



Hilti HCX Cast-in Socket Submission Folder

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Cast-in Socket HCX



BASE MATERIALS

- Concrete
- GRC

APPLICATIONS

- Façade fixing : Louver, GRC & Cladding works
- Precast panel support fixing
- Cooking bench fixing

ADVANTAGES

- Simple to locate on formwork accurately
- Shallow embedment depth required
- No stress impose on the concrete during pouring
- Clear marking for inspection

Technical data

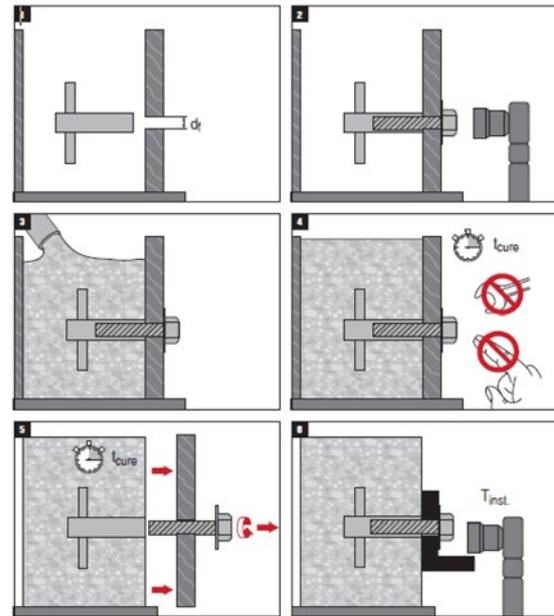
Head configuration	Inner thread
Type of fastening	Pre-fastening
HCX – Material Composition	Free cutting steel 1215
HCX – Material, Corrosion	Zinc plating 5µ on free cutting steel
HCX-R – Material Composition	Steel, A4 (SS316)

Recommended load (kN), non-cracked concrete at 25N/mm², safety factor(γ)=3

Model	Size	M8	M10	M12	M16
HCX (8.8)	Tensile Load, Nrec	3.0	4.2	5.8	6.9
	Shear Load, Vrec	4.3	7.1	9.7	12.3
HCX-R (A4-70)	Tensile Load, Nrec	3.0	4.2	5.8	6.9
	Shear Load, Vrec	4.3	6.8	9.9	13.7

Remarks:

- 1) All the data applies to no edge distance, spacing and other influences.
- 2) The loading performance varies depends on the steel grade of the screw or rod used in the HCX.
- 3) The bracket after HCX naming states the data for the steel grade of the screw or rod used.
- 4) For detail design method please refer to Fastening Technology Manual.



These are abbreviated instructions which may vary according to the application.

Ordering designation	Overall Anchor length	Outside Diameter	Allowable Screwing Depth	Effective Anchorage Depth	Max. tightening torque	Clearance hole	Sales pack quantity	Item number
HCX M8x40	40 mm	12 mm	10 / 21 mm	29 mm	8 Nm	9 mm	100 pc	2123086 ¹⁾
HCX M10x50	50 mm	16 mm	12 / 23 mm	36 mm	15 Nm	12 mm	50 pc	2123087 ¹⁾
HCX M12x60	60 mm	19 mm	14 / 26 mm	45 mm	25 Nm	14 mm	50 pc	2123088 ¹⁾
HCX M16x70	70 mm	22 mm	19 / 33 mm	50 mm	50 Nm	18 mm	25 pc	2123089
HCX-R M8x40	40 mm	12 mm	10 / 21 mm	29 mm	8 Nm	9 mm	100 pc	2123350 ¹⁾
HCX-R M10x50	50 mm	16 mm	12 / 23 mm	36 mm	15 Nm	12 mm	50 pc	2123351
HCXR M12x60	60 mm	19 mm	14 / 26 mm	45 mm	25 Nm	14 mm	50 pc	2123352 ¹⁾
HCX-R M16x70	70 mm	22 mm	19 / 33 mm	50 mm	50 Nm	18 mm	25 pc	2123353 ¹⁾

Please visit Hilti website for the latest item numbers and related products



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TEST REPORT

Form C/FDR/77/Issue 1 (1/1) [06/06]

Tensile Load Test on Anchor Bolt

Customer : Hilti (Hong Kong) Ltd Report No. : FDA20611
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, Test Date : 08-Mar-12
223 Wai Yip Street, Kwun Tong, Kowloon
Project : - Report Date : 26-Mar-12
Test Location : ETL Laboratory Page No. : 2 of 3
Anchor Type : HCS M8x40, Cast-in Socket Test Method : BS 5080:Part 1:1993 Cl 7.1
Amb. Temperature : 20°C Test Procedure : TPF/003

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
1.0	0.00	0.00	0.00	0.00	0.00
2.0	0.02	0.01	0.00	0.01	0.01
3.0	0.03	0.02	0.00	0.02	0.01
4.0	0.03	0.06	0.01	0.03	0.02
5.0	0.04	0.09	0.02	0.04	0.03
6.0	0.05	0.10	0.03	0.06	0.03
7.0	0.06	0.14	0.04	0.07	0.05
8.0	0.08	0.16	0.05	0.08	0.07
9.0	0.09	0.18	0.07	0.11	0.08
10.0	0.13	0.21	0.09	0.12	0.09
11.0	0.17	0.24	0.10	0.15	0.12
12.0	0.20	0.27	0.16	0.17	0.13
13.0	0.22	0.30	0.20	0.20	0.14
14.0	0.25	0.33	0.24	0.22	0.19
15.0	0.27	0.34	0.28	0.25	0.26
16.0	0.31	0.39	0.33	0.27	0.29
17.0	0.35	0.41	0.37	0.30	0.31
18.0	0.45	0.44	0.41	0.32	0.33
19.0	0.54	0.47	0.47	0.34	0.38
20.0	0.59	0.49	0.54	0.38	0.42
21.0	0.62	0.60	0.65	0.45	0.52
22.0	-	-	-	0.56	-
23.0	-	-	-	-	-
Failure Load (kN)	21.8	21.7	22.0	22.3	21.8
Failure Mode	F4	F4	F4	F4	F4
Average Failure Load (kN)	21.9				
Standard Deviation (kN)	0.2				

A) Test Apparatus	Load Cell : Compression Load Cell C3000, 50kN (ET/930/02/01)	S/N : 0175530
	Load Cell Indicator : XT1500/2/32 (ET/930/1/2/02)	S/N : 1000909/10
	Cylinder : Hydraulic Cylinder RCH 121 (ET/903/14)	S/N : -
	Digital Dial Gauge : Mitutoyo Digital Indicator (ET/915/35)	S/N : 2372
B) Concrete Grade	30 ± 3 MPa	
C) Anchor installed date	29-Feb-12	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F1 = Failure of anchor or its accessories F2 = Failure in structural member F3 = Pull out of anchor F4 = Failure of structural member in a shear cone F5 = Failure by continuous displacement or decreasing load F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) Anchor Braking	
E) Distance between reaction frame and centre of the fixing (mm)	150	
F) Distance between the centre of fixing and free edge (mm)	150	
G) Socket Length (mm)	30	

Tested By : YU, Shui Ming / CHAN, Ka Wai

Approved Signatory : MONG, Seng Ming

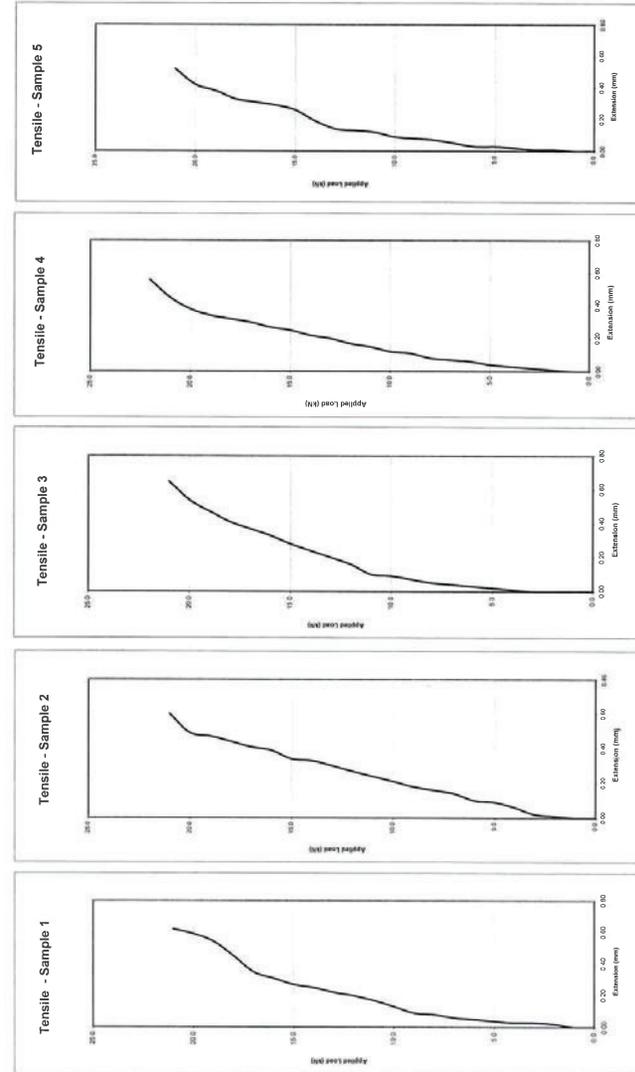
Checked By : PANG, Ting Pong / LIN, Meng Yang

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東業德勤测试顾问有限公司
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HCS M8x40, Cast-in Socket





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TEST REPORT

Form C/FDR/83/Issue 1 (1/1) [10/10]

Shear Load Test on Anchor Bolt

Information Provided by Customer

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : HCS M8x40, Cast-in Socket
Amb.Temperature : 20°C

Lab Information

Report No. : FDA20614
Test Date : 08-Mar-12
Report Date : 26-Mar-12
Page No. : 2 of 3
Test Method : BS 5080:Part 2:1986 Cl 7.2

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
2.0	0.00	0.05	0.06	0.05	0.09
4.0	0.04	0.19	0.11	0.08	0.14
6.0	0.09	0.27	0.16	0.13	0.18
8.0	0.18	0.38	0.22	0.19	0.21
10.0	0.27	0.47	0.29	0.24	0.28
12.0	0.36	0.58	0.43	0.36	0.40
14.0	0.66	0.69	0.62	0.48	0.59
16.0	0.85	0.93	0.80	0.68	0.78
18.0	1.29	1.31	1.32	1.10	1.07
20.0	-	-	-	-	-
22.0	-	-	-	-	-
Failure Load (kN)	19.0	19.5	19.8	19.6	19.4
Failure Mode	F7	F7	F7	F7	F7
Average Failure Load (kN)	19.5				
Standard Deviation (kN)	0.3				

