



CARAPACE® Cut-to-Length

Freeze Protected Potable Polyethylene Pipe System

Installation Instructions

General Information

CARAPACE cut-to-length is a solution for commercial/industrial applications or where calculating length requirements prior to the installation is not possible.

Heat-Line offers certified high quality industrial grade power termination and end-seal termination kits that promote efficient and effective on-site termination.

CARAPACE is adaptable to ALL areas where natural frost protection cannot be achieved. CARAPACE is a high performance, reliable product designed to work in extreme cold and harsh environments.

CARAPACE systems are supplied with the self-regulating heating cable factory extruded on the outside of a PE 4710 high density polyethylene pipe. Depending on the CARAPACE model operating maximum pressure ratings range from 200 to 250 PSI. CARAPACE is available in both IPS-I.D. and CTS pipe dimensions suitable for rural and municipal applications using low or high pressure pumping systems. This includes constant pressure systems and sewage force main use.

It is recommended that the CARAPACE installation be made by a qualified and experienced trades-person. This will help ensure optimum performance is achieved in each installation.

Thermostatic controls are optional but should be considered for every application for further energy savings if applicable. The use of insulation in all installations is highly recommend and therefore should be considered for cold weather reliability and energy efficiency.

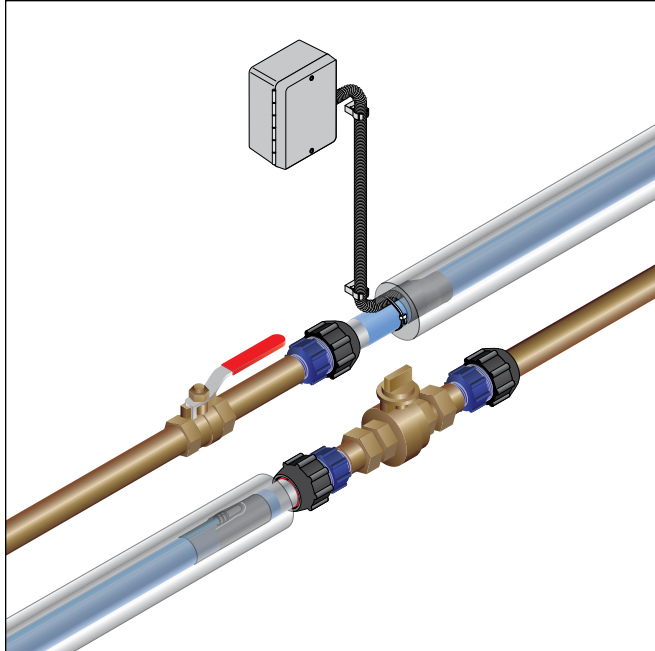
A. This heating cable set shall be installed in accordance with the National Electrical Code (USA) or the Canadian Electrical Code.

B. It is imperative that for all installations where the pipes are exposed to the outside ambient temperature that weatherproof insulation be used. (Wall thickness ½ inch minimum). Heat-Line offers closed cell foam types, foil/air bubble type and others. Other types of weather-proof insulations may also be used.

C. CARAPACE can be used even when there is no water in the pipe. CARAPACE WILL NOT melt or overheat if the pipe is dry. In the event of power failure your system may freeze. The system will however re-energize immediately following power restoration and will thaw out. In most cases no damage to pipes will be encountered.

CARAPACE is a technically advanced product. Handle it with proper care and be sure not to damage the outer sheath or jacket of the pipe and or heating cable.

Read the Safety Instructions and Installation Instructions completely before installing this product.



Approvals



B137.1 approved Usage W and X Canada
Installation Type A USA

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WARNING:

Important Safety Instructions and Rules for safe Installation and Operation

Fire and shock hazard. This component is an electrical device which must be installed properly.

- A. Read these rules and instructions carefully. Failure to follow them could result in serious bodily injury and/or property damage.
- B. Check your local building, plumbing and electrical codes before installing. You must comply with their rules. CARAPACE is cCSAus approved for use in Canada and the USA.

- C. Before installing this product have the electrical power supply checked by an electrician to make sure it is properly installed and grounded.
- D. Before installing or servicing your CARAPACE BE CERTAIN that the power source is disconnected.
- E. Ground-fault equipment protection must be used. Arcing may not be stopped by conventional circuit breakers.
- F. Component approvals and performance are based on the use of Heat-Line specified parts only. Do not use substitute parts or vinyl electrical tape.

- G. The black heating cable core and fibers are conductive and can short. They must be properly insulated and kept dry.
- H. Damaged bus wires can overheat or short. Do not break bus wire strands when scoring the jacket or core. If nick occurs, cut off and start again.
- I. Check unoccupied residences regularly to ensure that all systems are operating properly.

WHEN PERFORMING WORK OR REPAIRS ON YOUR WATER SYSTEM BE SURE TO DISCONNECT YOUR CARAPACE SYSTEM FROM THE POWER SUPPLY.

Different Pipe Size/Heating Cable Variations:

MHPE2-3-100-CTS	1 inch CTS	3 watts/ft	(9W/m) @ 50°F (10°C)	240 volt
MHPE2-5-100-CTS	1 inch CTS	5 watts/ft	(15W/m) @ 50°F (10°C)	240 volt
RHPE-5-100	1 inch SIDR	5 watts/ft	(15W/m) @ 50°F (10°C)	120 volt
RHPE-5-125	1 1/4 inch SIDR	5 watts/ft	(15W/m) @ 50°F (10°C)	120 volt
RHPE2-3-100	1 inch SIDR	3 watts/ft	(9W/m) @ 50°F (10°C)	240 volt
RHPE2-5-100	1 inch SIDR	5 watts/ft	(15W/m) @ 50°F (10°C)	240 volt
RHPE2-5-125	1 1/4 inch SIDR	5 watts/ft	(15W/m) @ 50°F (10°C)	240 volt

IMPORTANT: When ordering your CARAPACE system be sure to add an additional 7 feet minimum to accommodate the power and end seal termination.

Maximum Circuit Lengths Based on Circuit Breaker Sizes

	Ambient temperature at start-up		Maximum circuit length (in feet) per circuit breakers			
			120 V		240 V	
			15 A	20 A	15 A	20 A
3 Watt Systems	50°F (10°C)		330	330	660	660
	0°F (-18°C)		200	265	395	530
	-20°F (-29°C)		175	235	350	465
	-40°F (-40°C)		155	205	310	410
5 Watt Systems	50°F (10°C)		230	270	460	540
	0°F (-18°C)		140	190	285	380
	-20°F (-29°C)		125	165	250	330
	-40°F (-40°C)		110	145	220	295

Connection Kits and Optional Accessories

Heat-Line Connection Kits required for certified electrical termination:

HTLN-CKIT	Power & end termination kit
HTLN-CS100	Power only termination kit
HTLN-CESS	End seal only termination kit

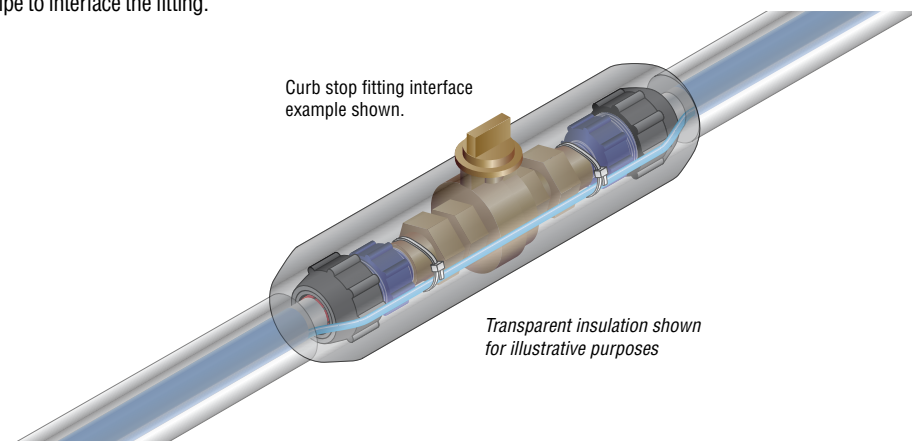
Optional Accessories:

