



Hilti HSA Wedge Anchor

Submission Folder

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Standard stud anchor HSA



BASE MATERIALS

- Concrete (uncracked)

APPLICATIONS

- Wide range of fastening applications in concrete
- Fastening facade brackets
- Fastening columns and beams
- Fastening brackets and channels

ADVANTAGES

- ETA-approved torquing using SIW 14-A or 22-A impact wrench and S-TB
- Fast and easy anchor setting with HS-SC and S-TB
- Excellent edge and spacing distances
- 3 embedment depths offering maximum flexibility
- Suitable for presetting and through-fastening in uncracked concrete

Approvals

ETA ETA 11/0374 for HSA stud anchor (ETAG 001-02, Option 7)

Approvals and test reports may apply to selected products only. Please refer to the documents for details.



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

Technical data	
Material composition	(Galvanized) Steel, zinc-plated (min. 5 µm); (Hot-dip galvanized) Steel, hot-dip galvanized (min. 5 µm); (Stainless steel) Steel, A4(SS316), A2(SS304)
Head configuration	Externally threaded
Type of fastening	Pre-fastening, Through-fastening
Approvals / test reports	ETA, Fire

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

Model	Size	M6	M8	M10	M12	M16	M20
Standard	Tensile Load, Nrec	40	40	50	65	80	100
	Shear Load, Vrec	40	40	50	65	80	100
HSA	Tensile Load, Nrec	2.5	4.3	6.0	8.8	12.0	16.8
	Shear Load, Vrec	2.2	3.5	6.3	9.8	17.0	28.6
HSA-R/R2	Tensile Load, Nrec	2.5	4.3	6.0	8.8	12.0	16.8
	Shear Load, Vrec	2.4	4.1	7.5	9.8	18.8	30.6

Remarks:

- 1) All the data applies to no edge distance, spacing and other influences
- 2) For detail design method, please refer to Fastening Technology Manual
- 3) Data based on standard embedment depth, please refer to the Hilti Fastening Technology Manual for recommended loads for shallower and deeper embedments

HSA (Galvanized min. 5µm)



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Ordering designation	Anchor size	Anchor length	Drill bit diameter	Drill. hole depth at embed.1	Drill. hole depth at embed.2	Drill. hole depth at embed.3	Fastening thickness at embed.1	Fastening thickness at embed.2	Fastening thickness at embed.3	Base plate clearance hole	Required tightening torque	Sales pack quantity	Item number
HSA M6x50 5/-/-	M6	50 mm	6 mm	42 mm	-	-	5 mm	-	-	7 mm	5 Nm	200 pc	2036084
HSA M6x65 20/10/-	M6	65 mm	6 mm	42 mm	52 mm	-	20 mm	10 mm	-	7 mm	5 Nm	200 pc	2036085
HSA M6x85 40/30/10	M6	85 mm	6 mm	42 mm	52 mm	72 mm	40 mm	30 mm	10 mm	7 mm	5 Nm	100 pc	2036086
HSA M6x100 55/45/25	M6	100 mm	6 mm	42 mm	52 mm	72 mm	55 mm	45 mm	25 mm	7 mm	5 Nm	100 pc	2036087
HSA M8x55 5/-/-	M8	54.5 mm	8 mm	44 mm	-	-	5 mm	-	-	9 mm	15 Nm	100 pc	2004122
HSA M8x70 20/10/-	M8	69.5 mm	8 mm	44 mm	54 mm	-	20 mm	10 mm	-	9 mm	15 Nm	100 pc	2004123
HSA M8x85 35/25/-	M8	84.5 mm	8 mm	44 mm	54 mm	-	35 mm	25 mm	-	9 mm	15 Nm	80 pc	2004124
HSA M8x105 55/45/15	M8	104.5 mm	8 mm	44 mm	54 mm	84 mm	55 mm	45 mm	15 mm	9 mm	15 Nm	50 pc	2004125
HSA M8x130 80/70/40	M8	129.5 mm	8 mm	44 mm	54 mm	84 mm	80 mm	70 mm	40 mm	9 mm	15 Nm	50 pc	2004126 ¹⁾
HSA M10x68 5/-/-	M10	68 mm	10 mm	55 mm	-	-	5 mm	-	-	12 mm	25 Nm	50 pc	2004127
HSA M10x83 20/10/-	M10	83 mm	10 mm	55 mm	65 mm	-	20 mm	10 mm	-	12 mm	25 Nm	50 pc	2004128
HSA M10x98 35/25/-	M10	98 mm	10 mm	55 mm	65 mm	-	35 mm	25 mm	-	12 mm	25 Nm	40 pc	2004129
HSA M10x113 50/40/10	M10	113 mm	10 mm	55 mm	65 mm	95 mm	50 mm	40 mm	10 mm	12 mm	25 Nm	40 pc	2004150
HSA M10x133 70/60/30	M10	133 mm	10 mm	55 mm	65 mm	95 mm	70 mm	60 mm	30 mm	12 mm	25 Nm	25 pc	2004151 ¹⁾
HSA M10x153 90/80/50	M10	153 mm	10 mm	55 mm	65 mm	95 mm	90 mm	80 mm	50 mm	12 mm	25 Nm	25 pc	2004152
HSA M10x168 105/95/65	M10	168 mm	10 mm	55 mm	65 mm	95 mm	105 mm	95 mm	65 mm	12 mm	25 Nm	25 pc	2004153 ¹⁾
HSA M12x85 5/-/-	M12	84.5 mm	12 mm	72 mm	-	-	5 mm	-	-	14 mm	50 Nm	25 pc	2004154
HSA M12x100 20/5/-	M12	99.5 mm	12 mm	72 mm	87 mm	-	20 mm	5 mm	-	14 mm	50 Nm	25 pc	2004155
HSA M12x115 35/20/-	M12	114.5 mm	12 mm	72 mm	87 mm	-	35 mm	20 mm	-	14 mm	50 Nm	25 pc	2004156
HSA M12x145 65/50/15	M12	144.5 mm	12 mm	72 mm	87 mm	122 mm	65 mm	50 mm	15 mm	14 mm	50 Nm	25 pc	2004157
HSA M12x175 95/80/45	M12	174.5 mm	12 mm	72 mm	87 mm	122 mm	95 mm	80 mm	45 mm	14 mm	50 Nm	25 pc	2004158
HSA M12x205 25/110/75	M12	204.5 mm	12 mm	72 mm	87 mm	122 mm	125 mm	110 mm	75 mm	14 mm	50 Nm	25 pc	2004159 ¹⁾
HSA M12x225 45/130/95	M12	224.5 mm	12 mm	72 mm	87 mm	122 mm	145 mm	130 mm	95 mm	14 mm	50 Nm	25 pc	2004160 ¹⁾
HSA M16x102 5/-/-	M16	101.5 mm	16 mm	85 mm	-	-	5 mm	-	-	18 mm	80 Nm	16 pc	2004161
HSA M16x117 20/5/-	M16	116.5 mm	16 mm	85 mm	100 mm	-	20 mm	25 mm	-	18 mm	80 Nm	16 pc	2004162
HSA M16x137 40/25/-	M16	136.5 mm	16 mm	85 mm	100 mm	-	40 mm	25 mm	-	18 mm	80 Nm	16 pc	2004163
HSA M16x182 85/70/30	M16	181.5 mm	16 mm	85 mm	100 mm	140 mm	85 mm	70 mm	30 mm	18 mm	80 Nm	16 pc	2004164
HSA M16x232 35/120/80	M16	231.5 mm	16 mm	85 mm	100 mm	140 mm	135 mm	120 mm	80 mm	18 mm	80 Nm	16 pc	2004165
HSA M20x125 10/-/-	M20	125 mm	20 mm	98 mm	-	-	10 mm	-	-	22 mm	200 Nm	10 pc	2036088
HSA M20x170 55/30/-	M20	170 mm	20 mm	98 mm	123 mm	138 mm	55 mm	30 mm	15 mm	22 mm	200 Nm	10 pc	2036089

