

Installation

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PVC coated conduit should be totally encapsulated to provide the best available exterior and interior protection against corrosion.

- A 40 mil PVC exterior coating should be permanently fused to rigid metal conduit.
- A tough, flexible urethane coating should be applied to the interior of the conduit.
- Threads should be protected from corrosion by hot galvanizing after PVC coating of the conduit and before application of a clear polyurethane topcoat.

Proper installation is essential to ensure the highest possible performance and provide maximum life for a conduit system. You're probably an expert at installing non-coated rigid metal conduit. We'd like to give you a few tips to assure the best possible PVC coated conduit installation. With the exceptions of a few precautions necessary to protect the coatings, coated rigid metal conduit installation procedures are the same as those for installing non coated rigid conduit.

Installing PVC coated conduit involves five basic steps:

1. Clamping
2. Cutting
3. Threading
4. Bending
5. Assembly

Clamping

A number of practical ways are recommended for clamping PVC coated conduit. If a power drive that spins the conduit is used, the chuck should be equipped with inserts designed specifically for PVC coated conduit. These inserts are available through a local threading equipment distributor. When using a pipe vise it is recommended that the jaw assembly be replaced with vise adapters designed for PVC coated conduit. These adapters spread the clamping force over a larger area, which helps prevent spinning of the pipe during cutting and threading operations. If these adapters are not used wrap the area of the conduit to be clamped with emery cloth course side down. This will increase the friction created by the vise jaws and help prevent spinning of the pipe, thereby reducing potential damage to the coating. We have developed half shell clamps to protect a large surface area when conduit is clamped in a chain vise. The aluminum nickel bronze clamps allow for a strong grip without damaging the exterior coating of the coated conduit. ½ shell clamps are available in sizes 2 through 6 inches.

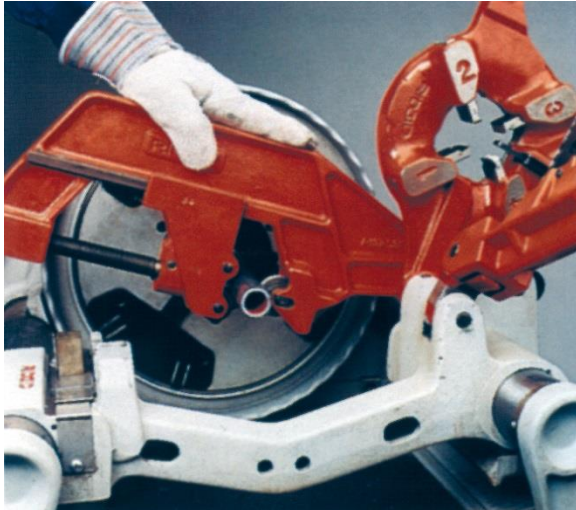
Half Shell Clamps



Cutting

We recommend using a roller cutter to cut coated conduit. In addition to producing a square cut end, the roller cutter will remove

approximately $\frac{1}{4}$ " of the PVC coating, aiding in conduit threading. Conventional manual or power saws may also be used to cut conduit. Use a reamer to remove any rough edges from the conduit interior caused by the cutting operation. This ensures that wire pulled through the conduit will not be damaged.



Roller Cutter



Band Saw

Threading

PVC coated conduit can be threaded with any standard threading tool. Larger model power-threaders with open die heads require no modification beyond optional grip inserts for PVC coated conduit.

If a threader with a tight-fitting die head is to be used, like many hand-held models, it is necessary to machine out the interior diameter of the stationary guide approximately $\frac{12}{100}$ ths of an inch to allow for clearance of the PVC coating. Prior to machining the pipe guide take note of the sequence in which the dies are removed; then replace dies in the proper sequence.

If conduit is to be threaded manually it must be pencil cut before threading to enable the die teeth on the threader to engage the conduit. In the same manner as sharpening a pencil with a knife, cut away $\frac{1}{4}$ " of the exterior coating from the end to be threaded. This allows the pipe guide to ride up and over the PVC coating enabling the removal of the coating and threading in one operation.

Before threading, by any method, a series of cuts should be made in the PVC coating along the longitudinal axis of the conduit. The thread protector attached to one end of the conduit can be used to gauge the length of the cuts. Make a slit up one side of the thread protector with a knife and remove it from the conduit. Push the thread protector over the cut end of the conduit to be threaded and place a mark on the circumference of the conduit at the mark, through the PVC coating, to the metal. This cut will indicate the starting point for the longitudinal cuts and it will give an even ending to the PVC coating removed during threading. The longitudinal cuts will allow the PVC coating to be removed in small pieces instead of long strips that can foul the die head causing the conduit to collapse.



Use a good quality thread cutting oil to flush away the metal and PVC chips. After threading use a degreasing spray to thoroughly clean the threads and interior of the pipe. Use care not to contaminate the cutting oil with the degreasing spray.

Degreasing is important to ensure the touchup compound will adhere to the unprotected steel

threads. Bare steel resulting from field cut threads is the most vulnerable area to corrosion in any conduit system, therefore, touchup compound must be used on all field cut threads and internal reams. These specially formulated interior and thread touch-up compounds are available in pint brush top cans. When an access fitting or coupling is attached to the newly threaded conduit, a colored band will form at the end of the sleeve. This indicates proper installation procedures have been followed.



Open Die Head Threader

Bending

A complete line of standard, special and large radius elbows are ready for quick shipment. When field bending is necessary, there are a variety of bending tools from which to choose. PVC coated conduit can be bent with conventional types of bending equipment.