GF-STAT	120/240V hard wire thermostat with GFCI
TIMER-CS	120/240V hard wire timer
MA-10	120/240V GFCI/ELCI
INSUL-1.00	Insulation sleeve for 1 inch ID pipe (1 5/8 inch ID, 6 ft long)
INSUL-1.25	Insulation sleeve for 1 1/4 inch ID pipe (1 7/8 inch ID, 6 ft long)
INSUL-2.00	Insulation sleeve for 2 inch ID pipe (2 5/8 inch ID, 6 ft long)
HLP-TAPE	Tape for insulation sleeves (100 ft)
PHILMAC	Heat-Line can provide various Philmac Fittings

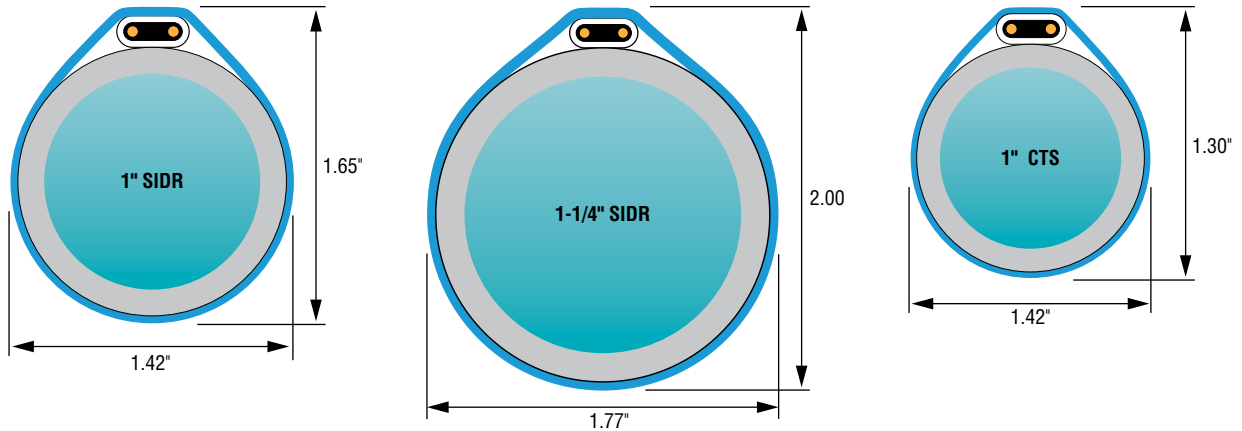
Fitting Interface Process

CARAPACE can be used with all standard residential and municipal pipe fittings such as elbows, couplings etc., but it is first necessary to extract the heating cable from the pipe in order to remove the pipe to interface the fitting.

See Page 12 for instructions.



CARAPACE Cross Sections



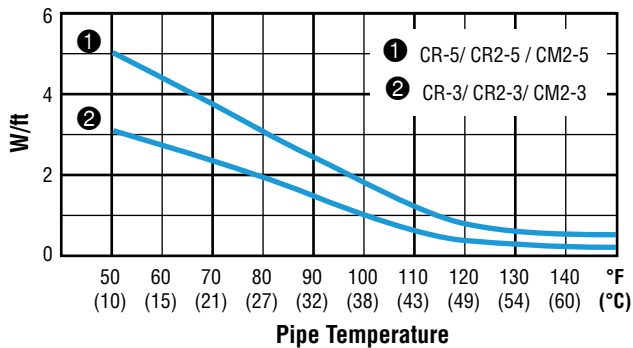
Product Characteristics

	CR-5-100, CR2-5-100	CR-3-100, CR2-3-100	CR-5-125, CR2-5-125	CR-3-125, CR2-3-125	CM2-3-100	CM2-5-100
Minimum Bend Radius of Product at 73.4 F (23°C)*	32.00 in (813 mm)	32.00 in (813 mm)	42.15 in (1071 mm)	42.15 in (1071 mm)	22.50 in (572 mm)	22.50 in (572 mm)
Overall Product Weight (per 10 ft. nominal)	3.8 lbs. (1.7 kg)	3.8 lbs. (1.7 kg)	5.4 lbs. (2.5 kg)	5.4 lbs. (2.5 kg)	3.5 lbs. (1.6 kg)	3.5 lbs. (1.6 kg)
Heating Cable Buss Wire Size	16 AWG	16 AWG	16 AWG	16 AWG	16 AWG	16 AWG
Heating Cable Dimensions	0.46 in x 0.25 in (11.7 mm x 6.35 mm)	0.46 in x 0.25 in (11.7 mm x 6.35 mm)	0.46 in x 0.25 in (11.7 mm x 6.35 mm)	0.46 in x 0.25 in (11.7 mm x 6.35 mm)	0.46 in x 0.25 in (11.7 mm x 6.35 mm)	0.46 in x 0.25 in (11.7 mm x 6.35 mm)
Heating Cable Watt Density	5 W/ft @ 50°F (10°C)	3 W/ft @ 50°F (10°C)	5 W/ft @ 50°F (10°C)	3 W/ft @ 50°F (10°C)	3 W/ft @ 50°F (10°C)	5 W/ft @ 50°F (10°C)
HDPE Pipe Dimensional Data	1" ID SIDR 9 200 PSI	1" ID SIDR 9 200 PSI	1.25" ID SIDR 9 200 PSI	1.25" ID SIDR 9 200 PSI	1" CTS SODR 9 250 PSI	1" CTS SODR 9 250 PSI
Overall Outer Dimensions of Product**	1.65 in x 1.42 in (42 mm x 36 mm)	1.65 in x 1.42 in (42 mm x 36 mm)	2.00 in x 1.77 in (51 mm x 45 mm)	2.00 in x 1.77 in (51 mm x 45 mm)	1.46 in x 1.30 in (37 mm x 33 mm)	1.46 in x 1.30 in (37 mm x 33 mm)

*The Minimum Bend Radius provided above includes a safety factor of 2:1.

**The overall outer dimension of the product is the complete cross section of the HDPE pipe, heating cable and outer extruded sheath.

Nominal Output Ratings



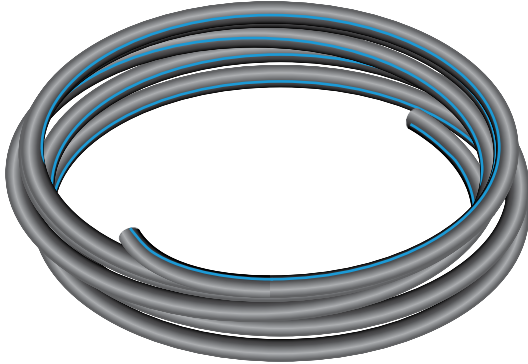
Supply Voltage

CR	100–130 Volts	Single Phase	60 Hz
CR2	200–277 Volts	Single Phase	60 Hz
CM2	200–277 Volts	Single Phase	60 Hz

Curb Stop Installation Example Shown

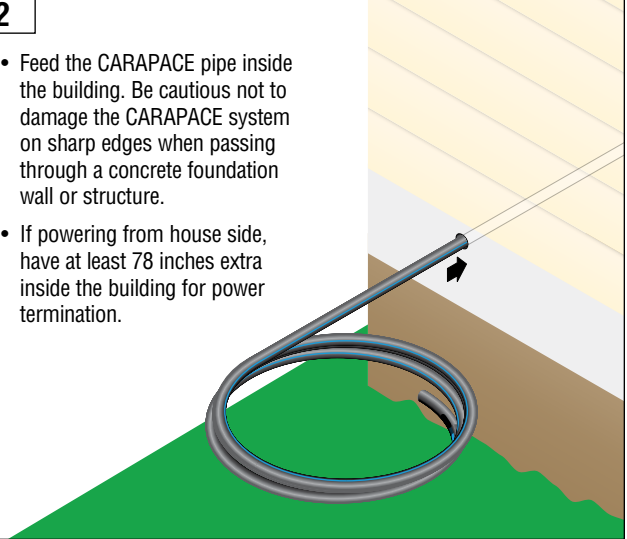
1

- Carefully unpack your CARAPACE and make a visual inspection of the pipe for any shipping damage.
- Do not use sharp instruments to unpack the roll.