¹⁾ For detailed stock availability and lead time information please contact your Hilti representative.

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HSA-F (Hot-dip galvanized min. 35µm)



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Ordering designation	Anchor size	Anchor length	Drill bit diameter	Drilling Hole Depth at embed. 1	Drilling Hole Depth at embed. 2	Drilling Hole Depth at embed. 3	Fastening thickness at embed.1	Fastening thickness at embed.2	Fastening thickness at embed.3	Base plate clearance hole	Required tightening torque	Sales pack quantity	Item number
HSA-F M8x55 5/-/-	M8	54.5 mm	8 mm	44 mm	-	-	5 mm	-	-	9 mm	15 Nm	100 pc	2004113
HSA-F M8x70 20/10/-	M8	69.5 mm	8 mm	44 mm	54 mm	-	20 mm	10 mm	-	9 mm	15 Nm	100 pc	2004114
HSA-F M8x85 35/25/-	M8	84.5 mm	8 mm	44 mm	54 mm	-	35 mm	25 mm	-	9 mm	15 Nm	80 pc	2004115
HSA-F M8x105 55/45/15	M8	104.5 mm	8 mm	44 mm	54 mm	84 mm	55 mm	45 mm	15 mm	9 mm	15 Nm	50 pc	2004116 ¹⁾
HSA-F M8x130 80/70/40	M8	129.5 mm	8 mm	44 mm	54 mm	84 mm	80 mm	70 mm	40 mm	9 mm	15 Nm	50 pc	2004117 ¹⁾
HSA-F M10x68 5/-/-	M10	68 mm	10 mm	55 mm	-	-	5 mm	-	-	12 mm	25 Nm	50 pc	2004118 ¹⁾
HSA-F M10x83 20/10/-	M10	83 mm	10 mm	55 mm	65 mm	-	20 mm	10 mm	-	12 mm	25 Nm	50 pc	2004119
HSA-F M10x98 35/25/-	M10	98 mm	10 mm	55 mm	65 mm	-	35 mm	25 mm	-	12 mm	25 Nm	40 pc	2004170 ¹⁾
HSA-F M10x113 50/40/10	M10	113 mm	10 mm	55 mm	65 mm	95 mm	50 mm	40 mm	10 mm	12 mm	25 Nm	40 pc	2004171
HSA-F M12x85 5/-/-	M12	84.5 mm	12 mm	72 mm	-	-	5 mm	-	-	14 mm	50 Nm	25 pc	2004172
HSA-F M12x100 20/5/-	M12	99.5 mm	12 mm	72 mm	87 mm	-	20 mm	5 mm	-	14 mm	50 Nm	25 pc	2004173
HSA-F M12x115 35/20/-	M12	114.5 mm	12 mm	72 mm	87 mm	-	35 mm	20 mm	-	14 mm	50 Nm	25 pc	2004174
HSA-F M12x145 65/50/15	M12	144.5 mm	12 mm	72 mm	87 mm	122 mm	65 mm	50 mm	15 mm	14 mm	50 Nm	25 pc	2004175
HSA-F M12x225 145/130/95	M12	224.5 mm	12 mm	72 mm	87 mm	122 mm	145 mm	130 mm	95 mm	14 mm	50 Nm	25 pc	2004176 ¹⁾
HSA-F M16x102 5/-/-	M16	101.5 mm	16 mm	85 mm	-	-	5 mm	-	-	18 mm	80 Nm	16 pc	2004177 ¹⁾
HSA-F M16x137 40/25/-	M16	136.5 mm	16 mm	85 mm	100 mm	-	40 mm	25 mm	-	18 mm	80 Nm	16 pc	2004178
HSA-F M16x182 85/70/30	M16	181.5 mm	16 mm	85 mm	100 mm	140 mm	85 mm	70 mm	30 mm	18 mm	80 Nm	16 pc	2004179
HSA-F M20x125 10/-/-	M20	125 mm	20 mm	98 mm	-	-	10 mm	-	-	22 mm	200 Nm	10 pc	2036312 ¹⁾
HSA-F M20x170 55/30/-	M20	170 mm	20 mm	98 mm	123 mm	138 mm	55 mm	30 mm	15 mm	22 mm	200 Nm	10 pc	2036313

¹⁾ For detailed stock availability and lead time information please contact your Hilti representative.

