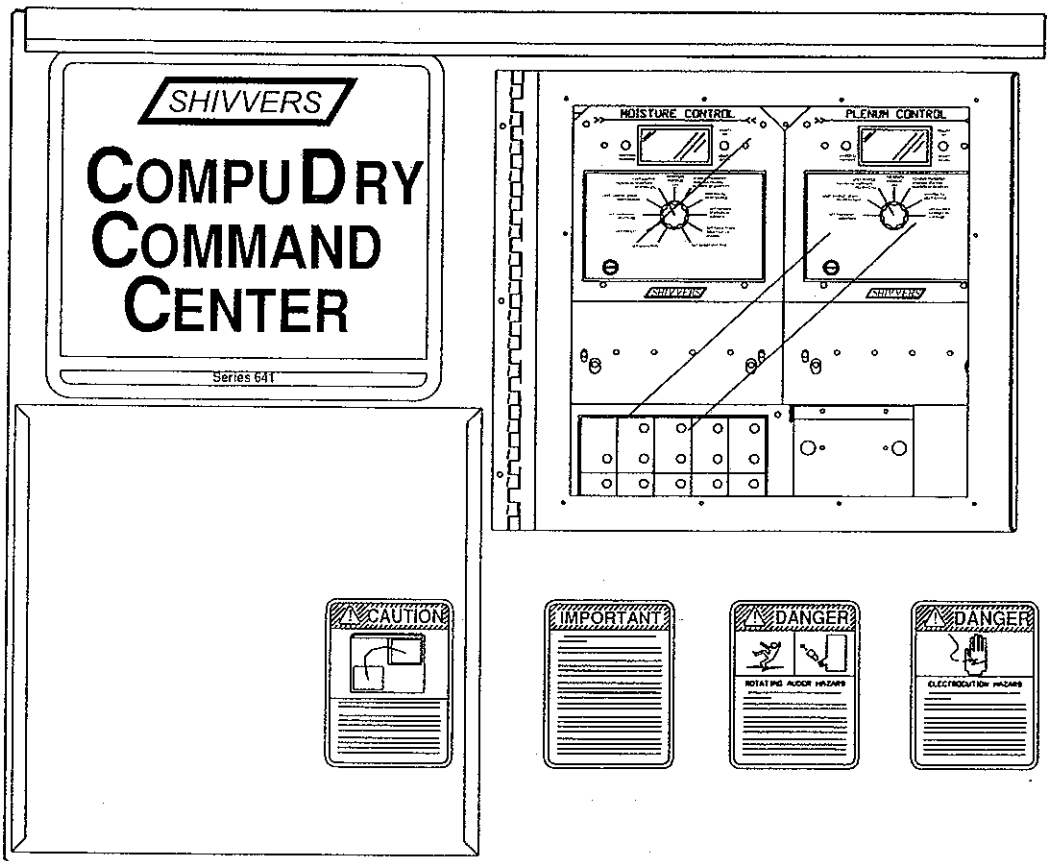


# CompuDry Command Center 641(A & B)-001A Installation Manual



SHIVVERS INCORPORATED  
CORYDON, IOWA USA  
Ph. (641) 872-1005 \*\* Fax (641) 872-1593  
[www.shivvers.com](http://www.shivvers.com)

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# **SAFETY INFORMATION**

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 SHIVVERS at the address shown on the front page.



TAKE NOTE ANYTIME EITHER OF THESE SYMBOLS APPEAR. 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.

Field installable safety decals are supplied with this unit. These decals may also be provided with other equipment. Consult the "Operator's Safety Manual" (P-10001) for complete instructions on where and how to place field installed safety decals. If more decals are needed, contact the factory for additional ones. Make sure all decals and the safety lock kits are installed on the system as shown in the safety manual.

Read this installation manual completely before starting.

# INTRODUCTION

The 641 series CompuDry Command Center is designed as a complete, automatic in-bin dryer control. It will read actual grain moisture with its computerized sensor and adjust the plenum heat, within operator set parameters, to give the desired grain moisture, while minimizing the amount of overdried grain.

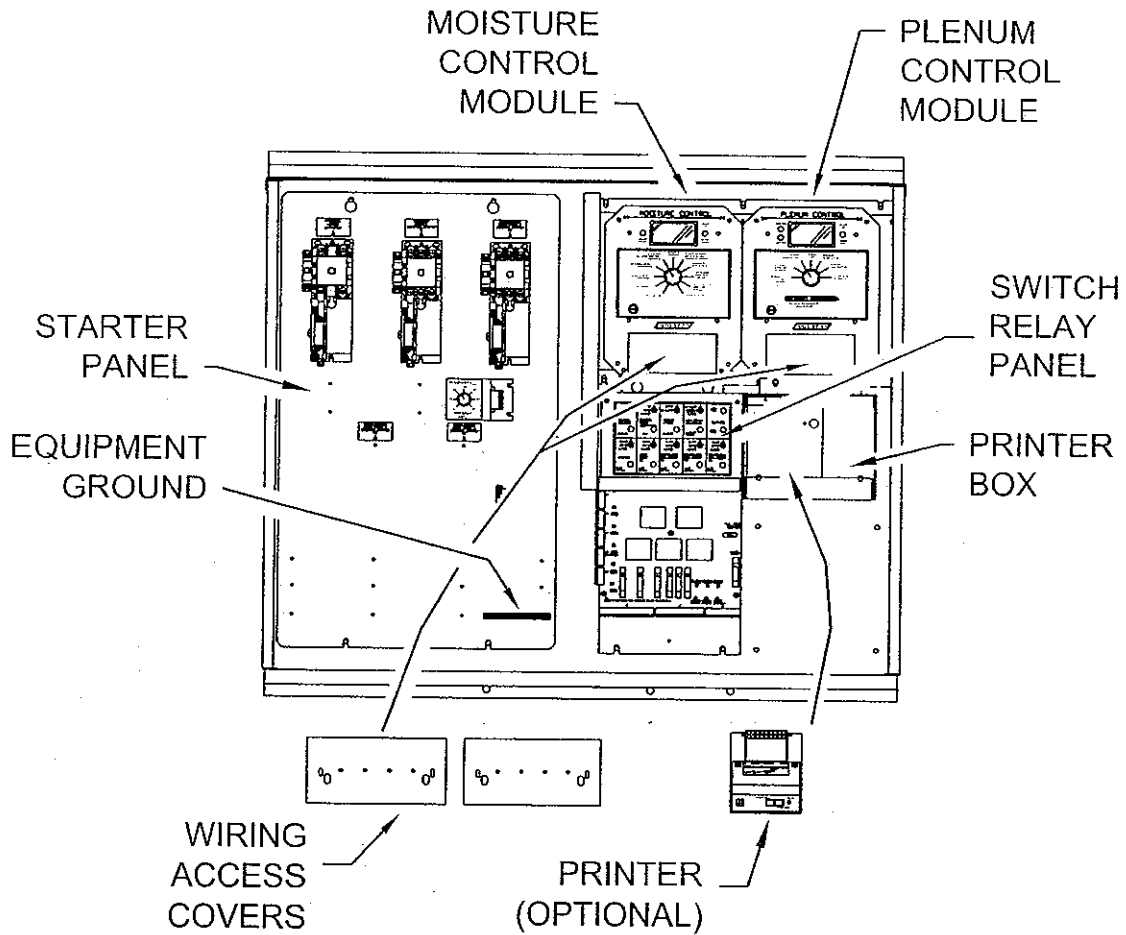
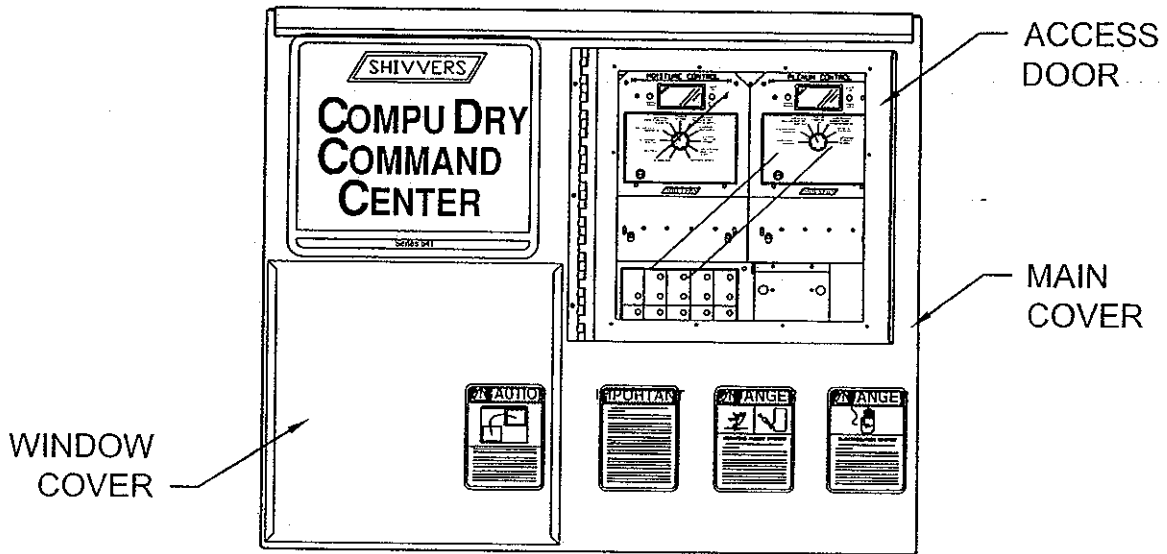
The standard configuration will control the grain removal machine and one continuous flow auger and spreader. It can control up to three fan and burner units, and has a low grain shut off to turn the system off when the grain depth gets low.

Available options include; motor starters for up to three additional transfer augers, a printer to record each grain sample, a sequential timer control for transfer auger clean out, and power transformers to convert available power to 115 volt control power. Grain Hi-Limits are also available for non-Shivvers burner units which can be installed over the burner transitions. They will shut the fans off in case of high grain temperatures.

Required but not included are: a main power disconnect switch or breaker with lockout capability, breakers or fuses for motor short circuit protection, conduit, wire, and thermal units (overload heater strips) properly sized for each motor. One thermal unit is required for each single phase motor, and three are required for each three phase motor. Thermal units are available from Shivvers but must be ordered separately and sized according to motor voltage and amperage. A lockable disconnect switch for the Machine (Circu-Lator or Dri-Flo) Motor is required near the bin entrance. This disconnect switch is NOT included, but can be obtained locally. A switch to control the drying bin spreader is also required, but not included.

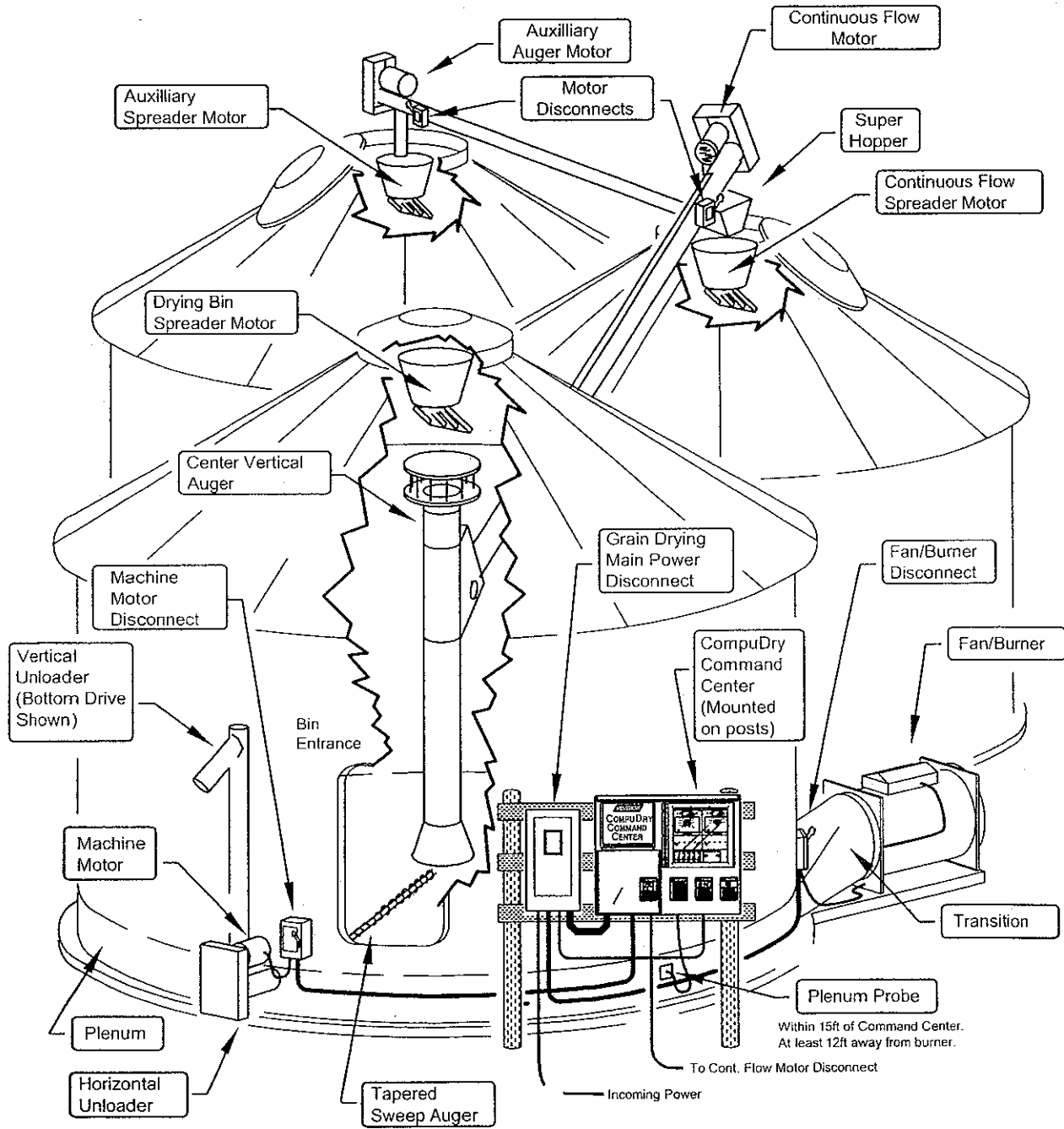
The CompuDry Command Center is in a weather resistant enclosure, but it will last much longer if it is not mounted directly on the bin sidewall. The Command Center and breaker box can be mounted on posts a couple feet away from the bin, or even in an easily accessible building or lean to, with a good view of the equipment. Anything to keep them directly out of the moisture from the bin eave, and from the vibration of the bin sidewall, will help. Seventy-five feet of moisture cable and fifteen feet of plenum temperature cable are provided. Extension kits are available to go up to an additional 175' away.

# COMMAND CENTER FEATURES



# EQUIPMENT TERMINOLOGY

Note: Some supporting structures are omitted for clarity, this diagram is not to be used as an installation guide, but rather to quickly identify various parts & components of the system.



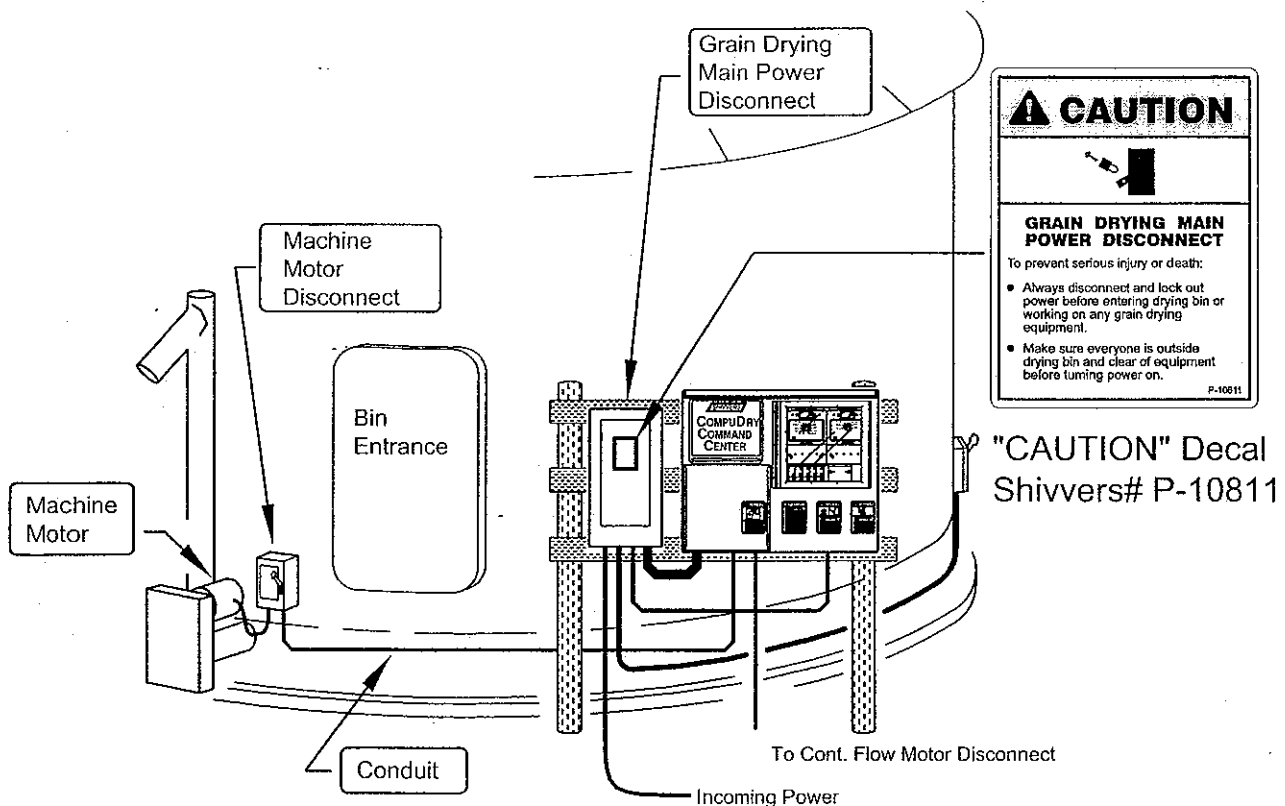
# MAIN POWER DISCONNECT

## (MECHANICAL INSTALLATION)

A main power disconnect switch box or main breaker load center must be wired immediately ahead of the CompuDry Command Center control box. It must be of sufficient capacity to safely switch the entire grain drying electrical load, including fans. It should not switch off lights or 115V electrical outlets. This switch must also have the capability of being locked into the OFF position. It must be located within direct line of sight of the CompuDry Command Center, and should also be in close proximity to the grain bin's main entry door. Most systems will require a 200 Amp rating, and some may require a 400 Amp rating. Contact Shivers Incorporated if assistance is needed to size the proper disconnect.

