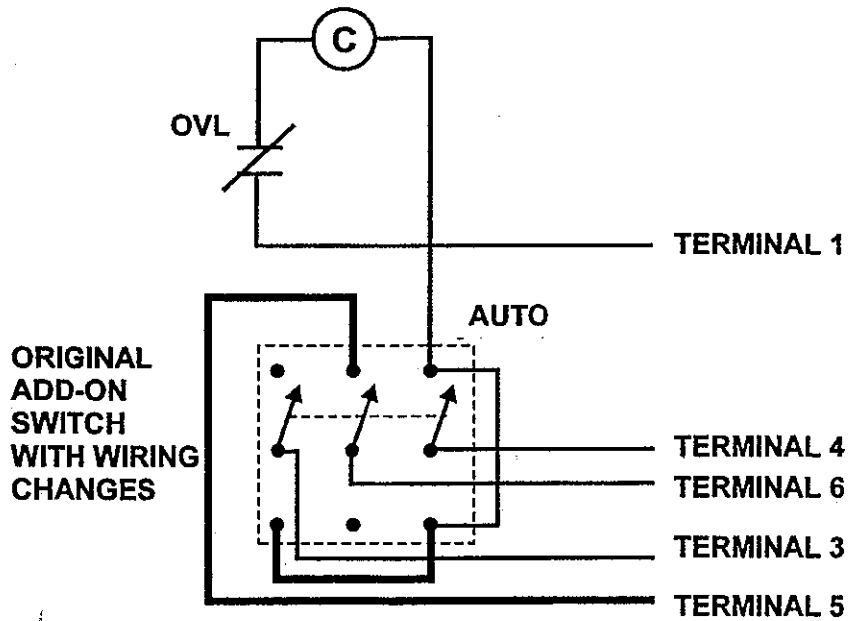


FIGURE 3

# WIRING THE E-Z CHECK TO THE COMPACT CONTROL CENTER (NO LOW GRAIN SHUTOFF)

Option 1 of 2

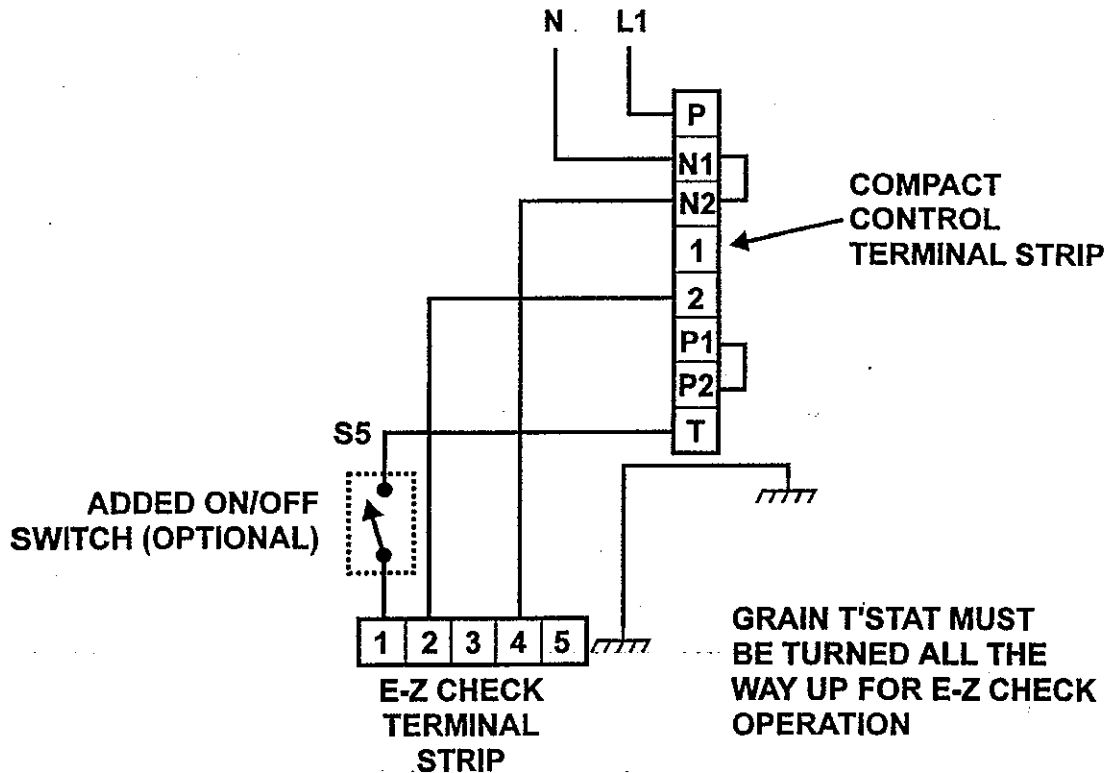
## WITH GRAIN THERMOSTAT BACKUP

For controls with a Low Grain Shutoff see page 36.

This procedure will allow E-Z check or grain thermostat operation. It will also transfer grain during samples while allowing the time delay circuit in the Compact Control to time out the transfer augers.

The diagram below shows how the E-Z Check should be wired to the compact control.

The Grain Thermostat will need to be turned all the way up to its highest or driest setting, for the E-Z Check to operate the Compact Control.



E-Z Check terminal 1 should be wired to Compact Control terminal T. This terminal has power present when the machine switch of the Compact Control is in auto. An on/off switch can be installed in this line if the E-Z Check is to be turned off during grain thermostat operation.

E-Z Check terminal 2 is wired to Compact Control terminal 2. This is the control line for the machine.

Terminal 4 of the E-Z Check should be wired to Compact Control terminal N2. This terminal has a jumper to terminal N1.

A ground wire should be ran from the Compact Control center to the E-Z Check. See Control Box Parts Identification section of this manual for ground termination points on the E-Z Check.

After checking all wiring and connections proceed to final configuration part of this manual.

# WIRING THE E-Z CHECK TO THE COMPACT CONTROL CENTER (NO LOW GRAIN SHUTOFF)

Option 2 of 2

## CONTROL OF TRANSFER AUGER AND THERMOSTAT BACKUP

For controls with a Low Grain Shutoff, see page 36.

The following procedure will allow the E-Z Check to keep the transfer augers off during samples, allowing only dry grain to be transferred. (Center vertical machines only.) The E-Z Check will also time out the transfer augers. There will need to be one wiring change made to the Compact Control Center for this procedure.

The two following pages show the wiring before and after the changes have been made. Find a convenient location to mount the "E-Z Check/T-Stat" Switch (E-5005-04, not provided). This switch will be shown as S5 on the "AFTER" wiring diagram. **The grain thermostat should be turned to its highest or driest setting for E-Z Check control.**

The left center terminal of the switch (S5) should be wired to Compact Control terminal T. The top left terminal of switch S5 should be wired to E-Z Check terminal 2. This will provide power to the E-Z Check when switch S5 is in E-Z Check mode, and the Compact control is in auto.

Terminal 2 of the E-Z Check should be wired to Compact control terminal 2. This ties the E-Z Check to grain thermostat W, allowing parallel operation of the machine contactor coil from the E-Z Check or the grain thermostat.

