

## Introduction

This Section contains adapters with thread types including: NPT, NPTF, BSPT, BSPP, SAE UN/UNF, and Metric. All the threads in this section are made to industry specifications with conformance shown in Table G1.

## Design and Construction

Shaped products (elbows, tees and crosses) are hot forged and machined, while straights are manufactured from cold drawn barstock. Where applicable, these products are made in conformance with the design criteria of the Society of Automotive Engineers Standards, SAE J514, J530.

Parker Fluid Connector products made from steel and brass, for the most part, have NPTF threads. Stainless steel products may have NPT or slightly modified NPT threads to minimize the chance of galling on assembly.

**Standard Material Specifications:** The standard materials used in the manufacture of Industrial Pipe and Adapter fittings are shown in Table G2.

**Note:** Upon request, pipe fittings, adapters and plugs could be furnished in materials other than those shown in the material specifications chart.

**Finish** - Zinc plating with yellow chromate (being changed to zinc chromium 6 free) is used on all standard steel products. Stainless steel fittings are passivated.

## Assembly and Installation

Please refer to [Section T](#) for the assembly and installation instructions for Pipe Fittings and Port Adapters.

Thread	Standard
NPT	ANSI B1.20.1, FED-STD-H28/7
NPTF	SAE J476, ANSI B1.20.3, FED-STD-H28/8
BSPT	BS 21, ISO 7/1
BSPP	BS 2779, ISO 228/1
Metric	ISO 261, ANSI B1.13M, FED-STD-H28/21
UN/UNF*	ANSI B1.1, FED-STD-H28/2

\*Class 2A or 2B

**Table G1 — Thread Conformance Standards**

Pipe Fittings, Adapters and Plugs	Steel		Stainless Steel		Brass	
	ASTM	Type	ASTM	Type	ASTM	Type
Forged Bodies	A576	1214/1215	A182	316	B124	CA377
Bar Stock Bodies	A108	12L14	A479	316	B16 B453	CA360 CA345
Cold Formed Bodies	A576	C1010 / C1008	—	—	—	—

**Table G2 — Standard Material Specifications for Industrial Pipe Fittings and Adapters**

## How Port Connections Work

### Tapered (“Pipe”) Threads

There are three types of tapered threads commonly used in industrial applications.

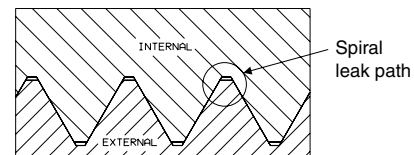
- NPT/NPTF
- BSPT
- Metric Taper

All three thread styles noted above use the same basic metal-to-metal sealing design for achieving a seal. Although very similar, there are differences in the thread dimensions, pitch, and flank angle that do not allow interchangeability.

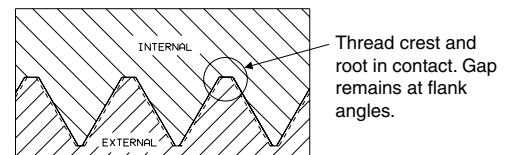
### NPT / NPTF Threads

NPT threads, when assembled without a sealant, leave a spiral leak path at the crest-root junction as shown in Fig. G1. To seal pressurized fluid, NPT threads require a suitable sealant. NPTF threads (Dryseal), on the other hand, when assembled, do not leave the spiral leak path. This is because they have controlled truncation at the crest and root, ensuring metal-to-metal crest-root contact prior to, or just as the male-female thread flanks make contact as seen in Fig. G2. Upon further tightening, the thread crests are flattened out until the flanks also make metal-to-metal contact as seen in Fig. G3. Thus, theoretically at least, there is no passage left for the fluid to leak, provided all surfaces are flawless and dimensions exact. **In reality, this is not the case and a sealant/lubricant is necessary to achieve a leak free joint, even with NPTF threads.** The sealant/lubricant fills all imperfections in the surfaces affecting the seal and also provides lubrication to ease assembly and minimize galling.

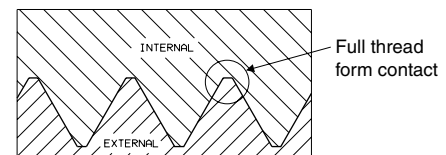
Dimensions and pressures for reference only, subject to change.



**Fig. G1 — NPT: Wrench Tight, No Crest-Root Contact, Flank Contact Only**



**Fig. G2 — NPTF: Hand Tight, Crest to Root Contact**



**Fig. G3 — NPTF: Wrench Tight, Crest to Root and Flank Contact**