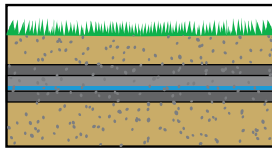
2

- Feed the CARAPACE pipe inside the building. Be cautious not to damage the CARAPACE system on sharp edges when passing through a concrete foundation wall or structure.
- If powering from house side, have at least 78 inches extra inside the building for power termination.

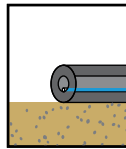


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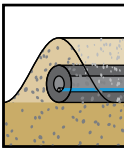
- Construct a level depth trench where possible and roll out the system to lay in the trench.
- Completely insulate the pipe with insulation if remaining above ground. Insulation is also recommended if pipe will be buried.
- The CARAPACE pipe system may also be installed within a 3" or 4" drainage type duct (optional) for mechanical protection.



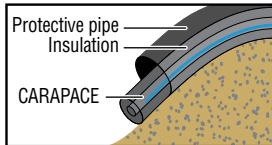
Bury the pipe a minimum of 3 inches deep



Run above ground. Cover with 3 inches of soil or sand (optional).



On rocky or inclined surfaces, and where the pipe enters the lake, protect with oversized plastic pipe (4 inch diameter or larger)



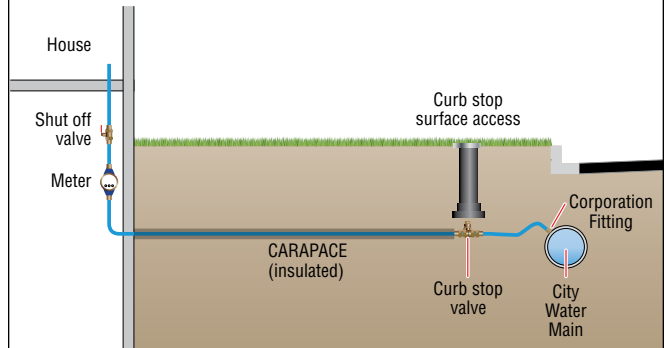
Protective pipe
Insulation
CARAPACE

4

- Install CARAPACE from the house to the curb stop or corporation stop at the water main.
- For details on how to splice in a curb stop refer to Interface process on page 12.

Option: CARAPACE can extend to Corporation Fitting after Curb stop

Note: For options on internally freeze protecting city water mains please refer to Retro-FM by Heat-Line.



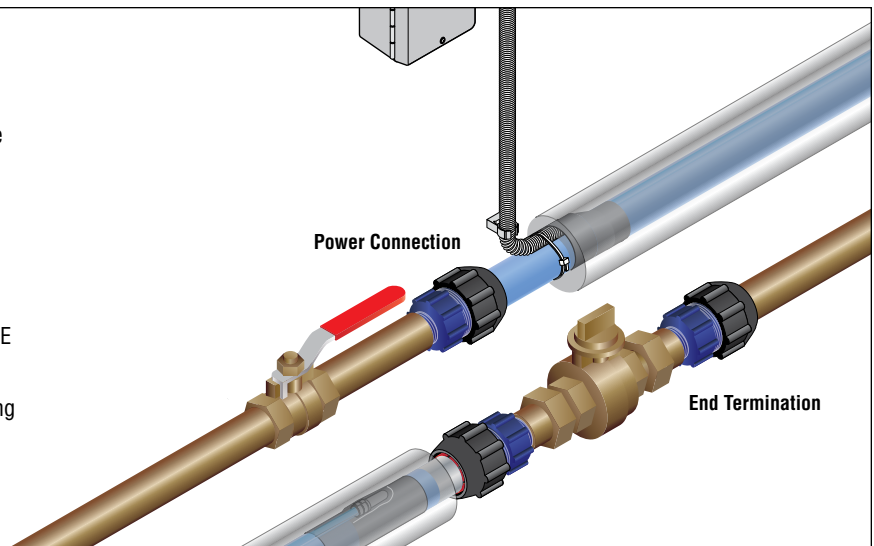
5

- Finish power and end seal termination as per instructions. Heat-Line offers a wide variety of high end Philmac compression fittings to make plumbing connections simple and effective.

Power connection – page 5

End seal termination – page 9

Note: As an option you can extend the CARAPACE system beyond the curb stop to the corporation fitting. Please refer to Page 12 of this document for information and steps on the CARAPACE fitting interface process.





CARAPACE®

Power Connection Kit

Part No. HTLN-CS100 (Power Connection Only)

Part No. HTLN-CKIT (Power & End Connection)

Installation Instructions

Description

Certified power connection kit for CARAPACE.

IMPORTANT: WHEN ORDERING YOUR CARAPACE SYSTEM BE SURE TO ADD AN ADDITIONAL 7 FEET MINIMUM TO ACCOMMODATE THE ELECTRICAL SPLICING AND TAILORING.

• This is a professional product designed to be installed by licensed tradespersons and must be inspected by the proper electrical and mechanical authorities following completion of the finished installation.

For technical support call Heat-Line at (800) 584-4944.

Tools Required

- Needle nose pliers
- Adjustable pliers
- Marker
- 3/16" (4 mm) or smaller slotted screwdriver
- Utility knife or hook knife
- Wire cutters
- Pipe cutter or saw
- Heat gun or mini-torch
- No. 2 Phillips or 1/4" (6 mm) slotted screwdriver

Additional Materials Required

- Certified enclosure and ground fault protection.
- Optional Heat-Line GF-STAT or MA-10 to provide required ground fault protection

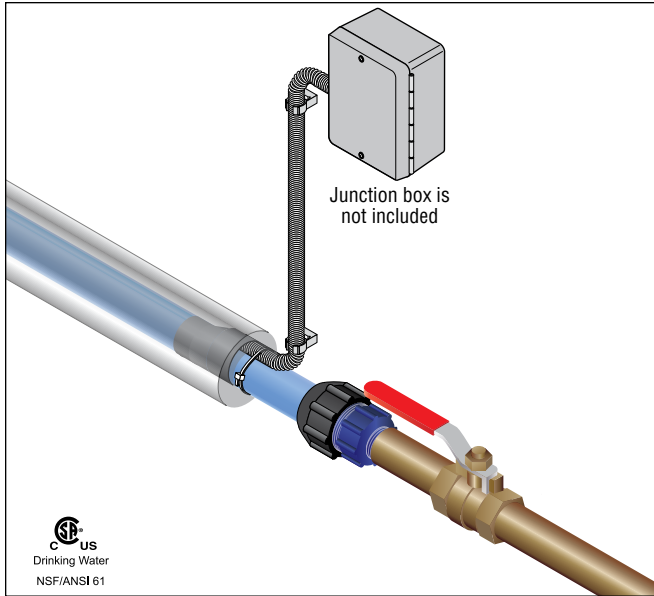
Installation Recommendations

Control devices are not required to operate the heating cable system. They can be added for energy efficiency.

Thermostats are used to duty cycle the system in an on/off operation saving power consumption and maintain a certain pipe temperature. A sensor lead must be placed on the coldest section of pipe.

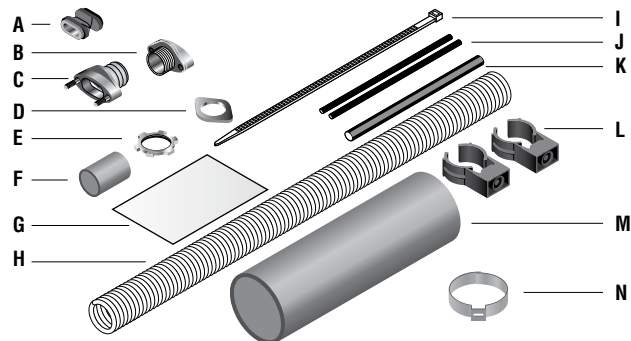
Timers are used to duty cycle the system in an on/off operation based on preset time intervals to save on power consumption.

