

Fastening Products Catalogue



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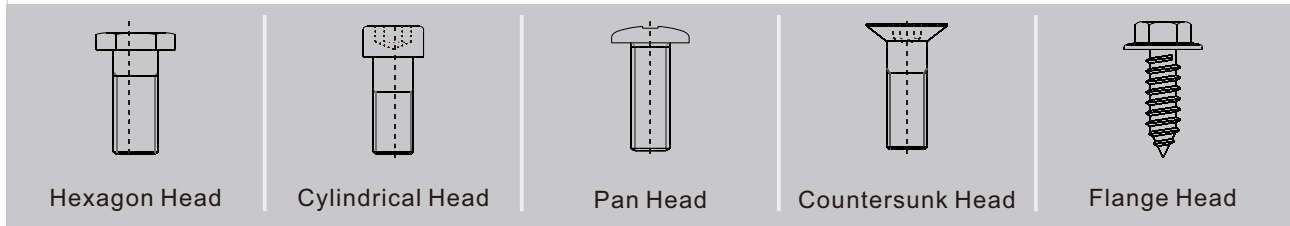
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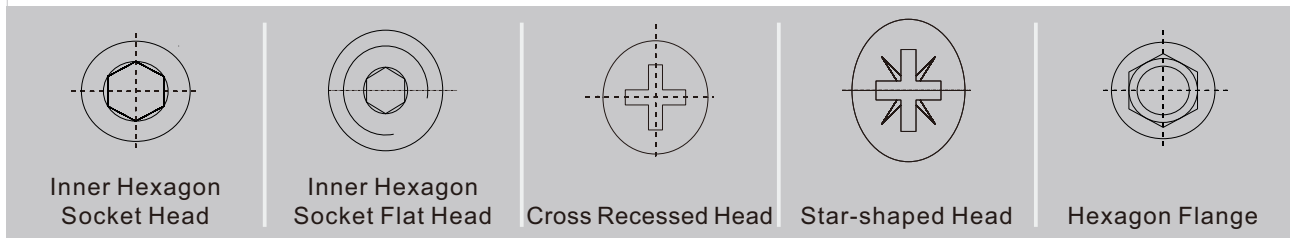


Screw Models

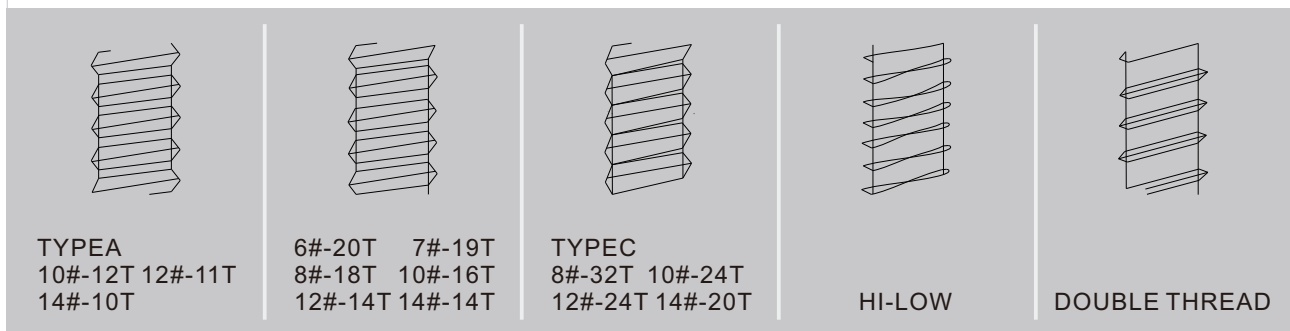
Head Types



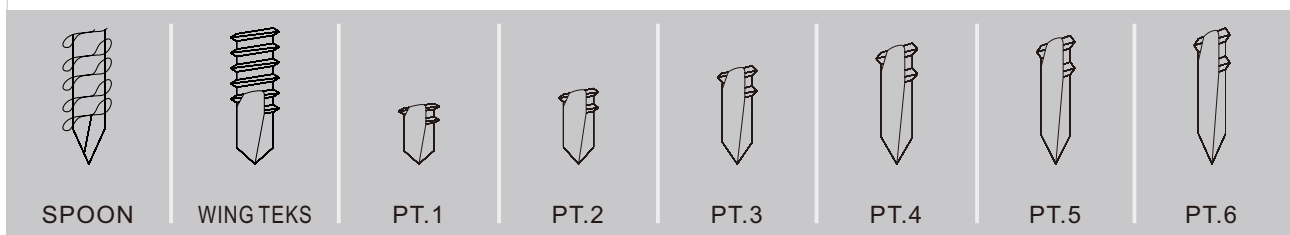
Hole Types



Thread Form



Drill Tail





Hexagon flange self-drilling and self-tapping compound screws

Metal Roofing Fasteners



Hexagon flange self-drilling and self-tapping screws-coated nails

Name	Standard Code			
	GB (code)	ISO National standard	German standard	Japanese standard
Hexagonal Compound Drilling Nails	GB15856.4	ISO15480-1999	DIN7504-K	JIS1124-2003
Plum blossom countersunk head drill nails	GB15856.2	ISO15482-1999	DIN7504-P	
Cross countersunk head drill nail	GB15856.2	ISO15482-1999	DIN7504-P	
Plum blossom pan head drill tail nails	GB15856.1	ISO15481-1999	DIN7504-N	
Cross pan head drill nail	GB15856.1	ISO15481-1999	DIN7504-N	










Metal Roofing Fasteners

The application of metal roofing has a long history and outstanding advantages. It is an ideal building roof covering material. The fabricated metal roofing system has become the first choice for building roofing materials due to its excellent product characteristics.

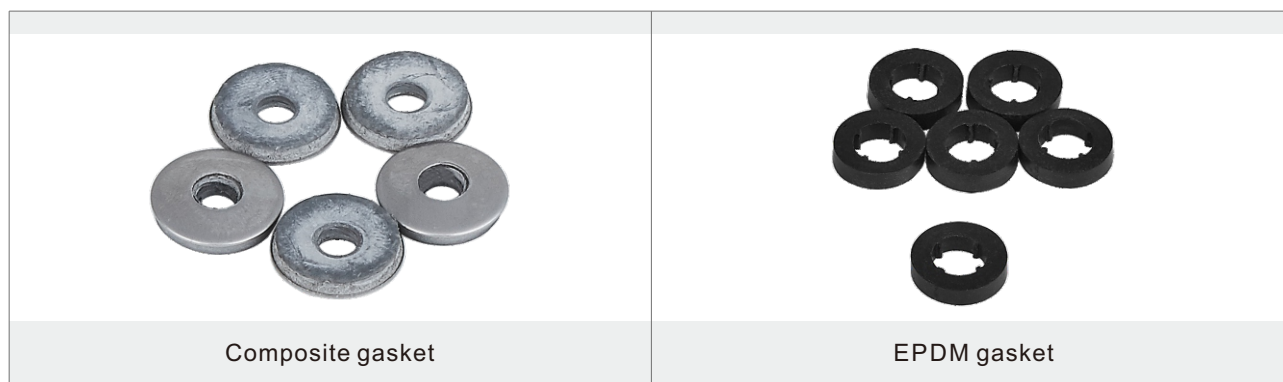
The single-layer roof structure is often open, with screws passing through the roof panel to connect with the purlin. Fasteners are important parts of the unit roof system. There are many types of fasteners. The commonly used fastener materials for metal roofing include carbon alloy screws, aluminum alloy screws, stainless steel composite screws, etc.

Composite screw material: SUS304+SCM435/SUS316+SCM435

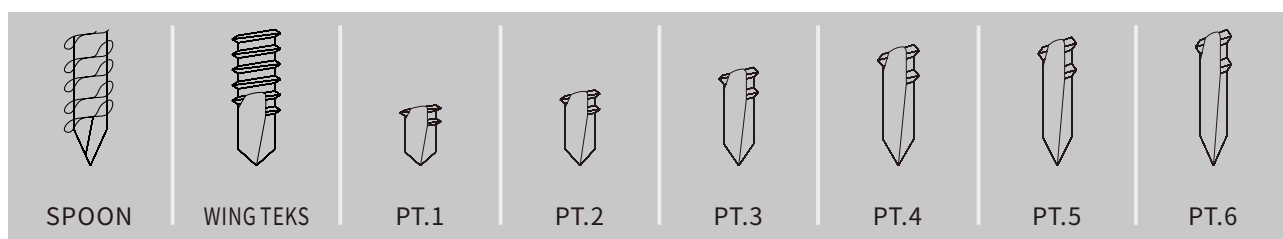
		
Hexagonal flange self-drilling and self-tapping screws-coated nails	Hexagon flange self-drilling and self-tapping compound screws	
		
Cross countersunk head compound self-drilling screw	Torx countersunk head composite self-drilling screws	
		
Hexagon head double-thread compound self-drilling screw	Torx pan head compound self-drilling screw	Hexagon head compound self-drilling screw 5# tail



gasket



Drill Tail



Finished product standard

According to the standard: factory standard

Dimensional tolerance: (length 13mm is No. 1 tail, length 16-19mm is No. 2 tail, length over 19mm is No. 3 tail)

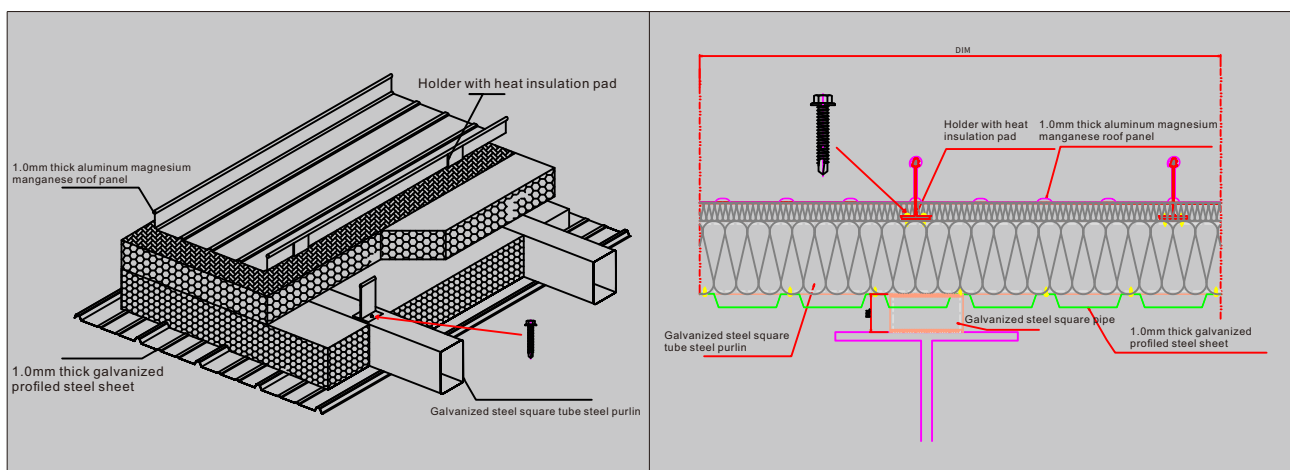
Screw specifications	ST2.9 4#-24	ST3.5 6#-20	ST3.9 7#-19	ST4.2 8#-18	ST4.8 10#-16	ST4.8 10#-24	ST5.5 12#-14	ST5.5 12#-24	ST6.3 14#-14	ST6.3 14#-20
Tail width	2.30 2.50	2.90 3.10	3.05 3.20	3.40 3.60	4.00 4.20	4.20 4.40	4.65 4.85	4.90 5.10	5.50 5.70	5.65 5.85
No. 1 tail length and width	2.30min	2.80min	2.80min	3.50min	4.50min		5.20min		6.00min	
No. 2 tail length and width	2.80min	3.50min	3.50min	4.00min	5.20min		6.00min		7.20min	
No. 3 tail length and width		4.20min	4.20min	5.00min	6.00min		7.20min		8.00min	
No. 4 tail length and width				6.00min	7.20min		10.50min		10.50min	
No. 5 tail length and width					8.70min		13.50min		13.50min	
No. 6 tail length and width							15.80min		15.80min	

No. 2-6 tail tapping thickness parameter (experimental value)

Blade model	No. 2 tail	No. 3 tail	No. 4 tail	No. 5 tail	No. 6 tail
tapping panel thickness					
tapping panel thickness(mm).max	4	6	8	12	14



Considering the metal roof from the material point of view, the factors that affect its design and selection include:	Operation process
<ul style="list-style-type: none">► The physical properties of the material, such as the strength, hardness, and brittleness of the material;► The chemical properties of the material, such as corrosion resistance, electrochemical corrosion performance, etc.	<ul style="list-style-type: none">► The thickness of the overall roof panel material needs to be fixed.► Choose a stainless steel self-drilling screw of sufficient length to fix the system.► Choose suitable electric tools for the screws of the determined model.► The screws and power tools must be perpendicular to the surface of the profile plate during installation, and force a center point to be created.► Apply force on the power tool by hand to ensure that the force is on the same vertical line as the center point.► The force is constant and uniform, and the drilling stops immediately after the screw is in place.





Name	Standard Code	
	GB (code)	German standard
Big Hexagon High Strength Bolts for Steel Structure	GB/T 1231	/
Torsional Shear Type High Strength Bolts for Steel Structure	GB/T 3632	/
Cylindrical Head Welding Studs for Arc Stud Welding	GB/T 10433	/



Prefabricated construction

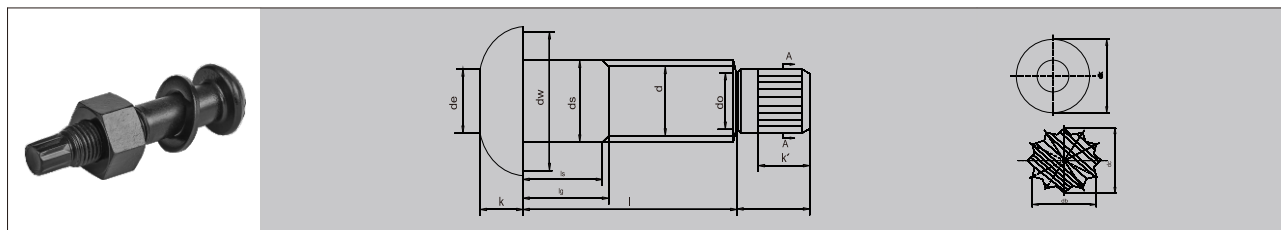
High-strength bolted connections have developed into one of the main connection forms of steel structures with the same status as welding. It has the advantages of good mechanical properties, good fatigue and seismic performance, high connection stiffness, and simple construction. It is widely used in site connection of building steel structure and bridge steel structure.

