Hilti HCX-R and Eye Bolt Submission folder

Cast-in Socket HCX

BASE MATERIALS

- Concrete
- GRC

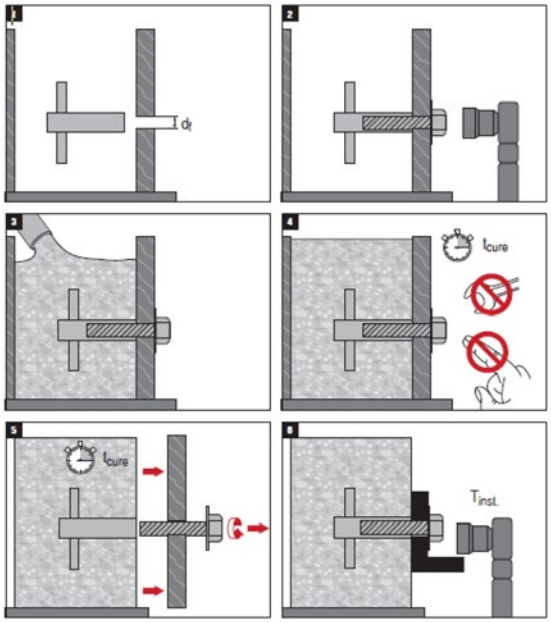
APPLICATIONS

- 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)



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

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.

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

Eye Bolt Use

- **Eye bolt with thread to connect metal piece with internal thread**

Material
- A4 stainless steel

Approvals
- Eye Bolt is according to DIN 580
- Tested as per BS5080

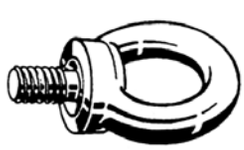
Benefits
- Simple to use
- One-stop-shop supply, including anchor and other accessories
- Corrosion resistance - A4 stainless steel available

Technical data

Maximum permissible loads as per DIN 580 or DIN 582 in kN

Direction of tension load		M12
for one bolt / one nut		3.4
for two bolts / two nuts		2.4

Others sizes and dimensions upon request



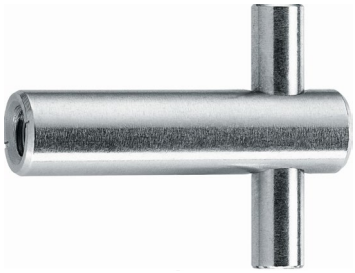
Eye Bolt

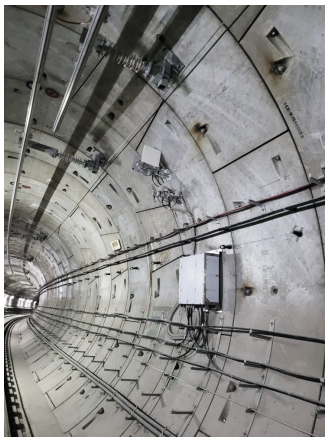
Eye Bolt

Thread Size (mm)	Ring Dia. (mm)	Thread length (mm)	Total height (mm)	Package (pcs)	Order designation	Item no
M12	30	20.5	53	20	**Eye Bolt M12**	**5002153**

HCX(-R) Cast-in socket

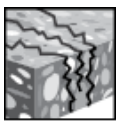
Internally threaded cast-in socket

Anchor version	Benefits
 HCX Carbon steel	- Simple well proven design - Easy installation to formwork - For use with bolts or threaded rods - Available in 5µm galvanized or stainless steel A4 to suit environmental conditions - HCX-R with head markings for easy identification
 HCX-R Stainless steel A4	



Base material

Concrete (uncracked)



Concrete (cracked)

Load conditions

Static/ quasi-static

Fire resistance[1)]

Other information

Hilti Technical data

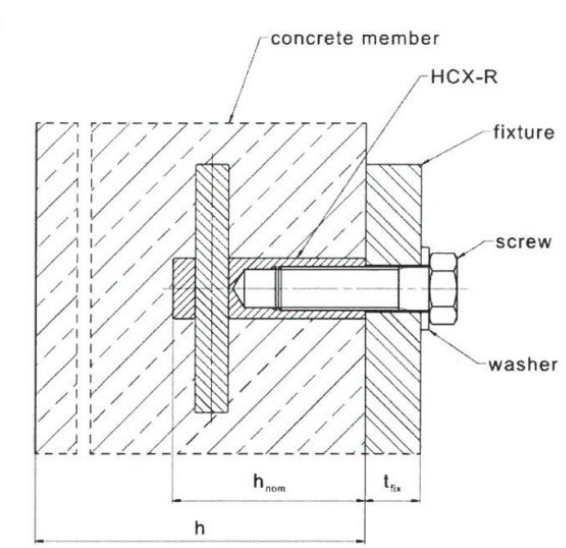
[1)] For HCX-R M16, please refer to ETA-20/0479 for more details.

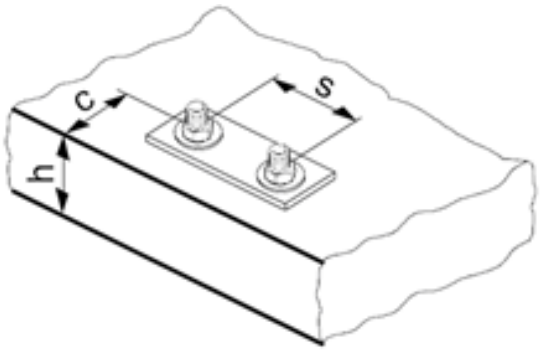
Setting information

Setting details

Anchor Size			HCX(-R)			HCX	HCX-R
			M8x40	M10x50	M12x60	M16x70	M16x70
Nominal embedment depth	h_{nom}	[mm]	40	50	60	70	70
Effective anchorage depth	h_{ef}	[mm]	29	36	45	50	50
Minimum base material thickness	h_{min}	[mm]	100	100	100	100	100
Minimum spacing	s_{min}	[mm]	58	72	90	100	150
Minimum edge distance	c_{min}	[mm]	44	54	68	75	100
Torque moment	T_{inst}	[Nm]	8	15	25	50	50
Characteristic spacing [1)]	s_{cr}	[mm]	3 h_{ef}				
Characteristic edge distance [1)]	c_{cr}	[mm]	1,5 h_{ef}				

[1)] For static condition ,for fire please refer ETA 20/0479





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TEST REPORT

Form C/FD/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 M8x40, Cast-in Socket
Amb.Temperature : 20°C

Report No. : FDA20611
Test Date : 08-Mar-12
Report Date : 26-Mar-12
Page No. : 2 of 3
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
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 Appratus
Load Cell : Compression Load Cell C3000, 50kN (ET/930/02/01) S/N : 0175530
Load Cell Indicator : XT1500/2/32 (ET/930/12/02) S/N : 1000090910
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 Breaking

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

東業德勤測試顧問有限公司
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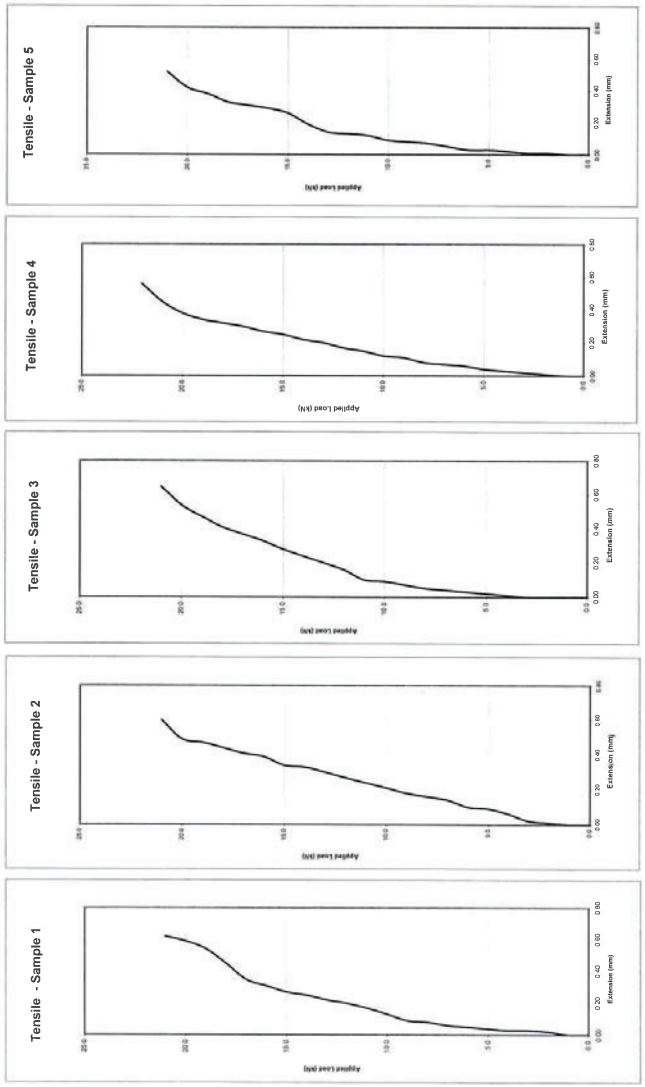
Report No: FDA20611

HCS M8x40, Cast-in Socket



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-END OF REPORT-

Report Issued Date: 26-Mar-12

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HOKLAS 022 TEST CAL

TEST REPORT

Form C/FD/R/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 Appratus
Load Cell : Comp. Load cell Thames, 50 kN (ET/930/11/01) S/N : 227183
Load Cell Indicator : - (ET/930/22/02) S/N : -
Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) S/N : C3696C
Digital Dial Gauge : Mitutoyo Digital Indicator (ET/430/19) 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

