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Leak Path and Testing Protocol

Nothing is more important in the piping system than safe and tight connections. To help installers in this regard, we not only integrate leak path feature into our press fittings, but also provide instructions on how to properly test the connection.

When un-pressed, all carbon steel M profile press fittings are designed to allow a small amount of water or gas to escape from the un-pressed joints, which is called "leak path". This feature may take the form of a specially designed part of the sealing ring or the tolerance in the product itself.

We recommend that any testing for piping system should consist of two parts: the first is low pressure test to identify any un-pressed fittings via the "leak path" function; the second is tightness test at higher pressure. Both "leak path" and "tightness test" tests should be carried out and pressure test records should be made.

Preliminary test: After the piping system is installed, "leak path" test should be carried out at 1 bar pressure for 10 minutes. During this period, the installer should perform the visual inspection of all connections and make pressure test records. If our pipe fittings are not pressed, there should be water droplets flowing out of the un-pressed fittings.

It is recommended to conduct "leak path" testing with air where possible to minimize any inconvenience caused by leaking joints, and to delay the introduction of water or liquid until the system is ready for

commissioning. Make ensure that all air/gas in the system is removed after water injection.

"Leak path" is designed to operate at low pressure, i.e. 1 bar or less. At higher pressures, the force of water or air/gas may press the sealing ring against the joint and inadvertently seal the "leak path". This is why the "leak path" test must be performed at the maximum pressure of 150 mbar (air/gas) or 1bar (water). Different procedures should be followed when testing with water or air and gas. If tested with water, the system should be installed and commissioned within 24 hours.

Note: If un-pressed fittings are detected, the system pressure should be relieved before pressing the fittings, and the installer should ensure the pipe is still inserted to the correct depth before pressing. Once pressing is completed, the test should be repeated.

Main test: After the "leak path" test is completed, the "tightness test" can be started. The test for drinking water systems should be performed at 1.1 times the maximum operating pressure (MOP), the test for heating or refrigeration systems should be tested at 1.3 times the maximum operating pressure (MOP).

If the pressure test exceeds the maximum capability of the system (usually 16 bar) and high operating pressures are required, we recommend testing the pressure in stages, for example, first to 5 bar for 10 minutes, then to 10 bar for 10 minutes and finally to 16 bar (or higher pressure). This is not mandatory, but in case the fittings are pressed but installed incorrectly, and it fails, it is best to fail at a lower pressure.

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Ideally, pressure testing should be performed using water as close to ambient temperature as possible. If heated water is used and allowed to cool within the "tightness test" time (i.e. one or more hours), which may cause the false pressure drop reading. We recommend a stabilization time of 30 minutes to balance out any temperature differences. The ambient temperature and water temperature should be recorded in the pressure test record.

All pressure tests of pressed connections must include a secondary visual inspection of each fitting (including individual marking by the operator).

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