To accommodate the PVC coating when using a hand bender: always select the next larger size shoe.

Use PVC coated hickey to reduce the possibility of damage to the conduit coating when making sharp bends, saddles or offsets.

For optimum results use equipment specially designed for bending PVC coated conduit. When bending PVC coated conduit with powered equipment, use rubbing alcohol to clean the inside of the shoe and the area of the conduit to be bent. Never use a lubricant on the shoe or conduit. Lubricants tend to allow the conduit to slip above the centerline of the shoe, resulting in flattening of the elbow.

Major manufacturers of bending equipment offer bending shoes for coated conduit that can be ordered for existing equipment. Acceptable results can be obtained by machining out existing shoes. Use shoes the same size as the conduit to be bent and remove approximately (.060") 6/100ths of an inch from the inside of the shoe.



Power or Hydraulic Bender

Assembly

Engineers, working in conjunction with prominent manufacturers, have developed special tools to aid in installation of PVC coated conduit. Exterior touch-up compound is used to repair nicks, cuts, and abrasions to the outer surface of coated conduit. Apply the exterior touch-up compound liberally over damaged areas. Because this material will not adhere to bare metal, it is advisable to overlap existing PVC coating. Sometimes it may be necessary to apply several coats in order to obtain adequate coverage. Allow the first coat to dry completely before applying additional coats.

Another application for exterior touch-up compound is for use as a sealant at access fitting openings. In wet locations apply the compound to the factory conduit threads at each joint before installation.

Exterior touch-up compound is available in pints with a brush-top applicator. It is also available in a 13-ounce aerosol can when cosmetic coverage is desired.

Special wrenches are designed to replace standard adjustable pliers. These wrenches feature extra-wide jaws, which spread the clamping force, enabling the tool to grip securely without marring the surface of the conduit. The V shaped upper jaw allows the wrench to

accommodate a wide range of conduit sizes. Shallow grooves in the upper and lower jaws provide an excellent grip. These wrenches are available in two sizes to fit 1/2" through 2 1/2" conduit.



Z-Wrench



With a "Spin-it", conduit can be tightened much faster than with a conventional tool and the "Spin-it" never touches the coating. Labor and time is saved because no touchup is needed for marks from wrenches or pliers. They are available in popular conduit sizes, 3/4" to 2". A 1/2" drive wrench is used for 3/4" and 1" conduit and a 3/4" drive wrench is used for 1 1/4" through 2" conduit.

Spin-It



Manufacturers have designed a special PVC hickey to reduce the possibility of damage

during conduit bending. It is available to handle 1/2" and 3/4" conduit.

Hickey



Special vise adapters were designed to protect PVC coated conduit from damage by vise jaws during conduit clamping. These vise adapters, consisting of a set of three aluminum-nickel-bronze vise jaws are designed to replace the regular jaws in a pipe vise. These vise adapters protect coated conduit from damage during cutting and threading. These replacement jaws spread the cutting force over a much larger area greatly reducing the possibility of the pipe spinning in the vise during cutting and threading operations. One set of replacement jaws handles 1/2" through 1-1/2" size conduit.

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Note: when ordering replacement vise adapters be sure to specify the vise model you are using.

Using a special socket adapter and a standard 3/8" ratchet will speed up u-bolt and beam clamp installation. The special socket adapter prevents abrasion and cracking of encapsulated nuts, which pliers or wrenches may cause, and it assures a tight seal between the nut and the saddle. The 3/8" special socket adapter fits nuts for 1/2" through 2" clamps. The 5/8" socket adapter fits nuts for 2-1/2" and larger sizes. Both adapters fit a standard 3/8" drive ratchet wrench.

Plasti-Socket



Here are some tips to remember when installing coated conduit. When a pipe wrench or adjustable pliers must be used, new tools with sharp teeth work best. New tools are less likely to slip and gouge the coating. The same holds true for pipe vises. New inserts should be installed if the existing ones show signs of wear. Strap wrenches are available from a number of sources and do a good job of tightening conduit and couplings without damaging the coating. Several suppliers offer straps that have been specifically woven and treated to provide an extra strong grip on coated conduit. Coated conduit and fittings feature an interior urethane coating. This hard smooth coating allows for easier wire pulling and will not crack or chip. The interior coating needs no heat or special considerations when field bending.

Matching couplings are offered as a standard part of the system. The molded ribs protect the coating from cuts and abrasions caused by the teeth of wrenches and pliers. Since damage is minimized and the bare metal is never exposed, touch-up operations are eliminated. Ribbed couplings are also easier to install. They can be tightened easily by hand and strap wrenches grip the ribs better.

Pressure sealing sleeves are present at all female openings. Here's an important tip to remember. Never cut the sleeves from PVC coated conduit fittings. These sleeves are necessary at all joints to seal out corrosion. However in some joints it is necessary to remove a portion of the sleeve. An example of this is the junction of a conduit, close nipple, and a union where both pressure sealing-sleeves will not fit over the close nipple. In this case: cut away $\frac{1}{2}$ of each sleeve and apply exterior touch-up compound to the threads.

Encapsulated nuts for U-bolts and specially formed saddles on right angle beam clamps are other unique features offered as part of PVC coated conduit system. U-bolts are made to fit snugly on conduit, and each nut is encapsulated in plastic. A sleeve covers the U-bolt threads, sealing out corrosive elements.

Encapsulated screws are provided with all Form 8 conduit bodies. They prevent corrosive elements from attacking the stainless steel fastener used to attach the cover to the body, and help to seal out corrosive liquids from the screw opening. A nut driver or socket is recommended for installing the encapsulated screws.