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Test Report

Client

Hauff-Technik GmbH & Co. KG
Giengener Straße 35
89428 Syrgenstein - Landshausen

Order no.

A 9072-5 / 2009

Date of contract	:	September 3rd, 2009
Contract	:	Testing of the water-tightness of a cable lead-through System HSI 150-K2 packing and installed cover system HSI 150-D3/60
Delivery of test items	:	Client
Date of receipt of test items		November 17th, 2009
Testing period	:	November 23th – 24th, 2009

Augsburg, January 28th, 2010
cl/di

Department Manager

i.V. ppa. Holger Dietrich

Prüf- und Ingenieurleistungen bautest

Laboratory Manager

i.A. Hendrik Zaus

This Test Report consists of 8 pages.
It may only be published unabridged.
The test results relate only on the items tested. The test material is dissipated.

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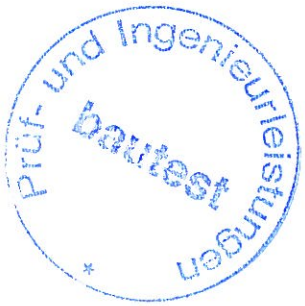

1 General

Kiwa Bautest GmbH was contracted by Hauff-Technik GmbH & Co. KG to evaluate the water tightness of a cable and pipe lead-through for cable and conductions.

Therefore a prefabricated test setup with the double packing HSI 150-K2 and the cover system HSI 150-D3/60 with a cold shrink sleeve, a heat shrink sleeve and a seal plug was delivered by Hauff-Technik GmbH & Co. KG to our test laboratory in Augsburg.

The double packing HSI 150-K2 is a cable lead-through for buildings, precast concrete elements, cable channels etc. and provides the watertight closure of cable- and conduction entries as well as the connection of cable protection tubes.

All tests were carried out by employees of our according to DIN EN ISO / IEC 17 025 chartered laboratory in Augsburg.

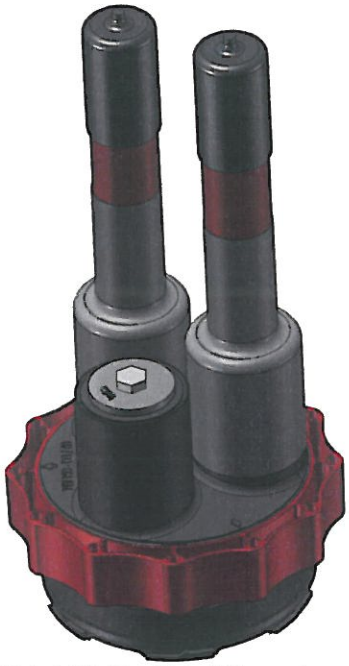

Figure 1: cover system HSI 150-D3/60 (Manufacturer drawing)

2 Test procedure

2.1 Test preparation (Hauff-Technik)

According to the Manufacturer information the test setup was pre-assembled by the Manufacturer as follows:

A double packing HSI 150-K2 was encased in a concrete test member (ca. 65 x 65 x 20 cm).

The sealing cover HSI 150-D3/60 was provided with a cold shrink sleeve, a heat shrink sleeve and a sealing plug. In each of the two shrink sleeves cables with Ø 35 mm were installed (see Figure 3). For the protection and the sealing shrink-on sleeves were put on the end of the cables. The shrink-on sleeves were installed according to the Manufacturer instructions.

Furthermore a compression bell with manometer, pressure regulator and rubber ring seal was provided by the Manufacturer. The compression bell is designated to be put on the test member and pressed against the concrete by four tension rods (see Figure 2).

2.2 Test procedure (Kiwa Bautest)

The test member which was delivered by the Manufacturer was a pre-assembled concrete test member with a test setup in accordance with section 2.1 and with a pre-assembled manometer and pressure regulator (see Figure 2 to Figure 4). A calibration of the manometer and the pressure regulator was not carried out by Kiwa Bautest GmbH.

The sealing cover HSI 150-D3/60 was installed by an employee of Kiwa Bautest GmbH according to the instructions of Hauff-Technik GmbH und Co. KG represented by Mr. Jasmund.

