

Rovanco® Piping Systems

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Above Ground Metal Jacketed Insul-8® Installation Instructions

INS-MFC

Revised 03/20/24

GENERAL

This instruction manual will give you all the information needed in terms of techniques, tools, and accessories required to install ROVANCO Insul-8 Above Ground system. If you follow the instructions carefully, the end result will be a high quality, pressure testable conduit piping system. Thank you for showing your confidence in ROVANCO by purchasing its products. We sincerely appreciate your business and we will provide you with quality products with a fair price and “great” service to deserve your future business. Please consult your local ROVANCO Manufacturer’s Representative for information about all of the products provided by ROVANCO.

INSPECTION

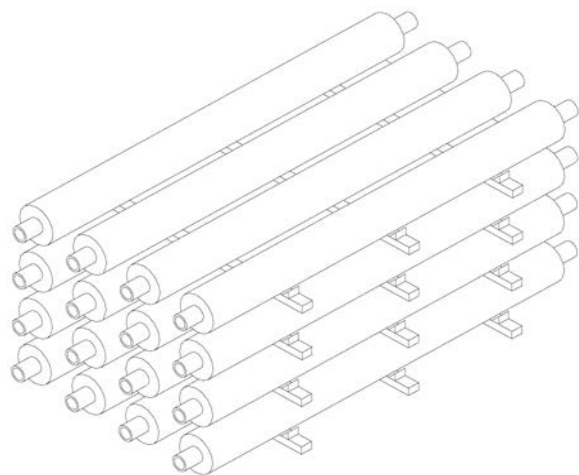
Inspect all shipments on receipt. Examine all pipe and accessories as they are unloaded. Check to insure that every item on the packing list is received. Check the contents of the cartons to insure that the materials have arrived safely. Do not throw the cartons from the vehicle. Handle all materials carefully. Have the freight carrier make out a damage or short receipt if any discrepancies are found. Keep a signed copy of this receipt and notify ROVANCO immediately. All spool pieces shipped have individual part numbers labeled on each end. Refer to your packing list to be sure you have all spool pieces shown. With your paperwork, you will receive two copies of the installation drawings. These drawings will show the location of each piece of ROVANCO Insul-8 Above Ground system.

UNLOADING

ROVANCO Insul-800 systems are manufactured to withstand normal field handling but, like any piping material, damage can occur from careless handling. The spool pieces should be unloaded from the truck using a cherry picker or other suitable equipment. Lift the pieces with nylon slings and spreader bars so as not to damage the polyethylene jacket. Do not use chains or chokers in direct contact with the polyethylene jacket. Do not drop spool pieces because this can damage the insulation or the polyethylene jacket.

STORAGE

Use dunnage material under the pipe and between successive layers to protect the casing from foreign objects. Do not stack more than four layers high to avoid excessive weight on the bottom layer. Prior to installation cover the pipe ends with a white tarp or white visqueen to keep out water, excessive dust and debris. If the pipe will be stockpiled in direct sunlight or at temperatures exceeding 90°F, cover the entire system with a white tarp or white visqueen. Do not use opaque, clear or any other color other than white. If these steps are not taken, warranty will



be void. There should be a layer of wood dunnage between the pipe and visqueen. Cartons of material (i.e. glue, foam kits, fiberglass adhesives, etc.) should be stored in a dry area at 60° to 80°F. Liquid foam has a shelf life of 6 months after delivery. Freezing or high temperatures may affect the product’s ability to perform their functions. IF these steps are not taken, warranty will be void.

TESTING

All carrier pipe must either be air or hydro tested per specifications prior to insulating and pouring thrust blocks around anchors or backfilling the system. Failure to comply with testing procedures will void warranty. Plastic carrier pipe must be hydro tested only, do not air test.

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Metal Jacketed Above Ground Systems

Rovanco metal fitting cover system is designed to provide a weather tight protective closure for the insulated fittings, such as 90°, 45°, and other odd angle changes of direction as well as tees.