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HSA-R (Stainless steel A4)



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Ordering designation	Anchor size	Anchor length	Drill bit diameter	Drilling Hole Depth at embed. 1	Drilling Hole Depth at embed. 2	Drilling Hole Depth at embed. 3	Fastening thickness at embed.1	Fastening thickness at embed.2	Fastening thickness at embed.3	Base plate clearance hole	Required tightening torque	Sales pack quantity	Item number
HSA-R M6x50 5/-/-	M6	50 mm	6 mm	42 mm	-	-	5 mm	-	-	7 mm	5 Nm	200 pc	2036314
HSA-R M6x65 20/10/-	M6	65 mm	6 mm	42 mm	52 mm	-	20 mm	10 mm	-	7 mm	5 Nm	200 pc	2036315
HSA-R M6x85 40/30/10	M6	85 mm	6 mm	42 mm	52 mm	72 mm	40 mm	30 mm	10 mm	7 mm	5 Nm	100 pc	2036316
HSA-R M8x55 5/-/-	M8	54.5 mm	8 mm	44 mm	-	-	5 mm	-	-	9 mm	15 Nm	100 pc	2004197
HSA-R M8x70 20/10/-	M8	69.5 mm	8 mm	44 mm	54 mm	-	20 mm	10 mm	-	9 mm	15 Nm	100 pc	2004198
HSA-R M8x85 35/25/-	M8	84.5 mm	8 mm	44 mm	54 mm	-	35 mm	25 mm	-	9 mm	15 Nm	80 pc	2004199
HSA-R M8x105 55/45/15	M8	104.5 mm	8 mm	44 mm	54 mm	84 mm	55 mm	45 mm	15 mm	9 mm	15 Nm	50 pc	2004200
HSA-R M10x68 5/-/-	M10	68 mm	10 mm	55 mm	-	-	5 mm	-	-	12 mm	25 Nm	50 pc	2004201
HSA-R M10x83 20/10/-	M10	83 mm	10 mm	55 mm	65 mm	-	20 mm	10 mm	-	12 mm	25 Nm	50 pc	2004202
HSA-R M10x98 35/25/-	M10	98 mm	10 mm	55 mm	65 mm	-	35 mm	25 mm	-	12 mm	25 Nm	40 pc	2004203
HSA-R M10x113 50/40/10	M10	113 mm	10 mm	55 mm	65 mm	95 mm	50 mm	40 mm	10 mm	12 mm	25 Nm	40 pc	2004204
HSA-R M10x133 70/60/30	M10	133 mm	10 mm	55 mm	65 mm	95 mm	70 mm	60 mm	30 mm	12 mm	25 Nm	25 pc	2004205 ¹⁾
HSA-R M10x153 90/80/50	M10	153 mm	10 mm	55 mm	65 mm	95 mm	90 mm	80 mm	50 mm	12 mm	25 Nm	25 pc	2004206 ¹⁾
HSA-R M12x85 5/-/-	M12	84.5 mm	12 mm	72 mm	-	-	5 mm	-	-	14 mm	50 Nm	25 pc	2004207
HSA-R M12x100 20/5/-	M12	99.5 mm	12 mm	72 mm	87 mm	-	20 mm	5 mm	-	14 mm	50 Nm	25 pc	2004208
HSA-R M12x115 35/20/-	M12	114.5 mm	12 mm	72 mm	87 mm	-	35 mm	20 mm	-	14 mm	50 Nm	25 pc	2004209
HSA-R M12x145 65/50/15	M12	144.5 mm	12 mm	72 mm	87 mm	122 mm	65 mm	50 mm	15 mm	14 mm	50 Nm	25 pc	2004210 ¹⁾
HSA-R M12x175 95/80/45	M12	174.5 mm	12 mm	72 mm	87 mm	122 mm	95 mm	80 mm	45 mm	14 mm	50 Nm	25 pc	2004211 ¹⁾
HSA-R M12x205 125/110/75	M12	204.5 mm	12 mm	72 mm	87 mm	122 mm	125 mm	110 mm	75 mm	14 mm	50 Nm	25 pc	2004212 ¹⁾
HSA-R M12x225 145/130/95	M12	224.5 mm	12 mm	72 mm	87 mm	122 mm	145 mm	130 mm	95 mm	14 mm	50 Nm	25 pc	2004213 ¹⁾
HSA-R M16x102 5/-/-	M16	101.5 mm	16 mm	85 mm	-	-	5 mm	-	-	18 mm	80 Nm	16 pc	2004214
HSA-R M16x117 20/5/-	M16	116.5 mm	16 mm	85 mm	100 mm	-	20 mm	25 mm	-	18 mm	80 Nm	16 pc	2004215 ¹⁾
HSA-R M16x137 40/25/-	M16	136.5 mm	16 mm	85 mm	100 mm	-	40 mm	25 mm	-	18 mm	80 Nm	16 pc	2004216
HSA-R M16x182 85/70/30	M16	181.5 mm	16 mm	85 mm	100 mm	140 mm	85 mm	70 mm	30 mm	18 mm	80 Nm	16 pc	2004217
HSA-R M20x125 10/-/-	M20	125 mm	20 mm	98 mm	-	-	10 mm	-	-	22 mm	200 Nm	10 pc	2036317 ¹⁾
HSA-R M20x170 55/30/-	M20	170 mm	20 mm	98 mm	123 mm	138 mm	55 mm	30 mm	15 mm	22 mm	200 Nm	10 pc	2036318 ¹⁾

¹⁾ For detailed stock availability and lead time information please contact your Hilti representative.

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HSA-R2 (Stainless steel A2)



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Ordering designation	Anchor size	Drill bit diameter	Fastening thickness at embed.2	Base plate clearance hole	Required tightening torque	Sales pack quantity	Item number
HSA-R2 M8x70 20/10/-	M8	8 mm	10 mm	9 mm	15 Nm	100 pc	2004218
HSA-R2 M10x83 20/10/-	M10	10 mm	10 mm	12 mm	25 Nm	50 pc	2004219
HSA-R2 M12x100 20/5/-	M12	12 mm	5 mm	14 mm	50 Nm	25 pc	2004220
HSA-R2 M12x115 35/20/-	M12	12 mm	20 mm	14 mm	50 Nm	25 pc	2004221 ¹⁾
HSA-R2 M16x137 40/25/-	M16	16 mm	40 mm	18 mm	80 Nm	16 pc	2004222

¹⁾ For detailed stock availability and lead time information please contact your Hilti representative.

