

CINTEC

Designed Anchor Systems

IN HOUSE
TEST DATA



SECURING THE PAST FOR THE FUTURE

In-house Testing of Cintec Anchors

Real Audencia, San Juan, Puerto Rico
Axial Pull Tests (1995)

Cintec Load Test Reports (1996)

CINTEC ANCHOR TESTING

In-house Testing
Real Audencia, San Juan, Puerto Rico

TYPE:

AXIAL PULL TESTS (1995)

Test Report on Axial Pull Tests on Inflated Cintec Anchors

Project: Real Audencia
Fortaleza Street

Location: San Juan, P.R.

Client: Government of Puerto Rico
State Historic Office
La Fortaleza San Juan, P.R. 00901

Architect: Roca and Associates
253 Fortaleza Street
4th Floor
San Juan, P.R. 00902-2876

Engineer: Wigberto Ponton
Consulting Engineer
509 Sagrado Corazon Street
Santurce, P.R. 00915

Contractor: Redondo Construction
GPO Box 4185
San Juan, P.R. 00936

Testing: Robert Lloyd-Rees, F.F.B.
Cavity Lock Systems Ltd.

Introduction

The property constructed in approximately 1710 is built of Calicanto [sand, limestone and brick rubble] and has been left derelict in recent years pending restoration. The roof was the original roof structure but was covered with temporary metal sheet finish. We understand that the property is a "listed Historic Building" and is to be restored. Following periods of torrential rainfall and a minor earthquake on Friday 27th October sections of the roof together with sections of the walls collapsed. Following a site inspection on Tuesday 31st October the following test procedures were agreed.

Test procedures: [NB - All directions are based on facing the building from outside]

Front right hand room - Left hand partition wall. A core sample of the full depth of the wall was taken in order to determine the strength of the Calicanto.

Front wall: 7 N° Cintec Anchors type RCT [rigid circular tie] 10 x 1 x 203mm 3/8" Ø x 8" long] with single sock and 10 x 1 x 203 [3/8" Ø x 8"] with two 76mm [3"] socks were inserted in 20mm [3/4"] Ø holes which had been cleared of all loose debris and had been prewettered. At 1300hrs Atlantic time, Wednesday November 1st 1995 a batch of grout was made comprising 12.5kg of Presstec grout mixed with 3 litres of portable water. The anchors were then injected with the grout mix until it was evident that the front section of the sock was fully inflated. The injection nozzle was then held in place for a further ten (10) seconds. At the same time 3 test cubes of grout were taken. The first being taken before the injection of anchors, the second during and the third after, the anchors had been injected.

Testing

The testing took place on Friday November 3rd 1995 at 10:00hrs some 45hrs after the anchors had been inflated in the presence of Eric Jokinen and Alexis Ocasio both being engineers.

Testing Equipment

Hilti MKV comprising standard 150mm long load spreading bridge, tester with interchangeable gauges [0 - 20kN]. Copy of original calibration certificate dated 28th June 1995 for gauges ref. HT94B2 and HT94B1. For the tests gauge HT94B1 was used.

Test Procedure

The load is applied on the anchor using a hilti tester (loading jack) with appropriate gauge attached. The anchor is connected to the loading jack through a threaded bar, nuts and washers.

The testing jack is supported on a load spreading bridge with 3 legs resting on the wall surface.

When the knob on the jack is turned the jack applies a load to the anchor. The load applied is related to the pressure indicated by the pressure gauge attached to the jack.

The load is to be applied in increments of 220lbs (1kN). The load at each increment to be held for one minute and the anchor to be observed for any indications of failure.

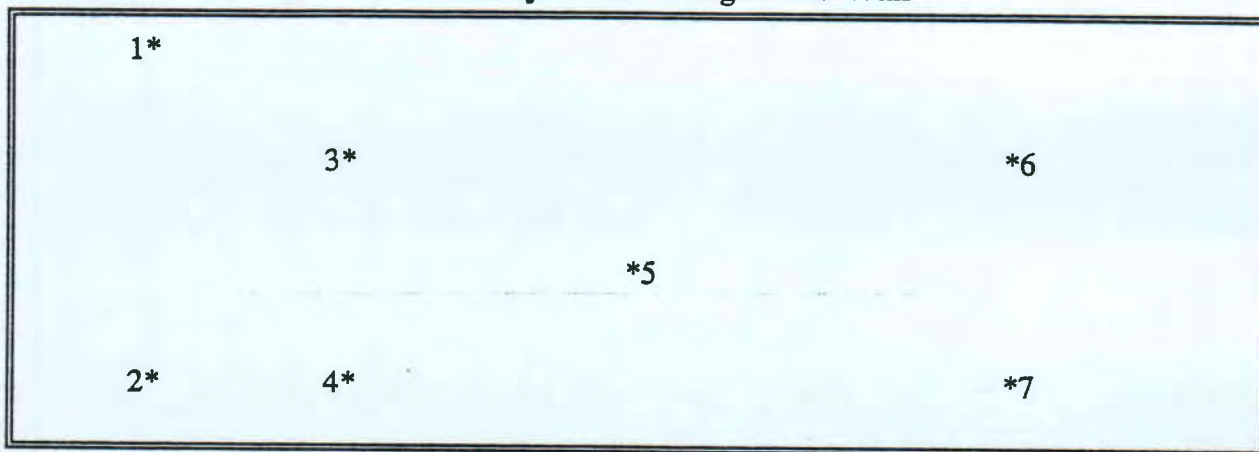
Load

Anchors to be tested to failure/20kN.

Test Results

The anchors were loaded and observations were recorded as shown in the attached tables.

Anchor Layout Front Righthand Wall



Test Results on Cintec Anchor No. 1

Load on Anchor (lbs)	(kN)	Holding Time (minutes)	Observations
220	(1kN)	1	none
440	(2kN)	1	none
660	(3kN)	1	none
880	(4kN)	1	none
1100	(5kN)	1	none
1320	(6kN)	1	none
1540	(7kN)	1	none
1760	(8kN)	1	none
1980	(9kN)	1	none
2200	(10kN)	1	stripped thread of test anchor

Test Results on Cintec Anchor No. 2

Load on Anchor (lbs)		Holding Time Minutes	Observations
220	(1kN)	1	none
440	(2kN)	1	none
660	(3kN)	1	none
880	(4kN)	1	none
1100	(5kN)	1	none
1320	(6kN)	1	none
1540	(7kN)	1	none
1760	(8kN)	1	none
1980	(9kN)	1 min second time 5 mins.	anchor steel slowly moved out and stayed gauge slipped back to 9kn then started retesting
2200	(10kN)	1	none
2420	(11kN)	1	none
2640	(12kN)	1	none
2860	(13kN)	1	none
3080	(14kN)	1	none
3300	(15kN)	1	none
3520	(16kN)	1	none
3740	(17Kn)	1	none
3960	(18kN)	1	none
4180	(19kN)	1	none
4400	(20kN)	5 minutes	maximum load of test equipment

Test Results on Cintec Anchor No. 3

Load on Anchor (lbs)	Holding Time Minutes	Observations
220 (1kN)	1	none
440 (2kN)	1	none
660 (3kN)	1	none
880 (4kN)	1	none
1100 (5kN)	1	none
1320 (6kN)	1	none
1540 (7kN)	1	none
1760 (8kN)	1	none
1980 (9kN)		stripped thread on test anchor

Test Results on Cintec Anchor No. 4

Load on Anchor (lbs)		Holding Time Minutes	Observations
220	(1kN)	1	none
440	(2kN)	1	none
660	(3kN)	1	none
880	(4kN)	1	none
1100	(5kN)	1	none
1320	(6kN)	1	none
1540	(7kN)	1	none
1760	(8kN)	1	none
1980	(9kN)	1	none
2200	(10kN)	1	none
2420	(11kN)	1	none
2640	(12kN)	1	none
2860	(13kN)	1	none
3080	(14kN)	1	none
3300	(15kN)	1	none
3520	(16kN)	1	none
3740	(17kN)	1	none
3960	(18kN)	1	none
4180	(19kN)	1	none
4400	(20kN)	5 minutes	maximum load of test equipment

No visible damage to the anchor was observed at all increments of the load.

