

# BEAR SCAN 24

# INSTALLATION INSTRUCTIONS

## MOUNT THE INSTRUMENT

Use bolts or concrete anchors to secure the enclosure in a dry, vibration-free location.

## SPLICE BOX

A splice box should be mounted close to the instrument for making the connections between pigtails from the instrument and the leadwire coming from the sensors. Mount the splice box with the same procedure as the instrument. A splice box is not necessary for the system to operate.

## MOUNT THE SENSOR

There are two types of sensors used with this system, a bearing sensor and a belt alignment sensor. For *bearing monitoring*, the sensor can be attached to the bearing by removing the grease zerk, (Before removing the zerk it is **imperative** that the area around the zerk is as clean as possible so that no foreign material gets inside the bearing case.) inserting it through the ring terminal on the sensor, and reattaching it to the bearing. If the ring is not the right size for the zerk, it may have to be drilled out with a unibit or a washer may need to be placed between the zerk and the ring. Another method of attachment is by using an internal thermocouple. Remove the grease zerk, insert the probe sensor

fitting in place of the zerk. Install zerk fitting into side of sensor fitting. Insert probe into the sensor fitting until it touches bearing. Pull back probe 1/8" and tighten compression fitting. Grease bearing and check for leaks. If leaks occur check fitting and tighten as necessary.

The *belt alignment monitoring* has a two part attachment. First, the location on the upside of the belt at the bottom of the leg must be determined; hopefully close to the inspection door so the belt location can be determined for placement of the sensor. A two inch hole needs to be drilled in each side of the leg in a location so that the middle of this hole is located where the belt will run. A two inch hole saw bit works well for this job. Insert the rub pad into the hole and secure the pad to the side of the leg with two #10 + 1/4 sheet metal screws or POP rivets. Next attach the ring terminal of the sensor to the outside of the rub pad.

## ATTACHING THE SENSOR TO THE LEADWIRE

There is a strand of two conductor wire attached to the sensor which is approximately two or three foot long. Inside this wire are two individual wires; **white and brown** or **red and blue** wire that needs to be connected to the leadwire that will be run to the instrument. Attach the BROWN or BLUE wire to one of the COPPER wires and the WHITE or RED wire to the CONSTANTAN wire in the leadwire going to

the instrument. It is **imperative** that good labeling procedures are used so that when the leadwire is hooked up to the instrument the proper sensor is attached to the proper indicator in the instrument. Allow for a small amount of slack in the leadwire connection to the bearing zerk as the bearing is repositioned slightly to change belt alignment and tension.

## BEAR SCAN 24 INSTALLATION

The proper operation of the BEAR SCAN 24 is dependent upon good installation techniques.

The thermocouples are manufactured to withstand all harsh environmental conditions including vibration, moisture, and salt spray. They are an isolated type which means they are not directly connected to the ring terminal or metal probe. This provides for a non-grounded condition which is necessary for proper operation of this equipment. The main causes of failure for the thermocouple would be to become grounded to whatever it is connected to, or for the connections to break. Moisture migration is the main cause for the thermocouple to become grounded. The electrical connections should be made so that moisture, including moisture-laden grain dust, cannot affect these connections. The thermocouple provides a voltage in the range of thousandths of a volt to the BEAR SCAN 24. This voltage is detected and changed into temperature. If moisture or frost is allowed to accumulate around the electrical connections, this voltage can

be affected and improper temperatures will be displayed by the BEAR SCAN 24. Vibration and rodent activity are the main causes for connections to become broken. Therefore, the electrical connections and leadwire runs should be enclosed in some sort of protective housing.

Because the BEAR SCAN 24 utilizes the isolated thermocouple, a good ground at the instrument is necessary. The isolated thermocouples along with the leadwire runs essentially become a large antenna. Static electricity and electrical spikes can be transmitted along these wires. There is internal protection built in the BEAR SCAN 24 to protect against this type of occurrence, but a good ground at the instrument is **imperative** to transmit this occurrence harmlessly away. Observing these installation techniques will result in reliable long-term operation of the BEAR SCAN 24. The protection of people and property will be aided by this equipment.