We provide the insulation, metal fitting covers, stainless steel strapping, clips, and a complementary stainless steel strapping tool. Valves, steam traps, strainers, flanges, and other accessories will be field insulated with materials supplied by the installing contractor.

Rovanco's fitting covers are packed separately from the insulation sections and are individually labeled to indicate the jacket size they fit. The insulation is packed in separate containers separated to indicate the pipe size and insulation thickness unless the mineral wool is supplied as bulk batts. The straight sections of insulation are provided in three or four foot lengths depending on the manufacturer (see Photo 1 on Page 4). They are field cut to fit by the installing contractor. Insulation sections are temporarily held in place by filament or box tape (see Photo 2 on Page 4), wire, duct tape, or other suitable means, supplied by the installing contractor.

The metal elbow fitting covers are provided in three sections, two straight cut sleeves and one centering piece. Tee fittings are supplied as one or two pieces.

Cold Systems Above Ground

Above ground chilled water or cryogenic systems will draw moisture into the system if the operating temperature of the system is below the outside air temp. For those systems it is important to seal all the seams at the joints and fittings to prevent the ingress of moisture into the system. All seams must be sealed vapor tight to prevent moisture from being drawn to the cold pipe.

If a vapor barrier is required, that can be accomplished by the use of either preformed PVC fitting covers, PVC sheets, and PVC tape or mastic compound such as Childer's. That material and application will be supplied by the installing contractor or his subcontractor and should comply with the project standards and/or standard industry practices.

Hot Systems Above Ground

If the operating temperature is above the ambient temperature, any moisture that might be inside the metal jacket will be driven out. If the system is going to be installed out doors or indoors in an area where it could be subjected to "wash-down" such as food processing facility, the top half of the circumferential seams should be sealed with silicone sealant. The bottom half is not sealed to allow any moisture that may be in the insulation system to exit. Seal circumferential seams on the top and the sides. Also seal any longitudinal seam where rain water can penetrate.

Section 1: Insulation Material List

Insul-8 pipe joints and fittings are easily field insulated. The following lists are some of the tools and materials you will need to install the pipe.

Materials (Supplied by Rovanco)

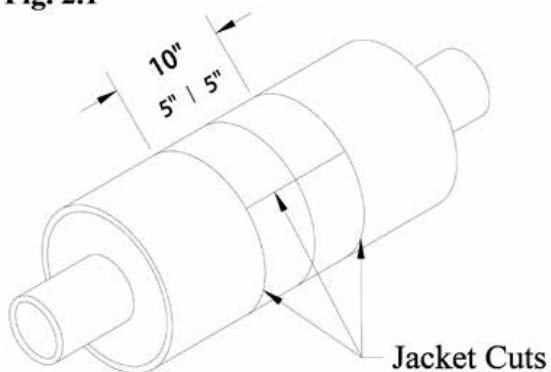
1. Insulation for Fittings and Straight Joints—Rovanco uses pre-formed foam insulation for the field insulated fittings and straight joints because the material is:
 - a. Rated for high temperature
 - b. The material is readily available
 - c. The material has been proven in the industry for over 40 years with many installers experienced with installing it
2. Metal fitting covers. Rovanco to supply coating if carrier pipe was specified with a coating.
This shall be done in the field.
3. Pre-Cut Split Sleeves for Straight Joints and Fittings
4. Stainless Steel Banding and Clips

1. Duct or Filament Tape
2. Sheet Metal Screws (if screws are used)
3. Pop Rivets & Tool (if pop riveting is required)
4. Silicone Sealant
5. Banding tool manufactured by Band-It® (if applicable). These tools they can be purchased directly from Band-It®.
6. Foster High Velocity Duct Sealant (if applicable)

Section 2: Field Alteration of Pipe

NOTE: During the welding process do NOT use anti-splatter or any type of lubricant IF your system has leak detection. These materials can cause the leak detection to fail.