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Torque bar S-TB



APPLICATIONS

- For setting HSA stud anchors with maximum accuracy and productivity

Technical data

Base material	Concrete (uncracked)
Connection end size	12.7 mm
Drive connection	1/2 in square, female

Ordering designation	Drive connection	Drive head	Material coating/plating/finish	Material composition	Tool type	Base material	Connection end size	Sales pack quantity	Item number
S-TB HSA M8	1/2 in square, female	1/2 in, square, male	Black	Impact-grade chrome molybdenum steel	Impact tools, SIW	Concrete (uncracked)	12.7 mm	1 pc	423774
S-TB HSA M10	1/2 in square, female	1/2 in, square, male	Black	Impact-grade chrome molybdenum steel	Impact tools, SIW	Concrete (uncracked)	12.7 mm	1 pc	423775
S-TB HSA M12	1/2 in square, female	1/2 in, square, male	Black	Impact-grade chrome molybdenum steel	Impact tools, SIW	Concrete (uncracked)	12.7 mm	1 pc	423776
S-TB HSA M16	1/2 in square, female	1/2 in, square, male	Black	Impact-grade chrome molybdenum steel	Impact tools, SIW	Concrete (uncracked)	12.7 mm	1 pc	423777

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Setting tool and torque bar



Fleet Management



①



②



Order designation	Description	Outside diameter	Length	Package	Item no.
SIW 14-A 1.6AH	SIW 14-A lithium cordless impact wrench (14.4v 2 batteries, 1 charger) For M8-M12	-	-	1 pc	3485630
SIW 14-A 3.3AH	SIW 14-A lithium cordless impact wrench (14.4v 2 batteries, 1 charger) For M8-M12	-	-	1 pc	3485631
SIW 22T-A 3.3AH	SIW 22T-A lithium cordless impact wrench (21.6v 2 batteries, 1 charger) For M16	-	-	1 pc	3469136
S-TB HSA M8	Torque bar S-TB HSA M8 (For HSA/HSA-R M8)	20 mm	215 mm	1 pc	423774
S-TB HSA M10 ①	Torque bar S-TB HSA M10 (For HSA/HSA-R M10)	26 mm	174 mm	1 pc	423775
S-TB HSA M12	Torque bar S-TB HSA M12 (For HSA/HSA-R M12)	28 mm	174 mm	1 pc	423776
S-TB HSA M16	Torque bar S-TB HSA M16 (For HSA/HSA-R M16)	34 mm	174 mm	1 pc	423777
HS-SC M8-M16 ②	Setting tool HS-SC M8-M16	-	-	1 pc	2051443

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HSA Expansion anchor

Everyday standard expansion anchor for uncracked concrete

Anchor technology & design

Heavy / medium duty metal anchors

Plastic / light duty / other metal anchors

Chemical anchors

Anchor version **Benefits**



HSA
HSA-F
HSA-R
HSA-R2
(M6-M20)

- Small edge and spacing distances
- Three embedment depths for maximal design flexibility
- Fast & convenient setting including approval to torque using impact wrench with torque bar for torque control

Base material **Load conditions**



Uncracked concrete



Static/
quasi-static



Fire
resistance

Installation conditions **Other information**



Hammer
drilled holes



Diamond
drilled holes



Hollow
drill-bit
drilling



Small edge
distance and
spacing



Variable
embedment
depth



European
Technical
Assessment



CE
conformity



PROFIS
Anchor design
software



Corrosion
resistance

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment ^{a)}	DIBt, Berlin	ETA-11/0374 / 2016-08-08
Fire performance	Exova Warringtonfire	WF 327804/A / 2013-07-10

a) All data given in this section according to ETA-11/0374, issue 2016-08-08.

Recommended general notes

* The below clauses based on Hilti product qualifications are for references only. Selection of clauses by the engineer shall be based on the specific application needs. Please contact Hilti's technical team for further details.

- Torque controlled expansion anchor, approved for use in un-cracked concrete
- Anchor shall be approved for installation in 3 embedment depths or setting positions
- The anchor must have European Technical Assessment (ETA); evaluating performance in un-cracked concrete
- Anchor shall have corrosion resistance of min. 5µm galvanization
- Anchor shall have corrosion resistance of A4 stainless steel
- Anchor shall be installed as per the manufacturer's approved procedure and equipment
- Anchor shall be approved for installation using manufacturer approved impact wrench with torque bar
- Anchor shall have identification marks on the bolt head that can be used to verify the anchor material and length during inspection
- The recommended tension load of the anchor should not be not less than __ kN in un-cracked concrete with concrete strength at 25N/mm² (including overall global safety factor=3)
- Effective anchorage depth of the anchor should not exceed __mm

Basic loading data (for a single anchor)

All data in this section applies to:

- Static and quasi-static loading
- Correct setting (see setting instruction)
- No edge distance and spacing influence
- *Steel* failure
- Minimum base material thickness
- Concrete C 20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$. Concrete strength influence factor can be applied when concrete grade > C20/25, when steel failure does not govern.

Effective anchorage depth

Anchor size	M6			M8			M10		
Eff. Anchorage depth h_{ef} [mm]	30	40	60	30	40	70	40	50	80
Anchor size	M12			M16			M20		
Eff. Anchorage depth h_{ef} [mm]	50	65	100	65	80	120	75	100	115

Characteristic resistance

Anchor size	M6			M8			M10			
Eff. Anchorage depth h_{ef} [mm]	30	40	60	30	40	70	40	50	80	
Tension N_{Rk}	HSA, HSA-F ^{a)}	6,0	7,5	9,0	8,3	12,8	16,0	12,8	17,9	25,0
	HSA-R2, HSA-R	6,0	7,5	9,0	8,3	12,8	16,0	12,8	17,9	25,0
Shear V_{Rk}	HSA, HSA-F ^{a)}	6,5	6,5	6,5	8,3	10,6	10,6	18,9	18,9	18,9
	HSA-R2, HSA-R	7,2	7,2	7,2	8,3	12,3	12,3	22,6	22,6	22,6
Anchor size	M12			M16			M20			
Eff. Anchorage depth h_{ef} [mm]	50	65	100	65	80	120	75	100	115	
Tension N_{Rk}	HSA, HSA-F ^{a)}	17,9	26,5	35,0	26,5	36,1	50,0	32,8 ^{a)}	50,5 ^{a)}	62,3 ^{a)}
	HSA-R2, HSA-R	17,9	26,5	35,0	26,5	36,1	50,0	32,8	50,5	62,3
Shear V_{Rk}	HSA, HSA-F ^{a)}	29,5	29,5	29,5	51,0	51,0	51,0	65,6 ^{a)}	85,8 ^{a)}	85,8 ^{a)}
	HSA-R2, HSA-R	29,3	29,3	29,3	56,5	56,5	56,5	65,6	91,9	91,9

a) Data for HSA-F covered by Hilti Technical Data.