Insulation is recommended for all new pipe installations, even where the pipe is to be buried, it is required in areas the pipe is near or exposed to the air temperature. Insulation aids in heat retention making the heating cable more energy efficient and providing cold weather reliability.



Kit Contents

Item	Qty	Description
A	1	Grommet
B	1	Gland bottom
C	1	Gland with threaded inserts and screws
D	1	Gland gasket
E	1	Locknut
F	1	1/2" Small heat-shrinkable tube
G	1	Product information label
H	1	72" Length of 1-inch flex
I	2	1/8" Black heat-shrinkable tubes
J	1	Green/yellow heat-shrinkable tube
K	1	Nylon tie
L	2	1" Flex clips
M	1	6" Large heat shrink tube
N	1	1" Crimp ring



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- B. Check your local building, plumbing and electrical codes before installing. You must comply with their rules. CARAPACE is cCSAus approved for use in Canada and the USA.

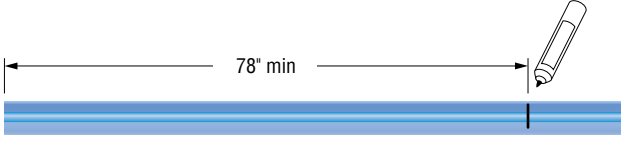
- C. Before installing this product have the electrical power supply checked by an electrician to make sure it is properly installed and grounded.
- D. Before installing or servicing your CARAPACE BE CERTAIN that the power source is disconnected.
- E. Ground-fault equipment protection must be used. Arcing may not be stopped by conventional circuit breakers.
- Component approvals and performance are based on the use of Heat-Line specified parts only. Do not use substitute parts or vinyl electrical tape.

- The black heating cable core and fibers are conductive and can short. They must be properly insulated and kept dry.
- Damaged bus wires can overheat or short. Do not break bus wire strands when scoring the jacket or core. If nick occurs, cut off and start again.
- Check unoccupied residences regularly to ensure that all systems are operating properly.

WHEN PERFORMING WORK OR REPAIRS ON YOUR WATER SYSTEM BE SURE TO DISCONNECT YOUR CARAPACE SYSTEM FROM THE POWER SUPPLY

1

- Mark pipe a minimum of 78" for the connection.



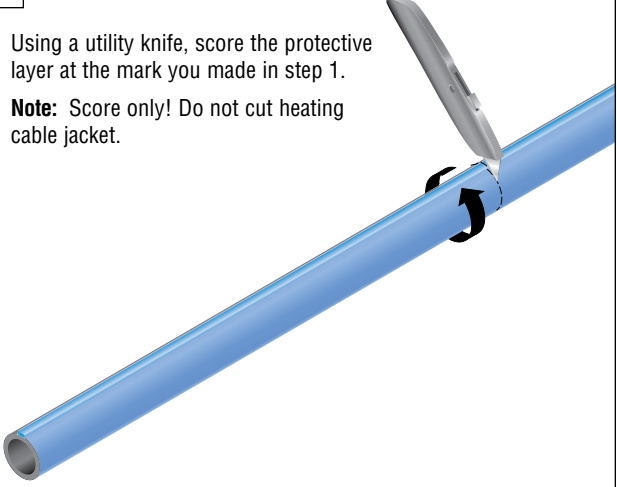
78" min

Note: Pipe will be cut back and interfaced to the plumbing connection later. The length of heating cable extracted must be based on power connection box or ground fault enclosure location per the GEC and NEC.

2

- Using a utility knife, score the protective layer at the mark you made in step 1.

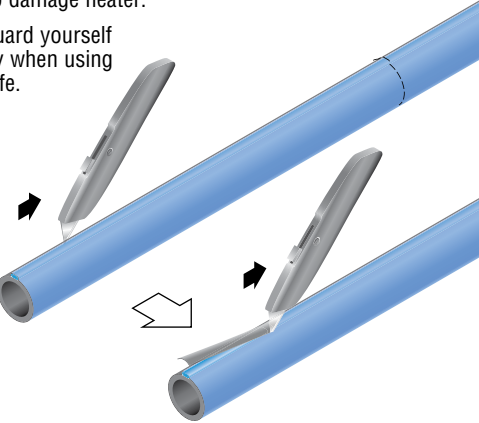
Note: Score only! Do not cut heating cable jacket.



3

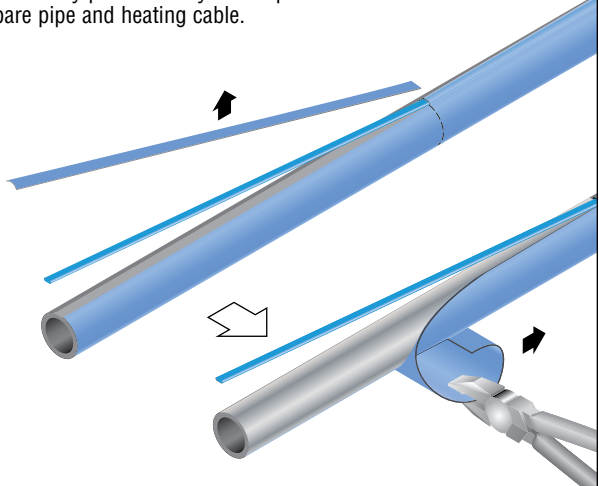
- Wedge utility knife into the space next to the heating cable and cut away protective layer. (Repeat on both sides). Be careful not to damage heater.

CAUTION: Guard yourself against injury when using the utility knife.



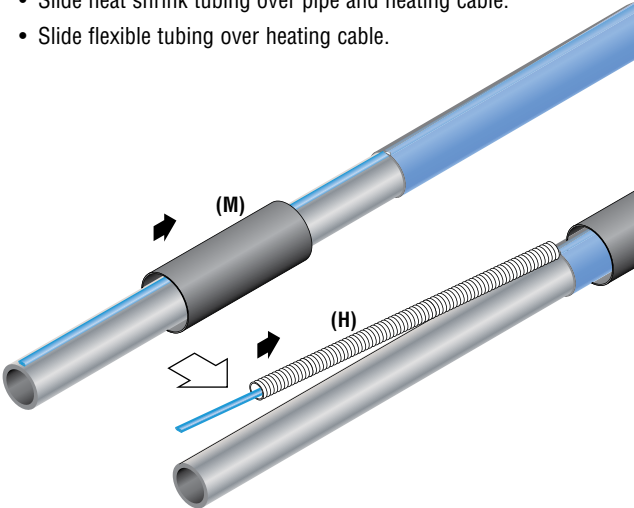
4

- Peel away protective layer to expose bare pipe and heating cable.



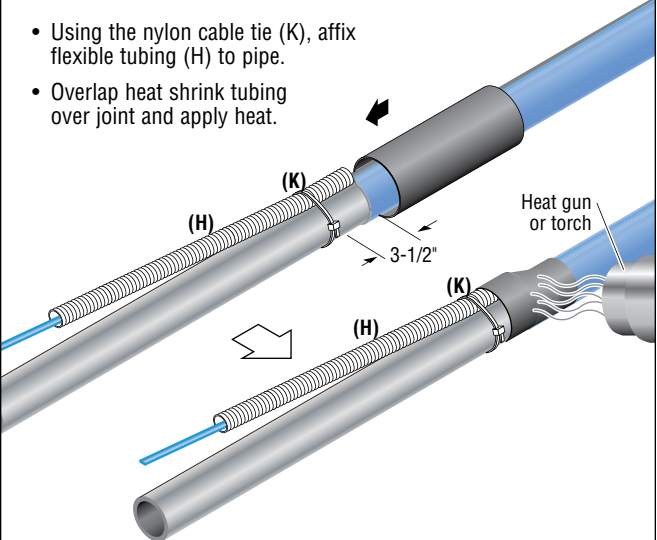
5

- Slide heat shrink tubing over pipe and heating cable.
- Slide flexible tubing over heating cable.



6

- Using the nylon cable tie (K), affix flexible tubing (H) to pipe.
- Overlap heat shrink tubing over joint and apply heat.



Heat gun or torch

3-1/2"

7

- Using a pipe cutter, remove all but 6 inches of the exposed pipe. Adjust to job requirements.