Fig. 2.1



1. Each length of Insul-8 piping comes with approximately six to eight inches of pipe exposed at each end to allow for joining.
2. Select the point at which pipe is to be cut and mark it on the casing.
3. Measure five inches on both sides of that point and draw lines using a wrap around. Make two circumferential cuts on the casing using a saber saw, reciprocal saw, or similar tool.
See Figure 2.1
4. Make a longitudinal cut on one side of the pipe jacket between the two circumferential cuts. Peel away the casing and clean off foam so the carrier pipe is exposed.
5. Using a wire brush or scraper, remove all foam residue from the exposed pipe. Cut the carrier pipe to length and dress the ends appropriately. **NOTE: Prior to any carrier field welds, pipe ends must be prepped in the field by contractor.**

Section 3a: Insulating Joints



NOTE: It is necessary that a carrier pipe be joined per project specifications and industry standards and a successful hydrostatic test per job specifications be completed before starting to insulate joint areas. Failure to follow these steps will void warranty.

The split sleeves can be slid over one end of the pipe prior to joining the carrier pipe, or installing the fittings. They can be spread carefully and slid over the joint area after the carrier is joined but prior to insulating.



Measure each joint from end of casing to end of casing. Then measure accordingly on the provided foam lengths. See Photo 1

The insulation comes in three to four foot lengths and should be cut to fit. See Photo 2.



The cut pieces should fit snugly into the joint opening. See Photo 3



Tape in place if necessary prior to applying the split jacket sleeve over the joint area. Save insulation drops for other joints and elbows. See Photo 4

For hot systems installed out doors or in a “wash-down” area, apply a bead of silicone sealant $\frac{1}{2}$ " wide $\frac{1}{4}$ " high on the metal pipe jacket 1" in from the end of the split sleeve. See Photo 5. Metal sleeve must have seam on side with top half overlapping the bottom as a watershed. See Photo 5

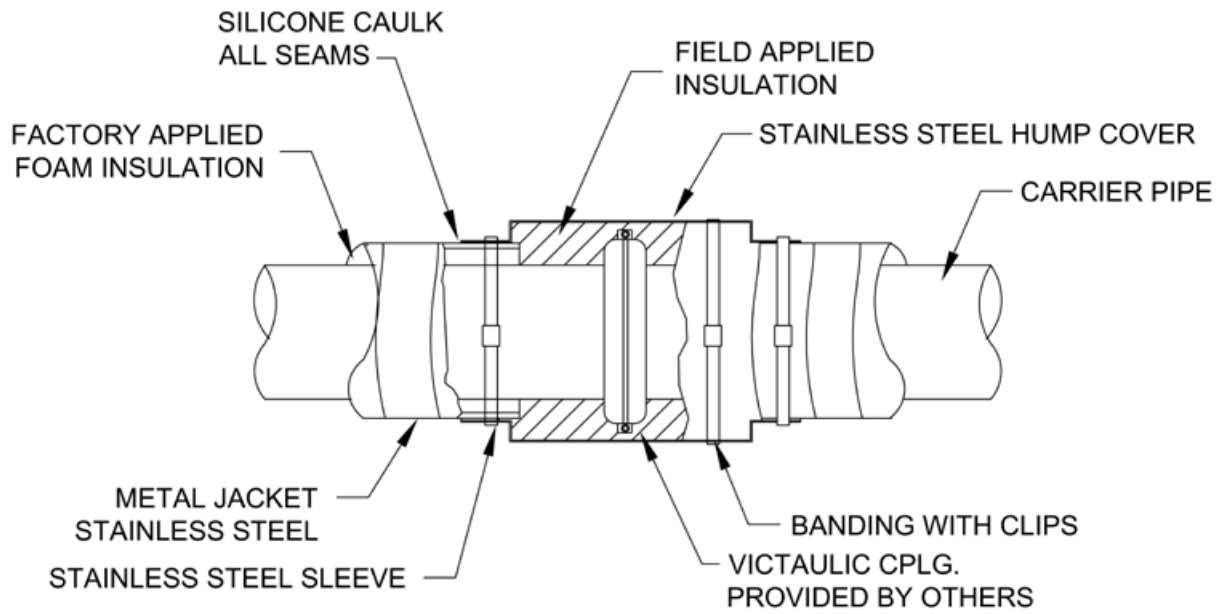


Note: Apply only on top half for hot systems. See content on page 2.