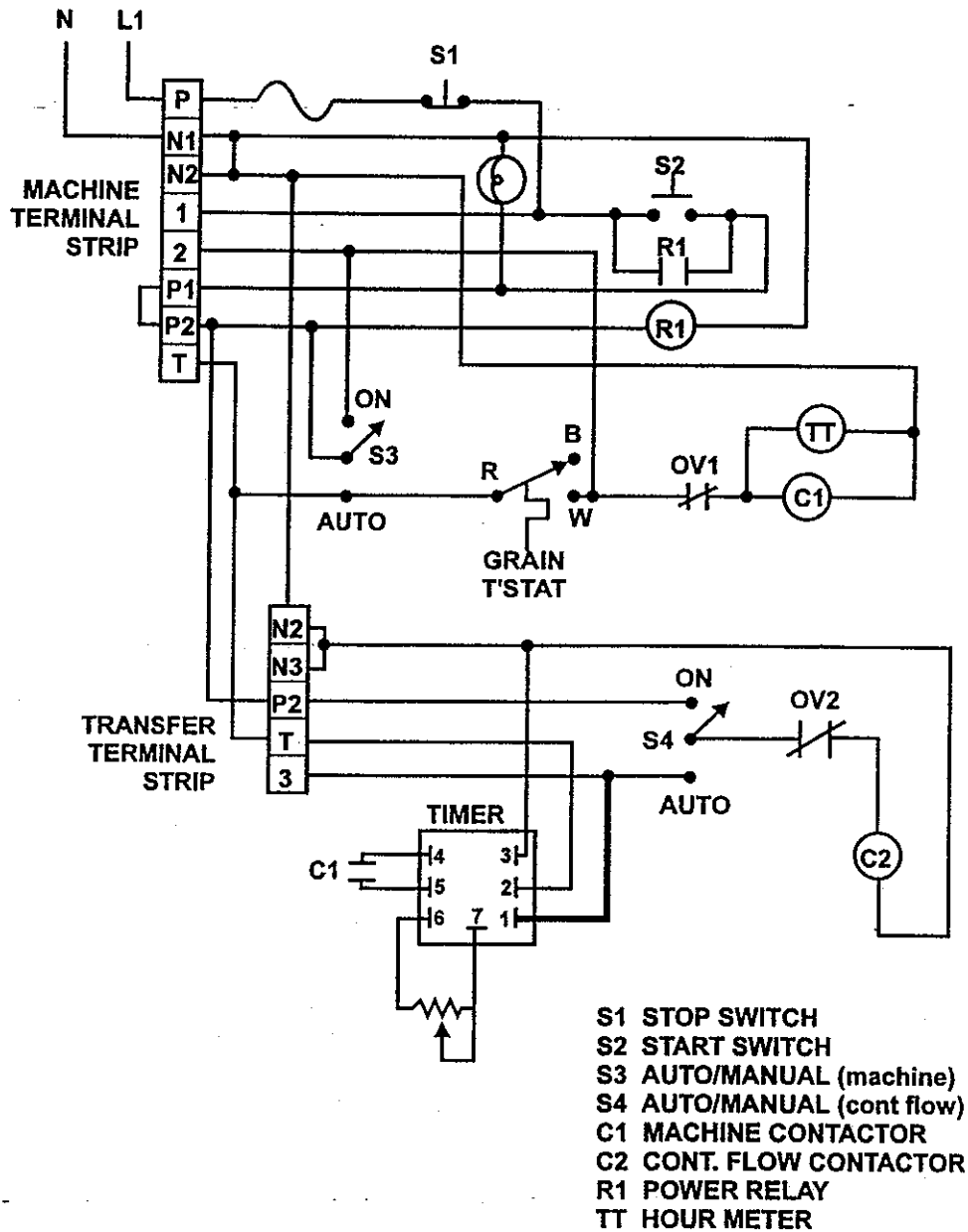
Terminal 4 of the E-Z Check should be wired to Compact Control terminal N2.

Terminal 5 of the E-Z Check should be jumpered to E-Z Check terminal 1. This will supply power to the continuous flow circuit when the E-Z Check is in control.

The wire from delay timer terminal 1 should be disconnected from Compact Control Add On terminal 3. Delay timer terminal 1 should be wired to the bottom left terminal of switch S5. The left center terminal of switch S5 should be wired to Compact Control Add On terminal 3. The top left terminal of switch S5 should be wired to E-Z Check terminal 6. This procedure will disable the delay circuit of the Compact Control, and allow E-Z Check control when the switch S5 is in E-Z Check mode. When switch S5 is in T-STAT mode, it returns the circuit back to its original configuration. Connect a ground wire from the Compact Control to the E-Z Check. (See Control Box Parts Identification section for ground termination points.)

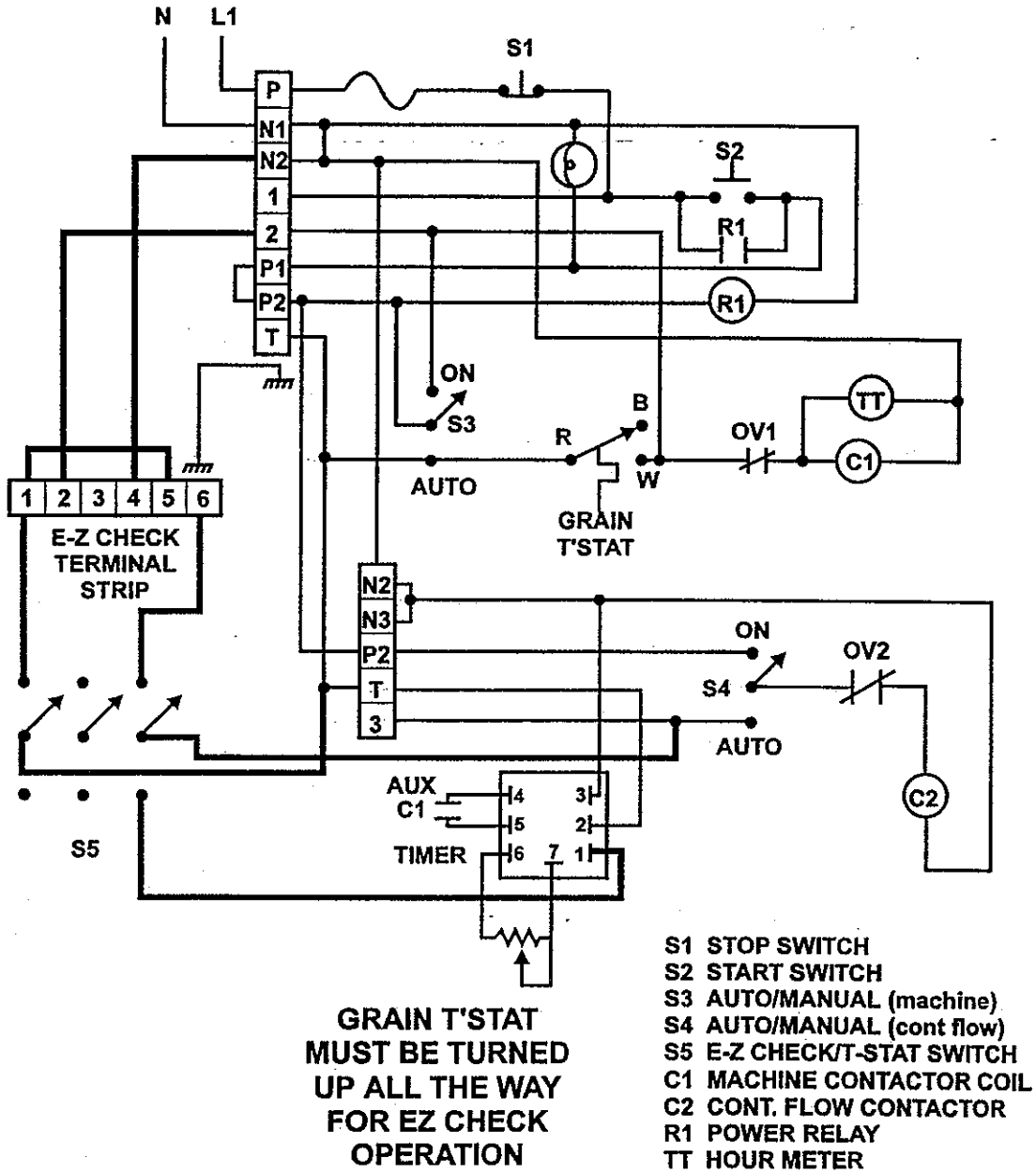
# BEFORE

## BOLD WIRES NEED TO BE CHANGED



# AFTER

## BOLD WIRES ARE FINAL CONFIGURATION



This is the completed wiring diagram for this procedure. Double check all wiring and connections, place E-Z Control label (P-11192) next to newly installed switch, and then proceed to Final Configuration section of this manual.

