INSTALLATION AND OPERATING INSTRUCTIONS FOR CALDWELL GRAIN TEMPERATURE LIMIT CONTROL KIT

PACKING LIST

QTY.	PART NO.	DESCRIPTION
1	772244	Support Bracket
1	772236	Sensing Element Guard
1	771998	GTLC Sealer
4	736488	#12 x 1" Self Drilling Sheet Metal Screw
1	708040	5/16" - 18 UNC x 2" Capscrw
3	707943	5/16" - 18 UNC x 3/4" Grain Bin Bolt
4	708313	5/16" Lockwasher
4	708164	5/16" - 18 UNC Hex Nuts
3	708373	5/16" Flat Washer With Neoprene Face
1	772004	Strain Relief Bushing
1	———	Limit Control Box
1	Bulletin 1115	Installation and Operating Instructions

WARNING: Warranty Is Void If Control Is Tampered With.

INSTALLATION INSTRUCTIONS

The Grain Temperature Limit Control is designed to be mounted over the transition, twelve inches above the drying floor on the bin wall. The sensing element guard is mounted on the inside of the bin so the bin must be empty when installing. The limit control box is mounted on the outside of the bin for easy access. Figure #1 illustrates a typical installation of the control.

1. The first thing to do is to drill the two 3/8" diameter holes and the one 11/2" diameter hole required to mount the sensing element guard. The best way to drill the holes is to go inside the bin and locate the center of the transition with respect to the inside of the bin wall. If the center of the transition is on or very near to a bin seam, move over to the left or right about six to eight inches so there is no interference when mounting the control box on the outside of the bin wall. Now measure from the floor up approximately twelve inches and go to the nearest hill corrugation. Drill or cut the 1 1/2" diameter hole making sure that the center of the hole is at the center of the hill corrugation. Refer to figure 2A & 2B for bins with 2.66" or 4" corrugation. Now go to the next hill corrugation above and below the 1 1/2" diameter hole and drill a 3/8" diameter hole on each hill corrugation. Make sure that the 3/8" diameter holes are on the center of the hill corrugations and the vertical centerlines of the 3/8" diameter holes line up with the vertical centerline of the 1 1/2" diamter.

2. Slip a 5/16" x 3/4" grain bin bolt through each of the 3/8 inch diameter holes from the outside and slip a 5/16 inch flatwasher with neoprene face onto each bolt. When slipping the washer onto the bolt, have the neoprene face facing the bin wall. Now slip the sensing element guard onto the bolts and add lockwasher and hex nuts to the bolts. Before tightening the nuts to the bolts make sure the 1 1/2 inch diamter hole in the sensing element guard lines up with the 1 1/2 inch diamter hole in the bin wall. Now securely tighten the nuts and bolts.

3. Bolt the support bracket to the sensing element guard by using a 5/16" x 2" hex bolt, lockwasher, and nut as shown in illustration #1.

4. Drill 3/8 inch diameter hole into the bin wall for the support bracket by first putting the bracket up to the wall and finding the hole locations. Move the support bracket out of the way and drill the hole. Slip the 5/16" x 3/4" grain bin bolt into the hole from the outside and then slip the 5/16 inch flatwasher with neoprene face onto the bolt. The neoprene face of the flatwasher should be facing the bin wall. Slip the support bracket onto the bolt and add the lockwasher and nut to the bolt. Securely tighten the nut and bolt.

5. Now move to the outside of the bin for mounting the control box. Take the control box and place it up against the wall. Make sure that the sensing element has slipped through the 1 1/2 inch diamter hole in the bin wall into the sensing element guard and the control box lid has been removed. There are eight holes in back of the box for mounting purposes. Mark four hole locations, two above and two below the control that fall on the hill corrugations. Remove the box and drill a 11/64 inch diamter hole in each location. Before mounting the control box, slip the grain temperature limit control sealer, a 11 1/4" x 5" x 6" foam rectanglar in a plastic bag, onto the sensing element and slip the sealer all the way up the sensing element until the sealer is touching the back of the control box. Now take the four #12 x 1 inch sheet metal screws and mount into the control box in the holes to be used. Squeeze the sealer enough so that the tip of each sheet metal screw is through the foam. Mount the control box and securely fasten the box to the bin wall. Securely fasten the lid to the control box.