		
Large hexagon high-strength bolts for steel structures	Cylindrical studs for arc stud welding	Torsion-shear high-strength bolts for steel structures





High strength bolts with torsional shear type for steel structure

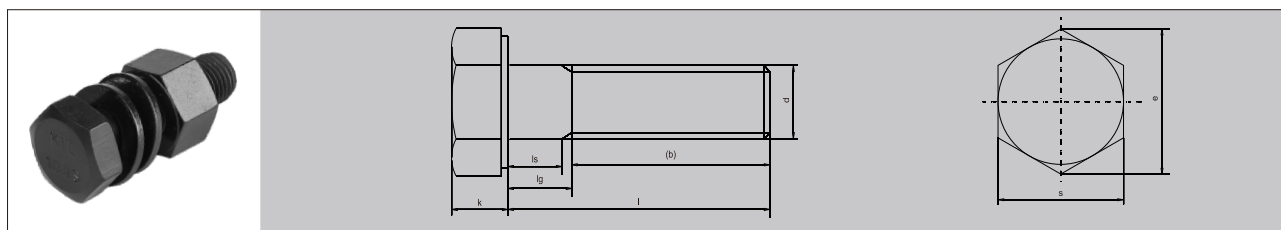


Note: After the surface blackening process, high strength bolts are formed, which are often used in steel structure engineering.

Material: 20MnTiB, 35VB

Nominal diameter D		M16	M20	M22	M24	M27	M30
Pitch	P	2	2.5	2.5	3	3	3.5
ds	max	16.43	20.52	22.52	24.52	27.84	30.84
	min	15.57	19.48	21.48	23.48	26.16	29.16
dK	Nominal	30	37	41	44	50	55

Large hexagon head high strength bolts for steel structure



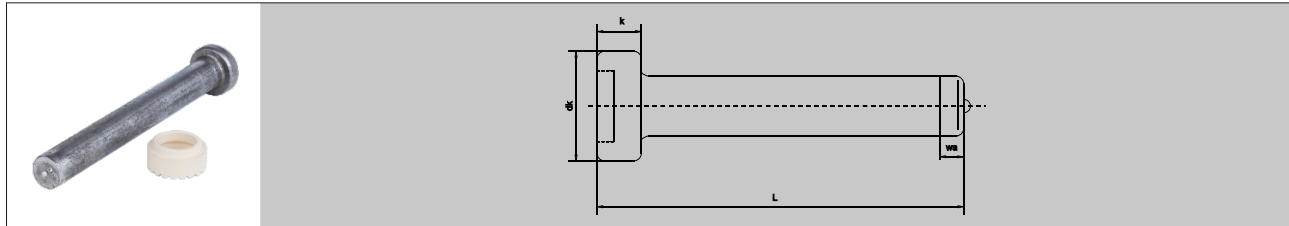
Note: After the surface blackening process, high strength bolts are formed, which are often used in steel structure engineering.

Material: 20MnTiB, 35VB

Nominal diameter D		M16	M20	M22	M24	M27	M30
Pitch	P	2	2.5	2.5	3	3	3.5
E	min	29.56	37.29	39.55	45.2	50.85	55.37
K	Nominal	10	12.5	14	15	17	18.7
S	max	27	34	36	41	46	50



Cylinder Head Welding Nail



Description: Usually applied to steel structure to go with magnetic ring, and connected by argon arc welding.
Material: ML15, ML15Al

Nominal diameter D		10	13	16	19	22	25
DK	max	18.35	22.42	29.42	32.5	35.5	40.5
K	max	7.45	8.45	8.45	10.45	10.45	12.55

Welding nails, also known as shear nails, specifically refer to components that are designed to resist shear forces. When the beam and plate are bent under the vertical load, the shear force (horizontal direction) of the beam and plate is the largest. The superposed surface of the superposed beam and plate members is at this place (or close to it), and many shear nails are set to resist the shear force to ensure the normal bending capacity of the beam and plate.

The lower part of the composite floor is a steel beam and the upper part is a concrete slab. The two work together. However, on the interface between the two, that is, between the bottom of the concrete slab and the top of the steel beam, it is necessary to ensure that it can effectively transmit shear force to prevent relative slippage between the two. It is far from enough to rely on the adhesion between the concrete and the steel beam, so it is necessary to set shear nails on the top of the steel beam, weld it to the steel beam, and embed it in the concrete, so that the shear force can be effectively transmitted. Shear nails should transmit the shear force between the concrete and the steel beam and the "lifting force" separating them when they are effective, so that the concrete and steel can be combined to work together.

Welding nails are also widely used in industrial plant construction, highways, railways, bridges, towers, automobiles, energy, transportation facilities, airports, stations, power stations, pipe supports, lifting machinery and other types of steel structures.

Use method of welding nail porcelain ring	Use method of welding nail porcelain ring
First, the porcelain ring seat is placed on the stud position where the wire has been placed. Use a welding torch to align the nail with the porcelain ring seat. Turn on the power of the welding torch and draw the arc at the ignition point of the stud to generate a high temperature melting stud head and the base material to form a high temperature melting welding pool. After a short time, the peg is welded to the base material, then the porcelain ring is removed, inspect the peripheral weld.	First, the porcelain ring seat is placed on the stud position where the wire has been placed. Use a welding torch to align the nail with the porcelain ring seat. Turn on the power of the welding torch and draw the arc at the ignition point of the stud to generate a high temperature melting stud head and the base material to form a high temperature melting welding pool. After a short time, the peg is welded to the base material, then the porcelain ring is removed, inspect the peripheral weld.






Highway and Bridge

Introduction to the installation method of steel bridge	Application area
<p>The steel structure bridge adopts the node connection form to connect the various components. The connection strength of the node device directly affects the safety and service life of the steel structure bridge. The straight webs, chords, horizontal links, and oblique webs at the joints of existing steel structure bridge nodes are connected by bolts. All relying on bolts for locking connections, instability factors such as nut locking force attenuation and screw fatigue will directly affect the safety of steel structure bridges.</p> <p>On the other hand, this installation form requires processing multiple bolt holes at the ends of the straight web bar, the Chord Bar, the transverse connecting bar and the Oblique Web bar, which will destroys the material integrity of the individual parts themselves, reducing the strength of the connection between the spare parts themselves.</p>	Large hexagon high-strength screw
	Mostly used for bridges (the main forms of steel structure bridges are cable-stayed bridges, steel arch bridges, beam bridges, steel box girder bridges, steel truss girder bridges, and rigid frame bridges. Small steel rails, high-voltage and ultra-high-voltage equipment connections.
	Torsional shear type high strength screw
	Mostly used for steel frame structure beam, column connection, solid web beam connection, heavy crane beam connection in industrial plant, braking system and connection of important structures under dynamic load.
	Welding nails
	It is widely used in bridges, industrial plant buildings, highways, railways, towers, automobiles, energy, transportation facilities, airports, stations, power stations, pipe supports, lifting machinery and other various steel structures.





High-strength Big Hexagon Head Bolts Connection&Welding Nails

	Torsional shear type high-strength bolts connection for steel structure GB/T 3632-2008 Torsional shear type high-strength bolts consist of one bolt, one nut and one washer.
	High-strength big hexagon head bolts connection for steel structure GB/T 1231-2006 Big hexagon head bolts consist of one bolt, one nut and two washers.
	Cylindrical head welding studs for arc stud welding Ordinary flat welding porcelain ring B1 type GB/T 10433-2002 Penetration welding porcelain ring B2 type

Outline of High-strength Bolts

Name	Material	Surface Treatment	Grade	Standard	Remark
Torsional shear type high strength bolt	20MnTiB/35VB	blacken	10.9S	GB/T3632	screw/ one flat washer/nut
Welding nail(stud)	ML15/ML15Al	nature finish	—	GB/T10433	screw/magnetic ring
Big hexagon head bolt	20MnTiB/35VB	blacken	10.9S	GB/T1228~1231	screw/ two flat washers/nut

High strength bolted joints for steel structures

Category		Performance level	Recommended materials	Trial Specifications	Standard number
High strength large hexagon bolt	Bolt	8.8S	45 steel, 35 steel	$\leq M30, \leq M16$	GB/T 699
		10.9S	20MnTiB, 35VB	$\leq M24, M27-M30$	GB/T 3077
	Nut	8H	35GrMo, 40Gr	$\leq M30$	/
		10H	45 steel, 35 steel		GB/T 699
	Washer	Hardness HRC35-45	45 steel, 35 steel	$\leq M30$	GB/T 699
High strength twist shear bolt	Bolt	10.9S	20MnTiB, 35VB	$\leq M24, M27-M30$	GB/T 3077
	Nut	10H	35 steel	$\leq M30$	GB/T 699
	Washer	Hardness HRB98-32	45steel	$\leq M30$	GB/T 699



Test Report

杭州华新检测技术股份有限公司
建设工程钢结构检测报告专用章
浙建检字(22)01026-G



检测报告
TEST REPORT



报告编号: HXT-LH-20231575
Report No.

客户名称: 广东坚朗五金制品股份有限公司
Customer name

客户地址: 广东省东莞市塘厦镇竖朗路3号
Customer address

工程名称: /
Project name

样品名称: 钢结构用扭剪型高强度螺栓连接副
Sample name

杭州华新检测技术股份有限公司
HANGZHOU HUAXIN TESTING TECHNOLOGY CO., LTD
Form No: HXT—4—114 Rev:E/1 第1页 共8页 (page)

杭州华新检测技术股份有限公司
HANGZHOU HUAXIN TESTING TECHNOLOGY CO., LTD
检测报告
Test report

客户名称 Customer name	广东坚朗五金制品股份有限公司	选择日期 Sample delivery date	2023.10.25
工程名称 Project name	/	检测日期 Test date	2023.10.28~2023.11.3
监理单位 Supervision unit	/	见证人 Witnesses	/
样品名称 Sample name	钢结构用扭剪型高强度螺栓连接副	样品等级 Sample grade	10.9S
样品编号 Sample number	20230492-01-06	规格、型号 Specification	M16-M30
		温/湿度 Temperature/humidity	20℃/57%RH
检测依据 Testing basis	GB/T3632-2008《钢结构用扭剪型高强度螺栓连接副》		
仪器名称 Instrument name	电液伺服万能材料试验机(WAW-1000B) HXT-M-94、洛氏硬度计(200HRS-150) HXT-M-157、扭矩系数测试仪(SDZX-3000-500) HXT-M-176		
检测项目 Test item(s)	螺栓预紧力试验、螺母的硬度及保证载荷、垫圈硬度、紧固轴力试验		
检测结论 Test conclusion	按 GB/T3632-2008《钢结构用扭剪型高强度螺栓连接副》标准检测下述项目, 检测结果符合 GB/T3632-2008《钢结构用扭剪型高强度螺栓连接副》标准要求。 (检验检测专用章) 中华人民共和国二级注册结构工程师 姓名: 金剑 注册号: 建检12-S0384 有效期至: 2026年12月 签发日期 (Issue date) 2023年11月08日		
备注			

检测: 黄旭东 审核: 批准: 第2页 共8页 (page)

杭州华新检测技术股份有限公司
HANGZHOU HUAXIN TESTING TECHNOLOGY CO., LTD.
检测报告
Test report

样品编号 Sample number		20230492-01	规格 Specification		M16*60	牌号 Brand number	10.9S
生产单位		杭州嘉翔高强螺栓股份有限公司				炉批号	/
检测项目 Test item(s)		技术要求 Requirement		检测结果 Test results		单项评定 Item conclusion	
螺栓预紧力 10°楔块(KN)		163-195		174	182	178	171
				167	168	173	180
螺母保证荷载 15S(KN)		163		螺母无脱扣断裂, 能正常旋出		合格	
螺母硬度试验 HRC		98HRB-32HRC		26	28	27	24
				25	24	26	27
垫圈硬度试验 HRC		35HRC-45HRC		42	39	39	41
				41	40	39	39
样品编号 Sample number		紧固轴力(kN) Tighten axial force		平均值(kN) Average Value		标准偏差 S Standard deviation	
01		111		110		5.72	
02		118					
03		113					
04		107					
05		104					
06		105					
07		104					
08		117					
标准 值		/		100-121		≤10.0	