A) Test Apparatus	Load Cell : Comp. Load cell Thames, 50 kN (ET/930/11/01) Load Cell Indicator : - (ET/930/22/02) Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) Digital Dial Gauge : Mitutoyo Digital Indicator (ET/430/19)	S/N : 227183 S/N : - S/N : C3696C S/N : O2354
B) Concrete Grade	30 ± 3 MPa	
C) Anchor installed date	29-Feb-2012	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F2 = Failure in structural member F4 = Failure of structural member in a shear cone F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking	F1 = Failure of anchor or its accessories F3 = Pull out of anchor F5 = Failure by continuous displacement or decreasing load
E) Distance between reaction frame and centre of the fixing (mm)	300	
F) Distance between the centre of fixing and free edge (mm)	150	
G) Socket Length (mm)	40	

Tested By : CHOI, Chung Lung / CHAN, Hon Kwan

Approved Signatory : MONG, Seng Ming

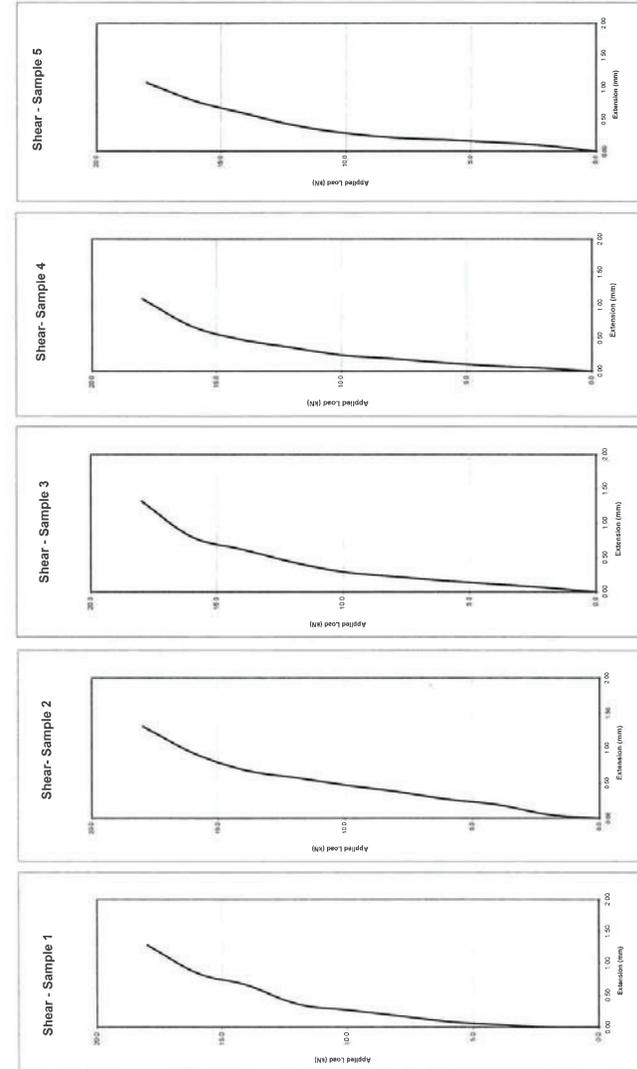
Checked By : PANG, Ting Pong/LIN, Meng Yang

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HCS M8x40, Cast-in Socket





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TEST REPORT

Form C/FDR/77/Issue 1 (1/1) [06/06]

Tensile Load Test on Anchor Bolt

Customer : Hilli (Hong Kong) Ltd Report No. : FDA20613
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon Test Date : 09-Mar-12
Project : +- Report Date : 26-Mar-12
Test Location : ETL Laboratory Page No. : 2 of 3
Anchor Type : HCS M10x50, Cast-in Socket Test Method : BS 5080:Part 1:1993 Cl 7.1
Amb. Temperature : 20°C Test Procedure : TPF/003

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
1.5	0.00	0.00	0.00	0.00	0.00
3.0	0.00	0.00	0.00	0.00	0.00
4.5	0.00	0.01	0.00	0.01	0.01
6.0	0.01	0.04	0.02	0.02	0.03
7.5	0.04	0.07	0.03	0.03	0.05
9.0	0.05	0.10	0.06	0.07	0.08
10.5	0.09	0.13	0.08	0.10	0.11
12.0	0.10	0.15	0.10	0.13	0.14
13.5	0.13	0.19	0.12	0.15	0.17
15.0	0.16	0.23	0.15	0.19	0.19
16.5	0.19	0.26	0.19	0.22	0.21
18.0	0.22	0.30	0.21	0.24	0.25
19.5	0.24	0.34	0.25	0.27	0.29
21.0	0.26	0.37	0.28	0.33	0.33
22.5	0.28	0.41	0.31	0.37	0.38
24.0	0.30	0.44	0.36	0.43	0.40
25.5	0.33	0.49	0.39	0.48	0.44
27.0	0.35	0.54	0.52	0.60	0.52
28.5	0.38	0.65	0.62	0.74	0.61
30.0	-	-	-	-	-
31.5	-	-	-	-	-
Failure Load (kN)	29.3	29.1	29.1	28.9	29.5
Failure Mode	F4	F4	F4	F4	F4
Average Failure Load (kN)	29.2				
Standard Deviation (kN)	0.2				

A) Test Apparatus	Load Cell : Comp. Load Cell YZC-219, 100kN (ET/930/10/01) Load Cell Indicator :- (ET/930/16/02) Cylinder : Hydraulic Cylinder RCH 121 (ET/903/14) Digital Dial Gauge : Mitutoyo Digital Indicator (ET/915/35)	S/N : 50603015 S/N : - S/N : - S/N : 2372
B) Concrete Grade	30 ± 3 MPa	
C) Anchor installed date	29-Feb-12	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F2 = Failure to structural member F4 = Failure of structural member in a shear cone F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) Anchor Breaking	F1 = Failure of anchor or its accessories F3 = Pull out of anchor F5 = Failure by continuous displacement or decreasing load
E) Distance between reaction frame and centre of the fixing (mm)	175	
F) Distance between the centre of fixing and free edge (mm)	175	
G) Socket Length (mm)	40	

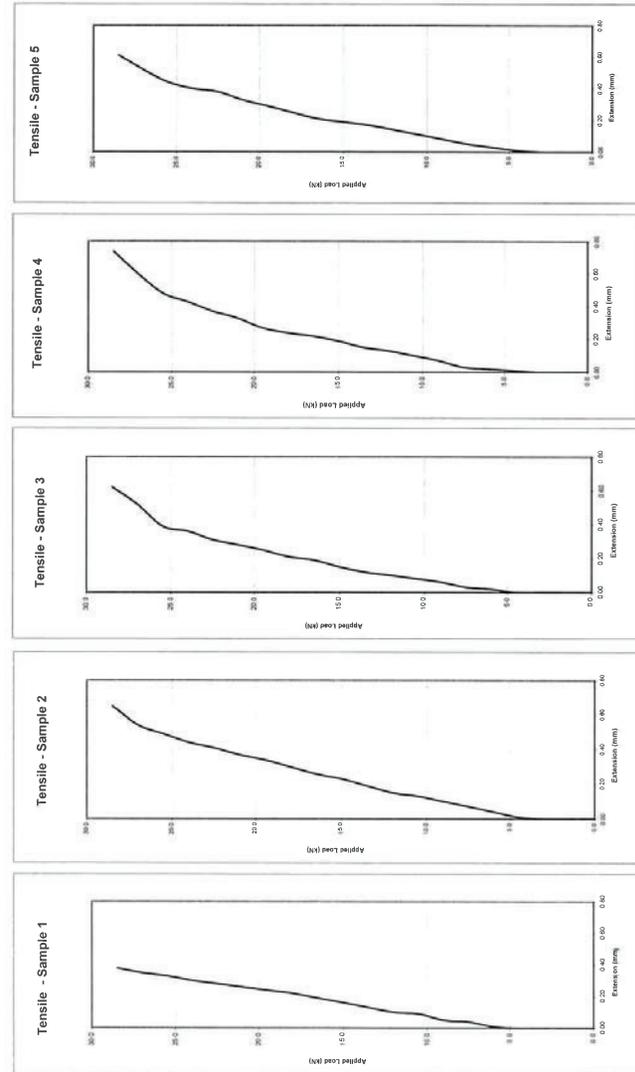
Tested By : YU, Shui Ming / CHAN, Ka Wai Approved Signatory: MONG, Seng Ming
Checked By : PANG, Ting Pong / LIN, Meng Yang

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HCS M10x50, Cast-in Socket



Report No: FDA20613

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-END OF REPORT-

Report Issued Date: 26-Mar-12



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Form C/FDR/03/Issue 1 (1/1) [10/10]

TEST REPORT

Shear Load Test on Anchor Bolt

Information Provided by Customer

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : HCS M10x50, Cast-in Socket
Amb. Temperature : 20°C

Lab Information

Report No. : FDA20615
Test Date : 08-Mar-12
Report Date : 26-Mar-12
Page No. : 2 of 3
Test Method : BS 5080:Part 2:1986 Cl 7.2

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
3.0	0.03	0.03	0.02	0.04	0.05
6.0	0.13	0.07	0.06	0.16	0.12
9.0	0.33	0.13	0.09	0.22	0.14
12.0	0.54	0.20	0.20	0.29	0.29
15.0	0.78	0.28	0.39	0.32	0.38
18.0	0.99	0.50	0.52	0.41	0.47
21.0	1.18	0.64	0.84	0.46	0.53
24.0	1.39	0.90	1.07	0.50	0.61
27.0	1.52	1.03	1.20	0.85	0.95
30.0	1.95	1.32	1.65	1.20	1.47
33.0	-	-	-	-	-
36.0	-	-	-	-	-
Failure Load (kN)	31.7	32.2	31.5	32.0	31.9
Failure Mode	F7	F7	F7	F7	F7
Average Failure Load (kN)	31.9				
Standard Deviation (kN)	0.3				

A) Test Apparatus	Load Cell : Comp Load cell Thames, 50 kN (ET/930/11/01) Load Cell Indicator : - (ET/930/22/02) Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) Digital Dial Gauge : Mitutoyo Digital Indicator (ET/430/19)	S/N : 227183 S/N : - S/N : C3696C S/N : O2354
B) Concrete Grade	30 ± 3 MPa	
C) Anchor installed date	29-Feb-2012	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F1 = Failure of anchor or its accessories F2 = Failure in structural member F3 = Pull out of anchor F4 = Failure of structural member in a shear cone F5 = Failure by continuous displacement or decreasing load F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking	
E) Distance between reaction frame and centre of the fixing (mm)	300	
F) Distance between the centre of fixing and free edge (mm)	150	
G) Socket Length (mm)	50	

