Data sheet wood screws, construction screws and coach screws — pre-drilling, length, spacing, selection

Rules of thumb for timber joints with screws (countersunk, washer head, flange head) and DIN 571 coach screws. Pre-drilling prevents splitting and breakage: in softwood only for d ≥ 6 mm or close to an end grain, in hardwood always. The screw must engage deep enough in the load-bearing part and keep enough distance from edge and end grain. For calculated structural joints the manufacturer's CE/ETA values and EN 1995-1-1 (Eurocode 5) apply; this sheet gives the practical rules.

Pre-drilling (mm) per screw diameter

d	softwood (spruce, pine)	hardwood (oak, bangkirai, azobé)	MDF / chipboard (near edge)
3	–	2.1	1.8
3.5	–	2.4	2.1
4	–	2.8	2.4
4.5	–	3.1	2.7
5	–	3.5	3
6	3	4.2	3.6
8	4	5.6	4.8
10	5	7	6
12	6	8.4	7.2

Coach screws DIN 571: width across flats

d	AF
6	10
8	13
10	17
12	19
16	24
20	30

Length and spacing

engagement	at least 8 × d in the load-bearing part, or 2/3 of the screw length in the second part
deck board	screw length ≥ 2.5 × board thickness (21 mm → 50–60 mm; 28 mm → 60–70 mm), two screws per board per joist
edge distance	≥ 5 × d to the edge, ≥ 10 × d to an end grain (otherwise pre-drill)
spacing	≥ 10 × d parallel to the grain, ≥ 5 × d across the grain
coach screw	pre-drill over the thread length (0.7 × d hard / 0.5 × d soft), clearance hole d, DIN 440/9021 washer, tighten with spanner AF

Choice of head, point and material

countersunk head	flush finish; milling ribs countersink the head without splintering
washer / flange head	wide head on the surface; replaces a washer; beams, purlins, garden timber
hexagon head (DIN 571)	high torque with a spanner; heavy joints, brackets, posts
cutting point	cuts its own hole, less splitting; standard on construction screws
drill point	self-drilling in hardwood and board; no pre-drilling in softwood
zinc / yellow zinc	indoors and under cover (C1–C2)

WIROX / hot-dip galvanised	outdoors, no salt (C3)
stainless A2	outdoors, damp (C3); tannin-rich hardwood: A2 may stain → A4
stainless A4	coast, pools, chemical exposure (C4–C5)
hardened stainless C2 (AISI 410)	hard as steel, rust resistant in normal outdoor air; not when permanently wet or salty