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Project / Plant: Water tightness test of the plastic flange Hauff HSI150-DFK for retrofit dowelling onto a waterproof concrete test block

Order date: 22 November 2017

Product description: Plastic flange Hauff HSI150-DFK for retrofit dowelling

Order: Water tightness test $\geq 1,0$ bar for 28 days, subsequent $\geq 2,0$ bar for 1 day and $\geq 2,5$ bar for another 1 day

Number of samples / tests: 3 tests

Sampling: on: - / by: Applicant

Date of delivery: 22 November 2017

Testing period: 22 November - 22 December 2017

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Number of annexes: The test report contains 1 annex

Remark: Translation of Test Report A1742020-01,
15 June 2018

Gersthofen, 15 June 2018
dö/rö

p. p.



Dr.-Ing. Massimo Sosoro
- Technical director -



p. p.



B. Eng. David Röck
- Project manager -

The test results relate only on the items tested. Without the written approval of the testing laboratory, a duplication in extracts of the test report is not permitted.

Geschäftsführer: Prof. Dr. Roland Hüttl

Amtsgericht Hamburg, HRB 130568, St.Nr.: 46/736/03268



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1. General

Kiwa GmbH, Bautest Augsburg, was contracted by Hauff-Technik GmbH & Co. KG to test the water tightness of the plastic flange Hauff HSI150-DFK [1] for retrofit dowelling on existing core drill onto a waterproof concrete test block.

Therefore Hauff-Technik GmbH & Co. KG delivered the concrete test block with the already installed plastic flange Hauff HSI150-DFK together with the components for the test setup to our test laboratory in Gersthofen, Germany. The assembly of the test setup was performed by an employee of Hauff-Technik GmbH & Co. KG (see Figure 1).

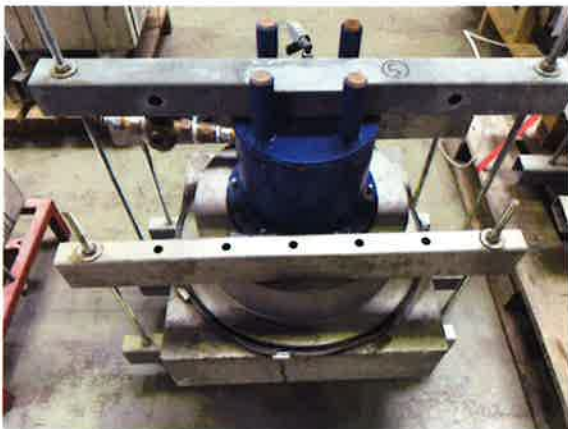


Figure 1. Assembled test setup.

2. References

- [1] Hauff-Technik GmbH & Co. KG - „Assembly instruction – HSI150-DFK – plastic Flange“. Version ma_hsi150_dfk_180214.
- [2] AFRISO-EURO-INDEX GmbH - “Inspection certificate according to EN 10204 - 3.1. Order No. 40854”.

3. Test procedure

3.1 Test preparation (Hauff Technik GmbH & Co. KG)

The assembly of the test setup was performed by the manufacturer (Hauff-Technik GmbH & Co. KG) of the plastic flange at Kiwa GmbH in Gersthofen, Germany. According to information given by the manufacturer the test setup was assembled as follows:

A core drill $\varnothing 150$ mm was placed through the middle of a waterproof concrete test block with the dimensions (l x w x h) 500 x 500 x 150 mm.

The uncast surface of the waterproof concrete test block was leveled and cleaned.

The plastic flange was placed over the core drill and aligned horizontally for marking the dowel holes

Subsequently the dowel holes ($\varnothing 10$ mm, 80 mm deep) for the plastic expansion dowels Fischer SXRL 10x80 were drilled and cleaned.

The adhesive and sealant EGO MS 805 was applied in the preformed seal recesses at the rear of the plastic flange before it was placed over the core drill.

Then the flange was pressed onto the wall and the pre-installed screws with sealing disc and insert fastening dowels were hit in until the dowels were flush with the shaft (see Figure 2).

The screws were tightened to max 14 Nm.

The opening of the plastic flange Hauff HSI150-DFK was closed with a press seal Hauff HRD150/160-G-WE Z/d.

Afterwards Hauff-Technik GmbH & Co. KG attached a pressure bell with manometer above the sealing system. The sealing of the pressure bell was performed with the help of an EPDM sealing and clamping pressure.