## **WIRING THE E-Z CHECK TO THE COMPACT CONTROL CENTER** **(WITH A LOW GRAIN SHUTOFF)**

When wiring the E-Z Check to the Compact Control Center with a Low Grain Shutoff, the wiring procedures in the previous sections still apply. But since the Low Grain Shutoff only controls the plenum thermostat circuit, the following wiring changes also need to be made.

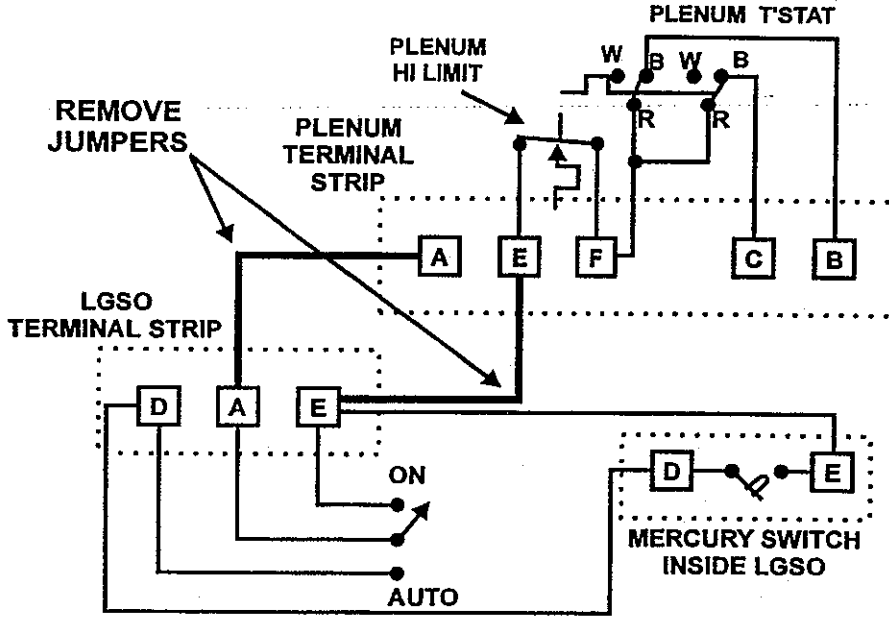
The diagrams on the following page show the changes to be made. Start by removing the jumper between the A terminals on the LGSO, and the Plenum terminal strips. Next, remove the jumper between the E terminals on the LGSO and the Plenum terminal strip. Also, the jumper between terminals P1 and P2 on the Machine terminal strip must be removed.

A relay must be installed. Find a convenient location to mount the relay. Connect a wire from terminal P1 on the machine terminal strip to the A terminal on the LGSO terminal strip. On the Plenum terminal strip connect a wire from terminal A to the normally open contact on the relay. Connect a wire from terminal E of the Plenum terminal strip to the common terminal of the same pole of the relay. This will restore the original LGSO circuit. Next connect a wire from the other normally open contact on the relay to the P1 terminal on the Machine terminal strip. Then connect a wire from the other common on the relay to terminal P2 on the Machine terminal strip. This will allow power to be turned off to the Machine control circuits and the E-Z Check when the bin runs out of grain. Then connect a wire from the E terminal of the LGSO strip to the coil of the relay, and connect the other side of the coil to Machine terminal strip N2. This will allow the mercury switch or the bypass switch to run the coil on the LGSO relay.

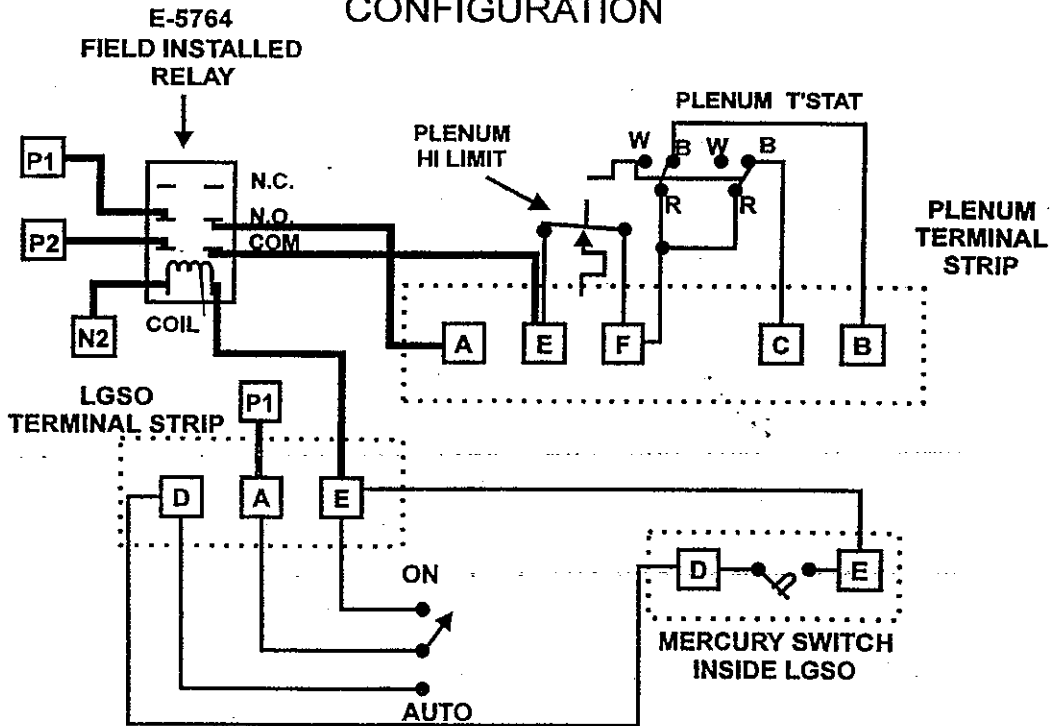
This concludes the wiring of the E-Z Check to the Compact Control Center with a Low Grain Shutoff. Double check wiring and connections and proceed to Final Configuration section of this manual.

# COMPACT CONTROL CENTER WITH LGSO

**BEFORE  
BOLD WIRES NEED  
TO BE CHANGED**



**AFTER  
BOLD WIRES FINAL  
CONFIGURATION**





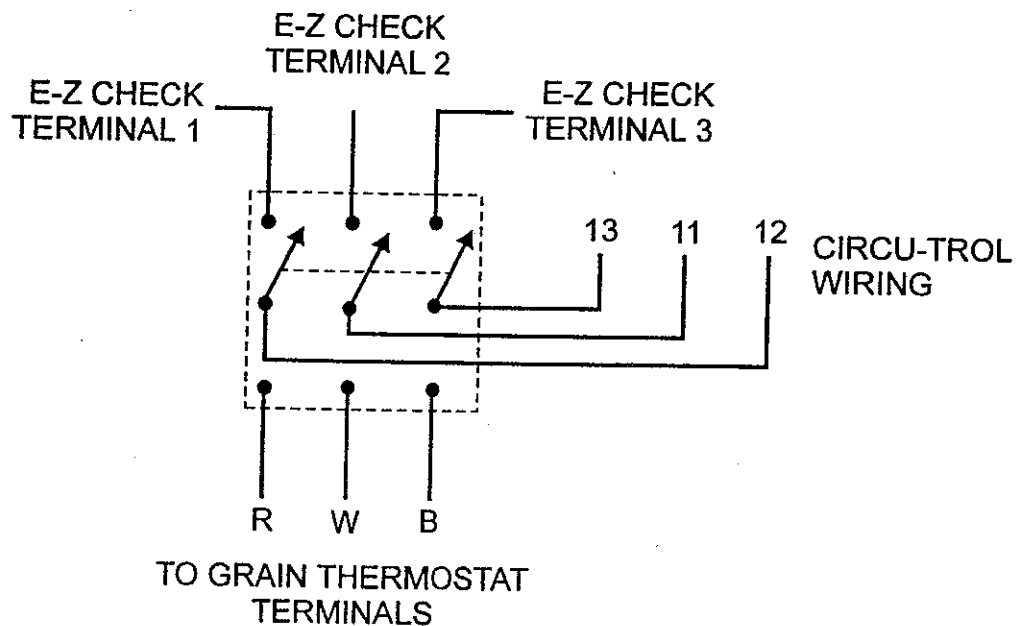
# WIRING THE E-Z CHECK TO THE SMALL CIRCU-TROL MODEL 296

Option 1 of 2

## WITH GRAIN THERMOSTAT BACKUP

This wiring configuration will transfer grain while samples are taken, but allows thermostat operation by changing a switch. It will also allow the Zenith timer in the Small Circu-trol to time out the transfer augers.