Test Results on Cintec Anchor No. 5

Load on Anchor (lbs)	Holding Time Minutes	Observations
220 (1kN)	1	none
440 (2kN)	1	none
660 (3kN)	1	none
880 (4kN)	1	none
1100 (5kN)	1	none
1320 (6kN)	1	none
1540 (7kN)	1	none
1760 (8kN)	1	none
1980 (9kN)		steel connector broke

Test Results on Cintec Anchor No. 6

Load on Anchor (lbs)	Holding Time Minutes	Observations
220 (1kN)	1	none
440 (2kN)	1	none
660 (3kN)	1	none
880 (4kN)	1	none
1100 (5kN)	1	none
1320 (6kN)	1	none
1540 (7kN)		stripped thread on test anchor

Test Results on Cintec Anchor No. 7

Load on Anchor (lbs)	Holding Time Minutes	Observations
220 (1kN)	1	none
440 (2kN)	1	none
660 (3kN)	1	none
880 (4kN)	1	none
1100 (5kN)	1	none
1320 (6kN)	1	none
1540 (7kN)		none
1760 (8kN)	1	none
1980 (9kN)	1	none
2200 (10kN)		stripped thread on test anchor

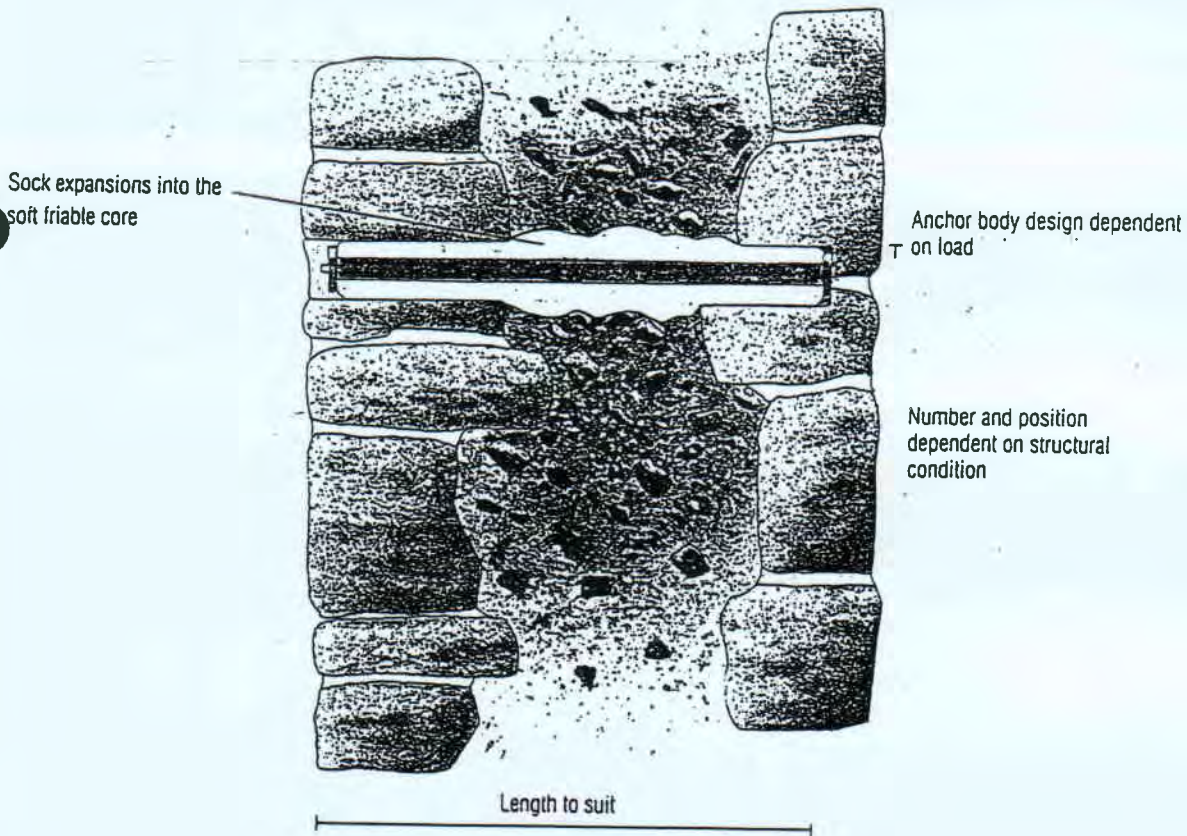
Compressive strength of grout

Sample 1 8,500 lb
Sample 2 10,000 lb
Sample 3 9,000 lb

Average strength of sample 9,267

Strength of Calicanto

STITCHING ANCHOR



TEL 1-800-363-6066
FAX 1-800-461-1862

CINTEC[®]
MC SYSTEMS

DESIGNED ANCHOR SYSTEMS FOR THE CONSTRUCTION INDUSTRY

GEOCONSULT
Geotechnical Engineers

P.O. Box 10328, San Juan, Puerto Rico 00922
Telephones (809) 782-3554 / 783-3585

Project Redondo (Montalva)
Description _____
Date 11/15/95 File No _____
By J. Batista Checked _____
Scale _____ Sheet No _____ of _____

Estimado Ing. Rivera:

Las muestras traídas a nuestro laboratorio por su personal en forma de "copper cups" fueron sometidas a compresión y los resultados en libras/fuerza fueron los siguientes:

1. 8,500 lb
2. 10,000 lb
3. 9,000 lb

Atentamente,

Juan Carlos Batista
Laboratorio

CINTEC ANCHOR TESTING

**Load Test Results
In-house Testing**

SUPERVISED BY:

**PETER SOBEK ING.
(1996)**



Hilti (Gt. Britain) Limited
1 Trafford Wharf Road
Manchester M17 1BY

Telephone: 061-886 1000 Fax: 061-872 1240
Technical Advisory Service Telephone: 061-886 1144

Certificate of Calibration

GAUGE REF. No. HT 94 B1

GAUGE RANGE 0 - 20kN/1bF

MODEL No. 0087C

We certify that this Gauge has been inspected and calibrated for accuracy and passed within our limits of plus or minus 2% F.S.D.

Results obtained at calibration stage are as follows:-

MASTER	4.00	8.00	12.00	16.00	20.00
ACTUAL	4.00	8.00	12.00	16.00	20.00

Calibration traceable to N.P.L. Standards

Accuracy of gauges as stated above cannot be guaranteed should the unit be subjected to mis-use. Gauge will be permanently damaged should maximum load be exceeded.

This unit will be due for calibration on 28 June 1996

Customer Hilti (Gt. Britain) Limited

Order No. 51/15762 Date of Calibration 28 June 1995

Approved Signatory *S Holmes*

Date 28 June 1995

CINTEC

Load Test Results

A wall measuring 1000mm thick was built from medium density bricks to conduct destructive testing on the Cintec Anchoring system.

An hydraulic hollow ram cylinder with a load range of 0 to 300 kn in 5 kn increments was used for two of the tests, but this was changed to a hollow ram cylinder with a load range of 0 to 120 kn with 2 kn increments this enabled us to achieve greater accuracy on the displacement values.

Displacement was measured using a digital readout dial gauge in 0.01 mm increments.

The characteristics of the stainless steel sections utilised were as follows :-

M12 stainless steel studding -

Grade 304

M16 stainless steel studding.

Grade 304

15mm x 15mm x 1.5mm stainless steel square hollow section.

Grade 304 S15

Proof stress = 195 N/mm²

Tensile strength = 500 N/mm²

Elongation = 40%

20mm x 20mm x 2mm stainless steel square hollow section.

Grade 304 S15

Proof stress = 195 N/mm²

Tensile strength = 500 N/mm²

Elongation = 40%

(These values are for strip stainless steel and are altered slightly after forming into square hollow section)

The gout used was the standard Presstec Grout with the typical values as follows :-

Compression = 40 N/mm² @ 28 days

Tension = 3.3 N/mm² @ 28 days

All anchor failure modes were steel to grout . None of the failures were grout to parent material.



TEST CERTIFICATE

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 30.04.96
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Site Address:
Warehouse

Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
200mm

Bore Hole Diameter
24 mm

Base Material
Medium Density Brick

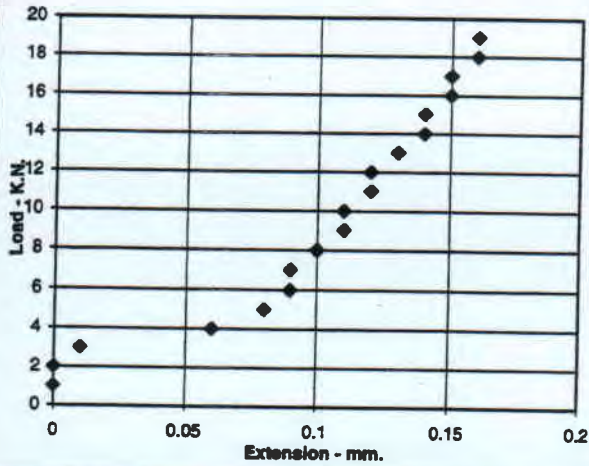
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
1	2 mins.	1	0.00	0.00
2	2 mins.	2	0.00	0.00
3	2 mins.	3	0.01	0.01
4	2 mins.	4	0.06	0.06
5	2 mins.	5	0.08	0.08
6	2 mins.	6	0.09	0.09
7	2 mins.	7	0.09	0.09
8	2 mins.	8	0.10	0.10
9	2 mins.	9	0.11	0.11
10	2 mins.	10	0.11	0.11
11	2 mins.	11	0.12	0.12
12	2 mins.	12	0.12	0.12
13	2 mins.	13	0.13	0.13
14	2 mins.	14	0.14	0.14
15	2 mins.	15	0.14	0.14
16	2 mins.	16	0.15	0.15
17	2 mins.	17	0.15	0.15
18	2 mins.	18	0.16	0.16
19	2 mins.	19	0.16	0.16