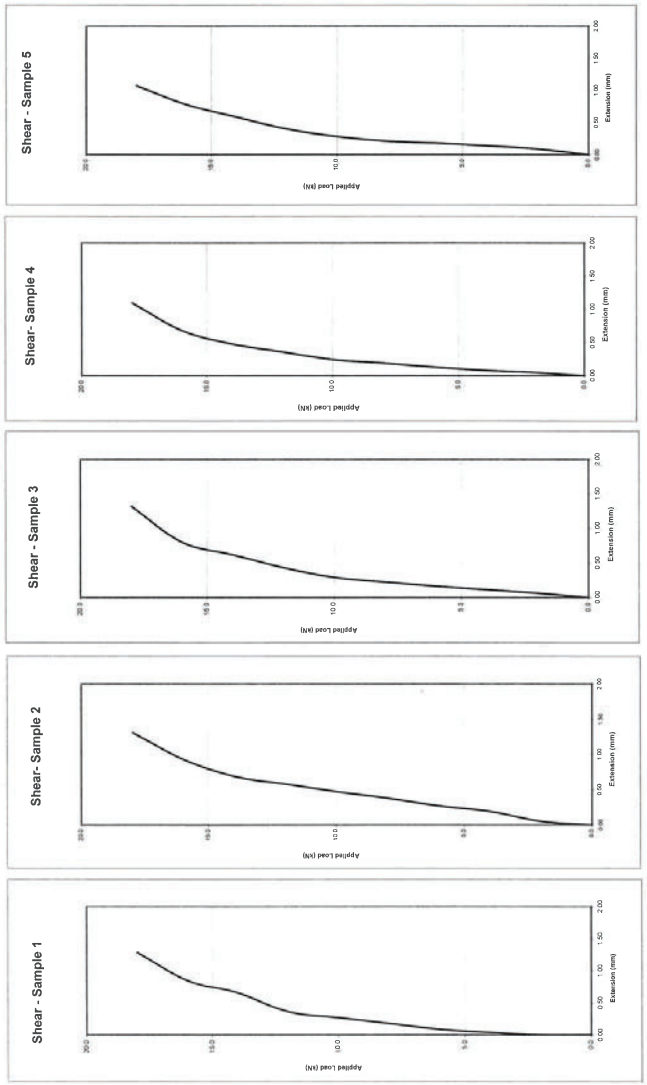
G) Socket Length (mm) 40

Tested By : CHOI, Chung Lung / CHAN, Hon Kwan
Approved Signatory : MONG, Seng Ming
Checked By : PANG, Ting Pong/LIN, Meng Yang

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Report No: FDA20614

HCS M8x40, Cast-in Socket



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TEST REPORT

Form C/FD/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 M10x50, Cast-in Socket
Amb.Temperature : 20°C

Report No. : FDA20613
Test Date : 09-Mar-12
Report Date : 26-Mar-12
Page No. : 2 of 3
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
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 Appratus
Load Cell : Comp. Load Cell YZC-219, 100kN (ET/930/10/01) S/N : 50603015
Load Cell Indicator : - (ET/930/16/02) S/N : -
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 Breaking

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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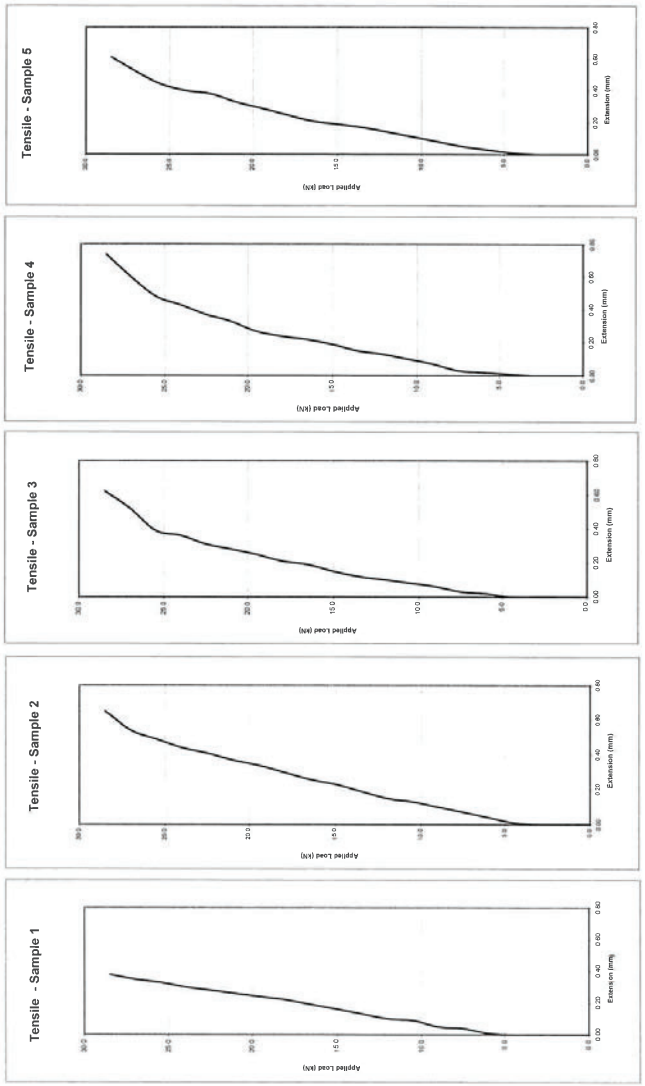
Report No: FDA20613

HCS M10x50, Cast-in Socket



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TEST REPORT

Form C/FD/R/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 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 Appratus
Load Cell : Comp. Load cell Thames, 50 kN (ET/930/11/01) S/N : 227183
Load Cell Indicator : - (ET/930/22/02) S/N : -
Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) S/N : C3696C
Digital Dial Gauge : Mitutoyo Digital Indicator (ET/430/19) 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

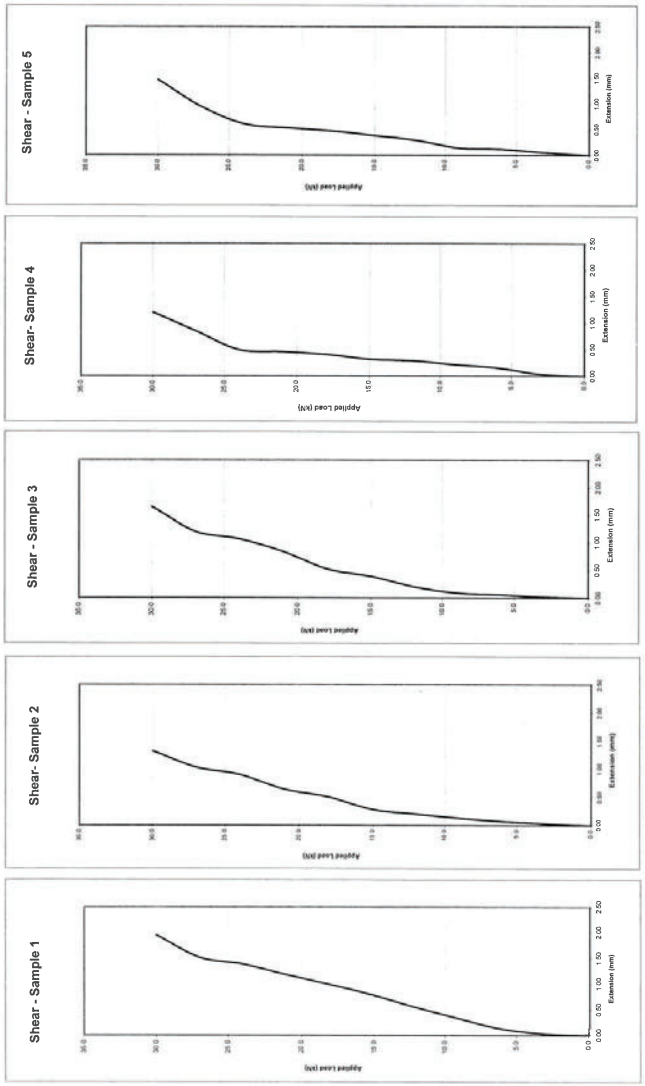
G) Socket Length (mm) 50

Tested By : CHOI, Chung Lung / CHAN, Hon Kwan
Approved Signatory : MONG, Seng Ming
Checked By : PANG, Ting Pong/LIN, Meng Yang

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Report No: FDA20615

HCS M10x50, Cast-in Socket



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HKAS 022 TEST CAL

TEST REPORT

Form C/FD/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 M12x60, Cast-in Socket
Amb.Temperature : 20°C

Report No. : FDA20612
Test Date : 08-Mar-12
Report Date : 26-Mar-12
Page No. : 2 of 3
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	0.02
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	0.48	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 Appratus	Load Cell : Compression Load Cell C3000, 50kN (ET/930/02/01)	S/N : 0175530
	Load Cell Indicator : XT1500/2/32 (ET/930/12/02)	S/N : 1000090910
	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 Breaking	
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
Checked By : PANG, Ting Pong / LIN, Meng Yang