8

- Attach the gland with threaded screws (B) to the flexible tubing (H) using the crimp ring (N), as illustrated then slide the grommet into position as shown.
- Seal grommet in gland (A) as shown.

9

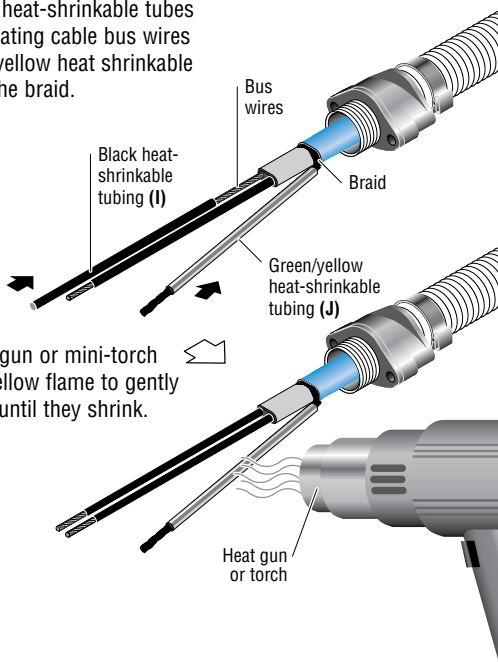
- Lightly score outer jacket of heating cable around and down as shown. **Do not cut braid.**
- Gently bend heating cable to break jacket at score, then peel off jacket.
- Push braid back to create a pucker.
- At pucker, use a screwdriver to open braid.
- Bend heating cable and work it through opening in braid.
- Lightly score base jacket around and down as shown.
- Pull braid tight to make a pigtail.

10

- Peel off base jacket.
- Notch core.
- Peel bus wire from the core.
- Score core between bus wires at inner jacket.
- Peel core from bus wire.
- Remove any remaining core material from bus wires.

11

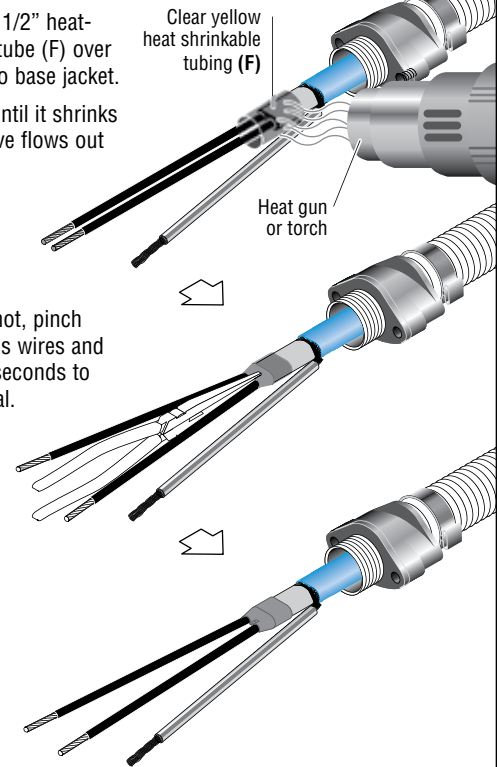
- Slide black heat-shrinkable tubes onto the heating cable bus wires and green/yellow heat shrinkable tube onto the braid.



- Use a heat gun or mini-torch with soft yellow flame to gently heat tubes until they shrink.

12

- Slide small 1/2" heat-shrinkable tube (F) over bus wires to base jacket.
- Heat tube until it shrinks and adhesive flows out ends.

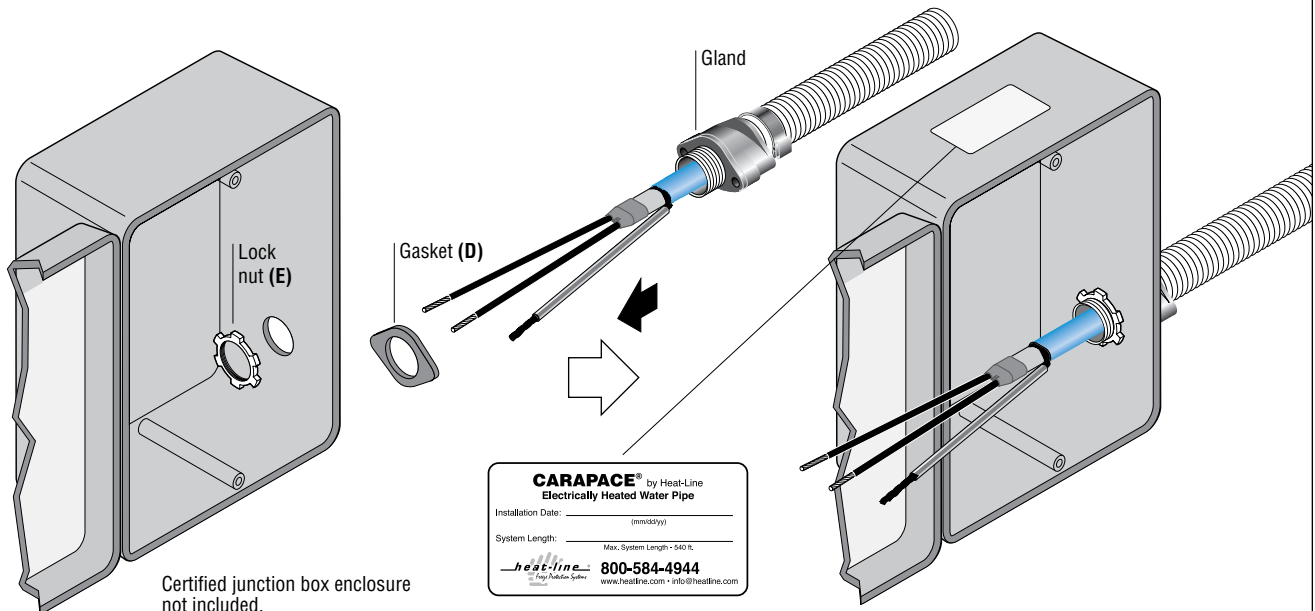


- While still hot, pinch between bus wires and hold for 5 seconds to create a seal.

13

- Follow accepted electrical practices. Use suitable approved enclosures based on location requirements. This product must be protected with certified ground-fault equipment protection devices per the NEC and CEC.
- Thread heating cable through gasket (D) and through 1/2 inch knock out hole in junction box and secure gland using the lock nut.

- Attach the Product Identification Label (G), to the pipe or a convenient location on the enclosure. Please enter the date of installation, system length and voltage using a ball point pen.
- Completely fill out the product identification label.





CARAPACE® End Seal Kit

Part No. HTLN-CESS (End Seal Connection Only)
Part No. HTLN-CKIT (Power & End Connection)

Installation Instructions

Description

Certified end seal termination kit for CARAPACE.

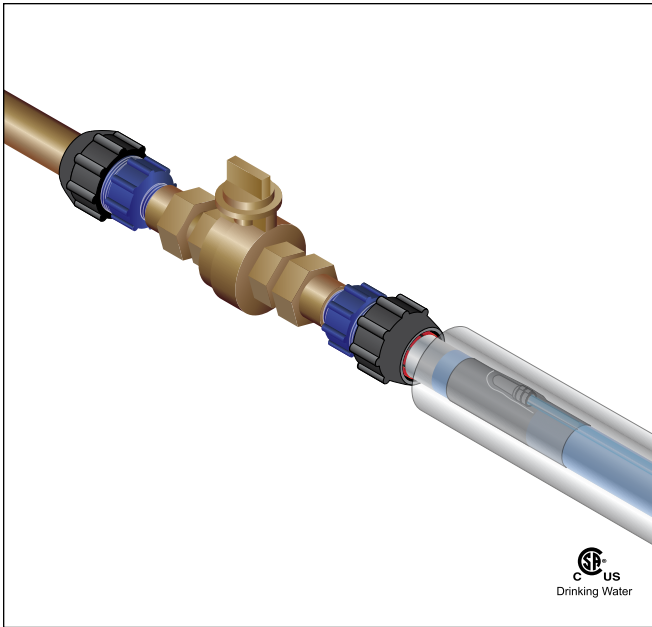
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For technical support call Heat-Line at (800) 584-4944.

