

DAEHAN BOLT

Only play with ahead technology and quality



Only Play with Ahead
The Technology And Quality
Since 1987



[Company History]



[KS ISO certified business]



[INNO-BIZ Corporation]

1999. 02. Registration "D.H" trade mark-KIPO

2011. 02.

2012. 05.

2012. 11.

Acquisition the patent(auto supply a shifter feeder of Compulsory set screw matter)-KIPO
Acquisition the patent(APPARATUS FOR COLD-FORGING OF A BOLT, IN WHICH AN UPPER MOLD BODY CAN BE EASILY CHANGED)-KIPO
Acquisition the patent(BOLT IN SETTING DEVICE CAPABLE OF INSERTING A NON-COLORED BOLT TO CIRCUMFERENTIAL SURFACE OF THE BOLT)-KIPO

1997. 01. Founding of DAEHANBOLT

[Certifications]



- 2001. 09. ISO/KS A 9001 Certification
- 2003. 04. Gyeongsan mayor award
- 2006. 10. Founding of DAEHANBOLT CO., LTD(investment in kind)
- 2008. 06. Acquired material / component specialized company official letter
- 2009. 10. Enlist in KSA member
- 2009. 11. Acquisition KS product certificate(hexagonal headed bolt/hexagon socket head cap bolt)
- 2010. 05. Acquisition Main-biz official letter-SMBA
- 2010. 06. Acquisition the Approval for R&D lab-Gyeong-IL univ. Acquisition INNO-biz official letter-SMBA
- 2010. 08. KS Q ISO 9001:2009 & ISO 9001:2008 Renewal the certificate(KSA) Acquisition INNO-biz official letter-SMBA
- 2010. 12. Relocation the new factory
Mass-production for hexagonal headed bolt/hexagon socket head cap bolt





Creative DAEHAN, Global DAEHAN...DAEHAN BOLT Corporation

Message from the President

As a specialized company by the production of industrial bolts, DaehanBolt Corporation, since its foundation in 1987, has challenged to make the first class bolt production and Zero defect with the management policy "to think cost innovation, to do the best productivity, and to make the best of quality"

and to enhance to be the first class product production, we produced a large bolt with a cold forging method at the first time in this area.

Moreover, we provide the customer with the first class product by establishing the high quality mass-production system which is obtained by continuing capacity expansion and new proprietary technologies and R&D investment.

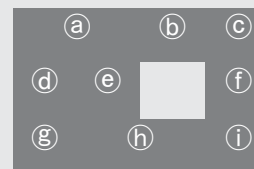
We provide the customer with the best of quality based on establishment of future-oriented management system, the customer creation and broadening the marketing activities

We will be 100 years company with customer by the certification, patents acquisition, R&D lab operation, academic-industrial cooperation contract.

We appreciate your support and developing new technology and products. We will continually be a great company.

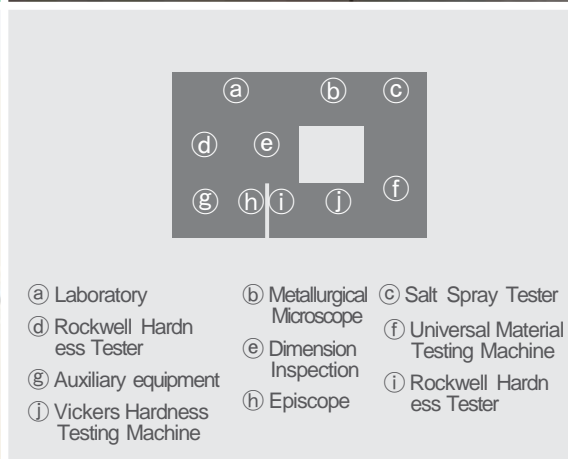
Thank you.

CEO SEOK-GYU CHOI



- a Company b Pool hall c Showroom
 d Production A e Production B f Parlor
 g Production C h Bolt former i Health club





- a Laboratory
- b Metallurgical Microscope
- c Salt Spray Tester
- d Rockwell Hardness Tester
- e Dimension Inspection
- f Universal Material Testing Machine
- g Auxiliary equipment
- h Episcopes
- i Rockwell Hardness Tester
- j Vickers Hardness Testing Machine

■ 2factory foreground(Quenching&Tempering)

Highest heat treatment facilities and the
best heat treatment technology,
To continuously practice to impress customers.



■ 2factory(Quenching&Tempering)