When the main power disconnect is locked off, it will be electrically safe to enter the drying bin or open the control panels. If the separate light and outlet circuit is provided, it is more convenient to use the main power disconnect. The fans must be switched off with the same disconnect because their circuits are controlled by the CompuDry Command Center.

Make sure the safety decal P-10811 is applied to the main power disconnect. See the "Operator's Safety Manual", for complete instructions.



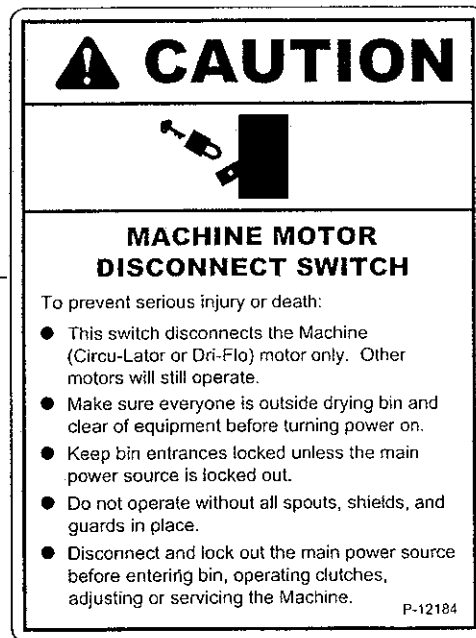
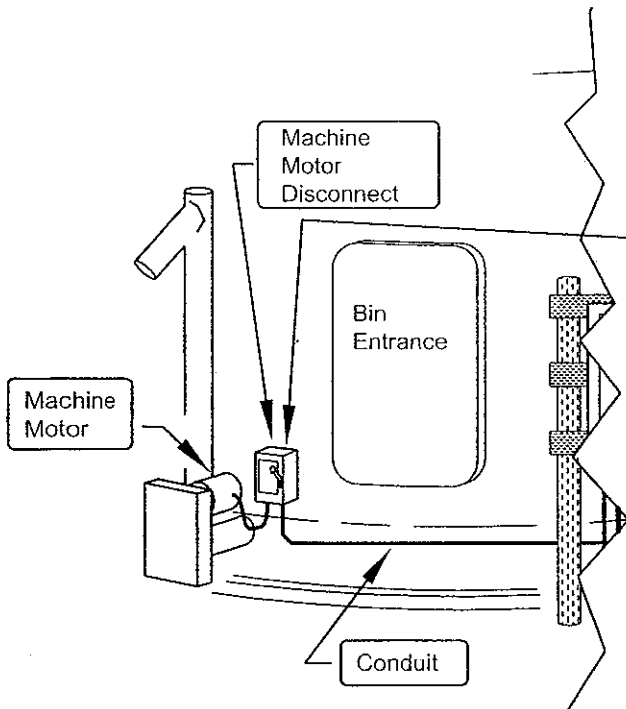


# MACHINE MOTOR DISCONNECT SWITCH

## (MECHANICAL INSTALLATION)

A Machine (Circu-Lator or Dri-Flo) Motor disconnect switch must be located adjacent to the bin entrance door. It must be of sufficient capacity to safely switch the Machine Motor, usually 10 or 15 Hp. This switch must also have the capability of being locked into the OFF position. Contact Shivvers Incorporated if assistance is needed to size the proper disconnect.

Make sure the safety decal P-12184 is applied on or near the machine motor disconnect. See the "Operator's Safety Manual", for complete instructions.

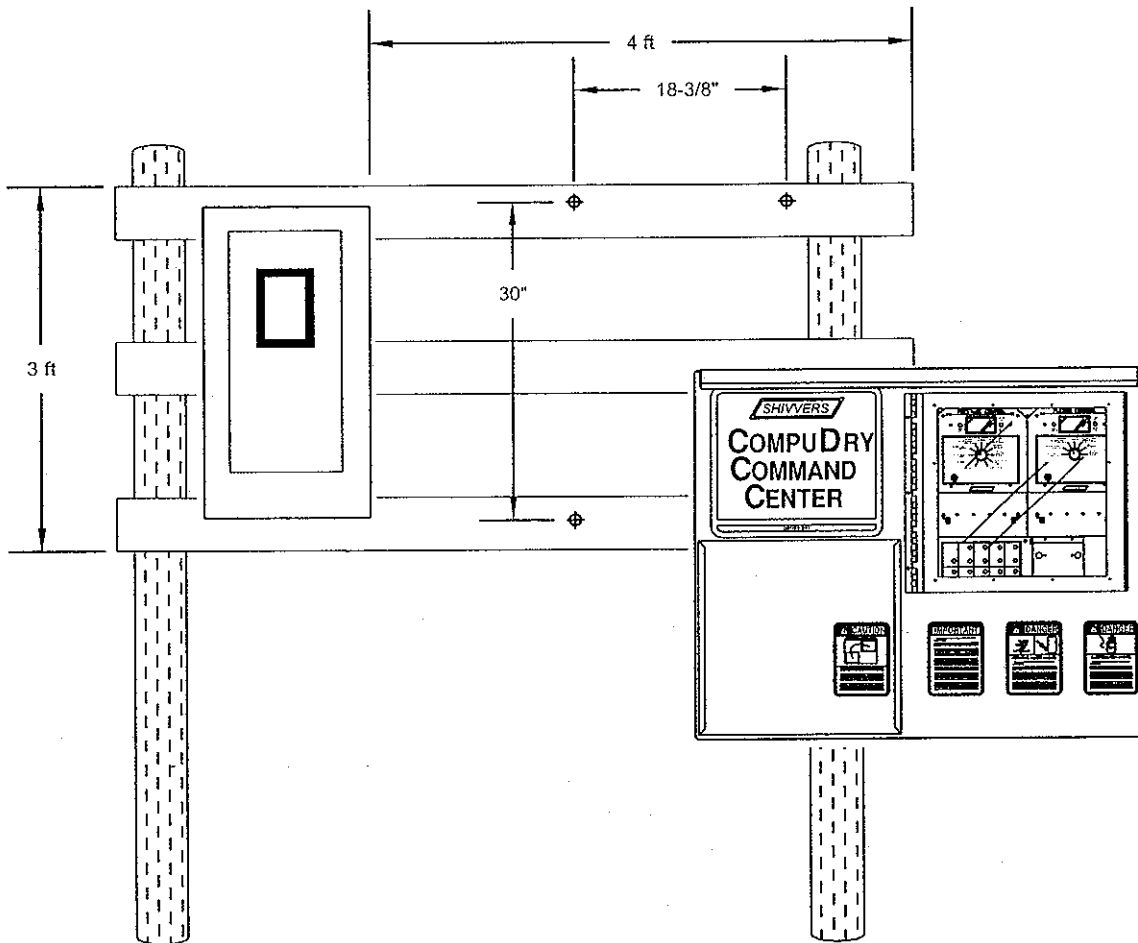


"CAUTION" Decal  
Shivvers# P-12184

# COMMAND CENTER INSTALLATION

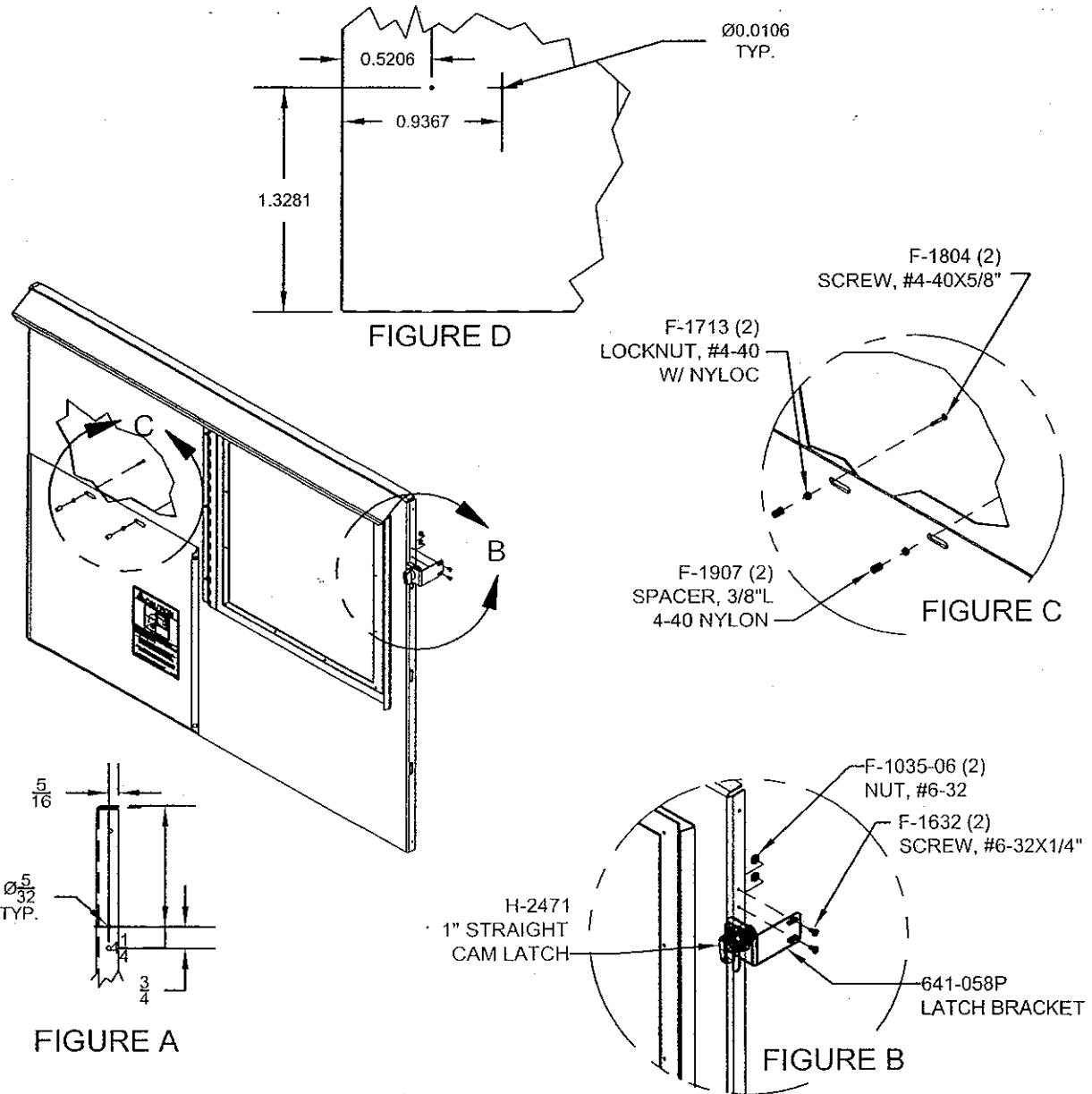
## (MECHANICAL INSTALLATION)

The CompuDry Command Center control box will require a 4' wide x 3' high area for mounting. Mounting flanges are on the top & bottom of the box. The windowed area should be mounted near eye level so the lights & switches can be viewed and operated easily. Remove the window cover to locate the lights & switches. Leave room for the easy operation of the latches and to allow the doors to swing open. Mounting hardware is provided in the 295-184A Circuitrol & Probe mounting hardware sack located in the 641B-001A accessory parts box. Provided for mounting the control box are: (4) 5/16 x 2-1/2" all thread bin bolts, (4) 5/16 plain nuts, and (4) 5/16 locknuts. The rest of the hardware in the sack is for mounting other components. Additional hardware may be required if the provided hardware doesn't work for the installation.



# DOOR LATCH KIT INSTALLATION (641P-002A)

## (MECHANICAL INSTALLATION)



**TO ASSEMBLE LATCH - FIGURE B**

IF COMMAND CENTER FRONT COVER DOES NOT HAVE HOLES, DRILL TWO 5/32" DIAMETER HOLES, AS SHOWN IN FIGURE A. USE #6-32X1/4" SCREWS (F-1632) AND #6-32 NUTS (F-1035-06) TO ATTACH LATCH BRACKET TO FRONT COVER. POSITION AND ADJUST LATCH, AS NEEDED. TIGHTEN SCREWS.

**TO ASSEMBLE ACCESS DOOR**

**LOCATORS - FIGURE C**

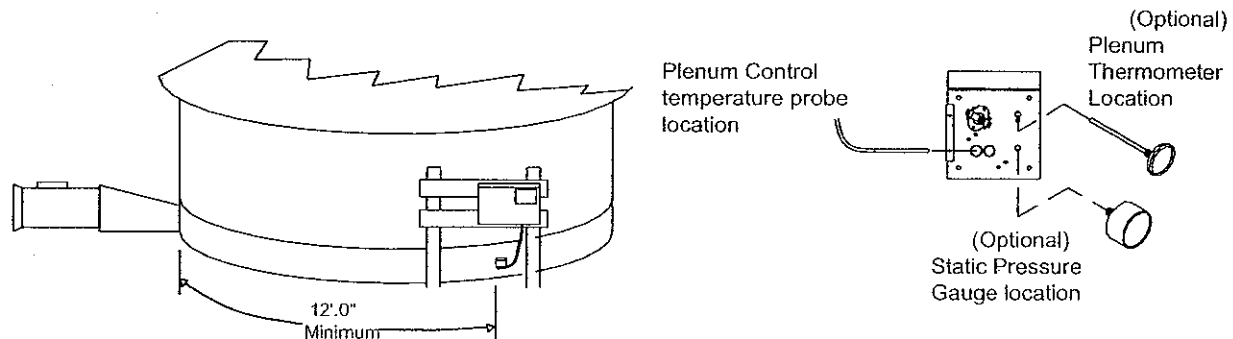
IF HOLES ARE NOT PRE-DRILLED, DRILL TWO 1/8" DIAMETER HOLES, AS SHOWN IN FIGURE D. ASSEMBLE ACCORDING TO FIGURE C.

# PLENUM PROBE HOLDER (MECHANICAL INSTALLATION)

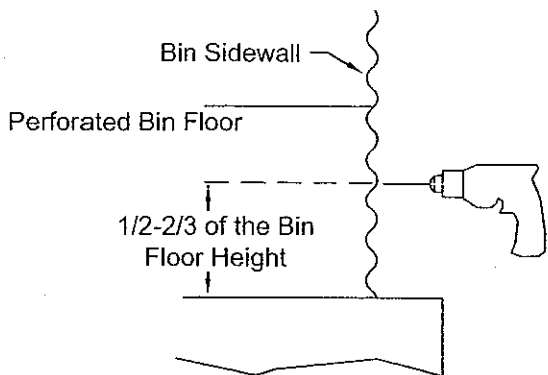
If possible, the Plenum Probe Holder should be mounted so that the 15' long temperature sensor will reach from the Command Center Plenum Control module to the holder. If it is not possible, extension kits are available to extend the temperature sensor cable.

The Plenum Probe Holder should also be located at least 12' away from the nearest fan/burner unit. The preferred location is directly across from a one-fan installation, as this is usually one of the hotter spots in the plenum.

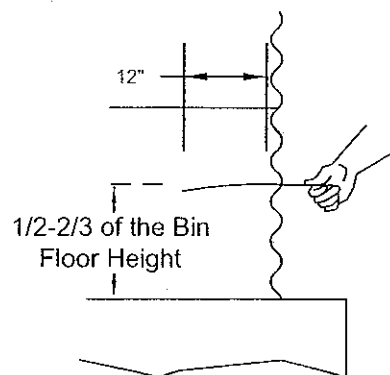
The Plenum Probe Holder has mounting holes for an optional Dial Thermometer, and/or Static Pressure Gauge, so keep this in mind when selecting a location.



Once a location is selected, drill a small hole 1/2-2/3 up from the bin concrete to the drying floor. Insert a wire 1 foot into the plenum area to make sure the hole is not obstructed by a floor leg or other structure. If it is obstructed, insert a sheet metal screw to plug the hole and move to another location. If clear, remove the mounting hole template from the probe holder and mark the opening on the bin. (See next page.)