Design resistance ^{a)}

Anchor size		M6			M8			M10		
Eff. Anchorage depth	h_{ef} [mm]	30	40	60	30	40	70	40	50	80
Tension	HSA, HSA-F ^{b)}	4,0	5,0	6,0	5,5	8,5	10,7	8,5	11,9	16,7
N_{Rd}	HSA-R2, HSA-R	4,0	5,0	6,0	5,5	8,5	10,7	8,5	11,9	16,7
Shear	HSA, HSA-F ^{b)}	5,2	5,2	5,2	5,5	8,5	8,5	15,1	15,1	15,1
V_{Rd}	HSA-R2, HSA-R	5,5	5,8	5,8	5,5	9,8	9,8	18,1	18,1	18,1
Anchor size		M12			M16			M20		
Eff. Anchorage depth	h_{ef} [mm]	50	65	100	65	80	120	75	100	115
Tension	HSA, HSA-F ^{b)}	11,9	17,6	23,3	17,6	24,1	33,3	21,9 ^{b)}	33,7 ^{b)}	41,5 ^{b)}
N_{Rd}	HSA-R2, HSA-R	11,9	17,6	23,3	17,6	24,1	33,3	21,9	33,7	41,5
Shear	HSA, HSA-F ^{b)}	23,6	23,6	23,6	40,8	40,8	40,8	43,7 ^{b)}	68,6 ^{b)}	68,6 ^{b)}
V_{Rd}	HSA-R2, HSA-R	23,4	23,4	23,4	45,2	45,2	45,2	43,7	73,5	73,5

a) Includes material partial factor according to ETA-11/0374, issue 2016-08-08

b) Data for HSA-F covered by Hilti Technical Data.

Recommended loads ^{a)}

Anchor size		M6			M8			M10		
Eff. Anchorage depth	h_{ef} [mm]	30	40	60	30	40	70	40	50	80
Tension	HSA, HSA-F ^{b)}	2,0	2,5	3,0	2,8	4,3	5,3	4,4	6,0	8,3
N_{Rec}	HSA-R2, HSA-R	2,0	2,5	3,0	2,8	4,3	5,3	4,4	6,0	8,3
Shear	HSA, HSA-F ^{b)}	2,2	2,2	2,2	2,8	3,5	3,5	6,3	6,3	6,3
V_{Rec}	HSA-R2, HSA-R	2,4	2,4	2,4	2,8	4,1	4,1	7,5	7,5	7,5
Anchor size		M12			M16			M20		
Eff. Anchorage depth	h_{ef} [mm]	50	65	100	65	80	120	75	100	115
Tension	HSA, HSA-F ^{b)}	6,0	8,8	11,7	8,8	12,0	16,7	11,0	16,8	20,8
N_{Rec}	HSA-R2, HSA-R	6,0	8,8	11,7	8,8	12,0	16,7	11,0	16,8	20,8
Shear	HSA, HSA-F ^{b)}	9,8	9,8	9,8	17,0	17,0	17,0	21,9	28,6	28,6
V_{Rec}	HSA-R2, HSA-R	9,8	9,8	9,8	18,8	18,8	18,8	21,9	30,6	30,6

a) Includes global safety factor of 3.0

b) Data for HSA-F covered by Hilti Technical Data.

Materials




Mechanical properties

Anchor size		M6	M8	M10	M12	M16	M20
Nominal tensile strength $f_{uk,thread}$	HSA, HSA-F [N/mm ²]	650	580	650	700	650	700
	HSA-R2, HSA-R	650	560	650	580	600	625
Yield strength $f_{yk,thread}$	HSA, HSA-F [N/mm ²]	520	464	520	560	520	560
	HSA-R2, HSA-R	520	448	520	464	480	500
Stressed cross-section A_s	[mm ²]	20,1	36,6	58	84,3	157	245
Moment of resistance W	[mm ³]	12,7	31,2	62,3	109,2	277,5	540,9
Char. bending resistance $M_{Rk,s}^0$	HSA, HSA-F [Nm]	9,9	21,7	48,6	91,7	216,4	454,4
	HSA-R2, HSA-R	9,9	21	48,6	76	199,8	405,7

Material quality

Part	Material	
HSA (Carbon steel)	Bolt	Galvanized ($\geq 5 \mu\text{m}$)
	Sleeve	Galvanized ($\geq 5 \mu\text{m}$)
	Washer	Galvanized ($\geq 5 \mu\text{m}$)
	Hexagon nut	Strength class 8 / Galvanized ($\geq 5 \mu\text{m}$)
HSA-R2 (Stainless steel)	Bolt	Stainless steel A2, 1.4301 or 1.4162; M6-M20 coated
	Sleeve	Stainless steel A2, 1.4301 or 1.4404
	Washer	Stainless steel A2
	Hexagon nut	Stainless steel A2; / M6-M20 coated
HSA-R (Stainless steel)	Bolt	Stainless steel A4, 1.4301 or 1.4162 / M6-M20 coated
	Sleeve	Stainless steel A2, 1.4301 or 1.4404
	Washer	Stainless steel A4
	Hexagon nut	Stainless steel A4; / M6-M20 coated
HSA-F (Carbon steel)	Bolt	Stainless steel A2, 1.4301; Rupture elongation $A_5 > 8\%$; Hot-dip galvanized ($\geq 42 \mu\text{m}$)
	Sleeve	Stainless steel A2, 1.4301 / Hot-dip galvanized ($\geq 42 \mu\text{m}$)
	Washer	Hot-dip galvanized ($\geq 42 \mu\text{m}$)
	Hexagon nut	Strength class 8 / Hot-dip galvanized ($\geq 42 \mu\text{m}$)

Material code for identification of different materials

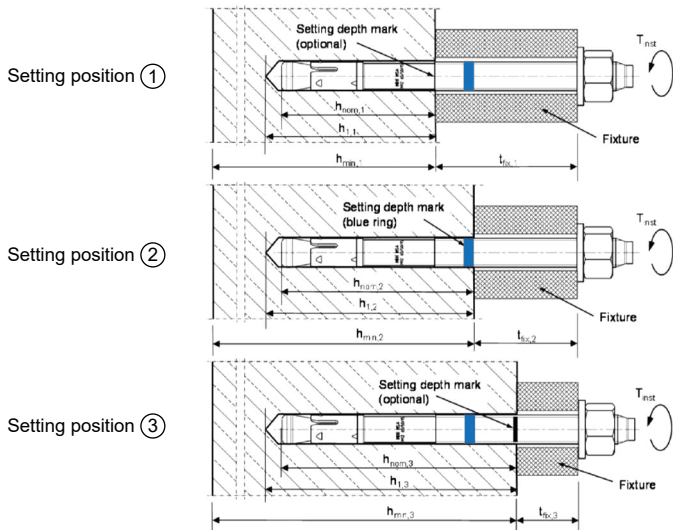
Type	HSA, HSA-F (carbon steel)	HSA-R2 (Stainless steel grade A2)	HSA-R (stainless steel grade A4)
Material code			
	Letter code without mark	Letter code with two marks	Letter code with three marks

