

INSTALLATION PROCEDURE FOR PRESSURE TESTABLE JOINT CLOSURES WITH POUR FOAM

Materials & Equipment

MATERIALS:

1. Thermacor Pressure Testable Joint Closure Sleeve
2. Pour Foam, Components "A" & "B"
3. 3 Wooden Tongue Depressors (Per Kit)
4. 2 Frictional Weld Plugs (Per Kit)
5. (2) H.S. Patch

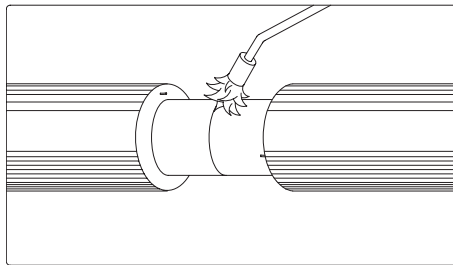
EQUIPMENT PROVIDED BY THERMACOR ON 30 DAY LOAN:

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

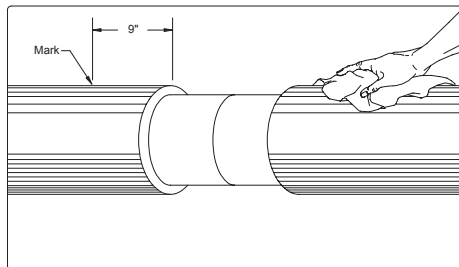
Step 1.



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.**

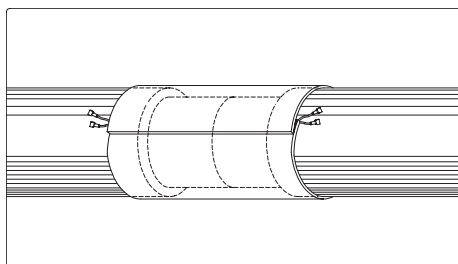
Use a propane torch with a light billowy flame to dry the area out, regardless whether or not the area appears dry. Residual moisture may be present that is not readily seen.

Step 2.



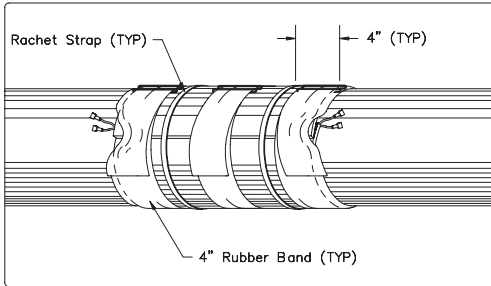
Clean HDPE Jacket and wrap around sleeve with a rag to remove any dust or dirt. Center the sleeve over the weld joint. Mark each end of PTJC on the HDPE jacket. On top of the jacket, make a mark 9" from the cutback on each side to locate pour holes.

Step 3.

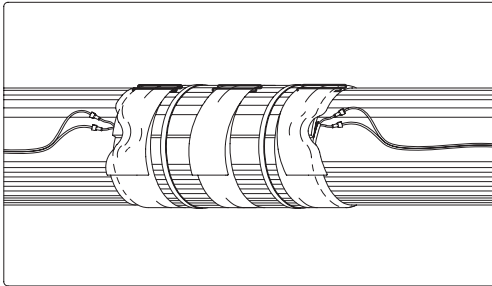


Wrap the Thermacor Pressure Testable Joint Closure (PTC) Sleeve tightly over insulated joint with longitudinal seam at 2 O' Clock position. Joint should overlap 2 to 4 inches and shall be centered over the joint. The Electro-Fusion Rod imbedded in the sleeve should be in tight contact with the open jacket and longitudinal overlap. 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.

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

Step 4.


Tighten 1" Ratchet Straps to sleeve to insure even pressure is maintained on fusion surfaces. **NO GAPS SHOULD BE VISIBLE.** Stretch 2 of the 4 inch "Rubber Bands" provided by Thermacor around the ends 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.