Tested By : CHOI, Chung Lung / CHAN, Hon Kwan

Approved Signatory

MONG, Seng Ming

Checked By : PANG, Ting Pong/LIN, Meng Yang

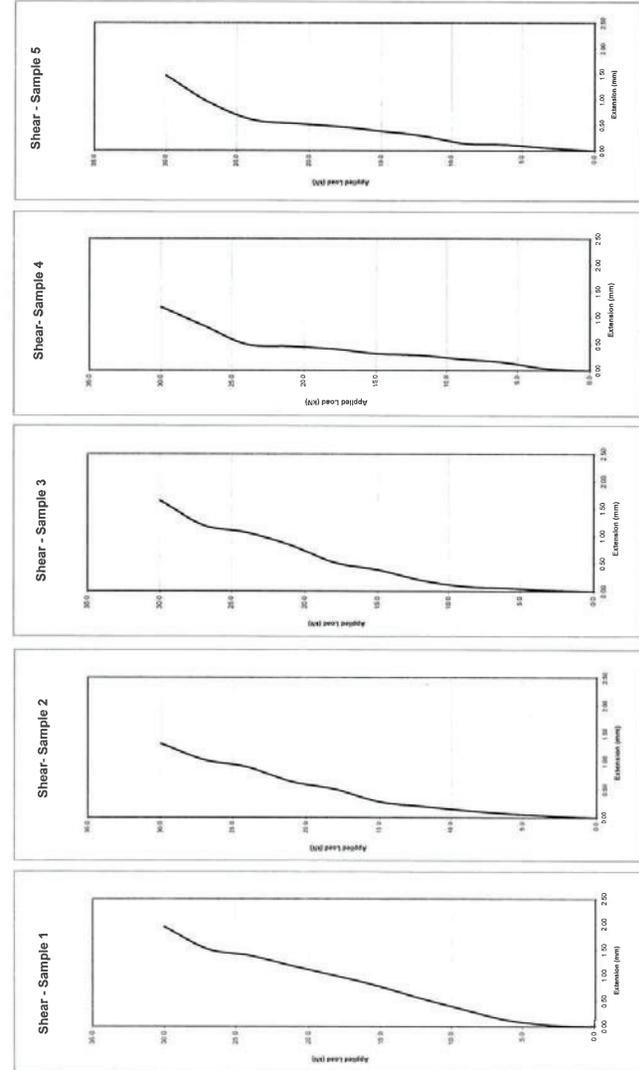
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Report No: FDA20615

HCS M10x50, Cast-in Socket



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-END OF REPORT-

Report issued Date: 26-Mar-12



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TEST REPORT

Form C/FDR/77/Issue 1 (1/1) (08/06)

Tensile Load Test on Anchor Bolt

Customer : Hilti (Hong Kong) Ltd Report No. : FDA20612
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, Test Date : 08-Mar-12
223 Wai Yip Street, Kwun Tong, Kowloon
Project : - Report Date : 26-Mar-12
Test Location : ETL Laboratory Page No. : 2 of 3
Anchor Type : HCS M12x60, Cast-in Socket Test Method : BS 5080-Part 1:1993 Cl 7.1
Amb. Temperature : 20°C Test Procedure : TPF/003

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
2.0	0.00	0.00	0.00	0.00	0.00
4.0	0.00	0.00	0.00	0.00	0.02
6.0	0.00	0.02	0.00	0.02	0.03
8.0	0.02	0.03	0.01	0.03	0.04
10.0	0.06	0.04	0.02	0.11	0.05
12.0	0.07	0.06	0.04	0.15	0.07
14.0	0.09	0.09	0.08	0.16	0.09
16.0	0.12	0.11	0.11	0.20	0.13
18.0	0.15	0.14	0.14	0.22	0.18
20.0	0.18	0.18	0.16	0.28	0.25
22.0	0.21	0.22	0.19	0.31	0.30
24.0	0.25	0.27	0.23	0.40	0.35
26.0	0.30	0.30	0.27	0.45	0.40
28.0	0.33	0.35	0.30	0.48	0.45
30.0	0.38	0.40	0.34	0.52	0.50
32.0	0.44	0.47	0.38	0.54	0.61
34.0	0.46	0.53	0.43	0.56	0.63
36.0	0.54	0.60	0.51	0.61	0.67
38.0	0.58	0.66	0.58	0.65	0.72
40.0	0.63	0.78	0.67	0.80	0.78
42.0	-	-	-	-	-
44.0	-	-	-	-	-
Failure Load (kN)	41.5	40.9	41.1	41.3	41.0
Failure Mode	F4	F4	F4	F4	F4
Average Failure Load (kN)	41.2				
Standard Deviation (kN)	0.2				

A) Test Apparatus	Load Cell : Compression Load Cell C3000, 50kN (ET/930/02/01) Load Cell Indicator : XT1500/2/32 (ET/930/12/02) Cylinder : Hydraulic Cylinder RCH 121 (ET/903/14) Digital Dial Gauge : Mitutoyo Digital Indicator (ET/915/35)	S/N : 0175530 S/N : 1000090910 S/N : - S/N : 2372
B) Concrete Grade	30 ± 3 MPa	
C) Anchor Installed date	29-Feb-12	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F1 = Failure of structural member F2 = Failure in structural member F3 = Failure of structural member in a shear cone F4 = Failure in structural member with crack/radiates outward from anchor F5 = Failure in structural member with crack/radiates outward from anchor F6 = Other failure mode(s) F7 = Anchor Breaking	F1 = Failure of anchor or its accessories F2 = Pull out of anchor F3 = Failure by continuous displacement or decreasing load
E) Distance between reaction frame and centre of the fixing (mm)	200	
F) Distance between the centre of fixing and free edge (mm)	200	
G) Socket Length (mm)	50	

Tested By : YU, Shui Ming / CHAN, Ka Wai Approved Signatory : MONG, Seng Ming

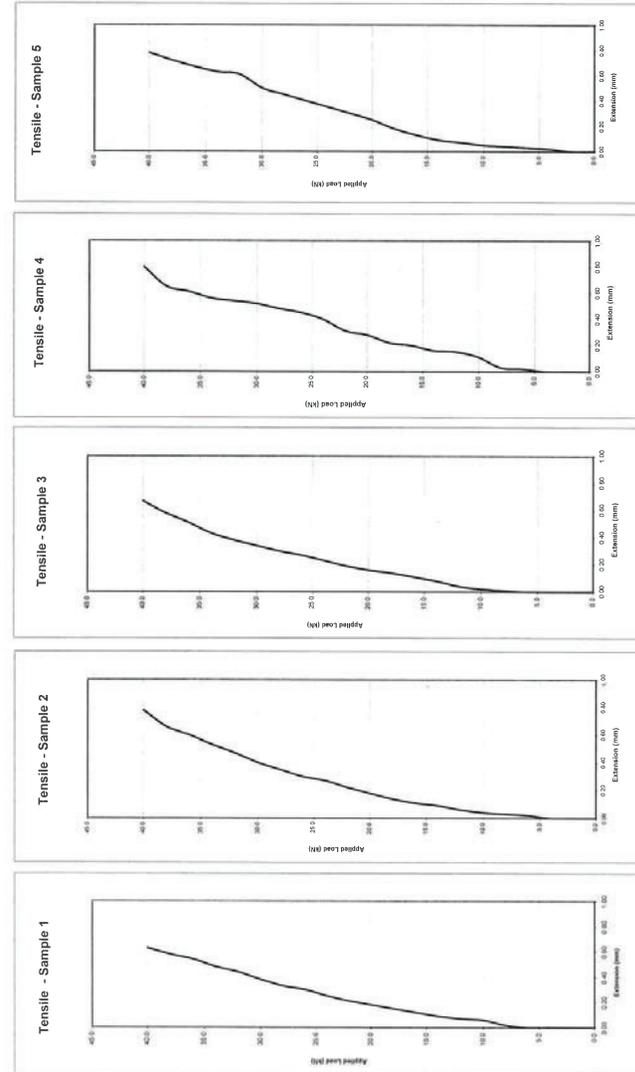
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HCS M12x60, Cast-in Socket



Report No: FDA20612

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Report issued Date: 26-Mar-12



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ETS-TESTCONSULT LIMITED

8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
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TEST REPORT

Form CFDR/83/Issue 1 (1/1) [10/10]

Shear Load Test on Anchor Bolt

Information Provided by Customer

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : HCS M12x60, Cast-in Socket
Amb. Temperature : 20°C

Lab Information

Report No. : FDA20616
Test Date : 08-Mar-12
Report Date : 26-Mar-12
Page No. : 2 of 3
Test Method : BS 5080:Part 2:1986 Cl 7.2

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
4.5	0.05	0.01	0.06	0.10	0.08
9.0	0.23	0.07	0.10	0.25	0.14
13.5	0.38	0.18	0.21	0.37	0.26
18.0	0.50	0.29	0.32	0.46	0.37
22.5	0.62	0.40	0.38	0.57	0.42
27.0	0.82	0.58	0.49	0.70	0.53
31.5	0.94	0.68	0.59	0.94	0.64
36.0	1.08	0.82	0.75	1.15	0.78
40.5	1.26	0.99	1.02	1.36	0.90
45.0	1.89	1.73	1.91	2.10	1.74
49.5	-	-	-	-	-
54.0	-	-	-	-	-
Failure Load (kN)	47.8	46.9	47.3	46.0	46.9
Failure Mode	F7	F7	F7	F7	F7
Average Failure Load (kN)	47.0				
Standard Deviation (kN)	0.7				

A) Test Apparatus	Load Cell : Compression Load Cell, 200kN (ET/930/12/01) Load Cell Indicator : - (ET/930/22/02) Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) Digital Dial Gauge : Mitutoyo Digital Indicator (ET/430/19)	S/N : 183639 S/N : - S/N : C3696C S/N : Q2354
B) Concrete Grade	30 ± 3 MPa	
C) Anchor installed date	29-Feb-2012	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F2 = Failure in structural member F4 = Failure of structural member in a shear cone F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) Anchor Breaking F1 = Failure of anchor or its accessories F3 = Pull out of anchor F5 = Failure by continuous displacement or decreasing load	
E) Distance between reaction frame and centre of the fixing (mm)	300	
F) Distance between the centre of fixing and free edge (mm)	150	
G) Socket Length (mm)	60	