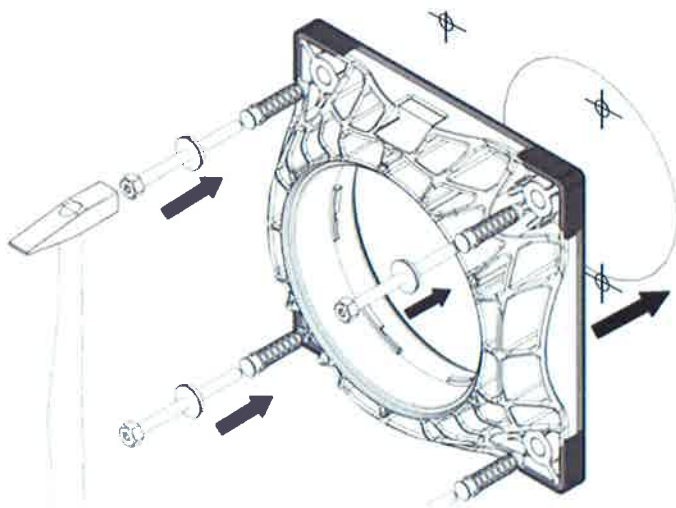


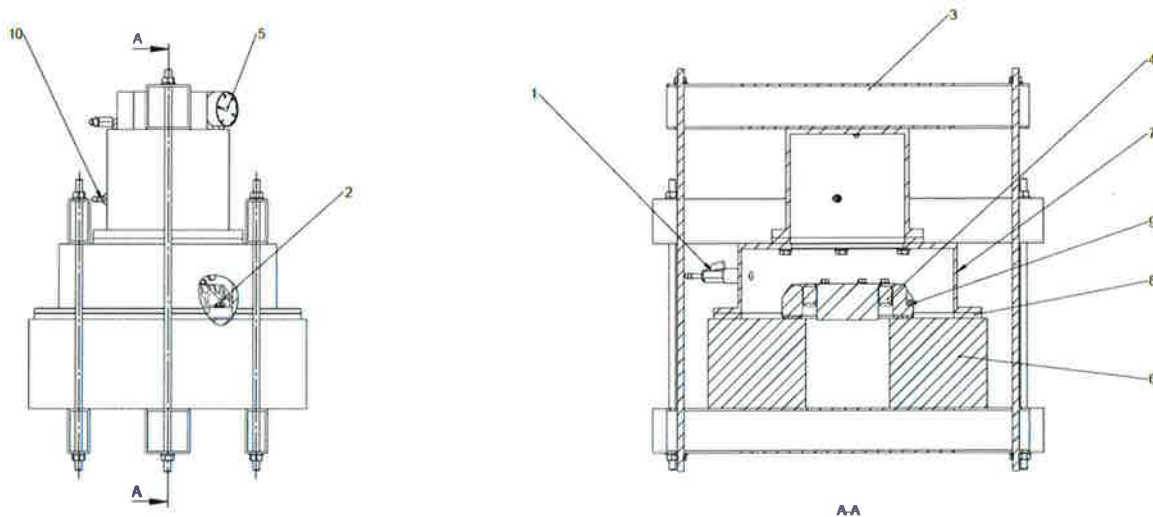
Figure 2. Example of installation of the plastic flange Hauff HSI150-DFK (picture of the manufacturer).

3.2 Water tightness test (Kiwa GmbH)

The test setup which was assembled by Hauff-Technik GmbH & Co. KG was built up in accordance to Section 3.1 with one manometer (see Figure 3).

A calibration of the assembled manometer (serial no. AEIRO15020 [2]) was performed by AFRISO-EURO-INDEX GmbH (see Section 6).

After prior consultation with the manufacturer the test of the water tightness with permanently attached water pressure was performed with $\geq 1,0$ bar for 28 days. Subsequently the water pressure was increased to $\geq 2,0$ bar for 1 day and after this to $\geq 2,5$ bar for another 1 day.



Position	Designation
1	stop valve
2	fixing plugs
3	security bar
4	press seal „HRD150/160-G-WE Z/d“
5	pressure gauge manometer
6	touchstone
7	test cylinder
8	test cylinder seal
9	plastic flange “HSI150-DFK”
10	air bleed valve

Figure 3. Detail of the test setup - manufacturer's drawing.