An additional switch should be installed to allow E-Z Check operation, or grain thermostat operation. By installing a 3PDT switch (E-5006-04 not provided), operation can be switched between E-Z Check or grain thermostat control.



The center row of terminals on the switch come from the Small Circu-trol. Wire 11 was removed from the grain thermostat terminal R, and placed on the left center switch terminal.

Wire 13 was removed from grain thermostat terminal B and placed on the right center switch terminal.

Wire 11 was removed from the grain thermostat terminal W and placed on the middle switch terminal.

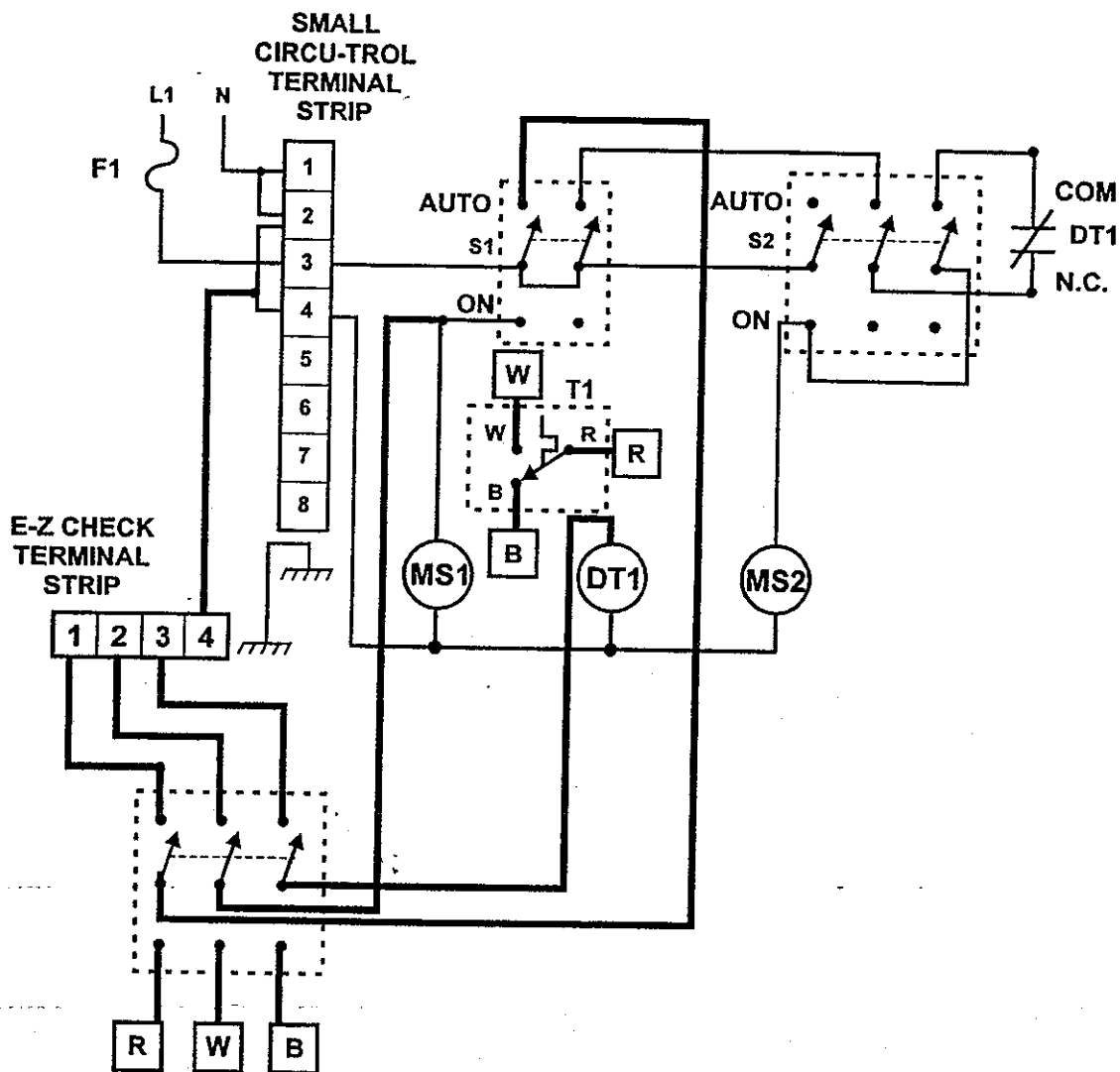
These wires may need to be extended to reach the switch.

The bottom row of terminals wire to the grain thermostat as indicated above. The top row of terminals connect to the corresponding terminals in the E-Z Check control box.

Connect a neutral wire from E-Z Check terminal 4 to Circu-trol terminal 4. Then connect a ground wire from the Small Circu-trol to the E-Z Check. (See Control Box Parts Identification section for ground termination points.)

Double check the wiring and connections, and check for proper operation. Be sure to place E-Z Control label (P-11192) next to the newly installed switch.

Below is the completed wiring diagram for the Small Circu-trol with Thermostat backup.



# WIRING THE E-Z CHECK TO THE SMALL CIRCU-TROL MODEL 296

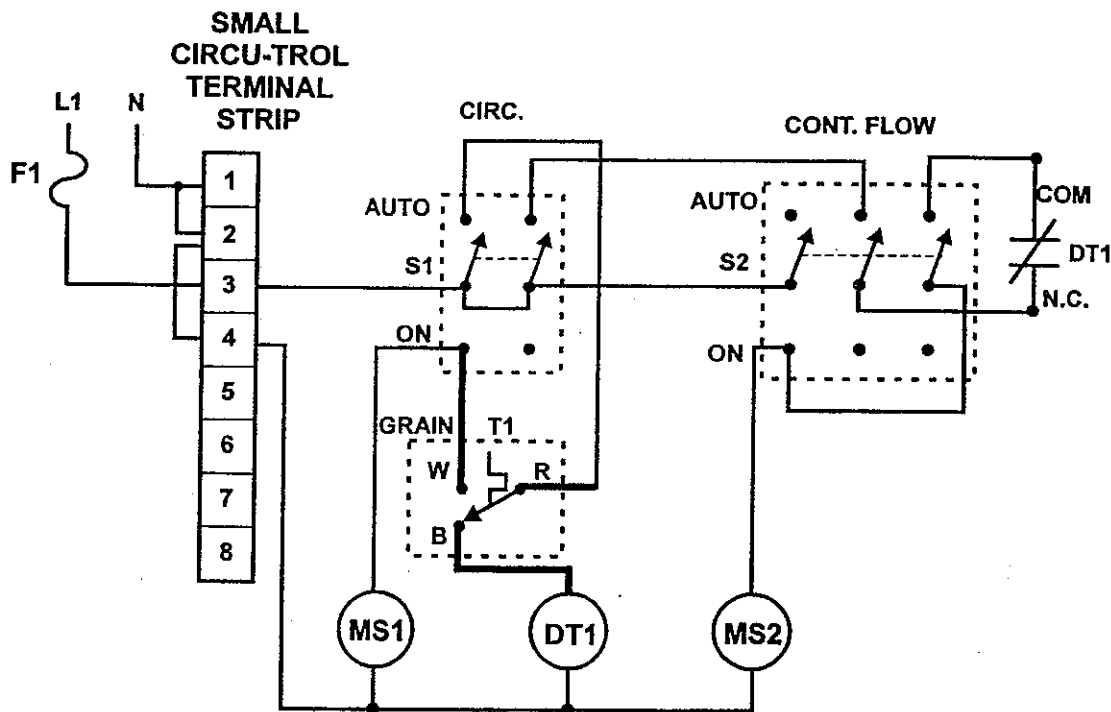
Option 2 of 2

## CONTROL OF TRANSFER AUGER AND GRAIN THERMOSTAT BACKUP

This procedure will allow the E-Z Check to keep the transfer augers off during samples, allowing only dry grain to be transferred. (Center vertical machines only). The E-Z Check will also time out the transfer augers.