Tested By : CHOI, Chung Lung / CHAN, Hon Kwan Approved Signatory MONG, Sang Ming

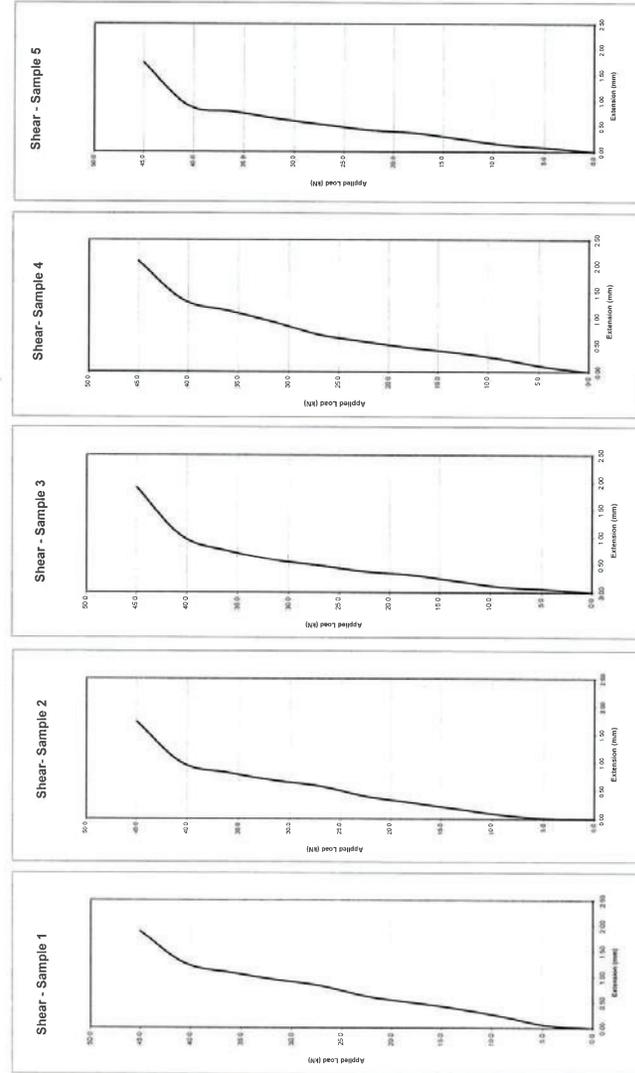
Checked By : PANG, Ting Pong/LIN, Meng Yang

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HCS M12x60, Cast-in Socket



Report No: FDA20616

Page 3 of 3
-END OF REPORT-

Report Issued Date: 26-Mar-12



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TEST REPORT

Tensile Load Test on Anchor Bolt

Customer : Hilti (Hong Kong) Ltd Report No. : FDA90426
 Address : 17/F, Tower 6, China HK City, 33 Canton Road, TST Test Date : 08-Apr-09
 Project : - Report Date : 17-Apr-09
 Test Location : ETL's Laboratory Page No. : 2 of 3
 Anchor Type * : HCS, M16 x 70 Test Method : BS 5080:Part 1:1993 Cl 7.1
 Amb. Temperature : 24°C

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.00	0.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	0.00	0.00
17.50	0.00	0.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	0.00	0.00
24.50	0.00	0.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	0.00	0.00
31.50	0.01	0.00	0.00	0.00	0.01
35.00	0.03	0.01	0.01	0.02	0.02
38.50	0.07	0.02	0.03	0.07	0.04
42.00	-	0.05	0.05	-	0.08
45.50	-	-	-	-	-
49.00	-	-	-	-	-
52.50	-	-	-	-	-
56.00	-	-	-	-	-
59.50	-	-	-	-	-
63.00	-	-	-	-	-
Failure Load (kN)	41.5	42.4	43.0	41.8	42.7
Failure Mode	F6	F6	F4	F6	F4
Average Failure Load (kN)	42.28				
Standard Deviation (kN)	0.62				

A) Test Apparatus
 Load Cell : Comp. Load cell C3000, 200kN (ET/930/07/01) S/N : 1000136752
 Load Cell Indicator : Load indicator AD813 (ET/930/07/02) S/N : -
 Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) S/N : C3696C
 Digital Dial Gauge : ET/915/35

B) Concrete Grade 30 ± 3 MPa

C) Anchor installed date 08-Apr-09

D) Failure Modes
 P = No sign of failure in anchor and/or structural member
 F1 = Failure of anchor or its accessories
 F2 = Failure in structural member
 F3 = Pull out of anchor
 F4 = Failure of structural member in a shear cone
 F5 = Failure by continuous displacement or decreasing load
 F6 = Failure in structural member with crack radiates outward from anchor
 F7 = Other failure mode(s) : Anchor Breaking

E) Span width(mm) 600
F) Edge distance(mm) 300
G) Embedded Length(mm) 70

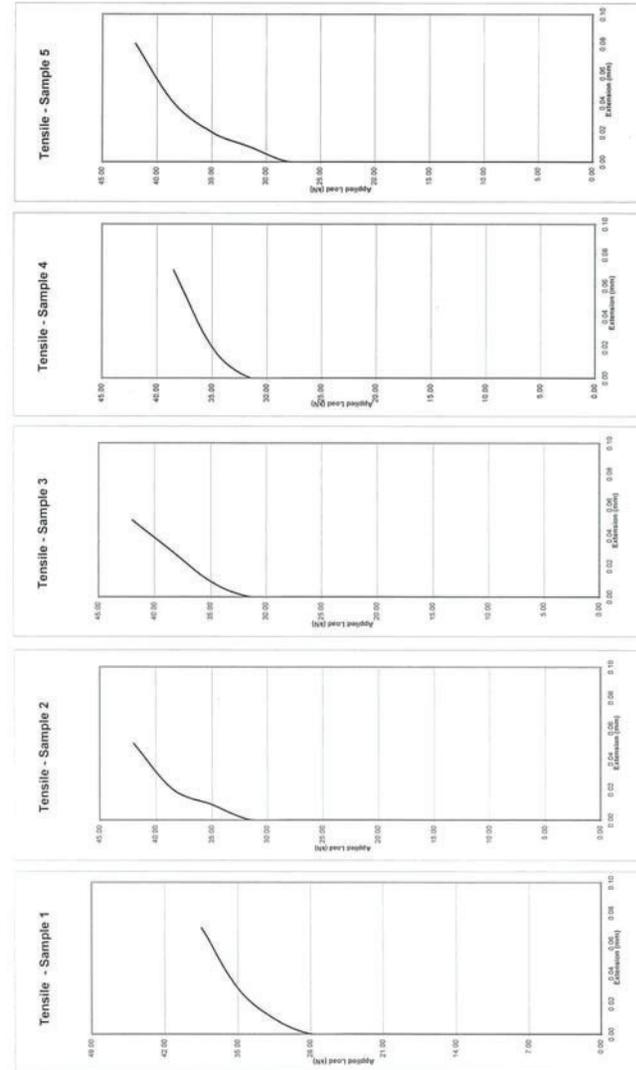
* Information provided by customer
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Report No. FDA90426

HCS, M16 x 70



Page 3 of 3

Report Issued Date: 17 Apr 09



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TEST REPORT

Shear Load Test on Anchor Bolt

Customer : Hilti (Hong Kong) Ltd Report No. : FDA90442
 Address : 17/F, Tower 6, China HK City, 33 Canton Road, TST Test Date : 08-Apr-09
 Project : - Report Date : 17-Apr-09
 Test Location : ETL's Laboratory Page No. : 2 of 3
 Anchor Type * : HCS, M16 x 70 Test Method : BS 5080:Part 2:1986 Cl. 7.2
 Amb. Temperature : 24°C

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
7.0	0.00	0.00	0.00	0.00	0.00
14.0	0.03	0.05	0.06	0.07	0.07
21.0	0.24	0.10	0.13	0.12	0.28
28.0	0.43	0.28	0.32	0.41	0.42
35.0	0.59	0.51	0.39	0.63	0.69
42.0	0.79	0.76	0.55	0.81	0.82
49.0	1.03	1.07	0.70	1.06	1.07
56.0	1.29	1.43	0.98	1.28	1.36
63.0	1.69	1.85	1.25	1.66	1.71
70.0	2.15	2.26	1.62	2.13	2.24
77.0	-	-	-	-	-
84.0	-	-	-	-	-
91.0	-	-	-	-	-
98.0	-	-	-	-	-
105.0	-	-	-	-	-
112.0	-	-	-	-	-
119.0	-	-	-	-	-
126.0	-	-	-	-	-
Failure Load (kN)	75.8	76.5	76.2	76.4	76.2
Failure Mode	F5	F5	F5	F5	F5
Average Failure Load (kN)	76.22				
Standard Deviation (kN)	0.27				

A) Test Apparatus
 Load Cell : Comp. Load cell C3000, 200kN (ET/930/07/01) S/N : 1000136752
 Load Cell Indicator : Load indicator AD813 (ET/930/07/02) S/N : -
 Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) S/N : C3696C
 Digital Dial Gauge : ET/915/35

B) Concrete Grade 30 ± 3 MPa

C) Anchor installed date 08-Apr-09

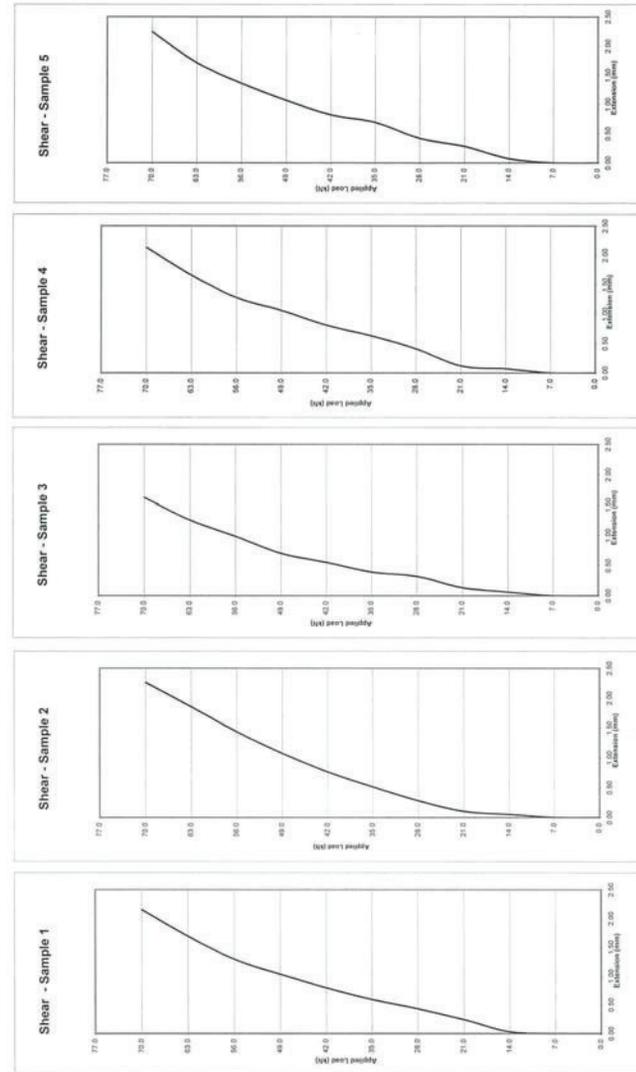
D) Failure Modes
 P = No sign of failure in anchor and/or structural member
 F1 = Failure of anchor or its accessories
 F2 = Failure in structural member
 F3 = Pull out of anchor
 F4 = Failure of structural member in a shear cone
 F5 = Failure by continuous displacement or decreasing load
 F6 = Failure in structural member with crack radiates outward from anchor
 F7 = Other failure mode(s) : Anchor Breaking

