

Technical data sheet

Title	Self-drilling screws
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DIN 7504-K



DIN 7504-P



AUTA



DIN 7504-N

1.- Characteristics.

- 1.- Drill point: it drills the material directly without needing previous drilling.
- 2.- Self-tapping thread.
- 3.- High variety of types of heads, diameters and lengths for different applications: flexibility in assembly.
- 4.- Zinc-plated coatings, black zinc plating, white zinc plating and silver ruspert.
- 5.- Versions in usual colours of commercial lacquered sheets (RAL chart)
- 6.- Coloured caps available for hex heads.

2- Applications.

- 1.- For joining metal to wood, metal components to each other, or plastic, wood and other materials on metal materials.
- 2.- Versions with galvanised steel-AREPDM or stainless steel-AREPDM washer for tight joints in façades and roofs, in different diameters.





3- Base materials.







4- Examples of application.



5- Selection table.

Code	Standard	Head	Mortise	Φ EPDM washer (1)	Material/Coating (2)	Material to be drilled
DIN 7504K 	DIN 7504K	Hex with washer	---	14, 16, 18, 25	Steel / Zinc plating	Steel
DIN 7504K 	DIN 7504K	Hex with washer	---	16	A2	Steel and stainless steel
AUTA 	---	Hex with washer	---	16	Steel / Zinc plating	Steel
AUTA 	---	Hex with washer	---	16		Steel and stainless

							steel
DIN 7504N		DIN 7504N	Pan	Phillips	---	Steel / Zinc plating	Steel
DIN 7504N		DIN 7504N	Pan	Phillips	---	Stainless steel	Aluminium
DIN 7504P		DIN 7504P	Countersunk	Phillips	---	Steel / Zinc plating	Steel
DIN 7504P		DIN 7504P	Countersunk	Phillips	---	Steel / Black zinc plating	Steel

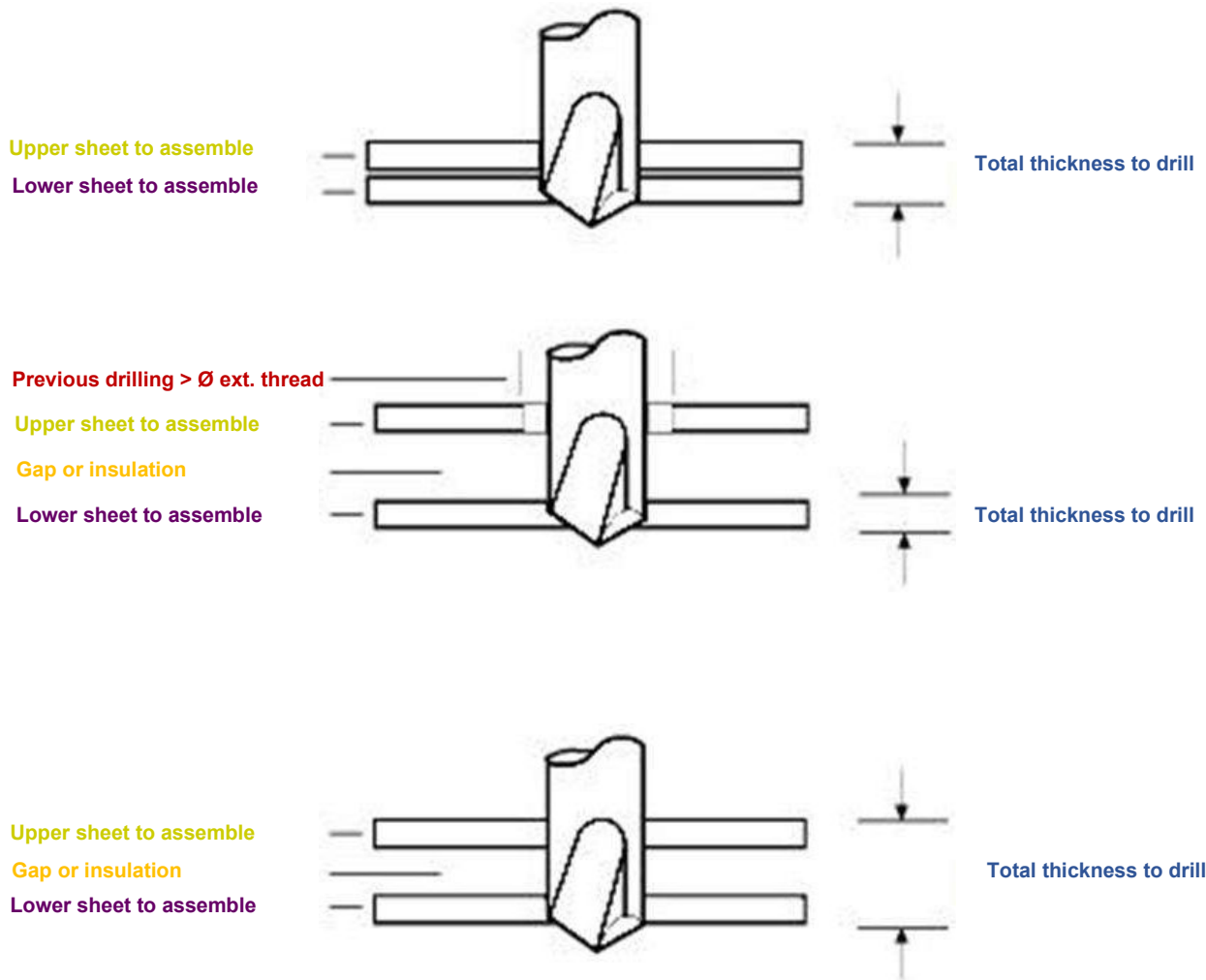
- (1) Characteristics of EPDM washer according to ARVUL data sheet.
(2) Coatings: zinc plating $\geq 3\mu\text{m}$ according to ISO 4042 A1J
black zinc plating $\geq 3\mu\text{m}$ according to ISO 4042 A1N