The diagram below shows the original wiring, and the wires that need to be changed.

**BOLD WIRES NEED TO BE CHANGED**



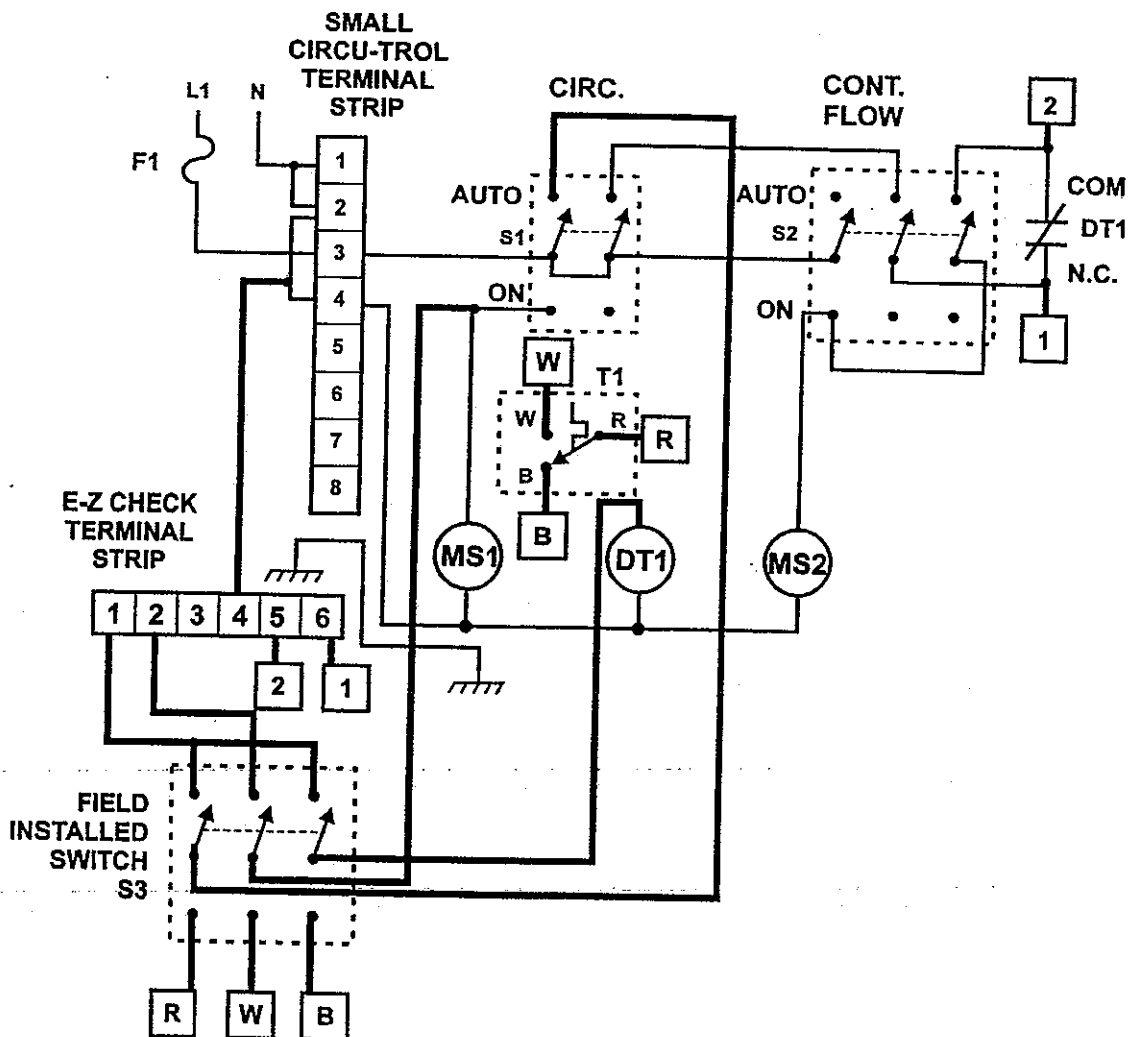
A 3PDT switch (E-5006-04, not provided) needs to be added. This will be shown as S3. Find a convenient location to mount the switch.

The wire on grain thermostat terminal R should be removed and placed on the left center terminal of the t'stat backup switch (S3). The wire on grain thermostat terminal W should be removed and placed on the center terminal of switch S3. The wire on grain thermostat terminal B should be removed and placed on the right center terminal of switch S3.

The bottom terminals on switch S3, connect to the grain thermostat as indicated on the following page.

This will restore the Original circuit for the grain thermostat when the switch is in the T'STAT position. The top left terminal is wired to E-Z Check terminal 1. The top center terminal is wired to E-Z Check terminal 2. A jumper wire should be installed from the top right switch terminal, to the top left switch terminal. This will keep the delay timer energized and the timer contacts open during E-Z Check control. Terminal 4 of the E-Z Check should be wired to circu-trol terminal 4. These are switched neutrals if a Grain Level Indicator is used. E-Z Check terminal 5 should be wired to the common terminal of the time delay contacts, while E-Z Check terminal 6 should be wired to the normally closed terminal of the time delay contacts. Connect a ground wire from the E-Z Check to the Small Circu-trol. See Control Box Identification for ground termination points.

This concludes the wiring of the E-Z Check to the Small Circu-trol with control of transfer auger. Double check all wiring and place E-Z control label (P-11192) next to newly installed switch, then proceed to Final Configuration Section of this manual.