東業德勤測試顧問有限公司
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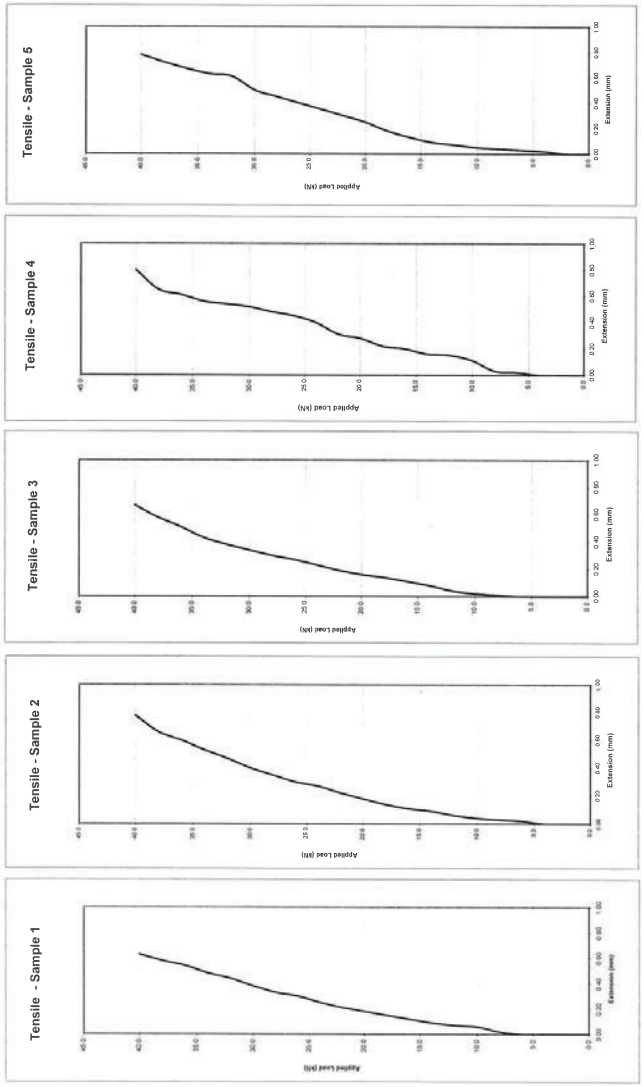
Report No: FDA20612

HCS M12x60, Cast-in Socket



Page 3 of 3
-END OF REPORT-

Report Issued Date: 26-Mar-12

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HKAS TEST CAL

TEST REPORT

Form C/FD/R/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 Appratus
Load Cell : Compression Load Cell, 200kN (ET/930/12/01) S/N : 183639
Load Cell Indicator : - (ET/930/22/02) S/N : -
Cylinder : Hydraulic Cylinder RCH 202 (ET/903/13) S/N : C3696C
Digital Dial Gauge : Mitutoyo Digital Indicator (ET/430/19) 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

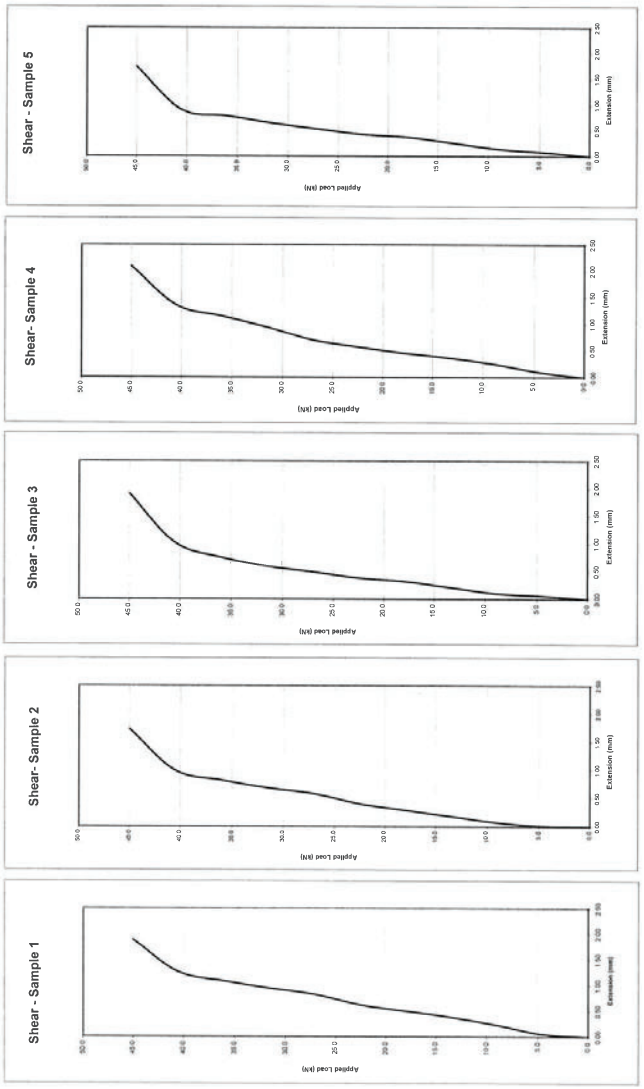
G) Socket Length (mm) 60

Tested By : CHOI, Chung Lung / CHAN, Hon Kwan
Approved Signatory : MONG, Seng Ming
Checked By : PANG, Ting Pong/LIN, Meng Yang

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Report No: FDA20616

HCS M12x60, Cast-in Socket



Page 3 of 3
-END OF REPORT-

Report Issued Date: 26-Mar-12

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HOKLAS 022

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 Appratus	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 Dail 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

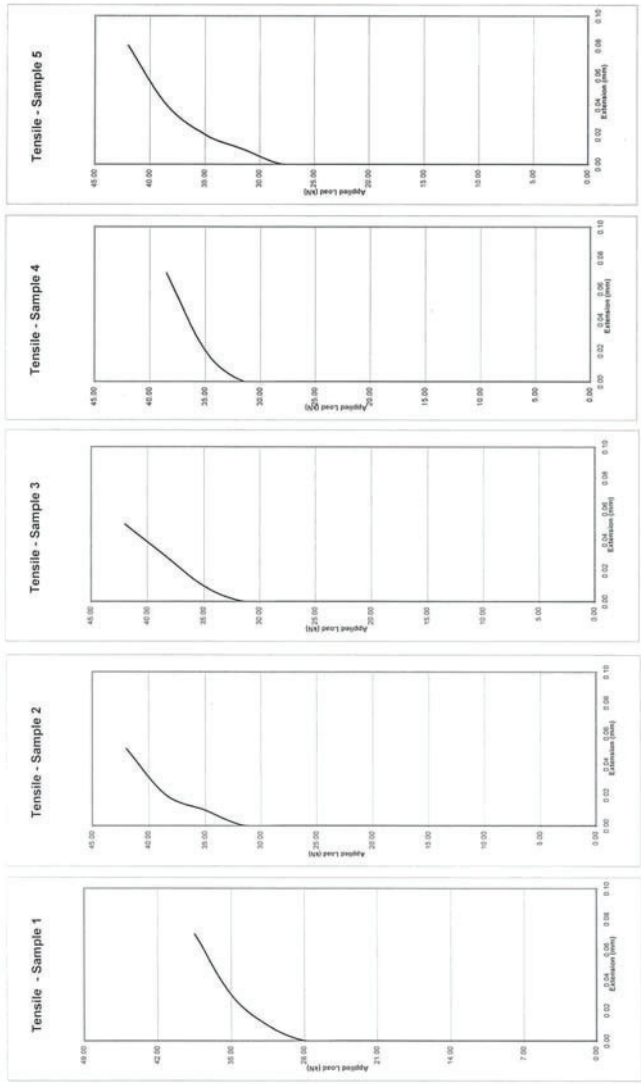
E) Span width(mm)	600
F) Edge distance(mm)	300
G) Embeded Length(mm)	70

*** Information provided by customer**

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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				

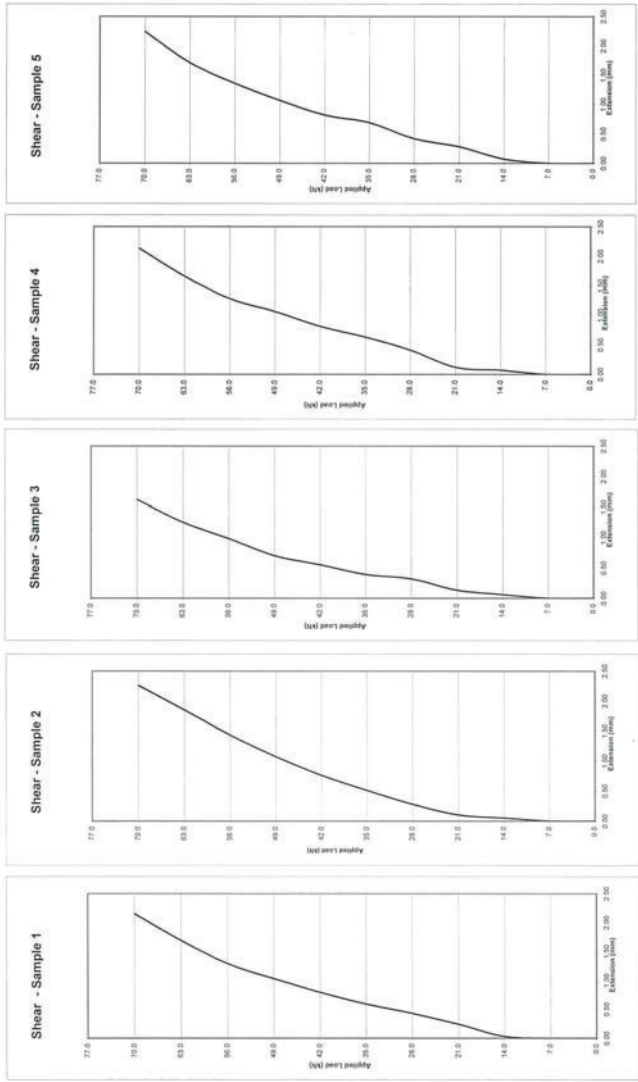
A) Test Appratus	Load Cell :	Comp. Load cell C3000, 200kN (ET/930/07/01)	S/N : 1000136752
	Load Cell Indicator :	Load indicator AD813 (ET/930/07/02)	S/N : -
	Cylinder :	Hydraulic Cylinder RCH 202 (ET/903/13)	S/N : C3696C
	Digital Dail Gauge :	ET/915/35	
B) Concrete Grade	30 ± 3 MPa		
C) Anchor installed 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) Embeded Length(mm)	70		