**DRILL SMALL HOLE (5/32") AT DESIRED LOCATION**

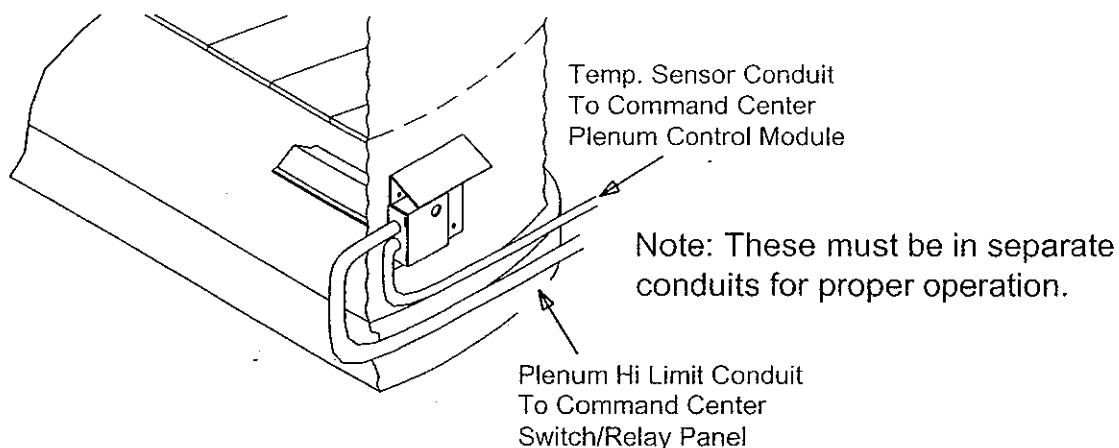
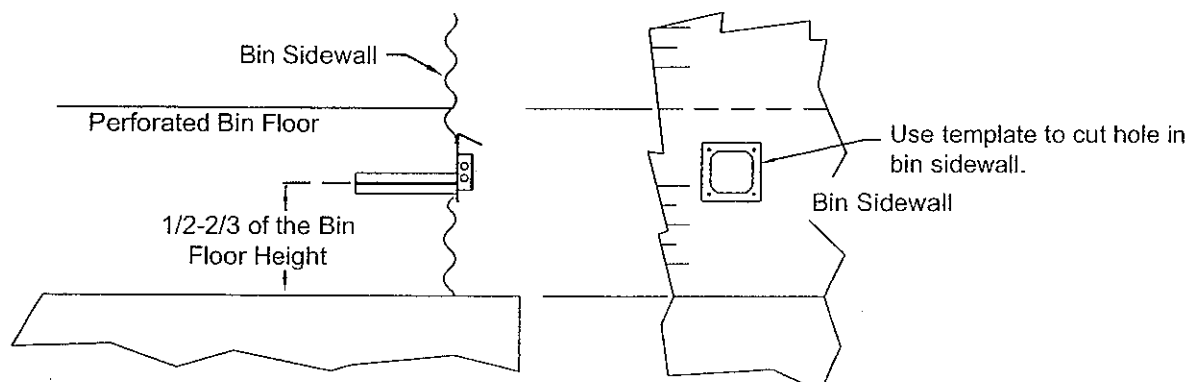


**USING A WIRE, CHECK FOR FLOOR LEGS OR OTHER OBSTRUCTIONS.**

# PLENUM PROBE HOLDER

## (MECHANICAL INSTALLATION)

Cut the hole into the bin and insert the probe holder. Make sure the dial thermometer and static pressure gauge holes are clear. Trim any required areas. Use 1/2 of the thum-seal provided in the 641B-001A Accessory Parts Box to seal between the bin sidewall and the probe holder. Attach the probe holder with (4) 1/4 x 1-1/2 self drilling screws provided in the 295-184A Circuitrol & Probe Mounting hardware sack.



# LOW GRAIN SHUT OFF

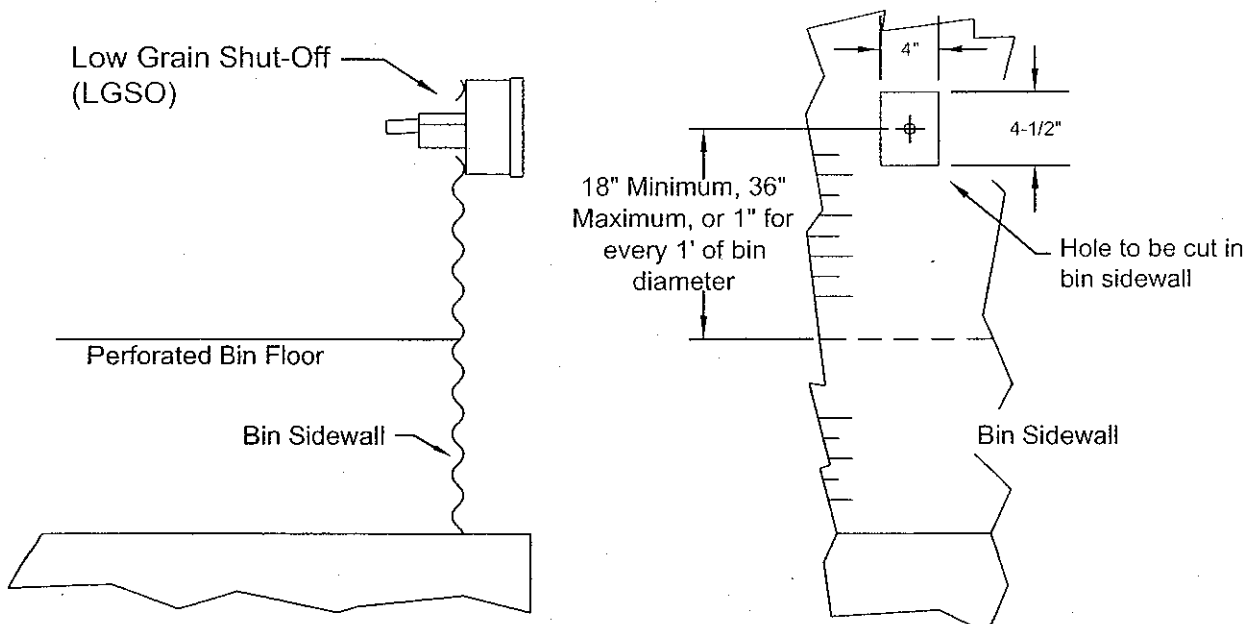
## (MECHANICAL INSTALLATION)

The Low Grain Shut-Off (LGSO) is designed to shut the drying system down when the grain level in the bin falls below the LGSO box. The mounting height above the perforated bin floor is normally determined by the bin diameter. If a Level-Dry is installed, the minimum grain depth is set by the Level-Dry. If there isn't a Level-Dry installed, mount the LGSO box one inch above the drying floor for every foot of bin diameter.

The minimum distance should be 18" (without a Level-Dry) and the maximum should be 36" under any conditions. For a 30' diameter bin, the distance should be 30".

Cut a 4" wide by 4-1/2" tall opening in the bin sidewall at the desired location. Use 1/2 the thum-seal provided in the 641B-001A Accessory Parts Box to seal between the LGSO box and the bin sidewall.

Place the LGSO on the bin and drill 4 mounting holes. Use the (4) 5/16 x 1-1/2" bolts and nyloc nuts to attach the box to the bin.

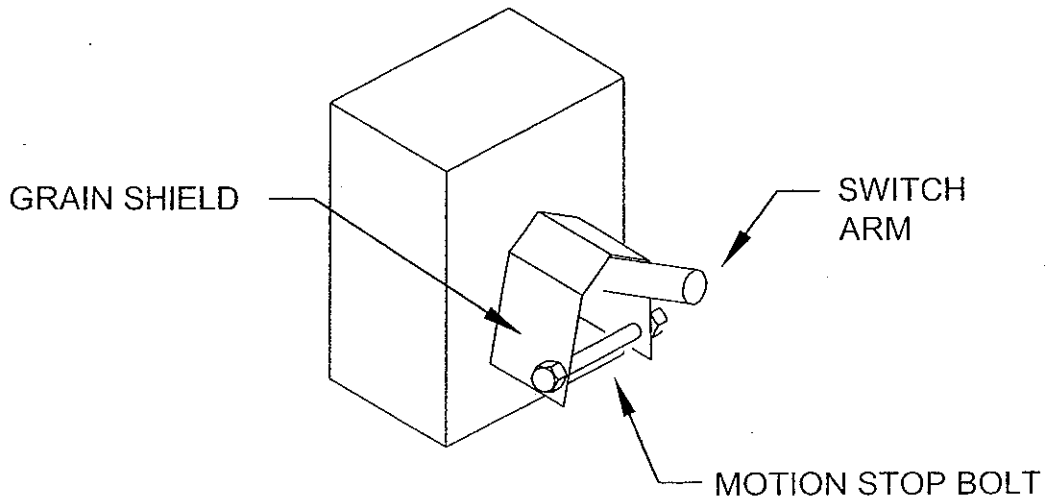


# LOW GRAIN SHUT OFF

## (MECHANICAL INSTALLATION)

Setup the Low Grain Shut-Off for operation as shown below:

BEFORE OPERATION THE LGSO SHOULD LOOK LIKE THIS...



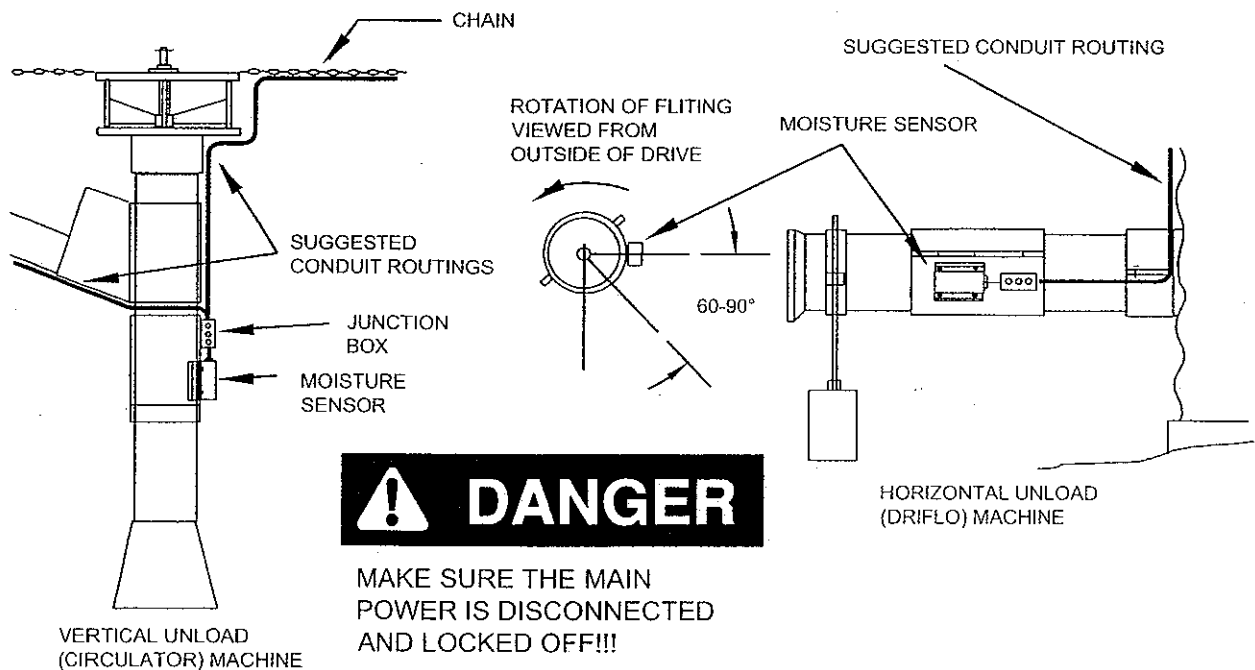
- 1.) REMOVE MOTION STOP BOLT
- 2.) SWING SWITCH ARM UP INTO GRAIN SHIELD
- 3.) REINSTALL MOTION STOP BOLT BELOW SWITCH ARM  
-DO NOT OVERTIGHTEN, TIGHTEN ONLY UNTIL  
BOLT HEAD AND NUT CONTACT SHIELD.

# MOISTURE SENSOR

## (MECHANICAL INSTALLATION)

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.



With the Flat Plate moisture sensor, at least 1-1/2" of fliting needs to be trimmed off the edge of the auger. Since it is not necessary to completely remove the fliting, a welder will not be required for most installations. On bottom unloading machines; the Moisture Sensor should be mounted 60-90 degrees up the climb side of the horizontal discharge auger. For bottom unloading machines with an 8" auger, the fliting should be completely removed to the shaft, unless Ultra High Capacity sweeps (1000 bu/hr) are used. Note that hanger bearing horizontal unloaders have the fliting pre-cut.

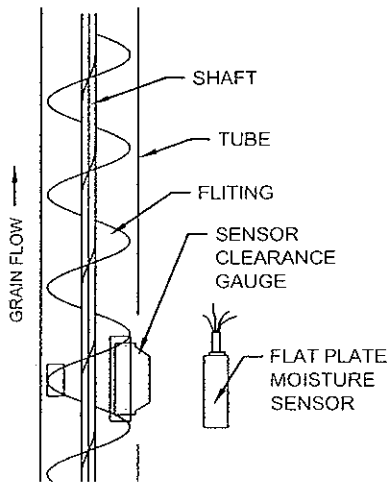
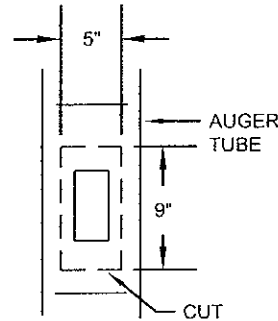
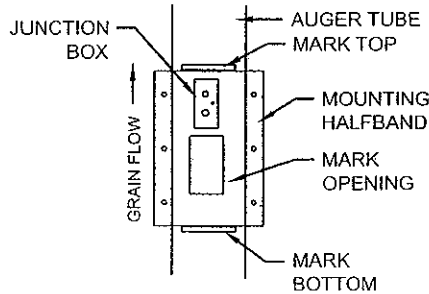
- (1) Hold the mounting halfband on the auger in the location desired. Make sure that the junction box on the halfband is towards conduit. Mark the outline of the rectangular opening, and both ends of the halfband, on the tube. Remove the halfband.



# MOISTURE SENSOR

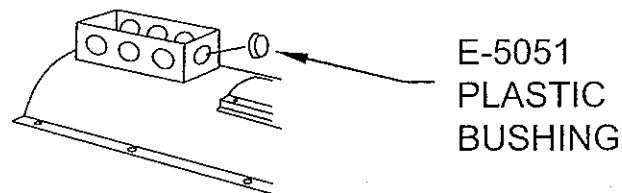
## (MECHANICAL INSTALLATION)

(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.

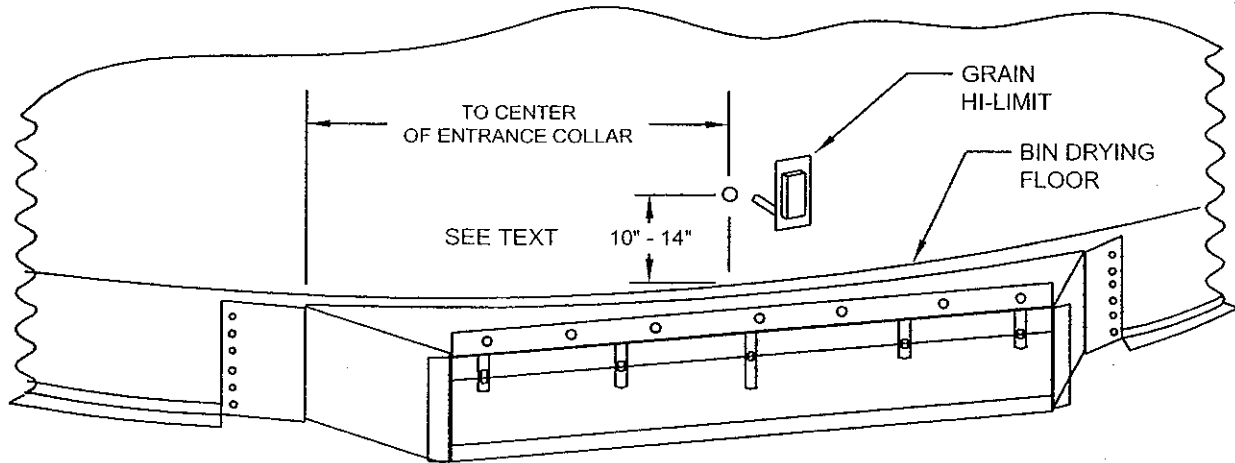


(5) Remove knockout in junction box nearest sensor opening and install plastic bushing into knockout. For bottom unload machines replace the plastic bushing with a cord grip or 2 screw connector to keep mice out of junction box. Put sensor wires through bushing in junction box. Attach the Moisture Sensor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

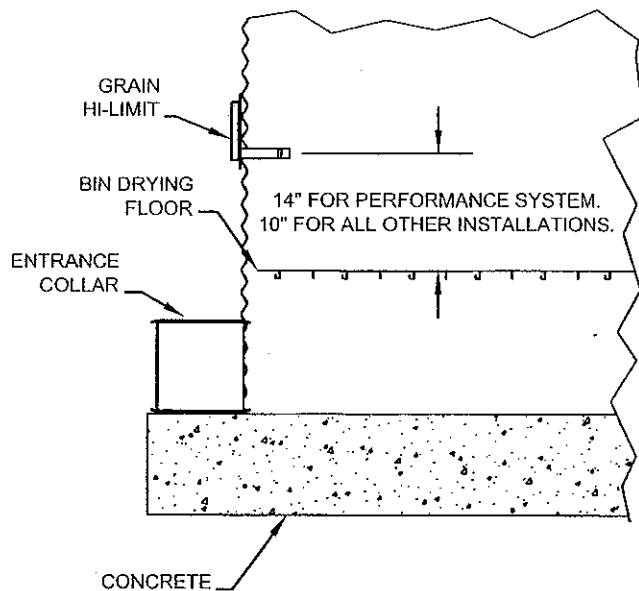
# GRAIN HIGH LIMIT

## (MECHANICAL INSTALLATION)

A Grain Hi-Limit is provided with each Shivers Blue Flame dryer. Install a Grain Hi-Limit for each fan/burner on the bin. The Grain Hi-Limit will shut down the fan(s) if the grain temperature exceeds 220°F. For Certified Performance Systems, the Grain Hi-Limit probe should be 14 inches above the bin drying floor to accommodate higher plenum temperatures. For other systems, the Grain Hi-Limit probe should be installed 10" above bin drying floor. If airway tubes are installed on the inside of the bin sidewall, make sure the Grain Hi-Limit is centered between them and as close to the center of the entrance collar as possible. Remove the black plastic shipping protector from the probe before installation. Use silicone or thum-seal around the probe to make a waterproof installation. For fans and burners without Grain Hi-Limits, purchase Shivers part # 527C-001A for each burner.