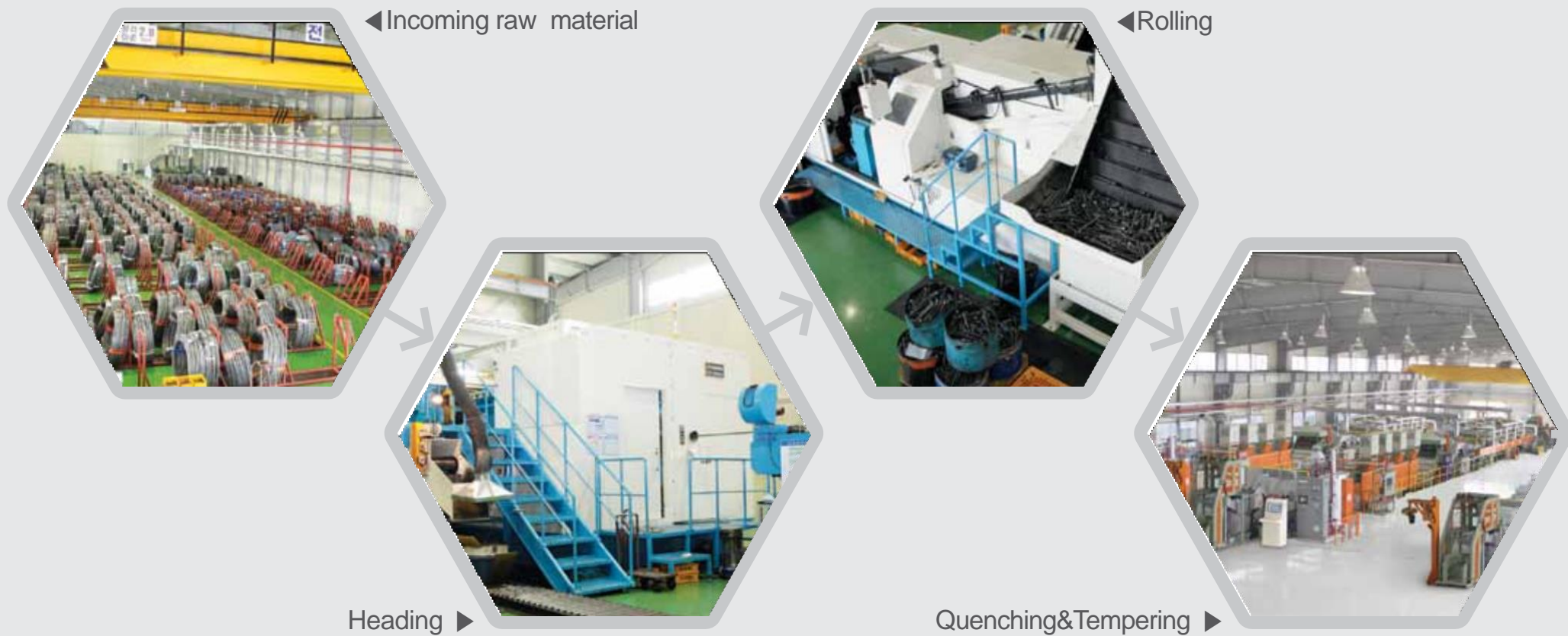
■ Continuous Heat Treatment (Electrothermal Mesh Belt Type)

Heat Treatment Size	47m
Production Capacity	1,000kg/hr Gross
Heat Treatment	Quenching & Tempering



Automatic machine control system

Fabrication Process



Coloring/Anticorrision ▶



Packing ▶



◀ Product inspection (appearance/
mechanical property)



◀ Delivery

Product Introduction



Hex socket head cap screws
[P 13]



Hexagon head sc
[P 15]



Heavy Hex screws
[P 19]



Hexagon head screws
with captive washer
[P 21]



Hexagon socket thin head
cap screws
[P 22]



Hexagon socket flat head
cap screws
[P 23]



Hexagon socket button head
screws
[P 24]



Hexagon socket set screws
[P 25]



Hexagon flange bolts
[P 27]



Hexagon wrench tapered
plug-A/B
[P 29]



No head bearing / MSW
[P 29]



Washer assembling bolt
[P 29]



STSHexagon/ Hexagon
computation4T
[P 30]



Cross plate bead bolt /
Cross Hexagonh bolt
[P 30]

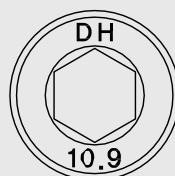
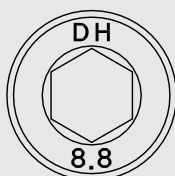
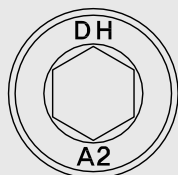


Kinesthesia bolt
[P 30]

Hexagon socket head cap screws

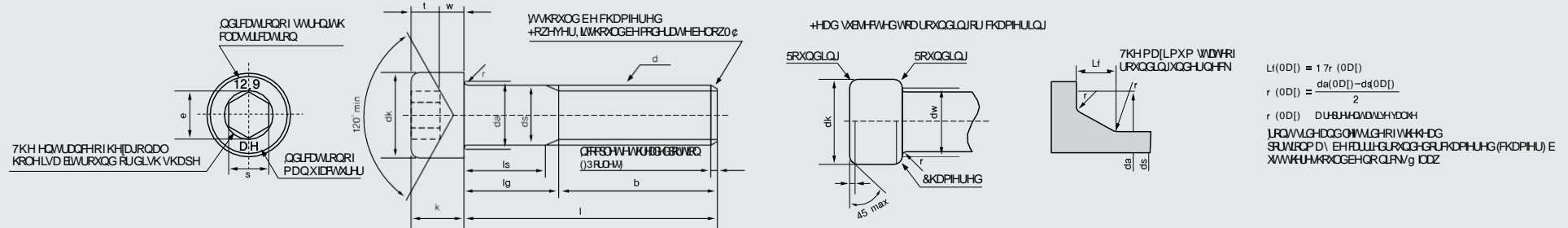
■ Specification

Strength	12.9	Normal	Sten
Quality	SCM435	CHQ 10A	STS304
Hardness	39~44	-	-
Remarks	Black oxide film nickel-plated	Black oxide film nickel-plated	Washing



■ Property classification 8.8 / 9.8 / 10.9 Order production is available

Product standard (KS B 1003)