Form No: HXT—4—114 Rev:E/1

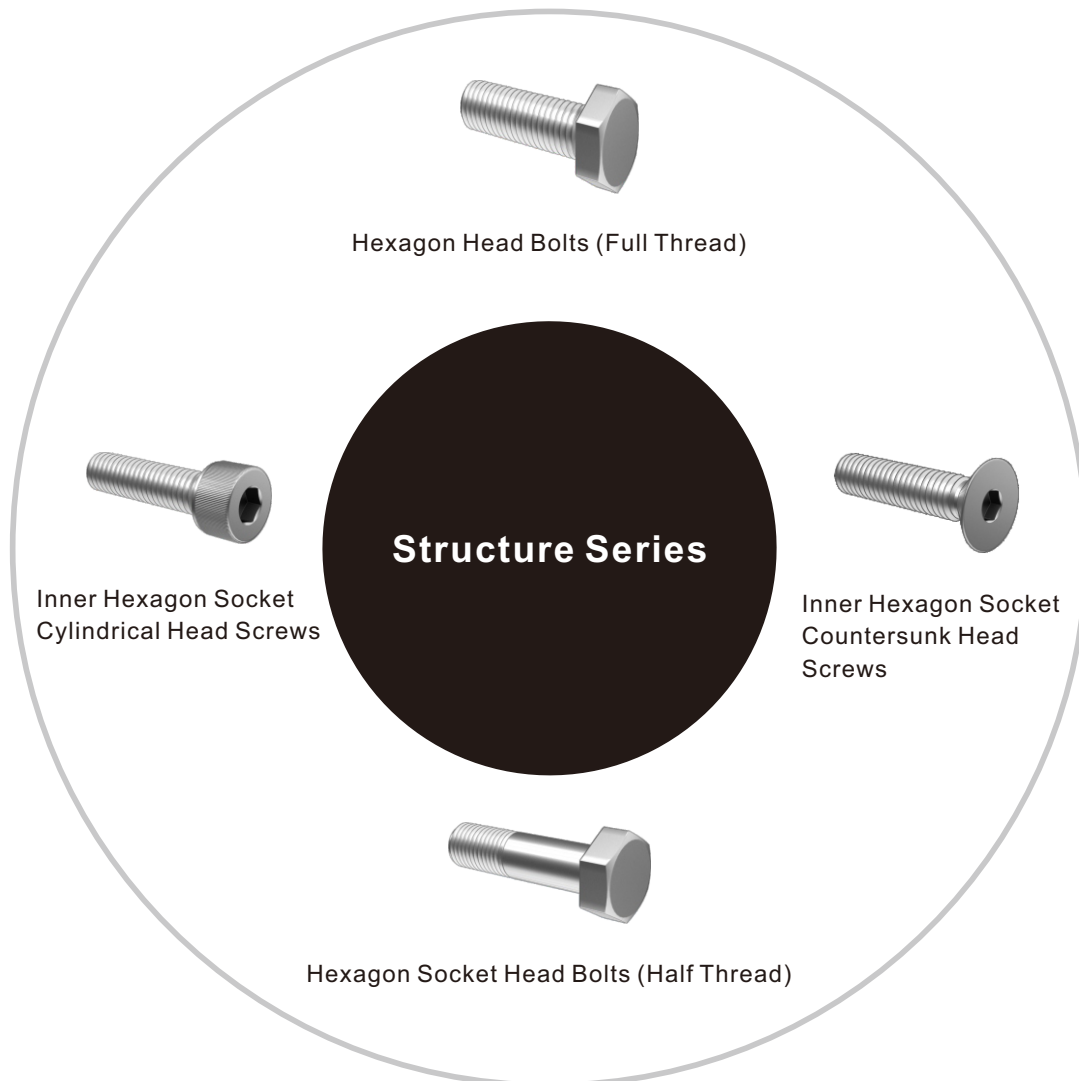
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杭州华新检测技术股份有限公司
HANGZHOU HUAXIN TESTING TECHNOLOGY CO., LTD.
检测报告
Test report

报告编号 Report No.: HXT-LH-20231575					
样品编号 Sample number	20230492-02	规格 Specification	M20*60	牌号 Brand number	10.9S
生产单位	杭州嘉翔高强螺栓股份有限公司			炉批号	/
检测项目 Test item(s)	技术要求 Requirement	检测结果 Test results		单项评定 Item conclusion	
螺栓预紧力 10°楔块(KN)	255-304	284	267 286 283	合格	
螺母保证载荷 15S(KN)	255	286	276 276 266	合格	
螺母硬度试验 HRC	98HRB-32HRC	螺母无脱扣断裂, 能正常旋出		合格	
垫圈硬度试验 HRC	35HRC-45HRC	26	25 25 27	合格	
样品编号	紧固轴力(kN) Tighten axial force	40	38 40 41	合格	
Sample number		平均值(kN) Average Value	标准偏差 S Standard deviation		
01	183	176	7.34		
02	174				
03	187				
04	176				
05	166				
06	182				
07	168				
08	174				
标准值	/	155-188	≤15.5		

Form No: HXT—4—114 Rev:E/1

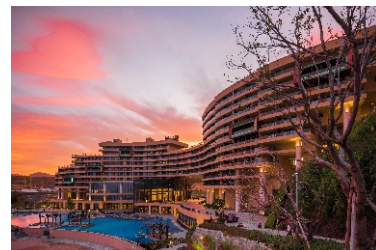
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Name	Standard Code	
	GB (code)	German standard
Inner Hexagon Socket Countersunk Head Screws	GB/T 70.3	DIN7991
Inner Hexagon Socket Cylindrical Head Screws	GB 70.1	DIN912
Hexagon Head Bolts (Full Thread)	GB/T 5783	DIN933
Hexagon Socket Head Bolts (Half Thread)	GB/T 5782	DIN931

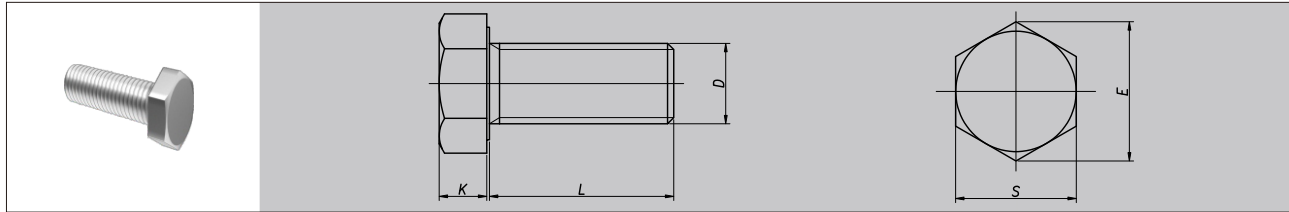


Structure Series





Hexagon Head Bolts (Full Thread)

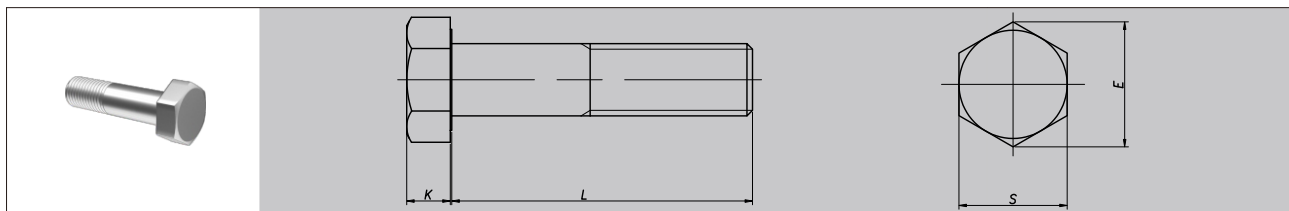


Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural component) joint together as a whole.

Material: 304、316

Nominal diameter D			M4	M5	M6	M8	M10	M12	M16	M20	M24	M30
Pitch			0.7	0.8	1	1.25	1.5	1.75	2	2.5	3	3.5
K	A	max	2.92	3.65	4.15	5.45	6.56	7.68	10.18	12.72	15.22	/
		min	2.68	3.35	3.85	5.15	6.22	7.32	9.82	12.28	14.78	/
	B	max	3.0	3.74	4.24	5.54	6.69	7.79	10.29	12.85	15.35	19.12
		min	2.6	3.26	3.76	5.06	6.11	7.21	9.71	12.15	14.65	18.28
S	max		7	8	10	13	17	19	24	30	36	46
	A	min	6.78	7.78	9.78	12.73	16.73	18.67	23.67	29.67	35.38	/
	B	min	6.64	7.64	9.64	12.57	16.57	18.48	23.16	29.16	35	45

Hexagon Socket Head Bolts (Half Thread)



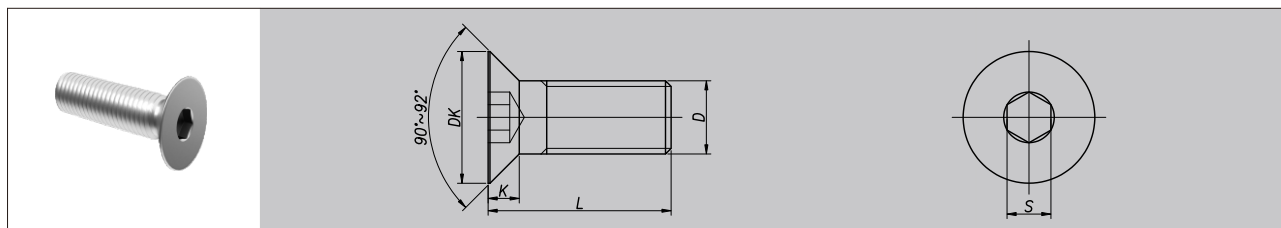
Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural component) joint together as a whole.

Material: 304、316

Nominal diameter D			M4	M5	M6	M8	M10	M12	M16	M20	M24	M30
Pitch			0.7	0.8	1	1.25	1.5	1.75	2	2.5	3	3.5
K	A	max	2.92	3.65	4.15	5.45	6.56	7.68	10.18	12.72	15.22	/
		min	2.68	3.35	3.85	5.15	6.22	7.32	9.82	12.28	14.78	/
	B	max	/	/	/	/	/	/	10.29	12.85	15.35	19.12
		min	/	/	/	/	/	/	9.71	12.15	14.65	18.28
S	max		7	8	10	13	17	19	24	30	36	46
	A	min	6.78	7.78	9.78	12.73	16.73	18.67	23.67	29.67	35.38	/
	B	min	/	/	/	/	/	/	23.16	29.16	35	45
L1		min	L≤125mm, L1=2D+6; 125mm≤L≤200mm, L1=2D+12; L>200mm, L1=2D+25									



Inner Hexagon Socket Countersunk Head Screws

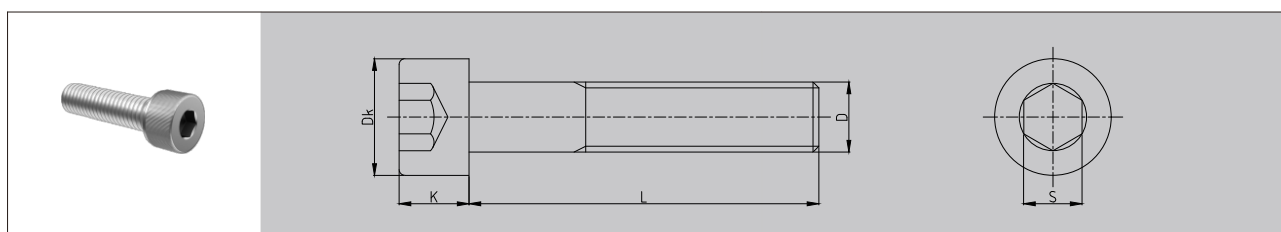


Description: Strong tightening force, need to drill a thread hole on the connected parts, and need special hexagon tools to work together.

Material: 304, 316

Nominal diameter D		M3	M4	M5	M6	M8	M10	M12	M14	M16	M20
Pitch	P	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5
DK	max	6.72	8.96	11.2	13.44	17.92	22.4	26.88	30.8	33.6	40.32
K	max	1.86	2.48	3.1	3.72	4.96	6.2	7.44	8.4	8.8	10.16

Inner Hexagon Socket Cylindrical Head Screws



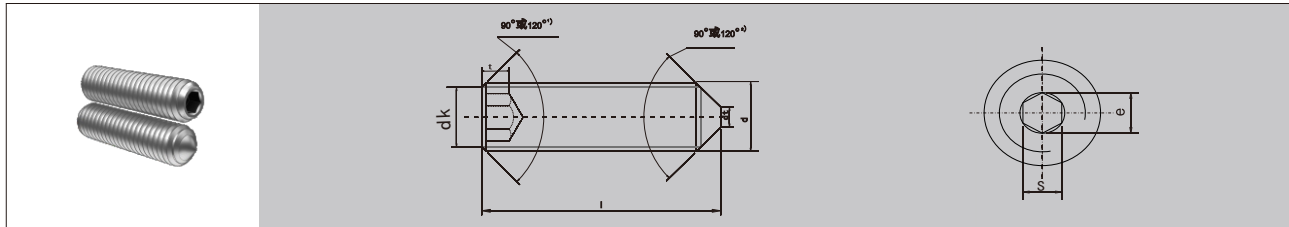
Description: Strong tightening force, need to drill a thread hole on the connected parts, and need special hexagon tools to work together.

Material: 304, 316

Nominal diameter D		M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
Pitch	P	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	3
Dk	Smooth head	7	8.5	10	13	16	18	21	24	30	36
max	Knurled head	7.22	8.72	10.22	13.27	16.27	18.27	21.33	24.33	30.33	36.39
K	max	4	5	6	8	10	12	14	16	20	24



Inner Hexagon Prototype Set Screws

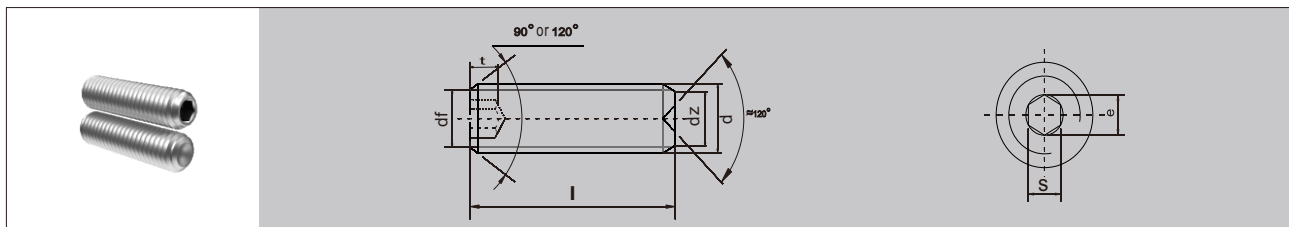


Description: The inner hexagon tapered end set screws with no head and inner hexagon groove need to be installed with a six-inch wrench that conforms to the size. The headless design makes the connected parts more beautiful and high-grade.