The Grain Hi-Limit contains a normally closed switch that opens at 200°F. If the grain gets too hot, it will open and shut off the fan(s). If there are two or more dryers on the bin, and one stops burning, the other one will try to make up all the heat and may trip the Grain Hi-Limit.



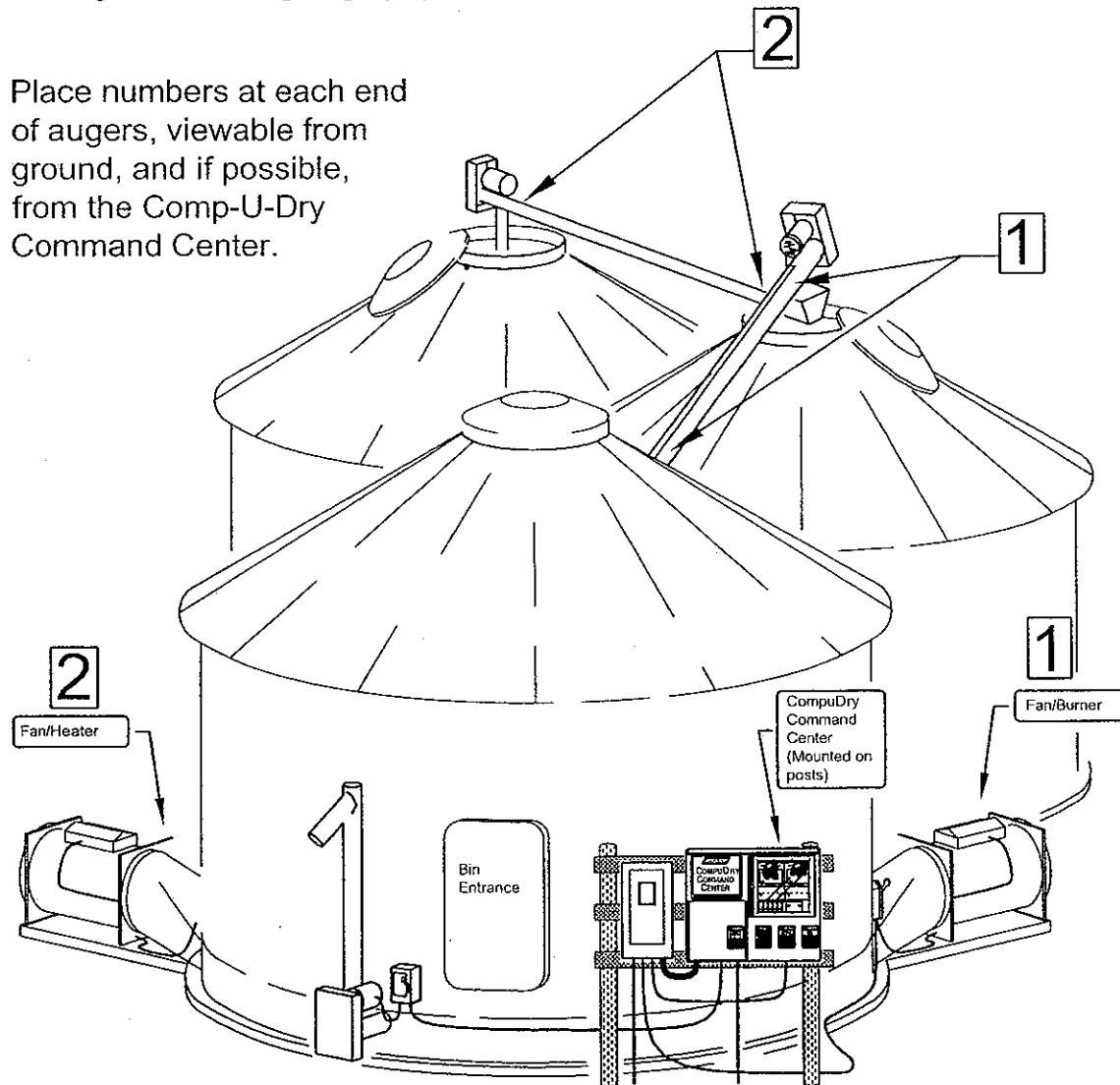
# NUMBERING EQUIPMENT

## (MECHANICAL INSTALLATION)

Located in the Manual Sack in the 641B-001A is a set of 3" high self-stick numbers. These are to be applied to the transfer augers and fans/burners to identify them for wiring and operation. If more numbers are required, order them at Shivvers, Part# P-11342.

If possible, place numbers where they are easily viewable from the CompuDry Command Center Control Box. If not possible, make sure they are viewable from the ground and from near the auger motors. Place two numbers (one near each end) on each continuous flow and auxiliary auger.

Starting with 1 and going up, place one number on each fan/burner unit.

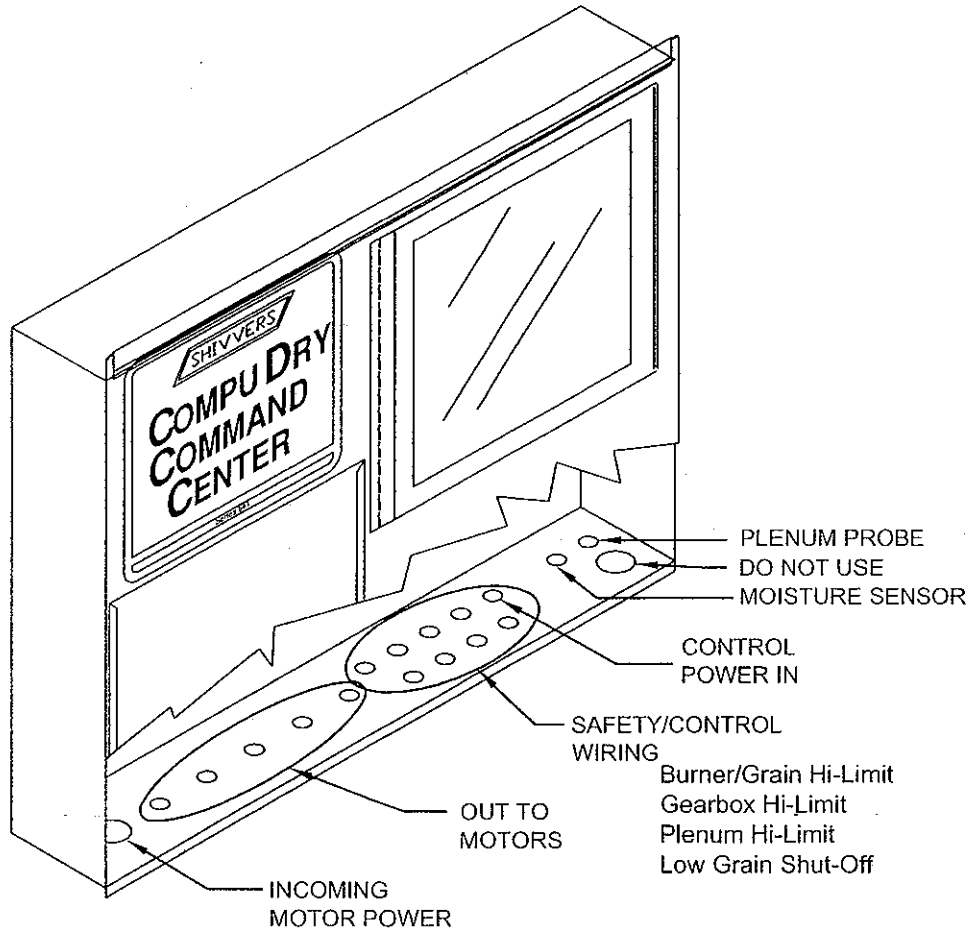


# ELECTRICAL INSTALLATION



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

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.



## CONDUIT LOCATIONS DIAGRAM

Use these locations to help reduce electrical interference problems.

# CONDUIT RUNS

## (ELECTRICAL INSTALLATION)

### COMP-U-DRY COMMAND CENTER CONTROL WIRING CONDUIT RUNS

All control wires to be #14 AWG stranded unless otherwise noted:

#### 1.) BREAKER PANEL TO COMMAND CENTER FOR CONTROL POWER:

- 1 Black wire from 10 - 15 amp breaker.
- 1 White wire from neutral.
- 1 Green wire from ground.

Note 1: If optional control transformer is used, delete white wire, and add another black wire.

Note 2: Do not run these wires in the same conduit as motor wires.

#### 2.) FROM EACH FAN/BURNER TO COMMAND CENTER:

- 8 Control wires.
- 1 ground wire.
- 2 Extra wires (optional).

Note 3: All wires may not be used depending on burner type.

#### 3.) GEARBOX HI-LIMIT TO COMMAND CENTER:

- 2 High temperature wires. (220 °F minimum) 70' provided with new systems.  
Located in the Horizontal Unloader Parts box.

#### 4.) PLENUM HI-LIMIT TO COMMAND CENTER:

- 2 Control wires.

#### 5.) LOW GRAIN SHUT OFF TO COMMAND CENTER:

- 2 Control wires.
- 1 White wire (optional) (May be required with some types of proximity sensors).

#### 6.) GRAIN HI-LIMIT TO EACH BURNER:

- 2 Control wires.

Note 4: A green ground wire may be required with each conduit run. Check local regulations.

#### 7.) MOISTURE SENSOR TO COMMAND CENTER:

- 75' of Shielded, 4-Wire Cable provided. Located in the 641B-001A Parts Box.

#### 8.) PLENUM PROBE HOLDER TO COMMAND CENTER

- 15' of Shielded, 2-Wire Cable provided. Located in the 641B-001A Parts Box.

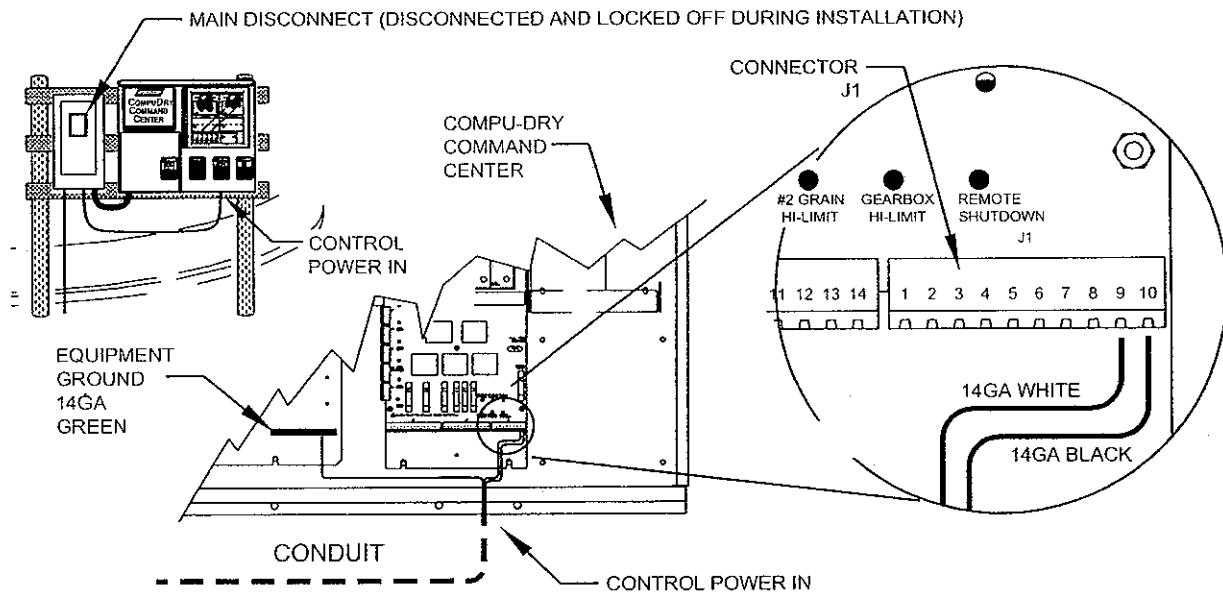
Note 5: The Command Center Front Cover can be opened, lifted off it's hinges, and set aside for ease of wiring.

# COMMAND CENTER LOW AMPERAGE CONTROL VOLTAGE (ELECTRICAL INSTALLATION)

## WIRING CONTROL POWER FOR THE COMMAND CENTER

**(Single Phase and Three Phase with 115VAC availability)** (for other inputs see next section).

Control power for the Command Center requires three wires in conduit from the main dryer disconnect supplied by a 10 - 15 amp breaker or fuse. (See the 1st Diagram in the Electrical Installation section for location of conduit into Command Center). One each of black, white, and green #14 gauge wire is required. The black wire connects to the breaker or fuse in the Main Disconnect box. The other end of the black wire connects to the 10 pole connector J1 terminal 10 on the Switch/Relay panel. On three phase, make sure the 115VAC source is not on the wild leg. The white wire connects to neutral in the Main Disconnect panel. The other end of the white wire connects to the 10 pole connector J1 terminal 9 on the Switch/Relay panel. The green wire connects to ground in the Main Disconnect, the other end connects to Equip. Ground on the lower right-hand side of the starter panel in the Command Center. (See Command Center Features section for Equip. Ground lug location).



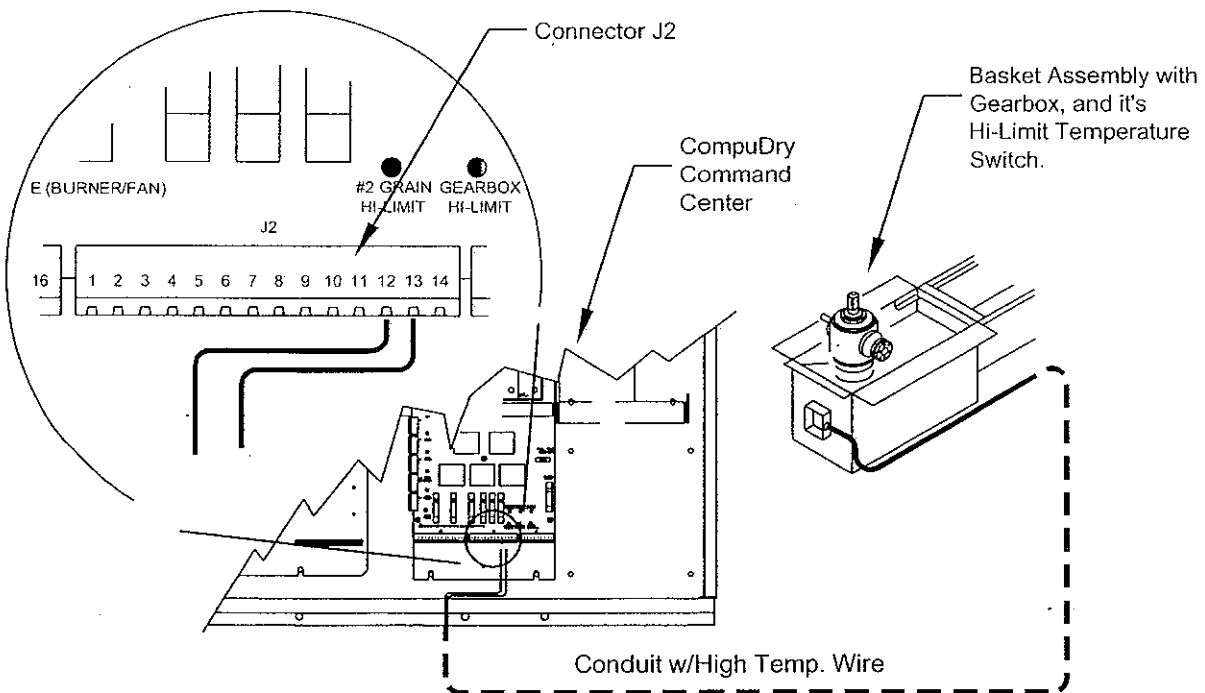
### **(Three Phase without 115VAC availability)**

The Command Center must use a Transformer Kit in Three Phase applications that don't have 115 VAC control power available. The white wire in the conduit run should be changed to black. The 2 black wires will come from the breaker or fuses in the Main Disconnect and will wire to the transformer assembly installed in the Command Center. (See installation manual P-11354 supplied with the Transformer Installation Kit for complete wiring details).