WIRING GRAIN TEMPERATURE LIMIT CONTROL TO HEATER

The Grain Temperature Limit Control is wired directly into the heater terminal block. Punch out the 5/8 inch knockouts provided at the bottom of thecontrol box or if the knockout is already being used, drill a 5/8 inch diamter hole in the side of the heater control box. Secure the cord and the strain relief bushing into the hole while making sure to provide sufficient cord length in the box to wire to the terminal block. Remove the jumper wire connecting terminals 4 and 5 on the terminal block.

Connect the cord's black wire to terminal 4, the cord's red wire to terminal 5, and the cord's white wire to terminal 8 of the terminal block. Connect the cord's green wire by loosing one of the mounting screws of the air switch and slip the fork terminal of the wire under the nut. Then retighten the screw and nut. Place the removed jumper wire in the bottom of the heater control box. (NOTE: Terminal numbering is from top to bottom. For further information see figure 3 & 4).

OPERATING INSTRUCTIONS

The Grain Temperature Limit Control is a manual resetting temperature limiting control with adjustable settings and is used to protect the grain from being exposed to excessive heat. The Grain Temperature Limit Control is not a operating control but a safety control. The Grain Temperature Limit Control is set by the operator by removing the box lid and turning the dial. Then the lid must be resecured to the box so the setting can not be accidentally changed. The control should be set as the chart shows for different grains and type of drying. After the control is set the control will sit in the grain and if the air passing by the Grain Temperature Limit Control has a higher temperature then the control is set at, the control will shut off the heater and a light on the side of the limit control box will go on. Before restarting the heater the operator should turn the heater toggle switch to the "off" position and check the bin for potential firing hazards. Allow the fan to cool the grain while resetting the Grain Temperature Limit Control by removing the limit control box lid and push the reset lever on top of the control. The Grain Temperature Limit Control will not reset until the temperature is 20^{o}F lower then its temperature setting. After resetting the limit control resecure the lid to the limit control box and restart the heater as stated in heater operating manual.

RECOMMENDED TEMPERATURE SETTING FOR GRAIN TEMPERATURE LIMIT

CROP	IN BIN CONTINUOUS	IN BIN BATCH
Corn	130°F (54°C)	90°F (32°C)
Grain Sorghum	130°F (54°C)	90°F (32°C)
Wheat	110°F (43°C)	80°F (27°C)
Rice	75°F (24°C)	60°F (16°C)
Oats	110°F (43°C)	80°F (27°C)
Sunflowers	80°F (27°C)	70°F (21°C)
Soybeans	90°F (32°C)	80°F (27°C)
Pinto Beans	70°F (31°C)	70°F (21°C)