Material: 304、316

Nominal diameter D		M1.6	M2	M2.5	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24
Pitch	P	0.35	0.4	0.45	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2.5	3

Inner Hexagon Recessed Set Screws



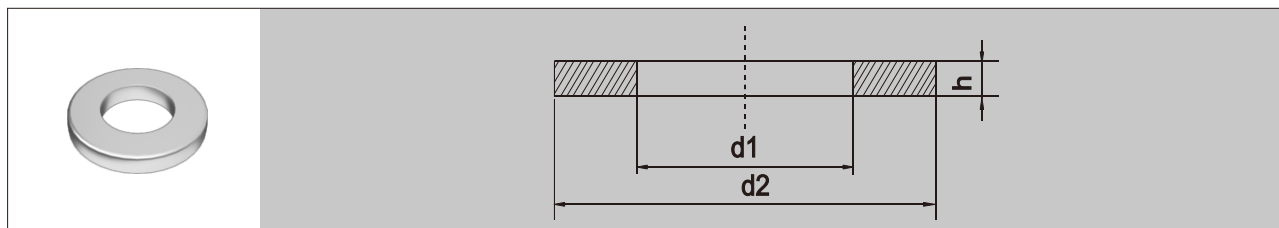
Description: The inner hexagon concave end set screws with no head and inner hexagon groove, of which the screw tail is concave end, need to be installed with the six-inch wrench with the size, its unique headless design makes the connected piece more beautiful and high-end.

Material: 304、316

Nominal diameter D		M1.6	M2	M2.5	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24
Pitch	P	0.35	0.4	0.45	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2.5	3



Flat Washer

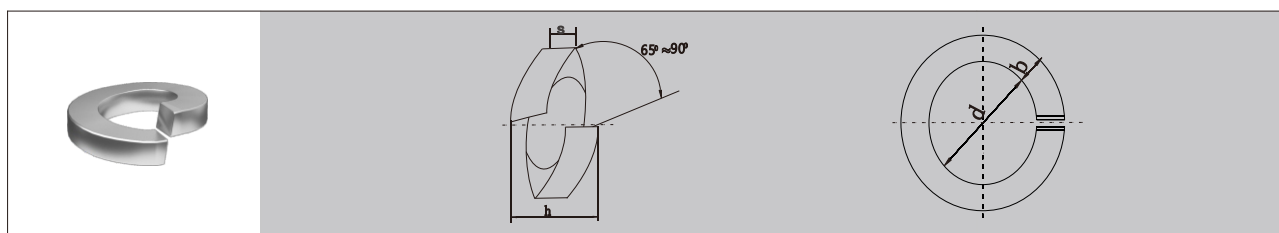


Description: Together with bolts, screws, and nuts, it protects the tightened surface to avoid scratch and increases the stressed area of the fastened parts.

Material: 304, 316

Specification		¢2	¢2.5	¢3	¢4	¢5	¢6	¢8	¢10	¢12	¢14	¢16	¢20	¢24	¢30	¢36
Inner diameter	D1	2.2	2.7	3.2	4.3	5.3	6.4	8.4	10.5	13	15	17	21	25	31	37
Outer diameter	D2	5	6	7	9	10	12	16	20	24	28	30	37	44	56	66
Thickness	h	0.3	0.5	0.5	0.8	1	1.6	1.6	2	2.5	2.5	3	3	4	4	5

Spring washer



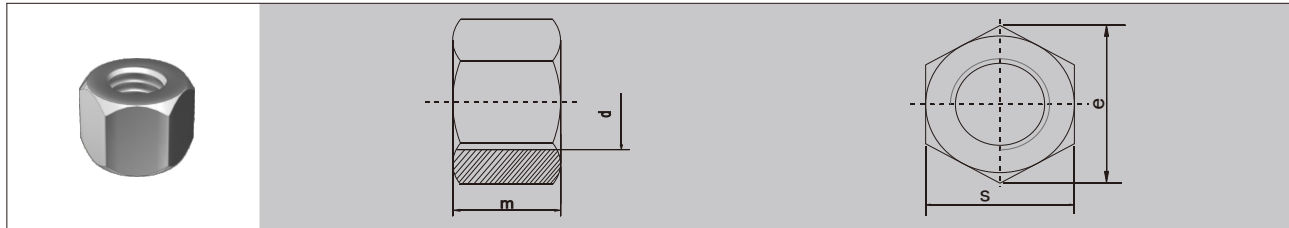
Description: Installed on the supporting surface of bolts, screws and nuts to prevent loosen and eliminate the gap after assembly.

Material: 304, 316

Specification		¢3	¢4	¢5	¢6	¢8	¢10	¢12	¢14	¢16	¢18	¢20	¢22	¢24
Inner diameter	D	3.1	4.1	5.1	6.1	8.1	10.2	12.2	14.2	16.2	18.2	20.2	2.5	24.5
Nominal diameter	S(b)	0.8	1.1	1.3	1.6	2.1	2.6	3.1	3.6	4.1	4.5	5	5.5	6
Thickness	h	1.6	2.2	2.6	2.6	4.2	5.2	6.2	7.2	8.2	9	10	11	12



Hexagon nut

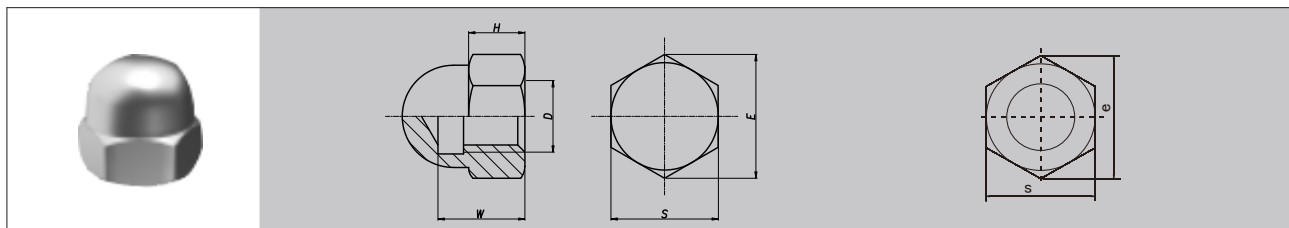


Description: Work together with bolts and screws, mostly used in these cases need to be disassembled frequently.

Material: 304、316

Thread specification		M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Pitch	P	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3
Thickness	m	2.4	3.2	4	5	6	8	10	11	13	14	16	18	19
Opposite side	Smax	5.5	7	8	10	14	17	19	22	24	27	30	32	36

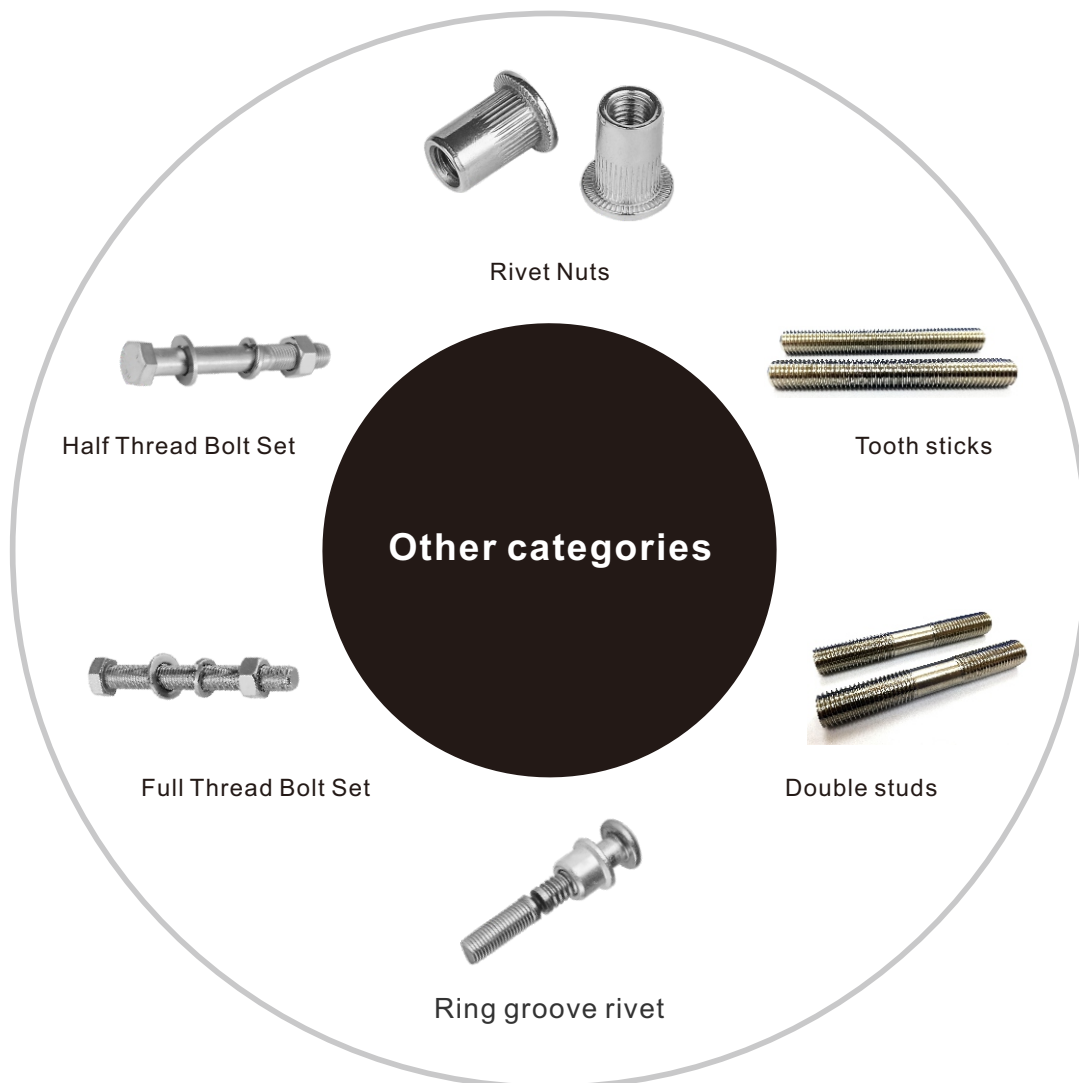
Dome nut



















Description: Apply to the place where need to cover the end of screw thread, mostly used in the end of pipeline system with the effect of anti-dust and damp proof.

Material: 304、316

Thread specification		M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Pitch	P	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3
Thickness	m	2.4	3.2	4	5	6	8	10	11	13	14	16	18	19
Opposite side	Smax	5.5	7	8	10	14	17	19	22	24	27	30	32	36




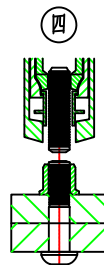
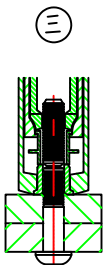
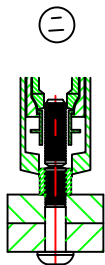
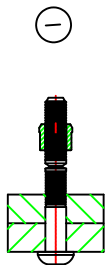


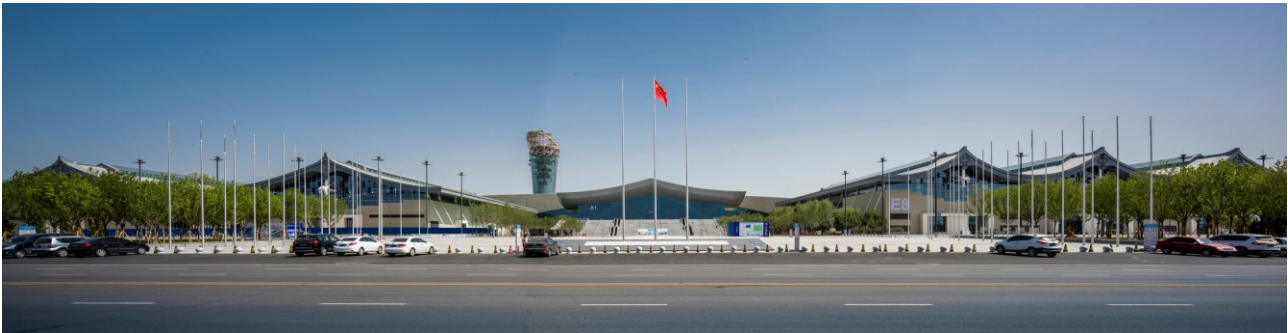
	<p> Rivet Nuts</p> <p>Material: 304, 316, ML08AL(carbon steel) Surface Treatment: White Zinc, Color Zinc, Green Zinc, Blue -white Zinc, White Washing, ZnC Nickel Alloy Color Specification: M3, M4, M5, M6, M8, M10, M12</p>
	<p> Blind rivets</p> <p>Material: All-iron All-steel Semi-steel Aluminum iron Surface Treatment: nature finish, blue -white Zinc, White Washing Specification: Ø2.4, Ø3, Ø3.2, Ø4, Ø4.8, Ø5, Ø6, Ø6.4</p>
	<p> Tooth sticks</p> <p>Material: 304, 316 Surface Treatment: nature finish Specification: M6, M8, M10, M12, M14, M16, M20, M24</p>
	<p> Double studs</p> <p>Material: 304, 316 Surface Treatment: nature finish Specification: M6, M8, M10, M12, M14, M16, M20, M24</p>
 <p> Rod Bolt Set</p>  <p> Stud Set</p>	 <p> Half Thread Bolt Set</p>  <p> Full Thread Bolt Set</p>



Ring groove rivet

Ring groove rivet refers to a special rivet. Ring groove rivets are divided into large diameter ring groove rivets, small diameter ring groove rivets, continuous groove ring groove rivets, and short tail rivets (bobtail). Ring groove rivets are made of high-quality carbon steel, with high riveting strength and firmness and reliability. Its biggest feature is its good anti-vibration performance, wide application and convenient construction.