# GEARBOX HI-LIMIT

## (ELECTRICAL INSTALLATION)

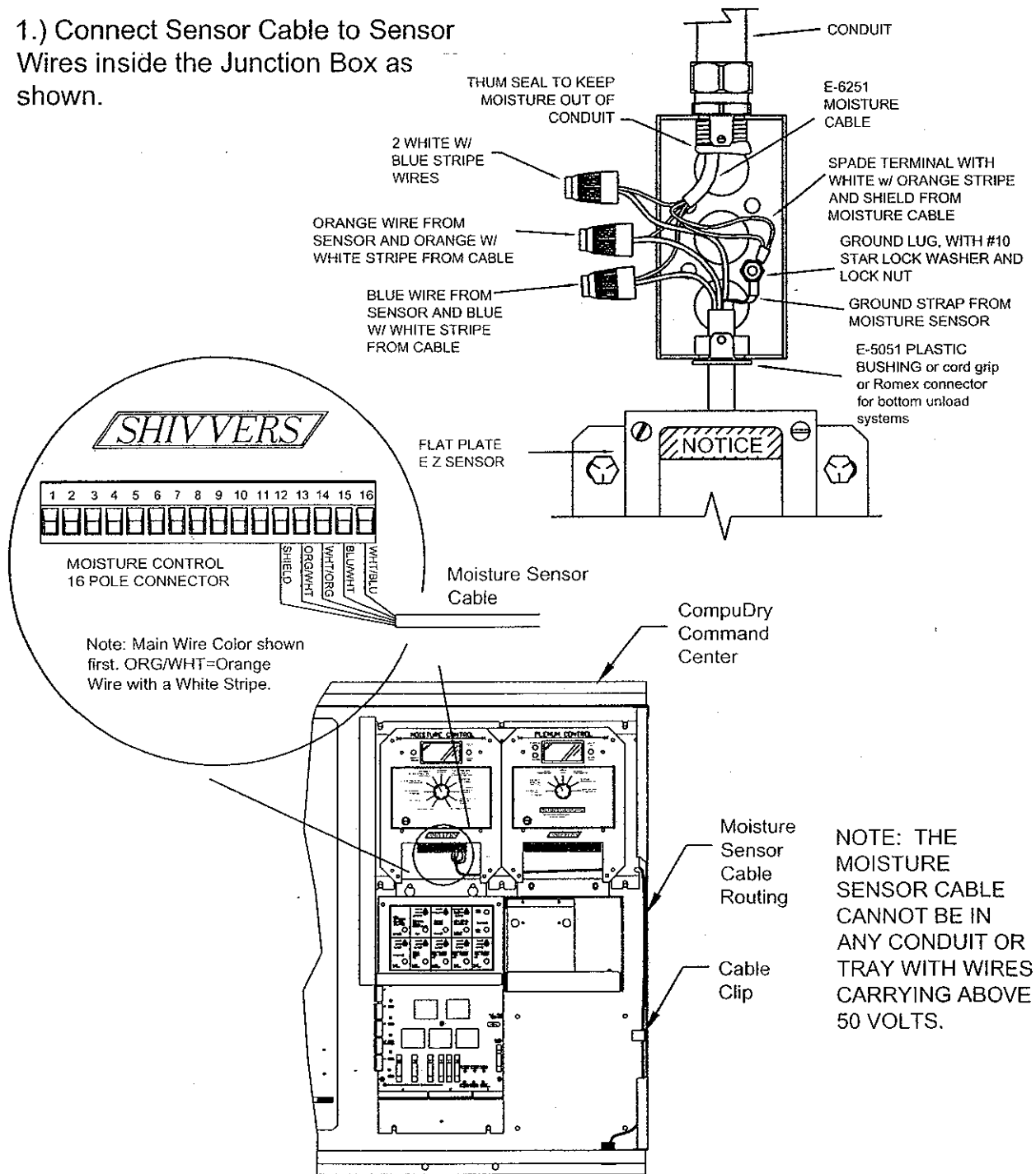
The Gearbox Hi-Limit shuts the Fans and Burners down if high temperatures around the gearbox area occur. To wire up the Gearbox Hi-Limit, run conduit from the junction box on the gearbox basket assembly to the Command Center. The wire must be high temperature wire, (220° F minimum) inside the bin. It is OK to change to regular temperature wire outside the bin. 641-046A Gearbox Hi-Limit Wire Assembly has 70' of high temperature wire provided. Locate it in the Horizontal Unloader Parts Box. Shivvers part # E-5375 is just the wire. It can be ordered by the foot. Bring the conduit into the Command Center in the location shown in the 1st diagram in the Electrical Installation section. Connect the wires to terminals 12 & 13 in connector J2 on the Switch/Relay Panel. The Fans and Burners will not work with the Command Center unless this circuit is hooked up.



# MOISTURE SENSOR

## (ELECTRICAL INSTALLATION)

1.) Connect Sensor Cable to Sensor  
Wires inside the Junction Box as  
shown.



2.) Remove the Wiring Access Covers from the Comp-U-Dry Command Center and route the Sensor Cable through the box as shown in the diagram above. Then connect the wires to the Moisture Control 16-Pole Connector as shown in the enlarged view.

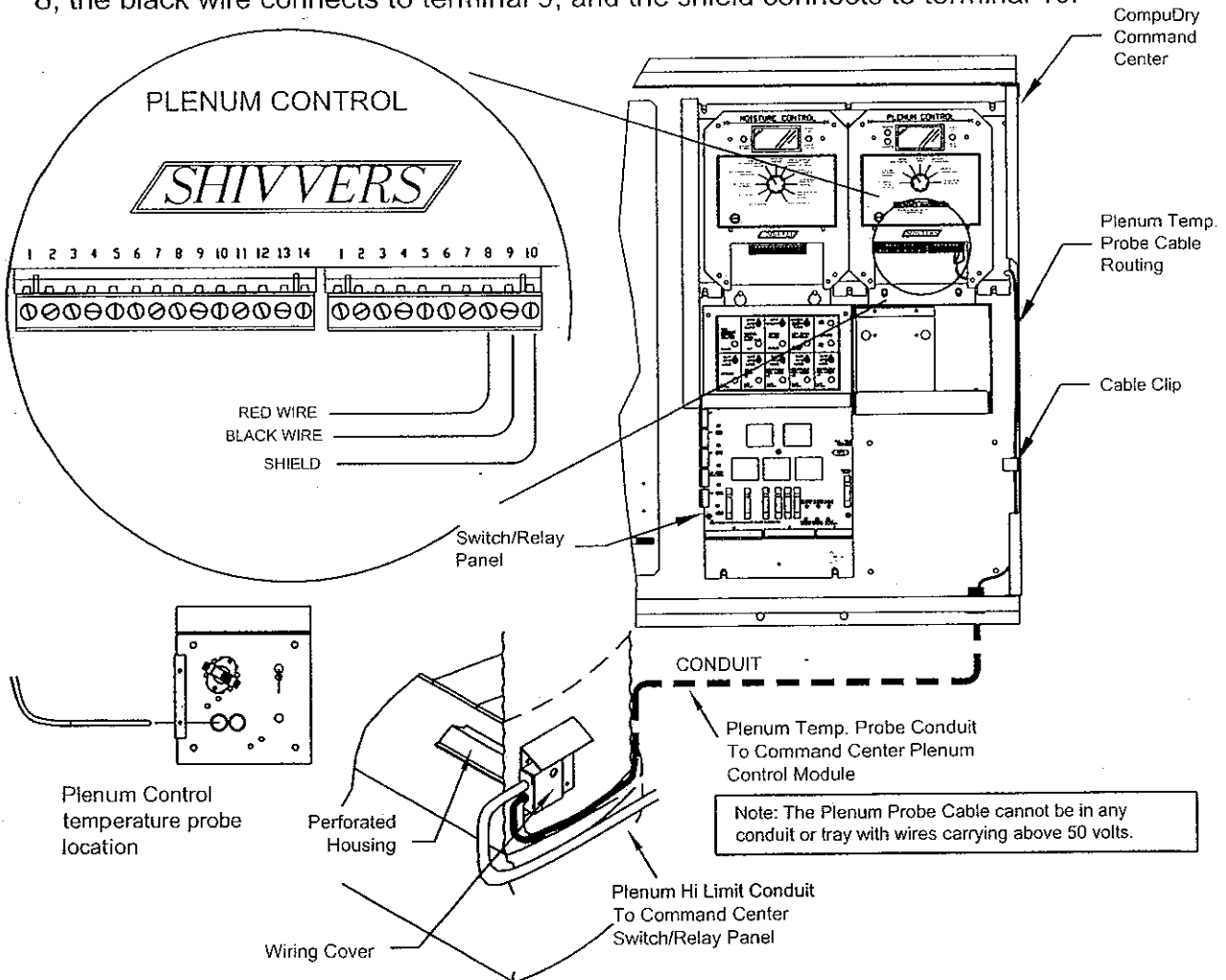


# PLENUM PROBE & HI-LIMIT (ELECTRICAL INSTALLATION)

CONNECT PLENUM TEMP. PROBE TO PLENUM PROBE MODULE IN THE COMMAND CENTER.

Remove the wiring cover from the Plenum Probe Holder, and the wiring access cover on the Plenum Control Module. Run conduit from the lower hole on the Plenum Temp Probe Holder to the Command Center. (See Diagram below and 1st Diagram in the Electrical Installation section for conduit routing.) Pull the wire end of the Plenum Temp Probe assembly through the conduit, into the Command Center, through the cable clip, up to the Plenum Control module, routing the cable as shown in the illustration. Leave enough cable at the probe holder to install the probe through the plastic bushing and up to 12 inches into the perforated housing. Trim off any excess wire from the plenum cable in the Command Center.

Strip off 2.5" to 3" of the outer insulation of the plenum cable. Strip the wires and connect them to the 10 pole plug on the Plenum Control module. The red wire connects to terminal 8, the black wire connects to terminal 9, and the shield connects to terminal 10.



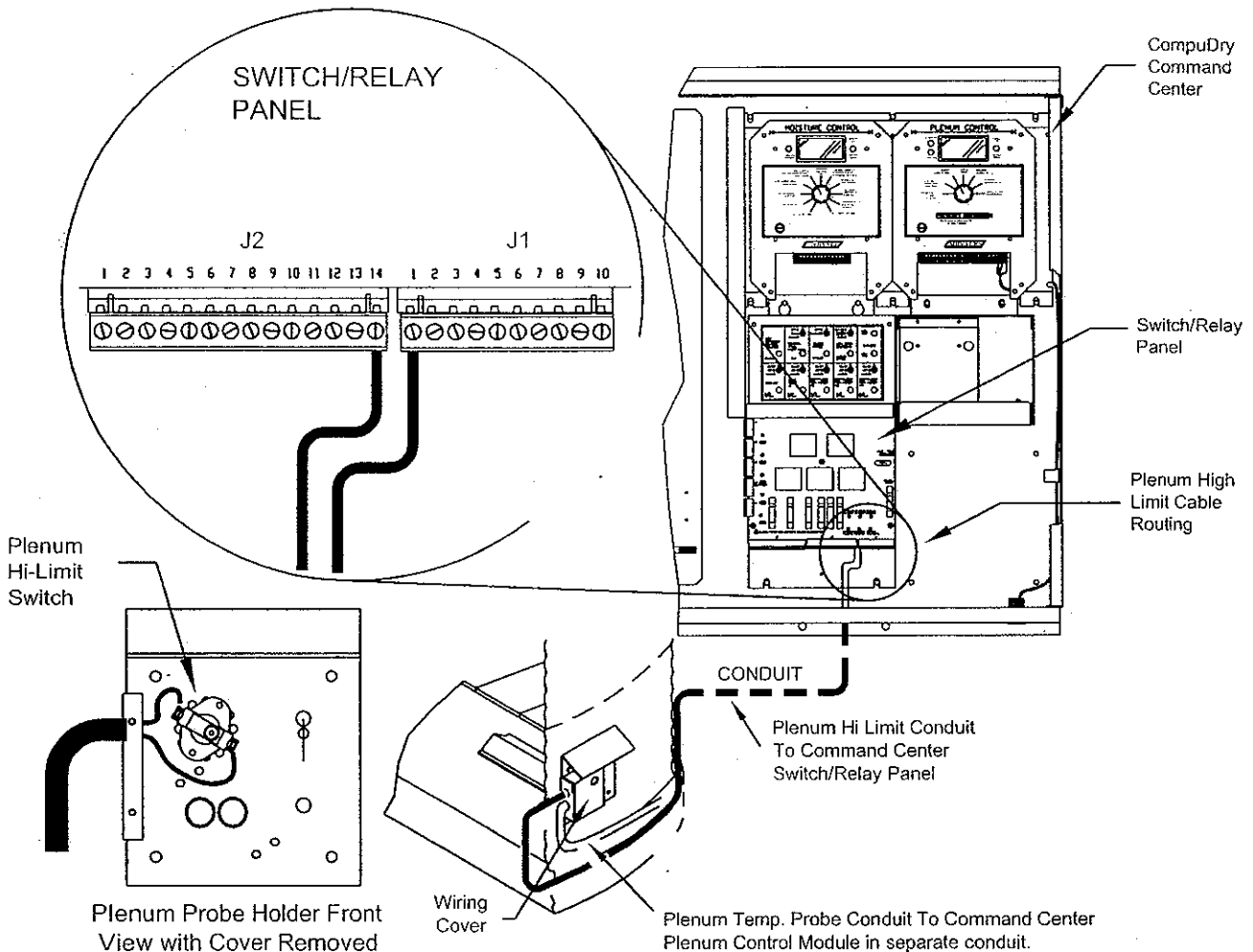
# PLENUM PROBE & HI-LIMIT (ELECTRICAL INSTALLATION)

## WIRING THE PLENUM HI-LIMIT

The Plenum Hi-Limit shuts down the burners if the plenum temperature goes above 220°F.

Run conduit from the top hole in the Plenum Holder to the Command Center using the 1st diagram in the Electrical Installation section and the diagram below as a guide. Pull 2 control wires through the conduit. Pull enough wire to connect to the bottom of the Switch/Relay Panel and to the Hi-Limit Switch in the Plenum Probe Holder. (DO NOT USE THE SAME CONDUIT AS THE TEMPERATURE SENSING PROBE !!!)

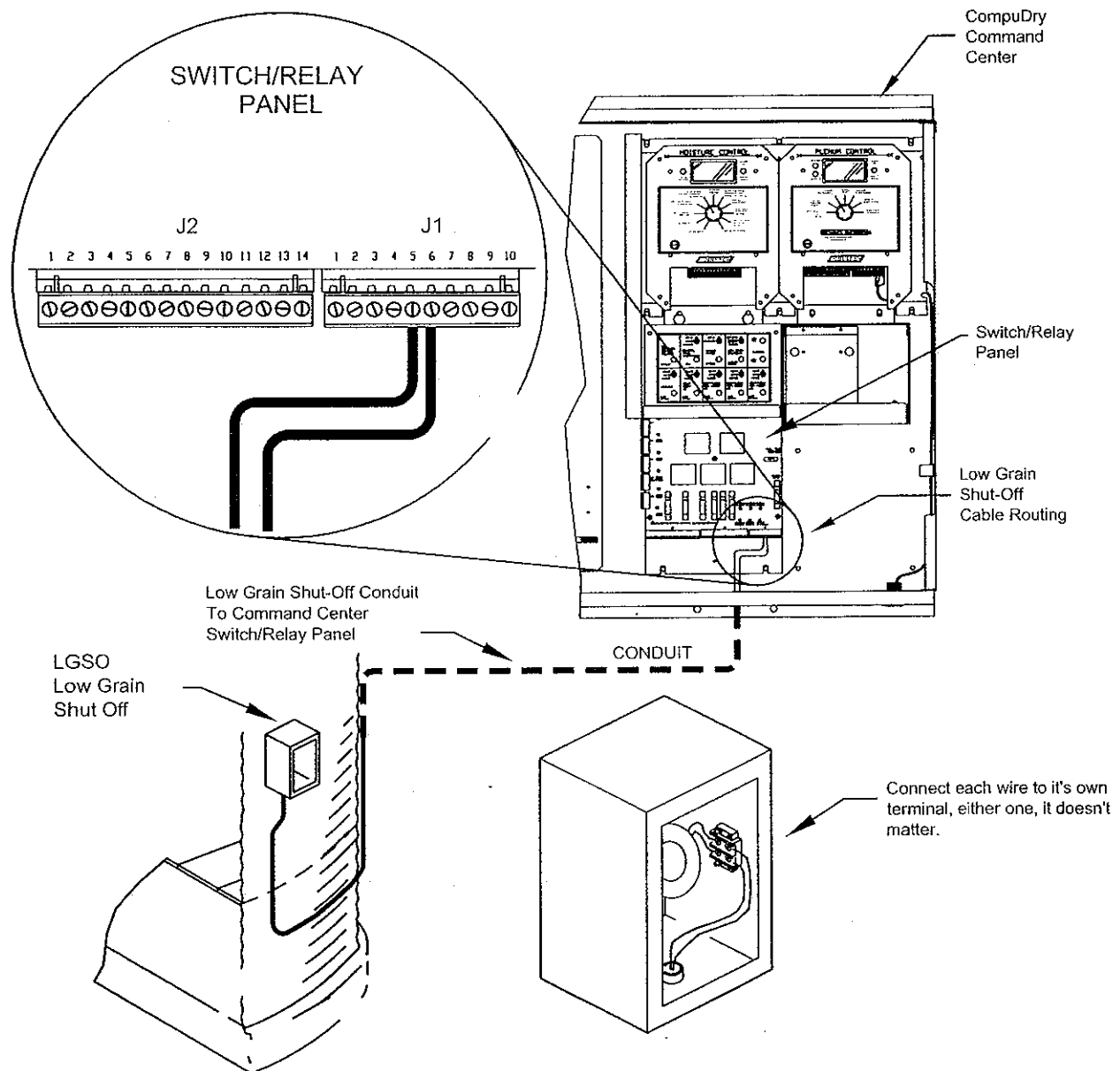
At the Plenum Probe Holder, connect a control wire to each screw terminal on the Hi-Limit Switch. In the Command Center connect one wire to J2 terminal 14. Connect the other wire to J1 terminal 1. The Wiring Decal inside the Main Cover can be used for reference if needed. Re-install the Wiring Cover on the Plenum Probe Holder. The Command Center will not operate the burners if this circuit is not connected.