6- Materials.

Characteristic	Stainless	Steel
Material	Special steel for thermal treatment SAE J403 1022	A2 stainless steel
Surface hardness	> 500 HV	---
Core hardness	240 - 450 HV	---
Hardness depth	ST 2.5- 3.5: 0.05- 0.18 mm ST 3.9- 5.5: 0.10- 0.23 mm ST 6.3: 0.15- 0.28 mm	---

7- Selection of tips.

The selection of the screw tip must be such that the total thickness of the metal materials to be joined (including eventual intermediate separations) is smaller than the edge of the drill point; otherwise, the screw may break during the installation.



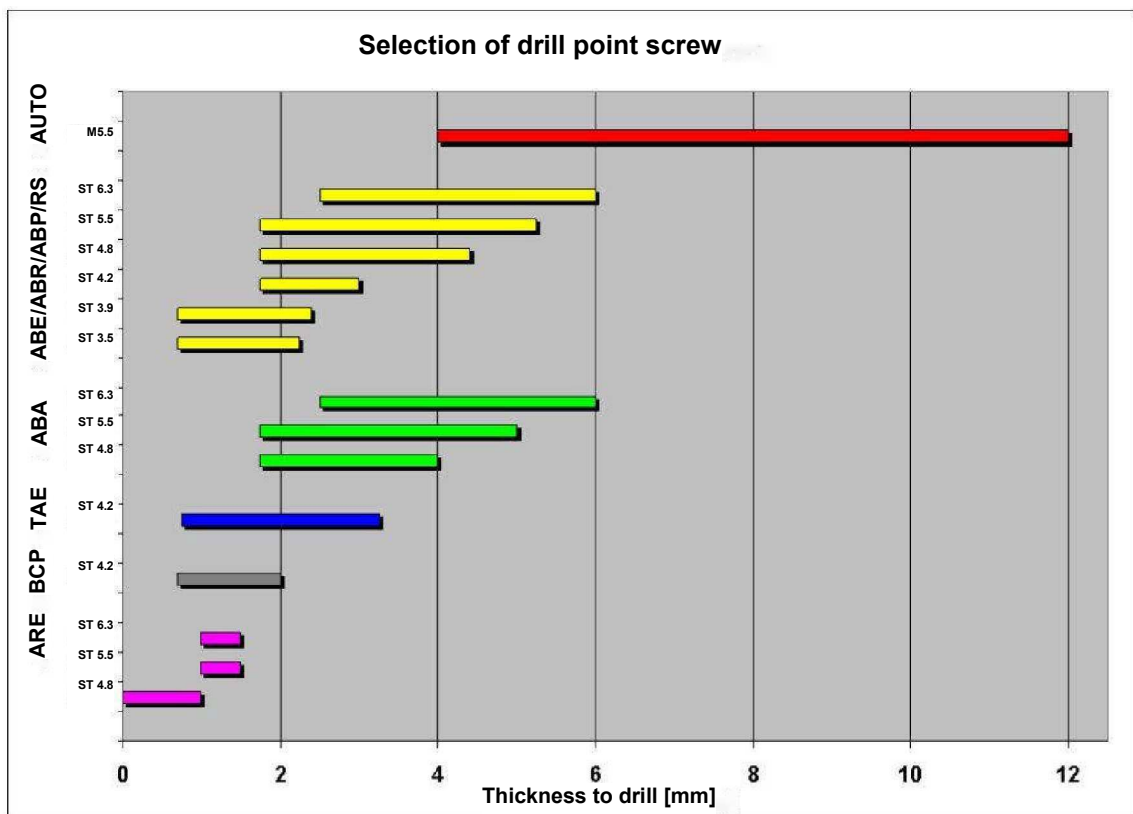
8- Installation parameters

Parameter		ST 3.5	ST 3.9	ST 4.2	ST 4.8	ST 5.5 M 5.5	ST 6.3
Maximum installation force	[N]	150	200	250	250	350	350
Drilling speed	Steel [rpm]	1800 - 2500				1000 - 1800	
	Stainless steel [rpm]	1000 - 1500				600 - 1000	
Maximum time	[sec]	4	4.5	5	7	11	13
Maximum torque	[Nm]	2.8	3.8	4.7	6.9	10.4	16.9

10 N ≈ 1 Kg

10 N ≈ 1 Kg m

At high drilling times or excessive drilling speed there is a risk of burning the drill point, therefore not achieving drilling of the material.