	<p>Ring groove rivet installation steps</p> <div></div>
<p>Ring groove rivets are used for riveting two structural parts into a whole. It is composed of two parts: rivet and nail sleeve. The rivet consists of a nail rod and a nail sleeve. When riveting, first insert the rivet into the nail hole of the connected part, and then set the nail on the ring groove of the working section of the rivet from the other side of the connected part, and then use the special tool-the muzzle sleeve of the pneumatic ring groove rivet gun on the ring groove of the clamping section of the rivet, press the muzzle against the end face of the nail sleeve, and then pull the trigger of the gun. The rivet gun will tighten the ring groove nail rod of the clamping section of the rivet until it breaks. At this time, the inner wall of the nail sleeve is squeezed into the ring groove of the working section of the rivet to form a new rivet head, thereby riveting and fastening the connected piece.</p>	<p>Features</p> <p>Convenient operation, high efficiency, low noise, good shock resistance, so it is widely used in various vehicles, ships, aviation, mechanical equipment, building structures and other fields.</p>





Name	Standard Code	
	GB (code)	German standard
Cross Recessed Countersunk Head Screws	GB 819	DIN965
Cross Recessed Pan Head Self-tapping Screws	GB/T 845	DIN7981
Cross Recessed Countersunk Head Self-tapping Screws	GB/T 846	DIN7982
Cross Recessed Pan Head Self-drilling & Tapping Screws	GB/T15856.1	DIN7504N
Cross Recessed Countersunk Head Self-drilling & Tapping Screws	GB/T15856.2	DIN7504P
Hexagon Flange Head Self-drilling & Tapping Screws	GB/T15856.4	DIN7504K

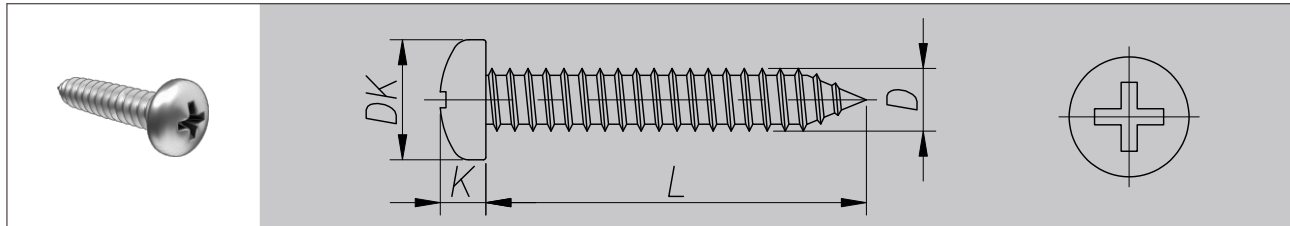


Doors and Windows series





Cross Recessed Pan Head Self-tapping Screws

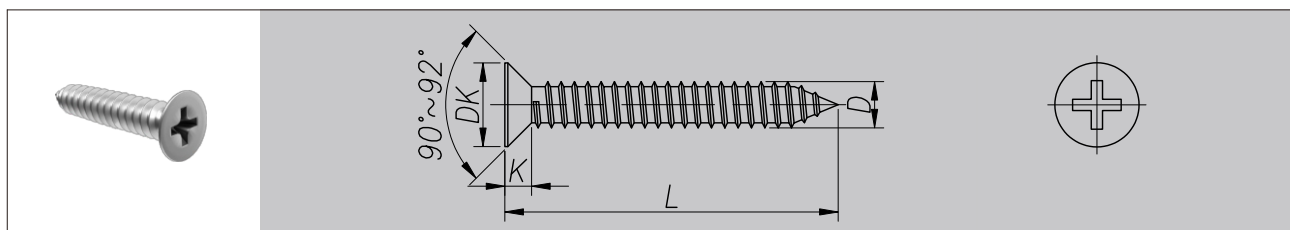


Description: Apply to the connection between thin sheet metal (aluminum, copper, low carbon steel) parts and thicker metal parts or woodwork (main body). Use cross screwdriver to screw, and will leave a thread after screwing in.

Material: 304、316、410

Nominal diameter D		ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.4	1.6	1.8	1.8
DK	max	7	8	9.5	11	12
	min	6.64	7.64	9.14	10.57	11.57
K	max	2.6	3.1	3.7	4	4.6
	min	2.35	2.8	3.4	3.7	4.3
Groove No.		2			3	

Cross Recessed Countersunk Head Self-tapping Screws



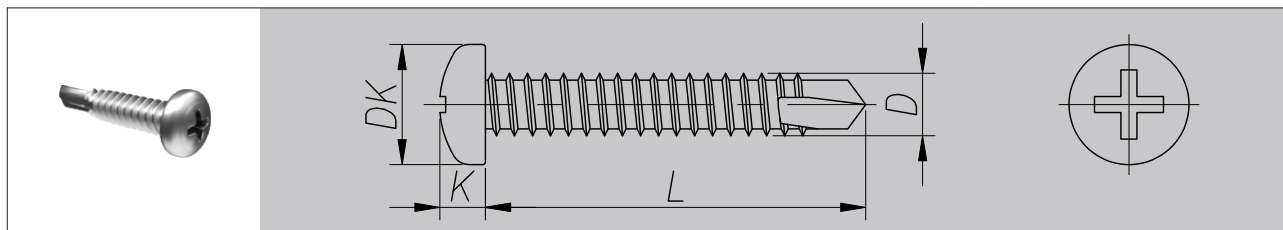
Description: Apply to thin sheet metal(aluminum,copper,low carbon steel) parts and thicker metal parts or the thread connection between woodwork(main body). Use cross screwdriver to screw, and will leave a thread after screwing in.Screw head is not allowed to be left outside.

Material: 304、316、410

Nominal diameter D		ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.4	1.6	1.8	1.8
DK	max	7.3	8.4	9.3	10.3	11.3
	min	6.9	8	8.9	9.9	10.9
K	max	2.35	2.6	2.8	3	3.15
Groove No.		2			3	



Cross Recessed Pan Head Self-drilling & Tapping Screws

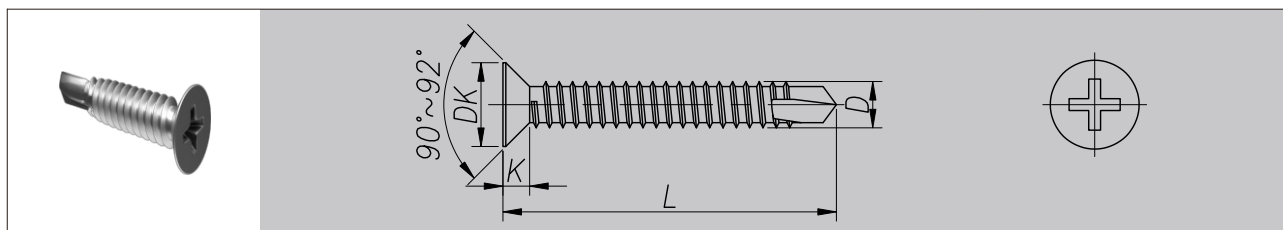


Description: Apply to the connection of cases like multi-layer plates or big-size panels (in lightweight buildings), and have a good comprehensive economic benefit in these industries like construction, automobile manufacturing etc. When selecting, please note that the thickness of the connected parts should be less than the length of the end of screw drill to make sure the drilling is completed before tapping. Use cross type screwdriver to screw.

Material: 304, 316, 410

Nominal diameter D		ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.4	1.6	1.8	1.8
DK	max	7	8	9.5	11	12
	min	6.64	7.64	9.14	10.57	11.57
k	max	2.6	3.1	3.7	4	4.6
	min	2.35	2.8	3.4	3.7	4.3
Groove No.		2			3	

Cross Recessed Countersunk Head Self-drilling & Tapping Screws



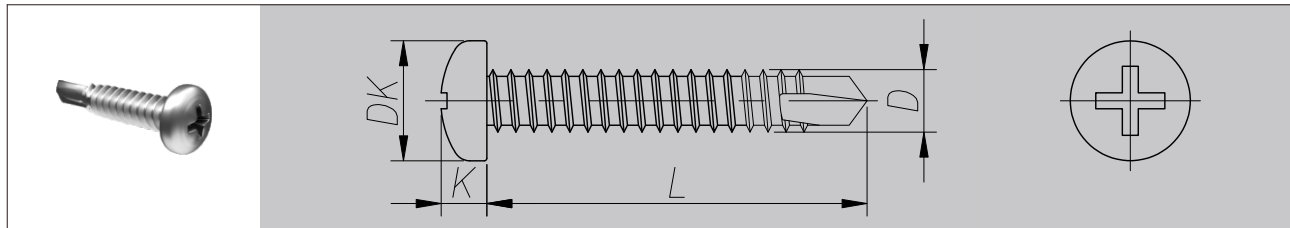
Description: Apply to the connection of cases like multi-layer plates or big-size panels (in lightweight buildings), and have a good comprehensive economic benefit in these industries like construction, automobile manufacturing etc. When selecting, please note that the thickness of the connected parts should be less than the length of the end of screw drill to make sure the drilling is completed before tapping. Use cross type screwdriver to screw.

Material: 304, 316, 410

Nominal diameter D		ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.4	1.6	1.8	1.8
DK	max	7.3	8.4	9.3	10.3	11.3
	min	6.9	8	8.9	9.9	10.9
k	max	2.35	2.6	2.8	3	3.15
Groove No.		2			3	



■ Cross recessed pan head integrated self-drilling & tapping screws



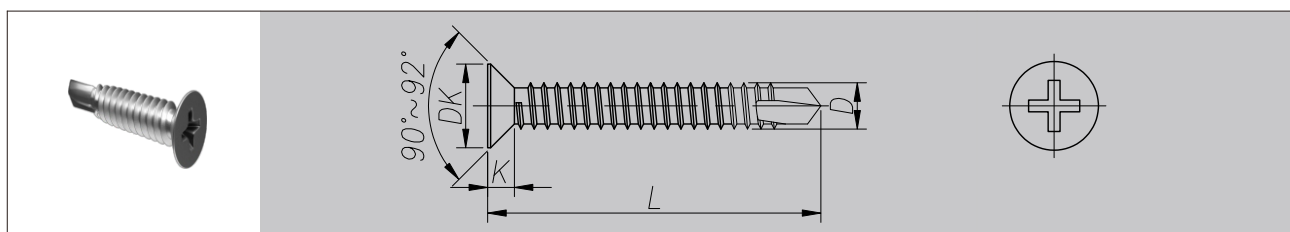
Description: The alloy steel tapping thread with special local heat treatment can make a new easy wedging alveolar inside the steel board or aluminum board at the moment of penetration.

Material: 316+1035 316+435

304+1035 304+435

Nominal diameter D		ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.4	1.6	1.8	1.8
DK	max	7	8	9.5	11	12
	min	6.64	7.64	9.14	10.57	11.57
K	max	2.6	3.1	3.7	4	4.6
	min	2.35	2.8	3.4	3.7	4.3
Groove No.		2			3	

■ Cross recessed countersunk head integrated self-drilling & tapping screws



Description: With tapping machine, screw can penetrate the 0-12mm steel plate directly. And it can design the length of alloy drill according to different usage requirements.

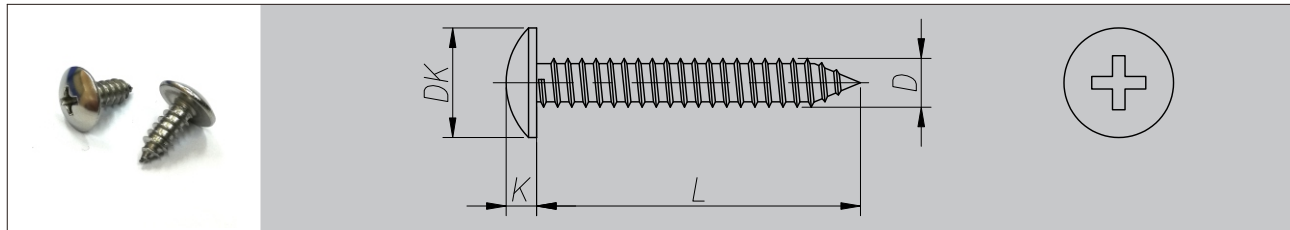
Material: 316+1035 316+435

304+1035 304+435

Nominal diameter D		ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.4	1.6	1.8	2.1
DK	max	7.3	8.4	9.3	10.3	11.3
	min	6.9	8	8.9	9.9	10.9
K	max	2.35	2.6	2.8	3	3.15
Groove No.		2			3	



Cross Recessed Big Flat Head Self-tapping Screws

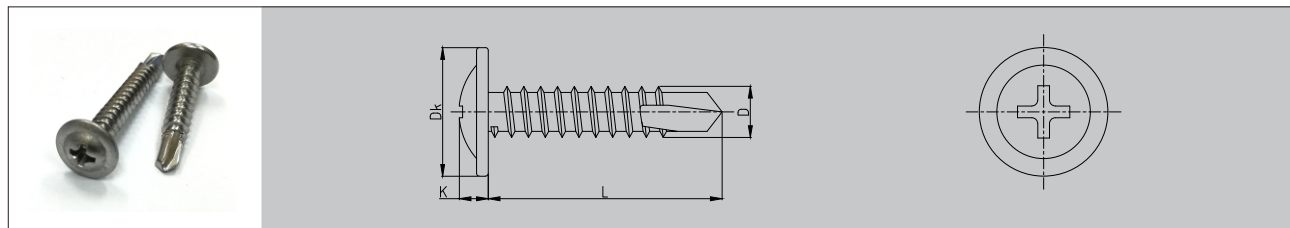


Description: Apply to the connection between thin sheet metal (aluminum, copper, low carbon steel) parts and thicker metal parts or the thread connection between woodwork (main body). Leave a thread after screwing in.

Material: 304、316、410

Nominal diameter D		ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.3	1.4	1.6	1.8	1.8
DK	max	8.1	9.4	9.4	11.8	11.8	14
	min	7.6	8.9	8.9	11.2	11.2	13.3
K	max	2.35	2.65	2.65	3.25	3.25	3.9
	min	2.05	2.35	2.35	2.95	2.95	3.5
Groove No.		2				3	

Cross Slotted Washer Head Self-drilling&tapping Screws



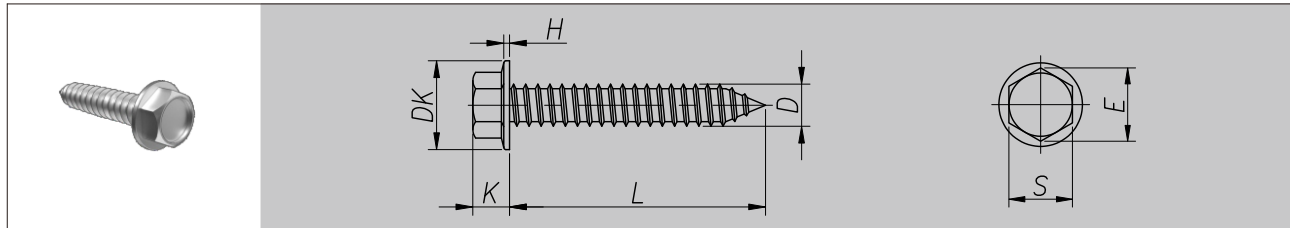
Description: Apply to the connection of cases like multi-layer plates and big-size panels (in lightweight buildings), having a good comprehensive economic benefit in these industries like construction, automobile manufacturing etc. When selecting, please note that the thickness of the connected parts should be less than the length of the end of screw drill to make sure the drilling is completed before tapping. Use cross type screwdriver to screw.