Letter code for anchor length and maximum thickness of the fixture $t_{fix}^{a)}$

Type	HSA, HSA-BW, HSA-R2, HSA-R, HSA-F					
Size	M6	M8	M10	M12	M16	M20
h_{nom} [mm]	37 / 47 / 67	39 / 49 / 79	50 / 60 / 90	64 / 79 / 114	77 / 92 / 132	90 / 115 / 130
Letter	t_{fix}					
	$t_{fix,1}/t_{fix,2}/t_{fix,3}$	$t_{fix,1}/t_{fix,2}/t_{fix,3}$	$t_{fix,1}/t_{fix,2}/t_{fix,3}$	$t_{fix,1}/t_{fix,2}/t_{fix,3}$	$t_{fix,1}/t_{fix,2}/t_{fix,3}$	$t_{fix,1}/t_{fix,2}/t_{fix,3}$
z	5/-/-	5/-/-	5/-/-	5/-/-	5/-/-	5/-/-
y	10/-/-	10/-/-	10/-/-	10/-/-	10/-/-	10/-/-
x	15/5/-	15/5/-	15/5/-	15/5/-	15/5/-	15/5/-
w	20/10/-	20/10/-	20/10/-	20/5/-	20/5/-	20/5/-
v	25/15/-	25/15/-	25/15	25/10/-	25/10/-	25/10/-
U	30/20/-	30/20/-	30/20/-	30/15/-	30/15/-	30/5/-
T	35/25/5	35/25/-	35/25/-	35/20/-	35/20/-	35/10/-
s	40/30/10	40/30/-	40/30/-	40/25/-	40/25/-	40/15/-
r	45/35/15	45/35/5	45/35/5	45/30/-	45/30/-	45/20/5
q	50/40/20	50/40/10	50/40/10	50/35/-	50/35/-	50/25/10
p	55/45/25	55/45/15	55/45/15	55/40/5	55/40/-	55/30/15
o	60/50/30	60/50/20	60/50/20	60/45/10	60/45/5	60/35/20
n	65/55/35	65/55/25	65/55/25	65/50/15	65/50/10	65/40/25
m	70/60/40	70/60/30	70/60/30	70/55/20	70/55/15	70/45/30
l	75/65/45	75/65/35	75/65/35	75/60/25	75/60/20	75/50/35
k	80/70/50	80/70/40	80/70/40	80/65/30	80/65/25	80/55/40
j	85/75/55	85/75/45	85/75/45	85/70/35	85/70/30	85/60/45
i	90/80/60	90/80/50	90/80/50	90/75/40	90/75/35	90/65/50
h	95/85/65	95/85/55	95/85/55	95/80/45	95/80/40	95/70/55
g	100/90/70	100/90/60	100/90/60	100/85/50	100/85/45	100/75/60
f	105/95/75	105/95/65	105/95/65	105/90/55	105/90/50	105/80/65
e	110/100/80	110/100/70	110/100/70	110/95/60	110/95/55	110/85/70
d	115/105/85	115/105/75	115/105/75	115/100/65	115/100/60	115/90/75
c	120/110/90	120/110/80	120/110/80	125/110/75	120/105/65	120/95/80
b	125/115/95	125/115/85	125/115/85	135/120/85	125/110/70	125/100/85
a	130/120/100	130/120/90	130/120/90	145/130/95	135/120/80	130/105/90

a) Please refer to the product catalogue on the Hilti Hong Kong website for standard portfolio. Anchor length in bold type are standard items for selection of other anchor length, check availability of the items

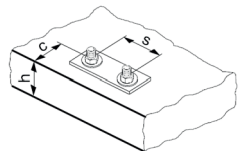
Setting information



Setting parameters

Anchor size		M6			M8			M10		
Nominal anchorage depth	h_{nom} [mm]	37	47	67	39	49	79	50	60	90
Minimum base material thickness	h_{min} [mm]	100	100	120	100	100	120	100	120	160
Minimum spacing	s_{min}	35	35	35	35	35	35	50	50	50
Minimum edge distance	c_{min}	35	35	35	40	35	35	50	40	40
Nominal diameter of drill bit	d_0	6			8			10		
Cutting diameter of drill bit	$d_{cut} \leq$	6,4			8,45			10,45		
Depth of drill hole	$h_1 \geq$	42	52	72	44	54	84	55	65	95
Diameter of clearance hole in the fixture	$d_f \leq$	7			9			12		
Torque moment	T_{inst}	5			15			25		
Width across	SW	10			13			17		
Anchor size		M12			M16			M20		
Nominal anchorage depth	h_{nom} [mm]	64	79	114	77	92	132	90	115	130
Minimum base material thickness	h_{min} [mm]	100	140	180	140	160	180	160	220	220
Minimum spacing	s_{min}	70	70	70	90	90	90	195	175	175
Minimum edge distance	c_{min}	70	65	55	80	75	70	130	120	120
Nominal diameter of drill bit	d_0	12			16			20		
Cutting diameter of drill bit	$d_{cut} \leq$	12,5			16,5			20,55		
Depth of drill hole	$h_1 \geq$	72	87	122	85	100	140	98	123	138
Diameter of clearance hole in the fixture	$d_f \leq$	14			18			22		
Torque moment	T_{inst}	50			80			200		
Width across	SW	19			24			30		

For spacing (edge distance) smaller than critical spacing (critical edge distance) the design loads have to be reduced.