Name of the screw (d)	Pitch of the screw (P)		dk			da	ds		e	f	k		r	s				t	v	dw	w
	Normal	Fine Thread	Maximum ¹⁾	Maximum ²⁾	Minimum	Maximum	Maximum (Reference dimension)	Maximum	Minimum	Maximum (Reference dimension)	Minimum	Minimum	Name (Reference dimension)	Minimum	Minimum		Minimum	Maximum	Minimum	Minimum	
															First blank	Second blank					
M1.6	0.35		3	3.14	2.86	2	1.6	1.46	1.73	0.34	1.6	1.46	0.1	1.5	1.52	1.560	1.545	0.7	0.16	2.72	0.55
M2	0.4		3.8	3.98	3.62	2.6	2	1.86	1.73	0.51	2	1.86	0.1	1.5	1.52	1.560	1.545	1	0.2	3.48	0.55
M2.5	0.45		4.5	4.68	4.32	3.1	2.5	2.36	2.30	0.51	2.5	2.36	0.1	2	2.02	2.060	2.045	1.1	0.25	4.18	0.85
M3	0.5		5.5	5.68	5.32	3.6	3	2.86	2.87	0.51	3	2.86	0.1	2.5	2.52	2.580	2.560	1.3	0.3	5.07	1.15
M4	0.7		7	7.22	6.78	4.7	4	3.82	3.44	0.60	4	3.82	0.2	3	3.02	3.080	3.071	2	0.4	6.53	1.4
M5	0.8		8.5	8.72	8.28	5.7	5	4.82	4.58	0.60	5	4.82	0.2	4	4.02	4.095	4.084	2.5	0.5	8.03	1.9
M6	1		10	10.22	9.78	6.8	6	5.82	5.72	0.68	6	5.70	0.25	5	5.02	5.140	5.084	3	0.6	9.38	2.3
M8	1.25	1	13	13.27	12.73	9.2	8	7.78	6.86	1.02	8	7.64	0.4	6	6.02	6.140	6.095	4	0.8	12.33	3.3
M10	1.5	1.25	16	16.27	15.73	11.2	10	9.78	9.15	1.02	10	9.64	0.4	8	8.025	8.175	8.115	5	1	15.33	4
M12	1.75	1.5/1.25	18	18.27	17.73	13.7	12	11.73	11.43	1.45	12	11.57	0.6	10	10.025	10.175	10.115	6	1.2	17.23	4.8
M14	2	1.5	21	21.33	20.67	15.7	14	13.73	13.72	1.45	14	13.57	0.6	12	12.032	12.212	12.142	7	1.4	20.17	5.8
M16	2	1.5	24	24.33	23.67	17.7	16	15.73	16.00	1.45	16	15.57	0.6	14	14.032	14.212	14.142	8	1.6	23.17	6.8
M18	2.5	1.5	27	27.33	26.67	20.2	18	17.73	16.00	1.87	18	17.57	0.6	14	14.032	14.212	14.142	9	1.8	25.87	7.7
M20	2.5	1.5	30	30.33	29.67	22.4	20	19.67	19.44	2.04	20	19.48	0.8	17	17.050	17.230		10	2	28.87	8.6
M22	2.5	1.5	33	33.39	32.61	24.4	22	21.67	19.44	2.04	22	21.48	0.8	17	17.050	17.230		11	2.2	31.81	9.5
M24	3	2	36	36.39	35.61	26.4	24	23.67	21.73	2.04	24	23.48	0.8	19	19.065	19.275		12	2.4	34.81	10.4
M27	3	2	40	40.39	39.61	30.4	27	26.67	21.73	2.89	27	26.48	1	19	19.065	19.275		13.5	2.7	38.61	12.1
M30	3.5	2	45	45.39	44.61	33.4	30	29.67	25.15	2.89	30	29.48	1	22	22.065	22.275		15.5	3	43.61	13.1
M33	3.5	2	50	50.39	49.61	36.4	33	32.61	27.43	2.89	33	32.38	1	24	24.065	24.275		16.5	3.3	48.61	15.0
M36	4	2	54	54.39	53.61	39.4	36	35.61	30.85	2.89	36	35.38	1	27	27.065	27.275		19	3.6	52.54	15.3

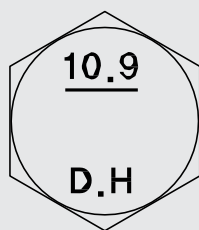
■ (1) It is applied to the head which is not knurled

■ (2) It is applied to the knurled head

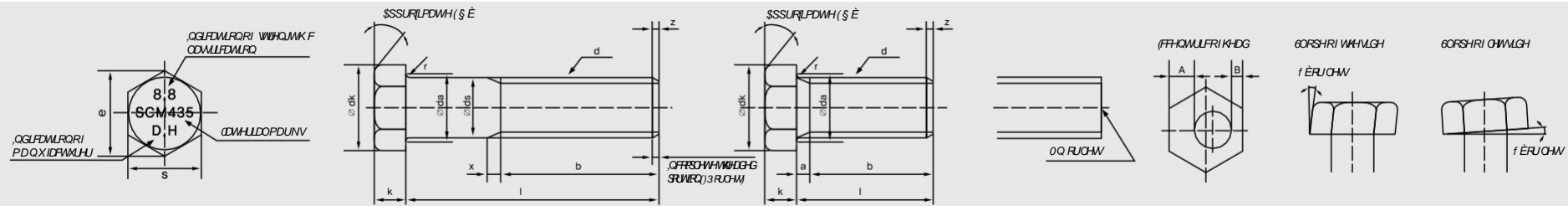
Hexagon head bolt

■Specification

Strength	8.8	10.9	10.9	12.9
Quality	SCM435	AISI51B20	AISI51B20	SCM435
Hardness	≤ 16 22~32	32~39	32~39	39~44
	d > 16 23~34			
Remarks	Black oxide film	Black	Black thin screws	Full screw Black oxide film



Product standard (KS B 1002)



Name of the screw(d)	Pitch of the screw(P)	Fine Thread	ds		k		s		e	dk	r	da	z	A-B	E	F
			Referenc e dimension	Tolerance	Referenc e dimension	Tolerance	Referenc e dimension	Tolerance	About	About	Minimum	Maximum	About	Maximum	Maximum	
M6	1		6	0 -0.2	4	± 0.25	10	0/-0.6	11.5	9.8	0.25	6.8	1	0.3	1°	2°
M8	1.25	M8X1	8		5.5		13	0 -0.7	15	12.6	0.4	9.2	1.2	0.4		
M10	1.5	M10X1.25	10		7		17		19.6	16.5	0.4	11.2	1.5	0.5		
M12	1.75	M12X1.5 M12X1.25	12	0 -0.25	8	± 0.3	19	0 -0.8	21.9	18	0.6	13.7	2	0.7		
M14	2	M14X1.5	14		9		22		25.4	21	0.6	15.7	2	0.7		
M16	2	M16X1.5	16		10		24		27.7	23	0.6	17.7	2	0.8		
M18	2.5	M18X1.5	18		12		27		31.2	26	0.6	20.2	2.5	0.9		
M20	2.5	M20X1.5	20	0 -0.35	13	± 0.35	30	0 -1	34.6	29	0.8	22.4	2.5	0.9		
M22	2.5	M22X1.5	22		14		32		37	31	0.8	24.4	2.5	1.1		
M24	3	M24X2	24		15		36		41.6	34	0.8	26.4	3	1.2		
M27	3		27		17		41		47.3	39	1	30.4	3	1.3		
M30	3.5		30	0 -0.4	19	± 0.4	46	0 -1.2	53.1	44	1	33.4	3.5	1.5		
M33	3.5		33		21		50		57.7	48	1	36.4	3.5	1.6		
M36	4		36		23		55		63.5	53	1	39.4	4	1.8		
M39	4		39		25		60		69.3	57	1	42.4	4	2		
M42	4.5		42		26		65		75	62	1.2	45.6	4.5	2.1		

