THREAD INSPECTION, TAPE, AND COMPOUND APPLICATION GUIDE

1. Thread Inspection and Measurement

1.1 Identify Thread Type

- Threads may be straight (NPS, BSPP) or tapered (NPT, BSPT).
- Applies to both male and female threads.
- Always confirm type before assembly.

1.2 Verify Thread Engagement

- Use certified thread gauges to measure male and female threads.
- Check hand-tight engagement against ANSI/ASME standards.
- Engagement tolerance determines how much thread tape is required.

1.3 Consider Material Differences

- Metal and plastic behave differently under stress.
- Dissimilar materials (e.g., metal to plastic) require extra care to avoid:
  - Over-tightening
  - Deeper engagements than intended
  - Thread damage from excess force

1.4 Apply Correct Torque

- Follow the manufacturer's torque specifications for all assemblies.
- Over or under-torquing may lead to leaks, cracking, or O-ring compression issues.
- When in doubt, refer to ANSI/ASME torque and engagement guidelines.

Use this guide as your field of reference:

- Check threads → tape correctly → apply compound → torque to spec.
- Proper preparation and assembly prevents leaks, cracking, and failures.

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2. Thread Tape and Compound

2.1 Purpose

- Both thread tape and thread compound act as anti-seize agents.
- Prevents galling, overheating, and seizing during assembly.

2.2 General Guidelines

- Use only food-safe products with PTFE.
- Thread tape is not a sealant or thread builder.
- Its function: reduces friction and allows threads to advance past hand-tight engagement.

2.3 When to Use Compound

- Apply thread compound when:
  - Joining dissimilar materials (e.g., plastic to metal).
  - Voids or gaps need to be filled.
- Tape should always be applied before compound.
- Compound must be a thin, non-toxic, non-hardening PTFE paste.

2.4 Tape Specifications

- Medium-density PTFE tape recommended.
- Width selection:
  - ½ inch: for 1/8" to 2" threads
  - ¾ inch: for 2-1/2" to 6" threads

2.5 Combined Use

- For dissimilar materials, use both tape and compound.
- Benefits:
  - Fill voids
  - Compensate for thread warping
  - Reduce galling

3. Application Procedure

3.1 Preparation

- Clean all threads before application.
- Remove debris, shavings, or flash from molding/threading.

3.2 Applying Thread Tape

1. Start wrapping one thread above the end of the fitting. (Prevents tape from obstructing flow).
2. Wrap 3–4 turns around the thread.
   - Adjust for oversized or undersized fittings.
   - Avoid more than 8 wraps—measure fitting if additional sealing is needed.
3. Cross-hatch tape slightly across threads to prevent it from sliding.

3.3 Applying Thread Compound

- After taping, spread a thin, even layer of PTFE paste over the tape.
- Do not apply compound directly to bare threads unless specified.

3.4 Assembly

- Tighten to the correct torque specification.
- Do not exceed engagement tolerances—this can cause:
  - Cracking
  - Leaks
  - Thread warping

3.5 Temperature Considerations

- Expansion and contraction can stress joints.
- Metal-to-plastic connections are especially prone to failure.
- Follow manufacturer/ANSI guidelines for engagement limits.

3.6 Special Note on Plastic Fittings

- Plastic threads deform to fit irregularities.
- They are more vulnerable to over-tightening.
- Always check torque and engagement tolerances before final tightening.