

Thermoplastic Pipe Threading Instructions

SCOPE

The procedure presented herein covers threading of all IPS Schedule 80 or heavier thermoplastic pipe. The threads are National Pipe Threads (NPT) which are cut to the dimensions outlined in (ANSI) B1.20.1 and presented in the table on the following page.

THREADING EQUIPMENT AND MATERIALS

- Pipe Dies
- Pipe Vise
- Threading ratchet or power machine
- Tapered plug
- Cutting lubricant (soap & water)
- Strap wrench
- Teflon tape
- Cutting and Deburring tools

Pipe Preparation

Plastic pipe can be easily cut with a handsaw, power hacksaw, circular or band saw. For best results, use a finetoothed blade (16-18 teeth per inch) with little or no set (maximum 0.025"). A circumferential speed of about 6,000 ft./min. is suitable for circular saws; band saw speed should be approximately 3,000 ft./min. Carbide-tipped blades are preferable when quantities of pipe are to be cut. To ensure square-ends, a miter box hold-down or jig should be used. Pipe or tubing cutters can be used for smaller diameter pipe when the cutting wheel is specifically designed for plastic pipe.

Threading Dies

Thread cutting dies should be clean, sharp and in good condition, and should not be used to cut materials other than plastics. Dies with a 5° negative front rake are recommended when using power threading equipment and dies with a 5° to 10° negative front rake are recommended when cutting threads by hand.

Threading and Joining

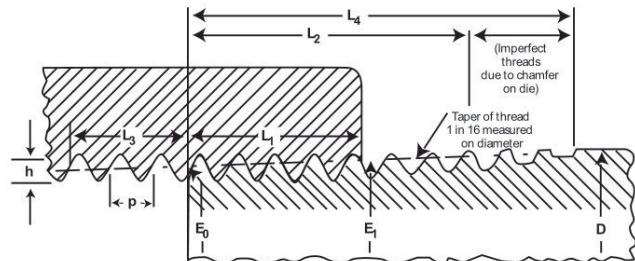
1. Hold pipe firmly in a pipe vise. Protect the pipe at the point of grip by inserting a rubber sheet or other material between the pipe and vise.



2. A tapered plug must be inserted in the end of the pipe to be threaded. This plug provides additional support and prevents distortion of the pipe in the threaded area. Distortion of the pipe during the threading operation will result in eccentric threads, non-uniform circumferential thread depth or gouging and tearing of the pipe wall. See the following Table for approximate plug O.D. dimensions.



DO NOT THREAD SCHEDULE 40 PIPE



REINFORCING PLUG DIMENSIONS

PIPE SIZE	PLUG O.D.*
1/2"	.526
3/4"	.722
1"	.935
1-1/4"	1.254
2"	1.913
2-1/2"	2.289
3"	2.864
4"	3.786

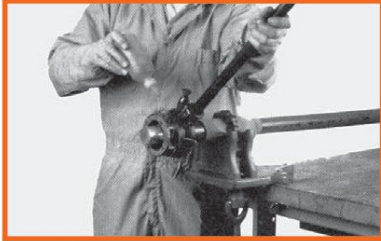
*These dimensions are based on the median wall thickness and average outside diameter for the respective pipe sizes. Variations in wall thicknesses and O.D. dimensions may require alteration of the plug dimensions.

3. Use a die stock with a proper guide that is free of burrs or sharp edges, so the die will start and go on square to the pipe axis.

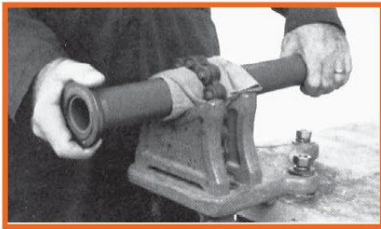


Threading Instructions

- Push straight down on the handle, avoiding side pressure that might distort the sides of the threads. If power threading equipment is used, the dies should not be driven at high speeds or with heavy pressure. Apply an external lubricant liberally when cutting the threads. Advance the die to the point where the thread dimensions are equal to those listed in Table No. 1. Do not over thread.



- Periodically check the threads with a ring gauge to ensure that proper procedures are being followed. Thread dimensions are listed in Table 1 and the gauging tolerance is $\pm 1\text{-}1/2$ turns.



- Brush threads clean of chips and ribbons. Then starting with the second full thread, and continuing over the thread length, wrap TFE (Teflon) thread tape in the direction of the threads. Overlap each wrap by one half of the width of the tape. FABCO does not recommend the use of any thread lubricant/sealant other than TFE (Teflon) tape.



- Thread the fitting onto the pipe and tighten by hand. Using a strap wrench only, further tighten the connection an additional one or two threads past hand tightness. Avoid excessive torque as this may cause thread damage or fitting damage.



PRESSURE TESTING

Threaded piping systems can be pressure tested up to 100% of the hydrostatic pressure rating as soon as the last connection is made.

CAUTION: AIR OR COMPRESSED GAS IS NOT RECOMMENDED AND SHOULD NOT BE USED AS A MEDIA FOR PRESSURE TESTING OF PLASTIC PIPING SYSTEMS.

PIPE AND FITTING THREADS AMERICAN STANDARD TAPER PIPE THREAD, NPT (EXCERPT FROM ANSI B1.20.1) IN INCHES

NOMINAL SIZE	OUTSIDE DIAMETER D	NUMBER OF THREADS PER IN. N	PITCH OF THREAD P	NORMAL ENGAGEMENT BY HAND L1	NORMAL ENGAGEMENT BY HAND L2	WRENCH MAKEUP LENGTH FOR INTERNAL THREAD L3	TOTAL LENGTH: END OF PIPE TO VANISH POINT L4	PITCH DIAMETER AT BEGINNING OF EXTERNAL THREAD E0	PITCH DIAMETER AT BEGINNING OF INTERNAL THREAD E1	HEIGHT OF THREAD (MAX) H
1/4	0.54	18	.05556	.228	.4018	.1667	.5946	.47739	.49163	.04444
1/2	0.84	14	.07143	.32	.5337	.2143	.7815	.75843	.77843	.05714
3/4	1.05	14	.07143	.339	.5457	.2143	.7935	.96768	.98887	.05714
1	1.315	11 1/2	.08696	.400	.6828	.2609	.9845	1.21363	1.23863	.06957
1 1/4	1.660	11 1/2	.08696	.420	.7068	.2609	1.0085	1.55713	1.58338	.06957
1 1/2	1.900	11 1/2	.08696	.420	.7235	.2609	1.0252	1.79609	1.82234	.06957
2	2.375	11 1/2	.08696	.436	.7565	.2609	1.0582	2.26902	2.29627	.06957
2 1/2	2.875	8	.12500	.682	1.1375	.2500	1.5712	2.71953	2.76216	.10000
3	3.500	8	.12500	.766	1.2000	.2500	1.6337	3.34062	3.38850	.10000
4	4.500	8	.12500	.844	1.3000	.2500	1.7337	4.33438	4.38712	.10000

(NOTE: Special dies for threading plastic pipe are available). When cutting threads with power threading equipment, self opening die heads and a slight chamfer to lead the dies will speed production.