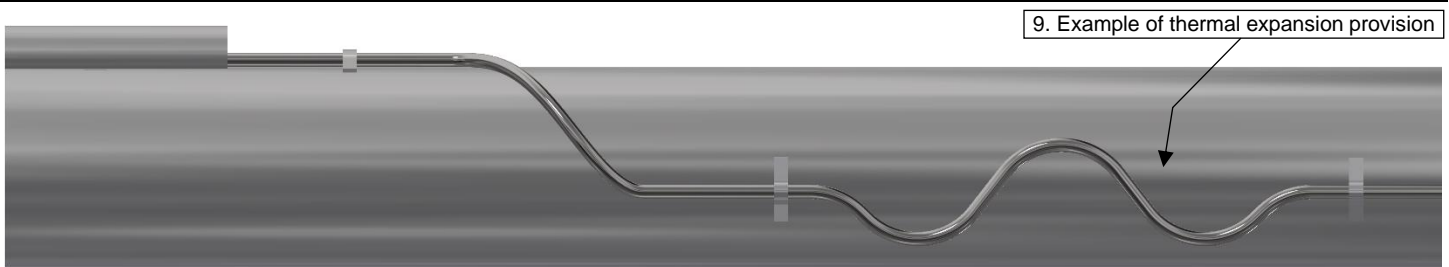


Boiler Tube Block Thermocouple (BTB)



The BTB is used in boiler, furnace and other process heating equipment. As each has its own set of characteristics, these instructions may serve as a guide to installation. Adaptation to specific applications may be required.

1. Follow facility-specific procedures that align with welding a BTB onto a boiler or furnace tube.
2. The tube weld locations should be clean and free of any contaminants.
3. Uncoil and layout the BTB sensor and MI (Mineral Insulated) cable as desired.
 - Industry best practice is to route the MI cable away from direct heat exposure as soon as possible on the tube.
 - Bending the MI cable is allowed. Do not exceed a bend radius of 4D and stay roughly 2" away from the BTB block and 4" away from the lead wires.
4. Apply side welds with a 1/8" fillet weld 3/8" long at the opposite end from the thermocouple junction, one pass and typical both sides.
 - Industry best practice is to use a GTAW welding process and a 1/16" filler rod.
5. Apply the sensor weld (after the side welds) with a 1/8" fillet weld, one pass across the thermocouple junction, and maintain a low heat input. This process will fuse the thermocouple junction onto the pipe wall.
6. Apply the sensor cap weld at least 2 minutes after the sensor weld, again with a one-pass, 1/8" fillet weld across the sensor weld and maintain a low heat input.
7. Tack MI the cable clamp(s) to the tube with fillet welds matching the thickness and outer edge length, one tack per side ensuring the MI cable is free to move underneath the clamp. Ensure the MI cable clamps spacing offers adequate support to prevent sagging at elevated temperatures.
8. Center the insulation packed shroud over the block. Tack the shroud into place with 1/8" fillet welds 1/4" long, two tacks per side.
9. Add provisions to protect the MI cable against thermal expansion effects (such as bends, expansion loops, or expansion joints) to prevent high stresses due to restricted movement at elevated temperatures. Make sure to not exceed the MI cable allowable bend radius of 4D.
10. Complete the installation by routing the MI cable outside of the boiler, furnace or process equipment. Seal fittings may or may not be provided by Aircom. Excess MI cable can be coiled outside the heating equipment.