Maximum fixture thickness						
Length	ST 3.5	ST 3.9	ST 4.2	ST 4.8	ST 5.5	ST 6.3
9.5	2.85					
11	4.2					
13	6.2	5.8	4.3	3.7		
16	9.2	8.8	7.3	5.5		
19	12.1	11.7	10.3	8.7	8.7	7
22	15.1	14.7	13.3	11.7	11.7	10
25	18.1	17.7	16.3	14.7	14.7	13
32	25.1	24.5	23	21.5	21.5	20
38		30.5	29	27.5	27.5	26
45			36	34.5	34.5	33
50			41	39.5	39.5	38
60				49.5	49.5	48
63				52.5	52.5	51
73				62.5	62.5	61
75				64.5	64.5	63
80				69.5		68
90				79.5		78
100				89.5		88
110						98
120						108
130						118
140						128

9- Characteristic resistance of the screw

Measurement	Traction [KN]	Shear [KN]
ST 2.9	2.62	1.31
ST 3.5	3.81	1.91
ST 3.9	4.64	2.32
ST 4.2	5.26	2.63
ST 4.8	7.11	3.56
ST 5.5	9.63	4.82
ST 6.3	13.36	6.68

1 KN ≈ 100 Kg

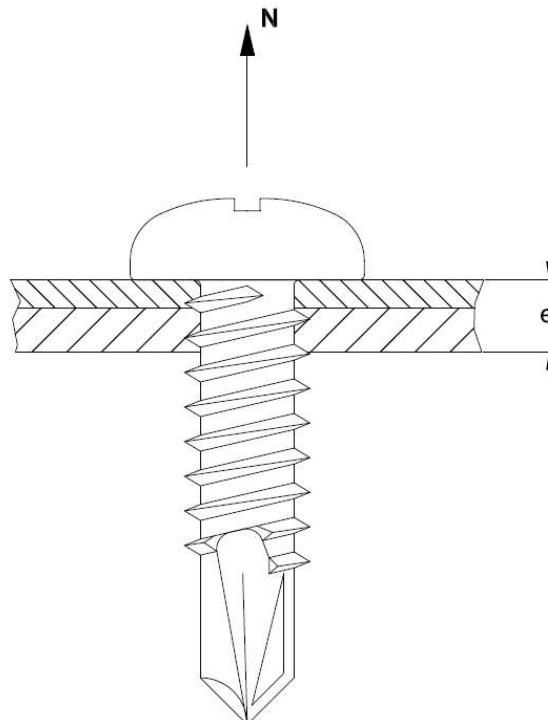
In tensile loads, the resistance of the sheets to be joined should be considered, which will be generally lower than the resistance of the screw itself, as the screw will probably tear the sheets.