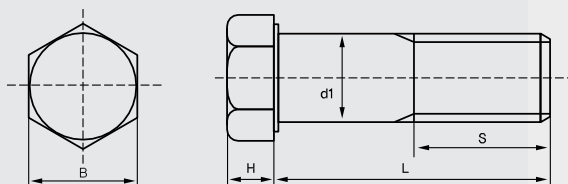
Mechanical and physical properties of bolt, screw, and the stud bolts I (KS B 0233)

Provision number	Mechanical and physical properties	Strength classification										
		3.6	4.6	4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9
								d ≤ 16 mm	d > 16 mm			
5.1	Nominal tensile strength R _m , nom N/mm ²	300	400		500		600	800	800	900	1000	1200
5.2	Minimum Tensile Strength R _m , min N/mm ² (kgf/mm ²)	330	400	420	500	520	600	800 (81.6)	830 (84.6)	900 (91.8)	1040 (106)	1220 (124)
5.3	Vickers hardness(Hv) min	95	120	130	155	160	190	250	255	290	320	385
	F _{≥98N} max			220			250	320	335	360	380	435
5.4	Brinell hardness(HB) min	90	114	124	147	152	181	238	242	276	304	366
	F=30 D ² max			209			238	304	318	342	361	414
5.5	Rockwell hardness min	-	-	-	-	-	-	22	23	28	32	39
	(HRC) max	-	-	-	-	-	-	32	34	37	39	44
5.6	Surface hardness max HV 0.3			-				320	356	380	402	454
5.7	Lower yield stress nominal	180	240	320	300	400	480	-	-	-	-	-
	R _{eL} N/mm ² min	190	240	340	300	420	480	-	-	-	-	-
5.8	0.2% Strength nominal			-				640	640	720	900	1080
	R _{p0.2} N/mm ² min			-				640	660	720	940	1100
5.9	Proof load stress S _p S _p /R _{eL}	0.94	0.94	0.91	0.93	0.90	0.92	0.91	0.91	0.90	0.88	0.88
	OR S _p /R _{p0.2} N/mm ²	180	225	310	280	380	440	580	600	650	830	970

Mechanical and physical properties of bolt, screw, and the stud bolts II (KS B 0233)

Provi sion numbe r	Mechanical and physical properties		Strength classification										
			3.6	4.6	4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9
									d ≤ 16 mm	d > 16 mm			
5.10	Breaking torque M _B	Nm/min	-						59.2	61.2	66.3	84.5	98.9
5.11	Engain percentage A	min	25	22	-	20	-	-	12	12	10	9	8
5.12	Sectional shrinkage percentage Z	%min	-						52		48	48	44
5.13	Wedge tensile strength		Values for full size bolts, screws (not studs) should be more than the minimum value for the tensile strength. (See 5.2)										
5.14	Impact strength KU	J min	-			25	-		30	30	25	20	15
5.15	Blow strength of head portion		It will not be destroyed										
5.16	Minimum height of the decarbonized screw portion, E		-						$\frac{1}{2}H_1$			$\frac{2}{3}H_1$	$\frac{3}{4}H_1$
	Max height of full decarbonized unit, G mm		-						0.015				
5.17	Hardness after tempering		-						Vickers hardness values should not be reduced to more than 20				
5.18	Surface defects		Meets ISO 6157-1(KS B 0547) or ISO 6157-3(KS B 0549)										

Heavy hex screw



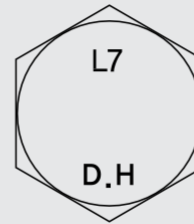
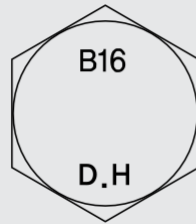
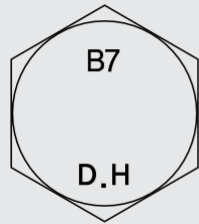
DIMENSION : ASME B 18.2.3.1M

Nomina l Size	d1		H		B		S		
	Max	Min	Max	Min	Max	Min	L ≤ 125	125 < L ≤ 200	L > 200
M12 x 1.75P	12.00	11.73	7.76	7.24	21.00	20.67	30	36	49
M14 x 2.0P	14.00	13.73	9.09	8.51	24.00	23.67	34	40	53
M16 x 2.0P	16.00	15.73	10.32	9.68	27.00	26.67	38	44	57
M20 x 2.5P	20.00	19.67	12.88	12.12	34.00	33.00	46	52	65
M24 x 3.0P	24.00	23.67	15.44	14.56	41.00	40.00	54	60	73
M30 x 3.5P	30.00	29.67	19.48	17.92	50.00	49.00	66	72	85
M36 x 4.0P	36.00	35.61	23.38	21.72	60.00	58.80	78	84	97

DIMENSION : ASME B 18.2.1

Nomina l Size	d1		H		B		S			
	Max	Min	Basic	Max	Min	Basic	Max	Min	L ≤ 6"	6" < L
1/2 0.500	0.500	0.482	5/16	0.323	0.302	7/8	0.875	0.850	1.250	1.500
5/8 0.625	0.625	0.605	25/64	0.403	0.378	1-1/16	1.062	1.031	1.500	1.750
3/4 0.750	0.750	0.729	15/32	0.483	0.455	1-1/4	1.250	1.212	1.750	2.000
7/8 0.875	0.875	0.852	35/64	0.563	0.531	1-7/16	1.438	1.394	2.000	2.250
1 1.000	1.000	0.976	39/64	0.627	0.591	1-5/8	1.625	1.575	2.250	2.500
1-1/8 1.125	1.125	1.098	11/16	0.718	0.658	1-13/16	1.812	1.756	2.500	2.750
1-1/4 1.250	1.250	1.223	25/32	0.813	0.749	2	2.000	1.938	2.750	3.000