Anchor Location
Test wall



Company Name: Cavity Lock Ssystems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Sobek	Ingenieurbureau Sobek	Independent Witness	



TEST CERTIFICATE

Type of Test: Diect Axial Pull	Install Date 04.16.96	Test Date 16.07.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
200mm

Bore Hole Diameter
24mm

Base Material
Medium Density Brick

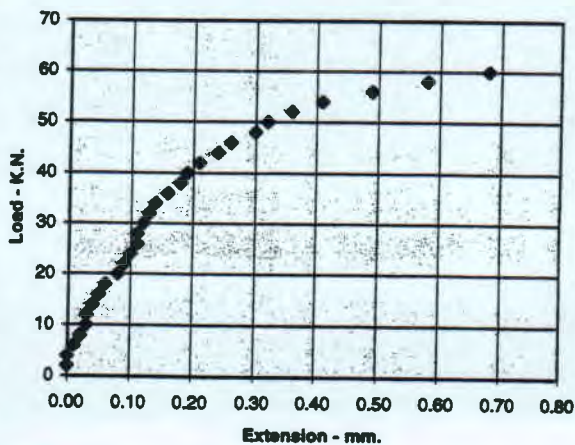
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.01	0.01
8	2 mins.	8	0.02	0.02
10	2 mins.	10	0.03	0.03
12	2 mins.	12	0.03	0.03
14	2 mins.	14	0.04	0.04
16	2 mins.	16	0.05	0.05
18	2 mins.	18	0.06	0.06
20	2 mins.	20	0.08	0.08
22	2 mins.	22	0.09	0.09
24	2 mins.	24	0.10	0.10
26	2 mins.	26	0.11	0.11
28	2 mins.	28	0.11	0.11
30	2 mins.	30	0.12	0.12
32	2 mins.	32	0.13	0.13
34	2 mins.	34	0.14	0.14
36	2 mins.	36	0.16	0.16
38	2 mins.	38	0.18	0.18
40	2 mins.	40	0.19	0.19
42	2 mins.	41	0.21	0.21
44	2 mins.	43	0.24	0.24
46	2 mins.	45	0.26	0.26
48	2 mins.	47	0.3	0.31
50	2 mins.	48	0.32	0.34
52	2 mins.	50	0.36	0.37
54	2 mins.	52	0.41	0.44
56	2 mins.	54	0.49	0.52
58	2 mins.	56	0.58	0.61
60			0.68	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales, NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



TEST CERTIFICATE

Type of Test:	Install Date	Test Date
Direct Axial Pull	04.01.96	26.06.96

Site Address:
 Warehouse
 Unit 23/24,
 Albany Industrial Estate,
 Newport,
 Borough of Newport,
 South Wales.

Anchor Type
 M12 Studding

Embedment Depth
 300mm

Bore Hole Diameter
 24mm

Base Material
 Medium Density Brick

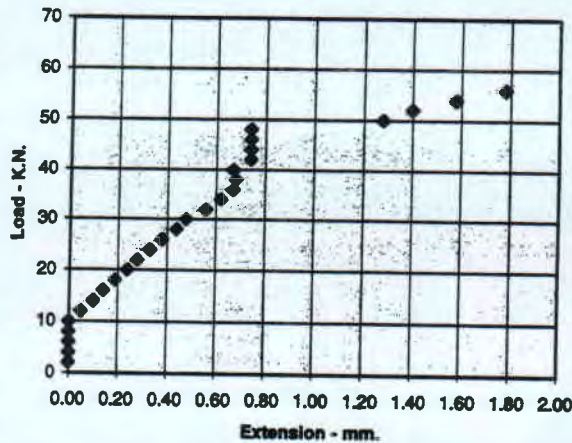
Required Load

Grout Type
 Presstec Standard

Anchor Material
 Stainless Steel

Anchor Location
 Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.00	0.00
12	2 mins.	12	0.05	0.05
14	2 mins.	14	0.10	0.10
16	2 mins.	16	0.14	0.15
18	2 mins.	18	0.19	0.19
20	2 mins.	20	0.24	0.24
22	2 mins.	22	0.28	0.28
24	2 mins.	24	0.33	0.34
26	2 mins.	26	0.38	0.39
28	2 mins.	28	0.44	0.45
30	2 mins.	30	0.48	0.50
32	2 mins.	31.5	0.56	0.57
34	2 mins.	34	0.62	0.63
36	2 mins.	36	0.67	0.67
38	2 mins.	38	0.68	0.68
40	2 mins.	40	0.67	0.67
42	2 mins.	42	0.74	0.74
44	2 mins.	44	0.74	0.74
46	2 mins.	46	0.74	0.74
48	2 mins.	48	0.74	0.78
50	2 mins.	49	1.28	1.31
52	2 mins.	50	1.40	1.47
54	2 mins.	52	1.58	1.63
56	2 mins.	53	1.78	1.99
58				



Company Name:	Engineers Name:
Cavity Lock Systems Limited	Peter Sobek
Company Address:	Engineers Address:
Factory Road,	Friedhofstr. 37b
Newport,	D63322 Rodermark
Borough of Newport,	Germany
South Wales.	
NP9 5FA	

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Jonis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



TEST CERTIFICATE

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 08.07.96
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Site Address:
Warehouse

Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
300mm

Bore Hole Diameter
24mm

Base Material
Medium Density Brick

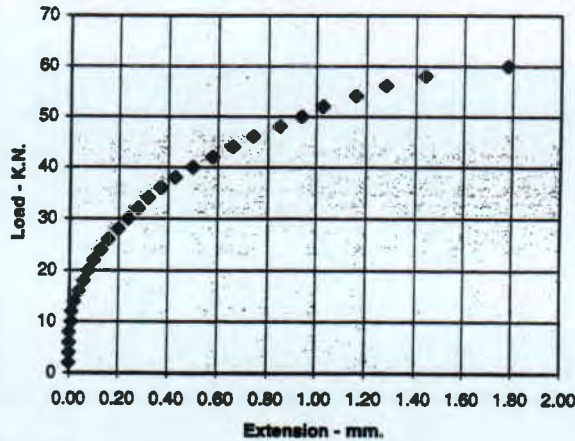
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.01	0.01
12	2 mins.	12	0.01	0.01
14	2 mins.	14	0.02	0.02
16	2 mins.	16	0.04	0.04
18	2 mins.	18	0.06	0.06
20	2 mins.	20	0.08	0.08
22	2 mins.	22	0.10	0.10
24	2 mins.	24	0.13	0.13
26	2 mins.	26	0.16	0.16
28	2 mins.	28	0.20	0.20
30	2 mins.	30	0.24	0.24
32	2 mins.	32	0.28	0.29
34	2 mins.	34	0.32	0.33
36	2 mins.	36	0.37	0.38
38	2 mins.	38	0.43	0.45
40	2 mins.	39.5	0.50	0.52
42	2 mins.	41.5	0.58	0.60
44	2 mins.	43.5	0.66	0.70
46	2 mins.	45	0.74	0.77
48	2 mins.	47.5	0.85	0.90
50	2 mins.	49	0.94	0.98
52	2 mins.	50	1.03	1.08
54	2 mins.	52	1.16	1.20
56	2 mins.	53	1.28	1.30
58	2 mins.	54	1.44	1.46
60	2 mins.		1.78	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Gunnis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 08.07.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
300mm

Bore Hole Diameter
24mm

Base Material
Medium Density Brick

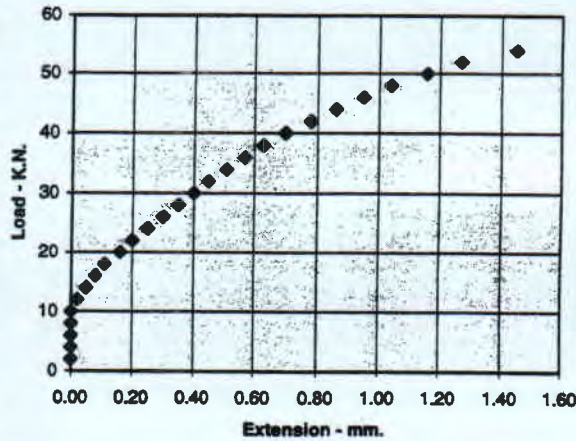
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.00	0.00
12	2 mins.	12	0.02	0.02
14	2 mins.	14	0.05	0.05
16	2 mins.	16	0.08	0.08
18	2 mins.	18	0.11	0.12
20	2 mins.	20	0.16	0.16
22	2 mins.	22	0.20	0.20
24	2 mins.	24	0.25	0.25
26	2 mins.	26	0.30	0.31
28	2 mins.	28	0.35	0.35
30	2 mins.	30	0.40	0.40
32	2 mins.	31.5	0.45	0.47
34	2 mins.	33.5	0.51	0.52
36	2 mins.	35.5	0.57	0.59
38	2 mins.	38	0.63	0.65
40	2 mins.	39	0.70	0.72
42	2 mins.	41.5	0.78	0.80
44	2 mins.	43	0.86	0.89
46	2 mins.	45	0.95	0.99
48	2 mins.	47	1.04	1.08
50	2 mins.	48	1.16	1.20
52	2 mins.	50	1.27	1.31
54			1.45	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Jonis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