10- Recommended load on extraction in steel sheet

Measurement	Recommended load					
	e [mm]	N [kN]	e [mm]	N [kN]	e [mm]	N [kN]
ST 3.5	0.8	0.55	1.5	0.89	2.0	1.13
ST 3.9	0.8	0.54	1.5	0.97	2.0	1.50
ST 4.2	2.0	1.63	2.5	1.51	3.0	2.62
ST 4.8	2.0	1.87	3.0	2.77	4.0	3.71
ST 5.5	2.0	1.77	3.5	2.86	5.0	3.43
ST 6.3	2.5	1.44	4.0	3.19	5.0	4.83

11- Recommended load on extraction in aluminium sheet

Measurement	Recommended load					
	e [mm]	N [kN]	e [mm]	N [kN]	e [mm]	N [kN]
ST 4.8	2.0	0.95	3.0	1.52	4.0	2.10



1. DIN 7504-K

Self-drilling hex head screw with embossed washer



Properties



Zinc-plated coating



Steel

Base material



Sheet assembly



Sheet profiles

Properties



Hex with embossed washer



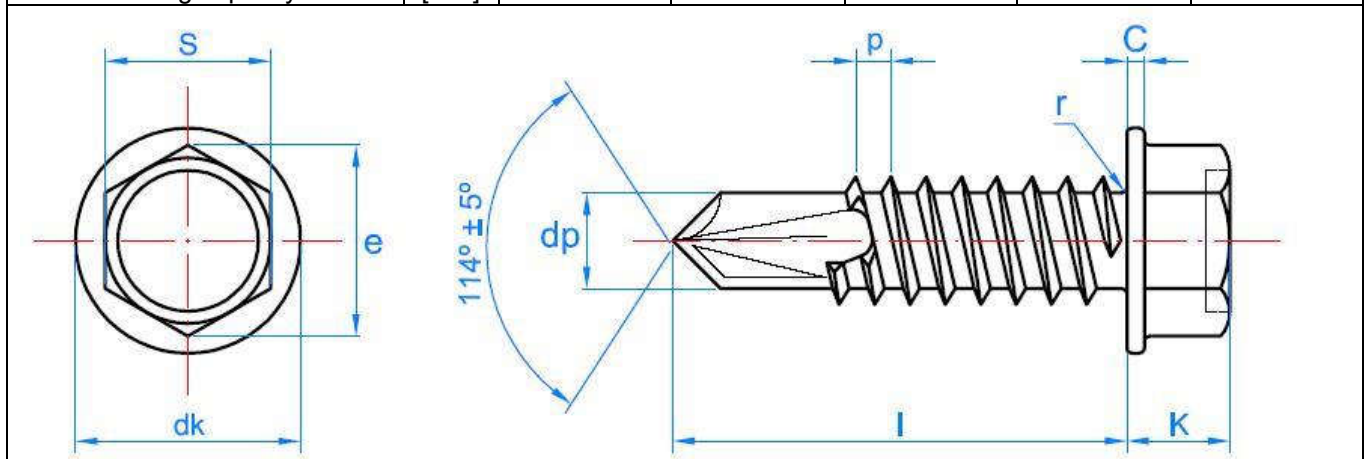
Hex with embossed washer



Drill point

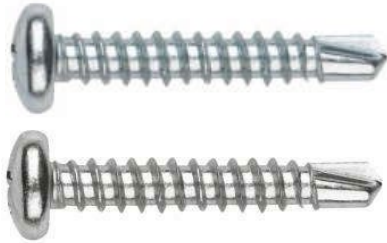
1.1.Datos

Code		ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
dk: head washer diameter	[mm]	8	8.5	10	10.5	12.6
k: head thickness	[mm]	3.3	4.1	4.3	4.3	6.3
c: washer thickness	[mm]	1.2	1.5	1.6	1.9	2
s: open end wrench	[mm]	6	7	8	8	10
D: thread outer diameter	[mm]	3.53	4.22	4.80	5.46	6.25
d: thread inner diameter	[mm]	2.64	3.10	3.58	4.17	4.88
p: thread pitch	[mm]	1.3	1.4	1.6	1.8	1.8
l: lengths	[mm]	9.5 - 32	13 - 38	13 - 38	19 - 75	19 - 140
lg: maximum thread length	[mm]	90	90	90	90	90
Installation point code (magnetic hex bit)		BOCA006	BOCA007	BOCA008	BOCA008	BOCA010
Drilling capacity	[mm]	0.70 - 2.25	1.75 - 3.00	1.75 - 4.40	1.75 - 5.25	2.50 - 6.00