Installation equipment

Anchor size		M6	M8	M10	M12	M16	M20	
Rotary hammer		TE2 – TE16					TE40 – TE80	
Other tools		hammer, torque wrench, blow out pump						
Machine tightening								
Setting tool		-	S-TB HSA				-	
Impact screw driver		-	Hilti S/W 14-A Hilti S/W 22-A			Hilti S/W 22T-A	-	
Speed	HAS, HAS-BW, HAS-F	-	1		3	- a)	-	
	HAS-R2, HAS-R	-	3				-	
Setting time t_{set} [sec]		-	4				-	

a) The impact screw driver operates with a fixed speed

Setting parameters

Anchor size		M6			M8			M10		
Nominal anchorage depth	h_{nom} [mm]	37	47	67	39	49	79	50	60	90
Effective anchorage depth	h_{ef} [mm]	30	40	60	30	40	70	40	50	80
Critical spacing for splitting failure	$s_{cr,sp}$	100	120	130	130	180	200	190	210	290
Critical edge distance for splitting failure	$c_{cr,sp}$	50	60	65	65	90	100	95	105	145
Critical spacing for concrete cone failure	$s_{cr,N}$	90	120	180	90	120	210	120	150	240
Critical edge distance for concrete cone failure	$c_{cr,N}$	45	60	90	45	60	105	60	75	120
Anchor size		M12			M16			M20		
Nominal anchorage depth	h_{nom} [mm]	64	79	114	77	92	132	90	115	130
Effective anchorage depth	h_{ef} [mm]	50	65	100	65	80	120	75	100	115
Critical spacing for splitting failure	$s_{cr,sp}$	200	250	310	230	280	380	260	370	400
Critical edge distance for splitting failure	$c_{cr,sp}$	100	125	155	115	140	190	130	185	200
Critical spacing for concrete cone failure	$s_{cr,N}$	150	195	300	195	240	360	225	300	345
Critical edge distance for concrete cone failure	$c_{cr,N}$	75	97,5	150	97,5	120	180	112,5	150	172,5

Setting instructions

* For detailed information on installation see instruction for use given with the package of the product

1. Hole drilling	
Hammer drilling (HD): M6-M20 	Diamond drilling (DD): M10-M20
2. Cleaning	
Manual cleaning (MC): M6-M20 	Automatic cleaning (AC): M12-M20
3. Anchor setting	
Manual setting (MC): M6-M20 	Machine setting (impact screw driver with setting tool): M8-M16
4. Check setting	
5. Anchor torqueing	
Manual cleaning (MC): M6-M20 	Impact screw driver with setting tool: M8-M16

Attn. : To whom it may concern

Date : 3 April 2023
Ref. : 022/FP/DY/23

Subject : Country of Origin - Hilti HSA WEDGE ANCHOR

Dear Sir / Madam,

Enclosed please find the information of Hilti HSA WEDGE ANCHOR.

Brand Name : Hilti

Manufacturer : Hilti Corporation

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

Manufacturer Contact Person : Dennis Yeung

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 : Dennis Yeung (+852 9723 4621)

Country of Origin : *(Attached)*

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,



Dennis Yeung
Head of Product Leadership Strategy, F&P

Item number	Model Name	Country of Origin	
2004113	Stud anchor HSA-F M8x55 5/-/-	China	
2004114	Stud anchor HSA-F M8x70 20/10/-		
2004115	Stud anchor HSA-F M8x85 35/25/-		
2004118	Stud anchor HSA-F M10x68 5/-/-		
2004119	Stud anchor HSA-F M10x83 20/10/-		
2004122	Stud anchor HSA M8x55 5/-/-		
2004123	Stud anchor HSA M8x70 20/10/-		
2004124	Stud anchor HSA M8x85 35/25/-		
2004125	Stud anchor HSA M8x105 55/45/15		
2004126	Stud anchor HSA M8x130 80/70/40		
2004127	Stud anchor HSA M10x68 5/-/-		
2004128	Stud anchor HSA M10x83 20/10/-		
2004129	Stud anchor HSA M10x98 35/25/-		
2004150	Stud anchor HSA M10x113 50/40/10		
2004151	Stud anchor HSA M10x133 70/60/30		
2004152	Stud anchor HSA M10x153 90/80/50		
2004153	Stud anchor HSA M10x168 105/95/65		
2004154	Stud anchor HSA M12x85 5/-/-		
2004155	Stud anchor HSA M12x100 20/5/-		
2004156	Stud anchor HSA M12x115 35/20/-		
2004157	Stud anchor HSA M12x145 65/50/15		
2004158	Stud anchor HSA M12x175 95/80/45		
2004159	Stud anchor HSA M12x205 125/110/75		
2004160	Stud anchor HSA M12x225 145/130/95		
2004161	Stud anchor HSA M16x102 5/-/-		
2004162	Stud anchor HSA M16x117 20/5/-		
2004163	Stud anchor HSA M16x137 40/25/-		
2004164	Stud anchor HSA M16x182 85/70/30		
2004165	Stud anchor HSA M16x232 135/120/80		
2004170	Stud anchor HSA-F M10x98 35/25/-		Liechtenstein
2004171	Stud anchor HSA-F M10x113 50/40/10		China
2004172	Stud anchor HSA-F M12x85 5/-/-		
2004173	Stud anchor HSA-F M12x100 20/5/-		
2004174	Stud anchor HSA-F M12x115 35/20/-		
2004175	Stud anchor HSA-F M12x145 65/50/15		
2004176	Stud anchor HSA-F M12x225 145/130/95		
2004177	Stud anchor HSA-F M16x102 5/-/-		
2004178	Stud anchor HSA-F M16x137 40/25/-		
2004179	Stud anchor HSA-F M16x182 85/70/30		
2004197	Stud anchor HSA-R M8x55 5/-/-	Liechtenstein	
2004198	Stud anchor HSA-R M8x70 20/10/-		
2004199	Stud anchor HSA-R M8x85 35/25/-		
2004200	Stud anchor HSA-R M8x105 55/45/15		
2004201	Stud anchor HSA-R M10x68 5/-/-		
2004202	Stud anchor HSA-R M10x83 20/10/-		
2004203	Stud anchor HSA-R M10x98 35/25/-		