E) Span width(mm) 600
F) Edge distance(mm) 300
G) Embedded Length(mm) 70

* Information provided by customer



HCS, M16 x 70





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TEST REPORT

Form C/FDR/77/Issue 1 (1/1) (06/06)

Tensile Load Test on Anchor Bolt

Customer : Hilti (Hong Kong) Ltd
 Address : 701-704, 7/F, Tower A, Manulife Financial Centre,
 223 Wai Yip Street, Kwun Tong, Kowloon
 Project : -
 Test Location : ETL Laboratory
 Anchor Type : HCS-R, M8
 Amb. Temperature : 24°C

Report No. : FDA41912
 Test Date : 01-Dec-2014
 Report Date : 04-Dec-2014
 Page No. : 3 of 4
 Test Method : BS 5080:Part 1:1993 Cl 7.1
 Test Procedure : TPF/003

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
2.0	0.00	0.00	0.00	0.00	0.00
4.0	0.00	0.00	0.00	0.00	0.00
6.0	0.00	0.00	0.00	0.00	0.00
8.0	0.00	0.02	0.00	0.01	0.06
10.0	0.00	0.06	0.01	0.02	0.09
12.0	0.04	0.08	0.04	0.05	0.13
14.0	0.10	0.15	0.10	0.11	0.18
16.0	0.22	0.28	0.15	0.19	0.29
18.0	-	-	-	-	-
20.0	-	-	-	-	-
22.0	-	-	-	-	-
24.0	-	-	-	-	-
26.0	-	-	-	-	-
28.0	-	-	-	-	-
30.0	-	-	-	-	-
32.0	-	-	-	-	-
34.0	-	-	-	-	-
Failure Load (kN)	16.7	16.4	16.5	16.8	16.4
Failure Mode	F4	F4	F4	F4	F4
Average Failure Load (kN)	16.6				
Standard Deviation (kN)	0.2				

A) Test Apparatus	Load Cell : Comp. Load Cell GS429-S1, 50kN (ET/930/21/01) Load Cell Indicator : XK315A1-8 (ET/930/34/02) Cylinder : RCH1211 (ET/903/18) Digital Dial Gauge : Digital Indicator (ET/915/52)	S/N : 04 S/N : - S/N : B0502C S/N : 102389
B) Concrete Grade	30/20D	
C) Anchor installed date	25-Nov-2014	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F2 = Failure in structural member F4 = Failure of structural member in a shear cone F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking	F1 = Failure of anchor or its accessories F3 = Pull out of anchor F5 = Failure by continuous displacement or decreasing load
E) Min. distance between reaction frame and centre of the fixing (mm)	96	
F) Min. distance between the centre of fixing and free edge (mm)	144	
G) Anchor Length, l (mm)	40	
H) Anchor Diameter, d_n (mm)	12	

Tested By : SO, Hin Ting/CHOI, Chung Lung

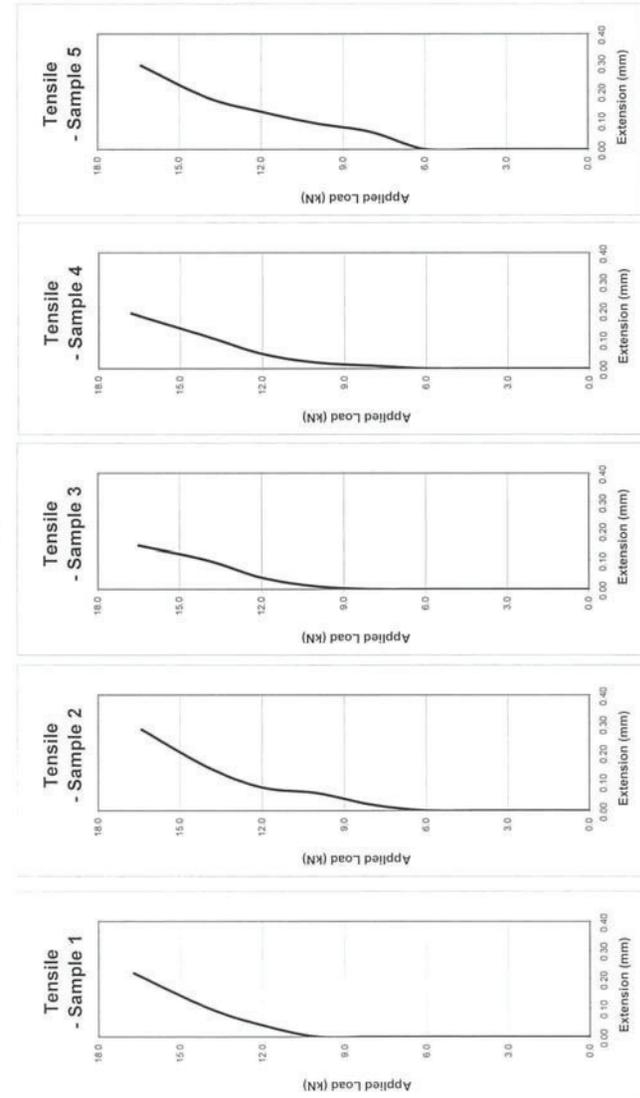
Approved Signatory :
 MONG, Seng Ming

Checked By :
 (Assistant Engineer)

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HCS-R, M8



Report No. FDA41912

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 Page 4 of 4

Report Issue Date: 04-Dec-2014



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ETS-TESTCONSULT LIMITED
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Form C/FDR/B3/Issue 1 (1/1) [10/10]

TEST REPORT
Shear Load Test on Anchor Bolt

Information Provided by Customer

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : HCS-R, M8
Amb. Temperature : 24°C

Lab Information

Report No. : FDA41900
Test Date : 01-Dec-2014
Report Date : 02-Dec-2014
Page No. : 3 of 4
Test Method : BS 5080-Part 2:1986 Cl 7.2

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
2.0	0.04	0.03	0.00	0.00	0.01
4.0	0.09	0.10	0.04	0.03	0.11
6.0	0.12	0.13	0.09	0.06	0.14
8.0	0.19	0.17	0.12	0.10	0.21
10.0	0.30	0.25	0.16	0.14	0.33
12.0	0.40	0.35	0.26	0.30	0.44
14.0	0.56	0.53	0.39	0.42	0.59
16.0	0.72	1.13	0.67	0.70	0.78
18.0	1.05	1.59	1.24	1.25	1.11
20.0	1.76	2.27	1.91	1.97	1.80
22.0	-	-	-	-	-
24.0	-	-	-	-	-
26.0	-	-	-	-	-
28.0	-	-	-	-	-
30.0	-	-	-	-	-
32.0	-	-	-	-	-
34.0	-	-	-	-	-
Failure Load (kN)	21.2	20.9	21.3	21.6	21.5
Failure Mode	F7	F7	F7	F7	F7
Average Failure Load (kN)	21.3				
Standard Deviation (kN)	0.3				

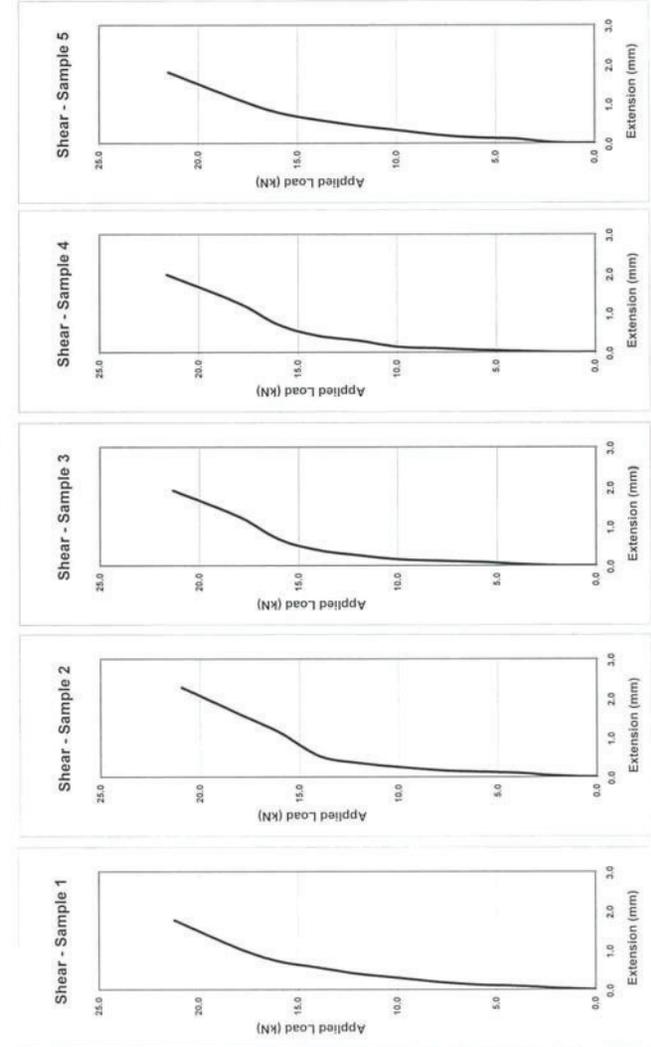
A) Test Apparatus	Load Cell : Compression Load Cell CWFK-10t, 100kN Load Cell Indicator : XK315A1-8 Cylinder : Hydraulic Cylinder RCH 121 Digital Dial Gauge : Digital Indicator	(ET/930/21/01) (ET/930/34/02) (ET/903/15) (ET/915/53)	S/N : 04 S/N : - S/N : - S/N : 1301344
B) Concrete Grade	30/20D		
C) Anchor installed date	24-Nov-2014		
D) Failure Modes	P = No sign of failure in anchor or/and structural member F1 = Failure of anchor or its accessories F2 = Failure in structural member F3 = Pull out of anchor F4 = Failure of structural member in a shear cone F5 = Failure by continuous displacement or decreasing load F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking		
E) Min. distance between reaction frame and centre of the fixing (mm)	96		
F) Min. distance between the centre of fixing and free edge (mm)	96		
G) Anchor Length, l (mm)	40		
H) Anchor Diameter, d_a (mm)	12		