*** Information provided by customer**

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Report No: FDA90442

HCS, M16 x 70



Page 3 of 3

Report Issued Date: 17 Apr 09

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HOKLAS 022 TEST CAL

TEST REPORT

Form C/FD/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, 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 Appratus
Load Cell : Comp. Load Cell GS429-5t, 50kN (ET/930/21/01) S/N : 04
Load Cell Indicator : XK315A1-8 (ET/930/34/02) S/N : -
Cylinder :RCH1211 (ET/903/18) S/N : B0502C
Digital Dial Gauge : Digital Indicator (ET/915/52) 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) 96

F) Min. distance between the centre of fixing and free edge (mm) 144

G) Anchor Length, ℓ (mm) 40

H) Anchor Diameter, d_o (mm) 12

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

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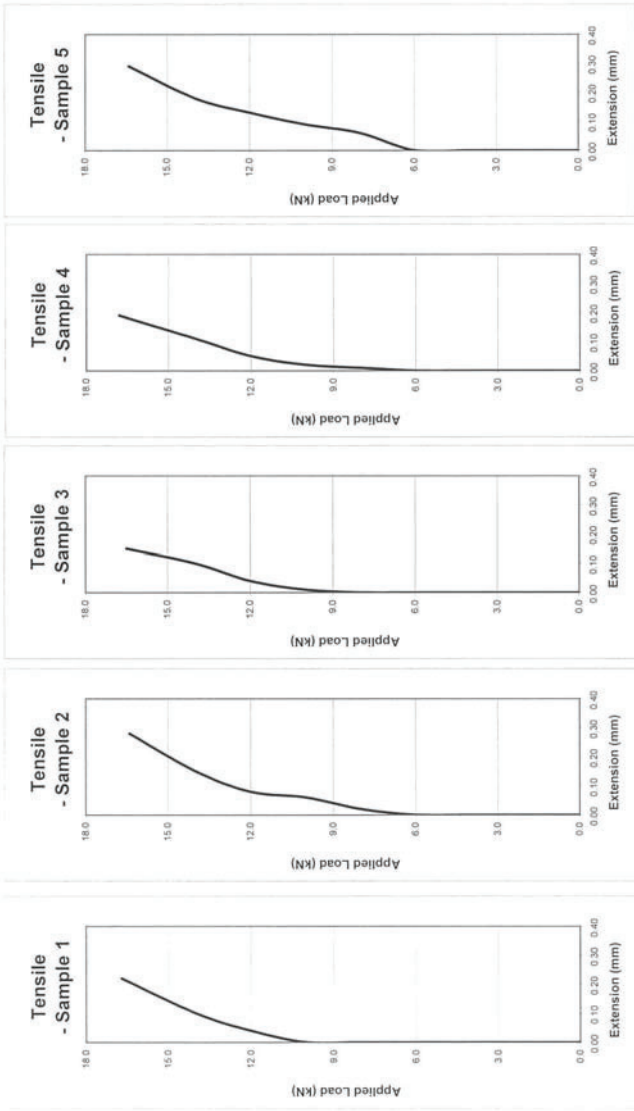
ETS-TESTCONSULT LIMITED



HCS-R, M8

Report No. FDA41912

- 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
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HOKLAS 022 TEST CAL

Form C/FD/R/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, 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 Appratus	Load Cell : Compression Load Cell CWFK-10t, 100kN	(ET/930/21/01)	S/N : 04
	Load Cell Indicator : XK315A1-8	(ET/930/34/02)	S/N : -
	Cylinder : Hydraulic Cylinder RCH 121	(ET/903/15)	S/N : -
	Digital Dial Gauge : Digital Indicator	(ET/915/53)	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)	96		
F) Min. distance between the centre of fixing and free edge (mm)	96		
G) Anchor Length, ℓ (mm)	40		
H) Anchor Diameter , d_n (mm)	12		

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

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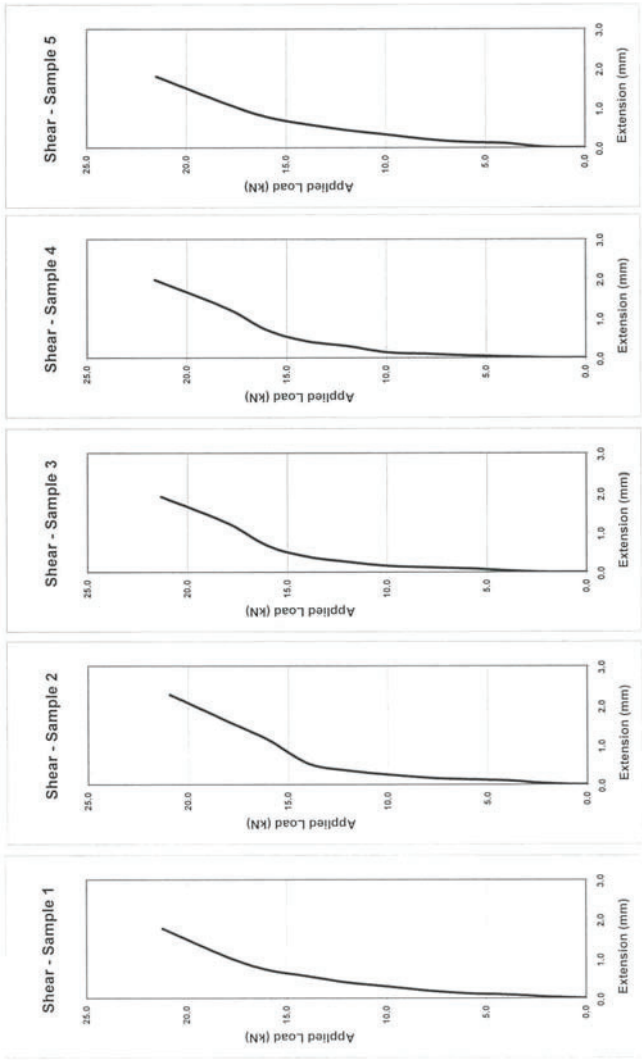
HCS-R, M8



Report No: FDA41900

-END OF REPORT-
Page 4 of 4

Report Issued Date: 02-Dec-2014

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HOKLAS 022 TEST CAL

TEST REPORT

Form C/FD/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, 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 Appratus
Load Cell : Comp. Load Cell GS429-5t, 50kN (ET/930/21/01) S/N : 04
Load Cell Indicator : XK315A1-8 (ET/930/34/02) S/N : -
Cylinder :RCH1211 (ET/903/18) S/N : B0502C
Digital Dial Gauge : Digital Indicator (ET/915/52) 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) 128

F) Min. distance between the centre of fixing and free edge (mm) 192

G) Anchor Length, ℓ (mm) 50

H) Anchor Diameter, d_a (mm) 16

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

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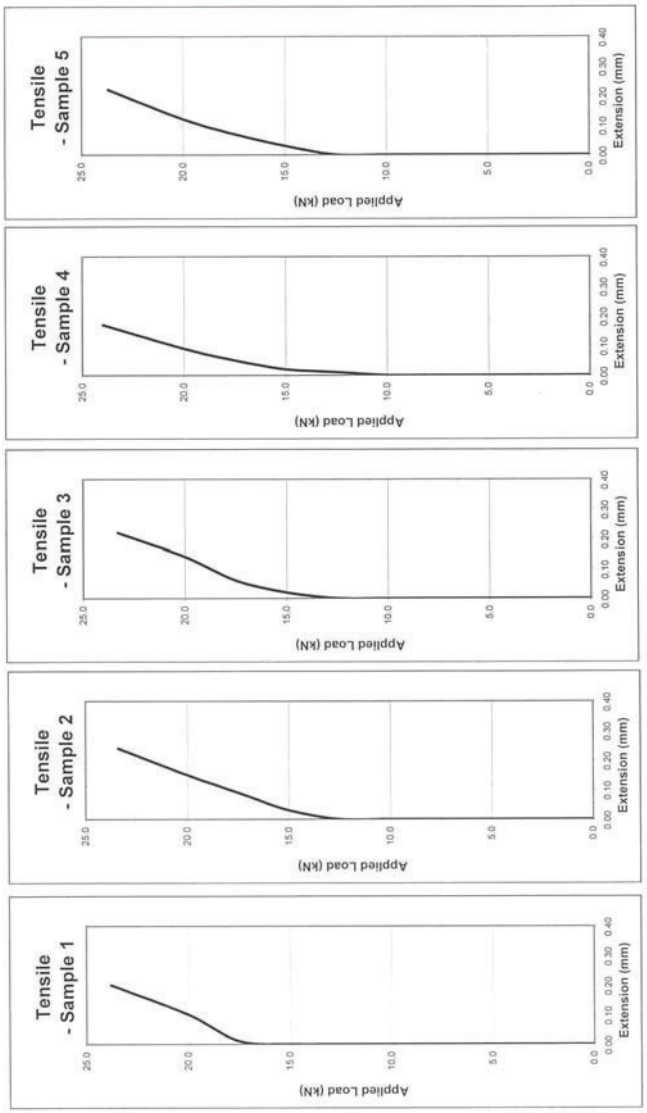
ETS-TESTCONSULT LIMITED

