THERMACOR	HDPE PRESSURE TESTABLE JOINT CLOSURE INSTRUCTIONS	FKII 14.401
	THERMACOR HT- 406	5.19.10

INSTALLATION PROCEDURE FOR PRESSURE TESTABLE JOINT CLOSURES FOR THERMACOR HT- 406

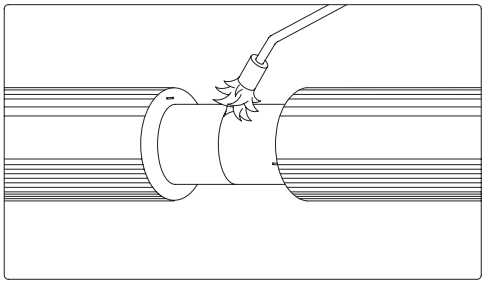
Materials & Equipment

MATERIALS:
1. Thermacor Pressure Testable Joint Closure Sleeve
2. 3 Wooden Tongue Depressors (Per Kit)
3. 1 Frictional Weld Plugs (Per Kit)
4. ERM Jumper Cable (Per Kit)
5. High Temperature Sectional Foam
6. H.S Sleeve & Patch

EQUIPMENT PROVIDED BY THERMACOR ON 30 DAY LOAN:
1. 110V Electric Power Control Unit w/ Adjustable Output (0-20 amps)
2. 3 Rubber Bands, each 4" Wide (per power unit requested)
3. Air Gauge Test Assembly
4. Ratchet Strap Tools
5. 1 Frictional Welding Drill Bit (per power unit requested)
6. Analog Ohmmeter

EQUIPMENT PROVIDED BY CONTRACTOR:
1. Hand Air Pump or Compressor
2. Clean Rags
3. Duct Tape
4. Hole Saw, 1" Hole Cutter
5. 5/8" Side Grinder
6. Safety Equipment as Prescribed by local Regulations
7. Tape Measure
8. Soap & Water Bottle
9. Propane Torch
10. Crimpers

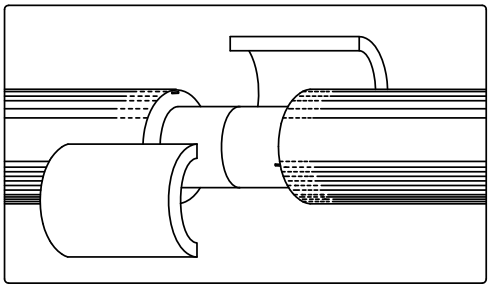
Step 1.



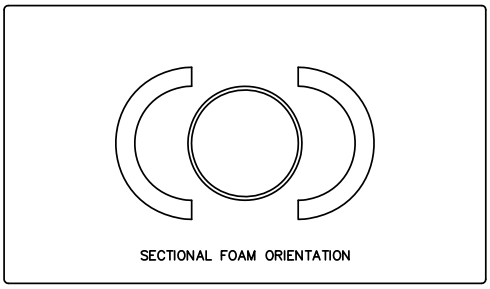
ONLY LABORERS TRAINED AND CERTIFIED BY THERMACOR ARE ALLOWED TO PERFORM THIS INSTALLATION. A Site foreman or inspector is required to inspect and log each joint on attached form. **Failure to provide this documentation will void Thermacor's warranty.**

Use a propane torch with a light billowy flame to dry the area out, regardless whether or not the area appears dry. Residual moisture may be present that is not readily seen.

Step 2.



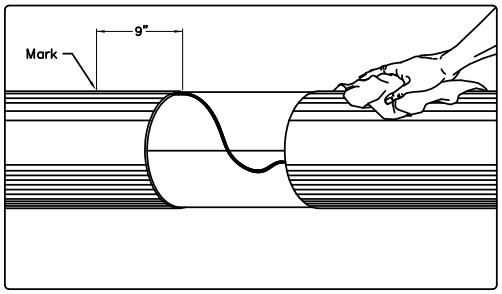
Insulate the joint using high temperature sectional foam. Measure distance between factory ends and cut insulation to fit, making sure the insulation fits between factory insulation tightly, without gaps. Tape into place. See following illustration for orientation of sectional foam.



IMPORTANT: THE JOINT AND JOINT MATERIALS MUST BE KEPT DRY!!

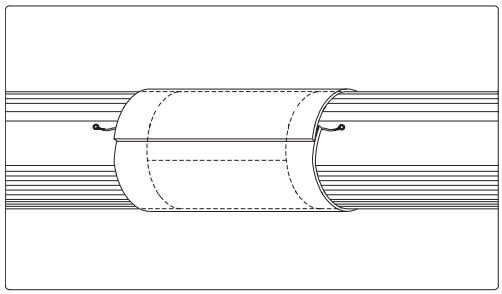
THERMACOR	HDPE PRESSURE TESTABLE JOINT CLOSURE INSTRUCTIONS	FKII 14.402
	THERMACOR HT- 406	5.19.10

Step 3.



