Data sheet plugs and anchors — choice per substrate, hole, screw size, fitting

The substrate decides the plug: solid material (concrete, solid brick) carries an expansion plug; perforated brick and hollow blocks need a long expansion zone or a knotting plug; board (plasterboard, wood) needs a cavity or board plug; aerated concrete its own anchor. The hole is always the plug diameter, the hole depth plug length + about 10 mm, and the screw length plug length + fixture thickness + one screw diameter. Loads are in the manufacturer's table and depend on substrate and installation.

Choice per substrate

substrate	plug type	note
concrete, solid brick, sand-lime block	expansion plug (SX Plus, S, SMART PB), brass/steel plug, hammer-set anchor	highest loads; for a metric bolt: brass, FMD or hammer-set anchor
perforated brick, hollow blocks	universal plug (DuoPower, FU, UX, XUP), frame fixing with long expansion zone	the long expansion zone bridges the voids; no hammer action on the plug
aerated concrete	aerated concrete anchor FPX-I, GB plug, aerated concrete nail/screw, FTP	ordinary plugs pull out; exact hole, do not ream
plasterboard, gypsum fibre	metal cavity fixing HM, plasterboard plug GK, DuoPower, universal plug	metal for heavy loads; board thickness from the table
hollow wall/ceiling with cavity behind	spring toggle KD/KDH, toggle anchor	not reusable; cavity at least the toggle length
wood, beams	no plug: wood screw or coach screw	plug only for end grain or weathered wood
cavity wall, loose masonry	cavity anchor, renovation anchor VBS-M, Isolfix	choose the anchor length by the cavity; 4–6 per m²

Nylon expansion and universal plugs: hole and screw (fischer SX Plus / DuoPower / FU, PGB SMART)

plug	hole Ø (mm)	min. hole depth (mm)	screw Ø (mm)
4 x 20	4	30	2.0 – 3.0
5 x 25	5	35	3.0 – 4.0
6 x 30	6	40 – 45	4.0 – 5.0
6 x 50	6	60	4.0 – 5.0
8 x 40	8	50	4.5 – 6.0
8 x 65	8	75	4.5 – 6.0
10 x 50	10	60 – 70	6.0 – 8.0
10 x 80	10	100	6.0 – 8.0
12 x 60	12	80 – 90	8.0 – 10.0
14 x 70	14	90	10.0 – 12.0

Cavity: board thickness and hole (fischer HM, KD/KDH)

type	hole Ø (mm)	board thickness (mm)	min. hole depth (mm)
HM 4 x 32 S	8	3 – 13	40
HM 5 x 65 S	10	20 – 34	71
HM 6 x 80 S	12	32 – 50	88
KDH 4	14	≤ 35	–
KD 5 / KD 6	16	≤ 63	–

Fitting rules

topic	rule
hole	diameter = plug diameter; in perforated brick drill without hammer action; blow out the hole
hole depth	plug length + 10 mm, for push-through fitting + fixture thickness
screw length	plug length + fixture + 1 × screw diameter (fischer); PGB: h_ef + t_fix + 5 mm
screw type	wood/chipboard screw or hanger bolt in nylon; metric bolt in brass, steel and hammer-set anchors; never a metric bolt in a nylon expansion plug
hammer fixing	drill through the part, insert the plug, hammer in the nail; anchorage depth 25–40 mm; removable with a screwdriver
frame fixing / frame screw	anchorage depth 50–70 mm in the wall; align the frame before tightening; do not overdrive
aerated concrete FPX-I	hole 10 mm, depth 95 mm, h_ef 70 mm, hammer in without cleaning, tighten with hex key (ETA-12/0456)
renovation anchor VBS-M	hole 8 mm, anchorage depth 50 mm, cavity 20–120 mm depending on length
outdoors	nylon is weather resistant; use a stainless A2 screw (A4 near the coast) to avoid rust streaks