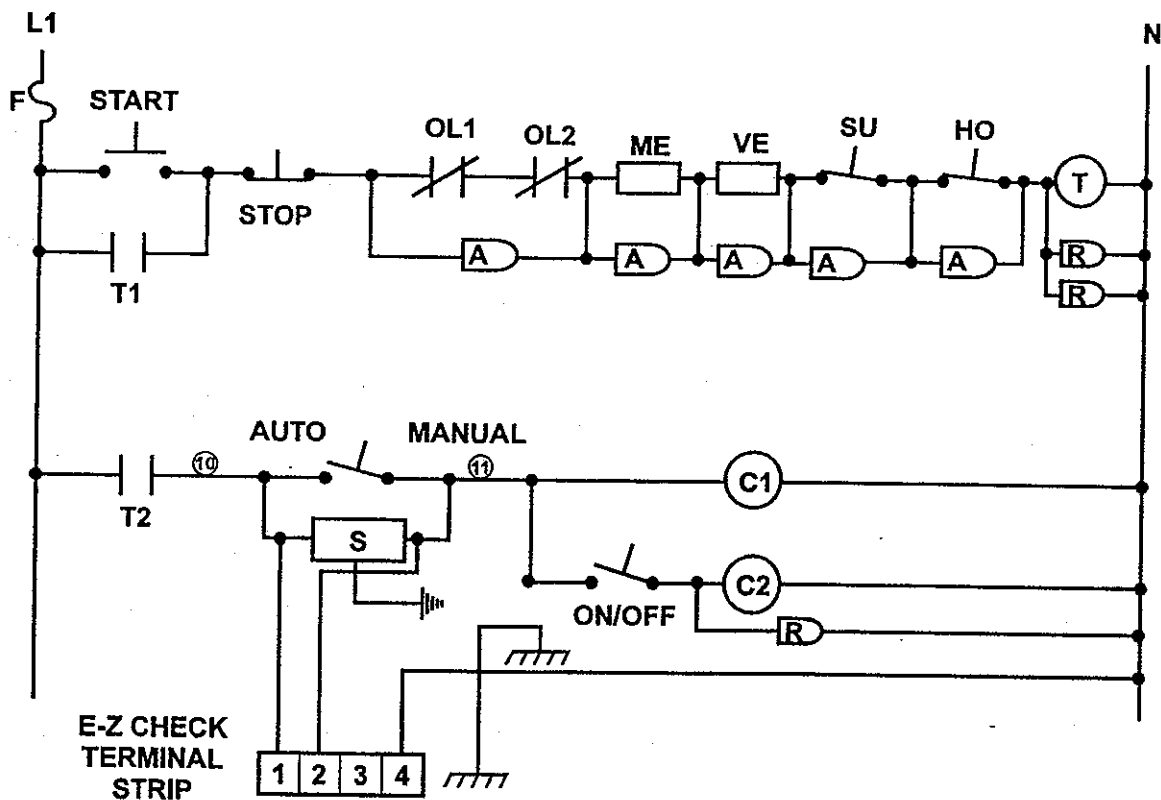


# WIRING THE E-Z CHECK TO THE SUKUP FOREWAY CONTROLLER

## WITH GRAIN THERMOSTAT BACKUP

This procedure will transfer grain while sampling. It will not time out the transfer augers. The grain sensor will need to be turned to its driest setting for E-Z Check operation.

Wire E-Z Check terminal 1 to wire 10 on the auto manual switch. Wire E-Z Check terminal 2 to wire 11 on the auto manual switch. Connect a neutral wire from E-Z Check terminal 4 to neutral in the Sukup control. Connect a ground wire from the Sukup control to the E-Z Check. (See Control Box Parts Identification section for ground termination points). The diagram below shows the completed wiring for this procedure.



This concludes wiring the E-Z Check to the Sukup Foreway. Double check all wiring and connections.

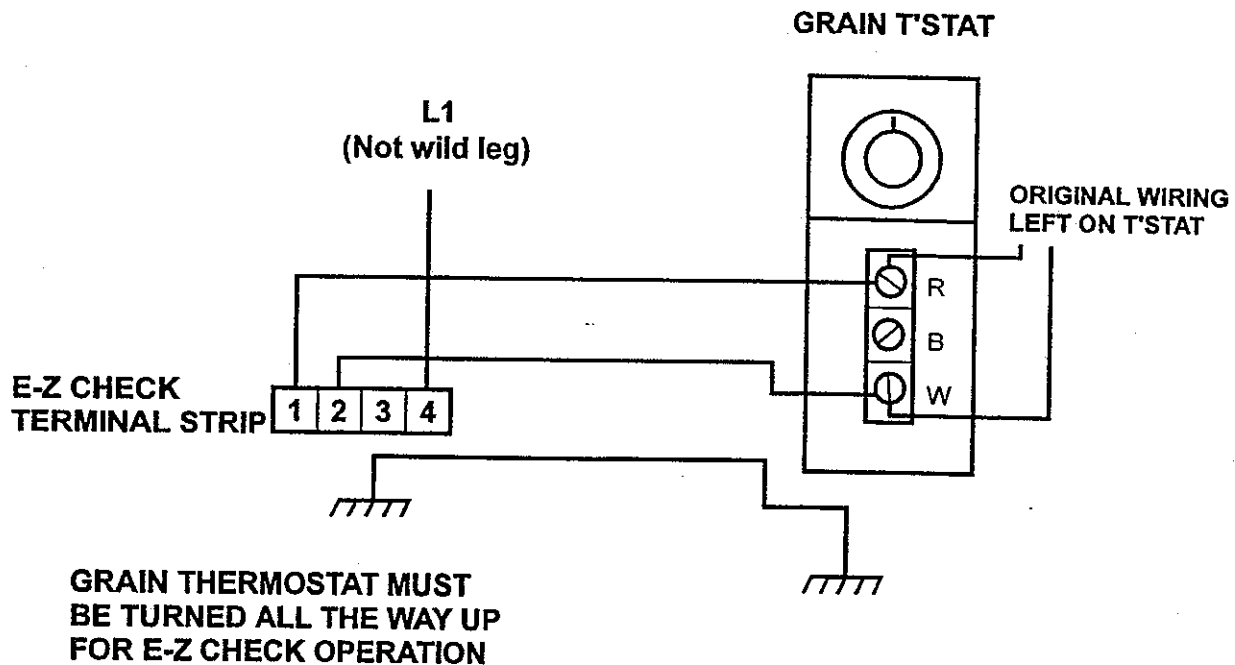
# WIRING THE E-Z CHECK TO THE NECO DELUXE 230V CONTROL

Option 1 of 2

## WITH GRAIN THERMOSTAT BACKUP

This procedure will transfer grain during samples and allow the delay timer to clean out the transfer augers. The Neco Deluxe is a 230V control panel so the E-Z Check needs to be configured for 230V operation. (See Final Configuration Section for this procedure.)

Leave existing wires on grain thermostat. Connect a wire from E-Z Check terminal 1 to grain thermostat terminal R. This will supply power to the E-Z Check. An on/off switch can be installed in this line if desired. Connect a wire from E-Z Check terminal 2 to grain thermostat terminal W. Next connect a wire from E-Z Check terminal 4 to L2 or L3 (not the wild leg). Connect a ground wire from the Neco panel to the E-Z Check (see Control Box Parts Identification section for ground termination points.)



The grain thermostat must be turned to its highest or driest setting for E-Z Check operation.

This concludes wiring the E-Z Check to the Neco Deluxe with grain t'stat back up. Double check wiring and proceed to Final Configuration section for selecting 230V operation.

## WIRING THE E-Z CHECK TO THE NECO DELUXE 230V CONTROL

Option 2 of 2

### CONTROL OF TRANSFER AUGER AND GRAIN THERMOSTAT BACK UP

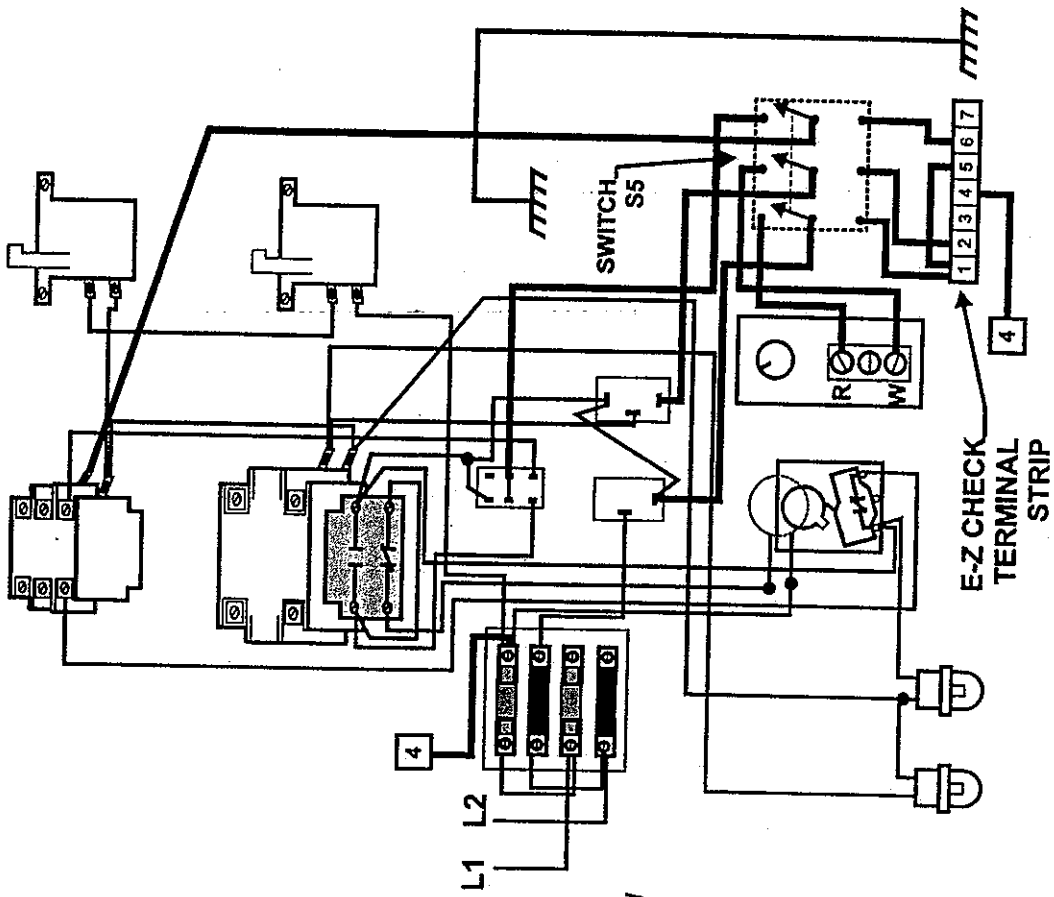
This procedure will allow the E-Z Check to transfer only dry grain, with no grain transferred during samples (center vertical machines only). The E-Z Check will time out the transfer augers. The diagram on the next page shows the control circuit for the Neco Deluxe, and the changes that must be made to the wiring. A switch will need to be added (E-5006-04, not provided). Find a convenient location to mount the switch.