## THERMOCOUPLE CONNECTIONS

All thermocouple connections are made in the splice box by splicing the correct leadwire to the pigtails provided. There are 2 wires for each connector and they will cover 24 points. The first wire has 3 groups of 7 wires each; In each group the wiring sequence is BLACK, BLUE, GREEN, RED, YELLOW, and CLEAR, with the constantan being WHITE, BROWN, or ORANGE. The sequence of the groups is WHITE, BROWN, and ORANGE in that order. All 3 of the



groups will be used in the first wire. The second wire consists of only one group of which all wires are used and again the wiring sequence is BLACK, BLUE, GREEN, RED, YELLOW, and CLEAR, with the constantan being WHITE, BROWN, or ORANGE.

## CALIBRATION

The calibration of the temperature is set at the factory. The displayed temperature can be 2 degrees more or less than the actual temperature.

## THERMOCOUPLES

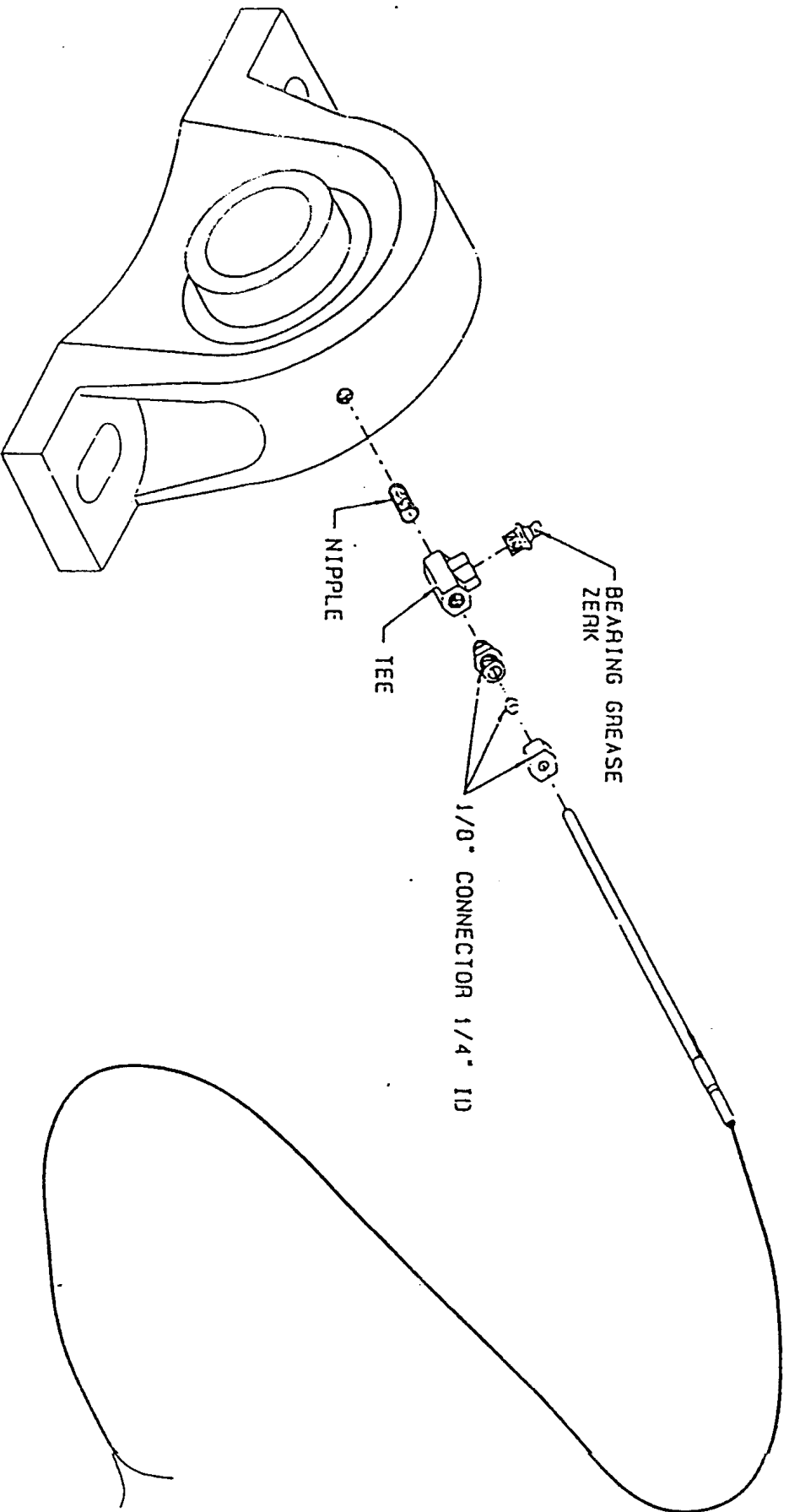
The thermocouples are an ungrounded type "T" formed and mounted in a ring terminal. These thermocouples are environmentally protected by an epoxy adhesive, a strengthened external housing, and a heat shrinkable tube. This ensures a thermocouple protected from moisture including salt spray, from grounding to the local area, and from harsh handling.