HCS-R, M10



Report No. FDA41913

- END OF REPORT - Page 4 of 4

Report Issue Date: 04-Dec-2014

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HOKLAS 022 TEST CAL

Form C/FD/R/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

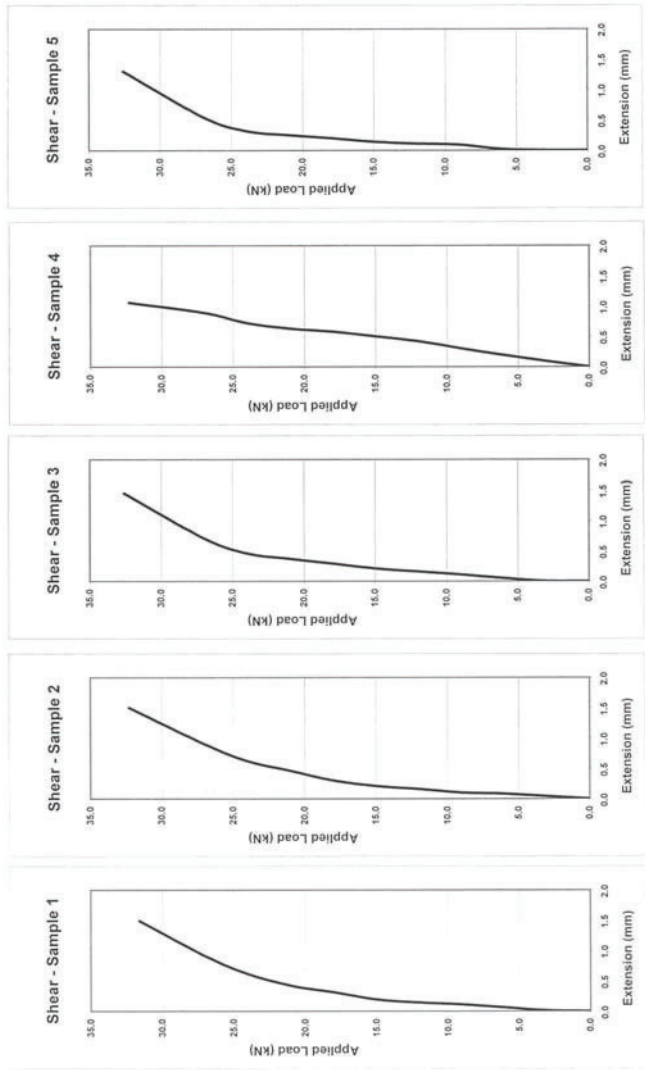
Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
3.0	0.01	0.04	0.00	0.09	0.00
6.0	0.06	0.08	0.05	0.19	0.02
9.0	0.11	0.10	0.11	0.30	0.09
12.0	0.14	0.16	0.16	0.42	0.11
15.0	0.19	0.21	0.21	0.50	0.14
18.0	0.31	0.30	0.29	0.58	0.20
21.0	0.42	0.46	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 Appratus	Load Cell : Compression Load Cell CWFK-10t, 100kN	(ET/930/21/01)	S/N : 04
	Load Cell Indicator : XK315A1-8	(ET/930/34/02)	S/N : -
	Cylinder : Hydraulic Cylinder RCH 121	(ET/903/15)	S/N : -
	Digital Dial Gauge : Digital Indicator	(ET/915/53)	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)	128		
F) Min. distance between the centre of fixing and free edge (mm)	128		
G) Anchor Length, $\acute{E}$ (mm)	50		
H) Anchor Diameter , d_a (mm)	16		

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

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

HCS-R, M10



Report No: FDA41901

-END OF REPORT-
Page 4 of 4

Report Issued Date: 02-Dec-2014

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HOKLAS 022 TEST CAL

TEST REPORT

Form C/FD/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 Appratus
Load Cell : Comp. Load Cell GS429-5t, 50kN (ET/930/21/01) S/N : 04
Load Cell Indicator : XK315A1-8 (ET/930/34/02) S/N : -
Cylinder :RCH1211 (ET/903/18) S/N : B0502C
Digital Dial Gauge : Digital Indicator (ET/915/52) 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_a (mm)	19

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

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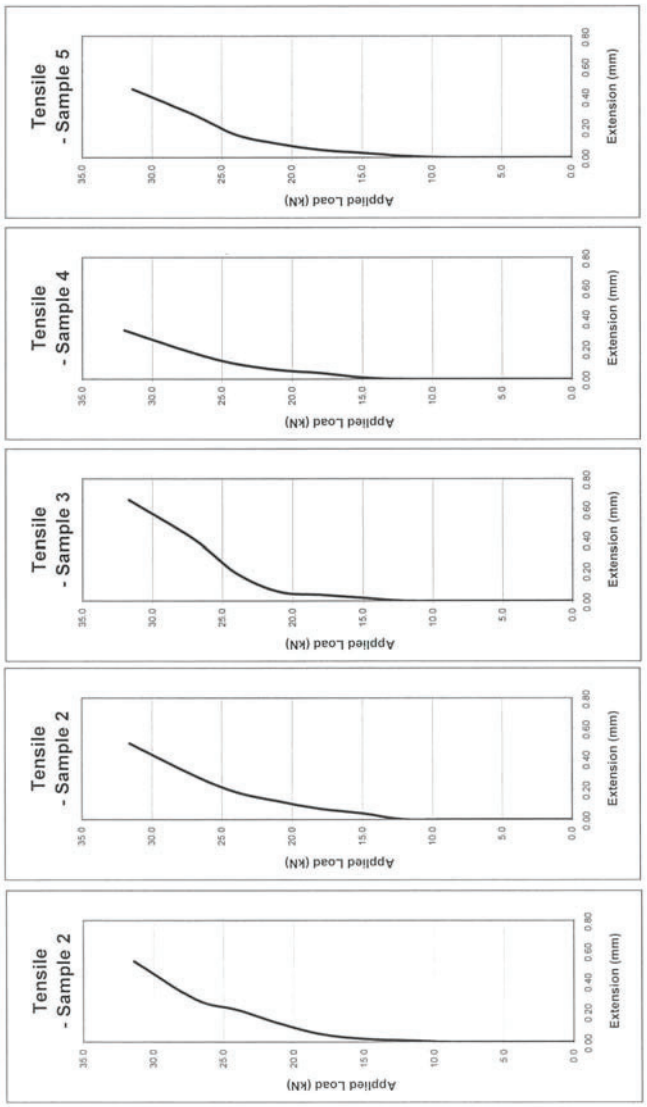
ETS-TESTCONSULT LIMITED

Report No. FDA41914

HCS-R, M12



- END OF REPORT -
Page 4 of 4

Report Issue Date: 04-Dec-2014

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HOKLAS 022 TEST CAL

Form C/FD/R/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, 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

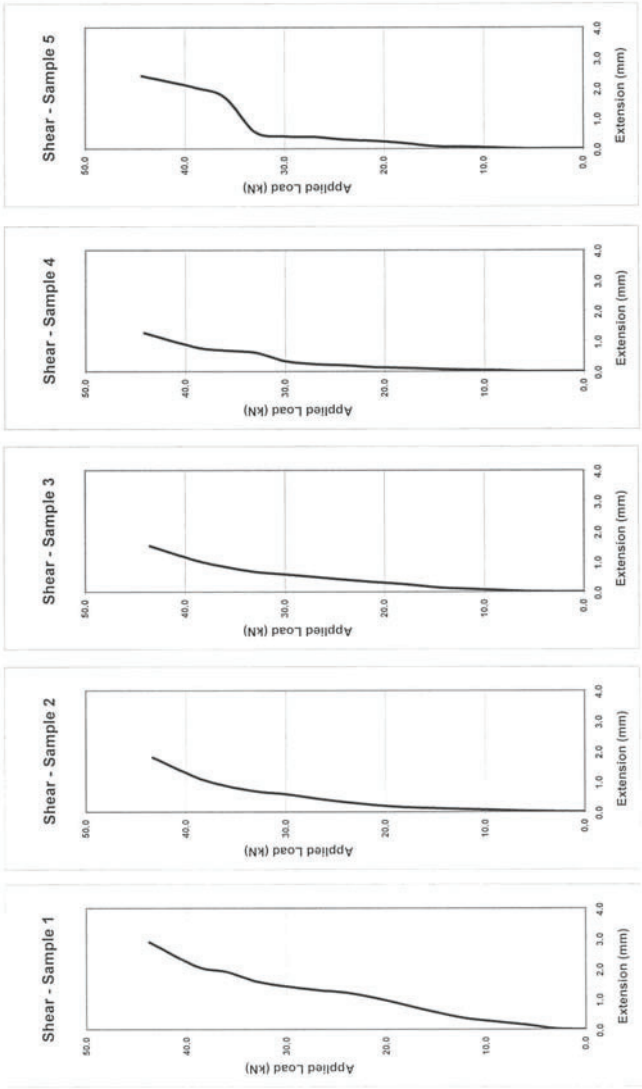
Load (kN)	Dial Gauge Reading (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.0	0.00	0.00	0.00	0.00	0.00
3.0	0.02	0.01	0.00	0.00	0.00
6.0	0.15	0.03	0.02	0.00	0.00
9.0	0.25	0.06	0.06	0.04	0.03
12.0	0.36	0.09	0.10	0.05	0.06
15.0	0.56	0.12	0.15	0.08	0.08
18.0	0.79	0.15	0.25	0.11	0.18
21.0	1.03	0.22	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	1.69
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 Appratus	Load Cell : Compression Load Cell CWFK-10t, 100kN	(ET/930/21/01)	S/N : 04
	Load Cell Indicator : XK315A1-8	(ET/930/34/02)	S/N : -
	Cylinder : Hydraulic Cylinder RCH 121	(ET/903/15)	S/N : -
	Digital Dial Gauge : Digital Indicator	(ET/915/53)	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)