TEST CERTIFICATE

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 25.06.96
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Site Address: Warehouse Unit 23/24, Albany Industrial Estate, Newport, Borough of Newport, South Wales.
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Anchor Type M12 Studding

Embedment Depth 200mm

Bore Hole Diameter 30mm

Base Material Medium Density Brick
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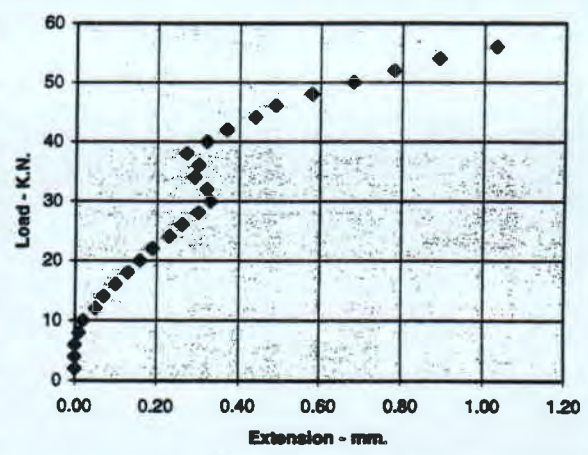
Required Load

Grout Type Presstec Standard
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Anchor Material Stainless Steel

Load - Start K.N.	Time Held	Load - End K.N.	Extensiaon mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.01	0.01
10	2 mins.	10	0.02	0.02
12	2 mins.	12	0.05	0.05
14	2 mins.	14	0.07	0.08
16	2 mins.	16	0.10	0.11
18	2 mins.	18	0.13	0.13
20	2 mins.	20	0.16	0.17
22	2 mins.	22	0.19	0.20
24	2 mins.	24	0.23	0.23
26	2 mins.	26	0.26	0.27
28	2 mins.	28	0.30	0.31
30	2 mins.	30	0.33	0.34
32	2 mins.	32	0.32	0.32
34	2 mins.	34	0.29	0.30
36	2 mins.	36	0.30	0.30
38	2 mins.	38	0.27	0.30
40	2 mins.	40	0.32	0.34
42	2 mins.	42	0.37	0.40
44	2 mins.	44	0.44	0.49
46	2 mins.	45	0.49	0.52
48	2 mins.	47	0.58	0.63
50	2 mins.	49	0.68	0.71
52	2 mins.	51	0.78	0.83
54	2 mins.	52	0.89	0.95
56			1.03	

Anchor Location Test Wall



Company Name: Cavity Lock Ssystems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Jennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



TEST CERTIFICATE

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 25.06.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
200mm

Bore Hole Diameter
30mm

Base Material
Medium Density Brick

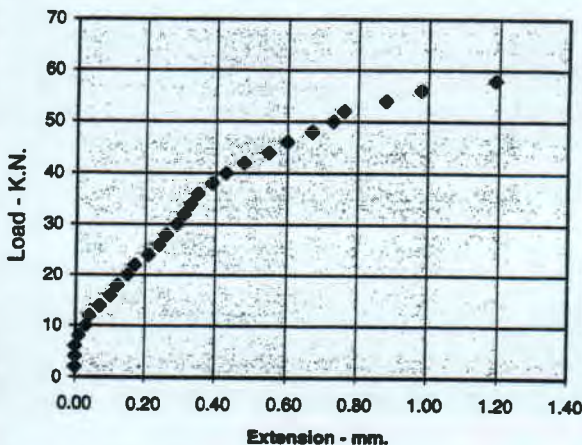
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.01	0.01
10	2 mins.	10	0.03	0.03
12	2 mins.	12	0.04	0.04
14	2 mins.	14	0.07	0.07
16	2 mins.	16	0.10	0.10
18	2 mins.	18	0.12	0.12
20	2 mins.	20	0.15	0.15
22	2 mins.	22	0.17	0.17
24	2 mins.	24	0.21	0.21
26	2 mins.	26	0.24	0.24
28	2 mins.	28	0.26	0.26
30	2 mins.	30	0.29	0.30
32	2 mins.	32	0.31	0.32
34	2 mins.	34	0.33	0.33
36	2 mins.	36	0.35	0.36
38	2 mins.	38	0.39	0.40
40	2 mins.	40	0.43	0.44
42	2 mins.	42	0.48	0.50
44	2 mins.	44	0.55	0.57
46	2 mins.	45	0.60	0.62
48	2 mins.	47	0.67	0.68
50	2 mins.	48	0.73	0.75
52	2 mins.	50	0.76	0.81
54	2 mins.	51	0.88	0.89
56	2 mins.	53	0.98	0.99
58	2 mins.	54	1.19	1.22
60				



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 16.07.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
200mm

Bore Hole Diameter
30mm

Base Material
Medium Density Brick

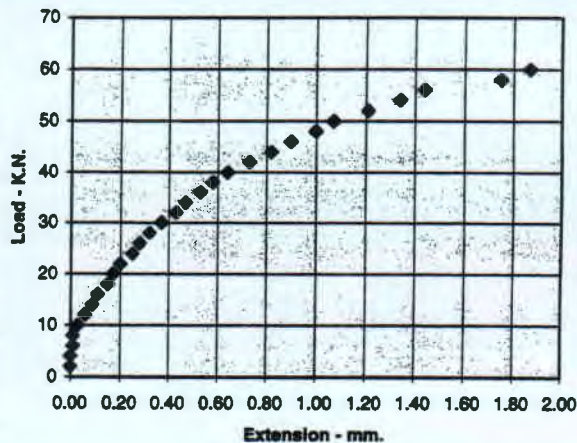
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.01	0.01
8	2 mins.	8	0.01	0.01
10	2 mins.	10	0.03	0.03
12	2 mins.	12	0.06	0.06
14	2 mins.	14	0.09	0.09
16	2 mins.	16	0.11	0.12
18	2 mins.	18	0.15	0.15
20	2 mins.	20	0.17	0.17
22	2 mins.	22	0.20	0.20
24	2 mins.	24	0.25	0.25
26	2 mins.	26	0.28	0.28
28	2 mins.	28	0.32	0.33
30	2 mins.	30	0.37	0.38
32	2 mins.	32	0.43	0.44
34	2 mins.	34	0.47	0.48
36	2 mins.	36	0.53	0.54
38	2 mins.	38	0.58	0.60
40	2 mins.	40	0.64	0.66
42	2 mins.	41.5	0.73	0.77
44	2 mins.	44	0.82	0.85
46	2 mins.	46	0.90	0.93
48	2 mins.	47	1.00	1.04
50	2 mins.	48	1.07	1.11
52	2 mins.	51	1.21	1.28
54	2 mins.	53	1.34	1.38
56	2 mins.	55	1.44	1.59
58	2 mins.	56	1.75	1.79
60			1.87	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales, NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Annis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 25.06.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
300mm

Bore Hole Diameter
30mm

Base Material
Medium Density Brick

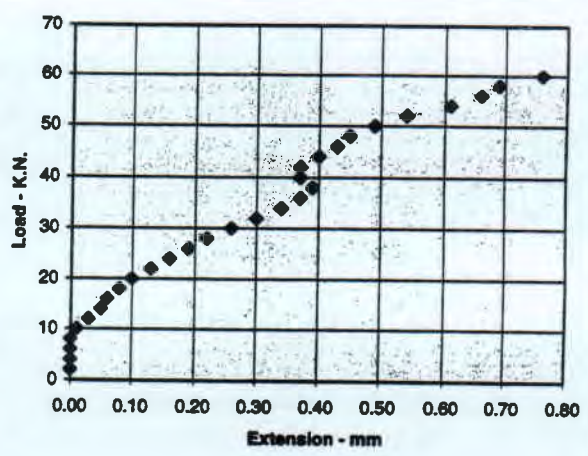
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins	2	0.00	0.00
4	2 mins	4	0.00	0.00
6	2 mins	6	0.00	0.00
8	2 mins	8	0.00	0.00
10	2 mins	10	0.01	0.01
12	2 mins	12	0.03	0.03
14	2 mins	14	0.05	0.05
16	2 mins	16	0.06	0.06
18	2 mins	18	0.08	0.09
20	2 mins	20	0.10	0.10
22	2 mins	22	0.13	0.13
24	2 mins	24	0.16	0.16
26	2 mins	26	0.19	0.19
28	2 mins	28	0.22	0.22
30	2 mins	30	0.26	0.26
32	2 mins	32	0.30	0.31
34	2 mins	34	0.34	0.35
36	2 mins	36	0.37	0.38
38	2 mins	38	0.39	0.39
40	2 mins	40	0.37	0.39
42	2 mins	42	0.37	0.39
44	2 mins	44	0.40	0.41
46	2 mins	46	0.43	0.44
48	2 mins	47	0.45	0.47
50	2 mins	49	0.49	0.5
52	2 mins	50	0.54	0.56
54	2 mins	52	0.61	0.62
56	2 mins	54	0.66	0.68
58	2 mins	56	0.69	0.72
60		56	0.76	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Janis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