Tested By : KAN, Chi Wai / CHOI, Chung Lung
Checked By : So (Assistant Engineer)
Approved Signatory : MONG, Seng Ming

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HCS-R, M8



Report No.: FDA41900

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Report Issued Date: 02-Dec-2014



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TEST REPORT

Form C/FDR/77/Issue 1 (1/1) [06/06]

Tensile Load Test on Anchor Bolt

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : HCS-R, M10
Amb. Temperature : 24°C

Report No. : FDA41913
Test Date : 01-Dec-2014
Report Date : 04-Dec-2014
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1
Test Procedure : TPF/003

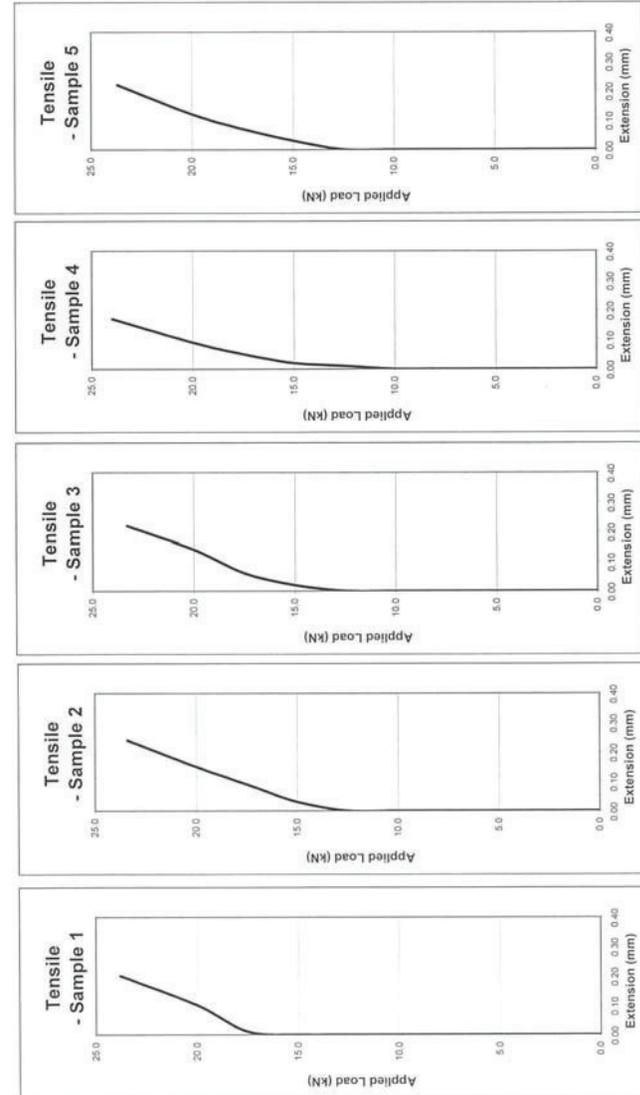
Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
2.5	0.00	0.00	0.00	0.00	0.00
5.0	0.00	0.00	0.00	0.00	0.00
7.5	0.00	0.00	0.00	0.00	0.00
10.0	0.00	0.00	0.00	0.00	0.00
12.5	0.00	0.00	0.00	0.01	0.00
15.0	0.00	0.03	0.02	0.02	0.03
17.5	0.01	0.09	0.06	0.05	0.07
20.0	0.10	0.15	0.14	0.09	0.12
22.5	0.20	0.24	0.22	0.17	0.22
25.0	-	-	-	-	-
27.5	-	-	-	-	-
30.0	-	-	-	-	-
32.5	-	-	-	-	-
35.0	-	-	-	-	-
37.5	-	-	-	-	-
40.0	-	-	-	-	-
42.5	-	-	-	-	-
Failure Load (kN)	23.8	23.4	23.3	24.0	23.7
Failure Mode	F4	F4	F4	F4	F4
Average Failure Load (kN)	23.6				
Standard Deviation (kN)	0.3				

A) Test Apparatus	Load Cell : Comp. Load Cell GS429-5t, 50kN (ET/930/21/01) Load Cell Indicator : XK315A1-8 (ET/930/34/02) Cylinder : RCH1211 (ET/903/18) Digital Dial Gauge : Digital Indicator (ET/915/52)	S/N : 04 S/N : - S/N : B0502C S/N : 102389
B) Concrete Grade	30/20D	
C) Anchor installed date	25-Nov-2014	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F2 = Failure in structural member F4 = Failure of structural member in a shear cone F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking	F1 = Failure of anchor or its accessories F3 = Pull out of anchor F5 = Failure by continuous displacement or decreasing load
E) Min. distance between reaction frame and centre of the fixing (mm)	128	
F) Min. distance between the centre of fixing and free edge (mm)	192	
G) Anchor Length, ℓ (mm)	50	
H) Anchor Diameter, d_s (mm)	16	

Tested By : SO, Hin Ting/CHOI, Chung Lung
Checked By : (Assistant Engineer)
Approved Signatory : MONG, Seng Ming

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HCS-R, M10



Report No. FDA41913

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Page 4 of 4

Report Issue Date: 04-Dec-2014



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Fax : 2695 3944 Web site : www.ets-testconsult.com



Form C/FDR/83/Issue 1 (1/1) (10/10)

TEST REPORT
Shear Load Test on Anchor Bolt

Information Provided by Customer

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : HCS-R, M10
Amb. Temperature : 24°C

Lab Information

Report No. : FDA41901
Test Date : 01-Dec-2014
Report Date : 02-Dec-2014
Page No. : 3 of 4
Test Method : BS 5080:Part 2:1986 Cl 7.2

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
3.0	0.01	0.04	0.00	0.09	0.00
6.0	0.06	0.08	0.05	0.19	0.02
9.0	0.11	0.10	0.11	0.30	0.09
12.0	0.14	0.16	0.16	0.42	0.11
15.0	0.19	0.21	0.21	0.50	0.14
18.0	0.31	0.30	0.29	0.58	0.20
21.0	0.42	0.46	0.37	0.63	0.25
24.0	0.61	0.62	0.46	0.72	0.32
27.0	0.91	0.90	0.71	0.89	0.55
30.0	1.49	1.50	1.45	1.06	1.30
33.0	-	-	-	-	-
36.0	-	-	-	-	-
39.0	-	-	-	-	-
42.0	-	-	-	-	-
45.0	-	-	-	-	-
48.0	-	-	-	-	-
51.0	-	-	-	-	-
Failure Load (kN)	31.6	32.3	32.6	32.3	32.6
Failure Mode	F7	F7	F7	F7	F7
Average Failure Load (kN)	32.3				
Standard Deviation (kN)	0.4				

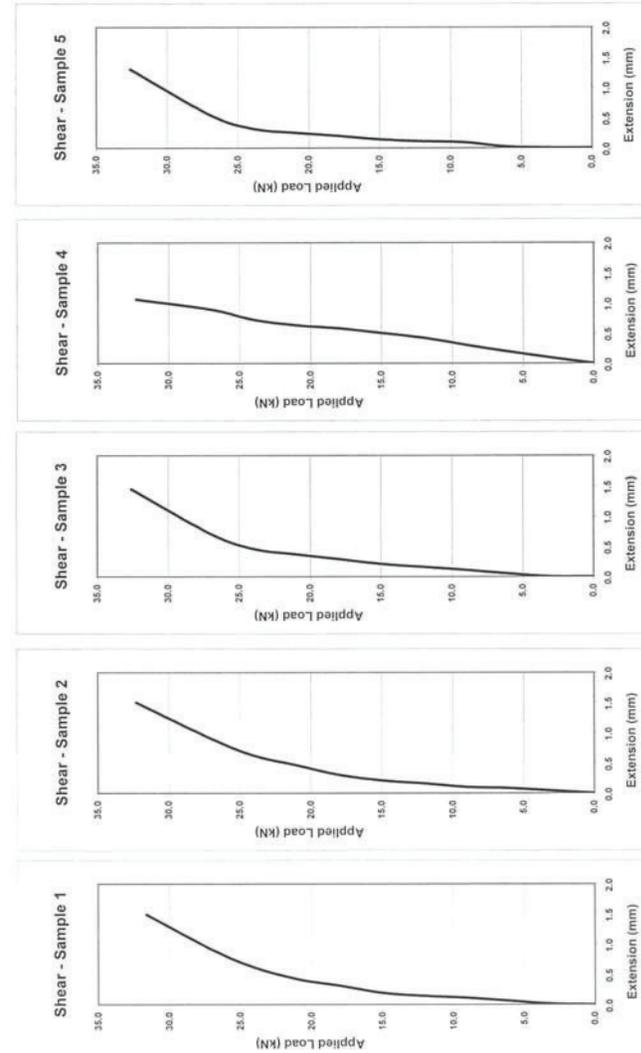
A) Test Apparatus	Load Cell : Compression Load Cell CWFK-10t, 100kN Load Cell Indicator : XK315A1-B Cylinder : Hydraulic Cylinder RCH 121 Digital Dial Gauge : Digital Indicator	(ET/930/21/01) (ET/930/34/02) (ET/903/15) (ET/915/53)	S/N : 04 S/N : - S/N : - S/N : 1301344
B) Concrete Grade	30/20D		
C) Anchor installed date	24-Nov-2014		
D) Failure Modes	P = No sign of failure in anchor and/or structural member F2 = Failure in structural member F4 = Failure of structural member in a shear cone F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking	F1 = Failure of anchor or its accessories F3 = Pull out of anchor F5 = Failure by continuous displacement or decreasing load	
E) Min. distance between reaction frame and centre of the fixing (mm)		128	
F) Min. distance between the centre of fixing and free edge (mm)		128	
G) Anchor Length, ℓ (mm)		50	
H) Anchor Diameter, d_a (mm)		16	

Tested By : KAN, Chi Wai / CHOI, Chung Lung
Checked By : (Assistant Engineer)
Approved Signatory : MONG, Seng Ming

HKAS has accredited this laboratory (Reg. No. 022 - TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. This report shall not be reproduced unless with prior written approval from this laboratory.