MECHANICAL PROPERTIES of ASTM-related products



Material Code	Grade	SIZE	Tensile Strength	Yield Strength	Elongation	Reduction of Area	Hardness	Impact Value
ASTM A193/A193M	B7	2 1/2" and under	min 125 ksi	min 105 ksi	min 16%	min 50%	max HRC35	
		over 2 1/2" to 4 "	min 115 ksi	min 95 ksi	min 16%	min 50%	max HRC35	
		over 4" to 7 "	min 100 ksi	min 75 ksi	min 18%	min 50%	max HRC35	
		M64 and under	min 860 Mpa	min 720 Mpa	min 16%	min 50%	max HRC35	
		over M64 to M100	min 795 Mpa	min 655 Mpa	min 16%	min 50%	max HRC35	
		over M100 to M180	min 690 Mpa	min 515 Mpa	min 18%	min 50%	max HRC35	
	B16	2 1/2" and under	min 125 ksi	min 105 ksi	min 18%	min 50%	max HRC35	
		over 2 1/2" to 4 "	min 110 ksi	min 95 ksi	min 17%	min 45%	max HRC35	
		over 4" to 8 "	min 100 ksi	min 85 ksi	min 16%	min 45%	max HRC35	
		M64 and under	min 860 Mpa	min 725 Mpa	min 18%	min 50%	max HRC35	
		over M64 to M100	min 760 Mpa	min 655 Mpa	min 17%	min 45%	max HRC35	
		over M100 to M180	min 690 Mpa	min 585 Mpa	min 16%	min 45%	max HRC35	
ASTM A307	Grade A	-	min 60 ksi	-	min 18%	-	HRB 69 ~ HRB100	
	Grade B	-	60 ksi ~ 100 ksi	-	min 18%	-	HRB 69 ~ HRB95	
ASTM A320/A320M	L7	2 1/2"(65) and under	min 125 ksi	min 105 ksi	min 16%	min 50%	max HRC35	min 27 J (-101°C) (10 by 10mm)
			min 860 Mpa	min 725 Mpa				
ASTM A325	TYPE 1	1/2" to 1	min 120 ksi	min 92 ksi	min 14%	min 35%	HRC25 ~ HRC34	
		1 1/8" to 1 1/2"	min 105 ksi	min 81 ksi			HRC19 ~ HRC30	
ASTM A325M	TYPE 1	M12 to M36	min 830 Mpa	min 660 Mpa	min 14%	min 35%	HRC25 ~ HRC34	

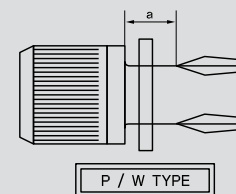
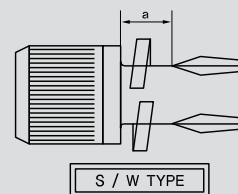
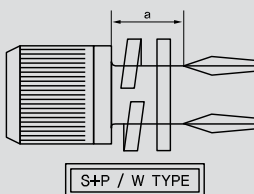
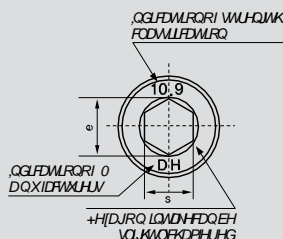
Hexagon head screws with captive washer

■Specification

Strength	10.9
Quality	SCM435
Hardness	32~39
Remarks	Nickel-plated black oxide film



◆Order production for S/W Type, P/W Type is available



Name of the screw(d)	Pitch of the screw(P)	S			Spring washer	Flat washer (external diameter x inner diameter x thickness)	a(Maximum)		
		Nominal (reference dimension)	Minimum	Maximum			S+P/W	S/W	P/W
M3	0.5	2.5	2.52	2.58	φ2.7	2.8 × 6 × 0.6	3.0	2.4	1.5
M4	0.7	3	3.02	3.08	φ3.6	3.7 × 8 × 0.8	4.4	3.5	2.3
M5	0.8	4	4.02	4.095	φ4.6	4.6 × 10 × 1.0	5.4	4.3	2.7
M6	1	5	5.02	5.14	φ5.5	5.6 × 12.5 × 1.6	6.9	5.1	3.7
M8	1.25	6	6.02	6.14	φ7.4	7.4 × 17 × 1.6	8.4	6.7	4.2
M10	1.5	8	8.025	8.175	φ9.4	9.5 × 21 × 2.0	10.4	8.2	5.2

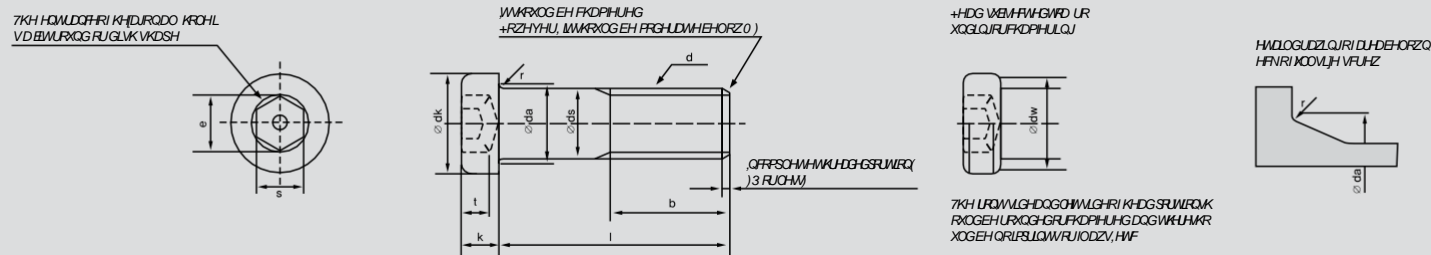
Hexagon socket thin head cap screws

Specification

Strength	12.9
Quality	SCM435
Hardness	39~44
Remarks	Full screw black oxide film



Standard of Goods (DIN 7984)