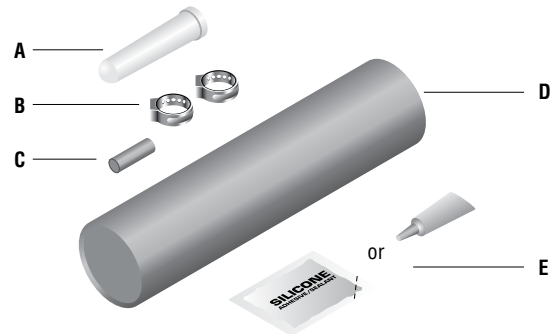
Tools Required

- Utility knife
- Diagonal cutting pliers
- Heat gun or mini-torch
- Stripping/scoring tool (available from Heat-Line in HTLN-CS100 power connection kit) or hook knife
- Side cutting pliers
- Long-nose pliers
- Oetiker # 14100134 straight jaw pincer (available from Heat-Line)



Kit Contents

Item	Qty	Description
A	1	End seal boot
B	2	Stainless steel crimp rings
C	1	5/16" Heat shrink sleeve
D	1	Large Heat shrink sleeve
E	1	Silicone sealant pouch or tube



⚠ WARNING:

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Fire and shock hazard. This component is an electrical device which must be installed properly.

- A. Read these rules and instructions carefully. Failure to follow them could result in serious bodily injury and/or property damage.
- B. Check your local building, plumbing and electrical codes before installing. You must comply with their rules. CARAPACE is cSAus approved for use in Canada and the USA.
- C. Before installing this product have the electrical power supply checked by an electrician to make sure it is properly installed and grounded.

D. Before installing or servicing your CARAPACE BE CERTAIN that the power source is disconnected.

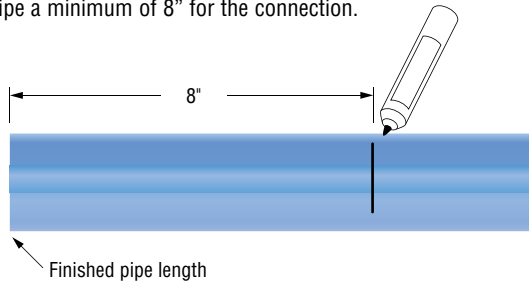
- E. Ground-fault equipment protection must be used. Arcing may not be stopped by conventional circuit breakers.
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 - The black heating cable core and fibers are conductive and can short. They must be properly insulated and kept dry.
 - Damaged bus wires can overheat or short. Do not break bus wire strands when scoring the jacket or core. If nick occurs, cut off and start again.

G. Check unoccupied residences regularly to ensure that all systems are operating properly.

WHEN PERFORMING WORK OR REPAIRS ON YOUR WATER SYSTEM BE SURE TO DISCONNECT YOUR CARAPACE SYSTEM FROM THE POWER SUPPLY

1

- Plan the finished pipe length at this time.
- Mark pipe a minimum of 8" for the connection.

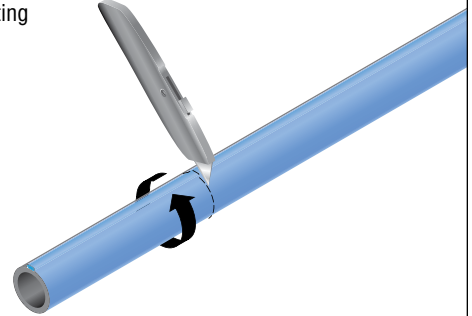


Note: The length of heating cable extracted must be based on the finished pipe length.

2

- Using the utility knife or a hook knife, score the protective layer at the mark you made in Step 1.

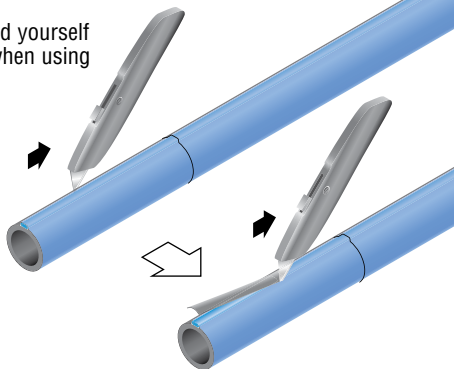
Note: Score only!
Do not cut heating cable jacket.



3

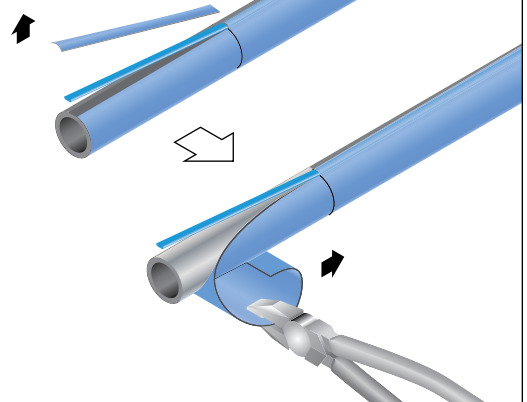
- Wedge the utility knife into the space next to the heating cable and cut away protective layer. (Repeat on both sides). Be careful not to damage the heater or score the pipe.

CAUTION: Guard yourself against injury when using the utility knife.



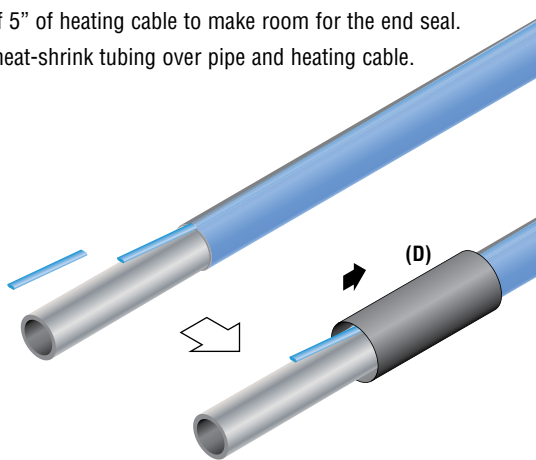
4

- Peel away protective layer to expose bare pipe and heating cable.



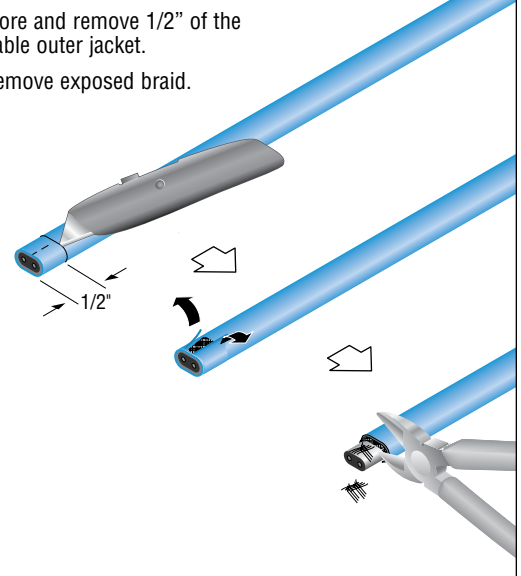
5

- Cut off 5" of heating cable to make room for the end seal.
- Slide heat-shrink tubing over pipe and heating cable.



6

- Lightly score and remove 1/2" of the heating cable outer jacket.
- Cut and remove exposed braid.



7

- Install the heat shrink sleeve over the core and heat (with a torch or heat gun) until it comes down tightly against the core.

Heat-shrinkable tubing (C)

Heat gun or torch

Long-nose pliers

- You will see the sealant flow around the edges.
- Using long nose pliers squeeze the end of the heat shrink to close it forming a seal, and let cool.

8

- Install sealant liberally around the entire end of the cable and into end seal boot.
- Push the boot on fully (min. 1-1/2").

Silicone sealant (D)

End seal boot (A)

- Sealant will flow out.

9

- Install the stainless steel crimping rings and completely close them using the Oetiker crimping tool as shown.

- Excess sealant can be wiped off.

