

4. General Installation Practices

(NOTE: See Section 6 for installation practices for PVC-coated conduit and fittings.)

4.1 Conduit Cutting And Threading Guidelines

Close attention to measuring the exact length of conduit needed is important for a quality installation.

4.1.1 Cutting and threading RMC and IMC

(NOTE: Although coupling threads are straight-tapped, conduit threads are tapered.)

Field threading is to be performed in accordance with the following procedures unless manufacturer's instructions differ. **The operating and safety instructions should be read and understood prior to operating the equipment.**

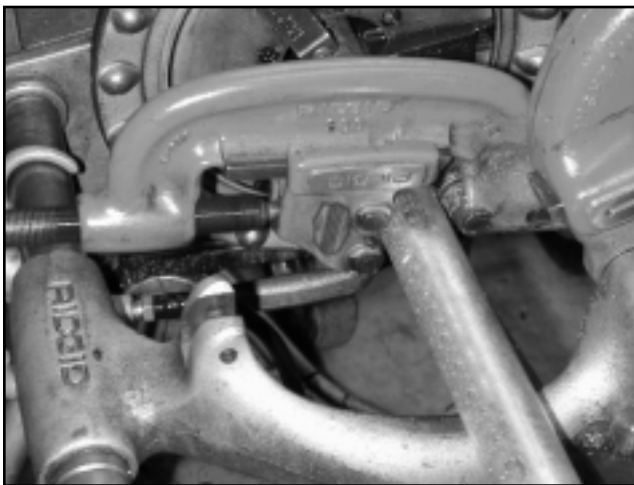


Figure 5: Lower the roll cutter to the desired length. Tighten the handle about one quarter turn per each revolution and repeat until the conduit is cut through.
(Courtesy of Wheatland Tube)

a) Use a standard $\frac{3}{4}$ inch per foot taper National Pipe Thread (NPT) die. The threads shall be cut full and clean using sharp dies.

b) Do not use worn dies. Although ragged and torn threads, or threads which are not cut deep enough, can be caused by poor threading practices, they can also indicate worn dies. If inspection shows this to be true, see Annex A for procedure to change dies.

c) To adjust the dies, loosen the screws or locking collar that hold the cutting dies in the head. When the screws or collar are loosened, the dies should move freely away from the head.

d) Screw the die head onto the threaded portion of a factory-threaded nipple or factory-threaded conduit until the die fits the factory thread. If the die head has an adjusting lever, set the head to cut a slightly oversized thread.



Figure 6: The roll cutter will leave a burr on the inside diameter of the conduit. The burr must be removed to ensure that the wire insulation will not be damaged during pulling.
(Courtesy of Wheatland Tube)

(NOTE: This will ordinarily be one thread short of being flush with the face of a thread gauge when the gauge is hand tight. This is within the tolerance limits which allow the thread to be one thread short or long of being flush with the gauge face.)

e) Tighten the screws or locking collar so that the dies are tightly held in the head.

f) Remove the set-up piece of threaded conduit. The die is ready for use.

g) After adjusting the dies as outlined above, proceed as follows:

h) Cut the conduit with a saw or roll cutter. Be careful to make a straight cut (see Figure 5).

(NOTE: If the die is not started on the pipe squarely, crooked threads will result. When using the wheel-and-roll cutter to cut pipe, the cutter must be revolved completely around the pipe. Tighten the handle about one-quarter turn after each rotation and repeat this procedure until the pipe is cut through.)

i) After cutting and prior to threading, ream the interior and remove sharp edges from the exterior (see Figures 6, 7 and 8).

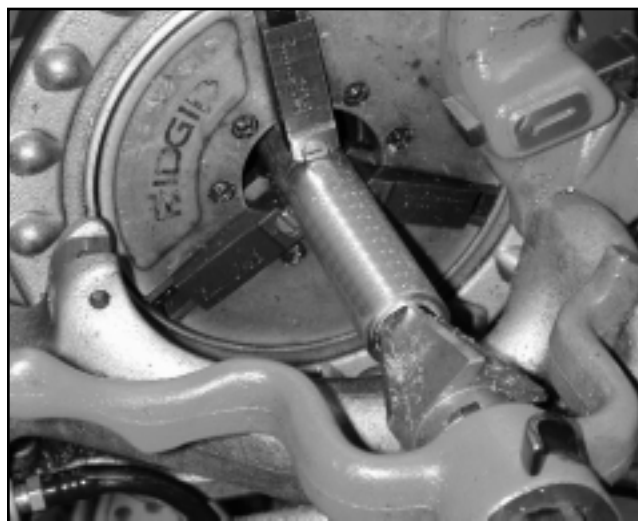


Figure 7: Insert the (flute) reamer into work piece and rotate until burr is removed.
(Courtesy of Wheatland Tube)