4. Test results

During the water tightness test no pressure drop as a result of leakages was detected (see Table 1). The test results can be seen at Figure A1 to Figure A6 attached in the annex.

Table 1. Results of the water tightness test.

Test specimen	Water pressure at the beginning of testing [bar]	Water pressure at the end of testing [bar]	Testing period [d]	Remark
HSI150-DFK	≥ 1,0	≥ 1,0	28	no pressure drop as a result of leakages
HSI150-DFK	≥ 2,0	≥ 2,0	1	no pressure drop as a result of leakages
HSI150-DFK	≥ 2,5	≥ 2,5	1	no pressure drop as a result of leakages

5. Summary

During the water tightness test of the plastic flange Hauff HSI150-DFK which was installed on a waterproof concrete test block no pressure drop as a result of leakages was detected during the testing period of 28 days with a permanent attached water pressure of $\geq 1,0$ bar and the following $\geq 2,0$ bar for 1 day and $\geq 2,5$ bar for another 1 day.

6. Calibration certificate

<p>Abnahmeprüfzeugnis EN 10204 – 3.1 Nr.: <u>16/2161</u> Inspection certificate</p>	<p>Formblatt FB-A-25-PB16</p>																																																
<p>Besteller / Customer: <u>Hauff-Technik & CoKG, 89568 Hemaringen</u> Auftrag Nr. / Job.-No.: <u>4140509</u> Bestell Nr. / Order.-No.: <u>40854 vom 05.08.2016</u></p>																																																	
<p>Abnahmeprüfzeugnis für: / Inspection certificate for: Typ: <u>RF D201</u> Nenngroße: <u>63</u> Nenndruck: <u>0/6bar</u> Klasse: <u>1,6</u> Type: <u>RF D201</u> Diameter: <u>63</u> Nominal pressure: <u>0/6bar</u> Class: <u>1,6</u> Fabriknummer: Stock No.: <u>AEIRO15020</u></p>																																																	
<p>Drucknormal: Reference Device: <u>DPM 200, SN:0907119/ DKD-Kalibrierschein-Nr.: 719 vom 16.11.2015</u> Messbereich: <u>-1/40bar</u> Messunsicherheit: <u>0.0081 bar</u> Measuring range Measuring insecurity:</p>																																																	
<p>Erreichte Druckwerte – Readings obtained:</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width:20%;">Skalenwert Scale value</th> <th style="width:40%;">im Aufwärtsgang with rising values</th> <th style="width:40%;">im Abwärtsgang with falling values</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>1.011</td><td>1.019</td></tr> <tr><td>2</td><td>1.973</td><td>2.036</td></tr> <tr><td>3</td><td>2.930</td><td>3.018</td></tr> <tr><td>4</td><td>3.961</td><td>4.002</td></tr> <tr><td>5</td><td>5.013</td><td>5.033</td></tr> <tr><td>6</td><td>6.036</td><td>6.027</td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>		Skalenwert Scale value	im Aufwärtsgang with rising values	im Abwärtsgang with falling values	0	0	0	1	1.011	1.019	2	1.973	2.036	3	2.930	3.018	4	3.961	4.002	5	5.013	5.033	6	6.036	6.027																								
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<p>Unsicherheit der angegebenen Werte insgesamt: The above readings are subject to an error in total: <p style="text-align: center;">0,4 %</p></p>																																																	
<p>Für die Prüfungen wurden Normale mit garantierter Rückführbarkeit auf nationale und internationale Normale eingesetzt. For the tests measuring instruments with guaranteed traceability to international standard have been used.</p>																																																	
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Gersthofen, 15 June 2018



Figure A1. Water tightness test with $\geq 1,0$ bar water filled test cylinder (manometer at the beginning of testing on 22.11.2017).



Figure A2. Water tightness test with $\geq 1,0$ bar water filled test cylinder (manometer after 28 days on 20.12.2017).



Figure A3. Water tightness test with $\geq 2,0$ bar water filled test cylinder (manometer at the beginning of testing on 20.12.2017).



Figure A4. Water tightness test with $\geq 2,0$ bar water filled test cylinder (manometer > 24 hours on 21.12.2017).



Figure A5. Water tightness test with $\geq 2,5$ bar water filled test cylinder (manometer at the beginning of testing on 21.12.2017).



Figure A6. Water tightness test with $\geq 2,5$ bar water filled test cylinder (manometer > 24 hours on 22.12.2017).