HCS-R, M10



Report No: FDA41901

-END OF REPORT-
Page 4 of 4

Report issued Date: 02-Dec-2014



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
 8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
 Tel : 2695 8318 E-mail : etl@ets-testconsult.com
 Fax : 2695 3944 Web site : www.ets-testconsult.com



TEST REPORT

Form CFD/R/77/Issue 1 (1/1) (06/06)

Tensile Load Test on Anchor Bolt

Customer : Hilti (Hong Kong) Ltd
 Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
 Project : -
 Test Location : ETL Laboratory
 Anchor Type : HCS-R, M12
 Amb. Temperature : 24°C

Report No. : FDA41914
 Test Date : 02-Dec-2014
 Report Date : 04-Dec-2014
 Page No. : 3 of 4
 Test Method : BS 5080:Part 1:1993 Cl 7.1
 Test Procedure : TPF/003

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
3.0	0.00	0.00	0.00	0.00	0.00
6.0	0.00	0.00	0.00	0.00	0.00
9.0	0.00	0.00	0.00	0.00	0.00
12.0	0.01	0.00	0.00	0.00	0.01
15.0	0.02	0.04	0.02	0.01	0.03
18.0	0.05	0.07	0.04	0.04	0.05
21.0	0.12	0.12	0.06	0.06	0.09
24.0	0.21	0.18	0.18	0.10	0.15
27.0	0.28	0.29	0.40	0.17	0.28
30.0	0.53	0.50	0.66	0.32	0.45
33.0	-	-	-	-	-
36.0	-	-	-	-	-
39.0	-	-	-	-	-
42.0	-	-	-	-	-
45.0	-	-	-	-	-
48.0	-	-	-	-	-
51.0	-	-	-	-	-
Failure Load (kN)	31.4	31.6	31.7	32.0	31.4
Failure Mode	F4	F4	F4	F4	F4
Average Failure Load (kN)	31.6				
Standard Deviation (kN)	0.2				

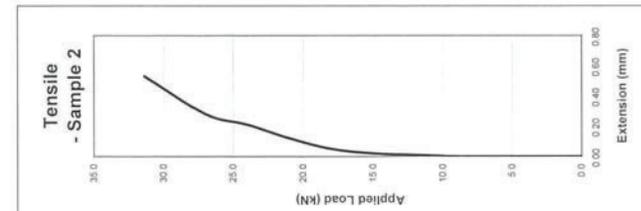
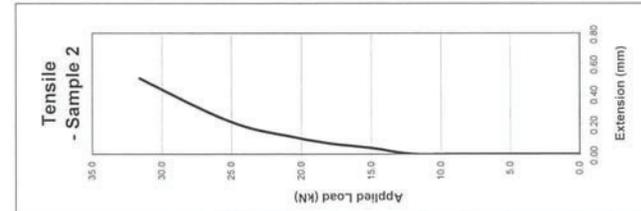
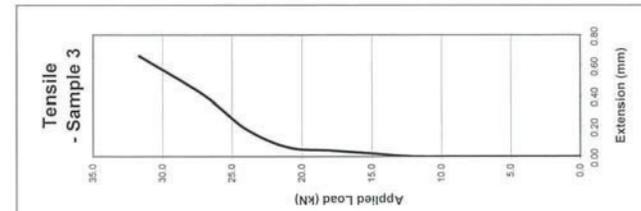
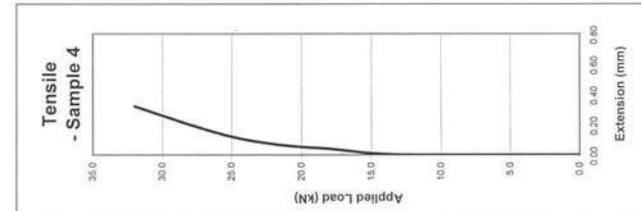
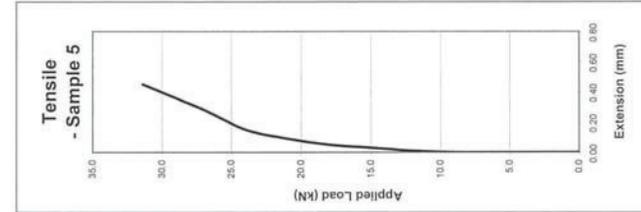
A) Test Apparatus	Load Cell : Comp. Load Cell GS429-5t, 50kN (ET/930/21/01) Load Cell Indicator : XK315A1-8 (ET/930/34/02) Cylinder : RCH1211 (ET/903/18) Digital Dial Gauge : Digital Indicator (ET/915/52)	S/N : 04 S/N : - S/N : B0502C S/N : 102389
B) Concrete Grade	30/20D	
C) Anchor installed date	25-Nov-2014	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F1 = Failure of anchor or its accessories F2 = Failure in structural member F3 = Pull out of anchor F4 = Failure of structural member in a shear cone F5 = Failure by continuous displacement or decreasing load F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) Anchor Breaking	
E) Min. distance between reaction frame and centre of the fixing (mm)	152	
F) Min. distance between the centre of fixing and free edge (mm)	228	
G) Anchor Length, l (mm)	60	
H) Anchor Diameter, d_n (mm)	19	

Tested By : SO, Hin Ting/CHOI, Chung Lung
 Checked By : (Assistant Engineer)
 Approved Signatory : MONG, Seng Ming

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HCS-R, M12



Report No. FDA41914

- END OF REPORT -
Page 4 of 4

Report Issue Date: 04-Dec-2014



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com



Form CFDR/83Issue 1 (1/1) (10/10)

TEST REPORT
Shear Load Test on Anchor Bolt

Information Provided by Customer

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : HCS-R, M12
Amb. Temperature : 24°C

Lab Information

Report No. : FDA41902
Test Date : 01-Dec-2014
Report Date : 02-Dec-2014
Page No. : 3 of 4
Test Method : BS 5080:Part 2:1986 Cl 7.2

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
3.0	0.02	0.01	0.00	0.00	0.00
6.0	0.15	0.03	0.02	0.00	0.00
9.0	0.25	0.06	0.06	0.04	0.03
12.0	0.36	0.09	0.10	0.05	0.06
15.0	0.56	0.12	0.15	0.08	0.08
18.0	0.79	0.15	0.25	0.11	0.18
21.0	1.03	0.22	0.32	0.14	0.26
24.0	1.21	0.32	0.40	0.20	0.30
27.0	1.30	0.44	0.49	0.24	0.39
30.0	1.42	0.58	0.58	0.34	0.41
33.0	1.58	0.68	0.66	0.62	0.56
36.0	1.90	0.86	0.83	0.69	1.09
39.0	2.08	1.15	1.05	0.80	2.02
42.0	2.88	1.79	1.52	1.27	2.40
45.0	-	-	-	-	-
48.0	-	-	-	-	-
51.0	-	-	-	-	-
Failure Load (kN)	43.7	43.3	43.5	44.1	44.3
Failure Mode	F7	F7	F7	F7	F7
Average Failure Load (kN)	43.8				
Standard Deviation (kN)	0.4				

A) Test Apparatus	Load Cell : Compression Load Cell CWFK-10t, 100kN Load Cell Indicator : XK315A1-8 Cylinder : Hydraulic Cylinder RCH 121 Digital Dial Gauge : Digital Indicator	(ET/930/21/01) (ET/930/34/02) (ET/903/15) (ET/915/53)	S/N : 04 S/N : - S/N : - S/N : 1301344
B) Concrete Grade	30/20D		
C) Anchor installed date	24-Nov-2014		
D) Failure Modes	P = No sign of failure in anchor and/or structural member F1 = Failure of anchor or its accessories F2 = Failure in structural member F3 = Pull out of anchor F4 = Failure of structural member in a shear cone F5 = Failure by continuous displacement or decreasing load F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking		
E) Min. distance between reaction frame and centre of the fixing (mm)	152		
F) Min. distance between the centre of fixing and free edge (mm)	152		
G) Anchor Length, ℓ (mm)	60		
H) Anchor Diameter, d_a (mm)	19		

Tested By : KAN, Chi Wai / CHOI, Chung Lung

Approved Signatory : MONG, Seng Ming

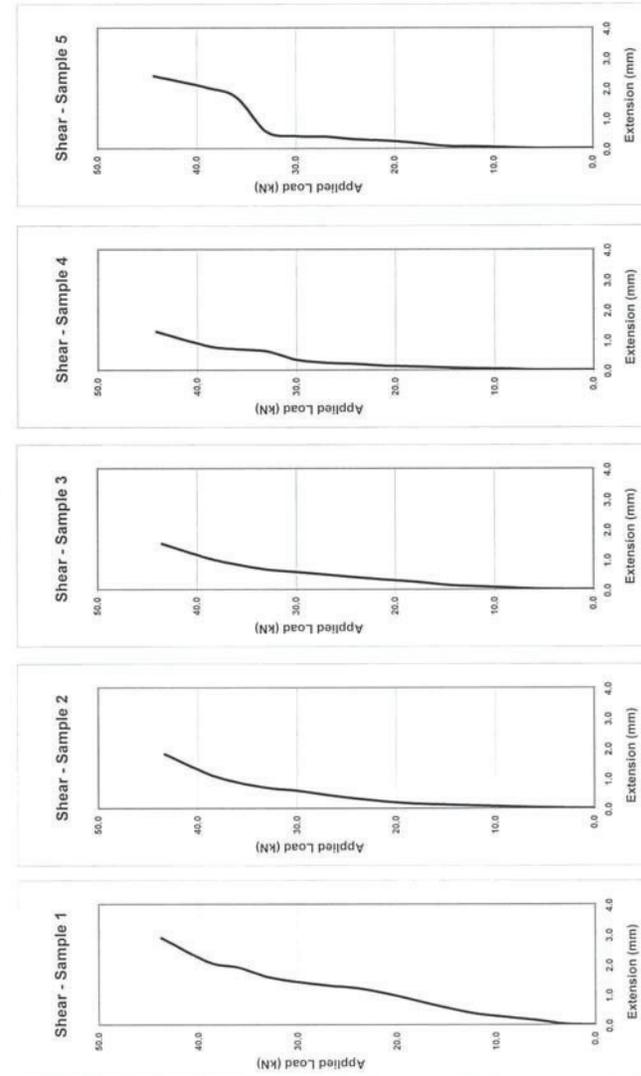
Checked By : (Assistant Engineer)

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ETS-TESTCONSULT LIMITED

HCS-R, M12



Report No. FDA41902

-END OF REPORT-
Page 4 of 4

Report Issued Date: 02-Dec-2014



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
 Tel : 2695 8318 E-mail : etl@ets-testconsult.com
 Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

Tensile Load Test on Anchor Bolt

Client	Hilti (Hong Kong) Ltd	Report No. :	FDA60276
Address	17/F, Tower 6, China HK City, 33 Canton Road, TST	Test Date :	09-Mar-06
Project	-	Report Date :	14-Mar-06
Test Location	ETL's Laboratory	Page No. :	2 of 3
Anchor Type	HCS-R, M16 x 70 (Stainless Steel)	Test Method :	BS 5080:Part 1:1993 Cl 7.1
Amb. Temperature	22°C		