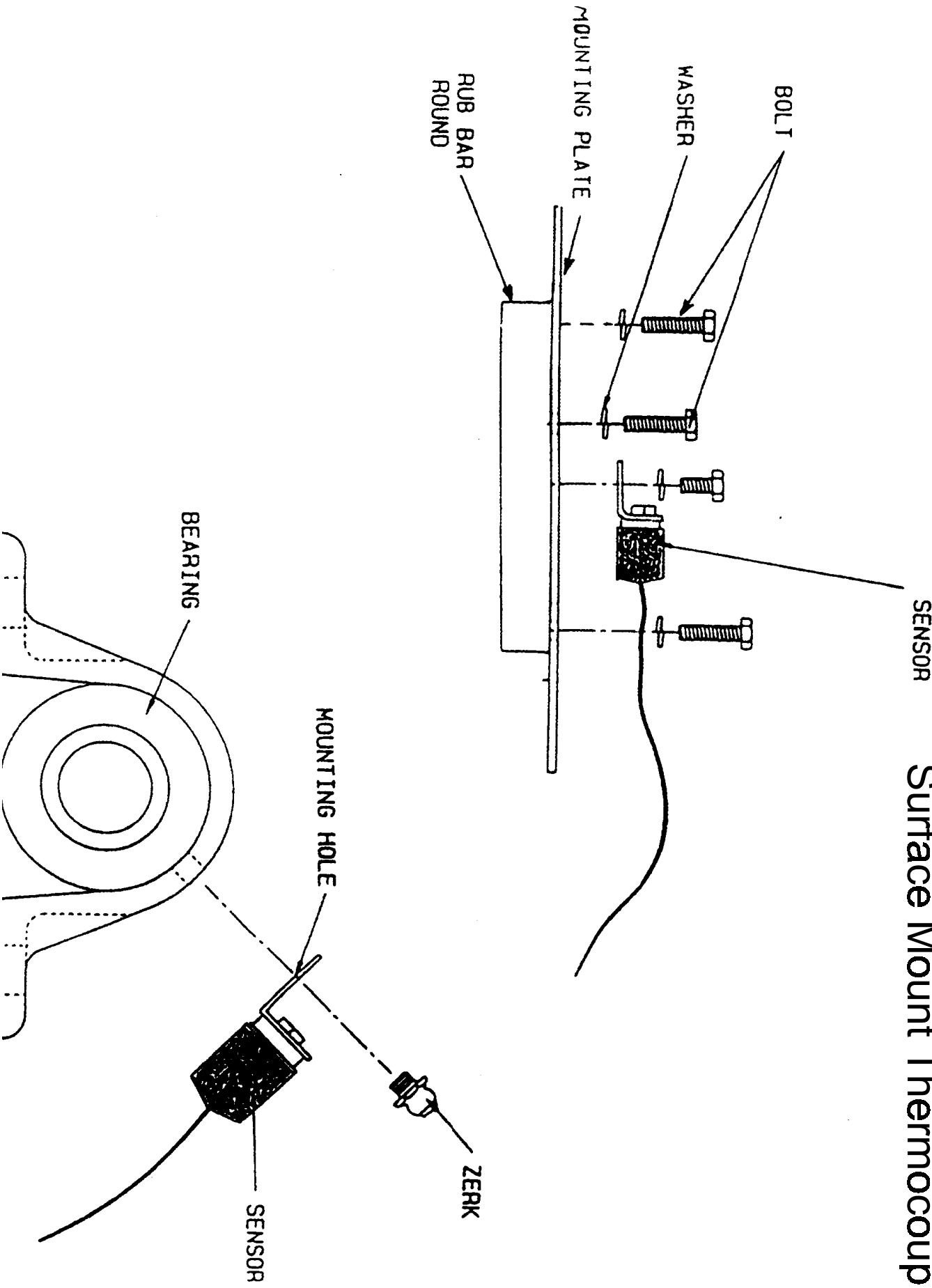
### **Tri-States Grain Conditioning, Inc.**