Name of the screw(d)	Pitch of the screw(P)	dk		da	e	k		r	s			t		
		Referenc e dimension	Minimum	Maximum	Minimum	Referenc e dimension	Minimum	Minimum	Referenc e dimension	Minimum	Maximum	Referenc e dimension	Minimum	Maximum
M3	0.5	5.5	5.32	3.6	2.30	2	1.86	0.1	2	2.02	2.10	1.5	1.38	1.62
M4	0.7	7	6.78	4.7	2.87	2.8	2.66	0.2	2.5	2.52	2.60	2.3	2.18	2.42
M5	0.8	8.5	8.28	5.7	3.44	3.5	3.32	0.2	3	3.02	3.10	2.7	2.58	2.82
M6	1.0	10	9.78	6.8	4.58	4	3.82	0.25	4	4.02	4.12	3	2.88	3.12
M8	1.25	13	12.73	9.2	5.72	5	4.82	0.4	5	5.02	5.14	3.8	3.65	3.95
M10	1.5	16	15.73	11.2	6.86	6	5.82	0.4	7	7.025	7.175	4.5	4.35	4.65
M12	1.75	18	17.73	13.7	9.15	7	6.78	0.6	8	8.025	8.175	5	4.85	5.15
M16	2	24	23.67	17.7	13.72	9	8.78	0.6	12	12.032	12.212	5.5	5.35	5.65

Hexagon socket flat head cap screws

■ Specification

Strength	12.9	Normal	Sten
Quality	SCM435	CHQ 10A	STS304
Hardness	39~44	-	-
Remarks	Black oxide film nickel-plating of full size screw	film nickel-plating of full size screw	cleaning for f ull size screw

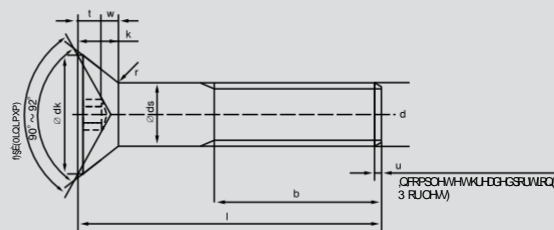
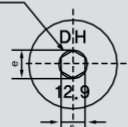


anti-loosening bolt



■ Standard of Goods (KS B ISO 10642)

7KH HQWUDFHRI KROHP D\LEH
D BWURXOGGRU GLVK WSH



Name of the screw(d)	Pitch of the screw(P)	ds		dk		k	s				t	w	da	r	e
		Maximum	Minimum	Maximum of theoretical value	minimum of actual value	Minimum	Minimum	maximum ^①	maximum ^②	Minimum	Minimum	Minimum	Maximum	Minimum	Minimum
M3	0.5	3	2.86	6.72	5.54	1.86	2	2.045	2.060	2.020	1.1	0.25	3.3	0.1	2.3
M4	0.7	4	3.82	8.96	7.53	2.48	2.5	2.56	2.58	2.52	1.5	0.45	4.4	0.2	2.87
M5	0.8	5	4.82	11.20	9.43	3.10	3	3.071	3.080	3.020	1.9	0.66	5.5	0.2	3.44
M6	1	6	5.82	13.44	11.34	3.72	4	4.084	4.095	4.020	2.2	0.7	6.6	0.25	4.58
M8	1.25	8	7.78	17.92	15.24	4.96	5	5.084	5.140	5.020	3.0	1.16	8.54	0.40	5.72
M10	1.5	10	9.78	22.40	19.22	6.20	6	6.095	6.140	6.020	3.6	1.62	10.62	0.40	6.86
M12	1.75	12	11.73	26.88	23.12	7.44	8	8.115	8.175	8.025	4.3	1.8	13.5	0.60	9.15
M14	2	14	13.73	30.80	26.52	8.40	10	10.115	10.175	10.025	4.5	1.62	15.5	0.60	11.43
M16	2	16	15.73	33.60	29.01	8.80	10	10.115	10.175	10.025	4.8	2.2	17.5	0.60	11.43
M20	2.5	20	19.67	40.32	36.05	10.16	12	12.142	12.212	12.032	5.6	2.2	22.0	0.80	13.72

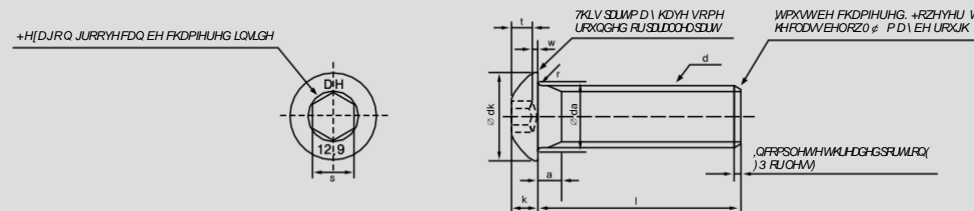
Hexagon socket button head screws

■ Specification

Strength	12.9	Normal	Sten
Quality	SCM435	CHQ 10A	STS304
Hardness	39~44	-	-
Remarks	Black oxide film nickel-plating of full size screw	Film nickel-plating of full size screw	Cleaning for full size screw



■ Standard of Goods (KS B 1067)