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

HCS-R, M12



Report No: FDA41902

-END OF REPORT-
Page 4 of 4

Report Issued Date: 02-Dec-2014

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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 Appratus	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 Dail 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) Embeded Length(mm)	70		

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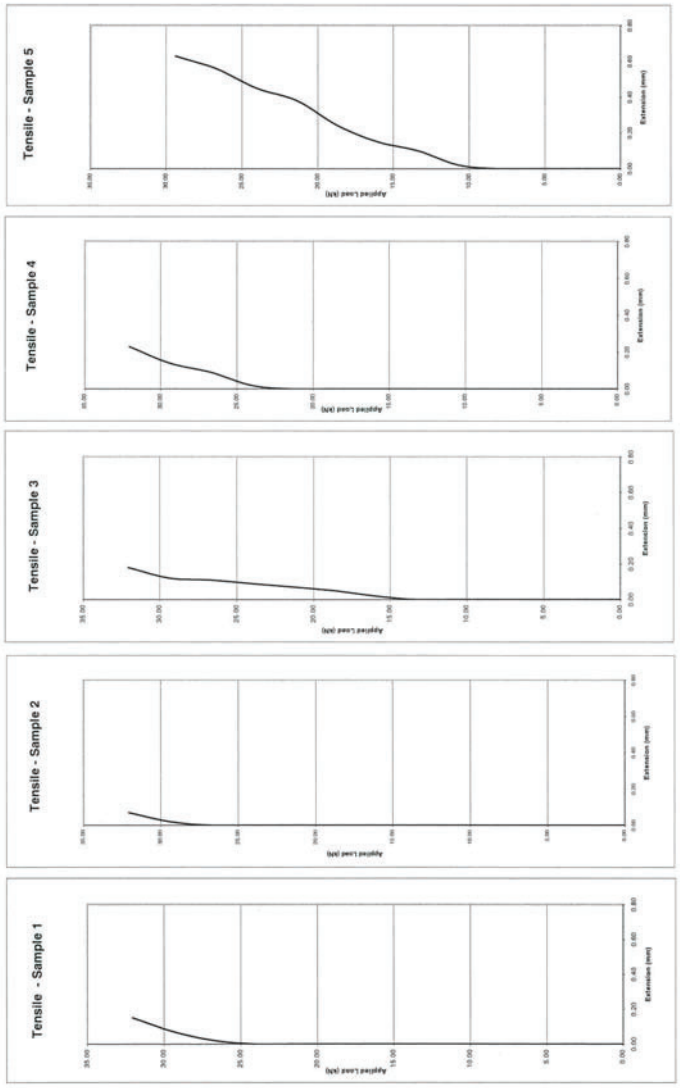
ETS-TESTCONSULT LIMITED

Report No: FDA60276

HCS-R, M16 x 70 (Stainless Steel)



Page 3 of 3

Report Issued Date: 14 Mar 2006

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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 Appratus

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 Dail Gauge :	ET/430/02	

B) Cocrete 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) 400

F) Edge distance(mm) 200

G) Embeded Length(mm) 70

東業德勤測試顧問有限公司
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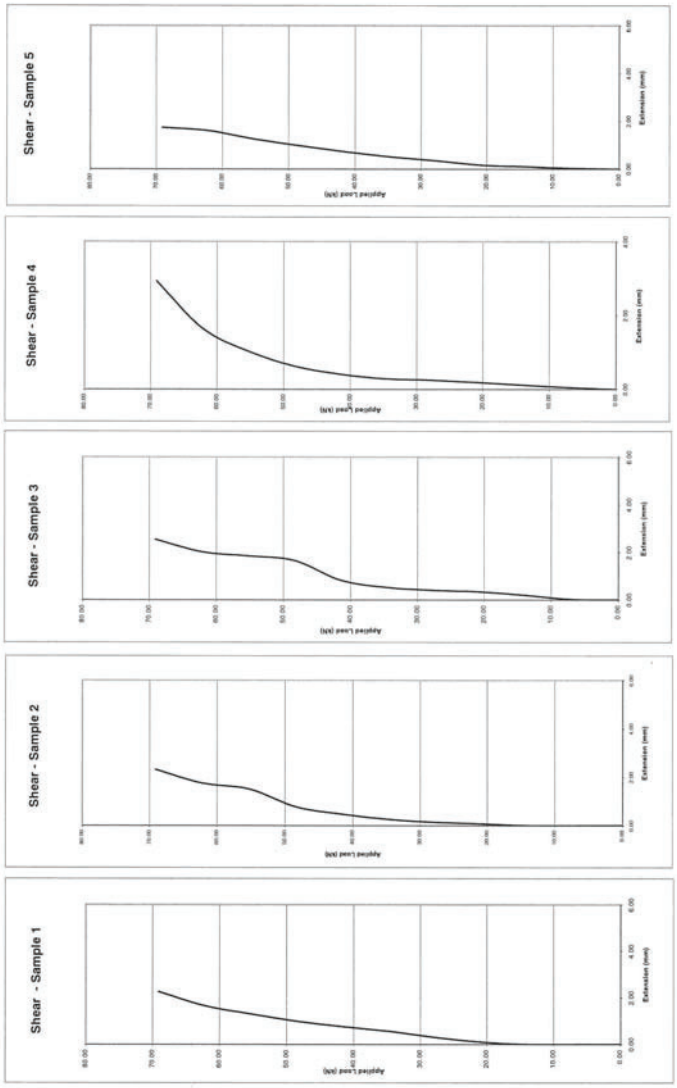
Report No: FDA60277

HCS-R, M16 x 70 (Stainless Steel)



Page 3 of 3

Report Issued Date: 14 Mar 2006

ZAG
ZAVOD ZA GRADBENIŠTVO SLOVENIJE
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European Technical Assessment

ETA-20/0479 of 23.09.2021

English version prepared by ZAG

General Part

Technical Assessment Body issuing the European Technical Assessment	**ZAG Ljubljana**
Trade name of the construction product	**HCX-R Cast-in socket**
Product family to which the construction product belongs	**33: Cast-in anchor with internal threaded socket**
Manufacturer	**HILTI Corporation** **Feldkircherstrasse 100** **9494 SCHAAN** **Liechtenstein** www.hilti.com
Manufacturing plant	**HILTI plants**
This European Technical Assessment contains	13 pages including 10 annexes, which form an integral part of the document
This version replaces	ETA-20/0479 issued on 11.11.2020
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330012-00-0601: Cast-in anchor with internal threaded socket, edition September 2015

ZAVOD ZA GRADBENIŠTVO SLOVENIJE LJUBLJANA 17

Specific parts

1 Technical description of the product

HCX-R Cast-in socket in the size M16 is an anchor consisting of an internal threaded socket with round pin. The socket is made of stainless steel.

The anchor is embedded surface – flush. The anchorage is established by anchorage of rounded pin which is positioned perpendicular to the socket.

An illustration of the product is given in Annex A1.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The performances given in Chapter 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

The basic work requirements for mechanical resistance and stability are listed in Annexes C1 to C3.

3.2 Safety in case of fire (BWR 2)

The basic work requirements for safety in case of fire are listed in Annexes C4 and C5.

3.3 General aspects relating to fitness for use

Durability and serviceability are only ensured if specifications of intended use according to Annex B1 are kept.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the decision 96/582/EC of the European Commission[1] the system of assessment and verification of constancy of performance (see Annex V to regulation (EU) No 305/2011) **1** apply.

5 Technical details necessary for the implementation of the AVCP system, as provided for on the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in Chapter 3 of EAD 330012-00-0601.

Issued in Ljubljana on 23. 09. 2021

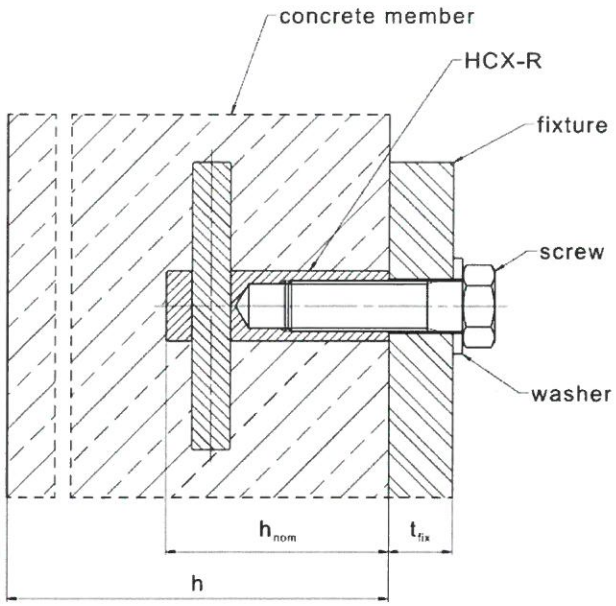
Signed by:

Franc Capuder, M.Sc., Research Engineer

Head of Service of TAB

[1] Official Journal of the European Communities L 254 of 8.10.1996

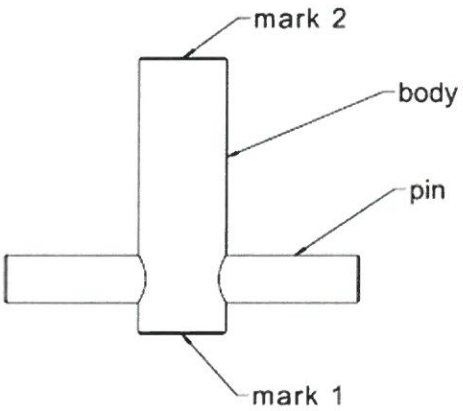
Installed condition



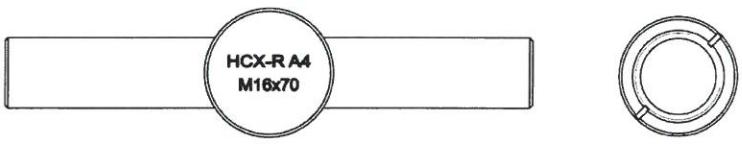
h = thickness of concrete member
t_{fix} = thickness of the fixture
h_{nom} = nominal embedment depth

Product description

Hilti cast-in socket anchor HCX-R



Anchor Marking



mark 1 mark 2

HCX-R Cast-in socket	
Product description Installed condition and marking	**Annex A1**

Table A1: Material for socket

Designation	Material
HCX-R M16	
Anchor body	Stainless Steel A4, $f_{uk} \geq 580$ N/mm², $f_{yk} \geq 420$ N/mm²
Anchor pin	Stainless Steel A4, $f_{uk} \geq 580$ N/mm², $f_{yk} \geq 420$ N/mm²

Table A2: Material for screw (not included with the fixing system)

Designation	Material
M16	
Screw	Stainless Steel A4 – 70 according to EN ISO 898-1

HCX-R Cast-in socket	
Product description Material	**Annex A2**

Specifications of intended use

Anchorages subjected to:

- Static and quasi static loading.
- Fire exposure: only for concrete C20/25 to C50/60.

