

## IDENTIFICATION OVERVIEW

A “1/4-inch” label does not identify a thread by itself. Pitch, flank angle, taper, sealing method and the governing standard must be checked before selecting a tap, gage or mating fitting.

Thread system	Typical 1/4 designation	Pitch	Angle	Form	Primary sealing / function	Reference standard
<b>NPT</b>	1/4-18 NPT	18 TPI	60°	Tapered 1:16	Thread interference; sealant normally used	ASME B1.20.1
<b>NPTF</b>	1/4-18 NPTF	18 TPI	60°	Tapered 1:16	Dryseal crest/root contact; controlled truncation	ASME B1.20.3
<b>BSPT</b>	R1/4 male / Rc1/4 female	19 TPI	55°	Tapered 1:16	Pressure-tight joint made on the threads	ISO 7-1
<b>BSPP</b>	G1/4	19 TPI	55°	Parallel	Seal made outside the threads by washer, O-ring or face	ISO 228-1
<b>UNC</b>	1/4-20 UNC	20 TPI	60°	Parallel	Fastening thread; not a pipe sealing thread	ASME B1.1

### NPT

#### Tapered

18 TPI / 60°  
Sealant normally required

### NPTF

#### Tapered dryseal

18 TPI / 60°  
Different crest/root control

### BSPT

#### Tapered

19 TPI / 55°  
R or Rc designation

### BSPP

#### Parallel

19 TPI / 55°  
Seals at face, not thread

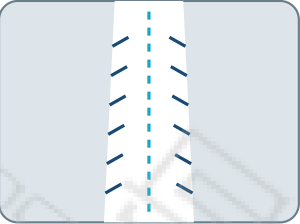
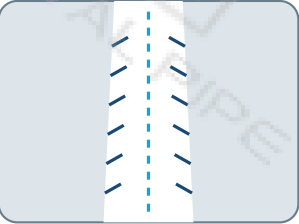
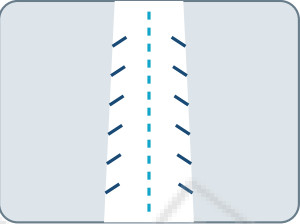
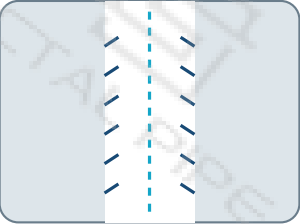
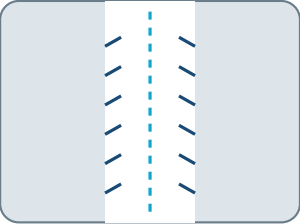
### UNC

#### Parallel

20 TPI / 60°  
Fastening only

## GEOMETRY AND SEALING PRINCIPLE

Thread identification must separate geometry from sealing function. Threads that share a nominal 1/4 size can differ in pitch, flank angle, taper and the location where sealing actually occurs.

<b>NPT</b> 1/4-18  60° <b>Tapered pipe thread</b> Sealant fills the spiral leakage path.	<b>NPTF</b> 1/4-18  60° <b>Tapered dryseal</b> Crest/root contact controls the leakage path.	<b>BSPT</b> R1/4 / Rc1/4  55° <b>Tapered pipe thread</b> Pressure-tight joint is made on the threads.	<b>BSPP</b> G1/4  55° <b>Parallel pipe thread</b> Seal is made at a face, washer or O-ring.	<b>UNC</b> 1/4-20  60° <b>Parallel screw thread</b> Designed for fastening, not fluid sealing.
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## WHAT EACH CHECK REVEALS

- 1 Taper check**  
Separates tapered NPT/NPTF/BSPT from parallel BSPP/UNC.
- 2 Pitch gage**  
Distinguishes 18 TPI, 19 TPI and 20 TPI quarter-size threads.
- 3 Profile / standard**  
Confirms 60° NPT/UNC or 55° BSP thread geometry.
- 4 Sealing face**  
Identifies whether sealing occurs on the thread or at a washer/O-ring/face.

## IDENTIFICATION WORKFLOW AND MISMATCH CONTROL

### FIVE-STEP IDENTIFICATION WORKFLOW

- 1 Check taper**  
Compare diameter near the first and last complete threads. Taper indicates NPT, NPTF or BSPT.
- 2 Measure pitch**  
Use a pitch gage. At 1/4 size: NPT/NPTF = 18 TPI, BSP = 19 TPI, UNC = 20 TPI.
- 3 Confirm flank form**  
NPT/NPTF/UNC use a 60° form; BSPT/BSPP use a 55° Whitworth form.
- 4 Read the sealing design**  
BSPP and UNC are parallel; verify the washer, O-ring, face or other sealing feature.
- 5 Confirm the callout and gage**  
Match the full designation to the drawing, tap and inspection gage before assembly.

### WHY SIMILAR-LOOKING THREADS FAIL

Comparison	Critical difference	Likely result
<b>NPT vs BSPT</b>	18 vs 19 TPI and 60° vs 55°	Partial engagement, flank damage and leakage
<b>BSPT vs BSPP</b>	Tapered vs parallel	Incorrect engagement and no controlled sealing face
<b>NPT vs NPTF</b>	Different crest/root truncation and gaging intent	NPT mating does not prove NPTF dryseal performance
<b>UNC vs pipe threads</b>	Different pitch, size basis and function	Cross-threading or a mechanically weak, non-sealing joint

### ASSEMBLY RULE

**A fitting that enters for several turns is not proof of compatibility. Sealant cannot correct the wrong pitch, flank angle or taper. Confirm the complete designation before machining, gaging or tightening.**

### STANDARDS BASIS

- ASME B1.20.1 - NPT general-purpose inch pipe threads and gaging
- ASME B1.20.3 - NPTF dryseal inch pipe threads
- ISO 7-1 - pipe threads where pressure-tight joints are made on the threads
- ISO 228-1 - parallel fastening pipe threads; sealing is outside the threads
- ASME B1.1 - unified inch screw threads, including UNC

Use the edition specified by the drawing, purchase order or project specification.