Step 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.** 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 30 minutes to 1 hour 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!**

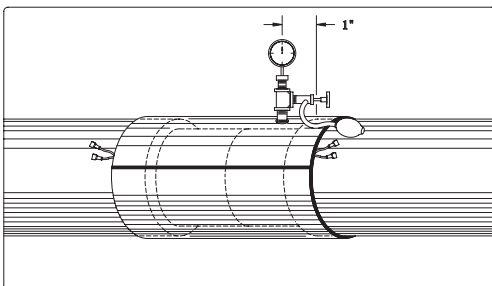
*Heating times increase with cold weather. Insulation blanket may be required around PTC during severe cold. Fusion complete when HDPE melt is seen oozing from all seams and wire indentation is seen (see pictures from submittal package).

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

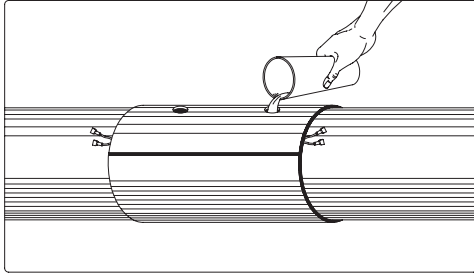
Ambient temperature affects cook times. The adjacent chart shows cook times with an assumed ambient temperature of 75°F. Cooler days require longer cooking time as with warm days require minimum time shown on chart. **The joint cooking process is only complete after visible HDPE melt is seen oozing from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

Step 6.


Measure 10" from the 9" mark and drill a 1" hole in the sleeve. Push the Pressure Gauge and Valve Test Device into the hole. Using hand pump or other air supply 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).

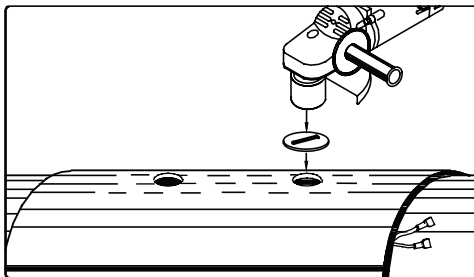
IMPORTANT: THE JOINT AND JOINT MATERIALS MUST BE KEPT DRY!!

Step 7.



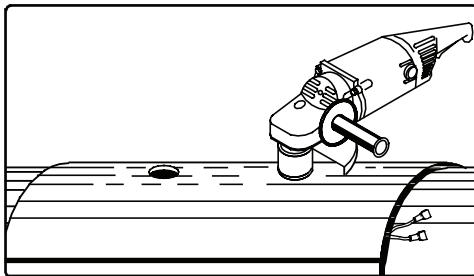
Remove test apparatus. Drill a second 1" hole 10" from the 9" mark. Mix required foam per Foam Kit Instructions and pour into 1" hole. Allow foam and gas (Air) to escape through holes, cover the holes with duct tape when the foam comes out of the holes. See Foam Kit Instructions for quantities, etc.

Step 8.



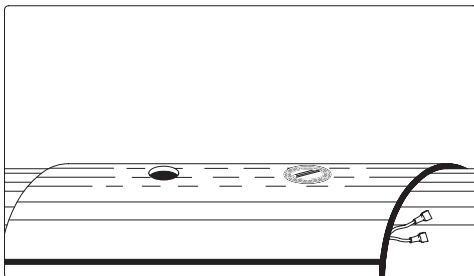
Clean any excess foam off the HDPE jacket. Using a chisel or other device, remove the foam from each hole to below the lip of the HDPE. Install drill bit provided by Thermacor into 5/8" side grinder. Fit the raised tongue of the white plug into the groove in the drill bit. Center the raised circle on the plug into the hole in the HDPE jacket.

Step 9.