Material: 304、316、410

Nominal diameter D		ST4.2	ST4.8
Pitch		1.4	1.6
DK	max	10.7	11.5
	min	10.3	10.8
K	max	2.6	2.6
	min	2.2	2.2
Groove No.		2	3



Hexagon Flange Head Self-tapping Bolts

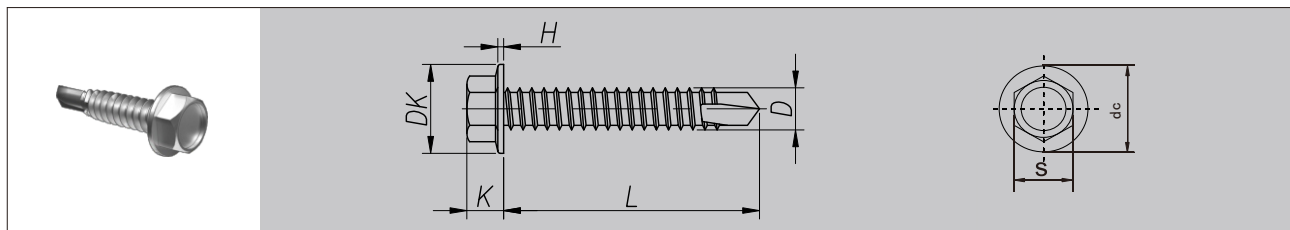


Description: Apply to the connection between thin sheet metal (aluminum, copper, low carbon steel) parts and thicker metal parts or the thread connection between woodwork (main body). Use flange type screwdriver to screw, and will leave a thread after screwing in.

Material: 304, 316, 410

Nominal diameter D		ST2.2	ST2.9	ST3.5	ST4.2	ST4.8	ST5.5	ST6.3	ST8	ST9.5
Pitch	P	0.8	1.1	1.3	1.4	1.6	1.8	1.8	2.1	2.1
DK	max	4.5	6.4	7.5	8.5	10	11.2	12.8	16.8	21
K	max	2.2	3.2	3.8	4.3	5.2	6	6.7	8.6	10.7

Hexagon Flange Head Self-drilling & Tapping Screws



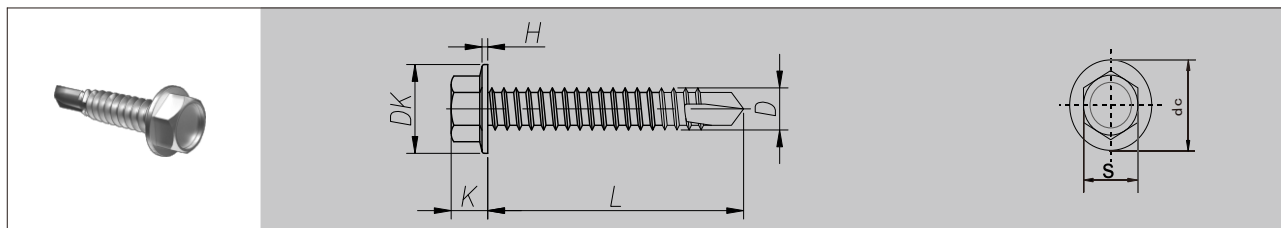
Description: Apply to the connection of cases like multi-layer plates and big-size panels (in lightweight buildings), having a good comprehensive economic benefit in these industries like construction, automobile manufacturing etc. When selecting, please note that the thickness of the connected parts should be less than the length of the end of screw drill to make sure the drilling is completed before tapping. Use flange type screwdriver to screw.

Material: 304, 316, 410

Nominal diameter D		ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.3	1.4	1.6	1.8	1.8
H	min	0.6	0.6	0.8	0.9	1	1
DK	max	8.3	8.3	8.8	10.5	11	13.5
	min	7.6	7.6	8.1	9.8	10	12.2
K	max	3.4	3.4	4.1	4.3	5.4	5.9
	min	3	3	3.6	3.8	4.8	5.3
S	max	5.5	5.5	7	8	8	10
	min	5.32	5.32	6.78	7.78	7.78	9.78



Hexagon flange head integrated self-drilling & tapping screws



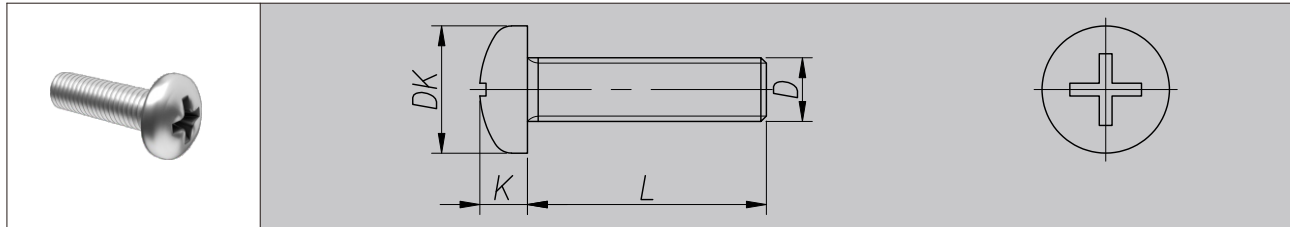
Description: For A2 or A4 stainless steel screws, during the whole producing process, strengthen the thread by cold forging, and keep the unique corrosion resistance of all kinds of stainless steel without heat treatment. It screws smoothly in the alveolar by gentle and firm way, without breaking the screw thread to pass the aggregating part, Achieving excellent performance of polymer and solid resistance and wind resistance.

Material: 316+1035 316+435 304+1035 304+435

Nominal diameter D		ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
Pitch	P	1.3	1.3	1.4	1.6	1.8	1.8
H	min	0.6	0.6	0.8	0.9	1	1
DK	max	8.3	8.3	8.8	10.5	11	13.5
	min	7.6	7.6	8.1	9.8	10	12.2
K	max	3.4	3.4	4.1	4.3	5.4	5.9
	min	3	3	3.6	3.8	4.8	5.3
S	max	5.5	5.5	7	8	8	10
	min	5.32	5.32	6.78	7.78	7.78	9.78



■ ■ ■ Cross recessed pan head screws

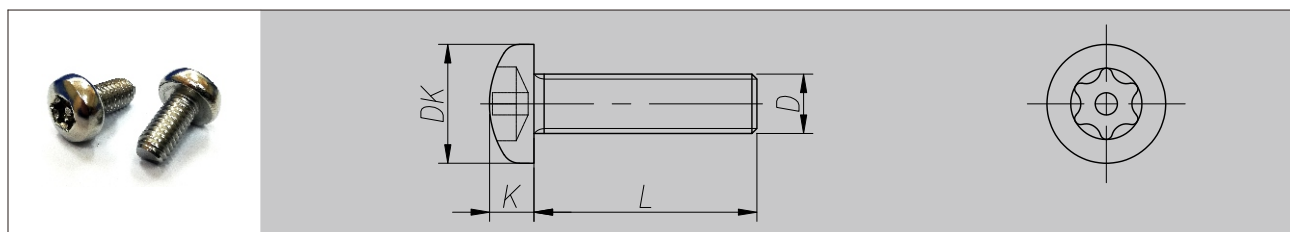


Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural components) joint together as a whole.

Material: 304、316

Nominal diameter D		M1.6	M2	M2.5	M3	M3.5	M4	M5	M6	M8	M10
Pitch	P	0.35	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
DK	MAX	3.2	4	5	5.6	7	8	9.5	12	16	20
K	MAX	1.3	1.6	2.1	2.4	2.6	3.1	3.7	4.6	6	7.5
Groove No.	NO.	0		1		2		3		4	

■ ■ ■ Plum Blossom Groove Pan Head Column Anti-theft Screws



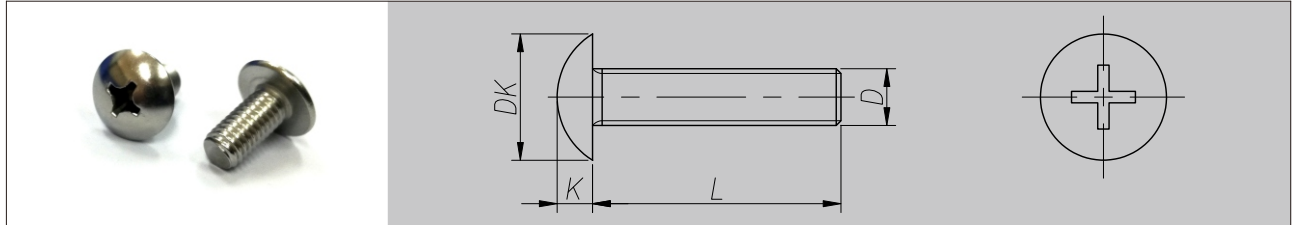
Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural components) joint together as a whole with certain anti-theft function.

Material: 304、316

Nominal diameter D		M3	M4	M5	M6	M8
Pitch	P	0.5	0.7	0.8	1	1.25
DK	max	5.6	8	9.5	12	16
	min	5.3	7.64	9.14	11.57	15.57
K	max	2.4	3.1	3.7	4.6	6
	min	2.26	2.92	3.52	4.3	5.7



■ ■ ■ Cross Recessed Large Flat Head Screws

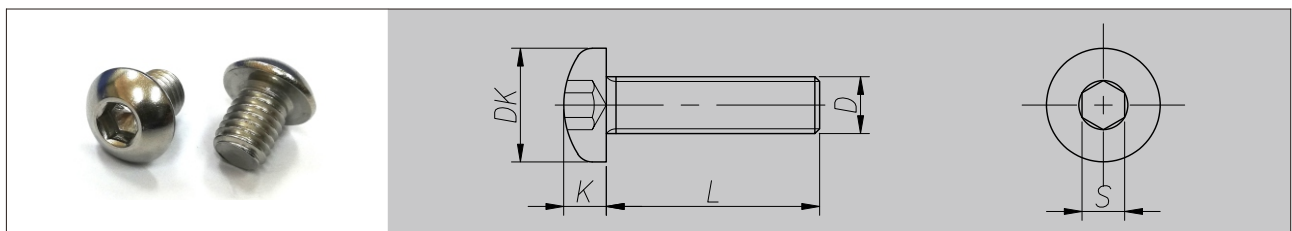


Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural components) joint together as a whole.

Material: 304、316

Nominal diameter D		M3	M4	M5	M6	M8
Pitch	P	0.5	0.7	0.8	1	1.25
DK	max	6.65	9.4	11.8	14	17.8
	min	6.35	8.9	11.2	13.3	17
K	max	2.05	2.65	3.25	3.9	5
	min	1.75	2.35	2.95	3.5	4.6

■ ■ ■ Hexagon Socket Flat Round Head Screws



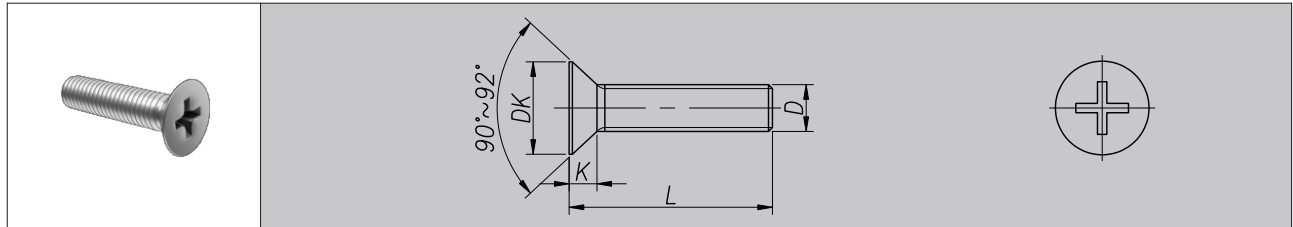
Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural components) joint together as a whole.

Material: 304、316

Nominal diameter D		M3	M4	M5	M6	M8
Pitch	P	0.5	0.7	0.8	1	1.25
DK	max	5.7	7.6	9.5	10.5	14
	min	5.4	7.24	9.14	10.07	13.57
K	max	1.65	2.2	2.75	3.3	4.4
	min	1.4	1.95	2.5	3	4.1



■ Cross Recessed Countersunk Head screws

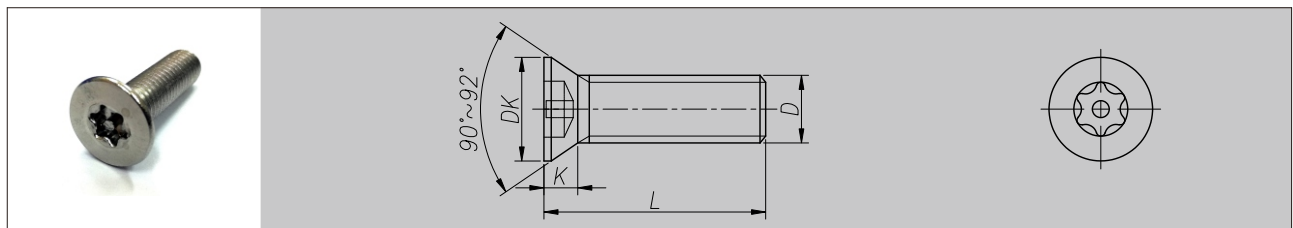


Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural components) joint together as a whole.