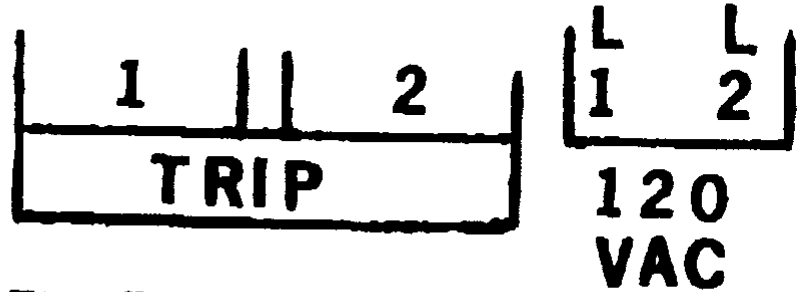
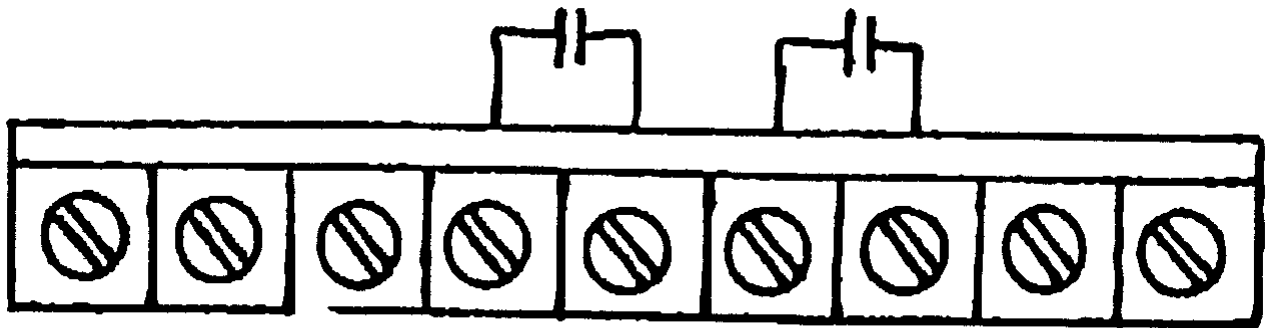
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# Internal Thermocouple Probe



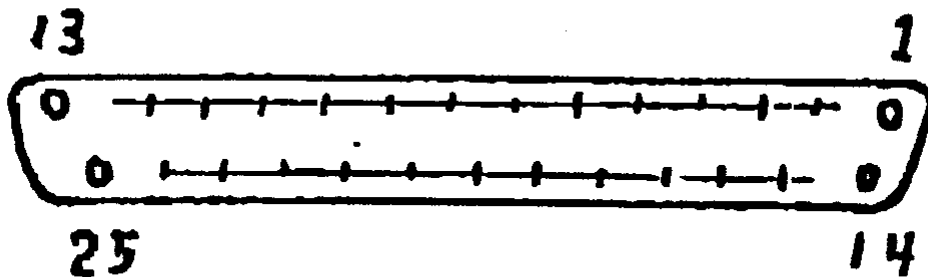
# Surface Mount Thermocouple





TRIP # 1  
HI LIMIT

TRIP # 2  
RATE OF RISE



TYPE T THERMOCOUPLE

1 to 24 COPPER +  
25 CONSTANTAN -