Refer to the Band-It Tool instructions in Section 6, Page 8. The bands should be located within 2" inches of the end of the sleeve/jacket.

Section 3b: Insulating With Optional Victaulic Couplings

NOTE: When using Victaulic couplings, a hump cover and insulation will be supplied.

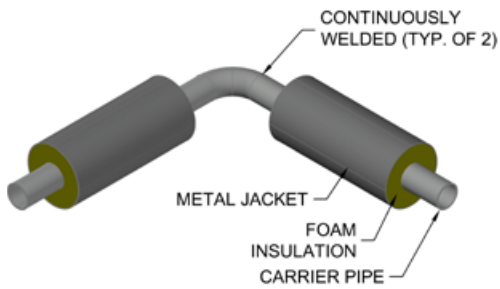


ABOVE GROUND FIELD JOINT DETAIL

N.T.S.

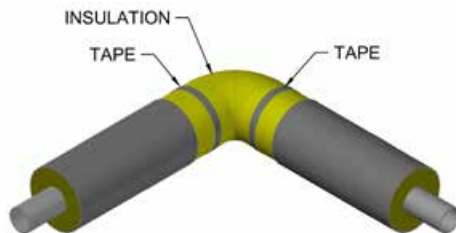
Section 4: Insulating Fittings

Fig. 4.1



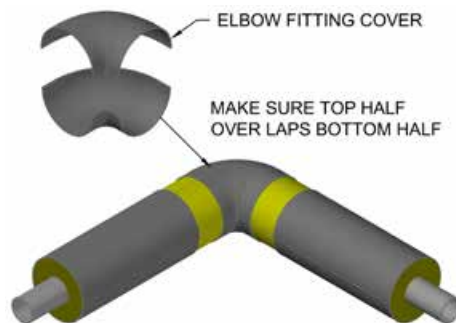
1. Weld carrier fitting, test welds per specifications.
See Figure 4.1

Fig. 4.2



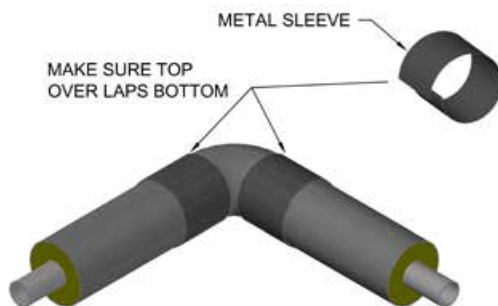
2. Place pre-molded insulation over elbow and secure in place with tape.
See Figure 4.2

Fig. 4.3



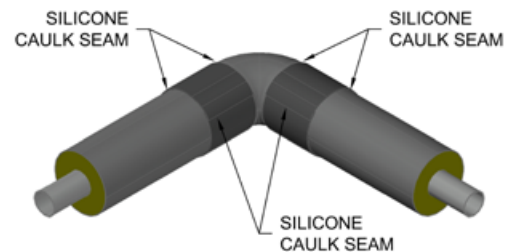
3. Install the elbow fitting cover. Tape can be used to hold in place if needed.
See Figure 4.3

Fig. 4.4



4. Place metal sleeves on both sides of the fitting.
See Figure 4.4

Fig. 4.5



5. Seal the seams with silicone caulk.
See Figure 4.5

Fig. 4.6



6. Install stainless steel bands on each metal sleeve.
See Figure 4.6

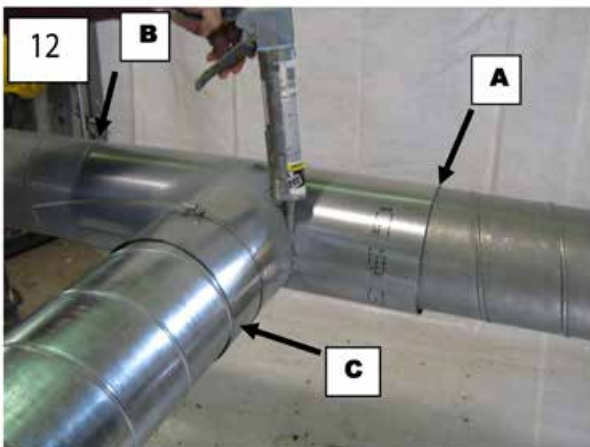
Section 5: Insulating & Jacketing of Tees & Reducing Tees



