Data sheet self-tapping screws — pilot holes, head types, DIN/ISO, width across flats

Self-tapping screws (ISO 1478 thread) cut their own thread in a pre-drilled hole in thin steel or aluminium sheet, plastics and hardboard. The pilot hole decides the joint: too small and the screw snaps or the head strips, too large and the thread does not hold. The table gives guide values per thread diameter for thin (≤ 1 mm) to thick (2–3 mm) steel sheet; aluminium and plastics about 0.1 mm smaller. Above about 2.5 mm steel choose a self-drilling screw or a tapped hole with a machine screw.

Pilot hole per thread diameter (guide values)

d (mm)	pitch (mm)	steel sheet thin → thick (mm)	aluminium / plastics (mm)
2.2	0.8	1.7 – 1.9	1.6 – 1.8
2.9	1.1	2.2 – 2.5	2.1 – 2.4
3.5	1.3	2.7 – 3	2.6 – 2.9
3.9	1.3	3 – 3.3	2.9 – 3.2
4.2	1.4	3.3 – 3.6	3.2 – 3.5
4.8	1.6	3.8 – 4.2	3.7 – 4.1
5.5	1.8	4.5 – 4.9	4.4 – 4.8
6.3	1.8	5.2 – 5.6	5.1 – 5.5
8	2.1	6.7 – 7.2	6.6 – 7.1

Standards, head types and drives

standard	head	note
DIN 7981 / ISO 7049	pan head	sits on the sheet, clamps without countersinking
DIN 7982 / ISO 7050	countersunk head	flush in a countersunk hole
DIN 7983 / ISO 7051	raised countersunk head	flush with a slight dome, visible work
DIN 7976 / ISO 1479	hexagon head	driven with a socket, high torque
DIN 6928	hexagon head with collar	the collar replaces a washer
DIN 968	flat pan head with flange	large bearing area on thin sheet and plastics
suffix -H / -Z / -T / -S	Phillips / Pozidriv / Torx / square	drive
form C / F	sharp point / blunt point	C is standard; F for a pre-drilled hole to size

Hexagon: width across flats DIN 7976 / 6928

d (mm)	AF (mm)
2.9	5
3.5	5.5
3.9	6
4.2	7
4.8	8
5.5	8
6.3	10
8	13

Procedure and material

topic	rule
sheet thickness	up to about 2.5 mm steel with pilot hole; thicker: self-drilling (DIN 7504) or tapped hole
engagement	at least 2 threads beyond the sheet; length = clamping thickness + 2 × pitch + point
speed	low, with torque limiting; do not overdrive or the formed thread strips
zinc plated	indoors and under cover (C1–C2); black zinc indoors only
stainless A2	outdoors; A4 near the coast, swimming pools, industry
stainless in steel sheet	pilot hole on the large side and drive slowly: stainless is softer than hardened steel