

THREAD SEAL TAPE, A FITTING FRIEND

Tips from the Service Bench



fitting and threaded port hole. The taper on NPT threads allows them to form a seal when torqued, as the flanks of the threads compress against each other. The fittings seal on the actual thread of the fitting and the hole. The fitting does not necessarily have to be installed to full thread depth as it is sealing on the thread itself.

Technology
TIP

OEM

INTRODUCTION

By design, vacuum pumps pull gas or liquid in on the inlet side and expel media on the exhaust side. One prevalent issue to ensure the pump keeps operating to full potential is keeping unwanted material out of the pump head and valves.

Many vacuum pump plumbing connections are made with hose connectors and fittings. One standard fitting thread is the National Pipe Thread (NPT). The threads on an NPT fitting are tapered for sealing, and are often used with thread sealant, such as Thread Seal tape.

A recurring issue seen by our Service Department is loose Thread Seal tape unintentionally ingested into a pump (see Figures to the right). The loose tape gets pulled in by the vacuum and lodges between the valve and valve seat. This can result in a loss of performance in the system and headaches for the pump user. The cause of this reduced performance is often not readily apparent, either.

Once ingested, tape will not be expelled on its own as the path through the pump head is not designed for long/stringy solids to move through. The removal of the tape debris involves disassembly of the pump head assembly, removal of the tape and re-assembly after inspection of all the components. This is time consuming and can be avoided.

One way to avoid ingested Thread Seal tape is to understand how the tape works in conjunction with the

Figures below: Actual Images of Ingested Tape Found within Pump Heads



DO'S

- Wrap the tape clockwise (facing the threaded portion) so that it follows the direction that the fitting will be threaded into the port (see Figure 2). Winding the tape in this direction will prevent the tape from unwinding during the tightening process.
- Use a Thread Seal tape that is narrow enough so it does not cover the first two threads of the fitting (see Figure 3). The first of the male fitting threads are the smallest in diameter and any tape wound onto these threads may actually be cut off as the fitting engages. The cut off tape may then be pulled into the pump head by the gas or liquid flow
- Use 2-4 wraps of Thread Seal tape. You may need to adjust the number of wraps due to specific tolerances.
- Start the fitting by hand to ensure no cross threading occurs.
- Tighten according to fitting manufacturer specifications

DONT'S

- Don't wrap tape covering the bottom of the fitting. Leave two threads free of tape (see Image 4).
- Don't feel the need to tighten fitting until the hex is flush. The sealing occurs on the tapered thread. It is OK if a few threads are left visible as long as the fitting is tightened to the manufacturer specified torque.

WRAP UP

Learning to apply Thread Seal tape properly will serve you well. When used properly Thread Seal tape is a wonderful sealant. It is inexpensive and works in many different applications. It is easy to apply and lubricates the fitting and threaded hole assembly process. It also prevents possible corrosion at this interface, and aids fitting removal.

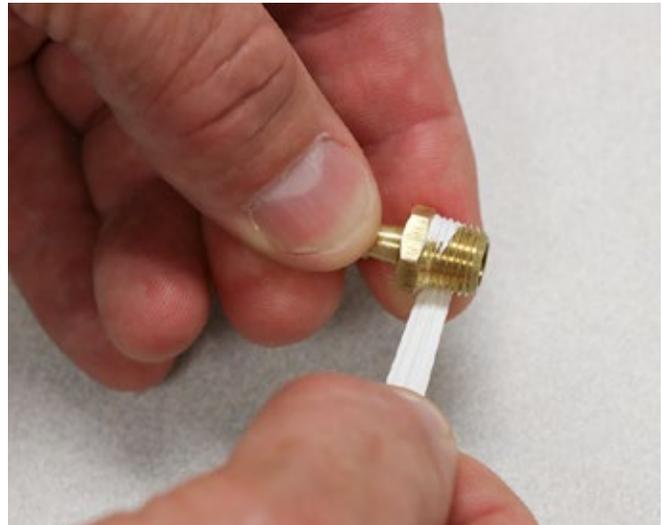


Figure 2: Apply Thread Seal Tape



Figure 3: Correct Application of Thread Seal Tape



Figure 4: Incorrect Application of Thread Seal Tape