

TECHNICAL NOTE

Number: VX-TN-5A.1
First Issue: 2B.1 Undated
Revision 1: March 2001



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USING PVC THREADED FITTINGS

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Problems are sometimes encountered by inexperienced users with PVC threaded fittings. This technical note provides some material information about PVC and some tips to assist in successful use of PVC fittings with factory-moulded threads. Threading of PVC in the field is not an acceptable practice.

A number of PVC fittings have factory-moulded threads to enable connection to other systems. These threads were designed in the days of galvanised steel pipe, and are unfortunately a long way from the ideal thread shape for PVC. However, we have to live with that situation, and with a little care, perfectly satisfactory performance can be achieved.

Recognition of the characteristics of PVC as a material is the first step:

1. The short-term strength of PVC is nothing like that of steel – about 12%. So in tightening of threads you have one-eighth the margin of safety against stripping of threads or splitting of the body of the fittings (all things being equal).
2. The long-term strength is about half that again. So a fitting which has not failed on installation may well do so at a later date if overstressed.
3. PVC expands and contracts with temperature about five times as much as steel. So a fitting mated with a metal component may be overstressed if the temperature changes. (Likewise, leakage may occur if the change occurs so as to relieve the tightening of the joint).
4. PVC is somewhat “notch sensitive”. So deep indentations from Stilsons and the like can promote a failure.

These considerations add up to one simple rule:

DON'T OVERTIGHTEN!

Here are a few pointers to help obtain satisfactory service:

- ◆ Always use PTFE (Teflon) tape and only PTFE tape. **DO NOT USE** hemp, grease or solvent cements.
- ◆ Check the fit of the joint first. Apply enough Teflon tape to enable screwing in by hand to half the full engagement depth. Practice will help judge the amount.
- ◆ Note the flange on the inside at the root of some female threads controlling the maximum length of engagement. If the spigot is screwed hard against this flange there will almost certainly be overstress. Likewise, attempting to obtain a seal by screwing right up to the flange on a male fitting can result in disaster. Remove the fitting and use more tape.
- ◆ After hand tightening, a couple of turns should give seal. Tighten only just enough to seal plus a half turn. (Whenever possible, leave the tightening until the line is pressurised, so that the correct point can be exactly determined).
- ◆ When mating with metal fittings, give consideration to temperature changes. If it's hot, female PVC threaded fittings should be tightened very carefully, whilst a male PVC threaded fitting should be slightly over-tightened. If it's cold, the reverse will apply.
- ◆ Examine the threads of mating metal fittings and ensure they are well formed and free of burrs and sharp edges. Clean them up if necessary.
- ◆ Avoid using serrated grip tools, particularly on pipe or the barrel of fitting sockets.

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