After the tees or reducing tees are installed and pressure tested, the insulation material is applied and taped into place. The tee fitting is usually supplied as one piece as a wrap around cover. Put water shed down.
See Photo 10



The tee cover is applied, water shed down.
See Photo 11



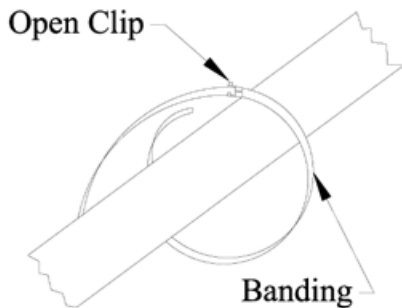
Seal with silicone if necessary at the "A", "B" & "C" spots shown.
See Photo 12

After the fitting covers are applied and appropriately sealed the stainless steel banding is applied. Pop rivets can be applied if the installing contractor feels they are necessary.
See Photos 14 & 15



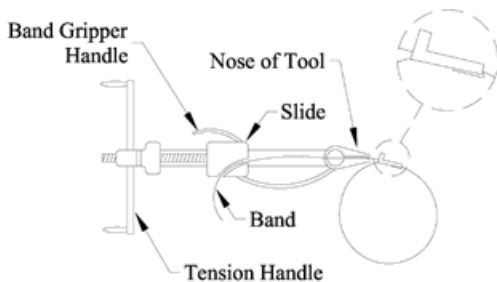
Section 6: Band-It Tool Instructions

Fig. 6.1



Pre-measure the circumference of the pipe and cut your banding accordingly. Leave an extra 8" to 10" inches to make it easy to work with.
See Figure 6.1

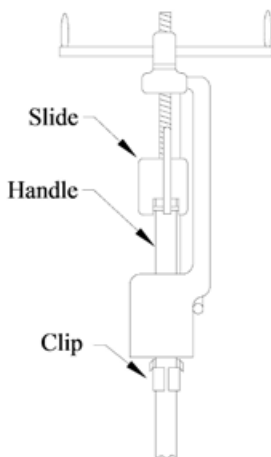
Fig. 6.2



Slide the clip on band as shown bringing the end of the banding around the sleeve and again through the clip so that it forms a loop. Now bend the banding end back so that it can't be pulled out easily.
See Figure 6.2.

Place banding in open slot of tool nose and in slide. With your thumb on the band gripper lever, apply tension by turning handle of tool. After tension is created it is no longer necessary to hold band gripper lever as it locks itself under tension.
See Figure 6.2

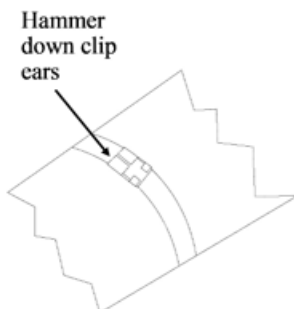
Fig. 6.3



Place your finger on the banding at clip while feel the banding stop moving through the clip as you are turning the handle, maximum pressure is being exerted by the banding around the sleeve. Stop turning the handle.
See Figure 6.3

Roll tool over clip backing off with the tension handle throughout the entire rolling operation. Failure to back off with tension handle throughout the entire course of roll may result in breaking the banding. There is no loss of tension as the banding released is used up in the bend.
See Figure 6.4

Fig. 6.4



Pull cutting handle to cut the band.

Remove the Band-It tool while holding the stub of the band down with your thumb.