10

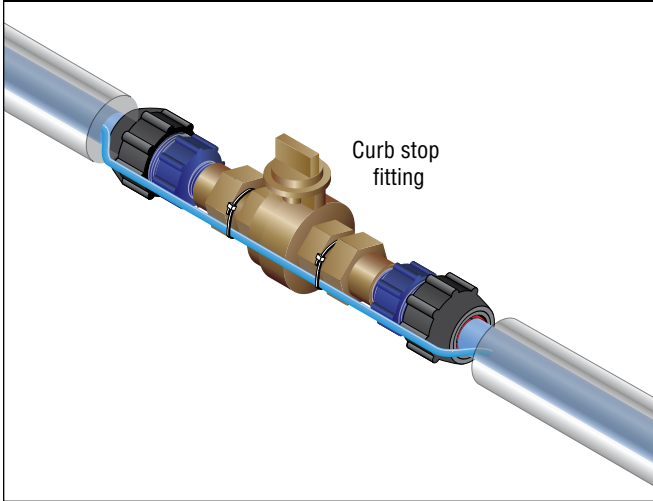
- Finish installation by shrinking large tube over the pipe and end seal boot, forming a seal around the pipe.

Heat gun or torch

- When you see the sealant flow around the edges, seal is complete.
- Pipe is now ready for plumbing connection.

Have installation inspected by the proper authorities.

CARAPACE Interface Process



Description

Use this instruction to retrofit a CARAPACE system with fittings such as rigid elbows and curb stops. In a curb stop application the interface of the curb stop fitting will allow the CARAPACE heating cable to continue on to the corporation fitting at the water main.

This is a professional product designed to be installed by licensed trade-persons and must be inspected by the proper electrical and mechanical authorities following completion of the finished installation.

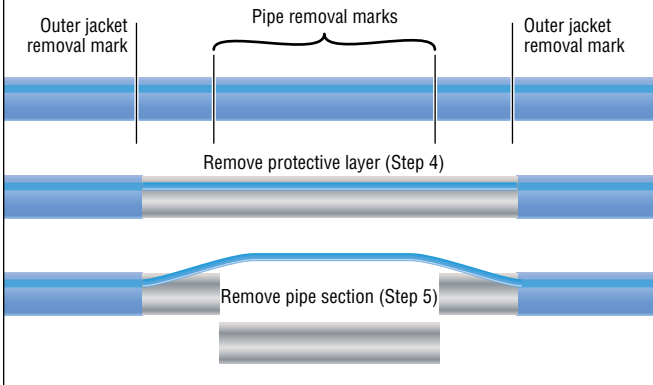
CARAPACE freeze protected pipe systems can be used with all standard residential and municipal pipe fittings such as elbows, couplings etc., but it is first necessary to extract the heating cable from the pipe in order to remove the pipe to interface the fitting. While a flexible joint is illustrated, the same process is followed for any fitting type.

Tools Required

- Utility knife or hook knife
- Polyethylene pipe cutter
- Tools Required
- Marker

1

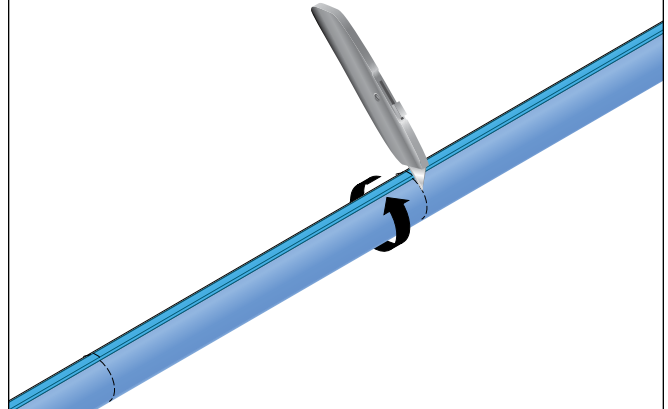
- Determine the location of the flexible fitting, straight elbow or fitting to be installed.
- Mark the outer jacket 4 to 6 inches beyond where the pipe will be cut and be liberal about leaving enough cable.



2

- Using a utility knife, score the protective outer jacket at the mark you made in Step 1.

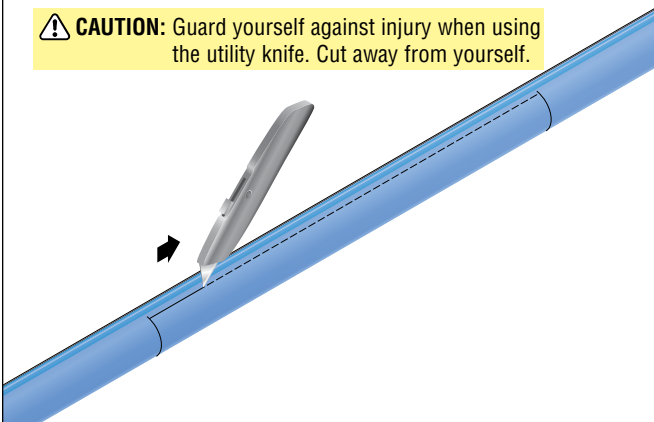
⚠ CAUTION: Score only! Do not cut heating cable jacket.



3

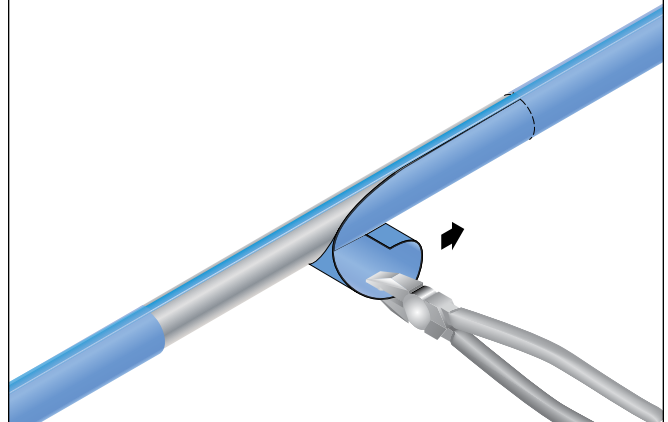
- Carefully wedge utility knife into the space next to the heating cable and cut away outer jacket of polyethylene pipe. Be careful not to damage heating cable.

⚠ CAUTION: Guard yourself against injury when using the utility knife. Cut away from yourself.



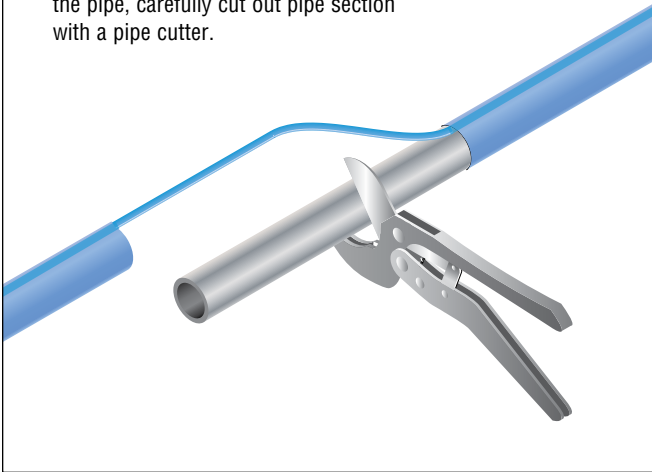
4

- Peel away protective layer to expose bare pipe and heating cable.



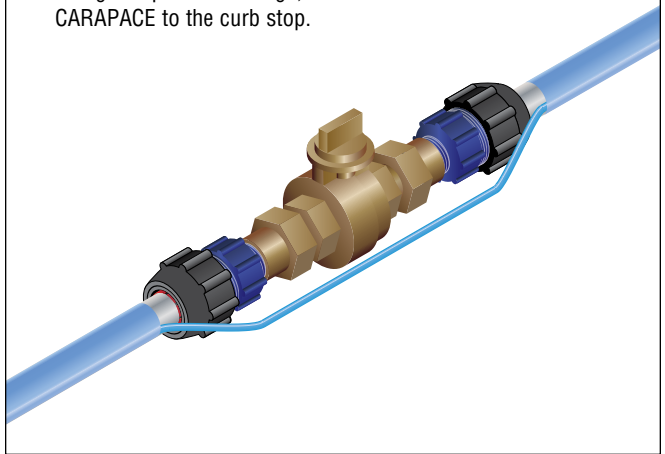
5

- Once the cable is extracted and clear of the pipe, carefully cut out pipe section with a pipe cutter.