2004204	Stud anchor HSA-R M10x113 50/40/10	Liechtenstein
2004205	Stud anchor HSA-R M10x133 70/60/30	
2004206	Stud anchor HSA-R M10x153 90/80/50	
2004207	Stud anchor HSA-R M12x85 5/-/-	
2004208	Stud anchor HSA-R M12x100 20/5/-	
2004209	Stud anchor HSA-R M12x115 35/20/-	
2004210	Stud anchor HSA-R M12x145 65/50/15	
2004211	Stud anchor HSA-R M12x175 95/80/45	
2004212	Stud anchor HSA-R M12x205 125/110/75	
2004213	Stud anchor HSA-R M12x225 145/130/95	
2004214	Stud anchor HSA-R M16x102 5/-/-	
2004215	Stud anchor HSA-R M16x117 20/5/-	
2004216	Stud anchor HSA-R M16x137 40/25/-	
2004217	Stud anchor HSA-R M16x182 85/70/30	
2004218	Stud anchor HSA-R2 M8x70 20/10/-	
2004219	Stud anchor HSA-R2 M10x83 20/10/-	
2004220	Stud anchor HSA-R2 M12x100 20/5/-	
2004221	Stud anchor HSA-R2 M12x115 35/20/-	
2004222	Stud anchor HSA-R2 M16x137 40/25/-	
2036084	Stud anchor HSA M6x50 5/-/-	
2036085	Stud anchor HSA M6x65 20/10/-	
2036086	Stud anchor HSA M6 x 85 40/30/10	
2036087	Stud anchor HSA M6x100 55/45/25	
2036088	Stud anchor HSA M20x125 10/-/-	
2036089	Stud anchor HSA M20x170 55/30/15	
2036312	Stud anchor HSA-F M20x125 10/-/-	
2036313	Stud anchor HSA-F M20x170 55/30/15	
2036314	Stud anchor HSA-R M6x50 5/-/-	
2036315	Stud anchor HSA-R M6x65 20/10/-	
2036316	Stud anchor HSA-R M6x85 40/30/10	
2036317	Stud anchor HSA-R M20x125 10/-/-	
2036318	Stud anchor HSA-R M20x170 55/30/15	



Hilti HSA Wedge Anchor Job Reference

Year	Project Name	Customer Name	Project type
2020	6-8 LAI YING ST, NKIL 6549	CHINA OVERSEAS BUILDING	Residential
2020	KAI TAK AREA 1L1 (6564)	GAMMON ENGINEERING & CONSTRUCTION	Residential
2020	CHAI WAN RD HOUSING	EASY SMART ENGINEERING LIMITED	Residential
2020	Refurbishment - Residential - 14 & 16 Tai Yuen Street, Wan Chai	FUJITEC (HK) COMPANY LIMITED	Residential
2020	TKO LOHAS PARK PH9 (SITE J)	GAMMON ENGINEERING & CONSTRUCTION	Residential
2020	OCEAN PARK- FULLERTON HOTEL	GAMMON CONSTRUCTION LIMITED	Hospitality
2020	1-11 AU PUI WAN ST, FO TAN	CHINA OVERSEAS BUILDING	Residential
2020	6 SCIENCE PARK WEST AVE A&A	ASIA PIONEER ENGINEERING LIMITED	Education
2020	TKO LOHAS PARK PH10	CHINA OVERSEAS BUILDING	Residential
2020	HKIA AIRPORT SKYCITY REGAL HOTEL	BIEN ENGINEERING COMPANY LIMITED	Hospitality
2021	Refurbishment - Residential - 14 & 16 Tai Yuen Street, Wan Chai	FUJITEC (HK) COMPANY LIMITED	Residential
2021	KAI TAK AREA 1L2 (6563)	GAMMON ENGINEERING & CONSTRUCTION	Residential
2021	AREA 54 TUNG CHUNG HOUSING	AGGRESSIVE CONSTRUCTION COMPANY	Residential
2021	6-8 LAI YING ST, NKIL 6549	CHINA OVERSEAS BUILDING	Residential
2021	CHUN YAT ST & CHUN CHEONG ST AMC	GAMMON CONSTRUCTION LIMITED	Office
2021	1-11 AU PUI WAN ST, FO TAN	CHINA OVERSEAS BUILDING	Residential
2021	6 SCIENCE PARK WEST AVE A&A	ASIA PIONEER ENGINEERING LIMITED	Education
2021	KAI TAK INLAND REVENUE TOWER	OTIS ELEVATOR COMPANY	Office
2021	HKIA 3508 TERMINAL 2	EASY SMART ENGINEERING LIMITED	Transport
2021	EAST KOWLOON CULTURAL CENTRE		Community & Cultural
2022	HKIA 3508 TERMINAL 2	EASY SMART ENGINEERING LIMITED	Transport
2022	LUNG CHEUNG RD, NKIL 6579	GAMMON ENGINEERING & CONSTRUCTION	Residential
2022	TKO LOHAS PARK PH11 (SITE C2)	GAMMON ENGINEERING & CONSTRUCTION	Residential
2022	TUEN MUN AREA 54 HOUSING SITE 5	KONE ELEVATOR (HK) LIMITED	Community & Cultural
2022	46-56 QUEEN'S RD EAST, 1-11 LANDALE ST & 2-12 ANTON ST	GAMMON ENGINEERING & CONSTRUCTION	Office
2022	KAI TAK AREA 1F SITE 2, NKIL 6556	MITSUBISHI ELEVATOR HONG KONG	Office
2022	HO MAN TIN STATION RES (PACKAGE 2)	GAMMON ENGINEERING & CONSTRUCTION	Infrastructure
2022	TKO LOHAS PARK PH12 (SITE D)	GAMMON ENGINEERING & CONSTRUCTION	Residential
2022	IMMIGRATION HEADQUARTERS, TKO	OTIS ELEVATOR COMPANY	Office
2022	KAI TAK SPORTS PARK	POWER ENGINEERING COMPANY	Sport & Recreation
2023	HO MAN TIN STATION RES (PACKAGE 2)	GAMMON ENGINEERING & CONSTRUCTION	Infrastructure
2023	TKO LOHAS PARK PH12 (SITE D)	GAMMON ENGINEERING & CONSTRUCTION	Residential
2023	TKO LOHAS PARK PH11 (SITE C2)	GAMMON ENGINEERING & CONSTRUCTION	Residential
2023	KAI TAK SPORTS PARK	EASY SMART ENGINEERING LIMITED	Sport & Recreation
2023	KAI TAK AREA 4A, SITE 2, NKIL 6554	KONE ELEVATOR (HK) LIMITED	Residential
2023	TPTL 244, YAU KING LANE & POK YIN RD	SHUN TUNG ENGINEERING CO LTD	Residential
2023	TUEN MUN AREA 54 HOUSING SITE 5	KONE ELEVATOR (HK) LIMITED	Community & Cultural
2023	HKIA 3508 TERMINAL 2	GAMMON ENGINEERING & CONSTRUCTION	Transport
2023	UNITED CHRISTIAN HOSPITAL	HIN TAT ENGINEERING LIMITED	Health
2023	TUEN MUN AREA 29 WEST - PUBLIC HOUSING	KONE ELEVATOR (HK) LIMITED	Residential