# LOW GRAIN SHUT OFF (ELECTRICAL INSTALLATION)

## WIRING THE LOW GRAIN SHUT OFF (LGSO)

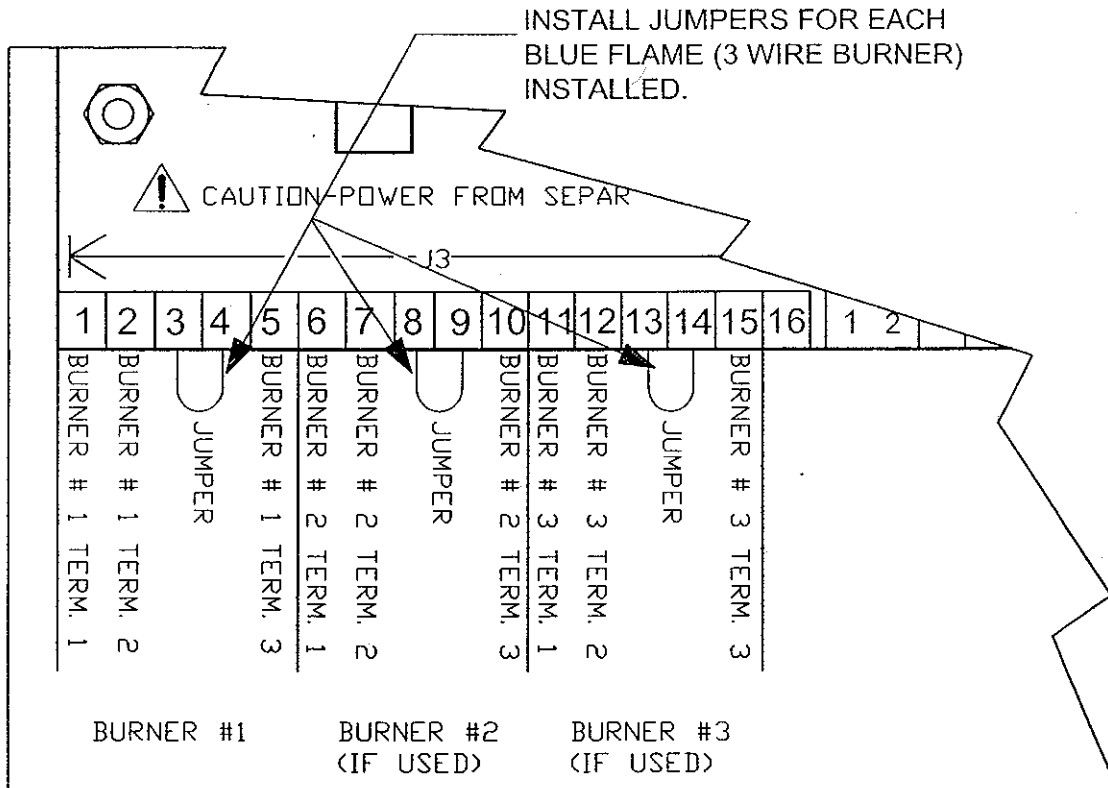
Install conduit from the Low Grain Shut Off to the Command Center in the location shown on the 1st diagram in the Electrical Installation section. Pull 2 control wires through the conduit. Connect one wire to terminal 1 in the LGSO and connect the other wire to terminal 2. Connect the other end of the control wires to the 10 pole plug J1 on the Switch/Relay Panel. One wire connects to J1 terminal 5, the other wire connects to J1 terminal 6. The wiring decal inside the main cover of the Command Center can be used for reference.



# SHIVERS AXIAL BLUE FLAME MANUFACTURED AFTER 2003 (FANS AND BURNERS)

WIRING THE SHIVERS BLUE FLAME (manufactured after 2003) TO THE COMMAND CENTER. (See appropriate section for other fans and burners.)

Install conduit to each fan/burner. Each run will require 7 control wires and one ground wire. Two extra control wires may be needed in some applications. Use the self sticking number decals in the manual sack to label the burners if more than one is being used. This will help in identification for wiring and operation. The green ground wire will connect to the ground lug inside the Blue Flame control box. The other end of the ground wire will connect to the Equipment ground in the bottom right corner of the starter panel of the Command Center. The diagram below shows how the first three control wires connect to the Command Center Switch/Relay Panel for each fan/burner. Be sure to install jumpers on Connector J3 for three wire operation.



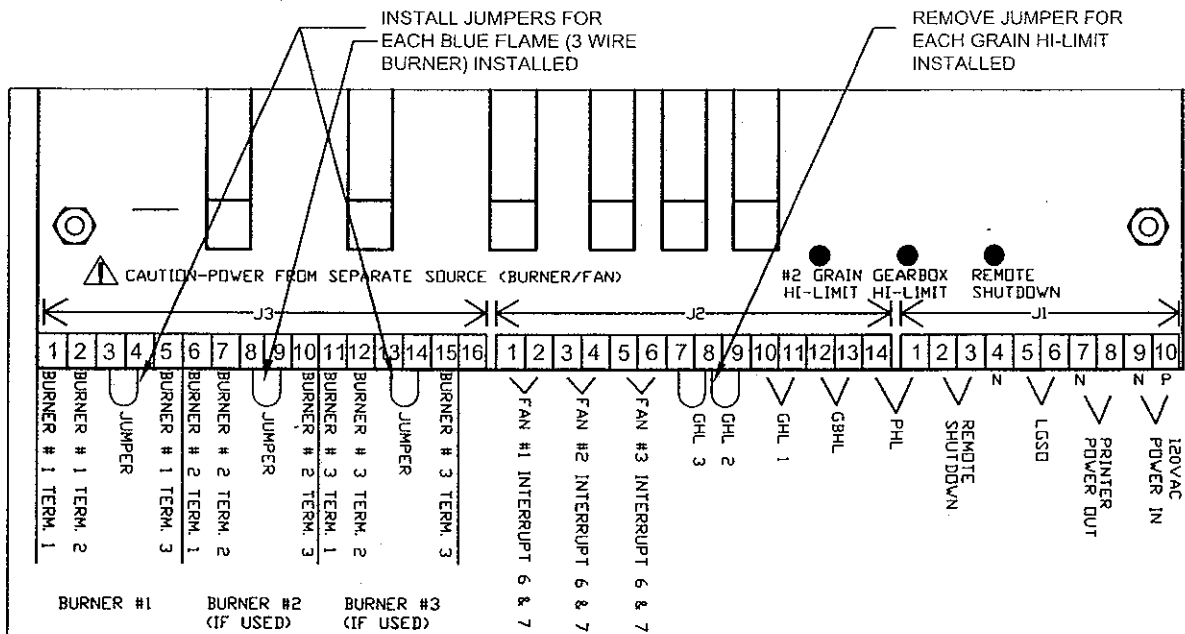
Note: Terminal numbers in the Burner refer to the large 12 pole terminal strip in the Blue Flame.

# SHIVERS AXIAL BLUE FLAME MANUFACTURED AFTER 2003 (continued) (FANS AND BURNERS)

The Grain Hi-Limit (GHL) must be wired for each Blue Flame Fan/Burner. The junction can be made in the Blue Flame Control Box or in a separate junction box on the bin sidewall. The GHL from Fan/Burner #1 connects to the 2 control wires coming from the Command Center, and connects to the 14 pole connector J2 terminals 10 and 11 on the Switch/Relay panel. If more than one GHL is to be wired to the Command Center the jumpers for the corresponding GHL need to be removed. Do not remove any jumpers unless a GHL is being connected in its place. For GHL #2 remove the jumper from J2 terminals 8 and 9. For GHL #3 remove the jumper from J2 terminals 7 and 8.

To wire up the Fan Interrupt, terminals 6 and 7 in the Blue Flame control box need to be connected to 2 control wires running to the Command Center. Terminals 6 and 7 come from the factory with a jumper installed between them. Remove the jumper, and connect a control wire from the Command Center to each terminal (6 & 7). In the Command Center the 2 control wires connect to the Switch/Relay Panel 14 pole connector J2, terminals 1 and 2 for Fan # 1. Fan # 2 interrupt connects to J2 terminals 3 and 4. Fan # 3 connects to J2 terminals 5 and 6.

## BLUE FLAME WIRING DIAGRAM

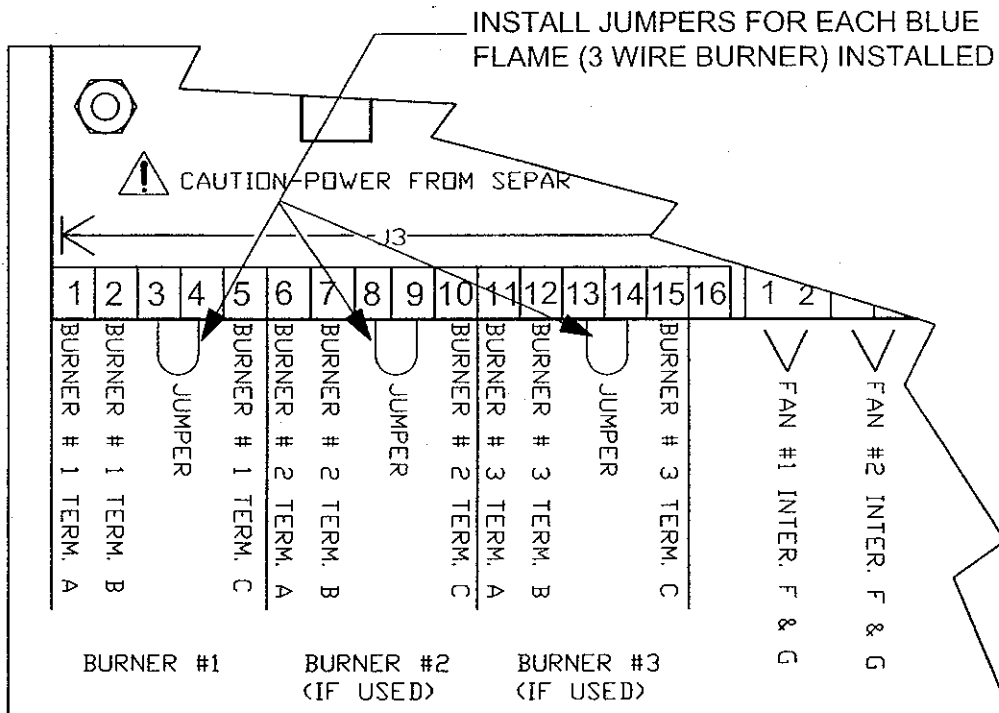


END OF BLUE FLAME MANUFACTURED AFTER 2003 WIRING. GO TO PAGE 38.

# SHIVERS AXIAL BLUE FLAME MANUFACTURED BEFORE 2003 (FANS AND BURNERS)

WIRING THE SHIVERS BLUE FLAME (manufactured before 2003) TO THE COMMAND CENTER.

Install conduit to each fan/burner. Each run will require 7 control wires and one ground wire. Two extra control wires may be needed in some applications. Use the self sticking number decals in the manual sack to label the burners if more than one is being used. This will help in identification for wiring and operation. The green ground wire will connect to the ground lug inside the Blue Flame control box. The other end of the ground wire will connect to the Equipment ground in the bottom right-hand corner of the starter panel of the Command Center. The diagram below shows how the first three control wires connect to the Command Center for each fan/burner. Be sure to install jumpers on Connector J3 for three wire operation.



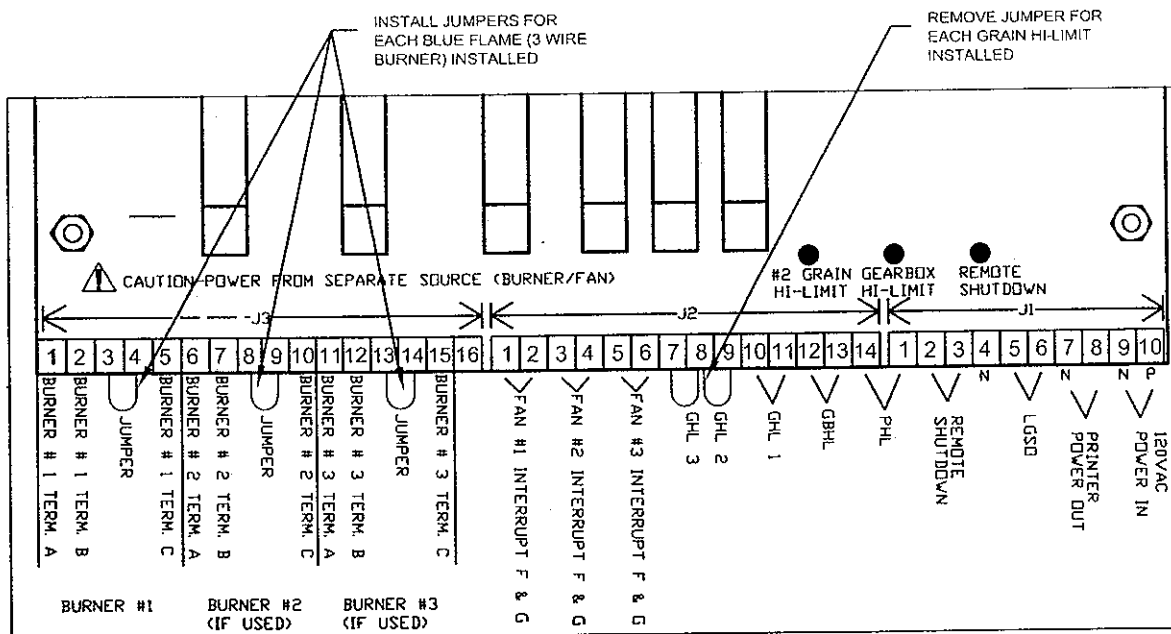
If the Gearbox Hi-Limit is connected to the fan/burner at terminals N and O, remove the gearbox wires from these terminals and install a jumper wire between terminals N and O. The Gearbox Hi-Limit wires will connect to 2 control wires coming from the Command Center. The other end of these control wires will connect to the 14 pole connector J2 terminals 12 and 13 on the Switch/Relay panel.

# SHIVERS AXIAL BLUE FLAME MANUFACTURED BEFORE 2003 (continued) (FANS AND BURNERS)

The Grain Hi-Limit (GHL) comes prewired to the Blue Flame Fan/Burner manufactured before 2003. This needs to be removed from terminals F and G in all fan/burners. If more than one fan/burner are present and a Grain Hi-Limit control box is used, unhook the Grain Hi-Limit control box. It is not needed. The GHL from Fan/Burner #1 connects to the 2 control wires coming from the Command Center, and connects to the 14 pole connector J2 terminals 10 and 11 on the Switch/Relay panel. If more than one GHL is to be wired to the Command Center the jumpers for the corresponding GHL need to be removed. Do not remove any jumpers unless a GHL is being connected in its place. For GHL #2 remove the jumper from J2 terminals 8 and 9. For GHL #3 remove the jumper from J2 terminals 7 and 8.

To wire up the Fan Interrupt, terminals F and G in the burner control box need to be connected to 2 control wires running to the Command Center. Terminals F and G previously had the Grain Hi-Limit connected to them. In the Command Center the 2 control wires connect to the Switch/Relay Panel 14 pole connector J2, terminals 1 and 2 for Fan # 1. Fan # 2 interrupt connects to J2 terminals 3 and 4. Fan # 3 connects to J2 terminals 5 and 6.

## BLUE FLAME WIRING DIAGRAM (manufactured before 2003)

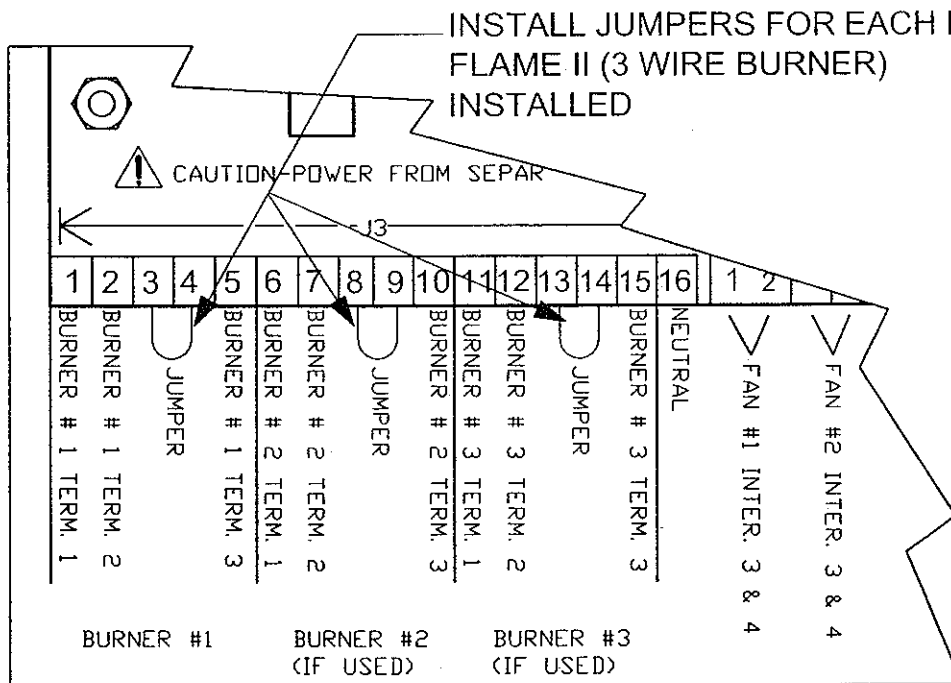


END OF BLUE FLAME MANUFACTURED BEFORE 2003 WIRING. GO TO PAGE 38.

# SHIVERS CENTRIF. BLUE FLAME II MANUFACTURED AFTER 2003 (FANS AND BURNERS)

## WIRING THE SHIVERS CENTRIFUGAL BURNER BLUE FLAME II TO THE COMMAND CENTER

Install conduit to each fan/burner. Each conduit will require 7 control wires and one ground wire. Two additional wires may be needed in some applications. Use the self sticking number decals in the manual sack to label the fan/burners if more than one is present. This will help in identification for wiring and operation. The ground wire will connect to the ground lug inside the burner control box. The other end of the ground wire will connect to the Equipment ground in the lower right-hand corner of the starter panel in the Command Center. The diagram below shows how the first three wires connect to the Command Center from the burner control box. Be sure to install jumpers on Connector J3 for three wire operation.



Note: Terminal numbers in the Burner refer to the large 12 pole terminal strip in the Blue Flame.