Clinch the stub by hammering down the clip ears completing the Band-It clamping operation.
See Figure 6.4

Section 7: Operation & Maintenance for Above Ground Foam

Annual: Remove the drain plugs to check for the presence of water in the air space yearly. When removing the drain plug, be alert for a possible steam flash. If water is found follow the repair procedure outlined below. The drain plugs must be replaced after the inspection to insure water does not inadvertently enter the air space from a flooded manhole or mechanical room.

CAUTION: Extreme caution must be exercised when entering steam manholes and opening vents and drains.

Also do an air test of the containment yearly. Using an air compressor, pressurize the air space to 15 psig and hold for one (1) hour. If the pressure can not be maintained, see the repair procedure below. Warranty will void if this is not done and logged year to year.

Repair: If a leak in the casing is found, it should be repaired, tested, coated, and backfilled as it was originally installed.

If a leak in the carrier pipe is found, at least a 2' section of pipe should be removed and replaced. The carrier pipe should then be hydrostatically tested at 1½ times it's operating pressure, not to exceed 500 psig. Re-insulate the carrier pipe as specified. Repair the inner containment casing using a split sleeve, similar to the connector band used in assembling the field joints. Air test the inner containment casing, then insulate as specified. Cover with a polyethylene sleeve and seal with a wrap around shrink sleeve.

Insulation: If insulation within the conduit becomes wet, then force ventilate the air space in the system at a rate of not less than 3 cubic feet per minute, and apply heat through the internal piping. Introduce the air through the system's high point vent, and force out the low point drain. Caution personnel regarding the possibility of a steam flash out of the low point drain while air is being forced through the system. Place a cool mirror at the exhaust point for a short time at appropriate intervals and position to indicate maximum fogging due to moisture. Continue ventilation until the mirror exhibits no visible fogging.

System Shutdown: If the system is shut down for any length of time, seal the system vents by plugging the goose neck or removing it and installing a plug. Purge with dry nitrogen before sealing system. The vents must be opened and the goose neck replaced before the system is turned on again. This will prevent moisture entry during shutdown.

Manholes: Automatic sump pumps, if any, should be thoroughly inspected for proper operation annually. Steam traps, if any, should be routinely inspected and/or replaced, based upon the recommendations of the manufacturer. All flanges should be checked for leakage and tightened if necessary. Any evidence of groundwater leakage should be investigated and repaired. Gland seals, end seals, and the inside wall of prefabricated steel manholes should be routinely inspected for leaks and/or corrosion. Sand and repaint any corrosion to match the existing coating. Check valves routinely for leaks and repack when necessary. Insulation and jacketing of internal piping and equipment should routinely be checked and replaced when necessary. Warranty will void if manholes flood over Rovanco's piping systems.

If you have any questions about anything in this instruction manual, or have any difficulty in completing the work please feel free to contact ROVANCO's Customer Service Department at our main office in Joliet, Illinois (815) 741-6700.

Thank you once again for showing your confidence in ROVANCO by purchasing our Hi-Temp Insul-8 products. We want you to know that we have a full line of pre-insulated and pre-fabricated piping systems for almost any temperature, pressure, or site condition.

If you are not familiar with our complete product line and you would like to know more about our product or would like to have our local Manufacturer's Representative call on you, call ROVANCO at (815) 741-6700, at rovanco.com, or email us at marketing@rovanco.com

Section 8: Parameters For Properly Installing & Operating Systems

Rovanco's pre-insulated and pre-fabricated products are carefully engineered to function as intended. If these products are properly installed, fully-tested, maintained and operated within the parameters for which they were designed, these systems should provide the user with years of trouble-free, efficient operation.

Refer to Rovanco's Installation Instruction(s) and the associated documentation from Rovanco's Engineering Department for important information and instructions that will carefully detail installation, testing, operating, and maintenance procedures. If needed, you are always welcome to contact Rovanco for assistance.

Failure to comply with the procedures as outlined in the Installation Instructions and Engineering support documentation could result in product damage, reduced product service life, costly repairs due to product failure, hazardous conditions which could result in injury to people, property and/or equipment. In addition, it will void Rovanco's warranty.