Material: 304、316

Nominal diameter D		M1.6	M2	M2.5	M3	M3.5	M4	M5	M6	M8	M10
Pitch	P	0.35	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
DK	MAX	3	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3
K	MAX	1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5
Groove No.	NO.	0		1		2			3	4	

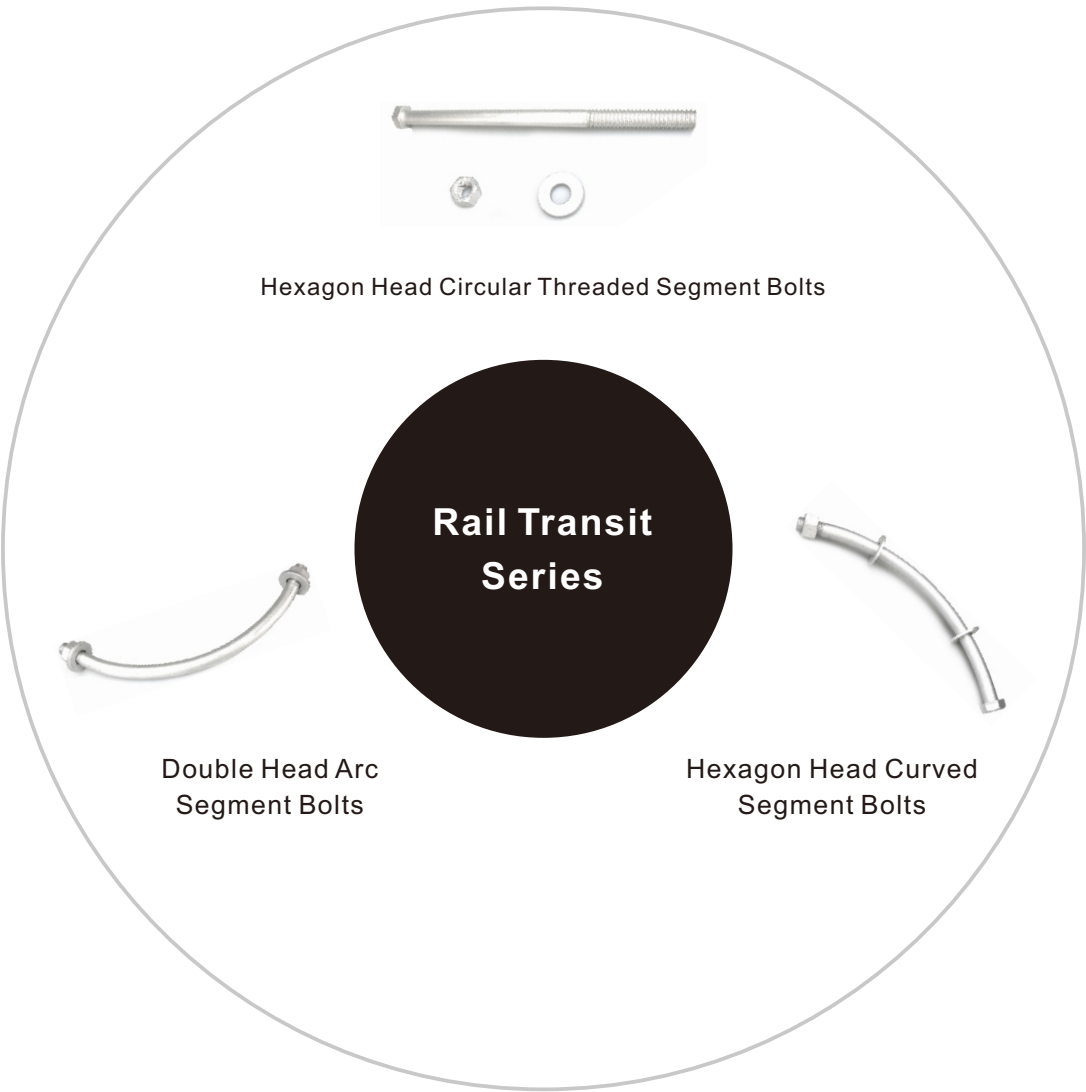
■ Plum Blossom Countersunk Head Column Anti-theft Screws



Description: Apply to the mechanical equipment which has high requirements on strength and accuracy, making two parts (structural components) joint together as a whole with certain anti-theft function.

Material: 304、316

Nominal diameter D		M3	M4	M5	M6	M8
Pitch	P	0.5	0.7	0.8	1	1.25
DK	max	5.5	8.4	9.3	11.3	15.8
	min	5.2	8.04	8.94	10.87	15.37
K	max	1.65	2.7	2.7	3.3	4.65



category	Name	Standard Code	remarks
		GB (code)	
Rail Transit Series	bolt	GB/T 5782 GB/T 901	reference
	nut	GB/T 6170	reference
		GB/T 41	reference



Rail Transit Series














Segment bolt series

Segment bolts are a special type of fastener used by shield tunneling machines to connect and fasten their segments during tunneling. Through this bolt connection, several arched segments can be connected into a circle. Therefore, the surface that supports the entire tunnel is also called a segment bolt, and even becomes a segment connector, or because it is used for shield tunnels, it is called a shield tunnel segment bolt or connector.

Application Industry	Installation method
It is specially used for segment connection of various shield tunneling tunnels, such as highway crossing river tunnels, railway shield tunnels, power cable shield tunnels, power plant suction shield tunnels, gas pipeline engineering shield tunnels, and highway mountain shield construction tunnel, ocean shield tunnel, municipal engineering, civil defense engineering, military special engineering, etc.	The shield tunnel section is connected by bolts one by one by circular segments, and each segment has reserved segment bolt holes. Each ring has horizontal and vertical segment bolts connected together, and each ring has six to eight tape-shaped segments that are joined together to form a cylindrical pipe.

Hexagon Head Circular Threaded Segment Bolts	Double Head Arc Segment Bolts	Hexagon Head Curved Segment Bolts	Stainless Steel Straight Segment Bolt	Stainless Steel Curved Segment Bolt
				
Bolts material: 45#, 40Cr, 316 Performance level: 5.8, 6.8, 8.8 Surface treatment: hot-dip galvanizing, dacromet, nanocomposite Powder galvanizing, natural surface finish Application areas: subway shield, tunnel segment connection				

			
Sherardizing-anti-alkali surface treatment	Dacromet + anti-alkali surface treatment	Sherardizing surface treatment	Dacromet surface treatment

Specification	M16	M24	M27	M30
Straight thread	39, 42	39, 42, 45	42, 45, 50	42, 45, 50
radian	R200, R310	R350, R360, R380	R350, R360, R380	R350, R360, R380
Opposite side	23.16	35.0	40.0	45.0
Diagonal distance	26.17	39.55	45.2	50.85
Head thickness	10.0	15.0	17.0	18.7



6.8 grade segment bolt technical parameter list						
Name of the part	Material	Hardness value HV	Tensile strength MPa	Surface treatment	Coating thickness μm	Salt spray time h
Segment Bolts	Bolts	45#/40Cr	190-250	Dacromet	$\geq 6.8.6$	480、1000
	nut	45#	170-302			
	washer	/	140-300			

8.8 grade bolt technical parameter table						
Name of the part	Material	Hardness value HV	Tensile strength MPa	Surface treatment	Coating thickness μm	Salt spray time h
Segment Bolts	Bolts	45#/40Cr	255-335	Dacromet	$\geq 6.8.6$	480、1000
	nut	45#	233-353			
	washer	/	140-300			

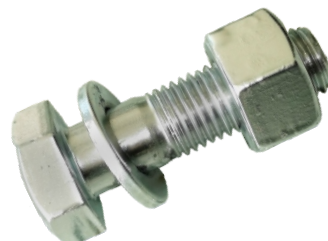
Major Project Cases		
No.	Name	Implementation year
1	XBZH-1 Standard Six Work Area of the Pearl River Delta Intercity New Baiguang Project	2018
2	Section 02 of Xiamen Metro Line 4	2018
3	Xiamen Rail Transit Line 6	2018
4	Taiyuan Metro	2018
5	Xi'an Metro Line 6	2018
6	Section 13 of Shijiazhuang Metro Line 3 Phase I	2019
7	Shijiazhuang Metro Line 2	2019
8	Xi'an Metro Line 14	2019
9	Xi'an Metro Line 14	2019
10	Shijiazhuang Metro Line 3 Phase II	2019
11	Kunming Metro Line 5	2019
12	Changsha Rail Transit Line 6 Central City Section	2020
13	Shijiazhuang Metro Line 1	2020
14	Nantong Rail Transit Line 2	2020
15	Xi'an Metro Line 6	2020
16	Section 3 of Shenyang Metro Line 2	2020
17	Shenyang Metro Line 2 Tender Section 4	2020
18	Suzhou Rail Transit Line S1-15	2020
19	Suzhou Rail Transit Line S1-09	2020
20	Section 02 of Suzhou Rail Transit S1 Line	2020



Track matching bolts



Turnout bolt



Hexagon head bolts



Carriage bolt



Isometric studs



Track bolt



Hexagon head bolts

Test Report



J13317-2021/0

检测报告

TEST REPORT

报告编号: 2022505520

委托单位: 广东坚朗五金制品股份有限公司
Client

样品名称: 管片螺栓螺母垫圈组合件
Product

检验类别: 型式检验
Test Type



浙江国检检测技术股份有限公司

Zhejiang Guojian Testing Technology Co., Ltd.

国家标准件产品质量检验检测中心(浙江)

China National Center for Quality Test of Standard Parts (Zhejiang)



J13317-2021/0

检测报告

报告编号/Report No.: 2022505520
防伪码/Anti-Fake: 91491352

报告日期/Date: 2022/11/25
页码/Page: 1/4

委托单位/Client: 广东坚朗五金制品股份有限公司
地址/Address: 广东省东莞市塘厦镇坚朗路3号
样品名称/Product: 管片螺栓螺母垫圈组合件
型号规格/Dimension: M10/M10/q 30
送样数量/Quantity: 10套
等级/Grade: 8.8/8/200HV
材料/Material: 碳钢
委托人提供以上信息, 实验室不负责其真实性。

样品来源/Sample Source: 委托方送样
样品描述/Sample Description: 见来样照片
到样日期/Receiving Date: 2022-09-26~2022-11-24
检验日期/Test Date: 2022-09-28~2022-11-24

结果判定依据/Specification & Conformance Requirement:
委托方提供的技术要求

检测结果/Test Result: 参见下页See next page



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浙江国检检测技术股份有限公司
国家标准件产品质量检验检测中心(浙江)

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J13304-2021/1

检测报告

报告编号/Report No.: 2022505520

页码/Page: 2/4

检测项目 /Test Item	检测方法 /Test Method	技术要求 /Requirement	检测结果 /Result	结论 /Conclusion
管片垫圈 维氏硬度 /HV0.05	GB/T 4340.1-2009	>200	247/240/240	符合
管片螺母 保证载荷	GB/T 3098.2-2015	516, 11kN	取一件进行检测, 卸载后用手旋出	符合
管片螺栓 抗拉强度 R _m /MPa	GB/T 3098.1-2010	>830	885, 断裂发生在未旋合螺纹长度内	符合
洛氏硬度 (1/4, r/2以内) /HRC	GB/T 230.1-2018	23-34	23.1/23.0/23.8	符合

审核/Reviewed by: 崔强珉 批准/Approved by: 李波

检测项目 /Test Item	检测方法 /Test Method	技术要求 /Requirement	检测结果 /Result	结论 /Conclusion
管片垫圈 附着力/级	GB/T 9286-2021	≤3	1	符合
管片螺母 铅笔硬度	GB/T 13448-2019	≥3H	3H	符合
管片螺母 耐碱性	GB 2724-88	168小时后涂层无变色、起皮、脱落等现象。	168小时后涂层无变色、起皮、脱落等现象。	符合

审核/Reviewed by: 陈萍 批准/Approved by: 李波



J13304-2021/1

检测报告

报告编号/Report No.: 2022505520

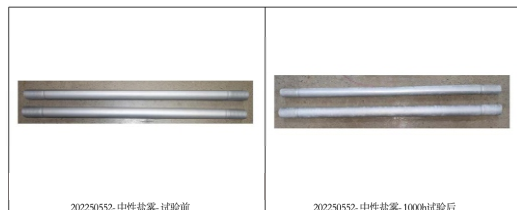
页码/Page: 3/4

检测项目 /Test Item	检测方法 /Test Method	技术要求 /Requirement	检测结果 /Result	结论 /Conclusion
管片垫圈 镀层厚度/μm	GB/T 4956-2003	>18.6	23.4	符合
管片螺母 镀层厚度(取 剖面)/μm	GB/T 4956-2003	>18.6	21.8	符合
管片螺栓 镀层厚度(未 端端面)/μm	GB/T 4956-2003	>8.6	18.5	符合

审核/Reviewed by: 李波 批准/Approved by: 李波

检测项目 /Test Item	检测方法 /Test Method	技术要求 /Requirement	检测结果 /Result	结论 /Conclusion
管片螺栓 中性盐雾试验	GB/T 10125-2012	1000小时中性盐雾无红锈	2个样品经1000小时中性盐雾试验, 表面均未出现红锈。	符合

审核/Reviewed by: 李波 批准/Approved by: 李波



202250552-中性盐雾-试验前

202250552-中性盐雾-1000h试验后



Carbon Steel Bolts (I)

Introduction of Carbon Steel Bolts

According to the performance grade, carbon steel bolts can be classified into 3.6, 4.6, 4.8, 5.6, 6.8, 8.8, 9.8, 10.9, 12.9 etc.

For example:

The material of the bolts is low carbon alloy steel or the medium carbon steel, meanwhile it has grade 8.8 and above, after heat treatment(quenching, temper), these bolts are called high-strength bolts, and the others are called ordinary bolts.

Performance grade consists of two figures which stand for the nominal tensile strength and yield ratio of bolt material.

For example the performance grade 4.6 means:

- Nominal tensile strength is 400MPa
- Yield ratio is 0.6
- Yield strength is 240MPa from the formula 400×0.6

After the heat treatment of material, the high-strength bolt grade 10.9 can achieve the following performance:

- Nominal tensile strength 1000Mpa
- Yield ratio 0.9
- Yield strength $1000 \times 0.9 = 900\text{MPa}$

The meaning of bolt performance grade is general international standard. The bolts with same performance grade, despite of the material and producing area, the performance are the same, just need to select the performance grade during designing.