FIGURE 2-B
BIN WITH 2.666" CORRUGATIONS

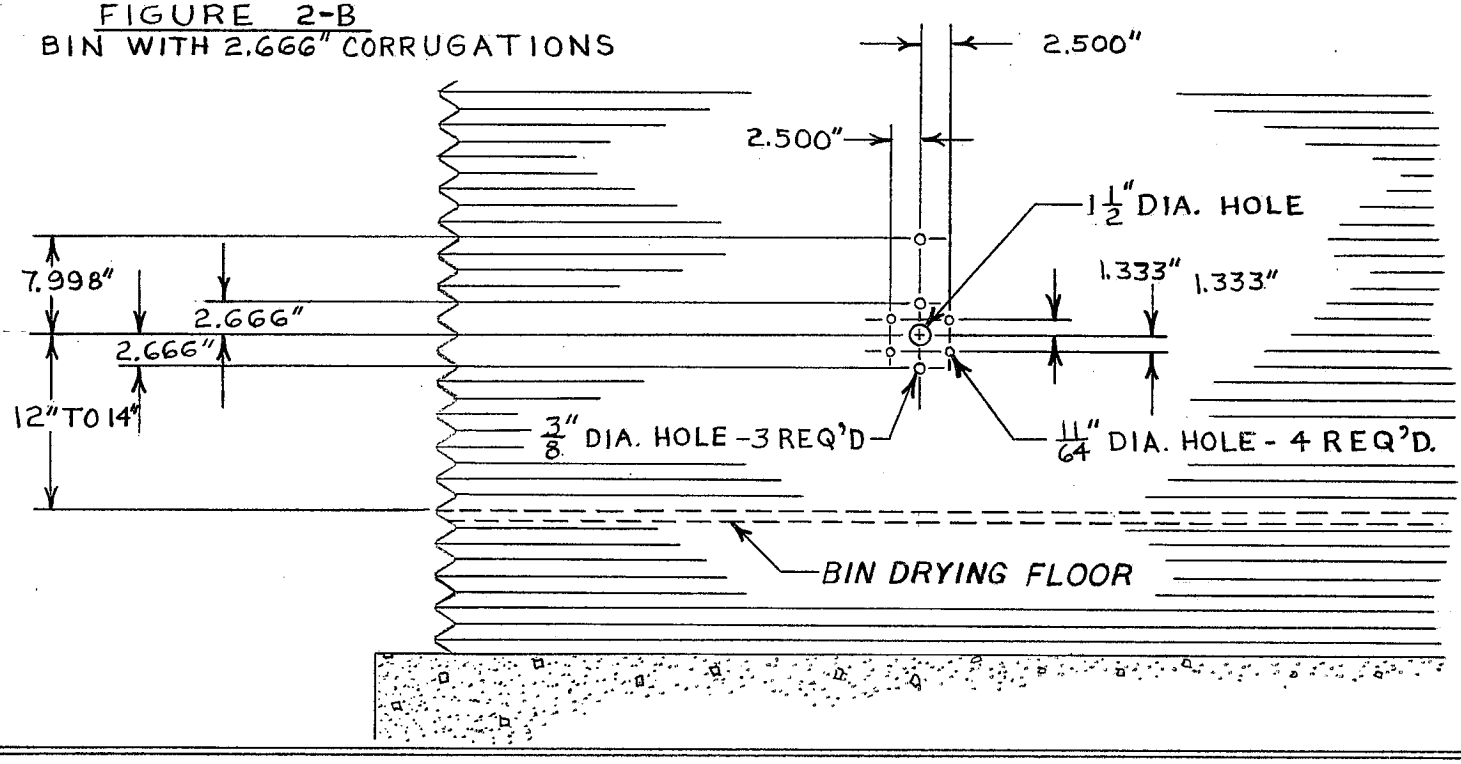

FIGURE 2-A
BIN WITH 4.00" CORRUGATIONS

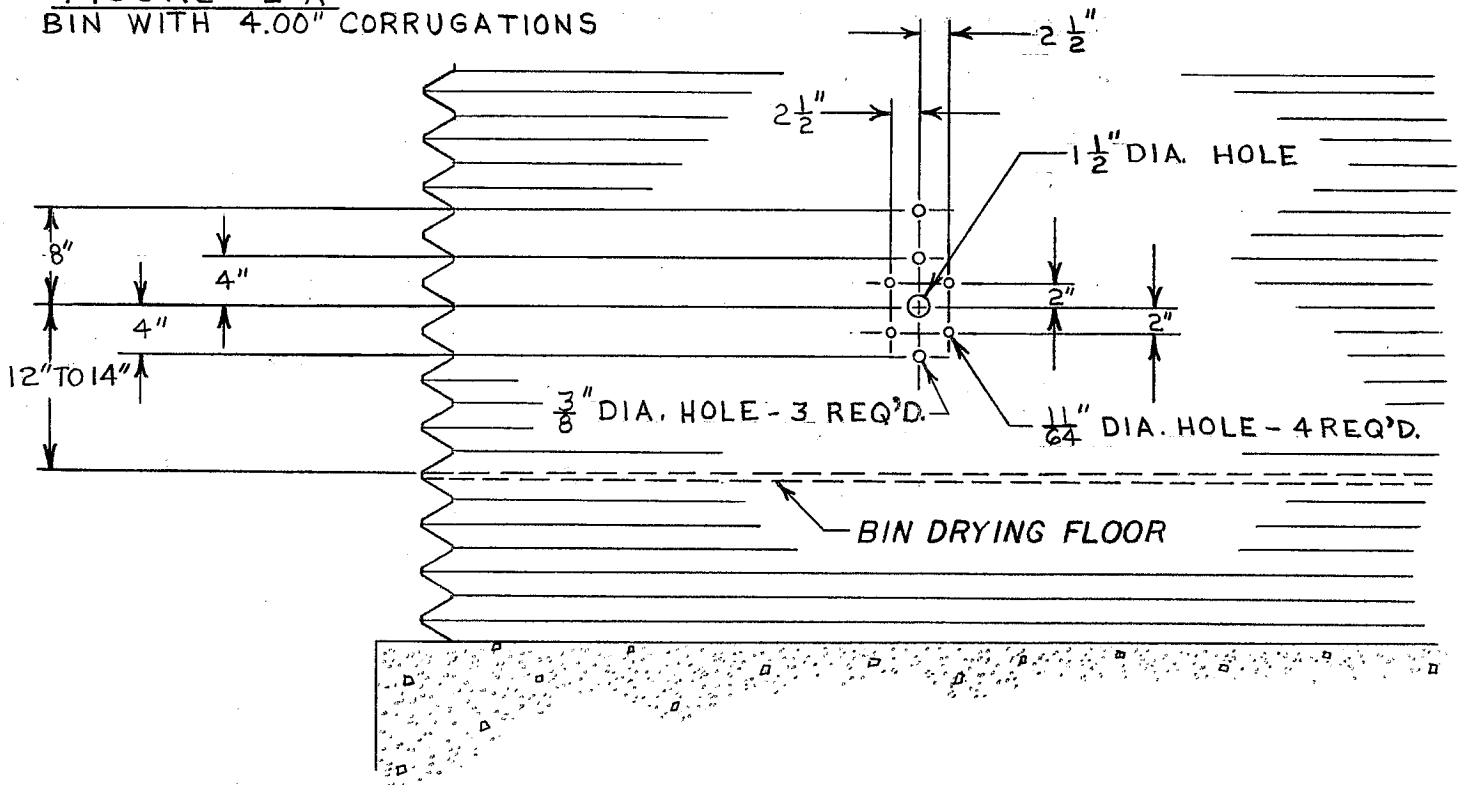

FIGURE 1

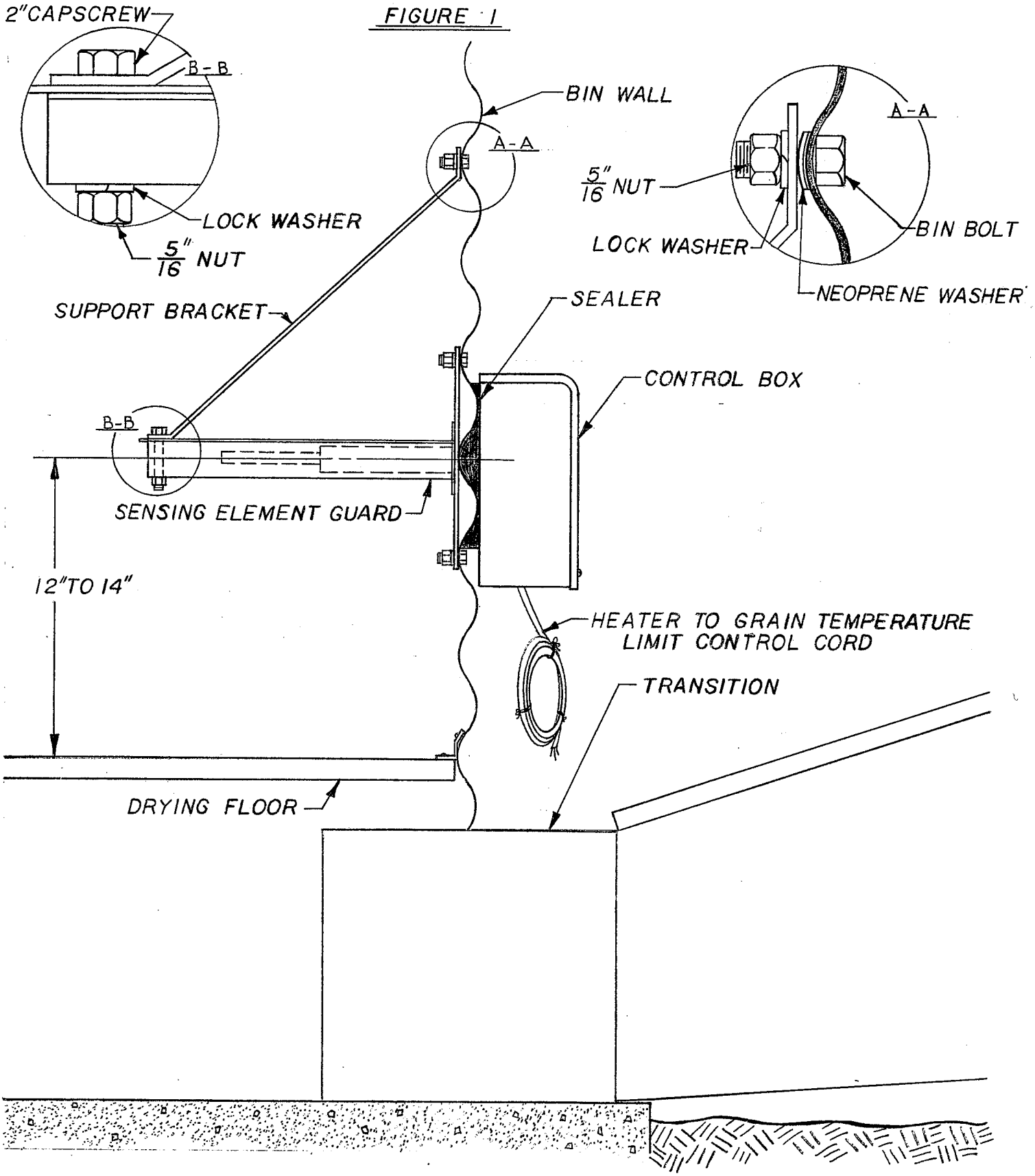
2"CAPSCREW
B-B
LOCK WASHER
5/16" NUT
BIN WALL
A-A
5/16" NUT
LOCK WASHER
A-A
BIN BOLT
NEOPRENE WASHER
SUPPORT BRACKET
SEALER
CONTROL BOX
B-B
SENSING ELEMENT GUARD
12"TO 14"
HEATER TO GRAIN TEMPERATURE LIMIT CONTROL CORD
TRANSITION
DRYING FLOOR