# SHIVERS CENTRIF. BLUE FLAME II MANUFACTURED AFTER 2003 (continued) (FANS AND BURNERS)

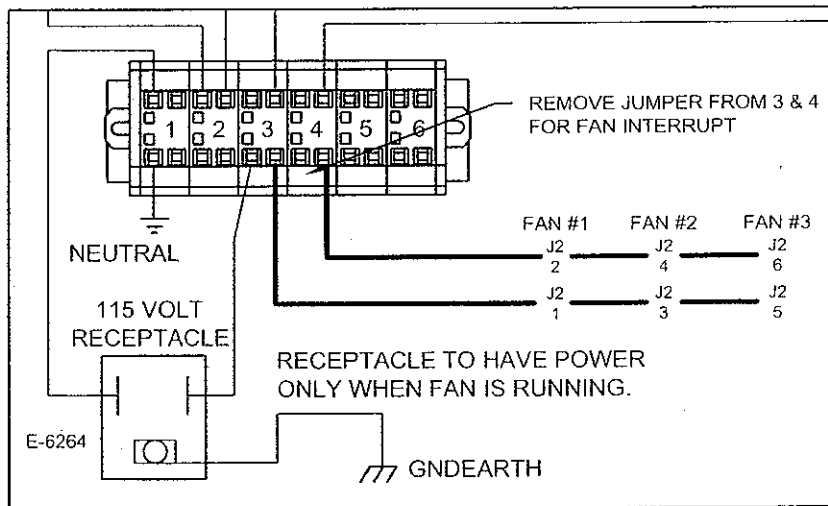
INSTALL CONDUIT FROM GRAIN HI-LIMIT TO THE BLUE FLAME II BURNER CONTROL BOX OR TO A JUNCTION BOX ON THE BIN SIDEWALL.

The Grain Hi-Limit (GHL) connects to 2 control wires running to the Command Center. The GHL from Fan/Burner #1 connects to the 14 pole connector J2 terminals 10 and 11 on the Switch/Relay panel. If more than one GHL is to be wired to the Command Center, the jumpers on connector J2 need to be removed for each Hi-Limit installed. See Diagram on next page for more information.

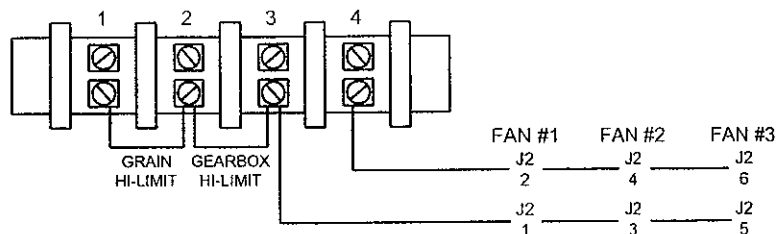
Select the appropriate section (1-3) for wiring the fan shutdown circuit.

- ① To wire up the Shivers 20 Hp C-Fan, see diagram below along with the diagram on the following page.

SHIVERS 20 HP C-FAN W/ GALVANIZED HOUSING

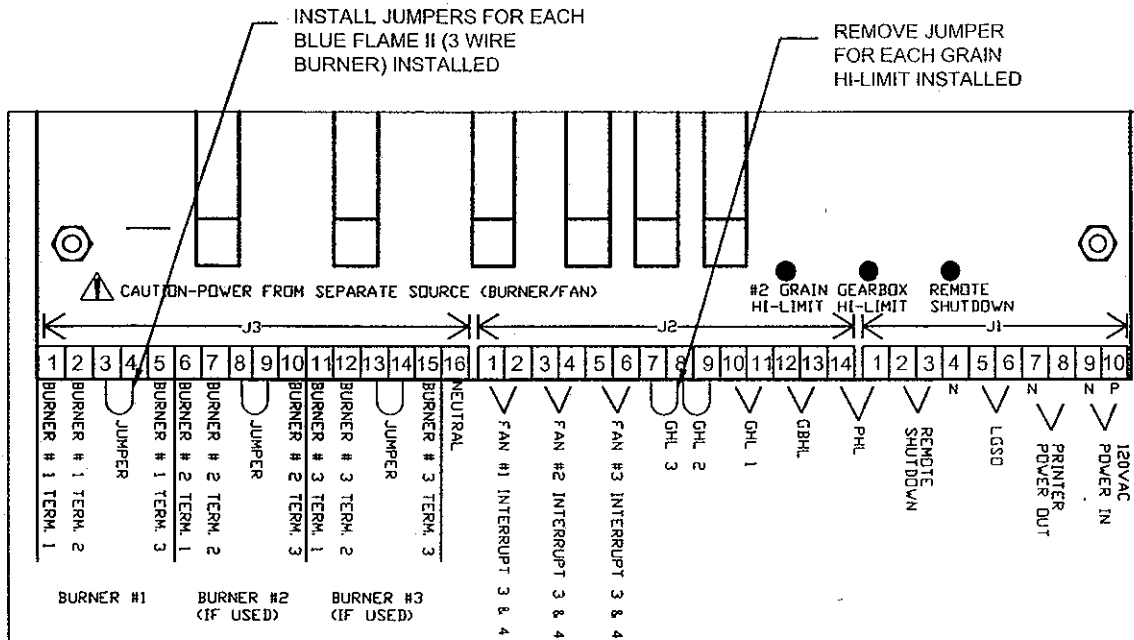


- ② When wiring up the CECO/Shivers Fan w/ 4 pole terminal strip, the Grain Hi-Limit and Gearbox Hi-Limit wire straight to the CompuDry Command Center. Put jumpers back in between terminals 1 & 2 and 2 & 3. Remove the jumper from 3 & 4 and wire to Command Center Fan Interrupt.



# SHIVERS CENTRIF. BLUE FLAME II MANUFACTURED AFTER 2003 (continued) (FANS AND BURNERS)

## BLUE FLAME II WIRING DIAGRAM



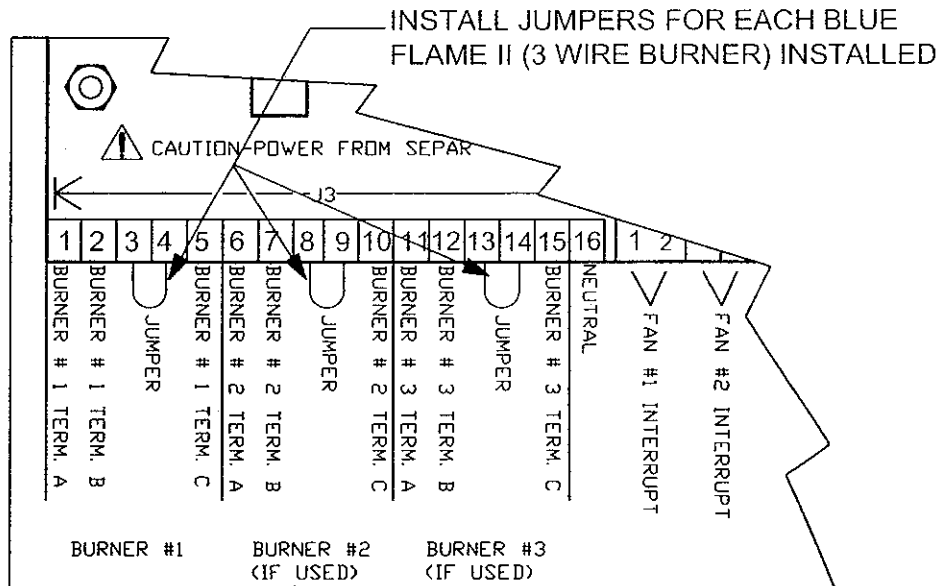
- ③ To wire up the fan interrupt to the Shivers/Caldwell C-Fan, disconnect the wire going to the bottom side of the 3 amp fuse in the fan control box. Connect this wire to one of 2 control wires running to the Command Center. Connect the other control wire to the bottom side of the 3 amp fuse. The other end of the control wires connect to the 14 pole connector J2 terminals 1 and 2 on the Switch/Relay panel for Fan #1. Fan #2 connects to J2 terminals 3 and 4. Fan #3 connects to J2 terminals 5 and 6.

END OF BLUE FLAME II MANUFACTURED AFTER 2003 WIRING. GO TO PAGE 38.

# SHIVERS CENTRIF. BLUE FLAME II MANUFACTURED BEFORE 2003 (FANS AND BURNERS)

## WIRING THE SHIVERS CENTRIFUGAL BURNER BLUE FLAME II TO THE COMMAND CENTER

Install conduit to each fan/burner. Each conduit will require 7 control wires and one ground wire. Two additional wires may be needed in some applications. Use the self sticking number decals in the manual sack to label the fan/burners if more than one is present. This will help in identification for wiring and operation. The ground wire will connect to the ground lug inside the burner control box. The other end of the ground wire will connect to the Equipment ground in the lower right-hand corner of the starter panel in the Command Center. The diagram below shows how the first three wires connect to the Command Center from the burner control box. Be sure to install jumpers on Connector J3 for three wire operation.



If the Gearbox Hi-Limit is already installed in the fan circuit, remove it and connect the 2 Hi-Limit wires to 2 control wires running to the Command Center. The 2 control wires connect to the 14 pole connector J2 terminals 12 and 13 on the Switch/Relay panel.

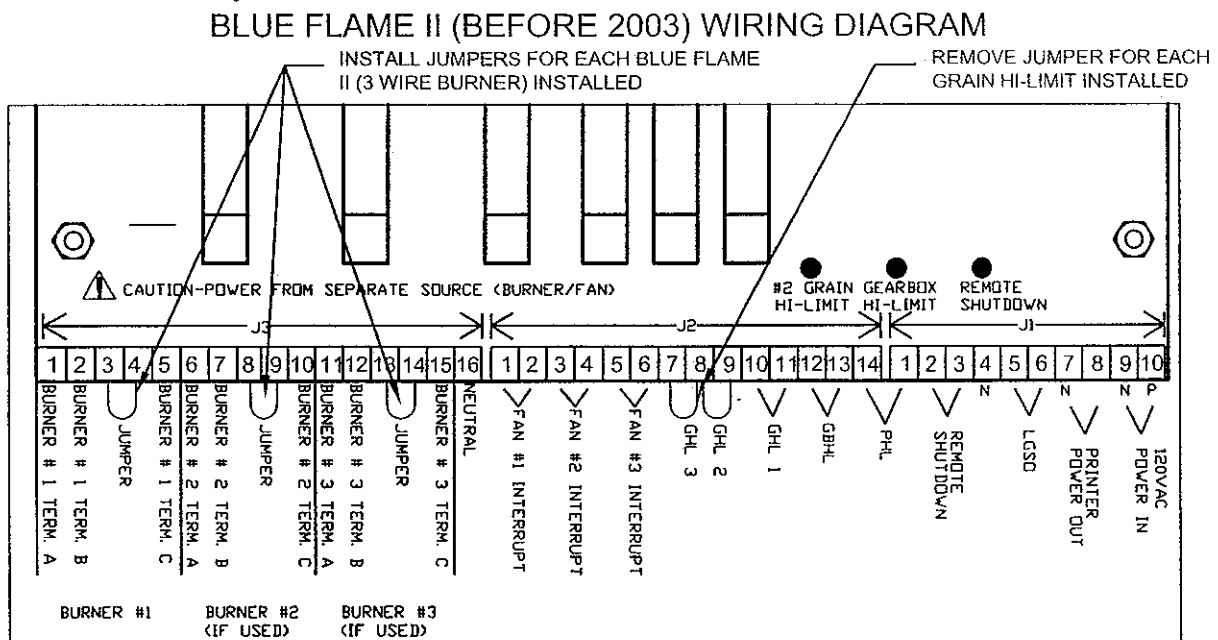
# SHIVERS CENTRIF. BLUE FLAME II MANUFACTURED BEFORE 2003 (continued) (FANS AND BURNERS)

INSTALL CONDUIT FROM GRAIN HI-LIMIT TO THE BLUE FLAME II BURNER CONTROL BOX

The Grain Hi-Limit (GHL) connects to 2 control wires running to the Command Center. The GHL from Fan/Burner #1 connects to the 14 pole connector J2 terminals 10 and 11 on the Switch/Relay panel. If more than one GHL is to be wired to the Command Center, the jumpers on connector J2 need to be removed for each Hi-Limit installed. If the Command Center is being wired to an existing system and a Grain Hi-Limit control box is installed, disconnect the wiring from the Grain Hi-Limit control box. It is not needed.

To wire up the fan interrupt to the Shivers/Caldwell C-Fan, disconnect the wire going to the bottom side of the 3 amp fuse in the fan control box. Connect this wire to one of 2 control wires running to the Command Center. Connect the other control wire to the bottom side of the 3 amp fuse. The other end of the control wires connect to the 14 pole connector J2 terminals 1 and 2 on the Switch/Relay panel for Fan #1. Fan #2 connects to J2 terminals 3 and 4. Fan #3 connects to J2 terminals 5 and 6.

For other C-Fan interrupt wiring see the previous section, or the generic section, or contact the factory.



END OF BLUE FLAME II MANUFACTURED BEFORE 2003 WIRING. GO TO PAGE 38.

# GENERIC

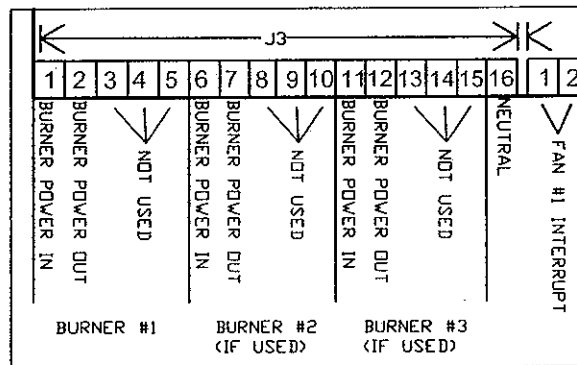
## (FANS AND BURNERS)

GENERIC FAN/BURNER WIRING INSTRUCTIONS FOR THE COMMAND CENTER  
(See appropriate section to match fan/burner installed)

### 2 Wire Control (On/Off)

Three wires are needed for a two wire burner system. Two control wires and one ground wire. The two control wires connect to the 16 pole connector J3 to the Burner Power In and Low Fire Out. The ground wire connects to the Equipment ground on the Starter panel in the Command Center, and the ground lug in the burner control box.

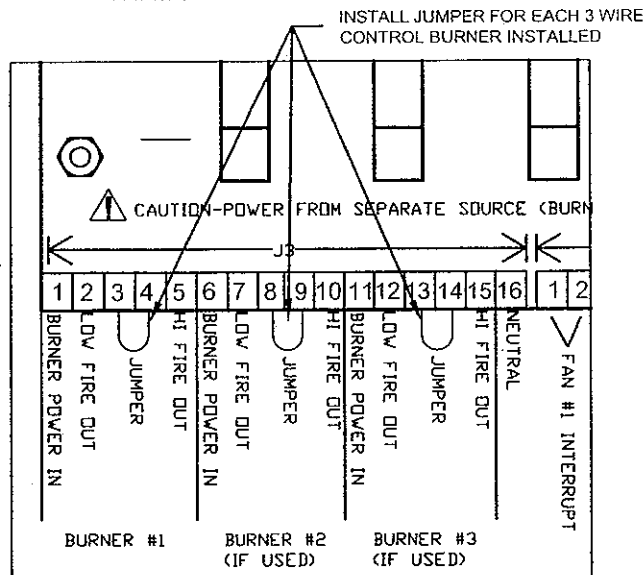
TWO WIRE BURNER CONTROL



### 3 Wire Control (Hi-Low-Off) (Not very common unless it is a Shivers Burner)

Four wires are needed for a three wire burner control. Three control wires and one ground wire. The three control wires connect to the 16 pole connector J3 as indicated below. Small jumpers will need to be added to J3 terminals 3 and 4, 8 and 9, 13 and 14. The ground wire connects to the Equipment ground on the Starter panel in the Command Center, and the ground lug in the burner control box.

THREE WIRE BURNER CONTROL

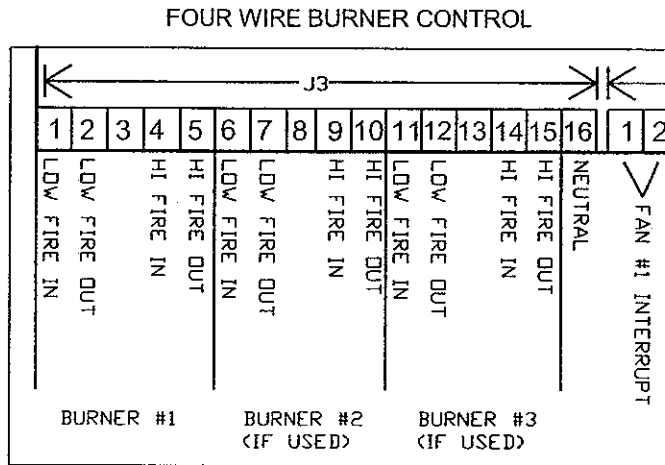


# GENERIC

## (FANS AND BURNERS)

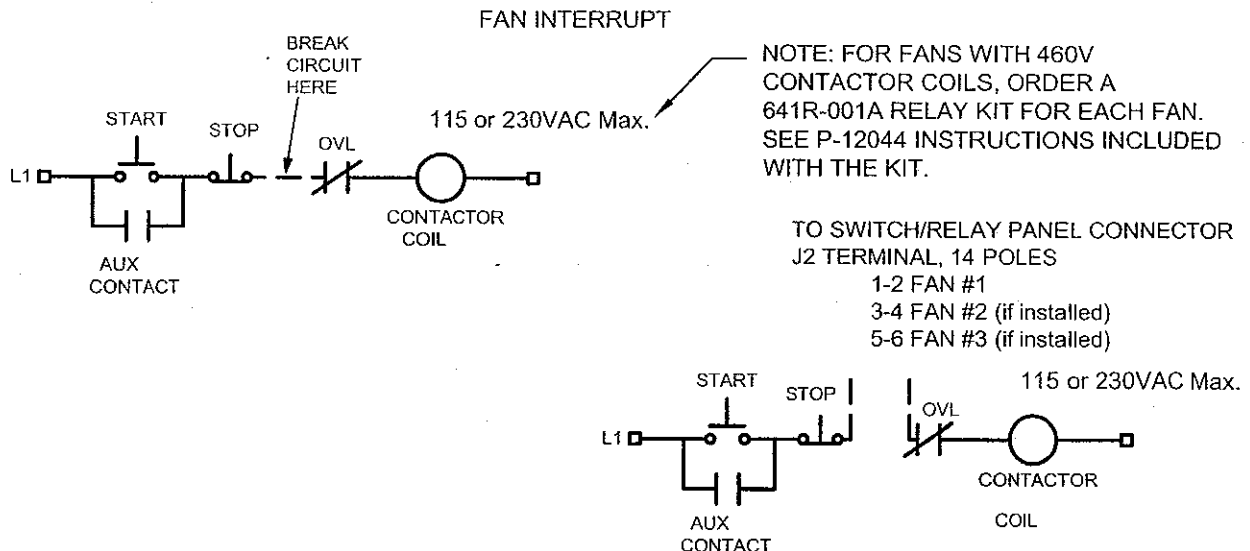
### 4 Wire Control

Five wires are needed for a four wire burner control. Four control wires and one ground wire. The ground wire connects to the Equipment ground on the Starter panel in the Command Center and the ground lug in the burner control box. The four control wires connect to the 16 pole connector J3 as indicated below.