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.00	0.00	0.00	0.00	0.00	0.00
2.67	0.00	0.00	0.00	0.00	0.00
5.34	0.00	0.00	0.00	0.00	0.00
8.01	0.00	0.00	0.00	0.00	0.00
10.68	0.00	0.00	0.00	0.00	0.02
13.35	0.00	0.00	0.00	0.00	0.10
16.02	0.00	0.00	0.02	0.00	0.15
18.69	0.00	0.00	0.05	0.00	0.24
21.36	0.00	0.00	0.07	0.00	0.38
24.03	0.00	0.00	0.09	0.02	0.45
26.70	0.02	0.00	0.11	0.09	0.56
29.37	0.07	0.02	0.12	0.14	0.63
32.04	0.15	0.07	0.18	0.23	-
34.71	-	-	-	-	-
37.38	-	-	-	-	-
40.05	-	-	-	-	-
42.72	-	-	-	-	-
45.39	-	-	-	-	-
48.06	-	-	-	-	-
Failure Load (kN)	34.2	34.0	33.8	34.0	31.6
Failure Mode	F4	F4	F4	F4	F4
Average Failure Load (kN)	33.52				
Standard Deviation (kN)	1.08				

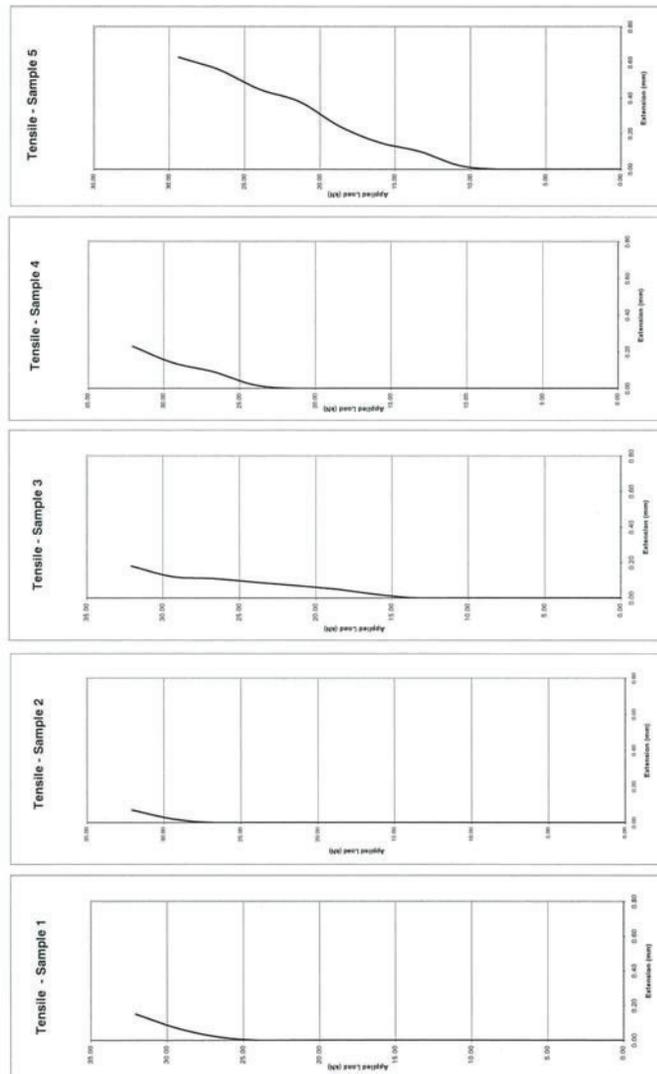
A) Test Apparatus	Load Cell : Maywood C3000 (ET/930/07/01) (200kN)	S/N : 100136752
	Load Cell Indicator : AD813 (ET/930/07/02)	S/N : -
	Cylinder : Enerpac RCH302 (ET/903/14)	S/N : -
	Digital Dial Gauge : ET/430/02	
B) Concrete Grade	30 ± 3 MPa	
C) Anchor installed date	-	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F1 = Failure of anchor or its accessories F2 = Failure in structural member F3 = Pull out of anchor F4 = Failure of structural member in a shear cone F5 = Failure by continuous displacement or decreasing load F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking	
E) Span width(mm)	600	
F) Edge distance(mm)	300	
G) Embedded Length(mm)	70	



東業德勤測試顧問有限公司
 ETS-TESTCONSULT LIMITED

Report No: FDA60276

HCS-R, M16 x 70 (Stainless Steel)



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Report Issued Date: 14 Mar 2006



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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 Tel : 2695 8318 E-mail : etl@ets-testconsult.com
 Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

Shear Load Test on Anchor Bolt

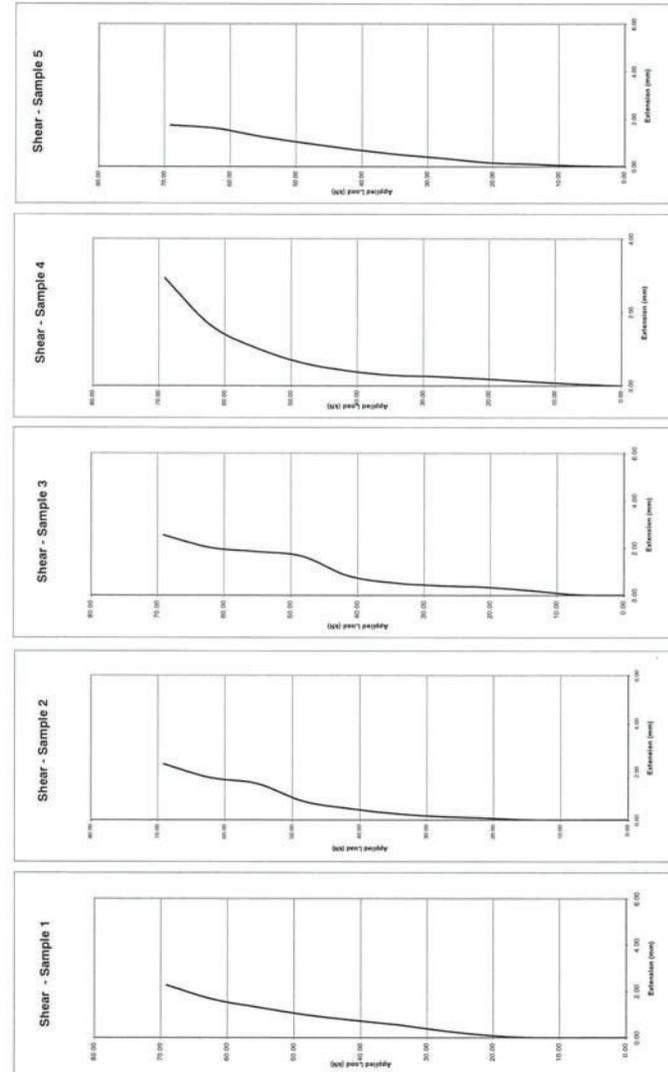
Client	Hilti (Hong Kong) Ltd	Report No.	: FDA60277
Address	17/F, Tower 6, China HK City, 33 Canton Road, TST	Test Date	: 09-Mar-06
Project	-	Report Date	: 14-Mar-06
Test Location	ETL's Laboratory	Page No.	: 2 of 3
Anchor Type	HCS-R, M16 x 70 (Stainless Steel)	Test Method	: BS 5080:Part 2:1986 Cl 7.2
Amb. Temperature	22°C		

Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.00	0.00	0.00	0.00	0.00	0.00
6.91	0.00	0.00	0.02	0.05	0.03
13.82	0.00	0.00	0.20	0.12	0.10
20.73	0.10	0.08	0.34	0.19	0.17
27.64	0.30	0.14	0.41	0.25	0.35
34.55	0.56	0.26	0.53	0.29	0.51
41.46	0.76	0.47	0.83	0.41	0.73
48.37	0.99	0.78	1.66	0.63	0.98
55.28	1.30	1.51	1.85	1.03	1.26
62.19	1.66	1.75	2.03	1.66	1.61
69.10	2.27	2.32	2.56	2.94	1.75
76.01	-	-	-	-	-
82.92	-	-	-	-	-
89.83	-	-	-	-	-
96.74	-	-	-	-	-
103.65	-	-	-	-	-
110.56	-	-	-	-	-
117.47	-	-	-	-	-
Failure Load (kN)	69.6	69.5	69.8	69.9	69.7
Failure Mode	F7	F7	F7	F7	F7
Average Failure Load (kN)	69.70				
Standard Deviation (kN)	0.16				

A) Test Apparatus	Load Cell : Maywood C3000 (ET/930/06/01) (500kN)	S/N : 174529
	Load Cell Indicator : AD813 (ET/930/06/02)	S/N : -
	Cylinder : Enerpac RCH302 (ET/903/07)	S/N : C3691C
	Digital Dial Gauge : ET/430/02	
B) Concrete Grade	30 ± 3 MPa	
C) Anchor installed date	-	
D) Failure Modes	P = No sign of failure in anchor and/or structural member F2 = Failure in structural member F4 = Failure of structural member in a shear cone F6 = Failure in structural member with crack radiates outward from anchor F7 = Other failure mode(s) : Anchor Breaking F1 = Failure of anchor or its accessories F3 = Pull out of anchor F5 = Failure by continuous displacement or decreasing load	
E) Span width(mm)	400	
F) Edge distance(mm)	200	
G) Embedded Length(mm)	70	



HCS-R, M16 x 70 (Stainless Steel)



Attn. : To whom it may concern

Date : 1 Apr 2025
Ref. : 023/FP/SC/25

Subject : Country of Origin - Hilti HCX Cast-in Socket

Dear Sir / Madam,

Enclosed please find the information of Hilti HCX Cast-in Socket.

Brand Name : Hilti

Manufacturer : Hilti Corporation

Address of Manufacturer : FL-9494, Principality of Liechtenstein.

Manufacturer Contact Person : Spencer Cheung

Supplier : Hilti (Hong Kong) Ltd

Address of Supplier : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong

Supplier Contact Person : Spencer Cheung (+852 9732 1231)

Country of Origin : China

Should you have further questions, please do not hesitate to contact our Technical Representatives, Customer Service Hotline at 8228-8118, or email us at hksales@hilti.com.

Yours Faithfully,

Spencer C. 

Spencer Cheung
Head of Product Leadership Strategy

Ref. no : 072/AM/DY/23
Date : 13 September 2023

Subject : Confirmation of name change of HCS/ HCS-R to HCX/ HCX-R cast-in sockets

To whom it may concern,

We confirm that the HCS/ HCS-R cast-in sockets are the same product as the HCX/ HCX-R cast-in sockets. The product went through an internal name change in our systems. The mechanical properties of the product or manufacturing process have not changed.

Should you have any further questions, please do not hesitate to contact our Technical Representatives or Customer Service Hotline at 8228-8118.

Yours faithfully,



Dennis Yeung
Head of Product Leadership Strategy, F&P
Hilti (Hong Kong) Ltd.