Name of the screw(d)	Pitch of the screw(P)	da	dk		k		s			t	w	r
		Maximum	maximum (reference dimension)	Minimum	maximum (reference dimension)	Minimum	Nominal (reference dimension)	Maximum	Minimum	Minimum	Minimum	Minimum
M3	0.5	3.6	5.7	5.4	1.65	1.4	2	2.045	2.02	1.04	0.20	0.1
M4	0.7	4.7	7.6	7.24	2.2	1.95	2.5	2.56	2.52	1.30	0.30	0.2
M5	0.8	5.7	9.5	9.14	2.75	2.5	3	3.08	3.02	1.56	0.38	0.2
M6	1	6.8	10.5	10.07	3.3	3.0	4	4.095	4.02	2.08	0.74	0.25
M8	1.25	9.2	14	13.57	4.4	4.1	5	5.095	5.02	2.60	1.05	0.4
M10	1.5	11.2	17.5	17.07	5.5	5.2	6	6.095	6.02	3.12	1.45	0.4
M12	1.75	13.7	21	20.48	6.6	6.24	8	8.115	8.025	4.16	1.63	0.6
M16	2	17.7	28	27.48	8.8	8.44	10	10.115	10.025	5.20	2.25	0.6

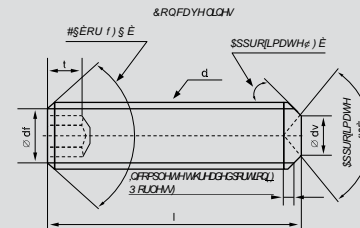
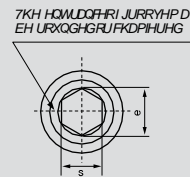
Hexagon socket set screws

■ Specification

Strength	45H	Sten
Quality	SCM435	STS304
Hardness	45~53	-
Remarks	Black oxide film	Clean



■ Standard of Goods (DIN 916)



Normal Designation of Screw(d)	Pitch(P)	dv		df	e	s			t	
		Maximum	Minimum	About	Minimum	Nominal	Minimum	Maximum	Minimum	
									First blank	Second blank
M3	0.5	1.4	1.15	Approximate slope of male screw	1.73	1.5	1.52	1.545	1.2	2
M4	0.7	2	1.75		2.30	2	2.02	2.045	1.5	2.5
M5	0.8	2.5	2.25		2.87	2.5	2.52	2.56	2	3
M6	1	3	2.75		3.44	3	3.02	3.08	2	3.5
M8	1.25	5	4.7		4.58	4	4.02	4.095	3	5
M10	1.5	6	5.7		5.72	5	5.02	5.095	4	6
M12	1.75	8	7.64		6.86	6	6.02	6.095	4.8	8
M14	2	9	8.64		6.86	6	6.02	6.095	5.6	9
M16	2	10	9.64		9.15	8	8.025	8.115	6.4	10
M18	2.5	12	11.57		11.43	8	8.025	8.115	7.2	11
M20	2.5	14	13.57		11.43	10	10.025	10.115	8	12
M22	2.5	16	15.57		13.72	10	10.025	10.115	9	13.5
M24	3	16	15.57		13.72	12	12.032	12.142	10	15

Mechanical properties (KS B 0240) of compulsory stop screws (wrench tanner)

※Table 1-Indication of hardness relating to Vickers hardness

Strength Classification		14H	22H	33H	45H
Vickers hardness Hvmin		140	220	330	450

Mechanical properties		Strength Classification			
		14H	22H	33H	45H
Vickers hardness HV10	min	140	220	330	450
	max	290	300	440	560
Brinell hardness HB, F=30D ²	min	133	209	314	428
	max	276	285	418	532
Rockwell hardness	HRB	min	75	95	-
		max	105	-	-
	HRC	min	-	-	33
		max	-	30	44
Minimum height of decarbonized screw portion, E	min	-	$\frac{1}{2}H_1$	$\frac{2}{3}H_1$	$\frac{3}{4}H_1$
Maximum height of a complete decarbonization, G mm	max	-	0.015	0.015	Decarbonization is not allowed
Surface hardness HV 0.3	max	-	320	450	580

◆14H, 22H, 33H is not used for a hexagon socket

◆The minimum value of HRB and maximum value of HRC need be tested during Rockwell hardness test for 22H of hardness classification

◆For strength classification of 45H, a complete decarbonization is not allowed

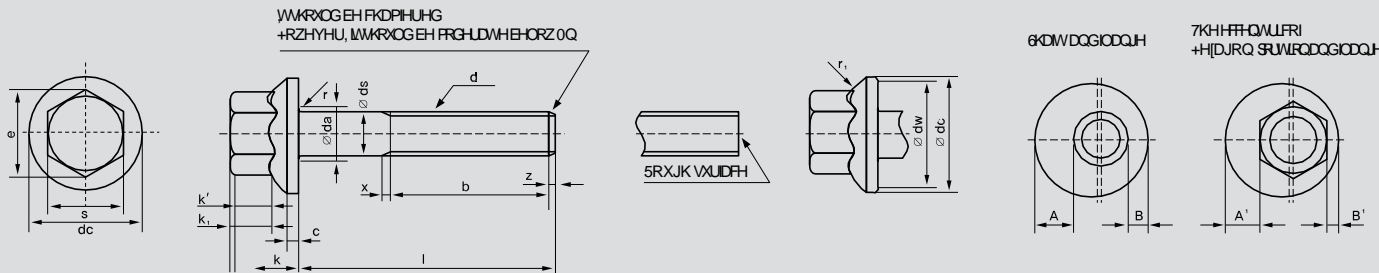
Hexagon flange bolts

■ Specification

Strength	General
Quality	CHQ 10A
Remarks	Sulfur plating for full size screws



■ Standard of Goods (KS B 1042)



Name of the screw(d)	ds		S		e	dc	dw	k	k ₁	c	r ₁	r	da	z	k'	A-B A'-B'
Normal	Reference size	Tolerance	Reference size	Tolerance	Minimum	Maximum	Minimum	Maximum	Minimum	Minimum	Minimum	Maximum	Maximum	About	Minimum	Maximum
M5	5	0	8	0	8.87	12	9	5	3	0.7	0.7	0.2	5.7	0.9	2.0	0.3
M6	6	-0.1	10	-0.2	11.05	14	11	6	3.6	0.8	0.8	0.25	6.8	1	2.3	0.3
M8	8	0	12	0	13.25	17.5	14.5	8	4.8	1.0	1.1	0.4	9.2	12	3.1	0.4
M10	10	-0.15	14	-0.25	15.51	21	18	10	6	12	1.4	0.4	11.2	1.5	3.9	0.5
M12	12	0	17	0	18.90	25	22	11.5	7.2	1.4	1.6	0.6	14.2	2	4.7	0.7
M16	16	-0.2	22	-0.35	24.49	33	30	15	9.6	1.8	2.0	0.6	18.2	2	6.2	0.8