If any Rovanco product does not perform as it is intended to, please inform Rovanco immediately.

Some problems and their potential causes are listed below. Although this list is not all-inclusive, you may be able to find additional information in Rovanco's Installation Instruction(s) and/or the Engineering Department documentation.

General Piping System Care:

- Wet insulation does not perform as intended and causes the premature failure of the system. Therefore, it is important the system's insulation is kept dry at all times. This includes during storage, installation and when system is operating.
- Our systems have been engineered to operate within a specific temperature & pressure range and under appropriate environmental conditions. Therefore, do not install or put our systems into service if these parameters are not within the product's specifications.
- If you find it is necessary to alter a Rovanco piping system, review the planned alterations with Rovanco or a qualified piping system designer before making any changes.
- Maintenance plays an important role in assuring you get the full service-life out of the system. Rovanco systems are designed to provide years of trouble-free operation, but changing conditions can affect that. So, systems should be inspected regularly to verify they are in good operating condition and functioning as intended. If repairs are required, make them promptly.

Pre-Insulated Foam Systems:

- Piping systems must be kept dry. Moisture of any amount can corrode carrier pipe and prematurely breakdown insulation. This will shorten piping system service-life and/or prevent it from operating properly. Keep all piping system dry during storage, installation and when it is operating.
- Assure field joints are completed correctly. This includes the proper field insulating and enclosing the outer jacket in the joint area. Improper completion of field joints could result in water ingress effecting carrier pipe and/or insulation.
- Damage to jacketing must be repaired immediately. Failure to do so could allow moisture to reach the insulations and/or carrier pipe.
- When installing piping systems designed for underground use that require external expansion pads, you must assure these expansion pads are properly installed according to specifications. Proper installation will allow for associated thermal expansion. Improperly installed expansion pads will put unwanted stress on a piping system that could damage it.

Conduit & Containment Systems:

- Moisture negatively affects a systems functionality and shortens its service-life. Moisture will corrode carrier, conduit & containment piping, leak detection or pull cables and it will degrade insulation. It is important that the air space in these systems is kept dry. If any type of moisture is detected, it must be dried immediately so system is returned to a dry state during installation and operation.
- A combination of moisture in the air space and high operating temperatures will accelerate the destruction of piping, its coating and any insulation. This can result in costly repairs, system damage and possibly system failure. Therefore, do not ever operate these systems under the negative conditions of moisture presence and high temperatures.
- Gland seals provide a seal against a service pipe while still allowing that service pipe to have axial movement. Therefore, it is important all gland seals are adjusted properly to these conditions are met and there is no binding of the service pipe.
- End seal vents and drain piping play an important role in keeping the air space dry. They allow the annular air space to vent and drain as well as prevent moisture ingress. So it is important end seal vents and drain piping is installed properly. This will allow them to function as intended.
- One important detail that will help keep the air space dry and drainable is to assure the piping system is installed with the proper slope so any moisture can drain as intended.

Systems Intended For Underground Installation:

- Plan for adverse weather conditions prior to installation. If trenches gather water, they must be drained prior to the installation of the piping.
- Inspect all steel piping that will be buried prior to backfilling using a Holiday tester. Any holidays or damage to coating must be repaired in accordance with Rovanco's installation instructions prior to backfilling. Failure to repair voids or damage to coating will promote premature corrosion and effect system performance and length of service.
- Prior to backfilling, all carrier pipe, conduit and containment piping must be tested. If piping system integrity is not tested prior to backfilling, it will result in costly excavating and will not be Rovanco's responsibility.
- Cathodic protection system must be installed with thin-coated steel conduit or containment that will be direct buried. The cathodic protection will prevent the premature corrosion of thin-coated steel piping system.
- Line trench accordingly before piping installation. Backfill and compact post-installation in accordance with Rovanco's installation instructions. If these procedures are performed properly, it will help prevent damage to the system when the ground settles.
- Manholes must be kept dry at all times. Installing sump pumps, keeping end seals above water levels and not installing manholes in low points will help prevent water from draining into them.