- Strength grade 8.8 and 10.9 means the bolt's shear stress grade is 8.8GPa and 10.9GPa. The 's' in 10.9s means steel structure.

High-strength bolts are mainly applied to steel structure projects, to connect the steel plate.

- High-strength bolts can be classified into tor-shear types high-strength bolts and big hexagonal high strength bolts
- Big hexagonal head high strength bolts are the high strength grade in ordinary bolts, while the tor-shear type high strength bolts are the improved types of big hexagonal head high strength bolts.



Carbon Steel Bolts (II)

Outline of High-strength Bolts

Name	Material	Surface Treatment	Grade	Standard	Remark
Torsional shear type high strength bolts	20MnTiB/35VB	blacken	10.9S	GB/T3632	screw/ one flat washer/nut
Welding nails(studs)	ML15/ML15Al	nature finish	—	GB/T10433	screw/magnetic ring
Big hexagon head bolts	20MnTiB/35VB	blacken	10.9S	GB/T1228~1231	screw/ two flat washers/nut
Inner hexagon Cylindrical head screws	10B21/35/45	blacken/galvanized /dacromet	4.8/8.8/10.9/12.9	DIN912	configuration according to client's requirement
Hexagon flange bolts	10B21/35/45	galvanized	4.8/8.8/10.9	GB/T5787	
Double head screws	35/45	blacken/galvanized	4.8/8.8/12.9	GB/T953	

Performance grade

Category	Bolt	Nut	Washer
Form size	according to GB/T1228	according to GB/T1229	according to GB/T1230
Performance grade	10.9S	10H	35-45HRC
	8.8S	8H	35-45HRC

Mechanical properties

Thread specification M	Performance grade	Material	Tensile strength Mpa
M12-M24	10.9S	20MnTiB	1040-1240
M27-M30		35VB	
M12-M24	8.8S	20MnTiB	830-1030
M27-M30		35VB	

Fastener FAQ

1. Self-tapping screws are not used directly on the profile without drilling the corresponding bottom hole, resulting in fractures and phillips screws slipped that cannot be used.

Specification	Reference torque (Nm)		Breaking torque (Nm)	Prefabricated hole diameter (mm)	Plate thickness (mm)
	Screw-in type	Cutting type			
ST2.2	0.24	0.3	0.45	1.95	1.2-1.3
ST2.6	0.48	0.6	0.9	2.2	1.2-1.3
ST2.9	0.8	1	1.5	2.4	1.2-1.3
ST3.3	1.07	1.33	2	2.7	1.2-1.3
ST3.5	1.45	1.8	2.7	2.95	1.8-2
ST3.9	1.82	2.27	3.4	3.25	1.8-2
ST4.2	2.36	2.93	4.4	3.45	1.8-2
ST4.8	3.37	4.2	6.3	4.05	3-3.2
ST5.5	5.35	6.67	10	4.75	3-3.2
ST6.3	7.29	9.08	13.6	5.5	4.5-5
ST8	16.5	20.5	30.8	6.9	5-6.85
Note: The red specifications in the table are common specifications					

2. The rotating speed of the used tool is too fast, and the tool is used for a long time after the screw is tightened, causing the screw to break and phillips screws slipped to be unusable.

3. The bit is too long, and the bit and the screw shake greatly, which makes it impossible to drill or break the screw.

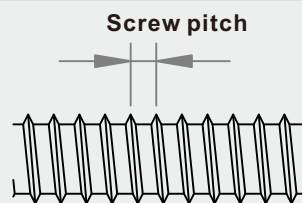
4. The bit does not match the phillips screws, and the cap head phillips screws slipped after being forcibly used, making the screws unusable.

5. Stainless steel (304/316) screws are used on steel linings, steel frames, screws cannot be drilled, heads are damaged, and cap screws cannot be used.

6. During the use of the screw, double-layer obstacles will cause the screw to break.

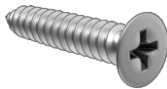

7. The thickness of the profile to be drilled is greater than 2/3 of the length of the self-drilling self-tapping drill bit, which causes fracture and phillips screws slipped.

8. The mismatch between the pitch of the screw and the thickness of the profile results in a tight screw lock.



9. Due to the different materials, different tooth pitches need to be selected. If the material is not selected correctly, problems such as screw breakage and phillips screws slipped due to cutting objects cannot be ruled out.

10. Common terms

Common terms		
	ST-Self-tapping nominal mark	M-Metric mechanical teeth nominal mark



11.The product material hardness is different, you need to choose the correct screw

Characteristics and application of the material 410	
<p>The material 410 (i.e. 1Cr13) is a kind of martensite stainless steel which has magnetism. Its main feature is that the core and surface hardness can be improved by heat treatment. It has a high comprehensive mechanical properties. But the corrosion resistance is not as good as 304,302. For the screw made of 410, no need to drill hole in advance, it can penetrate the steel plate directly,to realize drilling,tapping,locking at a time, saving time and labor. Though having a high comprehensive mechanical properties, its corrosion resistance is not good, need to pay attention to the application environment.</p>	<ul style="list-style-type: none"> ▶ no direct contact to rain water ▶ not suitable for strong acid and alkali ▶ not suitable for the environment with high humidity ▶ not suitable for seaside ▶ not suitable for the place near chemical factory
<p>Notes:If need to use in above cases, then must enhance the corrosion resistance first, which can be achieved by doing the treatment Dacromet on the surface. Otherwise, it can not be used directly.</p>	

Material	Tensile strength N/mm ²	Hardness HV	Application	Appearance	Corrosion resistance	Working environment	Thickness of the fixed plate
1022A Coating nail	1000	surface: HV450-650 core: HV280-400	plastic+steel keel wood+thick engineering plastic wood+steel keel fiberboard+steel keel	electroplate	No red rust after leaving the entire screw in the neutral salt fog for 72 hours	neutrality indoor	apply to the steel plate with thickness below 12mm, not apply to stainless steel plate
SUS304	500-700	surface: HV210-270 core: HV190-230	plastic+thin plastic aluminum wood board+ plastic plastic+thin steel wood+thin steel,aluminum board fiberboard+thin steel, aluminum board	nature finish	No red rust after leaving the screw head in the neutral salt fog for 120 hours	neutrality indoor exposed outdoor corrosive outdoor littoral area indoor	apply to the steel late with thickness below 1mm, and the aluminum plate thickness below 6mm
SUS316	500-700	surface: HV210-270 core: HV190-230	plastic+thin plastic wood+plastic plastic+thin steel wood+thin steel, aluminum board	nature finish	No red rust after leaving the screw head in the neutral salt fog for 120 hours	neutrality indoor exposed outdoor corrosive outdoor littoral area indoor littoral area outdoor	apply to the steel plate with thickness below 1mm, and the aluminum plate thickness below 6mm
SUS410	1400-1600	surface: HV580-680 core: HV350-450	plastic+steel,stainless steel keel wood+thick engineering plastic wood+steel, stainless steel keel fiberboard+steel, stainless steel keel	nature finish	No red rust after leaving the screw ead in the neutral salt fog for 72 hours	neutrality indoor exposed outdoor littoral area indoor	apply to the steel plate with thickness below 12mm, and the stainless steel plate thickness below 5mm

Notes:

- 1.Neutrality refers to the neutral climate in the inland. Corrosive environment is the environment with alkaline, sulfide, such as chemical, smelting, paper making, food and pharmaceutical factories, etc;
- 2.Littoral area: A region within 10KM from the coastline.

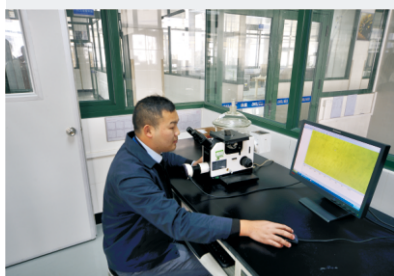
National Accreditation Laboratory

Technology Innovated, Beauty Created

KIN LONG builds a provincial level technology center and owns a laboratory certified by China National Accreditation Service. KIN LONG establishes the research and development center and sets up the market orientated product development mechanism. Owing more than 600 patents in China and abroad, KIN LONG was awarded as one of national high-

end technology enterprises.

Relying on strong R&D and test capacity, KIN LONG is also actively involved in the edition of National standard, Industrial standard and local standard. Till now, KIN LONG has completed editions of more than a hundre standards.





Commonly Used National Standard for Screws

National Standard No.	Name	National Standard No.	Name
GB/T5780	Hexagon head bolts/Grade C/Half thread	GB/T846	Cross recessed countersunk head tapping screws
GB/T5781	Hexagon head bolts/Grade C/Full thread	GB/T5283	Slotted countersunk head tapping screws
GB/T5782	Hexagon head bolts/Grade A&B	GB/T5284	Slotted oval head tapping screws
GB/T5783	Hexagon head bolts/Full thread/Grade A&B	GB/T865	Countersunk head rivets
GB/T41	I-Shape hexagon nuts /Grade C	GB/T867	Cup head rivets
GB/T6170	I-Shape hexagon nuts /Grade A&B	GB/T99	Slotted round head wood screws
GB/T93	Spring washer	GB/T100	Slotted countersunk head wood screws
GB/T97	Flat washer	GB/T101	Slotted oval head wood screws
GB/T859	Light-type spring washer	GB/E950	Cross recessed round head wood screws
GB/T95	Flat washer/Grade C	GB/T951	Cross recessed countersunk head wood screws
GB/T67	Recessed pan head screws	GB/T952	Cross recessed oval head wood screws
GB/T68	Recessed countersunk head screws	GB/T1014	Large oval head socket shank rivets
GB/T70	Hexagon socket head cap screws	GB/T12615	Enclosed mushroom flat self-plugging rivets
GB/T818	Cross recessed pan head screws	GB/T12616	Enclosed countersunk flat self-plugging rivets
GB/T819	Cross recessed countersunk head screws	GB/T12617	Slotted countersunk flat self-plugging rivets
GB/T820	Cross recessed oval head screws	GB/T12618	Open type mushroom flat self-plugging rivets
GB/T845	Cross recessed pan head tapping screws		

Commonly Used Material Chemical Composition Table

Grade	chemical composition%										
TYPE	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Others	
302	0.15	1	2	0.045	0.03	8.0-1.0	17.0-19.0				Has a good anti-corrosion performance in these mediums like nitric acid, most organic acids and inorganic acids, water solution, phosphoric acid, alkali and gas etc, will obtain a higher strength after cold working.
302HQ/ XM7	0.08	1	2	0.045	0.03	8.5-10.5	17.0-19.0		3.0-4.0		Has good cold working performance, suitable for the parts like cold heading etc.
303	0.15	1	2	0.2	≥0.15	8.0-10	17.0-19.0	≤0.60			Easy to lathe and cut.
303Cu	0.15	1	3	0.2	≥0.15	8.0-10	17.0-19.0	≤0.60	1.5-3.5		Easy to lathe and cut, suitable for automatic lathe.
304	0.08	1	2	0.045	0.03	8.0-10	18.0-20.0				Has good anti-corrosion performance, widely used.
304H	0.08	1	2	0.045	0.03	8.0-10	18.0-20.0				Has good anti-corrosion performance, strength will be enhanced after cold working.
304HC	0.08	1	2	0.045	0.03	8.0-10	18.0-20.0		2.0-3.0		Good cold working performance and good corrosion resistance.
304HCM	0.08	1	2	0.045	0.03	8.0-10	17.0-19.0		2.5-4.0		Good cold working performance and good corrosion resistance.
304L	0.03	1	2	0.045	0.03	9.0-13.0	18.0-20.0				Excellent corrosion resistance of grain boundary, suitable for the parts without heat treatment after welding.
304M	0.06	1	2	0.045	0.03	8.9-10	18.0-20.0				Good corrosion resistance and good drawing performance.
305	0.12	1	2	0.045	0.03	10.5-13.0	17.0-19.0				Good cold working performance and corrosion resistance.
305J1	0.08	1	2	0.045	0.03	11.0-13.0	16.5-19.0				Good cold working performance and corrosion resistance.
309S	0.08	1	2	0.045	0.03	12.0-15.0	22.0-24.0				Good heat resistance and oxidation resistance.
310S	0.08	1.5	2	0.045	0.03	19.0-22.0	24.0-26.0				Good heat resistance and oxidation resistance.
314	0.25	1.5-3.0	2	0.04	0.03	19.0-22.0	24.0-26.0				Better corrosion resistance than SUS 304 in these mediums like sea water and all kinds of organic acid etc.
316	0.08	1	2	0.045	0.03	10.0-14.0	16.0-18.0	2.0-3.0			Better corrosion resistance than SUS 304 in these mediums like sea water and all kinds of organic acid etc.
316Cu	0.03	1	2	0.045	0.03	10.0-14.0	16.0-18.0	2.0-3.0	2.0-3.0		Good cold impacting, good corrosion resistance.
316L	0.03	1	2	0.045	0.03	12.0-15.0	16.0-18.0	2.0-3.0			Important corrosion resistance material, has lower carbon content than SUS316, making it has better corrosion resistance of grain boundary.
321	0.08	1	2	0.045	0.03	9.0-13.0	17.0-19.0			Ti≤5%C	Add Ti to SUS304, having a good corrosion resistance, suitable for fabricating welding core, diamagnetic instrument parts.
410	0.15		1		0.03		11.5-13.5				Having a certain degree of hardness, plasticity and toughness, and the ability to resist saltwater solution, nitric acid and some organic acid with low concentration.
416	0.15		1.25		≥0.15		12-14.0				Better cutting performance than SUS410, suitable or machining on automatic lathe.
420	0.26-0.4		1		0.03		12-14.0				Has better cutting performance.
410L	0.03	1	1	0.04	0.03		11.5-13.5				Has strong toughness.
430	0.12	0.75	1	0.04	0.03		16.0-18.0				The ability to resist corrosion in anti-oxidative media, but there is a tendency to intergranular attachment
430F	0.12	1	1.25	0.06	0.15		16.0-18.0				Has better cutting performance than SUS430, suitable for machining in automatic lathe.
631(J1)	0.09	1	1	0.04	0.03	6.5-8.5	16.0-18.0			AL0.75-1.5	Heat resistant spring action, aging treatment steel.