Remove the wire from grain thermostat terminal R and place it on the left center terminal of the newly added switch (S5), then connect a wire from the top left terminal of switch S5 to terminal R on the grain thermostat. Remove the wire from grain thermostat terminal W and place it on the center terminal of switch S5, then connect a wire from the top center terminal of switch S5 and wire it to grain thermostat terminal W. Remove the red wire from the center terminal of the roof auger switch and connect it to the right center terminal of the switch S5, then wire the top right terminal of switch S5 to the center terminal of the roof auger switch. The procedures above will restore the original circuitry when the E-Z Control switch is in T'STAT position.

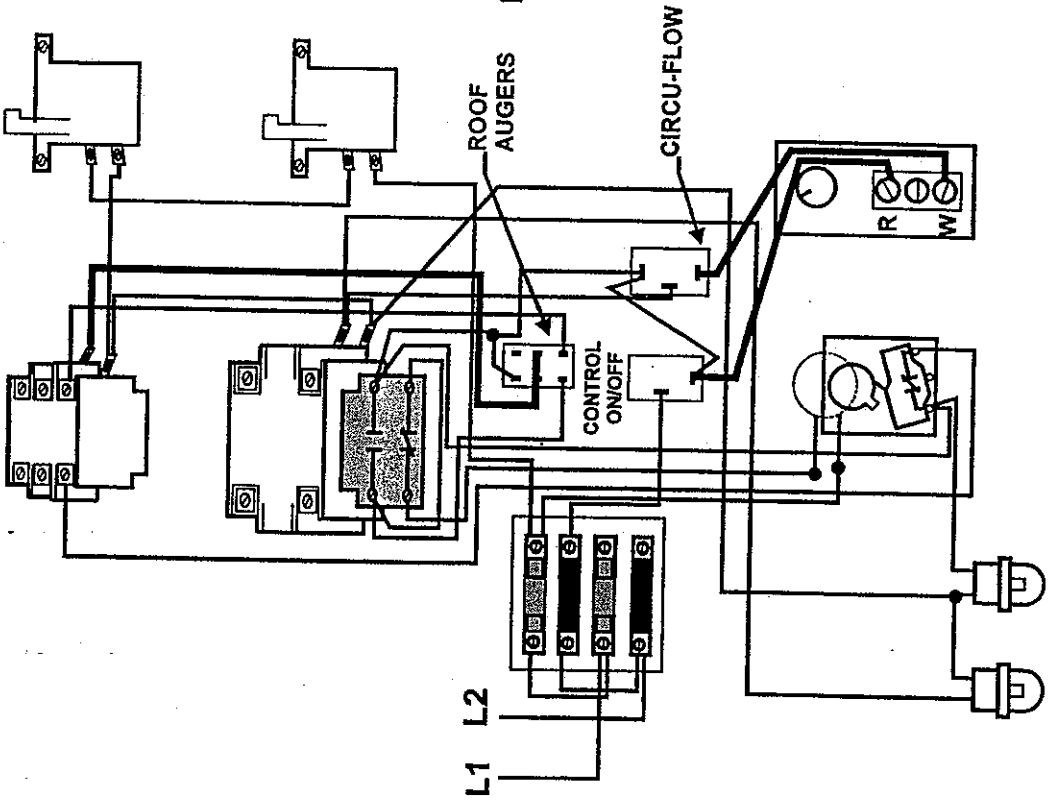
Connect a wire from E-Z Check terminal 1 to the bottom left terminal of switch S5. This will supply power to the E-Z Check when the switch is in E-Z Check position. Then wire E-Z Check terminal 2 to the bottom center terminal of switch S5. Terminal 4 of the E-Z Check should be wired to L1 in the Neco control. The control circuits are wired to L2 so this will supply 230V to the E-Z Check. **Be sure to set the voltage selector to 230V on the E-Z Check** (see Final Configuration Section of this manual). If the control is a three phase panel make sure that the E-Z Check is not connected to the wild leg. Terminal 5 of the E-Z Check should be jumpered to terminal 1 in the E-Z Check. Then connect a wire from terminal 6 in the E-Z Check to the bottom right terminal of switch S5. Connect a ground wire from the Neco Deluxe to the E-Z Check (see Control Box Parts Identification for ground termination points.)

Double check all wiring and connections, place E-Z Control label next to newly installed switch, and proceed to Final Configuration section of this manual.

**BOLD WIRES  
FINAL CONFIGURATION**



**BOLD WIRES  
NEED CHANGED**

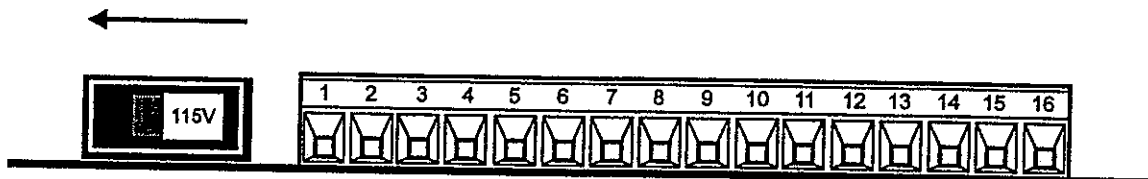




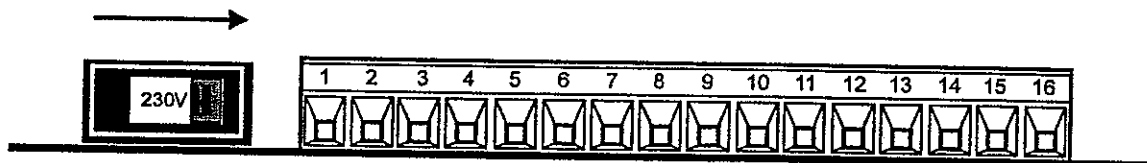
# FINAL CONFIGURATION

## SET VOLTAGE INPUT

The E-Z Check comes preset for 115V AC but can be set to run on 230V AC. The voltage selector switch is to the left of the 16 pole terminal strip on the E-Z Check. (See Control Box Parts Identification for location)



For 115V applications the red part of the switch should be slid to the left.



For 230V applications the red part of the switch should be slid to the right.

The voltage setting must be checked before power is applied to the E-Z Check. Improper voltage selection will damage E-Z Check control.