2. DIN 7504-N

Self-drilling Phillips panhead screw



Properties

Base material



Steel



Stainless steel



Sheet assembly



Sheet profiles

Coatings

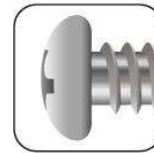
Properties



Zinc-plated coating



Phillips



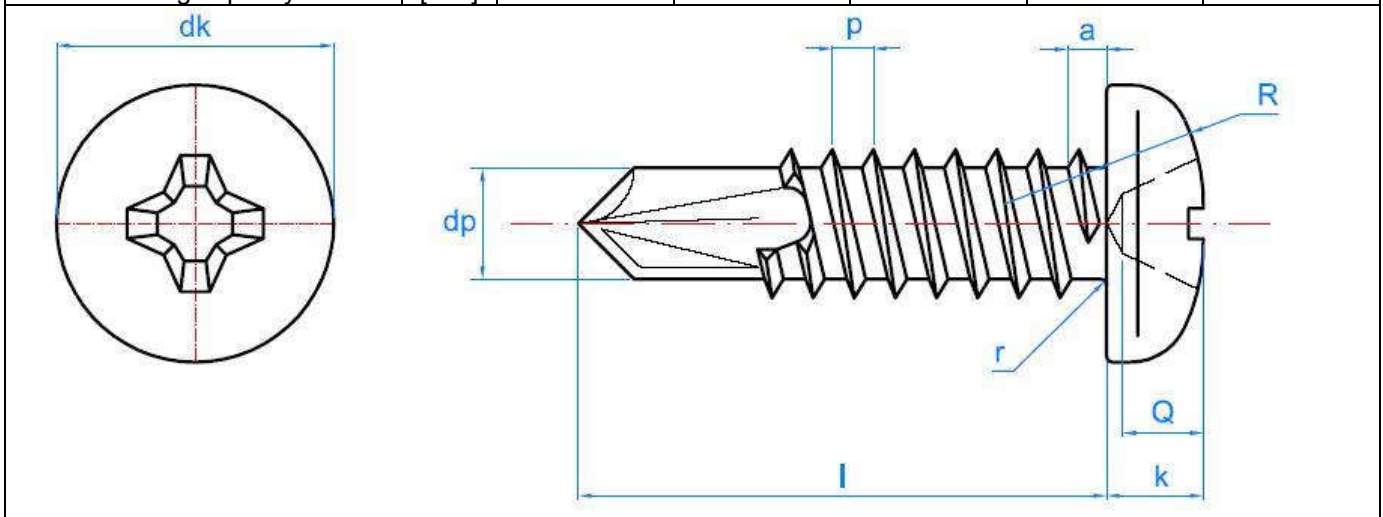
Pan head



Drill point

2.1.Datos

Code		ST 3.5	ST 3.9	ST 4.2	ST 4.8	ST 5.5
dk: head diameter	[mm]	6.9	7.5	8.2	9.5	10.8
k: head thickness	[mm]	2.60	2.80	3.05	3.55	3.95
Phillips mortise		no. 2	no. 2	no. 2	no. 2	no. 3
R: head radius	[mm]	5.4	5.8	6.2	7.2	8.2
D: thread outer diameter	[mm]	3.53	3.91	4.22	4.80	5.46
d: thread inner diameter	[mm]	2.64	2.92	3.10	3.58	4.17
p: thread pitch	[mm]	1.3	1.3	1.4	1.6	1.8
l: lengths	[mm]	9.5 - 32	13 - 32	13 - 50	13 - 120	19 - 73
Installation point code (Phillips point)		PUPHC02	PUPHC02	PUPHC02	PUPHC02	PUPHC03
		PUPHL02	PUPHL02	PUPHL02	PUPHL02	PUPHL03
Drilling capacity	[mm]	0.70 - 2.25	0.70 - 2.40	1.75 - 3.00	1.75 - 4.40	1.75 - 5.25



- Zinc-plated finish (ABR code), white zinc plating (ABR_BLE code) and black zinc plating (NBR code).
- Stainless steel A2 version (*ABRA2 code) for use only in aluminium (does not cause corrosion by galvanic couple). Do not use the stainless steel screw to drill steel, as the point will burn due to lack of hardness.