TEST CERTIFICATE

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 26.06.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
M12 Studding

Embedment Depth
300mm

Bore Hole Diameter
30mm

Base Material
Medium Density Brick

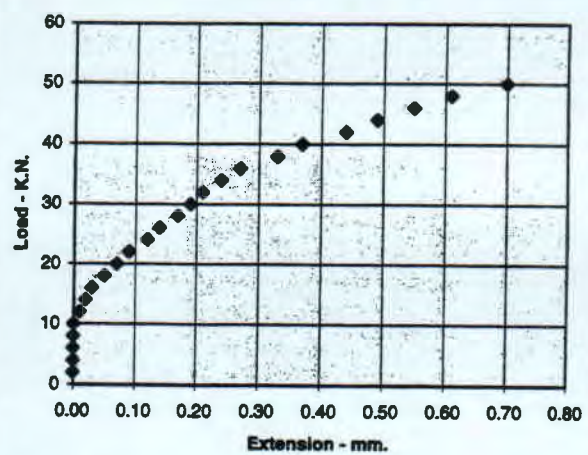
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.00	0.00
12	2 mins.	12	0.01	0.01
14	2 mins.	14	0.02	0.02
16	2 mins.	16	0.03	0.04
18	2 mins.	18	0.05	0.06
20	2 mins.	20	0.07	0.07
22	2 mins.	22	0.09	0.09
24	2 mins.	24	0.12	0.12
26	2 mins.	26	0.14	0.15
28	2 mins.	28	0.17	0.17
30	2 mins.	30	0.19	0.19
32	2 mins.	32	0.21	0.21
34	2 mins.	33.5	0.24	0.25
36	2 mins.	35	0.27	0.28
38	2 mins.	38	0.33	0.33
40	2 mins.	39	0.37	0.39
42	2 mins.	41	0.44	0.46
44	2 mins.	43	0.49	0.51
46	2 mins.	45	0.55	0.56
48	2 mins.	46	0.61	0.63
50			0.70	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Annis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test: Diriec Axial Pull	Install Date 04.01.96	Test Date 26.06.96
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Site Address:
 Warehouse
 Unit 23/24,
 Albany Industrial Estate,
 Newport,
 Borough of Newport,
 South Wales.

Anchor Type
M12 Studding

Embedment Depth
300mm

Bore Hole Diameter
30mm

Base Material
Medium Density Brick

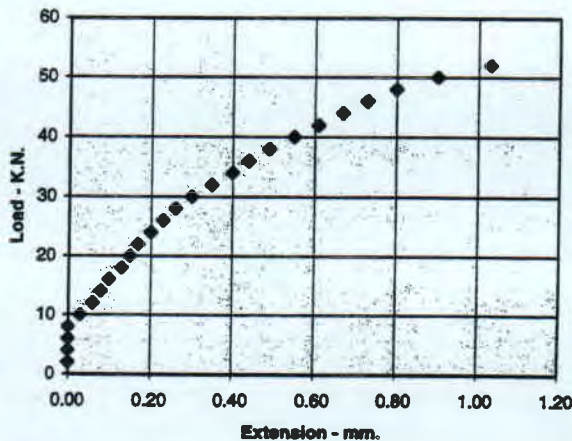
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.03	0.03
12	2 mins.	12	0.06	0.06
14	2 mins.	14	0.08	0.08
16	2 mins.	16	0.10	0.10
18	2 mins.	18	0.13	0.13
20	2 mins.	20	0.15	0.15
22	2 mins.	22	0.17	0.10
24	2 mins.	24	0.20	0.20
26	2 mins.	26	0.23	0.24
28	2 mins.	28	0.26	0.27
30	2 mins.	30	0.30	0.31
32	2 mins.	32	0.35	0.35
34	2 mins.	34	0.40	0.40
36	2 mins.	36	0.44	0.44
38	2 mins.	38	0.49	0.49
40	2 mins.	39	0.55	0.55
42	2 mins.	42	0.61	0.61
44	2 mins.	43	0.67	0.68
46	2 mins.	44	0.73	0.74
48	2 mins.	46	0.80	0.82
50	2 mins.	48	0.90	0.92
52	2 mins.	48	1.03	1.10
54				



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Annis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test:	Install Date	Test Date
Direct Axial Pull	04.01.96	25.06.96

Site Address:
 Warehouse
 Unit 23/24,
 Albany Industrial Estate,
 Newport,
 Borough of Newport,
 South Wales.

Anchor Type
 15mm x 15mm x 1.5mm

Embedment Depth
 500mm

Bore Hole Diameter
 30mm

Base Material
 Medium Density Brick

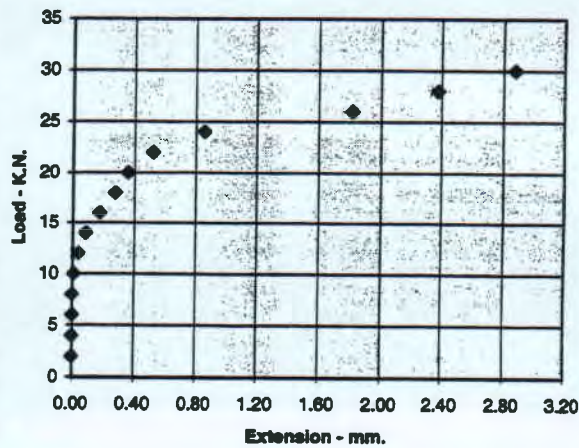
Required Load

Grout Type
 Presstec Standard

Anchor Material
 Stainless Steel

Anchor Location
 Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.01	0.01
12	2 mins.	12	0.04	0.04
14	2 mins.	14	0.09	0.10
16	2 mins.	16	0.18	0.18
18	2 mins.	18	0.28	0.28
20	2 mins.	20	0.36	0.37
22	2 mins.	21	0.52	0.56
24	2 mins.	22	0.86	0.96
26	2 mins.	24	1.82	1.92
28	2 mins.	26	2.38	2.49
30	2 mins.	27	2.88	3.01
32				



Company Name:	Engineers Name:
Cavity Lock Systems Limited	Peter Sobek
Company Address:	Engineers Address:
Factory Road,	Friedhofstr. 37b
Newport,	D63322 Rodermark
Borough of Newport,	Germany
South Wales.	
NP9 5FA	

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Johnis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 25.06.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
15mm x 15mm x 1.5mm

Embedment Depth
500mm

Bore Hole Diameter
55mm

Base Material
Medium Density Brick

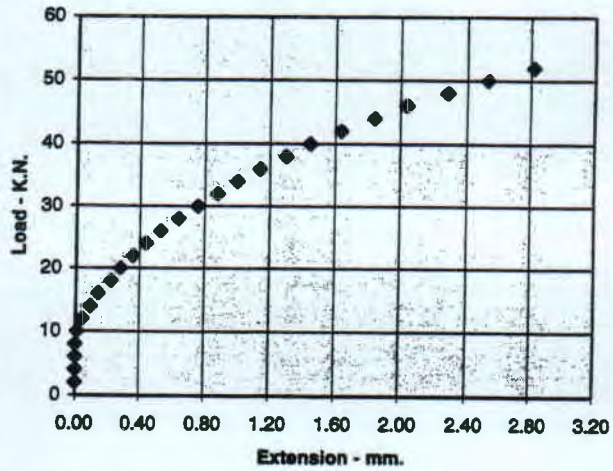
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.01	0.01
12	2 mins.	12	0.04	0.04
14	2 mins.	14	0.09	0.09
16	2 mins.	16	0.14	0.14
18	2 mins.	18	0.22	0.22
20	2 mins.	20	0.28	0.28
22	2 mins.	22	0.36	0.36
24	2 mins.	24	0.44	0.44
26	2 mins.	26	0.53	0.53
28	2 mins.	28	0.64	0.65
30	2 mins.	30	0.76	0.77
32	2 mins.	32	0.88	0.90
34	2 mins.	34	1.00	1.02
36	2 mins.	36	1.14	1.17
38	2 mins.	38	1.30	1.32
40	2 mins.	39	1.45	1.49
42	2 mins.	41	1.64	1.69
44	2 mins.	43	1.84	1.88
46	2 mins.	45	2.04	2.08
48	2 mins.	47	2.28	2.34
50	2 mins.	48	2.53	2.60
52	2 mins.	50	2.82	2.88
54				