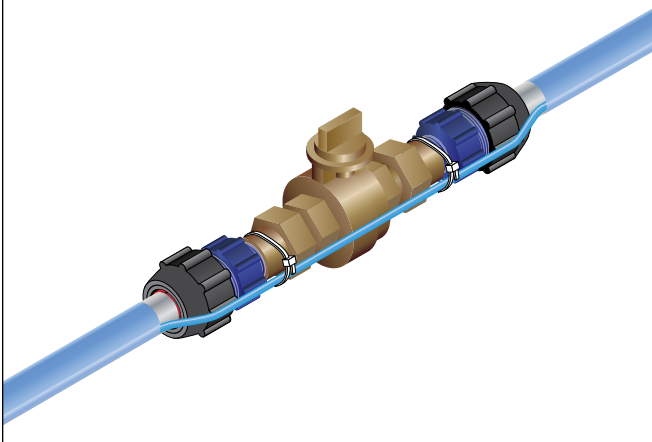
6

- Install curb stop fitting.
- Using compression fittings, connect CARAPACE to the curb stop.



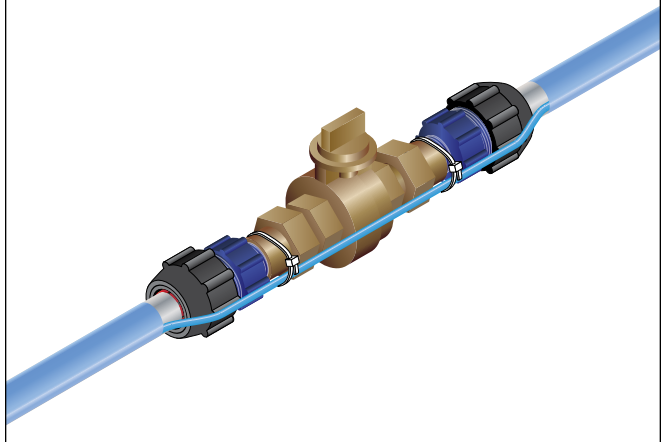
7

- Attach the heating cable to the curb stop with tape or nylon ties.



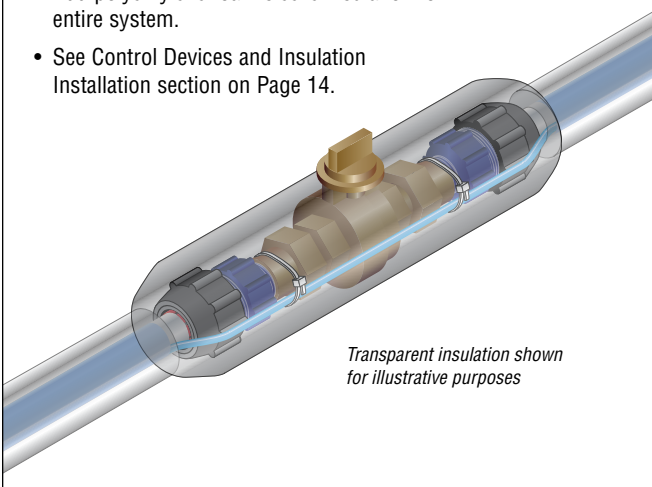
8

- Position pipe.



9

- Add polyethylene foam sleeve insulation to entire system.
- See Control Devices and Insulation Installation section on Page 14.



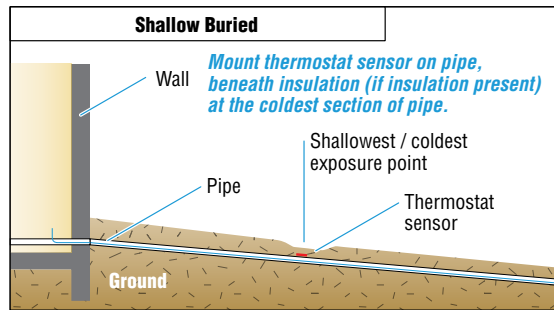
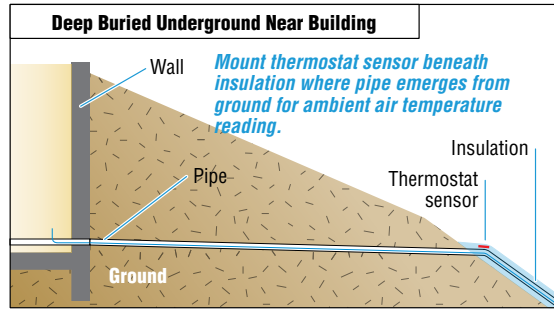
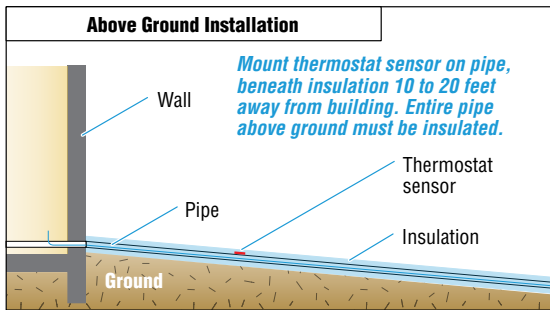
Control Devices and Insulation Installation

Control devices are not required to operate the heating cable system. They can be added for energy efficiency.

Thermostats are used to duty cycle the system in an on/off operation saving power consumption and maintain a certain pipe temperature. A sensor lead must be placed on the coldest section of pipe.

Timers are used to duty cycle the system in an on/off operation based on preset time intervals to save on power consumption.

Insulation is recommended for all new pipe installations, even where the pipe is to be buried.



Limited Warranty

During the time periods and subject to the conditions hereinafter set forth. Heat-Line will repair or replace to the original user any portion of your Heat-Line product which proves defective in materials or workmanship of Heat-Line. Contact Heat-Line or your installer for warranty service.

At all times Heat-Line shall have and possess the sole right and option to determine whether to repair or replace defective equipment, parts or components. **Damage due to natural events or conditions beyond the control of Heat-Line are NOT COVERED BY THIS WARRANTY.**

STANDARD WARRANTY PERIOD: 60 months from date of purchase or 63 months from date of manufacture, whichever ever occurs first.

ACCESSORIES, COMPONENTS, ELECTRONICS: Not manufactured by Heat-Line, are warranted only to the extent of original manufacturer's warranty.

LABOUR, COSTS, ETC.: Heat-Line shall in **NO EVENT** be responsible or liable for the cost of field labour or other charges incurred by any customer in removing and/or reaffixing any Heat-Line product, part or component thereof.

THIS WARRANTY WILL NOT APPLY:

- (a) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided,
- (b) to failures resulting from abuse, accident or negligence;

- (c) to normal maintenance services and
- (d) to parts not used in accordance with applicable local codes, ordinance and good trade practices;
- (e) if the unit is moved from its original installation location or
- (f) if the unit is used for purposes other than for what it was designed and manufactured.

PRODUCT IMPROVEMENTS: Heat-Line reserves the right to change or improve its products or any component thereof without being obligated to provide such a change or improvement for units sold and/or shipped prior to such change or improvement.

WARRANTY EXCLUSIONS: As to any Heat-Line product after the expiration of the time period of the warranty applicable thereto as set forth above. There will be no warranties including any implied warranties of merchantability or fitness for any particular purpose. No warranties or representations at any time made by any representative of Heat-Line, shall vary or expand the provisions hereof.

LIABILITY LIMITATION: In no event shall Heat-Line be liable or responsible for consequential, incidental or special damages resulting from or related in any manner to any Heat-Line product or parts thereof. In the absence of suitable proof of the purchase date, the effective date of this warranty will be based upon the date of manufacture plus 90 days.

Heat-Line Freeze Protection Systems

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