3. DIN 7504-P

Self-drilling Phillips countersunk screw

Properties



Zinc-plated coating



Steel

Base material

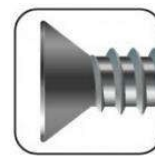
Properties



Sheet assembly



Phillips



Countersunk head

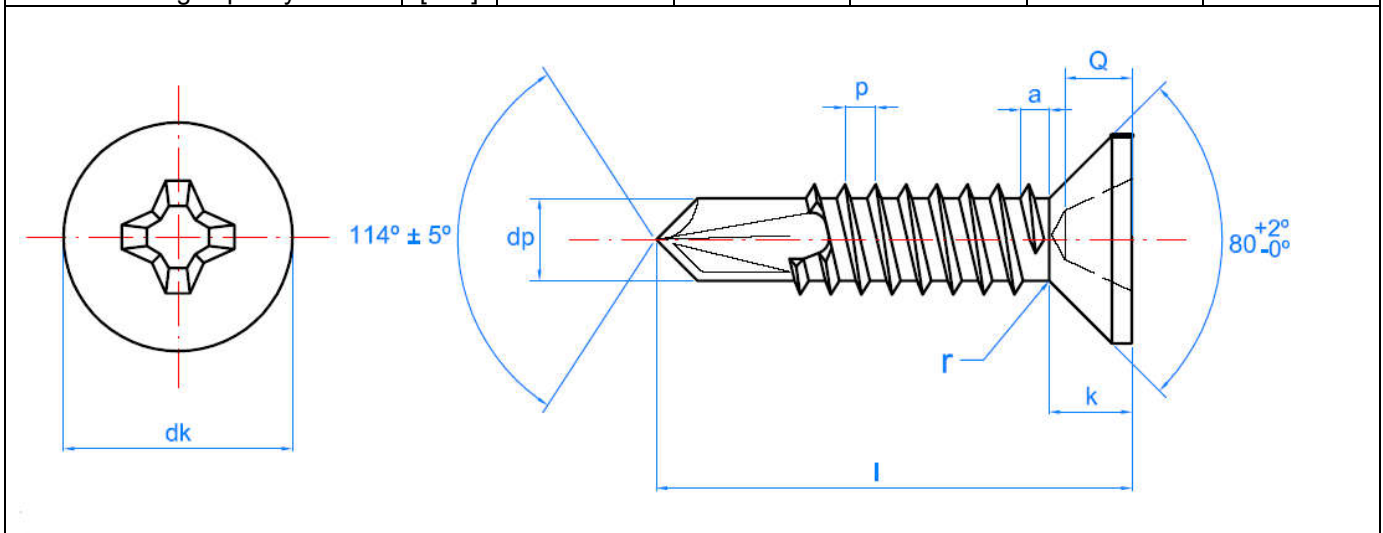


Drill point

Sheet profiles

3.1. Data

Code		ST 3.5	ST 3.9	ST 4.2	ST 4.8	ST 5.5
d_k : head diameter \leq	[mm]	6.8	7.5	8.1	9.5	10.8
k : head thickness	[mm]	2.1	2.3	2.5	3.0	3.4
Phillips mortise		no. 2	no. 2	no. 2	no. 2	no. 3
Countersunk head angle	$^\circ$	80	80	80	80	80
D : thread outer diameter	[mm]	3.53	3.91	4.22	4.80	5.46
d : thread inner diameter	[mm]	2.64	2.92	3.10	3.58	4.17
p : thread pitch	[mm]	1.3	1.3	1.4	1.6	1.8
L : lengths	[mm]	9.5 - 25	13 - 38	13 - 38	13 - 50	19 - 50
Installation point code (Phillips point)		PUPHC02 PUPHL02	PUPHC02 PUPHL02	PUPHC02 PUPHL02	PUPHC02 PUPHL02	PUPHC03 PUPHL03
Drilling capacity	[mm]	0.70 - 2.25	0.70 - 2.40	1.75 - 3.00	1.75 - 4.40	1.75 - 5.25



- Zinc-plated finish (ABP code) and black zinc plating (NBP code).

