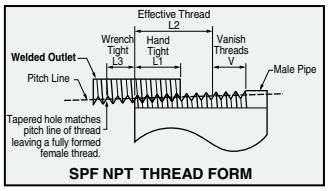
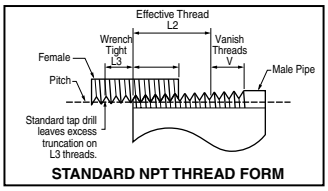
Threading Practice

SPF Welded Outlets thread form is consistent with Aeronautical National Form (ANPT) AS71051. The thread is fully formed over both the L-1 hand tight and L-3 wrench tight threads. NPT tapered threads are typically gauged only over the L-1 threads. This makes SPF Welded Outlets more forgiving of field cut threaded pipe that may only marginally conform to the specification. Fewer leaks translate into lower costs.

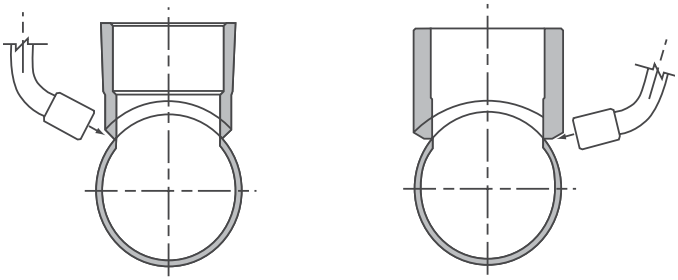


SPF NPT THREAD FORM



STANDARD NPT THREAD FORM

Ease of Installation



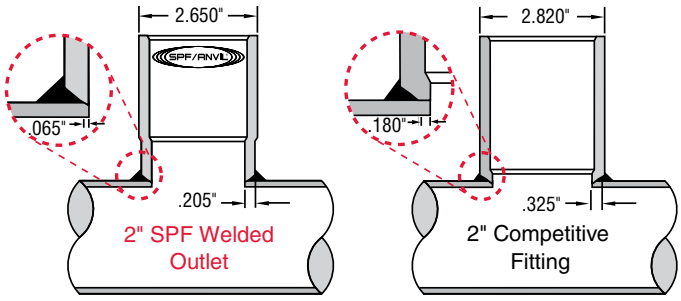
SPF Welded Outlets are designed to sit higher on the pipe, thereby requiring less weld and eliminating burn through. SPF Welded Outlets sit higher on the header or branch line pipe than competitive fittings. This allows the welding torch to remain in an optimum position for welding. In addition, 1 1/2" and larger female threaded and grooved welded outlets require the same hole size for installation. This results in fewer change overs when installed using automatic welders.

NPT TAPERED PIPE THREADS

Drop Nipple or Tee-Let Outlet Size	L1 Hand Tight		L3 Wrench Tight		Total L1 - L3 Length		L2 Effective Threads	
In./mm	*In./mm*	*Threads*	*In./mm*	*Threads*	*In./mm*	*Threads*	*In./mm*	*Threads*
½ *15*	0.320 *8.1*	4.48	0.214 *5.4*	3.00	0.534 *13.6*	7.48	0.534 *13.6*	7.47
¾ *20*	0.339 *8.6*	4.75	0.214 *5.4*	3.00	0.553 *14.0*	7.75	0.546 *13.9*	7.64
1 *25*	0.400 *10.2*	4.60	0.261 *6.6*	3.00	0.661 *16.8*	7.60	0.683 *17.3*	7.85
1¼ *32*	0.420 *10.7*	4.83	0.261 *6.6*	3.00	0.681 *17.3*	7.83	0.707 *18.0*	8.13
1½ *40*	0.420 *10.7*	4.83	0.261 *6.6*	3.00	0.697 *17.7*	7.83	0.724 *18.4*	8.32
2 *50*	0.436 *11.1*	5.01	0.261 *6.6*	3.00	0.706 *17.9*	8.01	0.757 *19.2*	8.70
2½ *65*	0.682 *17.3*	5.46	0.250 *6.4*	2.00	0.932 *23.7*	7.46	1.138 *28.9*	9.10
3 *80*	0.766 *19.5*	6.13	0.250 *6.4*	2.00	1.016 *25.8*	8.13	1.200 *30.5*	9.60
4 *100*	0.844 *21.4*	6.75	0.250 *6.4*	2.00	1.094 *27.8*	8.75	1.300 *33.0*	10.40

Welding Practice

When measured with respect to linear inches of weld required for installation, SPF Welded Outlets require up to 15% less weld than competitive fittings. This reduces time and savings over time are substantial. The diameter of the contoured end of Welded Outlet has been reduced so that the wall thickness more nearly matches the header or branch line pipe wall thickness. Therefore, current and voltage settings required for welding are set to provide for adequate penetration without burn through and cold shutting. Also, weld volume required for installation is lower for SPF Welded Outlets than most other fittings. Typically, SPF Welded Outlets require one-weld pass for attachment.