(NOTE: Reaming the conduit after threading will stretch or oval the end of the conduit.)

j) To start a universal die head, press it against the conduit end with one hand and turn the stock with the other (see Figures 10 and 11). With a drop head die, the stock remains stationary and the head rotates. After the dies have engaged for a thread or two, they will feed along without pressure.

k) Stop the cutting as soon as the die has taken hold and apply thread cutting oil freely to the dies and the area to be threaded (see Figure 9).

(NOTE: Frequent flooding of the dies with a good grade of cutting oil will further safeguard against poor threads. The oil keeps the material lubricated and insures a smoother cut by reducing friction and heat. Insufficient cutting oil will also cause ragged threads. The flow of the cutting fluid to the die head should be such that the cutting surfaces of the die segments are flooded. As a general rule, there is no such thing as too much oil at the die head.)

l) Thread one thread short of the end of the chaser.

(NOTE: It is a good practice to thread one thread short to prevent butting of conduit in a coupling and allow the coupling to cover all of the threads on the conduit when wrench tight.)



Figure 8: A minimal amount of pressure will remove the burr completely and eliminate possible flaring of the conduit end.
(Courtesy of Wheatland Tube)

m) Back the die head off and clean the chips from the thread (see Figure 10).

Importance of thread length

The length of the thread is important and the applicable UL requirements specify the manufactured length of the thread and the tolerance. A ring gauge is used to determine the correct thread length at the factory (see Figures 11 and 12). Good practice is to thread the conduit one thread short. This is to pre-



Figure 9: When proper thread length is achieved the end of the conduit becomes flush with the ends of the die segments. (Courtesy of Wheatland Tube)

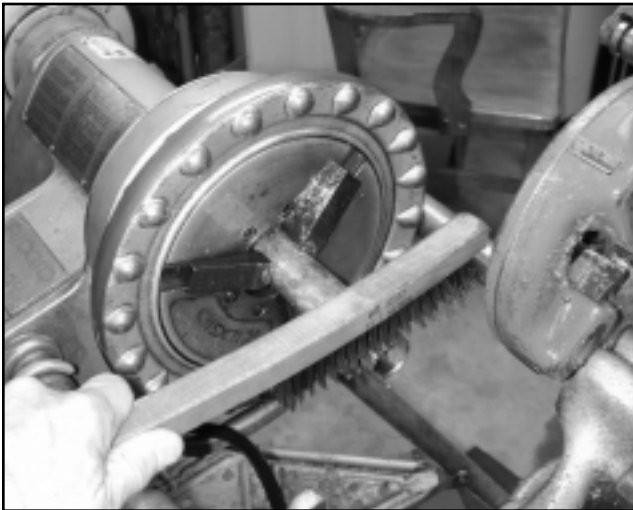


Figure 10: Wire brush the threads to remove any shavings or debris. (Courtesy of Wheatland Tube)

vent conduit from butting inside the coupling. This practice will permit a good electrical connection between the conduits and couplings.

To insure that the threads are properly engaged, the coupling should be made up hand-tight, then wrench-tightened. Wrench tightening should not exceed three additional threads (see Figure 13). It should never be necessary to use an extension handle on a wrench to make up a tight joint. The only time an extension handle should be used is to dismantle a stubborn joint in an existing line.

A simple rule regarding the use of tools is to select the right type and the right size. The proper size wrench for a given conduit size trade is indicated in Table 2.

4.1.2 Cutting EMT

Cut the EMT square using a hack saw or band saw. Do not use roll-type tubing cutters.

(NOTE: Roll-type cutters require reaming which flares the wall of EMT, making fittings difficult to install.)

A tool designed for the purpose is best for reaming the inside of EMT. Where side cutter pliers or other general tools are used, take special care not to flare the ends.

| Table 2: Proper Wrench Sizes | |
|------------------------------|-------------|
| Conduit Trade Size | Wrench Size |
| under 1/2 | 10" |
| 1/2 | 12" |
| 3/4 through 1 1/4 | 14" |
| 1 1/2 | 18" |
| 2 - 2 1/2 | 24" |
| 3 - 4 | 36" |
| 5 - 6 | 48" |