Anchor Location
Test Wall



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurburea Sobek	Independent Witness	



TEST CERTIFICATE

Type of Test: Diect Axial Pull	Install Date 04.01.96	Test Date 25.06.96
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Site Address: Warehouse Unit 23/24, Albany Industrial Estate, Newport, Borough of Newport, South Wales.
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Anchor Type
15mm x 15mm x 1.5mm

Embedment Depth
500mm

Bore Hole Diameter
55mm

Base Material
Mmedium Density Brick

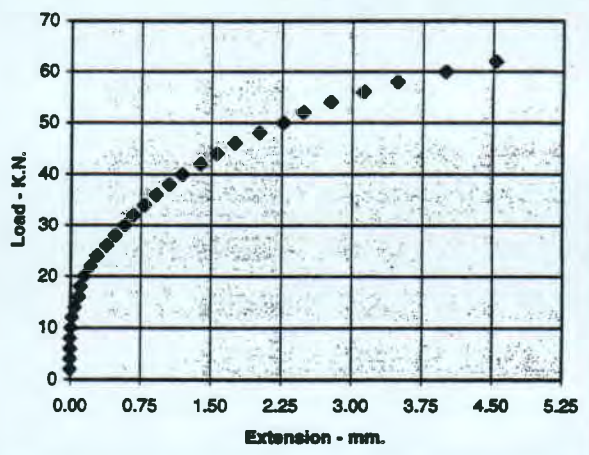
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.01	0.01
12	2 mins.	12	0.02	0.03
14	2 mins.	14	0.05	0.05
16	2 mins.	16	0.09	0.09
18	2 mins.	18	0.11	0.11
20	2 mins.	20	0.15	0.15
22	2 mins.	22	0.22	0.22
24	2 mins.	24	0.29	0.30
26	2 mins.	26	0.39	0.39
28	2 mins.	28	0.48	0.48
30	2 mins.	30	0.58	0.50
32	2 mins.	32	0.67	0.55
34	2 mins.	34	0.79	0.68
36	2 mins.	36	0.91	0.81
38	2 mins.	38	1.05	0.93
40	2 mins.	40	1.19	1.05
42	2 mins.	42	1.38	1.22
44	2 mins.	44	1.56	1.43
46	2 mins.	46	1.75	1.61
48	2 mins.	47	2.01	1.79
50	2 mins.	49	2.27	2.07
52	2 mins.	51	2.48	2.34
54	2 mins.	52	2.77	2.56
56	2 mins.		3.12	2.85
58			3.48	
60			4.00	
62			4.53	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Chris Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurburea Sobek	Independent Witness	



Test Certificate

Type of Test:	Install Date	Test Date
Direct Axial Pull	04.01.96	25.06.96

Site Address:

Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type

15mm x 15mm x 1.5mm

Embedment Depth

500mm

Bore Hole Diameter

55mm

Base Material

Mmedium Density Brick

Required Load

Grout Type

Presstec Standard

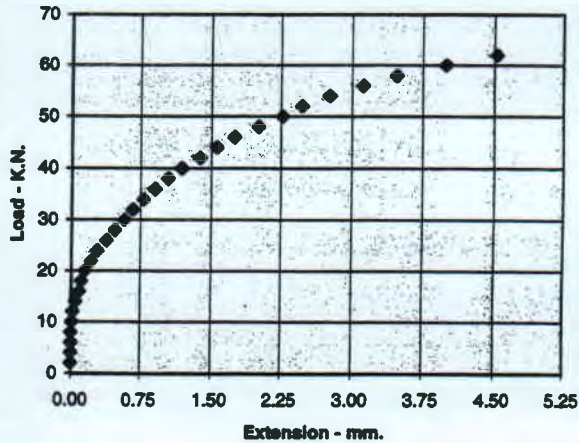
Anchor Material

Stainless Steel

Anchor Location

Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	2 mins.	2	0.00	0.00
4	2 mins.	4	0.00	0.00
6	2 mins.	6	0.00	0.00
8	2 mins.	8	0.00	0.00
10	2 mins.	10	0.01	0.01
12	2 mins.	12	0.02	0.03
14	2 mins.	14	0.05	0.05
16	2 mins.	16	0.09	0.09
18	2 mins.	18	0.11	0.11
20	2 mins.	20	0.15	0.15
22	2 mins.	22	0.22	0.22
24	2 mins.	24	0.29	0.30
26	2 mins.	26	0.39	0.39
28	2 mins.	28	0.48	0.48
30	2 mins.	30	0.58	0.50
32	2 mins.	32	0.67	0.55
34	2 mins.	34	0.79	0.68
36	2 mins.	36	0.91	0.81
38	2 mins.	38	1.05	0.93
40	2 mins.	40	1.19	1.05
42	2 mins.	42	1.38	1.22
44	2 mins.	44	1.56	1.43
46	2 mins.	46	1.75	1.61
48	2 mins.	47	2.01	1.79
50	2 mins.	49	2.27	2.07
52	2 mins.	51	2.48	2.34
54	2 mins.	52	2.77	2.56
56	2 mins.		3.12	2.85
58			3.48	
60			4.00	
62			4.53	



Company Name:	Engineers Name:
Cavity Lock Systems Limited	Peter Sobek
Company Address:	Engineers Address:
Factory Road,	Friedhofstr. 37b
Newport,	D63322 Rodemark
Borough of Newport,	Germany
South Wales.	
NP9 5FA	

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Gennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurburea Sobek	Independent Witness	



Test Certificate

Type of Test:	Install Date	Test Date
Direct Axial Pull	04.01.96	02.09.96

Site Address:
Warehouse

Anchor Type
15mm x 15mm x 1.5mm

Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Embedment Depth
1000mm

Bore Hole Diameter
30mm

Base Material
Medium Density Brick

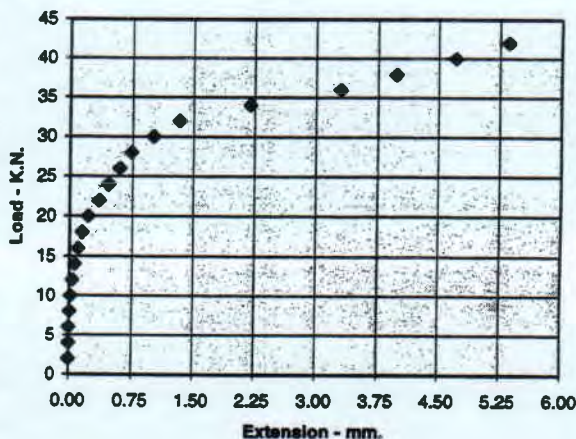
Required Load

Anchor Location
Test Wall

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	3 mins.	2	0.00	0.00
4	3 mins.	4	0.00	0.00
6	3 mins.	6	0.00	0.00
8	3 mins.	8	0.01	0.01
10	3 mins.	10	0.02	0.02
12	3 mins.	12	0.04	0.04
14	3 mins.	14	0.07	0.07
16	3 mins.	16	0.11	0.11
18	3 mins.	18	0.16	0.16
20	3 mins.	20	0.23	0.23
22	3 mins.	22	0.36	0.36
24	3 mins.	24	0.47	0.47
26	3 mins.	26	0.60	0.60
28	3 mins.	28	0.74	0.74
30	3 mins.	29	1.01	1.02
32	3 mins.	31	1.33	1.34
34	3 mins.	33	2.20	2.22
36	3 mins.	34	3.30	3.40
38	3 mins.	36	3.98	4.07
40	3 mins.	38	4.72	4.82
42			5.36	



Company Name:	Engineers Name:
Cavity Lock Systems Limited	Peter Sobek
Company Address:	Engineers Address:
Factory Road,	Friedhofstr. 37b
Newport,	D63322 Rodemark
Borough of Newport,	Germany
South Wales.	
NP9 5FA	

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Annis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test:	Install Date	Test Date
Direct Axial Pull	04.01.96	02.09.96

Site Address:
Warehouse

Anchor Type
15mm x 15mm x 1.5mm

Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Embedment Depth
1000mm

Bore Hole Diameter
30mm

Anchor Location
Test Wall

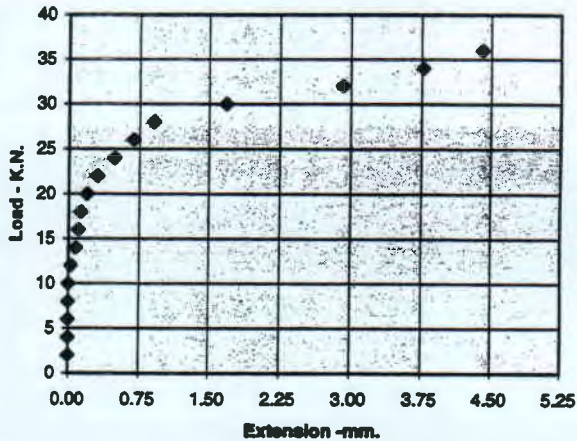
Base Material
Medium Density Brick

Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	3 mins.	2	0.00	0.00
4	3 mins.	4	0.00	0.00
6	3 mins.	6	0.00	0.00
8	3 mins.	8	0.00	0.00
10	3 mins.	10	0.00	0.00
12	3 mins.	12	0.03	0.03
14	3 mins.	14	0.08	0.08
16	3 mins.	16	0.11	0.11
18	3 mins.	18	0.14	0.14
20	3 mins.	20	0.20	0.21
22	3 mins.	22	0.31	0.31
24	3 mins.	24	0.49	0.49
26	3 mins.	26	0.69	0.70
28	3 mins.	27	0.91	0.92
30	3 mins.	29	1.69	1.70
32	3 mins.	31	2.92	2.95
34	3 mins.	32	3.77	3.85
36			4.41	