### Wiring The Fan Interrupt

Wiring the fan interrupt requires 2 control wires. The fan control circuit must be broken to insert the Command Center interrupt. See diagrams below for circuit wiring example. The control wires connect to the Switch/Relay panel on connector J2 terminals 1-2 for Fan #1, 3-4 for Fan #2, and 5-6 for Fan #3 (if installed). The decal inside the main cover can be used for reference.

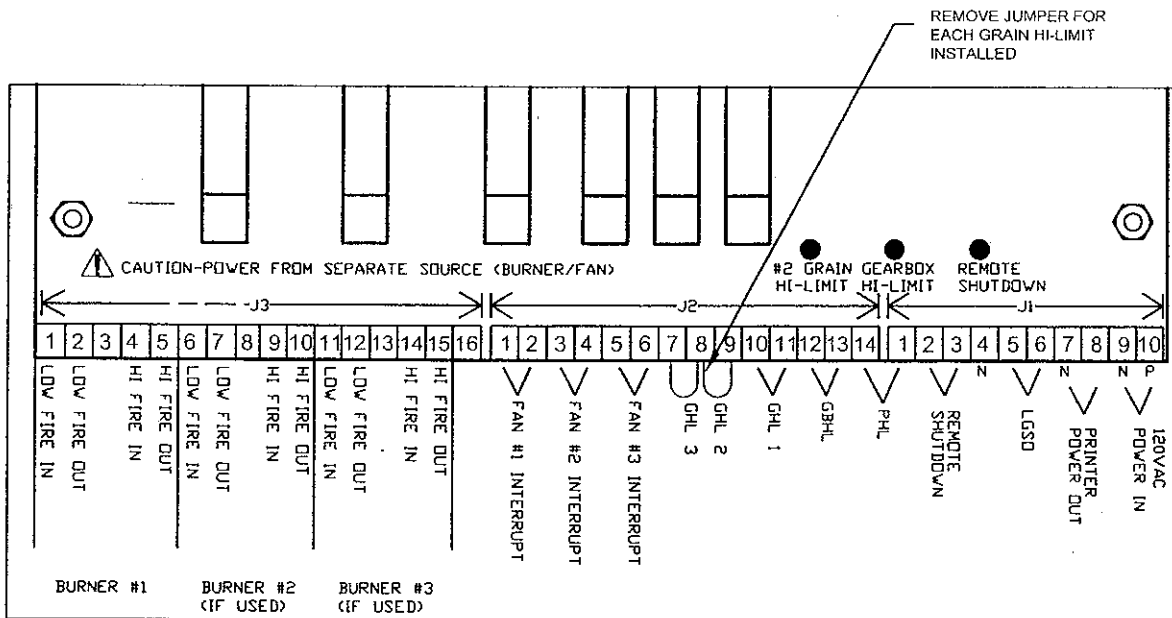


# GENERIC

## (FANS AND BURNERS)

**Wiring Grain Hi-Limits: Shivers Part # 527C-001A** (See page 16 for Mechanical installation.)

Grain Hi-Limits must be purchased for each fan/burner installed. The GHL from Fan/Burner #1 connects to the 2 control wires coming from the Command Center, and connects to the 14 pole connector J2 terminals 10 and 11 on the Switch/Relay panel. If more than one GHL is to be wired to the Command Center the jumpers for the corresponding GHL need to be removed. Do not remove any jumpers unless a GHL is being connected in its place. For GHL #2 remove the jumper from J2 terminals 8 and 9. For GHL #3 remove the jumper from J2 terminals 7 and 8.



# MAG. STARTERS, PRINTER, AND TRANSFORMERS

## MAGNETIC STARTERS

The Command Center comes standard with the Machine motor starter and one Cont. Flow motor starter. The Starters run off 115VAC control voltage. Up to three additional transfer augers can be added to the starter panel. Starters available for the Command center are:

641C-001A 2 POLE 10 HP 60 AMP 1 PHASE  
641D-001A 3 POLE 5 HP 40 AMP 1 PHASE  
641E-001A 3 POLE 15 HP 60 AMP 3 PHASE  
641F-001A 4 POLE 10 HP 40 AMP 3 PHASE  
641Q-001A 3 POLE 10 HP 60 AMP 1 PHASE

Heater strips do not come with the motor starters but can be ordered. The heater strips must be sized properly for the motor being used. See Starter Installation Manual P-11349 for installation of starters and proper heater strip sizing. See Starter Installation Manual for motor wiring. If more than 4 Cont. Flow/Aux augers will be required, order a 641N-001A, Add-On Box, to add up to 4 more augers.

## PRINTER

The 641G-001A printer kit can be added to provide a record of the dryer data. The printer installs directly into the Command Center and can be seen or operated through the Access Door on the main cover. See installation manual P-11351 for complete instructions.

## TRANSFORMER

The Command Center uses 115 VAC control voltages. In some three phase applications 115VAC power may not be available, so a transformer assembly must be added to provide the proper control voltage. Three transformer models are available.

641I-001A operates on 220V/460V primary voltage.

641J-001A operates on 575V primary voltage.

641K-001A operates on 380V primary voltage.

Manual P-11354 explains the transformer installation procedure. If more information is needed about three phase power applications contact Shivvers at the address shown on the front page.



## OTHER KITS

- 641H-001A      Sequence Timer Kit to clean-out a second or third auger after the first one shuts off. See P-11324 instructions included with the kit.
- 641L-001A      If the system is a Shivers Certified Performance System, this kit contains a special program chip to allow plenum temperatures up to 200° F. See P-11440 instructions for installing the program chip included with this kit. This kit also contains extra tubes of high temperature gearbox grease.
- 641O-001A      An Auxillary Timer Kit that will clean-out any Cont. Flow or Auxillary augers after the drying bin runs out of grain. The timer built into the Moisture Control Module will not clean out the augers after the bin runs out of grain. See P-11887 instructions included with the kit.
- 641S-001A      Data Link Program Kit. This kit includes a software program that can be installed on a home computer to store and manipulate Command Center readings. See P-12091 instructions included in the kit.

# FINAL CONFIGURATION AND LABELING

**SET MACHINE TYPE:** After the Command Center has been wired, the Moisture Control must be configured for the type of machine it is going to run.

**FOR CENTER VERTICAL MACHINES:** If the machine type is set to 0, the Moisture Control will not energize the Transfer Augers (CR2) until the moisture readings are below the set point. Grain will recirculate in the drying bin while sampling.

**FOR BOTTOM UNLOAD MACHINES:** If machine type is set to 1, the Moisture Control will energize the Transfer Augers (CR2) 4 seconds before energizing the Machine (CR1). This will allow pneumatic transfer systems to come up to speed before grain is discharged. The default setting is for Bottom Unloading Machines. To change the Machine Type:

- 1.) Turn Control Panel power to Command Center OFF.
- 2.) Turn function select knob on Moisture Control clockwise until pointed straight down.
- 3.) Turn control power to Command Center ON. Set LGSO Switch to "BYPASS" & Machine Switch to "AUTO". Moisture Control display will show HLP.
- 4.) Within 30 seconds of "power on", hold the Adjust Switch on the Moisture Control 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.

6.) After the machine configuration has been set:

- a.) Turn LGSO Switch to "SHUT DOWN". Turn Machine Switch to "OFF". Turn Control Power to "OFF".
- b.) Disconnect and Lockout Main Power
- c.) Mark the machine type on the wiring decal located inside the main cover of the Command Center.
- d.) Fill in Motor details on the wiring decal. This will provide a record should any service be required in the future.

Fill in wiring decal located inside the main cover of the Command Center.

MODEL 641A-001A					
MAX MOTOR VOLTAGE 600VAC, MAX HP DETERMINED BY STARTER SIZE					
ACTUAL MOTOR VOLTAGE -----					
PHASE 1 OR 3 -----					
MACHINE MOTOR HP -----			FLA -----		
CONT. FLOW #1 HP -----			FLA -----		
CONT. FLOW/AUX. AUGER #2 HP -----			FLA -----		
CONT. FLOW/AUX. AUGER #3 HP -----			FLA -----		
CONT. FLOW/AUX. AUGER #4 HP -----			FLA -----		
			120VAC SPREADERS		
			# 1 SPREADER HP -----		
			FLA -----		
			# 2 SPREADER HP -----		
			FLA -----		
			# 3 SPREADER HP -----		
			FLA -----		
			# 4 SPREADER HP -----		
			FLA -----		

MOISTURE CONTROL BOARD CONFIGURATION	<input type="checkbox"/>	CENTER VERTICAL
	<input type="checkbox"/>	BOTTOM UNLOAD

# CHECKOUT PROCEDURE



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

- 1.) Make sure all power to controls is locked off. Disengage the Machine motor from the augers so that only the motor will run (pull the 3 jaw clutch and unloader drive pin). Make sure bin and transfer equipment are clear of tools and all personnel. Set all switches in control panel to "OFF". Turn Main Power back on.
- 2.) Press the Control Panel switch (in the Command Center) to the "START" position. Set LGSO to "BYPASS".
- 3.) Turn Machine switch to "RUN". Machine should run. Turn Machine switch "OFF".
- 4.) Turn Continuous Flow switch to "RUN". Cont. flow auger should run. Turn Cont. Flow switch to "OFF". Check all Cont. Flow and Auxiliary Auger switches.

## CHECK OUT OF MOISTURE CONTROL AND PLENUM CONTROL

- 5.) With Command Center Control Panel power turned off, put Moisture Control Module selection knob straight down (HLP position), then turn power on. Put Machine switch in "AUTO". Within 30 seconds of Moisture Module power on, hold Adjust switch to "ADJUST DOWN" until HLP stops blinking, then release. Display will alternate between moisture reading and temperature reading. Temperature should be close to ambient temperature at the sensor. Moisture reading should be between 00.0 and 03.0 without any grain. Make sure no error messages occur. Turn Control Panel switch "OFF" on Command Center.
- 6.) This test will check machine type configuration. Set selection knob on Moisture Control to "MINUTES TO NEXT SAMPLE" position. Press Control Panel switch to "START". Moisture Control module should come on and flash the program version (Px.x). Set all Cont. Flow/Aux. Auger switches that are wired to "AUTO". Press the Adjust switch on the Moisture Control up or down to start the drying program. When the display shows 010 minutes to next sample, hold the Adjust switch down until display shows 000. If the Moisture Control is configured for bottom unload, the Cont. Flow/Aux. Augers will start. Five seconds later, the Machine Motor will start. If the Moisture Control is configured for center vertical, the Machine Motor will start

# CHECKOUT PROCEDURE



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

but the Cont. Flow/Aux. Augers will stay off. After 60 seconds, if there is no grain on the moisture sensor, the Moisture Control will show an E04 (readings out of range error) and maybe an E03 (readings not changing) or both (E43). The Machine Motor will stop. If configured for bottom unload, the Cont. Flow/Aux. Augers will time out for 30 seconds, then shut off. Turn the Control Panel switch to "OFF".

7.) Set the Drying Fan(s) switch to ENABLE. The red indicator light should come on. If it doesn't, check gearbox and Grain Hi-Limit wiring. If possible, start a fan and turn on the burner. Use caution if there isn't grain on the floor of the bin. The floor may lift with fans over 20 horsepower. The fan should start.

8.) Set the select knob on the Plenum Control to ACTUAL TEMPERATURE. Turn on the Control Panel power. Press the Adjust switch on the plenum control up or down until 8.8.8 is displayed, then release the switch. The reading displayed should be close to the plenum temperature at the sensing probe.

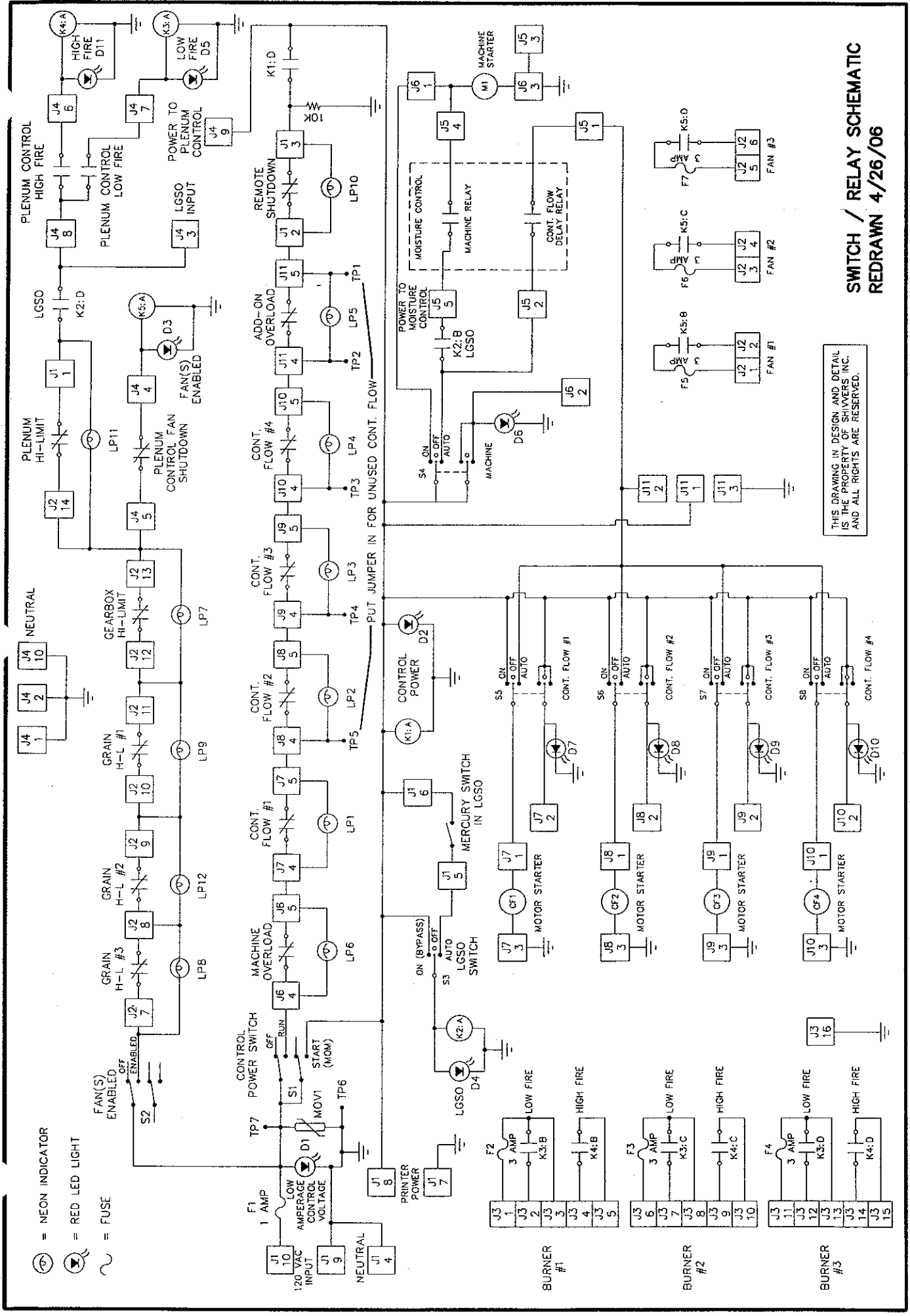
9.) If the ACTUAL TEMPERATURE is lower than the TARGET TEMPERATURE, the HIGH FIRE and LOW FIRE indicators should come on. If the fan is running and the burner switch on the burner is on, the burner should light (possibly after a 30 second delay).

10.) Set the Low Grain Shut Off switch to SHUT-DOWN. The burner should go off. The Moisture Control module should go off. After 5 seconds, the Plenum Control module will start flashing. This indicates it is in fan shut down mode. Turn the select knob on the Plenum Control to FAN SHUTDOWN TIME. Hold Adjust Down until display shows 000. The fan(s) should shut off. After a few seconds, the fan(s) enabled light will come back on, allowing the fan(s) to be restarted. The fan(s) should not automatically restart.

11.) Turn all switches on the switch/relay panel to the OFF position. The only light left on will be Low Amperage Control Voltage. Shut off the main power disconnect and lock it off. The Low Amperage Control Voltage enabled light will be off.

**SWITCH / RELAY SCHEMATIC  
REDRAWN 4/26/06**

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- = NEON INDICATOR
- = RED LED LIGHT
- = FUSE