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206:2013+A1:2016.
- Strength classes C20/25 to C90/105 according to EN 206:2013+A1:2016. However in the calculation of resistance the values of f_{ck} shall not exceed 50 N/mm^2, even the product is casted-in concrete of higher concrete strength.
- Cracked and uncracked concrete.

Use conditions (Environmental conditions):

- Anchorages subject to dry internal conditions and also in structures subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist.
  Note: Particularly aggressive conditions are e.g. permanent alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulfurization plants or road tunnels, where de-icing materials are used).

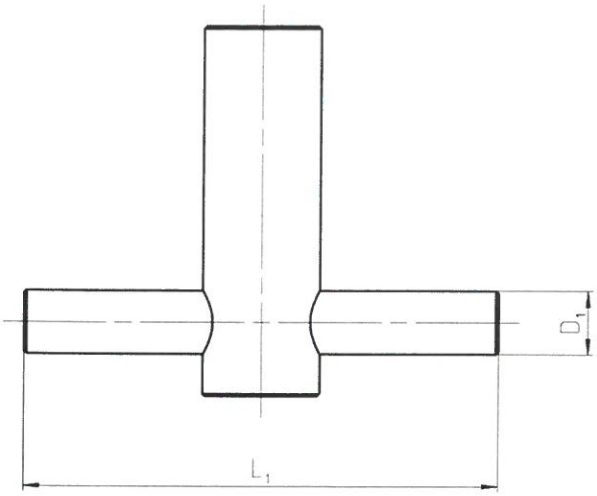
Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports etc.).
- Anchorages under static or quasi-static loading are designed in accordance with CEN/TS 1992-4, part 1 and 2.
- Anchorages under fire exposure are designed in accordance with EOTA TR 020, Edition May 2004.
- The screw is chosen with corresponding screw-in length acc. to Annex B2, Table B1 and with the strength class acc. to Annex C1 and C2 subject to the required steel resistance.with the material according to Annex A2, Table A2.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- The anchors are fixed on the formwork so that no movement of the anchors will occur during the time of laying the reinforcement and of placing and compacting the concrete.
- Adequate compaction close to the anchor particularly at head of the bolt, e.g. without significant voids. The cast-in anchor is protected against ingress of concrete into the threaded socket. Inner area of the socket made of stainless steel is to be protected against oil. The setting torque given in Annex B2 is not exceeded.
- The anchor may only be set once.
- Overhead applications are permitted.

HCX-R Cast-in socket	
Intended use Specifications	**Annex B1**



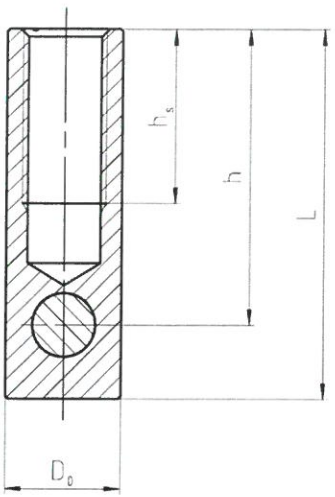


Table A2: Fastener dimensions

HCX-R			M16
Anchor body diameter	D_0	[mm]	22
Anchor Length	L	[mm]	70
Anchor pin diameter	D_1	[mm]	12
Anchor pin position from top	h	[mm]	56
Allowable screwing depth	$h_{s,min}$	[mm]	19
	$h_{s,max}$	[mm]	33
Anchor pin length	L_1	[mm]	90

HCX-R			M16
Nominal embedment depth	h_{nom}	[mm]	70
Effective embedment depth	h_{ef}	[mm]	50
Max. diameter of clearance hole in the fixture	d_f	[mm]	18
Min. thickness of concrete member	h_{min}	[mm]	100
Maximum setting torque	max T_{inst}	[Nm]	≤ 50
Minimum edge distance and spacing	s_{min}	[mm]	150
	c_{min}	[mm]	100

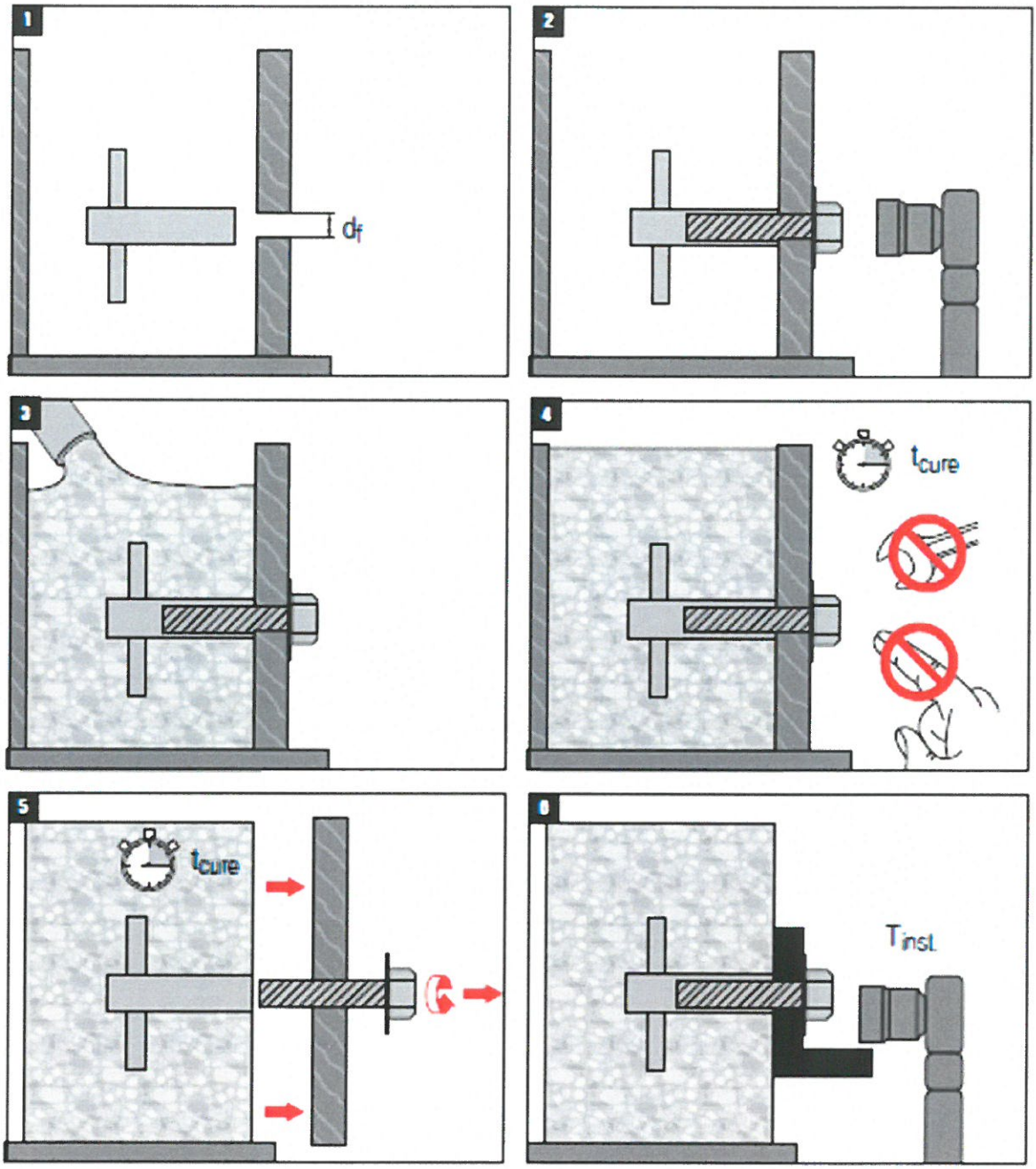
HCX-R Cast-in socket

Intended use

Fastener dimensions and installation parameters

Annex B2

Installation instruction



HCX-R Cast-in socket

Intended use

Installation instruction

Annex B3

Table C1: Characteristic resistance under tension load of static and quasi-static loading