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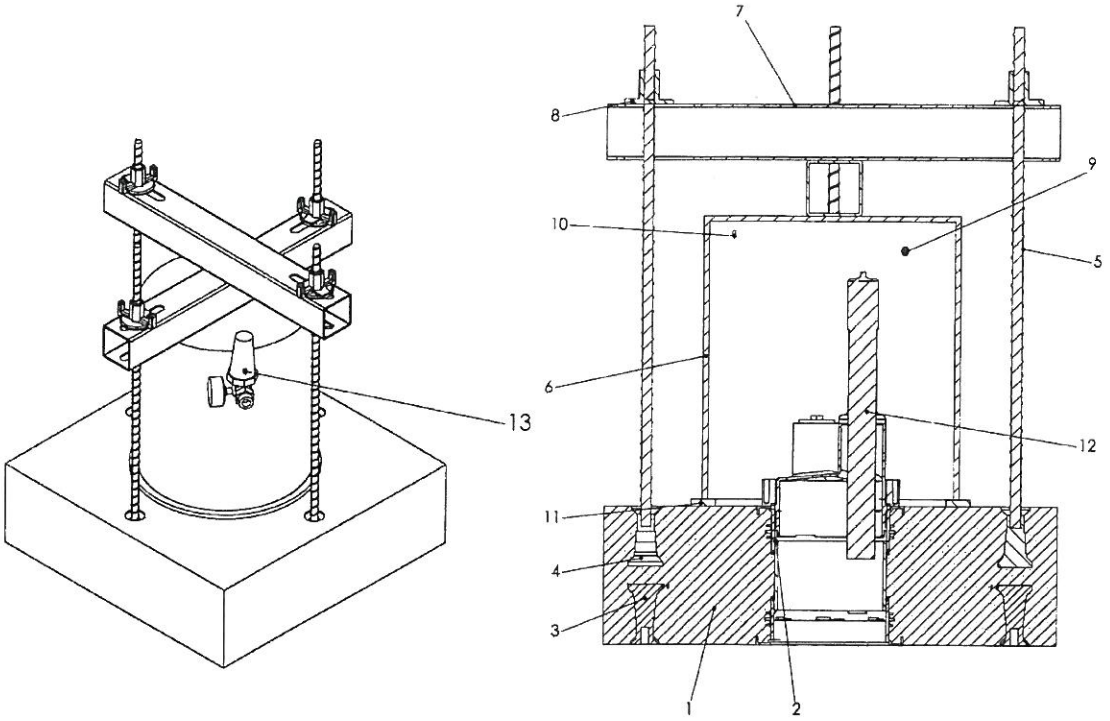
After consultation with the Manufacturer a tightness test with a water filled pressure bell over a period of 24 hours with a nominal pressure of 2,5 bar was carried out. The filling of the pressure bell with water was carried out until the water-level reached the inlet and the air bleed valve respectively.

The torque moment of the tension rod fixtures was determined at the beginning of the test with 60 Nm. The torque moment was controlled after half of the test duration.

Minor pressure fluctuations concerning the hygroscopic properties of the concrete or the temperature volume charge of the water may not be excluded.

Figure 2: Test setup

Figure 3: Test specimen



Item	Designation	Standard	Material
13	Pressure reducing regulator		
12	System cover D3/60		
11	Rubber seal		EPDM 55+/- Shore A
10	Bleed valve		
9	Pressure gauge		
8	Spindle rod nut		1.4301
7	Square tube		1.4301
6	Pressure cap welded part		St37
5	Formwork ties		
4	Climax protective cover		
3	Climax sleeve with nail cap		
2	HIS 150-K2/200		
1	Touchstone		C35 / C45 Concrete

Figure 4: Test setup (Manufacturer drawing)

3 Test results

Subsequent the manometer display at the beginning and at the end of the tightness test is shown in Figure 5.

For example causal for the minor pressure decrease may be the hygroscopic properties of the concrete as well as a decrease of the tension force of the tension rods for the pressure bell fixing. A water discharge in the area of the sealing could not be detected.

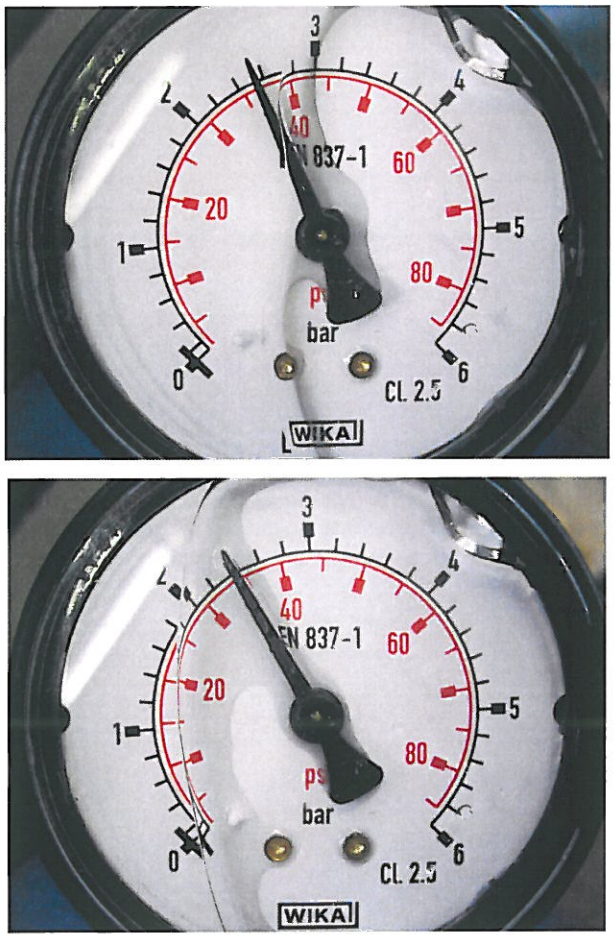


Figure 5: Tightness test with water filled pressure bell (above: manometer display at the beginning of the test at 11/23/2009 12:20; below: manometer display at the end of the test at 11/24/2009 12:25)

4 Summary

During the tightness test (double packing HSI 150-K2 and sealing cover HSI 150-D3/60 with cold shrink sleeve, heat shrink sleeve and sealing plug) with water filled pressure bell with a nominal pressure of 2,5 bar no defect in water tightness as a result of water discharge could be detected.

Augsburg, January 28th, 2010

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