Company Name:	Engineers Name:
Cavity Lock Systems Limited	Peter Sobek
Company Address:	Engineers Address:
Factory Road,	Friedhofstr. 37b
Newport,	D63322 Rodermark
Borough of Newport,	Germany
South Wales.	
NP9 5FA	

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Chris Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurburea Sobek	Independent Witness	



Test Certificate

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 02.09.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
15mm x 15mm x 1.5mm

Embedment Depth
1000mm

Bore Hole Diameter
55mm

Base Material
Medium Density Brick

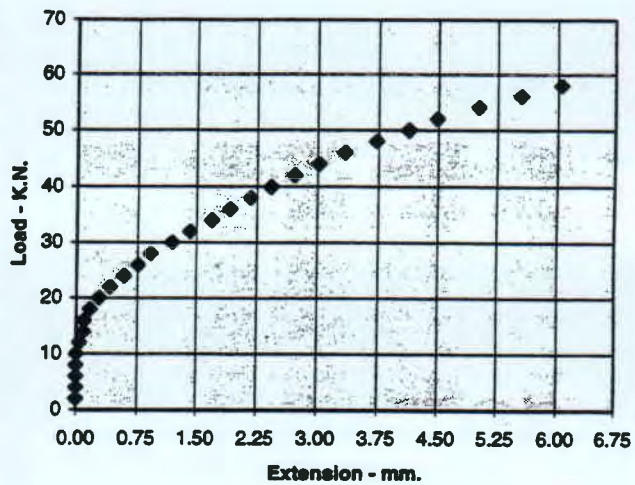
Required Load

Grout Type
Presstec Grout

Anchor Material
Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	3 mins.	2	0.00	0.00
4	3 mins.	4	0.00	0.00
6	3 mins.	6	0.00	0.00
8	3 mins.	8	0.00	0.00
10	3 mins.	10	0.00	0.00
12	3 mins.	12	0.04	0.04
14	3 mins.	14	0.09	0.09
16	3 mins.	16	0.10	0.10
18	3 mins.	18	0.17	0.17
20	3 mins.	20	0.28	0.28
22	3 mins.	22	0.41	0.41
24	3 mins.	24	0.58	0.58
26	3 mins.	26	0.76	0.76
28	3 mins.	28	0.91	0.91
30	3 mins.	30	1.19	1.19
32	3 mins.	32	1.42	1.43
34	3 mins.	34	1.69	1.70
36	3 mins.	36	1.91	1.92
38	3 mins.	38	2.17	2.18
40	3 mins.	39	2.43	2.47
42	3 mins.	41	2.72	2.75
44	3 mins.	43	3.02	3.07
46	3 mins.	45	3.33	3.38
48	3 mins.	47	3.73	3.79
50	3 mins.	48	4.13	4.20
52	3 mins.	50	4.49	4.57
54	3 mins.	52	5.01	5.08
56	3 mins.	54	5.54	5.62
58			6.05	



Company Name: Cavity Lock Systems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



TEST CERTIFICATE

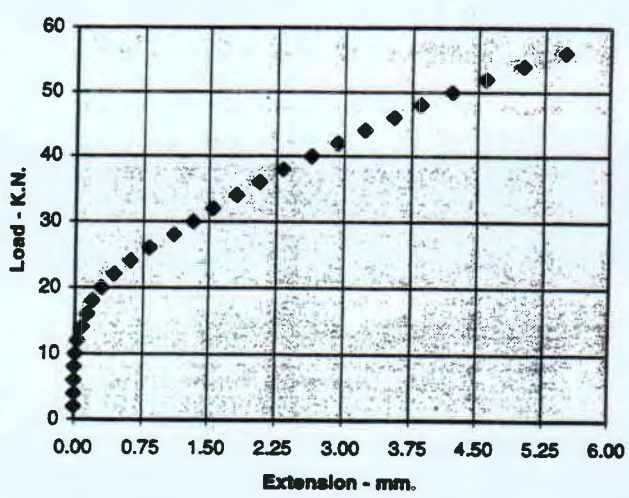
Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 07.01.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type 15mm x 15mm x 1.5mm
Embedment Depth 1000mm
Bore Hole Diameter 55mm
Base Material Medium Density Brick
Required Load
Grout Type Presstec Standard
Anchor Material Stainless Steel

Anchor Location
Test Wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	3 mins.	2	0.00	0.00
4	3 mins.	4	0.00	0.00
6	3 mins.	6	0.00	0.00
8	3 mins.	8	0.00	0.00
10	3 mins.	10	0.01	0.01
12	3 mins.	12	0.03	0.03
14	3 mins.	14	0.08	0.08
16	3 mins.	16	0.14	0.14
18	3 mins.	18	0.19	0.19
20	3 mins.	20	0.29	0.30
22	3 mins.	22	0.43	0.44
24	3 mins.	24	0.61	0.61
26	3 mins.	26	0.82	0.83
28	3 mins.	28	1.10	1.12
30	3 mins.	30	1.32	1.34
32	3 mins.	32	1.55	1.58
34	3 mins.	34	1.81	1.83
36	3 mins.	36	2.06	2.09
38	3 mins.	38	2.32	2.35
40	3 mins.	40	2.64	2.68
42	3 mins.	42	2.93	2.98
44	3 mins.	44	3.23	3.28
46	3 mins.	45	3.55	3.60
48	3 mins.	47	3.85	3.92
50	3 mins.	48	4.21	4.29
52	3 mins.	50	4.59	4.65
54	3 mins.	52	5.01	5.09
56			5.48	



Company Name: Cavity Lock System Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 07.10.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
15mm x 15mm x 1.5mm

Embedment Depth
1000mm

Bore Hole Diameter
55mm

Base Material
Medium Density Brick

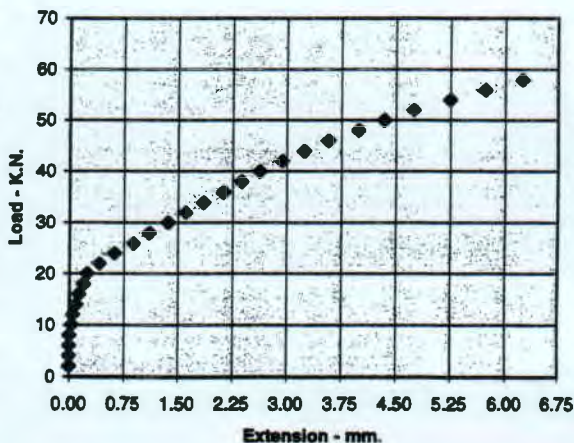
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2	3 mins	2	0.00	0.00
4	3 mins	4	0.00	0.00
6	3 mins	6	0.00	0.00
8	3 mins	8	0.00	0.00
10	3 mins	10	0.03	0.03
12	3 mins	12	0.05	0.05
14	3 mins	14	0.09	0.09
16	3 mins	16	0.13	0.13
18	3 mins	18	0.19	0.19
20	3 mins	20	0.24	0.24
22	3 mins	22	0.41	0.41
24	3 mins	24	0.62	0.62
26	3 mins	26	0.89	0.89
28	3 mins	28	1.11	1.11
30	3 mins	30	1.37	1.39
32	3 mins	32	1.61	1.62
34	3 mins	34	1.86	1.88
36	3 mins	36	2.13	2.15
38	3 mins	38	2.37	2.41
40	3 mins	40	2.62	2.67
42	3 mins	42	2.94	2.98
44	3 mins	43	3.25	3.3
46	3 mins	45	3.58	3.63
48	3 mins	47	3.99	4.05
50	3 mins	48	4.34	4.43
52	3 mins	50	4.75	4.82
54	3 mins	52	5.25	5.33
56	3 mins	54	5.73	5.82
58			6.25	



Company Name: Cavity Lock Ssystems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Gannis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 30.04.96
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Site Address: Warehouse Unit 23/24, Albany Industrial Estate, Newport, Borough of Newport, South Wales.
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Anchor Type
20mm x 20mm x 2mm