Size			**HCX-R M16**
Effective embedment depth	h_{ef}	[mm]	50
Steel failure, fixing anchor and screw (min. steel strength A4-70) made of stainless steel			
Partial safety factor	γ_{Ms} [1)]	[-]	1,66
Characteristic resistance	$N_{Rk,s}$	[kN]	66,1
Pull-out failure			
Characteristic resistance in concrete C20/25			
Installation safety factor	γ_{inst}	[-]	1,0
Uncracked concrete	$N_{Rk,p,ucr}$	[kN]	- [2)]
Cracked concrete	$N_{Rk,p,cr}$	[kN]	- [2)]
Increasing factor ψ_c	C30/37	[-]	1,22
	C40/50	[-]	1,41
	C50/60	[-]	1,55
Concrete cone and splitting failure			
Installation safety factor	γ_{inst}	[-]	1,0
Factor for uncracked concrete	k_{ucr}	[-]	11,9
Factor for cracked concrete	k_{cr}	[-]	8,5
Spacing	$s_{cr,N}$	[mm]	$3 \cdot h_{ef}$
Edge distance	$c_{cr,N}$	[mm]	$1,5 \cdot h_{ef}$
Spacing (splitting)	$s_{cr,sp}$	[mm]	150
Edge distance (splitting)	$c_{cr,sp}$	[mm]	75

[1)] In absence of other national regulations

[2)] Pull-out failure is not decisive

HCX-R Cast-in socket

Performances

Essential characteristic for HCX-R Cast-in socket under tension loads

Annex C1

ZAVOD ZA GRADBENIŠTVO SLO... LJUBLJANA 17

Table C2: Characteristic resistance under shear load of static and quasi-static loading

Size			**HCX-R M16**
Effective embedment depth	h_{ef}	[mm]	50
Steel failure without lever arm			
Steel failure, fixing anchor and screw (min. steel strength A4-70) made of stainless steel			
Partial safety factor	γ_{Ms} [1)]	[-]	1,56
Ductility factor	k_7	[-]	1,0
Characteristic resistance	$V_{Rk,s}$	[kN]	55,0
Steel failure with lever arm			
Steel failure, fixing anchor and screw (min. steel strength A4-70) made of stainless steel			
Partial safety factor	γ_{Ms} [1)]	[-]	1,56
Ductility factor	k_7	[-]	1,0
Characteristic resistance	$M^0_{Rk,s}$	[kN]	233,2
Concrete pry-out failure			
Pry-out factor	k_8	[-]	1,0
Installation safety factor	γ_{inst}	[-]	1,0
Concrete edge failure			
Effective length of fastener under shear loading	$l_f = h_{ef}$	[mm]	50
Outside diameter of fastener	d_{nom}	[mm]	22
Installation safety factor	γ_{inst}	[-]	1,0

[1)] In absence of other national regulations

HCX-R Cast-in socket

Performances

Essential characteristic for HCX-R Cast-in socket under shear loads

Annex C2

ZAVOD ZA GRADBENIŠTVO SLOVENIJE LJUBLJANA 17

Table C2: Displacement under tension load in case of static and quasi-static loading

Size			HCX-R M16
Effective embedment depth	h_{ef}	[mm]	50
Tension load in uncracked concrete C20/25	N	[kN]	10,0
Displacement	δ_{N0}	[mm]	0,03
	$\delta_{N\infty}$	[mm]	0,06
Tension load in uncracked concrete C50/60	N	[kN]	15,5
Displacement	δ_{N0}	[mm]	0,05
	$\delta_{N\infty}$	[mm]	0,10
Tension load in cracked concrete C20/25	N	[kN]	7,2
Displacement	δ_{N0}	[mm]	0,05
	$\delta_{N\infty}$	[mm]	0,10
Tension load in cracked concrete C50/60	N	[kN]	11,1
Displacement	δ_{N0}	[mm]	0,09
	$\delta_{N\infty}$	[mm]	0,18

Table C4: Displacement under shear load in case of static and quasistatic loading

Size			HCX-R M16
Effective embedment depth	h_{ef}	[mm]	50
Shear load in uncracked concrete C20/25 to C50/60	V	[kN]	25,1
Displacement	δ_{V0}	[mm]	1,16
	$\delta_{V\infty}$	[mm]	1,75

HCX-R Cast-in socket

Performances

Displacements under static or quasi-static loading

Annex C3

Table C5: Characteristic resistance to tension load in in cracked and uncracked concrete under fire exposure[1)]

Size			HCX-R M16
Effective embedment depth	h_{ef}	[mm]	50
Steel failure			
Characteristic resistance	$N_{Rk,s,fi(30)}$	[kN]	4,71
	$N_{Rk,s,fi(60)}$	[kN]	3,93
	$N_{Rk,s,fi(90)}$	[kN]	3,14
	$N_{Rk,s,fi(120)}$	[kN]	2,51
Pull-out failure			
Characteristic resistance ≥ C20/25	$N_{Rk,p,fi(30)}$	[kN]	- [3)]
	$N_{Rk,p,fi(60)}$	[kN]	- [3)]
	$N_{Rk,ps,fi(90)}$	[kN]	- [3)]
	$N_{Rk,p,fi(120)}$	[kN]	- [3)]
Concrete cone and splitting failure [3)]			
Characteristic resistance ≥ C20/25	$N_{Rk,c,fi(30)}$	[kN]	3,76
	$N_{Rk,c,fi(60)}$	[kN]	3,76
	$N_{Rk,c,fi(90)}$	[kN]	3,76
	$N_{Rk,c,fi(120)}$	[kN]	3,01
Characteristic spacing	$s_{cr,N,fi}$	[mm]	$2 \cdot c_{cr,N,fi}$
Characteristic edge distance	$c_{cr,N,fi}$	[mm]	$2 \cdot h_{ef}$

[1)] Design under fire exposure is performed according to the design method given in EOTA TR 020 Under fire exposure usually cracked concrete is assumed. The design equations are given in EOTA TR 020, Section 2.2.1.

[2)] As a rule, splitting failure can be neglected when cracked concrete and reinforcement is assumed.

[3)] Pull-out failure is not decisive.

EOTA TR 020 covers design for fire exposure from one side. For fire attack from more than one side the edge distance must be increased to $c_{min} \geq 300$ mm and $\geq 2 \cdot h_{ef}$.

HCX-R Cast-in socket

Performances

Characteristic resistance to tension load under fire exposure

ZAVOD ZA GRADBENIŠTVO SLOVENIJE LJUBLJANA 17

Annex C4

Table C6: Characteristic resistance to shear load in in cracked and uncracked concrete under fire exposure[1)]

Size			HCX-R M16
Effective embedment depth	h_{ef}	[mm]	50
Steel failure without lever arm			
Characteristic resistance	$V_{Rk,s,fi(30)}$	[kN]	4,71
	$V_{Rk,s,fi(60)}$	[kN]	3,93
	$V_{Rk,s,fi(90)}$	[kN]	3,14
	$V_{Rk,s,fi(120)}$	[kN]	2,51
Steel failure with lever arm			
Characteristic resistance	$M^0_{Rk,s,fi(30)}$	[Nm]	9,99
	$M^0_{Rk,s,fi(60)}$	[Nm]	8,33
	$M^0_{Rk,s,fi(90)}$	[Nm]	6,66
	$M^0_{Rk,s,fi(120)}$	[Nm]	5,33
Concrete pryout failure			
Pryout factor	k_8	[-]	1,0
Characteristic resistance ≥ C20/25	$V_{Rk,cp,fi(30)}$	[kN]	3,75
	$V_{Rk,cp,fi(60)}$	[kN]	3,75
	$V_{Rk,cp,fi(90)}$	[kN]	3,75
	$V_{Rk,cp,fi(120)}$	[kN]	3,01
Concrete edge failure			
Effective length of fastener under shear loading	$l_f = h_{ef}$	[mm]	50
Outside diameter of fastener	d_{nom}	[mm]	22

[1)] Design under fire exposure is performed according to the design method given in EOTA TR 020 Under fire exposure usually cracked concrete is assumed. The design equations are given in EOTA TR 020, Section 2.2.2.

EOTA TR 020 covers design for fire exposure from one side. For fire attack from more than one side the edge distance must be increased to $c_{min} \geq 300$ mm and $\geq 2 \cdot h_{ef}$.

HCX-R Cast-in socket

Performances

Characteristic resistance to shear load under fire exposure

Annex C5

Attn. : To whom it may concern

Date : 19 Aug 2025
Ref. : 176/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 Cheung
Head of Product Leadership Strategy

Hilti (Hong Kong) Ltd.
701-704 | Tower A | Manulife Financial Centre
223 Wai Yip Street | Kwun Tong
Kowloon | Hong Kong
P +852-8228 8118 I **F** +852-2954 1751
www.hilti.com.hk

Ref. no : 177/AM/SC/25
Date : 19 August 2025

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,

Spencer Cheung
Head of Product Leadership Strategy

Hilti (Hong Kong) Ltd.
701-704 & 708A&B | Tower A | Manulife Financial Centre
223 Wai Yip Street | Kwun Tong
Kowloon | Hong Kong
P +852-8228 8118 I **F** +852-2954 1751
www.hilti.com.hk

Hilti HCX Cast-in Socket Job Reference

Year	Project Name	Customer Name	Project type
2021	YAU ON STREET	NISHIMATSU CONSTRUCTION CO LTD	Office
2021	WAI LOK STREET	CHUN YIP ELECTRICAL ENGINEERING	Transport
2021	15-17 NG FONG STREET	AGGRESSIVE CONSTRUCTION COMPANY	Transport
2023	SKY CITY RD E	GAMMON ENGINEERING & CONSTRUCTION	Residential
2023	NGO CHEUNG ROAD	BUILD KING - SK ECOPLANT JOINT	Utilities
2022	HOI WANG RD	WELL PARK CONSTRUCTION LIMITED	Office