Creative DAEHAN, Global DAEHAN
DAEHAN BOLT Corporation

| Hexagon wrench tapered plug-A/B | No head bearing / MSW



TYPE	A	B	
Strength	Standard	HRC 32~42	Sten
Quality	CHQ 10A	SCM435	STS304
Surface	Black oxide film	Black oxide film	Washing

| Bearing tanning | MSW



TYPE	No head bearing	MSW
Strength	SCM435	SWCH 45F
Quality	Thin screws	1.5P
Surface	Black oxide film	Black oxide film

| Washer assembling bolt



Strength	Hexagon socket wrench bolts, hexagon bolts, STS hexagon bolts
Quality	Alloy Steel, Standard, STS
Surface	Spring + flat washer / spring washer / flatwasher
Surface treatment	Black oxide film, Plating

| STS Hexagon/Hexagon computation 4T | Cross plate bead bolt/Cross hexagon bolt | Kinesthesia bolt



TYPE	STS Hexagon	Hexagon computation 4T
Strength	Sten	Standard
Quality	STS304	CHQ 10A
Surface	Washing	Sulfur-plating



TYPE	Cross plate bead bolt	Cross hexagon bolt
Strength	Standard	Standard
Quality	CHQ 10A	CHQ 10A
Surface	Sulfur-plating	Sulfur-plating



TYPE	Kinesthesia bolt
Strength	Standard
Quality	CHQ 10A
Surface	Sulfur-plating , Back-plating

| Hex socket head cap screws (M36 X 320)

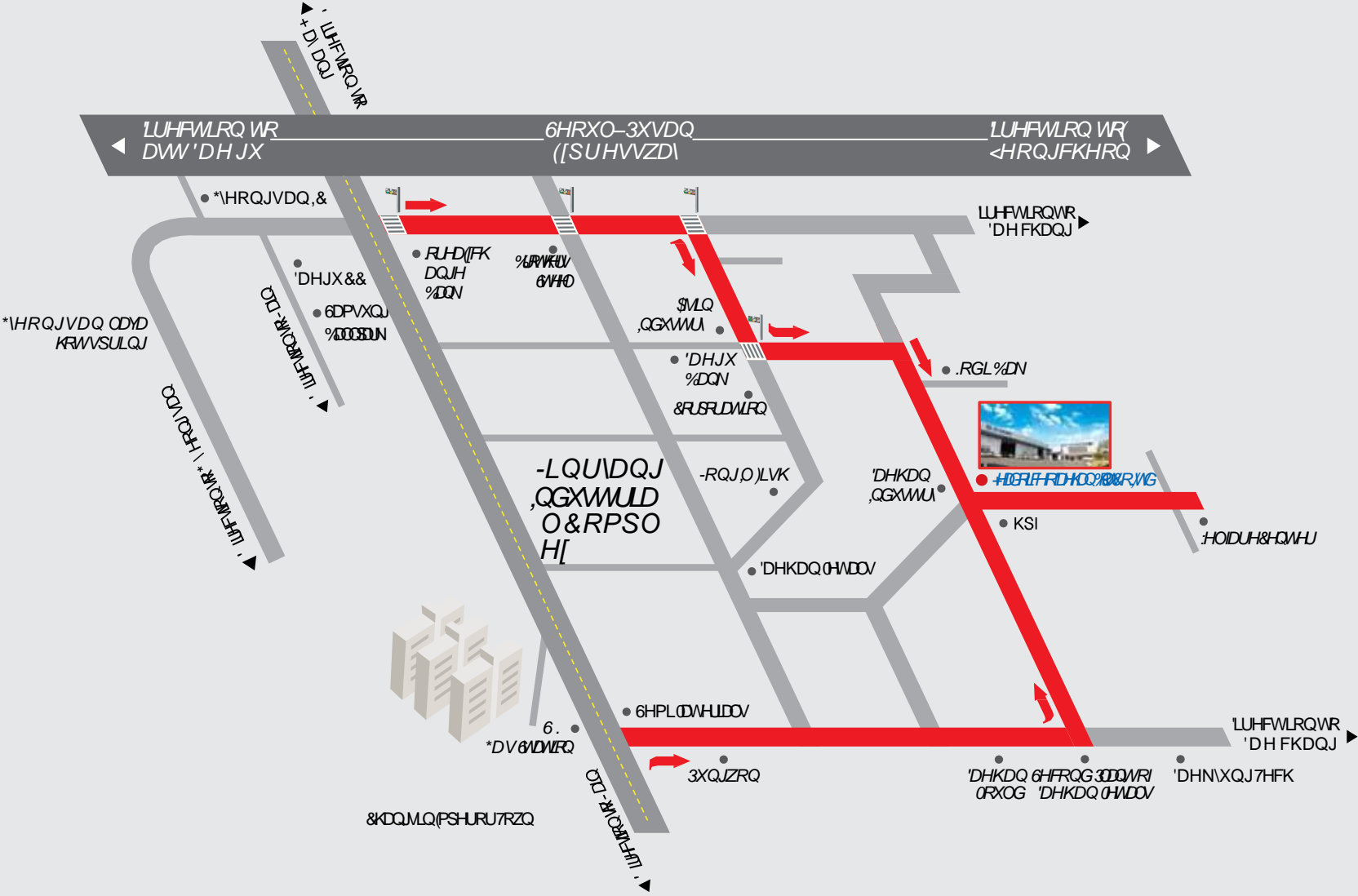




| Hexagon head screws (M36 X 360)

※This image is real size

Rough map





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