FIGURE 3
WIRING DIAGRAM

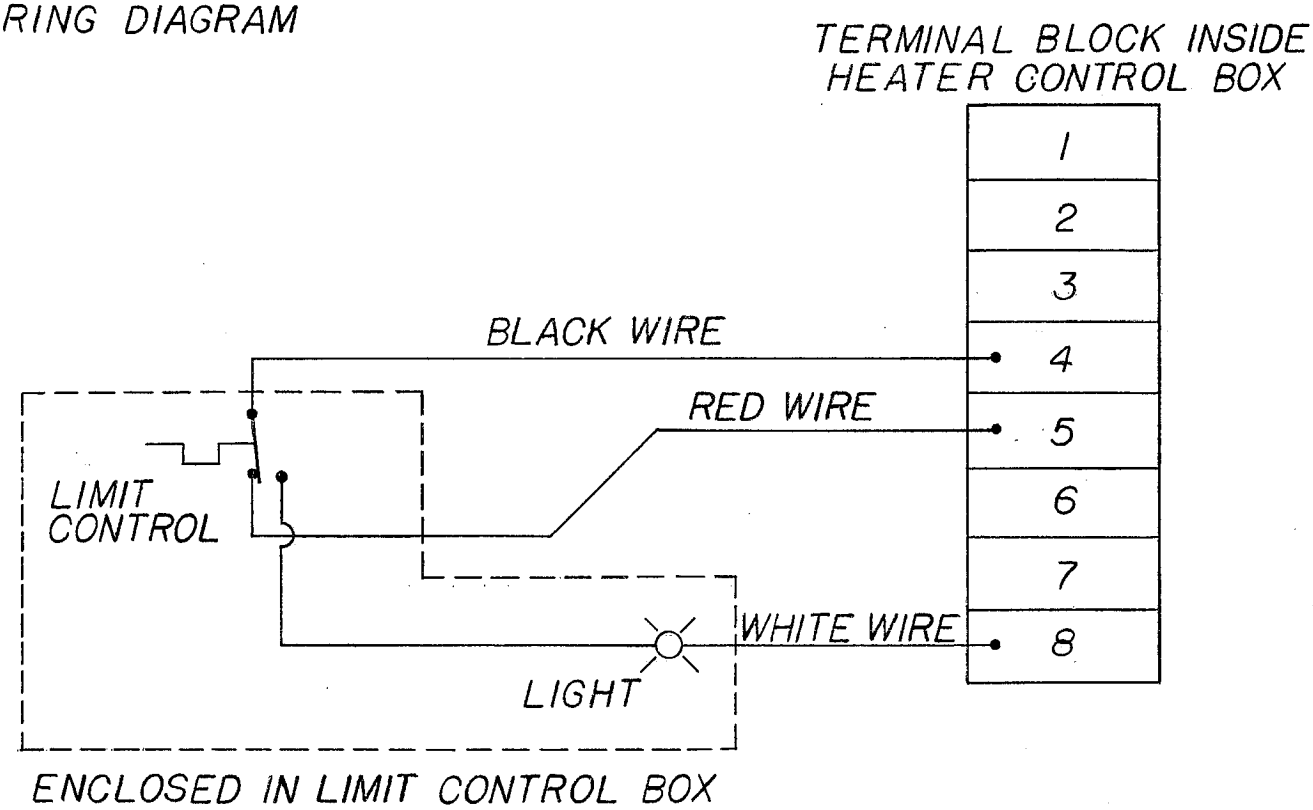

FIGURE 4