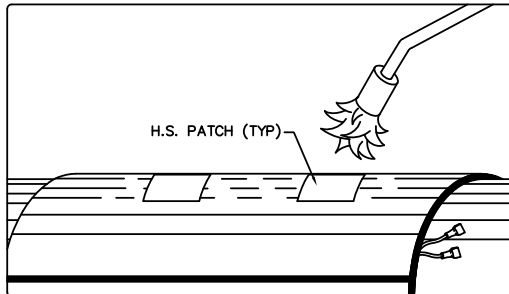
Apply firm downward pressure on the plug, then spin the plug at full speed until outside of drill bit touches HDPE jacket (approx. 13 seconds). Stop spinning the plug, but continue applying downward pressure. At the same time, tilt the grinder slightly, approximately 5 degrees, moving the grinder so that pressure is applied on all sides of the plug. Maintain the downward pressure for another 20 seconds.

Step 10.

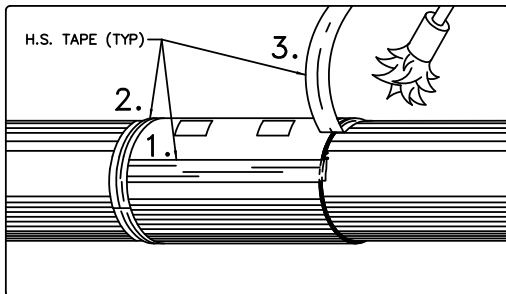


Visually inspect the plug after the fusing process. The edge of the clear plug should have turned black around the outer 1/2" if a good bond has been made. If the edges are not black, carefully drill the plug out (re-drill the existing hole) and repeat the process.

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Step 11.

Place H.S. Patch, 30 mils. thick x 6" wide over plug and heat using a soft billowy flame.

Step 12.

Crimp off the Electro-Fusion wires at the PTC sleeve. Place one heat shrink strip over the joint seam (1). Heat the strip using a billowy flame with the torch. When the heating is complete, a melt should be seen along the outer edges of the strip. Apply light heat to stick heat shrink tape in place. Place another heat shrink tape strip around one end of the PTC sleeve (2). Last, place the remaining H.S. tape strip around the other end of the PTC sleeve (3).

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

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HDPE PRESSURE TESTABLE JOINT CLOSURE INSTRUCTIONS

FKII
14.205

POUR FOAM

1.04.08

STANDARD POUR FOAM MIXING QUANTITIES

Pipe (in)	Pipe O.D. (in)	Jacket O.D. (in)	"A" Component (fl. oz)	"B" Component (fl. oz)
1/2	0.840	5.40	3.0	3.0
		6.68	5.0	5.0
3/4	1.050	5.40	3.0	3.0
		6.68	5.0	5.0
1	1.315	5.40	3.0	3.0
		6.68	5.0	5.0
1 1/4	1.660	5.40	3.0	3.0
		8.68	5.0	5.0
1 1/2	1.900	5.40	3.0	3.0
		6.68	4.0	4.0
2	2.375	6.68	4.0	4.0
		8.68	7.0	7.0
2 1/2	2.875	6.68	4.0	4.0
		8.68	7.0	7.0
3	3.500	8.68	7.0	7.0
		10.85	11.0	11.0
4	4.500	8.68	6.0	6.0
		10.85	10.0	10.0
6	6.625	10.85	8.0	8.0
		12.85	12.0	12.0
8	8.625	12.85	9.0	9.0
		14.12	12.0	12.0
10	10.750	14.12	9.0	9.0
		16.14	14.0	14.0
12	12.750	18.22	10.0	10.0
		18.22	17.0	17.0
14	14.000	18.22	14.0	14.0
		20.28	21.0	21.0
16	16.000	20.28	15.0	15.0
		22.25	23.0	23.0
18	18.000	22.25	17.0	16.5
20	20.000	24.38	19.0	19.0
24	24.000	28.25	22.0	22.0
		30.60	35.0	35.0
28	28.000	32.25	25.0	25.0
30	30.000	36.60	43.0	43.0

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