

Orderer:

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PL 16-001 Bialystok-Kleosin

# Certificate and test report Nr. J156CON

Coupling system for solar thermal applications.  
Test according to SPF test procedure: Test class A1



**System KAN-therm Inox**

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## 1. Description of the sample

### 1.1 Product information and technical description

Manufacturer	KAN Sp. z o.o., PL 16-001 Bialystok-Kleosin
Model	System KAN-therm Inox
Tested sample	KAN-therm press coupling, Different sizes 15mm-28mm
Connection Type	Press fitting with O-Ring.
Application range	Pipework connections for solar thermal installation.
Nominal diameters	15mm-108mm, bigger diameters are available.
Description of sample	Metallic coupling system for connecting stainless steel tubes
Materials*	Molybdenum Alloy Steel 1.4401, 1.4404, 1.4521 LBP FPM O-Ring
Heat transfer media*	Ethylene or Propylene glycol / Water
Application limitations*	16 bar maximum working pressure, 200°C Maximum operating temperature

\* Manufacturer information

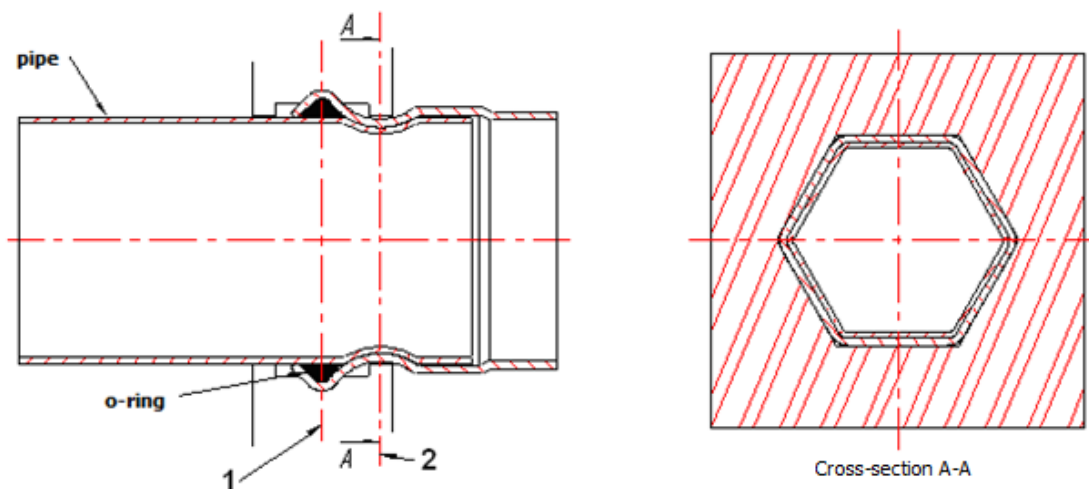


Figure 1

Construction of a connection with a diameter of 15-54 mm;

connection made with the clamping jaws

1 – the section in which the sealing of the joint

2 – sectional determinant of the strength of the connection

## 2. Test methods and results

### 2.1 General remarks

The test procedure is intended to assess the resistance of the connection system against the assumed thermal load encountered during the lifetime of a typical solar installation with state-of-the-art solar collectors (selective absorber coating, solar glazing). Different couplings in different sizes are available to connect tubes. This test is valid for the press fitting as described above and as depicted below only. The test J156 does not cover any other parts such as tubes, corrugated tubes or any other male or female standard connection components.

Three samples using different sizes and different tube materials have been submitted for testing. The test samples have been assembled by the manufacturer in a professional manner. It is assumed that the test samples have been assembled using the original materials and original parts as declared by the manufacturer.

The connector system is not intended to be used as compensator between solar thermal collectors.

### 2.2 Test procedure and test parameters

Test according to SPF standard. Test Class A1 reduced to the thermal loads. The 500 thermal shocks represent the stagnation cycles to be expected during the lifetime of a solar thermal system.

The sample is not allowed to fail for passing the test. During the test procedure the sample is flowed through with glycol at a pressure of  $10 \pm 1$  bar. The test sample was installed without any static misalignment (installation tolerance) and the SPF test procedure is reduced to the thermal shocks. No further static or dynamic mechanical loads are applied during the whole test procedure.

The test procedure is made up of 500 thermal shocks as follows:

The temperature of the fluid (and hence the fitting) is increased up to the maximum temperature of  $T_{\text{high}} = 180^\circ\text{C}$  ( $\pm 5^\circ\text{C}$ ). Upon thermal stabilisation of the whole system a thermal shock is triggered and the samples are flushed with fluid at the lower temperature level  $T_{\text{low}} < 80^\circ\text{C}$ . The decay time of the shock is in the range of 5 seconds.

The time required for one complete temperature cycle is approx. 30 minutes.

These thermal shocks represent the thermal loads that occur during the filling procedure of a drained collector system.

### 2.3 Test history

Test start:	22.04.2014
Test interrupted due to test rig failure	05.05.2014 and 15.05.2014
Test finished	16.05.2014

## 2.4 Photographs of test samples



Figure 2: (before test start)  
Test sample 1, 611793.6S - pipe 1.4401 Ø22



Figure 3: (before test start)  
Test sample 2, 611791.4 – pipe 1.4404 Ø15



Figure 4: (before test start)  
Test sample 3, 6222808 – pipe 1.4521 Ø28



Figure 5: (before test start)  
Test samples installed on the test rig.



Figure 6: (after test)  
All the samples are fully intact and no leakage has been observed during the whole test procedure.

## 2.5 Notes

The test results and the certificate are valid for fluids in the liquid phase. The behaviour of the fitting for vaporous heat transfer media as well as evaporation and condensation effects are not assessed with the present test procedure.

The fittings must be used together with corrugated stainless steel tubes or any other compensating devices which are able to absorb the mechanical movements induced by thermal elongations, mechanical misalignment and similar.

## 2.6 Result

No leakage, deficiency and no other failures have been observed during the test. The “fast coupling system for corrugated stainless steel pipes” is therefore considered as suitable for the use in solar thermal installations.

The System **KAN-therm Inox** in the tested dimension therefore fulfils the requirements of the SPF test procedure class A1 reduced to the thermal shocks and is certified under the SPF number J156CON.

The certificate is also valid for the coupling system up to a dimension of DN54.

The certificate is valid for 5 years.

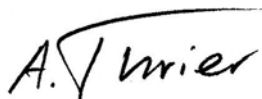
## 3 Remarks

This report must not be copied except in full.  
The test results only refer to the tested sample.

Rapperswil, 12.06.2014



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Responsible for the testing