- For metal-metal bondings where it is desired that the screw is in line with the material to be fixed.
- Requires previous countersinking.

4. AUTA

Self-drilling screw for beam with drill point no. 5 and hex head



Properties



Zinc-plated coating



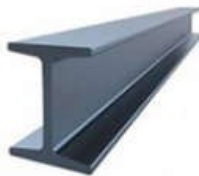
Steel

Base material

Properties



Sheet assembly



IPN



Hex with embossed washer



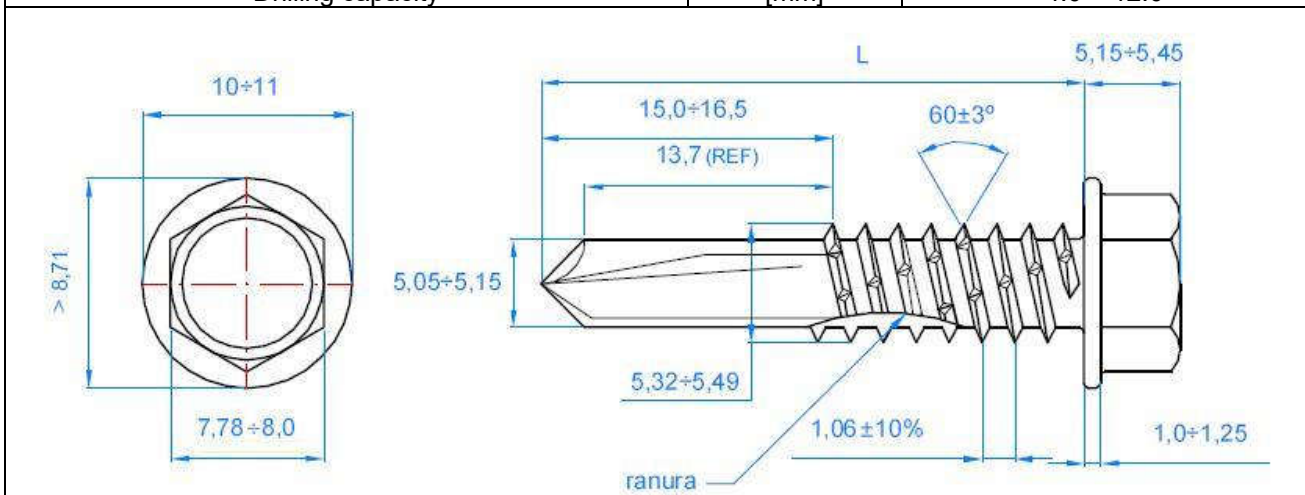
Hex with embossed washer



Beam drill point

4.1.Data

Code		M 5.5
dk: head washer diameter	[mm]	11
k: head thickness	[mm]	5.3
c: washer thickness	[mm]	1.15
s: open end wrench	[mm]	8
Point		#5
D: thread outer diameter	[mm]	5.5
d: thread inner diameter	[mm]	4.6
p: thread pitch	[mm]	1.06
l: lengths	[mm]	32 – 38
Installation point code (magnetic hex bit)		BOCA008
Drilling capacity	[mm]	4.0 – 12.0



- Zinc-plated finish.
- General use in sheet-sheet joints for thicknesses of up to 12 mm.
- Versions with AREPDM washer assembled for tight closure in façades and roofs.