## SET MACHINE TYPE

After the E-Z Check has been wired, the control may be configured for the type of machine it is going to run. This procedure needs to be performed only if the continuous flow augers are wired to E-Z Check terminals 5 and 6.

### FOR CENTER VERTICAL MACHINES

If the machine type is set to 0, the E-Z Check will not energize CR2 until the moisture readings are below set point. Grain will recirculate in the drying bin while sampling.

### FOR BOTTOM UNLOAD MACHINES

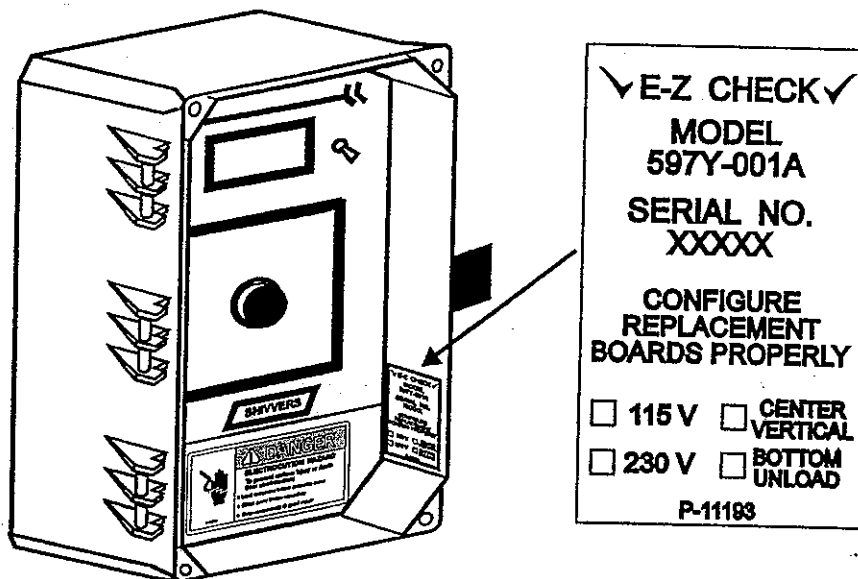
If machine type is set to 1, the E-Z Check will energize CR2 4 seconds before energizing CR1. This will allow pneumatic transfer systems to come up to speed before grain is discharged.

1. Turn power to E-Z Check OFF.
2. Turn function select knob clockwise until pointer is positioned straight down.
3. Turn power to E-Z Check ON. Display will show HLP.
4. Within 30 seconds of "POWER ON", hold adjust switch to "ADJUST UP" for 5 seconds. Display will start blinking showing the machine type setting.

0 = CENTER VERTICAL (CIRCU-LATOR)

1 = BOTTOM UNLOADER (DRI-FLO)

5. When display stops blinking, release adjust switch. Machine type setting is shown. Press adjust switch up or down to change setting. After about 10 seconds the display will show HLP and programming machine type is complete. Turn function select knob to desired setting.



After the voltage and machine configuration have been set, be sure to mark the voltage and the machine type on the model/serial tag on the inside wall of the E-Z Check box. This will provide a record for future reference should the E-Z Check require any service.

## CHECK OUT PROCEDURE

### CHECK OUT OF ORIGINAL DRYER CONTROLS



**DISCONNECT AND LOCKOUT ALL POWER BEFORE ATTEMPTING TO CHANGE DRIVE CLUTCHES. LOCK OFF BIN ENTRANCE, AND MAKE SURE ALL PERSONNEL ARE CLEAR BEFORE STARTING.**

If the control panel is wired with grain thermostat backup, the E-Z Control switch will need to be in the T'STAT position for this part of the procedure.

1. Make sure all power to controls is locked off. Disengage the Machine motor from the augers so that only the motor will run. Make sure bin and transfer equipment is clear of tools and all personnel. Set all switches in control panel to "OFF". Turn grain thermostat to highest (driest) setting.
2. Turn power on to control panel. Set LGSO to "ON" or "BYPASS". On Compact Control Center, push "ON" switch.
3. Turn machine switch to "ON". Machine should run. Center vertical units should not be transferring. Turn Machine switch "OFF".
4. Turn Continuous flow switch to "ON". Cont. flow auger should run. Turn cont. flow switch "OFF". Check all cont. flow and auxiliary auger switches.
5. Set Machine switch to "AUTO". Turn grain thermostat down until the machine runs. If the temperature is below 60 degrees, it may be necessary to heat up the grain probe some way (place it in a bucket of hot water, for example). Turn grain thermostat all the way up and the machine should stop.
6. Turn one or more of the cont. flow switches to "AUTO". On some models the auger may run until it times out. After it stops running, lower the grain thermostat again. The machine and cont. flow augers should both start and run. Turn the grain thermostat all the way up. The machine should stop and the cont. flow auger run until the timer shuts it off (if so equipped).

## CHECK OUT OF E-Z CHECK CONTROL

7. With power to E-Z Check turned off, put selection knob straight down (HLP position), then turn power on. Within 30 seconds of power on hold adjust "DOWN" until HLP stops blinking, then release. Display will alternate between moisture reading and temperature reading. Temperature should be close to ambient temp at the sensor. Moisture reading should be between 00.0 and 01.0 without any grain. Make sure no error messages occur. Turn power off to E-Z Check.
  
- 8A. This test will check systems wired with no control of transfer auger, or bottom unload machines.  
Turn select knob away from HLP position. Make sure everyone is clear of machinery. If switch is added, set to E-Z Check control. When machine switch is set to auto, E-Z Check will come on. When the display flashes the program version (P1.X) move the adjust switch up or down to start the drying program. Turn the function knob to minutes to next sample selection, and adjust down until display shows 0. The machine should turn on. The transfer augers should also run. If E-Z Check terminals 5 and 6 are used in bottom unload machines, the transfer augers will come on before the machine will. If there is no grain in the bin, or the clutch is disengaged the sensor will send an error to the E-Z Check control, (Readings out of range error "E04"). Machine will shut off and the transfer auger will time out. Turn power to E-Z Check and controls off.
  
- 8B. This test will check center vertical systems wired to transfer dry grain only (no grain transferred during samples). Make sure everyone is clear of machinery. Turn function knob to HLP position. Turn power on to E-Z Check and hold adjust "UP" until HLP stops blinking. Reconfigure E-Z Check to 1. See Final Configuration section for details. After reconfiguring the control, turn cont. flow switch to auto. Turn function select knob to minutes to next sample, and adjust down to 0. The transfer augers should come on first (approximately 4 seconds before machine comes on). After 60 seconds, if there isn't any grain on the sensor, display will show "E04" (readings out of range). Machine will shut off and transfer auger will time out. After machine and augers stop, turn all controls OFF. Turn function select knob to HLP position and turn power on. Hold adjust up in the same manner as above and reconfigure the E-Z Check for 0. Repeat test. This time machine will run but transfer auger won't. This concludes the check out procedure for the E-Z check.

## **METER TEST MODE**

The following procedure will allow you to check the moisture sensor without turning on the machine or transfer auger.

1. Turn power to E-Z Check off.
2. Turn function select knob clockwise until pointer is positioned straight down.
3. Turn power to E-Z Check on. Display will show HLP.
4. Within 30 seconds of "POWER ON," hold adjust switch to "ADJUST DOWN" for 5 seconds. The display will start blinking HLP. When HLP stops blinking release "ADJUST DOWN".
5. Display will alternate between moisture reading and temperature reading. Moisture readings have a decimal point (00.0), temperature reading does not (070).

If E05 shows in the display there is either a bad sensor or no input from the sensor. Any error messages displayed will be sent to the printer, if connected.

**Moisture and temp readings received in this mode are "RAW" readings. They are not calibrated and are not temperature compensated.**

With no grain on sensor, reading should be from 00.0 to 01.0, for moisture. Temperature reading should be close to ambient temperature at the sensor. For example: 070.