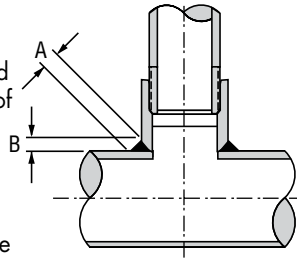


WELDING PRACTICE

Outlet Size	SPF WELDED OUTLETS				COMPETITIVE FITTING			
	WELD VOLUME*		LINEAR WELDING		WELD VOLUME*		LINEAR WELDING	
In. (mm)	*Cross Sec. Area*	*%less*	*In.(mm)*	*%less*	*Cross Sec. Area*	*%more*	*In.(mm)*	*%less*
1" *25*	0.051 sq. in. *32.9 sq mm*	12%	2.48 *62.9*	0%	0.058 sq. in. *37.4 sq mm*	12%	2.48 *62.9*	0%
1¼" *32*	0.032" *20.6*	48%	2.88 *73.1*	4%	0.063 *40.6*	48%	3.01 *76.4*	4%
1½" *40*	0.036" *23.2*	40%	3.12 *79.2*	10%	0.060 *38.7*	40%	3.46 *87.8*	10%
2" *50*	0.040" *25.8*	62%	3.77 *95.7*	15%	0.106 *68.3*	62%	4.41 *112.0*	15%

Recommended Installation Procedures

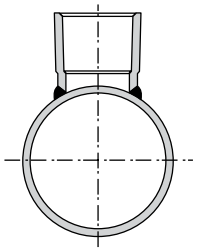
SPF Welded Outlet Fittings are designed and manufactured to reduce the cost of installation from both the standpoint of labor required and energy consumed. In addition, by following the recommended installation procedures, many of the problems associated with installing welding outlet fittings on standard weight or light weight pipe are eliminated, including burn through and excessive shrinkage resulting in pipe distortion.



½, ¾ & 1 Outlet

Recommended Hole Sizes

The hole cut in the branch or header pipe can be cut prior or subsequent to attachment of the Welded Outlets. One advantage of cutting the hole after welding is that the pipe is left intact during welding, thereby, reducing shrinkage and possible distortion. If holes are cut prior to welding, as some codes require, then the following hole sizes are recommended.



1¼ - 2 Outlet

Recommended Welding Procedures

SPF Welded Outlet Fittings are designed to be installed on standard weight or light weight pipe with one weld pass on sizes through 4". Moreover, the wall thickness at the weld end of the fitting approximately matches standard weight pipe. Accordingly, heat settings can be made to optimize penetration on both the fitting and the pipe which it is being welded. Aside from reducing the likelihood of burn through and distortion resulting from excessive heat, the amount of weld required for adequate penetration is significantly reduced.

As a general rule, the weld should be only as hot as required to allow the weld to penetrate the materials being welded while concomitantly allowing gases developed in the welding process to escape. Every effort must be made to avoid welding too hot or overheating both the pipe and the Welded Outlets. Excessive heat may cause the wrench tight threads (those in the bottom of the Welded Outlets near the weld zone) to distort while also causing the branch pipe to bend. It should be noted that SPF Welded Outlet Fittings have been subjected to exhaustive testing and evaluation, and only negligibly distort when subjected to excessive heat. The threads, on the other hand, may not return to their gauged form after cooling if excessive heat causes them to expand. The following is intended only as a guide, and assumes that the welding equipment is properly calibrated and functioning normally and the operator is qualified.

Note: Please refer to www.anvilintl.com or latest catalog for recommended hole size and welding practice.

RECOMMENDED AMOUNT OF WELD

Outlet Size	A	B
In./mm	*In./mm*	*In./mm*
1 *25*	¼ *7*	3⁄16 *5*
1¼ *31*	¼ *7*	3⁄16 *5*
1½ *38*	5⁄16 *8*	¼ *7*
2 *50*	5⁄16 *8*	¼ *7*
2½ *63*	5⁄16 *8*	¼ *7*
3 *75*	⅜ *10*	5⁄16 *8*
4 *100*	⅜ *10*	5⁄16 *8*

RECOMMENDED OUTLET HOLE SIZES

Welded Outlet Size	Type	Recommended Hole Size
In./mm		*In./mm*
½ *13*	MTM-40	⅝ *16*
¾ *19*	MTM-40	⅞ *22*
1 *25*	MTM-40	1⅛ *28*
1¼ *31*	MTM-40	1½ *38*
1¼ *31*	GR-40	1⅜ *35*
1½ *38*	MTM-40 or GR-40	1⅝ *41*
2 *50*	MTM-40 or GR-40	2 *50*
2½ *63*	GR-40	2 7⁄16 *61*
3 *75*	GR-40	3 *75*
4 *100*	GR-40	4 *100*

Holes may be cut employing mechanical means – including hole sawing, mechanical flame cutting (oxy-acetylene or propane), and air plasma cutting (constricted tungsten arc) machines. Anvil offers a simple approach to cutting the hole. Hand–held templates are sized to match your plasma cutter.