Embedment Depth
2000mm

Bore Hole Diameter
40mm

Base Material
Medium Density Brick

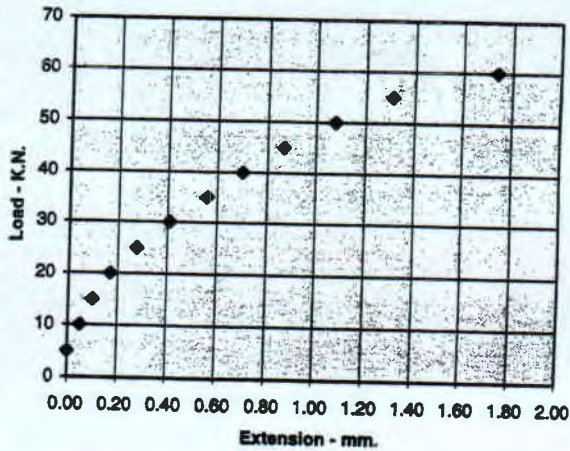
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
5	2 mins.	5	0.00	0.00
10	2 mins.	5	0.05	0.05
15	2 mins.	5	0.10	0.08
20	2 mins.	15	0.17	0.17
25	2 mins.	12	0.28	0.24
30	2 mins.	25	0.41	0.41
35	2 mins.	30	0.56	0.56
40	2 mins.	40	0.70	0.70
45	2 mins.	45	0.87	0.87
50	2 mins.	45	1.08	1.08
55	2 mins.	53	1.31	1.32
60	2 mins.	10	1.74	

Anchor Location Test wall



Company Name: Cavity Lock Ssystems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Gannis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	

4. 11 13



Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 17.07.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type
20mm x 20mm x 2mm

Embedment Depth
2000mm

Bore Hole Diameter
40mm

Base Material
Medium Density Brick

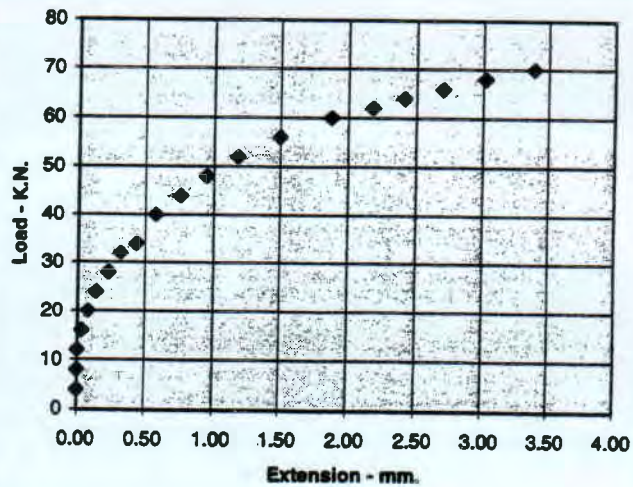
Required Load

Grout Type
Presstec Standard

Anchor Material
Stainless Steel

Anchor Location
Test wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
4	3 mins.	4	0.00	0.00
8	3 mins.	8	0.00	0.00
12	3 mins.	12	0.00	0.00
16	3 mins.	16	0.03	0.03
20	3 mins.	20	0.08	0.08
24	3 mins.	24	0.14	0.14
28	3 mins.	28	0.23	0.24
32	3 mins.	32	0.32	0.32
34	3 mins.	34	0.44	0.44
40	3 mins.	40	0.58	0.59
44	3 mins.	44	0.76	0.78
48	3 mins.	48	0.95	0.97
52	3 mins.	51	1.18	1.22
56	3 mins.	54	1.50	1.52
60	3 mins.	58	1.88	1.93
62	3 mins.	60	2.18	2.23
64	3 mins.	63	2.41	2.45
66	3 mins.	64	2.70	2.74
68	3 mins.	67	3.02	3.07
70	3 mins.	68	3.39	3.45



Company Name: Cavity Lock Ssystems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	



Test Certificate

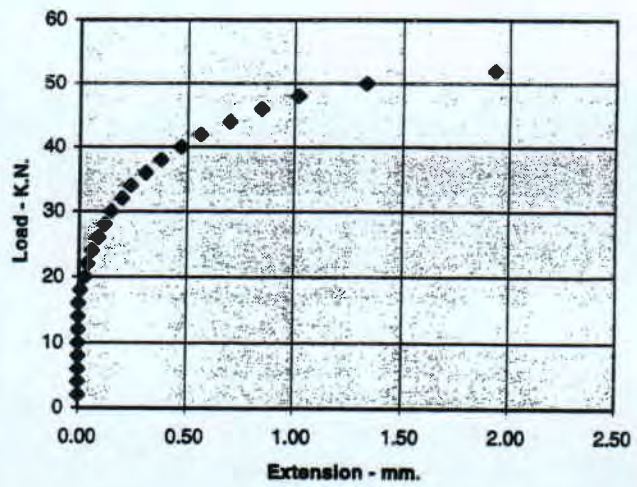
Type of Test: Direct Axial Pull	Install Date 04.01.96	Test Date 04.11.96
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Site Address:
Warehouse
Unit 23/24,
Albany Industrial Estate,
Newport,
Borough of Newport,
South Wales.

Anchor Type 8mm mild steel rebar "u"
Embedment Depth 500mm
Bore Hole Diameter 55mm
Base Material Medium Density Brick
Required Load
Grout Type Presstec Standard
Anchor Material Stainless Steel

Anchor Location
Test wall

Load - Start K.N.	Time Held	Load - End K.N.	Extension mm.	Relaxation mm.
2		2	0.00	0.00
4		4	0.00	0.00
6		6	0.00	0.00
8		8	0.00	0.00
10		10	0.00	0.00
12		12	0.00	0.00
14		14	0.00	0.00
16		16	0.00	0.00
18		18	0.01	0.01
20		20	0.03	0.03
22		22	0.04	0.05
24		24	0.06	0.07
26		26	0.09	0.10
28		28	0.12	0.13
30		30	0.15	0.17
32		32	0.20	0.21
34		34	0.24	0.27
36		36	0.31	0.33
38		38	0.38	0.40
40		40	0.47	0.51
42		42	0.56	0.62
44		43	0.7	0.75
46		45	0.85	0.91
48		46	1.02	1.11
50		48	1.33	1.4
52			1.93	
40			1.91	
30			1.83	
20			1.74	
10			1.69	
5			1.67	
0			1.22	



Company Name: Cavity Lock Ssystems Limited	Engineers Name: Peter Sobek
Company Address: Factory Road, Newport, Borough of Newport, South Wales. NP9 5FA	Engineers Address: Friedhofstr. 37b D63322 Rodermark Germany

Any Stamps or Seals from Witnesses

Persons Present	Company	Position	Signature
Dennis Lee	Cavity Lock Systems Limited	Technical Advisor	
Peter Sobek	Ingenieurbureau Sobek	Independent Witness	

CINTEC

Micro Concrete / Lime Grout anchor : Direct Axial Pull				Test certificate			
Anchor Type: 8mm mild steel rebar "u"		Sock Diameter: 55mm		Test Date: 04/11/96			
Anchor Length: 500mm		Base Material: Medium density brick		Position of Anchor:			
Bore Hole Diameter: 55mm		Installation Date: 03/10/96					
Prototype Anchor for Germany		Engineers Name: Peter Sobek		Site Name/Project: Test data			
Frankfurt II		Engineers Address:		Site Address: Warehouse			
Additional concrete floor reinforcement		Friedhoffstra. 8e 37b		Albany industrial estate			
		D-63322 Rodermark		Albany road			
		Germany		Newport			
Load Applied at SOU KN	Time Held MIN	Load Applied at End KN	Excursion	Relaxation	Comments		
2		2	0.00	0.00			
4		4	0.00	0.00			
6		6	0.00	0.00			
8		8	0.00	0.00			
10		10	0.00	0.00			
12		12	0.00	0.00			
14		14	0.00	0.00			
16		16	0.00	0.00			
18		18	0.01	0.01			
20		20	0.03	0.03			
22		22	0.04	0.05			
24		24	0.06	0.07			
26		26	0.09	0.10			
28		28	0.12	0.13			
30		30	0.15	0.17			
32		32	0.20	0.21			
34		34	0.24	0.27			
36		36	0.31	0.33			
38		38	0.38	0.40			
40		40	0.47	0.51			
42		42	0.56	0.62			
44		43	0.70	0.75			
46		45	0.85	0.91			
48		46	1.02	1.11			
50		48	1.33	1.40			
52			1.93		Test stopped. No bond failure		
40			1.91				
30			1.83				
20			1.74				
10			1.69				
5			1.67				
0			1.22				

Persons/Witness Present:
 Dennis Lee (Cintec Technical Advisor)
 Peter Sobek (Independent Witness)

Signed: *[Signature]* (Testing Officer)
 for & on behalf of Cavity Lock Systems Limited
 Signed: *[Signature]*
 for & on behalf of:



Cavity Lock Systems Limited, Factory Road, Newport, Borough of Newport, South Wales, NP9 5PA. Tel: 01433 34614 - Fax: 01433 346110
 This certificate must be completed in full and be signed by the Testing Officer and at least one witness.