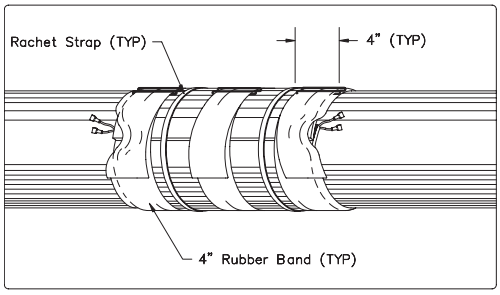
Following the ERM leak detection instructions, test the continuity of the pipe. Trim the bare copper wire so that it cannot make contact with the carrier pipe. Connect one end of the insulated jumper cable and crimp. Complete the connection to the second wire and crimp. Test the connection by following the ERM instructions. Make sure that the ERM jumper cable is NOT centered on the top of the joint, but placed to one side to prevent damaging the wire when drilling the air test hole. Clean HDPE jacket and wrap around sleeve with rag to remove any dust or dirt. On both sides of the joint, make a visible mark 9" from the cut insulation onto the factory jacket. Center the sleeve over the weld joint.

Step 4.



Wrap the Thermacor Pressure Testable Joint Closure (PTC) Sleeve tightly over insulated joint with longitudinal seam at 2 O'Clock position. Joint should overlap 2 to 4 inches and shall be centered over the joint. After the sleeve is wrapped around the joint, make sure the ends are square to each other at the overlap area. Hold in place with 1" ratchet straps. (Note: If overlap is greater than 4" or less than 2", contact Thermacor for instructions.) Ratchet to be located at 12 O' Clock position.

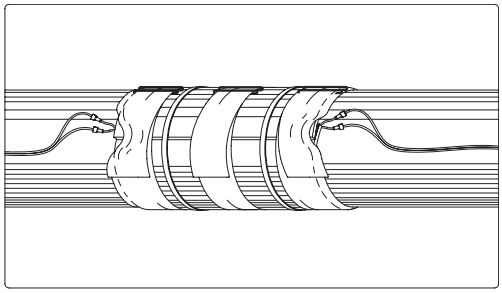
Step 5.



Tighten 1" Ratchet Straps to sleeve to ensure even pressure is maintained on fusion surfaces. NO GAPS SHOULD BE VISIBLE. Stretch 2 of the 4 inch "Rubber Bands", provided by Thermacor, along the edge of the sleeve. Rubber bands need to be at the edge of the sleeve. Stretch one 4 inch "Rubber Band" around the middle of the HDPE sleeve. The rubber bands should be placed at the 11 O'Clock position with "This End Up" visible. The loose end of the rubber band is threaded through the buckle and the rubber band is pulled tight in the **SAME DIRECTION** as the overlap. On each end of the sleeve, insert the wooden shims in between the rubber band and where the wire exits the sleeve. Gently pull the wires 90 degrees from the overlap, taking care not to pull wires off sleeve.

IMPORTANT: THE JOINT AND JOINT MATERIALS MUST BE KEPT DRY!!

Step 6.



*Heating times increase with cold weather. Insulation blanket may be required around PTC during severe cold. Fusion complete when HDPE melt is seen oozing from all seams and wire indention is seen (see pictures from submittal package).

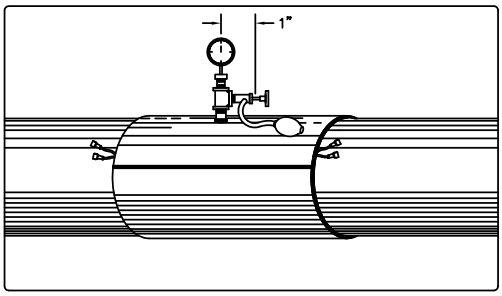
POWER CHART		
JACKET SIZE	AMPS	*MINUTES
5" TO 14"	12	20 – 30
16" TO 24"	12	25 – 35
26" TO 30"	12	30 – 40
30" AND UP	12	40 – 50

NOTE: Power requirement is 12 amps ± 0.5

Connect 110V single phase welding machine to a **DEDICATED POWER SOURCE**. Attach power cables extending from a 110V single phase welding machine to the Electro-Fusion wire. (Note: It does not matter which color power cable is connected to the Electro-Fusion wire). Apply 12 +/-0.5 Amps to the sleeve. Maintain 12 Amps throughout the heating cycle. Check the Amp reading after 5 minutes of heating to ensure that the reading remains at 12 Amps. Do not exceed 12 Amps. See power chart for heating times. Heating times will vary. **NOTE: JOINT IS NOT COMPLETE UNTIL MELT IS VISIBLE EXTRUDING FROM ALL CIRCUMFERENTIAL SEAMS AND WIRE INDENTION IS SEEN IN CLOSURE**. As the heating cycle proceeds, the rubber bands exert constant pressure on the sleeve. **DO NOT RETIGHTEN THE RATCHET STRAPS ONCE HEATING CYCLE HAS BEGUN**. The automatic timer is set for the correct heating time, shutting off the power at the end of the cycle. Allow power cords to cool for 5 minutes before disconnecting. Remove power cords and allow to cool for a minimum of 20 minutes or until the weld zone is the same temperature as the adjacent jacket. Do not remove the straps or rubber bands until the joint has cooled!

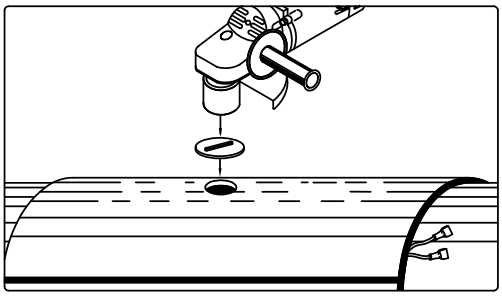
Ambient temperature affects cook times. The adjacent chart shows cook times with an assumed ambient temperature of 75ºF. Cooler days require longer cooking time as with warm days require minimum time shown on chart. **The joint cooking process is only complete after visible HDPE melt is seen oozing from all seams and wire indention is seen (see pictures from submittal package).**

Step 7.



Locate the center of the sleeve and drill a 1" hole in the sleeve at 12 O' Clock. Push the Pressure Gauge and Valve Test Device into the hole. Using a hand pump or other air supply to obtain 5 psi pressure. Disconnect air supply and soap joint for "pin hole" leaks. Hold air pressure for 5 minutes. (Note: In rare cases air will escape down the interface between the foam and the jacket. This can be confirmed by soaping the end of the jacket interface).

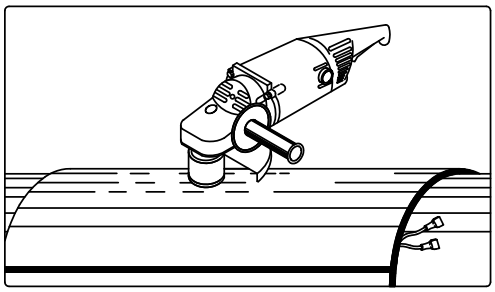
Step 8.



Install drill bit provided by Thermacor into 5/8" side grinder. Fit the raised tongue of the white plug into the groove in the drill bit. Center the raised circle on the plug into the hole in the HDPE jacket.

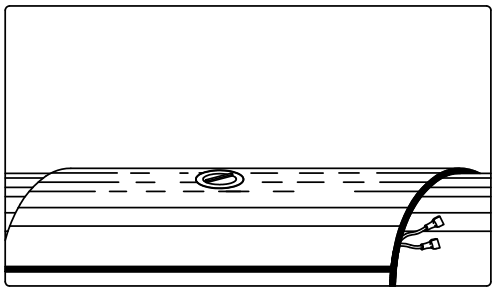
IMPORTANT: THE JOINT AND JOINT MATERIALS MUST BE KEPT DRY!!

Step 9.



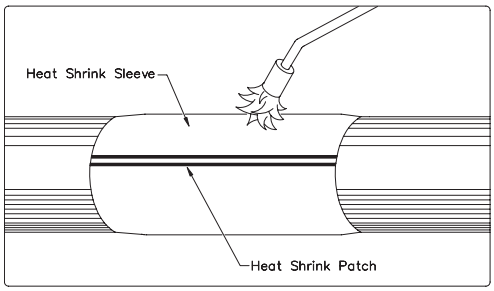
Apply firm downward pressure on the plug, then spin the plug at full speed until outside of drill bit touches HDPE jacket (approx. 13 seconds). Stop spinning the plug, but continue applying downward pressure. At the same time, tilt the grinder slightly, approximately 5 degrees, moving the grinder so that pressure is applied on all sides of the plug. Maintain the downward pressure for another 20 seconds. TAKE CAUTION NOT TO DRILL THROUGH THE ERM WIRE.

Step 10.



Visually inspect the plug after the fusing process. The edge of the clear plug should have turned black around the outer 1/2" if a good bond has been made. If the edges are not black, carefully drill the plug out (re-drill the existing hole) and repeat the process.

Step 11.



Crimp off the Electro- Fusion wires at the PTC sleeve. Using a soft billowy flame, heat the patch with a smooth brushing motion until it becomes soft and shiny. Remove heat and press the patch to the sleeve with a gloved hand to form a bond. Heat the rest of the heat shrink sleeve into place, starting at the bottom center of the sleeve and working up and out toward the ends. The mastic should be visible on both sides after the sleeve has cooled.

INSTALLER IS REQUIRED TO SIGN THEIR NAME AND DATE ON THE JOINT WITH A YELLOW PAINT PEN.

IMPORTANT: THE JOINT AND JOINT MATERIALS MUST BE KEPT DRY!!